SECTION DLN DRIVELINE c

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< PRECAUTION > PRECAUTION PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT **PRF-TENSIONER**" INFOID:000000011153077

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. DLN

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 Igni-Н tion 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 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.

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.

Service Notice or Precautions for Transfer

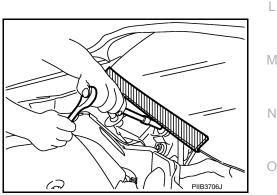
- After overhaul refill the transfer with new transfer oil.
- Check the oil level or replace the oil only with the vehicle parked on level surface.
- · During removal or installation, keep inside of transfer clear of dust or dirt.
- Replace all tires at the same time. Always use tires of the proper size 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

Special Service Tool

INFOID:000000011153081 B

[TRANSFER: TY21C]

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.		Removing ring gear bearing (left) inner race (transfer case side)	DLN E
KV381054S0 (J-34286)	ZZA0810D	Removing ring gear shaft oil seal	F
Puller			G
	ZZA0601D		Н
ST3127S000 (J-25765-A)		Measuring preload torque	
Preload gauge			I
	ZZA0503D		J

Commercial Service Tool

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	Description	L
	Loosening nuts, screws and bolts	
		Μ
¥ PIIB1407E		Ν
	Removing gear ring bearing inner race (adapter case side)	0
		Ρ
	PIB1407E	Loosening nuts, screws and bolts PIB1407E Removing gear ring bearing inner race (adapter case side)

PREPARATION

< PREPARATION >

[TRANSFER: TY21C]

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	
	NT115	
Drift a: 44 mm (1.73 in) dia. b: 33 mm (1.3 in) dia.		Installing ring gear shaft oil seal
	ab	
Puller	NT115	Removing ring gear bearing (left) inner race
		(transfer case side)
	NT077	
Drift	N1077	Installing oil seal (installing pinion bearing
a: 70 mm (2.76 in) dia. b: 60 mm (2.36 in) dia.	ab	seal)
	NT115	
Drift a: 78 mm (3.07 in) dia. b: 68 mm (2.68 in) dia.		Installing side oil seal (installing transfer cover oil seal)
Replacer	NT115	 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.	ab	(וומוזכו נמשל שועל)
	NT115	

PREPARATION

< PREPARATION >

[TRANSFER: TY21C]

Tool name		Description
Drift a: 62 mm (2.44 in) dia. b: 58 mm (2.28 in) dia.		Installing ring gear bearing (right) inner race (transfer cover side)
	V NT115	
Drift a: 73.5 mm (2.894 in) dia.	a	Installing ring gear bearing (left) outer race (transfer case side)
Drift	SCIA5338E	Installing ring gear bearing (right) outer race
a: 87 mm (3.43 in) dia.	a	(transfer cover side)
	SCIA5338E	
Drift a: 20 mm (0.79 in) dia.		Removing drive pinion
Drift	SCIA5338E	Installing pinion bearing
a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia.		
Drift	NT115	Installing companion flange
a: 40 mm (1.57 in) dia. b: 25 mm (0.98 in) dia.		
	NT115	

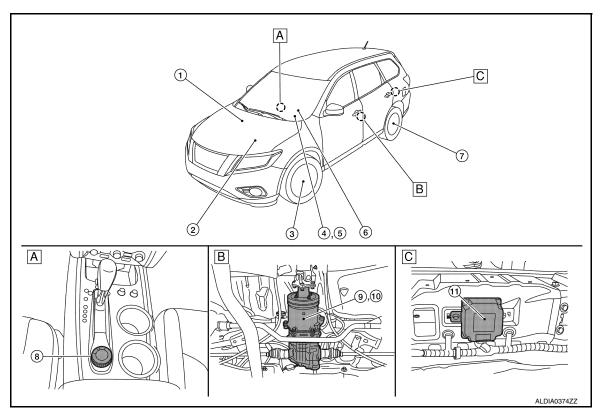
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< SYSTEM DESCRIPTION > SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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- A. Center console area
- B. Rear final drive assembly
- C. Inside storage room

No.	Component parts	Reference/Function
1	ABS actuator and electric unit (control unit)	Transmits/receives the signals for control of 4WD system via CAN com- munication line to/from 4WD control unit. For transmitting/receiving mainly signals, refer to <u>DLN-15, "4WD SYSTEM : System Description"</u> . Refer to <u>BRC-11, "Component Parts Location"</u> (Type 1) or <u>BRC-139,</u> <u>"Component Parts Location"</u> (Type 2) for detailed installation location.
2	ECM	Transmits/receives the signals for control of 4WD system via CAN com- munication line to/from 4WD control unit. For transmitting/receiving mainly signals, refer to <u>DLN-15, "4WD SYSTEM : System Description"</u> . Refer to <u>EC-20, "ENGINE CONTROL SYSTEM : Component Parts Loca- tion"</u> (USA and Canada) or <u>EC-534, "ENGINE CONTROL SYSTEM :</u> <u>Component Parts Location"</u> (Mexico) for detailed installation location.
3	Front wheel sensor	BRC-13, "Wheel Sensor and Sensor Rotor" (Type 1) or BRC-141, "Wheel Sensor and Sensor Rotor" (Type 2)
4	Combination meter	Transmits/receives the signals for control of 4WD system via CAN com- munication line to/from 4WD control unit. For transmitting/receiving mainly signals, refer to <u>DLN-15, "4WD SYSTEM : System Description"</u> . Refer to <u>MWI-6, "METER SYSTEM : Component Parts Location"</u> for de- tailed installation location.
5	Vehicle information display	DLN-11. "Vehicle Information Display"• 4WD mode indicator• Torque distribution indicator• 4WD warning indicator

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[TRANSFER: TY21C]

No.	Component parts	Reference/Function	
6	Steering angle sensor	Transmits/receives the signals for control of 4WD system via CAN com- munication line to/from 4WD control unit. For transmitting/receiving mainly signals, refer to <u>DLN-15, "4WD SYSTEM : System Description"</u> . Refer to <u>STC-4, "Component Parts Location"</u> for detailed installation loca- tion.	AB
7	Rear wheel sensor	BRC-13, "Wheel Sensor and Sensor Rotor" (Type 1) or BRC-141, "Wheel Sensor and Sensor Rotor" (Type 2)	C
8	4WD shift switch	DLN-11, "4WD Shift Switch"	0
9	Electric controlled coupling	DLN-11, "Electric Controlled Coupling"	
10	4WD solenoid	DLN-11, "4WD Solenoid"	DLN
11	4WD control unit	DLN-11, "4WD Control Unit"	

4WD Control Unit

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

- Front wheel driving conditions is available by fail-safe function if malfunction is detected in 4WD system.
- 4WD actuator relay is integrated with 4WD control unit, and supplies 4WD solenoid with voltage.

4WD Solenoid

Controls electric controlled coupling by command current from 4WD control unit.

Electric Controlled Coupling

Electric controlled coupling is integrated with rear final drive and transmits driving force to rear final drive. For operation, refer to <u>DLN-13</u>, "Operation <u>Description</u>".

4WD Shift Switch

Every time 4WD shift switch is pressed, AUTO mode, 2WD mode and LOCK mode switch each other.

Vehicle Information Display

4WD MODE INDICATOR

4WD mode indicator displays the state of the 4WD mode.

TORQUE DISTRIBUTION INDICATOR

The number of bars shows driving force distributed to each tire. **NOTE:** The driving force distribution may not match actual one. This is not a system malfunction.

4WD WARNING INDICATOR

4WD warning indicator is displayed when there is a malfunction in 4WD system. 4WD warning indicator indicates the vehicle is in fail-safe mode and shifting to front-wheel drive or 4-wheel drive (rear-wheels still have some driving torque).

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COMPONENT PARTS

< SYSTEM DESCRIPTION >

Condition	4WD warning indicator
4WD system malfunction	ALDIA0417ZZ (Indicator lamp illuminates)
Protection function is activated due to heavy load to electric con- trolled coupling. (4WD system is not malfunctioning and 4WD sys- tem changes to front wheel drive.) When this indication is displayed, refer to <u>DLN-67. "Description"</u> .	AWD ALDIA0417ZZ (Indicator lamp blinks rapidly)
Large difference in diameter of front/rear tires When this indication is displayed, refer to <u>DLN-68. "Diagnosis Pro-</u> cedure".	ALDIA0417ZZ (Indicator lamp blinks slowly)
Other than above (system normal)	OFF

CAUTION:

• 4WD warning indicator is displayed due to data reception error, CAN communication error etc.

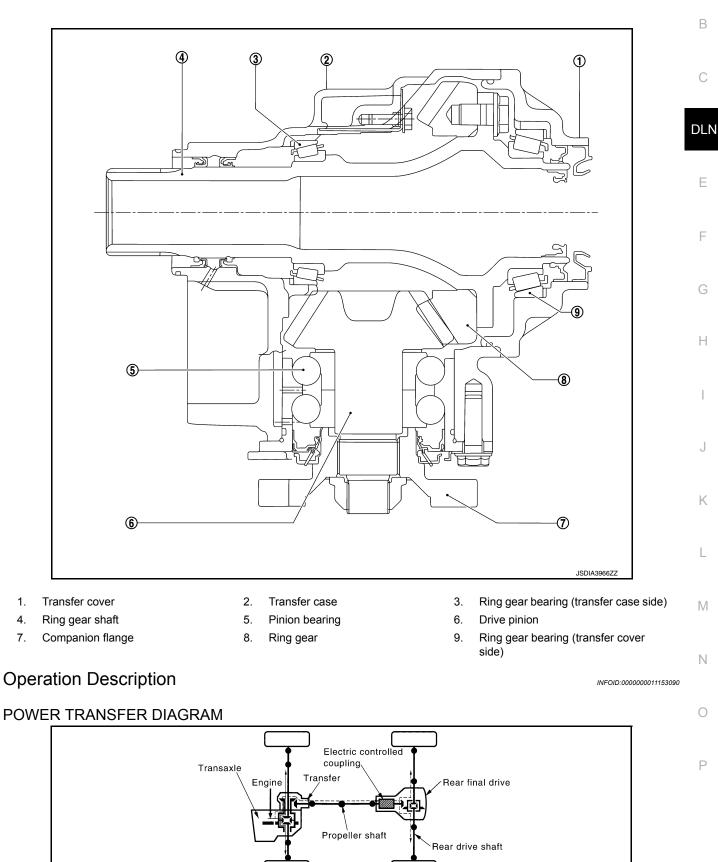
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STRUCTURE AND OPERATION

Sectional View

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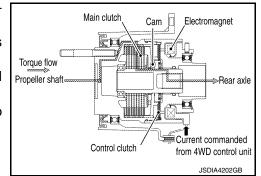
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STRUCTURE AND OPERATION

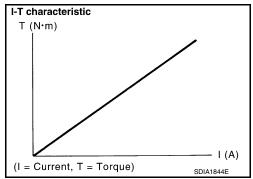
< SYSTEM DESCRIPTION >

ELECTRIC CONTROLLED COUPLING

- 1. The 4WD control unit supplies command current to electric controlled coupling (4WD 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.
- 4. The main clutch transmits torque to front wheels according to pressing power.



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

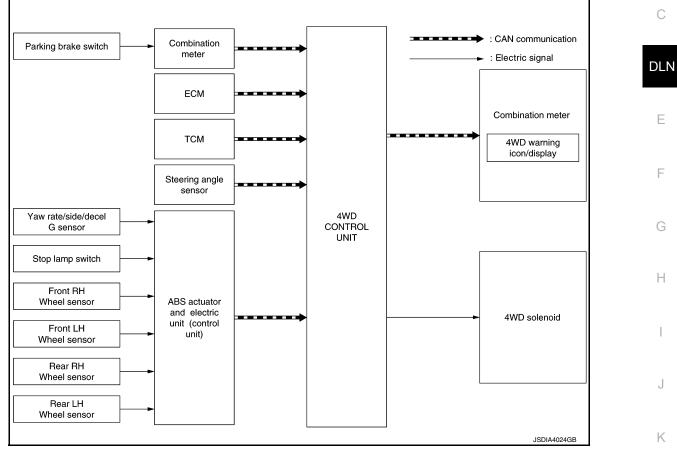


[TRANSFER: TY21C]

SYSTEM 4WD SYSTEM

4WD SYSTEM : System Description

SYSTEM DIAGRAM



INPUT/OUTPUT SIGNAL It transmits/receives each signal from the following 4WD control unit via CAN communication line.

Component parts	Function
ABS actuator and electric unit (control unit)	 Transmits the following signals via CAN communication to 4WD control unit. Vehicle speed signal Stop lamp switch signal (brake signal) Yaw rate sensor signal Side G sensor signal Decel G sensor signal
ECM	Transmits the following signals via CAN communication to 4WD control unit.Accelerator pedal position signalEngine speed signal
ТСМ	Transmits the following signals via CAN communication to 4WD control unit.Input shaft revolution signalCVT ratio signal
Combination meter	Transmits conditions of parking brake switch signal via CAN communication to 4WD con- trol unit.
Combination meter	Receives the following signals via CAN communication from 4WD control unit. • 4WD warning indicator signal
Steering angle sensor	Transmits conditions of steering angle sensor signal via CAN communication to 4WD control unit.

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< SYSTEM DESCRIPTION >

DESCRIPTION

- 4WD 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.
- 4WD mode makes possible stable driving possible with no wheel spin, on snowy roads or other slippery surfaces.
- 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.

4WD SYSTEM : Fail-Safe

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- If any malfunction occurs in 4WD electrical system, and control unit detects the malfunction, 4WD warning indicator on information display is displayed to indicate system malfunction.
- When 4WD warning indicator is displayed, vehicle changes to front-wheel drive or shifts to 4-wheel drive (rear-wheels still have some driving torque).

DTC	4WD warning indicator	Possible cause	Vehicle condition
C1201		Internal malfunction of 4WD control unit	
C1203		ABS malfunction Vehicle speed signal error 	•
C1204		 Internal malfunction of electronic controlled coupling Malfunction of 4WD solenoid power supply circuit (open or short) Malfunction of 4WD solenoid command current 	-
C1205	4WD	 Internal malfunction of 4WD control unit Malfunction of 4WD solenoid power supply circuit (ground short) 	Front-wheel drive or shifts to 4-wheel drive (Rear- wheels still have some
C1209		Malfunction of 4WD shift switch or 4WD shift switch cir- cuit	driving torque)
C1210	ALDIA0417ZZ (Indicator lamp illuminates)	Malfunction of engine control system	
P1804		Internal malfunction of 4WD control unit	•
P181F		Writing unit characteristics is incomplete.	•
U1000		CAN communication error Malfunction of 4WD control unit	
U1010		Malfunction of 4WD control unit	*

4WD SYSTEM : Protection Function

INFOID:000000011153093

4WD system activates its protection function (shuts down 4WD system temporarily) if 4WD system detects high load continuously or the front wheel tire size differs from the rear tire size. (4WD system is automatically restored if 4WD system no longer detects any overload or the tire size difference is eliminated.)

SYSTEM

< SYSTEM DESCRIPTION >

4WD warning indicator	Possible cause	Vehicle condition	1
4WD	Drive train parts in protection mode. It is not malfunction. (Internal temperature rise of electronic controlled coupling) When this message is displayed, refer to <u>DLN-67</u> , <u>"Descrip-</u>		
ALDIA0417ZZ Quick blinking	tion".		
(Blinking for approximately 1 minute and then turned OFF)		Shuts down 4WD system tem- porarily	C
		(Front wheel drive)	
4WD	Malfunction in each tire or different tire diameter		
	When this message is displayed, refer to <u>DLN-68</u> , "Diagno- sis Procedure".		
ALDIA0417ZZ Slow blinking Continuing to blink until ignition switch is turned OFF)			

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DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

CONSULT Function

INFOID:0000000011153094

[TRANSFER: TY21C]

APPLICATION ITEMS

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

Diagnostic test mode	Function
ECU Identification	4WD 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 4WD control unit can be read.
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the 4WD control unit 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

4WD control unit part number can be read.

SELF DIAGNOSTIC RESULT

Refer to DLN-23, "DTC Index".

When "PRSNT" is displayed on self-diagnosis result.

• The system is presently malfunctioning.

When "PAST" is displayed on self-diagnosis 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.

Freeze Frame Data Item	Description
IGN COUNTER [0 - 39]	 The number of times that ignition switch is turned ON after the DTC is detected is displayed. When "0" is displayed: It indicates that the system is presently malfunctioning. When except "0" is displayed: It indicates that system malfunction in the past is detected, but the system is presently normal. NOTE: Each time when ignition switch is turned OFF to ON, numerical number increases in 1→2→338→39. When the operation number of times exceeds 39, the number do not increase and "39" is displayed until self-diagnosis is erased.

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 4WD actuator relay (integrated in 4WD control unit) is displayed.
4WD WARN LAMP [On/Off]	Control status of 4WD warning indicator is displayed.
4WD MODE SW [2WD/AUTO/LOCK]	4WD shift switch status is displayed.
4WD MODE MON [2WD/AUTO/LOCK]	Control status of 4WD is displayed.
DIS-TIRE MONI [mm]	Improper size tire installed condition is displayed.

Revision: September 2014

DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21C]

Monitor item (Unit)	Remarks	
P BRAKE SW [On/Off]	Parking switch signal status via CAN communication line is displayed.	A
BATTERY VOLT [V]	Power supply voltage for 4WD control unit	
THRTL POS SEN [%]	Throttle opening status is displayed.	В
ETS SOLENOID [A]	Monitored value of current at 4WD solenoid	
FR RH SENSOR [km/h] or [mph]	Wheel speed calculated by front RH wheel sensor signal is displayed.	
FR LH SENSOR [km/h] or [mph]	Wheel speed calculated by front LH wheel sensor signal is displayed.	С
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.	DLN

ACTIVE TEST

Use this mode to determine and identify the details of a malfunction based on self-diagnostic results or data monitor. 4WD control unit gives drive signal to actuator with receiving command from CONSULT to check operation of actuator.

Test item	Condition	Description	F
ETS S/V (Detects 4WD solenoid)	 Vehicle stopped Engine running No DTC detected 	 Change command current value to 4WD 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 	G

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 4WD control unit.	J
UNIT CHARACTERISTICS WRITE	Writes the unit characteristics of electric controlled coupling to 4WD control unit.	-

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ECU DIAGNOSIS INFORMATION 4WD CONTROL UNIT

Reference Value

INFOID:000000011153095

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 LAWP SW	Brake pedal: Released	Off
ENG SPEED SIG	Engine stopped (Engine speed: Less than 400 rpm)	Stop
ENG SPEED SIG	Engine running (Engine speed: 400 rpm or more)	Run
ETS ACTUATOR	Engine stopped (Ignition switch: ON)	Off
ETS ACTUATOR	Engine running	On
	4WD warning indicator: ON	On
4WD WARN LAMP	4WD warning indicator: OFF	Off
	4WD shift switch: 2WD	2WD
4WD MODE SW	4WD shift switch: AUTO	AUTO
	4WD shift switch: LOCK (State of hold of LOCK position)	LOCK
	4WD shift switch: 2WD	2WD
	4WD shift switch: AUTO	AUTO
4WD MODE MON	4WD shift switch: AUTO \Rightarrow LOCK (State of 4WD indicator lamp turn ON)	$AUTO \Rightarrow LOCK$
	4WD shift switch: LOCK \Rightarrow AUTO (State of LOCK indicator lamp turn ON)	$LOCK \Rightarrow AUTO$
	Vehicle running with normal size tire installed	0 – 4 mm
DIS-TIRE MONI	Vehicle running with improper size tire installed (Front/rear tire size difference, wear condition)	4 – 8 mm, 8 – mm
	Parking brake operated	On
P BRAKE SW	Parking brake not operated	Off
BATTERY VOLT	Always	Battery voltage
THRTL POS SEN	When depressing accelerator pedal (Value rises gradually in response to throttle position.)	0 – 100%
	Engine running At idle speed 	Approx. 0.000 A
ETS SOLENOID	Engine running 3,000 rpm or more constant 	Approx. 0.000 – 1.800 A*
	Vehicle stopped	0.00 km/h (0.00 mph)
FR 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)
FR LH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Nearly matches the speed meter display ($\pm 10\%$ or less)

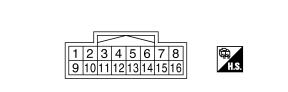
4WD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

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

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

TERMINAL LAYOUT



PHYSICAL VALUES

	nal No. e color)	Description			Condition	Value (Approx.)
+	-	Signal name	Input/ Output		Condition	
1	Ground	4WD solenoid power sup-	Output	Engine speed: At idle)	0 V
(LG)	Ground	ply	Output	Engine speed: 3,000	rpm or more constant	2.5 V*
2 (V)	Ground	4WD solenoid ground	_		Always	0 V
					4WD shift switch: 2WD	Battery voltage
5	Ground	4WD shift switch (AUTO)	Output	Ignition switch: ON	4WD shift switch: AUTO	0 V
(V)	Cround		output		4WD shift switch: LOCK (State of hold of LOCK position)	0 V
7	Ground	Ignition switch	Input	Ignition switch: ON		Battery voltage
(W)	Ground	Ignition switch	Input	Ignition switch: OFF		0 V
8 (L)	_	CAN-H	Input/ Output		-	_
9 (SB)	Ground	Power supply (4WD sole- noid)	Input		Always	Battery voltage
10 (B)	Ground	Ground			Always	
11 (B)	Ground	Ground	_	Always		0 V
					4WD shift switch: 2WD	0 V
12	Ground	4WD shift switch (2WD)	Output	Ignition switch: ON	ition switch: ON 4WD shift switch: AUTO	
(BG)		10 400 SNIT SWITCH (2000)		<u> </u>	4WD shift switch: LOCK (State of hold of LOCK position)	Battery voltage

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[TRANSFER: TY21C]

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4WD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

	nal No. color)	Description			Condition	Value (Approx.)
+	-	Signal name Input/ Output 4WD shift switch (LOCK) Output Power supply (4WD control unit) Input CAN-I Input/		Condition	value (Applox.)	
					4WD shift switch: 2WD	Battery voltage
14	Ground	4WD shift switch (LOCK)	Output	Ignition switch: ON	4WD shift switch: AUTO	Battery voltage
(BR)			DCK) Output Ignition switch: ON 4WD shift switch: 2WD 4WD shift switch: AUTO 4WD shift switch: LOCK (State of hold of LOCK posi	4WD shift switch: LOCK (State of hold of LOCK position)	0 V	
15 (Y)	Ground		Input		Always	Battery voltage
16 (P)	_	CAN-L	Input/ Output		_	_

*: The values are changed by throttle 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

INFOID:000000011153096

- If any malfunction occurs in 4WD electrical system, and control unit detects the malfunction, 4WD warning indicator on information display is displayed to indicate system malfunction.
- When 4WD warning indicator is displayed, vehicle changes to front-wheel drive or shifts to 4-wheel drive (rear-wheels still have some driving torque).

DTC	4WD warning indicator	Possible cause	Vehicle condition
C1201		Internal malfunction of 4WD control unit	
C1203	-	ABS malfunction Vehicle speed signal error 	*
C1204		 Internal malfunction of electronic controlled coupling Malfunction of 4WD solenoid power supply circuit (open or short) Malfunction of 4WD solenoid command current 	-
C1205	4WD	 Internal malfunction of 4WD control unit Malfunction of 4WD solenoid power supply circuit (ground short) 	Front-wheel drive or shifts to 4-wheel drive (Rear- wheels still have some
C1209		Malfunction of 4WD shift switch or 4WD shift switch cir- cuit	driving torque)
C1210	ALDIA0417ZZ (Indicator lamp illuminates)	Malfunction of engine control system	-
P1804		Internal malfunction of 4WD control unit	-
P181F		Writing unit characteristics is incomplete.	-
U1000	-	CAN communication error Malfunction of 4WD control unit	*
U1010		Malfunction of 4WD control unit	*

Protection Function

INFOID:000000011153097

4WD system activates its protection function (shuts down 4WD system temporarily) if 4WD system detects high load continuously or the front wheel tire size differs from the rear tire size. (4WD system is automatically restored if 4WD system no longer detects any overload or the tire size difference is eliminated.)

4WD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21C]

4WD warning indicator	Possible cause	Vehicle condition	А
4WD	Drive train parts in protection mode. It is not malfunction. (Internal temperature rise of electronic controlled coupling)	is not malfunction. controlled coupling) to <u>DLN-67, "Descrip-</u> Shuts down 4WD system tem- porarily (Front wheel drive)	В
ALDIA0417ZZ	WD Drive train parts in protection mode. It is not malfunction. (Internal temperature rise of electronic controlled coupling) When this message is displayed, refer to DLN-67, "Description". ALDIA0417ZZ Shuts down porarily (Front whee WD Malfunction in each tire or different tire diameter When this message is displayed, refer to DLN-68, "Diagno- sis Procedure". ALDIA0417ZZ Malfunction in each tire or different tire diameter When this message is displayed, refer to DLN-68, "Diagno- sis Procedure".		С
Quick blinking (Blinking for approximately 1 minute and then turned OFF)		-	DL
			E
4WD	When this message is displayed, refer to DLN-68. "Diagno-		F
ALDIA0417ZZ Slow blinking (Continuing to blink until ignition switch is turned OFF)			G

DTC Inspection Priority Chart

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

Priority	Detected items (DTC)	
1	U1000 CAN COMM CIRCUIT U1010 CONTROL UNIT (CAN)	
2	C1201 CONTROLLER FAILURE C1205 4WD ACTUATOR RLY	
3	C1204 4WD SOLENOID	
4	C1203 ABS SYSTEM C1210 ENGINE SIGNAL 1	
5	• C1209 MODE SW	
6	P1804 CONTROL UNIT 3	
7	P181F INCOMP CALIBRATION	

DTC Index

INFOID:0000000011153099

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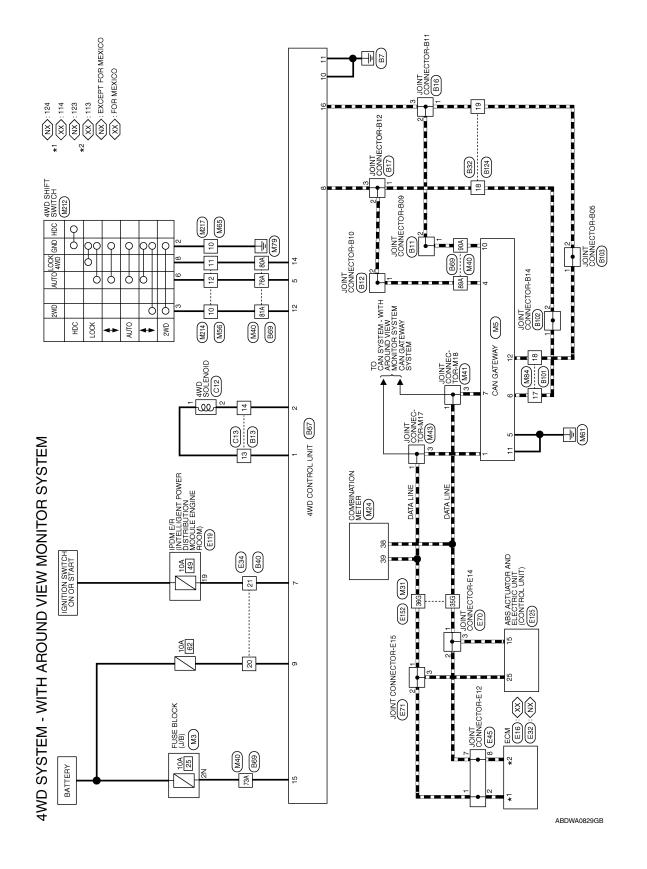
DTC	Display Item	Reference
C1201	CONTROLLER FAILURE	DLN-45, "DTC Logic"
C1203	ABS SYSTEM	DLN-46, "DTC Logic"
C1204	4WD SOLENOID	DLN-47, "DTC Logic"
C1205	4WD ACTUATOR RLY	DLN-50, "DTC Logic"
C1209	MODE SW	DLN-52, "DTC Logic"
C1210	ENGINE SIGNAL 1	DLN-55, "DTC Logic"
P1804	CONTROL UNIT 3	DLN-56, "DTC Logic"
P181F	INCOMP CALIBRATION	DLN-57, "DTC Logic"
U1000	CAN COMM CIRCUIT	DLN-58, "DTC Logic"
U1010	CONTROL UNIT (CAN)	DLN-59, "DTC Logic"

WIRING DIAGRAM

4WD SYSTEM

Wiring Diagram - With Around View Monitor System-

INFOID:0000000011153100



	A
Signal Name CAN-H CAN-L CAN-L GND CAN-L GND CAN-L -	B
Terminal No. Color of Mire 6 L L Mire 6 L L 11 B L 11 B L 112 P 12 P 12 P Mire 136G P Mire 6 L L 13 A 14 Color of 7 7 P Mire 136 P M	
	F
WITH AROUND VIEW MONITOR SYSTEM Connector No. M5 Connector Name Can GATEWAY Connector Color WHITE M Terminal No. Color of a 10 11 12 Terminal No. Color of a 10 11 12 Terminal No. Color of a 10 11 12 Connector No. M31 Connector No. M31 Connector Name MRE TO WIRE	16 76 36 46 56 116 26 36 46 56 120 36 46 56 120 36 46 56 120 36 46 56 120 220 220 26 120 220 256 46 56 120 220 256 266 376 386 120 220 250 240 426 450 450 120 220 250 240 426 450 450 450 120 220 250 250 40 450 450 450 10 220 250 100 250 100 450
Connector No. M5 Connector Name M5 Connector Name CAN GATEWAY Connector Name CAN GATEWAY Connector Name CAN GATEWAY Terminal No. Color of Signal 1 L CA 5 B Gill Connector Name WIRE TO WIRE	
	K
· · · · · · · · · · · · · · · · · · ·	Signal Name CAN-H CAN-H
CONNECT M3 FUSE BLOCK WHITE M1 M1 M1 M1 M1 M1 M1 M24 COMBINATION	
STEM C ctor No al No. Color al No. Color ctor No ctor No	Alignment Alignment 239 1 33 P 33 P
4WD SYS Connect Connect ZN ZN Connect Connect	ABDIA1103GB

< WIRING DIAGRAM >

4WD SYSTEM

[TRANSFER: TY21C]

Revision: September 2014

Connector No. M40	Terminal No.	No. Color of Wire	Signal Name	
Connector Color CBAV	73A	BG	1	Connector Name JOINT CONNECTOR-M18
	76A	>	1	
	80A	ВВ	I	
H S 14 24 34 44 54	81A	BG	I	
6A 7A 8A	89A	_	1	
11A12A15A15A15A15A15A15A15A15A22A	90A	٩	I	Terminal No. Kvire Signal Name
22A/23A/24A/25A/26A/27A/28A/29A/30A 314 172A 173A 173A 173A 173A 173A 173A 173A 174A 174A				c.
428,438,448,458,468,498,508				-
51A 52A 53A 54A 55A 56A 57A 58A 59A 60A 61A				
62A 53A 64A 65A 65A 65A 65A 58A 59A 70A]			
71A72A73A74A75A76A77A76A77A78A79A80A81A 82A83A84485A88A85A88A89A90A				
91A 92A 93A 94A 95A 04A 92A 88A 193A 00A				
Connector No M43	Connector No	r No M56		Connector No M65
e	Connecto	e	E TO WIRE	e e
Connector Color WHITE	Connector Color	r Color WHITE	TE	Connector Color WHITE
	प्रिंग	1 2 3 4	4 5 6 7 8 9 10 11 12	1 2 3 1
-1	H.S.	13 14 15 1	17 18 19 20 21	H.S.
Terminal No. Color of Signal Name	Terminal No.	No. Color of Wire	Signal Name	Terminal No. Vifre Signal Name
-	10	BG		10 B -
3 L	=	BR	1	

Revision: September 2014

M214 WIRE TO WIRE WHITE	Signal Name	E32 E32 Image: ECM ECM Image: ECM	
Connector No. M214 Connector Name WIRE T Connector Color WHITE H.S.	Terminal No. Color of Wire 10 BG 11 BR 12 V	Connector No. E32 Connector Name ECM (EXCEF Connector Color BLACK Italizatization I2312131103 (12112311031) (12112311031 (12112311031 (12112311031) (12112311031 (12112311031) (12112311031 (12112311031) (121123110) (12112110) (12112110) (12112110) (12111110) (1211110) (1211110) (1211110) (1211110) (12	
T	e		
Connector No. M212 Connector Name 4WD SHIFT SWITCH Connector Color BLACK	Color of Signal Name Wire B BG BB BB BB	No. E16 Name ECM (FOR MEXICO) Color GRAY Color GRAY 122 123 111 1101 100 100 128 129 113 1101 100 90 0. Color of Wire Signal Name CAN-L	
Connector No. Connector Name Connector Color	Terminal No. Color 3 W W	Connector No. Connector Name Connector Name Connector Color 13 113 113 113 113	
5 4 3 2 1 21 20 19 18 17	e l	e e	
Connector No. M84 Connector Name WIRE TO WIRE Connector Color WHITE	e Signal Name	M217 ame WIRE TO WIRE olor WHITE olor WHITE olor WHITE T 6 4 3 2 1 T 6 1 10 9 8 Color of Wire Signal Name - -	
Connector No. A Connector Name V Connector Color V Connector Color V (13) 231 30 25 (23) 130 25	Terminal No. Color of Wire 17 L 18 P	Connector No. M21 Connector Name WIR Connector Color WHI Terminal No. Color of 10 B	

Connector Num Connector Num<	WIFE Connector No. E45 WIFE Connector Name JOINT CONNECTOR-E12 Connector Name JOINT CONNECTOR-E12 Signal Name Terminal No. Color of Signal Name T Terminal No. Color of Signal Name Signal Name Terminal No. Color of Signal Name T Terminal No. Color of Signal Name NNECTOR-E15 Onnector Name Power Distribution Signal Name T T T T T T T T Signal Name T T T T Signal Name T T T T T T T T T T Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name T T T T T T T Signal Name Signal Name Signal Name Signal Name Signal Name Signal Name	Connector No.E70Connector NameJOINT CONNECTOR-E14Connector ColorBLACK	H.S.	Terminal No. Color of Wire Signal Name 1 P - 2 P - 3 P -	Connector No. E125 Connector Name ELECTRIC UNIT Connector Name ELECTRIC UNIT Connector Color BLACK	Terminal No. Color of Signal Name 15 P CAN-L	
Connector Name Connector Name	E34 WIRE TO WIRE Onnector Name Connector Name Provide	5 INT CONNECTOR-E12 JE			T E/R (INTELLIGENT FER DISTRIBUTION ULE ENGINE ROOM) TE 24 25 22 29 31 32 23 40 41 42 43 44 45 46 47 48 48		
TO WIRE TO WIRE Signal Name Signal Name Signal Name	E34 WIRE TO WIR WHITE CG CG CG SB BLACK BLACK SG SB SG SG SG SG SG SG SG SG SG SG SG SG SG	Connector No. E4: Connector Name JOI Connector Color BLU	S.				_
		TO WIRE	7 6 5 4 3 2 1 19 10 17 16 15 14 13	Signal Name 	SONNECTOR-E1	Signal Name	1 1

	1	٦	F							[Г	
			:	Signal Name	I			B12 JOINT CONNECTOR-B10 WHITE			Signal Name	1		
. C12 me_4WD 9	lor GRAY			Wire SB	>			0. B12 ame JOINT blor WHITI		Color of	Wire		-	
Connector No. C12 Connector Name Awn S01 ENOID	Connector Color GRAY		H.S.H	Terminal No.	2			Connector No. B12 Connector Name JOINT (Connector Color WHITE	国 H.S.		Terminal No.	- ~	1	
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Terminal No.	35G	36G						Connector No. B11 Connector Name JOINT (Connector Color WHITE	品.S.H		Terminal No.	- ~	J	
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			3136126 3236226	336326316	536526516	963G62G 373G72G71G 883G82G]				ame			
			⁵⁶ 46 36 26 16 106 96 86 76 66 26186176166156140	376366356340	500490648047048064504806430420 60059065806570580550540530520	700699068904670660650640630620 8007990786776756746736726 9006996886876860850846836826	95G 94G 93G 92G 91G 100G 99G 98G 97G 96G) WIRE			Signal Name	ı I		
Connector No. E152 Connector Name WIDE TO WIDE	or WHITE		50 46 35 25 16 100 96 86 76 66 210 26 16 16 210 26 86 76 66 210 26 16 16 16	416406396386376366356346336326	50G49G48G47G46G45G44G43G42G 61G60G59G58G57G56G55G54G53G52G	70G699G689G67G665G64G633G23 81G80G79678G77G7675G74373G723 90G895B8G87686685G84G833G2323	95G 94 100G 95	Connector No. C13 Connector Name WIRE TO WIRE Connector Color BLACK	2 3 7 3 8 4 8		Wire 0	97 >	-	
Connector No.	Connector Color			_				Connector No. Connector Nan Connector Colo			Terminal No.	5 4 4	_	

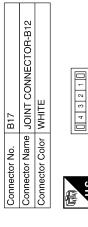
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< WIRING DIAGRAM >

[TRANSFER: TY21C]

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Connector No. B17 Connector Name JOI Connector Color WH	S.H	Terminal No. Wire		2	e
Connector No. B16 Connector Name JOINT CONNECTOR-B11 Connector Color WHITE		Signal Name	I	I	I
B16 B10IN r WHIT		Color of Wire	۹.	٩	۹.
Connector No. B16 Connector Name JOINT (Connector Color WHITE	国 H.S.	Terminal No. Wire	-	2	e
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Connector No. B13 Connector Name WIRE TO WIRE Connector Color BLACK	12 1 10 9 1 11 10 9 1 1				_
Connector No. B13 Connector Name WIRE T Connector Color BLACK		Terminal No. Wire	LG	>	-
lectc lecto	H.S.	ninal	13	4	



Signal Name	I	1	I
Color of Wire	Ţ	_	L
Terminal No. Color of Wire	F	2	3

Connector No.	No		ш	B32													
Connector Name WIRE TO WIRE	Nai	ne	>	1	ш	Ι¥.		₿	ш								
Connector Color WHITE	S S	õ	>	H	Ε	l m											
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SH	16	16 15 14 13 12 11 10 9	4	13	12	÷	9	0	80	~	9	2	4	e	~	-	
	32	32 31 30 29 28 27 26 25 24 23 22 21 20 19 18	8	29	28	27	26	25	24	23	22	21	20	19	18	17	
																	-

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Connector Name WIRE TO WIRE Connector Color WHITE

Connector No. B40

DLN-30

Signal Name	I	-
Color of Wire	Γ	Р
Terminal No.	18	19

ABDIA1105GB

12 24 23 22 21 18 19 20 1 2 3 4 13 14 15 16 H.S.

Signal Name	-	-
Color of Wire	SB	Μ
Terminal No.	20	12

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														_										1						1	A
													щ						13 14 15 16 29 30 31 32		Signal Name		1								В
												B101	RE TO WIR	WHITE			[7 8 9 10 11 12 13 14 15 16 23 24 25 26 27 28 29 30 31 32					_						(С
												r No. B1	Connector Name WIRE TO WIRE	r Color WI				-	4 5 6 20 21 22		No. Color of Wire			-						D	LN
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														-	1		T	1	-												F
Signal Name	1	IGNITION SWITCH	CAN-H	BATTERY (4WD SOLENOID)	GROUND	GROUND	2WD SW	1	LOCK SW	BATTERY (CONTROL UNIT)	CAN-L	Signal Name	1			1	1	I												(G
							(5)		~																					I	Η
No. Color of Wire		N		SB	8	8	BG	1	BR	> 	6	No. Color of	· ·																		
Terminal No.	9	7	8	6	10	=	12	13	14	15	16	Terminal No.	734	76A	80A	81A	89A	90A												,	J
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LINI							Signal Name	4WD SOLENOID (+)	4WD SOLENOID (-)		– AUTO SW					14	7A 6A]	21A 20A 19A 18A 17A 16A 15A 14A 13A 12A 11A	9/24A/23A/22A	41A 40A 39A 38A 37A 36A 35A 34A 33A 32A 31A 50A 49A 48A 47A 46A 45A 44A 43A 42A	A 54A 53A 52A 51A	70A 69A 68A 67A 66A 65A 64A 63A 62A	814 804 794 784 774 764 754 744 734 724 714 000 000 000 000 000 000 000 000 000	A 84A 83A 82A	91A	964				L
IOUTINO.		1		5 6 7 8 13 14 15 16			Signal	4WD SOL	4WD SOL		AUTO		RE TO WIRE	۲۲ ۲		5A 4A 3A 2A	94 8A		A 18A 17A 16A 15	1284/2/4/264/25	IA 38A 37A 36A 35 A 48A 47A 46A 45	A 58A 57A 56A 55	A 68A 67A 66A 65	A 78A 77A 76A 75	A 884 8/ 4 804 80	95A 94A 93A 92A 91A	VIE VOE VEE VOO			ſ	M
Connector No. B67 Connector Name Jum CONTEOU LINIT	Connector Color WHITE		\square	1 2 3 4 9 10 11 12 ⁻			o. Wire	ГG	>	1	>	No. B69		Color GRAY					21A 20A 15	304/25	41A 40A 36 50A 49	61A 60A 59	70A 69	81A 80A 75	90A 85		_			I	Ν
Connector No. Connector Nan	Connector C		E	H.S.	-		Terminal No.	-	2	e .	5 4	Connector No.	Connector	Connector Color			0 I]		(0
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4WD SYSTEM

< WIRING DIAGRAM >

Revision: September 2014

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B102	Connector Name JOINT CONNECTOR-B14	MHITE	
Connector No.	Connector Name	Connector Color WHITE	国 H.S.

Connector Name JOINT CONNECTOR-B05 Connector Color WHITE

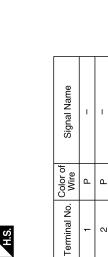
B103

Connector No.

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Signal Name	I	I
Color of Wire	L	Г
Terminal No.	Ļ	2

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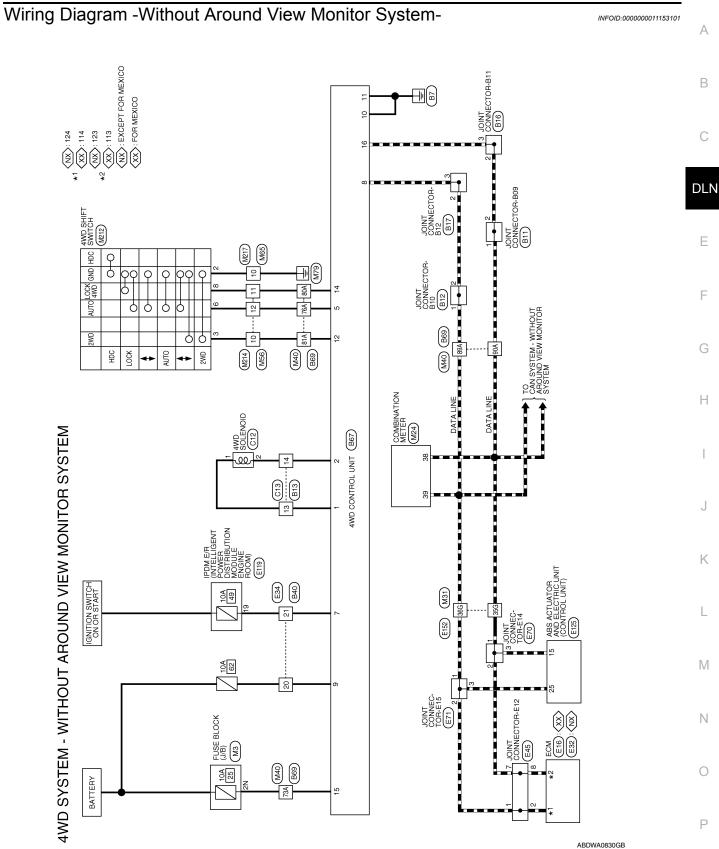
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Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE		U	5	
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Signal Name	I	I
Color of Wire	L	٩
Terminal No.	18	19

4WD SYSTEM



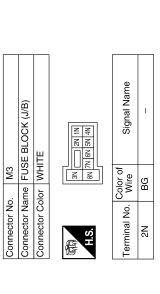


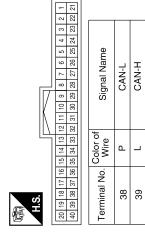
Connector Name COMBINATION METER

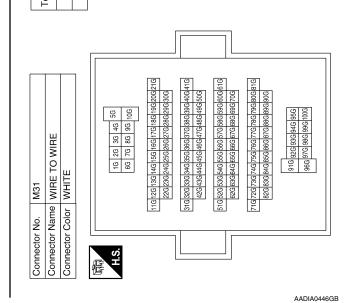
M24

Connector No.

Connector Color WHITE







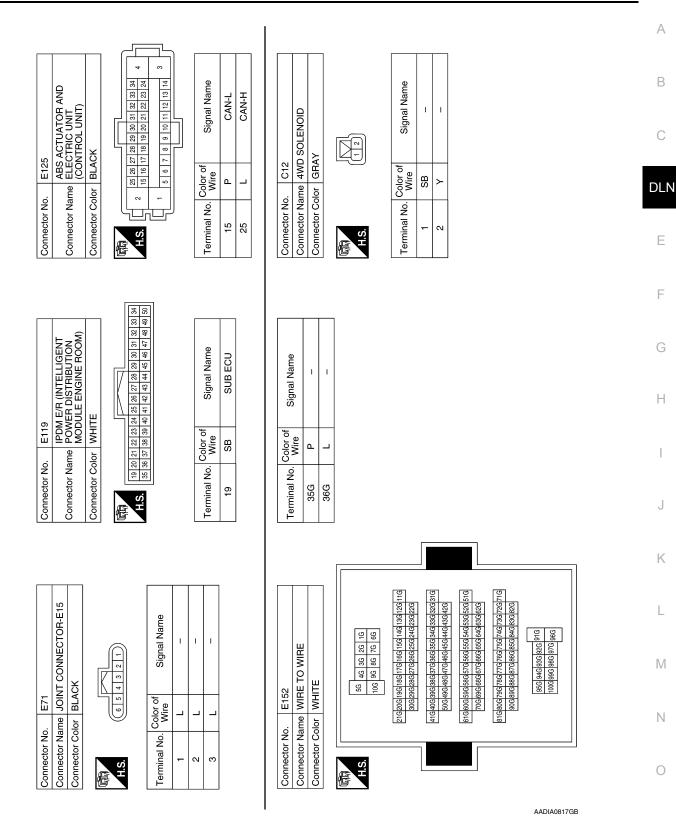
Signal Name	I	I	
Color of Wire	٩	Γ	
Terminal No.	35G	36G	

DLN-34

S RE TO WIRE ITE Signal Name 	No. M214 Name WIRE TO WIRE Color WHITE BG - BG - V -
tor No. M56 tor Name WIF stor Color WH 113 14 15 8 8 8 8 8 8	
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Signal Name	Connector No. M212 Connector Name 4WD SHIFT SWITCH Connector Color BLACK Terminal No. Color of Signal Name 3 BG Signal Name 8 BR
Double contract Color of Sine of Mine of Color of Mine of Sine	Connector No. M212 Connector Name 4WD SI Connector Color BLACK Terminal No. Color of 3 BG V 6 V 8 BR
Terminal No. 73A 76A 80A 89A 90A	Connector Nan Connector Nan Connector Nan Terminal No. 2 3 8 6 6
M40 M40 WIRE TO WIRE - GRAY - 1A 2A 5A 3A 1A 3A 5A 3A 5A 3A 5A 3A 5A 3A 5A 3A 5A 3A 22253 22A 23A 55A 23A 55A 23A 55A 3AA 55A 55A	M65 me MRE TO WIRE Ior WHITE 1 2 8 9 10 11 11 12 13 14 15 16 Wire Signal Name B -
Connector No. M40 Connector Name WIRE TO WIRE Connector Color GRAY 1A.S. 6A 7A 64 11A[12] 13A[14A[15A][66] 13A[22A]23A[23A]24A[25A]264] 14A[45A]466] 15A[22A]23A]24A[25A]266] 17A[72A]74A[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]666] 17A[72A]74[45A]74[45A]74[45A]766] 17A[72A]74[45A]74[45A]744] 17A[72A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[45A]74[45A]74[45A]764] 17A[72A]74[45A]74[4	Connector No. M65 Connector Name WIRE TO WIRE Connector Color WHITE Earlier Signal No. Color of Signal No. Wire 10 B -
	Connector Nary Connector Nary Connector Nary Connector Nary List 10 10

Connector No. E32 Connector Name ECM EXCEPT FOR MEXICO) Connector Color BLACK	Terminal No.Color of WireSignal Name123PCAN-L124LCAN-H	Connector No. E70 Connector Name JOINT CONNECTOR-E14 Connector Color BLACK Image: State of the stat
Connector No. E16 Connector Name ECM (FOR MEXICO) Connector Color GRAY	Terminal No. Color of Signal Name Wire Signal Name 113 P CAN-L 114 L CAN-H	Connector No. E45 Connector Name JOINT CONNECTOR-E12 Connector Name JOINT CONNECTOR-E12 Connector Color BLUE Image: State of the state o
Connector No. M217 Connector Name WIRE TO WIRE Connector Color WHITE	Terminal No. Color of Signal Name 10 B –	Connector No. E34 Connector Name WIRE TO WIRE Image: Second State Image: Second State

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< WIRING DIAGRAM >

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Connector Name WIRE TO WIRE Connector Color BLACK	Connector No. B11 Connector Name JOINT CONNECTOR-B09 Connector Color WHITE	ECTOR-B09	Connector No. B12 Connector Name JOINT CONNECTOR-B10 Connector Color WHITE	CTOR-B10
H. 1 2 3 4 13 5 6 7 8 13 1 1 12 14	国 H.S.		[] H.S.	
Terminal No. Color of Wire Signal Name 13 SB - 14 Y -	Terminal No. Color of Si Wire Si 2 P	Signal Name 	Terminal No. Color of Sign 1 L 2 L	Signal Name
Connector No. B13 Connector Name WIRE TO WIRE Connector Color BLACK	Connector No. B16 Connector Name JOINT CONNECTOR-B11 Connector Color WHITE	ECTOR-B11	Connector No. B17 Connector Name JOINT CONNECTOR-B12 Connector Color WHITE	:CTOR-B12
H. H.S. H.12 11 10 9	国43211 H.S.		· [1] [1] [1] [1] [1] [1] [1] [1] [1] [1]	
Terminal No. Wire Signal Name	Terminal No. Wire Sign	Signal Name	Terminal No. Color of Signal	Signal Name
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Connector No. B67 Connector Name 4WD CC Connector Color WHITE	H.S.	Terminal No. Color of Wire	2 2	20 4 1 1	5	Terminal No. Color of Wire		76A V 80A BR	81A BG	89A L	90A P	-
Connector No. B40 Connector Name WIRE TO WIRE Connector Color WHITE	H.S. 13 14 15 16 17 18 19 20 21 22 23 24	Terminal No. Color of Signal Name 20 SB –	21 W –			B69	Connector Name WINE IO WINE Connector Color GRAY		5A 4A 3A 2A 1A	10A 9A 8A		214/204/104/104/104/104/104/104/104/104/104/1

BATTERY (CONTROL UNIT) **IGNITION SWITCH** BATTERY (4WD SOLENOID) Signal Name GROUND LOCK SW CAN-H GROUND 2WD SW CAN-L I L Terminal No. Wire BG ВВ SB ≥ ш _ ш Т ≻ ٩ L 15 16 9 œ ი \sim

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CONTROL UNIT	
[7	
6 7 8 14 15 16	
Signal Name	
4WD SOLENOID (+)	
4WD SOLENOID (-)	

Signal Name	4WD SOLENOID (+)	4WD SOLENOID (-)	I	I	AUTO SW	
Color of Wire	ГG	~	I	Ξ	~	
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Signal Name	I
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BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000011153102

DETAILED FLOW

1.INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing <u>DLN-41</u>, "<u>Diagnostic</u> <u>Work Sheet</u>" 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 <u>DLN-22</u>. "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-DIAGNOSIS

With CONSULT

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

Is any DTC detected?

YES >> Record or print self-diagnosis results. GO TO 4.

NO >> GO TO 6.

4.RECHECK SYMPTOM

With CONSULT

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".

2. Perform DTC confirmation procedures for the error detected system.

NOTE:

If some DTCs are detected at the same time, determine the order for performing the diagnosis based on <u>LAN-</u> 21, "Trouble Diagnosis Flow Chart".

Is any DTC detected?

YES >> GO TO 5.

NO >> Check harness and connectors based on the information obtained by interview. Refer to <u>GI-47</u>, <u>"Intermittent Incident"</u>.

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 results for "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?

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

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YES >> GO TO 7. NO >> Check harness and connectors based on the information obtained by interview. Refer to <u>GI-47</u>, <u>"Intermittent Incident"</u>. **7.**FINAL CHECK

- 1. Check the reference value for 4WD control module.
- 2. 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

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 4WD mode.			
		□4WD warnin	g indicator is displayed.			
Symptom		□Heavy tight-	corner braking symptom	occurs		
e jp te		□Noise □	Vibration			
□Others ()
First occurren	се	□Recently	□Others ()
Frequency of	occurrence	□Always I	Under a certain condition	ons of Sometin	nes (time(s)/day)	
		□Irrelevant				
Climate con-	Weather	□Fine □C	loud □Rain □Sr	now DOthers ()
ditions	Temperature	□Hot □W	arm □Cool □Co	Id DTemperature	e (Approx.	°C)
	Relative humidity	□High □N	loderate DLow			
Road conditions □Urban area □Suburb area □High way □Mounting road (uphill or down hill) □Rough road □Rough road □						
Operation con	iditions, etc.	□Irrelevant □When engin □During drivir □During dece	g During accelerat	•	it speed driving r left curve)	

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[TRANSFER: TY21C]

Memo

ADDITIONAL SERVICE WHEN REPLACING 4WD CONTROL UNIT < BASIC INSPECTION > [TRANSFER: TY21C] ADDITIONAL SERVICE WHEN REPLACING 4WD CONTROL UNIT

	A
Description	
When replacing 4WD control unit, unit characteristics writing is required.	В
Work Procedure	
1.PERFORM WRITING UNIT CHARACTERISTICS	С
Perform writing unit characteristics of electric controlled coupling.	
>> Refer to <u>DLN-44. "Work Procedure"</u> .	DLN
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UNIT CHARACTERISTICS WRITING

< BASIC INSPECTION >

UNIT CHARACTERISTICS WRITING

Description

When replacing 4WD control unit, rear final drive assembly and/or electric controlled coupling, unit characteristics of electric controlled coupling writing is required.

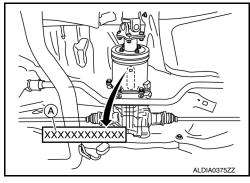
Work Procedure

1. UNIT CHARACTERISTICS WRITING

With CONSULT Confirm the un

- 1. Confirm the unit characteristics (A) of electric controlled coupling.
 - NOTE:
- Unit characteristics is 12-digit alphanumeric. 2. Turn the ignition switch OFF to ON.
- Select "UNIT CHARACTERISTICS WRITE" in "WORK SUP-PORT" for "ALL MODE AWD/4WD".
- 4. Input unit characteristics.
- 5. Select "Start".
- 6. Check that "UNIT CHARACTERISTICS WRITE COMPLETED" is displayed.

>> WORK END



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INFOID:000000011153107

[TRANSFER: TY21C]

DTC/CIRCUIT DIAGNOSIS C1201 4WD CONTROL UNIT

DTC Logic

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INFOID:000000011153108

[TRANSFER: TY21C]

DTC DETECTION LOGIC

control unit. DTC CONFIRMATION PROCEDURE 1. PRECONDITIONING If "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF wait at least 10 seconds before conducting the next test. >> GO TO 2. 2. PERFORM DTC CONFIRMATION Image: transmitted of the ignition switch OFF to ON. 2. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES YES >> Proceed to DLN-45. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure 1. PERFORM SELF-DIAGNOSIS Image: transe self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD".		Malfunction detected condition	Possible cause
PRECONDITIONING TDTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF vait at least 10 seconds before conducting the next test. >> GO TO 2. PERFORM DTC CONFIRMATION With CONSULT Turn the ignition switch OFF to ON. Perform self-diagnosis for "ALL MODE AWD/4WD". Diagnosis Procedure PERFORM SELF-DIAGNOSIS With CONSULT Frase self-diagnostic results for "ALL MODE AWD/4WD". PERFORM SELF-DIAGNOSIS With CONSULT Frase self-diagnostic results for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". Turn the ignition set for "ALL MODE AWD/4WD". PERFORM SELF-DIAGNOSIS With CONSULT Frase self-diagnosis for "ALL MODE AWD/4WD". Turn the ignition set for "ALL MODE AWD/4WD". Diagnosis for "AL	C1201 CONTROLLER FAILURE		Internal malfunction of 4WD control unit
f "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF vait at least 10 seconds before conducting the next test. >> GO TO 2. PERFORM DTC CONFIRMATION With CONSULT . Turn the ignition switch OFF to ON. Perform self-diagnosis for "ALL MODE AWD/4WD". PERFORM SELF-DIAGNOSIS With CONSULT . Erase self-diagnostic results for "ALL MODE AWD/4WD". PERFORM SELF-DIAGNOSIS With CONSULT . Erase self-diagnostic results for "ALL MODE AWD/4WD". Diagnosis for "ALL MODE AWD/4WD". Self-Cit201" detected? Self-Cit201" detected? With CONSULT . Erase self-diagnostic results for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". Self Cit201" detected? YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection	CONFIRMATION PROCEDUR	E	
wait at least 10 seconds before conducting the next test. >> GO TO 2. 2.PERFORM DTC CONFIRMATION With CONSULT 1. Turn the ignition switch OFF to ON. 2. Perform self-diagnosis for "ALL MODE AWD/4WD". s DTC "C1201" detected? YES YES >> Proceed to DLN-45. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure 1. PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". s DTC "C1201" detected? YES YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection	RECONDITIONING		
 2. PERFORM DTC CONFIRMATION With CONSULT Turn the ignition switch OFF to ON. Perform self-diagnosis for "ALL MODE AWD/4WD". <u>s DTC "C1201" detected?</u> YES >> Proceed to <u>DLN-45, "Diagnosis Procedure"</u>. NO >> INSPECTION END Diagnosis Procedure PERFORM SELF-DIAGNOSIS With CONSULT Erase self-diagnostic results for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". SDTC "C1201" detected? YES >> Replace 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u>. NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection with harness			always turn ignition switch OFF and
 PERFORM DTC CONFIRMATION With CONSULT Turn the ignition switch OFF to ON. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Proceed to <u>DLN-45. "Diagnosis Procedure"</u>. NO >> INSPECTION END Diagnosis Procedure I.PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u>. NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection	>> GO TO 2		
 2. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Proceed to DLN-45, "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure I.PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection 			
 1. Turn the ignition switch OFF to ON. 2. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Proceed to DLN-45. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure I.PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection 	Vith CONSULT		
NO >> INSPECTION END Diagnosis Procedure 1.PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u> . NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection	Turn the ignition switch OFF to ON Perform self-diagnosis for "ALL MC		
Diagnosis Procedure INFOLD:000000 1.PERFORM SELF-DIAGNOSIS Image: Self-diagnostic results for "ALL MODE AWD/4WD". 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". Image: Self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. Image: Self-diagnosis for "ALL MODE AWD/4WD". 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Image: Self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection		osis Procedure".	
 1.PERFORM SELF-DIAGNOSIS With CONSULT 1. Erase self-diagnostic results for "ALL MODE AWD/4WD". 2. Turn the ignition switch OFF, and then wait 10 seconds or more. 3. Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection 			
 With CONSULT Erase self-diagnostic results for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". DTC "C1201" detected? YES >> Replace 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u>. NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection 	gnosis Procedure		INFOID:000000011153109
 Erase self-diagnostic results for "ALL MODE AWD/4WD". Turn the ignition switch OFF, and then wait 10 seconds or more. Perform self-diagnosis for "ALL MODE AWD/4WD". <u>Is DTC "C1201" detected?</u> YES >> Replace 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u>. NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection 	ERFORM SELF-DIAGNOSIS		
YES >> Replace 4WD control unit. Refer to <u>DLN-72</u> , " <u>Removal and Installation</u> ". NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connection	Erase self-diagnostic results for "Al Turn the ignition switch OFF, and th Perform self-diagnosis for "ALL MC	nen wait 10 seconds or more.	
	S >> Replace 4WD control unit. >> Check 4WD control unit pir	n terminals for damage or loose cor	nnection with harness connector. If
,,	any items are damaded, re		
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C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Logic

INFOID:000000011153110

[TRANSFER: TY21C]

DTC DETECTION LOGIC

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

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.PERFORM DTC CONFIRMATION

(I) With CONSULT

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

Is DTC "C1203" detected?

- YES >> Proceed to DLN-46, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000011153111

1. PERFORM ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS

With CONSULT

Perform self-diagnosis for "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to <u>BRC-47, "DTC Index"</u> (Type 1) or <u>BRC-176, "DTC Index"</u> (Type 2). NO >> GO TO 2.

2.CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD 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 4WD control unit. Refer to <u>DLN-72, "Removal and Installation"</u>.
- NO >> Repair or replace error-detected parts.

C1204 4WD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

C1204 4WD SOLENOID

DTC Logic

INFOID:0000000011153112

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DTC DETECTION LOGIC

DTC	Displa	y item	Malfunction detected condition	Possible cause	
C1204	4WD SOLENO	DID	Malfunction related to 4WD solenoid has been detected.	 Internal malfunction of electronic con- trolled coupling Malfunction of 4WD solenoid power supply circuit (open or short) Malfunction of 4WD solenoid com- mand current 	C DLN
DTC CONFI	RMATION PR	OCEDURE			Ε
			has been previously conducted, a ng the next test.	lways turn ignition switch OFF and	F
^	O TO 2. I DTC CONFIR	RMATION			G
2. Perform s	gnition switch (elf-diagnosis fo		DE AWD/4WD".		Η
			sis Procedure".		I
Diagnosis I				INFOID:000000011153113	J
Diagnosis I Regarding Wi	Procedure	nformation, re	efer to <u>DLN-24, "Wiring Diagram -\</u> round View Monitor System-".	INFOID:000000011153113 Nith Around View Monitor System-	J
Diagnosis I Regarding Wi <u>"</u> or <u>DLN-33, "</u>	Procedure	nformation, re n -Without A	round View Monitor System-".		J K L
Diagnosis I Regarding Wi or <u>DLN-33.</u> 1. CHECK 4V 1. Turn the i 2. Disconne	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control	nformation, ro <u>n -Without A</u> O POWER SU OFF.	round View Monitor System-". JPPLY (1)	Nith Around View Monitor System-	J K L M
Diagnosis I Regarding Wi or <u>DLN-33.</u> 1. CHECK 4V 1. Turn the i 2. Disconne 3. Check the	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control	nformation, ro <u>n -Without A</u> O POWER SU OFF.	round View Monitor System-". JPPLY (1) s connector. htrol unit harness connector and gr	Nith Around View Monitor System-	L
Diagnosis I Regarding Wi or <u>DLN-33.</u> 1. CHECK 4V 1. Turn the i 2. Disconne 3. Check the	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control e voltage betwe	nformation, ro <u>n -Without A</u> O POWER SU OFF.	round View Monitor System-". JPPLY (1) s connector.	Nith Around View Monitor System-	L
Diagnosis I Regarding Wi or <u>DLN-33</u> , " 1. CHECK 4V 1. Turn the i 2. Disconne 3. Check the 4WD co Connector B67	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control e voltage betwee introl unit Terminal 9	oformation, ro n -Without A O POWER SU OFF. Unit harness een 4WD cor — Ground	round View Monitor System-". JPPLY (1) s connector. htrol unit harness connector and gr	Nith Around View Monitor System-	L
Diagnosis I Regarding Wi or DLN-33. " 1.CHECK 4V 1. Turn the i 2. Disconne 3. Check the 4WD co Connector B67 4. Turn the i CAUTION Never sta	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control e voltage betwee Introl unit Terminal 9 gnition switch (art the engine.	oformation, ron <u>n -Without A</u> O POWER SU OFF. Unit harness een 4WD cor Ground ON.	round View Monitor System-". JPPLY (1) s connector. htrol unit harness connector and gr Voltage	Nith Around View Monitor System-	L
Diagnosis I Regarding Wi or DLN-33. " 1.CHECK 4V 1. Turn the i 2. Disconne 3. Check the 4WD co Connector B67 4. Turn the i CAUTION Never sta 5. Check the	Procedure ring Diagram ir Wiring Diagram VD SOLENOID gnition switch (ct 4WD control e voltage betwee Introl unit Terminal 9 gnition switch (art the engine.	oformation, ron <u>n -Without A</u> O POWER SU OFF. Unit harness een 4WD cor Ground ON.	round View Monitor System-". JPPLY (1) s connector. htrol unit harness connector and gr Voltage Battery voltage htrol unit harness connector and gr	Nith Around View Monitor System-	L M N O
Diagnosis I Regarding Wi or DLN-33. " 1.CHECK 4V 1. Turn the i 2. Disconne 3. Check the 4WD co Connector B67 4. Turn the i CAUTION Never sta 5. Check the	Procedure ring Diagram in Wiring Diagram VD SOLENOID gnition switch (ct 4WD control e voltage betwee introl unit Terminal 9 gnition switch (art the engine. e voltage betwee	oformation, ron <u>n -Without A</u> O POWER SU OFF. Unit harness een 4WD cor Ground ON.	Image: Constraint of the second system	Nith Around View Monitor System-	L M N O

Is the inspection result normal?

YES >> GO TO 3.

C1204 4WD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

NO >> GO TO 2.

2. CHECK 4WD SOLENOID POWER SUPPLY (2)

- 1. Turn the ignition switch OFF.
- 2. Check the 10A fuse (#62)
- 3. Check the harness for open or short between 4WD control unit harness connector No.9 terminal and 10A fuse (#62).

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-16</u>, "Wiring Diagram <u>BAT-</u> <u>TERY POWER SUPPLY -"</u>.
- NO >> Repair or replace error-detected parts.

3.CHECK 4WD SOLENOID GROUND

Check the continuity between 4WD control unit harness connector and ground.

4WD co	ntrol unit		Continuity
Connector	Terminal		Continuity
B67	10	Ground	Existed
607	11	Ground	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK 4WD SOLENOID CIRCUIT (1)

Check the resistance between 4WD control unit harness connector.

4WD control unit			Resistance (Approx.)
Connector	Terr	Resistance (Approx.)	
B67	1	2	2.45 Ω

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 5.

5.CHECK 4WD SOLENOID CIRCUIT (2)

1. Remove 4WD solenoid harness connector.

2. Check the continuity between 4WD control unit harness connector and 4WD solenoid harness connector.

4WD co	ntrol unit	4WD s	olenoid	Continuity
Connector	Terminal	Connector Terminal		Continuity
B67	1	C12	1	Existed
100	2	012	2	LAISIEU

3. Check the continuity between 4WD control unit harness connector and the ground.

4WD control unit			Continuity	
Connector	Terminal		Continuity	
B67	1	Ground	Not existed	
607	2	Ground	NOT EXISTED	

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.CHECK 4WD SOLENOID

Check 4WD solenoid. Refer to DLN-49, "Component Inspection".

C1204 4WD SOLENOID

Is the inspection result norm	nal?			
YES >> GO TO 7.				A
		Replace electric controlled	coupling. Refer	to <u>DLN-120,</u>
				В
1. CHECK TERMINALS AN				
		age or loose connection with		-
Is the inspection result norm		e or loose connection with ha	ness connector.	С
•		DLN-72, "Removal and Instal	lation"	
	ce error-detected pa		<u>lation</u> .	
Component Inspection	n			DLN
				INFOID.000000011153114
1.CHECK 4WD SOLENOI	D			E
1. Turn the ignition switch	OFF.			
2. Disconnect 4WD solend	oid harness connect			
3. Check the resistance be	etween 4WD soleno	id harness connector termina	S.	F
4WD solenoid	Resistance (Approx.)			0
Terminal				G
1 2	2.45 Ω			
Is the inspection result norm				Н
YES >> INSPECTION E NO >> 4WD solenoid		Replace electric controlled	coupling Defer	to DLN 120
"Removal and I			coupling. Relei	$10 \underline{DLN-120},$
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< DTC/CIRCUIT DIAGNOSIS >

C1205 4WD ACTUATOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

C1205 4WD ACTUATOR RELAY

DTC Logic

INFOID:0000000011153115

[TRANSFER: TY21C]

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1205	4WD ACTUATOR RLY	Malfunction has been detected from 4WD actuator relay integrated with 4WD control unit, or malfunction related to 4WD solenoid has been detected.	 Internal malfunction of 4WD control unit Malfunction of 4WD solenoid power supply circuit (ground short)

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. PERFORM DTC CONFIRMATION

() With CONSULT

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

Is DTC "C1205" detected?

- YES >> Proceed to <u>DLN-50</u>, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000011153116

Regarding Wiring Diagram information, refer to <u>DLN-24</u>, "Wiring Diagram -With Around View Monitor System-" or <u>DLN-33</u>, "Wiring Diagram -Without Around View Monitor System-".

1.CHECK 4WD SOLENOID CIRCUIT (1)

- 1. Turn the ignition switch OFF.
- 2. Disconnect 4WD control unit harness connector.
- 3. Check the continuity between 4WD control unit harness connector and the ground.

4WD co	ntrol unit		Continuity	
Connector	Terminal		Continuity	
B67	1	Ground	Not existed	
501	2	Ground	Not existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2. CHECK 4WD SOLENOID

1. Disconnect 4WD solenoid harness connector.

2. Check the continuity between 4WD solenoid connector and the ground.

C1205 4WD ACTUATOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

4WD solenoid	_	Continuity					A
Terminal							
<u> </u>	Ground	Not existed					В
Is the inspectio	n result normal'	?					
YES >> GC) TO 3.						С
			I. Replace el	ectric controlle	ed coupling.	Refer to <u>DLN-120.</u>	
3.CHECK 4W	emoval and Inst						DLN
Check the cont	inuity between 4	4WD control uni	t harness con	nector and the	ground.		
4WD co	ntrol unit			-			E
Connector	Terminal		Continuity				
	1			-			F
B67	2	Ground	Not existed				
Is the inspectio	n result normal'	?		-			
) TO 4.						G
	• •	damaged parts.					
4.CHECK TEF	RMINALS AND	HARNESS CON	NECTORS				Н
		n terminals for c					-
		erminals for dan	nage or loose	connection with	n harness conr	iector.	
Is the inspectio							I
		acn narness cor d, replace 4WD				e again. When DTC	,
		damaged parts.				<u>a motanation</u> .	J
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							M
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							0
							-
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< DTC/CIRCUIT DIAGNOSIS >

C1209 MODE SW

DTC Logic

INFOID:0000000011153117

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when	Possible cause
C1209	MODE SW	More than two switch inputs are simulta- neously detected due to short circuit of 4WD shift switch.	Malfunction of 4WD shift switch or 4WD shift switch circuit.

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

(I) With CONSULT

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

Is DTC "C1209" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-52, "Diagnosis Procedure"</u>.

NO >> INSPECTION ĔND

Diagnosis Procedure

INFOID:0000000011153118

Regarding Wiring Diagram information, refer to <u>DLN-24</u>, "Wiring Diagram -With Around View Monitor System-" or <u>DLN-33</u>, "Wiring Diagram -Without Around View Monitor System-".

1.CHECK 4WD SHIFT SWITCH

1. Turn the ignition switch OFF.

- 2. Remove 4WD shift switch.
- 3. Check the continuity between 4WD shift switch connector terminals.

	4WD shift switch			Continuity	
Connector	Terminal		Condition	Continuity	
	2	3	4WD shift switch: 2WD	Existed	
	2	5	Except the above	Not existed	
M212	2	0	2 6	4WD shift switch: AUTO	Existed
	2	0	Except the above	Not existed	
	n	8	4WD shift switch: LOCK	Existed	
	2		Except the above	Not existed	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace 4WD shift switch. Refer to <u>DLN-73, "Removal and Installation"</u>.

2.CHECK 4WD SHIFT SWITCH CIRCUIT (1)

Check the continuity between 4WD shift switch harness connector and ground.

4WD shift switch		Ground	Continuity
Connector	Terminal	Crodina	Continuity
M212	2	Ground	Existed

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

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NO >> Repair or replace damaged parts.

3.CHECK 4WD SHIFT SWITCH CIRCUIT (2)

- 1. Disconnect 4WD control unit harness connector.
- Check the continuity between 4WD control unit harness connector and 4WD shift switch harness connector.

4WD control unit		4WD shift switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	5		3	Not existed
	5		6	Existed
	5	-	8	Not existed
	12		3	Existed
B67	12	M212	6	Not existed
	12		8	Not existed
	14		3	Not existed
	14		6	Not existed
	14		8	Existed

3. Check the continuity between 4WD control unit harness connector and ground.

4WD control unit		Ground	Continuity
Connector	Terminal	Ground	Continuity
	5		
B67	12	Ground	Not existed
	14		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK 4WD CONTROL UNIT OUTPUT SIGNAL

- 1. Connect 4WD control unit harness connector.
- 2. Turn the ignition switch ON.
- 3. Check the voltage between 4WD shift switch harness connector and ground.

4WD shi	ft switch	Ground	Voltago (Approx)
Connector	Terminal	Giouna	Voltage (Approx.)
	3		
M212	6	Ground	Battery voltage
	8		

Is the inspection result normal?

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

NO >> Replace 4WD control unit. Refer to DLN-72, "Removal and Installation".

Component Inspection

1.CHECK 4WD SHIFT SWITCH

1. Turn the ignition switch OFF.

- 2. Remove 4WD shift switch.
- 3. Check the continuity between 4WD shift switch connector terminals.

INFOID:0000000011153119

C1209 MODE SW

< DTC/CIRCUIT DIAGNOSIS >

	4WD	shift switch	Continuity
Terr	minal	Condition	Continuity
2	3	4WD shift switch: 2WD	Existed
2	5	Except the above	Not existed
2	6	4WD shift switch: AUTO	Existed
2	0	Except the above	Not existed
2	8	4WD shift switch: LOCK	Existed
2	0	Except the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace 4WD shift switch. Refer to <u>DLN-73. "Removal and Installation"</u>.

C1210 ECM

< DTC/CIRCUIT DIAGNOSIS >

C1210 ECM

DTC Logic

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[TRANSFER: TY21C]

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	
C1210	ENGINE SIGNAL 1	Malfunction related to engine signal has been detected.	Malfunction of engine control system	С
OTC CONFIR	MATION PROCEDUR	E		DLI
1.precondi	TIONING			DLI
	RMATION PROCEDURI	E" has been previously conducted, a ting the next test.	lways turn ignition switch OFF and	E
•	D TO 2. DTC CONFIRMATION			F
2. Perform se	ngine and drive at 30 km elf-diagnosis for "ALL MC	/h (19 MPH) or more for approximat DE AWD/4WD".	ely 1 minute.	G
		dure. Refer to <u>DLN-55, "Diagnosis F</u>	Procedure".	Η
Diagnosis F	Procedure		INFOID:000000011153121	
1.PERFORM	ECM SELF-DIAGNOSIS			I
	agnosis for "ENGINE".			J
(M		EC-105, "DTC Index" (USA and C	Canada) or <u>EC-610, "DTC Index"</u>	K
^	RMINALS AND HARNES	SS CONNECTORS		1
		or damage or loose connection with I	harness connector.	
is	er turning the ignition sw	ritch OFF, perform DTC confirmation control unit. Refer to <u>DLN-72, "Rema</u> ndented parts.		Μ
				Ν
				0

< DTC/CIRCUIT DIAGNOSIS >

P1804 4WD CONTROL UNIT

DTC Logic

INFOID:0000000011153122

[TRANSFER: TY21C]

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1804	CONTROL UNIT 3	Malfunction is detected in the memory (EEPROM) system of 4WD control unit.	Internal malfunction of 4WD control module.

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. PERFORM DTC CONFIRMATION

With CONSULT

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

Is DTC "P1804" detected?

- YES >> Proceed to <u>DLN-56, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000011153123

1.PERFORM SELF-DIAGNOSIS AGAIN

(I) With CONSULT

Perform "DTC CONFIRMATION PROCEDURE" (self-diagnosis) again. Refer to DLN-56, "DTC Logic".

Is DTC "P1804" detected?

- YES >> Replace 4WD control unit. Refer to <u>DLN-72</u>, "Removal and Installation".
- NO >> Check 4WD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace error-detected parts.

P181F INCOMPLETE CALIBRATION

< DTC/CIRCUIT DIAGNOSIS >

P181F INCOMPLETE CALIBRATION

DTC Logic

INFOID:000000011153124

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[TRANSFER: TY21C]

	Display item	Malfunction detected condition	Possible cause
P181F	INCOMP CALIBRATION	When incomplete writing unit character- istics of rear final drive is detected.	Writing unit characteristics is incomplete.
TC CONFIF	RMATION PROCEDUR	E	
.PRECOND	ITIONING		
"DTC CONF ait at least 1	IRMATION PROCEDURE 0 seconds before conduct	E" has been previously conducted, a ting the next test.	lways turn ignition switch OFF and
>> G	O TO 2.		
PERFORM	DTC CONFIRMATION		
	gnition switch OFF to ON. elf-diagnosis for "ALL MC		
YES >> Pi	roceed to <u>DLN-57, "Diagn</u> ISPECTION END	osis Procedure".	
-	Procedure		INFOID:00000001115312
.PERFORM	WRITING UNIT CHARA	CTERISTICS	
. Perform w . Turn the ig	f-diagnostic result for "ALI rriting unit characteristics. gnition switch OFF to ON elf-diagnosis for "ALL MC	Refer to <u>DLN-44, "Work Procedure</u> "	<u>.</u>
	ccept "P181F" detected?	DE AVVD/4000.	
	erform trouble diagnosis f	or detected DTC. Refer to <u>DLN-23. '</u>	'DTC Index".
YES >> Po	· · · · · · · ·		
YES >> Po NO >> G		IN	
YES >> Po NO >> G	SELF-DIAGNOSIS AGA	IN	
YES >> Po NO >> G PERFORM With CON erform "DTC	SELF-DIAGNOSIS AGA	IN EDURE" (self-diagnosis) again. Refe	er to <u>DLN-23, "DTC Index"</u> .

U1000 CAN COMM CIRCUIT

Description

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

INFOID:0000000011153127

INFOID:000000011153128

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	4WD control unit is not transmitting/re- ceiving CAN communication signal for 2 seconds or more.	 CAN communication error Malfunction of 4WD control unit

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. PERFORM DTC CONFIRMATION

(I) With CONSULT

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

Is DTC "U1000" detected?

- YES >> Proceed to DLN-58, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

Proceed to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:000000011153126

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

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 Logic

INFOID:000000011153130

INFOID:000000011153129

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1010	CONTROL UNIT (CAN)	Detecting error during the initial diagno- sis of CAN controller of 4WD control unit.	Malfunction of 4WD control unit
OTC CONFIR	MATION PROCEDURE		
1.PRECONDI	TIONING		
		" has been previously conducted, a	lways turn ignition switch OFF and
wait at least 10	seconds before conducti	ng the next test.	
>> GC	TO 2.		
2.PERFORM	OTC CONFIRMATION		
2. Perform se Is DTC "U1010"	nition switch OFF to ON. If-diagnosis for "ALL MOI		
	SPECTION END	<u>JSIS FIOCEdule</u> .	
Diagnosis P	rocedure		INFOID:00000001115313
1.CHECK 4W	O CONTROL UNIT		
		tor for disconnection and deformation	on.
YES >> Re	<u>n result normal?</u> place 4WD control unit. F pair or replace error-dete	Refer to <u>DLN-72, "Removal and Inst</u> cted parts.	allation".

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< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000011153132

[TRANSFER: TY21C]

Regarding Wiring Diagram information, refer to <u>DLN-24</u>, "Wiring Diagram -With Around View Monitor System-" or <u>DLN-33</u>, "Wiring Diagram -Without Around View Monitor System-".

1.CHECK 4WD CONTROL UNIT POWER SUPPLY (1)

- 1. Turn the ignition switch OFF.
- 2. Disconnect 4WD control unit harness connector.
- 3. Check the voltage between 4WD control unit harness connector and ground.

4WD co	ntrol unit		Voltage (Approx.)
Connector	Terminal		voltage (Approx.)
B67	7	Ground	0 V

4. Turn the ignition switch ON. CAUTION:

Never start the engine.

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

4WD co	ntrol unit		Voltage
Connector	Terminal		voltage
B67	7	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.CHECK 4WD CONTROL UNIT POWER SUPPLY (2)

- 1. Turn the ignition switch OFF.
- 2. Check the 10A fuse (#49).
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between 4WD control unit harness connector and IPDM E/R harness connector.

4WD co	ntrol unit	IPDN	/I E/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B67	7	E119	19	Existed

5. Check the continuity between 4WD control unit harness connector and the ground.

4WD co	ntrol unit		Continuity
Connector	Terminal		Continuity
B67	7	Ground	Not existed

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-29</u>, "Wiring Diagram <u>IGNITION POWER SUPPLY -"</u>.
- NO >> Repair or replace error-detected parts.

3.CHECK 4WD CONTROL UNIT POWER SUPPLY (3)

1. Turn the ignition switch OFF.

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

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21C]

4WD c	ontrol unit				
Connector	Termina			Voltage	
B67	15	Groui	nd	Battery voltage	-
CAUTIO Never st	art the eng	ine.) control u	init harness co	- onnector and ground.
4WD c	ontrol unit				-
Connector	Termina	— —		Voltage	
B67	15	Grou	nd	Battery voltage	-
NO >> (.CHECK 4	GO TO 5. GO TO 4. WD CONTF		OWER SI	JPPLY (4)	
. Check th . Disconne		(#25). ck (J/B) harn			connector and fuse block (J/B) harness connec-
4WD cor	trol unit	Fuse bl	ock (J/B)	Quatinuitu	-
4WD cor Connector	trol unit Terminal	Fuse ble Connector	ock (J/B) Termina	Continuity	_
Connector B67	Terminal 15	Connector M3	Termina 2N	Existed	- - - connector and the ground
Connector B67 . Check th 4WD c	Terminal 15 e continuity ontrol unit	Connector M3 between 4V	Termina 2N	Existed	connector and the ground.
Connector B67 . Check th 4WD c Connector	Terminal 15 e continuity ontrol unit Termina	Connector M3 between 4V	Termina 2N VD contro	Existed I unit harness Continuity	- connector and the ground. -
Connector B67 Check th 4WD c Connector B67	Terminal 15 e continuity ontrol unit Termina 15	Connector M3 between 4V	Termina 2N VD contro	Existed	- connector and the ground. -
Connector B67 6. Check th 4WD c Connector B67 s the inspec YES >> F	Terminal 15 e continuity ontrol unit Termina 15 ion result n Perform the ERY POW	Connector M3 between 4V	Termina 2N VD contro	Existed Existed I unit harness Continuity Not existed power supply	
Connector B67 Check th 4WD c Connector B67 Sthe inspec YES >> F NO >> F	Terminal 15 e continuity ontrol unit Terminal 15 cion result n Perform the ERY POW Repair or re	Connector M3 between 4V Groun ormal? trouble diag ER SUPPLY place error-d	Termina 2N VD contro nd nosis for letected p	Existed Existed I unit harness Continuity Not existed power supply arts.	-
Connector B67 . Check th 4WD c Connector B67 s the inspec YES >> F NO >> F O.CHECK 4 . Turn the . Disconne	Terminal 15 e continuity ontrol unit Termina 15 ion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite ect 4WD sol	Connector M3 between 4V between 4V Groun ormal? trouble diag ER SUPPLY place error-d IOID POWE tch OFF.	Termina 2N VD contro nd nosis for letected p R SUPPL ss connec	Existed Existed I unit harness Continuity Not existed power supply arts. Y (1)	-
Connector B67 Check th 4WD c Connector B67 Sthe inspec YES >> F NO >> F O.CHECK 4 . Turn the Disconne Check th	Terminal 15 e continuity ontrol unit Termina 15 ion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite ect 4WD sol	Connector M3 between 4V between 4V Groun ormal? trouble diag ER SUPPLY place error-d IOID POWE tch OFF.	Termina 2N VD contro nd nosis for letected p R SUPPL ss connec	Existed Existed I unit harness Continuity Not existed power supply arts. Y (1) Ctor. unit harness co	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u>
Connector B67 . Check th 4WD c Connector B67 s the inspec YES >> F NO >> F O.CHECK 4 . Turn the . Disconne . Check th	Terminal 15 e continuity ontrol unit Terminal 15 ion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite e t 4WD sol e voltage be	Connector M3 between 4V between 4V Groun ormal? trouble diagent trouble diagent ER SUPPLY place error-d IOID POWE toh OFF. lenoid harne etween 4WD	Termina 2N VD contro nd nosis for letected p R SUPPL ss connec	Existed Existed I unit harness Continuity Not existed power supply arts. Y (1)	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u>
Connector B67 . Check th 4WD c Connector B67 s the inspec YES >> F NO >> F O.CHECK 4 . Turn the . Disconne . Check th	Terminal 15 e continuity ontrol unit Termina 15 ion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite ect 4WD sol e voltage be ontrol unit	Connector M3 between 4V between 4V Groun ormal? trouble diagent trouble diagent ER SUPPLY place error-d IOID POWE toh OFF. lenoid harne etween 4WD	Termina 2N VD contro nd nosis for letected p R SUPPL ss connee) control u	Existed Existed I unit harness Continuity Not existed power supply arts. Y (1) Ctor. unit harness co	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u>
Connector B67 5. Check th 4WD c Connector B67 S the inspec YES >> F NO >> F D.CHECK 4 . Turn the Disconne B. Check th 4WD c Connector B67 . Turn the CAUTIO Never st	Terminal 15 e continuity ontrol unit Terminal 15 cion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite e voltage be ontrol unit Termina 9 ignition swite N: art the eng	Connector M3 between 4V between 4V Groun ormal? trouble diag ER SUPPLY place error-d IOID POWE toh OFF. lenoid harne etween 4WD Groun tch ON. ine.	Termina 2N VD contro nd gnosis for letected p R SUPPL ss connee) control u	I Existed I unit harness Continuity Not existed power supply arts. Y (1) ctor. unit harness control Voltage Battery voltage	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u>
Connector B67 5. Check th 4WD c Connector B67 S the inspect YES >> F NO >> F D.CHECK 4 . Turn the 2. Disconne 3. Check th 4WD c Connector B67 4. Turn the CAUTIO Never st 5. Check th	Terminal 15 e continuity ontrol unit Terminal 15 cion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite e voltage be ontrol unit Termina 9 ignition swite N: art the eng	Connector M3 between 4V between 4V Groun ormal? trouble diag ER SUPPLY place error-d IOID POWE toh OFF. lenoid harne etween 4WD Groun tch ON. ine.	Termina 2N VD contro nd gnosis for letected p R SUPPL ss connee) control u	I Existed I unit harness Continuity Not existed power supply arts. Y (1) ctor. unit harness complete Voltage Battery voltage unit harness complete	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u> onnector and ground.
Connector B67 5. Check th 4WD c Connector B67 S the inspect YES >> F NO >> F D.CHECK 4 . Turn the 2. Disconne 3. Check th 4WD c Connector B67 4. Turn the CAUTIO Never st 5. Check th	Terminal 15 e continuity ontrol unit Terminal 15 cion result n Perform the ERY POW Repair or rep WD SOLEN ignition swite ct 4WD sol e voltage be ontrol unit Terminal 9 ignition swite art the eng e voltage be	Connector M3 between 4V between 4V Groun ormal? trouble diag ER SUPPLY place error-d IOID POWE toh OFF. lenoid harne etween 4WD Groun toh ON. ine. etween 4WD	Termina 2N VD contro nd gnosis for letected p R SUPPL ss connee) control u	I Existed I unit harness Continuity Not existed power supply arts. Y (1) ctor. unit harness control Voltage Battery voltage	circuit. Refer to <u>PG-16, "Wiring Diagram - BAT-</u> onnector and ground.

Revision: September 2014

DLN-61

2015 Pathfinder

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21C]

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.CHECK 4WD SOLENOID POWER SUPPLY (2)

- 1. Turn the ignition switch OFF.
- 2. Check the 10A fuse (#62)
- Check the harness for open or short between 4WD control unit harness connector No.9 terminal and 10A fuse (#62).

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-16</u>, "Wiring Diagram - <u>BAT-</u> <u>TERY POWER SUPPLY -"</u>.

NO >> Repair or replace error-detected parts.

7. CHECK 4WD CONTROL UNIT GROUND

- 1. Turn the ignition switch OFF.
- 2. Check the continuity between 4WD control unit harness connector and ground.

4WD co	ntrol unit		Continuity		
Connector	Terminal				
B67	10	Ground	Existed		
807	11	Ground	Existed		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace error-detected parts.

4WD WARNING ICON/DISPLAY

4WD WARNING ICON/DISPLAT		
< DTC/CIRCUIT DIAGNOSIS >	[TRANSFER: TY21C]	
4WD WARNING ICON/DISPLAY		_
Diagnosis Procedure	F INFOID:000000011153133	Δ.
1. CHECK POWER SUPPLY AND GROUND CIRCUIT	E	З
Perform the trouble diagnosis for power supply and ground circuit. Refer to DLN-60,	"Diagnosis Procedure".	
Is the inspection result normal?	(С
YES >> GO TO 2. NO >> Repair or replace the error-detected parts.		2
2.PERFORM SELF-DIAGNOSIS (4WD CONTROL UNIT)		
(P) With CONSULT	D	LN
Perform self-diagnosis for "ALL MODE AWD/4WD".		
Is any detected?	E	_
YES >> Check the DTC. Refer to <u>DLN-23, "DTC Index"</u> . NO >> GO TO 3.		
3. PERFORM SELF-DIAGNOSIS (COMBINATION METER)	F	-
With CONSULT Perform self-diagnosis for "METER/M&A".		
Is any detected?	(G
YES >> Check the DTC. Refer to <u>MWI-29, "DTC Index"</u> . NO >> Perform the trouble diagnosis for combination meter power supply on <u>"COMBINATION METER : Diagnosis Procedure"</u> .	circuit. Refer to <u>MWI-61.</u> ⊦	-
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4WD ERROR IS DISPLAYED ON INFORMATION DISPLAY

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

4WD ERROR IS DISPLAYED ON INFORMATION DISPLAY

Description

4WD warning indicator is displayed on information display after the engine started.

Diagnosis Procedure

1.PERFORM SELF-DIAGNOSIS

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

Is any DTC detected?

YES >> Check the DTC. Refer to <u>DLN-23, "DTC Index"</u>.

NO >> GO TO 2.

2. CHECK 4WD WARNING ICON/DISPLAY

Perform the trouble diagnosis of the 4WD warning icon/display. Refer to <u>DLN-63, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

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

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

INFOID:0000000011153134

[TRANSFER: TY21C]

INFOID:0000000011153135

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS	
< SYMPTOM DIAGNOSIS > [TRANSFER: TY21C]	
HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS	А
Description INFOID:000000011153136	
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.	В
Diagnosis Procedure	С
1.PERFORM ECM SELF-DIAGNOSIS	
	DL
With CONSULT Perform self-diagnosis for "ENGINE". Is any DTC detected?	E
 YES >> Check the DTC. Refer to <u>EC-105, "DTC Index"</u> (USA and Canada) or <u>EC-610, "DTC Index"</u> (Mexico). NO >> GO TO 2. 	F
2.PERFORM SELF-DIAGNOSIS	
With CONSULT Perform self-diagnosis for "ALL MODE AWD/4WD".	G
Is DTC "U1000" detected? YES >> Proceed to LAN-21, "Trouble Diagnosis Flow Chart". NO >> GO TO 3.	Н
3. CHECK 4WD SOLENOID	
Perform the trouble diagnosis of the 4WD solenoid. Refer to <u>DLN-47, "Diagnosis Procedure"</u> .	
Is the inspection result normal?	
YES >> GO TO 4. NO >> Repair or replace the error-detected parts.	J
4. CHECK ELECTRIC CONTROLLED COUPLING	
 Turn the ignition switch OFF. Set the transaxle to neutral. Release the parking brake. 	K
 Lift up the vehicle. Rotate the propeller shaft by hand. Hold rear wheel of right and left lightly. 	L
Does rear wheel rotate?	
 YES >> Replace electric controlled coupling for mechanical malfunction (clutch sticking etc.). Refer to <u>DLN-120, "Removal and Installation"</u>. NO >> Check each harness connector pin terminal for disconnection. 	N
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VEHICLE DOES NOT ENTER 4WD MODE

< SYMPTOM DIAGNOSIS >

VEHICLE DOES NOT ENTER 4WD MODE

Description

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

Diagnosis Procedure

1.CHECK 4WD WARNING ICON/DISPLAY

Perform the trouble diagnosis of the 4WD warning icon/display. Refer to <u>DLN-63, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

YES >> GO TO 2.

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

2.CHECK PARKING BRAKE SWITCH SIGNAL

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

Monitor Item	Condition	Status
P BRAKE SW	When the parking brake pedal is 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-110, "Diagnosis Procedure"</u> (Type 1) or <u>BRC-241, "Diagnosis Procedure"</u> (Type 2).

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 <u>DLN-120</u>, "<u>Removal and Installation</u>".
- NO >> Check each harness connector pin terminal for disconnection.

INFOID:0000000011153138

INFOID:0000000011153139

4WD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

< SYMPTOM DIAGNOSIS >

4WD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

Description

INFOID:000000011153140

[TRANSFER: TY21C]

While driving, 4WD warning indicator is quickly blinked on information display and it turns OFF after 1 minute.

- 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 lamp blinks quickly. Both cases are not malfunction. Refer to <u>DLN-22</u>, "Protection Function".
- When this symptom occurs, stop vehicle and allow it to idle for some times. Blinking will stop and system will ^C 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:0000000011153141

[TRANSFER: TY21C]

While driving, 4WD warning indicator is slowly blinked on information display.

Diagnosis Procedure

INFOID:0000000011153142

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

With CONSULT

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

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

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

Check 4WD control unit harness connector for disconnection.

Is the inspection result normal?

- YES >> Replace 4WD control unit. Refer to <u>DLN-72. "Removal and Installation"</u>.
- NO >> Repair or replace the error-detected parts.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING [TRANSFER: TY21C]

< SYMPTOM DIAGNOSIS >

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000011153143

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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 В parts.

Reference		DLN-70. "Inspection"		DLN-77, "Exploded View"	DLN-77. "Exploded View"	DLN-77, "Exploded View"	DLN-84, "Inspection"	DLN-84, "Inspection"	C DLN	
SUSPECTED P/ (Possible cause		TRANSFER OIL (Level Iow)	TRANSFER OIL (Wrong)	TRANSFER OIL (Level too high)	LIQUID GASKET (Damaged)	O-RING (Worn or damaged)	OIL SEAL (Worn or damaged)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	F G H
Symptom Noise Transfer oil leakage		1	2				3	3	3	-
			3	1	2	2	2			

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PERIODIC MAINTENANCE TRANSFER OIL

Inspection

TRANSFER OIL LEAKS

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

TRANSFER OIL LEVEL

CAUTION:

Do not start engine while checking transfer oil level.

1. 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 <u>MA-15</u>, "FOR USA <u>AND CANADA : Fluids and Lubricants"</u> (United States and Canada) or <u>MA-17</u>, "FOR MEXICO : Fluids and Lubricants" (Mexico).
- Set a new gasket onto filler plug, and install it in the transfer and tighten to specified torque. Refer to <u>DLN-93</u>, "<u>Exploded View</u>". CAUTION:

Do not reuse gasket.

Draining

CAUTION:

Do not start engine while working.

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

← : Front

 Set a new gasket onto filler plug, and install it in the transfer and tighten to specified torque. Refer to <u>DLN-93</u>, "Exploded View". CAUTION:

Do not reuse gasket.

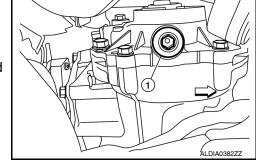


CAUTION:

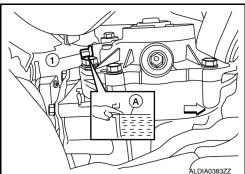
Do not start engine while checking transfer oil level.

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

: Front



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INFOID:000000011153145

TRANSFER OIL

Transfer oil grade and viscosity	: Refer to <u>MA-15, "FOR USA</u> <u>AND CANADA : Fluids and</u> <u>Lubricants"</u> (United States and Canada) or <u>MA-17, "FOR</u> <u>MEXICO : Fluids and Lubri-</u>	A B
Transfer oil capacity	<u>cants"</u> (Mexico). : Refer to <u>DLN-97, "General</u> <u>Specifications"</u> .	С
. Set a new gasket onto filler pl <u>93, "Exploded View"</u> . CAUTION:	lug, and install it in the transfer and tighten to specified torque. Refer to <u>DLN-</u>	DL
Do not reuse gasket.		E
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< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION 4WD CONTROL UNIT

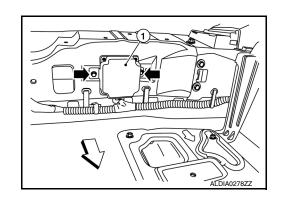
Removal and Installation

REMOVAL

- 1. Disconnect the negative battery terminal. Refer to PG-95. "Exploded View".
- 2. Remove storage box. Refer to <u>INT-30, "Exploded View"</u>.
- 3. Remove 4WD control unit bolts (<).

<⊐ : Front

- 4. Disconnect 4WD control unit harness connector.
- 5. Remove 4WD control unit (1).



INSTALLATIONInstallation is in the reverse order of removal.Tighten 4WD control unit bolts to specified torque.

4WD control unit bolts : 10.1 N·m (1.0 kg-m, 7 ft-lb)

CAUTION:

Do not drop or shock 4WD control unit.

Reset electronic systems as necessary. Refer to <u>PG-89</u>, "ADDITIONAL SERVICE WHEN REMOVING BAT-<u>TERY NEGATIVE TERMINAL</u> : Special Repair Requirement".

INFOID:000000011153147

< REMOVAL AND INSTALLATION >

4WD SHIFT SWITCH

Removal and Installation

18, "Exploded View".

REMOVAL

- 1. Remove the CVT shift selector finisher. Refer to <u>IP-18, "Exploded View"</u>.
- 2. Remove the 4WD lock switch finisher (1).

3. Remove the front seat climate control switch bracket screws (1) and the CVT shift selector indicator lamp screws (2). Refer to P-

4. Separate the CVT shift selector indicator lamp from the CVT shift selector finisher by pressing down on the pawls. (): Pawls

5. Remove the 4WD lock switch from the CVT shift selector indicator lamp.

INSTALLATION

Installation is in the reverse order of removal.

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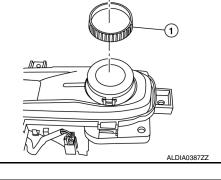
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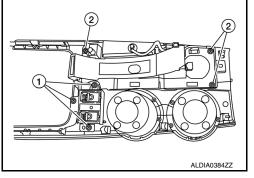
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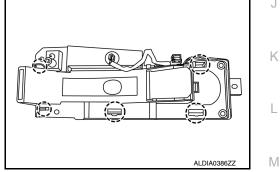
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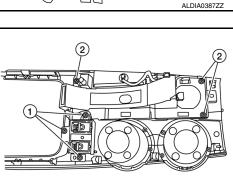
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< REMOVAL AND INSTALLATION >

TRANSFER COVER

Removal and Installation

INFOID:0000000011153149

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-94</u>, "Disassembly".

TRANSFER ASSEMBLY

Exploded View

INFOID:000000011153150 В

SEC. 310•330		
35 (3.6, 26)		35.3 (3.6, 26)
0		میں 3 (3.6, 26)
🔽 44.0 (4.5, 32)		
		JSDIA4207GB
1. Transfer assembly	2. Transfer gusset	3. Rear gusset
⊐: Front</td <td></td> <td></td>		
emoval and Installatio	n	INFOID:000000011153151
OTE: nen removing components s	such as bases tubes/lines etc.	oon or plug oppnings to provent fluid from spill
e .		cap or plug openings to prevent fluid from spill-
l.	Such as hoses, lubes/lines, etc., t	ap or plug openings to prevent huld norn spin-
l.		ap or plug openings to prevent huld from spin-
Drain the transfer oil. Refe Remove exhaust manifold CAUTION:		oval and Installation (bank 1)".
MOVAL Drain the transfer oil. Refe Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s	er to <u>DLN-70, "Draining"</u> . I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack.	oval and Installation (bank 1)". /st.
MOVAL Drain the transfer oil. Refe Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s	er to <u>DLN-70, "Draining"</u> . I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack.	oval and Installation (bank 1)".
MOVAL Drain the transfer oil. Refe Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s Remove the steering gear "Removal and Installation Remove rear gusset and t	er to <u>DLN-70, "Draining</u> ". I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. ⁻ and linkage. Refer to <u>ST-58, "Re</u> <u>- 4WD"</u> (4WD). transfer gusset.	oval and Installation (bank 1)". /st.
MOVAL Drain the transfer oil. Reference Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s Remove the steering gear "Removal and Installation Remove rear gusset and the Remove transaxle assemble	er to <u>DLN-70, "Draining"</u> . I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. - and linkage. Refer to <u>ST-58, "Re</u> - <u>4WD"</u> (4WD).	oval and Installation (bank 1)". /st.
MOVAL Drain the transfer oil. Reference Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s Remove the steering gear "Removal and Installation Remove rear gusset and the Remove transaxle assemile CAUTION:	er to <u>DLN-70, "Draining</u> ". I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. ⁻ and linkage. Refer to <u>ST-58, "Re</u> <u>- 4WD"</u> (4WD). transfer gusset.	oval and Installation (bank 1)". /st. moval and Installation - 2WD" (2WD) or <u>ST-60.</u>
MOVAL Drain the transfer oil. Reference Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s Remove the steering gear "Removal and Installation Remove rear gusset and the Remove transaxle assemile CAUTION: Be careful not to damage	er to <u>DLN-70, "Draining"</u> . I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. and linkage. Refer to <u>ST-58, "Re</u> <u>- 4WD"</u> (4WD). transfer gusset. bly to transfer assembly bolts. e gear ring oil seal inside of CN	oval and Installation (bank 1)". /st. moval and Installation - 2WD" (2WD) or <u>ST-60.</u>
MOVAL Drain the transfer oil. Reference Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a se Remove the steering gear "Remove the steering gear "Remove rear gusset and the Remove transaxle assemile CAUTION: Be careful not to damage Dolt No.	er to <u>DLN-70, "Draining"</u> . d (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. • and linkage. Refer to <u>ST-58, "Re</u> <u>- 4WD"</u> (4WD). transfer gusset. bly to transfer assembly bolts. e gear ring oil seal inside of C (A) (B)	oval and Installation (bank 1)". /st. moval and Installation - 2WD" (2WD) or <u>ST-60.</u>
MOVAL Drain the transfer oil. Reference Remove exhaust manifold CAUTION: Handle carefully to avoid Support transaxle with a s Remove the steering gear "Removal and Installation Remove rear gusset and the Remove transaxle assemile CAUTION:	er to <u>DLN-70, "Draining"</u> . I (bank 1). Refer to <u>EM-33, "Rem</u> d any shock to three way cataly suitable jack. and linkage. Refer to <u>ST-58, "Re</u> <u>- 4WD"</u> (4WD). transfer gusset. bly to transfer assembly bolts. e gear ring oil seal inside of CN	oval and Installation (bank 1)". /st. moval and Installation - 2WD" (2WD) or <u>ST-60.</u> /T. ():():() ():():() ():():() ():():() ():():() ():():() (

DLN-75

• After removing transfer from transaxle, always replace differential side oil seal of the transaxle side with new one. Refer to TM-208, "Removal and Installation".

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TRANSFER ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

INSTALLATION

Installation is in the reverse order of removal.

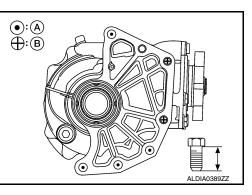
 When installing the transfer to the transaxle, install the bolts following the standard below.

Bolt No.	(A)	(B)
Quantity	4	2
Bolt length " ℓ " mm (in)	40 (1.57)	40 (1.57)

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-70, "Refilling"</u>.

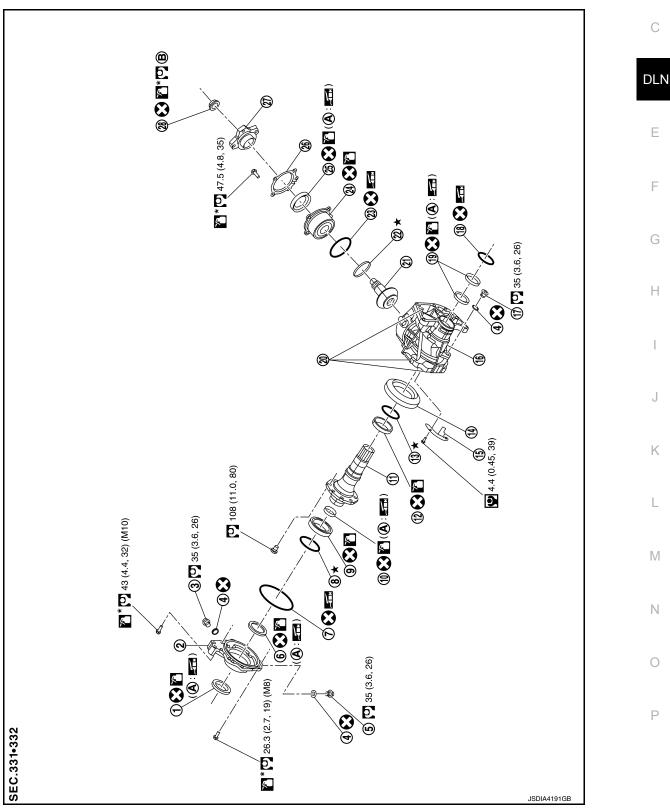


UNIT DISASSEMBLY AND ASSEMBLY TRANSFER COVER

Exploded View

INFOID:000000011153152

[TRANSFER: TY21C]



TRANSFER COVER

< UNIT DISASSEMBLY AND ASSEMBLY >

- 1. Oil seal
- 4. Gasket
- 7. O-ring
- 10. Drive 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
- A. Oil seal lip

- 2. Transfer cover
- 5. Drain plug
- 8. 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
- B. Comply with the assembly procedure when tightening. Refer to <u>DLN-</u> <u>79. "Assembly"</u>.

- 3. Filler plug
- 6. Oil seal
- 9. Ring gear bearing (transfer cover side)

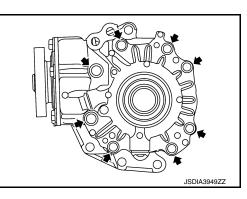
[TRANSFER: TY21C]

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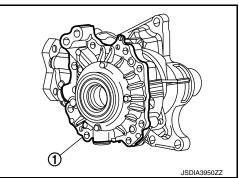
- 12. Ring gear bearing (transfer case side)
- 15. Baffle plate
- 18. O-ring
- 21. Drive pinion
- 24. Pinion bearing assembly
- 27. Companion flange

Disassembly

1. Remove transfer cover bolts (+).

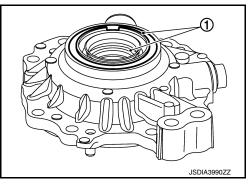


- 2. Lightly tap transfer cover (1) with a plastic hammer to remove transfer cover.
- 3. Remove O-ring from transfer cover. CAUTION:
 - Do not use a tool.
 - Do not damage transfer cover.



 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 tool.

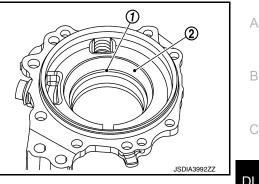


TRANSFER COVER

< UNIT DISASSEMBLY AND ASSEMBLY >

- Remove the ring gear bearing adjusting shim (transfer cover side) (1) and ring gear bearing outer race (transfer cover side) (2) using a suitable tool.
- 6. Remove drain plug and gasket.
- 7. Remove filler plug and gasket.
- Perform inspection after disassembly. Refer to <u>DLN-80, "Inspec-</u> tion".





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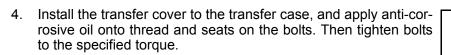
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Assembly

- 1. Select the ring gear bearing adjusting shim (transfer cover side). Refer to <u>DLN-87, "Adjustment"</u>.
- Install the selected ring gear bearing adjusting shim (transfer cover side) (1) and ring gear bearing outer race (transfer cover side) (2) using a suitable tool.
 CAUTION:
 - Do not reuse ring gear bearing.
 - Apply gear oil to the ring gear bearing.
- 3. Install gasket onto drain plug and install them to transfer cover.

Do not reuse gasket.



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

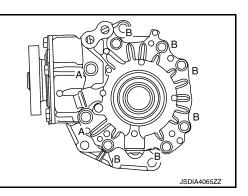
NOTE:

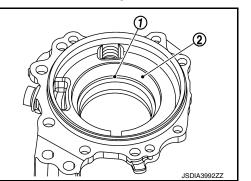
At this timing, O-ring installing to transfer cover is not necessary. Install O-ring after tooth contact is checked.

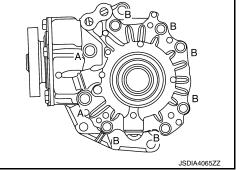
 Check backlash, tooth contact, total preload and companion flange runout. Refer to <u>DLN-87. "Adjustment"</u>. CAUTION:

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 tool.
 - Do not damage O-ring.
- 8. Install the transfer cover to the transfer case, and apply anti-corrosive oil onto thread and seats on the bolts. Then tighten bolts to the specified torque.
 - (A) : M10 bolt
 - (B) : M8 bolt







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TRANSFER COVER

< UNIT DISASSEMBLY AND ASSEMBLY >

- 9. Drive the transfer cover oil seals using a suitable tool.
 - (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.

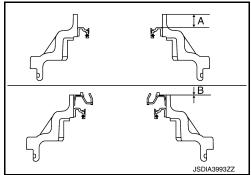
Inspection

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.



[TRANSFER: TY21C]

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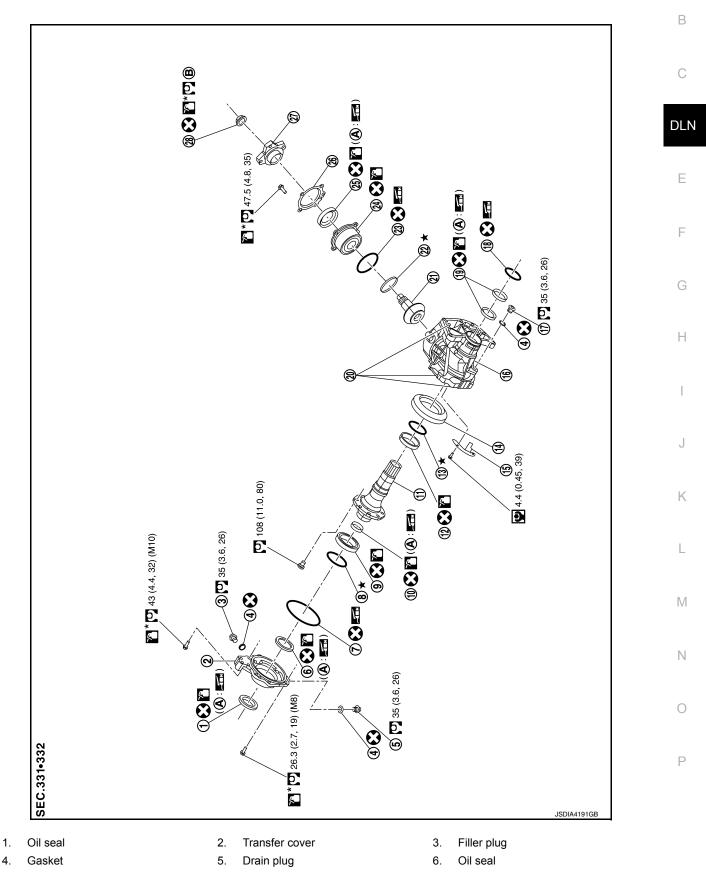
< UNIT DISASSEMBLY AND ASSEMBLY >

RING GEAR SHAFT

Exploded View

INFOID:000000011153156

А



< UNIT DISASSEMBLY AND ASSEMBLY >

- 7. O-ring
- 10. Drive 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
- A. Oil seal lip

- Ring gear bearing adjusting shim (transfer cover side)
 Ring gear shaft
- 14. Ring gear
- 17. Plug
- 20. Dowel pin
- 23. O-ring
- 26. Dust cover
- B. Comply with the assembly procedure when tightening. Refer to <u>DLN-</u> <u>83. "Assembly"</u>.

- Ring gear bearing (transfer cover side)
- 12. Ring gear bearing (transfer case side)
- 15. Baffle plate
- 18. O-ring

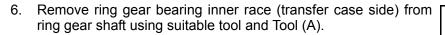
9.

- 21. Drive pinion
- 24. Pinion bearing assembly
- 27. Companion flange

Disassembly

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- 1. Remove transfer cover assembly. Refer to <u>DLN-78, "Disassembly"</u>.
- 2. 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-82, "Disassembly"</u>.
- 3. Remove ring gear shaft assembly from the transfer case.
- 4. 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-94</u>, "Disassembly".
- 5. Remove ring gear bearing inner race (transfer cover side) from ring gear shaft using suitable tools.

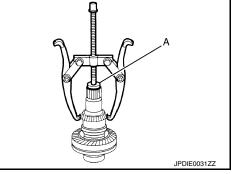


Tool number (A)

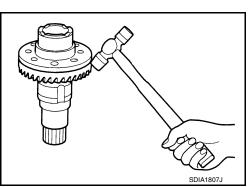
7.

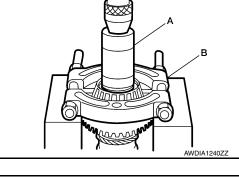
Remove the ring gear bolts.

: ST33031000 (J-8107-2)



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





2015 Pathfinder

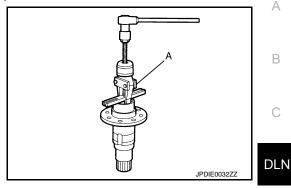
[TRANSFER: TY21C]

< UNIT DISASSEMBLY AND ASSEMBLY >

9. Remove drive shaft oil seal from the ring gear shaft using Tool (A).

Tool number (A) : KV381054S0 (J-34286)

10. Perform inspection after disassembly. Refer to <u>DLN-84. "Inspec-</u> tion".



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Assembly

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

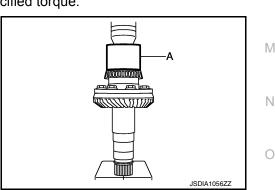
(L) : 2.0 +0.6/-0 mm (0.079 +0.024/-0 in)

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.
- Select ring gear bearing adjusting shim (transfer case side) and ring gear bearing adjusting shim (transfer cover side). Refer to <u>DLN-87, "Adjustment"</u>.
- 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 <u>DLN-95, "Assembly"</u>.
 CAUTION:
 - Do not reuse ring gear bearing.
 - Apply gear oil to the ring gear bearing.
- 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-83, "Assembly"</u>. CAUTION:
 - Do not reuse ring gear bearing.
 - · Apply gear oil to the ring gear bearing.
- 5. Install the ring gear to ring gear shaft, and tighten bolts to the specified torque.
- 6. Install ring gear bearing inner race (transfer cover side) using a suitable tool (A).

CAUTION:

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





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< UNIT DISASSEMBLY AND ASSEMBLY >

- 7. Install the ring gear bearing inner race (transfer case side) to ring gear shaft using suitable tool (A). **CAUTION:**
 - Do not reuse ring gear bearing.
 - Apply gear oil to the ring gear bearing.

Install the ring gear shaft assembly to the transfer case. 8. **CAUTION:**

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

Apply multi-purpose grease to spline part as shown. а.

b Wrap piece of vinyl to spline part only as shown. (A): Limit line **CAUTION:**

Do not wrap sliding surfaces on oil seal.

9. Install transfer cover to check and adjust each part. Refer to DLN-79. "Assembly".

NOTE:

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

10. Check backlash, tooth contact, total preload and companion flange runout. Refer to DLN-87, "Adjustment". **CAUTION:**

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

- 11. Reinstall transfer cover for installing O-ring. Refer to <u>DLN-79, "Assembly"</u>.
- 12. After installing transfer case oil seals, remove wrapped vinyl from the spline of ring gear shaft.

Inspection

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.

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:

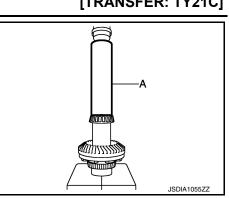
When replacing the bearing, always replace the inner race and outer race as a pair.

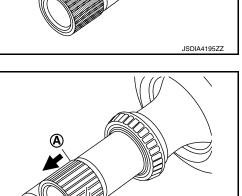
Shim

Check for seizure, damage, and unusual wear.

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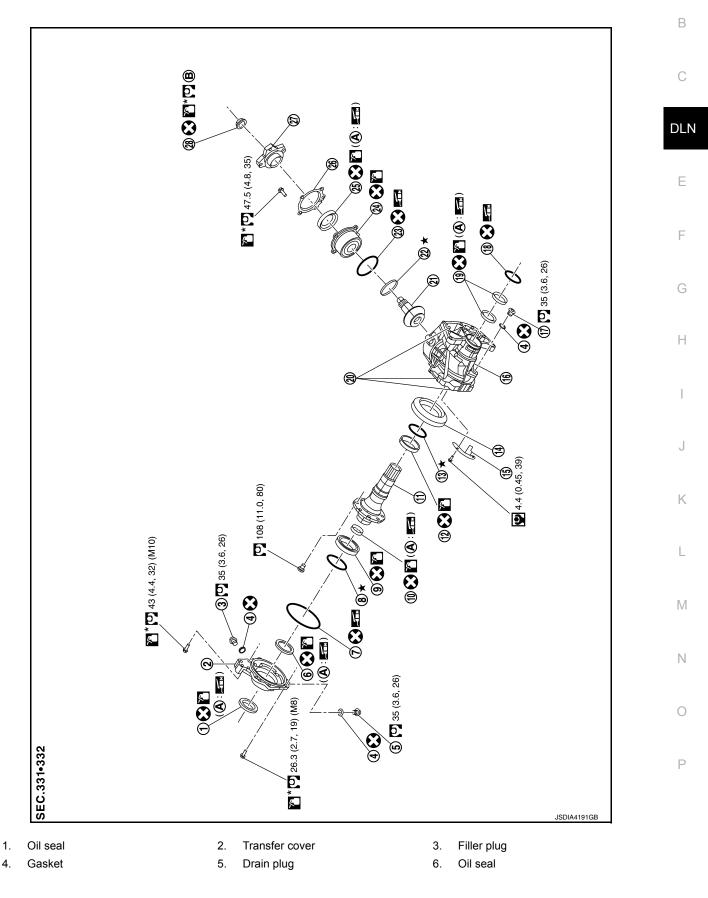
[TRANSFER: TY21C]

DRIVE PINION

Exploded View

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< UNIT DISASSEMBLY AND ASSEMBLY >

- 7. O-ring
- 10. Drive 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
- A. Oil seal lip

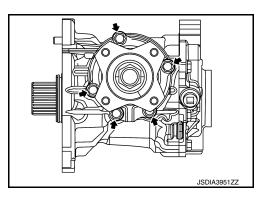
- 8. Ring gear bearing adjusting shim (transfer cover side)
- 11. Ring gear shaft
- 14. Ring gear
- 17. Plug
- 20. Dowel pin
- 23. O-ring
- 26. Dust cover
- B. Comply with the assembly procedure when tightening. Refer to <u>DLN-</u> <u>86, "Assembly"</u>.

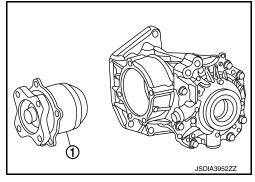
- 9. Ring gear bearing (transfer cover side)
- 12. Ring gear bearing (transfer case side)
- 15. Baffle plate
- 18. O-ring
- 21. Drive pinion
- 24. Pinion bearing assembly
- 27. Companion flange

Disassembly

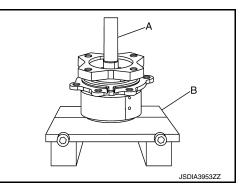
1. Remove pinion bearing assembly bolts.

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





- 5. Remove drive pinion from pinion bearing assembly using suitable tools (A and 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 <u>DLN-92. "Inspec-</u> <u>tion"</u>.



Assembly

- 1. Select drive pinion adjusting shim. Refer to <u>DLN-87, "Adjustment"</u>.
- 2. Assemble the selected drive pinion adjusting shim to drive pinion.
- 3. Install the drive pinion to pinion bearing assembly using a suitable tool.

DLN-86

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[TRANSFER: TY21C]

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< UNIT DISASSEMBLY AND ASSEMBLY >

CAUTION:

- · Do not reuse pinion bearing assembly.
- · Apply gear oil to pinion bearing part.
- 4. Install oil seal to pinion bearing assembly using a 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. 5.
 - NOTE:

Tighten dust cover together with pinion bearing assembly.

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

Tool number

: ST3127S000 (J-25765-A)

Install pinion lock nut, and then tighten to the specified torque. a.

> 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.

: ST3127S000 (J-25765-A)

Measure the pinion bearing preload using Tool. C.

Pinion bearing	preload			

: Refer to DLN-97, "Preload Torque".

- 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.

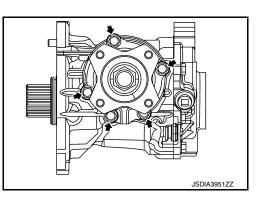
Tool number

- When installing O-ring, do not use a tool.
- Do not damage O-ring.
- 9. Install drive pinion assembly, and apply anti-corrosive oil onto thread and seats on the 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-87, "Adjustment". CAUTION:

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



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Adjustment

ADJUSTING SHIM SELECTION

DLN-87

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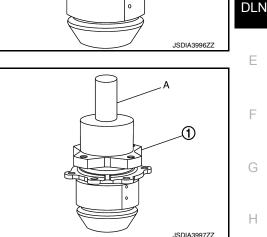
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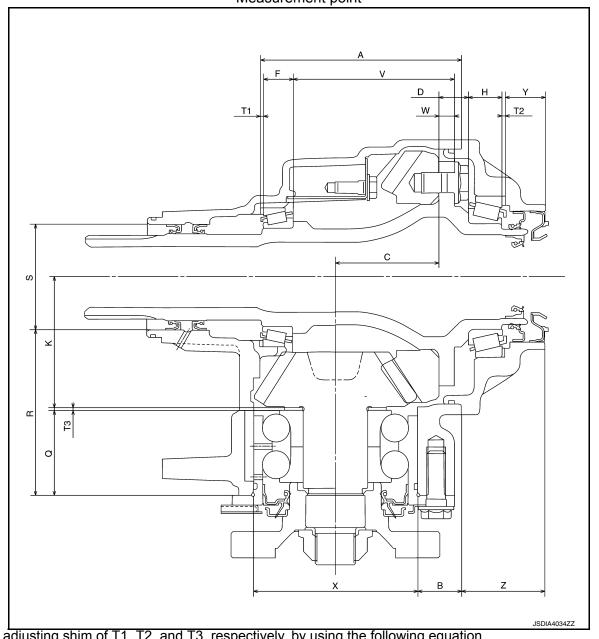
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< UNIT DISASSEMBLY AND ASSEMBLY >

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)

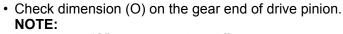
T2 [Ring gear bearing adjusting shim (transfer cover side)] • T2 = -Y + Z + (B + X/2) - C - D - H + (M/100) + 0.071 mm (0.0028 in)

T3 (Drive pinion adjusting shim) • T3 = -Q + (R + S/2) - K + (O/100)

< UNIT DISASSEMBLY AND ASSEMBLY >

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.



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 DLN-82. "Disassembly". 1.
- 2. 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.
- Measure the pinion bearing preload using Tool (A). 4.

Tool number (A) Pinion bearing preload

: ST3127S000 (J-25765-A) : Refer to DLN-97, "Preload Tor<u>que"</u>.

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:

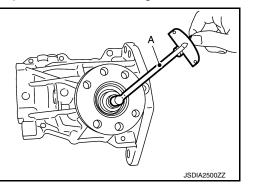
When measuring preload, the rotating speed must be set to 30 rpm.

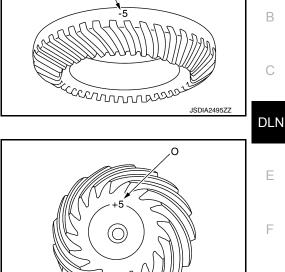
1. Measure pinion bearing preload. CAUTION:

Check that the pinion bearing preload is within the standard.

- Assemble the ring gear shaft assembly to the transfer case. Refer to <u>DLN-83. "Assembly"</u>
- Install transfer cover to check and adjust each part. Refer to <u>DLN-79</u>, "Assembly".
- Rotate the companion flange at least 20 times to check for smooth operation of the bearing.

DLN-89





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< UNIT DISASSEMBLY AND ASSEMBLY >

5. Measure the total preload using Tool (A).

Tool number (A) Total preload

: ST3127S000 (J-25765-A) : Refer to <u>DLN-97, "Preload</u> <u>Torque"</u>.

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 protocol after disassembly. Then install transfer case oil seal

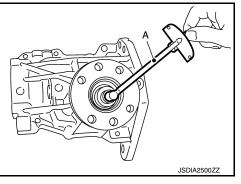
total preload after disassembly. Then install transfer case oil seals and transfer cover oil seal.

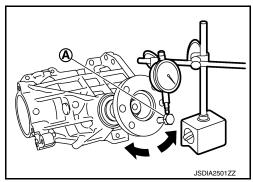
BACKLASH

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

Backlash : Refer to DLN-97, "Backlash".

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





TOOTH CONTACT

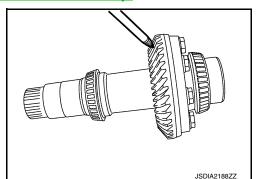
- 1. Remove transfer cover. Refer to <u>DLN-78, "Disassembly"</u>.
- 2. Remove ring gear shaft assembly from transfer case. Refer to DLN-82, "Disassembly".
- 3. Apply red lead onto the ring gear. CAUTION:

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 <u>DLN-83</u>, "Assembly".
- Install transfer cover to check and adjust each part. Refer to <u>DLN-79, "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.

- 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.



[TRANSFER: TY21C]

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21C]

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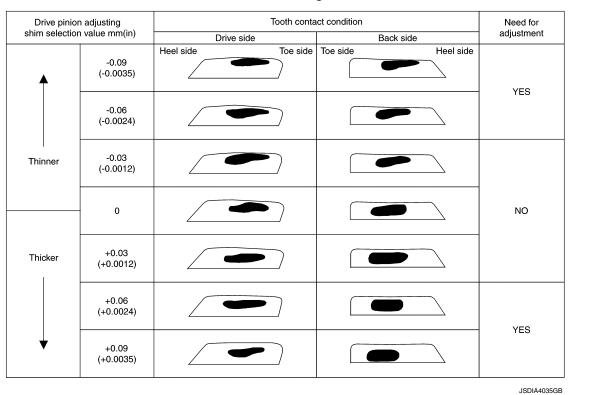
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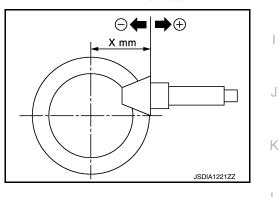
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Tooth Contact Judgment Guide



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:

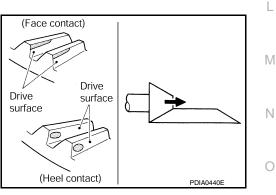
If no adjusting shim with the calculated value is available, select the thicker and closest one.



• 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.



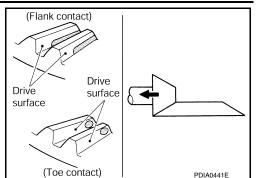


< UNIT DISASSEMBLY AND ASSEMBLY >

• 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.



COMPANION FLANGE RUNOUT

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

Companion flange runout : Refer to <u>DLN-97, "Companion Flange Runout"</u>.

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

Companion flange runout : Refer to <u>DLN-97, "Companion Flange Runout"</u>.

- 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

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.

CAUTION:

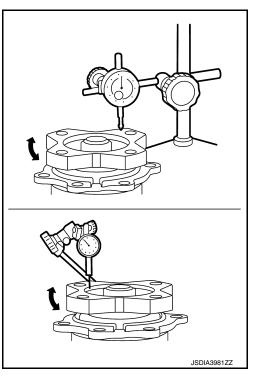
Replace ring gear and drive pinion as a set (hypoid gear set) if any malfunction is detected on the ring gear or drive pinion.

Bearing

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

Shim

Check for seizure, damage, and unusual wear.



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[TRANSFER: TY21C]

TRANSFER CASE

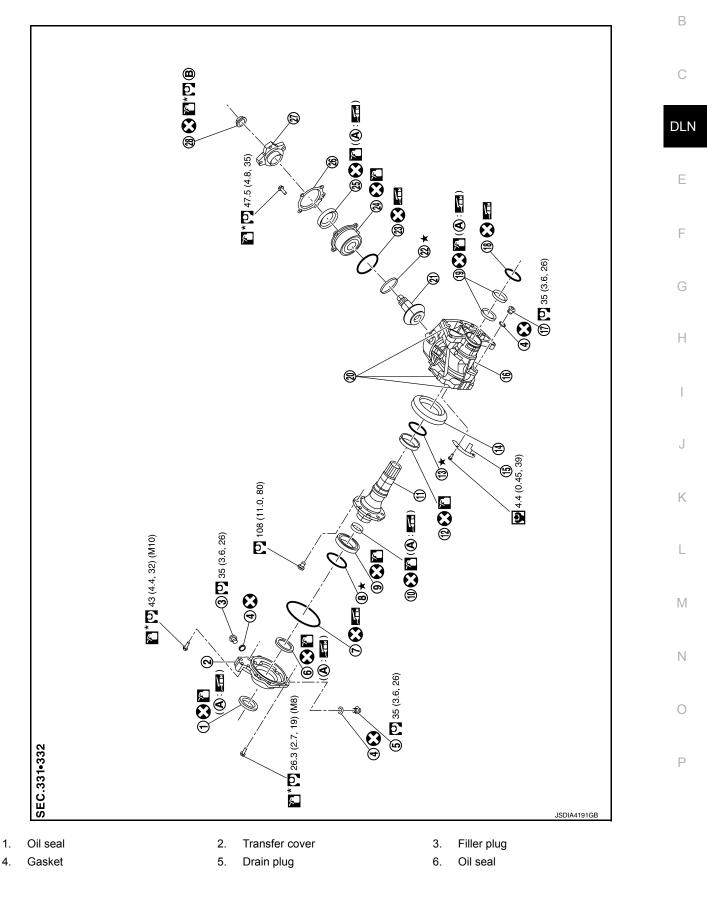
< UNIT DISASSEMBLY AND ASSEMBLY >

TRANSFER CASE

Exploded View

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TRANSFER CASE

< UNIT DISASSEMBLY AND ASSEMBLY >

- 7. O-ring
- 10. Drive 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
- A. Oil seal lip

- 8. 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
- B. Comply with the assembly procedure when tightening. Refer to <u>DLN-</u><u>95. "Assembly"</u>.

- Ring gear bearing (transfer cover side)
- 12. Ring gear bearing (transfer case side)
- 15. Baffle plate
- 18. O-ring

9.

- 21. Drive pinion
- 24. Pinion bearing assembly
- 27. Companion flange

Disassembly

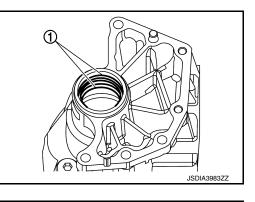
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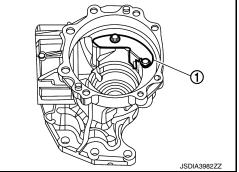
- 1. Remove transfer cover. Refer to <u>DLN-78, "Disassembly"</u>.
- 2. Remove ring gear shaft assembly. Refer to DLN-82. "Disassembly".
- 3. Remove drive pinion assembly. Refer to <u>DLN-86, "Disassembly"</u>.
- 4. Remove O-ring from transfer case.
 - CAUTION:

6.

- Do not use a tool.
- Do not damage transfer case.
- 5. Remove oil seals (1). CAUTION: Do not damage transfer case.

Remove baffle plate (1).





[TRANSFER: TY21C]

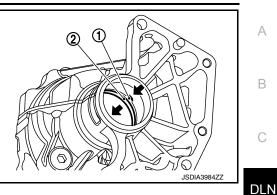
TRANSFER CASE

< UNIT DISASSEMBLY AND ASSEMBLY >

7. 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 (\bigstar) on the transfer case. **CAUTION:**

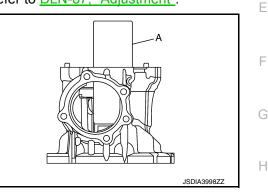
Do not damage transfer case.

- Remove plug and gasket.
- Perform inspection after disassembly. Refer to DLN-96, "Inspection".



Assembly

- Select the ring gear bearing adjusting shim (transfer case side). Refer to <u>DLN-87, "Adjustment"</u>.
- 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.



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- Install baffle plate (1). 3.
- 4. Install ring gear shaft assembly. Refer to <u>DLN-83, "Assembly"</u>. **CAUTION:**

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

- Install drive pinion assembly. Refer to <u>DLN-86, "Assembly"</u>.
- 6. Install transfer cover to check and adjust each part. Refer to DLN-79, "Assembly".

NOTE:

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

7. Check backlash, tooth contact, total preload and companion flange runout. Refer to DLN-87, "Adjustment".

CAUTION:

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

- Reinstall transfer cover for installing O-ring. Refer to <u>DLN-79</u>, "Assembly".
- 9. Install oil seals using a 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.



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< UNIT DISASSEMBLY AND ASSEMBLY >

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CAUTION:

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

Inspection

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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	DATA AND SPECIFI	
SERVICE DA	TA AND SPECIFICATION	S (SDS)
General Specif	ications	INFOID:000000011153169
·		
		ℓ (US pt, Imp pt) VQ35DE
Applied model	—	CVT
Transfer model		TY21C
Oil Type		MA-15 (United States and Canada) or MA-17 (Mexico)
Oil capacity (Approx.)		0.31(5/8 pt, 1/2 pt)
Gear ratio		0.404
Number of the di-	Ring gear	42
Number of teeth	Drive pinion	17
Preload Torque		INFOID:000000011153170
		Unit: N⋅m (kg-m, in-lb)
	Item	Unit: N·m (kg-m, in-lb) Standard
Pinion bearing preload		
Pinion bearing preload		Standard
Pinion bearing preload	1	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0)
Total preload	With all oil seals Without oil seals (for transfer cover and	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0)
Total preload	With all oil seals Without oil seals (for transfer cover and	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0)
Total preload	With all oil seals Without oil seals (for transfer cover and	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0)
Total preload	With all oil seals Without oil seals (for transfer cover and transfer case) Item	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0)
Total preload Backlash Ring gear to drive pini	With all oil seals Without oil seals (for transfer cover and transfer case) Item on	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0) INFOID:000000011153171 Unit: mm (in) Standard
Total preload Backlash	With all oil seals Without oil seals (for transfer cover and transfer case) Item on	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0) INFOID:000000011153171 Unit: mm (in) Standard 0.16 - 0.21 (0.0063 - 0.0083)
Total preload Backlash Ring gear to drive pini	With all oil seals Without oil seals (for transfer cover and transfer case) Item on	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0) INFOID:000000011153171 Unit: mm (in) Standard 0.16 - 0.21 (0.0063 - 0.0083)
Total preload Backlash Ring gear to drive pini Companion Fla	With all oil seals Without oil seals (for transfer cover and transfer case) Item Item Item Item Item Item Item Item	Standard 0.25 - 1.15 (0.03 - 0.11, 3.0 - 10.0) P1 + 0.7 - 1.0 (0.08 - 0.1, 7.0 - 8.0) P1 + 0.5 - 0.8 (0.06 - 0.08, 5.0 - 7.0) INFOID:000000011153171 Unit: mm (in) Standard 0.16 - 0.21 (0.0063 - 0.0083) INFOID:000000011153172 Unit: mm (in)

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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.

< PREPARATION > PREPARATION

PREPARATION

Commercial Service Tool

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Fool name		Description
Power tool		Loosening nuts, screws and bolts
	PIIB1407E	

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [REAR PROPELLER SHAFT: 3FCJ-CVJ]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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Use the chart below to find the	e cause of the syn	nptom	. If neo	essar	y, repa	ir or re	eplace	these	parts.						i
Reference		DLN-101, "Inspection"	DLN-104, "Inspection"	I	DLN-104, "Inspection"	I	DLN-104, "Inspection"	DLN-101, "Inspection"	DLN-113, "NVH Troubleshooting Chart"	EAX-5. "NVH Troubleshooting Chart", RAX-4. "NVH Troubleshooting Chart", ESU-3. "NVH Troubleshooting Chart", RSU-4. "NVH Troubleshooting Chart"	WT-56, "NVH Troubleshooting Chart"	WT-56, "NVH Troubleshooting Chart"	FAX-5, "NVH Troubleshooting Chart", RAX-4, "NVH Troubleshooting Chart"	BR-6, "NVH Troubleshooting Chart"	ST-42, "NVH Troubleshooting Chart"
Possible cause and SUSF	PECTED PARTS	Uneven rotating torque	Center bearing improper installation	Excessive center bearing axial end play	Center bearing mounting (insulator) cracks, damage or deterioration	Excessive joint angle	Rotation imbalance	Excessive runout	DIFFERENTIAL	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Symptom	Shake		×			×				×	×	×	×	×	×
	Vibration	×	×	×	×	×	×	×		×	×		×		×

×: Applicable

PROPELLER SHAFT ASSEMBLY

BASIC INSPECTION PROPELLER SHAFT ASSEMBLY

Inspection

APPEARANCE AND NOISE INSPECTION

- Inspect the propeller shaft tube for dents or cracks. If damaged, replace the propeller shaft assembly.
- · Check bearings for noise or damage. If damaged, replace as necessary.

PROPELLER SHAFT VIBRATION

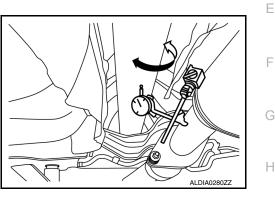
NOTE:

DLN If vibration is present at high speed, check propeller shaft runout first, then check mounting between propeller shaft and companion flange.

Measure the runout of the propeller shaft tube at several points 1. by rotating the final drive companion flange with your hands.

Propeller shaft runout

: Refer toDLN-106, "Propeller Shaft Runout".

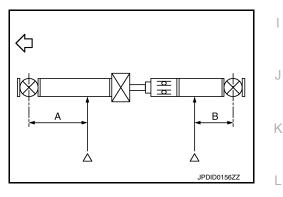


Propeller shaft runout measuring point (Point "△").

Dimension

(A): 612.0 mm (24.09 in) (B): 474.5 mm (18.68 in)

 \triangleleft : Front



- 2. If the runout still exceeds specifications, disconnect the propeller shaft at the final drive companion flange; then rotate the companion flange 90°, 180°, 270° and reconnect propeller shaft.
- 3. Check the runout again. If the runout still exceeds specifications, replace the propeller shaft assembly.
- After installation, check for vibration by driving the vehicle. 4.

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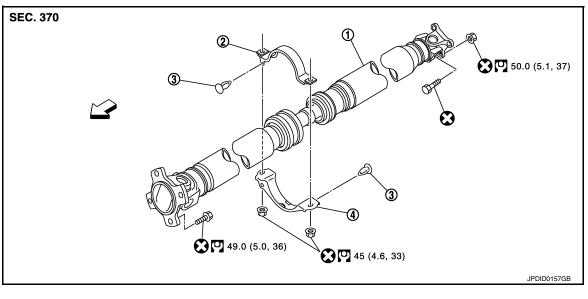
[REAR PROPELLER SHAFT: 3FCJ-CVJ]

REMOVAL AND INSTALLATION REAR PROPELLER SHAFT

Exploded View

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INFOID:000000011153178



1. Propeller shaft assembly

2. Center bearing bracket (upper) 3. Clip

4. Center bearing bracket (lower)

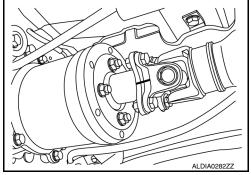
C: Front

Removal and Installation

REMOVAL

- 1. Move the CVT shift selector to the neutral position, and then release the parking brake.
- Put matching marks onto propeller shaft flange yokes, final drive torsional damper, and transfer companion flange.
 CAUTION:

For matching marks, use paint. Do not damage propeller shaft flange yokes, final drive torsional damper or transfer companion flange.



3. Remove front heat insulator.

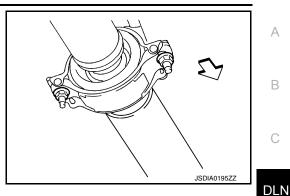
REAR PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

- [REAR PROPELLER SHAFT: 3FCJ-CVJ]
- 4. Loosen nuts of center bearing brackets (upper/lower).

⟨⊐ : Front

CAUTION: Tighten nuts temporarily.



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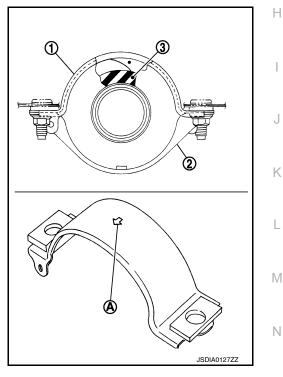
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- 5. Remove propeller shaft assembly bolts and nuts.Refer to DLN-102, "Exploded View".
- Remove center bearing bracket nuts.
- 7. Remove propeller shaft assembly.
 - **CAUTION:** If constant velocity joint was bent during propeller shaft assembly removal, installation, or transportation, its boot may be damaged. Wrap boot with shop cloth or rubber to protect boot from damage.
- 8. Remove clips in center bearing bracket (upper/lower).
- Perform inspection after removal. Refer to <u>DLN-104, "Inspection"</u>.

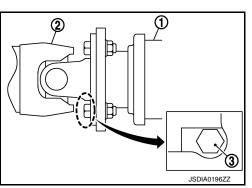
INSTALLATION

Installation is in the reverse order of removal.

- 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 DLN-104, "Inspection".



- After tightening the bolts and nuts to the specified torque, check that the bolts (3) on the flange side are tightened as shown.
- Final drive assembly (1)
- Propeller shaft assembly (2)

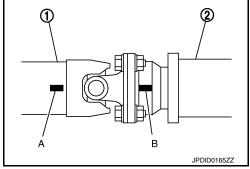


2015 Pathfinder

REAR PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

- If propeller shaft assembly or final drive assembly has been replaced, connect them as follows:
- Install propeller shaft (1) while aligning its matching mark (A) with the matching mark (B) of the final drive (2) on the joint as close as possible.
- Tighten bolts and nuts of propeller shaft and final drive to the specified torque.



[REAR PROPELLER SHAFT: 3FCJ-CVJ]

Inspection

INFOID:000000011153179

INSPECTION AFTER REMOVAL

Appearance

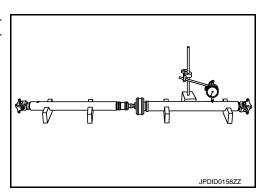
Check propeller shaft for bend and damage. If damage is detected, replace propeller shaft assembly.

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-106</u>, "Propeller Shaft Runout".

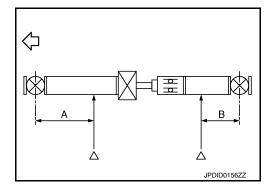


Propeller shaft runout measuring point (Point "△").

⟨
□ : Front

Dimension

(A) 612.0 mm (24.09 in) (B) 474.5 mm (18.68 in)



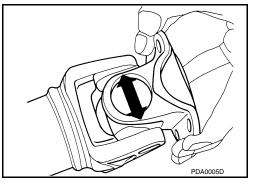
Journal Axial Play

As shown, 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-106, "Jour-</u> nal Axial Play".

CAUTION: Do not disassemble joints.



Center Bearing

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

REAR PROPELLER SHAFT < REMOVAL AND INSTALLATION > [REAR PROPELLER SHAFT: 3FCJ-CVJ]	
CAUTION: Do not disassemble center bearing.	А
INSPECTION AFTER INSTALLATION After assembly, perform a driving test to check propeller shaft vibration. If vibration occurs refer to <u>DLN-101</u> , <u>"Inspection"</u> .	В
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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[REAR PROPELLER SHAFT: 3FCJ-CVJ]

SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:000000011153180

		4WD
Applied model		VQ35DE
		CVT
Propeller shaft model		3FCJ-CVJ
Number of joints		3
	1st joint	Shell type
Type of journal bearings (Non-disassembly type)	2nd joint	CVJ type
3rd joint		Shell type
Coupling method with trans	sfer	Flange type
Coupling method with rear	final drive	Flange type
Shaft length 1st (Spider to EDJ joint center) 2nd (EDJ joint center to spider)		1,332 mm (52.44 in)
		946 mm (37.24 in)
Shaft outer diameter	1st	80 mm (3.15 in)
Shaft outer diameter	2nd	70 mm (2.76 in)

Propeller Shaft Runout

INFOID:0000000011153181

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

Journal Axial Play

INFOID:000000011153182

Unit: mm (in)

Item	Standard
Journal axial play	0 (0)

< PRECAUTION > PRECAUTION PRECAUTIONS

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

INFOID:000000011153183

INFOID:000000011153184

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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 one if necessary.
- Seals 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.
- Avoid using 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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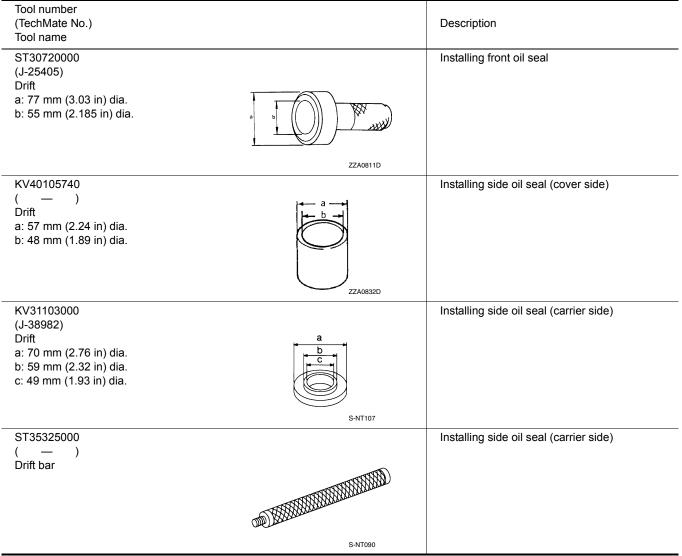
< PREPARATION > PREPARATION

PREPARATION

Special Service Tools

INFOID:000000011153185

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

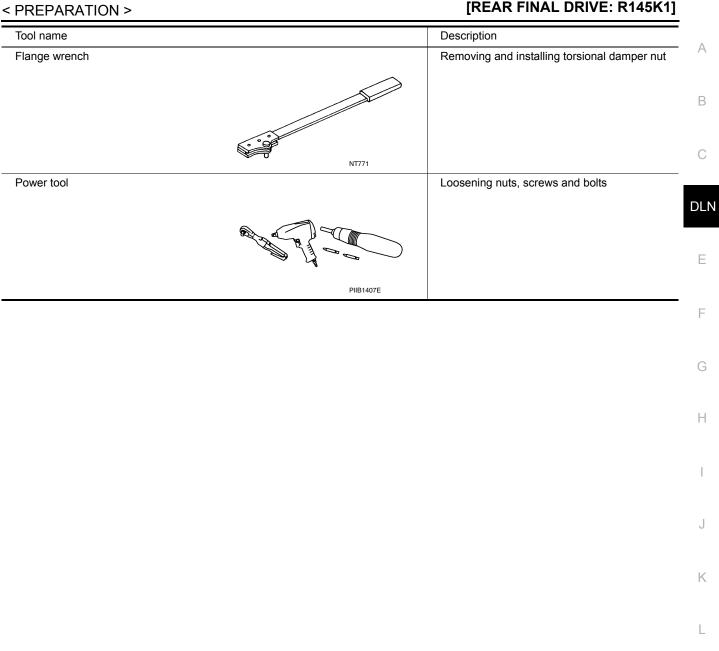


Commercial Service Tools

INFOID:0000000011153186

PREPARATION

[REAR FINAL DRIVE: R145K1]



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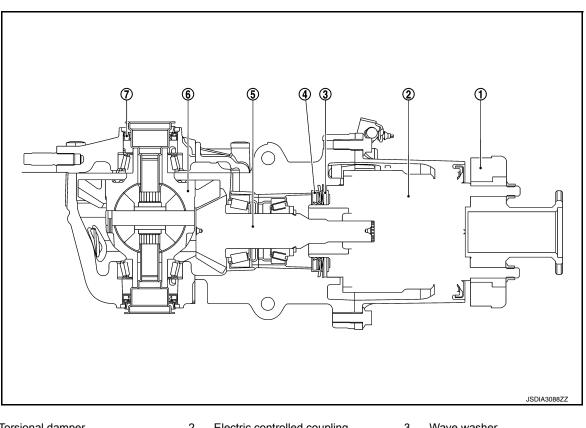
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SYSTEM DESCRIPTION STRUCTURE AND OPERATION

Sectional View

INFOID:000000011153187



- Torsional damper 1.
- Electric controlled coupling

- 4. Front oil seal
- 7. Side oil seal

- 2.
- 5. Drive pinion

- Wave washer 3.
- 6. Differential case

Electric Controlled Coupling

INFOID:000000011153188

The electric controlled coupling operates as the 4WD system. For the operation, refer to DLN-13, "Operation Description".

ADDITIONAL SERVICE WHEN REPLACING REAR FINAL DRIVE ASSEMBLY < BASIC INSPECTION > [REAR FINAL DRIVE: R145K1]

BASIC INSPECTION		Δ
ADDITIONAL SERVICE WHEN REPLACING REAR FINAL DRIVE	E ASSEM-	
		В
Description	INFOID:000000011153189	
When replacing rear final drive assembly, unit characteristics writing is required.		С
Work Procedure	INFOID:0000000011153190	

1.PERFORM WRITING UNIT CHARACTERISTICS Perform writing unit characteristics of electric controlled coupling.

>> Refer to DLN-44, "Work Procedure".

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ADDITIONAL SERVICE WHEN REPLACING ELECTRIC CONTROLLED COU-PLING

< BASIC INSPECTION >

[REAR FINAL DRIVE: R145K1]

ADDITIONAL SERVICE WHEN REPLACING ELECTRIC CONTROLLED COUPLING

Description

INFOID:0000000011153191

When replacing electric controlled coupling, unit characteristics writing is required.

Work Procedure

INFOID:000000011153192

1.PERFORM WRITING UNIT CHARACTERISTICS

Perform writing unit characteristics of electric controlled coupling.

>> Refer to <u>DLN-44, "Work Procedure"</u>.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [REAR FINAL DRIVE: R145K1]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000011153193

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		Geart	Gear	Tooth	Backl	Comp	Gear	PROF	AXLE	TIRE	ROAI	DRIV	BRAKE	STEERING	-
Possible cause and PARTS	I SUSPECTED	Gear tooth rough	contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION		ROAD WHEEL	DRIVE SHAFT	ш	RING	
Reference		I	I	I	I	DLN-133, "Adjustment"	DLN-114, "Inspection"	DLN-100, "NVH Troubleshooting Chart"	FAX-5. "NVH Troubleshooting Chart", RAX-4, "NVH Troubleshooting Chart", FSU-3, "NVH Troubleshooting Chart", RSU-4, "NVH Troubleshooting Chart"	WT-56, "NVH Troubleshooting Chart"	WT-56, "NVH Troubleshooting Chart"	FAX-5, "NVH Troubleshooting Chart", RAX-4, "NVH Troubleshooting Chart"	BR-6, "NVH Troubleshooting Chart"	ST-42, "NVH Troubleshooting Chart"	D

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PERIODIC MAINTENANCE REAR DIFFERENTIAL GEAR OIL

Inspection

OIL LEAKS

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

OIL LEVEL

Do not start engine while checking oil level.

 Remove and discard filler plug (1).
 CAUTION: Do not reuse filler plug.

: Front

- Oil level should be level with the bottom of filler plug hole. Add oil if necessary. Refer to <u>MA-15, "FOR USA AND CANADA :</u> <u>Fluids and Lubricants"</u> (United States and Canada) or <u>MA-17,</u> <u>"FOR MEXICO : Fluids and Lubricants"</u> (Mexico).
- 3. Install filler plug (1) and tighten to specified torque. Refer to <u>DLN-130, "Exploded View"</u>.

Draining

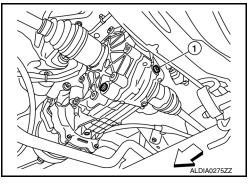
CAUTION:

Do not start engine while checking oil level.

1. Remove and discard drain plug (1), and drain gear oil. CAUTION:

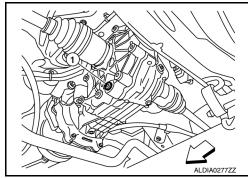
Do not reuse drain plug.

 Install drain plug (1) and tighten to specified torque. Refer to <u>DLN-130, "Exploded View"</u>.



INFOID:0000000011153195

INFOID:0000000011153194



INFOID:0000000011153196

Refilling

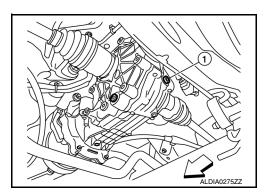
CAUTION:

Do not start engine while checking oil level.

 Remove and discard filler plug (1).
 CAUTION: Do not reuse filler plug.

<□ : Front

2. Fill with new oil to the specified level near the filler plug hole.



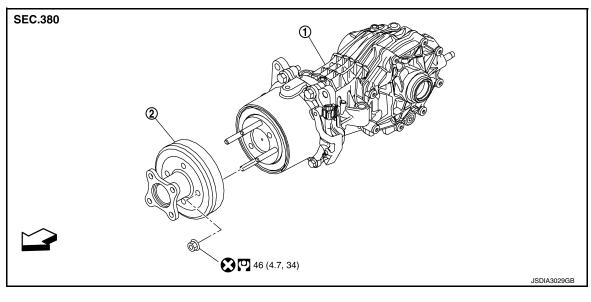
<	PERIODIC MAINTENANCE >	[REAR FINAL DRIVE: R145K1]			
	Oil grade and viscosity	: Refer to <u>MA-15, "FOR USA</u> <u>AND CANADA : Fluids and Lu-</u> <u>bricants"</u> (United States and Canada) or <u>MA-17, "FOR MEXI-</u> <u>CO : Fluids and Lubricants"</u> (Mexico).	A B		
	Oil capacity	: Refer to <u>DLN-135, "General</u> <u>Specification"</u> .	С		
3.	Install filler plug (1) and tight	en to specified torque. Refer to <u>DLN-130.</u>	"Exploded View".		
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< REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION TORSIONAL DAMPER

Exploded View

INFOID:0000000011153197

INFOID:000000011153198



1. Final drive assembly

2. Torsional damper

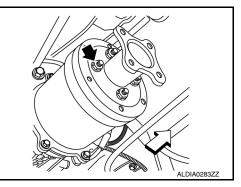
Front

Removal and Installation

REMOVAL

- 1. Remove rear propeller shaft from the torsional damper, and support the end of the propeller shaft. Refer to <u>DLN-102, "Exploded View"</u>.
- 2. Remove torsional damper lock nuts (<), using suitable tool.

<□ : Front



3. Remove torsional damper.

INSTALLATION

1. Install torsional damper. (When torsional damper has been reused.)

Clean the mounting surface.

2. Install torsional damper. (When torsional damper has been replaced.) Degrease the mounting surface of electric controlled coupling, according to the following instruction.

TORSIONAL DAMPER

< REMOVAL AND INSTALLATION >

Spray alcohol on a cotton cloth four times per part. 1. CAUTION: Always use a new cotton cloth.

[REAR FINAL DRIVE: R145K1]

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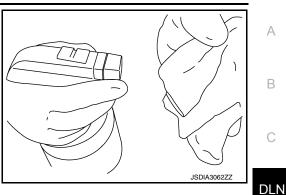
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2. Wipe the mounting surface of electric controlled coupling five times. **CAUTION:**

Complete the work within 180 seconds to prevent alcohol from evaporating.

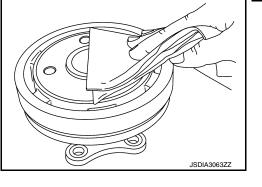
3. Install torsional damper lock nuts, using suitable tool, and tighten to the specified torque. CAUTION:

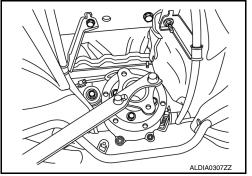
Do not reuse torsional damper lock nuts.

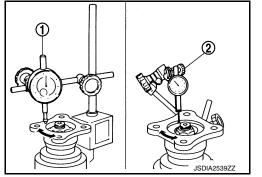
- 4. Check torsional damper runout as follows:
 - · Rotate torsional damper and check for runout on the torsional damper face (inner side of the bolt holes) using a dial indicator (1). Also check for runout on the inner side of the torsional damper using a test indicator (2).

Torsional damper runout : Refer to DLN-97, "Compan-

- ion Flange Runout".
- · If the runout value is outside the runout limit, follow the procedure below to adjust.
- Check for runout while changing the phase between the torsional damper and electric controlled coupling by 90° step, and search for the position where the runout value is the minimum.
- If the runout value is still outside of the runout limit after the phase has been changed, replace the torsional damper.
- If the runout value is still outside of the runout limit after torsional damper has been replaced, possible cause will be a damaged electric controlled coupling. Repair as necessary. Refer to DLN-120, "Removal and Installation".
- Install rear propeller shaft. Refer to DLN-102, "Exploded View".







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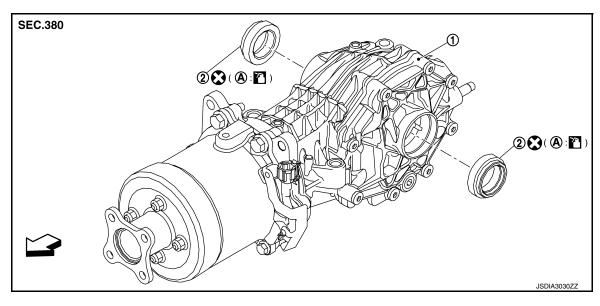
< REMOVAL AND INSTALLATION >

SIDE OIL SEAL

Exploded View

INFOID:000000011153199

[REAR FINAL DRIVE: R145K1]



1. Final drive assembly

2. Side oil seal

- A. Oil seal lip
- Front

Removal and Installation

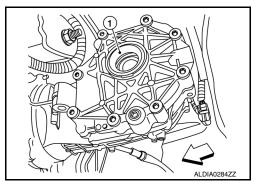
INFOID:000000011153200

REMOVAL

- 1. Remove rear drive shaft (LH or RH) as necessary. Refer to RAX-9, "Removal and Installation".
- 2. Remove side oil seal (1), using suitable tool. CAUTION:

Be careful not to damage gear carrier and side cover.

<□ : Front



INSTALLATION

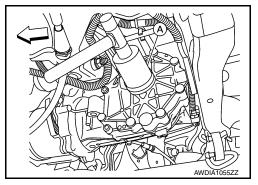
1. Install side oil seal (cover side) until it becomes flush with the carrier end, using tool (A).

<⊐ : Front

Tool number (A): KV40105740 (—)

CAUTION:

- Do not reuse oil seal.
- When installing, do not incline oil seals.
- Apply gear oil onto side oil seal lip.



SIDE OIL SEAL

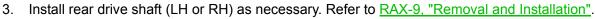
< REMOVAL AND INSTALLATION >

2. Install side oil seal (carrier side) until it becomes flush with the carrier end, using tool (A) and tool (B).

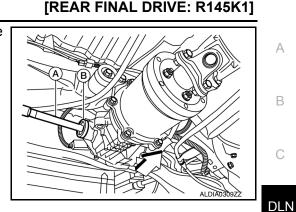
Tool number (A): ST35325000 (—) (B): KV31103000 (J-38982)

CAUTION:

- Do not reuse oil seal.
- When installing, do not incline oil seals.
- Apply gear oil onto side oil seal lip.



4. Check oil level and check for oil leaks. Refer to DLN-114. "Inspection".



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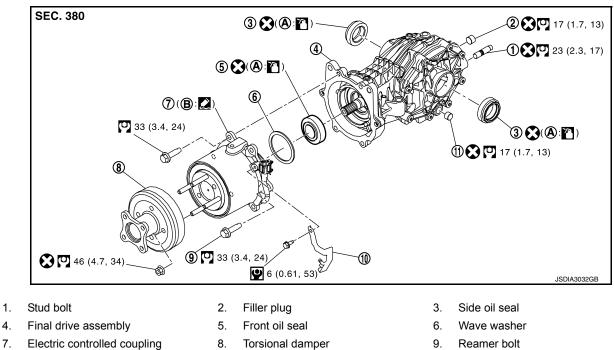
< REMOVAL AND INSTALLATION >

ELECTRIC CONTROLLED COUPLING

Exploded View

INFOID:000000011153201

INFOID:000000011153202



- 10. Harness bracket
- B. Final drive mounting face

Removal and Installation

NOTE:

7.

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

CAUTION:

When replacing rear final drive assembly, perform writing unit characteristics. Refer to DLN-112, "Work Procedure".

REMOVAL

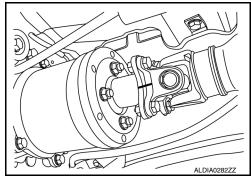
1. Move the shift selector to the neutral position, and then release the parking brake.

11. Drain plug

- Drain rear differential gear oil. Refer to DLN-114, "Draining". 2.
- Remove rear propeller shaft from the torsional damper, and support the end of the propeller shaft. Refer to 3. DLN-102, "Exploded View".

CAUTION:

For matching marks, use paint. Do not damage propeller shaft flange yokes, final drive torsional damper or transfer companion flange.



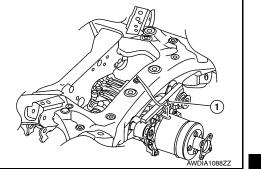
Oil seal lip

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ELECTRIC CONTROLLED COUPLING

< REMOVAL AND INSTALLATION >

- [REAR FINAL DRIVE: R145K1]
- 4. Remove the electric controlled coupling breather hose (1).



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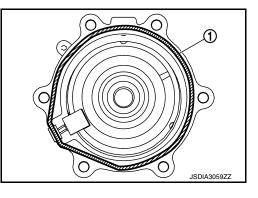
- 5. Disconnect the electric controlled coupling harness connector and unclip harness from harness bracket.
- 6. Remove the 6 bolts from the electric controlled coupling.
- Remove the electric controlled coupling.
 CAUTION: Be careful that the wave washer does not fall out or get damaged when removing the electric controlled coupling.

INSTALLATION

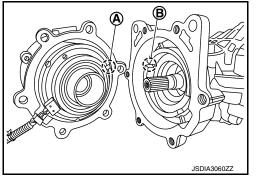
Installation is in the reverse order of removal.

CAUTION:

- 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 tab 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 <u>GI-22, "Recommended Chemical Products and Sealants"</u>.
- Apply liquid gasket (1) to mating surface of coupling cover. Use Genuine Silicone RTV or equivalent. Refer to <u>GI-22</u>, "Recommended Chemical Products and Sealants". CAUTION:
 - The width of sealant bend is approximately 3 mm (0.012 in).



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



ELECTRIC CONTROLLED COUPLING

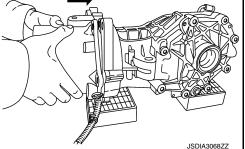
< REMOVAL AND INSTALLATION >

Press the electric controlled coupling pin to check that it is posi-٠ tioned 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 washer.



[REAR FINAL DRIVE: R145K1]



- 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.
- Install the electric controlled coupling breather hose (1) as shown.
- Install electric controlled coupling breather hose at the coupling side to the metal connector (3) of the coupling (2) all the way to the point shown by the solid arrow (\bigstar) .

<⊐ : Front

- Install electric controlled coupling breather hose at the suspension member side until dimension (A) as shown.

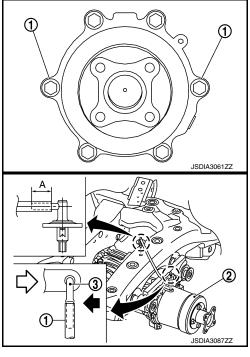
(A) : 15 mm (0.59 in)

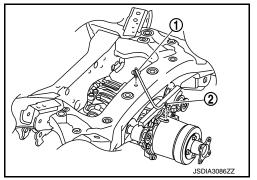
- If resin connector of the electric controlled coupling (1) and metal connector (2) are removed, install them as shown.
- Install the resin connector at the insertion side to the suspension member, facing to the vehicle front.
- Install the metal connector to the coupling cover, facing to the vehicle front.

CAUTION:

Do not reuse breather connector and hose clip.







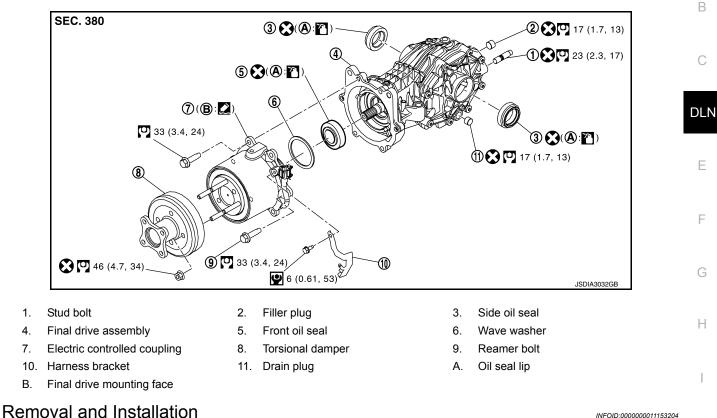
< REMOVAL AND INSTALLATION >

FRONT OIL SEAL

Exploded View

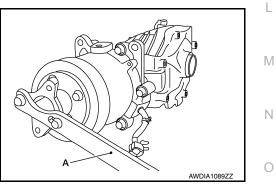
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[REAR FINAL DRIVE: R145K1]



REMOVAL

- 1. Drain rear differential gear oil. Refer to DLN-114, "Draining".
- 2. Remove the rear propeller shaft from the rear final drive and support the rear propeller shaft with suitable wire. Refer to <u>DLN-102</u>, "Exploded View".
- 3. Remove torsional damper nuts using suitable tool (A) and remove torsional damper (if necessary).



- 4. Remove the electric controlled coupling. Refer to <u>DLN-120, "Removal and Installation"</u>.
- 5. Remove wave washer.

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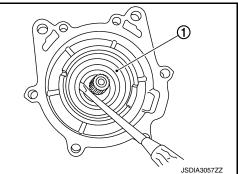
FRONT OIL SEAL

< REMOVAL AND INSTALLATION >

 Remove front oil seal (1) from final drive assembly, using a suitable tool. CAUTION:

Do not damage final drive assembly.





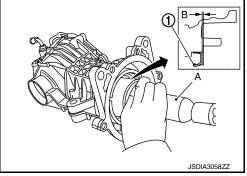
INSTALLATION

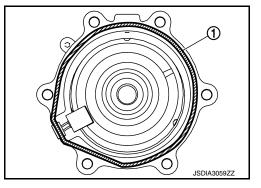
- Install drain plug.
 CAUTION:
 Do not reuse drain plug.
- 2. Using a Tool (A) install front oil seal (1) as shown.

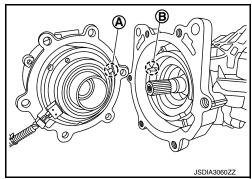
Tool number : ST30720000 (J-25405)

CAUTION:

- Do not reuse front oil seal.
- When installing, do not incline front oil seal.
- Apply rear differential gear oil onto front oil seal lip.
- 3. Install wave washer to electric controlled coupling.
- Apply liquid gasket (1) to mating surface of coupling cover. Use Genuine Silicone RTV or equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. CAUTION:
 - Remove old gasket adhering to the surfaces. Also remove any moisture, rear differential gear oil, or foreign material adhering to the surfaces.
 - The width of sealant bend is approximately 3 mm (0.012 in).
- 5. 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 front oil seal.







vn. al. bil seal lip.

< REMOVAL AND INSTALLATION >

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 washer.

- 7. 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.
- 8. Tighten reamer bolts and coupling cover bolts to the specified torque.
- 9. Install harness bracket, and tighten bolts to the specified torque.
- 10. Install torsional damper. (When torsional damper has been replaced.)

Degrease the surface of electric controlled coupling, according to the following instruction.

 Spray alcohol on a cotton cloth four times per part. CAUTION: Always use a new cotton cloth.

2. Wipe the surface of electric controlled coupling five times. **CAUTION:**

Complete the work within 180 seconds to prevent alcohol from evaporating.



[REAR FINAL DRIVE: R145K1]

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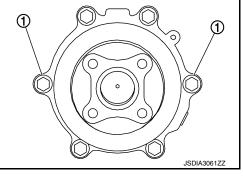
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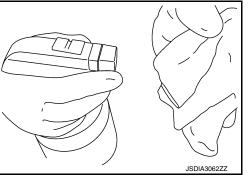
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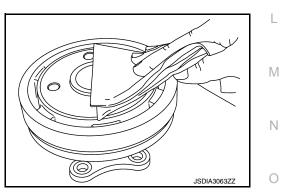
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FRONT OIL SEAL

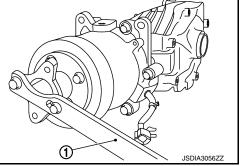
< REMOVAL AND INSTALLATION >

3. Install torsional damper nut, using suitable tool (1) and tighten to the specified torque. CAUTION:

Do not reuse torsional damper nut.

- 11. Check companion flange runout. Refer to DLN-135, "Companion Flange Runout".
- 12. When replacing electric controlled coupling, perform writing unit characteristics after installing final drive assembly to the vehicle. Refer to DLN-112, "Work Procedure".





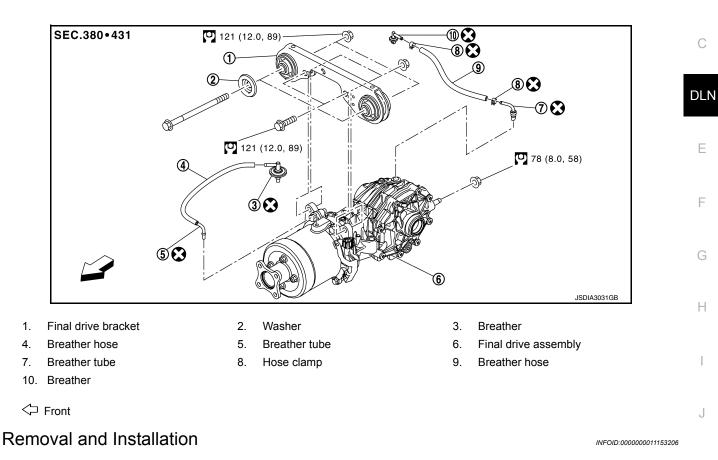
Exploded View

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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.	Drain rear final drive oil. Refer to <u>DLN-114, "Draining"</u> .	
2.	Remove the rear propeller shaft from the rear final drive and support the rear propeller shaft with suitable wire. Refer to <u>DLN-102</u> , " <u>Removal and Installation</u> ".	M
3.	Remove the vehicle spare tire.	
4.	Remove the rear drive shafts. Refer to RAX-9, "Removal and Installation".	Ν
5.	Remove rear stabilizer bar. Refer to RSU-15, "Removal and Installation".	
6.	Remove 4WD harness bracket.	
7.	Disconnect 4WD harness connector and unclip harness from the final drive bracket.	0
8.	Remove rear final drive breather hose and electric controlled coupling breather hose.	
9.	Support final drive assembly with a suitable jack.	
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< UNIT REMOVAL AND INSTALLATION >

10. Remove final drive bolts (

Revision: September 2014

11. Remove rear final drive nut (+) at rear suspension member, and remove final drive from vehicle.

NOTE:

If it is necessary to remove the final drive bracket, the fuel tank must be removed first. Refer to FL-13, "Removal and Installation".

CAUTION:

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



Installation is in the reverse order of removal.

• Install the breather hose (1) to breather connector until dimension (A) shown as follows.

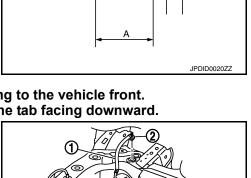
(A):

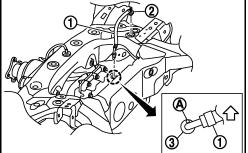
Final drive side : 20 mm (0.79 in) Suspension member side : 20.7 mm (0.815 in)

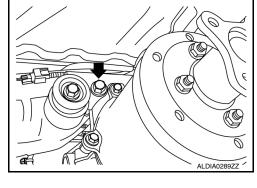
CAUTION:

- 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 tab facing to the vehicle front.
- Install the hose clamp at the suspension member side, with the tab facing downward.
- If remove resin connector (2) and metal connector (3), install breather hose (1), resin connector and metal connector as shown.
- For installation, insert resin connector into the square hole of rear suspension. Install metal connector to rear cover with aiming painted mark (A) to the front of vehicle.

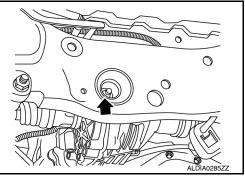


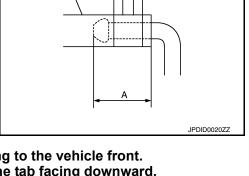






[REAR FINAL DRIVE: R145K1]





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< UNIT REMOVAL AND INSTALLATION >

Install the electric controlled coupling breather hose (1) as shown.
Install electric controlled coupling breather hose at the coupling side to the metal connector (3) of the coupling (2) all the way to the point shown by the solid arrow (<).

← : Front

- Install electric controlled coupling breather hose at the suspension member side until dimension (A) shown as follows.

(A) : 15 mm (0.59 in)

- If remove resin connector of the electric controlled coupling (1) and metal connector (2), install them as shown.
- Install the resin connector at the insertion side to the suspension member, facing to the vehicle front.
- Install the metal connector to the coupling cover, facing to the vehicle front.

CAUTION:

Do not reuse breather connector and hose clip.

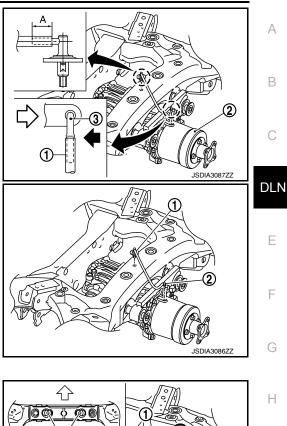
• If remove plug (1) and (2), install them as shown.

← : Front

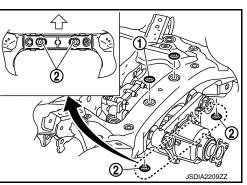
CAUTION:

Do not reuse breather connector and hose clip.

- When oil leaks while removing final drive assembly, check oil level after the installation. Refer to <u>DLN-114</u>, "Inspection".
- When replacing rear final drive assembly, perform writing unit characteristics. Refer to <u>DLN-111, "Work Procedure"</u>.



[REAR FINAL DRIVE: R145K1]



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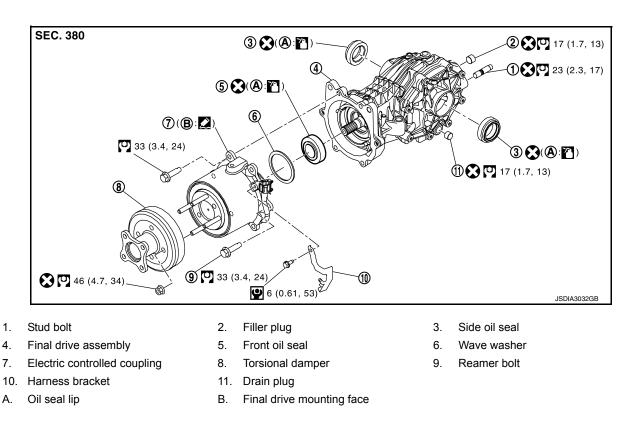
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[REAR FINAL DRIVE: R145K1]

UNIT DISASSEMBLY AND ASSEMBLY REAR FINAL DRIVE ASSEMBLY

Exploded View

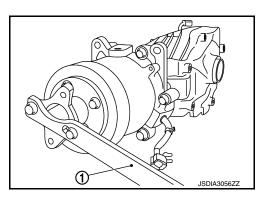
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Apply Genuine Silicone RTV or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

Disassembly

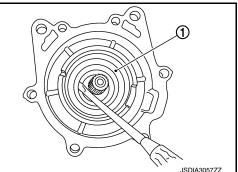
- 1. Remove torsional damper nut, using a suitable tool.
- 2. Remove torsional damper.
- 3. Remove harness bracket.
- 4. Remove electric controlled coupling.
- 5. Remove wave washer.



Remove front oil seal (1) from final drive assembly, using a oil seal remover.
 CAUTION:

Do not damage final drive assembly.

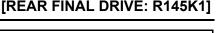
7. Remove drain plug and filler plug, if necessary.

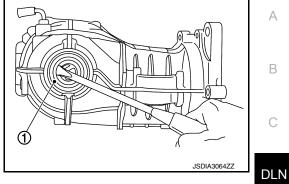


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< UNIT DISASSEMBLY AND ASSEMBLY >

- 8. Remove side oil seal (1), using a oil seal remover. **CAUTION:**
- Do not damage final drive assembly and side cover.
- 9. Remove stud bolt from side cover, if necessary.





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Assembly

- 1. Install stud bolt to side cover. **CAUTION:** Do not reuse stud bolt.
- 2. Install side oil seal (cover side) until it becomes flush with the carrier end, using Tool (A).

Tool number (A)

: KV40105740 (—)

CAUTION:

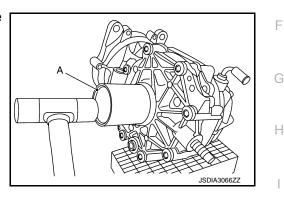
- Do not reuse oil seal.
- · When installing, do not incline oil seals.
- Apply gear oil onto side oil seal lip.
- Install side oil seal (carrier side) until it becomes flush with the 3. carrier end, using Tools (A and B).
 - Tool number (A)
- : KV31103000 (J-38982)
- Tool number (B)

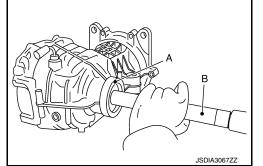
- : ST35325000 (
- **CAUTION:**
- Do not reuse oil seal.
- When installing, do not incline oil seals.
- · Apply gear oil onto side oil seal lip.
- Install drain plug. **CAUTION:** Do not reuse drain plug.
- 5. Install filler plug. **CAUTION:** Do not reuse filler plug.
- 6. Install front oil seal (1) using Tool (A) as shown.

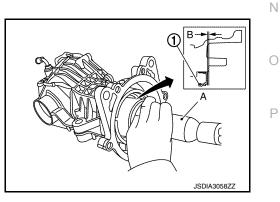
Tool number (A)	: ST30720000 (J-25405)
(B)	: 0.5 – 1.2 mm (0.020 – 0.047 in)

CAUTION:

- Do not reuse oil seal.
- When installing, do not incline oil seal.
- · Apply gear oil onto side oil seal lip.
- 7. Install wave washer to electric controlled coupling.







< UNIT DISASSEMBLY AND ASSEMBLY >

- Apply liquid gasket (1) to mating surface of coupling cover. Use Genuine Silicone RTV or equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. 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 bend is approximately 3 mm (0.012 in).
- 9. 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.

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

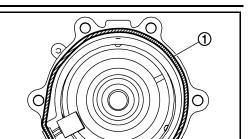
If the pin is properly positioned in the groove, then the electric controlled coupling can be pressed by the same amount of flection of the wave washer.

- 11. 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.
- 12. Tighten reamer bolts and coupling cover bolts to the specified torque.
- 13. Install harness bracket, and tighten bolts to the specified torque.
- 14. Install torsional damper. (When torsional damper has been reused.) CAUTION:

Clean the mounting surface.

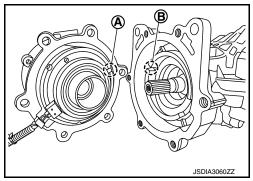
15. Install torsional damper. (When torsional damper has been replaced.)

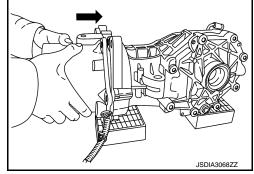
Degrease the mounting surface of electric controlled coupling, according to the following instruction.

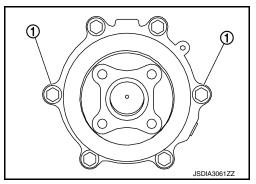


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[REAR FINAL DRIVE: R145K1]







DLN-132

< UNIT DISASSEMBLY AND ASSEMBLY >

 Spray alcohol on a cotton cloth four times per part. CAUTION: Always use a new cotton cloth.

[REAR FINAL DRIVE: R145K1]

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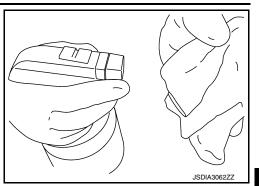
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2. Wipe the mounting surface of electric controlled coupling five times.

CAUTION:

Complete the work within 180 seconds to prevent alcohol from evaporating.

 Install torsional damper nut, using suitable tool (1) and tighten to the specified torque.
 CAUTION:

Do not reuse torsional damper nut.

- 17. Check companion flange runout. Refer to <u>DLN-133, "Adjust-ment"</u>.
- 18. When oil leaks while removing, check oil level after installation. Refer to <u>DLN-114, "Inspection"</u>.
- When replacing electric controlled coupling, perform writing unit characteristics after installing final drive assembly to the vehicle. Refer to <u>DLN-112, "Work Procedure"</u>.

Adjustment

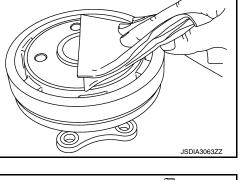
COMPANION FLANGE RUNOUT

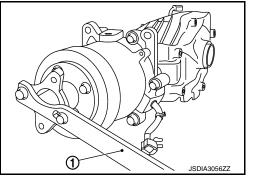
Check for companion flange runout as follows:

- For companion flange face, fit a dial indicator (1) onto the companion flange face (inner side of the propeller shaft bolt holes). For inner side of the companion flange, fit a test indicator (2) to the inner side of companion flange (socket diameter).
- Rotate companion flange to check for runout.

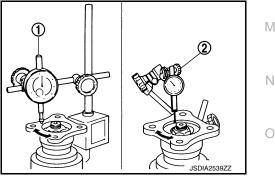
Companion flange runout : Refer to <u>DLN-135, "Com-</u> panion Flange Runout".

- If the runout value is outside the runout limit, follow the procedure below to adjust.
- Check for runout while changing the phase between companion flange and drive pinion by 90° step, and search for the position where the runout is the minimum.
- If the runout value is still outside of the limit after the phase has been changed, replace companion flange.
- If the runout value is still outside of the limit after companion flange has been replaced, possible cause will be an electric controlled coupling.









< UNIT DISASSEMBLY AND ASSEMBLY >

Inspection

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[REAR FINAL DRIVE: R145K1]

OIL SEAL

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

COMPANION FLANGE

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

SERVICE DATA AND SPECIFICATIONS (SDS) [REAR FINAL DRIVE: R145K1] < SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS) А SERVICE DATA AND SPECIFICATIONS (SDS) **General Specification** INFOID:000000011153212 В 4WD С VQ35DE Applied model CVT Final drive model R145K1 DLN Gear ratio 2.466 37/15 Number of teeth (Drive gear/Drive pinion) Е 0.5 (1, 7/8) Oil capacity (Approx.) ℓ (US pt, Imp pt) Number of pinion gears 2 Companion Flange Runout INFOID:000000011153213

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Item	Limit	G
Companion flange face	0.12 (0.0047)	
Inner side of the companion flange	0.27 (0.0106)	Н