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PRECAUTIONS

[TRANSFER: TY21C] < PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRF-TFNSIONER"

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

this Service Manual.

WARNING:

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

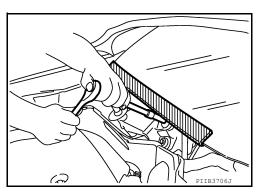
PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

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

Precaution for Procedure without Cowl Top Cover

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



Precaution for Battery Service

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

Service Notice or Precautions for Transfer

- After overhaul refill the transfer with new transfer oil.
- Check the oil level or replace the oil only with the vehicle parked on level surface.
- During removal or installation, keep inside of transfer clear of dust or dirt.
- Replace all tires at the same time. Always use tires of the proper size and the same brand and pattern. Fitting improper size and unusual wear tires applies excessive force to vehicle mechanism and can cause longitudinal vibration.
- Disassembly should be done in a clean work area.

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PRECAUTIONS

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• Before proceeding with disassembly, thoroughly clean the transfer. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.

- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they do not interfere with the function of the parts when applied.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new one if necessary.
- Gaskets, seals, O-rings and lock nuts should be replaced any time when the transfer is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- · Observe the specified torque when assembling.
- Clean and flush the parts sufficiently and blow-dry them.
- · Be careful not to damage sliding surfaces and mating surfaces.
- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transfer.

PREPARATION

< PREPARATION > [TRANSFER: TY21C]

PREPARATION

PREPARATION

Special Service Tool

The actual shape of	the tools may differ from	m those illustrated here.
The detadi chape of		

Tool number (TechMate No.) Tool name		Description	С
ST33061000 (J-8107-2) Drift a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.	b	Removing gear ring bearing inner race (transfer case side)	DLN E
KV381054S0 (J-34286)	22A0810D	Removing ring gear shaft oil seal	F
Puller			G
	ZZA0601D		Н
ST3127S000 (J-25765-A)	* •	Measuring preload torque	_
Preload gauge			I

Commercial Service Tool

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	Description
	Loosening nuts, screws and bolts
PIIBI4U/E	Removing gear ring bearing inner race (trans-
	fer cover side)
a b	
	PIIB1407E

PREPARATION

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Tool name		Description
Drift a: 56.5 mm (2.224 in) dia. b: 48 mm (1.89 in) dia.		Installing side oil seal (installing transfer case oil seal)
	ab	
Drift a: 44 mm (1.73 in) dia.	NT115	Installing ring gear shaft oil seal
b: 33 mm (1.3 in) dia.	a b	
Puller	NT115	Removing ring gear bearing (left) inner race (transfer case side)
	NTO77	(lialister case side)
Drift a: 70 mm (2.76 in) dia. b: 60 mm (2.36 in) dia.	a b	Installing oil seal (installing pinion bearing seal)
Drift	NT115	Installing side oil seal (installing transfer cover
a: 78 mm (3.07 in) dia. b: 68 mm (2.68 in) dia.	a b NT115	oil seal)
Replacer		Removing drive pinion Removing ring gear bearing (left) inner race (transfer cover side)
Drift a: 58 mm (2.28 in) dia.	ZZA0700D	Installing ring gear bearing (left) inner race (transfer case side)
b: 55 mm (2.17 in) dia.	a b	
	NT115	

PREPARATION

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PREPARATION >		[IRANSFER: IY210
Tool name		Description
Orift 1: 62 mm (2.44 in) dia. 1: 58 mm (2.28 in) dia.	a b	Installing ring gear bearing (right) inner race (transfer cover side)
orift : 73.5 mm (2.894 in) dia.	NT115	Installing ring gear bearing (left) outer race (transfer case side)
	a SCIA5338E	
Drift a: 87 mm (3.43 in) dia.	SCIAD338E	Installing ring gear bearing (right) outer race (transfer cover side)
	a SCIA5338E	
orift : 20 mm (0.79 in) dia.		Removing drive pinion
	a	
Drift a: 40 mm (1.57 in) dia. b: 25 mm (0.98 in) dia.	SCIA5338E	Installing companion flange
(5.55) did.	a b	
	NT115	

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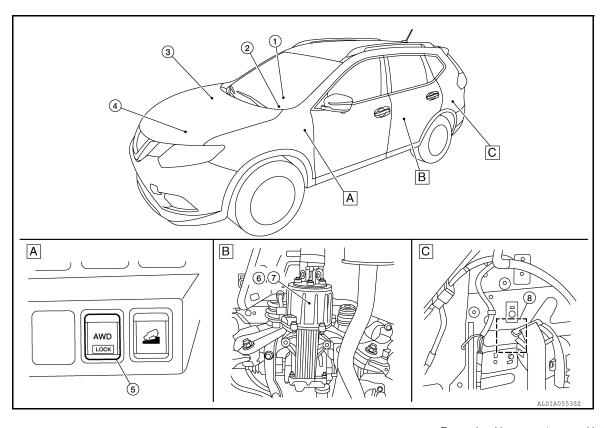
SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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[TRANSFER: TY21C]



- Instrument lower panel LH
- B Rear final drive assembly
- Rear wheel house outer panel in luggage room of left side

No.	Component	Function
1	Combination meter	Mainly transmits the following signal to AWD control unit via CAN communication: Parking brake switch signal Mainly receives the following signals from AWD control unit via CAN communication: AWD warning lamp signal AWD LOCK indicator lamp signal Torque distribution indicator signal For detailed installation location, refer to MWI-6, "METER SYSTEM: Component Parts Location".
2	Steering angle sensor	Mainly transmits the following signal to AWD control unit via CAN communication: Steering angle sensor signal For detailed installation location, refer to BRC-7, "Component Parts Location".

COMPONENT PARTS

< SYSTEM DESCRIPTION >

No.	Component	Function
3	ABS actuator and electric unit (control unit)	Mainly transmits the following signals to AWD control unit via CAN communication: Each wheel speed signal Stop lamp switch signal (brake signal) Yaw rate sensor signal Side G sensor signal Decel G sensor signal For detailed installation location, refer to BRC-7, "Component Parts Location".
4	ECM	Mainly transmits the following signals to AWD control unit via CAN communication: Accelerator pedal position signal Engine speed signal For detailed installation location, refer to EC-14. "Component Parts Location".
(5)	AWD lock switch	Refer to DLN-11, "AWD Lock Switch".
6	Electric controlled coupling	Refer to DLN-11, "Electric Controlled Coupling".
7	AWD solenoid	Refer to DLN-11, "AWD Solenoid".
8	AWD control unit • AWD actuator relay	Refer to DLN-11, "AWD Control Unit".

AWD Control Unit

• Controls driving force distribution by signals from each sensor from front wheel driving mode (100:0) to 4-wheel driving mode (50:50).

Front wheel driving conditions is available by fail-safe function if malfunction is detected in AWD system.

AWD actuator relay is integrated with AWD control unit, and supplies AWD solenoid with voltage.

Electric Controlled Coupling

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Electric controlled coupling is integrated with rear final drive and transmits driving force to rear final drive. For operation, refer to <u>DLN-12</u>, "<u>Operation Description</u>".

AWD Solenoid

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

AWD Lock Switch

Every time AWD lock switch is pressed, AUTO mode and LOCK mode switch each other.

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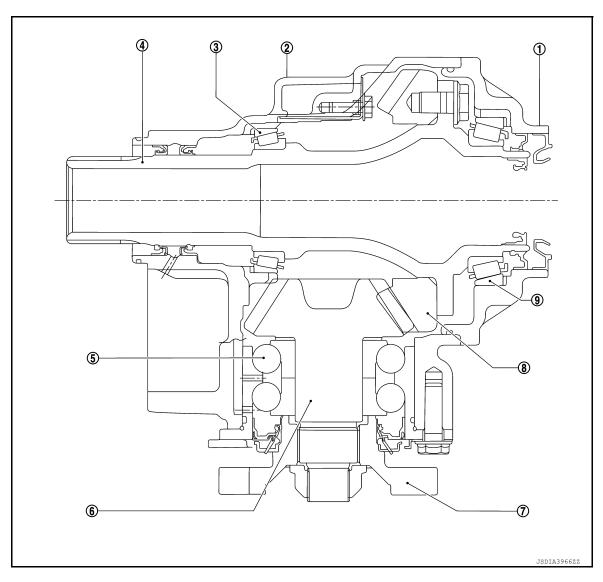
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STRUCTURE AND OPERATION

Sectional View



- 1. Transfer cover
- 4. Ring gear shaft
- 7. Companion flange

- 2. Transfer case
- 5. Pinion bearing
- 8. Ring gear

3. Ring gear bearing (transfer case side)

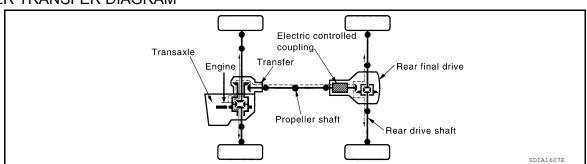
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- 6. Drive pinion
- 9. Ring gear bearing (transfer cover side)

Operation Description

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POWER TRANSFER DIAGRAM

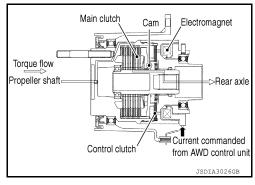


STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

ELECTRIC CONTROLLED COUPLING

- 1. The AWD control unit supplies command current to electric controlled coupling (AWD solenoid).
- 2. The 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.
- The main clutch transmits torque to front wheels according to pressing power.



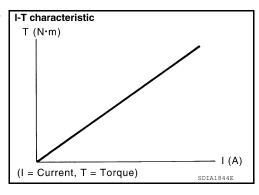
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Transmission torque to the rear wheels is determined according to command current.



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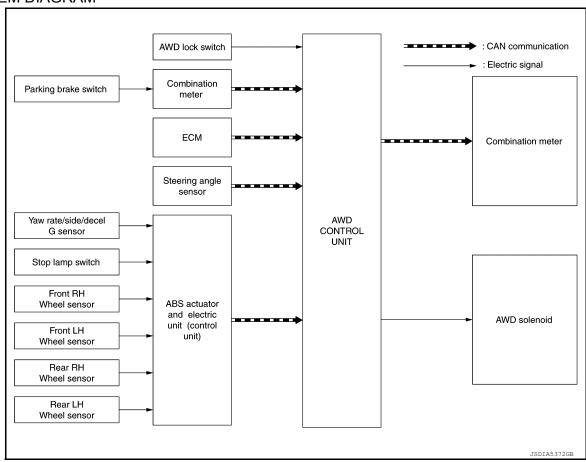
AWD SYSTEM

AWD SYSTEM: System Description

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SYSTEM DIAGRAM



Signal with Communication Line

Major signal transmission between each unit via CAN communication lines are shown in the following table.

Component parts	Signal item
Combination meter	Mainly transmits the following signal to AWD control unit via CAN communication: • Parking brake switch signal Mainly receives the following signals from AWD control unit via CAN communication: • AWD warning lamp signal • AWD LOCK indicator lamp signal • Torque distribution indicator signal
Steering angle sensor	Mainly transmits the following signal to AWD control unit via CAN communication: • Steering angle sensor signal

SYSTEM

Component parts	Signal item
ABS actuator and electric unit (control unit)	Mainly transmits the following signals to AWD control unit via CAN communication: • Each wheel speed signal • Stop lamp switch signal (brake signal) • Yaw rate sensor signal • Side G sensor signal • Decel G sensor signal
ECM	Mainly transmits the following signals to AWD control unit via CAN communication: • Accelerator pedal position signal • Engine speed signal

DESCRIPTION

- AWD controls distribution of drive power between front-wheel drive (100:0) and 4-wheel drive (50:50) conditions according to signals from sensors.
- By receiving the steering angle sensor signal, yaw rate sensor signal, side G sensor signal and decel G sensor signal, vehicle with VDC corrects a torque distribution for front and rear wheels according to a driving operation and a behavior of the vehicle during cornering and improves drivability and safety on a slippery road surface.
- Electronic control allows optimal distribution of torque to front/rear wheels to match road conditions.
- AWD mode makes possible stable driving possible with no wheel spin, on snowy roads or other slippery sur-
- On roads which do not require 4-wheel drive, it contributes to improved fuel economy by driving in conditions close to front-wheel drive.
- · Sensor inputs determine the vehicle's turning condition, and tight cornering/braking are controlled by distributing optimum torque to rear wheels.

NOTE:

Light tight-corner braking symptom may occur depending on driving condition. This is not malfunction.

AWD SYSTEM: Fail-Safe

If any malfunction occurs in AWD electrical system, and control unit detects the malfunction, AWD warning on information display (combination meter) is displayed to indicate system malfunction. And then AWD control unit controls becomes the fail-safe mode depending on DTC.

DTC	Vehicle condition	
•C1201 •C1204 •C1209 •P1804 •P1809 •P1811 •P181F	AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.	
•C1203 •C1210 •P1808 •P181D •U1000 •U1010	AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.	
•P181B	No impact to vehicle behavior.	

AWD SYSTEM: Protection Function

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.)

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DTC	AWD warning (on information display)	Error area and root cause	Contents of protection function
_	Refer to DLN-16, "IN- FORMATION DISPLAY	Rear final drive assembly in protection mode. It is not malfunction. (Internal temperature rise of electronic controlled coupling)	Shuts down AWD sys-
_	(COMBINATION METER) : AWD Warn- ing".	Malfunction in each tire or different tire diameter	tem temporarily (Front wheel drive)

NOTE:

- If the AWD warning displays during driving but remains not displayed after the engine is restarted, the system is normal. If it again displays after driving for some time, vehicle must be inspected.
- When there is a difference of revolution speed between the front and rear wheel the shift occasionally changes to direct 4-wheel driving conditions automatically. This is not a malfunction.

INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER): AWD Warning

INFOID:0000000011278301

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DESIGN/PURPOSE

AWD warning is displayed when the AWD system has a malfunction. AWD warning indicates that the vehicle is in fail-safe mode or protection function mode.

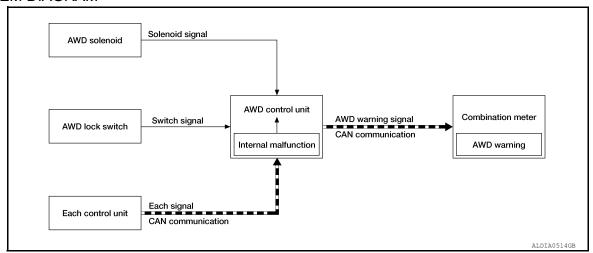
Symbol	Message	Condition
AVD	AWD Error See Owner's Manual	AWD system malfunction.
	AWD High Temp. Stop vehicle	Protection function is activated due to heavy load to electric controlled coupling. (AWD system is not malfunctioning and AWD system changes to rear wheel drive.)
	Tire Size Incorrect See Owner's Manual	Large difference in diameter of front/rear tires.

SYNCHRONIZATION WITH MASTER WARNING LAMP

Applicable

For master warning lamp, refer to <u>DLN-17</u>, "WARNING/INDICATOR/CHIME LIST: Warning/Indicator (On Information Display)".

SYSTEM DIAGRAM



SIGNAL PATH

 The AWD control unit judges and decides a mode from among normal mode, fail-safe mode, and protection function mode, according to signals received from each switch, sensor, and control unit.

SYSTEM

< SYSTEM DESCRIPTION >

- The AWD control unit transmits AWD warning signal to the combination meter via CAN communication when judging fail-safe mode or protection function mode.
- The combination meter displays AWD warning on the information display when receiving AWD warning signal transmitted from the AWD control unit.

WARNING CONDITION

AWD warning is displayed when the AWD system goes into fail-safe mode or protection function mode.

WARNING CANCEL CONDITION

When any of the conditions listed below is satisfied:

- Ignition switch is in a position other than ON.
- AWD warning becomes invisible when the AWD system returns to normal.

INFORMATION DISPLAY (COMBINATION METER): AWD Torque Distribution Indica-

tor INFOID:0000000011404794

DESIGN/PURPOSE

Symbol	Function
AWD	Displays the drive torque distribution to the front and rear wheels while driving and informs the driver of this. NOTE: The driving force distribution may not match actual one. This is not a system malfunction.

WARNING/INDICATOR/CHIME LIST

WARNING/INDICATOR/CHIME LIST: Warning/Indicator (On Information Display)

INFOID:0000000011278302

Name	Function
AWD warning	Refer to DLN-16, "INFORMATION DISPLAY (COMBINATION METER): AWD Warning".

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DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

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< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

CONSULT Function

APPLICATION ITEMS

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 and freeze frame data 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 ur and also shifts some parameters in a specified range.	
Work support	This mode enable a technician to adjust some devices faster and more accurately by following the indication on the CONSULT.	

^{*:} The following diagnosis information is erased by erasing.

- DTC
- Freeze frame data (FFD)

ECU IDENTIFICATION

AWD control unit part number can be read.

SELF DIAGNOSTIC RESULT

Refer to DLN-23, "DTC Index".

When "PRSNT" is displayed on "Self Diagnostic Result".

• The system is presently malfunctioning.

When "PAST" is displayed on "Self Diagnostic Result".

System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed.

Monitor item (Unit)	Remarks
ODO/TRIP METER [km/h] or [mph]	Odometer value via CAN communication line is displayed.
ABS OPERATION SIG [On/Off]	ABS operation status via CAN communication line is displayed.
VDC OPERATION SIG [On/Off]	VDC operation status via CAN communication line is displayed.
TCS OPERATION SIG [On/Off]	TCS operation status via CAN communication line is displayed.
HI COEF FRIC FLG 1 [LOW/HIGH]	Measured friction of load is displayed when vehicle starts.
HI COEF FRIC FLG 2 [LOW/HIGH]	Measured friction of load is displayed when vehicle during deceleration.
IGN VOLT [V]	Ignition voltage supplied to AWD control unit is displayed.
TARGET SOL CRNT [A]	AWD solenoid target current is displayed.
SOLENOID CRNT [A]	AWD solenoid control current is displayed.
QUASI VEHICLE SPEED [km/h] or [mph]	Vehicle speed calculated by AWD control unit is displayed.
FRONT WHEEL SPEED [km/h] or [mph]	Front wheel speed average calculated by AWD control unit is displayed.
REAR WHEEL SPEED [km/h] or [mph]	Rear wheel speed average calculated by AWD control unit is displayed.
SLCT LVR POSI	Current transmission gear via CAN communication line is displayed.
OPERATION MODE	Control status of AWD mode is displayed.
FRONT RH WHEEL SPEED [km/h] or [mph]	Wheel speed calculated by front RH wheel sensor signal is displayed.
FRONT LH WHEEL SPEED [km/h] or [mph]	Wheel speed calculated by front LH wheel sensor signal is displayed.
REAR RH WHEEL SPEED [km/h] or [mph]	Wheel speed calculated by rear RH wheel sensor signal is displayed.
REAR LH WHEEL SPEED [km/h] or [mph]	Wheel speed calculated by rear LH wheel sensor signal is displayed.

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

< SYSTEM DESCRIPTION >

DATA MONITOR

NOTE:

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

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 (on information display) is displayed.
4WD MODE SW [AUTO/LOCK]	AWD lock switch status is displayed.
4WD MODE MON [AUTO/LOCK]	Control status of AWD is displayed.
DIS-TIRE MONI [mm]	Improper size tire installed condition is displayed.
PARKING BRAKE SW SIG [On/Off]	Parking switch signal status via CAN communication line is displayed.
4WD MODE SW (2WD) [On/Off]	This item is not equipped, but displayed.
4WD MODE SW (AUTO) [On/Off]	This item is not equipped, but displayed.
4WD MODE SW (LOCK) [On/Off]	AWD lock switch signal is displayed.
READY [Off/Running]	This item is not equipped, but displayed.
BATTERY VOLT [V]	Power supply voltage value of AWD control unit is displayed.
THRTL POS SEN [%]	Throttle opening status is displayed.
ETS SOLENOID [A]	Monitored value of current at AWD solenoid is displayed.
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.

ACTIVE TEST

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	Condition	Description
SOLENOID (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.

WORK SUPPORT

Item	Usage
UNIT CHARACTERISTICS DATA	Display the unit characteristics of electric controlled coupling written to AWD control unit.
UNIT CHARACTERISTICS WRITE	Writes the unit characteristics of electric controlled coupling to AWD control unit.

Revision: August 2014 DLN-19 2015 Rogue NAM

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< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

AWD CONTROL UNIT

Reference Value

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 SW	Brake pedal: Released		Off
ENG SPEED SIG	Engine stopped (Engine speed: Less than 400 r	om)	Stop
ENG SPEED SIG	Engine running (Engine speed: 400 rpm or more	e)	Run
ETS ACTUATOR	Engine stopped (Ignition switch:	ON)	Off
LISACIDATOR	Engine running		On
4WD WARN LAMP	AWD warning (on information di	splay): Displayed	On
4VVD WARN LAWIF	AWD warning (on information di	splay): Not displayed	Off
AVAID MAODE OVAL	Releasing AWD lock switch		AUTO
4WD MODE SW	AWD lock switch is hold pressed	1	LOCK
	AWD LOCK indicator lamp: OFF	=	AUTO
4WD MODE MON	AVAID LOOKS IS A LOOK	Vehicle speed below 10 km/h (6 mph)	LOCK
	AWD LOCK indicator lamp: ON	Vehicle speed above 10 km/h (6 mph)	AUTO
	Vehicle running with normal size	e tire installed	0 – 4 mm
DIS-TIRE MONI	Vehicle running with improper si ference, wear condition)	ze tire installed (Front/rear tire size dif-	4 – 8 mm, 8 – mm
	Parking brake operated		On
PARKING BRAKE SW SIG	Parking brake not operated		Off
4WD MODE SW (2WD)	Always		Off
4WD MODE SW (AUTO)	Always		Off
11MD MODE 01M (1 0 0 K)	Releasing AWD lock switch		Off
4WD MODE SW (LOCK)	AWD lock switch is hold pressed	1	On
READY	Always		Off
BATTERY VOLT	Always		Battery voltage
THRTL POS SEN	When depressing accelerator per (Value rises gradually in response		0 – 100%
	Engine running	AUTO mode	Approx. 0.000 A
ETC COLENOID	At idle speed	LOCK mode	Approx. 0.000 A
ETS SOLENOID	Engine running	AUTO mode	Approx. 0.000 – 2.490 A*
	3,000 rpm or more constant	LOCK mode	Approx. 2.490 A
	Vehicle stopped		0.00 km/h (0.00 mph)
FR RH SENSOR	Vehicle running CAUTION: Check air pressure of tire und	er standard condition.	Nearly matches the speed meter display (±10% or less)

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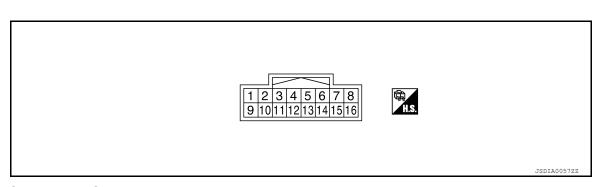
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< ECU DIAGNOSIS INFORMATION >

Monitor item	Condition	Value/Status
	Vehicle stopped	0.00 km/h (0.00 mph)
FR LH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Nearly matches the speed meter display (±10% or less)
	Vehicle stopped	0.00 km/h (0.00 mph)
RR RH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Nearly matches the speed meter display (±10% or less)
	Vehicle stopped	0.00 km/h (0.00 mph)
RR LH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Nearly matches the speed meter display (±10%)

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

TERMINAL LAYOUT



PHYSICAL VALUES

	nal No. color)	Description		Cor	ndition	Value (Approx.)		
+	-	Signal name	Input/ Output	Col	idition	value (Approx.)		
				Engine speed: At idle		0 V		
1 (SB)	Ground	AWD solenoid power supply	Output	Engine speed: 3,000 rpm	AUTO mode	2.5 V*		
(02)		oupp.y		or more constant	LOCK mode	8 V		
2	Craund	ANN/D a classid around	lanut	Engine speed: At idle		0 V		
(Y)	Ground	AWD solenoid ground	Input	Engine speed: 3,000 rpm o	r more constant	0 V		
7	Craund	lanition quitab	lanut	Ignition switch: ON		Battery voltage		
(LA/R)	Ground	Ignition switch	Input	Ignition switch: OFF		0 V		
8 (L)	_	CAN-high	Input/ Output		_	_		
9 (LA/G)	Ground	Power supply (AWD solenoid)	Input	Alv	ways	Battery voltage		
10 (B)	Ground	Ground	_	Alv	ways	0 V		
11 (B)	Ground	Ground	_	- Always		Always		0 V
14					Releasing AWD lock switch	Battery voltage		
(Y)	Ground	AWD lock switch	Input	Ignition switch: ON	AWD lock switch is hold pressed	0 V		

< ECU DIAGNOSIS INFORMATION >

	nal No. color)	Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output	Condition	value (Approx.)
15 (LA/L)	Ground	Power supply (AWD control unit)	Input	Always	Battery voltage
16 (P)	_	CAN-low	Input/ Output	_	_

^{*:} The values are changed by depressed accelerator pedal opening and engine speed. **CAUTION:**

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

Fail-Safe

If any malfunction occurs in AWD electrical system, and control unit detects the malfunction, AWD warning on information display (combination meter) is displayed to indicate system malfunction. And then AWD control unit controls becomes the fail-safe mode depending on DTC.

DTC	Vehicle condition
•C1201 •C1204 •C1209 •P1804 •P1809 •P1811 •P181F	AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.
•C1203 •C1210 •P1808 •P181D •U1000 •U1010	AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.
•P181B	No impact to vehicle behavior.

Protection Function

INFOID:0000000011278306

[TRANSFER: TY21C]

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.)

DTC	AWD warning (on information display)	Error area and root cause	Contents of protection function
_	Refer to DLN-16, "IN- FORMATION DISPLAY	Rear final drive assembly in protection mode. It is not malfunction. (Internal temperature rise of electronic controlled coupling)	Shuts down AWD sys-
_	(COMBINATION METER): AWD Warn- ing".	Malfunction in each tire or different tire diameter	tem temporarily (Front wheel drive)

NOTE:

- If the AWD warning displays during driving but remains not displayed after the engine is restarted, the systemis normal. If it again displays after driving for some time, vehicle must be inspected.
- When there is a difference of revolution speed between the front and rear wheel the shift occasionally changes to direct 4-wheel driving conditions automatically. This is not a malfunction.

DTC Inspection Priority Chart

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

< ECU DIAGNOSIS INFORMATION >

Priority	Detected items (DTC)	А
1	C1201 CONTROLLER FAILURE	
2	U1000 CAN COMM CIRCUIT U1010 CONTROL UNIT (CAN)	В
3	 C1203 ABS SYSTEM C1210 ENGINE SIGNAL 1 P1808 VHCL SPEED SEN-ABS P181D ENGINE SYSTEM 	С
4	P1809 CONTROL UNIT	
5	C1204 4WD SOLENOID P1811 BATTERY VOLTAGE	DLN
6	• C1209 MODE SW	
7	C1804 CONTROL UNIT	E
8	P181B INCOMP SELFSHUT P181F INCOMP CALIBRATION	

DTC Index INFOID:0000000011278308

DTC	Display Item	Reference
C1201	CONTROLLER FAILURE	DLN-36, "DTC Description"
C1203	ABS SYSTEM	DLN-37, "DTC Description"
C1204	4WD SOLENOID	DLN-38, "DTC Description"
C1209	MODE SW	DLN-41, "DTC Description"
C1210	ENGINE SIGNAL 1	DLN-43, "DTC Description"
P1804	CONTROL UNIT	DLN-44, "DTC Description"
P1808	VHCL SPEED SEN-ABS	DLN-45, "DTC Description"
P1809	CONTROL UNIT	DLN-46, "DTC Description"
P1811	BATTERY VOLTAGE	DLN-47, "DTC Description"
P181B	INCOMP SELF SHUT	DLN-50, "DTC Description"
P181D	ENGINE SYSTEM	DLN-53, "DTC Description"
P181F	INCOMP CALIBRATION	DLN-54, "DTC Description"
U1000	CAN COMM CIRCUIT	DLN-56, "DTC Description"
U1010	CONTROL UNIT (CAN)	DLN-57, "DTC Description"

If some DTCs are displayed at the same time, refer to DLN-22, "DTC Inspection Priority Chart".

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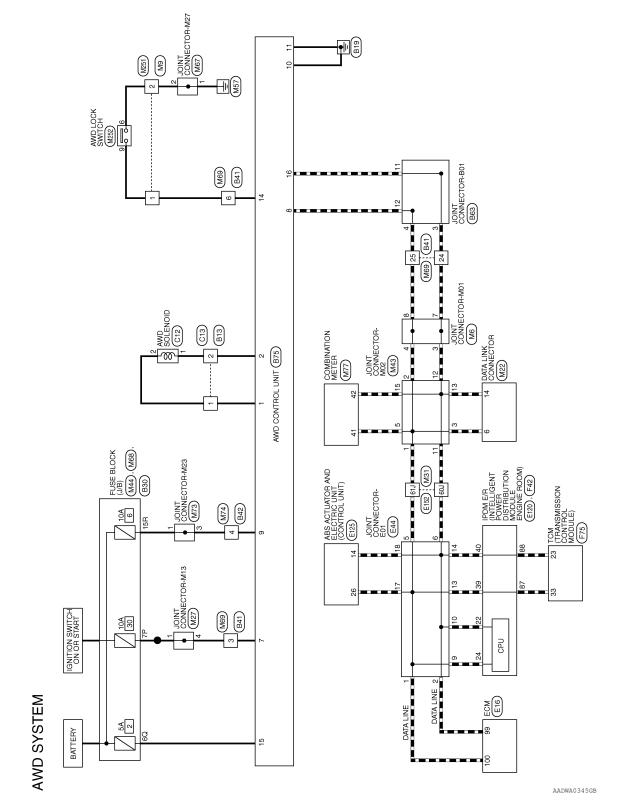
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WIRING DIAGRAM

AWD SYSTEM

Wiring Diagram

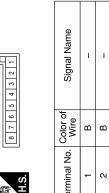


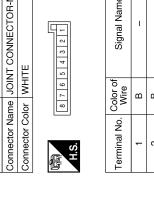
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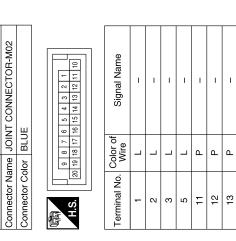


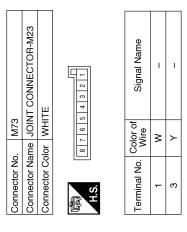


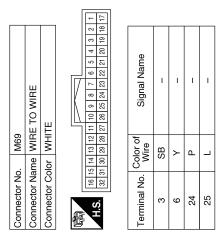
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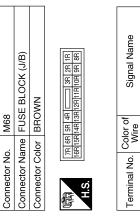
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DLN-27 Revision: August 2014 2015 Rogue NAM

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Connector Name | FUSE BLOCK (J/B)

Connector Name WIRE TO WIRE Connector Color BLACK

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Connector No.

Connector Color WHITE

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Connector Name | AWD SOLENOID

Connector Name Connector Color

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Connector No.

F42

Connector No.

C12

Connector No.

Connector Color GRAY

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tor Name POWER DISTRIBUTION MODILI F FINGINF ROOM)		22 91 90 88 87 104 103 102 101 100 99	Signal Name	CAN-H	CAN-L
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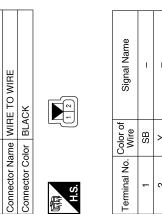
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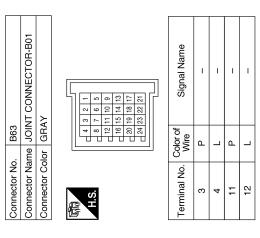
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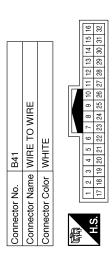
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DIAGNOSIS AND REPAIR WORK FLOW

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow INFOID:0000000011278310

DETAILED FLOW

1.INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing DLN-32, "Diagnostic Work Sheet" and reproduce symptoms as well as fully understand it. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if necessary.

CAUTION:

Customers are not professional. Never guess easily like "maybe the customer means that...," or "maybe the customer mentions this symptom".

>> GO TO 2.

2.CHECK SYMPTOM

Reproduce the symptom that is indicated by the customer, based on the information from the customer obtained by interview. Also check that the symptom is not caused by protection function. Refer to DLN-22. "Protection Function".

CAUTION:

When the symptom is caused by normal operation, fully inspect each portion and obtain the understanding of customer that the symptom is not caused by a malfunction.

>> GO TO 3.

3.PERFORM SELF DIAGNOSTIC RESULT

With CONSULT

Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is any DTC detected?

YES >> Record or print self diagnostic results. GO TO 4.

NO >> GO TO 6.

f 4.RECHECK SYMPTOM

With CONSULT

- 1. Erase "Self Diagnostic Result" of "ALL MODE AWD/4WD".
- Perform DTC confirmation procedures for the error detected system.

NOTE:

NO

If some DTCs are detected at the same time, determine the order for performing the diagnosis based on DLN-22, "DTC Inspection Priority Chart".

Is any DTC detected?

YES >> GO TO 5.

> >> Check harness and connectors based on the information obtained by interview. Refer to GI-44, "Intermittent Incident".

5. REPAIR OR REPLACE ERROR-DETECTED PARTS

- Repair or replace error-detected parts.
- Reconnect part or connector after repairing or replacing.
- When DTC is detected, erase "Self Diagnostic Result" of "ALL MODE AWD/4WD".

>> GO TO 7.

O.IDENTIFY ERROR-DETECTED SYSTEM BY SYMPTOM DIAGNOSIS

Estimate error-detected system based on symptom diagnosis and perform inspection.

Can the error-detected system be identified?

DLN-31 Revision: August 2014 2015 Rogue NAM DLN

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [TRANSFER: TY21C]

YES >> GO TO 7.

NO >> Check harness and connectors based on the information obtained by interview. Refer to <u>GI-44</u>, <u>"Intermittent Incident"</u>.

7. FINAL CHECK

(II) With CONSULT

- 1. Check the reference value for AWD control unit.
- Recheck the symptom and check that symptom is not reproduced on the same conditions.

Is the symptom reproduced?

YES >> GO TO 3.

NO >> Inspection End.

Diagnostic Work Sheet

INFOID:0000000011278311

Description

- In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about his/her concerns carefully. To systemize all the information for the diagnosis, prepare the interview sheet referring to the interview points.
- In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

Interview sheet sample

			nterview sheet						
Customer	MR/MS	Registration number			Initial year registration				
name		Vehicle type			VIN				
Storage date		Engine			Mileage		km (Mile)		
		□Vehicle does not enter AWD mode.							
		□AWD warnin	g (AWD Error) is	displayed.					
Symptom		□Heavy tight-	corner braking sy	mptom occu	ırs				
-,		□Noise □	Vibration						
		□Others ()		
First occurren	се	□Recently	□Others ()		
Frequency of occurrence		□Always I	⊒Under a certain	conditions of	of □Sometin	nes (time(s)/day)			
		□Irrelevant							
Climate con-	Weather	□Fine □C	loud □Rain	□Snow	□Others ()		
ditions	Temperature	□Hot □W	arm □Cool	□Cold	□Temperature	e (Approx.	°C)		
	Relative humidity	□High □N	loderate □Lo)W					
Road conditio	ns	□Urban area □Mounting ro	□Suburb are ad (uphill or dow		ı way Rough road				
Operation con	nditions, etc.	□Irrelevant □When engin □During drivir □During dece	ıg □During a	ring idling cceleration ring cornerir	□At constan	t speed driving left curve)			

DIAGNOSIS AND REPAIR WORK FLOW

		Interview shee	t	
ustomer	MR/MS	Registration number	Initial year registration	
ame		Vehicle type	VIN	
torage date		Engine	Mileage	km (Mile)
ther conditions				
lemo				
				_

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ADDITIONAL SERVICE WHEN REPLACING AWD CONTROL UNIT

< BASIC INSPECTION > [TRANSFER: TY21C]

ADDITIONAL SERVICE WHEN REPLACING AWD CONTROL UNIT

Description INFOID:0000000011278312

When replacing AWD control unit, unit characteristics writing is required.

Work Procedure

1. PERFORM WRITING UNIT CHARACTERISTICS

Perform writing unit characteristics of electric controlled coupling.

>> Refer to DLN-35, "Work Procedure".

UNIT CHARACTERISTICS WRITING

< BASIC INSPECTION > [TRANSFER: TY21C]

UNIT CHARACTERISTICS WRITING

Description INFOID:0000000011278314

When replacing AWD control unit, rear final drive assembly and/or electric controlled coupling, unit characteristics of electric controlled coupling writing is required.

Work Procedure

1. UNIT CHARACTERISTICS WRITING

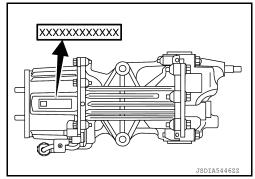
(I) With CONSULT

Confirm the unit characteristics of electric controlled coupling.
 NOTE:

Unit characteristics is 12-digit alphanumeric.

- Turn the ignition switch OFF to ON.
- Select "UNIT CHARACTERISTICS WRITE" in "Work support" of "ALL MODE AWD/4WD".
- 4. Input unit characteristics.
- Select "Start".
- 6. Check that "UNIT CHARACTERISTICS WRITE COMPLETED" is displayed.

>> Work End.



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C1201 AWD CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

C1201 AWD CONTROL UNIT

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
C1201	CONTROLLER FAILURE (Control unit failure)	Malfunction has occurred inside AWD control unit.

POSSIBLE CAUSE

Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

$2.\,$ DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1201" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-36, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000011278317

[TRANSFER: TY21C]

INFOID:0000000011278316

1. PERFORM SELF DIAGNOSTIC RESULT

(I) With CONSULT

- Erase "Self Diagnostic Result" of "ALL MODE AWD/4WD".
- 2. Turn the ignition switch OFF, and then wait 10 seconds or more.
- 3. Turn the ignition switch ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1201" detected?

- YES >> Replace AWD control unit. Refer to <u>DLN-68, "Removal and Installation"</u>.
- NO >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace error-detected parts.

C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
C1203	ABS SYSTEM (ABS system)	Malfunction related to wheel sensor has been detected by ABS actuator and electric unit (control unit).

POSSIBLE CAUSE

ABS malfunction

· Vehicle speed signal error

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(A) With CONSULT

- 1. Drive at 30 km/h (19 MPH) or more for approximately 1 minute.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1203" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>DLN-37</u>, "<u>Diagnosis Procedure</u>".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

1.PERFORM ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF DIAGNOSTIC RESULT

(P) With CONSULT

Perform "Self Diagnostic Result" of "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-53, "DTC Index".

NO >> GO TO 2.

2. CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. If DTC "C1203" is detected, Replace AWD control unit. Refer to DLN-68, "Removal and Installation".

NO >> Repair or replace error-detected parts.

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C1204 AWD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

C1204 AWD SOLENOID

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
C1204	4WD SOLENOID (4WD solenoid)	Malfunction related to AWD solenoid has been detected.

POSSIBLE CAUSE

- Internal malfunction of electronic controlled coupling
- Malfunction of AWD solenoid power supply circuit (open or short)
- Malfunction of AWD solenoid command current

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch OFF to ON.
- Turn the ignition switch ON, then wait 10 seconds or more.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1204" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-38</u>, "<u>Diagnosis Procedure</u>".

NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".

NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000011278321

[TRANSFER: TY21C]

$1.\mathsf{check}$ awd solenoid power supply (1)

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

AWD control unit		_	Voltage	
Connector	Terminal	_	voltage	
B75	9	Ground	Battery voltage	

4. Turn the ignition switch ON.

CAUTION:

Never start the engine.

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

AWD control unit		_	Voltage	
Connector	Terminal	_	voltage	
B75	9	Ground	Battery voltage	

C1204 AWD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.CHECK AWD SOLENOID POWER SUPPLY (2)

- 1. Turn the ignition switch OFF.
- 2. Check the 10A fuse (#6).
- 3. Disconnect fuse block (J/B) harness connector.
- 4. Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

AWD co	AWD control unit		Fuse block (J/B)	
Connector	Terminal	Connector	Terminal	Continuity
B75	9	M68	15R	Yes

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

AWD control unit			Continuity
Connector	Terminal	_	Continuity
B75	9	Ground	No

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-13, "Wiring Diagram — Battery Power Supply —"</u>.

NO >> Repair or replace error-detected parts.

3.CHECK AWD SOLENOID GROUND

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

AWD control unit			Continuity
Connector	Terminal	_	Continuity
B75	10	Ground	Yes
ыз	11	Ground	165

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK AWD SOLENOID CIRCUIT (1)

Check the resistance between AWD control unit harness connector.

	AWD control unit		
Connector	Terminal		Resistance (Approx.)
B75	1	2	2.5 Ω

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 5.

CHECK AWD SOLENOID CIRCUIT (2)

- 1. Remove AWD solenoid harness connector.
- 2. Check the continuity between AWD control unit harness connector and AWD solenoid harness connector.

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C1204 AWD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

AWD (control unit	AWD s	solenoid	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B75	1	C12	2	Yes
ыз	2	OIZ	1	163

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

AWD control unit			Continuity
Connector	Terminal	Continuity	Continuity
B75	1	Ground	No
5/5	2	Giodila	INU

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.CHECK AWD SOLENOID

Check AWD solenoid. Refer to DLN-40, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> AWD solenoid is malfunctioning. Replace electric controlled coupling. Refer to <u>DLN-115</u>, <u>"Removal and Installation"</u>.

7. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> After erasing the DTC, perform DTC confirmation procedure again. If DTC "C1204", replace AWD control unit. Refer to DLN-68, "Removal and Installation".

NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:0000000011278322

[TRANSFER: TY21C]

1. CHECK AWD SOLENOID

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

AWD s	solenoid	Resistance (Approx.)	
Terminal		resistance (Approx.)	
1	2	2.5 Ω	

Is the inspection result normal?

YES >> Inspection End.

NO >> AWD solenoid is malfunctioning. Replace electric controlled coupling. Refer to <u>DLN-115</u>, "Removal and Installation".

C1209 MODE SW

< DTC/CIRCUIT DIAGNOSIS >

C1209 MODE SW

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
C1209	MODE SW (Mode switch)	More than two switch inputs are simultaneously detected due to short circuit of AWD lock switch.

POSSIBLE CAUSE

Malfunction of AWD lock switch or AWD lock switch circuit.

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1209" detected?

- >> Proceed to diagnosis procedure. Refer to DLN-41, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

Check AWD lock switch. Refer to DLN-42. "Component Inspection".

Is the inspection result normal?

CHECK AWD LOCK SWITCH

YFS >> GO TO 2.

NO >> Replace AWD lock switch. Refer to <u>DLN-69</u>, "Removal and Installation".

2.CHECK AWD LOCK SWITCH CIRCUIT (1)

Check the continuity between AWD lock switch harness connector and ground.

AWD lock switch			Continuity
Connector	Terminal	<u> </u>	Continuity
M252	6	Ground	Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK AWD LOCK SWITCH CIRCUIT (2)

- Disconnect AWD control unit harness connector.
- Check the continuity between AWD control unit harness connector and AWD lock switch harness connec-2.

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C1209 MODE SW

< DTC/CIRCUIT DIAGNOSIS >

AWD co	ntrol unit	AWD lock switch		Continuity
Connector	Terminal	Connector Terminal		Continuity
B75	14	M252	9	Yes

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

AWD control unit		_	Continuity
Connector	Terminal	_	Continuity
B75	14	Ground	No

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4. CHECK AWD CONTROL UNIT OUTPUT SIGNAL

- Connect AWD control unit harness connector.
- 2. Turn the ignition switch ON.

CAUTION:

Never start the engine.

3. Check the voltage between AWD lock switch harness connector and ground.

AWD lock switch		_	Voltage (Approx.)
Connector	Terminal		voltage (Approx.)
M252	9	Ground	Battery voltage

Is the inspection result normal?

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

NO >> Replace AWD control unit. Refer to <u>DLN-68, "Removal and Installation"</u>.

Component Inspection

INFOID:0000000011278325

[TRANSFER: TY21C]

1. CHECK AWD LOCK SWITCH

- 1. Turn the ignition switch OFF.
- 2. Remove AWD lock switch.
- 3. Check the continuity between AWD lock switch connector terminals.

AWD lo	ck switch	vitch	
Terr	minal	Condition	Continuity
6	a	When releasing AWD lock switch.	No
Ü	9	When AWD lock switch is hold pressed.	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace AWD lock switch. Refer to <u>DLN-69</u>, "Removal and Installation".

C1210 ECM

< DTC/CIRCUIT DIAGNOSIS >

C1210 ECM

DTC Description

INFOID:0000000011278326

[TRANSFER: TY21C]

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	
C1210	ENGINE SIGNAL 1 (Engine signal 1)	Malfunction related to engine signal has been detected.	

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POSSIBLE CAUSE

Malfunction of engine control system

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

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>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

1. Drive the vehicle for a while.

Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "C1210" detected?

- >> Proceed to diagnosis procedure. Refer to DLN-43, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000011278327

1.PERFORM ECM SELF DIAGNOSTIC RESULT

With CONSULT

Perform "Self Diagnostic Result" of "ENGINE".

Is any DTC detected?

YES >> Check the DTC. Refer to EC-96, "DTC Index".

NO >> GO TO 2.

2.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

>> After turning the ignition switch OFF, perform DTC confirmation procedure again. If DTC "C1210" YES is detected, Replace AWD control unit. Refer to DLN-68, "Removal and Installation".

>> Repair or replace error-detected parts. NO

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DLN-43 Revision: August 2014 2015 Rogue NAM

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P1804 AWD CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

P1804 AWD CONTROL UNIT

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
P1804	CONTROL UNIT (Control unit)	Malfunction is detected in the memory (EEPROM) system of AWD control unit.

POSSIBLE CAUSE

Internal malfunction of AWD control unit.

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P1804" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-44, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000011278329

[TRANSFER: TY21C]

1. PERFORM SELF DIAGNOSTIC RESULT

(P) With CONSULT

After erasing the DTC, perform DTC confirmation procedure again. Refer to <u>DLN-44, "DTC Description"</u>

Is DTC P1804 detected?

YES >> Replace AWD control unit. Refer <u>DLN-68</u>, "Removal and Installation".

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

P1808 WHEEL SPEED SENSOR

[TRANSFER: TY21C]

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< DTC/CIRCUIT DIAGNOSIS >

P1808 WHEEL SPEED SENSOR

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
P1808	VHCL SPEED SEN-ABS (Vehicle speed sensor-ABS)	 Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. Improper signal is input while driving.

POSSIBLE CAUSE

- ABS malfunction
- · Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(II) With CONSULT

- 1. Turn the ignition switch ON.
- 2. Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P1808" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-45, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

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

(P) With CONSULT

Perform "Self Diagnostic Result" of "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-53, "DTC Index".

NO >> GO TO 2.

2.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. If DTC "P1808" is detected, Replace AWD control unit. Refer to <u>DLN-68</u>, "Removal and Installation".

NO >> Repair or replace error-detected parts.

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P1809 AWD CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

P1809 AWD CONTROL UNIT

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
P1809	CONTROL UNIT (Control unit)	AD converter system of AWD control unit is malfunctioning.

POSSIBLE CAUSE

Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P1809" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-46, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000011278333

[TRANSFER: TY21C]

1. PERFORM SELF DIAGNOSTIC RESULT

(P)With CONSULT

After the DTC, perform DTC confirmation procedure again. Refer to <u>DLN-46, "DTC Description"</u>. Is DTC P1809 detected?

YES >> Replace AWD control unit. Refer <u>DLN-68</u>, "Removal and Installation".

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

P1811 BATTERY VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

P1811 BATTERY VOLTAGE

DTC Description INFOID:0000000011278334

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	
P1811	BATTERY VOLTAGE (Battery voltage)	When engine is running and AWD control unit power supply is less than 9 V or higher than 16 V.	

POSSIBLE CAUSE

- Malfunction of AWD control unit power supply circuit (open or short)
- · Battery power supply
- · Ignition power supply
- · Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(II) With CONSULT

- Turn the ignition switch ON.
- Drive the vehicle for a while.
- 3. Stop the vehicle.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P1811" detected?

YES >> Proceed to diagnosis procedure. Refer to DLN-47, "Diagnosis Procedure".

NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".

NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

1.CHECK AWD CONTROL UNIT POWER SUPPLY (1)

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

AWD control unit			Voltage (Approx.)
Connector	Connector Terminal		
B75	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.

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P1811 BATTERY VOLTAGE

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< DTC/CIRCUIT DIAGNOSIS >

AWD control unit			Voltage
Connector	Terminal	_	Voltage
B75	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)

- 1. Turn the ignition switch OFF.
- Check the 10A fuse (#30).
- 3. Disconnect fuse block (J/B) harness connector.
- Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

AWD co	ontrol unit	Fuse block (J/B)		Continuity
Connector	Terminal	Connector Terminal		Continuity
B75	7	M44	7P	Yes

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

AWD control unit		_	Continuity
Connector	Terminal	_	Continuity
B75	7	Ground	No

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-24, "Wiring Diagram — Ignition Power Supply —"</u>.

NO >> Repair or replace error-detected parts.

3.CHECK AWD CONTROL UNIT POWER SUPPLY (3)

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

AWD co	AWD control unit		Voltage (Approx.)	
Connector	Terminal	_	Voltage (Approx.)	
B75	15	Ground	Battery voltage	

3. Turn the ignition switch ON.

CAUTION:

Never start the engine.

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

AWD control unit			Voltage
Connector	Terminal	_	Voltage
B75	15	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. CHECK AWD CONTROL UNIT POWER SUPPLY (4)

- 1. Turn the ignition switch OFF.
- 2. Check the 5A fuse (#2).
- 3. Disconnect fuse block (J/B) harness connector.
- Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

P1811 BATTERY VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

AWD co	ntrol unit	Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B75	15	B30	6Q	Yes

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

AWD control unit		_	Continuity	
Connector	Terminal	_	Continuity	
B75	15	Ground	No	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to PG-13, "Wiring Diagram — Battery Power Supply —".

NO >> Repair or replace error-detected parts.

CHECK AWD CONTROL UNIT GROUND

Turn the ignition switch OFF.

Check the continuity between AWD control unit harness connector and ground. 2.

AWD control unit			Continuity	
Connector	Terminal	_	Continuity	
B75	10	Ground	Yes	
075	11	- Ground	- Ground	165

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1811" is detected, Replace AWD control unit. Refer to <u>DLN-68, "Removal and Installation".</u>

NO >> Repair or replace error-detected parts.

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P181B INCOMPLETE SELFSHUT

< DTC/CIRCUIT DIAGNOSIS >

P181B INCOMPLETE SELFSHUT

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	
P181B	INCOMP SELF SHUT (Incomplete self shut)	When ignition switch is ON, self-shut of AWD control unit was incomplete.	

POSSIBLE CAUSE

- Malfunction of AWD control unit power supply circuit (open or short)
- · Battery power supply
- Ignition power supply
- · Internal malfunction of AWD control unit

FAIL-SAFE

No impact to vehicle behavior.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P181B" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-50, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

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[TRANSFER: TY21C]

1.CHECK AWD CONTROL UNIT POWER SUPPLY (1)

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

AWD control unit			Voltage (Approx.)
Connector	Terminal	_	Voltage (Approx.)
B75	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 control unit			Voltage
Connector	Terminal	_	Voltage
B75	7	Ground	Battery voltage

P181B INCOMPLETE SELFSHUT

< DTC/CIRCUIT DIAGNOSIS >

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 (#30). 2.
- 3. Disconnect fuse block (J/B) harness connector.
- 4. Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

AWD co	ntrol unit Fuse block (J/B)		Fuse block (J/B)	
Connector	Terminal	Connector	Terminal	Continuity
B75	7	M44	7P	Yes

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

AWD control unit		_	Continuity	
Connector	Terminal	<u> </u>	Continuity	
B75	7	Ground	No	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to PG-24, "Wiring Diagram Ignition Power Supply —".

NO >> Repair or replace error-detected parts.

3.CHECK AWD CONTROL UNIT POWER SUPPLY (3)

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

AWD control unit			Voltage (Approx.)	
Connector	Terminal	_	voltage (Approx.)	
B75	15	Ground	Battery voltage	

Turn the ignition switch ON.

CAUTION:

Never start the engine.

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

AWD control unit		_	Voltage	
Connector	Terminal	_	voltage	
B75	15	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4.CHECK AWD CONTROL UNIT POWER SUPPLY (4)

- 1. Turn the ignition switch OFF.
- 2. Check the 5A fuse (#2).
- 3. Disconnect fuse block (J/B) harness connector.
- 4. Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

AWD co	ontrol unit	Fuse block (J/B)		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
B75	15	B30	6Q	Yes	

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

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P181B INCOMPLETE SELFSHUT

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< DTC/CIRCUIT DIAGNOSIS >

AWD control unit			Continuity	
Connector	Terminal	_	Continuity	
B75	15	Ground	No	

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-13, "Wiring Diagram Battery Power Supply —"</u>.
- NO >> Repair or replace error-detected parts.

5.CHECK AWD CONTROL UNIT GROUND

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

AWD control unit			Continuity	
Connector	Terminal	_	Continuity	
B75	10	Cround	Yes	
	11	Ground	ies	

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P181B" is detected, Replace AWD control unit. Refer to DLN-68, "Removal and Installation".

NO >> Repair or replace error-detected parts.

P181D ENGINE TORQUE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

P181D ENGINE TORQUE SIGNAL

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
P181D	ENGINE SYSTEM (Engine system)	Malfunction related to engine signal has been detected.

POSSIBLE CAUSE

- · Malfunction of engine control system
- · Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- 1. Drive the vehicle for a while.
- 2. Stop the vehicle.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P181D" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-53, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

1. PERFORM ECM SELF DIAGNOSTIC RESULT

(P) With CONSULT

Perform "Self Diagnostic Result" of "ENGINE".

Is any DTC detected?

YES >> Check the DTC. Refer to EC-96, "DTC Index".

NO >> GO TO 2.

2.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. If DTC "P181D" is detected, Replace AWD control unit. Refer to <u>DLN-68</u>, "Removal and Installation".

NO >> Repair or replace error-detected parts.

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P181F INCOMPLETE CALIBRATION

< DTC/CIRCUIT DIAGNOSIS >

P181F INCOMPLETE CALIBRATION

DTC Description

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	
P181F	INCOMP CALIBRATION (incomplete calibration)	When incomplete writing unit characteristics of electric controlled coupling are detected.	

POSSIBLE CAUSE

Writing unit characteristics are incomplete.

FAIL-SAFE

AWD control changes to front-wheel drive immediately, then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(A) With CONSULT

- 1. Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "P181F" detected?

- YES >> Proceed to diagnosis procedure. Refer to DLN-54, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

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[TRANSFER: TY21C]

1. PERFORM WRITING UNIT CHARACTERISTICS

- 1. Erase "Self Diagnostic Result" of "ALL MODE AWD/4WD".
- Perform writing unit characteristics. Refer to DLN-35, "Work Procedure".
- 3. Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is any DTC except "P181F" detected?

YES >> Perform trouble diagnosis for detected DTC. Refer to <u>DLN-23</u>, "<u>DTC Index</u>".

NO >> GO TO 2.

2.perform writing unit characteristics again

- 1. Erase "Self Diagnostic Result" of "ALL MODE AWD/4WD".
- 2. Perform writing unit characteristics. Refer to DLN-34, "Work Procedure".
- 3. Perform DTC confirmation procedure again. Refer to DLN-54, "DTC Description".

Is DTC "P181F" detected?

YES >> GO TO 3.

NO >> Inspection End.

3.CHECK TERMINALS AND HARNESS CONNECTORS

Check AWD control unit pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

P181F INCOMPLETE CALIBRATION

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21C] >> After turning the ignition switch OFF, perform DTC confirmation procedure again. If DTC YES

NO >> Repair or replace error-detected parts.

"P181F" DLN-68, "Removal and Installation".

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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

U1000 CAN COMM CIRCUIT

DTC Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent 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 communicate data but selectively reads required data only.

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	AWD control unit is not transmitting/receiving CAN communication signal for 2 seconds or more.	

POSSIBLE CAUSE

- CAN communication error
- · Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- 1. Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" for "ALL MODE AWD/4WD".

Is DTC "U1000" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>DLN-56</u>, "<u>Diagnosis Procedure</u>".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident".
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

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Proceed to LAN-17, "Trouble Diagnosis Flow Chart".

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

DTC Description INFOID:0000000011278344

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 communicate data but selectively reads required data only.

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
U1010	CONTROL UNIT (CAN) [Control unit (CAN)]	Detecting error during the initial diagnosis of CAN controller of AWD control unit.

POSSIBLE CAUSE

Internal malfunction of AWD control unit

FAIL-SAFE

AWD control changes to front-wheel drive gradually (rear-wheels still have some driving torque), then AWD control stops, and the vehicle becomes front-wheel drive.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(P) With CONSULT

- Turn the ignition switch OFF to ON.
- Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "U1010" detected?

- >> Proceed to diagnosis procedure. Refer to DLN-57, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-44, "Intermittent Incident"
- NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

 ${f 1}$.PERFORM SELF DIAGNOSTIC RESULT

(P)With CONSULT

After erasing the DTC, perform DTC confirmation procedure again. Refer to DLN-57, "DTC Description".

Is DTC U1010 detected?

- YES >> Replace AWD control unit. Refer to DLN-68, "Removal and Installation".
- NO >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace error-detected parts.

DLN-57 Revision: August 2014 2015 Rogue NAM DLN

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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000011278346

[TRANSFER: TY21C]

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 control unit		_	Voltage (Approx.)
Connector	Terminal	_	voltage (Approx.)
B75	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 control unit		_	Voltage	
Connector	Terminal		voltage	
B75	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)

- 1. Turn the ignition switch OFF.
- Check the 10A fuse (#30).
- 3. Disconnect fuse block (J/B) harness connector.
- Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector.

AWD co	AWD control unit Fuse block (J/B) Continuit		Fuse block (J/B)	
Connector	Terminal	Connector Terminal		Continuity
B75	7	M44	7P	Yes

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

AWD control unit			Continuity		
Connector	Terminal	_	Continuity		
B75	B75 7		No		

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-24, "Wiring Diagram — Ignition Power Supply —"</u>.

NO >> Repair or replace error-detected parts.

3.CHECK AWD CONTROL UNIT POWER SUPPLY (3)

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

AWD control unit			Voltage (Approx.)		
Connector	Terminal	_	Voltage (Approx.)		
B75	B75 15		Battery voltage		

3. Turn the ignition switch ON.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

CAUTION:

Never start the engine.

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

AWD control unit		_	Voltage	
Connector	Connector Terminal		vollage	
B75	15	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4.CHECK AWD CONTROL UNIT POWER SUPPLY (4)

Turn the ignition switch OFF.

- 2. Check the 5A fuse (#2).
- 3. Disconnect fuse block (J/B) harness connector.
- Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connec-

AWD control unit		Fuse bl	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
B75	15	B30	6Q	Yes	

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

AWD control unit		_	Continuity	
Connector	Connector Terminal			
B75	B75 15 Ground		No	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to PG-13, "Wiring Diagram — Battery Power Supply —".

NO >> Repair or replace error-detected parts.

5.CHECK AWD SOLENOID POWER SUPPLY (1)

Turn the ignition switch OFF.

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

AWD control unit			Voltage	
Connector	Connector Terminal		voltage	
B75	9	Ground	Battery voltage	

Turn the ignition switch ON.

CAUTION:

Never start the engine.

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

AWD	AWD control unit Connector Terminal		Voltage	
Connector				
B75	9	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.CHECK AWD SOLENOID POWER SUPPLY (2)

Turn the ignition switch OFF.

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POWER SUPPLY AND GROUND CIRCUIT

[TRANSFER: TY21C]

< DTC/CIRCUIT DIAGNOSIS >

- Check the 10A fuse (#6).
- 3. Disconnect fuse block (J/B) harness connector.
- Check the continuity between AWD control unit harness connector and fuse block (J/B) harness connector

AWD control unit		Fuse bl	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
B75	9	M68	15R	Yes

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

AWD control unit		AWD control unit		
Connector	Connector Terminal		Continuity	
B75	9	Ground	No	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-13, "Wiring Diagram — Battery Power Supply —"</u>.

NO >> Repair or replace error-detected parts.

7.CHECK AWD CONTROL UNIT GROUND

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

AWD control unit		_	Continuity	
Connector	Connector Terminal			
B75	10	Ground	Yes	
ы	11	Giodila	165	

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair or replace error-detected parts.

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS

< SYMPTOM DIAGNOSIS > [TRANSFER: TY21C]

SYMPTOM DIAGNOSIS

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS

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.

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1. PERFORM ECM SELF DIAGNOSTIC RESULT

With CONSULT

Description

Perform "Self Diagnostic Result" of "ENGINE".

Is any DTC detected?

Diagnosis Procedure

YES >> Check the DTC. Refer to EC-96, "DTC Index".

NO >> GO TO 2.

2.PERFORM SELF DIAGNOSTIC RESULT

(P) With CONSULT

Perform "Self Diagnostic Result" of "ALL MODE AWD/4WD".

Is DTC "U1000" detected?

YES >> Proceed to <u>DLN-56</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

3. CHECK AWD SOLENOID

Perform the trouble diagnosis of the AWD solenoid. Refer to DLN-38, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.

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

4. CHECK ELECTRIC CONTROLLED COUPLING

- 1. Turn the ignition switch OFF.
- 2. Set the transaxle to neutral. Release the parking brake.
- 3. Lift up the vehicle.
- 4. Rotate the propeller shaft by hand.
- 5. Hold rear wheel of right and left lightly.

Does rear wheel rotate?

YES >> Replace electric controlled coupling for mechanical malfunction (clutch sticking etc.). Refer to <u>DLN-115</u>, "Removal and Installation".

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

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VEHICLE DOES NOT ENTER AWD MODE

< SYMPTOM DIAGNOSIS >

VEHICLE DOES NOT ENTER AWD MODE

Description INFOID:000000011278349

Vehicle does not enter 4-wheel drive mode even though AWD warning is not displayed.

Diagnosis Procedure

INFOID:0000000011278350

[TRANSFER: TY21C]

1. CHECK INFORMATION DISPLAY (COMBINATION METER)

Perform the trouble diagnosis of combination meter. Refer to MWI-53, "Work flow".

Is the inspection result normal?

YES >> GO TO 2.

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

2.CHECK PARKING BRAKE SWITCH SIGNAL

(II) With CONSULT

Check "PARKING BRAKE SW SIG" in "Data Monitor" for "ALL MODE AWD/4WD".

Monitor Item	Condition	Status
PARKING BRAKE SW SIG	When the parking brake pedal is operation.	On
	When the parking brake pedal is not operation.	Off

Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to <u>BRC-113</u>, "Component Function Check".

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 DLN-115, "Removal and Installation".

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

AWD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

< SYMPTOM DIAGNOSIS >

AWD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

Description INFOID:0000000011278351

While driving, AWD warning (AWD High Temp. Stop vehicle) is displayed on information display (combination meter).

- This symptom protects drivetrain parts when a heavy load is applied to the electric controlled coupling and multiple disc clutch temperature increases. Also, optional distribution of torque sometimes becomes rigid before AWD warning (AWD High Temp. Stop vehicle) is displayed. Both cases are not malfunction. Refer to DLN-22, "Protection Function".
- When this symptom occurs, stop vehicle and allow it to idle for some times. Displays will stop and system will be restored.

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TIRE SIZE INCORRECT IS DISPLAYED ON INFORMATION DISPLAY

< SYMPTOM DIAGNOSIS >

TIRE SIZE INCORRECT IS DISPLAYED ON INFORMATION DISPLAY

Description INFOID.0000000011278352

While driving, AWD warning (Tire Size Incorrect: See Owner's Manual) is displayed on information display (combination meter).

Diagnosis Procedure

INFOID:0000000011278353

[TRANSFER: TY21C]

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 continually.
- Check "DIS-TIRE MONI" in "Data Monitor" of "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-68, "Removal and Installation".

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

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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Use the chart below to find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

Reference		DLN-66, "Inspection"		I	DLN-73, "Exploded View".	DLN-73, "Exploded View"	DLN-80, "Inspection", DLN-89, "Inspection"	DLN-80, "Inspection", DLN-89, "Inspection"	
SUSPECTED PA (Possible cause)		TRANSFER OIL (Level low)	TRANSFER OIL (Wrong)	TRANSFER OIL (Level too high)	LIQUID GASKET (Damaged)	O-RING (Worn or damaged)	OIL SEAL (Worn or damaged)	GEAR (Wom or damaged)	BEARING (Worn or damaged)
Symptom	Noise	1	2				3	3	3
Symptom	Transfer oil leakage		3	1	2	2	2		

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PERIODIC MAINTENANCE

TRANSFER OIL

Inspection INFOID:0000000011278355

TRANSFER OIL LEAKS

Check that transfer oil is not leaking from transfer assembly or around it.

TRANSFER OIL LEVEL

CAUTION:

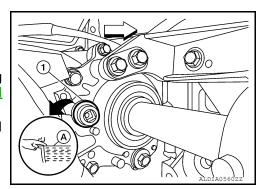
Do not start engine while checking transfer oil level.

Remove filler plug (1) and gasket.

<□ : Front

- Transfer oil level (A) should be level with bottom of filler plug hole. Add transfer oil if necessary. Refer to MA-11, "Fluids and Lubricants".
- 3. Set a new gasket onto filler plug, and install it in the transfer and tighten to specified torque. Refer to DLN-90, "Exploded View". **CAUTION:**

Do not reuse gasket.



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Draining

CAUTION:

Do not start engine while working.

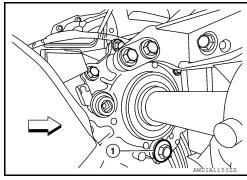
- 1. Run the vehicle to warm up the transfer unit sufficiently.
- Stop the engine and remove drain plug (1) and gasket and drain the transfer oil.

< : Front

Set a new gasket onto drain plug, and install it in the transfer and tighten to specified torque. Refer to DLN-90, "Exploded View".

CAUTION:

Do not reuse gasket.



Refilling

CAUTION:

Do not start engine while checking transfer oil level.

- Remove filler plug (1).
- Fill with new transfer oil to the specified level (A) near the filler plug hole.

<□ : Front

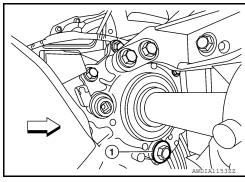
Transfer oil grade and viscosity

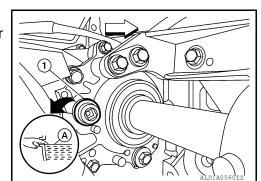
Transfer oil capacity

: Refer to MA-11, "Fluids and Lubricants".

: Refer to <u>DLN-94</u>, "General Specifications".

Set a new gasket onto filler plug, and install it in the transfer and tighten to specified torque. Refer to DLN-90, "Exploded View".





TRANSFER OIL

< PERIODIC MAINTENANCE > [TRANSFER: TY21C]

CAUTION:

Do not reuse gasket.

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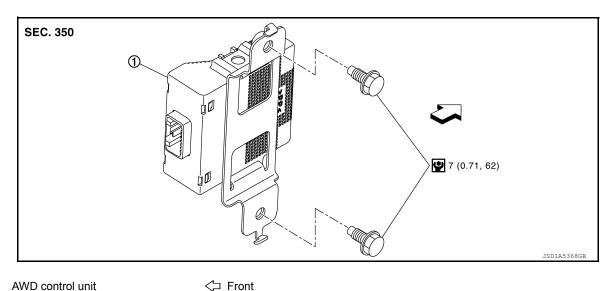
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Revision: August 2014 DLN-67 2015 Rogue NAM

REMOVAL AND INSTALLATION

AWD CONTROL UNIT

Exploded View INFOID:0000000011278358



1. AWD control unit

Removal and Installation

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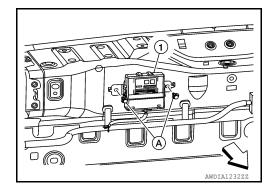
[TRANSFER: TY21C]

REMOVAL

- 1. Remove luggage side lower finisher (LH). Refer to INT-33, "Exploded View".
- 2. Disconnect harness connector from the AWD control unit.
- Remove AWD control unit bolts (A). NOTE:

AWD control unit (1) is located on the back side of body panel.

<□ : Front



4. Remove AWD control unit.

INSTALLATION

Installation is in the reverse order of removal.

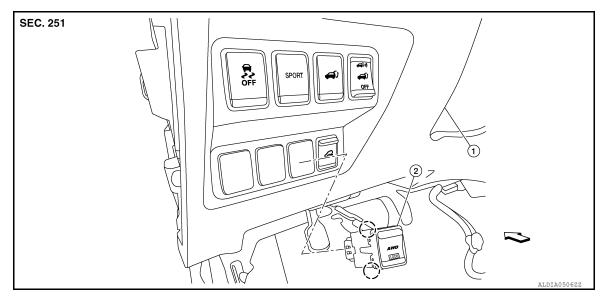
CAUTION:

- Do not drop or shock AWD control unit.
- When replacing AWD control unit, perform writing unit characteristic. Refer to DLN-35, "Work Procedure".

[TRANSFER: TY21C]

AWD LOCK SWITCH

Exploded View INFOID:0000000011278360



Instrument lower panel LH Pawl

AWD lock switch

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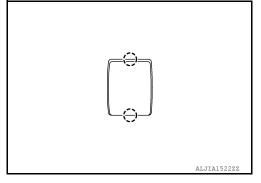
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Removal and Installation

REMOVAL

- 1. Remove instrument lower panel LH. Refer to IP-23, "Removal and Installation".
- 2. Disconnect AWD lock switch harness connector (A).
- Release pawls using suitable tool and remove AWD lock switch from lower switch bracket (1).





INSTALLATION

Install in the reverse order of removal.

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TRANSFER COVER OIL SEAL

< REMOVAL AND INSTALLATION >

TRANSFER COVER OIL SEAL

Removal and Installation

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[TRANSFER: TY21C]

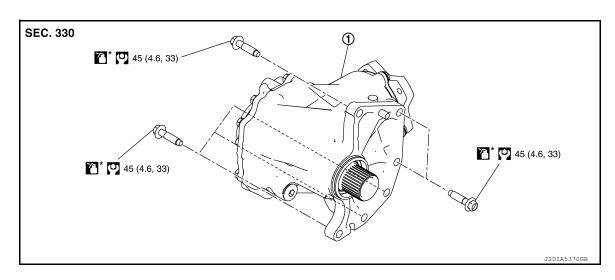
NOTE:

- Replacement on vehicle may cause damage to transfer cover, and may cause a transfer oil leak.
- If transfer cover oil seal requires replacement, remove the transfer assembly from the vehicle before replacing transfer cover oil seal. Refer to <u>DLN-74</u>, "<u>Disassembly</u>".

UNIT REMOVAL AND INSTALLATION

TRANSFER ASSEMBLY

Exploded View



(1) Transfer assembly

: N·m (kg-m, ft-lb)

*: Apply anti-corrosion oil.

Removal and Installation

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

- Remove front drive shaft (RH). Refer to <u>FAX-23</u>, "Removal and Installation (RH)".
- 2. Remove front suspension member. Refer to FSU-22, "Removal and Installation".
- Remove front exhaust tube. Refer to <u>EX-5</u>, "Exploded View".
- 4. Remove rear propeller shaft. Refer to DLN-100, "Removal and Installation".
- Remove transaxle assembly to transfer assembly bolts.CAUTION:

Be careful not to damage gear ring oil seal inside of CVT.

Bolt No.	(A)	(B)
Quantity	4	2
Bolt length " ℓ " mm (in)	44 (1.73)	42 (1.65)

- Remove transfer assembly from the vehicle. CAUTION:
 - Do not damage air breather hose.
 - After removing transfer from transaxle, always replace differential side oil seal of the transaxle side with new one. Refer to <u>TM-210</u>, "<u>Removal and Installation</u>".

•: A ⊕: B

INSTALLATION

Installation is in the reverse order of removal.

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TRANSFER ASSEMBLY

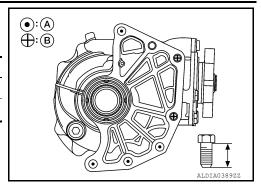
< UNIT REMOVAL AND INSTALLATION >

When installing the transfer to the transaxle, install the bolts following the standard below.

Bolt No.	(A)	(B)
Quantity	4	2
Bolt length " ℓ " mm (in)	44 (1.73)	42 (1.65)

CAUTION:

- When installing transfer to transaxle, be careful not to damage oil seal of transaxle.
- Do not reuse differential side oil seal.
- Check transfer oil level and check for transfer oil leaks after installation. Refer to <u>DLN-66</u>, "<u>Refilling</u>".

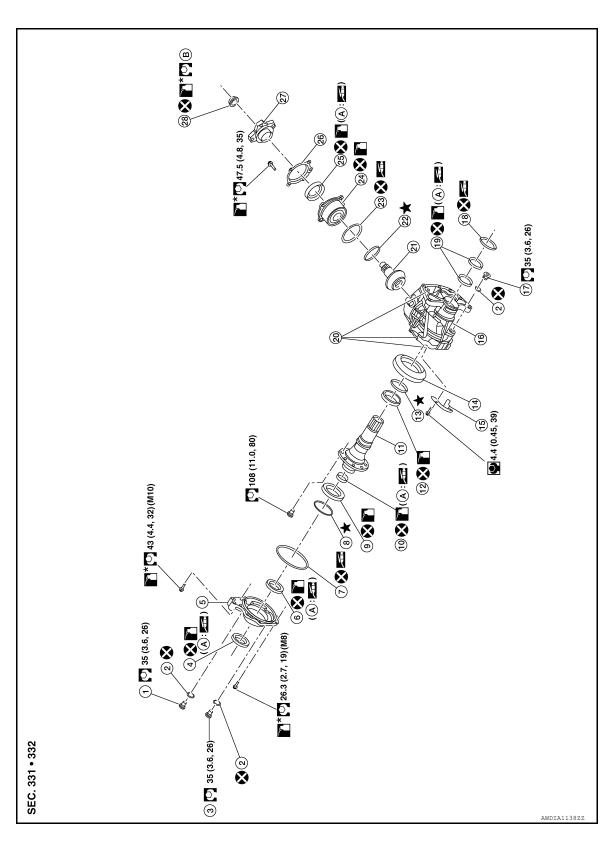


[TRANSFER: TY21C]

UNIT DISASSEMBLY AND ASSEMBLY

TRANSFER COVER

Exploded View



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TRANSFER COVER

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Drain plug

Oil seal

side)

side)

15. Baffle plate

21. Drive pinion

24. Pinion bearing assembly

27. Companion flange

18. O-ring

< UNIT DISASSEMBLY AND ASSEMBLY >

- 1. Filler plug
- 4. Oil seal
- O-ring
- 10. Ring gear shaft oil seal
- 13. Ring gear bearing adjusting shim (transfer case side)
- 16. Transfer case
- 19. Oil seal
- 22. Drive pinion adjusting shim
- 25. Oil seal
- 28. Pinion lock nut
- Oil seal lip

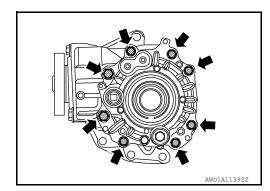
- 2. Gasket
- Transfer cover 5.
- Ring gear bearing adjusting shim (transfer cover side)
- 11. Ring gear shaft
- 14. Ring gear
- 17. Plug
- 20. Dowel pin
- 23. O-ring

- 26. Dust cover
- Comply with the assembly procedure when tightening. Refer to DLN-84, "Assembly".
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- : Apply gear oil.

Disassembly

- *: Apply anti-corrosive oil.
- Apply multi-purpose grease.
- ★: Select with proper thickness.

Remove transfer cover mounting bolts (-).



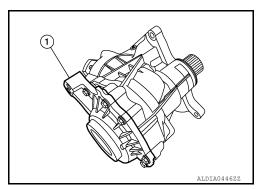
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[TRANSFER: TY21C]

Ring gear bearing (transfer cover

12. Ring gear bearing (transfer case

- 2. Lightly tap transfer cover (1) with a plastic hammer to remove transfer cover.
- 3. Remove O-ring from transfer cover.
 - **CAUTION:**
 - · Do not use a suitable tool.
 - · Do not damage transfer cover.



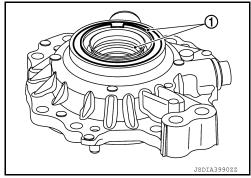
TRANSFER COVER

< UNIT DISASSEMBLY AND ASSEMBLY >

 Lightly tap the metal part of oil seals (1) with punch from back side of transfer cover to remove oil seals.

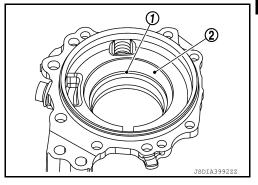
CAUTION:

When removing, Do not damage the transfer cover by scooping it out with a suitable tool.



[TRANSFER: TY21C]

- 5. Remove the ring gear bearing adjusting shim (transfer cover side) (1) and ring gear bearing outer race (transfer cover side) (2) using suitable tool.
- 6. Remove drain plug and gasket.
- 7. Remove filler plug and gasket.
- 8. Perform inspection after disassembly. Refer to <u>DLN-76, "Inspection"</u>.



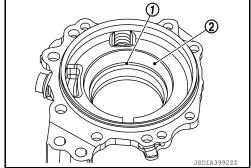
Assembly

- 1. Select the ring gear bearing adjusting shim (transfer cover side). Refer to DLN-85, "Adjustment".
- Install the selected ring gear bearing adjusting shim (transfer cover side) (1) and ring gear bearing outer race (transfer cover side) (2) using suitable tool.

CAUTION:

- Do not reuse ring gear bearing.
- Apply gear oil to the ring gear bearing.
- Install gasket onto drain plug and install them to transfer cover. CAUTION:

Do not reuse gasket.



- Install the transfer cover to the transfer case, and apply anti-corrosive oil onto thread and seats on the mounting bolts. Then
 tighten mounting bolts to the specified torque.
 - (A) : M10 bolt (B) : M8 bolt

NOTE:

At this timing, O-ring installing to transfer cover is not necessary. Install O-ring after tooth contact is checked.

5. Check backlash, tooth contact, total preload and companion flange runout. Refer to <u>DLN-85</u>, "Adjustment".

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CAUTION:

Measure the total preload without oil seals of transfer cover and transfer case.

- 6. Remove transfer cover to install O-ring.
- 7. Apply multi-purpose grease lightly and evenly onto an O-ring, and install it to the transfer cover. **CAUTION:**
 - Do not reuse O-ring.
 - When installing O-ring, do not use a suitable tool.
 - Do not damage O-ring.

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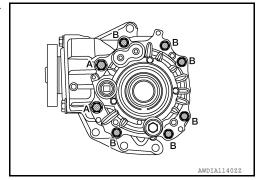
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TRANSFER COVER

< UNIT DISASSEMBLY AND ASSEMBLY >

8. Install the transfer cover to the transfer case, and apply anti-corrosive oil onto thread and seats on the mounting bolts. Then tighten mounting bolts to the specified torque.

(A) : M10 bolt(B) : M8 bolt



[TRANSFER: TY21C]

9. Using suitable tool drive the transfer cover oil seals.

(A) : 10.3 +0.6/-0 mm (0.406 +0.024/-0 in)

(B) : 0 +0.6/-0 mm (0 +0.024/-0 in)

CAUTION:

- When checking the total preload torque, measure it without the oil seal, then install the oil seal.
- Do not reuse the oil seal.
- When installing, do not incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.
- 10. Install gasket onto filler plug and install them to transfer cover.

CAUTION:

- · Do not reuse gasket.
- · Install filler plug after oil is filled.

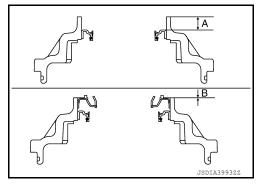
Inspection INFOID:0000000011278368

INSPECTION AFTER DISASSEMBLY

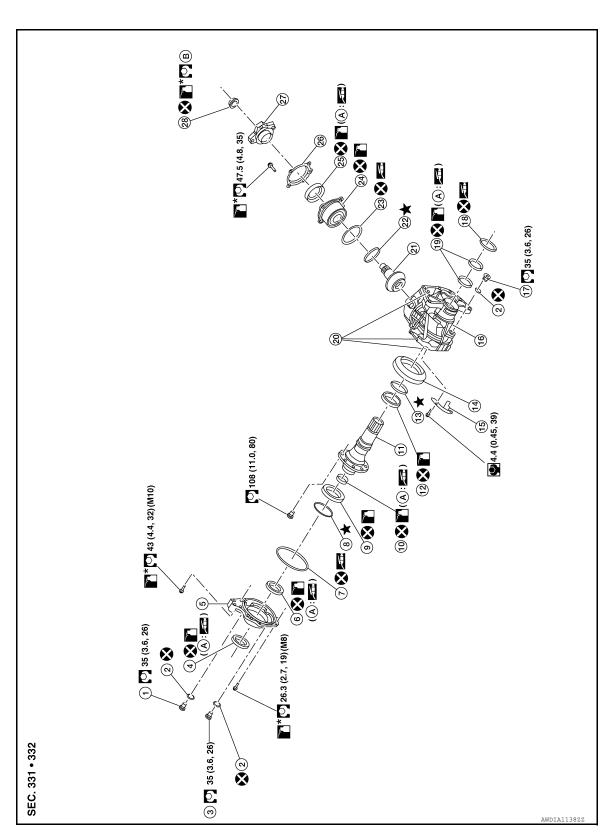
Check items below. If necessary, replace them with new ones.

Transfer cover

Check the bearing mounting surface for wear, cracks and damages.



Exploded View



- 1. Filler plug
- 4. Oil seal

- 2. Gasket
- 5. Transfer cover

- 3. Drain plug
- 6. Oil seal

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< UNIT DISASSEMBLY AND ASSEMBLY >

- O-ring
 Ring gear bearing adjusting shim (transfer cover side)
 Ring gear bearing (transfer cover side)
 Ring gear bearing (transfer cover side)
 Ring gear bearing (transfer case side)
 Ring gear bearing adjusting shim
 Ring gear bearing adjusting shim
- (transfer case side)

 16. Transfer case 17. Plug 18. O-ring

 19. Oil seal 20. Dowel pin 21. Drive pinion
- 22. Drive pinion adjusting shim
 23. O-ring
 24. Pinion bearing assembly
 25. Oil seal
 26. Dust cover
 27. Companion flange
 - . Oil seal lip

 B. Comply with the assembly procedure when tightening. Refer to DLN-84, "Assembly".
- 84. "Assembly".

 N·m (kg-m, in-lb)

 N·m (kg-m, ft-lb)
- Always replace after every disassembly.
- Apply gear oil.
- *: Apply anti-corrosive oil.

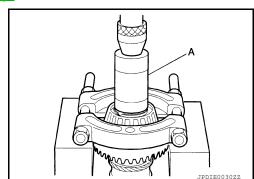
 Apply multi-purpose grease.

28. Pinion lock nut

★: Select with proper thickness.

Disassembly INFOID:0000000011278370

- Remove transfer cover assembly. Refer to <u>DLN-74, "Disassembly"</u>.
- Remove ring gear bearing outer race (transfer cover side) and ring gear bearing adjusting shim (transfer cover side) from the transfer cover. Refer to <u>DLN-74</u>, "<u>Disassembly</u>".
- 3. Remove ring gear shaft assembly from the transfer case.
- Remove ring gear bearing outer race (transfer case side) and ring gear bearing adjusting shim (transfer case side) from the transfer case. Refer to <u>DLN-91</u>, "<u>Disassembly</u>".
- 5. Remove ring gear bearing inner race (transfer cover side) from ring gear shaft using suitable tool (A) and suitable tool.

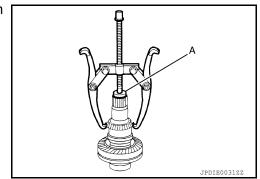


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6. Remove ring gear bearing inner race (transfer case side) from ring gear shaft with suitable tool (A) and Tool.

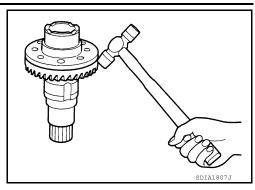
Tool number : (KV381054S0) J-34286

Remove the ring gear mounting bolts.



< UNIT DISASSEMBLY AND ASSEMBLY >

Lightly tap ring gear with a plastic hammer to remove ring gear from the ring gear shaft.

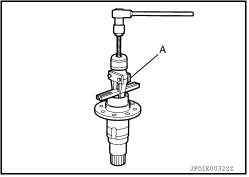


[TRANSFER: TY21C]

Remove ring gear shaft oil seal from the ring gear shaft with the Tool (A).

Tool number : (KV381054S0) J-34286

10. Perform inspection after disassembly. Refer to DLN-80, "Inspection".



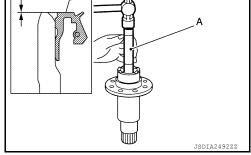
Assembly INFOID:0000000011278371

1. Using suitable tool (A), install ring gear shaft oil seal (1) within the dimension (L) shown as follows.

> : 2.0 +0.6/-0 mm (0.079 +0.024/-0 in) (L)

CAUTION:

- Do not reuse the oil seal.
- When installing, do not incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.
- 2. Select ring gear bearing adjusting shim (transfer case side) and ring gear bearing adjusting shim (transfer cover side). Refer to DLN-85, "Adjustment".



- Assemble the selected ring gear bearing adjusting shim (transfer case side) and ring gear bearing outer race (transfer case side) to transfer case. Refer to DLN-92, "Assembly". **CAUTION:**
 - · Do not reuse ring gear bearing.
 - Apply gear oil to the ring gear bearing.
- 4. Assemble the selected ring gear bearing adjusting shim (transfer cover side) and ring gear bearing outer race (transfer cover side) to transfer cover. Refer to <u>DLN-75</u>, "Assembly". **CAUTION:**
 - · Do not reuse ring gear bearing.
 - Apply gear oil to the ring gear bearing.
- Install the ring gear to ring gear shaft, and tighten mounting bolts to the specified torque.

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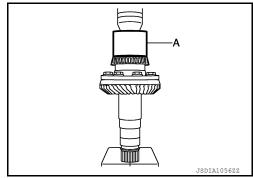
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< UNIT DISASSEMBLY AND ASSEMBLY >

6. Install ring gear bearing inner race (transfer cover side) with drift (A) (commercial service tool).

CAUTION:

- Do not reuse ring gear bearing.
- Apply gear oil to the ring gear bearing.



[TRANSFER: TY21C]

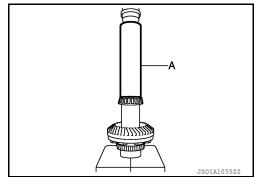
7. Install the ring gear bearing inner race (transfer case side) to ring gear shaft with suitable tool (A).

CAUTION:

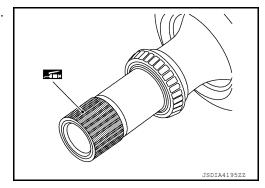
- Do not reuse ring gear bearing.
- Apply gear oil to the ring gear bearing.
- 8. Install the ring gear shaft assembly to the transfer case.

CAUTION:

Protect transfer case oil seals beforehand from being damaged by the spline of ring gear shaft below method following.



a. Apply multi-purpose grease to spline part indicated in the figure.



b. Wrap piece of vinyl to spline part only indicated in the figure. [(A): limit line]

CAUTION:

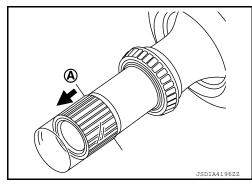
Do not wrap sliding surfaces on oil seal.

 Install transfer cover to check and adjust each part. Refer to <u>DLN-75</u>, "Assembly".

NOTE:

At this timing, O-ring installing to transfer cover is not necessary. Install O-ring after backlash and tooth contact are checked.

 Check backlash, tooth contact, total preload and companion flange runout. Refer to <u>DLN-85</u>, "<u>Adjustment</u>".
 CAUTION:



Measure the total preload without oil seals of transfer cover and transfer case.

- 11. Reinstall transfer cover for installing O-ring. Refer to DLN-75, "Assembly".
- 12. After installing transfer case oil seals, remove wrapped vinyl from the spline of ring gear shaft.

Inspection Infoid:0000000011278372

INSPECTION AFTER DISASSEMBLY

Check items below. If necessary, replace them with new ones.

Gear and Shaft

Check gear face and shaft for wear, cracks, damage, and seizure.

< UNIT DISASSEMBLY AND ASSEMBLY >

CAUTION:

If malfunction is detected on the ring gear or drive pinion, replace the ring gear and drive pinion as a set.

Bearing

Check for seizure, peeling, wear, corrosion, sticking, unusual noise, roughness in hand turning, and other damage.

CAUTION:

When replacing the bearing, always replace the inner race and outer race as a pair.

Shim

Check for seizure, damage, and unusual wear.

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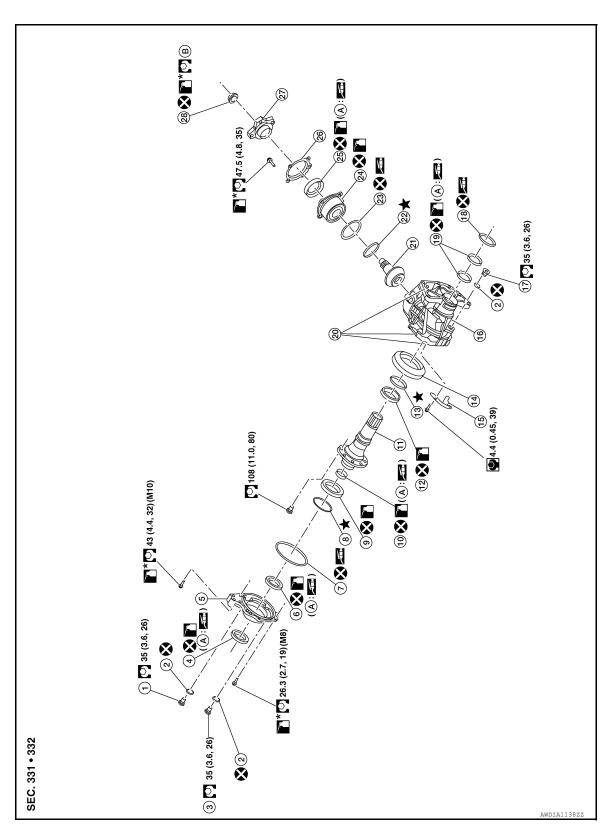
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[TRANSFER: TY21C]

DRIVE PINION

Exploded View



- 1. Filler plug
- 4. Oil seal

- 2. Gasket
- 5. Transfer cover

- 3. Drain plug
- 6. Oil seal

< UNIT DISASSEMBLY AND ASSEMBLY >

O-ring Ring gear bearing adjusting shim (transfer cover side) 10. Ring gear shaft oil seal 11.

14. Ring gear

20. Dowel pin

26. Dust cover

17. Plug

23. O-ring

- Ring gear shaft
 - 12. Ring gear bearing (transfer case

Ring gear bearing (transfer cover

[TRANSFER: TY21C]

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- side)
- 15. Baffle plate
- 18. O-ring 21. Drive pinion
- 24. Pinion bearing assembly
- 27. Companion flange

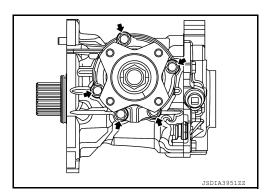
- 13. Ring gear bearing adjusting shim (transfer case side)
- 16. Transfer case
- 19. Oil seal
- 22. Drive pinion adjusting shim
- 25. Oil seal
- 28. Pinion lock nut
- Oil seal lip

B. Comply with the assembly procedure when tightening. Refer to DLN-84, "Assembly".

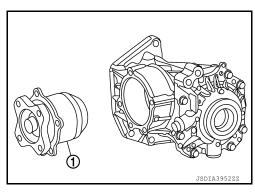
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- : Apply gear oil.
- *: Apply anti-corrosive oil.
- Apply multi-purpose grease.
- ★: Select with proper thickness.

Disassembly INFOID:0000000011278374

1. Remove pinion bearing assembly mounting bolts.



- Lightly tap companion flange with a plastic hammer to remove drive pinion assembly (1).
- 3. Remove the O-ring from pinion bearing.
- Remove the pinion lock nut.



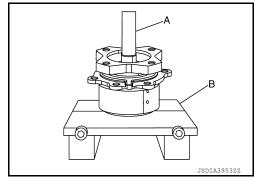
2015 Rogue NAM

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DLN-83

< UNIT DISASSEMBLY AND ASSEMBLY >

- 5. Remove drive pinion from pinion bearing assembly using suitable tool (A) and suitable tool (B).
- 6. Remove adjusting shim.
- 7. Remove companion flange.
- 8. Remove the dust cover.
- 9. Remove the oil seal.
- 10. Perform inspection after disassembly. Refer to DLN-89, "Inspection".



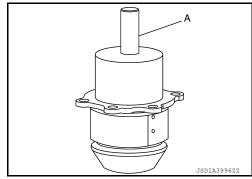
[TRANSFER: TY21C]

Assembly

- Select drive pinion adjusting shim. Refer to <u>DLN-85, "Adjustment"</u>.
- 2. Assemble the selected drive pinion adjusting shim to drive pinion.
- Install the drive pinion to pinion bearing assembly using suitable tool. CAUTION:
 - Do not reuse pinion bearing assembly.
 - Apply gear oil to pinion bearing part.
- Install oil seal to pinion bearing assembly using suitable tool (A).
 CAUTION:
 - · Do not reuse the oil seal.
 - · When installing, do not incline oil seal.
 - Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.
- Install dust cover.

NOTE:

Tighten dust cover together with pinion bearing assembly.



- 6. Install companion flange (1) to pinion bearing using suitable tool (A).
- 7. Apply anti-corrosive oil to the thread and seat of the lock nut, and adjust the pinion lock nut tightening torque and pinion bearing preload torque, using a preload gauge.
- a. Install pinion lock nut, and then tighten to the specified torque.

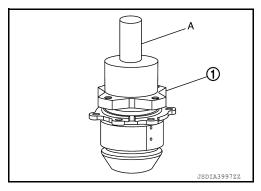
Pinion lock nut : 90±9 N⋅m (9.2±0.92kg-m, 66±7 ft-lb) tightening torque

CAUTION:

- Do not reuse pinion lock nut.
- Check that pinion lock nut is seated on the companion flange.
- b. After tightening pinion lock nut to the specified torque, retighten the pinion lock nut by 25 degrees.
- Measure the pinion bearing preload.

Pinion bearing preload : Refer to <u>DLN-94</u>, "<u>Preload Torque</u>".

- 8. Apply multi-purpose grease lightly and evenly onto an O-ring, and install it to the pinion bearing assembly. **CAUTION:**
 - · Do not reuse O-ring.
 - When installing O-ring, do not use a suitable tool.
 - · Do not damage O-ring.



< UNIT DISASSEMBLY AND ASSEMBLY >

Install drive pinion assembly, and apply anti-corrosive oil onto thread and seats on the mounting bolts. Tighten to the specified torque.

NOTE:

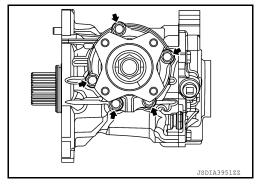
Tighten dust cover together with pinion bearing assembly.

10. Check backlash, tooth contact, total preload and companion flange runout. Refer to DLN-85, "Adjustment".

CAUTION:

ADJUSTING SHIM SELECTION

Measure the total preload without oil seals of transfer cover and transfer case.

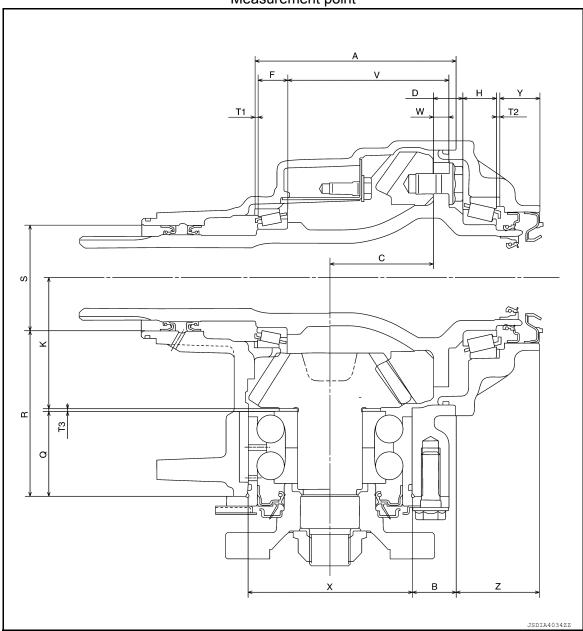


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[TRANSFER: TY21C]

Adjustment

Measurement point



Select adjusting shim of T1, T2, and T3, respectively, by using the following equation.

T1 [Ring gear bearing adjusting shim (transfer case side)]
• T1 = A -(B + X/2) + C + W - V - F - (M/100) + 0.071 mm (0.0028 in)

DLN-85 Revision: August 2014 2015 Rogue NAM Α

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< UNIT DISASSEMBLY AND ASSEMBLY >

T2 [Ring gear bearing adjusting shim (transfer cover side)]

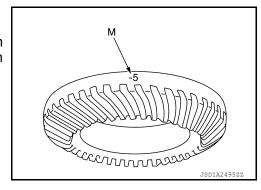
• T2 = -Y + Z + (B + X/2) - C - D - H + (M/100) + 0.071 mm (0.0028 in)

T3 (Drive pinion adjusting shim)

- T3 = -Q + (R + S/2) K + (O/100)
- Check dimension (M) on the ring gear side face.

NOTE:

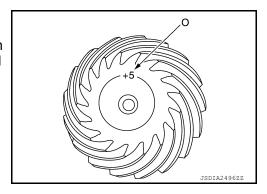
Dimension "M" indicates the difference between the optimum engagement and standard dimensions in increments of 0.01 mm (0.0004 in) written on the ring gear side face.



[TRANSFER: TY21C]

Check dimension (O) on the gear end of drive pinion.
 NOTE:

Dimension "O" indicates the difference between the optimum engagement and the standard dimensions in increments of 0.01 mm (0.0004 in) written on the gear end of drive pinion.



PINION BEARING PRELOAD

CAUTION:

When measuring preload, the rotating speed must be set to 30 rpm.

- Remove ring gear shaft assembly from the transfer case. Refer to <u>DLN-78</u>, "<u>Disassembly</u>".
- Rotate the companion flange back and forth from 2 to 3 times to check for unusual noise, binding, sticking, and so on.
- Rotate the companion flange at least 20 times to check for smooth operation of the bearing.
- 4. Measure the pinion bearing preload using Tool A).

Pinion bearing preload : Refer to <u>DLN-94</u>, "<u>Preload</u>

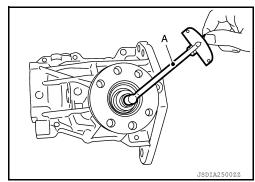
Torque".

Tool number : ST3127S000 (J-25765-A)

CAUTION:

Each rotational part should rotate smoothly with the specified gear oil.

• If outside the standard, disassemble the drive pinion assembly to check and adjust each part.



TOTAL PRELOAD

CAUTION:

When measuring preload, the rotating speed must be set to 30 rpm.

1. Measure pinion bearing preload.

CAUTION:

Check that the pinion bearing preload is within the standard.

- 2. Assemble the ring gear shaft assembly to the transfer case. Refer to <u>DLN-79</u>. "Assembly"
- Install transfer cover to check and adjust each part. Refer to <u>DLN-75</u>, "<u>Assembly</u>".
- Rotate the companion flange at least 20 times to check for smooth operation of the bearing.

< UNIT DISASSEMBLY AND ASSEMBLY >

Measure the total preload using Tool (A).

Total preload : Refer to DLN-94, "Preload

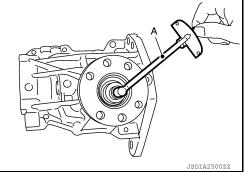
Torque".

Tool number : ST3127S000 (J-25765-A)

CAUTION:

Each rotational part should rotate smoothly with the specified gear oil.

· If outside the standard, disassemble the transfer assembly to check and adjust each part. Measure it with the transfer case oil seal and transfer cover oil seal removed when measuring total preload after disassembly. Then install transfer case oil seals and transfer cover oil seal.



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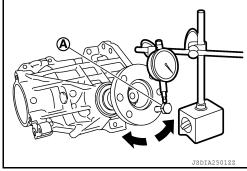
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BACKLASH

- 1. Install the bolt to the companion flange.
- Fit a dial indicator onto the bolt (A).
- 3. Measure the circumference backlash of the companion flange.

Backlash : Refer to DLN-94, "Backlash".

· If outside the standard, disassemble the transfer assembly to check and adjust each part.



TOOTH CONTACT

- 1. Remove transfer cover. Refer to <u>DLN-74</u>, "<u>Disassembly</u>".
- Remove ring gear shaft assembly from transfer case. Refer to <u>DLN-78</u>. "<u>Disassembly</u>".
- 3. Apply red lead onto the ring gear.

CAUTION:

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

- 4. Assemble the ring gear shaft assembly to the transfer case. Refer to DLN-79, "Assembly".
- 5. Install transfer cover to check and adjust each part. Refer to DLN-75, "Assembly".

NOTE:

At this timing, O-ring installing to transfer cover is not necessary. Install O-ring after backlash and tooth contact are checked.

- 6. Remove the plug from the transfer case.
- 7. Rotate the companion flange back and forth several times, and check the drive pinion gear to ring gear tooth contact by viewing from the plug hole.

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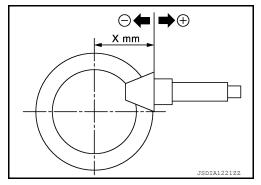
Tooth Contact Judgment Guide

Drive pinion adjusting shim selection value mm(in)			Need for			
shim selectio	n value mm(in)	Drive s	side	Bacl	adjustment	
	-0.09 (-0.0035)	Heel side	Toe side	Toe side	Heel side	YES
	-0.06 (-0.0024)					123
Thinner	-0.03 (-0.0012)					
	- 0					NO
Thicker	+0.03 (+0.0012)					
	+0.06 (+0.0024)					YES
\	+0.09 (+0.0035)					123

 Follow the procedure below to adjust pinion height (dimension X) if tooth contact is improper. For selecting adjusting shim, refer to the latest parts information.

CAUTION:

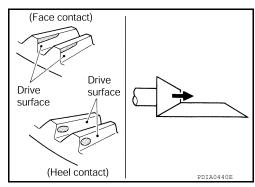
If no adjusting shim with the calculated value is available, select the thicker and closest one.



Thicken the drive pinion adjusting shim to move the drive pinion closer to the ring gear in case of face contact or heel contact.

CAUTION:

Only one adjusting shim can be selected.

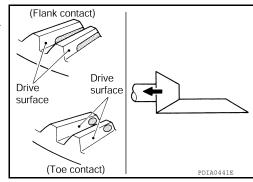


< UNIT DISASSEMBLY AND ASSEMBLY >

 Thin the drive pinion adjusting shim to move the drive pinion farther from the ring gear in case of flank contact or toe contact.

CAUTION:

Only one adjusting shim can be selected.



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COMPANION FLANGE RUNOUT

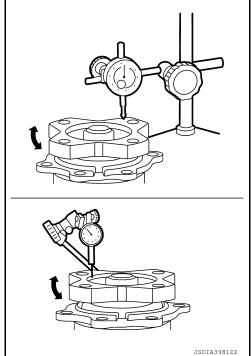
- Fit a dial indicator onto the companion flange face (inner side of the propeller shaft mounting bolt holes).
- Rotate the companion flange to check for runout.

Companion flange runout : Refer to <u>DLN-94, "Com-</u> panion Flange Runout".

- Fit suitable tool to the inner side of the companion flange (socket diameter).
- Rotate the companion flange to check for runout.

Companion flange runout : Refer to <u>DLN-94, "Com-</u> panion Flange Runout".

- 5. Follow the procedure below to adjust if runout value is outside the repair limit.
- a. Check for runout while changing the phase between companion flange and drive pinion in 90° steps. Then search for the minimum point.
- b. Replace companion flange if runout value is still outside the limit after the phase has been changed.
- c. Adjust assembly status of the pinion bearing and drive pinion, or replace pinion bearing assembly if runout is outside the standard after the companion flange is replaced.



Inspection INFOID:0000000011278377

INSPECTION AFTER DISASSEMBLY

Check items below. If necessary, replace them with new ones.

Gear and Shaft

Revision: August 2014

Check gear face and shaft for wear, cracks, damage, and seizure.

CAUTION:

Replace ring gear and drive pinion as a set (hypoid gear set) if any malfunction is detected on the ring gear or drive pinion.

Check for seizure, peeling, wear, corrosion, sticking, unusual noise, roughness in hand turning, and other damage.

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Shim

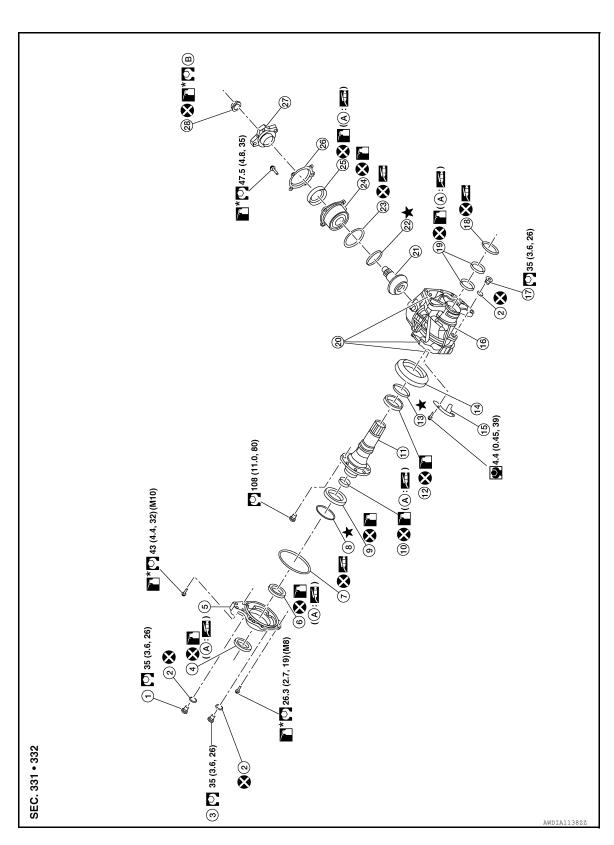
Check for seizure, damage, and unusual wear.

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[TRANSFER: TY21C]

TRANSFER CASE

Exploded View



- 1. Filler plug
- 4. Oil seal

- 2. Gasket
- 5. Transfer cover

- 3. Drain plug
- 6. Oil seal

TRANSFER CASE

< UNIT DISASSEMBLY AND ASSEMBLY >

- [TRANSFER: TY21C] Ring gear bearing (transfer cover O-ring Ring gear bearing adjusting shim (transfer cover side) 10. Ring gear shaft oil seal 11. Ring gear shaft 12. Ring gear bearing (transfer case
- side) 15. Baffle plate 13. Ring gear bearing adjusting shim 14. Ring gear
- (transfer case side) 16. Transfer case 17. Plug 18. O-ring
- 19. Oil seal 20. Dowel pin 21. Drive pinion 22. Drive pinion adjusting shim 24. Pinion bearing assembly 23. O-ring
- 25. Oil seal 26. Dust cover 27. Companion flange 28. Pinion lock nut
- Oil seal lip B. Comply with the assembly procedure when tightening. Refer to DLN-84, "Assembly".
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- : Apply gear oil.
- *: Apply anti-corrosive oil.
- Apply multi-purpose grease.
- ★: Select with proper thickness.

Disassembly INFOID:0000000011278379

- Remove transfer cover. Refer to <u>DLN-74, "Disassembly"</u>. 1.
- 2. Remove ring gear shaft assembly. Refer to <u>DLN-78</u>, "<u>Disassembly</u>".
- Remove drive pinion assembly. Refer to DLN-83, "Disassembly". 3.
- Remove O-ring from transfer case.

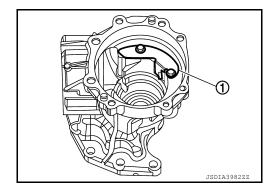
CAUTION:

- Do not use a suitable tool.
- · Do not damage transfer case.
- Remove oil seals (1).

CAUTION: Do not damage transfer case.

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Remove baffle plate (1).



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TRANSFER CASE

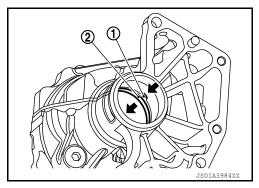
< UNIT DISASSEMBLY AND ASSEMBLY >

 Remove the ring gear bearing adjusting shim (transfer case side) (1) and ring gear bearing outer race (transfer case side) (2) by tapping from the 2 cutouts (on the transfer case.

CAUTION:

Do not damage transfer case.

- 8. Remove plug and gasket.
- Perform inspection after disassembly. Refer to <u>DLN-93, "Inspection"</u>.



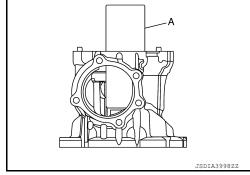
[TRANSFER: TY21C]

Assembly

- Select the ring gear bearing adjusting shim (transfer case side). Refer to <u>DLN-85</u>, "Adjustment".
- 2. Install the selected ring gear bearing adjusting shim (transfer case side) and ring gear bearing outer race (transfer case side) using suitable tool (A).

CAUTION:

- Do not reuse ring gear bearing.
- Apply gear oil to the ring gear bearing.



- 3. Install baffle plate (1).
- Install ring gear shaft assembly. Refer to <u>DLN-79, "Assembly"</u>.
 CAUTION:

Protect transfer case oil seals beforehand from being damaged by the spline of ring gear shaft.

- 5. Install drive pinion assembly. Refer to DLN-84, "Assembly".
- Install transfer cover to check and adjust each part. Refer to <u>DLN-75, "Assembly"</u>.

NOTE:

At this timing, O-ring installing to transfer cover is not necessary. Install O-ring after backlash and tooth contact are checked.

Check backlash, tooth contact, total preload and companion flange runout. Refer to <u>DLN-85, "Adjust-ment"</u>.

CAUTION:

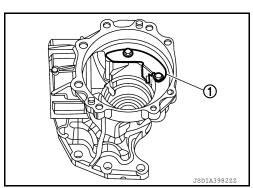
Measure the total preload without oil seals of transfer cover and transfer case.

- 8. Reinstall transfer cover for installing O-ring. Refer to DLN-75, "Assembly".
- Install oil seals using suitable tool.

(A) : 24.8 mm (0.976 in) (B) : 10.3 mm (0.406 in)

CAUTION:

- When checking the total preload torque, measure it without the oil seal, then install the oil seal.
- · Do not reuse the oil seal.
- · When installing, do not incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.
- Do not damage oil seals by spline of ring gear shaft.
- 10. After installing oil seals to transfer case, remove wrapped vinyl from the spline of ring gear shaft.
- 11. Apply multi-purpose grease lightly and evenly onto an O-ring, and install it to the transfer case.



TRANSFER CASE

< UNIT DISASSEMBLY AND ASSEMBLY > [TRANSFER: TY21C]

CAUTION:

- Do not reuse O-ring.
- When installing O-ring, do not use a suitable tool.
- Do not damage O-ring.

Inspection BINFOID:0000000011278381

INSPECTION AFTER DISASSEMBLY

Check items below. If necessary, replace them with new ones.

Case

Check the bearing mounting surface for wear, cracks and damages.

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

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[TRANSFER: TY21C]

		ℓ (US pt, Imp pt)				
Applied model		AWD				
		QR25DE				
		CVT				
Transfer model		TY21C				
Oil Type		MA-11, "Fluids and Lubricants"				
Oil capacity (Approx.)		0.31 (5/8 pt, 1/2 pt)				
Gear ratio		0.404				
Number of teeth	Ring gear	42				
Number of teeth	Drive pinion	17				

Preload Torque

INFOID:0000000011278383

Unit:	N∙m	(kg-m,	in-lb)

	Item	Standard			
Pinion bearing preload		0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0)			
	With all oil seals	P1 + 0.7 – 1.0 (0.08 – 0.1, 7.0 – 8.0)			
Total preload	Without oil seals (for transfer cover and transfer case)	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0)			

Backlash

Unit: mm (in)

Item	Standard
Ring gear to drive pinion	0.16 – 0.21 (0.0063 – 0.0083)

Companion Flange Runout

INFOID:0000000011278385

Unit: mm (in)

Item	Limit		
Companion flange face (inner side of the propeller shaft mounting bolt holes)	0.15 (0.0059)		
Inside of companion flange (socket diameter)	0.1 (0.004)		

PRECAUTIONS

< PRECAUTION >

[REAR PROPELLER SHAFT: C-CVJ-C]

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

Precaution for Propeller Shaft

- Replace the propeller shaft assembly if there is a breakage or deflection on 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 constant velocity joint was bent during propeller shaft assembly removal, installation, or transportation, its boot may be damaged. Wrap boot interference area to metal part with shop cloth or rubber to protect boot from breakage.

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PREPARATION

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[REAR PROPELLER SHAFT: C-CVJ-C]

PREPARATION

PREPARATION

Commercial Service Tools

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Tool name		Description
Power Tool		Loosening nuts, screws and bolts
	PIIB1407E	

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

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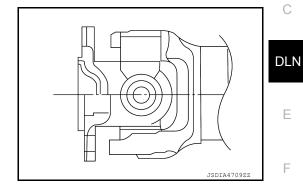
SYSTEM DESCRIPTION

STRUCTURE AND OPERATION

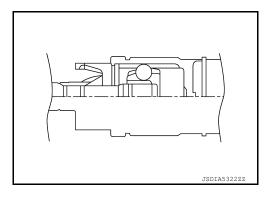
Sectional View INFOID:0000000011278389 В

PART OF JOINT

Universal Type (Shell Type)



CVJ Type



2015 Rogue NAM

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000011278390

[REAR PROPELLER SHAFT: C-CVJ-C]

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

Reference		DLN-99, "Inspection"	DLN-100, "Exploded View"	I	DLN-102, "Inspection"	I	DLN-99, "Inspection"	DLN-99, "Inspection"	NVH of REAR FINAL DRIVE in this 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.
Possible cause and SUSPEC		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
	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Symptom	Shake		×			×				×	×	×	×	×	×
	Vibration	×	×	×	×	×	×	×		×	×		×		×

x: Applicable

< PERIODIC MAINTENANCE >

[REAR PROPELLER SHAFT: C-CVJ-C]

PERIODIC MAINTENANCE

REAR PROPELLER SHAFT

Inspection INFOID:0000000011278391

APPEARANCE AND NOISE

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

VIBRATION

If vibration is present at high speed, adjust the propeller shaft phase first.

- Check the propeller shaft for bend and damage. If damaged, replace propeller shaft assembly.
- 2. Perform a cruise test drive to check the propeller shaft for runout. If vibration occurs, separate propeller shaft at electric controlled coupling of final drive; then change the phase between electric controlled coupling stud bolt and propeller shaft by the one bolt hole at a time and install propeller shaft.
- 3. If vibration is still detected, measure propeller shaft runout after removing it. Refer to <u>DLN-102, "Inspection"</u>.

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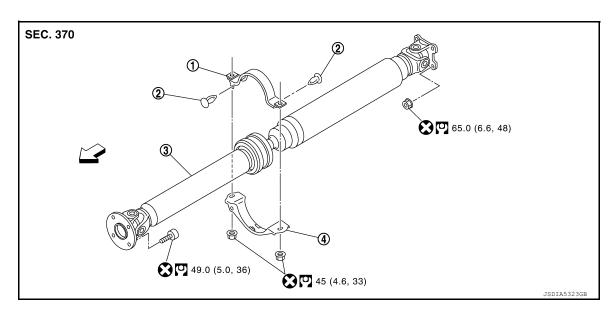
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REMOVAL AND INSTALLATION

REAR PROPELLER SHAFT

Exploded View



- ① Center bearing mounting bracket (upper)
- ② Clip

Propeller shaft assembly

- Center bearing mounting bracket (lower)
- ⟨□: Vehicle front
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.

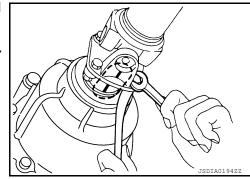
Removal and Installation

INFOID:0000000011278393

REMOVAL

- 1. Shift the transaxle to the neutral position, and then release the parking brake.
- 2. Remove muffler assembly. Refer to EX-5, "Removal and Installation".
- Put matching marks onto propeller shaft flange yoke and final drive and transfer companion flanges.
 CAUTION:

For matching marks, use paint. Do not damage propeller shaft flange yoke and transfer companion flange.



< REMOVAL AND INSTALLATION >

[REAR PROPELLER SHAFT: C-CVJ-C]

4. Loosen nuts of center bearing brackets (upper/lower).

<□ : Front

CAUTION:

Tighten nuts temporarily.

- 5. Remove propeller shaft assembly bolts and nuts.
- 6. Remove center bearing bracket nuts.
- 7. Remove propeller shaft assembly.

CAUTION:

If constant velocity joint was bent during propeller shaft assembly removal, installation, or transportation, its boot

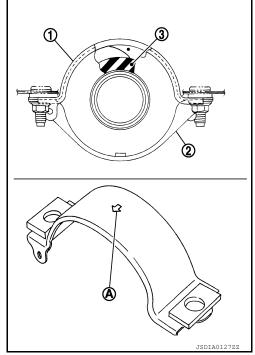
may be damaged. Wrap boot interference area to metal part with shop cloth or rubber to protect boot from breakage.

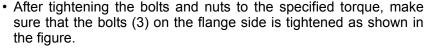
8. Remove clips and center bearing bracket (upper/lower).

INSTALLATION

Installation is in the reverse order of removal.

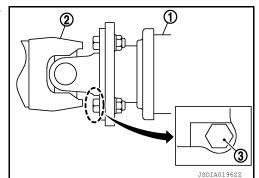
- When removing propeller shaft from final drive assembly (electric controlled coupling), replace stud bolts of electric controlled coupling.
- Install center bearing bracket (upper) (1) with its arrow mark (A) facing forward.
- Adjust position of center bearing bracket (upper), center bearing bracket (lower) (2) sliding back and forth to prevent play in thrust direction of center bearing insulator (3). Install center bearing bracket (upper/lower) to vehicle.
- Align matching marks to install propeller shaft assembly to final drive and transfer companion flanges.
- Perform inspection after installation. Refer to <u>DLN-102</u>, "Inspection".





(1) : Transfer assembly

(2) : Propeller shaft assembly



• If propeller shaft assembly or final drive assembly (electric controlled coupling) has been replaced, connect them as follows:

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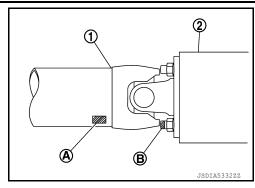
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< REMOVAL AND INSTALLATION >

[REAR PROPELLER SHAFT: C-CVJ-C]

- Install propeller shaft (1) while aligning its matching marks (A) on propeller shaft with matching mark (B) on electric controlled coupling (2) and join them as close as possible.



Inspection INFOID:0000000011278394

INSPECTION AFTER REMOVAL

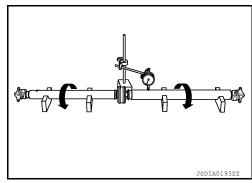
Appearance

Check propeller shaft tube surface for dents or cracks. If malfunction is detected, replace propeller shaft assembly.

Propeller Shaft Runout

Check propeller shaft runout at measuring points with a dial indicator. If runout exceeds specifications, replace propeller shaft assembly.

Propeller shaft runout : Refer to <u>DLN-104, "Propeller Shaft Runout".</u>

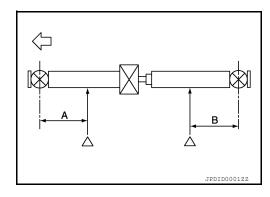


Propeller shaft runout measuring point (Point "△").

: Front side

Dimension

A : 541.5 mm (21.32 in) B : 488.7 mm (19.24 in)



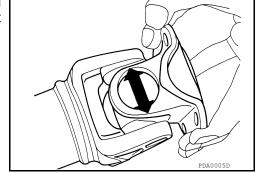
Journal Axial Play

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.

Journal axial play : Refer to <u>DLN-104, "Journal Axial Play"</u>.

CAUTION:

Never disassemble joints.



Center Bearing

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

< REMOVAL AND INSTALLATION >

[REAR PROPELLER SHAFT: C-CVJ-C]

Never disassemble center bearing.

INSPECTION AFTER INSTALLATION

After assembly, perform a driving test to check propeller shaft vibration. If vibration occurred, separate propeller shaft from final drive. Reinstall propeller shaft by changing the phase between electric controlled coupling stud bolt and propeller shaft by the one bolt hole at a time. Then perform driving test and check propeller shaft vibration again at each point.

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SERVICE DATA AND SPECIFICATIONS (SDS)

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[REAR PROPELLER SHAFT: C-CVJ-C]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000011278395

		AWD
Applied model		QR25DE
		CVT
Propeller shaft model		C-CVJ-C
Number of joints		3
	1st joint	Universal (Shell type)
Joint type	2nd joint	CVJ type
	3rd joint	Universal (Shell type)
Coupling method	Transfer side	Flange type
Coupling method	Rear final drive side	Flange type
Chaft langth	1st (Spider to CVJ joint center)	1196 mm (47.09 in)
Shaft length	2nd (CVJ joint center to spider)	983 mm (38.70 in)
Shaft outer diameter	1st	63.5 mm (2.500 in)
Shart outer diameter	2nd	70.0 mm (2.756 in)

Propeller Shaft Runout

INFOID:0000000011278396

Unit: mm (in)

Item	Standard
Propeller shaft runout	0.6 (0.024) or less

Journal Axial Play

INFOID:0000000011278397

Unit: mm (in)

Item	Standard			
Journal axial play	0 (0)			

PRECAUTIONS

< PRECAUTION > [REAR FINAL DRIVE: R145]

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

Service Notice or Precautions for Rear Final Drive

- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they never interfere with the function of the parts when applied.
- 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.
- Gaskets, seals and O-rings should be replaced any time when the unit is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Clean and flush the parts sufficiently and blow-dry them.
- · Be careful not to damage sliding surfaces and mating surfaces.
- When applying sealant, remove the old sealant from the mounting surface; then remove any moisture, oil, and foreign materials from the application and mounting surfaces.
- Always use shop paper for cleaning the inside of components.
- Never use cotton gloves or shop rags to prevent entering of lint.
- During assembly, observe the specified tightening torque, and apply new gear oil, petroleum jelly, or multipurpose grease as specified for each vehicle, if necessary.

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[REAR FINAL DRIVE: R145]

PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000011278400

Tool number (TechMate No.) Tool name		Description
KV38100200 (J-26233) Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.	ab	Installing drive pinion oil seal Installing side oil seal
ST27861000	ZZA1143D	Installing drive pinion oil seal
(—) Drift a: 62 mm (2.44 in) dia. b: 52 mm (2.05 in) dia.	a de	
ST35271000 (J-26091) Drift a: 72 mm (2.83 in) dia. b: 63 mm (2.48 in) dia.	a b	Installing drive pinion oil seal
KV40100610 (J-26089) Drift a: 63 mm (2.48 in) dia. b: 54.3 mm (2.138 in) dia.	22A0814D	Removing and installing gear carrier and rear cover (2 pieces are used) Installing pinion front bearing inner race
ST33052000		Removing side bearing inner race
(—) Adaptor a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	a b zzalozad	
KV40105020 (—) Drift a: 39.7 mm (1.563 in) dia. b: 35 mm (1.38 in) dia.	b	Installing side bearing inner race
c: 15 mm (0.59 in)	a zzali33D	

PREPARATION

[REAR FINAL DRIVE: R145]

PREPARATION >		[REAR FINAL DRIVE. R14
Tool number TechMate No.) Tool name		Description
KV38109500 —) Drive pinion socket		Removing and installing drive pinion lock nut Measuring preload torque
KV38109400 —) Pinion nut wrench	ZZA1205D	Removing and installing drive pinion lock nu
ST33200000 J-26082) Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	ZZA1206D	Installing pinion rear bearing outer race
ST33230000 (J-25805-01) Drift a: 51 mm (2.01 in) dia. b: 41 mm (1.61 in) dia. b: 28.5 mm (1.122 in) dia.	ZZA1002D	Installing pinion front bearing outer race
ST23860000 —) Drift a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.	22A0534D	Installing pinion rear bearing inner race Installing pinion front bearing inner race
ST38220000 —) Press stand a: 63 mm (2.48 in) dia. b: 65 mm (2.56 in)	a a b	Installing pinion front bearing inner race

PREPARATION

< PREPARATION >

[REAR FINAL DRIVE: R145]

Tool number (TechMate No.) Tool name		Description
ST3127S000 (J-25765-A) Preload gauge	ZZA0503D	Measuring preload torque
KV381086S1 (—) Dummy cover set 1. KV38108610 (—) Dummy cover 2. KV38108621 (—) Dummy cover spacer 3. KV38108630 (—) Dummy cover shim	SDIA2313E	Checking backlash Checking drive gear runout Checking tooth contact

Commercial Service Tools

INFOID:0000000011278401

Tool name		Description
Separator	Z2A0700D	Removing side bearing inner race Removing pinion rear bearing inner race
Puller	22A0119D	Removing side bearing inner race Removing pinion rear bearing inner race
Pin Punch a: 4.5 mm (0.177 in) dia.		Removing and installing lock pin
	a	
	NT410	

PREPARATION

< PREPARATION >

[REAR FINAL DRIVE: R145]

Tool name		Description	
Oil seal Remover		Removing drive pinion oil seal	
	JSDIA4998ZZ		
Power Tool		Loosening nuts, screws and bolts	
	PIIB1407E		

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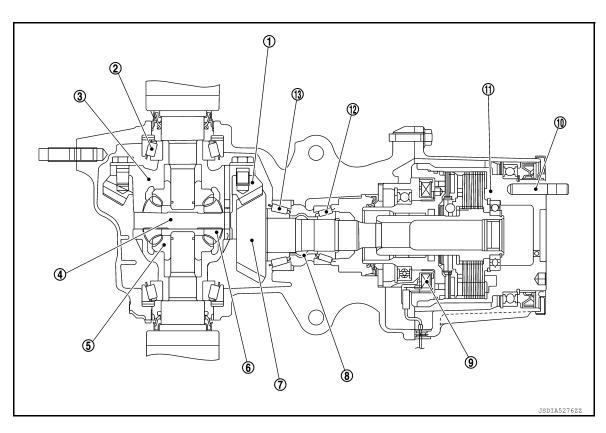
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SYSTEM DESCRIPTION

STRUCTURE AND OPERATION

Sectional View



- 1) Drive gear
- (4) Pinion mate shaft
- 7 Drive pinion
- Stud bolt
- Pinion rear bearing

- Side bearing
- Side gear
- (8) Collapsible spacer
- (1) Electric controlled coupling
- (3) Differential case
- 6 Pinion mate gear
- AWD solenoid
- (12) Pinion front bearing

Electric Controlled Coupling

INFOID:0000000011278403

The electric controlled coupling operates as the AWD system. For the operation, refer to <u>DLN-12, "Operation Description"</u>.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

[REAR FINAL DRIVE: R145]

< 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-135, "Inspection"	DLN-131, "Adjustment"	DLN-135, "Inspection"	DLN-131, "Adjustment"	I	DLN-112, "Inspection"	NVH of REAR PROPELLER SHAFT in this 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	×	×	×	×	×	×	×	×	×	×	×	×	×

x: Applicable

Revision: August 2014 DLN-111 2015 Rogue NAM

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PERIODIC MAINTENANCE

REAR DIFFERENTIAL GEAR OIL

Inspection INFOID:0000000011278405

OIL LEAKS

Make sure that oil is not leaking from final drive assembly or around it.

OILLEVEL

• Remove filler plug (1) and check oil level (A) from filler plug mounting hole as shown.

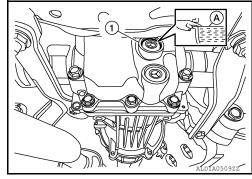
CAUTION:

Do not start engine while checking oil level.

Set a new gasket on filler plug and install it on final drive assembly.
 Refer to <u>DLN-125</u>, "<u>Exploded View</u>".

CAUTION:

Do not reuse gasket.



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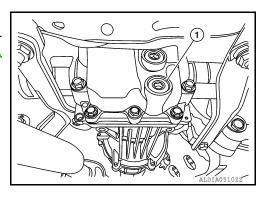
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Draining

- 1. Stop engine.
- 2. Remove drain plug (1) and drain gear oil.
- 3. Set a new gasket on drain plug and install it to final drive assembly and tighten to the specified torque. Refer to <u>DLN-125</u>, <u>"Exploded View"</u>.

CAUTION:

Do not reuse gasket.



Refilling

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

Oil grade and viscosity

: Refer to MA-11, "Fluids

and Lubricants".

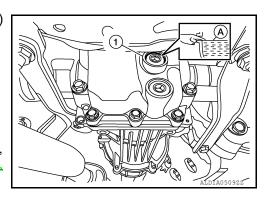
Oil capacity

: Refer to <u>DLN-142, "General Specifications".</u>

2. After refilling oil, check oil level. Set a new gasket to filler plug, then install it to final drive assembly. Refer to DLN-125. "Exploded View".

CAUTION:

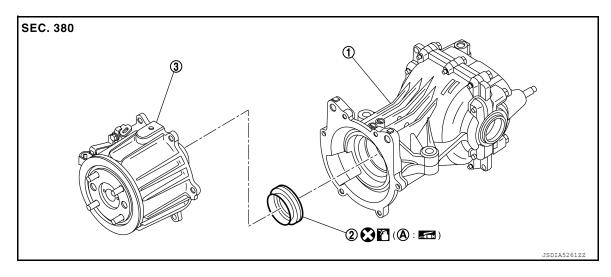
Do not reuse gasket.



REMOVAL AND INSTALLATION

DRIVE PINION OIL SEAL

Exploded View



- Rear final drive assembly
- ② Drive pinion oil seal
- 3 Electric controlled coupling assembly

- (A) Oil seal lip
- : Always replace after every disassembly.
- : Apply gear oil.
- Apply multi-purpose grease.

Removal and Installation

REMOVAL

- Remove electric controlled coupling. Refer to <u>DLN-115</u>, "<u>Removal and Installation</u>".
- 2. Using a suitable tool remove drive pinion oil seal.

CAUTION:

Do not damage rear final drive assembly.

INSTALLATION

Install drive pinon oil seal (1) using Tool (A).

Oil seal installation

: 0.8 - 1.2 mm (0.031 - 0.047 in)

length (B)
Tool number

: KV38100200 (J-26233)

: ST27861000 (—

CAUTION:

- · Do not reuse oil seal.
- · When installing, do not incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- ALDIA05228Z
- Install electric controlled coupling. Refer to <u>DLN-115, "Removal and Installation"</u>.
- Install rear propeller shaft. Refer to <u>DLN-100, "Exploded View"</u>.
- 4. When oil leaks while removing, check oil level after the installation. Refer to DLN-112, "Inspection".

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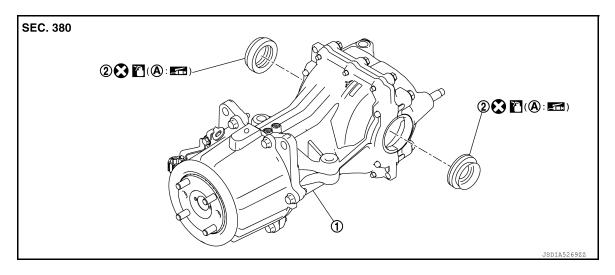
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SIDE OIL SEAL

Exploded View



- (1) Rear final drive assembly
- (2) Side oil seal

- (A) Oil seal lip
- : Always replace after every disassembly.
- : Apply gear oil.
- Apply multi-purpose grease.

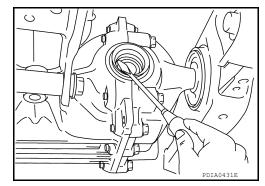
Removal and Installation

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REMOVAL

- 1. Remove rear drive shaft (LH/RH) with power tool. Refer to RAX-19. "Exploded View".
- Remove side oil seal (LH/RH), using a suitable tool. CAUTION:

Do not damage gear carrier and rear cover.



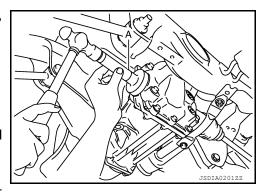
INSTALLATION

1. Install side oil seals until it becomes flush with the carrier end, using Tool (A).

Tool number : KV38100200 (J-26233)

CAUTION:

- Do not reuse oil seals.
- When installing, do not incline oil seals.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- 2. Install rear drive shafts. Refer to RAX-19, "Exploded View".
- 3. When oil leaks while removing, check oil level after the installation. Refer to <u>DLN-112</u>, "Inspection".



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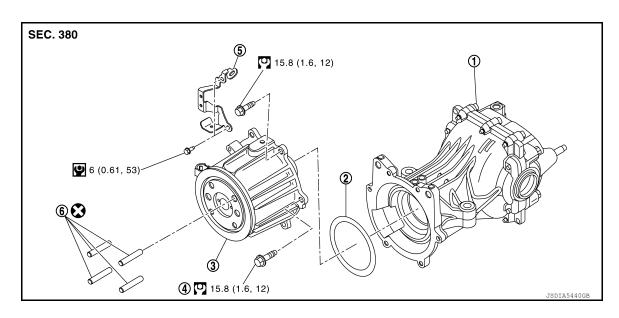
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ELECTRIC CONTROLLED COUPLING

Exploded View



- Rear final drive assembly
- (2) Wave spring

③ Electric controlled coupling assembly

(4) Reamer bolt

- (5) Connector bracket
- 6 Stud bolt

- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.

Removal and Installation

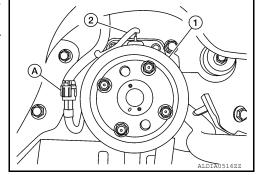
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NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

- 1. Remove rear propeller shaft from the electric controlled coupling, and support the end of the propeller shaft. Refer to <u>DLN-100</u>, "<u>Exploded View</u>".
- 2. Remove electric controlled coupling breather hose (2) from electric controlled coupling (1).
- 3. Disconnect the electric controlled coupling harness connector (A).



- 4. Remove harness connector bracket.
- Remove bolts from electric controlled coupling.
- Remove the electric controlled coupling. CAUTION:

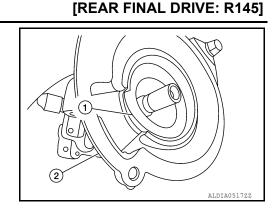
Be careful that the wave spring does not fall out or get damaged when removing the electric controlled coupling.

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< REMOVAL AND INSTALLATION >

Remove wave spring (1).

(2) : Rear final drive assembly



INSTALLATION

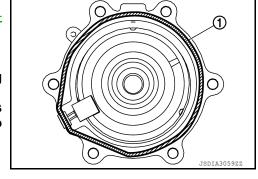
Installation is in the reverse order of removal.

CAUTION:

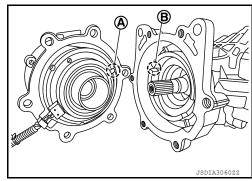
- When replacing electric controlled coupling, perform writing unit characteristic. Refer to <u>DLN-35</u>, <u>"Work Procedure"</u>.
- Do not reuse hose clamp and breather connector.
- Make sure there are no pinched or restricted areas on the breather hose caused by bending or winding when installing it.
- Install the hose clamp at the final drive side, with the paint mark facing to the vehicle front.
- Install the hose clamp at the suspension member side, with the tab facing downward.
- Use Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".
- Remove the old sealant from mating surfaces using a suitable tool before installing.
- Apply liquid gasket (1) to mating surface of coupling cover.
 Use Genuine Silicone RTV or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

CAUTION:

- The width of sealant bend is approximately 3 mm (0.012 in).
- Installation should be done within 5 minutes after applying liquid gasket.
- Do not fill the engine within engine oil for at least 30 minutes after the components are installed to allow the sealant to cure.



- Install electric controlled coupling to spline of drive pinion inside final drive assembly.
 CAUTION:
 - Align the pin (A) on electric controlled coupling with the groove (B) of final drive assembly.
 - Be careful not to damage center oil seal.

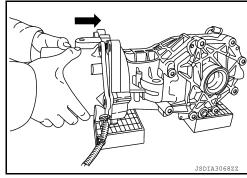


< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: R145]

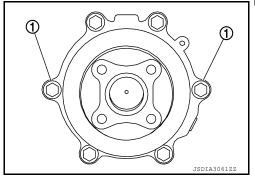
Press the electric controlled coupling pin to check that it is positioned in the groove of the final drive assembly as shown.
 NOTE:

If the pin is properly positioned in the groove, then the electric controlled coupling can be pressed into position by the same amount of flection of the wave spring.



Temporarily tighten reamer bolts (1) to the positions shown.
 CAUTION:

- Do not use tools. Always tighten by hand.
- If reamer bolts cannot be tightened all the way by hand, the electric controlled coupling pin may not be positioned in the groove of the final drive assembly. In this case, remove electric controlled coupling and reinstall it.
- If reamer bolts can be tightened all the way by hand torque them to the specified value.



When oil leaks while removing, check oil level after the installation. Refer to <u>DLN-112</u>, "Inspection".

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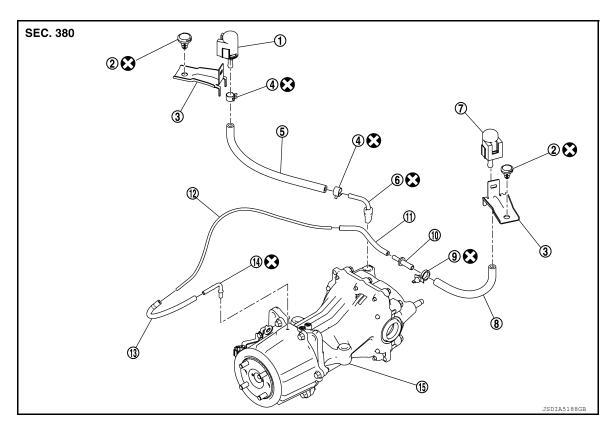
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AIR BREATHER

Exploded View INFOID:0000000011278414



- 1 Breather connector (resin)
- (4) Hose clamp
- (7) Breather connector (resin)
- (10) Hose connector
- (13) Air breather hose*

- (5) Air breather hose
- (8) Air breather hose
- (1) Air breather hose*
- : Always replace after every disassembly.
- (2) Trim clip

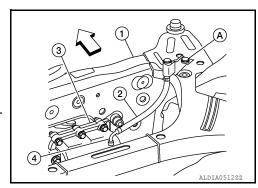
- (14) Breather connector (metal)

- (3) Bracket
- (6) Breather connector (metal)
- (9) Clip
- (12) Air breather tube*
- (15) Rear final drive assembly
- *: These parts are adhered to each other. Therefore they are assembled parts.

Removal and Installation

REMOVAL

- Remove clip (A) from rear suspension member (1).
 - (3) : Rear final drive assembly
 - ⟨
 □ : Front
- Remove air breather hose (2) and breather tube (4) together.
- Loosen hose clamp and remove breather tube (4) from air breather hose (2).



INFOID:0000000011278415

AIR BREATHER

< REMOVAL AND INSTALLATION >

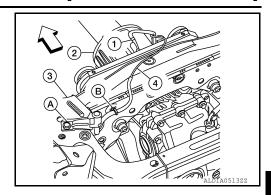
[REAR FINAL DRIVE: R145]

4. Remove clips (A) from rear suspension member (3).

(2) : Electric controlled coupling

⟨
⇒ : Front

- 5. Remove hose clamp (1) and clip (B) from air breather hose (4).
- 6. Remove air breather hose (4).



INSTALLATION

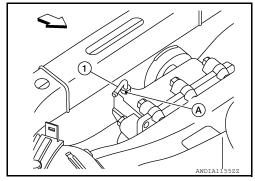
Installation is in the reverse order of removal.

CAUTION:

- Do not reuse hose clamps.
- Do not reuse trim clips.
- Do not reuse breather connectors (metal).
- Do not reuse clips.
- Set breather connector (1) to rear final drive with the paint mark (A) facing front as shown.

⟨⇒ : Front

 When installing air breather hose, make sure there are no pinched or restricted areas on air breather hose caused by bending or winding.



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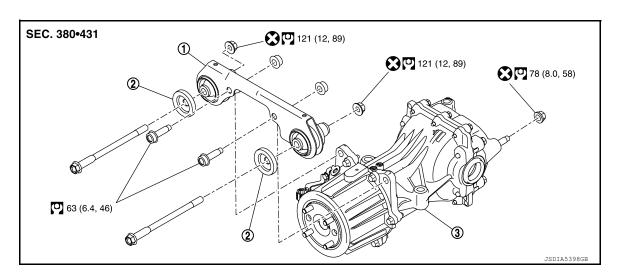
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UNIT REMOVAL AND INSTALLATION

REAR FINAL DRIVE ASSEMBLY

Exploded View



- (1) Final drive mounting bracket
- ② Mounting stopper
- (3) Rear final drive assembly

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

Removal and Installation

INFOID:0000000011278417

REMOVAL

- Remove rear propeller shaft. Refer to <u>DLN-100, "Exploded View"</u>.
- Remove rear drive shafts. Refer to <u>RAX-19</u>, "<u>Exploded View</u>".
- Disconnect AWD solenoid harness connector.
- Remove rear final drive breather hose and electric controlled coupling breather hose. <u>DLN-118</u>, "<u>Exploded View</u>".
- 5. Support final drive assembly with a suitable jack.
- 6. Remove final drive nuts and final drive bolts with power tool. If necessary, remove final drive bracket and washer with power tool. **CAUTION:**

Secure final drive assembly to a suitable jack while removing it.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

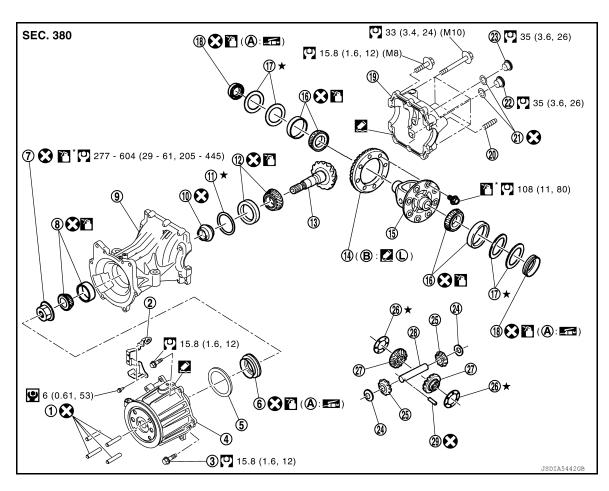
When replacing rear final drive assembly, perform writing unit characteristics. Refer to <u>DLN-35, "Work Procedure"</u>.

When oil leaks while removing final drive assembly, check oil level after the installation. Refer to <u>DLN-112.</u> "Inspection".

UNIT DISASSEMBLY AND ASSEMBLY

ELECTRIC CONTROLLED COUPLING

Exploded View



- 1 Stud bolt
- Electric controlled coupling assembly
- Opening in the property of the property of
- (10) Collapsible spacer
- (13) Drive pinion
- (16) Side bearing
- (19) Rear cover
- 2 Drain plug
- 25 Pinion mate gear
- (28) Pinion mate shaft
- (A) Oil seal lip
- : N·m (kg-m, in-lb)
- N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- ★: Select with proper thickness.
- : Apply gear oil.

- ② Connector bracket
- Wave spring
- (8) Pinion front bearing
- (1) Drive pinion adjusting shim
- (14) Drive gear
- (17) Side bearing adjusting shim
- ② Stud bolt
- 23 Filler plug
- Side gear thrust washer
- 29 Lock pin
- Screw hole

- 3 Reamer bolt
- 6 Drive pinion oil seal
- (9) Gear carrier
- (12) Pinion rear bearing
- 15 Differential case
- 18 Side oil seal
- (21) Gasket
- Pinion mate thrust washer
- 27 Side gear

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[REAR FINAL DRIVE: R145]

*: Apply anti-corrosion oil.

Apply multi purpose grease.

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

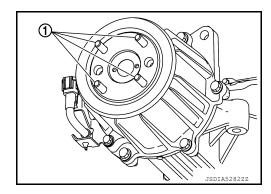
(L): Apply Genuine High Strength Thread Locking Sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

Disassembly and Assembly

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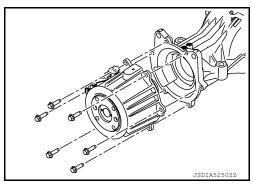
DISASSEMBLY

1. Remove stud bolts (1).

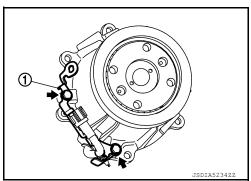


- 2. Remove electric controlled coupling assembly from final drive assembly.
- 3. Remove wave spring.
- Remove drive pinion oil seal from the inside of gear carrier. Refer to <u>DLN-137</u>, "<u>Disassembly and Assembly</u>".
 CAUTION:

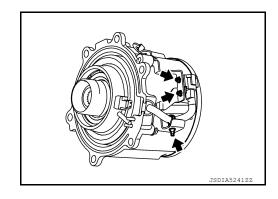
When removing electric controlled coupling, replace drive pinion oil seal.



Remove connector bracket (1) from electric controlled coupling.



6. Separate band clip and connector clip from connector bracket.



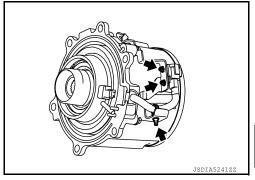
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

- 1. Install connector bracket to electric controlled coupling.
 - For tightening torque, refer to <u>DLN-121</u>, "<u>Exploded View</u>".
- 2. Fix AWD solenoid harness with band clip and connector clip.
- 3. Install drive pinion oil seal to the inside of gear carrier. Refer to <u>DLN-137, "Disassembly and Assembly"</u>.

CAUTION:

When removing electric controlled coupling, replace drive pinion oil seal.



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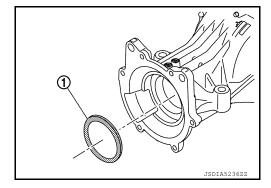
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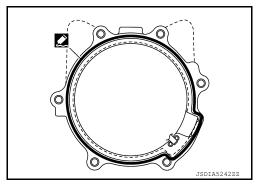
4. Install wave spring ① to the inside of gear carrier.



Apply liquid gasket to mating surface of electric controlled coupling assembly.

CAUTION:

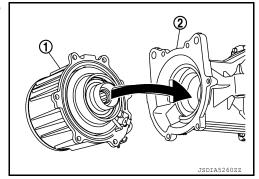
- Remove old gasket adhering to the mounting surfaces.
 Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.
- The width of sealant bead is approximately 3 mm (0.12 in).
 Apply sealant evenly.



6. Match electric controlled coupling assembly ① to spline of drive pinion, then install it to final drive assembly ②.

CAUTION:

Be careful not to damage drive pinion oil seal.



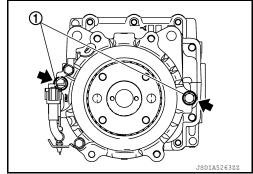
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< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

- 7. Temporarily tighten reamer bolts ① to the positions shown in the figure.
- 8. Tighten reamer bolts and electric controlled coupling assembly mounting bolts to the specified torque.
 - For tightening torque, refer to <u>DLN-121, "Exploded View"</u>.



9. Install stud bolts 1.

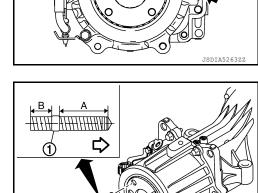
: Electric controlled coupling side

Thread length

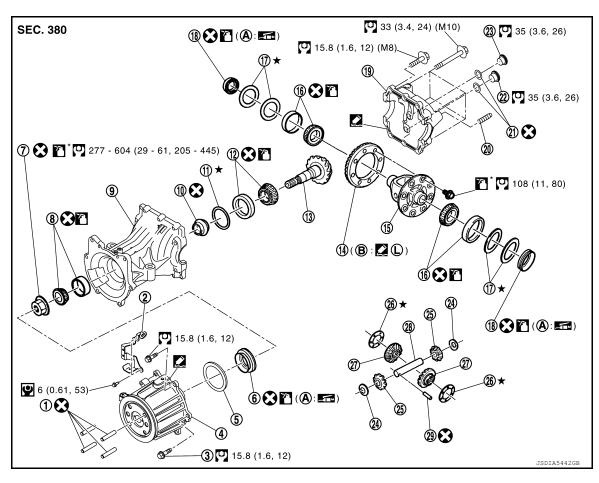
A : Long B : Short

CAUTION:

- Never reuse stud bolt.
- Screw long thread side of stud bolt to electric controlled coupling.
- Screw the stud bolt until the stop by applying a torque of 15 N·m (1.5 kg-m, 11 ft-lb) ±20%.
- After installing stud bolt, the length of the protrusion from electric controlled coupling must be 19.8 mm (0.780 in) ± 1.4 mm (0.055 in).



Exploded View INFOID:0000000011278420



- Stud bolt 1
- Electric controlled coupling assem-4
- (7)Drive pinion lock nut
- (10) Collapsible spacer
- 13 Drive pinion
- Side bearing 16
- 19 Rear cover
- (22) Drain plug
- Pinion mate gear (25)
- (28) Pinion mate shaft
- Oil seal lip
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- ★: Select with proper thickness.
- : Apply gear oil.
- *: Apply anti-corrosion oil.
- Apply multi purpose grease.

- Connector bracket (3)
- Pinion front bearing (8)

Wave spring

- (11) Drive pinion adjusting shim
- (14) Drive gear

2

(5)

- Side bearing adjusting shim (17)
- 20 Stud bolt
- 23) Filler plug
- Side gear thrust washer (26)
- Lock pin 29
- Screw hole

- Reamer bolt
- (6) Drive pinion oil seal
- (9) Gear carrier
- (12) Pinion rear bearing
- Differential case (15)
- Side oil seal (18)
- 21) Gasket
- (24) Pinion mate thrust washer
- (27) Side gear

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< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

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

(L): Apply Genuine High Strength Thread Locking Sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

Disassembly and Assembly

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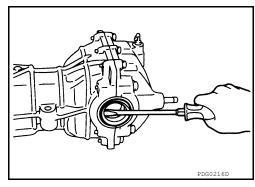
DISASSEMBLY

- 1. Remove drain plug, filler plug and gaskets.
- 2. Remove the side oil seal, using oil seal remover (commercial service tool).

CAUTION:

Never damage gear carrier and rear cover.

3. Remove rear cover mounting bolts.



4. Set drifts (A and B) to the right and left side bearing adjusting shims individually. Press differential assembly with side bearing to remove gear carrier assembly and rear cover assembly.

A : Drift [SST: KV40100610 (J-26089)]
B : Drift [SST: KV40100610 (J-26089)]

CAUTION:

The pressure shall be as low as possible to remove gear carrier assembly and rear cover assembly. The maximum pressure shall be 10 kN (1 ton, 1.0 lmp ton). NOTE:

Differential assembly, side bearings, and adjusting washers are compressed and integrated in gear carrier and rear cover.

5. Remove stud bolt from rear cover.

NOTE:

It is not necessary to remove stud bolt except when it is replaced.

6. Remove side bearing adjusting shims and side bearing outer races.

CAUTION:

Mark the side bearing adjusting shims so that the original mounting positions (right/left) can be identified later.

 Remove side bearing inner races, using adaptor (A), separator (B) and puller (C).

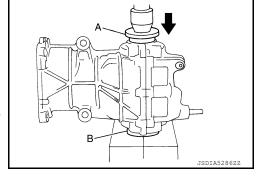
A : Adaptor [ST33052000 (—)]

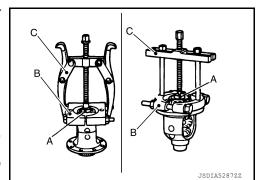
B : Separator (commercial service tool)

C : Puller (commercial service tool)

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 when it is replaced.





< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

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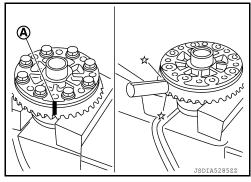
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8. For proper reinstallation, paint matching marks (A) on one differential assembly and drive gear.

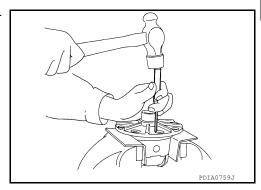
CAUTION:

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

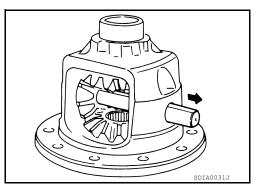
9. Remove drive gear mounting bolts and then remove drive gear from differential assembly.



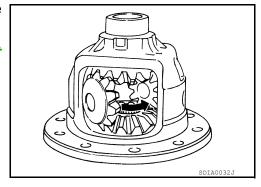
10. Remove lock pin of pinion mate shaft, using the pin punch (commercial service tool).



11. Remove pinion mate shaft.



- 12. Remove pinion mate gears, pinion mate thrust washers, side gears, side gear thrust washers from differential case.
- 13. Perform inspection after disassembly. Refer to <u>DLN-135</u>, "Inspection".



ASSEMBLY

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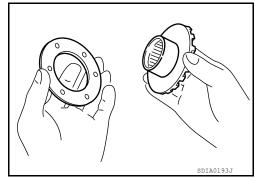
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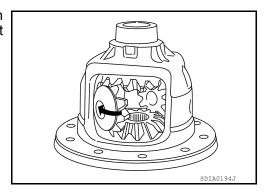
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

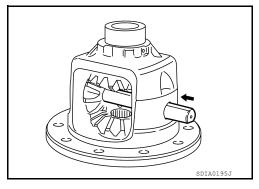
- Install side gear thrust washers with the same thickness as the ones installed prior to disassembly or reinstall the old ones on the side gears.
- Install side gears and side gear thrust washers into differential case.



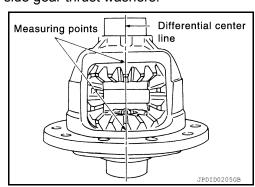
3. Align 2 pinion mate gears in diagonally opposite positions, then rotate and install them into differential case after installing thrust washer to pinion mate gear.



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



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



< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

Feeler gauges with the same thickness

Feeler gauges with the same thickness

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.

ance".

CAUTION:

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

• If the back clearance is outside the specification, use a thicker/ thinner side gear thrust washer to adjust. For selecting thrust washer, refer to the latest parts information.

When the back clearance : Use a thicker thrust washer.

is large

When the back clearance : Use a thinner thrust washer.

is small

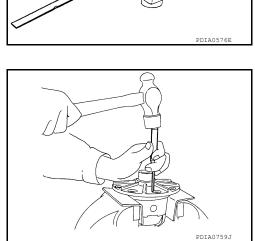
CAUTION:

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

6. Drive a lock pin into pinion mate shaft, using the pin punch (commercial service tool).

CAUTION:

Never reuse lock pin.



Press side bearing inner races to differential assembly, using the drifts (A and B).

A : Drift [SST: KV40105020 (—)]

B : Drift [SST: KV40105020 (—)]

CAUTION:

- Never reuse side bearing inner race.
- · Apply gear oil to side bearing.

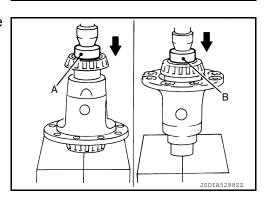
Apply thread locking sealant into the thread hole of drive gear. CAUTION:

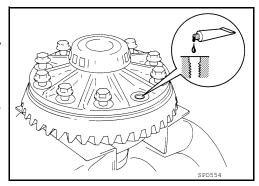
Clean and degrees drive gear back and threaded holes sufficiently.

9. Install the drive gear to differential assembly.

CAUTION:

Align the matching mark of differential assembly and drive gear.





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

For tightening torque, refer to <u>DLN-125, "Exploded View"</u>.
 CAUTION:

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

11. Assemble side bearing outer races to inner races.

CAUTION:

- Never reuse side bearing outer race.
- · Apply gear oil to side bearing.
- 12. Install new side bearing adjusting shims (2 pieces for one side) with the same thickness as the ones installed prior to disassembly or re-install the old ones, on side bearing outer race of differential assembly.

If side bearing adjusting shims have been already selected, use them.

13. Set the drifts (A and B) to the right and left side bearing adjusting shims individually. Compress differential assembly and side bearing to gear carrier assembly to install differential assembly.

A : Drift [KV40100610 (J-26089)]
B : Drift [KV40100610 (J-26089)]

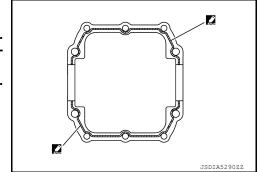
CAUTION:

- The drift shall be placed on the center of the adjusting shims.
- The pressure shall be as low as possible to install differential assembly into gear carrier assembly. The maximum pressure shall be 10 kN (1 ton, 1.1 US ton, 1.0 lmp ton).
- If the adjusting shims are installed by tapping, the gear carrier may be damaged. Avoid tapping.
- 14. Install dummy cover set [SST: KV381086S1 ()], check and adjust drive gear runout, tooth contact, backlash, and total preload torque. Refer to DLN-131, "Adjustment".
- 15. Remove dummy cover set.
- 16. Install stud bolt to rear cover.

CAUTION:

Screw the stud bolt until the thread becomes invisible by applying a torque of 20 N·m (2.0 kg-m, 15 ft-lb) or less.

- 17. Apply liquid gasket to mating surface of rear cover. **CAUTION:**
 - Remove old gasket adhering to the mounting surfaces.
 Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.
 - The width of sealant bead is approximately 3 mm (0.12 in).
 Apply sealant evenly.



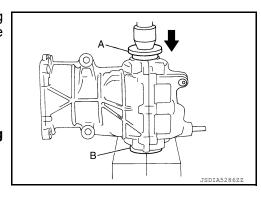
18. Set the drifts (A and B) to the right and left side bearing adjusting shims individually. Compress differential assembly and side bearing to install rear cover.

A : Drift [KV40100610 (J-26089)]
B : Drift [KV40100610 (J-26089)]

CAUTION:

 The drift shall be placed on the center of the adjusting shims.

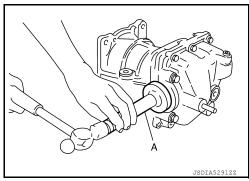




< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

- The pressure shall be as low as possible to install differential assembly into gear carrier assembly. The maximum pressure shall be 10 kN (1 ton, 1.1 US ton, 1.0 lmp ton).
- If the adjusting shims are installed by tapping, the gear carrier may be damaged. Avoid tapping.
- 19. Tighten rear cover mounting bolts to the specified torque.
 - For tightening torque, refer to <u>DLN-125</u>, "Exploded View".
- 20. Using the drift (A) [SST: KV38100200 (J-26233)], drive side oil seals until it becomes flush with the gear carrier end. CAUTION:
 - · Never reuse oil seals.
 - · When installing, do not incline oil seals.
 - · Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- 21. Check total preload torque. Refer to DLN-131, "Adjustment".



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TOTAL PRELOAD TORQUE

Adjustment

- Remove electric controlled coupling assembly. Refer to <u>DLN-122</u>, "<u>Disassembly and Assembly</u>".
- Rotate drive pinion back and forth 2 to 3 times to check for unusual noise and rotation malfunction.
- 3. Rotate drive pinion at least 20 times to check for smooth operation of the bearing.
- 4. Fit drive pinion socket onto drive pinion spline. Measure the total preload, using the preload gauge and drive pinion socket.

: Preload gauge [SST: ST3127S000 (J-25765-A)] В : Drive pinion socket [SST: KV38109500 (

Standard

Total preload torque : Refer to DLN-142, "Pre-

load Torque".

Tool B Tool A

NOTE:

Total preload torque = Pinion bearing torque + Side bearing 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.

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Adjust the pinion bearing preload first, then adjust the side bearing preload.

When the preload torque is large

On pinion bearings: Replace the collapsible spacer.

On side bearings: Use thinner side bearing adjusting shims. For selecting adjusting

shim, refer to the latest parts information.

When the preload is small

On pinion bearings: Tighten the drive pinion nut.

On side bearings: Use thicker side bearing adjusting shims. For selecting adjusting

shim, refer to the latest parts information.

DRIVE GEAR RUNOUT

Remove rear cover. Refer to <u>DLN-126</u>, "<u>Disassembly and Assembly</u>".

Following the procedure below, install a dummy cover set [SST: KV381086S1 ()] to gear carrier.

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< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

- a. Set dummy cover shims [SST: KV38108630 ()] to the right and left side bearing adjusting shims.
- b. Temporarily tighten dummy cover [SST: KV38108610 ()] to gear carrier.
- c. Position dummy cover spacers [SST: KV38108621 ()] to dummy cover [SST: KV38108610 ()].
- d. Tighten rear cover mounting bolts to the specified torque. Refer to <u>DLN-125</u>, "Exploded View".
- e. Tighten dummy cover spacer mounting bolts evenly to the specified torque.

9 : 5.9 N·m (0.6 kg-m, 52 in-lb)

- 3. Fit a dial indicator to the drive gear back face.
- Rotate the drive gear to measure runout.

Limit

Drive gear back face : Refer to <u>DLN-142, "Drive</u> runout <u>Gear Runout"</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.

CAUTION:

Replace drive gear and drive pinion as a set.

Tool

TOOTH CONTACT

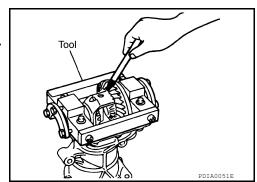
- Remove rear cover. Refer to <u>DLN-126</u>, "<u>Disassembly and Assembly</u>".
- Following the procedure below, install a dummy cover set [SST: KV381086S1 ()] to gear carrier.
- a. Set dummy cover shims [SST: KV38108630 ($\,-\,$)] to the right and left side bearing adjusting shims.
- b. Temporarily tighten dummy cover [SST: KV38108610 ()] to gear carrier.
- c. Position dummy cover spacers [SST: KV38108621 ()] to dummy cover [SST: KV38108610 ()].
- d. Tighten rear cover mounting bolts to the specified torque. Refer to <u>DLN-125</u>, "Exploded View".
- e. Tighten dummy cover spacer mounting bolts evenly to the specified torque.

9 : 5.9 N·m (0.6 kg-m, 52 in-lb)

3. 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.



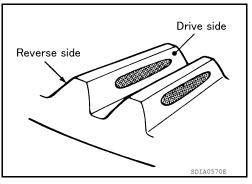
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

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

CAUTION:

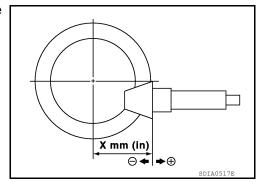
Check tooth contact on drive side and reverse side.



Tooth Contact Judgment Guide

Tooth contact condition		Drive pinion adjusting		Adjustment	Possible cause	
Drive side	Back side	shim selection value [mm (in)]		(Yes/No)		
Heel side Toe side	Toe side Heel side		+ 0.09 (+0.0035)	Yes	Occurrence of noise and scoring sound in all speed ranges.	
		Thicker	+0.06 (+0.0024)	165	Occurrence of noise when accelerating.	
			+0.03 (+0.0012)			
			0	No	-	
			-0.03 (-0.0012)			
		Thinner	- 0.06 (-0.0024)	Yes	Occurrence of noise at constant speed and decreasing speed.	
			- 0.09 (-0.0035)	res	Occurrence of noise and scoring sound in all speed ranges.	

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



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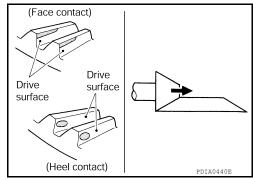
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< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

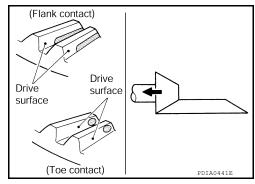
 If the tooth contact is near the face (face contact), or near the heel (heel contact), thicken drive pinion gear adjusting shim to move drive pinion closer to drive gear.

For selecting adjusting shim, refer to the latest parts information



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

For selecting adjusting shim, refer to the latest parts information.



BACKLASH

- 1. Remove rear cover. Refer to <u>DLN-126</u>, "Disassembly and Assembly".
- Following the procedure below, install a dummy cover set [SST: KV381086S1 ()] to gear carrier.
- a. Set dummy cover shims [SST: KV38108630 ($\,-\,$)] to the right and left side bearing adjusting shims.
- b. Temporarily tighten dummy cover [SST: KV38108610 ()] to gear carrier.
- c. Position dummy cover spacers [SST: KV38108621 ()] to dummy cover [SST: KV38108610 ()].
- d. Tighten rear cover mounting bolts to the specified torque. Refer to DLN-125, "Exploded View".
- Tighten dummy cover spacer mounting bolts evenly to the specified torque.

9: 5.9 N·m (0.6 kg-m, 52 in-lb)

3. Fit a dial indicator to the drive gear face to measure the backlash.

Standard

Backlash : Refer to <u>DLN-142, "Backlash"</u>.

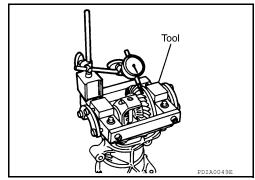
• If the backlash is outside of the specified value, change the thickness of side bearing adjusting shims.

When the backlash is large:

Make drive gear back adjusting shims thicker, and drive gear front adjusting shims thinner. For selecting adjusting shim, refer to the latest parts information.

When the backlash is small:

Make drive gear back adjusting shims thinner, and drive gear front adjusting shims thicker. For selecting adjusting shim, refer to the latest parts information.



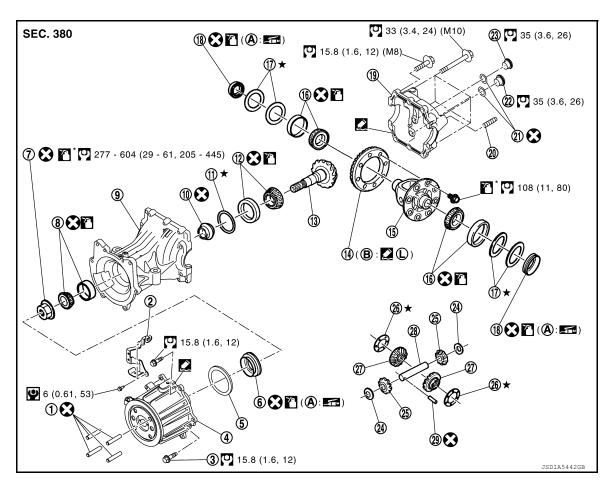
[REAR FINAL DRIVE: R145] < UNIT DISASSEMBLY AND ASSEMBLY > Inspection INFOID:0000000011278423 Α INSPECTION AFTER DISASSEMBLY Drive Gear and Drive Pinion В Clean up the disassembled parts. If the gear teeth never mesh or line-up correctly, determine the cause and adjust or replace as necessary. · If the gears are worn, cracked, damaged, pitted or chipped (by friction) noticeably, replace with new drive C gear and drive pinion as a set. Bearing · Clean up the disassembled parts. DLN • 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). Oil Seal Е · Whenever disassembled, replace. If wear, deterioration of adherence (sealing force lips), or damage is detected on the lips, replace them. Differential Assembly DIFFERENTIAL CASE · Clean up the disassembled parts. If any wear or crack on the contact sides of the differential case is found, replace. 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. Н 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. K L Ν

Revision: August 2014 DLN-135 2015 Rogue NAM

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DRIVE PINION

Exploded View



- 1 Stud bolt
- Electric controlled coupling assembly
- (7) Drive pinion lock nut
- (10) Collapsible spacer
- ① Drive pinion
- (6) Side bearing
- (19) Rear cover
- 22 Drain plug
- 25) Pinion mate gear
- 28 Pinion mate shaft
- (A) Oil seal lip
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Always replace after every disassembly.
- ★: Select with proper thickness.
- ?: Apply gear oil.
- *: Apply anti-corrosion oil.
- : Apply multi purpose grease.

- ② Connector bracket
- Wave spring
- (8) Pinion front bearing
- (1) Drive pinion adjusting shim
- ① Drive gear
- (7) Side bearing adjusting shim
- Stud bolt
- 23 Filler plug
- 26 Side gear thrust washer
- 29 Lock pin
- Screw hole

- (3) Reamer bolt
- (6) Drive pinion oil seal
- (9) Gear carrier
- (12) Pinion rear bearing
- (15) Differential case
- (18) Side oil seal
- (21) Gasket
- (24) Pinion mate thrust washer
- 27) Side gear

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

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

(a): Apply Genuine High Strength Thread Locking Sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

Disassembly and Assembly

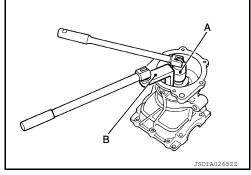
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DISASSEMBLY

1. Remove electric controlled coupling assembly. Refer to DLN-122, "Disassembly and Assembly".

- Remove differential assembly. Refer to <u>DLN-126</u>. "<u>Disassembly and Assembly</u>".
- 3. Remove drive pinion oil seal, using oil seal remover (commercial service tool).
- 4. Fit drive pinion socket (A) onto drive pinion spline. Remove drive pinion lock nut, using the pinion nut wrench (B).

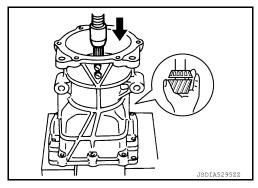
A : Drive pinion socket [SST: KV38109500 (-)] B : Pinion nut wrench [SST: KV38109400 (-)]



Press drive pinion assembly out of gear carrier. CAUTION:

Never drop drive pinion assembly.

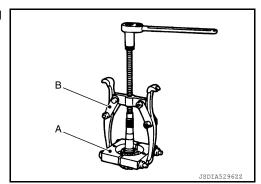
- 6. Remove pinion front bearing inner race.
- 7. Remove collapsible spacer.



8. Remove pinion rear bearing inner race from drive pinion, using the separator (A) and the puller (B).

A : Separator (commercial service tool)

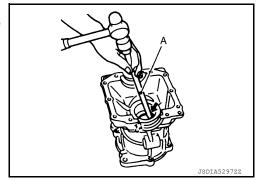
B : Puller (commercial service tool)



9. Using a brass rod or equivalent (A), tap pinion front bearing outer race evenly from the 2 cutouts on gear carrier and remove pinion front bearing outer race.

CAUTION:

Be careful not to damage gear carrier.



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< UNIT DISASSEMBLY AND ASSEMBLY >

10. Using a brass rod or equivalent (A), tap drive pinion adjusting shim evenly from the 2 cutouts on gear carrier and remove drive pinion adjusting shim and pinion rear bearing outer race. CAUTION:

Be careful not to damage gear carrier.

11. Perform inspection after disassembly. Refer to <u>DLN-141.</u> "Inspection".



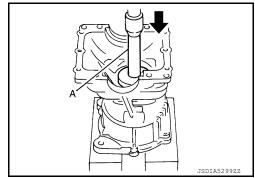
[REAR FINAL DRIVE: R145]

ASSEMBLY

 Install a drive pinion adjusting shim of the same thickness as was installed prior to disassembly. Press pinion rear bearing outer race into gear carrier, using the drift (A) [SST: ST33200000 (J-26082)].

CAUTION:

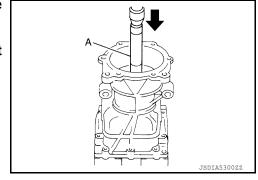
- At first, using a hammer, tap bearing outer race until it becomes flush to gear carrier.
- · Never reuse pinion rear bearing outer race.



2. Press pinion front bearing outer race into gear carrier, using the drift (A) [SST: ST33230000 (J-25805-01)].

CAUTION:

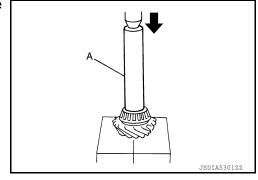
- At first, using a hammer, tap bearing outer race until it becomes flush to gear carrier.
- Never reuse pinion front bearing outer race.



Press pinion rear bearing inner race to drive pinion, using the drift (A) [SST: ST23860000 (—)].

CAUTION:

Never reuse pinion rear bearing inner race.



- Check and adjust the tooth contact and back lash of drive gear and drive pinion following the procedure below.
- Assemble drive pinion into gear carrier.

CAUTION:

- Never assemble collapsible spacer.
- Apply gear oil to pinion rear bearing.
- b. Assemble pinion front bearing inner race to drive pinion assembly.

CAUTION:

- Never reuse pinion front bearing inner race.
- Apply gear oil to pinion front bearing.

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

c. Using the drifts (A and C) and press stand (B), press pinion front bearing inner race to drive pinion as far as drive pinion lock nut can be tightened.

A : Drift [SST: KV40100610 (J-26089)]
B : Press stand [SST: ST38220000 (—)]

C : Drift [SST: ST23860000 (—)]

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

Use removed drive pinion lock nut only for the preload measurement.

e. Rotate drive pinion more than 20 times to adjust bearing.

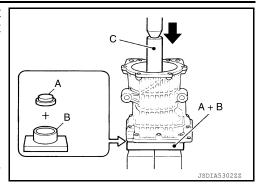
f. Fit the drive pinion socket (A) onto the drive pinion. Using the pinion nut wrench (B), tighten drive pinion lock nut holding drive pinion, while adjusting pinion bearing preload torque using preload gauge (C).

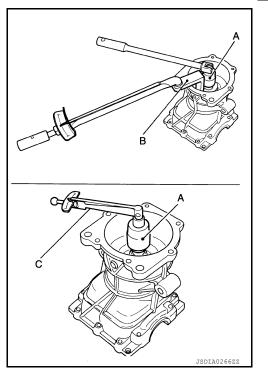
A : Drive pinion socket [SST: KV38109500 (—)]
B : Pinion nut wrench [SST: KV38109400 (—)]
C : Preload gauge [SST: ST3127S000 (J-25765-A)]

Pinion bearing preload : Refer to <u>DLN-142, "Preload Torque"</u>.

CAUTION:

Drive pinion lock nut is tightened with no collapsible spacer. Be careful not to overtighten it. While measuring the preload, tighten it by 5° to 10°.





g. Install new side bearing adjusting shims (2 pieces for one side) with the same thickness or re-install the old ones to the same mounting position they were in prior to disassembly. Install differential assembly to gear carrier. Refer to <u>DLN-126</u>, "<u>Disassembly and Assembly</u>". CAUTION:

Apply differential gear oil to the side bearings.

- h. Check and adjust tooth contact, drive gear to drive pinion backlash. Refer to DLN-131, "Adjustment".
- Remove differential assembly.
- j. Remove drive pinion assembly from gear carrier
- k. Remove drive pinion nut and press drive pinion assembly out of gear carrier.
- I. Remove pinion front bearing inner race.

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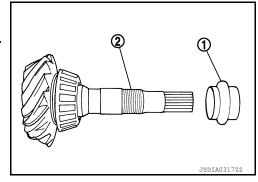
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- Assemble collapsible spacer ① to drive pinion ②. CAUTION:
 - Be careful of the mounting direction of collapsible spacer.
 - Never reuse collapsible spacer.



6. Assemble drive pinion into gear carrier.

CAUTION:

Apply gear oil to pinion rear bearing.

- Assemble pinion front bearing inner race to drive pinion assembly. CAUTION:
 - · Never reuse pinion front bearing inner race.
 - Apply gear oil to pinion front bearing.
- 8. Using the drifts (A and C) and press stand (B), press pinion front bearing inner race to drive pinion as far as drive pinion lock nut can be tightened.

A : Drift [SST: KV40100610 (J-26089)]

B : Press stand [SST: ST38220000 (—)]

C : Drift [SST: ST23860000 (—)]

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



Never reuse drive pinion lock nut.

10. Fit the drive pinion socket (A) onto the drive pinion. While holding drive pinion, tighten drive pinion lock nut within the limits of specified torque so as to keep the pinion bearing preload within a standard values, using the pinion nut wrench (B) and the preload gauge (C).

A : Drive pinion socket [SST: KV38109500 (—)]

B : Pinion nut wrench [SST: KV38109400 (—)]

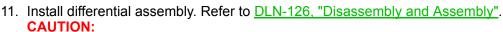
C : Preload gauge [SST: ST3127S000 (J-25765-A)]

Drive pinion lock nut : Refer to <u>DLN-136</u>, "Explodtightening torque : Refer to <u>DLN-136</u>, "Exploded View".

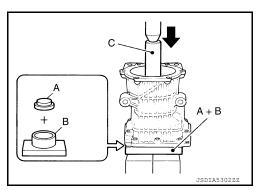
Pinion bearing preload : Refer to <u>DLN-142, "Preload</u> Torque".

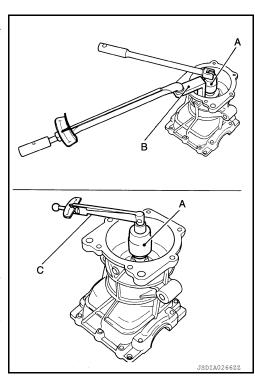
CAUTION:

- Adjust the lower limit of the drive pinion lock nut tightening torque first.
- If the preload torque exceeds the specified value, replace collapsible spacer and tighten it again to adjust. Never loose n drive pinion lock nut to adjust the preload torque.
- After adjustment, rotate drive pinion back and forth 2 to 3 times to check for unusual noise, rotation malfunction, and other malfunctions.



Never install rear cover at this timing.





< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: R145]

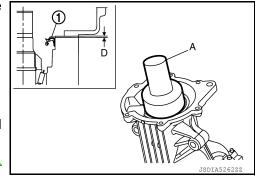
- 12. Check and adjust drive gear runout, tooth contact, and drive gear to drive pinion backlash. Refer to <u>DLN-131</u>, "Adjustment".
- 13. Remove dummy cover set [SST: KV381086S1 ()], then install rear cover, and side oil seal. Refer to DLN-126, "Disassembly and Assembly".
- 14. Check total preload torque. Refer to DLN-131, "Adjustment".
- 15. Using the drift (A) [SST: ST35271000 (J-26091)], install drive pinion oil seal ① within the dimension (D) shown as follows.

D: 0.8 - 1.2 mm (0.031 - 0.047 in)

CAUTION:

Inspection

- · 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.
- Install electric controlled coupling assembly. Refer to <u>DLN-122</u>, <u>"Disassembly and Assembly"</u>.



INFOID:0000000011278426

INSPECTION AFTER DISASSEMBLY

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).

Oil Seal

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

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SERVICE DATA AND SPECIFICATIONS (SDS)

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General Specifications

INFOID:0000000011278427

[REAR FINAL DRIVE: R145]

Applied model		AWD
		QR25DE
		CVT
Final drive model		R145
Gear ratio		2.466
Number of teeth (Drive gear/Drive pinion)		37/15
Number of pinion gears		2
Drive pinion	adjustment spacer type	Collapsible
0.1	Recommended oil	Refer to MA-11, "Fluids and Lubricants".
Oil	Oil capacity (Approx.) ℓ (US pt, Imp pt)	0.55 (1-1/8, 1)

Preload Torque

INFOID:0000000011278428

Unit: N·m (kg-m, in-lb)

Item	Standard
Pinion bearing (P1)	0.69 – 1.18 (0.07 – 0.12, 7 – 10)
Side bearing (P2)	0.66 - 1.00 (0.07 - 0.10, 6 - 8)
Side bearing to pinion bearing (Total preload) (Total preload = P1 + P2)	1.35 – 2.18 (0.14 – 0.22, 12 – 19)

Drive Gear Runout

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	Unit: mm (in)
Item	Standard
Drive gear back face runout	0.05 (0.0020) or less

Backlash

INFOID:0000000011278430

Unit: mm (in)

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

Differential Side Gear Clearance

INFOID:0000000011278431

Unit: mm (in)

Item	Standard
Side gear backlash (Clearance between side gear and differential case)	0.10 (0.004) or less (Each gear should rotate smoothly without excessive resistance during differential motion.)