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:000000012552639

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Н 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 or batteries, 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

< PRECAUTION >

- 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

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[TRANSFER: TY21C]

The actual shape of the tools may differ from	n those illustrated here.	
Tool number (TechMate No.) Tool name		Description
ST33061000 (J-8107-2) Drift a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.	zzaosioD	Removing ring gear bearing (left) inner race (transfer case side)
KV381054S0 (J-34286) Puller		Removing ring gear shaft oil seal

	ZZA0601D		G H
ST3127S000 (J-25765-A) Preload gauge		Measuring preload torque	
	ZZA0503D		J

Commercial Service Tool

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Tool name		Description	L
Power tool		Loosening nuts, screws and bolts	
			Μ
	×.		Ν
	PIIB1407E		
Drift a: 52 mm (2.05 in) dia. b: 44 mm (1.73 in) dia.		Removing gear ring bearing inner race (adapter case side)	0
	a b ZZA1002D		Ρ

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PREPARATION

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[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
	a b Mills	
Puller	N1115	Removing ring gear bearing (left) inner race
		(transfer case side)
	NT077	
Drift a: 70 mm (2.76 in) dia. b: 60 mm (2.36 in) dia.		Installing oil seal (installing pinion bearing seal)
Drift	NT115	Installing side oil seal (installing transfer cover
a: 78 mm (3.07 in) dia. b: 68 mm (2.68 in) dia.	a b NI115	oil seal)
Replacer		Removing drive pinion
	ZXA0700D	Removing ring gear bearing (left) inner race (transfer cover side)
Drift a: 58 mm (2.28 in) dia. b: 55 mm (2.17 in) dia.	ab	Installing ring gear bearing (left) inner race (transfer case side)
	NT115	

PREPARATION

< PREPARATION >

[TRANSFER: TY21C]

	٨
Drift a: 62 mm (2.44 in) dia. b: 58 mm (2.28 in) dia.	nner race A
NT115	С
Drift a: 73.5 mm (2.894 in) dia.	DLN E
Drift a: 87 mm (3.43 in) dia.	uter race F
a SCIA5338E	Н
Drift Removing drive pinion a: 20 mm (0.79 in) dia.	
a SCIA533BE	l J
Drift a: 50 mm (1.97 in) dia.	K
	L
Drift Installing companion flange	M
a: 40 mm (1.57 in) dia. b: 25 mm (0.98 in) dia.	Ν
NT115	0

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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-169.</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-516, "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-171, "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	٨
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</u> , "4WD SYSTEM : System Description". Refer to <u>STC-4</u> , "Component Parts Location" for detailed installation loca- tion.	B
7	Rear wheel sensor	BRC-13, "Wheel Sensor and Sensor Rotor" (Type 1) or BRC-171, "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> .	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.

< SYSTEM DESCRIPTION >

STRUCTURE AND OPERATION

Sectional View

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[TRANSFER: TY21C]



Revision: November 2015

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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.



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 	M
ECM	Transmits the following signals via CAN communication to 4WD control unit.Accelerator pedal position signalEngine speed signal	0
ТСМ	Transmits the following signals via CAN communication to 4WD control unit.Input shaft revolution signalCVT ratio signal	P
Combination meter	Transmits conditions of parking brake switch signal via CAN communication to 4WD con- trol unit.	
	Receives the following signal 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

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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	А
ALDIA0417ZZ Quick blinking (Blinking for approximately 1 minute and then turned OFF)	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, "Descrip-</u> <u>tion"</u> .	Shuts down 4WD system tem-	B C DLN
4WD	Malfunction in each tire or different tire diameter When this message is displayed, refer to <u>DLN-68, "Diagno-</u>	 porarily (Front wheel drive) 	E
ALDIA0417ZZ Slow blinking (Continuing to blink until ignition switch is turned OFF)	sis Procedure".		G

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DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

CONSULT Function

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[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: November 2015

DIAGNOSIS SYSTEM (4WD CONTROL UNIT)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21C]

Monitor item (Unit)	Remarks	٥
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.	
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:000000012552657

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
	Brake pedal: Depressed	On
STOP LAWF SW	Brake pedal: Released	Off
	Engine stopped (Engine speed: Less than 400 rpm)	Stop
LING OF LED SIG	Engine running (Engine speed: 400 rpm or more)	Run
	Engine stopped (Ignition switch: ON)	Off
	Engine running	On
	4WD warning indicator: ON	On
	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) 4WD shift switch: 2WD		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
F DRAKE 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 (±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





JSDIA0057ZZ

PHYSICAL VALUES

Termiı (Wire	nal No. color)	Description		- Condition		Value (Approx.)				
+	-	Signal name	Input/ Output							
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		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)	0.00110		capat	4WD shift switch: LOCK (State of hold of LOCK position		4WD shift switch: LOCK (State of hold of LOCK position)		4WD shift switch: LOCK (State of hold of LOCK position		0 V
7	Ground	lanition switch	Input	Ignition switch: ON		Battery voltage				
(W)	Giouna	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	0 V				
11 (B)	Ground	Ground			Always	0 V				
					4WD shift switch: 2WD	0 V				
12	Ground	4WD shift switch (2WD)	Output	Ignition switch: ON	4WD shift switch: AUTO	Battery voltage				
(BG)		(= - _)	-	5 -	4WD shift switch: LOCK (State of hold of LOCK position)	Battery voltage				

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[TRANSFER: TY21C]

4WD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Termi (Wire	nal No. color)	Description			Condition	Value (Approx.)
+	-	Signal name	Input/ Output		Condition	
					4WD shift switch: 2WD	Battery voltage
14	Ground	4WD shift switch (LOCK)	Output	Ignition switch: ON	4WD shift switch: AUTO	Battery voltage
(BR)				3 • • • • •	4WD shift switch: LOCK (State of hold of LOCK position)	0 V
15 (Y)	Ground	Power supply (4WD control unit)	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:000000012552658

- 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:000000012552659

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
ALDIA0417ZZ Quick blinking (Blinking for approximately 1 minute and then turned OFF)	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, "Descrip-</u> <u>tion"</u> .	Shuts down 4WD system tem-	B C DLN
		(Front wheel drive)	E
4WD	Malfunction in each tire or different tire diameter When this message is displayed, refer to <u>DLN-68</u> , " <u>Diagno-</u> <u>sis Procedure</u> ".		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)	J
2	C1201 CONTROLLER FAILURE C1205 4WD ACTUATOR RLY	
3	C1204 4WD SOLENOID	k
4	C1203 ABS SYSTEM C1210 ENGINE SIGNAL 1	
5	• C1209 MODE SW	
6	P1804 CONTROL UNIT 3	
7	P181F INCOMP CALIBRATION	N

DTC Index

INFOID:000000012552661

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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:000000012552662



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Signal Name CAN-L CAN-L GND CAN-L GND CAN-L 	B
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	J
CTORS - WI Signal Name Signal Name Signal Name Signal Name CAN-H CAN-H	L
No. M3 Name FUSE Name FUSE Color WHITE Image Image	N
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4WD SYSTEM

< WIRING DIAGRAM >



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				В
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Revision: November 2015

[TRANSFER: TY21C]

0 DINT CONNECTOR-E14 ACK	4 3 2 1	of Signal Name – – – – – – – – – – – – – – – – – – –	1	125 3S ACTUATOR AND ECTRIC UNIT (CONTROL NIT) (WITH 4WD SYSTEM) ACK	26 27 28 29 30 31 32 33 34 4 16 17 18 19 20 21 22 23 24 4 6 7 8 9 10 11 12 13 14 3	of Signal Name	CAN-L	CAN-H
Connector No. E7 Connector Name JC Connector Color BL	(1) H.S.	Terminal No. Color Color 1 Wire	. a. . m	Connector No. E Connector Name El U Connector Color B	HIS HIS	Terminal No. Color o	15 P	25 L
r connector-e12		Signal Name	1 1	E/R (INTELLIGENT ER DISTRIBUTION JLE ENGINE ROOM)	4 25 26 27 38 33 32 33 34 0 41 42 43 44 45 46 47 48 49 50	Signal Name	SUB ECU	
Connector No. E45 Connector Name JOINT Connector Color BLUE	H.S.	Terminal No. Color of Wire		Connector No. E119 Connector Name POWE Connector Color WHITI	19 20 21 22 23 2 H.S.	Terminal No. Color of Wire	19 SB	
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No. E34 Name WIRE Color WHITE	12 11 10 9 8 24 23 22 21 20	o. Color of Wire LG		No. E71 Name JOINT Color BLACH		o. Color of Wire		
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< WIRING DIAGRAM >

Signat Name	CONNECTOR-B10	
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B40

Connector No.

Termina	20	21
Signal Name	1	1

Color of Wire _ ٩

Terminal No.

H.S.H.

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Signal Name	I	I
Color of Wire	SB	Μ
Terminal No.	20	21

NT CONNECTOR-B12 TE 3 2 1 0



4WD SYSTEM



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4WD SYSTEM

DLN-32

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Connector No.	B102	Connector No.	B103
Connector Name	JOINT CONNECTOR-B14	Connector Name	JOINT CONNECTOR-B05
Connector Color	WHITE	Connector Color	WHITE
雨 H.S.		际 H.S.	

Signal		
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Terminal No.	1	2

Color of Wire	Ч	Ч
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Signal Name	I	I

Color of Wire _ _

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< WIRING DIAGRAM >

Signal Name	Ι	I
Color of Wire	Γ	٩
Terminal No.	18	19

[TRANSFER: TY21C]

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4WD SYSTEM





Connector Name COMBINATION METER

M24

Connector No.

Connector Color WHITE







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

DLN-34

2016 Pathfinder

Terminal No. Connector Name Nume Signal Name 7aA V - 7aA B - 7aA Connector Name WITE 7aA Connector Name MITE 7aA Connector Name Connector Name 7aA Connector Name Connector Name 7aA Connector Name Connector Name	0 ME Connector No. Connector No. Connector No. MA Tak Kor Tak Kor MA Maketorial Maketorial Kor Tak MA Maketorial Maketorial Maketorial Maketorial Maketorial Maketorial Maketorial Maketorial Maketorial Maktorial Maketorial Maketorial <th>) WIRE</th> <th></th> <th></th> <th></th> <th>6 7 8 9 10 11 12</th> <th>18 19 20 21 22 23 24</th> <th></th> <th>Signal Name</th> <th>1</th> <th>1</th> <th>I</th> <th></th> <th></th> <th></th> <th>) WIRE</th> <th></th> <th>6 5 4 3 2 1 18 17 16 15 14 13</th> <th>Signal Name</th> <th>1</th> <th>1</th> <th>1</th> <th></th> <th></th> <th></th>) WIRE				6 7 8 9 10 11 12	18 19 20 21 22 23 24		Signal Name	1	1	I) WIRE		6 5 4 3 2 1 18 17 16 15 14 13	Signal Name	1	1	1			
Terminal No. Oolor of Nine Signal Name 73A BG - 76A V - 81A BG - 90A L - 90A P -<	0 Terminal No. Color of wire in the individual of the indindividual of the individual of the individual of the in	Connector No. M56 Connector Name WIRE TO	Connector Color WHITE			H S 1 2 3 4 5			Terminal No. Color of Wire	10 BG	11 BR	12 V			Connector No. M214	Connector Name WIRE TO	Connector Color WHITE	頃 H.S. 23 22 21 20 19	Terminal No. Color of Wire	10 BG	11 BR	12 V			
Terminal No. Color of Wire Signe 73A BG V 76A V Signe 89A L V 90A P V	10 Terminal No. Color of Wine Signa 14 1 2 8 0 N 14 1 2 8 0 N N 15 1 2 8 0 N	l Name														NITCH			al Name	1	1	1	1	1	
Terminal 89A 90A 90A 80A 90A 90A 5 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3	40 Terminal RE TO WIRE 73A AY 76A Re TO WIRE 73A 1A 76 234 76 234 76 234 76 234 76 77 76 77 76 77 76 77 76 77 76 77 76 77 76 77 76 77 76 77 <td>No. Color of Signa</td> <td>BG</td> <td>></td> <td>BR</td> <td>BG</td> <td></td> <td>۵.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>or No. M212</td> <td>or Name 4WD SHIFT SV</td> <td>or Color BLACK</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>No. Color of Sign</td> <td>J</td> <td>В</td> <td>BG</td> <td>></td> <td>BR</td> <td>-</td>	No. Color of Signa	BG	>	BR	BG		۵.							or No. M212	or Name 4WD SHIFT SV	or Color BLACK	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	No. Color of Sign	J	В	BG	>	BR	-
	40 1A RE TO WIRE 1A RAY 1A 1A 1A <td< td=""><td>Terminal</td><td>73A</td><td>76A</td><td>80A</td><td>81A</td><td>89A</td><td>906</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Connecto</td><td>Connecto</td><td>Connecto</td><td>际 H.S.</td><td>Terminal</td><td>-</td><td>2</td><td>e</td><td>9</td><td>ø</td><td></td></td<>	Terminal	73A	76A	80A	81A	89A	906							Connecto	Connecto	Connecto	际 H.S.	Terminal	-	2	e	9	ø	

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< WIRING DIAGRAM >

Connector No. E16 Connector No. E32 O WIRE Connector Name ECM (FOR MEXICO) Connector Name ECM Connector Color GRAY Connector Color BACK		Signal Name Terminal No. Color of Wire Color of Wire Signal Name - 113 P CAN-L 114 L CAN-H 124 L CAN-H	Connector No. E45 Connector No. E70 O WIRE Connector Name JOINT CONNECTOR-E12 Connector Name JOINT CONNECTOR-E14 Connector Color BLUE Connector Color BLACK	7 6 5 4 3 2 1 19 18 17 16 16 14 13 H.S. (6 5 4 3 2 1)	Signal Name Terminal No. Color of Signal Name Terminal No. Wire Signal Name	
 M217 M2 MIRE TO WIRI MIRE TO WIRI 	7 6 5 4 3 16 15 14 13 12 11 10	Color of Sign Wire B	o. E34 ame WIRE TO WIR olor WHITE	12 11 10 9 8 7 6 5 24 23 22 21 20 19 18 17	Color of Sign	SB
inector Nc inector Na inector Co	S.	minal No. 10	nnector Nc nnector Nc	S.	minal No.	21

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< WIRING DIAGRAM >


4WD SYSTEM

< WIRING DIAGRAM >

Revision: November 2015

DLN-37

2016 Pathfinder

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[TRANSFER: TY21C]

T CONNECTOR-B1	2 1	Signal Name	T CONNECTOR-BI	321	Signal Name -
B12 ne JOIN or WHIT		Color of Mire	B17 me JOIN or WHIT	4	Color of Wire L
Connector No. Connector Nar Connector Col	品.R.	Terminal No.	Connector No. Connector Nar Connector Col	百百 H.S.	Terminal No.
CONNECTOR-B09		Signal Name	CONNECTOR-B11	2 1	Signal Name
B11 e JOINT r WHITE	1 4 3 2	P P Mire	B16 e JOINT	1 4 3	olor of Wire P
Connector No. Connector Nam Connector Colo	(百) H.S.	Terminal No. C	Connector No. Connector Nam Connector Colo	国 H.S.	Terminal No. C
TO WIRE		Signal Name	TO WIRE		Signal Name -
C13 IP WIRE T	10 11 12 12	Color of Wire SB	B13 Pe WIRE ⁻ M BLACK	13 4 3	color of Wire LG
Connector No. Connector Nam Connector Colo	U- US SH	Terminal No. C 13 14	Connector No. Connector Nam Connector Colo	H.S.	Terminal No. C

DLN-38

ABDIA1108GB

< WIRING DIAGRAM >

CONTROL UNIT E	3 14 15 15 15 16	Signal Name 4WD SOLENOID 4WD SOLENOID 4WD SOLENOID - - AUTO SW	Signal Name	G H
nector No. B67 nector Name 4WD nector Color WHIT		minal No. Color of Wire 2 V V 3 3 - V 5 V 5 V V	minal No. Color of Wire 73A Y 75A V 76A V 80A BR 81A BG 90A P	Ι
		L L L L L L L L L L L L L L L L L L L		J
WIRE	7 8 9 10 11 12 19 20 21 22 23 24	Signal Name	V WIRE 3 (2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	L
ector No. B40 ector Name WIRE TO ector Color WHITE	1 2 3 4 5 6 13 14 15 16 17 18	nal No. Color of Wire 0 SB	Sector No. B69 Bctor No. B69 Sector Name WIRE TC Sector Color GRAY Sector Section Sector Section Sector Section Sector Se	Ν
Conne Conne	HS H	Termi 2 2		0

CAN-H BATTERY (4WD SOLENOID) BATTERY (CONTROL UNIT) **IGNITION SWITCH** Signal Name LOCK SW GROUND GROUND 2WD SW CAN-L I I. Terminal No. Wire BG ВВ SB ≥ ш m _ Т ≻ ٩ L 9 ÷ 5 10 4 16 15 6 9 \sim œ

13 14 15 16 13 14 15 16	Signal Name	4WD SOLENOID (+)	4WD SOLENOID (-)	I
4 1	r of re	رت ا		

I	AUTO SW		Signal Name	I	I	I	
T	>		Color of Wire	Y	٨	ВВ	
4	5		Terminal No.	73A	A 6A	80A	

4WD SYSTEM

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BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000012552664

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>. <u>"Protection Function"</u>.

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 >

[TRANSFER: TY21C]

YES >> GO TO 7. NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-47, А "Intermittent Incident". 7.FINAL CHECK В With CONSULT 1. Check the reference value for 4WD control unit. Recheck the symptom and check that symptom is not reproduced on the same conditions. 2. Is the symptom reproduced? YES >> GO TO 3. NO >> INSPECTION END DLN Diagnostic Work Sheet INFOID:000000012552665

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

		Ir	terview sheet			
Customer name	MR/MS	Registration number		Initial year registration		
		Vehicle type		VIN		
Storage date		Engine		Mileage	km (Mile)	
		□Vehicle does	not enter 4WD mode.			
		□4WD warning	indicator is displayed.			
Symptom		□Heavy tight-c	orner braking symptom occ	urs		
-)			/ibration		0	
		Dothers				
First occurrence		□Recently □Others ()				
Frequency of occurrence		□Always □Under a certain conditions of □Sometimes (time(s)/day)				
		□Irrelevant			L	
Climate con-	Weather	□Fine □CI	oud ⊟Rain ⊟Snow	□Others ()	
ditions	Temperature	□Hot □Wa	rm □Cool □Cold	□Temperature (App	rox. °C)	
	Relative humidity	□High □Moderate □Low				
Road conditions		□Urban area □Suburb area □High way □Mounting road (uphill or down hill) □Rough road			N	
Operation conditions, etc.		□Irrelevant □When engine □During driving □During decele	starts During idling During acceleration eration During corneri	□At constant spee ng (right curve or left c	d driving urve)	

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[TRANSFER: TY21C]

Interview sheet					
Customer name	MR/MS	Registration number		Initial year registration	
		Vehicle type		VIN	
Storage date		Engine		Mileage	km (Mile)
Other conditions					

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. Work Procedure	В
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. Turn the ignition switch OFF to ON.
- 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".
- Check that "UNIT CHARACTERISTICS WRITE COMPLETED" is displayed.

>> WORK END



INFOID:000000012552668

INFOID:000000012552669

[TRANSFER: TY21C]

DTC/CIRCUIT DIAGNOSIS C1201 4WD CONTROL UNIT

DTC Logic

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1201	CONTROLLER FAILURE	Malfunction has occurred inside 4WD control unit.	Internal malfunction of 4WD control unit
DTC CONFIR	MATION PROCEDURI	Ξ	
1.PRECOND	ITIONING		
If "DTC CONF wait at least 10	RMATION PROCEDURE) seconds before conduct	" has been previously conducted, a ing the next test.	always turn ignition switch OFF and
>> G(O TO 2.		
2.PERFORM	DTC CONFIRMATION		
	SULT		
 Turn the ig Perform set 	nition switch OFF to ON. elf-diagnosis for "ALL MO	DE AWD/4WD".	
<u>Is DTC "C1201</u>	<u>" detected?</u>	- sie Des sodernell	
NO >> IN	SPECTION END	<u>DSIS Procedure"</u> .	
Diagnosis F	Procedure		INFOID:000000012552671
1.PERFORM	SELF-DIAGNOSIS		
(P) With CONS	SULT		
 Erase self Turn the ig Perform set 	-diagnostic results for "AL unition switch OFF, and the elf-diagnosis for "ALL MO	L MODE AWD/4WD". en wait 10 seconds or more. DE AWD/4WD".	
<u>VES</u> >> Re	<u>detected ?</u>	Refer to DI N-72 "Removal and Ins	tallation"
NO >> Ch	neck 4WD control unit pin v items are damaged, rep	terminals for damage or loose coloair or replace error-detected parts.	nnection with harness connector. If
	, U U U		

А

В

[TRANSFER: TY21C]

INFOID:000000012552670

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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:000000012552672

[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:000000012552673

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

(I) With CONSULT

Perform self-diagnosis for "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to <u>BRC-47, "DTC Index"</u> (Type 1) or <u>BRC-206, "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

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В

INFOID:000000012552674

[TRANSFER: TY21C]

DTC DETECTION LOGIC

DTC	Displa	ay item	Malfunction detected condition	Possible cause	
C1204	4WD SOLEN	סוכ	Malfunction related to 4WD solenoid ha been detected.	 Internal malfunction of electronic controlled coupling Malfunction of 4WD solenoid power supply circuit (open or short) Malfunction of 4WD solenoid command current 	
DTC CONFIE 1.PRECOND	RMATION PF	ROCEDURE		E	
If "DTC CONF wait at least 10	IRMATION PI 0 seconds bef	ROCEDURE"	has been previously conducted, g the next test.	always turn ignition switch OFF and	
>> G 2.perform	O TO 2. I DTC CONFII	RMATION		C	
 With CONS 1. Turn the ig 2. Perform s Is DTC "C120" 	SULT gnition switch elf-diagnosis f 4" detected?	OFF to ON. for "ALL MOD	E AWD/4WD".	ŀ	
YES >> Proceed to <u>DLN-47, "Diagnosis Procedure"</u> . NO >> INSPECTION END					
Diagnosis I	Procedure			INFOID:000000012552675	
Regarding Wir <u>"</u> or <u>DLN-33, "</u>	ring Diagram i <u>Wiring Diagra</u>	nformation, re m -Without Ar	fer to <u>DLN-24, "Wiring Diagram</u> ound View Monitor System-".	-With Around View Monitor System-	
1 .CHECK 4V	VD SOLENOII	D POWER SU	IPPLY (1)	l	
 Turn the ig Disconnee Check the 	gnition switch ct 4WD contro voltage betw	OFF. I unit harness een 4WD con	connector. trol unit harness connector and	ground.	
4WD co	ntrol unit		Voltago		
Connector	Terminal		voltage	1	
B67	9	Ground	Battery voltage		
4. Turn the ig CAUTION Never sta	gnition switch I: Int the engine	ON.		(
5. Uneck the	e voltage betw	een 4VVD con	troi unit narness connector and	grouna. F	
4WD co	ntrol unit				
Connector	Terminal		Voltage		
B67	9	Ground	Battery voltage		

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-15, "Wiring Diagram 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	LAISIEU

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.

	Resistance (Approx.)		
Connector	Terr		
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
007	2	012	2	LAISIEU

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
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	<u>nal?</u>			
YES >> GO TO 7.				А
NO >> 4WD solenoid	is malfunctioning.	Replace electric contr	olled coupling. Ref	er to <u>DLN-120,</u>
				В
	ID HARINESS CON	NECTURS		
 Check 4WD control unit p Check 4WD colonoid pin f 	in terminals for damage	age or loose connection v	with harness connect	tor.
Is the inspection result por	al?			С
YES >> Replace 4WD c	<u>nan:</u> Control unit Refer to	DI N-72 "Removal and L	nstallation"	
NO >> Repair or replace	ce error-detected pa	rts.	<u>notanation</u> .	
Component Inspection	n			
				INI 012.000000012332010
1. CHECK 4WD SOLENOI	D			E
1. Turn the ignition switch	OFF.			
2. Disconnect 4WD solend	oid harness connect	or.		
3. Check the resistance be	etween 4WD soleno	id harness connector terr	minals.	F
1WD colonoid				
Torminal	Resistance (Approx.)			G
	2.45.0			0
	2.43 \2			
	<u>181 /</u>			Н
NO >> 4WD solenoid	is malfunctioning.	Replace electric contr	olled coupling. Ref	er to DLN-120.
"Removal and I	nstallation".		ened eeepmig	
				1
				J
				K
				L
				M
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				0
				5
				Ч

< DTC/CIRCUIT DIAGNOSIS >

C1205 4WD ACTUATOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

C1205 4WD ACTUATOR RELAY

DTC Logic

INFOID:000000012552677

[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

(I) 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:000000012552678

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 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									
1	Ground	Not existed							В
2									
	TO 3	<u>{</u>							C
NO >> 4W	/D solenoid is	malfunctioning	. Replace ele	ectric (controlle	d couplin	ng. Refe	r to <u>DLN-</u>	<u>-120.</u>
<u>"Re</u>	emoval and Inst	allation".					-		
\mathbf{S} .CHECK 4W	D SOLENOID (CIRCUIT (2)							DL
heck the cont	inuity between	4WD control un	it harness conn	ector a	and the g	round.			
				-					F
4WD co	ontrol unit		Continuity						L
Connector	Terminal		Contaction	_					
B67	1	Ground	Not existed						F
	2			-					
the inspectio	n result normal	<u>?</u>							(
ES >> GC) TO 4. Ingir or replace	damaged parts							
CHECK IE	RIVIIINALS AND	HARNESS CO	NINECTORS						
Check 400	D control unit pi		amage of loos	e conn		hamanes			
			hage of loose c	Jonnec		namess	connecto	л. Л.	
	or connecting of	<u>?</u> ach harnoss ao	anactor porform		oonfirm	ation proof	oduro od	ain Whon	отс
"C	1205" is detecte	ed, replace 4WD	control unit. R	efer to	DLN-72	, "Remova	al and Ins	stallation".	DIC
IO >> Re	pair or replace	damaged parts.							
									l
									I
									l

Revision: November 2015

< DTC/CIRCUIT DIAGNOSIS >

C1209 MODE SW

DTC Logic

INFOID:000000012552679

[TRANSFER: TY21C]

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:000000012552680

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 sw	vitch	Continuity
Connector	Terr	ninal	Condition	Continuity
	2	з	4WD shift switch: 2WD	Existed
	2	5	Except the above	Not existed
M010	2	e e	4WD shift switch: AUTO	Existed
	2	0	Except the above	Not existed
	C	0	4WD shift switch: LOCK	Existed
	2	0	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 sh	ift 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 co	ntrol unit	4WD sh	ift 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 co	ntrol 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 sh	nift switch	Ground	Voltage (Approx.)	
Connector	Terminal	Giouna		
	3			
M212	6	Ground	Battery voltage	
	8			
		10		

Is the inspection result normal?

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

NO >> Replace 4WD control unit. Refer to <u>DLN-72</u>, "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:000000012552681

C1209 MODE SW

< DTC/CIRCUIT DIAGNOSIS >

	4WD shift switch			
Terminal		Condition	Continuity	
2	з	4WD shift switch: 2WD	Existed	
2	5	Except the above	Not existed	
2	6	4WD shift switch: AUTO	Existed	
		Except the above	Not existed	
2	8	4WD shift switch: LOCK	Existed	
		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

INFOID:000000012552682

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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
DTC CON	FIRMATION PROCEDUF	RE		
1.PRECO	NDITIONING			
If "DTC CO wait at leas	NFIRMATION PROCEDUR t 10 seconds before conduc	E" has been previously conducted, a cting the next test.	lways turn ignition switch OFF and	E
>> 2.perfo	GO TO 2. RM DTC CONFIRMATION			F
With COStart thPerform	DNSULT le engine and drive at 30 km n self-diagnosis for "ALL M0	n/h (19 MPH) or more for approximat DDE AWD/4WD".	ely 1 minute.	G
Is DTC "C1 YES >> NO >>	210" detected? Proceed to diagnosis proce INSPECTION END	edure. Refer to <u>DLN-55, "Diagnosis I</u>	Procedure".	Η
Diagnosi	s Procedure		INFOID:000000012552683	1
1.PERFO	RM ECM SELF-DIAGNOSIS	8		I
() With CO Perform se	DNSULT If-diagnosis for "ENGINE".			J
Is any DTC YES >> NO >>	 detected? Check the DTC. Refer to (Mexico). GO TO 2. 	EC-104, "DTC Index" (USA and (Canada) or <u>EC-592, "DTC Index"</u>	K
2.снеск	TERMINALS AND HARNE	SS CONNECTORS		L
Check 4WI	D control unit pin terminals f	or damage or loose connection with	harness connector.	
Is inspectic	n result normal?			
YES >>	 After turning the ignition sv is detected, Replace 4WD 	vitch OFF, perform DTC confirmation control unit. Refer to <u>DLN-72, "Remain</u>	n procedure again. If DTC "C1210" oval and Installation".	IVI
NO >>	 Repair or replace error-def 	ected parts.		Ν
				0

< DTC/CIRCUIT DIAGNOSIS >

P1804 4WD CONTROL UNIT

DTC Logic

INFOID:000000012552684

[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 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

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:000000012552685

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:000000012552686

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[TRANSFER: TY21C]

DTC	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 CONFI	RMATION PROCEDUR	E	
1.PRECOND	DITIONING		
f "DTC CONF vait at least 1	FIRMATION PROCEDURE	E" has been previously conducted, a ting the next test.	lways turn ignition switch OFF and
>> (GO TO 2.		
2.PERFORM	I DTC CONFIRMATION		
With CON With CON Turn the C. Perform s	I SULT ignition switch OFF to ON. self-diagnosis for "ALL MO	DE AWD/4WD".	
<u>s DTC "P181</u>	F" detected?	a dia Dua a di wall	
NO >> I	VICCEED TO <u>DLN-57, "Diagn</u> NSPECTION END	osis Procedure".	
Diagnosis	Procedure		INFOID:000000012552687
	WRITING UNIT CHARA	CTERISTICS	
 Erase sel Perform v Turn the 	If-diagnostic result for "ALI writing unit characteristics. ignition switch OFF to ON.	- MODE AWD/4WD". Refer to <u>DLN-44, "Work Procedure</u>	<u>"</u> .
I. Perform	self-diagnosis for "ALL MO	DE AWD/4WD".	
<u>s any DIC e</u> YES >> P	<u>xcept "P181F" detected?</u> Perform trouble diagnosis f	or detected DTC. Refer to DLN-23	"DTC Index"
NO >> G	SO TO 2.		
2.PERFORM	A SELF-DIAGNOSIS AGA	IN	
With CON Perform "DTC	I SULT C CONFIRMATION PROCI	EDURE" (self-diagnosis) again. Ref	er to <u>DLN-23, "DTC Index"</u> .
<u>s DTC "P181</u>	F" detected?		
YES >> R	Replace 4WD control unit.	Reter to <u>DLN-72, "Removal and Inst</u>	tallation".

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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:000000012552689

INFOID:000000012552690

INFOID:000000012552688

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

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

Is DTC "U1000" detected?

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

Diagnosis Procedure

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

< 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:000000012552692

DTC DETECTION LOGIC

Revision: November 2015

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
DTC CONFIR	MATION PROCEDUR	E	
1.PRECONDI	TIONING		
If "DTC CONFI	RMATION PROCEDURE	" has been previously conducted, a	lways turn ignition switch OFF and
wait at least 10	seconds before conduct	ting the next test.	
>> 6(
	DTC CONFIRMATION		
With CONS 1 Turn the in	ULI nition switch OFF to ON		
2. Perform se	elf-diagnosis for "ALL MO	DE AWD/4WD".	
<u>Is DTC "U1010</u>	" detected?		
YES >> Pro	oceed to <u>DLN-59, "Diagn</u>	osis Procedure".	
NO >> INS	SPECTION END		
Diagnosis P	rocedure		INFOID:000000012552693
Check 4WD co	ntrol unit harness conne	ctor for disconnection and deformati	on.
is the inspectio	n result normal?		
YES >> Re	place 4WD control unit.	Refer to <u>DLN-72, "Removal and Inst</u>	allation".
	pair of replace error-dete		

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INFOID:000000012552691

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< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000012552694

[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 control unit Connector Terminal			Voltage (Approx.)
			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 control unit Connector Terminal			Voltage
			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 control unit		IPDN	IPDM E/R	
Connector	Terminal	Connector	Connector Terminal	
B67	7	E119	19	Existed

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

4WD control unit Connector Terminal			Continuity
			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-28</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]

	ontrolunit				-	А
				Voltage		/ \
Connector	Terminal	0	ad Da		-	
B67	15	Grou	nd Ba	ttery voltage	-	В
 Turn the CAUTION Never st Check th 	N: art the engi ne voltage be	n ON. ne. tween 4WI	D control uni	t harness co	nnector and ground.	С
4WD c	ontrol unit				-	
Connector	Terminal			Voltage		DL
	15	Grou	nd Ba	tterv voltage	-	
ls the inspect	tion result no	rmal?		tiony voltage	-	F
YES $>> 0$ NO $>> 0$ 4 .CHECK 4V	GO TO 5. GO TO 4. WD CONTRO		OWER SUF	PPLY (4)		F
 Check th Disconne Check th tor. 	e 10A fuse (a ect fuse block e continuity	#25). k (J/B) harr between 4\	ness connec WD control	tor. unit harness	connector and fuse block (J/B) harness connec-	G
4WD con	trol unit	Fuse bl	ock (I/B)		-	
Connector	Terminal		Terminal	Continuity		
B67	15	M3	2NI	Evisted	-	
5 Chock th					-	
J. CHECK III		Jelween 41				.1
4WD c	ontrol unit				-	0
Connector	Terminal			Continuity		
B67	15	Grou	nd N	Not existed	-	K
Is the inspect	tion result no	rmal?			-	
YES >> F	Perform the t	rouble diag	gnosis for p <u>′_"</u> .	ower supply	circuit. Refer to PG-15, "Wiring Diagram - BAT-	L
				(1)		
	institute 1		N SUPPLI	(1)		M
 1. Turn the 2. Disconne 3. Check th 	ect 4WD sole	noid harne tween 4WE	ess connecto D control un	or. It harness co	nnector and ground.	Ν
4WD c	ontrol unit			Valtage	-	
Connector	Terminal			vollage		0
B67	9	Grou	nd Ba	ttery voltage	-	
4. Turn the CAUTIO Never st	ignition switc N: art the engi	h ON. ne.			-	Ρ
5. Check th	e voltage be	tween 4WE	D control uni	t harness co	nnector and ground.	
4WD c	ontrol unit			Voltage		
Connector	Terminal				_	
B67	9	Grou	nd Ba	ttery voltage		

Revision: November 2015

DLN-61

2016 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-15</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		Continuity		
B67	10	Ground	Existed		
507	11	Ground	Existed		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace error-detected parts.

4WD WARNING ICON/DISPLAY		
< DTC/CIRCUIT DIAGNOSIS >	[TRANSFER: TY21C]	
4WD WARNING ICON/DISPLAY		
Diagnosis Procedure	A INFOID:000000012552695	
1. CHECK POWER SUPPLY AND GROUND CIRCUIT	В	
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.	Ũ	
2. PERFORM SELF-DIAGNOSIS (4WD CONTROL UNIT)		
		N
Perform self-diagnosis for "ALL MODE AWD/4WD".		
Is any detected?	E	
NO >> GO TO 3.		
3. PERFORM SELF-DIAGNOSIS (COMBINATION METER)	F	
With CONSULT		
Perform self-diagnosis for "METER/M&A".	G	
YES >> Check the DTC. Refer to MWI-29. "DTC Index".		
NO >> Perform the trouble diagnosis for combination meter power supply <u>"COMBINATION METER : Diagnosis Procedure"</u> .	circuit. Refer to <u>MWI-61,</u> H	
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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

With CONSULT

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:000000012552696

INFOID:000000012552697

[TRANSFER: TY21C]

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS	
< SYMPTOM DIAGNOSIS > [TRANSFER: TY21C]	
HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS	Δ
Description INFOID:000000012552698	/ \
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:	В
Dis seaso is Descendence	С
Diagnosis Procedure	
1.PERFORM ECM SELF-DIAGNOSIS	DLN
With CONSULT Perform self-diagnosis for "ENGINE". Is any DTC detected?	E
(Mexico). NO >> GO TO 2. 2. PERFORM SELF-DIAGNOSIS	F
With CONSULT Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "U1000" detected?	G
YES >> Proceed to <u>LAN-21, "Trouble Diagnosis Flow Chart"</u> . NO >> GO TO 3. 3 CHECK AWD SOLENOID	Η
Perform the trouble diagnosis of the 4WD solenoid. Refer to <u>DLN-47, "Diagnosis Procedure"</u> .	I
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. Lift up the vehicle. Rotate the propeller shaft by hand. Hold rear wheel of right and left lightly. 	K
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. 	M

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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

With CONSULT

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

Monitor Item	Condition	Status
P BRAKE SW	When the parking brake pedal is 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-139</u>, "Diagnosis Procedure" (Type 1) or <u>BRC-300</u>, "Diagnosis Procedure" (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:000000012552700

INFOID:000000012552701

4WD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

< SYMPTOM DIAGNOSIS >

4WD HIGH TEMP IS DISPLAYED ON INFORMATION DISPLAY

Description

INFOID:000000012552702

[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:000000012552703

[TRANSFER: TY21C]

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

Diagnosis Procedure

INFOID:000000012552704

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:000000012552705

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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
SUSPECTED P/ (Possible cause)	ARTS	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
Symptom	Noise	1	2				3	3	3	_
Symptom	Transfer oil leakage		3	1	2	2	2			

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PERIODIC MAINTENANCE TRANSFER OIL

Inspection

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.

Remove filler plug (1) and gasket. 1.

<⊐ : Front

- Transfer oil level (A) should be level with bottom of filler plug 2. hole. Add transfer oil if necessary. Refer to MA-17, "FOR USA AND CANADA : Fluids and Lubricants" (United States and Canada) or MA-19, "FOR MEXICO : Fluids and Lubricants" (Mexico).
- 3. Set a new gasket onto filler plug, and install it in the transfer and tighten to specified torque. Refer to DLN-93, "Exploded View". **CAUTION:**

Do not reuse gasket.

Draining

CAUTION:

Do not start engine while working.

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

⟨□ : Front

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

Do not reuse gasket.



CAUTION:

Do not start engine while checking transfer oil level.

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

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INFOID:000000012552707



INFOID:000000012552708



[TRANSFER: TY21C]

INFOID:000000012552706

TRANSFER OIL

	Transfer oil grade and viscosity	: Refer to <u>MA-17, "FOR USA</u> <u>AND CANADA : Fluids and</u> <u>Lubricants"</u> (United States and Canada) or <u>MA-19, "FOR</u> <u>MEXICO : Fluids and Lubri- cants"</u> (Mexico).	A
	Transfer oil capacity	: Refer to <u>DLN-97, "General</u> <u>Specifications"</u> .	С
3.	Set a new gasket onto filler plug 93, "Exploded View". CAUTION: Do not reuse gasket	g, and install it in the transfer and tighten to specified torque. Refer to <u>DLN-</u>	DLN
	Do not reuse gasket.		Е
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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-93. "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-87</u>, "ADDITIONAL SERVICE WHEN REMOVING BAT-<u>TERY NEGATIVE TERMINAL</u> : Special Repair Requirement".

INFOID:000000012552709
< 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).

4. Separate the CVT shift selector indicator lamp from the CVT

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

shift selector finisher by pressing down on the pawls. (): Pawls

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

DLN-73

INSTALLATION

Installation is in the reverse order of removal.

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< REMOVAL AND INSTALLATION >

TRANSFER COVER

Removal and Installation

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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".

Exploded View

[TRANSFER: TY21C]

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• After removing transfer from transaxle, always replace differential side oil seal of the transaxle side with new one. Refer to TM-218, "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

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[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.



4. 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".

[TRANSFER: TY21C]



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:

4.

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

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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

- 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)

[TRANSFER: TY21C]

- 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 DLN-78, "Disassembly".
- 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)



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



< 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.



< UNIT DISASSEMBLY AND ASSEMBLY >

- 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.

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

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

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

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

Do not wrap sliding surfaces on oil seal.

 Install transfer cover to check and adjust each part. Refer to <u>DLN-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.

 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.

- 11. Reinstall transfer cover for installing O-ring. Refer to DLN-79, "Assembly".
- 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.

DLN-84

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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

2016 Pathfinder

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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.
- Measure the pinion bearing preload using Tool. C.

Tool number Pinion bearing preload

: ST3127S000 (J-25765-A) : 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.
 - 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





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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 as

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.



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< UNIT DISASSEMBLY AND ASSEMBLY >

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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

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

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

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

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

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

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Disassembly

- 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</u>, "Assembly". **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 >

INFOID:000000012552730

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.

SERVICE	ATA AND SPECIFICATION	S (SDS)				
General Speci	fications	INFOID:000000012552731				
		ℓ (US pt. Imp pt)				
Applied model		VQ35DE				
		CVT				
Transfer model		TY21C				
Oil Type		MA-17 (United States and Canada) or MA-19 (Mexico)				
Oil capacity (Approx.)	0.31(5/8 pt, 1/2 pt)				
Gear ratio		0.404				
Number of teeth	Ring gear	42				
Number of teeth	Drive pinion	17				
	Item	Unit: N⋅m (kg-m, in-lb) Standard				
Pinion bearing preload		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)				
	With all oil seals					
Total preload	With all oil seals Without oil seals (for transfer cover and transfer case)	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)	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)	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) INFOID:000000012552733 Unit: mm (in)				
Total preload	Vith all oil seals Without oil seals (for transfer cover and transfer case) Item	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) INFOID:000000012552733 Unit: mm (in) Standard				
Total preload Backlash Ring gear to drive pir	With all oil seals Without oil seals (for transfer cover and transfer case) Item Item	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) <i>INFOID:000000012552733</i> Unit: mm (in) <u>Standard</u> 0.16 – 0.21 (0.0063 – 0.0083)				
Total preload Backlash Ring gear to drive pir Companion FI	With all oil seals Without oil seals (for transfer cover and transfer case) Item ion ange Runout	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) <i>INFOID:000000012552733</i> Unit: mm (in) <u>Standard</u> 0.16 – 0.21 (0.0063 – 0.0083) <i>INFOID:000000012552734</i>				
Total preload Backlash Ring gear to drive pir Companion Fl	With all oil seals Without oil seals (for transfer cover and transfer case) Item ion ange Runout	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) INFOID:000000012552733 Unit: mm (in) Standard 0.16 – 0.21 (0.0063 – 0.0083) INFOID:000000012552734 Unit: mm (in)				
Total preload Backlash Ring gear to drive pir Companion Fl	With all oil seals Without oil seals (for transfer cover and transfer case) Item ion ange Runout Item	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) <i>INFOID:000000012552733</i> Unit: mm (in) <u>Standard</u> 0.16 – 0.21 (0.0063 – 0.0083) <i>INFOID:000000012552734</i> Unit: mm (in) Limit				
Total preload Backlash Ring gear to drive pir Companion Flange factor	With all oil seals Without oil seals (for transfer cover and transfer case) Item ange Runout Item Item e (inner side of the propeller shaft bolt holes)	P1 + 0.5 – 0.8 (0.06 – 0.08, 5.0 – 7.0) INFOID:000000012552733 Unit: mm (in) Standard 0.16 – 0.21 (0.0063 – 0.0083) INFOID:000000012552734 Unit: mm (in) Limit 0.15 (0.0059)				

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.

< PREPARATION > PREPARATION

PREPARATION

Commercial Service Tool

INFOID:000000012552736

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

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000012552737

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

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-57, "NVH Troubleshooting Chart"	WT-57, "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

INFOID:000000012552739

INFOID:000000012552740



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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- 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 <u>DLN-104</u>, "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)



2016 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:000000012552741

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 "△").

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</u>, "Journal 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.

DLN-104

REAR PROPELLER SHAFT < REMOVAL AND INSTALLATION > [REAR PROPELLER SHAFT: 3FCJ-CVJ]	
CAUTION: Do not disassemble center bearing.	A
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:000000012552742

Applied model		4WD				
		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 transfer		Flange type				
Coupling method with rear final drive		Flange type				
Shaft langth	1st (Spider to EDJ joint center)	1,332 mm (52.44 in)				
Shaft length	2nd (EDJ joint center to spider)	946 mm (37.24 in)				
Ohaft auton diamata :	1st	80 mm (3.15 in)				
	2nd	70 mm (2.76 in)				

Propeller Shaft Runout

INFOID:000000012552743

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

Journal Axial Play

INFOID:000000012552744

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"

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, 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:000000012552747

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



Commercial Service Tools

INFOID:000000012552748
PREPARATION

[REAR FINAL DRIVE: R145K1]



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SYSTEM DESCRIPTION STRUCTURE AND OPERATION

Sectional View

INFOID:000000012552749



- 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:000000012552750

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 ASSEM-	~
	В
Description	
When replacing rear final drive assembly, unit characteristics writing is required.	С
Work Procedure	

 Work Procedure
 INFOID:00000012552752

 1.PERFORM WRITING UNIT CHARACTERISTICS
 DLN

 Perform writing unit characteristics of electric controlled coupling.
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>> 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:000000012552753

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

Work Procedure

INFOID:000000012552754

1.PERFORM WRITING UNIT CHARACTERISTICS

Perform writing unit characteristics of electric controlled coupling.

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

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

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000012552755

Mathematical Stress Mathematical Stress Mathematical Stress Matter Stress Companion fiange excessive runout DLN-113. "Adlustment" Data DLN-113. "Adlustment" I Matter Stress DLN-100. "NVH Troubleshooting Chart" Matter Stress DLN-113. "Adlustment" Matter Stress DLN-114. "Inspection" Matter Stress DLN-114. "Inspection" <td< th=""><th>Symptom</th><th>noise</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th>×</th><th></th></td<>	Symptom	noise	×	×	×	×	×	×	×	×	×	×	×	×	×	
Meter State Doth rough Doth rough Montact improper Surfaces worn Surfaces worn Surfaces worn Mill improper Surfaces worn Surfaces worn I Mill improper DLN-114. "Inspection" I I Mill improper BR-6. "NVH Troubleshooting Chart" I I Mill improper SI42. "NVH Troubleshooting Chart" </td <td colspan="2">Ourseland Naio</td> <td>Gear to</td> <td>Gear c</td> <td>Tooth :</td> <td>Backla</td> <td>Comp</td> <td>Gear c</td> <td>PROP</td> <td>AXLE</td> <td>TIRE</td> <td>ROAD</td> <td>DRIVE</td> <td>BRAKI</td> <td>STEEF</td> <td>J</td>	Ourseland Naio		Gear to	Gear c	Tooth :	Backla	Comp	Gear c	PROP	AXLE	TIRE	ROAD	DRIVE	BRAKI	STEEF	J
BR-6, "NVH Troubleshooting Chart", ST-42, "NVH Troubleshooting Chart, ST-42, "NVH Troubleshooting Chart, ST	Possible cause and SUSPECTED PARTS	ooth rough	contact improper	surfaces worn	ish incorrect	anion flange excessive runou	jil improper	ELLER SHAFT	AND SUSPENSION		WHEEL	E SHAFT	ш	RING	G H	
	Reference		I	I	1	I	t DLN-133, "Adjustment"	DLN-114, "Inspection"	DLN-100, "NVH Troubleshooting Chart'	EAX-5, "NVH Troubleshooting Chart", RAX-4, "NVH Troubleshooting Chart", ESU-3, "NVH Troubleshooting Chart", RSU-4, "NVH Troubleshooting Chart"	WT-57, "NVH Troubleshooting Chart"	WT-57, "NVH Troubleshooting Chart"	EAX-5, "NVH Troubleshooting Chart", RAX-4, "NVH Troubleshooting Chart"	BR-6, "NVH Troubleshooting Chart"	ST-42, "NVH Troubleshooting Chart"	C DL F

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2016 Pathfinder

Revision: November 2015

DLN-113

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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-17, "FOR USA AND CANADA :</u> <u>Fluids and Lubricants"</u> (United States and Canada) or <u>MA-19,</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:000000012552757



INFOID:000000012552758

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.



INFOID:000000012552756

< [PERIODIC MAINTENANCE >	[REAR FINAL DRIVE: R145K1]				
	Oil grade and viscosity	: Refer to <u>MA-17, "FOR USA</u> <u>AND CANADA : Fluids and Lu-</u> <u>bricants"</u> (United States and Canada) or <u>MA-19, "FOR MEXI-</u> <u>CO : Fluids and Lubricants"</u> (Mexico).		A		
	Oil capacity	: Refer to <u>DLN-135, "General</u> Specification".		С		
3.	Install filler plug (1) and tight	en to specified torque. Refer to <u>DLN-13</u>	80. "Exploded View".	DLN		
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< REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION TORSIONAL DAMPER

Exploded View

INFOID:000000012552759

INFOID:000000012552760



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.) CAUTION:

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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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:000000012552761

[REAR FINAL DRIVE: R145K1]



1. Final drive assembly

2. Side oil seal

- A. Oil seal lip
- Front

Removal and Installation

INFOID:000000012552762

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

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- 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, "Description".

REMOVAL

- 1. Move the shift selector to the neutral position, and then release the parking brake.
- 2. Drain rear differential gear oil. Refer to DLN-114, "Draining".
- 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.



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 <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>, "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 DLN-120, "Removal and Installation".
- 5. Remove wave washer.

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FRONT OIL SEAL

< REMOVAL AND INSTALLATION >

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

Do not damage final drive assembly.





INSTALLATION

- Install drain plug. 1. **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.
- 4. Apply liquid gasket (1) to mating surface of coupling cover. Use Genuine Silicone RTV or equivalent. Refer to GI-22. "Recommended Chemical Products and Sealants". **CAUTION:**
 - 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.







< 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.







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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, "Description".



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> , "Removal and Installation".	M
3.	Remove the vehicle spare tire.	
4.	Remove the rear drive shafts. Refer to RAX-9, "Removal and Installation".	N
5.	Remove rear stabilizer bar. Refer to RSU-15, "Removal and Installation".	14
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 (**←**).

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[REAR FINAL DRIVE: R145K1]

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 <u>FL-13</u>, <u>"Removal and Installa-tion"</u>.

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.





< 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 (<).

- 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.

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, "Description"</u>.



[REAR FINAL DRIVE: R145K1]



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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.







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< 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.









[REAR FINAL DRIVE: R145K1]

< UNIT DISASSEMBLY AND ASSEMBLY >

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

CAUTION:

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

16. 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 DLN-133, "Adjustment".
- 18. When oil leaks while removing, check oil level after installation. Refer to DLN-114, "Inspection".
- 19. When replacing electric controlled coupling, perform writing unit characteristics after installing final drive assembly to the vehicle. Refer to DLN-112, "Description".

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 DLN-135, "Companion 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.

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< 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 SPEC	AND SPECIF	[REAR FINAL D	DRIVE: R145K1]	
SERVICE DATA AND	SPECIFICATION	NS (SDS)		A
General Specification			INFOID:000000012552774	В
		4WD		0
Applied model		VQ35DE		C
		CVT		
Final drive model		R145K1		DLN
Gear ratio		2.466		
Number of teeth (Drive gear/Drive pin	nion)	37/15		_
Oil capacity (Approx.)	ℓ (US pt, Imp pt)	0.5 (1, 7/8)		E
Number of pinion gears		2		
Companion Flange Run	out		INFOID:000000012552775	F
			Unit: mm (in)	

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

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