SECTION DLN
DRIVELINE

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000013582333

Risk of injury

There is a risk of injury caused by parts becoming projectiles if uncontrolled deployment of air bag or seat belt pre-tensioner occurs, or by storing air bag with the deployment side facing downwards. When scrapping air bag or seat belt pre-tensioner by means of controlled deployment, there is also a danger present if a sufficiently safe distance is not maintained, or if opening using cutting torches or other cutting tools, or due to smelting or if parts that are not yet triggered are exposed to a blaze or a smoldering fire at landfills.

Safety instructions/precautions

- Removed air bag must always be stored with deployment side facing up.
- Acquisition, transportation, storage, testing and assembly work should only be performed or supervised by properly trained personnel.
- Install air bag or seat belt pre-tensioner immediately following retrieval from storage.
- Air bag and seat belt pre-tensioner must be protected from flying sparks, open fires and temperature exceeding 100°C (212°F).
- Never transport air bag and seat belt pre-tensioner in the passenger compartment. Store them securely in the luggage room of the vehicle in their original replacement part packaging and secure them so that they cannot slip around.
- Never allow air bag and seat belt pre-tensioner to come into contact with grease, oil, or cleaning agents.
- Perform system tests using approved testing equipment only, and only when the units are properly installed and the vehicle is unoccupied.
- Before the initial hookup of the battery or an external power supply, the ignition must be switched on and the vehicle unoccupied.
- Air bag and seat belt pre-tensioner that fall from a height of more than 0.5 m must be replaced.
- When scrapping by means of controlled deployment of air bag and seat belt pre-tensioner, a safe distance of at least 10 m must be maintained.
- Before starting work on air bag and seat belt pre-tensioner and work on components that are connected to air bag and seat belt pre-tensioner or require and intervention in their electric circuit (e.g. when removing the steering wheel):

- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery

- Before starting bodywork in combination with welding or retrofitting, during which work is performed on uninsulated, current-carrying lines or require an intervention in their electric circuit (e.g. when removing the steering wheel):

- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery.
- During welding, disconnect plug connection and from control unit of air bag.

- When the air bag deploys, the pyrofuse activates and the power source from the battery is disconnected. This prevents possible fires caused by electric leakage after an accident occurs.

Precautions for Removing Battery Terminal

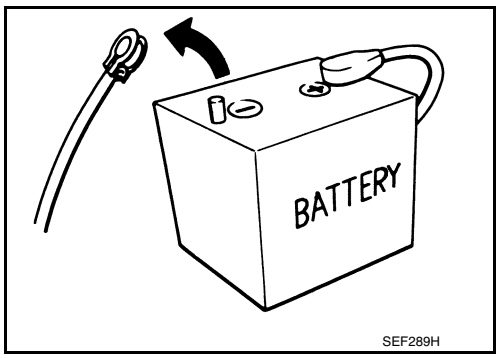
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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



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

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

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

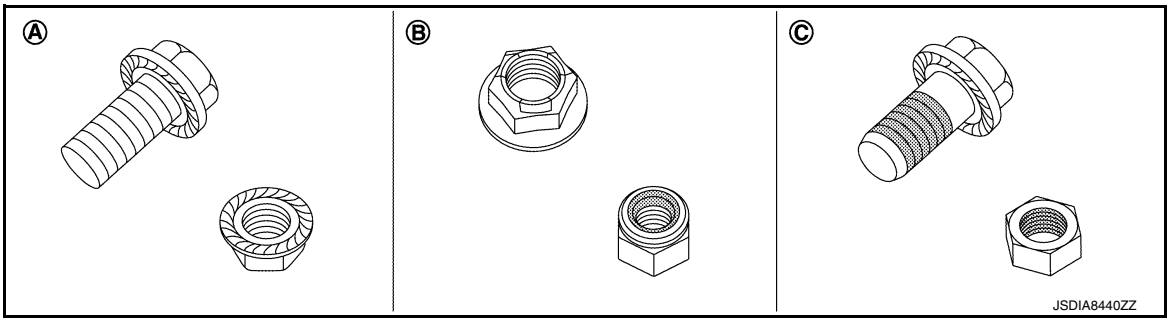
NOTE:
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

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

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

Precautions for Self-locking Nuts and Bolts

INFOID:0000000013582335



Ⓐ Bolt and nut with locking splines Ⓑ Self-locking nuts Ⓒ Adhesive coated bolt and nut

CAUTION:
Bolts and nuts with locking splines, self-locking nuts, and adhesive coated bolts and nuts must always be replaced after they have been used once. Also, the bolts must always be replaced on bolted connections with self-locking nuts made of all-metal.

Service Notice or Precautions for Transfer

INFOID:0000000013582336

- Transfer unit is completely integrated into the transaxle assembly and a collective oil system is implemented.
- 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 unusually worn tires applies excessive force to vehicle mechanism and can cause longitudinal vibration.
- Disassembly should be done in a clean work area, it is preferable to work in dustproof area.

- 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.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- 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.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new ones if necessary.
- 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 flash the parts sufficiently and blow-dry them.
- Be careful not to damage sliding surfaces and mating surfaces.
- Clean inner parts with lint-free cloth or towels. Do not use cotton work gloves and rags to prevent adhering fibers.

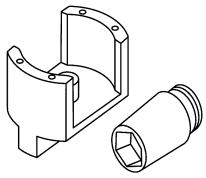
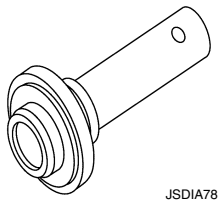
PREPARATION

PREPARATION

Special Service Tool

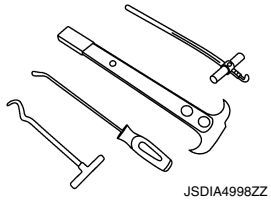
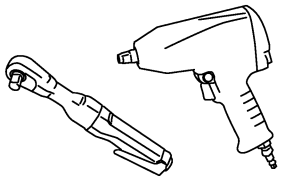
INFOID:0000000013582337

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

Tool number (TechMate No.) (DAIMLER tool No.) Tool name	Description
KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00) Socket wrench set  JSDIA8789ZZ	Removing and installing nut on radial shaft
KV385H0060 (TechMate No. —) (DAIMLER tool No. 724 589 03 15 00) Drift  JSDIA7877ZZ	Installing radial shaft oil seal

Commercial Service Tool

INFOID:0000000013582338

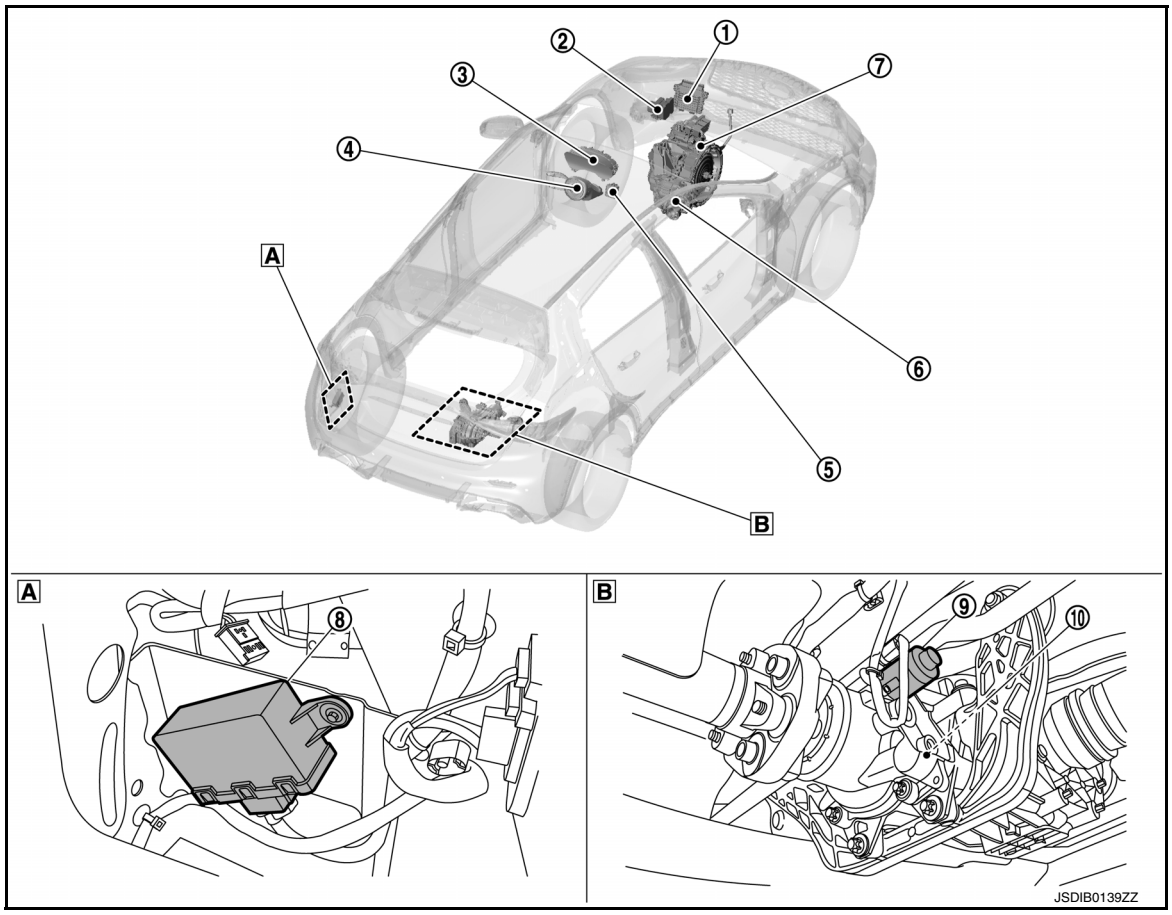
Tool name	Description
Oil seal remover  JSDIA4998ZZ	Removing radial shaft oil seal
Power tool  PBIC0190E	Loosening bolts and nuts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000013582339



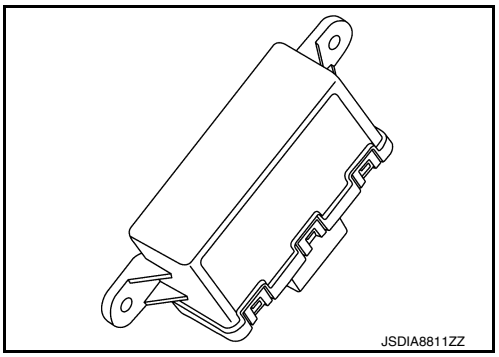
A Luggage room rear left side B Rear final drive

No.	Component	Function
①	ECM	For detailed installation location, refer to EC-27, "Component Parts Location".
②	Electric stability program control unit	For detailed installation location, refer to BRC-29, "Component Parts Location".
③	Combination meter	For detailed installation location, refer to MWI-7, "METER SYSTEM : Component Parts Location".
④	Steering column control module	For detailed installation location, refer to BCS-9, "STEERING COLUMN CONTROL SYSTEM : Component Parts Location".
⑤	Electronic ignition switch control unit	For detailed installation location, refer to PCS-5, "Component Parts Location".
⑥	Transfer	Refer to DLN-9, "Transfer".
⑦	TCM	For detailed installation location, refer to TM-17, "Component Parts Location".
⑧	AWD control unit	Refer to DLN-9, "AWD Control Unit".
⑨	AWD solenoid	Refer to DLN-9, "AWD Solenoid".
⑩	Multiple disk clutch	Refer to DLN-10, "Multiple Disk Clutch".

AWD Control Unit

INFOID:0000000013582340

The AWD control unit actuates AWD solenoid valve to engage the rear axle. The AWD solenoid valve then closes the multiple disk clutch in the rear final drive assembly.


JSDIA8811ZZ

WEAR DATA STORED IN AWD CONTROL UNIT

Wear data of the rear final drive is stored in the AWD control unit. When replacing the AWD control unit, this data must first be read out so that the data can be stored in the new AWD control unit. If the oil or the entire rear final drive assembly is replaced, the wear data must be reset in order to guarantee optimal functioning. When the AWD solenoid is replaced, the valve resistance value must be taught in again.

CALCULATION OF TEMPERATURE

The temperature in rear final drive is calculated by means of an internal model in AWD control unit. The ambient temperature and the position of the AWD solenoid valve are the input factor.

MESSAGE IN THE INFORMATION DISPLAY (COMBINATION METER)

In case of malfunctions in the system, the messages are displayed in the combination meter.

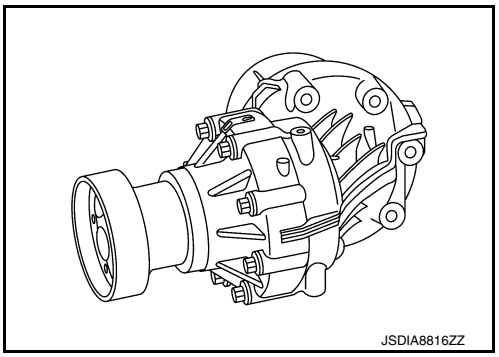
Temporary error such as overheating
- AWD drive temporarily out of operation.

Permanent malfunctions and serious malfunctions
- AWD drive out of order.

Transfer

INFOID:0000000013582341

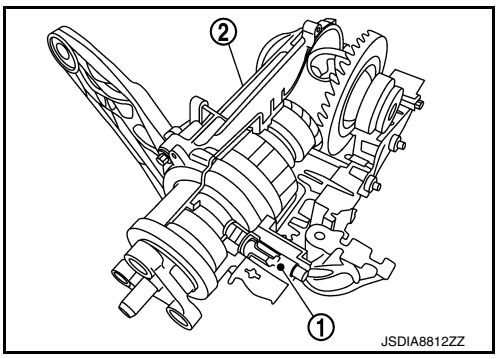
The transfer is used for torque transfer from the transaxle to the rear final drive via propeller shaft.
The bearing of the shafts in the transfer housing takes place over tapered roller bearings with minimized friction.
Lubrication is ensured through a shared of oil supply with the transaxle assembly.


JSDIA8816ZZ

AWD Solenoid

INFOID:0000000013582343

- AWD solenoid ① is mounted on housing of rear final drive assembly ②.
- AWD solenoid regulates the level of the oil pressure that acts on the piston and actuates the multiple disk clutch.
- AWD solenoid is operated by command current from AWD control unit.

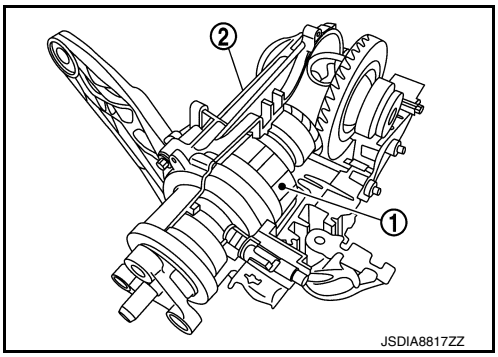


JSDIA8812ZZ

Multiple Disk Clutch

INFOID:0000000013582342

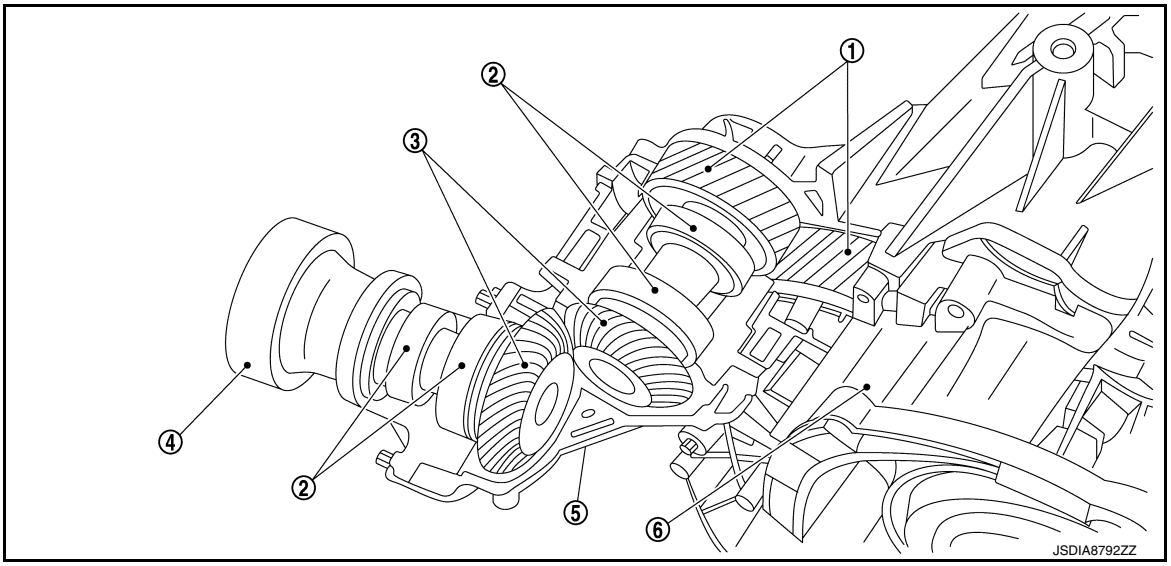
Multiple disk clutch ① is integrated with rear final drive assembly ② and transmits driving force to rear axle. For operation, refer to DLN-11, "Operation Description".



STRUCTURE AND OPERATION

Sectional View

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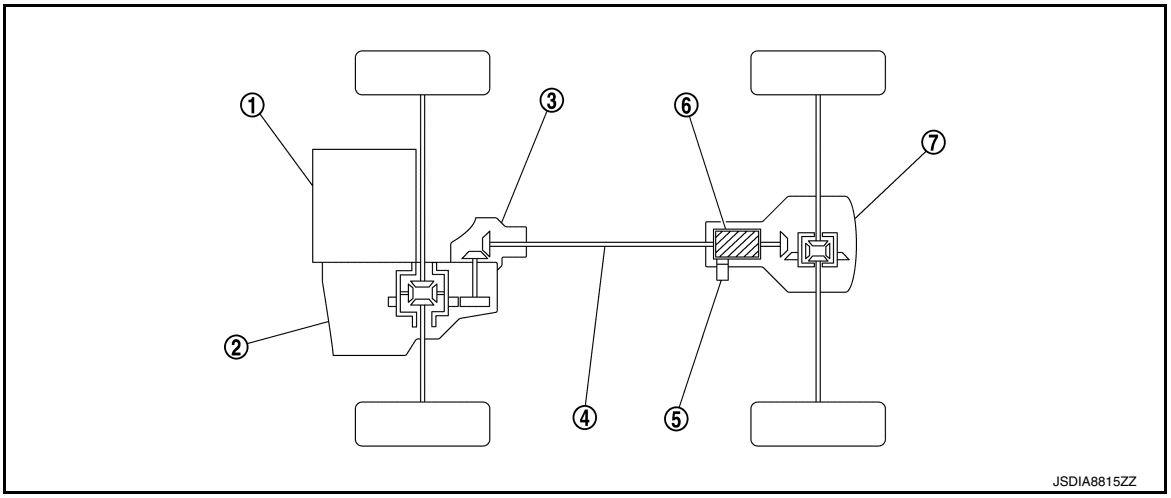


① Spur gears (helically geared) ② Tapered roller bearing ③ Bevel gears (spirally geared)
④ Companion flange ⑤ Transfer ⑥ Transaxle assembly

Operation Description

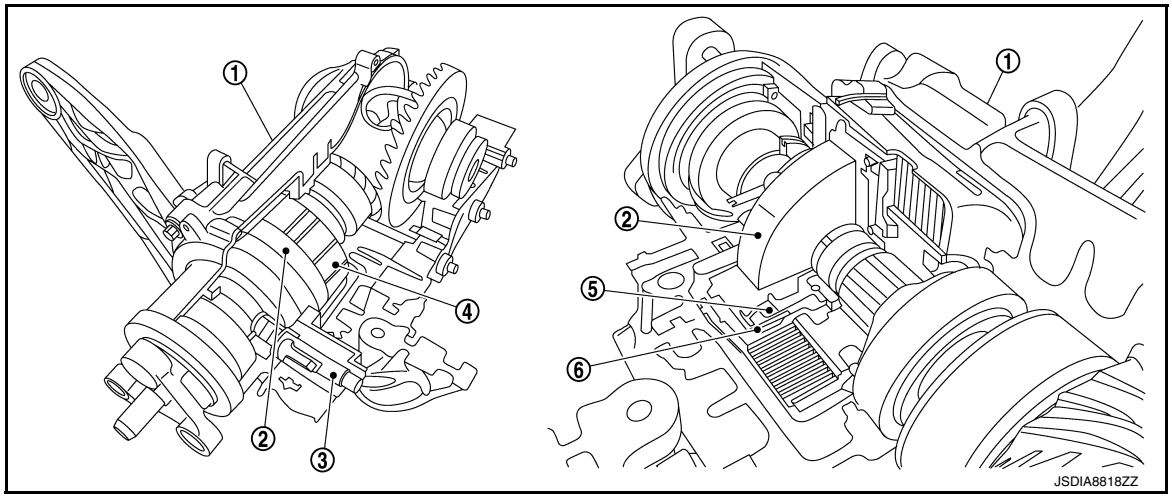
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POWER TRANSFER COMPONENTS



① Engine ② Transaxle ③ Transfer
④ Propeller shaft ⑤ AWD solenoid ⑥ Multiple disk clutch
⑦ Rear final drive

OPERATION OF MULTIPLE DISK CLUTCH



① Rear final drive assembly	② Oil pump	③ AWD solenoid
④ Multiple disk clutch	⑤ Pressure chamber	⑥ Piston

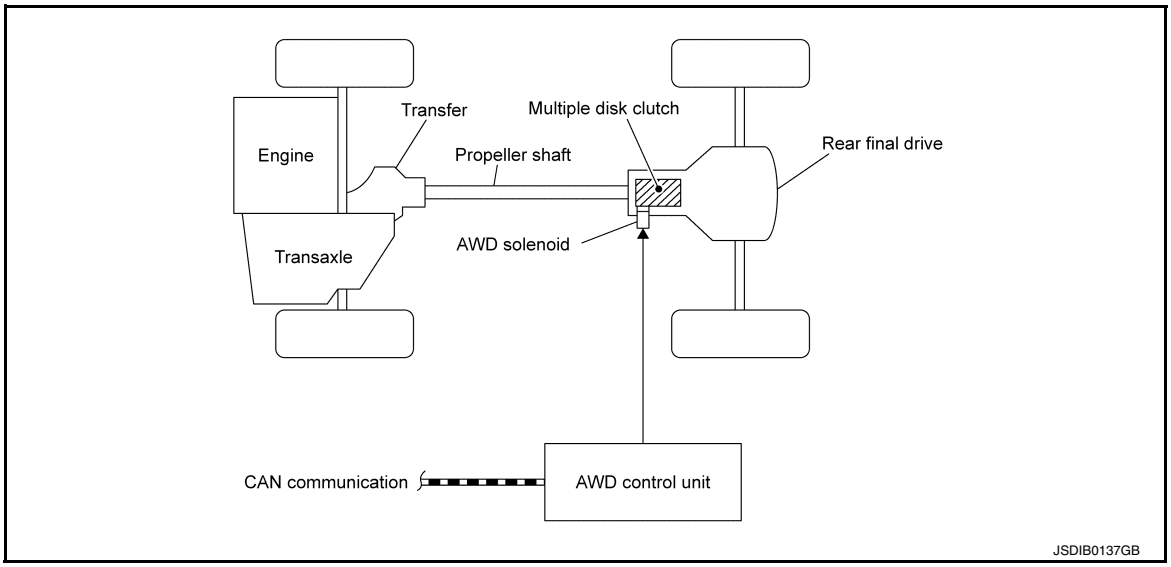
The multiple disk clutch shares the oil supply source with the rear final drive assembly. The oil pump in the rear final drive assembly generates an increased oil flow if there is a revolution difference between the wheels on the front axle and rear axle.
AWD solenoid regulates the level of the oil pressure that acts on the piston and actuates the multiple disk clutch. The torque transfer thus starts.

SYSTEM
AWD SYSTEM
AWD SYSTEM : System Description

INFOID:0000000013582346

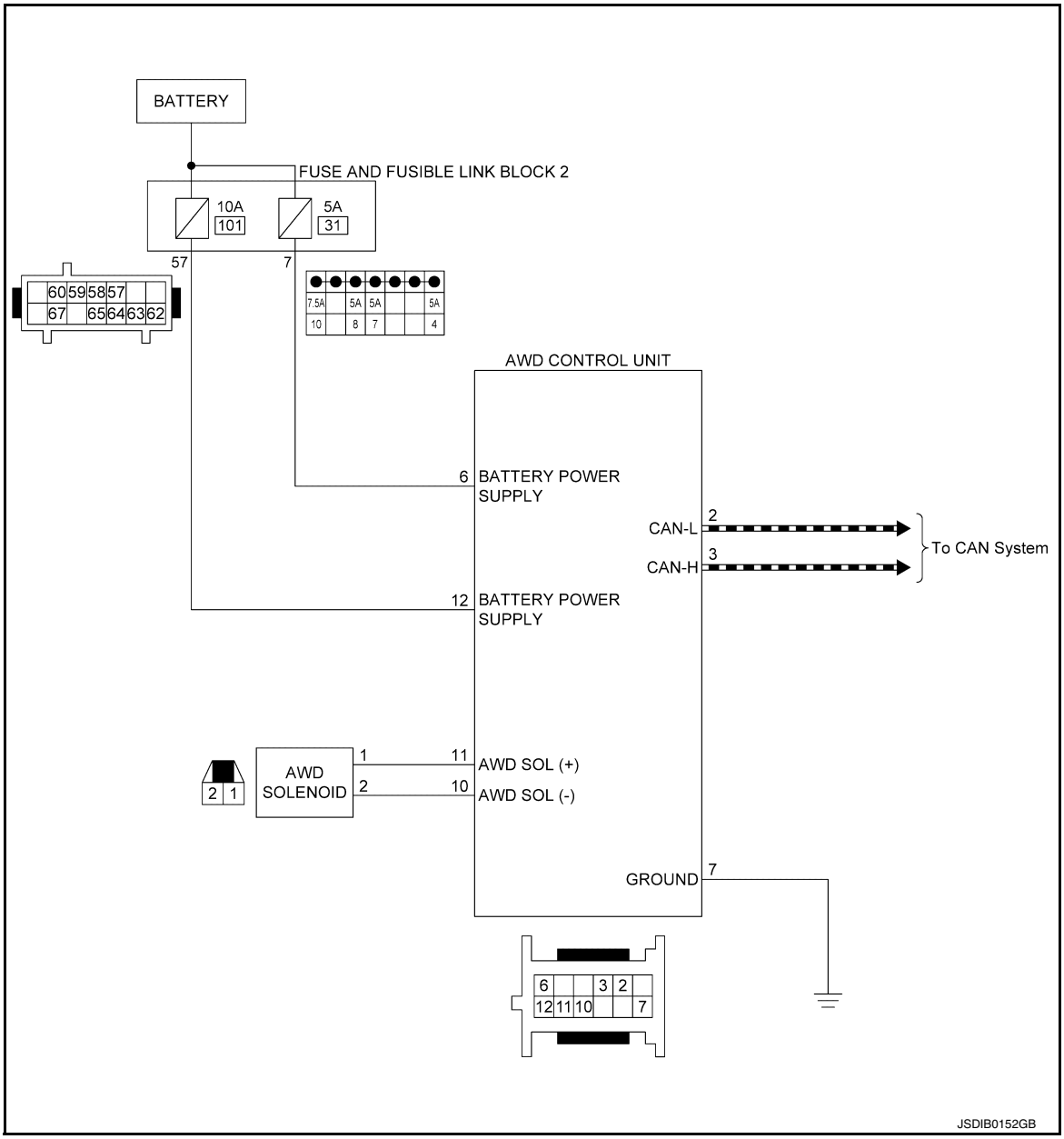
The automatically controlled AWD is a hang-on AWD with transfer installed on the transaxle assembly and multiple disk clutch integrated in the final drive assembly. Installation of the transfer on the transaxle assembly makes it possible to have a shared source of oil supply. By the closing the multiple disk clutch in the rear final drive assembly, the regulated drive torque distribution can be varied and enables up 50% of the drive torque to be directed to the rear axle. The drive torque is distributed to the front axle and via the transfer without off-road ratio to the rear axle. The propeller shaft turns constantly while driving. The oil pump in the rear final drive generates an oil pressure if there is a revolution difference between the wheels of the front axle and the rear axle. The increasing oil pressure acts on the piston, which actuates the multiple disk clutch in the rear final drive assembly. The torque transfer thus starts. The AWD control unit regulates the oil pressure using a solenoid valve and thus the drive torque transferred to the rear axle, depending on the driving situation. The dynamics of the AWD are influenced by the respective VDC mode.

SYSTEM DIAGRAM



AWD SYSTEM : Circuit Diagram

INFOID:0000000013582347



AWD SYSTEM : Fail-Safe

INFOID:0000000013582348

DTC		Vehicle condition
B21FC	1D	Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)
P0607	44	
P0607	45	
P0960	00	
P0961	1A	
P0961	1B	
P0961	1D	
P0962	00	
P0963	00	
P1614	47	

DTC		Vehicle condition
B210A	00	Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)
B210B	00	
P0562	00	
P0563	00	
P0961	4B	
P2787	4B	
U0073	00	
U0101	87	
U0122	87	
U0212	87	
U0402	81	
U0402	82	
U0402	83	
U0416	81	
U0416	82	
U0416	83	
U0429	81	
U0429	82	
U0429	83	
P0961	98	AWD control that moment is limited.
P0607	55	No reaction
P0897	00	
P0961	16	
P1614	94	
U0100	87	
U0155	87	
U0168	87	
U0401	81	
U0401	82	
U0401	83	
U0423	81	
U0427	81	
U0427	82	
U0427	83	

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

CONSULT Function

INFOID:0000000013582349

APPLICATION ITEMS

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

Diagnostic test mode	Function
Self Diagnostic Result	Self-diagnostic results and freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the AWD control unit can be read.
Work support	This mode enable a technician to adjust some devices faster and more accurately by following the indication on the CONSULT.
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the AWD control unit and also shifts some parameters in a specified range.
ECU Identification	AWD control unit part number can be read.

*: The following diagnosis information is erased by erasing.
- DTC
- Freeze frame data (FFD)

ECU IDENTIFICATION

AWD control unit part number can be read.

SELF DIAGNOSTIC RESULT

Refer to DLN-22, "DTC Index".

When “CRNT” 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.

Monitor item (Unit)	Remarks
Original Odometer Value (km)	Odometer value stored when the respective DTC is detected for the first time.
Most Recent Odometer Value (km)	Odometer value stored or updated when the DTC was detected the last time.
Frequency Counter	The frequency counter is defined as the total number of times the DTC status has transitioned from “stored - not active” to “active”.
Ignition cycle counter	Indicates the number of consecutive operation cycles recorded since a DTC first became stored - not active and is no longer an active DTC. This information is needed for Self-healing functionality.
Power supply (last occurrence) (V)	Local measured voltage.
Outside temperature (last occurrence) (°C)	The outside air temperature.
Status of control signal (last occurrence)	The internal status of the clutch controller.

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
Voltage (V)	—
POWER SUPPLY (V)	—

Monitor item (Unit)	Remarks
Status of solenoid valve	Status of AWD solenoid valve. • Diag init: Diagnosis initialize • Ia no vld: Inactive no valid information • Ia sh gnd: Inactive short to ground • Ia sh pwr: Inactive short to power supply • Ia op ld: Inactive open load • Ia no mlf: Inactive no malfunction • Ac no vld: Active no valid information • Ac el mlf: Active electrical malfunction • Ac no mlf: Active no malfunction
Resistance of solenoid valve (ohm)	Resistance of AWD solenoid valve.
MAIN ODOMETER READING (km)	—
Current thermal load of sv (%)	Current thermal load of AWD solenoid valve in percent.
Status of control unit	Status of AWD control unit • No state: No state • Init comp: Initialize component • Normal Operation: Normal operation • Cmp run: Components run • Not defined: Not defined • Sd comp: Shutdown components • Rdy fr sd: Ready for shutdown • Error: Error • Temp err: Temporary error • Prmnt err: Permanent error • Idle: Idle • OFF: Off
Distance driven snc lst oil cng (km)	Distance driven since last oil change.
Clutch work range 1 (kWh)	—
Clutch work range 2 (kWh)	—
Clutch work range 3 (kWh)	—
Gear efficiency (kWh)	—
Drag loss (kWh)	—
Oil work (kWh)	—

WORK SUPPORT

Item	Usage
Replacement of transfer unit	Replacement of rear final drive assembly
Function test of solenoid valve while driving	Function test of AWD solenoid valve while driving
Resetting of learned values of solenoid valve	Resetting of learned valves of AWD solenoid valve
Resetting oil service data	Resetting the oil service data
Manual initial startup	Manual initial startup
SAVING DATA FOR REPLC CPU	Saving data for replacing AWD control unit
WRITING DATA FOR REPLC CPU	Writing data for replacing AWD control unit

ACTIVE TEST

Test item	Description
Solenoid valve	This test is able to check AWD solenoid valve operation.

ECU DIAGNOSIS INFORMATION

AWD CONTROL UNIT

Reference Value

INFOID:0000000013582350

VALUES ON THE DIAGNOSIS TOOL

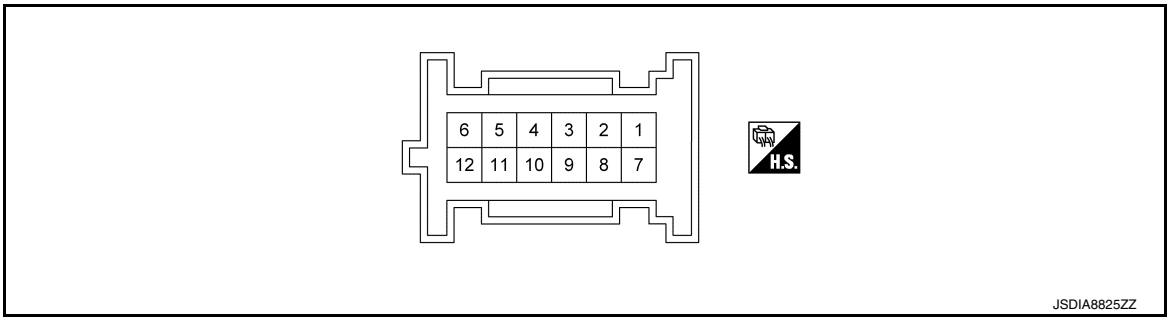
NOTE:

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
Voltage	Always	11 – 15.5 V
POWER SUPPLY	Always	11 – 15.5 V
Status of solenoid valve	Diagnosis initialize	Diag init
	Inactive no valid information	Ia no vld
	Inactive short to ground	Ia sh gnd
	Inactive short to power supply	Ia sh pwr
	Inactive open load	Ia op ld
	Inactive no malfunction	Ia no mlf
	Active no valid information	Ac no vld
	Active electrical malfunction	Ac el mlf
	Active no malfunction	Ac no mlf
Resistance of solenoid valve	Ignition switch: ON	4.3 – 4.9 ohm
MAIN ODOMETER READING	Always	Nearly matches the odometer display
Current thermal load of sv	Vehicle running	0 – 90%
Status of control unit	No state	No state
	Initialize component	Init comp
	Normal operation	Normal Operation
	Components run	Cmp run
	Not defined	Not defined
	Shutdown components	Sd comp
	Ready for shutdown	Rdy fr sd
	Error	Error: Error
	Temporary error	Temp err
	Permanent error	Prmnt err
	Idle	Idle
	Off	OFF
Distance driven snc lst oil cng	Always	Distance driven since last oil change
Clutch work range 1	—	—*
Clutch work range 2	—	—*
Clutch work range 3	—	—*
Gear efficiency	—	—*
Drag loss	—	—*
Oil work	—	—*

*: The values are changed by depressed accelerator pedal opening, engine speed, and driving condition.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
2 (L)	—	CAN-L	Input/ Output	—	—
3 (W)	—	CAN-H	Input/ Output	—	—
6 (L)	Ground	Battery power supply	Input	Always	11 – 15.5 V
7 (BR)	Ground	Ground	—	Always	0 V
10 (BR)	Ground	AWD solenoid (-)	Input	Engine speed: At idle	0 V
11 (O)	Ground	AWD solenoid (+)	Output	Engine speed: Running	—*
12 (R)	Ground	Battery power supply	Input	Always	11 – 15.5 V

*: The values are changed by depressed accelerator pedal opening, engine speed, and driving condition.

CAUTION:

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

Fail-Safe

INFOID:0000000013582351

DTC		Vehicle condition
B21FC	1D	Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)
P0607	44	
P0607	45	
P0960	00	
P0961	1A	
P0961	1B	
P0961	1D	
P0962	00	
P0963	00	
P1614	47	

DTC		Vehicle condition
B210A	00	Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)
B210B	00	
P0562	00	
P0563	00	
P0961	4B	
P2787	4B	
U0073	00	
U0101	87	
U0122	87	
U0212	87	
U0402	81	
U0402	82	
U0402	83	
U0416	81	
U0416	82	
U0416	83	
U0429	81	
U0429	82	
U0429	83	
P0961	98	AWD control that moment is limited.
P0607	55	No reaction
P0897	00	
P0961	16	
P1614	94	
U0100	87	
U0155	87	
U0168	87	
U0401	81	
U0401	82	
U0401	83	
U0423	81	
U0427	81	
U0427	82	
U0427	83	

DTC Inspection Priority Chart

INFOID:0000000013582352

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

Priority	Detected items (DTC)			
	DTC		Items (CONSULT screen terms)	
			Main items	Sub type
1	P0607	44	CONTROL MODULE	DATA MEMORY ERROR
	P0607	45	CONTROL MODULE	PROGRAM MEMORY ERROR
	P0960	00	Pressure control solenoid A	—
	P0962	00	Pressure control solenoid A	—
	P0963	00	Pressure control solenoid A	—
2	B21FC	1D	All-wheel drive solenoid valve	CIRC CURRENT OUT OF RANGE
3	P0961	1A	Pressure control solenoid A	CIRC RESISTANCE BELOW THRESHOLD
	P0961	1B	Pressure control solenoid A	CIRC RESISTANCE ABOVE THRESHOLD
4	P0607	55	CONTROL MODULE	NOT CONFIURED
	P0897	00	Transmission fluid deteriorated	—
	P0961	1D	Pressure control solenoid A	CIRC CURRENT OUT OF RANGE
	P0961	4B	Pressure control solenoid A	OVER TEMPERATURE
	P1614	47	INTERNAL CONTROL UNIT RESET	WATCHDOG/SAFETY UC FAILURE
	P1614	94	INTERNAL CONTROL UNIT RESET	UNEXPECTED OPERATION
	P2787	4B	CLUTCH TEMPERATURE	OVER TEMPERATURE
5	B210A	00	Power Supply circuit	—
	B210B	00	Power Supply circuit	—
	P0562	00	SYSTEM VOLTAGE	—
	P0563	00	SYSTEM VOLTAGE	—
	P0961	16	Pressure control solenoid A	CIRC VOLT BELOW THRESHOLD
	P0961	98	Pressure control solenoid A	COMPONENT/SYS OVER TEMP
6	U0073	00	Control module comm bus A off	—
7	U0101	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE
	U0122	87	Communication error (lost)	MISSING MESSAGE
	U0212	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE
	U0402	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED
	U0402	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT
	U0402	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT
	U0416	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED
	U0416	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT
	U0416	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT
	U0429	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED
	U0429	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT
	U0429	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT

Priority	Detected items (DTC)			
	DTC		Items (CONSULT screen terms)	
			Main items	Sub type
8	U0100	87	Communication error	MISSING MESSAGE
	U0155	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE
	U0168	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE
	U0401	81	Communication error (invalid)	INVALID SERIAL DATA RECEIVED
	U0401	82	Communication error (invalid)	ALIV/CNT INCRCT/NOT UPDAT
	U0401	83	Communication error (invalid)	SIG PRTCTN CLCLTN INCRCT
	U0423	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED
	U0427	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED
	U0427	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT
	U0427	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT

DTC Index

INFOID:0000000013582353

DTC		Items (CONSULT screen terms)		Reference
		Main items	Sub type	
B210A	00	Power Supply circuit	—	DLN-29, "DTC Description"
B210B	00	Power Supply circuit	—	DLN-30, "DTC Description"
B21FC	1D	All-wheel drive solenoid valve	CIRC CURRENT OUT OF RANGE	DLN-31, "DTC Description"
P0562	00	SYSTEM VOLTAGE	—	DLN-33, "DTC Description"
P0563	00	SYSTEM VOLTAGE	—	DLN-34, "DTC Description"
P0607	44	CONTROL MODULE	DATA MEMORY ERROR	DLN-35, "DTC Description"
	45	CONTROL MODULE	PROGRAM MEMORY ERROR	
	55	CONTROL MODULE	NOT CONFIURED	
P0897	00	Transmission fluid deteriorated	—	DLN-37, "DTC Description"
P0960	00	Pressure control solenoid A	—	DLN-38, "DTC Description"
P0961	16	Pressure control solenoid A	CIRC VOLT BELOW THRESHOLD	DLN-40, "DTC Description"
	98	Pressure control solenoid A	COMPONENT/SYS OVER TEMP	
	1A	Pressure control solenoid A	CIRC RESISTANCE BELOW THRESHOLD	
	1B	Pressure control solenoid A	CIRC RESISTANCE ABOVE THRESHOLD	
	1D	Pressure control solenoid A	CIRC CURRENT OUT OF RANGE	
	4B	Pressure control solenoid A	OVER TEMPERATURE	
P0962	00	Pressure control solenoid A	—	DLN-45, "DTC Description"
P0963	00	Pressure control solenoid A	—	DLN-47, "DTC Description"
P1614	47	INTERNAL CONTROL UNIT RESET	WATCHDOG/SAFETY UC FAILURE	DLN-49, "DTC Description"
	94	INTERNAL CONTROL UNIT RESET	UNEXPECTED OPERATION	
P2787	4B	CLUTCH TEMPERATURE	OVER TEMPERATURE	DLN-51, "DTC Description"
U0073	00	Control module comm bus A off	—	DLN-52, "DTC Description"
U0100	87	Communication error	MISSING MESSAGE	DLN-53, "DTC Description"
U0101	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE	DLN-54, "DTC Description"
U0122	87	Communication error (lost)	MISSING MESSAGE	DLN-55, "DTC Description"

DTC		Items (CONSULT screen terms)		Reference
		Main items	Sub type	
U0155	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE	DLN-56, "DTC Description"
U0168	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE	DLN-57, "DTC Description"
U0212	87	COMMUNICATION ERROR (LOST)	MISSING MESSAGE	DLN-58, "DTC Description"
U0401	81	Communication error (invalid)	INVALID SERIAL DATA RECEIVED	DLN-59, "DTC Description"
	82	Communication error (invalid)	ALIV/CNT INCRCT/NOT UPDAT	
	83	Communication error (invalid)	SIG PRTCTN CLCLTN INCRCT	
U0402	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED	DLN-61, "DTC Description"
	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT	
	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT	
U0416	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED	DLN-63, "DTC Description"
	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT	
	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT	
U0423	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED	DLN-65, "DTC Description"
U0427	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED	DLN-66, "DTC Description"
	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT	
	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT	
U0429	81	COMMUNICATION ERROR (INVALID)	INVALID SERIAL DATA RECEIVED	DLN-68, "DTC Description"
	82	COMMUNICATION ERROR (INVALID)	ALIV/CNT INCRCT/NOT UPDAT	
	83	COMMUNICATION ERROR (INVALID)	SIG PRTCTN CLCLTN INCRCT	

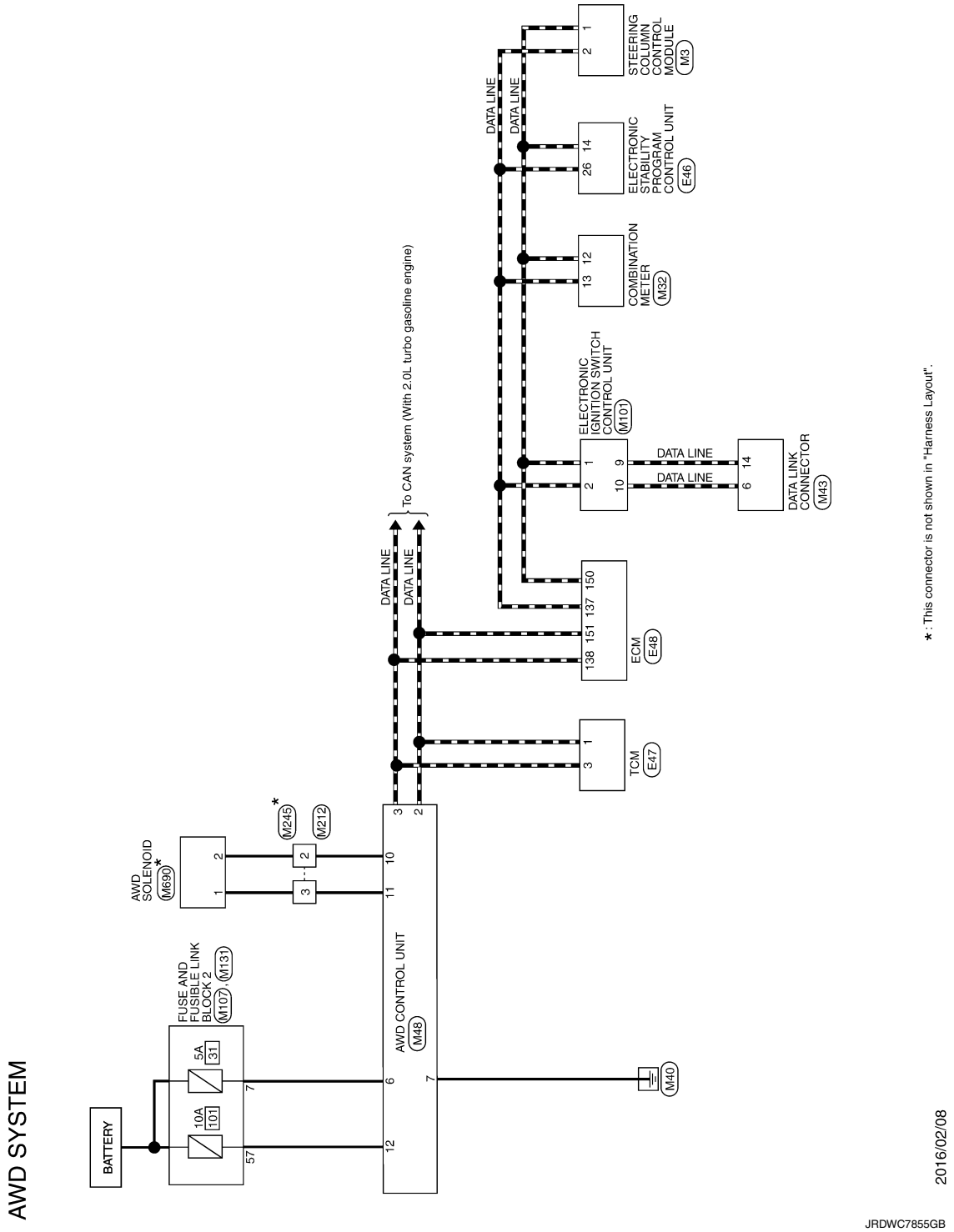
NOTE:
If some DTCs are displayed at the same time, refer to DLN-20, "DTC Inspection Priority Chart".

WIRING DIAGRAM

AWD SYSTEM

Wiring Diagram

INFOID:0000000013582354



AWD SYSTEM

Connector No.	E46
Connector Name	ELECTRONIC STABILITY PROGRAM CONTROL UNIT
Connector Type	MB_A2465400581

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	MOTOR POWER SUPPLY
2	W	BRAKE PEDAL
4	P	RIGHT FRONT AXLE RPM SENSOR SIGNAL
5	GR	BRAKE VACUUM SENSOR POWER SUPPLY
6	B	BRAKE LIGHT SWITCH-L
7	R	BATTERY POWER SUPPLY
8	Y	LFET FRONT AXLE RPM SENSOR SIGNAL
10	O	STANDSTILL CONTROL (SSC) STATUS
12	P	BRAKE VACUUM SENSOR SIGNAL
13	BR	GROUND (MOTOR)
14	G	CAN-L
16	B	RIGHT FRONT AXLE RPM SENSOR POWER SUPPLY
17	Y	RIGHT REAR AXLE RPM SENSOR POWER SUPPLY
18	BR	LFET REAR AXLE RPM SENSOR SIGNAL
19	W	LFET FRONT AXLE RPM SENSOR POWER SUPPLY
23	B	BRAKE VACUUM SENSOR GROUND
25	P	VALVE RELAY POWER SUPPLY
26	W	CAN-H
28	R	BATTERY POWER SUPPLY
29	P	RIGHT REAR AXLE RPM SENSOR SIGNAL
30	V	BRAKE LIGHT SWITCH-H
31	GR	LFET REAR AXLE RPM SENSOR POWER SUPPLY
32	L	BRAKE LIGHT SWITCH GROUND
35	R	BRAKE LIGHT SWITCH POWER SUPPLY
38	B	GROUND (VALVE)

Connector No.	E47
Connector Name	TCM
Connector Type	MB_A2465450026

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	CAN-L
2	V	NOT P
3	GR	CAN-H
5	W	BATTERY POWER SUPPLY

Connector No.	E48
Connector Name	ECM
Connector Type	MB_A0075406981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
97	R	POWER SUPPLY (ECM)
98	BR	ECM GROUND
99	V	POWER SUPPLY (ECM)
100	BR	ECM GROUND
101	R	POWER SUPPLY (ECM)
102	B	ECM GROUND
103	L	COOLING FAN CONTROL SIGNAL
104	R	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
105	G	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
106	BR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR1)
111	B	IGNITION SIGNAL
112	Y	POWER SUPPLY (BATTERY)
116	W	STARTER RELAY-L
119	GR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
120	O	SENSOR GROUND

122	R	HOT START SIGNAL
123	GR	MOTOR RELAY CONTROL SIGNAL
127	O	FUEL PUMP ON SIGNAL
132	G	ACCELERATOR PEDAL POSITION SENSOR 1
136	Y	POWERTRAIN SENSOR CAN-H
137	W	CAN-H
138	GR	POWERTRAIN CAN-H
141	B	WATER PUMP RELAY CONTROL SIGNAL
145	W	ACCELERATOR PEDAL POSITION SENSOR 2
146	G	FUEL TANK PRESSURE SENSOR
147	L	CRASH SIGNAL
148	W	STARTER RELAY-H
149	B	POWERTRAIN SENSOR CAN-L
150	G	CAN-L
151	L	POWERTRAIN CAN-L
152	V	EVAP CANISTER VENT CONTROL VALVE
153	BR	EVAP PURGE CONTROL VALVE

Connector No.	M3
Connector Name	STEERING COLUMN CONTROL MODULE
Connector Type	MB_A2045401281

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CAN-L (CHASIS)
2	W	CAN-H (CHASIS)
3	BR	GND
4	R	KI.30G
6	R	KI.30
7	BR	GND
8	L	AB1+
9	Y	AB1-
10	V	AB2+
11	G	AB2-

Connector No.	M32
Connector Name	COMBINATION METER
Connector Type	MB_A0523452726

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
4	R	BATTERY POWER SUPPLY
12	GR	CAN-L
13	W	CAN-H
17	BR	CAN-L
18	R	CAN-H

Connector No.	M43
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW

H.S.

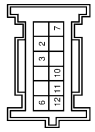
Terminal No.	Color Of Wire	Signal Name [Specification]
4	B	CHASSIS_GND
5	B	ELECTRONICS_GND
6	GR	DIAGNOSTICS-CAN_H_DAI
8	W	IGN_SW
12	L	DIAGNOSTIC-CAN-L_NIS
13	V	DIAGNOSTIC-CAN_H_NIS
14	GR	DIAGNOSTICS-CAN_L_DAI
16	R	BATTERY

JRDWC7856GB

AWD SYSTEM

Connector No.	M48
Connector Name	AWD CONTROL UNIT
Connector Type	MB_A0525451826

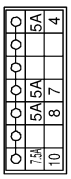
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
2	L	CAN-L
3	W	CAN-H
6	L	BATTERY POWER SUPPLY
7	BR	GROUND
10	BR	AWD SOL (-)
11	O	AWD SOL (+)
12	R	BATTERY POWER SUPPLY

Connector No.	M107
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A0055459701

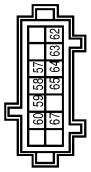
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
4	O	-
7	L	-
8	R	-
10	O	-

Connector No.	M131
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A2205459928

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
57	R	-
58	P	-
59	O	-
60	R	-
62	W	-
63	V	-
64	G	-
65	B	-
67	Y	-

Connector No.	M101
Connector Name	ELECTRONIC IGNITION SWITCH CONTROL UNIT
Connector Type	MB_A0265458426

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CHASSIS CAN-L
2	W	CHASSIS CAN-H
3	R	BODY CAN 1-H
4	BR	BODY CAN 1-L
6	W	STEERING LOCK OPERATION
9	GR	REMOTE KEYLESS
10	W	POWER SUPPLY
11	BR	DIAGNOSTIC CAN-L
12	L	DIAGNOSTIC CAN-H

Connector No.	M212
Connector Name	WIRE TO WIRE
Connector Type	MB_A0545455028

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	BR	-
3	O	-

Connector No.	M245
Connector Name	WIRE TO WIRE
Connector Type	MB_A0365458728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	-	-
3	-	-

Connector No.	M690
Connector Name	AWD SOLENOID
Connector Type	TB02FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-

JRDWC7857GB

BASIC INSPECTION

ADDITIONAL SERVICE WHEN REPLACING AWD CONTROL UNIT

Description

INFOID:0000000013582355

When replacing AWD control unit, the following work is required.
- Before replacing, read out wear data from AWD control unit.
- After replacing, write the wear data to the new AWD control unit.

For the work procedure, refer to DLN-27, "Work Procedure".

Work Procedure

INFOID:0000000013582356

1. SAVING DATA

With CONSULT
1. Turn the ignition switch OFF to ON.
2. Select “SAVING DATA FOR REPLC CPU” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
3. Select “Start”.
4. Check that “Completed” is displayed.

>> GO TO 2.

2. PERFORM REPLACING AWD CONTROL UNIT

Replace AWD control unit. Refer to DLN-72, "Removal and Installation".

>> GO TO 3.

3. WRITING DATA

With CONSULT
1. Turn the ignition switch OFF to ON.
2. Select “WRITING DATA FOR REPLC CPU” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
3. Select “Start”.
4. Check that “Completed” is displayed.

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING GEAR OIL

Description

INFOID:0000000013582357

Perform the following work with CONSULT after the differential gear oil is replaced.
- Resetting oil service data
- Function test of AWD solenoid

For the work procedure, refer to DLN-28, "Work Procedure".

Work Procedure

INFOID:0000000013582358

1.RESETTING OIL SERVICE DATA

With CONSULT
1. Turn the ignition switch OFF to ON.
2. Select “Resetting oil service data” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
3. Select “Start”.
4. Follow the instructions in CONSULT.
5. Check that “Reset” is displayed.

>> GO TO 2.

2.FUNCTION TEST OF AWD SOLENOID

NOTE:
When performing function test of AWD solenoid, driving situation is required.

With CONSULT
1. Turn the ignition switch OFF to ON.
2. Select “Function test of solenoid valve while driving” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
3. Select “Start”.
4. Follow the instructions in CONSULT.
   NOTE:
   When performing actuation, a brief jolt must be felt in the vehicle; this ensures that the entire final drive assembly is correctly filled with oil.

Is “successful” displayed?

YES >> WORK END
NO >> GO TO 3.

3.FUNCTION TEST OF AWD SOLENOID AGAIN

With CONSULT
Perform “Function test of solenoid valve while driving” again.

Is “successful” displayed within 10 times?

YES >> WORK END
NO >> GO TO 4.

4.CHECKING OIL LEVEL

Check oil level. Refer to DLN-102, "Inspection".

>> GO TO 2.

DTC/CIRCUIT DIAGNOSIS

B210A CONTROL UNIT POWER SUPPLY

DTC Description

INFOID:0000000013582359

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210A	00	Power Supply circuit (Power supply circuit)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Battery power supply signal < 9 V
				Diagnosis delay time	2 sec.

POSSIBLE CAUSE

The power supply in the system is too low

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582360

1.CHECK DTC (ECM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.
3. Check DTC detected item. Refer to EC-142, "DTC Index".

>> INSPECTION END

B210B CONTROL UNIT POWER SUPPLY

DTC Description

INFOID:0000000013582361

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210B	00	Power Supply circuit (Power supply circuit)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Battery power supply signal > 16.5 V
				Diagnosis delay time	2 sec.

POSSIBLE CAUSE

The power supply in the system is too high

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582362

1.CHECK BATTERY VOLTAGE

Check the battery voltage.

Is the inspection result normal?

YES >> INSPECTION END

NO >> 1. Check the harness and connector of TCM for correct connection and loose contact.
2. Check the alternator. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)", CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

B21FC AWD SOLENOID

DTC Description

INFOID:0000000013582363

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B21FC	1D	All-wheel drive solenoid valve (All-wheel drive solenoid valve)	CIRC CURRENT OUT OF RANGE	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	50 msec.

POSSIBLE CAUSE

The electric circuit of AWD solenoid valves has a malfunction (General electrical failure)

FAIL-SAFE

Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

Diagnosis Procedure

INFOID:0000000013582364

1.CHECK AWD SOLENOID

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

AWD solenoid Terminal		Resistance
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0562 CONTROL UNIT POWER SUPPLY

DTC Description

INFOID:0000000013582365

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0562	00	SYSTEM VOLTAGE (System voltage low)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Battery power supply < 9 V
				Diagnosis delay time	15 sec.

POSSIBLE CAUSE

The on-board power supply voltage is too low

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582366

1.CHECK BATTERY VOLTAGE

Check the battery voltage.

Is the inspection result normal?

YES >> INSPECTION END

NO >> 1. Check the harness and connector of TCM for correct connection and loose contact.
2. Check the alternator. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)", CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

P0563 CONTROL UNIT POWER SUPPLY

DTC Description

INFOID:0000000013582367

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0563	00	SYSTEM VOLTAGE (System voltage high)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Battery power supply > 16.5 V
				Diagnosis delay time	15 sec.

POSSIBLE CAUSE

The on-board power supply voltage is too high

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582368

1.CHECK DTC (ECM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.
3. Check DTC detected item. Refer to EC-142, "DTC Index".

>> INSPECTION END

P0607 AWD CONTROL UNIT

DTC Description

INFOID:0000000013582369

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0607	44	CONTROL MODULE (Control module performance)	DATA MEMORY ERROR	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	0 msec.
	45		PROGRAM MEMORY ERROR	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	0 msec.
	55		NOT CONFIGURED	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

44 Data Memory Error
The control unit has a malfunction (Data memory malfunction)

45 Program Memory Error
The control unit has a malfunction (Program memory malfunction)

55 Not Configured
The control unit has a malfunction (Not configured)

FAIL-SAFE

44 Data Memory Error, 45 Program Memory Error
Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

55 Not Configured
No reaction

Diagnosis Procedure

INFOID:0000000013582370

P0607-44

1.REPLACE AWD CONTROL UNIT

1. Replace the AWD control unit. Refer to DLN-72, "Removal and Installation".
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

>> WORK END

P0607-45

1.REPLACE AWD CONTROL UNIT

1. Replace the AWD control unit. Refer to DLN-72, "Removal and Installation".
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

>> WORK END

P0607-55

1.ERASE DTC

NOTE:
- If the malfunction has occurred once and no customer complaint has been received, erase the DTC.
- If the malfunction has occurred multiple times or if a customer complaint has been raceived, replace AWD control unit.

1. Erase the DTC.
2. Turn ignition switch OFF.
3. Perform drive test.
4. Check DTC.

Is the DTC detected again?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> INSPECTION END

P0897 OIL

DTC Description

INFOID:0000000013582371

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0897	00	Transmission fluid deteriorated (Transmission fluid deteriorated)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Oil wear is above limit according to requirement.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

Rear differential gear oil deteriorated

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582372

1.TRANSFER OIL CHANGE

Change the transfer oil. Refer to DLN-71, "Transfer Oil".

>> GO TO 2.

2.DIFFERENTIAL GEAR OIL CHANGE

Change the differential gear oil. Refer to DLN-102, "Draining", DLN-103, "Refilling".

>> GO TO 3.

3.PERFORM WORK AFTER OIL CHANGE

Perform “SOLENOID” of “ACTIVE TEST”. Refer to DLN-16, "CONSULT Function".

>> WORK END

P0960 AWD SOLENOID

DTC Description

INFOID:0000000013582373

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0960	00	Pressure control solenoid A (Pressure control solenoid A control circuit/ open)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	100 msec.

POSSIBLE CAUSE

AWD solenoid control circuit

FAIL-SAFE

Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

Diagnosis Procedure

INFOID:0000000013582374

1.CHECK AWD SOLENOID

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

AWD solenoid Terminal		Resistance
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0961 AWD SOLENOID

DTC Description

INFOID:0000000013582375

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0961	16	Pressure control solenoid A (Pressure control solenoid A control circuit range/performance)	CIRC VOLT BELOW THRESHOLD	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Valve actuation mulfunction by low voltage
				Diagnosis delay time	200 msec.
	1A		CIRC RESISTANCE BELOW THRESHOLD	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	The calculated resistance value of the valve is below a lower limit.
				Diagnosis delay time	200 msec.
	1B		CIRC RESISTANCE ABOVE THRESHOLD	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	The calculated resistance value of the valve is below an upper limit.
				Diagnosis delay time	200 msec.
	1D		CIRC CURRENT OUT OF RANGE	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	The measured current deviates from the requested current.
				Diagnosis delay time	30 msec.
	4B		OVER TEMPERATURE	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Valve thermal stress exceeds a shut-down limit according to requirement.
				Diagnosis delay time	0 msec.
	98		COMPONENT/SYS OVER TEMP	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Valve thermal stress exceeds a warning limit according to requirement.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

16 Circuit Voltage Below Threshold
Integrated current control deviation exceeds a limit according to requirement (Intergrated deviation exceeds limit due to low voltage)

1A Circuit Resistance Below Threshold
AWD solenoid has a malfunction (Circuit resistance below threshold)

1B Circuit Resistance Above Threshold
AWD solenoid has a malfunction (Circuit valve resistance above threshold)

1D Circuit Current Out of Range
AWD solenoid has a malfunction (Circuit current out of range)

4B Over Temperature
AWD solenoid has a malfunction (Over temperature)

98 Component or System Over Temperature
AWD solenoid has a malfunction (Component or system over temperature)

FAIL-SAFE

16 Circuit Voltage Below Threshold
No reaction

1A Circuit Resistance Below Threshold, 1B Circuit Resistance Above Threshold, 1D Circuit Current Out of Range
Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

4B Over Temperature
Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

98 Component or System Over Temperature
AWD control that moment is limited.

Diagnosis Procedure

INFOID:0000000013582376

P0961-16

1.CHECK AWD SOLENOID INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect AWD solenoid connector.
3. Turn ignition switch ON.
4. Check the voltage between AWD solenoid vehicle side harness connector terminals.

AWD solenoid			Voltage
Connector	Terminal		
	+	–	
M690	1	2	8.5 – 16.5 V

Is the inspection result normal?

YES >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".
NO >> GO TO 2.

2.DETECT MALFUNCTION ITEMS

Check the following items:
- Check the harness between AWD control unit and AWD solenoid for loose contact, damage, and corrosion.
- Check alternator. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)", CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace damaged parts.

P0961-1A

1.CHECK AWD SOLENOID

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

AWD solenoid		Resistance
Terminal		
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0961-1B

1.CHECK AWD SOLENOID

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

AWD solenoid		Resistance
Terminal		
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0961-1D

1.CHECK AWD SOLENOID

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

AWD solenoid		Resistance
Terminal		
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0961-4B

1.ERASE DTC

Erase the DTC.
NOTE:
This DTC is detected by overtemperature of AWD solenoid.
The actuation of the AWD is shut off in the event of overtemperature in the rear final drive after high loads on the AWD or after moving off several times under unfavorable conditions (heavy payload, slippery road or off road) in order to prevent damage to the rear final drive.

>> WORK END

P0961-98

1.ERASE DTC

Erase the DTC.
NOTE:
This DTC is detected by overtemperature of AWD solenoid.
The actuation of the AWD is shut off in the event of overtemperature in the rear final drive after high loads on the AWD or after moving off several times under unfavorable conditions (heavy payload, slippery road or off road) in order to prevent damage to the rear final drive.

>> WORK END

P0962 AWD SOLENOID

DTC Description

INFOID:0000000013582377

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0962	00	Pressure control solenoid A (Pressure control solenoid A control circuit low)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	100 msec.

POSSIBLE CAUSE

AWD solenoid has a short circuit to ground

FAIL-SAFE

Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

Diagnosis Procedure

INFOID:0000000013582378

1.CHECK AWD SOLENOID

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

AWD solenoid Terminal		Resistance
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P0963 AWD SOLENOID

DTC Description

INFOID:0000000013582379

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P0963	00	Pressure control solenoid A (Pressure control solenoid A control circuit high)	—	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	100 msec.

POSSIBLE CAUSE

AWD solenoid has a short circuit to positive

FAIL-SAFE

Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

Diagnosis Procedure

INFOID:0000000013582380

1.CHECK AWD SOLENOID

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

AWD solenoid Terminal		Resistance
1	2	4.30 – 4.90 Ω

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace AWD solenoid. Refer to DLN-109, "Removal and Installation".

2.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Disconnect AWD control unit connector.
2. Check the continuity between AWD control unit vehicle side harness connector terminals and AWD solenoid connector terminals.

AWD control unit		AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	
M48	10	M690	2	Existed
	11		1	

Is the inspection result normal?

YES >> GO TO 3.
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

3.CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

Check continuity between AWD control unit vehicle side harness connector terminals and ground.

AWD control unit		—	Continuity
Connector	Terminal		
M48	10	Ground	Not existed
	11		

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> 1. Repair or replace damaged parts.
2. Perform “Solenoid valve” of “Active Test”. Refer to DLN-16, "CONSULT Function".

P1614 AWD CONTROL UNIT

DTC Description

INFOID:0000000013582381

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P1614	47	INTERNAL CONTROL UNIT RESET (Internal control unit reset was performed)	WATCHDOG/SAFETY UC FAILURE	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Unexpected reset was detected and a keyword in the reset resistant RAM indicates a watchdog reset.
				Diagnosis delay time	0 msec.
	94		UNEXPECTED OPERATION	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Unexpected reset was detected and a keyword in the reset resistant RAM indicates an unexpected reset.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

47 Watchdog/Safety μC Failure
Internal AWD control unit reset was performed (watchdog/safety malfunction)

94 Unexpected Operation
Internal AWD control unit reset was performed (Unexpected operation)

FAIL-SAFE

47 Watchdog/Safety μC Failure
Multiple disk clutch opens permanently. (The vehicle becomes front-wheel drive.)

94 Unexpected Operation
No reaction

Diagnosis Procedure

INFOID:0000000013582382

P1614-47

1.REPLACE AWD CONTROL UNIT

Replace the AWD control unit. Refer to DLN-72, "Removal and Installation".

>> WORK END

P1614-94

1.CHECK AWD CONTROL UNIT POWER SUPPLY

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

+		–	Voltage
AWD control unit			
Connector	Terminal		
M48	6	Ground	11 – 15.5 V
	12		

Is the inspection result normal?

YES >> Replace the AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> GO TO 2.

2.DETECT MALFUNCTION ITEMS

Check the following items:
- Open or short circuit in harness between AWD control unit connector terminal 6 and fuse and fusible link block-2 terminal 7.
- Open or short circuit in harness between AWD control unit connector terminal 12 and fuse and fusible link block-2 terminal 57.
- 10A fuse (No.101, located in the fuse and fusible link block-2).
- 5A fuse (No.31, located in the fuse and fusible link block-2).
- Battery

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace damaged parts.

P2787 MULTIPLE DISK CLUTCH

DTC Description

INFOID:0000000013582383

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P2787	4B	CLUTCH TEMPERATURE (Clutch temperature too high)	OVER TEMPERATURE	Diagnosis condition	• Ignition switch: ON • Engine running
				Signal (terminal)	—
				Threshold	Clutch thermal stress exceeds a shutdown limit according to requirement.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

The temperature of the multiple disk clutch is too high (Over temperature)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582384

1.ERASE DTC

Erase the DTC.

NOTE:

This DTC is detected by overtemperature of AWD solenoid.

The actuation of the AWD is shut off in the event of overtemperature in the rear final drive after high loads on the AWD or after moving off several times under unfavorable conditions (heavy payload, slippery road or off road) in order to prevent damage to the rear final drive.

>> WORK END

U0073 CAN COMMUNICATION

DTC Description

INFOID:0000000013582385

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0073	00	Control module comm bus A off (Control module communication bus A off)	—	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	CAN driver detects bus off according to CAN specification.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

- CAN communication circuit

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582386

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> Replace the AWD control unit. Refer to DLN-72, "Removal and Installation".
NO >> Repair or replace damaged parts.

U0100 CAN COMMUNICATION

DTC Description

INFOID:0000000013582387

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0100	87	Communication error (Lost communication with ECM/PCM A)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the ECM has a malfunction.
				Diagnosis delay time	200 msec.

POSSIBLE CAUSE

Communication with ECM has a malfunction (Missing message)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582388

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0101 CAN COMMUNICATION

DTC Description

INFOID:0000000013582389

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0101	87	COMMUNICATION ERROR (LOST) (Lost communication with TCM)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the TCM has a malfunction.
				Diagnosis delay time	200 msec.

POSSIBLE CAUSE

Communication with TCM has a malfunction (Missing message)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582390

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0122 CAN COMMUNICATION

DTC Description

INFOID:0000000013582391

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0122	87	Communication error (lost) (Lost communication with vehicle dynamics control module)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the electronic stability program control unit has a malfunction.
				Diagnosis delay time	200 msec.

POSSIBLE CAUSE

Communication with electronic stability program control unit has a malfunction (Missing message)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582392

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0155 CAN COMMUNICATION

DTC Description

INFOID:0000000013582393

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0155	87	COMMUNICATION ERROR (LOST) (Lost communication with instrument panel cluster (IPC) control module)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the combination meter has a malfunction.
				Diagnosis delay time	5000 msec.

POSSIBLE CAUSE

Communication with combination meter has a malfunction (Missing message)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582394

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0168 CAN COMMUNICATION

DTC Description

INFOID:0000000013582395

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0168	87	COMMUNICATION ERROR (LOST) (Lost communication with vehicle security control module)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the electronic ignition switch control unit has a malfunction.
				Diagnosis delay time	1500 msec.

POSSIBLE CAUSE

Communication with electronic ignition switch control unit has a malfunction (Missing message)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582396

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0212 CAN COMMUNICATION

DTC Description

INFOID:0000000013582397

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0212	87	COMMUNICATION ERROR (LOST) (Lost communication with steering column control module)	MISSING MESSAGE	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Communication with the steering column control module has a malfunction.
				Diagnosis delay time	200 msec.

POSSIBLE CAUSE

Communication with steering column control module has a malfunction (Missing message)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582398

Proceed to LAN-58, "Trouble Diagnosis Flow Chart".

U0401 COMMUNICATION DATA

DTC Description

INFOID:0000000013582399

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0401	81	Communication error (invalid) (Invalid data received from ECM/PCM A)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Signal not available in signal from ECM.
				Diagnosis delay time	200 msec.
	82		ALIV/CNT INCRCT/ NOT UPDAT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid sequence counter from ECM.
				Diagnosis delay time	5 times diagnosis cycle time
	83		SIG PRTCTN CLCLTN INCRCT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid checksum received from ECM.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

81 Invalid Serial Data Received
Implausible data were received from ECM (Invalid serial data received)

82 Alive/Sequence Counter Incorrect/Not Updated
Implausible data were received from ECM (Alive/sequence counter incorrect/not updated)

83 Value of Signal Protection Calculation Incorrect
Implausible data were received from ECM (Value of signal protection calculation incorrect)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582400

U0401-81

1.CHECK DTC (ECM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.
3. Check DTC detected item. Refer EC-142, "DTC Index".

>> INSPECTION END

U0401-82

1.CHECK DTC (ECM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.
3. Check DTC detected item. Refer EC-142, "DTC Index".

>> INSPECTION END

U0401-83

1.CHECK DTC (ECM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.
3. Check DTC detected item. Refer EC-142, "DTC Index".

>> INSPECTION END

U0402 COMMUNICATION DATA

DTC Description

INFOID:0000000013582401

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0402	81	COMMUNICATION ERROR (INVALID) (Invalid data received from TCM)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Signal not available in signal from TCM.
				Diagnosis delay time	200 msec.
	82		ALIV/CNT INCRCT/ NOT UPDAT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid sequence counter from TCM.
				Diagnosis delay time	5 times diagnosis cycle time
	83		SIG PRTCTN CLCLTN INCRCT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid checksum received from TCM.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

81 Invalid Serial Data Received
Implausible data were received from TCM (Invalid serial data received)

82 Alive/Sequence Counter Incorrect/Not Updated
Implausible data were received from TCM (Alive/sequence counter incorrect/not updated)

83 Value of Signal Protection Calculation Incorrect
Implausible data were received from TCM (Value of signal protection calculation incorrect)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582402

U0402-81

1.CHECK DTC (TCM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Check DTC detected item. Refer TM-45, "DTC Index".

>> INSPECTION END

U0402-82

1.CHECK DTC (TCM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Check DTC detected item. Refer TM-45, "DTC Index".

>> INSPECTION END

U0402-83

1.CHECK DTC (TCM)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Check DTC detected item. Refer TM-45, "DTC Index".

>> INSPECTION END

U0416 COMMUNICATION DATA

DTC Description

INFOID:0000000013582403

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0416	81	COMMUNICATION ERROR (INVALID) (Invalid data received from vehicle dynamics control module)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Signal not available in signal from electronic stability program control unit.
				Diagnosis delay time	200 msec.
	82		ALIV/CNT INCRCT/ NOT UPDAT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid sequence counter from electronic stability program control unit.
				Diagnosis delay time	5 times diagnosis cycle time
	83		SIG PRTCTN CLCLTN INCRCT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid checksum received from electronic stability program control unit.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

81 Invalid Serial Data Received
Implausible data were received from electronic stability program control unit (Invalid serial data received)

82 Alive/Sequence Counter Incorrect/Not Updated
Implausible data were received from electronic stability program control unit (Alive/sequence counter incorrect/not updated)

83 Value of Signal Protection Calculation Incorrect
Implausible data were received from electronic stability program control unit (Value of signal protection calculation incorrect)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582404

U0416-81

1.CHECK DTC (ELECTRONIC STABILITY PROGRAM CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ABS”.
3. Check DTC detected item. Refer BRC-59, "DTC Index".

>> INSPECTION END

U0416-82

1.CHECK DTC (ELECTRONIC STABILITY PROGRAM CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ABS”.

3. Check DTC detected item. Refer BRC-59, "DTC Index".

>> INSPECTION END

U0416-83

1.CHECK DTC (ELECTRONIC STABILITY PROGRAM CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ABS”.
3. Check DTC detected item. Refer BRC-59, "DTC Index".

>> INSPECTION END

U0423 COMMUNICATION DATA

DTC Description

INFOID:0000000013582405

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0423	81	COMMUNICATION ERROR (INVALID) (Invalid data received from instrument panel cluster control module)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Scombination meterignal not available in signal from ECM.
				Diagnosis delay time	5000 msec.

POSSIBLE CAUSE

Implausible data were received from combination meter (Invalid serial data received)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582406

1.CHECK DTC (COMBINATION METER)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “METER”.
3. Check DTC detected item. Refer MWI-85, "DTC Index".

>> INSPECTION END

U0427 COMMUNICATION DATA

DTC Description

INFOID:0000000013582407

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0427	81	COMMUNICATION ERROR (INVALID) (Invalid data received from vehicle security control module)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Signal not available in signal from electronic ignition switch control unit.
				Diagnosis delay time	1500 msec.
	82		ALIV/CNT INCRCT/ NOT UPDAT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid sequence counter from electronic ignition switch control unit.
				Diagnosis delay time	5 times diagnosis cycle time
	83		SIG PRTCTN CLCLTN INCRCT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid checksum received from electronic ignition switch control unit.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

81 Invalid Serial Data Received
Implausible data were received from electronic ignition switch control unit (Invalid serial data received

82 Alive/Sequence Counter Incorrect/Not Updated
Implausible data were received from electronic ignition switch control unit (Alive/sequence counter incorrect/ not updated)

83 Value of Signal Protection Calculation Incorrect
Implausible data were received from electronic ignition switch control unit (Value of signal protection calculation incorrect)

FAIL-SAFE

No reaction

Diagnosis Procedure

INFOID:0000000013582408

U0427-81

1.CHECK DTC (ELECTRONIC IGNITION SWITCH CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Electric ign switch cont unit”.
3. Check DTC detected item. Refer to PCS-12, "DTC Index".

>> INSPECTION END

U0427-82

1.CHECK DTC (ELECTRONIC IGNITION SWITCH CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Electric ign switch cont unit”.
3. Check DTC detected item. Refer to PCS-12, "DTC Index".

>> INSPECTION END

U0427-83

1.CHECK DTC (ELECTRONIC IGNITION SWITCH CONTROL UNIT)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Electric ign switch cont unit”.
3. Check DTC detected item. Refer to PCS-12, "DTC Index".

>> INSPECTION END

U0429 COMMUNICATION DATA

DTC Description

INFOID:0000000013582409

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0429	81	COMMUNICATION ERROR (INVALID) (Invalid data received from steering column control module)	INVALID SERIAL DATA RECEIVED	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Signal not available in signal from steering column control module.
				Diagnosis delay time	200 msec.
	82		ALIV/CNT INCRCT/ NOT UPDAT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid sequence counter from steering column control module.
				Diagnosis delay time	5 times diagnosis cycle time
	83		SIG PRTCTN CLCLTN INCRCT	Diagnosis condition	Ignition switch: ON
				Signal (terminal)	—
				Threshold	Invalid checksum received from steering column control module.
				Diagnosis delay time	0 msec.

POSSIBLE CAUSE

81 Invalid Serial Data Received
Implausible data were received from steering column control module (Invalid serial data received)

82 Alive/Sequence Counter Incorrect/Not Updated
Implausible data were received from steering column control module (Alive/sequence counter incorrect/not updated)

83 Value of Signal Protection Calculation Incorrect
Implausible data were received from steering column control module (Value of signal protection calculation incorrect)

FAIL-SAFE

Multiple disk clutch opens temporarily. (Shuts down AWD system temporarily.)

Diagnosis Procedure

INFOID:0000000013582410

U0429-81

1.CHECK DTC (STEERING COLUMN CONTROL MODULE)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Steering column cont module”.
3. Check DTC detected item. Refer to BCS-61, "DTC Index".

>> INSPECTION END

U0429-82

1.CHECK DTC (STEERING COLUMN CONTROL MODULE)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Steering column cont module”.
3. Check DTC detected item. Refer to BCS-61, "DTC Index".

>> INSPECTION END

U0429-83

1.CHECK DTC (STEERING COLUMN CONTROL MODULE)

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “Steering column cont module”.
3. Check DTC detected item. Refer to BCS-61, "DTC Index".

>> INSPECTION END

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000013582411

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

Reference		DLN-71, "Transfer Oil"			—	DLN-76, "Exploded View"	DLN-76, "Exploded View"	—	—
SUSPECTED PARTS (Possible cause)		TRANSFER OIL (Level low)	TRANSFER OIL (Wrong)	TRANSFER OIL (Level too high)	LIQUID GASKET (Damaged)	O-RING (Worn or damaged)	OIL SEAL (Worn or damaged)	GEAR (Worn or damaged)	BEARING (Worn or damaged)
Symptom	Noise	1	2				3	3	3
	Transfer oil leakage		3	1	2	2	2		

PERIODIC MAINTENANCE

TRANSFER OIL

Transfer Oil

INFOID:0000000013582412

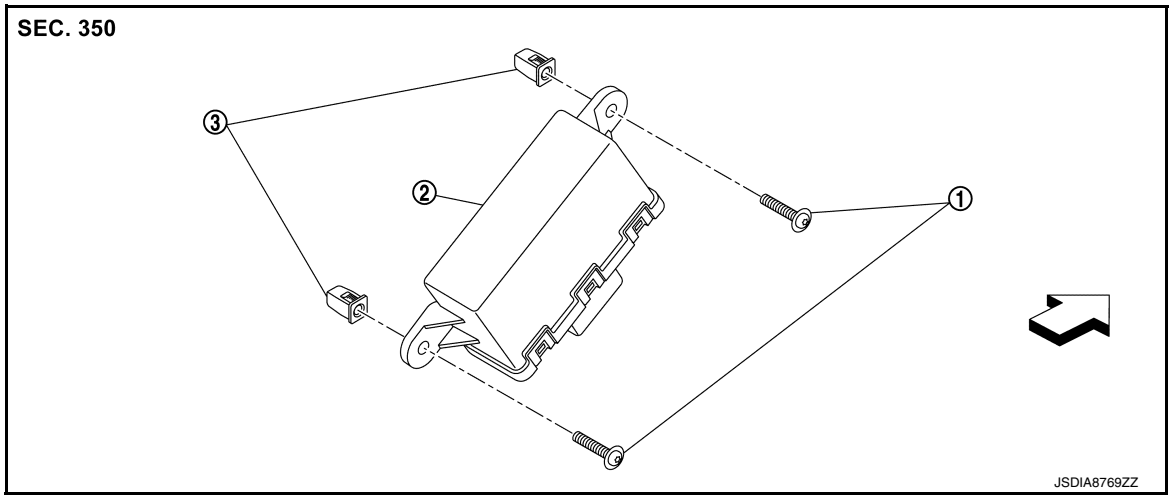
NOTE:
Refer to TM-212, "Inspection", because transfer unit is completely integrated into the transaxle assembly and a collective oil system is implemented.

REMOVAL AND INSTALLATION

AWD CONTROL UNIT

Exploded View

INFOID:0000000013582413



① Combination screw ② AWD control unit ③ Spreader nut

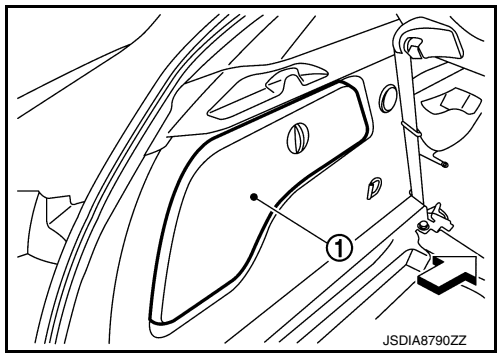
⇦: Vehicle front

Removal and Installation

INFOID:0000000013582414

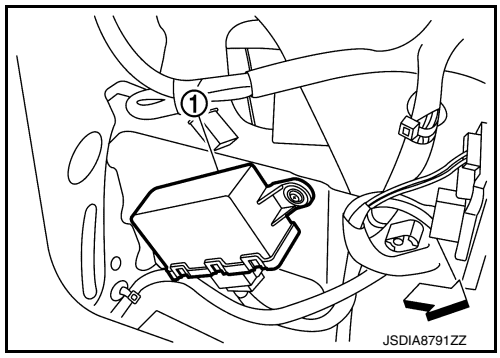
REMOVAL

1. When replacing AWD control unit, read out wear data from AWD control unit using CONSULT. Refer to DLN-27, "Description".
2. Turn the ignition switch OFF.
3. Remove luggage side finisher lid LH ① in luggage component. Refer to INT-36, "Exploded View".



⇦ : Vehicle front

4. Disconnect AWD control unit harness connector.
5. Remove AWD control unit mounting screws and remove AWD control unit ①.



⇦ : Vehicle front

6. Remove spreader nuts if necessary.

INSTALLATION

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

• Perform adjustment after installation. Refer to DLN-73, "Adjustment".

Adjustment

INFOID:0000000013582415

ADJUSTMENT AFTER INSTALLATION

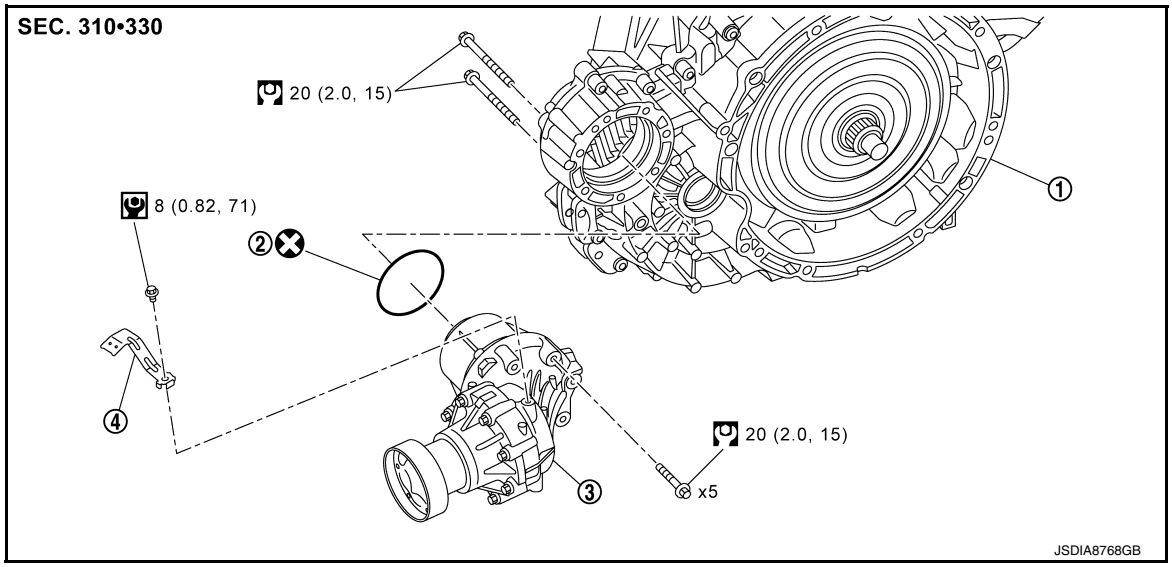
When AWD control unit is replaced, write the wear data to the new AWD control unit. Refer to DLN-27, "Description".

UNIT REMOVAL AND INSTALLATION

TRANSFER ASSEMBLY

Exploded View

INFOID:0000000013582416



① Transaxle assembly ② O-ring ③ Transfer assembly

④ Harness bracket*

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

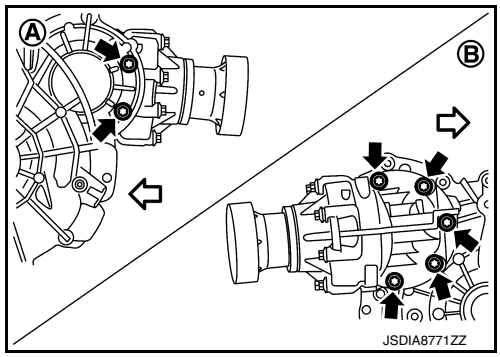
*: Not applicable

Removal and Installation

INFOID:0000000013582417

REMOVAL

1. Remove battery and battery tray. Refer to PG-117, "MAIN BATTERY : Removal and Installation".
2. Remove propeller shaft from transfer assembly. Refer to DLN-87, "Removal and Installation".
   CAUTION:
   The joint of propeller shaft must be handled with care.
3. Remove exhaust front tube. Refer to EX-7, "Removal and Installation".
4. Remove transfer assembly from transaxle assembly.



Ⓐ : View from the left side

Ⓑ : View from the right side

⇦ : Vehicle front

CAUTION:
Be careful when removing transfer assembly form the vehicle because it is heavy.

5. Remove O-ring.

INSTALLATION

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

- For non-reusable parts, refer to DLN-74, "Exploded View".
- For each tightening torque, refer to DLN-74, "Exploded View".

- Perform inspection after installation. Refer to DLN-75, "Inspection".

Inspection

INFOID:0000000013582418

INSPECTION AFTER INSTALLATION

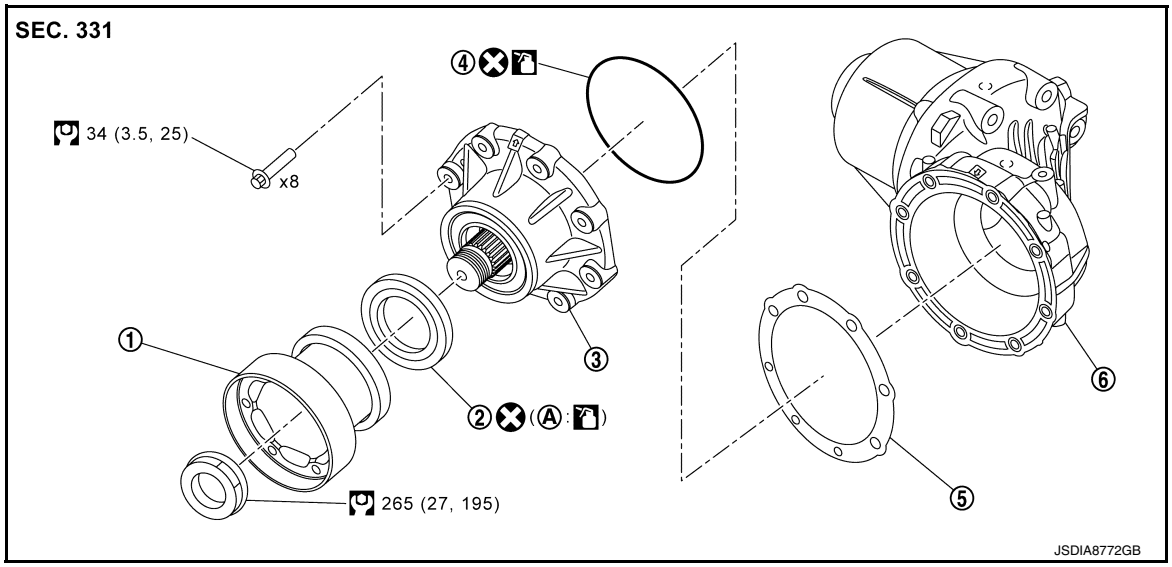
When oil leaks while removing/installing transfer assembly, check oil level after the installation. Refer to DLN-71, "Transfer Oil".

UNIT DISASSEMBLY AND ASSEMBLY

RADIAL SHAFT OIL SEAL

Exploded View

INFOID:0000000013582419



① Companion flange ② Radial shaft oil seal ③ Output gear housing
④ O-ring ⑤ Spacer ⑥ Transfer housing
Ⓐ Oil seal lip

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

CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-5, "Precautions for Self-locking Nuts and Bolts".

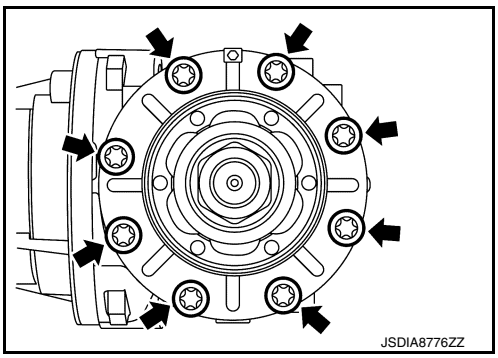
Disassembly and Assembly

INFOID:0000000013582420

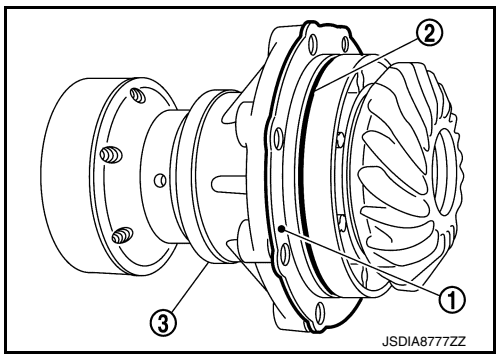
CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-5, "Precautions for Self-locking Nuts and Bolts".

DISASSEMBLY

1. Remove output housing mounting bolts.
2. Lightly tap output housing with a plastic hammer to remove output housing.

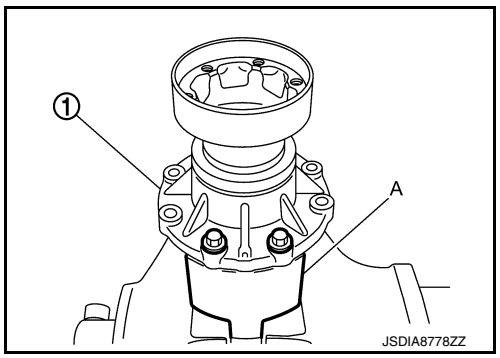


3. Remove spacer ① and O-ring ② from output housing ③.
CAUTION:
- **Never use a suitable tool.**
- **Never damage output housing.**

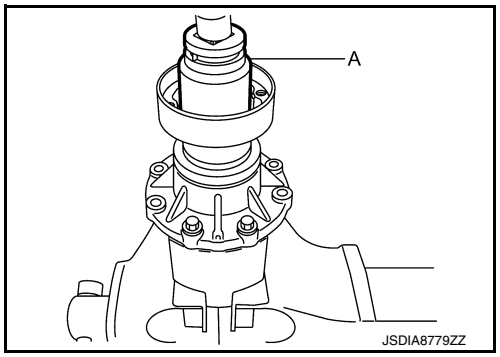


4. Clamp holder of socket wrench set [SST: KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00)] into vise.

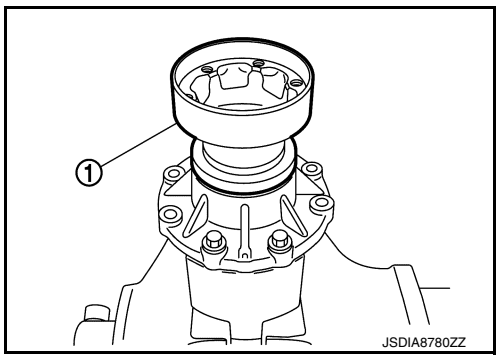
5. Set output housing ① to the holder (A) of socket wrench set [SST: KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00)] and mount with 4 output housing mounting bolts finger-tight.



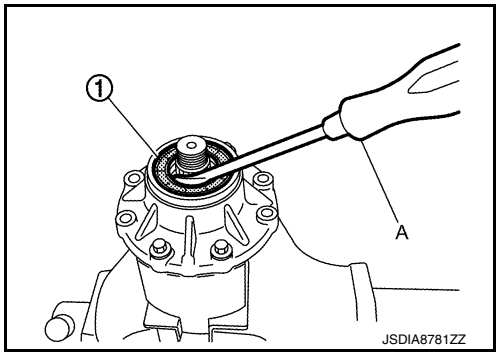
6. Using the socket wrench (A) of socket wrench set [SST: KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00)], loosen the nut and remove it.



7. Remove companion flange ①.

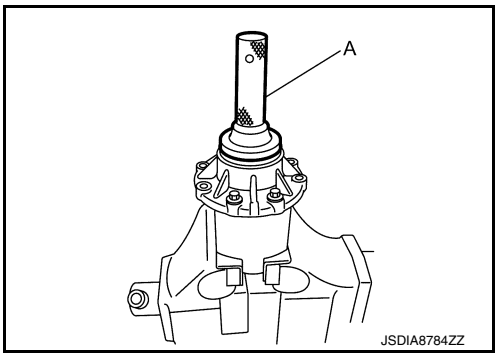


8. Remove radial shaft oil seal ① using oil seal remover (A) (commercial service tool).
CAUTION:
Never damage output housing.

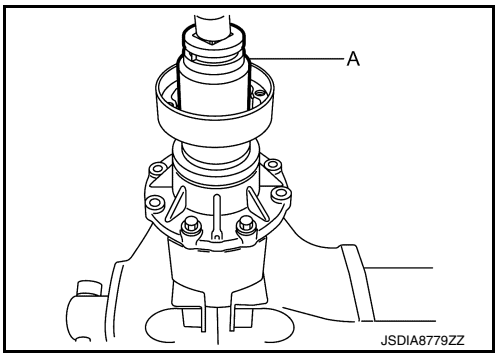


ASSEMBLY

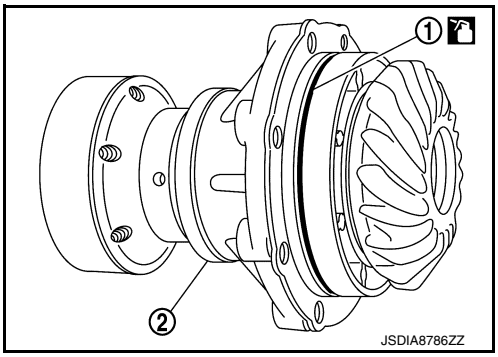
1. Using the drift (A) [SST: KV385H0060 (TechMate No. —) (DAIMLER tool No. 724 589 03 15 00)], install radial shaft oil seal until the drift makes contact with the output housing.
   CAUTION:
   - **Never reuse oil seal.**
   - **When installing, never incline oil seal.**
   - **Apply gear oil onto oil seal lip**
   - **Never damage output housing.**
2. Install companion.



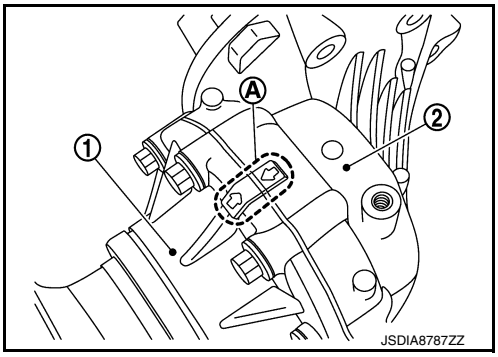
3. Using the socket wrench (A) of socket wrench set [SST: KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00)], tighten the nut to the specified torque.
   - For tightening torque, refer to DLN-76, "Exploded View".
4. Remove the socket wrench set [SST: KV385H0050 (TechMate No. —) (DAIMLER tool No. 724 589 00 09 00)] from output gear housing.
5. Install spacer to output gear housing.



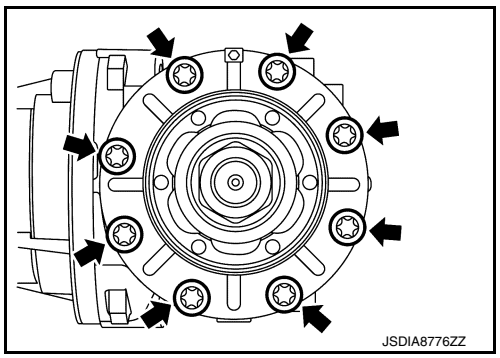
6. Install O-ring ① to output gear housing ②.
   CAUTION:
   - **Never reuse O-ring.**
   - **When installing O-ring, never use a suitable tool.**
   - **Apply gear oil to O-ring**
   - **Never damage O-ring.**



7. Install output gear housing ① to transfer housing ②.
   CAUTION:
   Align the arrow markings Ⓐ on the output gear housing, transfer housing, and molding on spacer with each other.



8. Tighten output housing mounting bolts to the specified torque.
   • For tightening torque, refer to DLN-76, "Exploded View".



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000013582421

Applied model	Axle	AWD
	Engine	2.0L turbo engine
	Transaxle	GE7F30A
Oil		Transfer oil is shared with transaxle oil.

PRECAUTION

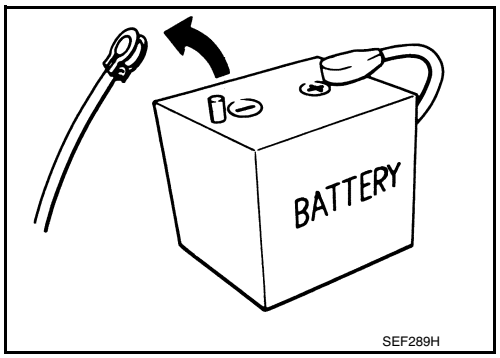
PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000013582422

When disconnecting the battery terminal, pay attention to the following.
- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

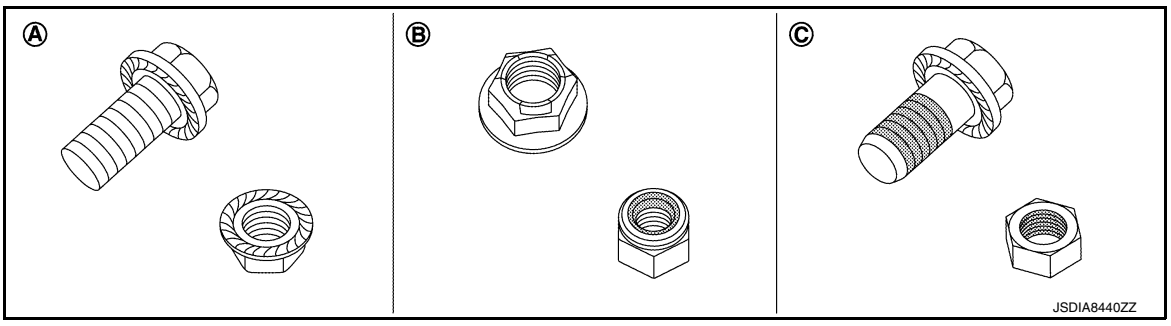
NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

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

Precautions for Self-locking Nuts and Bolts

INFOID:0000000013582423



Ⓐ Bolt and nut with locking splines Ⓑ Self-locking nuts Ⓒ Adhesive coated bolt and nut

CAUTION:
Bolts and nuts with locking splines, self-locking nuts, and adhesive coated bolts and nuts must always be replaced after they have been used once. Also, the bolts must always be replaced on bolted connections with self-locking nuts made of all-metal.

Service Notice or Precautions for Propeller Shaft

INFOID:0000000013582424

- Replace the propeller shaft assembly if there is a breakage or deflection on tube.
- Never hit the tube or apply an impact on it during repair service. Never damage the tube as well.
- The joint cannot be disassembled. Never disassemble it.
- If constant velocity joint was bent during propeller shaft assembly removal, installation, or transportation, its boot may be damaged. Wrap boot interference area to metal part with shop cloth or rubber to protect boot from breakage.

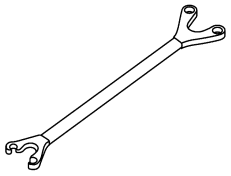
PREPARATION

PREPARATION

Special Service Tools

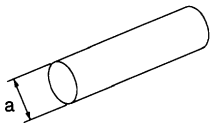
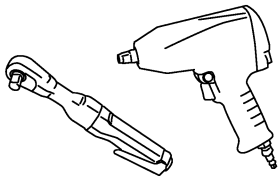
INFOID:0000000013582425

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

Tool number (TechMate No.) (DAIMLER tool No.) Tool name	Description
KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00) Counter holder  JSDIA7886ZZ	Prevention of propeller shaft rotation.

Commercial Service Tools

INFOID:0000000013582426

Tool name	Description
Drift a: 28.5 mm (1.122 in) dia. or more  S-NT063	Installing pilot bushing
Power tool  PBIC0190E	Loosening bolts and nuts

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000013582427

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

Reference		DLN-85, "Inspection"	DLN-86, "Exploded View"	—	DLN-93, "Inspection"	DLN-85, "Inspection"	DLN-85, "Inspection"	—	NVH of REAR FINAL DRIVE in this section.	NVH in FAX, RAX, FSU, and RSU section.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.
Possible cause and SUSPECTED 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
Symptom	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Shake		×			×				×	×	×	×	×	×
	Vibration	×	×	×	×	×	×	×		×	×		×		×

×: Applicable

PERIODIC MAINTENANCE

REAR PROPELLER SHAFT

Inspection

INFOID:0000000013582428

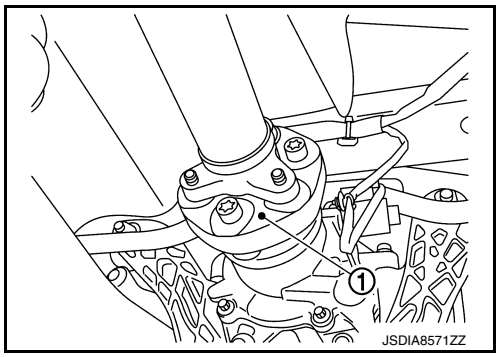
NOTE:
Before inspection, clear the work space around the propeller shaft. Refer to DLN-87, "Removal and Installation".

LOOSENESS OF CONNECTED PART

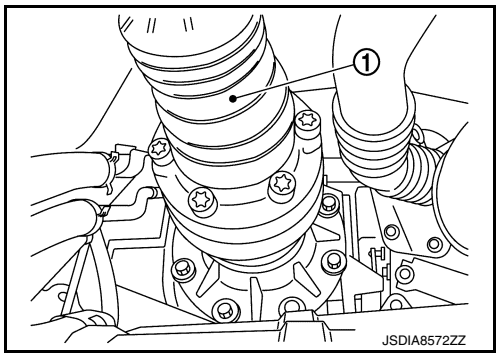
Check each fixing bolt for looseness using torque wrench. For each tightening torque, refer to DLN-86, "Exploded View".

APPEARANCE AND NOISE

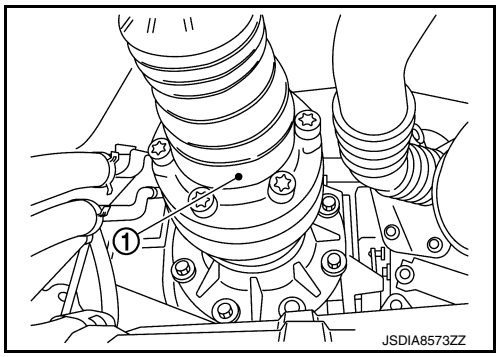
- Check the propeller shaft tube surface for dents or cracks. If malfunction is detected, replace propeller shaft assembly.
- If center bearing is noisy or damaged, replace propeller shaft assembly.
- Check flex disk ① for crack formation, wear, damage and deformation. If malfunction is detected, replace flex disk.



- Check propeller shaft boot ① for crack formation, wear, damage and deformation. If malfunction is detected, replace propeller shaft assembly.



- Check clamps ① are firmly seated. If malfunction is detected, replace propeller shaft assembly.



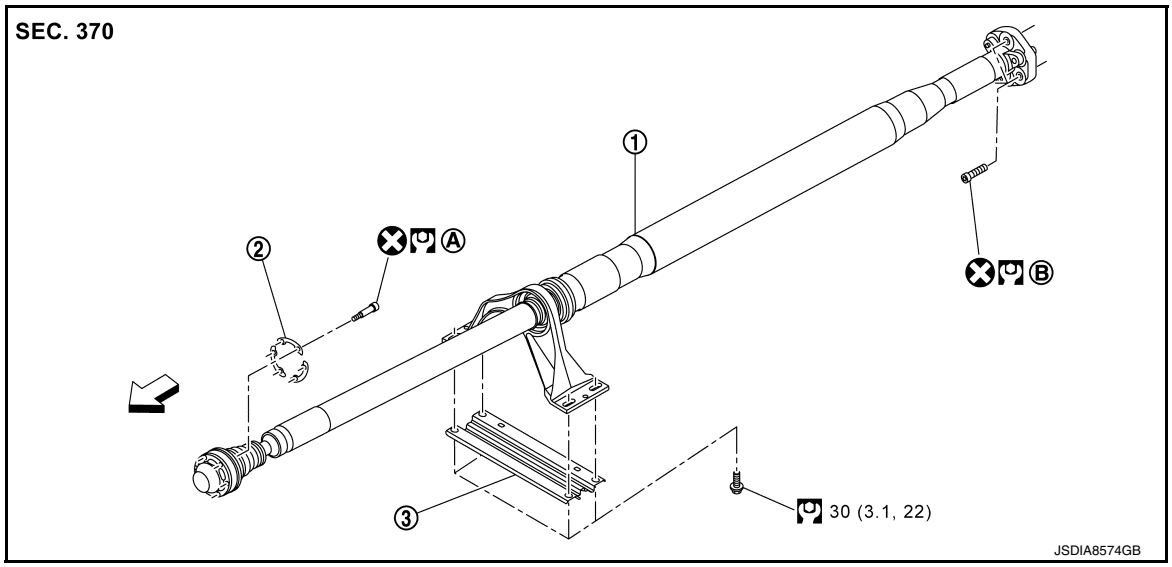
REMOVAL AND INSTALLATION

REAR PROPELLER SHAFT

Exploded View

INFOID:0000000013582429

REMOVAL



① Propeller shaft assembly	② Washer	③ Tunnel stay
Ⓐ Comply with the installation procedure when tightening. Refer to DLN-87, "Removal and Installation".	Ⓑ Comply with the installation procedure when tightening. Refer to DLN-87, "Removal and Installation".	

⇦: Vehicle front

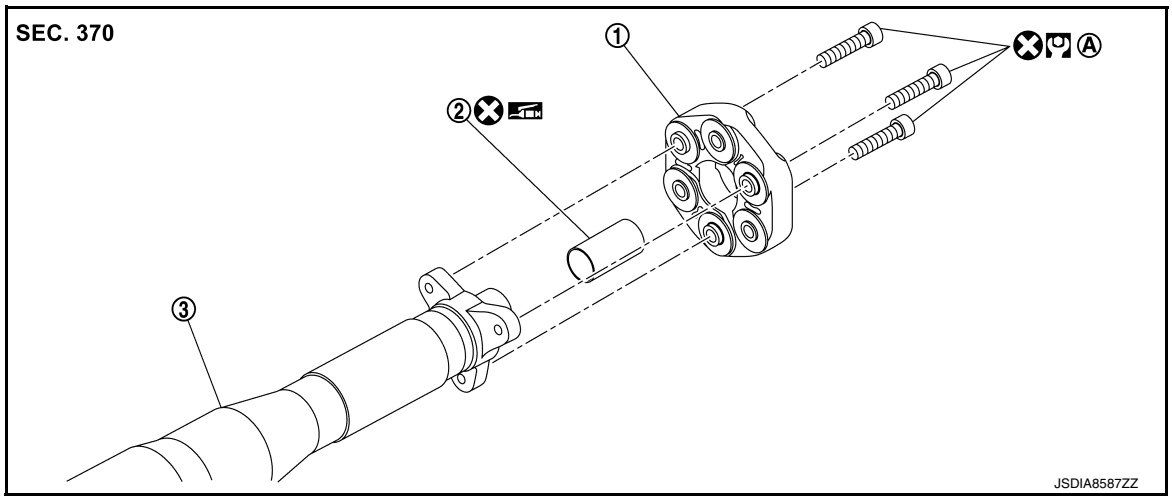
: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

CAUTION:

Never reuse removed bolt or nut if it is self-locking. Refer to DLN-81, "Precautions for Self-locking Nuts and Bolts".

DISASSEMBLY



① Flex disk ② Pilot bushing ③ Propeller shaft

Ⓐ Comply with the assembly procedure when tightening. Refer to DLN-91, "Disassembly and Assembly".

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

: Apply multi-purpose grease.

CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-81, "Precautions for Self-locking Nuts and Bolts".

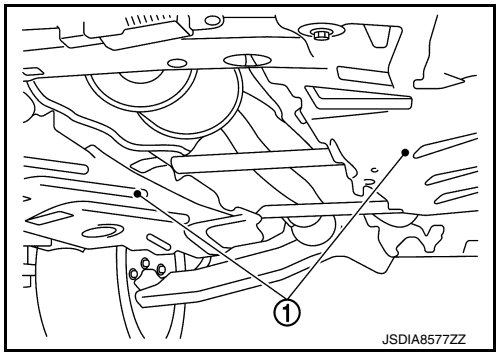
Removal and Installation

INFOID:0000000013582430

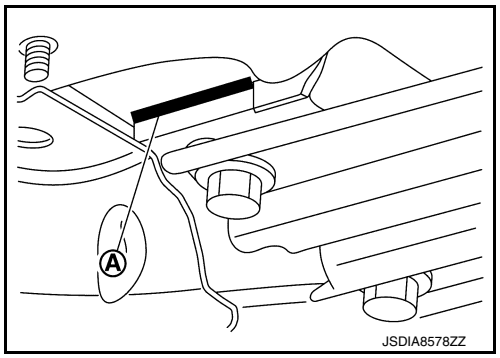
CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-81, "Precautions for Self-locking Nuts and Bolts".

REMOVAL

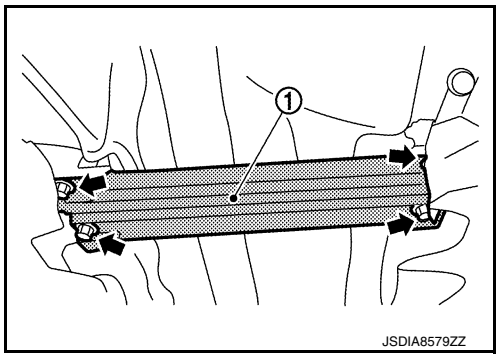
1. Shift transaxle to the neutral position, and then release parking brake.
2. Remove floor under covers ① in area of propeller shaft center bearing. Refer to EXT-45, "FLOOR UNDER COVER : Exploded View".



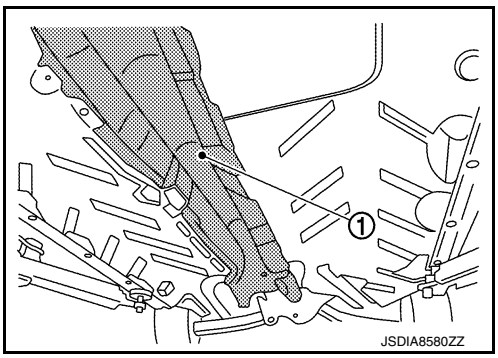
3. Put matching marks Ⓐ on floor and center bearing mounting bracket.
   CAUTION:
   For matching mark, use paint. Never damage floor and center bearing mounting bracket.



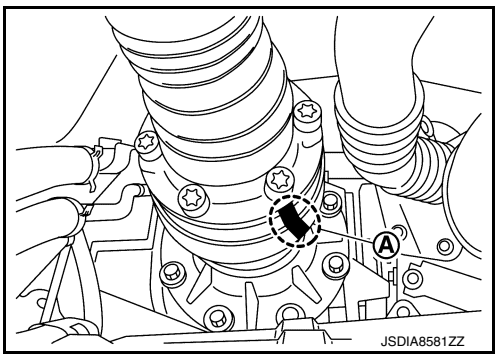
4. Remove mounting bolts and remove tunnel stay ①.
5. Tighten mounting bolts of center bearing mounting bracket temporarily to prevent drop of propeller shaft.
6. Remove exhaust system. Refer to EX-7, "Removal and Installation".



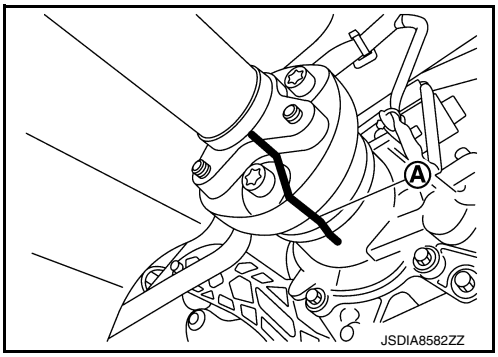
7. Remove heat insulator ①.



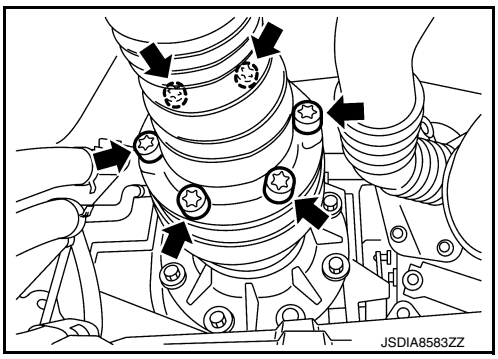
8. Put matching marks Ⓐ on propeller shaft and transfer companion flange.
CAUTION:
For matching mark, use paint. Never damage propeller shaft and transfer companion flange.



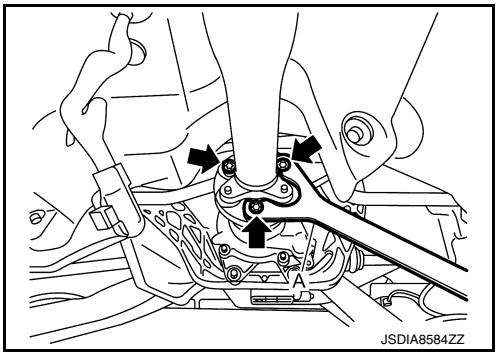
9. Put matching marks Ⓐ on propeller shaft and final drive companion flange.
CAUTION:
For matching mark, use paint. Never damage propeller shaft flange and final drive companion flange.



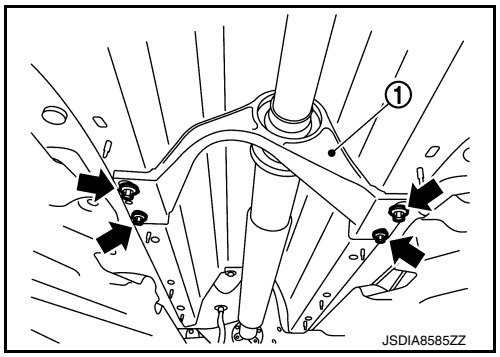
10. Remove propeller shaft assembly fixing bolts and washers using the counter holder [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], and separate propeller shaft assembly from transfer companion flange.
NOTE:
When using the counter holder [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], hold at final drive side.



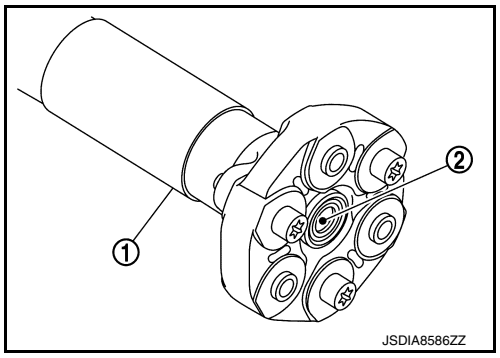
11. Remove propeller shaft assembly fixing bolts using the counter holder (A) [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], and separate propeller shaft assembly from final drive companion flange.



12. Remove mounting bolts of center bearing mounting bracket ①.



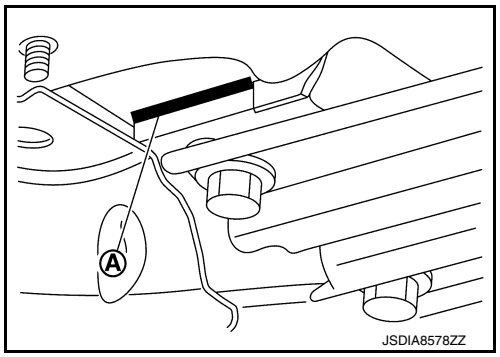
13. Remove propeller shaft assembly.
CAUTION:
Pull propeller shaft assembly ① off final drive carefully. Pilot bushing ② in the propeller shaft will otherwise be damaged.
14. Perform inspection after removal. Refer to DLN-93, "Inspection".



INSTALLATION

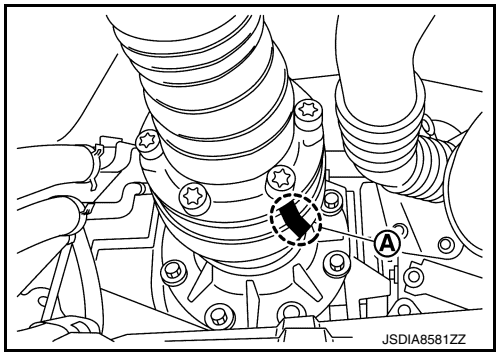
Note the following, and install in the reverse order of removal.

- For non-reusable parts, refer to DLN-86, "Exploded View".
- Remove any moisture, oil, or foreign material from matching surface on transfer companion flange, final drive companion flange and propeller shaft.
- Mounting bolts of center bearing mounting bracket should not be tightened until the propeller shaft is tightened at transfer companion flange and final drive companion flange. Otherwise vibrations may be caused in the drive train and the propeller shaft center bearing may get damaged.
- Align matching marks Ⓐ to install center bearing mounting bracket onto floor.



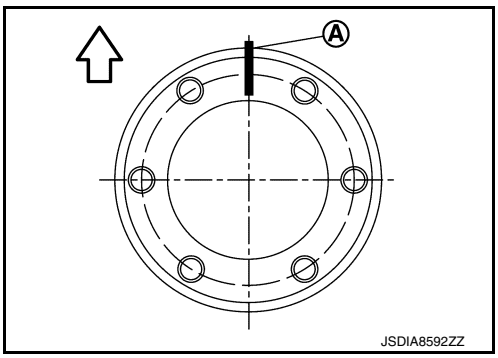
- When installing propeller shaft to transfer companion flange, install it as per the following procedure.

1. Align matching marks Ⓐ to install propeller shaft and transfer companion flange.
2. Tighten propeller shaft assembly fixing bolts with washers temporarily.



3. Turn color marking Ⓐ upward.

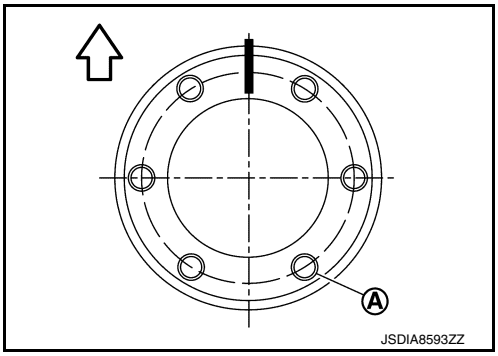
⇦ : Vehicle upside



4. Set the counter holder [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)] to prevent propeller shaft rotation.

5. Tighten the fixing bolt Ⓐ to 10 N·m (1.0 kg-m, 89 in-lb).

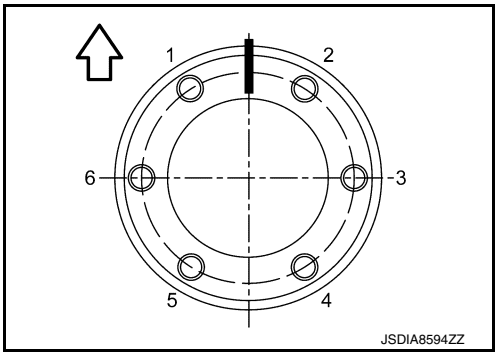
⇦ : Vehicle upside



6. Tighten the fixing bolts to the specified torque in the order shown in the figure.

⇦ : Vehicle upside

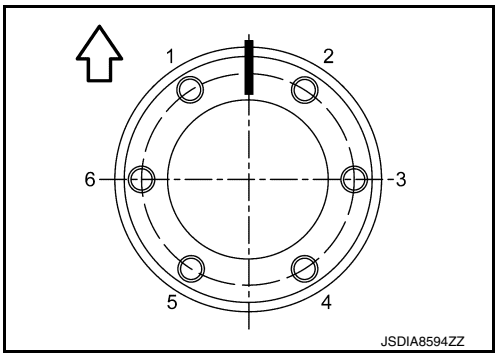
Tightening torque : 27 N•m (2.8 kg-m, 20 ft-lb)



7. Tighten the fixing bolts additionally to the specified angle in the order shown in the figure.

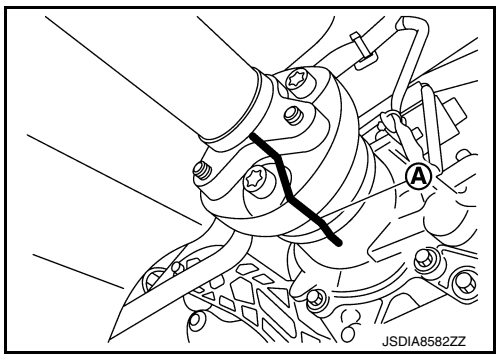
⇦ : Vehicle upside

Tightening angle : 90 degree



- When installing propeller shaft to final drive companion flange, install it as per the following procedure.

1. Align matching marks Ⓐ to install propeller shaft and final drive companion flange.

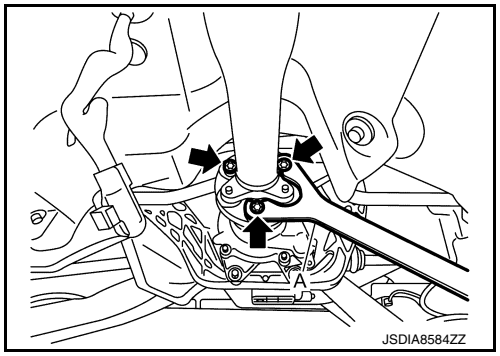


2. While holding companion flange with the counter holder (A) [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], tighten the fixing bolts to the specified torque.

Tightening torque : 40 N•m (4.1 kg-m, 30 ft-lb)

3. Tighten the fixing bolts additionally to the specified angle.

Tightening angle : 90 degree



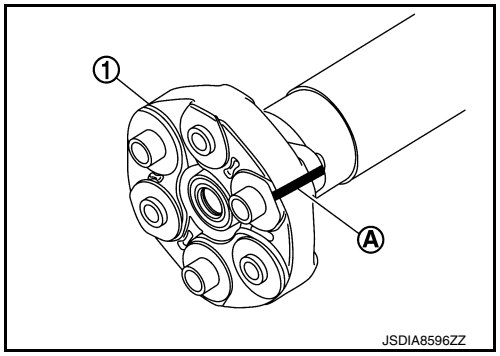
Disassembly and Assembly

INFOID:0000000013582431

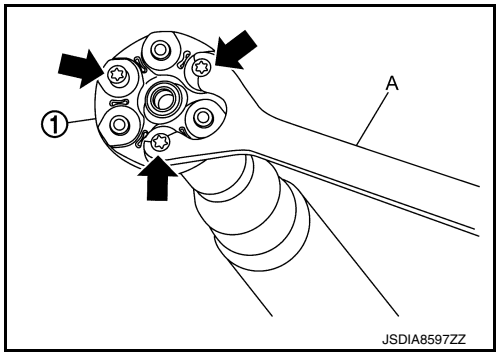
DISASSEMBLY

1. Put matching marks Ⓐ on propeller shaft and flex disk ①.

CAUTION:
For matching mark, use paint. Never damage propeller shaft and flex disk.

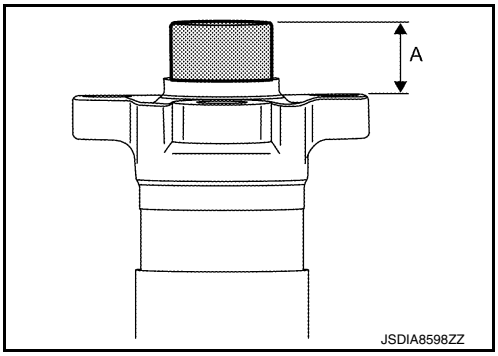


2. Remove flex disk fixing bolts using the counter holder (A) [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], and separate flex disk ① from propeller shaft.



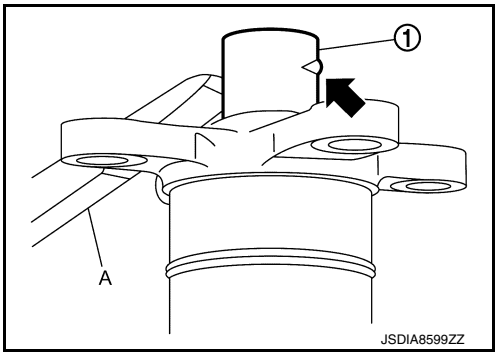
3. Remove pilot bushing as per the following procedure.

a. Measure and note dimension (A).

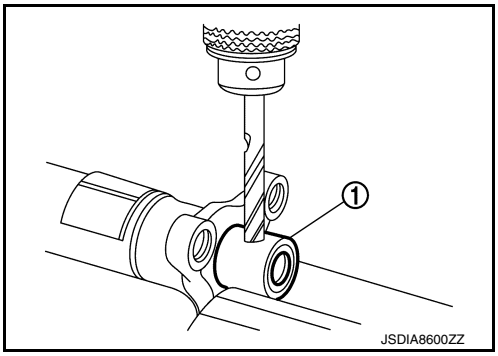


b. Knock pilot bushing ① using flat chisel (A) uniformly onto propeller shaft.

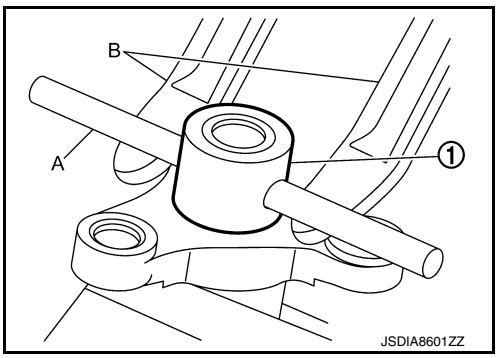
c. If the pilot bushing is unable to be driven out using the flat chisel, remove it as per the following procedure.



i. 15 mm (0.59 in) from the end face of the pilot bushing ①, drill a hole [10 mm (0.39 in)] at right angles through the pilot bushing.



ii. Insert suitable drift (A) through hole and pry pilot bushing ① out of propeller shaft using two suitable levers (B).



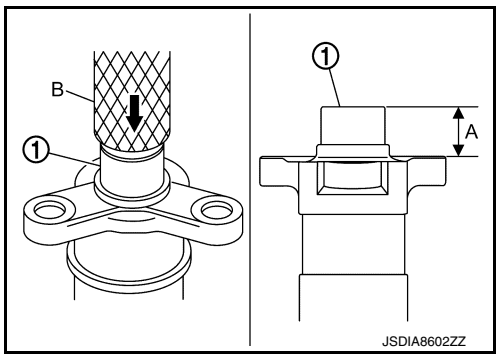
ASSEMBLY

1. Press in pilot bushing ① using a drift (B) (commercial service tool).

Dimension (A) : 22.7 mm (0.894 in)

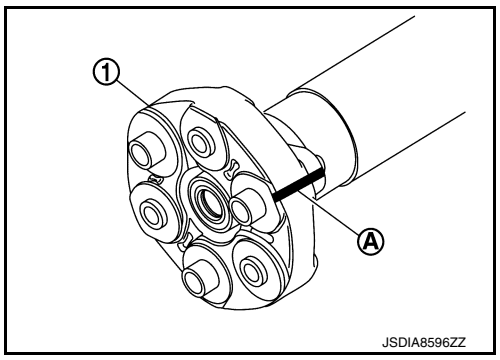
CAUTION:
- **Never reuse pilot bushing.**
- **Be careful dimension from front of pilot bushing to flange.**

2. Apply multi-purpose grease to cavities of pilot bushing.



3. Install flex disk to propeller shaft as per the following procedure.

a. Align matching marks Ⓐ to install flex disk ① to propeller shaft.

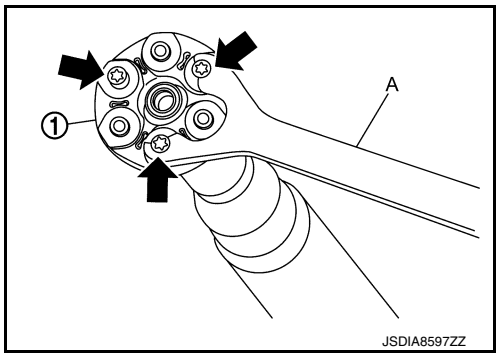


b. While holding flange of propeller shaft with the counter holder (A) [SST: KV385H0020 (TechMate No. —) (DAIMLER tool No. 176 589 00 40 00)], tighten flex disk ① fixing bolts to the specified torque.

Tightening torque : 40 N•m (4.1 kg-m, 30 ft-lb)

c. Tighten the fixing bolts additionally to the specified angle.

Tightening angle : 90 degree



Inspection

INFOID:0000000013582432

INSPECTION AFTER REMOVAL

Appearance

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

Center Bearing

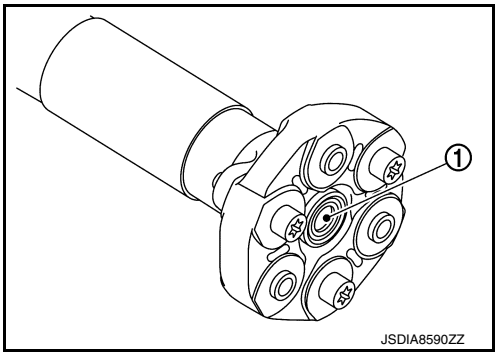
Check center bearing for noise and damage. If malfunction is detected, replace propeller shaft assembly.

CAUTION:

Never disassemble center bearing.

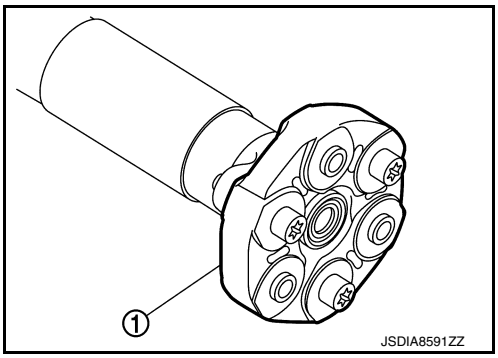
Pilot Bushing

Check pilot bushing ① for wear and damage. If malfunction is detected, replace pilot bushing. Refer to DLN-91, "Disassembly and Assembly".



Flex Disk

Check flex disk ① for crack formation, wear, damage and deformation. If malfunction is detected, replace flex disk. Refer to DLN-91, "Disassembly and Assembly".



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000013582433

Applied model	Axle	AWD
	Engine	2.0L turbo engine
	Transaxle	GE7F30A
Number of joints		3
Joint type	1st joint	CVJ type
	2nd joint	CVJ type
	3rd joint	CVJ type
Coupling method	Transfer side	Flange type
	Rear final drive side	Flange type

PRECAUTION

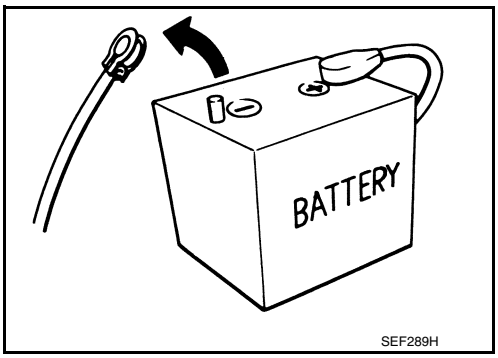
PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000013582434

When disconnecting the battery terminal, pay attention to the following.
- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

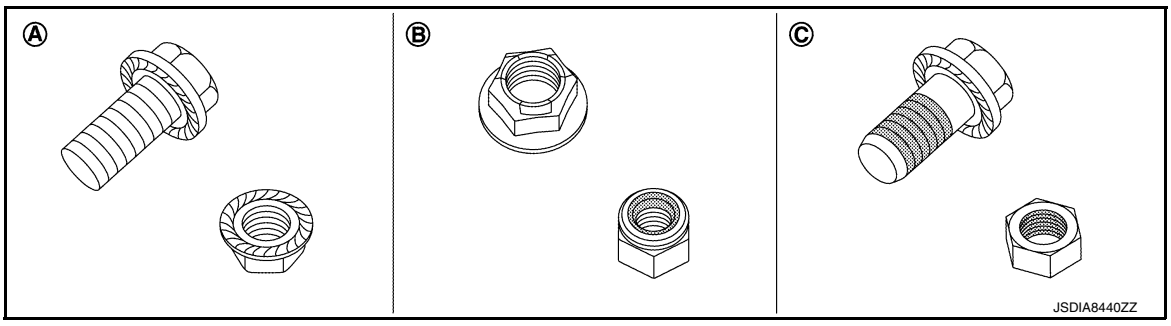
NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

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

Precautions for Self-locking Nuts and Bolts

INFOID:0000000013582435



Ⓐ Bolt and nut with locking splines Ⓑ Self-locking nuts Ⓒ Adhesive coated bolt and nut

CAUTION:
Bolts and nuts with locking splines, self-locking nuts, and adhesive coated bolts and nuts must always be replaced after they have been used once. Also, the bolts must always be replaced on bolted connections with self-locking nuts made of all-metal.

Service Notice or Precautions for Rear Final Drive

INFOID:0000000013582436

- Use recommended gear oil only, refer to MA-12, "FOR NORTH AMERICA : Fluids and Lubricants".
- 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.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Clean and flush the parts sufficiently and blow-dry them.
- Be careful not to damage sliding surfaces and mating surfaces.
- When applying sealant, remove the old sealant from the mounting surface; then remove any moisture, oil, and foreign materials from the application and mounting surfaces.
- Always use shop paper for cleaning the inside of components.
- Never use cotton gloves or shop rags to prevent entering of lint.

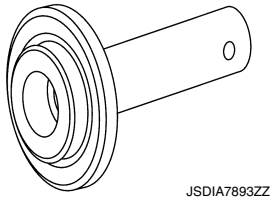
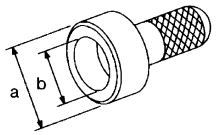
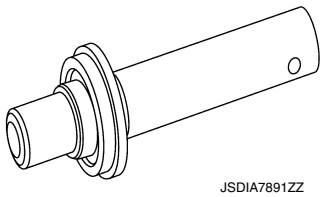
PREPARATION

PREPARATION

Special Service Tools

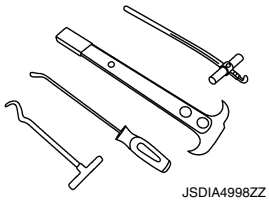
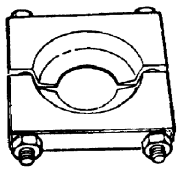
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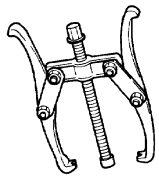
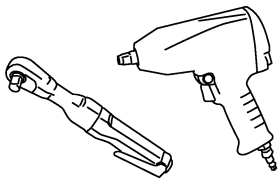
The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) (DAIMLER tool No.) Tool name	Description
KV405H0180 (TechMate No. —) (DAIMLER tool No. 176 589 01 15 00) Drift  JSDIA7893ZZ	Installing drive pinion oil seal
KV38100500 (TechMate No. —) Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.  SDIA1264J	Installing companion flange
KV405H0160 (TechMate No. —) (DAIMLER tool No. 176 589 00 15 00) Drift  JSDIA7891ZZ	Installing side oil seal

Commercial Service Tools

INFOID:0000000013582438

Tool name	Description
Oil seal remover  JSDIA4998ZZ	• Removing side oil seal • Removing drive pinion oil seal
Separator  ZZA0700D	• Removing side bearing inner race • Removing pinion rear bearing inner race

Tool name	Description
Puller  ZZA0119D	Removing companion flange
Power tool  PBIC0190E	Loosening bolts and nuts

Lubricant or/and Sealant

INFOID:0000000013582439

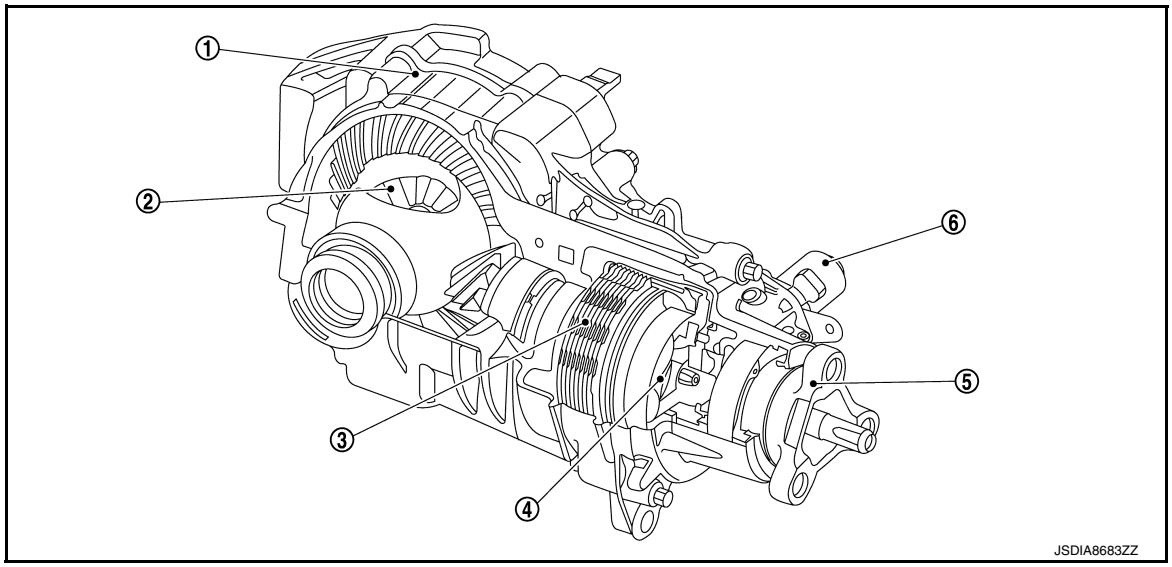
Item	Use
Loctite 5810B sealant or equivalent.	Application to mating surface with the cover of the housing

SYSTEM DESCRIPTION

STRUCTURE AND OPERATION

Sectional View

INFOID:0000000013582440



① Housing	② Differential assembly	③ Multiple disk clutch
④ Oil pump	⑤ Companion flange	⑥ AWD solenoid

Electric Controlled Coupling

INFOID:0000000013582441

The multiple disk clutch operates as the AWD system. For the operation, refer to DLN-11, "Operation Description".

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000013582442

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

		Reference	Gear tooth rough	Gear contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
		Possible cause and SUSPECTED PARTS	Gear tooth rough	Gear contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
Symptom	Noise		×	×	×	×	×	×	×	×	×	×	×	×	×

		Reference	NVH of REAR PROPELLER SHAFT in this section.	NVH in FAX, RAX, FSU and RSU sections.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.
		Possible cause and SUSPECTED PARTS	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
Symptom	Noise		×	×	×	×	×	×	×

		Reference	DLN-102, "Inspection"
		Possible cause and SUSPECTED PARTS	Gear oil improper
Symptom	Noise		×

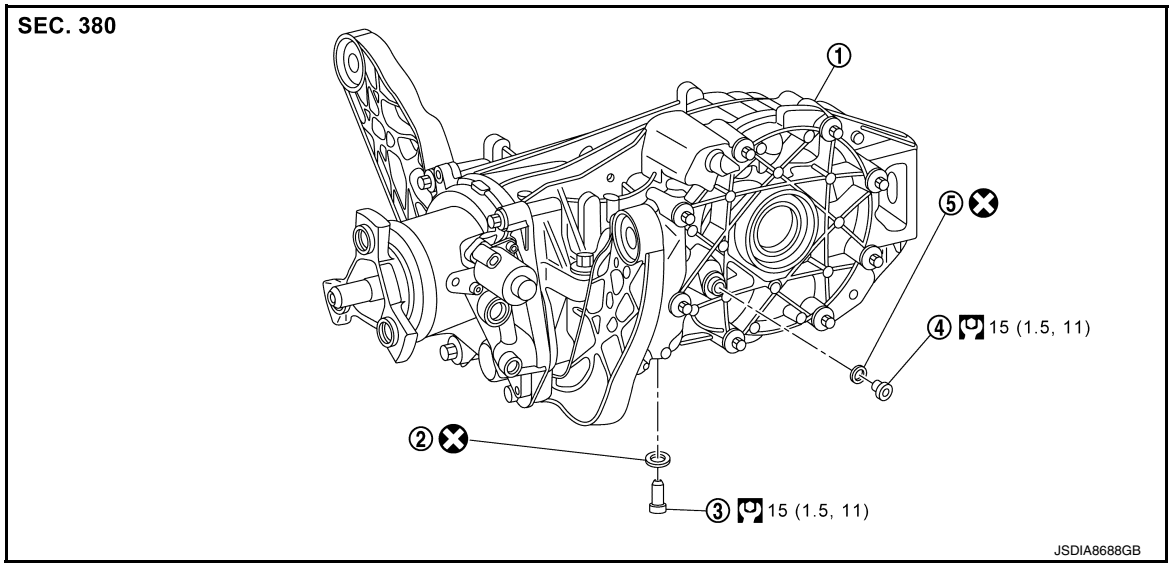
×: Applicable

PERIODIC MAINTENANCE

REAR DIFFERENTIAL GEAR OIL

Exploded View

INFOID:0000000013582443



① Rear final drive assembly ② Gasket ③ Drain plug
④ Filler plug ⑤ Gasket

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

Inspection

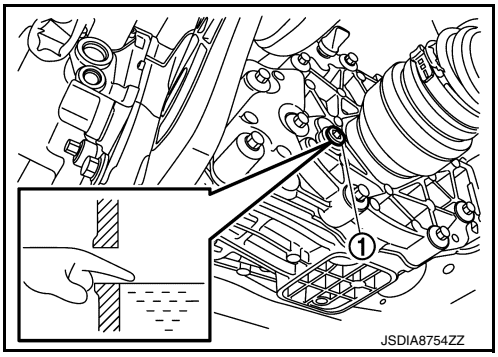
INFOID:0000000013582444

OIL LEAKAGE

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

OIL LEVEL

1. Check oil level from filler plug mounting hole as shown in the figure after removing filler plug ① and gasket from final drive assembly.
   CAUTION:
   Turn the ignition switch OFF while checking oil level.
   • Oil level should be level with bottom of filler plug mounting hole. Add gear oil if necessary. Refer to DLN-103, "Refilling".
2. Set a gasket on filler plug and install it on final drive assembly.
   CAUTION:
   Never reuse gasket.
3. Tighten filler plug to the specified torque. Refer to DLN-102, "Exploded View".

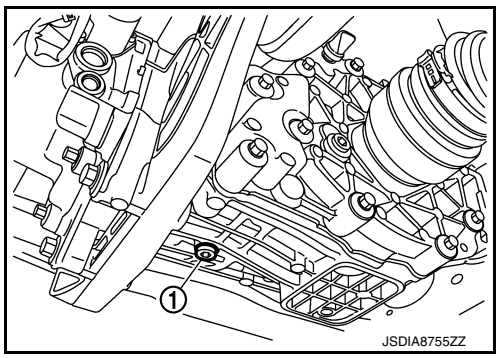


Draining

INFOID:0000000013582445

1. Shift transaxle to the neutral position, and then release parking brake.

2. Remove drain plug ① and gasket.
3. Drain gear oil.
   NOTE:
   Removing filler plug can make the work easier.
4. Rotate both rear wheels five revolutions simultaneously in same direction of travel.
   CAUTION:
   The front wheels must remain stationary. Otherwise not all of the oil will be drained from the final drive assembly.
5. Set a gasket on drain plug and install it to final drive assembly.
   CAUTION:
   Never reuse gasket.
6. Tighten drain plug to the specified torque. Refer to DLN-102, "Exploded View".



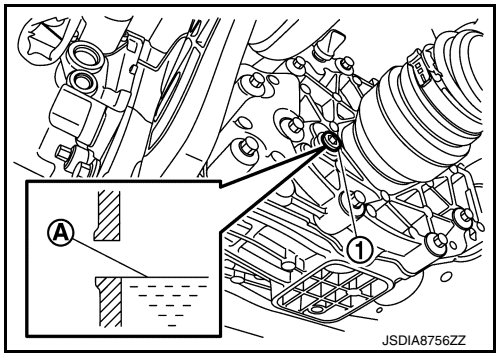
Refilling

INFOID:0000000013582446

1. Fill with new gear oil until oil level reaches the specified level Ⓐ at filler plug mounting hole, after removing filler plug ① from final drive assembly.

   Recommended oil and capacity : Refer to MA-12, "FOR NORTH AMERICA : Fluids and Lubricants".

2. After refilling gear oil, check the oil level. Refer to DLN-102, "Inspection".
3. Set a gasket on filler plug, and install it to final drive assembly.
   CAUTION:
   Never reuse gasket.
4. Tighten filler plug to the specified torque. Refer to DLN-102, "Exploded View".
5. Reset oil service data and check function of AWD solenoid component with CONSULT. Refer to DLN-28, "Description".

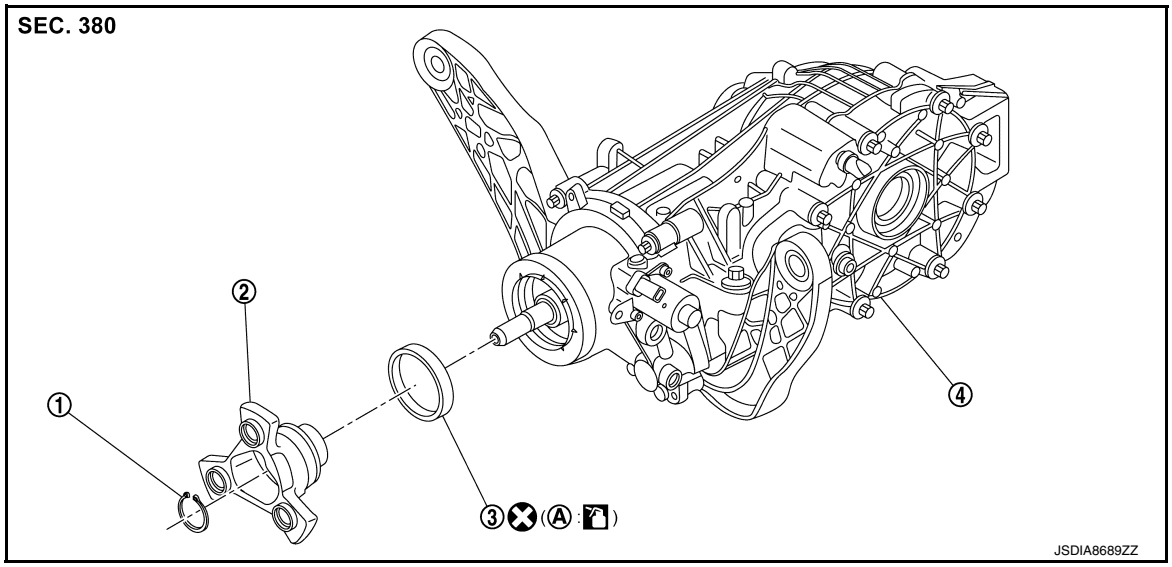


REMOVAL AND INSTALLATION

DRIVE PINION OIL SEAL

Exploded View

INFOID:0000000013582447



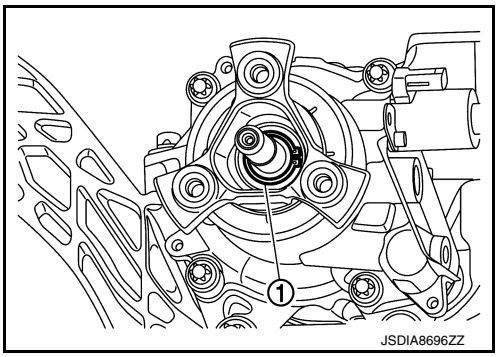
① Snap ring
② Companion flange
③ Drive pinion oil seal
④ Rear final drive assembly
Ⓐ Oil seal lip
: Always replace after every disassembly.
: Apply gear oil.

Removal and Installation

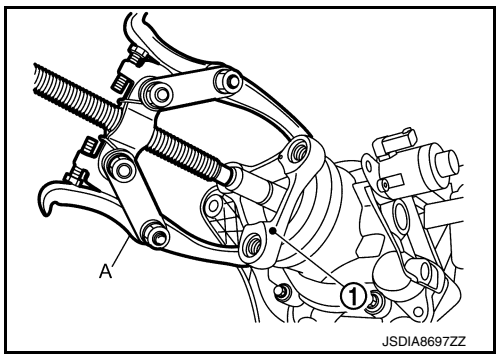
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REMOVAL

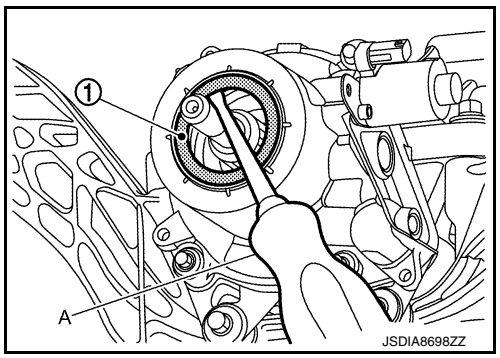
1. Remove propeller shaft from rear final drive assembly. Refer to DLN-87, "Removal and Installation".
2. Remove snap ring ①.



3. Remove companion flange ① using puller (A) (commercial service tool).



4. Remove drive pinion oil seal ① using oil seal remover (A) (commercial service tool).

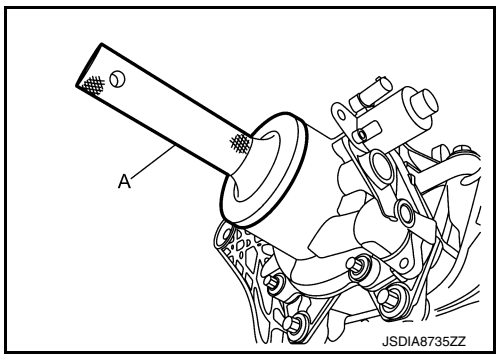


INSTALLATION

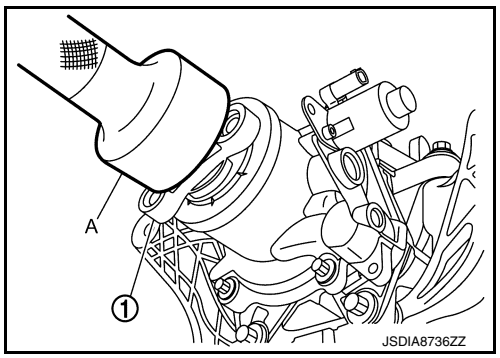
1. Using the drift (A) [SST: KV405H0180 (TechMate No. —) (DAIMLER tool No. 176 589 01 15 00)], Install drive pinion oil seal until the drift makes contact with the housing.

CAUTION:

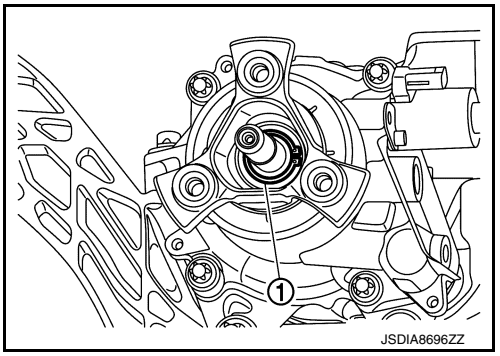
- **Never reuse oil seal.**
- **When installing, never incline oil seal.**
- **Apply gear oil onto oil seal lip**
- **Never damage housing.**



2. Install companion flange ① using the drift (A) [SST: KV38100500 (TechMate No. —)].



3. Install snap ring ① using suitable pliers.
4. Perform inspection after installation. Refer to DLN-106, "Inspection".



Inspection

INFOID:0000000013582449

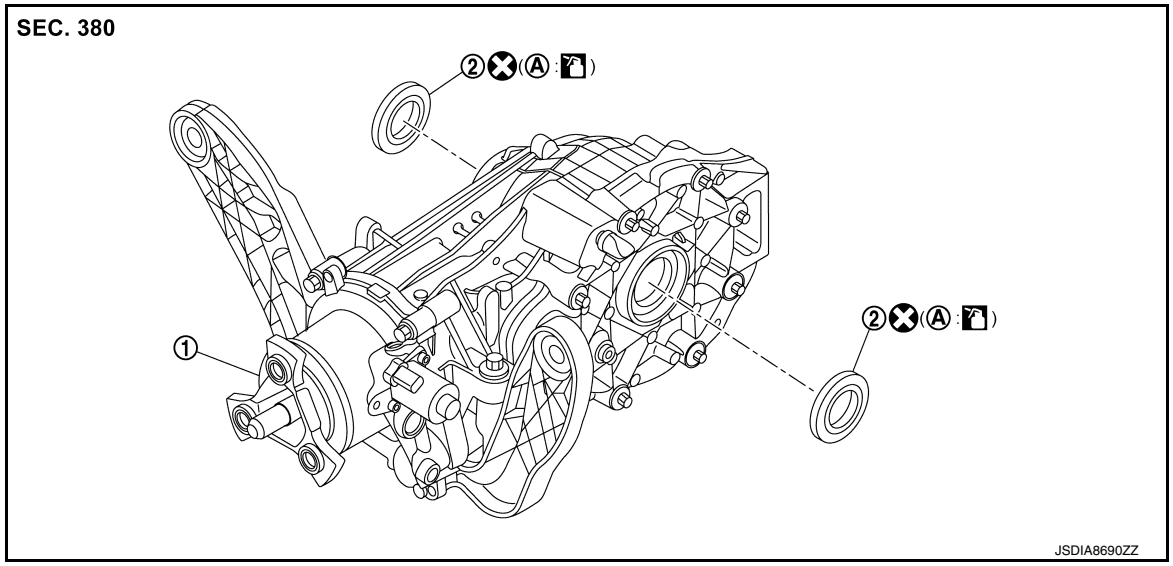
INSPECTION AFTER INSTALLATION

Check oil level and final drive for oil leakage. Refer to DLN-102, "Inspection".

SIDE OIL SEAL

Exploded View

INFOID:0000000013582450



① Rear final drive assembly ② Side oil seal

Ⓐ Oil seal lip

: Always replace after every disassembly.

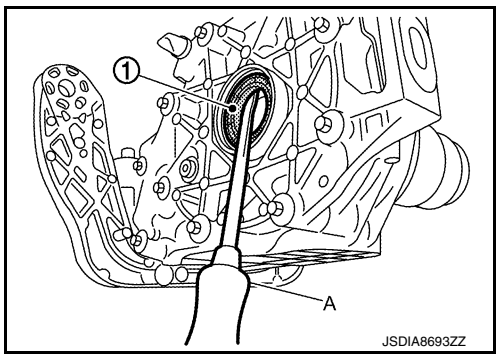
: Apply gear oil.

Removal and Installation

INFOID:0000000013582451

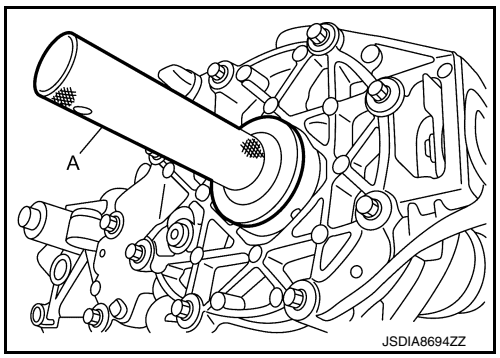
REMOVAL

1. Remove rear drive shafts. Refer to RAX-21, "Removal and Installation".
2. Remove side oil seal ①, using oil seal remover (A) (commercial service tool).
   CAUTION:
   Never damage housing and cover.



INSTALLATION

1. Using the drift (A) [SST: KV405H0160 (TechMate No. —) (DAIMLER tool No. 176 589 00 15 00)], install side oil seal until the drift makes contact with the housing/cover.
   CAUTION:
   - **Never reuse oil seal.**
   - **When installing, never incline oil seal.**
   - **Apply gear oil onto oil seal lip**
   - **Never damage housing and cover.**
2. Install rear drive shafts. Refer to RAX-21, "Removal and Installation".
3. Perform inspection after installation. Refer to DLN-108, "Inspection".



Inspection

INFOID:0000000013582452

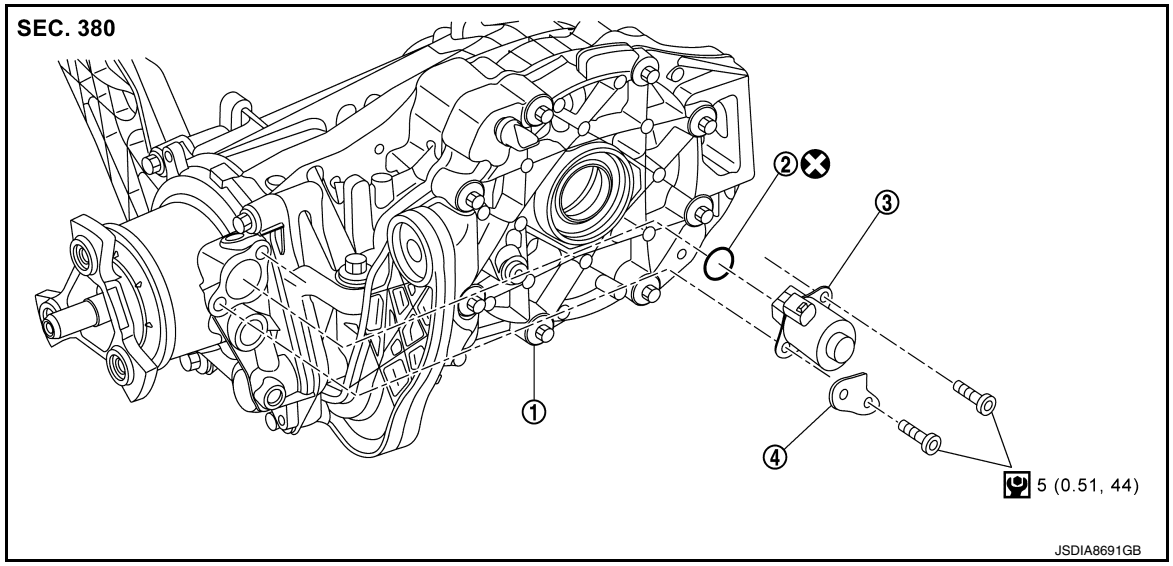
INSPECTION AFTER INSTALLATION

Check oil level and final drive for oil leakage. Refer to DLN-102, "Inspection".

AWD SOLENOID

Exploded View

INFOID:0000000013582453



① Rear final drive assembly ② O-ring ③ AWD solenoid

④ Harness holder plate

: N·m (kg-m, in-lb)

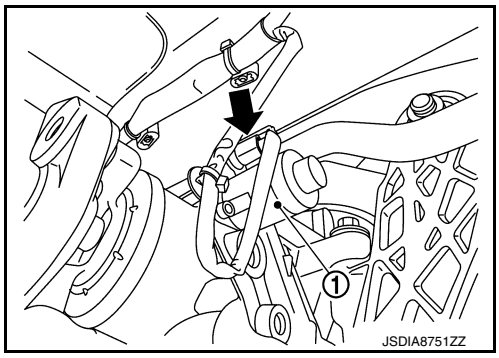
: Always replace after every disassembly.

Removal and Installation

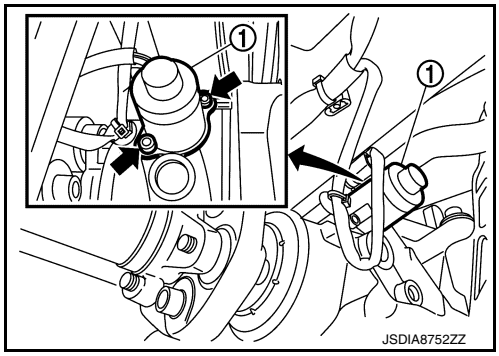
INFOID:0000000013582454

REMOVAL

1. Turn the ignition switch OFF.
2. Clean area surrounding AWD solenoid valve.
3. Release lock and disconnect AWD solenoid ① harness connector.

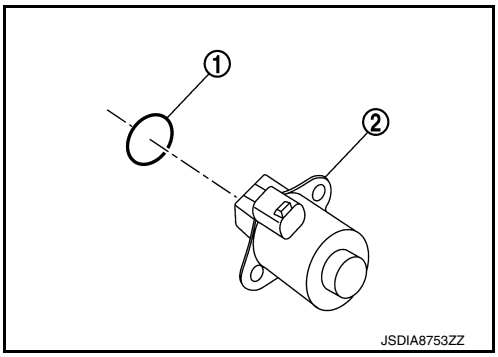


4. Remove mounting bolts of AWD solenoid ①.
5. Remove harness holder plate if necessary.

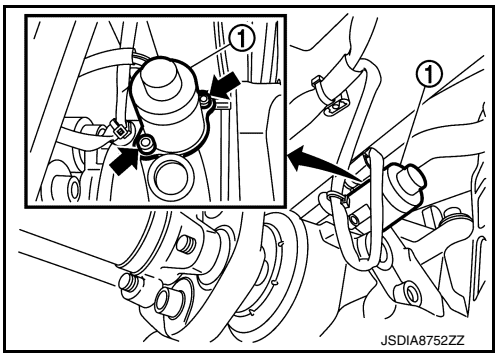


INSTALLATION

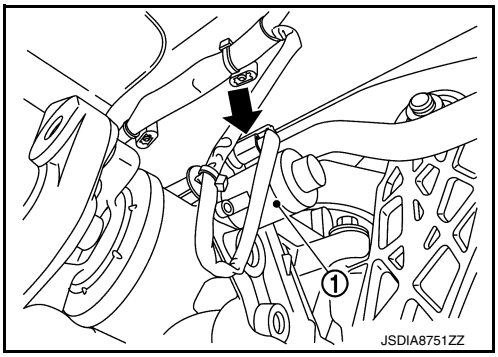
1. Replace O-ring ① of AWD solenoid ②.
   CAUTION:
   Never reuse O-ring.



2. Install AWD solenoid ① together with harness holder plate.
   • For tightening torque, refer to DLN-109, "Exploded View".



3. Connect AWD solenoid ① harness connector and install harness to harness holder plate.
4. Perform inspection and adjustment after installation. Refer to DLN-110, "Inspection and Adjustment".



Inspection and Adjustment

INFOID:0000000013582455

INSPECTION AFTER INSTALLATION

Check oil level and final drive for oil leakage. Refer to DLN-102, "Inspection".

ADJUSTMENT AFTER INSTALLATION

When AWD solenoid was replaced, perform the following work.

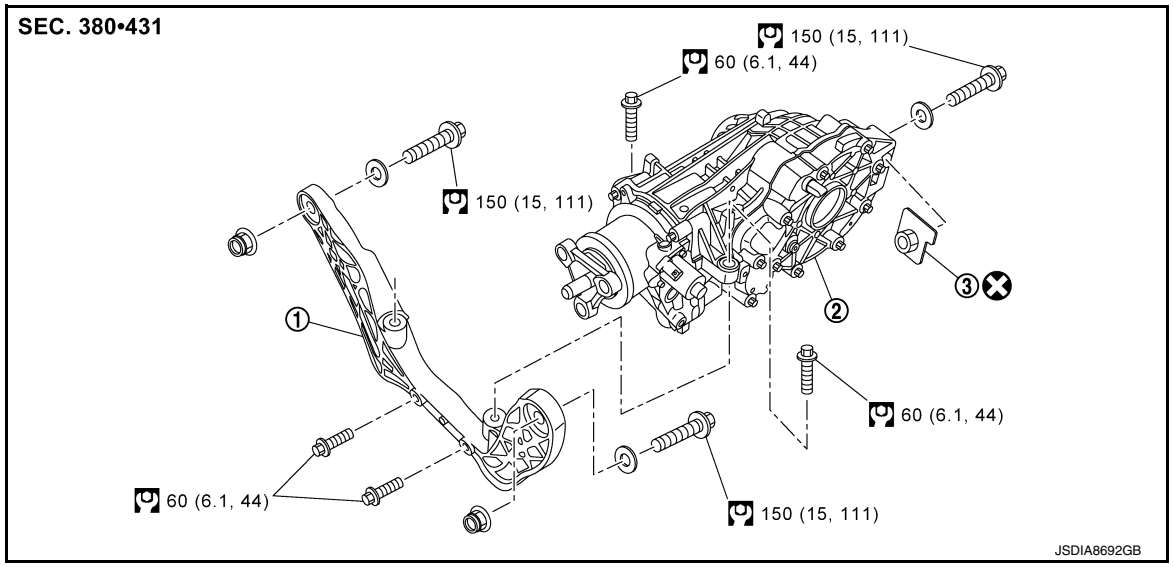
1. Set CONSULT to the vehicle.
2. Perform “Resetting of learned values of solenoid valve” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
3. Follow the instructions in CONSULT and check that “COMPLETED” is displayed.

UNIT REMOVAL AND INSTALLATION

REAR FINAL DRIVE ASSEMBLY

Exploded View

INFOID:0000000013582456



① Rear final drive carrier ② Rear final drive assembly ③ Stopper bracket

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-96, "Precautions for Self-locking Nuts and Bolts".

Removal and Installation

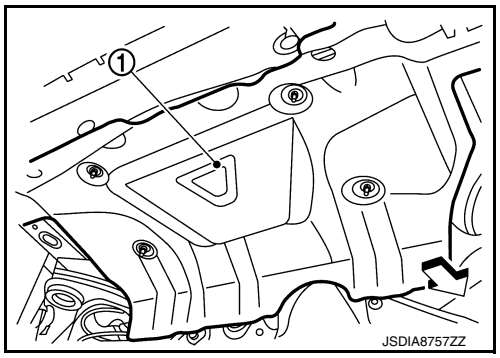
INFOID:0000000013582457

REMOVAL

CAUTION:
Never reuse removed bolt or nut if it is self-locking. Refer to DLN-96, "Precautions for Self-locking Nuts and Bolts".

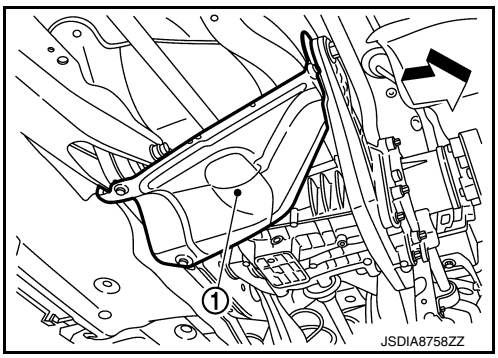
1. Remove exhaust system. Refer to EX-7, "Removal and Installation".
2. Remove heat shield ① over rear muffler.

⇦ : Vehicle front



3. Remove heat insulator ① under rear drive shaft. Refer to RAX-21, "Exploded View".

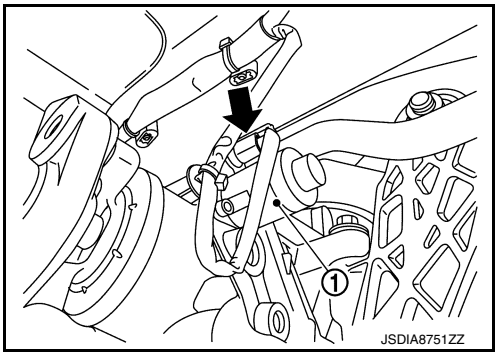
⇦ : Vehicle front



4. Release lock and disconnect AWD solenoid ① harness connector.
5. Remove AWD solenoid harness from harness holder plate.
6. Remove propeller shaft from rear final drive assembly. Refer to DLN-87, "Removal and Installation".
7. Remove rear drive shaft (left side). Refer to RAX-21, "Removal and Installation".

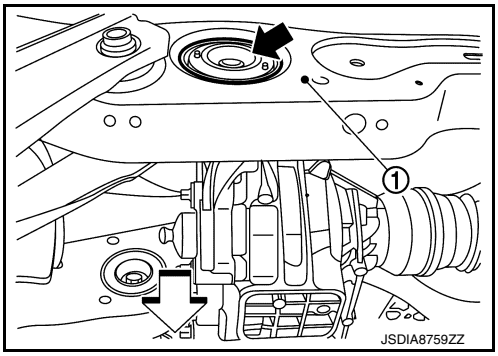
CAUTION:
Oil may leak from the opening. Use cap and/or plug to prevent leakage.

8. Set a suitable jack to rear final drive assembly.



9. Remove rear final drive assembly mounting bolt and washer at rear suspension member ①.

⇦ : Vehicle front



10. Remove bolts, washers and nuts engaging rear final drive carrier ① with rear suspension member ②.

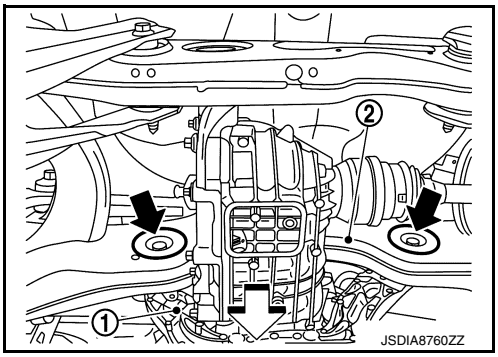
⇦ : Vehicle front

CAUTION:
Secure rear final drive assembly to suitable jack.

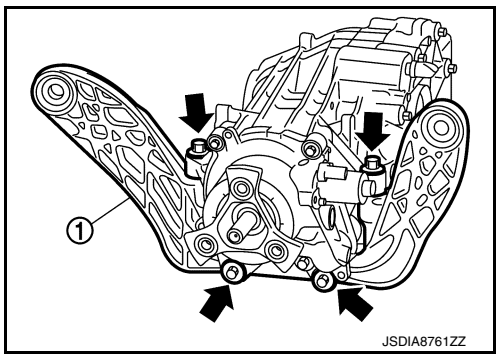
11. Remove rear drive shaft (right side) from rear final drive assembly. Refer to RAX-21, "Removal and Installation".

CAUTION:
- **Oil may leak from the opening. Use cap and/or plug to prevent leakage.**
- **Secure against falling down.**

12. Lower rear final drive assembly and remove it.
13. Remove stopper bracket.



14. Remove rear final drive carrier ①.



INSTALLATION

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

- For non-reusable parts, refer to DLN-111, "Exploded View".
- For each tightening torque, refer to DLN-111, "Exploded View".
- Perform inspection and adjustment after installation. Refer to DLN-113, "Inspection and Adjustment".

Inspection and Adjustment

INFOID:0000000013582458

INSPECTION AFTER INSTALLATION

When oil leaks while removing/installing final drive assembly, check oil level after the installation. Refer to DLN-102, "Inspection".

ADJUSTMENT AFTER INSTALLATION

When rear final drive assembly was changed, perform the following work.

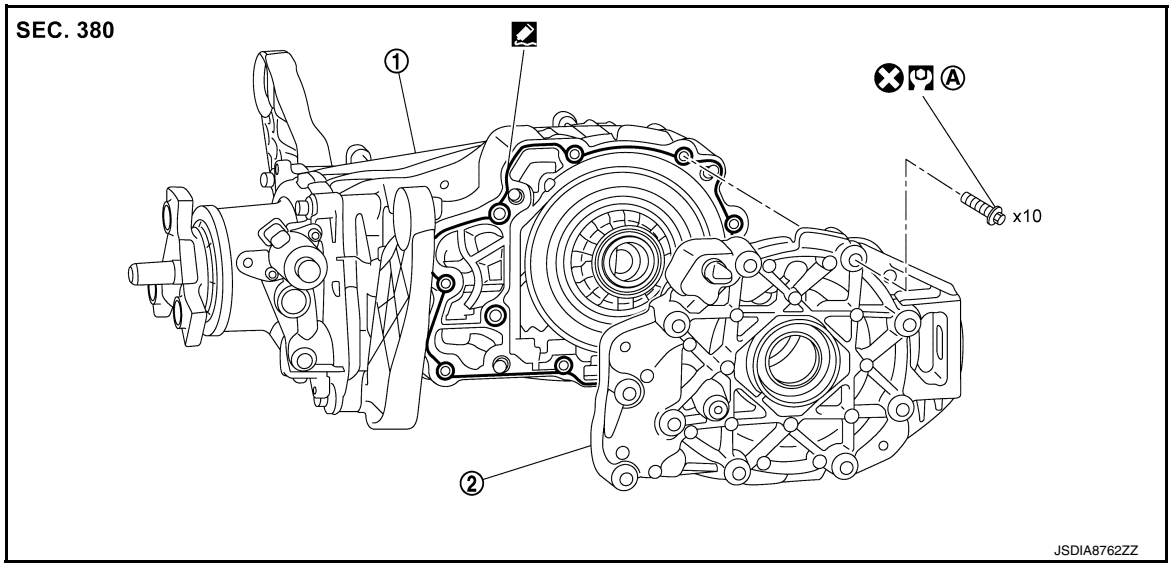
1. Set CONSULT to the vehicle.
2. Perform “Replacement of transfer unit” in “WORK SUPPORT” for “ALL MODE AWD/4WD”.
   NOTE:
   The display name includes part name inapplicable to this vehicle. Applicable name to this vehicle is rear final drive.
3. Follow the instructions in CONSULT and check that “COMPLETED” is displayed.

UNIT DISASSEMBLY AND ASSEMBLY

SEAL

Exploded View

INFOID:0000000013582459



① Housing (with gear component) ② Cover

Ⓐ Comply with the assembly procedure when tightening. Refer to DLN-114, "Disassembly and Assembly".

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

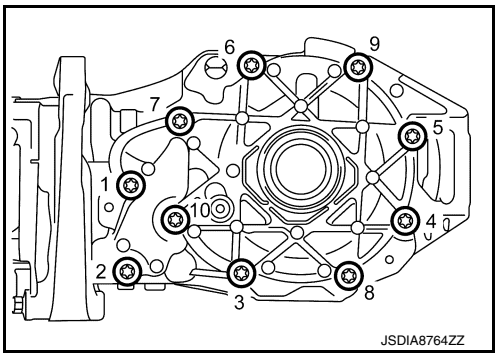
: Apply Loctite 5810 B sealant or equivalent.

Disassembly and Assembly

INFOID:0000000013582460

DISASSEMBLY

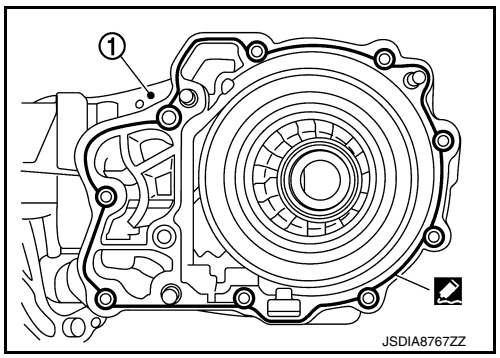
1. Drain gear oil. Refer to DLN-102, "Draining".
2. Loosen the fixing bolts in the order shown in the figure.
3. Remove the fixing bolts.
4. Remove cover.



ASSEMBLY

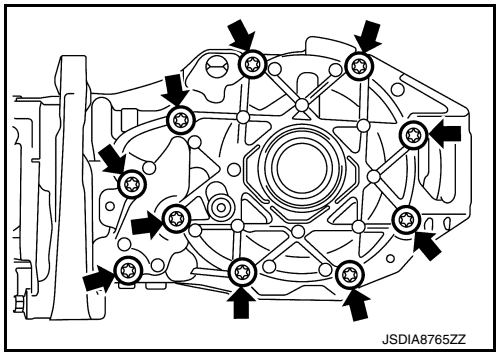
1. Apply liquid gasket to mating surface of housing ①.
   - For applying liquid gasket, refer to DLN-114, "Exploded View".

   CAUTION:
   - **Remove old gasket adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.**
   - **The sealant bead must not be spread.**
2. Install cover to housing.



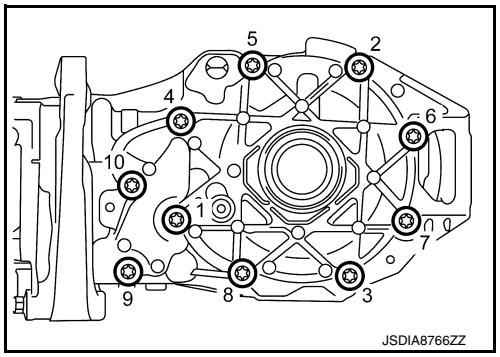
3. Temporarily tighten the fixing bolts.

   CAUTION:
   Never reuse fixing bolt.



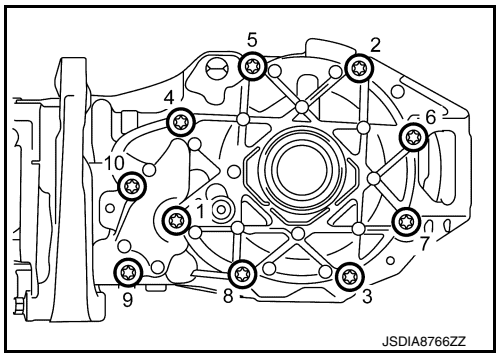
4. Tighten the fixing bolts to the specified torque in the order shown in the figure.

   Tightening torque : 25 N•m (2.6 kg-m, 18 ft-lb)



5. Tighten the fixing bolts additionally to the specified angle in the order shown in the figure.

   Tightening angle : 90 degree
6. Refill gear oil after installing final drive assembly to the vehicle.



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000013582461

Applied model	Axle	AWD
	Engine	2.0L turbo engine
	Transaxle	GE7F30A
Oil capacity		Refer to MA-12, "FOR NORTH AMERICA : Fluids and Lubricants".