

SECTION **DLN**
DRIVELINE

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PRECAUTION

PRECAUTIONS

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

INFOID:000000006600488

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

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.
- The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.

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

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000006600489

NOTE:

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

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

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

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PRECAUTIONS

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OPERATION PROCEDURE

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

Service Notice or Precautions for Transfer

INFOID:000000006359885

- After overhaul refill the transfer with new transfer oil.
- Check the oil level or replace the oil only with the vehicle parked on level surface.
- During removal or installation, keep inside of transfer clear of dust or dirt.
- Replace all tires at the same time. Always use tires of the proper size and the same brand and pattern. Fitting improper size and unusual wear tires applies excessive force to vehicle mechanism and can cause longitudinal vibration.
- Disassembly should be done in a clean work area.
- Before proceeding with disassembly, thoroughly clean the transfer. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they do not interfere with the function of the parts when applied.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new one if necessary.
- Gaskets, seals, O-rings and lock nuts should be replaced any time when the transfer is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Observe the specified torque when assembling.
- Clean and flush the parts sufficiently and blow-dry them.
- Never damage sliding surfaces and mating surfaces.
- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transfer.

PREPARATION

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[TRANSFER: TY21B]

PREPARATION

PREPARATION

Special Service Tools

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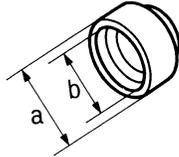
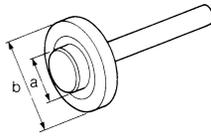
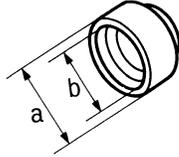
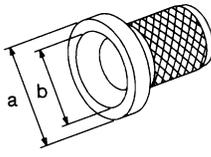
Tool number Tool name	Description
ST33200000 Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	Removing ring gear bearing inner race (left side).
KV381054S0 Puller	<ul style="list-style-type: none"> • Removing drive shaft oil seal. • Removing drive pinion oil seal.
ST33230000 Drift a: 51 mm (2.01 in) dia. b: 28.5 mm (1.122 in) dia.	<ul style="list-style-type: none"> • Installing drive shaft oil seal. • Installing pinion rear bearing outer race.
ST3127S000 Preload gauge	Measuring pinion bearing preload and total preload.
ST35272000 Drift a: 40 mm (1.57 in) dia. b: 72 mm (2.83 in) dia.	Installing pinion front bearing inner race.
ST30720000 Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	<ul style="list-style-type: none"> • Installing drive pinion oil seal. • Installing transfer case oil seal (right side).

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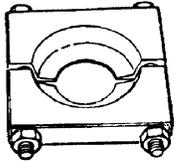
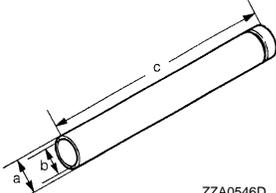
< PREPARATION >

[TRANSFER: TY21B]

Tool number Tool name	Description
KV38102510 Drift a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.	Installing drive pinion oil seal.
 <p style="text-align: center; font-size: small;">ZZA0838D</p>	
ST17130000 Drift a: 31.8 mm (1.252 in) dia. b: 58 mm (2.28 in) dia.	Installing pinion front bearing outer race.
 <p style="text-align: center; font-size: small;">ZZA0836D</p>	
ST19820000 Drift a: 70 mm (2.76 in) dia. b: 50 mm (1.97 in) dia.	Installing transfer case oil seal (right side).
 <p style="text-align: center; font-size: small;">ZZA0838D</p>	
KV40100621 Drift a: 76 mm (2.99 in) dia. b: 69 mm (2.72 in) dia.	Installing transfer case oil seal (left side).
 <p style="text-align: center; font-size: small;">NT086</p>	

Commercial Service Tools

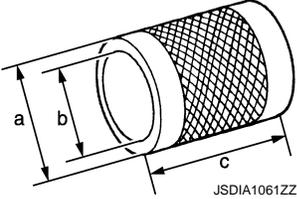
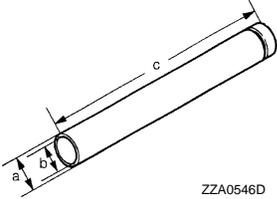
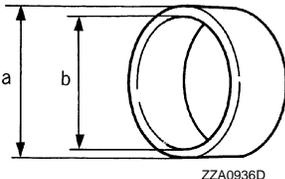
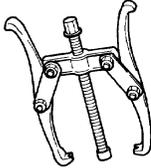
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Tool name	Description
Replacer	<ul style="list-style-type: none"> Remove ring gear bearing inner race (left side). Remove ring gear bearing inner race (right side). Remove pinion front bearing inner race.
 <p style="text-align: center; font-size: small;">ZZA0700D</p>	
Drift a: 57 mm (2.42 in) dia. b: 51 mm (2.01 in) dia. c: 85 mm (3.35 in)	Install ring gear bearing inner race (right side).
 <p style="text-align: center; font-size: small;">ZZA0546D</p>	

PREPARATION

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Tool name	Description
<p>Drift a: 66 mm (2.60 in) dia. b: 60 mm (2.36 in) dia. c: 50 mm (1.97 in)</p> 	<p>Install ring gear bearing inner race (left side).</p>
<p>Drift a: 61 mm (2.40 in) dia. b: 51 mm (2.01 in) dia. c: 85 mm (3.35 in)</p> 	<p>Install ring gear assembly.</p>
<p>Drift a: 74 mm (2.91 in) dia. b: 60 mm (2.36 in) dia.</p> 	<p>Install ring gear assembly.</p>
<p>Puller</p> 	<ul style="list-style-type: none"> • Remove companion flange. • Remove ring gear bearing inner race (right side).

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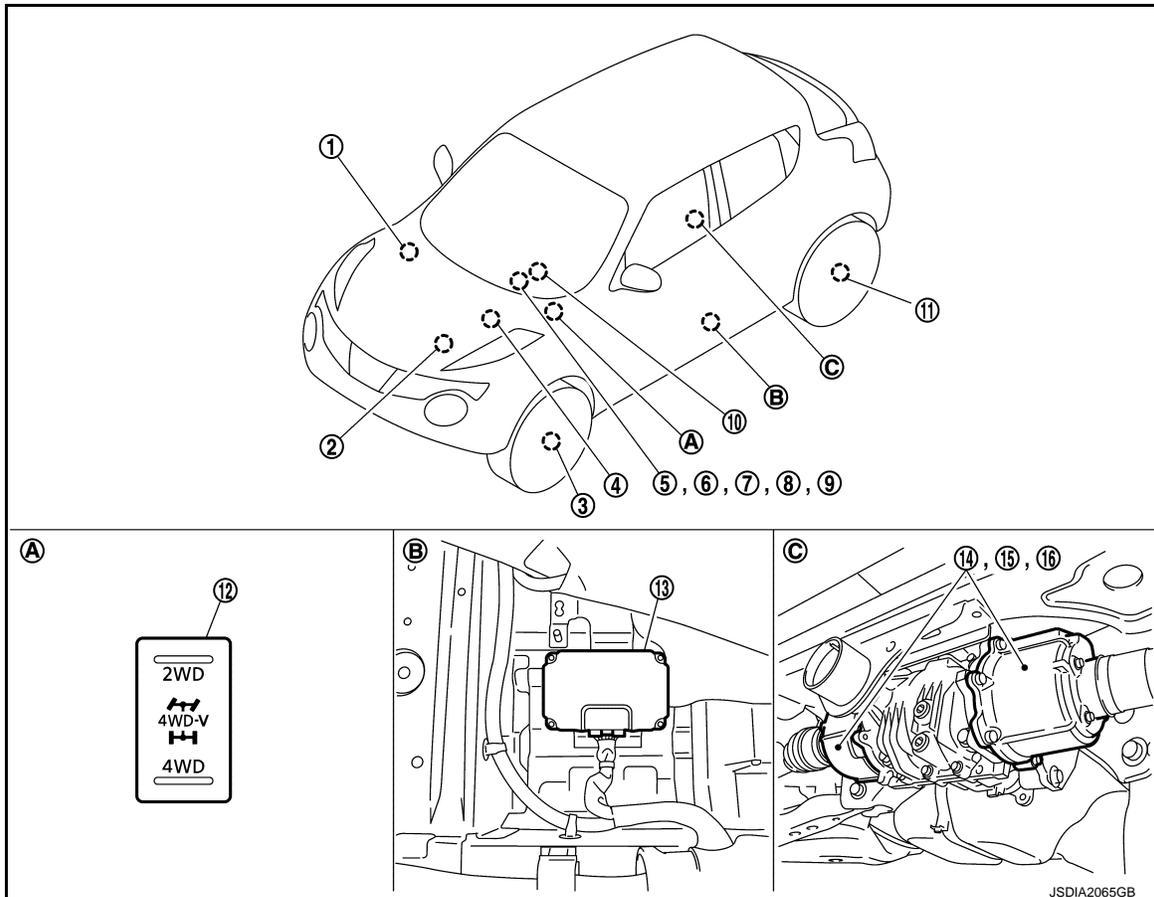
SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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LHD models



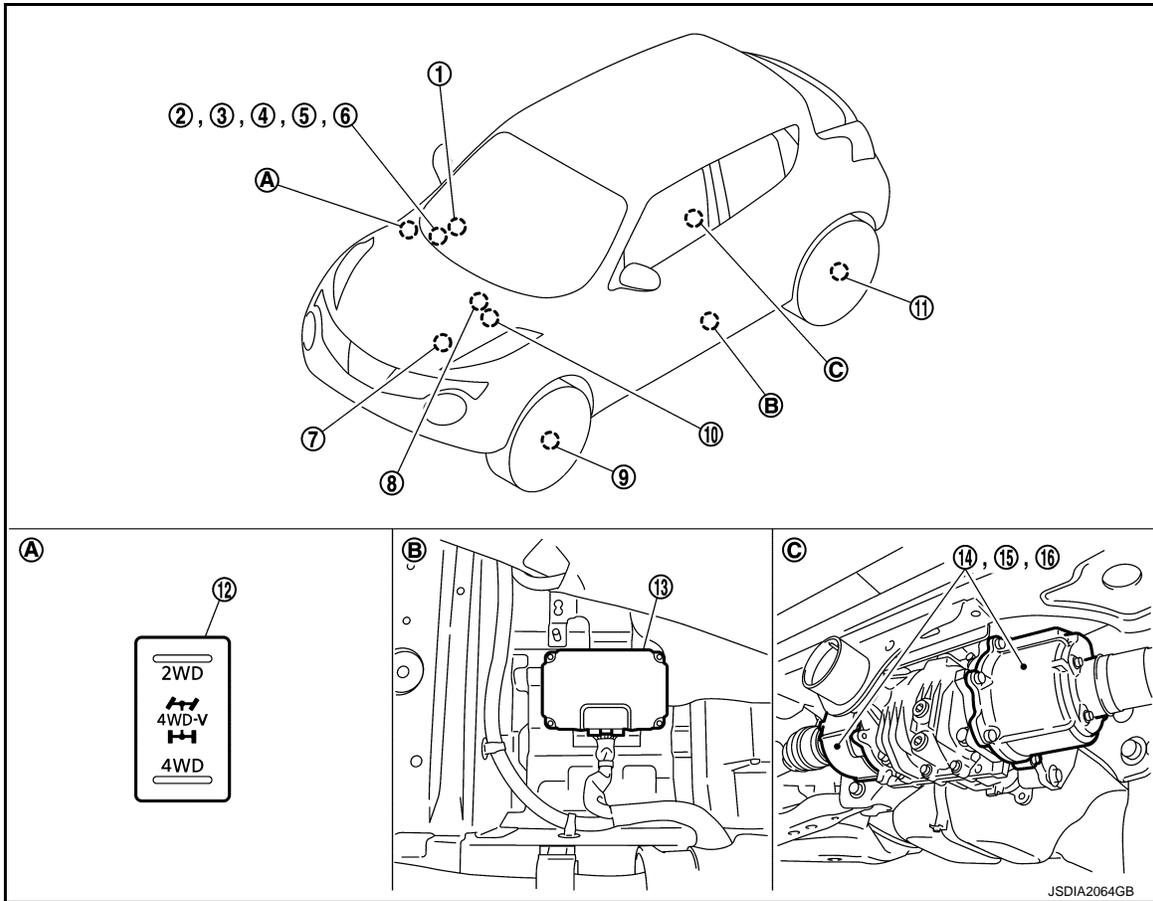
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|---|---|--|
| 1. ABS actuator and electric unit (control unit)
Refer to BRC-97, "Component Parts Location" . | 2. ECM
Refer to EC-25, "ENGINE CONTROL SYSTEM : Component Parts Location" . | 3. Front wheel sensor
Refer to BRC-97, "Component Parts Location" . |
| 4. TCM
Refer to TM-131, "CVT CONTROL SYSTEM : Component Parts Location" . | 5. Combination meter
Refer to MWI-4, "METER SYSTEM : Component Parts Location" . | 6. 4WD warning lamp
(In combination meter) |
| 7. 4WD mode indicator lamp (4WD-V)
(In combination meter) | 8. 4WD mode indicator lamp (4WD)
(In combination meter) | 9. Torque distribution indicator
(In combination meter) |
| 10. Steering angle sensor
Refer to BRC-97, "Component Parts Location" . | 11. Rear wheel sensor
Refer to BRC-97, "Component Parts Location" . | 12. 4WD mode switch |
| 13. 4WD control module | 14. 4WD solenoid
(Inside rear final drive) | 15. Electric controlled coupling
(Inside rear final drive) |
| 16. Electric controlled coupling temperature sensor
(Inside rear final drive) | | |
| A. Instrument driver lower panel | B. Under front (left side) seat | C. Rear final drive assembly |

COMPONENT PARTS

< SYSTEM DESCRIPTION >

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RHD models



- | | | |
|--|---|--|
| 1. Steering angle sensor
Refer to BRC-97, "Component Parts Location" . | 2. Combination meter
Refer to MWI-4, "METER SYSTEM : Component Parts Location" . | 3. 4WD warning lamp
(In combination meter) |
| 4. 4WD mode indicator lamp (4WD-V)
(In combination meter) | 5. 4WD mode indicator lamp (4WD)
(In combination meter) | 6. Torque distribution indicator
(In combination meter) |
| 7. ECM
Refer to EC-25, "ENGINE CONTROL SYSTEM : Component Parts Location" . | 8. ABS actuator and electric unit (control unit)
Refer to BRC-97, "Component Parts Location" . | 9. Front wheel sensor
Refer to BRC-97, "Component Parts Location" . |
| 10. TCM
Refer to TM-131, "CVT CONTROL SYSTEM : Component Parts Location" . | 11. Rear wheel sensor
Refer to BRC-97, "Component Parts Location" . | 12. 4WD mode switch |
| 13. 4WD control module | 14. 4WD solenoid
(Inside rear final drive) | 15. Electric controlled coupling
(Inside rear final drive) |
| 16. Electric controlled coupling temperature sensor
(Inside rear final drive) | | |
| A. Instrument driver lower panel | B. Under front (left side) seat | C. Rear final drive assembly |

Component Description

INFOID:0000000006359887

Component parts	Reference/Function
4WD control module	DLN-12, "4WD Control Module"
4WD solenoid	DLN-12, "4WD Solenoid"
Electric controlled coupling	DLN-12, "Electric Controlled Coupling"
Electric controlled coupling temperature sensor	DLN-12, "Electric Controlled Coupling Temperature Sensor"

COMPONENT PARTS

< SYSTEM DESCRIPTION >

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Component parts	Reference/Function
4WD mode switch	DLN-12, "4WD Mode Switch"
4WD warning lamp	DLN-13, "4WD Warning Lamp"
4WD mode indicator lamp (4WD-V, 4WD)	DLN-13, "4WD Mode Indicator Lamp"
Torque distribution indicator	DLN-13, "Torque Distribution Indicator"
ABS actuator and electric unit (control unit)	Transmits/receives the signals for control of 4WD system via CAN communication line to/from 4WD control module. For transmitting/recieving mainly signals, refer to DLN-17, "4WD SYSTEM : System Diagram" .
Wheel sensor	BRC-102, "Wheel Sensor and Sensor Rotor"
Yaw rate/side/decel G sensor	BRC-104, "Yaw Rate/Side/Decel G Sensor"
ECM	Transmits/receives the signals for control of 4WD system via CAN communication line to/from 4WD control module. For transmitting/recieving mainly signals, refer to DLN-17, "4WD SYSTEM : System Diagram" .
Accelerator pedal position sensor	EC-32, "Accelerator Pedal Position Sensor"
TCM	Transmits/receives the signals for control of 4WD system via CAN communication line to/from 4WD control module. For transmitting/recieving mainly signals, refer to DLN-17, "4WD SYSTEM : System Diagram" .
Combination meter	Transmits/receives the signals for control of 4WD system via CAN communication line to/from 4WD control module. For transmitting/recieving mainly signals, refer to DLN-17, "4WD SYSTEM : System Diagram" .
Steering angle sensor	Transmits/receives the signals for control of 4WD system via CAN communication line to/from 4WD control module. For transmitting/recieving mainly signals, refer to DLN-17, "4WD SYSTEM : System Diagram" .

4WD Control Module

INFOID:000000006359888

- 4WD control module controls driving force distribution by signals from each sensor from front wheel driving mode (100:0) to 4-wheel driving mode (50:50).
- Driving torque between both rear wheels is automatically controlled between 100:0 and 0:100 during acceleration and cornering.
- Front wheel driving conditions is available by fail-safe function if malfunction is detected in 4WD system.
- 4WD actuator relay is integrated with 4WD control module, and supplies 4WD solenoid with voltage.
- Self-diagnosis can be done with CONSULT-III.

4WD Solenoid

INFOID:000000006359889

4WD solenoid is integrated with each electric controlled coupling, and controls electric controlled couplings by command current from 4WD control module.

Electric Controlled Coupling

INFOID:000000006359890

Electric controlled couplings are integrated with rear final drive and transmits driving force to rear drive shaft. For operation, refer to [DLN-15, "Operation Principle"](#).

Electric Controlled Coupling Temperature Sensor

INFOID:000000006484786

- Electric controlled coupling temperature sensor is integrated with each electric controlled coupling.
- Electric controlled coupling temperature sensor detects the electric controlled coupling temperature and transmits a signal to 4WD control module.

4WD Mode Switch

INFOID:000000006359891

- 4WD mode is selectable among 2WD, 4WD-V, and 4WD by operating the 4WD mode switch while the ignition switch is ON or the engine is running.
- Tilting the switch to the 2WD/4WD side allows mode selection between 2WD and 4WD. To switch mode to 4WD-V, simply position the switch in 4WD-V (neutral position).

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

4WD Warning Lamp

INFOID:000000006542955

- After the 4WD system is activated, the 4WD warning lamp turns OFF during front and rear wheels driving torque distribution.
- After the 4WD system is deactivated by fail-safe function and torque distribution of front and rear wheels is stopped, the 4WD warning lamp turns ON to indicate that the state is in 2WD.

NOTE:

- The 4WD warning lamp does not turn ON when only torque distribution of both rear wheels is stopped by the fail-safe function.
- The 4WD warning lamp blinks to indicate that the state is in 2WD when the 4WD system is temporarily stopped by the protection function.
- Also turns ON when ignition switch is turned ON, for the purpose of lamp check. Turns OFF after the engine starts if system is normal.

Condition	4WD warning lamp
Lamp check	Turns ON when ignition switch is turned ON. (Turns OFF approx. 1 second after the engine start.)
4WD system is malfunction*	ON
Protection function is activated due to heavy load to electric controlled coupling. (4WD system is not malfunctioning and 4WD system changes to front wheel drive.)	Quick blinking: 2 times/second (Blinking in approx. 1 minute and then turning OFF)
Large difference in diameter of front/rear tires	Slow blinking: 1 time/2 seconds (Continuing to blink until turning ignition switch OFF)
Other than above (System is normal)	OFF

*: The 4WD warning lamp does not turn ON when only torque distribution of both rear wheels is stopped.

NOTE:

4WD warning lamp also turns ON due to data reception error, CAN communication error etc.

4WD Mode Indicator Lamp

INFOID:000000006542956

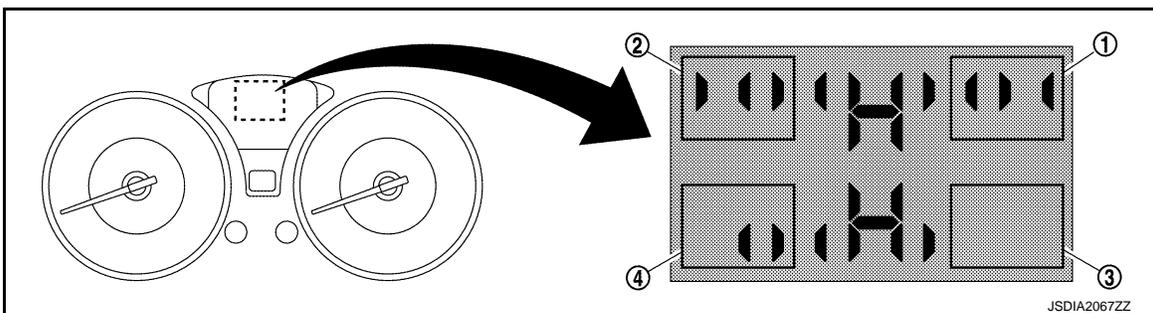
The following is the indications of 4WD mode indicator lamp.

Condition	4WD mode indicator lamp	
	4WD-V	4WD
Lamp check	—	Turns ON when ignition switch is turned ON in approx. 1 second and then turns OFF.
4WD mode: 2WD	OFF	OFF
4WD mode: 4WD-V	ON	OFF
4WD mode: 4WD	OFF	ON

Torque Distribution Indicator

INFOID:000000006548412

- Torque distribution indicator is displayed when the ODO/TRIP indication on the combination meter is switched.
- The number of bars shows driving force distributed to each tire. (Maximum bars: 3)



COMPONENT PARTS

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

1. Front right side driving torque
2. Front left side driving torque
3. Rear right side driving torque
4. Rear left side driving torque

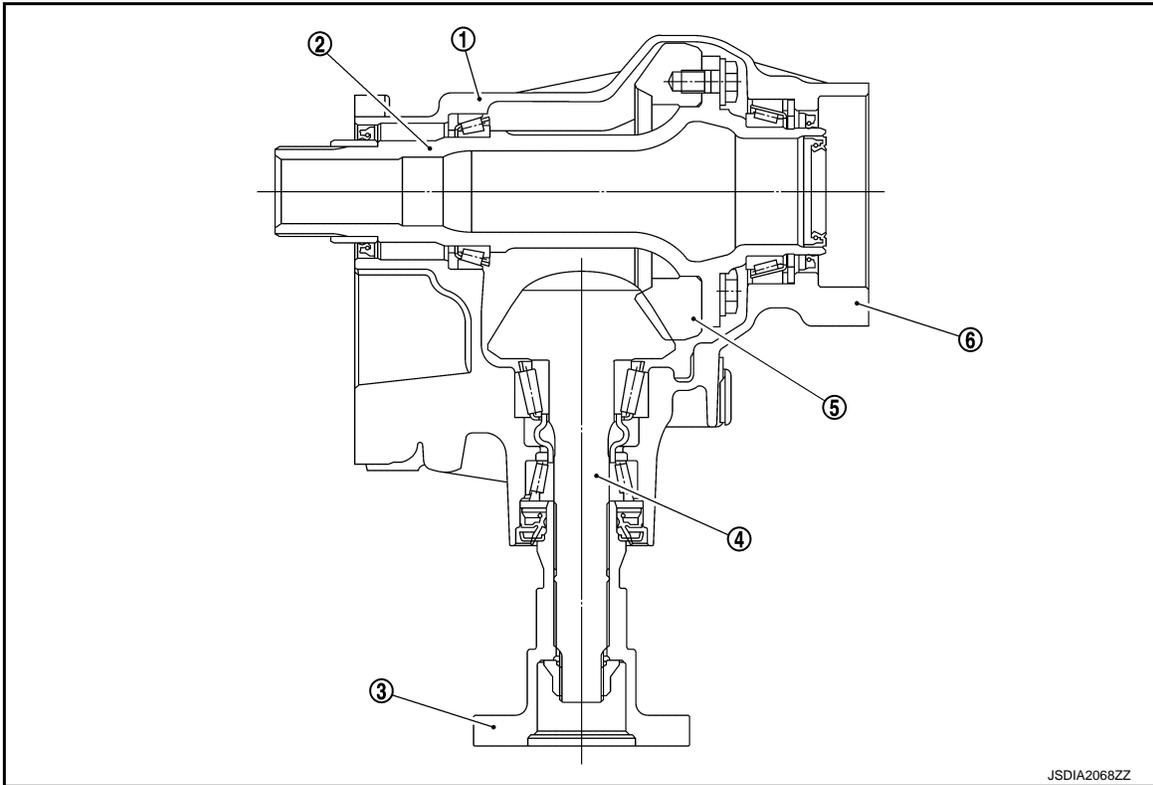
NOTE:

The driving force distribution may not match actual one. This is not a system malfunction.

STRUCTURE AND OPERATION

Sectional View

INFOID:000000006359896



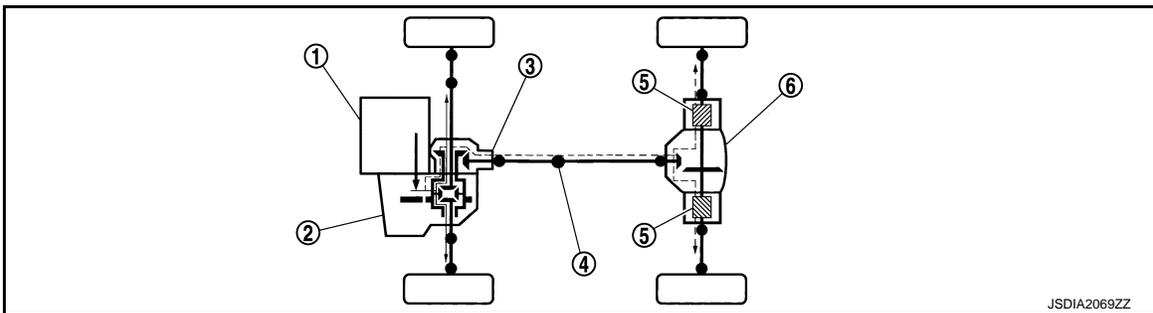
JSDIA2068ZZ

- | | | |
|-------------------|--------------------|---------------------|
| 1. Transfer cover | 2. Ring gear shaft | 3. Companion flange |
| 4. Drive pinion | 5. Ring gear | 6. Transfer case |

Operation Principle

INFOID:000000006484157

POWER TRANSFER DIAGRAM



JSDIA2069ZZ

- | | | |
|--------------------|---------------------------------|---------------------|
| 1. Engine | 2. Transaxle | 3. Transfer |
| 4. Propeller shaft | 5. Electric controlled coupling | 6. Rear final drive |

ELECTRIC CONTROLLED COUPLING

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

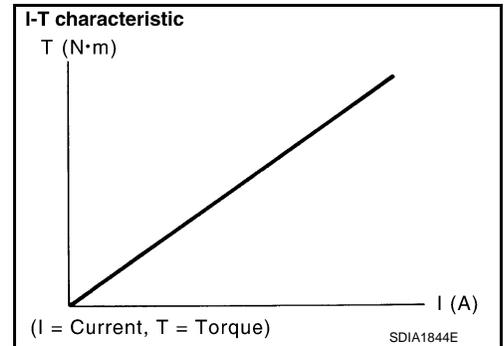
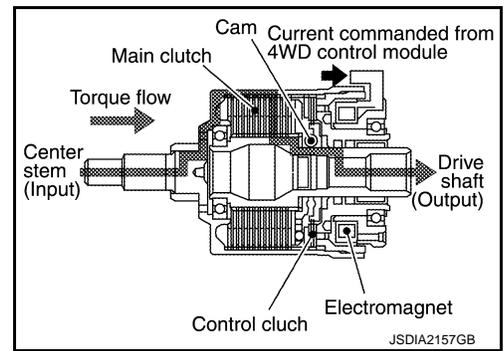
[TRANSFER: TY21B]

1. The 4WD control module supplies command current to each electric controlled coupling (4WD solenoid).
2. Each of control clutch is engaged by electromagnet and torque is detected in control clutch.
3. The cam operates in response to control clutch torque and applies pressure to main clutch.
4. Each of main clutch transmits torque to right and left rear wheels according to pressing power.

NOTE:

Change each pressing power according to 4WD mode atatus and cornering conditions.

- Transmission torque to the right and left rear wheels is determined according to command current.

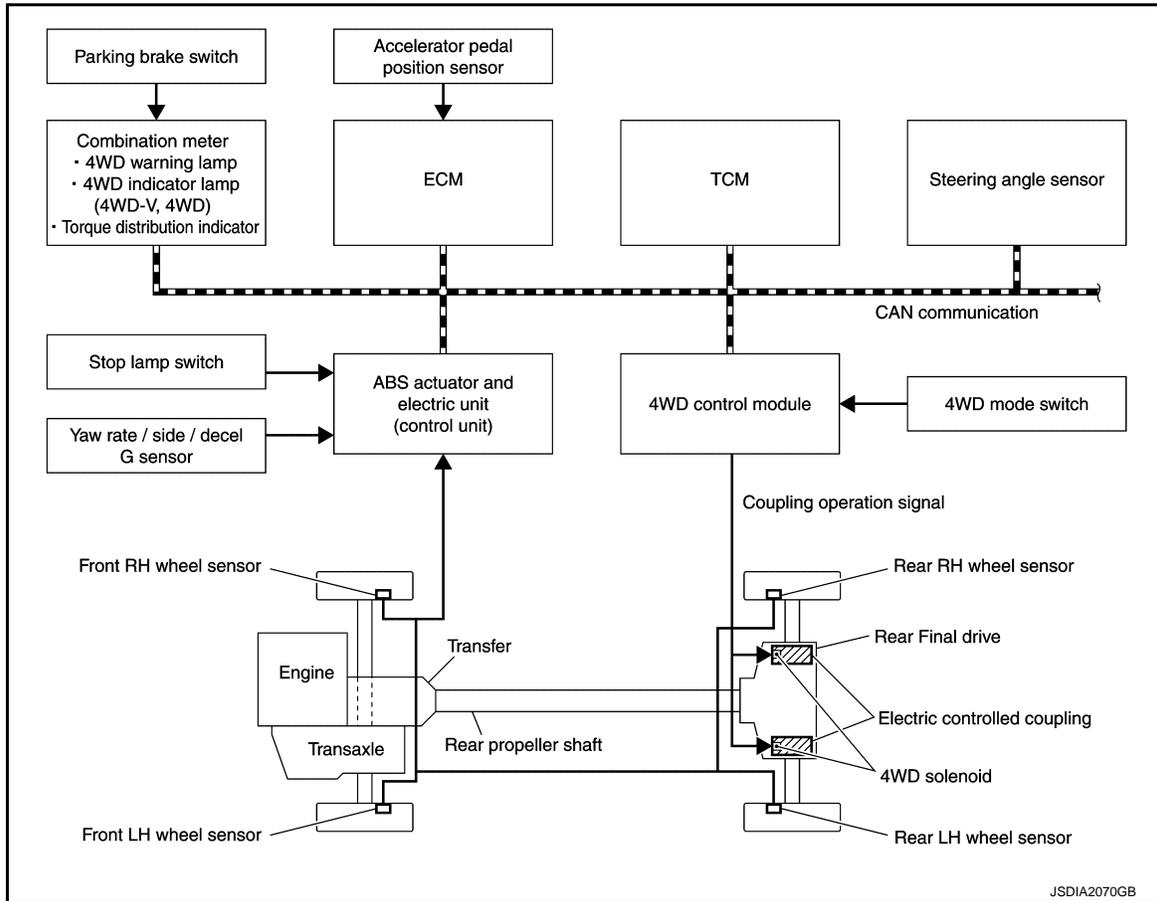


SYSTEM

4WD SYSTEM

4WD SYSTEM : System Diagram

INFOID:000000006548414



JSDIA2070GB

INPUT/OUTPUT SIGNAL

It transmits/receives each signal from the following 4WD control module via CAN communication line.

Component parts	Signal item
ABS actuator and electric unit (control unit)-	Mainly transmits the following signals via CAN communication line to 4WD control module. <ul style="list-style-type: none"> • Vehicle speed signal (ABS) • Stop lamp switch signal (brake signal) • Yaw rate signal • Side G sensor signal • Decel G sensor signal
ECM	Mainly transmits the following signals via CAN communication line to 4WD control module. <ul style="list-style-type: none"> • Accelerator pedal position signal • Engine speed signal • Engine torque signal
TCM	Mainly transmits the following signals via CAN communication line to 4WD control module. <ul style="list-style-type: none"> • Next gear position signal • Current gear position signal • Input shaft revolutionary signal • Output shaft revolutionary signal • CVT ratio signal

SYSTEM

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

Component parts	Signal item
Combination meter	Mainly transmits the following signals via CAN communication line to 4WD control module. <ul style="list-style-type: none"> • Parking brake switch signal
	Mainly receives the following signals via CAN communication line from 4WD control module. <ul style="list-style-type: none"> • 4WD warning lamp signal • 4WD mode indicator lamp signal • Torque distribution indicator signal
Steering angle sensor	Mainly transmits the following signals via CAN communication line to 4WD control module. <ul style="list-style-type: none"> • Steering angle sensor signal

4WD SYSTEM : System Description

INFOID:000000006359897

- 4WD mode is selectable among 2WD, 4WD-V, and 4WD by operating the 4WD mode switch.
- When judging driving conditions and road surface conditions based on signals transmitted from each sensor and switch, the 4WD system automatically controls torque distribution of front and rear wheels and both rear wheels, depending on the situation.
- In accordance with fail-safe function, when system is malfunctioning, 4WD control stops, and the system becomes rear wheel drive. Refer to [DLN-19, "4WD SYSTEM : Fail-safe"](#).
- When a high load status continues for electric controlled coupling, 4WD control temporarily becomes rear wheel drive, according to protection function. Refer to [DLN-21, "4WD SYSTEM : Protection Function"](#).

4WD SYSTEM : Torque Split Control

INFOID:000000006543008

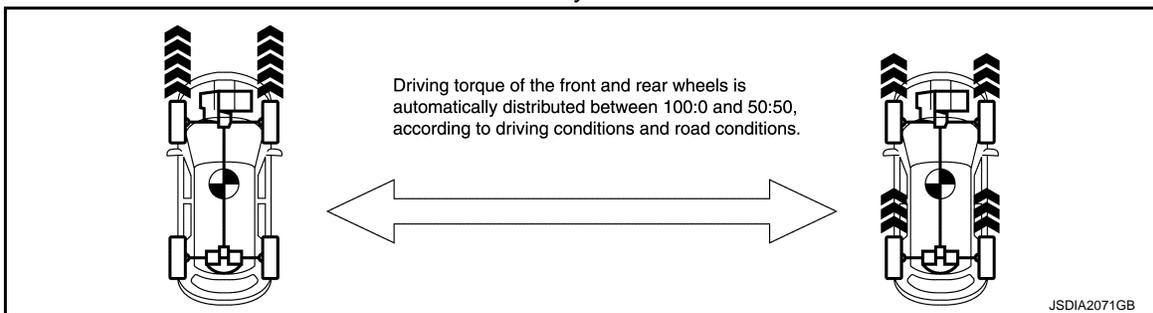
2WD mode

- Vehicle is in front-wheel drive.

4WD-V mode

Normal Control

- Pressing force of multiple disc clutch is controlled by electric control. Driving torque distribution of front and rear wheels changes automatically between approximately 100 : 0 (Front wheel drive) and 50 : 50 (4WD) to have an optimized torque distribution adapted to road condition change.
- When spin occurs on front wheel, distribute optimum torque to rear wheel and keep stable driving.
- On roads which do not require 4WD, it contributes to improved fuel economy by driving in conditions close to front-wheel drive and it results in better fuel efficiency.



Cornering Control

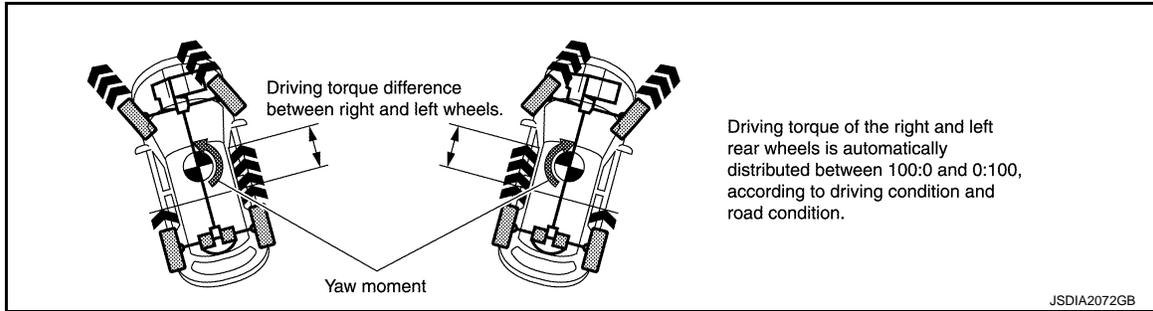
- Torque between both rear wheels is automatically changed between 100 : 0 and 0 : 100 for distributing optimum torque that depends on the driving conditions and road surface conditions.
- Producing a difference between both rear wheels enables sporty and smooth handling.

SYSTEM

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

- The vehicle cornering status is judged according to information from each sensor, and the optimum torque is distributed to rear wheels for preventing tight cornering/braking symptom.



4WD mode

- The 4WD mode controls torque for obtaining suitable torque for driving on slippery roads (e.g. snow-covered roads) and provides more stable driving, compared to 4WD-V.

4WD SYSTEM : Fail-safe

INFOID:000000006570277

When a system malfunction occurs, the 4WD warning lamp turns ON and the 4WD control becomes 2WD state.

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition
P1804	Internal malfunction of 4WD control module	OFF	Normal control continues.
P1808	<ul style="list-style-type: none"> ABS actuator and electric unit (control unit) - Malfunction of ABS actuator and electric unit (control unit) circuit error - Wheel speed sensor error • 4WD control module • CAN communication line 	ON	Front and rear distribution control stops.
P1809	Internal malfunction of 4WD control module		
P1811	<ul style="list-style-type: none"> Malfunction of 4WD control module power supply circuit (open or short) Malfunction of 4WD control module Battery 		
P1813	<ul style="list-style-type: none"> 4WD mode switch - Internal malfunction of 4WD mode switch - Malfunction of 4WD mode switch circuit • 4WD control module 		
P181B	Self-shut of 4WD control module is incomplete.	ON	Front and rear distribution control stops. NOTE: The state becomes 4WD only when a turning difference occurs between front and rear wheels.
P181D	<ul style="list-style-type: none"> ECM • 4WD control module • CAN communication line 		
P181E	<ul style="list-style-type: none"> Steering angle sensor - Steering angle sensor error - Malfunction of steering angle sensor circuit • Malfunction of 4WD control module • CAN communication line 	OFF	Right and left rear wheels difference control stops.
P181F	Writing unit parameter is incomplete.	ON	Front and rear distribution control stops.
P1820	<ul style="list-style-type: none"> ECM • 4WD control module • CAN communication line 	OFF	Normal control continues.

SYSTEM

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition
P1829	<ul style="list-style-type: none"> • ECM • 4WD control module • CAN communication line 	ON	Front and rear distribution control stops.
P182D	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (LH) • Malfunction of 4WD solenoid (LH) power supply circuit (open or short) • Malfunction of 4WD control module 		
P182E	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (RH) • Malfunction of 4WD solenoid (RH) power supply circuit (open or short) • Malfunction of 4WD control module 		
P182F	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (left) temperature sensor • Malfunction of electric controlled coupling (left) temperature sensor circuit • Malfunction of 4WD control module 	OFF	Normal control continues.
P1830	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 		
P1831	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 		
P1832	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 		
P183A	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (right) temperature sensor • Malfunction of electric controlled coupling (right) temperature sensor circuit • Malfunction of 4WD control module 		
P183B	<ul style="list-style-type: none"> • Malfunction of 4WD solenoid power supply circuit • Malfunction of 4WD control module • Malfunction of 4WD control module power supply circuit (open or short) • Battery 	ON	Front and rear distribution control stops.

SYSTEM

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition
P183C	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 	OFF	Right and left rear wheels difference control stops.
P183D	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 		
P183E	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 		
P183F	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1840	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1864	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1865	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
U1000	CAN communication error		
U1010	Internal malfunction of 4WD control module		

4WD SYSTEM : Protection Function

INFOID:000000006570278

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

Detected DTC	Warning lamp	Possible cause	Vehicle condition
—	Quick blinking ^{*1}	Turning difference remains between front and rear wheels or between right and left rear wheels, resulting in an oil temperature rise in drive train related parts. NOTE: It is not malfunction.	Shuts down 4WD system temporarily
—	Slow blinking ^{*2}	Malfunction in each tire or different tire diameter	

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

*2: 1 time/2 seconds (continuing to blink until ignition switch is turned OFF)

NOTE:

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

DIAGNOSIS SYSTEM (4WD CONTROL MODULE)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

DIAGNOSIS SYSTEM (4WD CONTROL MODULE)

CONSULT-III Function

INFOID:000000006359899

APPLICATION ITEMS

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

Diagnostic test mode	Function
ECU Identification	4WD control module part number can be read.
Self Diagnostic Result	Self-diagnostic results and freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the 4WD control module can be read.
Active Test	Diagnostic Test Mode in which CONSULT-III drives some actuators apart from the 4WD control module and also shifts some parameters in a specified range.
Work support	This mode enable a technician to adjust some devices faster and more accurately by following the indication on the CONSULT-III.

*: The following diagnosis information is erased by erasing.

- DTC
- Freeze frame data (FFD)

ECU IDENTIFICATION

4WD control module part number can be read.

SELF DIAGNOSTIC RESULT

Refer to [DLN-33. "DTC Index"](#).

When "PRNT" 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 on CONSULT-III.

Freeze Frame Data Item	Description
SOLENOID VOLT	Power supply voltage of 4WD solenoid is displayed when DTC is detected.
TRGT SOL CRNT LH	4WD solenoid (LH) target current is displayed when DTC is detected.
SOLENOID CRNT LH	4WD solenoid (LH) control current is displayed when DTC is detected.
TRGT SOL CRNT RH	4WD solenoid (RH) target current is displayed when DTC is detected.
SOLENOID CRNT RH	4WD solenoid (RH) control current is displayed when DTC is detected.
COMPR VHCL SPEED	Vehicle speed calculated by 4WD control module is displayed when DTC is detected.
VHCL/S SEN-FR	Vehicle speed (front) average calculated by 4WD control module is displayed when DTC is detected.
VHCL/S SEN-RR	Vehicle speed (rear) average calculated by 4WD control module is displayed when DTC is detected.
WHEEL SPD SEN FR	Wheel speed (front RH) calculated by 4WD control module is displayed when DTC is detected.
WHEEL SPD SEN FL	Wheel speed (front LH) calculated by 4WD control module is displayed when DTC is detected.
WHEEL SPD SEN RR	Wheel speed (rear RH) calculated by 4WD control module is displayed when DTC is detected.
WHEEL SPD SEN RL	Wheel speed (rear LH) calculated by 4WD control module is displayed when DTC is detected.
ABS OPERATION SIG	ABS operation status via CAN communication line is displayed when DTC is detected.
VDC OPERATION SIG	VDC operation status via CAN communication line is displayed when DTC is detected.
TCS OPERATION SIG	TCS operation status via CAN communication line is displayed when DTC is detected.
HIGH M FLG 1 [0/1]	Measured friction of load is displayed when vehicle starts. <ul style="list-style-type: none">• When "0" is displayed: It indicates that friction of load is not high.• When "1" is displayed: It indicates that friction of load is high.

DIAGNOSIS SYSTEM (4WD CONTROL MODULE)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

Freeze Frame Data Item	Description
HIGH M FLG 2 [0/1]	Measured friction of load is displayed when vehicle throttles down. <ul style="list-style-type: none"> • When "0" is displayed: It indicates that friction of load is not high. • When "1" is displayed: It indicates that friction of load is high.
SLCT LVR POSI	Current transmission gear via CAN communication line is displayed when DTC is detected.
OPERATION MODE	Control status of 4WD mode is displayed when DTC is detected.
IGN COUNTER [0 - 39]	The number of times that ignition switch is turned ON after the DTC is detected is displayed. <ul style="list-style-type: none"> • When "0" is displayed: It indicates that the system is presently malfunctioning. • When except "0" is displayed: It indicates that system malfunction in the past is detected, but the system is presently normal. <p>NOTE: Each time when ignition switch is turned OFF to ON, numerical number increases in 1→2→3...38→39. When the operation number of times exceeds 39, the number do not increase and "39" is displayed until self-diagnosis is erased.</p>

DATA MONITOR

X: Applicable

Monitor item [Unit]	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIG-NALS	
SWITCH 1 [On/Off]	X		4WD mode switch status (2WD) is displayed.
SWITCH 2 [On/Off]	X		4WD mode switch status (4WD-V or 4WD) is displayed.
SWITCH 3 [On/Off]	X		4WD mode switch status (4WD) is displayed.
IGN SW [On/Off]	X		Ignition switch status is displayed.
WARNING LAMP [On/Off]		X	Control status of 4WD warning lamp is displayed.
R POSITION SW [On/Off]	X	X	CVT shift selector is displayed.
ABS OPERATION SIG [On/Off]			ABS operation status via CAN communication line is displayed.
VDC OPERATION SIG [On/Off]			VDC operation status via CAN communication line is displayed.
TCS OPERATION SIG [On/Off]			TCS operation status via CAN communication line is displayed.
PKB SW [On/Off]		X	Parking brake switch signal status via CAN communication line is displayed.
STOP LAMP SW [On/Off]		X	Stop lamp switch signal status via CAN communication line is displayed.
4WD MODE SW [2WD/4WD-A]		X	4WD mode switch status is displayed.
ACTUATOR RELAY [On/Off]			4WD actuator relay (integrated in 4WD control module) operation status is displayed.
OPERATION MODE [2WD/4WD-V/4WD-A]		X	Control status of 4WD mode is displayed.
INDICATOR [2WD/4WD-V/4WD-A]		X	Control status of 4WD mode indicator lamp is displayed.
DRIVE MODE [1/2]		X	Snow mode (4WD mode) status is displayed.
TORQU DISTR RR LH [1/1-2/1-3/1-4/OFF]			Control status of torque distribution indicator (rear LH) is displayed.
TORQU DISTR RR RH [1/1-2/1-3/1-4/OFF]			Control status of torque distribution indicator (rear RH) is displayed.
TORQU IND FRONT [1/1-2/1-3/1-4/OFF]			Control status of torque distribution indicator (front) is displayed.
TEMP SEN LEFT [V]	X		Voltage of electric controlled coupling temperature sensor (LH) is displayed.
TEMP SEN RIGHT [V]	X		Voltage of electric controlled coupling temperature sensor (RH) is displayed.

DIAGNOSIS SYSTEM (4WD CONTROL MODULE)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

Monitor item [Unit]	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	
CONT MODUL VOLT [V]	X		Power supply voltage of 4WD control module is displayed.
SOLENOID VOLT [V]	X		Power supply voltage of 4WD solenoid is displayed.
TRGT SOL CRNT LH [A]	X		4WD solenoid (LH) target current is displayed.
SOLENOID CRNT LH [A]	X		4WD solenoid (LH) control current is displayed.
TRGT SOL CRNT RH [A]	X		4WD solenoid (RH) target current is displayed.
SOLENOID CRNT RH [A]	X		4WD solenoid (RH) control current is displayed.
COMPR VHCL SPEED [km/h]		X	Vehicle speed calculated by 4WD control module is displayed.
VHCL/S SEN-FR [km/h]			Vehicle speed (front) average calculated by 4WD control module is displayed.
VHCL/S SEN-RR [km/h]			Vehicle speed (rear) average calculated by 4WD control module is displayed.
THRTL POS SEN [%]			Throttle operation status via CAN communication line is displayed.
SLCT LVR POSI [2ND / 3RD / 4TH / 5TH / 6TH / 7TH / 8TH / R / N/P / D]		X	Current transmission gear via CAN communication line is displayed.
TRGT DRIVE TORQU [Nm]			Request drive torque from 4WD control module to ECM is displayed.
RQST DRIVE TORQU [Nm]			Request drive torque from ABS actuator and electric unit (control unit) to 4WD control module is displayed.
WHEEL SPD SEN FR [km/h]			Wheel speed (front RH) calculated by 4WD control module is displayed.
WHEEL SPD SEN FL [km/h]			Wheel speed (front LH) calculated by 4WD control module is displayed.
WHEEL SPD SEN RR [km/h]			Wheel speed (rear RH) calculated by 4WD control module is displayed.
WHEEL SPD SEN RL [km/h]			Wheel speed (rear LH) calculated by 4WD control module is displayed.

ACTIVE TEST

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

Test item	Condition	Description
4WDSOL_L	<ul style="list-style-type: none"> • Vehicle stopped • Engine running • No DTC detected 	Change command current value to 4WD solenoid (LH), and then change driving mode. (Monitor value is normal if it is within approx. $\pm 10\%$ of command value.) <ul style="list-style-type: none"> • Qu: Increase current value in increments of 0.2 A • Qd: Decrease current value in increments of 0.2 A • UP: Increase current value in increments of 0.02 A • DOWN: Decrease current value in increments of 0.02 A
4WDSOL_R	<ul style="list-style-type: none"> • Vehicle stopped • Engine running • No DTC detected 	Change command current value to 4WD solenoid (RH), and then change driving mode. (Monitor value is normal if it is within approx. $\pm 10\%$ of command value.) <ul style="list-style-type: none"> • Qu: Increase current value in increments of 0.2 A • Qd: Decrease current value in increments of 0.2 A • UP: Increase current value in increments of 0.02 A • DOWN: Decrease current value in increments of 0.02 A

CAUTION:

Never energize continuously for a long time.

DIAGNOSIS SYSTEM (4WD CONTROL MODULE)

< SYSTEM DESCRIPTION >

[TRANSFER: TY21B]

WORK SUPPORT

Function	Description
UNIT CHARACTERISTICS DATA	Display the unit parameter of electric controlled coupling written to 4WD control module.
UNIT CHARACTERISTICS WRITE	Writes the unit parameter of electric controlled coupling to 4WD control module.

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4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

ECU DIAGNOSIS INFORMATION

4WD CONTROL MODULE

Reference Value

INFOID:000000006359900

VALUES ON THE DIAGNOSIS TOOL

Monitor item	Condition	Value/Status
SWITCH 1	4WD mode switch: 2WD	On
	4WD mode switch: 4WD-V or 4WD	Off
SWITCH 2	4WD mode switch: 4WD-V or 4WD	On
	4WD mode switch: 2WD	Off
SWITCH 3	4WD mode switch: 4WD	On
	4WD mode switch: 2WD or 4WD-V	Off
IGN SW	Ignition SW: ON	On
	Ignition SW: OFF	Off
WARNING LAMP	4WD warning lamp: ON	On
	4WD warning lamp: OFF	Off
R POSITION SW	CVT shift selector: R	On
	CVT shift selector: Except R	Off
ABS OPERATION SIG	ABS is operating	On
	ABS is not operating	Off
VDC OPERATION SIG	VDC is operating	On
	VDC is not operating	Off
TCS OPERATION SIG	TCS is operating	On
	TCS is not operating	Off
PKB SW	Parking brake is operated	On
	Parking brake is not operated	Off
STOP LAMP SW	Brake pedal is depressed	On
	Brake pedal is released	Off
4WD MODE SW	4WD mode switch: 2WD	2WD
	4WD mode switch: 4WD-V or 4WD	4WD-A
ACTUATOR RELAY	Engine stopped (Ignition switch: ON)	Off
	Engine running	On
OPERATION MODE	4WD mode: 2WD	2WD
	4WD mode: 4WD-V	4WD-V
	4WD mode: 4WD	4WD-A
INDICATOR	4WD mode indicator (4WD-V): OFF 4WD mode indicator (4WD): OFF	2WD
	4WD mode indicator (4WD-V): ON 4WD mode indicator (4WD): OFF	4WD-V
	4WD mode indicator (4WD-V): ON 4WD mode indicator (4WD): ON	4WD-A
DRIVE MODE	4WD mode: Except 4WD	1
	4WD mode: 4WD	2

4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Monitor item	Condition	Value/Status	
TORQU DISTR RR LH	The number of bars of torque distribution indicator (rear LH): 0	OFF	A
	The number of bars of torque distribution indicator (rear LH): 1	1	
	The number of bars of torque distribution indicator (rear LH): 2	1-2	B
	The number of bars of torque distribution indicator (rear LH): 3	1-3	
	The number of bars of torque distribution indicator (rear LH): 4	1-4	
TORQU DISTR RR RH	The number of bars of torque distribution indicator (rear RH): 0	OFF	C
	The number of bars of torque distribution indicator (rear RH): 1	1	
	The number of bars of torque distribution indicator (rear RH): 2	1-2	DLN
	The number of bars of torque distribution indicator (rear RH): 3	1-3	
	The number of bars of torque distribution indicator (rear RH): 4	1-4	
TORQU IND FRONT	The number of bars of torque distribution indicator (front): 0	OFF	E
	The number of bars of torque distribution indicator (front): 1	1	
	The number of bars of torque distribution indicator (front): 2	1-2	F
	The number of bars of torque distribution indicator (front): 3	1-3	
	The number of bars of torque distribution indicator (front): 4	1-4	
TEMP SEN LEFT	Temperature of electric controlled coupling (LH) is 10 °C	Approx. 3.5 V	G
	Temperature of electric controlled coupling (LH) is 20 °C	Approx. 3.2 V	
	Temperature of electric controlled coupling (LH) is 30 °C	Approx. 2.8 V	
TEMP SEN RIGHT	Temperature of electric controlled coupling (RH) is 10 °C	Approx. 3.5 V	H
	Temperature of electric controlled coupling (RH) is 20 °C	Approx. 3.2 V	
	Temperature of electric controlled coupling (RH) is 30 °C	Approx. 2.8 V	I
CONT MODUL VOLT	Always	Battery Voltage	
SOLENOID VOLT	Always	Battery Voltage	
TRGT SOL CRNT LH	Vehicle stopped	0.00 A	J
	Vehicle starting (Straight-ahead start on a dry road with accelerator angle 2/8)	Approx. 1.00 A	
SOLENOID CRNT LH	Vehicle stopped	0.00 A	K
	Vehicle starting (Straight-ahead start on a dry road with accelerator angle 2/8)	Approx. 1.00 A	
TRGT SOL CRNT RH	Vehicle stopped	0.00 A	L
	Vehicle starting (Straight-ahead start on a dry road with accelerator angle 2/8)	Approx. 1.00 A	
SOLENOID CRNT RH	Vehicle stopped	0.00 A	M
	Vehicle starting (Straight-ahead start on a dry road with accelerator angle 2/8)	Approx. 1.00 A	
COMPR VHCL SPEED	Vehicle stopped	0.00 km/h (0.00mph)	N
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)	O
VHCL/S SEN-FR	Vehicle stopped	0.00 km/h (0.00mph)	
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)	P
VHCL/S SEN-RR	Vehicle stopped	0.00 km/h (0.00mph)	
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)	

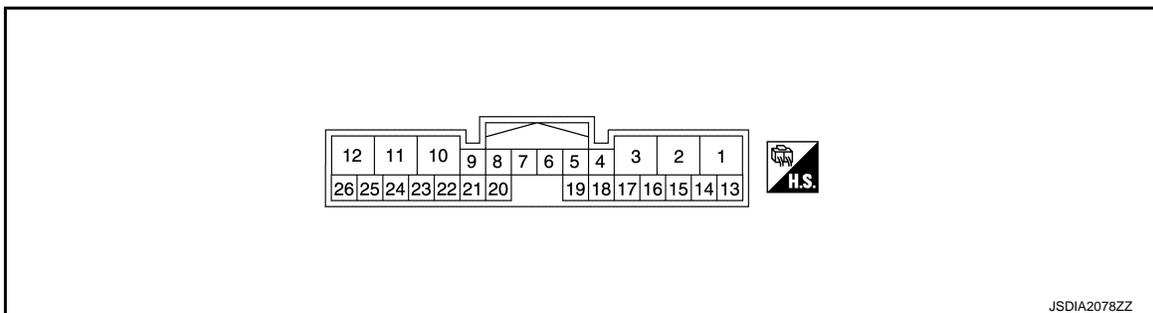
4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Monitor item	Condition	Value/Status
THRTL POS SEN	When depressing accelerator pedal (Value rises gradually in response to throttle position)	0 - 100 %
SLCT LVR POSI	Engine running	1ST
		2ND
		3RD
		4TH
	CVT shift selector: Manual mode	5TH
		6TH
		7TH
		8TH
	CVT shift selector: R	REVERSE
	CVT shift selector: N or P	N/P
	CVT shift selector: D	D
TRGT DRIVE TORQU	Request from 4WD control module to ECM.	0 - 507 Nm
	No request from 4WD control module to ECM.	508 Nm
RQST DRIVE TORQU	Request from ABS actuator and electric unit (control unit) to 4WD control module.	0 - 1274 Nm
	No request from ABS actuator and electric unit (control unit) to 4WD control module.	1275 Nm
WHEEL SPD SEN FR	Vehicle stopped	0.00 km/h (0.00mph)
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)
WHEEL SPD SEN FL	Vehicle stopped	0.00 km/h (0.00mph)
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)
WHEEL SPD SEN RR	Vehicle stopped	0.00 km/h (0.00mph)
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)
WHEEL SPD SEN RL	Vehicle stopped	0.00 km/h (0.00mph)
	Vehicle driving CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (inside of ±10 %)

TERMINAL LAYOUT



PHYSICAL VALUES

4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
1 (GR)	Ground	Power supply (4WD control module)	Input	Always	11 - 13 V	
3 (LG)	Ground	Ignition switch	Input	Ignition switch: ON	11 - 13 V	
				Ignition switch: OFF	0 V	
4 (L)	—	CAN-H	Input/ Output	—	—	
5 (P)	—	CAN-L	Input/ Output	—	—	
6 (SB)	Ground	Electric controlled coupling (RH) temperature sensor power supply.	Output	Ignition switch: ON	5 V	
				Ignition switch: OFF	0 V	
7 (P)	Ground	Electric controlled coupling (RH) temperature sensor signal.	Input	Rear final drive assembly temperature is the same as room temperature.	Electric controlled coupling (RH) temperature: 10°C (50°F)	
					Electric controlled coupling (RH) temperature: 20°C (68°F)	3.2 V
					Electric controlled coupling (RH) temperature: 30°C (86°F)	2.8 V
9 (W)	Ground	4WD mode SW (4WD-V)	Input	IGN ON	4WD mode switch: 2WD	
					4WD mode switch: 4WD-V or 4WD	0 V
10 (B)	Ground	Ground	—	Always	0 V	
11 (B)	Ground	Ground	—	Always	0 V	
12 (Y)	Ground	Power supply (4WD solenoid)	Input	Always	11 - 13 V	
13 (G)	Ground	4WD mode SW (2WD)	Input	IGN ON	4WD mode switch: 2WD	
					4WD mode switch: 4WD-V or 4WD	4.5 - 5 V
16 (G)	Ground	Electric controlled coupling (LH) temperature sensor signal.	Input	Rear final drive assembly temperature is the same as room temperature.	Electric controlled coupling (LH) temperature: 10°C (50°F)	
					Electric controlled coupling (LH) temperature: 20°C (68°F)	3.2 V
					Electric controlled coupling (LH) temperature: 30°C (86°F)	2.8 V
17 (L)	Ground	Electric controlled coupling (LH) temperature sensor power supply.	Output	Ignition switch: ON	5 V	
				Ignition switch: OFF	0 V	
21 (Y)	Ground	4WD mode SW (4WD-V)	Input	IGN ON	4WD mode switch: 2WD or 4WD-V	
					4WD mode switch: 4WD	0 V
23 (R)	Ground	4WD solenoid (LH) power supply	Output	Engine speed: At idle	0 V	
				Engine speed: 3,000 or more constant	2.5 V*	
24 (V)	Ground	4WD solenoid (LH) ground	Input	Always	1.5 V or less	

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4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
25 (W)	Ground	4WD solenoid (RH) power supply	Output	Engine speed: At idle	0 V
				Engine speed: 3,000 or more constant	2.5 V*
26 (Y)	Ground	4WD solenoid (RH) ground	Input	Always	1.5 V or less

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

CAUTION:

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

Fail-safe

INFOID:000000006359898

When a system malfunction occurs, the 4WD warning lamp turns ON and the 4WD control becomes 2WD state.

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition
P1804	Internal malfunction of 4WD control module	OFF	Normal control continues.
P1808	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) - Malfunction of ABS actuator and electric unit (control unit) circuit error - Wheel speed sensor error • 4WD control module • CAN communication line 	ON	Front and rear distribution control stops.
P1809	Internal malfunction of 4WD control module		
P1811	<ul style="list-style-type: none"> • Malfunction of 4WD control module power supply circuit (open or short) • Malfunction of 4WD control module • Battery 		
P1813	<ul style="list-style-type: none"> • 4WD mode switch - Internal malfunction of 4WD mode switch - Malfunction of 4WD mode switch circuit • 4WD control module 		
P181B	Self-shut of 4WD control module is incomplete.	ON	Front and rear distribution control stops. NOTE: The state becomes 4WD only when a turning difference occurs between front and rear wheels.
P181D	<ul style="list-style-type: none"> • ECM • 4WD control module • CAN communication line 		
P181E	<ul style="list-style-type: none"> • Steering angle sensor - Steering angle sensor error - Malfunction of steering angle sensor circuit • Malfunction of 4WD control module • CAN communication line 	OFF	Right and left rear wheels difference control stops.
P181F	Writing unit parameter is incomplete.	ON	Front and rear distribution control stops.
P1820	<ul style="list-style-type: none"> • ECM • 4WD control module • CAN communication line 	OFF	Normal control continues.

4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition	A
P1829	<ul style="list-style-type: none"> • ECM • 4WD control module • CAN communication line 	ON	Front and rear distribution control stops.	B
P182D	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (LH) • Malfunction of 4WD solenoid (LH) power supply circuit (open or short) • Malfunction of 4WD control module 			C
P182E	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (RH) • Malfunction of 4WD solenoid (RH) power supply circuit (open or short) • Malfunction of 4WD control module 			DLN
P182F	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (left) temperature sensor • Malfunction of electric controlled coupling (left) temperature sensor circuit • Malfunction of 4WD control module 	OFF	Normal control continues.	E
P1830	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 			F
P1831	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 			G
P1832	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • 4WD control module • CAN communication line 			H
P183A	<ul style="list-style-type: none"> • Internal malfunction of electric controlled coupling (right) temperature sensor • Malfunction of electric controlled coupling (right) temperature sensor circuit • Malfunction of 4WD control module 			I
P183B	<ul style="list-style-type: none"> • Malfunction of 4WD solenoid power supply circuit • Malfunction of 4WD control module • Malfunction of 4WD control module power supply circuit (open or short) • Battery 	ON	Front and rear distribution control stops.	J
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4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

Detected DTC	Possible cause	4WD warning lamp status	Vehicle condition
P183C	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 	OFF	Right and left rear wheels difference control stops.
P183D	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 		
P183E	<ul style="list-style-type: none"> • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor • 4WD control module • CAN communication line 		
P183F	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1840	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1864	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
P1865	<ul style="list-style-type: none"> • CVT sensor • TCM • 4WD control module • CAN communication line 		
U1000	CAN communication error	ON	Front and rear distribution control stops.
U1010	Internal malfunction of 4WD control module		

Protection Function

INFOID:000000006542957

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

Detected DTC	Warning lamp	Possible cause	Vehicle condition
—	Quick blinking ^{*1}	Turning difference remains between front and rear wheels or between right and left rear wheels, resulting in an oil temperature rise in drive train related parts. NOTE: It is not malfunction.	Shuts down 4WD system temporarily
—	Slow blinking ^{*2}	Malfunction in each tire or different tire diameter	

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

*2: 1 time/2 seconds (continuing to blink until ignition switch is turned OFF)

NOTE:

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

4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

DTC Inspection Priority Chart

INFOID:000000006359902

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

Priority	Detected items (DTC)
1	<ul style="list-style-type: none"> • U1010 CONTROL UNIT (CAN) • U1000 CAN COMM CIRCUIT
2	<ul style="list-style-type: none"> • P1808 VHCL SPEED SEN-ABS • P1809 CONTROL UNIT 4 • P1811 BATTERY VOLTAGE • P1813 4WD MODE SW • P181F INCOMP CALIBRATION • P1829 THROTTLE POSI SEN • P182D SOLENOID LEFT • P182E SOLENOID RIGHT • P183B SOL POWER SUPPLY
3	<ul style="list-style-type: none"> • P181E STR ANGLE SEN • P183C DECEL G SENSOR • P183D SIDE G SENSOR • P183F GEAR POSI SIGNAL • P183E YAWRATE SENSOR • P1840 OUTPUT SPEED SIGNAL • P1864 INPUT SPEED SIGNAL • P1865 GEAR RATIO
4	<ul style="list-style-type: none"> • P1804 CONTROL UNIT 3 • P181B INCOMP SELF SHUT • P181D ENGINE SYSTEM • P1820 ENGINE SPEED SIG • P182F TEMP SENSOR LEFT • P1830 ABS OP SIG • P1831 VDC OP SIG • P1832 TCS OP SIG • P183A TEMP SENSOR RIGHT

DTC Index

INFOID:000000006359903

DTC	Display Items	Reference
P1804	CONTROL UNIT3	DLN-40, "DTC Logic"
P1808	VHCL SPEED SEN-ABS	DLN-41, "DTC Logic"
P1809	CONTROL UNIT4	DLN-40, "DTC Logic"
P1811	BATTERY VOLTAGE	DLN-42, "DTC Logic"
P1813	4WD MODE SW	DLN-44, "DTC Logic"
P181B	INCOMP SELF SHUT	DLN-47, "DTC Logic"
P181D	ENGINE SYSTEM	DLN-49, "DTC Logic"
P181E	STR ANGLE SEN	DLN-50, "DTC Logic"
P181F	INCOMP CALIBRATION	DLN-51, "DTC Logic"
P1820	ENGINE SPEED SIG	DLN-52, "DTC Logic"
P1829	THROTTLE POSI SEN	DLN-53, "DTC Logic"
P182D	SOLENOID LEFT	DLN-54, "DTC Logic"
P182E	SOLENOID RIGHT	DLN-57, "DTC Logic"
P182F	TEMP SENSOR LEFT	DLN-60, "DTC Logic"
P1830	ABS OP SIG	DLN-62, "DTC Logic"
P1831	VDC OP SIG	DLN-63, "DTC Logic"
P1832	TCS OP SIG	DLN-64, "DTC Logic"

4WD CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[TRANSFER: TY21B]

DTC	Display Items	Reference
P183A	TEMP SENSOR RIGHT	DLN-65. "DTC Logic"
P183B	SOL POWER SUPPLY	DLN-67. "DTC Logic"
P183C	DECEL G SENSOR	DLN-69. "DTC Logic"
P183D	SIDE G SENSOR	DLN-70. "DTC Logic"
P183E	YAWRATE SENSOR	DLN-71. "DTC Logic"
P183F	GEAR POSI SIGNAL	DLN-72. "DTC Logic"
P1840	OUTPUT SPEED SIGNAL	DLN-73. "DTC Logic"
P1864	INPUT SPEED SIGNAL	DLN-74. "DTC Logic"
P1865	GEAR RATIO	DLN-75. "DTC Logic"
U1000	CAN COMM CIRCUIT	DLN-76. "DTC Logic"
U1010	CONTROL UNIT (CAN)	DLN-77. "DTC Logic"

NOTE:

If some DTCs are displayed at the same time, refer to [DLN-33. "DTC Inspection Priority Chart"](#).

4WD SYSTEM

< WIRING DIAGRAM >

[TRANSFER: TY21B]

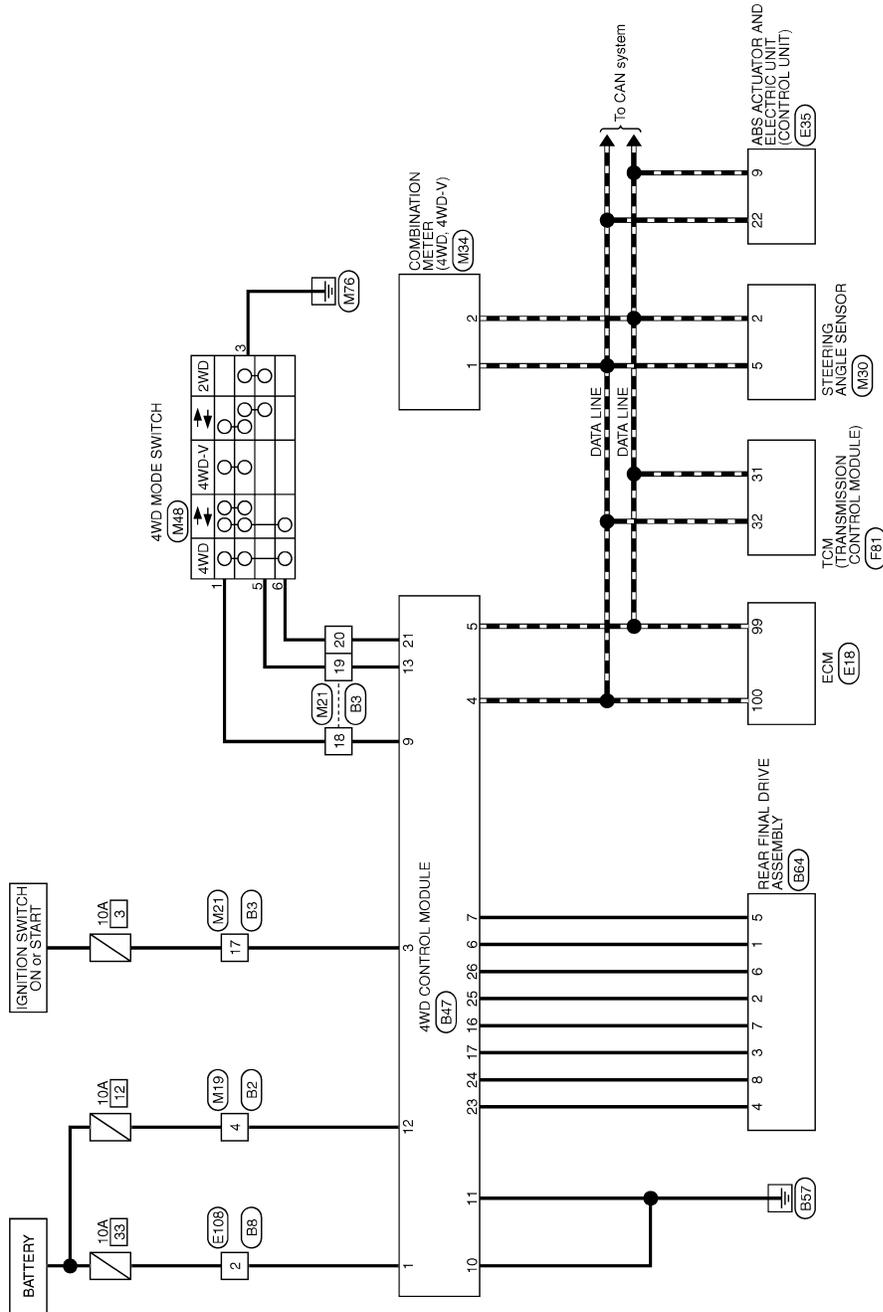
WIRING DIAGRAM

4WD SYSTEM

Wiring Diagram

INFOID:000000006359904

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12. "Connector Information/Explanation of Option Abbreviation"](#).



4WD SYSTEM

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000006359905

DETAILED FLOW

1. INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing [DLN-37, "Diagnostic Work Sheet"](#) and reproduce symptoms as well as fully understand it. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if necessary.

CAUTION:

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

>> GO TO 2.

2. CHECK SYMPTOM

Reproduce the symptom that is indicated by the customer, based on the information from the customer obtained by interview. Also check that the symptom is not caused by protection function. Refer to [DLN-32, "Protection Function"](#).

CAUTION:

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

>> GO TO 3.

3. PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is any DTC detected?

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

NO >> GO TO 6.

4. RECHECK SYMPTOM

With CONSULT-III

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

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

NOTE:

If some DTCs are detected at the same time, determine the order for performing the diagnosis based on [DLN-33, "DTC Inspection Priority Chart"](#).

Is any DTC detected?

YES >> GO TO 5.

NO >> Check harness and connectors based on the information obtained by interview. Refer to [GI-42, "Intermittent Incident"](#).

5. REPAIR OR REPLACE ERROR-DETECTED PARTS

- Repair or replace error-detected parts.
- Reconnect part or connector after repairing or replacing.
- When DTC is detected, erase self-diagnostic results for “ALL MODE AWD/4WD”.

>> GO TO 7.

6. IDENTIFY ERROR-DETECTED SYSTEM BY SYMPTOM DIAGNOSIS

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

Can the error-detected system be identified?

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[TRANSFER: TY21B]

Interview sheet

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

Memo

WRITING UNIT PARAMETER

Description

INFOID:000000006581329

Perform writing unit parameter of electric controlled coupling after replacing 4WD control module, rear final drive assembly or electric controlled coupling. Refer to [DLN-39. "Work Procedure"](#).

Work Procedure

INFOID:000000006581330

1. WRITE UNIT PARAMETER

With CONSULT-III

1. Confirm the unit parameter (A) of electric controlled coupling (LH) and (B) of electric controlled coupling (RH).

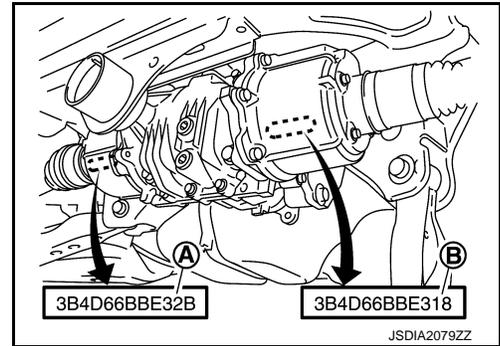
NOTE:

- This illustration is sample.
- For the illustration, the unit parameters are following.

Right side: 3B4D66BBE318

Left side: 3B4D66BBE32B

2. Turn the ignition switch OFF to ON.
3. Select "UNIT CHARACTERISTICS WRITE" of CONSULT-III "WORK SUPPORT" for "ALL MODE AWD/4WD".
4. Input unit parameters.
5. Select "Start".
6. Check that "UNIT CHARACTERISTICS WRITE COMPLETED" is displayed.



>> WORK END

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DTC/CIRCUIT DIAGNOSIS

P1804, P1809 4WD CONTROL MODULE

DTC Logic

INFOID:000000006359976

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1804	CONTROL UNIT 3	Malfunction is detected in the memory (EEOROM) system of 4WD control module.	Internal malfunction of 4WD control module.
P1809	CONTROL UNIT 4	AD converter system of 4WD control module is malfunctioning.	

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

Ⓟ With CONSULT-III

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

Are DTC's "P1804 or P1809" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-40, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359977

1. PERFORM SELF-DIAGNOSIS

Ⓟ With CONSULT-III

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

Are DTC's "P1804 or 1809" detected?

- YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
 NO >> Check 4WD control module pin terminals for damage or loose connection with harness connector.
 If any items are damaged, repair or replace error-detected parts.

P1808 WHEEL SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1808 WHEEL SPEED SENSOR

DTC Logic

INFOID:000000006359979

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1808	VHCL SPEED SEN-ABS	<ul style="list-style-type: none">Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication.Improper signal is input while driving.	<ul style="list-style-type: none">ABS actuator and electric unit (control unit)- Malfunction of ABS actuator and electric unit (control unit) circuit error- Wheel speed sensor error4WD control moduleCAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1808" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-41, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359980

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1808" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P1811 POWER SUPPLY CIRCUIT FOR 4WD CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1811 POWER SUPPLY CIRCUIT FOR 4WD CONTROL MODULE

DTC Logic

INFOID:000000006359982

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1811	BATTERY VOLTAGE	When 4WD control module power supply is lower or higher than normal	<ul style="list-style-type: none">Malfunction of 4WD control module power supply circuit (open or short)Malfunction of 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

Ⓟ With CONSULT-III

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

Is DTC "P1811" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-42, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359983

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

- Turn the ignition switch OFF.
- Disconnect 4WD control module harness connector.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

- Turn the ignition switch ON.
CAUTION:
Never start the engine.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

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

- Turn the ignition switch OFF.
- Check the 10A fuse (#33).
- Check the harness for open or short between 4WD control module harness connector No.1 terminal and 10A (#33).

Is the inspection result normal?

P1811 POWER SUPPLY CIRCUIT FOR 4WD CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to [PG-10. "Wiring Diagram - BATTERY POWER SUPPLY -"](#).
- NO >> Repair or replace error-detected parts.

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

1. Turn the ignition switch OFF.
2. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	0 V

3. Turn the ignition switch ON.
CAUTION:
Never start the engine.
4. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	Battery voltage

Is the inspection result normal?

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

4.CHECK 4WD CONTROL MODULE POWER SUPPLY (4)

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

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to [PG-15. "Wiring Diagram - IGNITION POWER SUPPLY -"](#).
- NO >> Repair or replace error-detected parts.

5.CHECK 4WD CONTROL MODULE GROUND

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

4WD control module		—	Continuity
Connector	Terminal		
B47	10	Ground	Existed
	11		

Is the inspection result normal?

- YES >> GO TO 6.
NO >> Repair or replace error-detected parts.

6.CHECK TERMINALS AND HARNESS CONNECTORS

Check the 4WD control module pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace 4WD control module. Refer to [DLN-91. "Removal and Installation"](#).
- NO >> Repair or replace error-detected parts.

P1813 4WD MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1813 4WD MODE SWITCH

DTC Logic

INFOID:000000006359989

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1813	4WD MODE SW	Multiple signals received from 4WD shift switch are detected.	<ul style="list-style-type: none">• 4WD mode switch- Internal malfunction of 4WD mode switch- Malfunction of 4WD mode switch circuit• 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1813" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-44, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359990

1. CHECK 4WD MODE SWITCH

Check 4WD mode switch. Refer to [DLN-45, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Replace 4WD mode switch. Refer to [DLN-92, "Removal and Installation"](#).

2. CHECK 4WD MODE SWITCH CIRCUIT (1)

1. Disconnect 4WD control module harness connector.
2. Check the continuity between 4WD control module harness connector and 4WD mode switch harness connector.

P1813 4WD MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD control module		4WD mode switch		Continuity
Connector	Terminal	Connector	Terminal	
B47	9	M48	1	Existed
			5	Not existed
			6	Not existed
	13		1	Not existed
			5	Existed
			6	Not existed
	21		1	Not existed
			5	Not existed
			6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.CHECK 4WD MODE SWITCH CIRCUIT (2)

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

4WD mode switch		—	Continuity
Connector	Terminal		
M48	3	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK TERMINALS AND HARNESS CONNECTORS

- Check 4WD control module pin terminals for damage or loose connection with harness connector.
- Check 4WD mode switch pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:000000006359991

1.CHECK 4WD MODE SWITCH

1. Turn the ignition switch OFF.
2. Remove 4WD mode switch. Refer to [DLN-92, "Removal and Installation"](#).
3. Check the continuity between 4WD mode switch harness connector terminals.

4WD switch assembly		Condition	Continuity
Terminal			
1	3	4WD shift switch: 2WD	Not existed
		4WD shift switch: 4WD-V or 4WD	Existed
5	3	4WD shift switch: 2WD	Existed
		4WD shift switch: 4WD-V or 4WD	Not existed
6	3	4WD shift switch: 2WD or 4WD-V	Not existed
		4WD shift switch: 4WD	Existed

Is the inspection result normal?

YES >> INSPECTION END

P1813 4WD MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

NO >> Replace 4WD mode switch. Refer to [DLN-92, "Removal and Installation"](#).

P181B INCOMPLETE SELF SHUT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P181B INCOMPLETE SELF SHUT

DTC Logic

INFOID:000000006360005

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P181B	IMCOMP SELF SHUT	When ignition switch is OFF and 4WD control module power supply is lower or higher than normal	Self-shut of 4WD control module is incomplete.

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P181B" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-47, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360006

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

- Turn the ignition switch OFF.
- Disconnect 4WD control module harness connector.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

- Turn the ignition switch ON.
CAUTION:
Never start the engine.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> GO TO 2.

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

- Turn the ignition switch OFF.
- Check the 10A fuse (#33).
- Check the harness for open or short between 4WD control module harness connector No.1 terminal and 10A (#33).

Is the inspection result normal?

P181B INCOMPLETE SELF SHUT

[TRANSFER: TY21B]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to [PG-10, "Wiring Diagram - BATTERY POWER SUPPLY -"](#).
- NO >> Repair or replace error-detected parts.

3. CHECK 4WD CONTROL MODULE GROUND

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

4WD control module		—	Continuity
Connector	Terminal		
E60	10	Ground	Existed
	11		

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace error-detected parts.

4. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P181B" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
- NO >> Repair or replace error-detected parts.

P181D ENGINE TORQUE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P181D ENGINE TORQUE SIGNAL

DTC Logic

INFOID:000000006360018

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P181D	ENGINE SYSTEM	Malfunction is detected in engine torque signal that is output from ECM through CAN communication.	<ul style="list-style-type: none">• ECM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

1. Start the engine and drive at 20 km/h (12 MPH) or more.
2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P181D" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-54, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360019

1. PERFORM ECM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "ENGINE".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [EC-108, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Turn the ignition switch OFF.
3. Start the engine and drive vehicle for a while.
4. Check that malfunction indicator lamp (MIL) turns OFF.

Does malfunction indicator lamp (MIL) turn OFF?

- YES >> GO TO 3.
NO >> Refer to [EC-436, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P181D" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P181E STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P181E STEERING ANGLE SENSOR

DTC Logic

INFOID:000000006360002

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P181E	ST ANGLE SEN SIG	Malfunction is detected in steering angle sensor signal through CAN communication.	<ul style="list-style-type: none">• Steering angle sensor- Steering angle sensor error- Malfunction of steering angle sensor circuit• Malfunction of 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P181E" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-50, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360003

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is DTC "C1143" detected?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-189, "Diagnosis Procedure"](#).
NO >> GO TO 2.

2. CHECK CAN COMMUNICATION LINE

Check communication line. Refer to [LAN-44, "Diagnosis Procedure"](#).

Is inspection result normal?

- YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P181F INCOMPLETE CALIBRATION

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P181F INCOMPLETE CALIBRATION

DTC Logic

INFOID:000000006360025

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P181F	INCOMP CALIBRATION	When incomplete writing unit parameter of rear final drive is detected.	Writing unit parameter is incomplete.

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P181F" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-51, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360026

1. PERFORM WRITING UNIT PARAMETER

1. Erase self-diagnostic result for "ALL MODE AWD/4WD".
2. Perform writing unit parameter. Refer to [DLN-39, "Work Procedure"](#).
3. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is any DTC except "P181F" detected?

- YES >> Check DTC.
NO >> GO TO 2.

2. PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is DTC "P181F" detected?

- YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Check 4WD control module pin terminals for damage or loose connection with harness connector.
If any items are damaged, repair or replace the error-detected parts.

P1820 ENGINE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1820 ENGINE SPEED SIGNAL

DTC Logic

INFOID:000000006360023

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1820	ENGINE SPEED SIG	Malfunction is detected in engine speed signal that is output from ECM through CAN communication.	<ul style="list-style-type: none">• ECM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

Ⓜ With CONSULT-III

1. Start the engine and drive at 20 km/h (12 MPH) or more.
2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P1820" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-52, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360024

1. PERFORM ECM SELF-DIAGNOSIS

Ⓜ With CONSULT-III

Perform self-diagnosis for "ENGINE".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [EC-108, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

Ⓜ With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Turn the ignition switch OFF.
3. Start the engine and drive vehicle for a while.
4. Check that malfunction indicator lamp (MIL) turns OFF.

Does malfunction indicator lamp (MIL) turn OFF?

- YES >> GO TO 3.
NO >> Refer to [EC-436, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1820" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P1829 ACCELERATOR PEDAL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1829 ACCELERATOR PEDAL POSITION SENSOR

DTC Logic

INFOID:000000006360029

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1829	THROTTLE POSI SEN	Malfunction is detected in accelerator pedal position signal that is output from ECM through CAN communication.	<ul style="list-style-type: none">• ECM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1829" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-53, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360030

1. PERFORM ECM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "ENGINE".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [EC-108, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Turn the ignition switch OFF.
3. Start the engine and drive vehicle for a while.
4. Check that malfunction indicator lamp (MIL) turns OFF.

Does malfunction indicator lamp (MIL) turn OFF?

- YES >> GO TO 3.
NO >> Refer to [EC-436, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1829" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P182D 4WD SOLENOID LEFT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P182D 4WD SOLENOID LEFT

DTC Logic

INFOID:000000006360058

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P182D	SOLENOID LEFT	Malfunction related to 4WD solenoid (LH) has been detected.	<ul style="list-style-type: none">Internal malfunction of electric controlled coupling (LH)Malfunction of 4WD solenoid (LH) power supply circuit (open or short)Malfunction of 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE (1)

With CONSULT-III

- Turn the ignition switch OFF to ON, and then wait for 5 seconds or more.
- Turn the ignition switch OFF.
- Turn the ignition switch ON, and then wait for 5 seconds or more.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182D" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-54, "Diagnosis Procedure"](#).
NO >> GO TO 3.

3. DTC REPRODUCTION PROCEDURE (2)

With CONSULT-III

- Lift up the vehicle.
- Start the engine, and run at idle for 1 second.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182D" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-54, "Diagnosis Procedure"](#).
NO >> GO TO 4.

4. DTC REPRODUCTION PROCEDURE (3)

With CONSULT-III

- Drive the vehicle at 30 km/h (19 MPH) or more less for approximately 1 minute.
- Stop the vehicle.
- Drive the vehicle at 30 km/h (19 MPH) or more less for approximately 1 minute.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182D" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-54, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360059

1. CHECK 4WD SOLENOID CIRCUIT (1)

- Check the resistance between 4WD control module harness connector.

P182D 4WD SOLENOID LEFT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD control module			Condition	Resistance (Approx.)
Connector	Terminal			
B47	23	24	10 °C (50 °F)	2.5 Ω
			20 °C (68 °F)	2.7 Ω
			30 °C (86 °F)	2.8 Ω

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> GO TO 2.

2.CHECK 4WD SOLENOID CIRCUIT (2)

1. Check the continuity between 4WD control module harness connector and rear final drive assembly harness connector.

4WD control module		Rear final drive assembly		Continuity
Connector	Terminal	Connector	Terminal	
B47	23	B64	4	Existed
	24		8	

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

4WD control module		—	Continuity
Connector	Terminal		
B47	23	Ground	Not existed
	24		

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair or replace the error-detected parts.

3.CHECK 4WD SOLENOID

Check 4WD solenoid. Refer to [DLN-55, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> 4WD solenoid is malfunctioning (LH). Replace electric controlled coupling. Refer to [DLN-139, "Removal and Installation"](#).

4.CHECK TERMINALS AND HARNESS CONNECTORS

1. Check 4WD control module pin terminals for damage or loose connection with harness connector.
2. Check rear final drive assembly pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
- NO >> Repair or replace the error-detected parts.

Component Inspection

INFOID:000000006360060

1.CHECK 4WD SOLENOID

1. Turn the ignition switch OFF.
2. Disconnect rear final drive assembly harness connector.
3. Check the resistance between rear final drive assembly connector terminals.

P182D 4WD SOLENOID LEFT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

Rear final drive assembly		Condition	Resistance (Approx.)
Terminal			
4	8	10 °C (50 °F)	2.5 Ω
		20 °C (68 °F)	2.7 Ω
		30 °C (86 °F)	2.8 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> 4WD solenoid (LH) is malfunctioning. Replace electric controlled coupling. Refer to [DLN-139](#), "[Removal and Installation](#)".

P182E 4WD SOLENOID RIGHT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P182E 4WD SOLENOID RIGHT

DTC Logic

INFOID:000000006360061

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P182E	SOLENOID RIGHT	Malfunction related to 4WD solenoid (RH) has been detected.	<ul style="list-style-type: none">Internal malfunction of electric controlled coupling (RH)Malfunction of 4WD solenoid (RH) power supply circuit (open or short)Malfunction of 4WD control module

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE (1)

With CONSULT-III

- Turn the ignition switch OFF to ON, and then wait for 5 seconds or more.
- Turn the ignition switch OFF.
- Turn the ignition switch ON, and then wait for 5 seconds or more.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182E" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-57, "Diagnosis Procedure"](#).
NO >> GO TO 3.

3. DTC REPRODUCTION PROCEDURE (2)

With CONSULT-III

- Lift up the vehicle.
- Start the engine, and run at idle for 1 second.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182E" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-57, "Diagnosis Procedure"](#).
NO >> GO TO 4.

4. DTC REPRODUCTION PROCEDURE (3)

With CONSULT-III

- Drive the vehicle at 30 km/h (19 MPH) or more less for approximately 1 minute.
- Stop the vehicle.
- Drive the vehicle at 30 km/h (19 MPH) or more less for approximately 1 minute.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P182E" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-57, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360062

1. CHECK 4WD SOLENOID CIRCUIT (1)

- Check the resistance between 4WD control module harness connector.

P182E 4WD SOLENOID RIGHT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD control module			Condition	Resistance (Approx.)
Connector	Terminal			
B47	25	26	10 °C (50 °F)	2.5 Ω
			20 °C (68 °F)	2.7 Ω
			30 °C (86 °F)	2.8 Ω

Is the inspection result normal?

- YES >> GO TO 4.
NO >> GO TO 2.

2.CHECK 4WD SOLENOID CIRCUIT (2)

1. Check the continuity between 4WD control module harness connector and rear final drive assembly harness connector.

4WD control module		Rear final drive assembly		Continuity
Connector	Terminal	Connector	Terminal	
B47	25	B64	2	Existed
	26		6	

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

4WD control module		—	Continuity
Connector	Terminal		
B47	25	Ground	Not existed
	26		

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace the error-detected parts.

3.CHECK 4WD SOLENOID

Check 4WD solenoid. Refer to [DLN-58, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 4.
NO >> 4WD solenoid is malfunctioning (RH). Replace electric controlled coupling. Refer to [DLN-139, "Removal and Installation"](#).

4.CHECK TERMINALS AND HARNESS CONNECTORS

1. Check 4WD control module pin terminals for damage or loose connection with harness connector.
2. Check rear final drive assembly pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace the error-detected parts.

Component Inspection

INFOID:000000006360063

1.CHECK 4WD SOLENOID

1. Turn the ignition switch OFF.
2. Disconnect rear final drive assembly harness connector.
3. Check the resistance between rear final drive assembly connector terminals.

P182E 4WD SOLENOID RIGHT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

Rear final drive assembly		Condition	Resistance (Approx.)
Terminal			
2	6	10 °C (50 °F)	2.5 Ω
		20 °C (68 °F)	2.7 Ω
		30 °C (86 °F)	2.8 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> 4WD solenoid (RH) is malfunctioning. Replace electric controlled coupling. Refer to [DLN-139](#).
["Removal and Installation"](#).

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P182F COUPLING TEMPERATURE SENSOR LEFT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P182F COUPLING TEMPERATURE SENSOR LEFT

DTC Logic

INFOID:000000006360031

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P182F	TEMP SENSOR LEFT	When electric controlled coupling (LH) temperature is lower than normal	Electric controlled coupling (LH) temperature • Malfunction of electric controlled coupling (LH) temperature sensor circuit (open)
		When electric controlled coupling (LH) temperature is higher than normal	Electric controlled coupling (LH) temperature • Malfunction of electric controlled coupling (LH) temperature sensor circuit (short)

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

Ⓟ With CONSULT-III

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

Is DTC "P182F" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-60, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360032

1. CHECK ELECTRIC CONTROLLED COUPLING (LH) TEMPERATURE SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect transfer fluid temperature sensor harness connector.
3. Turn the ignition switch ON.
CAUTION:
Never start the engine.
4. Check the voltage between rear final drive assembly harness connector terminals.

+		-		Voltage
Rear final drive assembly				
Connector	Terminal			
B64	3	7	Approx. 5 V	

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK ELECTRIC CONTROLLED COUPLING (LH) TEMPERATURE SENSOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect 4WD control module harness connector.
3. Check the continuity between 4WD control module harness connector and rear final drive assembly harness connector.

P182F COUPLING TEMPERATURE SENSOR LEFT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD control module		Rear final drive assembly		Continuity
Connector	Terminal	Connector	Terminal	
B47	16	B64	7	Existed
	17		3	

4. Check the continuity between transfer fluid temperature sensor harness connector and ground.

Rear final drive assembly		—	Continuity
Connector	Terminal		
B64	7	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

3. CHECK ELECTRIC CONTROLLED COUPLING (LH) TEMPERATURE SENSOR

Check the electric controlled coupling (LH) temperature sensor. Refer to [DLN-61, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Electric controlled coupling (LH) temperature sensor is malfunctioning. Replace electric controlled coupling (LH). Refer to [DLN-139, "Removal and Installation"](#).

4. CHECK TERMINALS AND HARNESS CONNECTORS

Check the pin terminals for damage or loose connection with each harness connector.

Is the inspection result normal?

YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:000000006360033

1. CHECK ELECTRIC CONTROLLED COUPLING (LH) TEMPERATURE SENSOR

1. Turn the ignition switch OFF.
2. Disconnect rear final drive assembly harness connector.
3. Check the resistance between transfer control fluid temperature sensor connector terminals.

Rear final drive assembly		Condition	Resistance (Approx.)
Terminal			
3	7	10 °C (50 °F)	9.8 kΩ
		20 °C (68 °F)	6.5 kΩ
		30 °C (86 °F)	4.4 kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> Electric controlled coupling (LH) temperature sensor is malfunctioning. Replace electric controlled coupling (LH). Refer to [DLN-139, "Removal and Installation"](#).

P1830 ABS OPERATION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1830 ABS OPERATION SIGNAL

DTC Logic

INFOID:000000006360037

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1830	ABS OP SIG	Malfunction is detected in ABS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	Malfunction of ABS system

DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1830" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-62. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360038

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142. "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212. "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1830" is detected, Replace 4WD control module. Refer to [DLN-91. "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P1831 VDC OPERATION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1831 VDC OPERATION SIGNAL

DTC Logic

INFOID:000000006360039

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1831	VDC OP SIG	Malfunction is detected in VDC operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	Malfunction of ABS system

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DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1831" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-63, "Diagnosis Procedure"](#).
NO >> INSPECTION END

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Diagnosis Procedure

INFOID:000000006360040

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1831" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

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P1832 TCS OPERATION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1832 TCS OPERATION SIGNAL

DTC Logic

INFOID:000000006360041

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1832	TCS OP SIG	Malfunction is detected in TCS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	Malfunction of TCS system

DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1832" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-64. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360042

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142. "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212. "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1832" is detected, Replace 4WD control module. Refer to [DLN-91. "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P183A COUPLING TEMPERATURE SENSOR RIGHT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183A COUPLING TEMPERATURE SENSOR RIGHT

DTC Logic

INFOID:000000006360034

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183A	TEMP SENSOR RIGHT	When electric controlled coupling (RH) temperature is lower than normal	Electric controlled coupling (RH) temperature • Malfunction of electric controlled coupling (RH) temperature sensor circuit (open)
		When electric controlled coupling (RH) temperature is higher than normal	Electric controlled coupling (RH) temperature • Malfunction of electric controlled coupling (RH) temperature sensor circuit (short)

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P183A" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-65, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360035

1. CHECK ELECTRIC CONTROLLED COUPLING (RH) TEMPERATURE SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect transfer fluid temperature sensor harness connector.
3. Turn the ignition switch ON.
CAUTION:
Never start the engine.
4. Check the voltage between rear final drive assembly harness connector terminals.

+		-		Voltage
Rear final drive assembly				
Connector	Terminal			
B64	1	5	Approx. 5 V	

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK ELECTRIC CONTROLLED COUPLING (RH) TEMPERATURE SENSOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect 4WD control module harness connector.
3. Check the continuity between 4WD control module harness connector and rear final drive assembly harness connector.

P183A COUPLING TEMPERATURE SENSOR RIGHT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD control module		Rear final drive assembly		Continuity
Connector	Terminal	Connector	Terminal	
B47	6	B64	1	Existed
	7		5	

4. Check the continuity between transfer fluid temperature sensor harness connector and ground.

Rear final drive assembly		—	Continuity
Connector	Terminal		
B64	1	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

3. CHECK ELECTRIC CONTROLLED COUPLING (RH) TEMPERATURE SENSOR

Check the electric controlled coupling (RH) temperature sensor. Refer to [DLN-66, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Electric controlled coupling (RH) temperature sensor is malfunctioning. Replace electric controlled coupling (RH). Refer to [DLN-139, "Removal and Installation"](#).

4. CHECK TERMINALS AND HARNESS CONNECTORS

Check the pin terminals for damage or loose connection with each harness connector.

Is the inspection result normal?

YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:000000006360036

1. CHECK ELECTRIC CONTROLLED COUPLING (RH) TEMPERATURE SENSOR

1. Turn the ignition switch OFF.
2. Disconnect rear final drive assembly harness connector.
3. Check the resistance between transfer control fluid temperature sensor connector terminals.

Rear final drive assembly		Condition	Resistance (Approx.)
Terminal			
1	5	10 °C (50 °F)	9.8 kΩ
		20 °C (68 °F)	6.5 kΩ
		30 °C (86 °F)	4.4 kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> Electric controlled coupling (RH) temperature sensor is malfunctioning. Replace electric controlled coupling (RH). Refer to [DLN-139, "Removal and Installation"](#).

P183B SOLENOID POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183B SOLENOID POWER SUPPLY

DTC Logic

INFOID:000000006360064

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183B	SOLENOID POWER SUPPLY	When 4WD solenoid power supply voltage is lower or higher than normal.	<ul style="list-style-type: none">Malfunction of 4WD solenoid power supply circuitMalfunction of 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P183B" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-67, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360065

1. CHECK 4WD SOLENOID POWER SUPPLY (1)

- Turn the ignition switch OFF.
- Disconnect 4WD control module harness connector.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	12	Ground	Battery voltage

- Turn the ignition switch OFF to ON.
CAUTION:
Never start the engine.
- Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	12	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK 4WD SOLENOID POWER SUPPLY (2)

- Turn the ignition switch OFF.
- Check the 10A fuse (#12).
- Check the harness for open or short between 4WD control module harness connector No.12 and the 10A fuse (#12).

Is the inspection result normal?

P183B SOLENOID POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

- YES >> Perform the trouble the diagnosis for power supply circuit. Refer to [PG-10. "Wiring Diagram - BATTERY POWER SUPPLY -"](#).
NO >> Repair or replace error-detected parts.

3.CHECK 4WD CONTROL MODULE POWER SUPPLY (1)

1. Turn the ignition switch OFF.
2. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	0 V

3. Turn the ignition switch ON.
CAUTION:
Never start the engine.
4. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	Battery voltage

Is the inspection result normal?

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

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

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

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to [PG-15. "Wiring Diagram - IGNITION POWER SUPPLY -"](#).
NO >> Repair or replace error-detected parts.

5.CHECK 4WD SOLENOID GROUND

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

4WD control module		—	Continuity
Connector	Terminal		
B47	10	Ground	Existed
	11		

Is the inspection result normal?

- YES >> GO TO 6.
NO >> Repair or replace the error-detected parts.

6.CHECK TERMINALS AND HARNESS CONNECTORS

1. Check 4WD control module pin terminals for damage or loose connection with harness connector.
2. Check 4WD solenoid pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace 4WD control module. Refer to [DLN-91. "Removal and Installation"](#).
NO >> Repair or replace the error-detected parts.

P183C DECEL G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183C DECEL G SENSOR

DTC Logic

INFOID:000000006360043

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183C	DECEL G SENSOR	Malfunction is detected in decel G sensor signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	<ul style="list-style-type: none">• ABS actuator and electric unit (control unit)• Yaw rate/side/decel G sensor• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P183C" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-71, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360044

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P183C" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P183D SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183D SIDE G SENSOR

DTC Logic

INFOID:000000006360045

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183D	SIDE G SENSOR	Malfunction is detected in side G sensor signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	<ul style="list-style-type: none">• ABS actuator and electric unit (control unit)• Yaw rate/side/decel G sensor• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P183D" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-70, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360046

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

With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P183D" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P183E YAW RATE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183E YAW RATE SENSOR

DTC Logic

INFOID:000000006360048

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183E	YAWRATE SENSOR	Malfunction is detected in yaw rate sensor signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	<ul style="list-style-type: none">• ABS actuator and electric unit (control unit)• Yaw rate/side/decel G sensor• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

Ⓜ With CONSULT-III

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

Is DTC "P183E" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-71, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360049

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

Ⓜ With CONSULT-III

Perform self-diagnosis for "ABS".

Is any DTCs detected?

- YES >> Check the DTCs. Refer to [BRC-142, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

Ⓜ With CONSULT-III

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

Does ABS warning lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [BRC-212, "Diagnosis Procedure"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P183E" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P183F GEAR POSITION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P183F GEAR POSITION SIGNAL

DTC Logic

INFOID:000000006360050

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P183F	GEAR POSI SIGNAL	Malfunction is detected in current gear position signal that is output from TCM through CAN communication.	<ul style="list-style-type: none">• CVT sensor• TCM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P183F" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-72, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360051

1. PERFORM TCM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "TRANSMISSION".

Is any DTCs detected?

- YES >> Check the DTC. Refer to [TM-171, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Start the engine and drive vehicle at 30 km/h (19 MPH) or more.
3. Check that A/T CHECK indicator lamp turns OFF.

Does A/T CHECK indicator lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [TM-259, "Symptom Table"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P183F" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P1840 OUTPUT SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1840 OUTPUT SPEED SIGNAL

DTC Logic

INFOID:000000006360052

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1840	OUTPUT SPEED SIGNAL	Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication.	<ul style="list-style-type: none">• CVT sensor• TCM• 4WD control module• CAN communication line

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DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1840" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-73, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360053

1. PERFORM TCM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "TRANSMISSION".

Is any DTCs detected?

- YES >> Check the DTC. Refer to [TM-171, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Start the engine and drive vehicle at 30 km/h (19 MPH) or more.
3. Check that A/T CHECK indicator lamp turns OFF.

Does A/T CHECK indicator lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [TM-259, "Symptom Table"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1840" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

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P1864 INPUT SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1864 INPUT SPEED SIGNAL

DTC Logic

INFOID:000000006360054

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1864	INPUT SPEED SIGNAL	Malfunction is detected in input shaft revolution signal that is output from TCM through CAN communication.	<ul style="list-style-type: none">• CVT sensor• TCM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1864" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-74, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360055

1. PERFORM TCM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "TRANSMISSION".

Is any DTCs detected?

- YES >> Check the DTC. Refer to [TM-171, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Start the engine and drive vehicle at 30 km/h (19 MPH) or more.
3. Check that A/T CHECK indicator lamp turns OFF.

Does A/T CHECK indicator lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [TM-259, "Symptom Table"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1864" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

P1865 GEAR RATIO SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

P1865 GEAR RATIO SIGNAL

DTC Logic

INFOID:000000006360056

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1865	GEAR RATIO	Malfunction is detected in CVT ratio signal that is output from TCM through CAN communication.	<ul style="list-style-type: none">• CVT sensor• TCM• 4WD control module• CAN communication line

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "P1865" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-75, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006360057

1. PERFORM TCM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "TRANSMISSION".

Is any DTCs detected?

- YES >> Check the DTC. Refer to [TM-171, "DTC Index"](#).
NO >> GO TO 2.

2. ERASE SELF-DIAGNOSTIC RESULT

With CONSULT-III

1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
2. Start the engine and drive vehicle at 30 km/h (19 MPH) or more.
3. Check that A/T CHECK indicator lamp turns OFF.

Does A/T CHECK indicator lamp turn OFF?

- YES >> GO TO 3.
NO >> Refer to [TM-259, "Symptom Table"](#).

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check 4WD control module pin terminals for damage or loose connection with harness connector.

Is inspection result normal?

- YES >> After turning the ignition switch OFF, perform DTC confirmation procedure again. When DTC "P1865" is detected, Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).
NO >> Repair or replace error-detected parts.

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

U1000 CAN COMM CIRCUIT

Description

INFOID:000000006359919

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit communicate data but selectively reads required data only.

DTC Logic

INFOID:000000006359920

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	4WD control module is not transmitting/receiving CAN communication signal for 2 seconds or more.	<ul style="list-style-type: none">• CAN communication error• Malfunction of 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "U1000" detected?

- YES >> Proceed to diagnosis procedure. Refer to [DLN-76, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359921

Proceed to [LAN-17, "Trouble Diagnosis Flow Chart"](#).

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

U1010 CONTROL UNIT (CAN)

Description

INFOID:000000006359922

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit communicate data but selectively reads required data only.

DTC Logic

INFOID:000000006359923

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1010	CONTROL UNIT (CAN)	Detecting error during the initial diagnosis of CAN controller of 4WD control module.	Internal malfunction of 4WD control module

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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

Is DTC "U1010" detected?

YES >> Proceed to diagnosis procedure. Refer to [DLN-77, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006359924

1. CHECK 4WD CONTROL MODULE

Check 4WD control module harness connector for disconnection and deformation.

Is the inspection result normal?

YES >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

NO >> Repair or replace error-detected parts.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000006359926

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

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

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

4. Turn the ignition switch ON.
CAUTION:
Never start the engine.
5. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	1	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

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

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#33).
3. Check the harness for open or short between 4WD control module harness connector No.1 terminal and 10A (#33).

Is the inspection result normal?

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to [PG-10. "Wiring Diagram - BATTERY POWER SUPPLY -"](#).
- NO >> Repair or replace error-detected parts.

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

1. Turn the ignition switch OFF.
2. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	0 V

3. Turn the ignition switch ON.
CAUTION:
Never start the engine.
4. Check the voltage between 4WD control module harness connector and ground.

4WD control module		—	Voltage
Connector	Terminal		
B47	3	Ground	Battery voltage

Is the inspection result normal?

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

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4.CHECK 4WD CONTROL MODULE POWER SUPPLY (4)

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

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to [PG-15. "Wiring Diagram - IGNITION POWER SUPPLY -"](#).

NO >> Repair or replace error-detected parts.

5.CHECK 4WD SOLENOID POWER SUPPLY (1)

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

4WD control module		—	Voltage
Connector	Terminal		
B47	12	Ground	Battery voltage

4. Turn the ignition switch OFF to ON.

CAUTION:

Never start the engine.

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

4WD control module		—	Voltage
Connector	Terminal		
B47	12	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.CHECK 4WD SOLENOID POWER SUPPLY (2)

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#12).
3. Check the harness for open or short between 4WD control module harness connector No.12 and the 10A fuse (#12).

Is the inspection result normal?

YES >> Perform the trouble the diagnosis for power supply circuit. Refer to [PG-10. "Wiring Diagram - BATTERY POWER SUPPLY -"](#).

NO >> Repair or replace error-detected parts.

7.CHECK 4WD CONTROL MODULE GROUND

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

4WD control module		—	Continuity
Connector	Terminal		
B47	10	Ground	Existed
	11		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace error-detected parts.

4WD WARNING LAMP

Component Function Check

INFOID:000000006359927

1. CHECK 4WD WARNING LAMP FUNCTION

1. Turn the ignition switch ON.
2. Check that 4WD warning lamp turns on.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to [DLN-80, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006359928

1. CHECK POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for power supply and ground circuit. Refer to [DLN-78, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 2.

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

2. PERFORM SELF-DIAGNOSIS

 **With CONSULT-III**

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

Is any DTC detected?

YES >> Check the DTC. Refer to [DLN-33, "DTC Index"](#).

NO >> GO TO 3.

3. CHECK 4WD WARNING LAMP SIGNAL

 **With CONSULT-III**

1. Turn the ignition switch ON.

CAUTION:

Never start the engine.

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

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

YES >> Perform the trouble diagnosis for combination meter power supply circuit. Refer to [MWI-51, "COMBINATION METER : Diagnosis Procedure"](#).

NO >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

4WD MODE INDICATOR LAMP (4WD-V)

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD MODE INDICATOR LAMP (4WD-V)

Component Function Check

INFOID:000000006359929

1. 4WD MODE INDICATOR LAMP OPERATION CHECK

1. Turn the ignition switch ON.
2. Change 4WD mode switch to "4WD-V".
3. Check that 4WD mode indicator lamp (4WD-V) turns on.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to [DLN-81, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006359930

1. CHECK 4WD WARNING LAMP

Start the engine and drive at 30 km/h (19 MPH) or more for approximately 1 minute.

Does 4WD warning lamp turn ON?

YES >> Proceed to [DLN-80, "Diagnosis Procedure"](#).

NO >> GO TO 2.

2. CHECK 4WD MODE SWITCH

Perform the trouble diagnosis for 4WD mode switch. Refer to [DLN-44, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 3.

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

3. CHECK 4WD MODE INDICATOR LAMP SIGNAL

 **With CONSULT-III**

1. Start the engine.

CAUTION:

Stop the vehicle.

2. Change 4WD mode switch to "4WD-V" from "2WD".
3. Check "INDICATOR" of CONSULT-III "DATA MONITOR" for "ALL MODE AWD/4WD".

Does the item on "DATA MONITOR" indicate "4WD-V"?

YES >> GO TO 4.

NO >> Replace 4WD control module. Refer to [DLN-91, "Removal and Installation"](#).

4. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

Perform the trouble diagnosis for combination meter power supply circuit. Refer to [MWI-51, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> INSPECTION END

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

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4WD MODE INDICATOR LAMP (4WD)

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER: TY21B]

4WD MODE INDICATOR LAMP (4WD)

Component Function Check

INFOID:000000006598699

1. 4WD MODE INDICATOR LAMP OPERATION CHECK

Check that 4WD mode indicator lamp (4WD) turns on for approximately 1 second after the ignition switch is turned ON.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to [DLN-82. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006598700

1. CHECK 4WD WARNING LAMP

Start the engine and drive at 30 km/h (19 MPH) or more for approximately 1 minute.

Does 4WD warning lamp turn ON?

YES >> Proceed to [DLN-80. "Diagnosis Procedure"](#).

NO >> GO TO 2.

2. CHECK 4WD MODE SWITCH

Perform the trouble diagnosis for 4WD mode switch. Refer to [DLN-44. "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 3.

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

3. CHECK 4WD MODE INDICATOR LAMP SIGNAL

With CONSULT-III

1. Start the engine.

CAUTION:

Stop the vehicle.

2. Change 4WD mode switch to "4WD" from "4WD-V".

3. Check "INDICATOR" of CONSULT-III "DATA MONITOR" for "ALL MODE AWD/4WD".

Does the item on "DATA MONITOR" indicate "4WD"?

YES >> GO TO 4.

NO >> Replace 4WD control module. Refer to [DLN-91. "Removal and Installation"](#).

4. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

Perform the trouble diagnosis for combination meter power supply circuit. Refer to [MWI-51. "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> INSPECTION END

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

4WD WARNING LAMP DOES NOT TURN ON

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

SYMPTOM DIAGNOSIS

4WD WARNING LAMP DOES NOT TURN ON

Description

INFOID:000000006359934

4WD warning lamp does not turn ON when the ignition switch is turned to ON.

Diagnosis Procedure

INFOID:000000006359935

1. CHECK 4WD WARNING LAMP

Perform the trouble diagnosis for 4WD warning lamp. Refer to [DLN-80. "Diagnosis Procedure"](#).

Is the inspection result normal?

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

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

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4WD WARNING LAMP DOES NOT TURN OFF

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

4WD WARNING LAMP DOES NOT TURN OFF

Description

INFOID:000000006359936

4WD warning lamp does not turn OFF several seconds after the engine started.

Diagnosis Procedure

INFOID:000000006359937

1.PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is any DTC detected?

YES >> Check the DTC. Refer to [DLN-33, "DTC Index"](#).

NO >> GO TO 2.

2.CHECK 4WD WARNING LAMP

Perform the trouble diagnosis of the 4WD warning lamp. Refer to [DLN-80, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK 4WD CONTROL MODULE POWER SUPPLY AND GRAUND CIRCUIT

Perform the trouble diagnosis of power supply and ground circuit. Refer to [MWI-51, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

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

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

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS

Description

INFOID:000000006359938

Heavy tight-corner braking symptom occurs when the vehicle is driven and the steering wheel is turned fully to either side after the engine is started.

NOTE:

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

Diagnosis Procedure

INFOID:000000006359939

1. PERFORM ECM SELF-DIAGNOSIS

With CONSULT-III

Perform self-diagnosis for "ENGINE".

Is any DTC detected?

- YES >> Check the DTC. Refer to [EC-108, "DTC Index"](#).
- NO >> GO TO 2.

2. PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is any DTC detected?

- YES >> Check the DTC. Refer to [DLN-33, "DTC Index"](#).
- NO >> GO TO 3.

3. CHECK 4WD SOLENOID

Perform the trouble diagnosis of the 4WD solenoid. Refer to [DLN-54, "Diagnosis Procedure"](#) (left), [DLN-57, "Diagnosis Procedure"](#) (right).

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace the error-detected parts.

4. CHECK ELECTRIC CONTROLLED COUPLING

1. Turn the ignition switch OFF.
2. Set the transmission to neutral. Release the parking brake.
3. Lift up the vehicle.
4. Rotate the rear propeller shaft.
5. Hold the front propeller shaft lightly.

Does the front propeller shaft rotate?

- YES >> Replace electric controlled coupling for mechanical malfunction (clutch sticking etc.). Refer to [DLN-139, "Removal and Installation"](#).
- NO >> Check each harness connector pin terminal for disconnection.

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VEHICLE DOES NOT ENTER 4WD MODE

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

VEHICLE DOES NOT ENTER 4WD MODE

Description

INFOID:000000006359940

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

Diagnosis Procedure

INFOID:000000006359941

1. CHECK 4WD WARNING LAMP

Turn the ignition switch ON.

Does 4WD warning lamp turn ON?

YES >> GO TO 2.

NO >> Proceed to diagnosis procedure. Refer to [DLN-80, "Diagnosis Procedure"](#).

2. CHECK PARKING BRAKE SWITCH SIGNAL

Ⓟ With CONSULT-III

Check "PKB SW" of CONSULT-III "DATA MONITOR" for "ALL MODE AWD/4WD".

Monitor Item	Condition	Status
PKB SW	When the parking brake switch is operation.	On
	When the parking brake switch is not operation.	Off

Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to diagnosis procedure. Refer to [BRC-208, "Diagnosis Procedure"](#).

3. CRUISE TEST

Drive the vehicle for a period of time.

Does any symptom occur?

YES >> Replace electric controlled coupling for mechanical malfunction (mechanical engagement of clutch is not possible). Refer to [DLN-139, "Removal and Installation"](#).

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

4WD WARNING LAMP BLINKS QUICKLY

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

4WD WARNING LAMP BLINKS QUICKLY

Description

INFOID:000000006359942

While driving, 4WD warning lamp blinks 2 times in 1 second and it turns OFF after 1 minute.

NOTE:

- This symptom protects drivetrain parts when a heavy load is applied to the electric controlled coupling and multiple disc clutch temperature increases. Also, optional distribution of torque sometimes becomes rigid before lamp blinks quickly. Both cases are not malfunction. Refer to [DLN-32, "Protection Function"](#).
- When this symptom occurs, stop vehicle and allow it to idle for some times. Blinking will stop and system will be restored.

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4WD WARNING LAMP BLINKS SLOWLY

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

4WD WARNING LAMP BLINKS SLOWLY

Description

INFOID:000000006359943

4WD warning lamp blinks at approximately 2 seconds intervals while driving.

Diagnosis Procedure

INFOID:000000006359944

1.CHECK TIRE

Check the following.

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

Is the inspection result normal?

YES >> GO TO 2.

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

2.TERMINAL INSPECTION

Check 4WD control unit harness connector for disconnection.

Is the inspection result normal?

YES >> Replace 4WD control unit. Refer to [DLN-91, "Removal and Installation"](#).

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

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[TRANSFER: TY21B]

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000006359951

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-90, "Inspection"			DLN-95, "Exploded View"	DLN-95, "Exploded View"	DLN-107, "Inspection"	DLN-111, "Inspection"
SUSPECTED PARTS (Possible cause)		TRANSFER OIL (Level low)	TRANSFER OIL (Wrong)	TRANSFER OIL (Level too high)	LIQUID GASKET (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		

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PERIODIC MAINTENANCE

TRANSFER OIL

Inspection

INFOID:000000006359775

OIL LEAKAGE

Check transfer surrounding area (oil seal, drain plug, filler plug, and transfer case etc.) for oil leakage.

OIL LEVEL

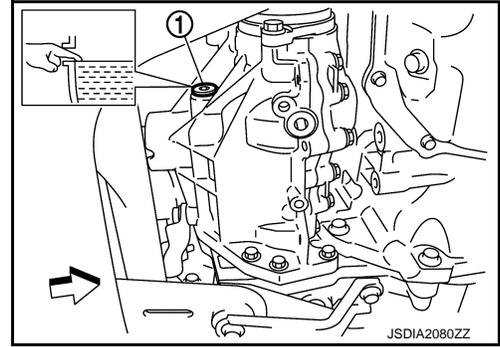
1. Remove filler plug (1) and gasket. Then check that oil is filled up from mounting hole for the filler plug.

⇐ Vehicle front

CAUTION:
Never start engine while checking oil level.

2. Before installing filler plug, set a new gasket. Install filler plug on transfer and tighten to the specified torque. Refer to [DLN-113, "Exploded View"](#).

CAUTION:
Never reuse gasket.



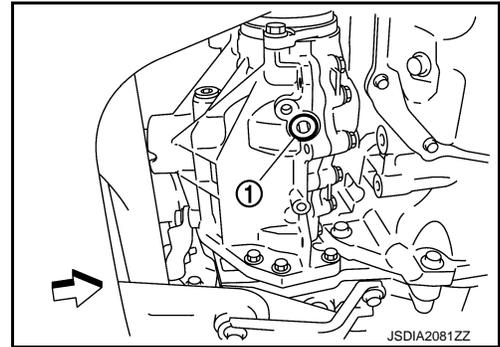
Draining

INFOID:000000006359776

1. Run the vehicle to warm up the transfer unit sufficiently.
2. Stop the engine and remove the drain plug (1) and gasket to drain the transfer oil.
3. Before installing drain plug, set a new gasket. Install drain plug on the transfer and tighten to the specified torque. Refer to [DLN-113, "Exploded View"](#).

⇐ Vehicle front

CAUTION:
Never reuse gasket.



Refilling

INFOID:000000006359777

1. Remove filler plug (1) and gasket. Then fill oil up to mounting hole for the filler plug.

⇐ Vehicle front

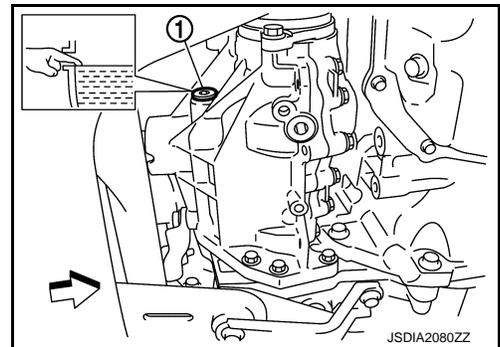
Oil and viscosity : Refer to [MA-13, "Fluids and Lubricants"](#).

Oil capacity : Refer to [DLN-117, "General Specifications"](#).

CAUTION:
Carefully fill the oil. (Fill up for approximately 3 minutes.)

2. Leave the vehicle for 3 minutes, and check the oil level again.
3. Before installing filler plug, set a new gasket. Install filler plug on transfer and tighten to the specified torque. Refer to [DLN-113, "Exploded View"](#).

CAUTION:
Never reuse gasket.



REMOVAL AND INSTALLATION

4WD CONTROL MODULE

Removal and Installation

INFOID:000000006598861

REMOVAL

1. Turn the ignition switch OFF.
2. Remove front (left side) seat. Refer to [SE-27, "Removal and Installation"](#).
3. Remove floor carpet. Refer to [INT-23, "Removal and Installation"](#).
4. Remove G sensor. Refer to [TM-282, "Removal and Installation"](#).
5. Disconnect 4WD control module harness connector.
6. Remove 4WD control module mounting nuts.
7. Remove 4WD control module.

INSTALLATION

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

- Perform "G SENSOR CALIBRATION". Refer to [TM-182, "Description"](#).
- When installing 4WD control module, install it following procedure.

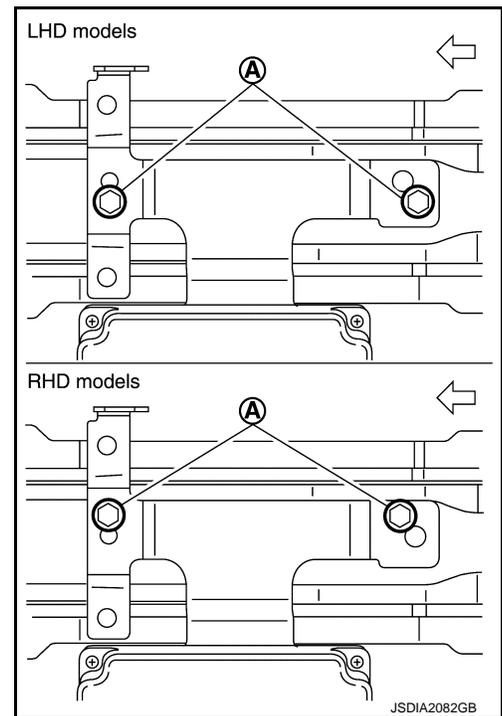
1. Align the securing holes (A) of bracket as shown in the figure and temporarily tighten mounting bolts.

←: Vehicle front

2. When replace 4WD control module, hold 4WD control module and remove protector paper on the adhesion area of bracket to bond to the front floor (LH).
3. Tighten mounting bolts to the specified torque.

Tightening torque : 8.0 N·m (0.82 kg·m, 71in·lb)

- When replacing 4WD control module, perform writing unit parameter. Refer to [DLN-39, "Work Procedure"](#).



4WD MODE SWITCH

< REMOVAL AND INSTALLATION >

[TRANSFER: TY21B]

4WD MODE SWITCH

Removal and Installation

INFOID:000000006607877

REMOVAL

1. Remove instrument lower panel. Refer to [IP-12, "Exploded View"](#).
2. Remove 4WD mode switch.

INSTALLATION

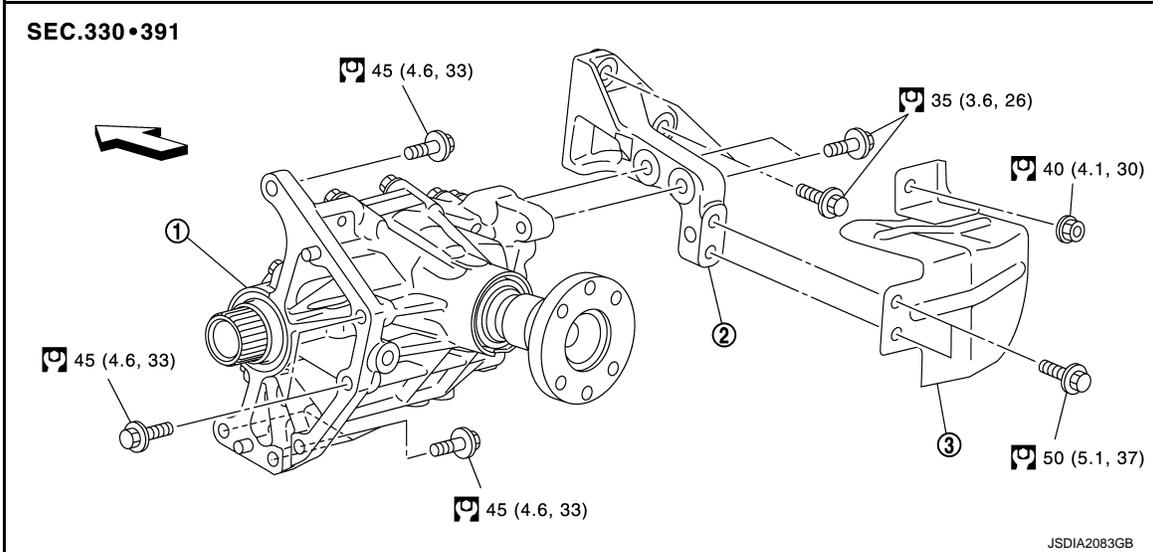
Install in the reverse order of removal.

UNIT REMOVAL AND INSTALLATION

TRANSFER ASSEMBLY

Exploded View

INFOID:000000006359778



1. Transfer gusset

2. Transfer assembly

3. Heat insulator

← Vehicle front

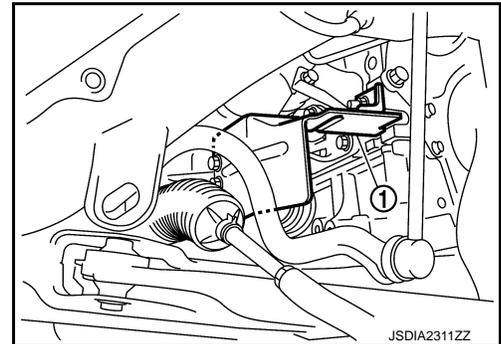
: N·m (kg·m, ft·lb)

Removal and Installation

INFOID:000000006359779

REMOVAL

1. Separate the rear propeller shaft. Refer to [DLN-121, "Removal and Installation"](#).
2. Remove right side drive shaft. Refer to [FAX-24, "RIGHT SIDE : Removal and Installation"](#).
3. Remove catalyst convertor support bracket (RH). [EM-35, "4WD : Removal and Installation"](#).
4. Remove heat insulator (1).



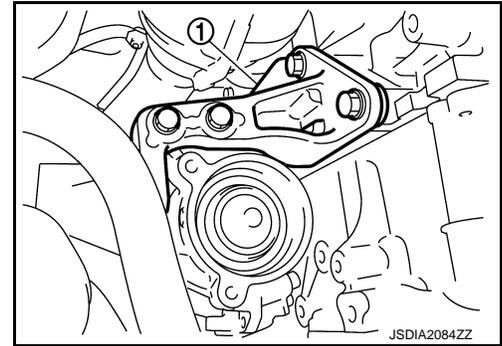
JSDIA2311ZZ

TRANSFER ASSEMBLY

[TRANSFER: TY21B]

< UNIT REMOVAL AND INSTALLATION >

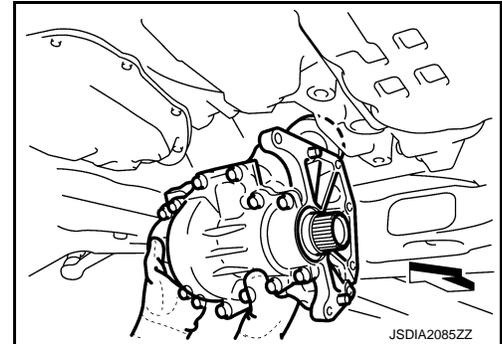
5. Remove transfer gusset (1).
6. Remove catalyst convertor support bracket rear. [EM-59. "4WD : Removal and Installation"](#).
7. Remove rear torque rod and rear torque rod bracket. Refer to [EM-59. "4WD : Removal and Installation"](#).
8. Remove the mounting bolts of transaxle assembly and transfer assembly.



9. Remove transfer assembly from the vehicle.

← Vehicle front

CAUTION:
Never damage ring gear shaft.



INSTALLATION

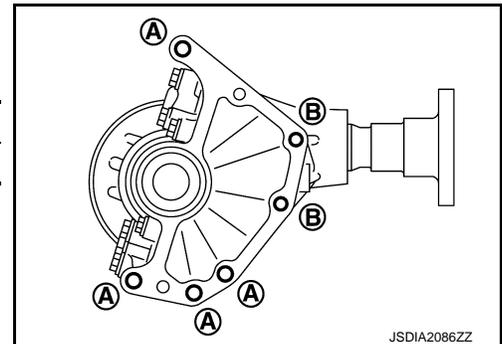
Note the following, and install in the reverse order of removal.

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

Bolt symbol	A	B
Installation direction	Transfer ⇒ Transaxle	Transaxle ⇒ Transfer

CAUTION:

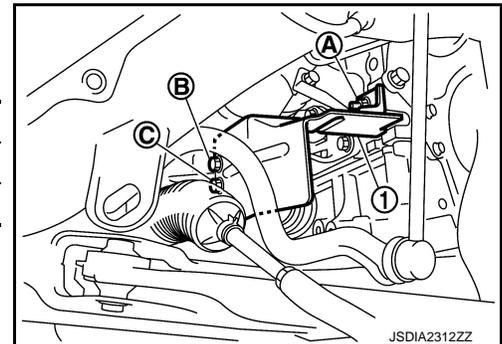
- When installing transfer assembly to transaxle assembly, replace the side oil seal (transfer joint). Refer to [TM-292. "Removal and Installation"](#).
- Never damage side oil seal (the joint part of transfer).



- When installing heat insulator (1), install the mounting bolts and nut following procedure.

Tightening order	1	2	3	4	5	6
Bolt symbol	A	B	C	A	B	C
Tightening torque	Temporary tightening			Specified torque		

- Check oil level and check for oil leakage after installation. Refer to [DLN-90. "Inspection"](#).



RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

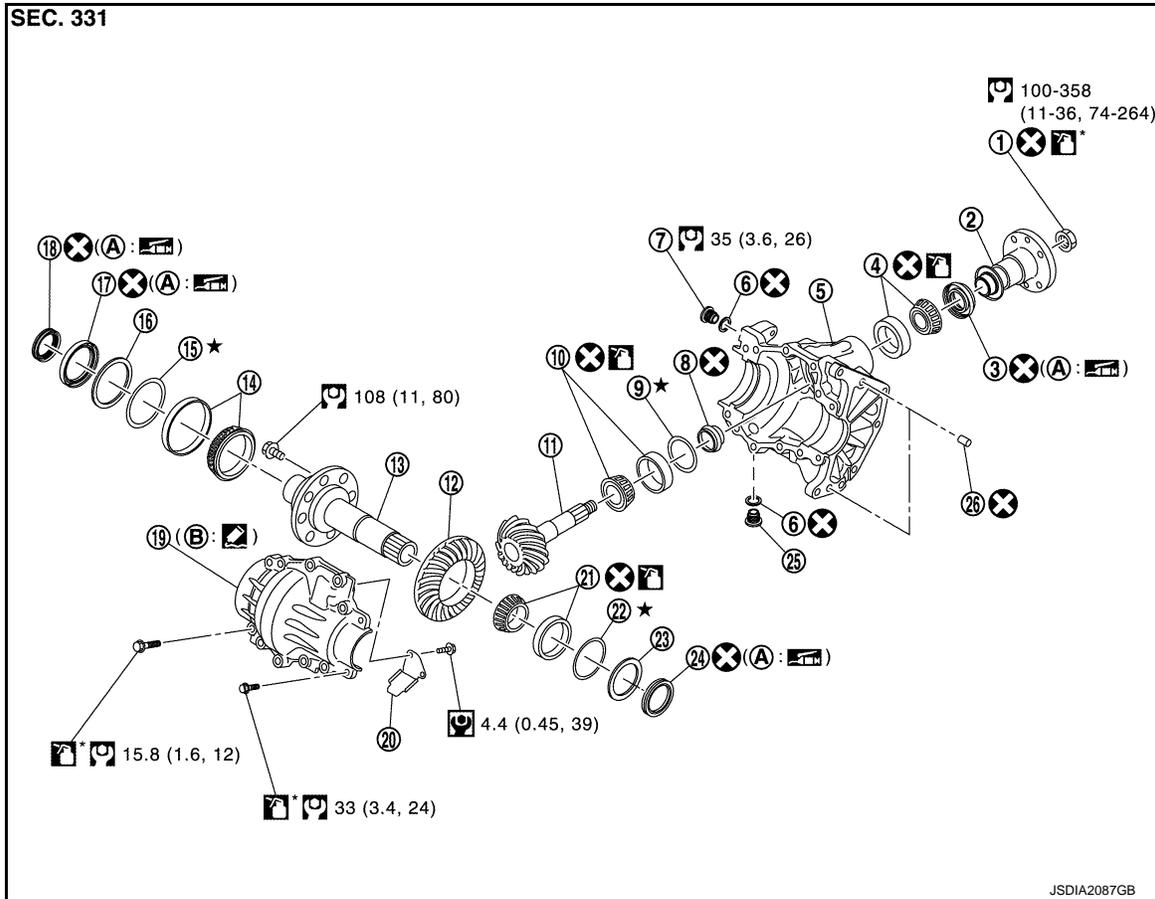
[TRANSFER: TY21B]

UNIT DISASSEMBLY AND ASSEMBLY

RING GEAR SHAFT

Exploded View

INFOID:000000006359785



- | | | |
|--|------------------------------------|---|
| 1. Pinion lock nut | 2. Companion flange | 3. Drive pion oil seal |
| 4. Pinion rear bearing | 5. Transfer case | 6. Gasket |
| 7. Filler plug | 8. Collapsible spacer | 9. Drive pinion adjust shim |
| 10. Drive pinion | 11. Pinion front bearing | 12. Ring gear |
| 13. Ring gear shaft | 14. Ring gear bearing (right) | 15. Ring gear bearing adjust shim (right) |
| 16. Spacer (right) | 17. Transfer case oil seal (right) | 18. Drive shaft oil seal |
| 19. Transfer cover | 20. Oil defense | 21. Ring gear bearing (left) |
| 22. Ring gear bearing adjust shim (left) | 23. Spacer (left) | 24. Transfer case oil seal (left) |
| 25. Drain plug | 26. Dowel pin | |
| A. Oil seal lip | B. Transfer case mounting face | |

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

: Apply gear oil.

: Apply anti-corrosive oil.

: Apply multi purpose grease

: Apply Genuine Liquid Gasket 1215 or equivalent.

★: Select with proper thickness.

RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

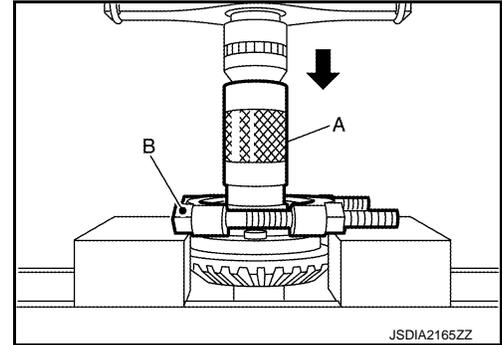
[TRANSFER: TY21B]

Disassembly

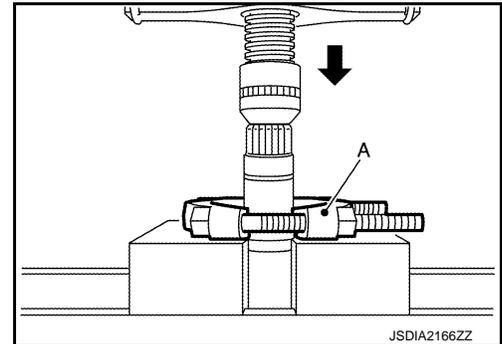
INFOID:00000006359786

1. Remove transfer cover. Refer to [DLN-114](#), "Disassembly".
2. Remove transfer case oil seal (right and left side).
3. Remove ring gear shaft assembly from transfer case.
4. Remove ring gear bearing outer race (right and left side) from ring gear shaft assembly.
5. Remove ring gear bearing adjust shim (right and left side) from ring gear shaft assembly.
6. Remove spacer (right and left side) from ring gear shaft assembly.
7. Remove gear ring bearing inner race (left side) from ring gear shaft with the drift (A) and a replacer (B).

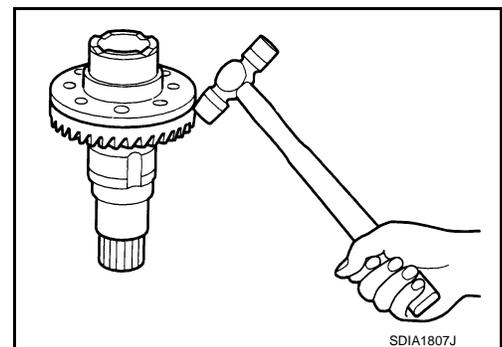
- A : Drift (SST:ST33200000)
B : Replacer (commercial service tool)



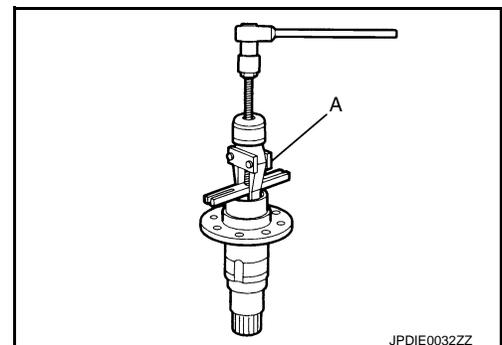
8. Remove gear ring bearing inner race (right side) from ring gear shaft with a replacer (A) (commercial service tool).
9. Remove the ring gear mounting bolts.



10. Lightly tap adapter case with a plastic hammer to remove drive gear from ring gear shaft.



11. Remove drive shaft oil seal from the gear ring with a puller (A) (SST: KV381054S0).
12. Perform inspection after disassembly. Refer to [DLN-107](#), "Inspection".



RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

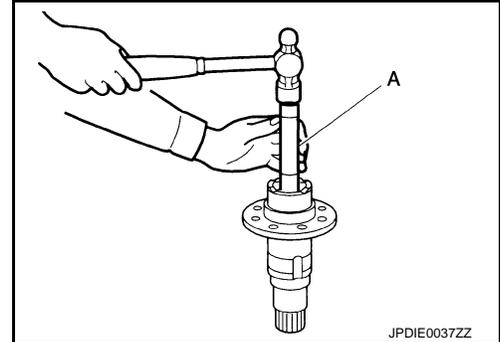
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Assembly

1. Select ring gear bearing adjust shim (right and left side). Refer to [DLN-98. "Adjustment"](#).
2. Install drive shaft oil seal until it becomes flush with ring gear shaft end, using the drift (A) (SST: ST33230000).

CAUTION:

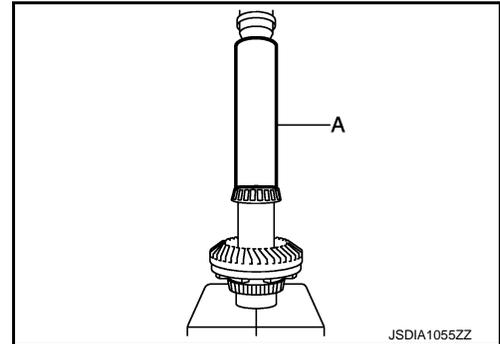
- Never reuse the oil seal.
- When installing, never incline oil seal.
- Apply multi-purpose grease to oil seal lip.



3. Install the gear ring bearing inner race (right side) to gear ring with the drift (A) (commercial service tool).

CAUTION:

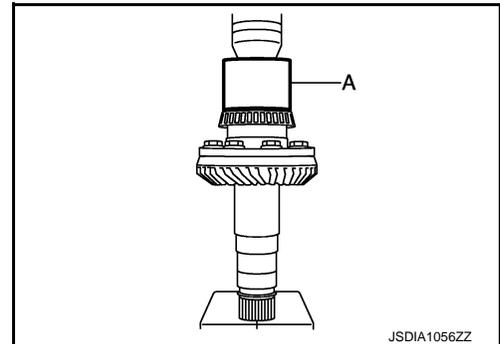
- Never reuse the ring gear bearing.
- Apply gear oil to gear ring bearing inner race.



4. Install the gear ring bearing inner race (left side) to gear ring with the drift (A) (commercial service tool).

CAUTION:

- Never reuse the ring gear bearing.
- Apply gear oil to gear ring bearing inner race.



5. Install spacer (right and left side) to ring gear shaft assembly.
6. Install selected ring gear bearing adjust shim (right and left side) to ring gear shaft assembly.
7. Install ring gear bearing outer race (right and left side) to ring gear shaft assembly.

CAUTION:

- Never reuse the ring gear bearing.
- Apply gear oil to gear ring bearing outer race.

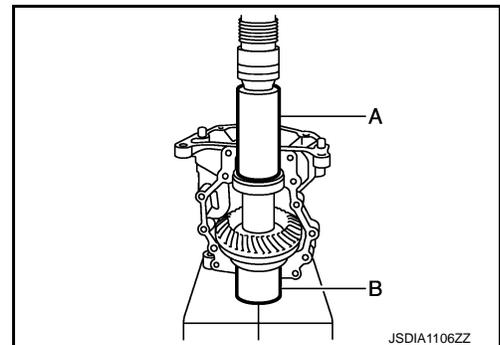
8. Set the drifts (A and B) to right and left side spacers individually. Compress ring gear shaft assembly and ring gear bearing to install ring gear shaft assembly to transfer case.

A : Drift (commercial service tool)

B : Drift (commercial service tool)

CAUTION:

- The drift shall be placed on the center of the spacers.
- The pressure shall be as low as to install ring gear shaft assembly into transfer case. The maximum pressure shall be 10 kN (1 ton, 1.0 Imp ton).
- If the adjusting shims and spacers are installed by tapping, the transfer case may be damaged. Avoid tapping.



9. Install transfer cover. Refer to [DLN-114. "Assembly"](#).
10. Check backlash, tooth contact, total preload and companion flange runout. Refer to [DLN-98. "Adjustment"](#).

CAUTION:

Measure the total preload without the adapter case oil seal.

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RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

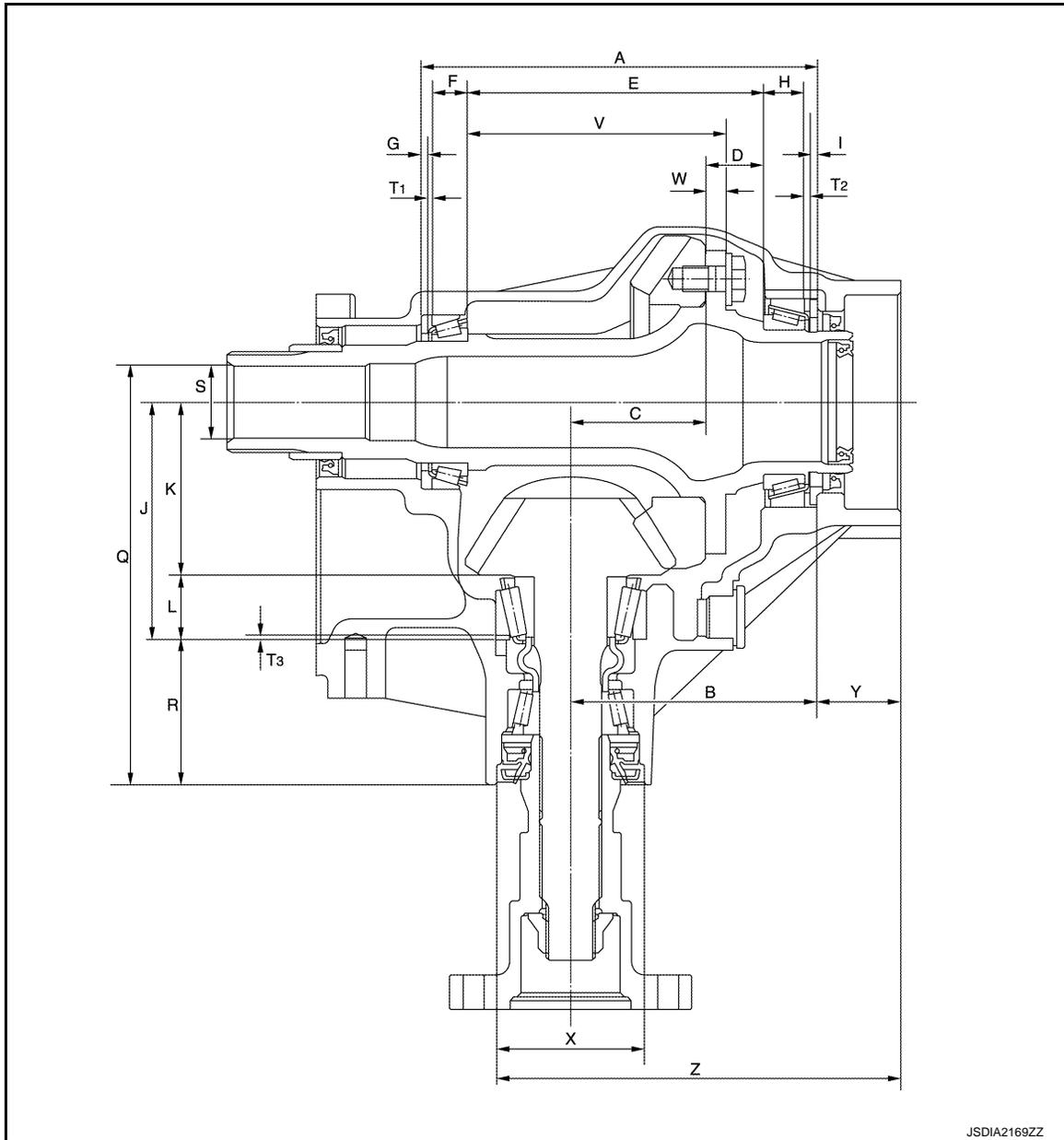
11. Install the transfer case oil seal (left and right side). Refer to [DLN-114. "Assembly"](#).

Adjustment

INFOID:000000006359788

Adjusting shim selection

Measurement point



JSDIA2169ZZ

1. Transfer assembly

Ring gear bearing adjusting shim (right side)

1. Measure the dimensions of each measuring point with the following procedure:

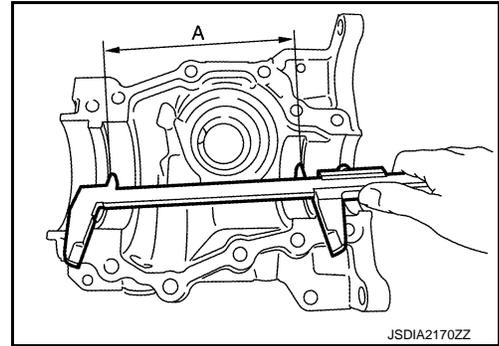
Dimension "A" measurement

RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

- Measure dimension (A) of transfer case with a pair of vernier calipers. Refer to "Measuring point".

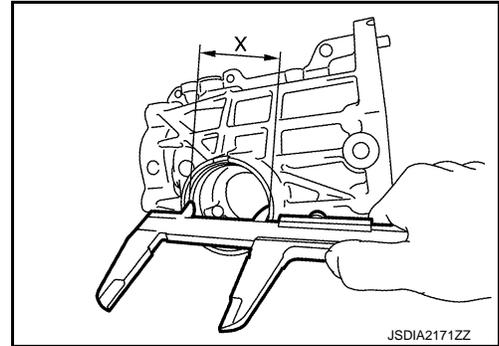


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Dimension "X" measurement

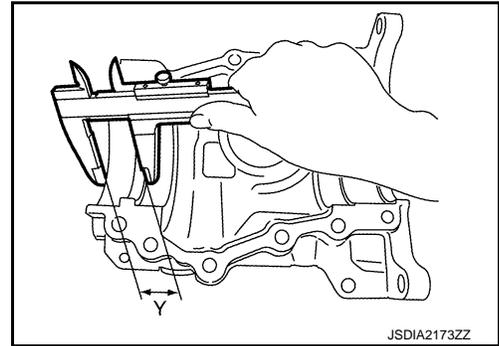
- Measure the diameter (X) of transfer case with a pair of vernier calipers. Refer to "Measuring point".



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Dimension "Y" measurement

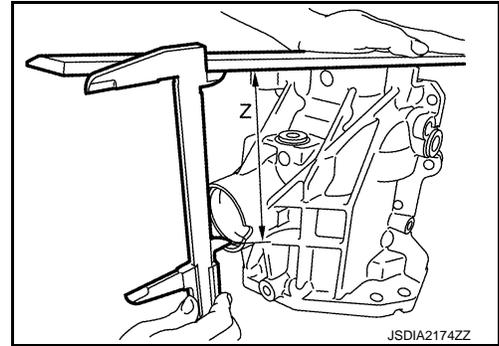
- Measure dimension (Y) of transfer case with a pair of vernier calipers. Refer to "Measuring point".



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Dimension "Z" measurement

- Measure dimension (Z) of transfer case with a pair of vernier calipers and straightedge. Refer to "Measuring point".



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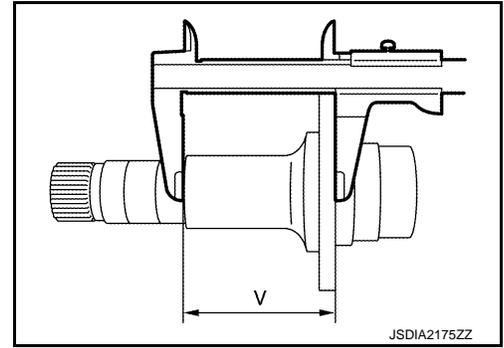
Dimension "V" measurement

RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

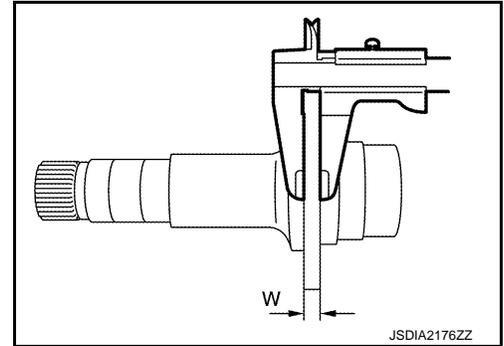
[TRANSFER: TY21B]

- Measure dimension (V) of ring gear shaft with a pair of vernier calipers. Refer to “Measuring point”.



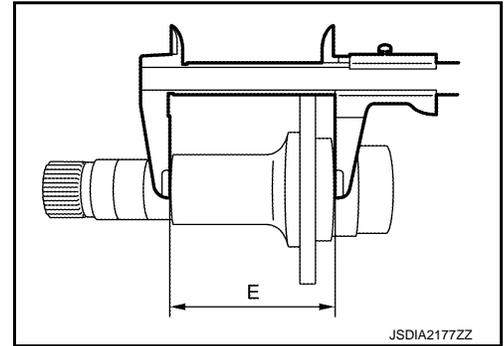
Dimension “W” measurement

- Measure dimension (W) of ring gear shaft with a pair of vernier calipers. Refer to “Measuring point”.



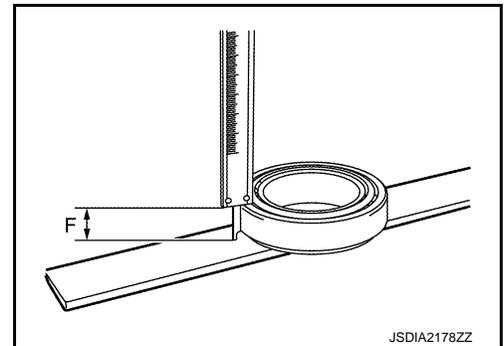
Dimension “E” measurement

- Measure dimension (E) of ring gear shaft with a pair of vernier calipers. Refer to “Measuring point”.



Dimension “F” measurement

- Measure dimension (F) from outer race edge surface of ring gear shaft bearing (right side) to inner race edge surface with a pair of vernier calipers and straightedge. Refer to “Measuring point”.



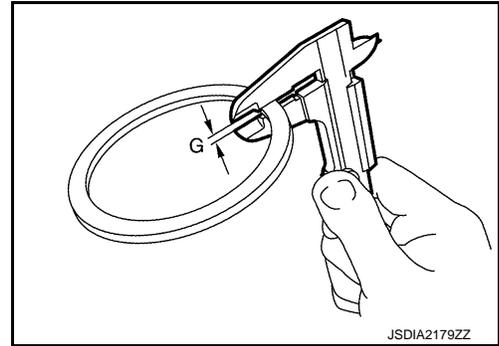
Dimension “G” measurement

RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

- Measure thickness (G) of spacer (right side) with a pair of vernier calipers. Refer to "Measuring point".



2. Calculate dimension "B" by the formula below.

$$B = Z - Y - (X \times 0.5)$$

3. Calculate dimension "D" by the formula below.

$$D = E - V + W$$

4. Calculate the thickness of the ring gear bearing adjusting shim (right side) "T1" by the formula below.

$$T_1 = A - B + C + D - E - F - G + 0.045 \text{ mm (0.0018 in)}$$

NOTE:

Calculate dimension "C" as 56.0 mm (2.20 in)

5. Select ring gear bearing adjusting shim (right side).

CAUTION:

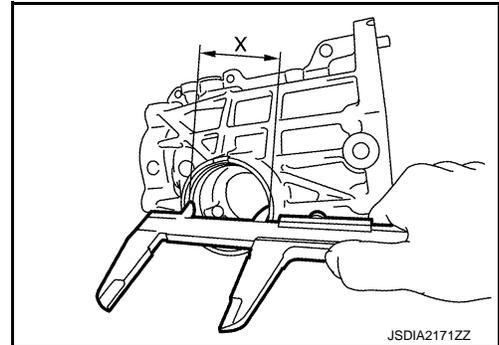
- Only one adjusting shim can be selected.
- Select the closest one, favoring thicker over thinner when necessary if no adjusting shim with the calculated value is available.

Ring gear bearing adjusting shim (right side)

1. Measure the dimensions of each measuring point with the following procedure:

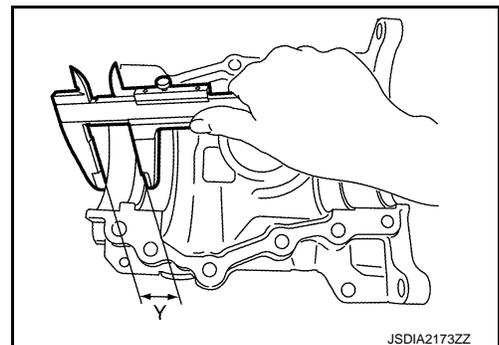
Dimension "X" measurement

- Measure the diameter (X) of transfer case with a pair of vernier calipers. Refer to "Measuring point".



Dimension "Y" measurement

- Measure dimension (Y) of transfer case with a pair of vernier calipers. Refer to "Measuring point".



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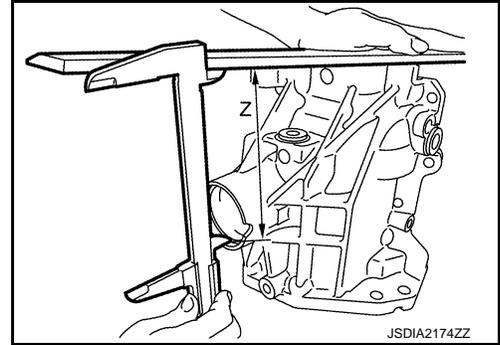
RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

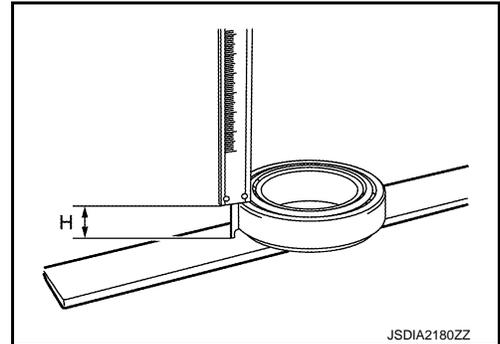
Dimension "Z" measurement

- Measure dimension (Z) of transfer case with a pair of vernier calipers and straightedge. Refer to "Measuring point".



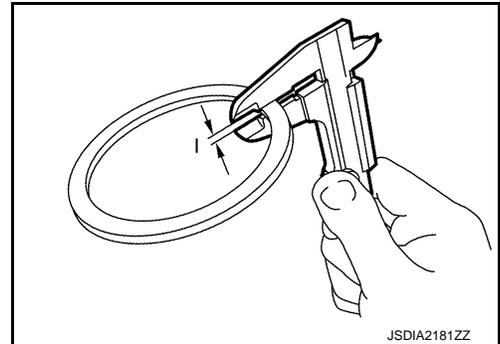
Dimension "H" measurement

- Measure dimension (H) from outer race edge surface of ring gear shaft bearing (left side) to inner race edge surface with a pair of vernier calipers and straightedge. Refer to "Measuring point".



Dimension "I" measurement

- Measure thickness (I) of spacer (left side) with a pair of vernier calipers. Refer to "Measuring point".



2. Calculate dimension "B" by the formula below.

$$B = Z - Y - (X \times 0.5)$$

3. Calculate dimension "D" by the formula below.

$$D = E - V + W$$

4. Calculate the thickness of the ring gear bearing adjusting shim (left side) "T2" by the formula below.

$$T_2 = B - C - D - H - I + 0.045 \text{ mm (0.0018 in)}$$

NOTE:

Calculate dimension "C" as 56.0 mm (2.20 in)

5. Select ring gear bearing adjusting shim (left side).

CAUTION:

- Only one adjusting shim can be selected.
- Select the closest one, favoring thicker over thinner when necessary if no adjusting shim with the calculated value is available.

RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

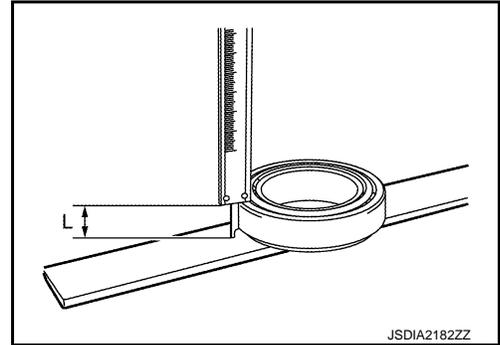
[TRANSFER: TY21B]

Drive pinion adjusting shim

1. Measure the dimensions of each measuring point with the following procedure:

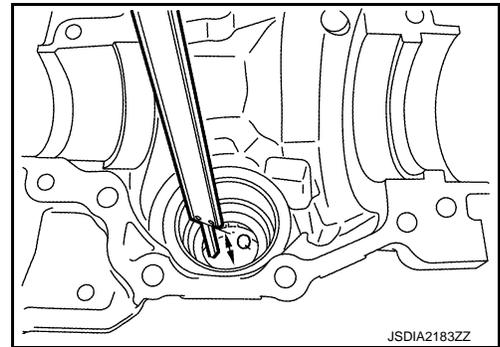
Dimension "L" measurement

- Measure dimension (L) from outer race edge surface of pinion rear bearing to inner race edge surface with a pair of vernier calipers and straightedge. Refer to "Measuring point".



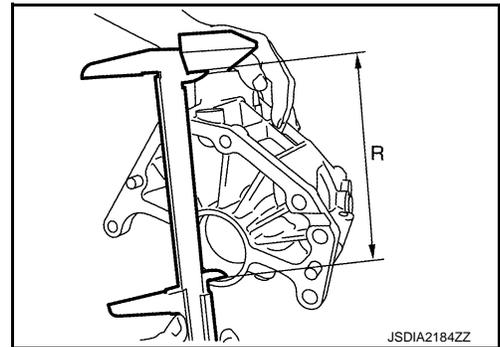
Dimension "Q" measurement

- Measure dimension (Q) of transfer case with a pair of vernier calipers and straightedge. Refer to "Measuring point".



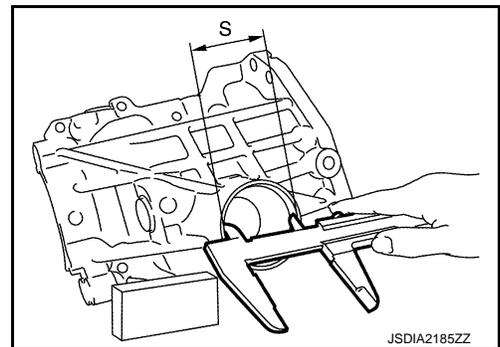
Dimension "R" measurement

- Measure dimension (R) of transfer case with a pair of vernier calipers and straightedge. Refer to "Measuring point".



Dimension "S" measurement

- Measure the diameter (S) of transfer case with a pair of vernier calipers. Refer to "Measuring point".



2. Calculate dimension "J" by the formula below.

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RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

$$J = Q - R - (S \times 0.5)$$

3. Calculate the thickness of the drive pinion adjusting shim "T3" by the formula below.

$$T_3 = J - K - L$$

NOTE:

Calculate dimension "K" as 70.85 mm (2.7894 in)

4. Select drive pinion adjusting shim.

CAUTION:

- Only one adjusting shim can be selected.
- Select the closest one, favoring thicker over thinner when necessary if no adjusting shim with the calculated value is available.

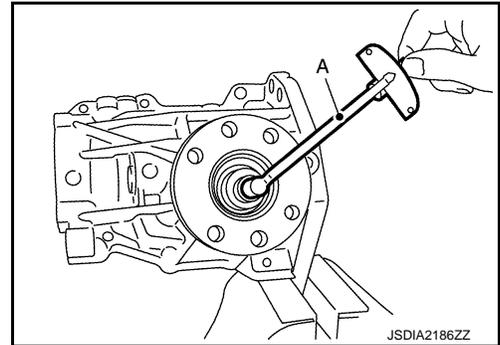
DRIVE PINION BEARING PRELOAD

1. Remove ring gear shaft assembly from the transfer case. Refer to [DLN-96, "Disassembly"](#).
2. Rotate the companion flange back and forth from 2 to 3 times to check for unusual noise, binding, sticking, and so on.
3. Rotate the companion flange at least 20 times to check for smooth operation of the bearing.
4. Measure the drive pinion bearing preload with a preload gauge (A) (SST: ST3127S000).

Drive pinion bearing preload : Refer to [DLN-117, "Preload Torque"](#).

CAUTION:

- Each rotational part should rotate smoothly with the specified gear oil.
- Disassemble the drive pinion assembly to check and adjust each part if outside the standard.



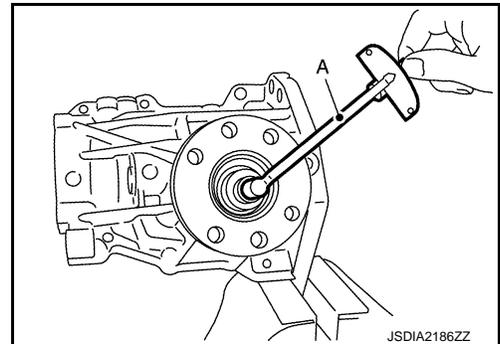
TOTAL PRELOAD

1. Measure drive pinion bearing preload (P1). Refer to [DLN-117, "Preload Torque"](#).
- CAUTION:**
Check that the drive pinion bearing preload is within the standard.
2. Assemble the ring gear shaft assembly to the transfer case. Refer to [DLN-97, "Assembly"](#)
 3. Install transfer cover. Refer to [DLN-114, "Assembly"](#).
 4. Rotate the companion flange at least 20 times to check for smooth operation of the bearing.
 5. Measure the total preload with a preload gauge (A) (SST: ST3127S000).

Total preload : Refer to [DLN-117, "Preload Torque"](#).

CAUTION:

- Each rotational part should rotate smoothly with the specified gear oil.
- Disassemble the transfer assembly to check and adjust each part if outside the standard. Measure it with the transfer case oil seals removed when measuring total preload after disassembly. Then install transfer case oil seals.



BACKLASH

RING GEAR SHAFT

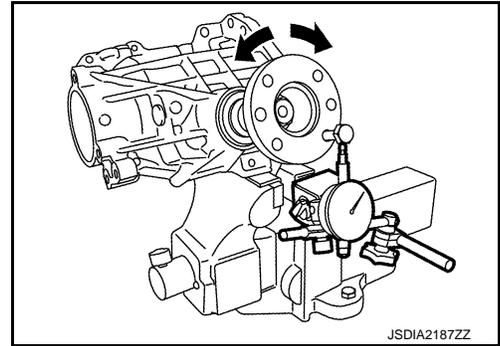
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

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

Backlash : Refer to [DLN-117, "Backlash"](#).

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



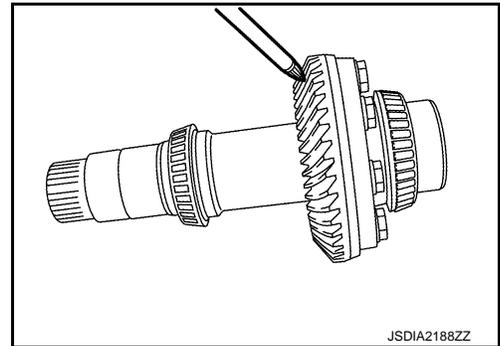
TOOTH CONTACT

1. Remove transfer cover. Refer to [DLN-114, "Disassembly"](#).
2. Remove ring gear shaft assembly from transfer case. Then apply red lead onto the ring gear. Refer to [DLN-96, "Disassembly"](#).

CAUTION:

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

3. Assemble the ring gear shaft assembly to the transfer case. Refer to [DLN-97, "Assembly"](#).
4. Install transfer cover. Refer to [DLN-114, "Assembly"](#).
5. Rotate the companion flange back and forth several times.
6. Remove ring gear shaft assembly from transfer case. Then check drive pinion to ring gear tooth contact



Tooth Contact Judgment Guide

Drive pinion adjusting shim selection value mm(in)		Tooth contact condition				Need for adjustment
		Drive side		Back side		
		Heel side	Toe side	Toe side	Heel side	
↑ Thinner	-0.09 (-0.0035)					Yes
	-0.06 (-0.0024)					
	-0.03 (-0.0012)					
0						No
↓ Thicker	+0.03 (+0.0012)					Yes
	+0.06 (+0.0024)					
	+0.09 (+0.0036)					

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RING GEAR SHAFT

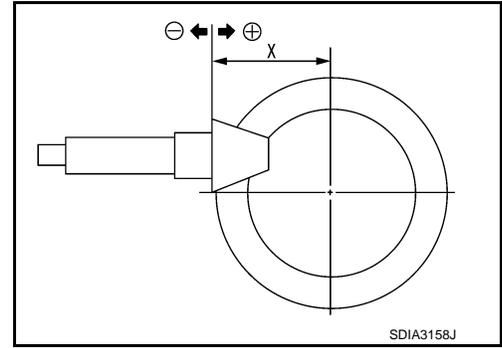
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

7. Follow the procedure below to adjust pinion height (dimension X) if tooth contact is improper.

CAUTION:

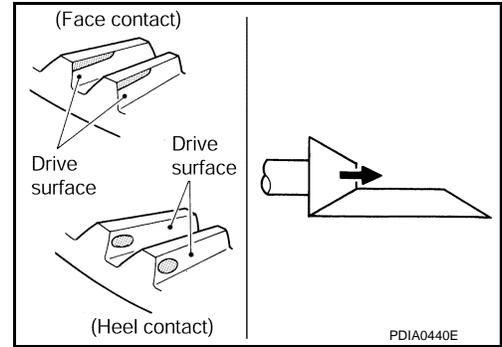
If no adjusting shim with the calculated value is available, select the thicker and closest one.



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

CAUTION:

Only one adjusting shim can be selected.



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

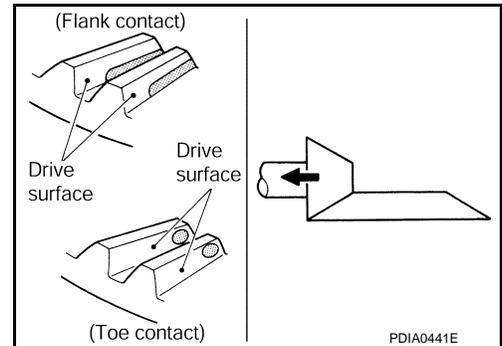
CAUTION:

Only one adjusting shim can be selected.

8. Assemble the plug to the transfer case.

CAUTION:

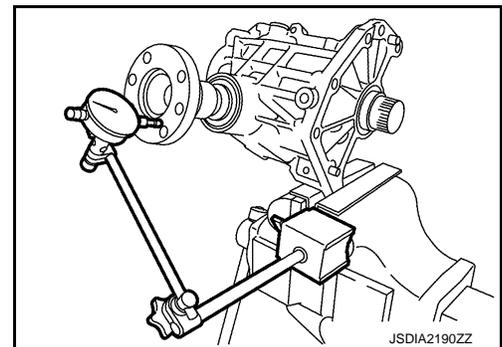
- Remove old gasket on mounting surface, then remove any moisture, oil, and foreign material on the application and mounting surfaces.
- Apply liquid gasket to the thread, and tighten to the specified torque when installing plug.



COMPANION FLANGE RUNOUT

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

Companion flange runout : Refer to [DLN-117. "Companion Flange Runout"](#).



RING GEAR SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

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

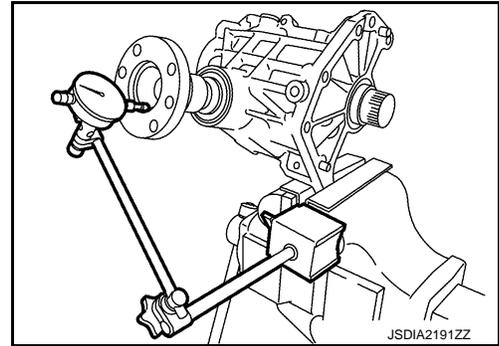
Companion flange runout : Refer to [DLN-117, "Companion Flange Runout"](#).

5. Follow the procedure below to adjust if runout value is outside the repair limit.

CAUTION:

Replace collapsible spacer to check and adjust each part when companion flange is adjusted or replaced.

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



Inspection

INFOID:000000006359789

INSPECTION AFTER DISASSEMBLY

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

Gear and Shaft

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

CAUTION:

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

Bearing

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

CAUTION:

Always replace inner race and outer race as a pair when replacing the bearing.

Shim

Check for seizure, damage, and unusual wear.

Case

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

CAUTION:

Replace transfer case and transfer cover as a set if any malfunction is detected on transfer case or transfer cover.

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DRIVE PINION

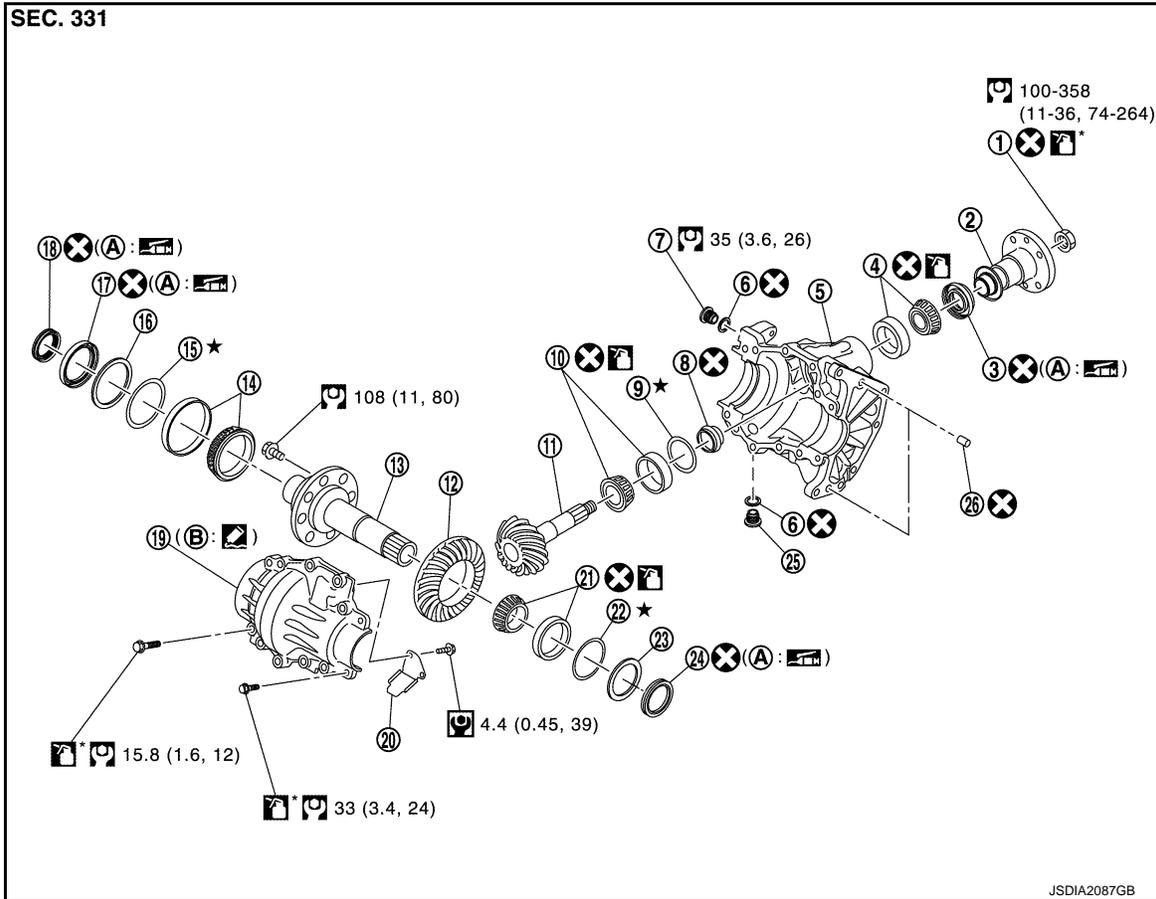
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

DRIVE PINION

Exploded View

INFOID:00000006359780



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|--|------------------------------------|---|
| 1. Pinion lock nut | 2. Companion flange | 3. Drive pion oil seal |
| 4. Pinion rear bearing | 5. Transfer case | 6. Gasket |
| 7. Filler plug | 8. Collapsible spacer | 9. Drive pinion adjust shim |
| 10. Drive pinion | 11. Pinion front bearing | 12. Ring gear |
| 13. Ring gear shaft | 14. Ring gear bearing (right) | 15. Ring gear bearing adjust shim (right) |
| 16. Spacer (right) | 17. Transfer case oil seal (right) | 18. Drive shaft oil seal |
| 19. Transfer cover | 20. Oil defense | 21. Ring gear bearing (left) |
| 22. Ring gear bearing adjust shim (left) | 23. Spacer (left) | 24. Transfer case oil seal (left) |
| 25. Drain plug | 26. Dowel pin | |
| A. Oil seal lip | B. Transfer case mounting face | |

: N·m (kg·m, ft·lb)

: Always replace after every disassembly.

: Apply gear oil.

*: Apply anti-corrosive oil.

: Apply multi purpose grease

: Apply Genuine Liquid Gasket 1215 or equivalent.

★: Select with proper thickness.

DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

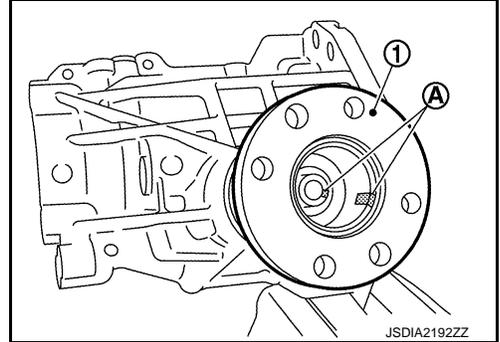
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Disassembly

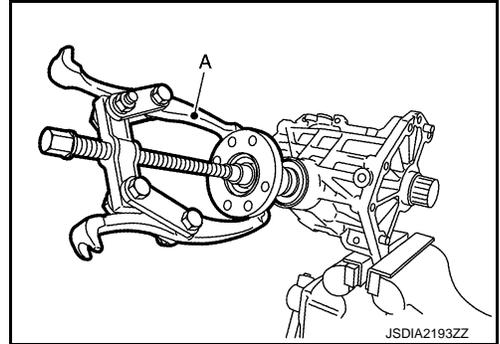
1. Remove transfer cover. Refer to [DLN-114, "Disassembly"](#).
2. Remove ring gear shaft assembly. Refer to [DLN-96, "Disassembly"](#).
3. Remove lock nut from the drive pinion.
4. Put matching marks (A) on screw ends of companion flange (1) and drive pinion.

CAUTION:

Use paint to avoid scratching the surface.



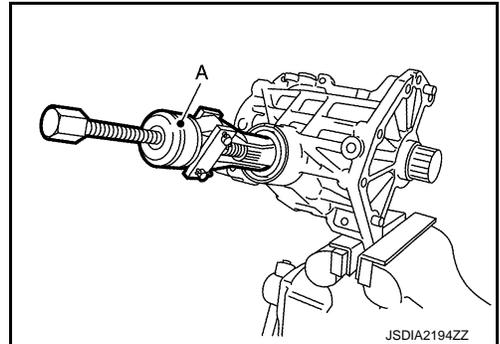
5. Remove companion flange from drive pinion with a puller (A).



6. Remove drive pinion oil seal from the transfer case with a puller (A) (SST: KV381054S0).

CAUTION:

Never damage transfer case.

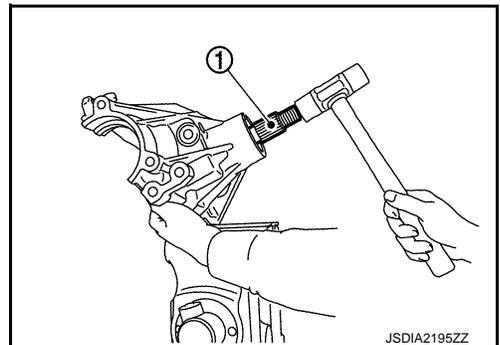


7. Remove drive pinion assembly (1) from transfer case while tapping the drive pinion lightly with a plastic hammer.

CAUTION:

Never drop the drive pinion assembly.

8. Remove collapsible spacer from the drive pinion.
9. Remove inner race of drive pinion bearing (rear side) from transfer case.



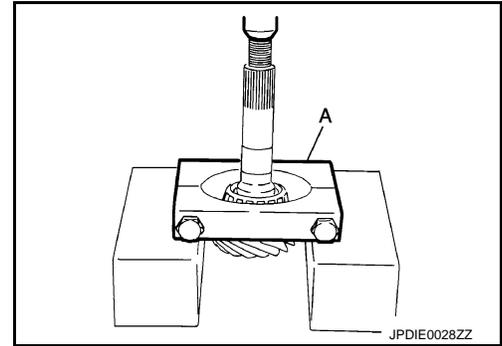
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DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

10. Remove inner race of drive pinion bearing (front side) from drive pinion with a replacer (A) (commercial service tool).
11. Remove drive pinion adjusting shim from the drive pinion.
12. Perform inspection after disassembly. Refer to [DLN-111, "Inspection"](#).



INFOID:000000006359782

Assembly

1. Select drive pinion adjusting shim. Refer to [DLN-98, "Adjustment"](#).
2. Install selected drive pinion adjusting shim to drive pinion.
3. Install inner race of drive pinion bearing (front side) to drive pinion with a drift (A) (SST: ST35272000).

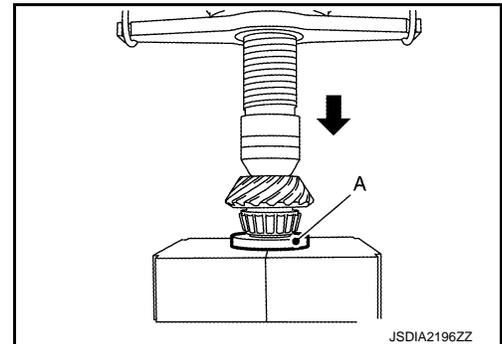
CAUTION:

- Never reuse drive pinion bearing (front side).
- Apply gear oil to the drive pinion bearing (front side).

4. Assemble the inner race of drive pinion bearing (rear side) into the transfer case.

CAUTION:

- Never reuse drive pinion bearing (rear side).
- Apply gear oil to the drive pinion bearing (rear side).



5. Install drive pinion oil seal to transfer case with drifts so that it becomes flush with case end surface with the drifts (A and B).

A : Drift (SST: KV38102510)

B : Drift (SST: ST30720000)

CAUTION:

- Never reuse oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference.

6. Assemble a collapsible spacer onto the drive pinion.

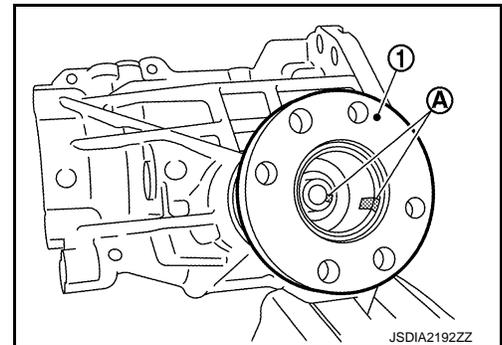
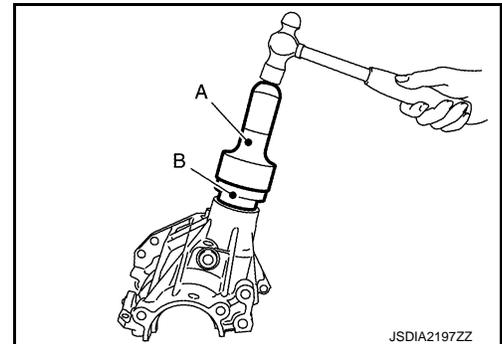
CAUTION:

Never reuse the collapsible spacer.

7. Assemble drive pinion assembly into the transfer case, and then install companion flange (1) to drive pinion.

NOTE:

Align matching marks (A) on the thread edge of companion flange and drive pinion and install companion flange if drive pinion is reused.



DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

8. Tap the companion flange (1) with a plastic hammer as far as the lock nut can be tightened.

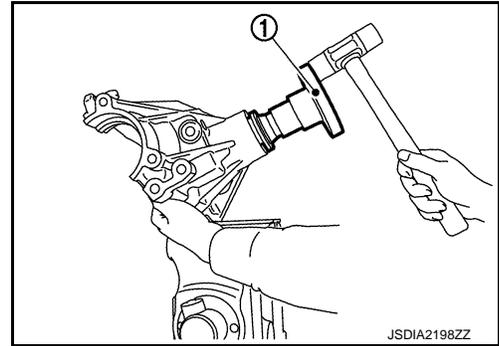
CAUTION:

Never damage drive pinion oil seal.

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

CAUTION:

Never reuse lock nut.

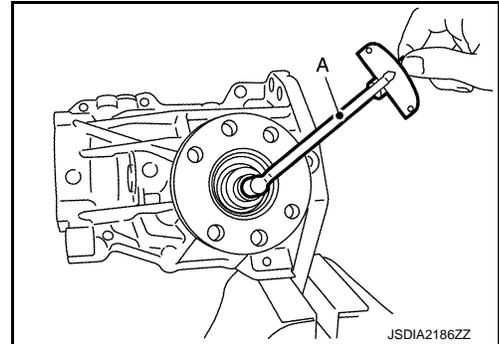


10. Tighten lock nut within the specified torque range with a preload gauge (A) (SST: ST3127S000) so that the drive pinion bearing preload is within standard.

Drive pinion bearing preload : Refer to [DLN-117, "Pre-load Torque"](#).

CAUTION:

- Start the tightening of lock nut from lower limit of the specified torque. Check the preload every 5° to 10° while tightening the lock nut.
- Replace the collapsible spacer and tighten it again to adjust if preload exceeds the specified value. Never loosen lock nut to adjust preload.
- After adjustment, rotate the drive pinion back and forth from 2 to 3 times to check for unusual noise, sticking, binding, and so on.



11. Install ring gear shaft assembly. Refer to [DLN-97, "Assembly"](#).

12. Install transfer cover. Refer to [DLN-114, "Assembly"](#).

13. Check backlash, tooth contact, total preload and companion flange runout. Refer to [DLN-98, "Adjustment"](#).

CAUTION:

Measure the total preload without the transfer case oil seal.

Adjustment

INFOID:000000006359783

About adjusting of drive pinion, refer to [DLN-98, "Adjustment"](#).

Inspection

INFOID:000000006359784

INSPECTION AFTER DISASSEMBLY

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

Gear and Shaft

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

CAUTION:

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

Bearing

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

CAUTION:

Always replace inner race and outer race as a pair when replacing the bearing.

Shim

Check for seizure, damage, and unusual wear.

Case

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

CAUTION:

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DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

Replace transfer case and transfer cover as a set if any malfunction is detected on transfer case or transfer cover.

TRANSFER CASE

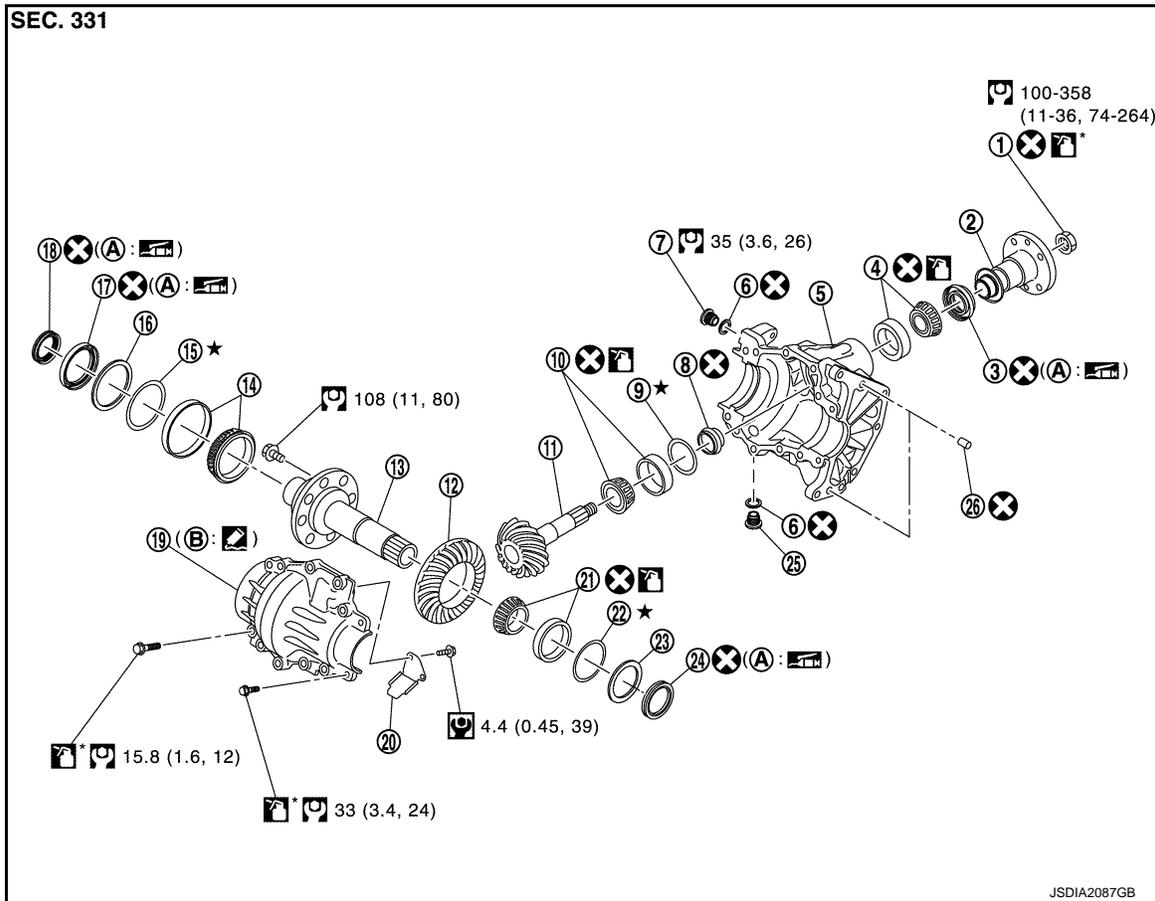
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

TRANSFER CASE

Exploded View

INFOID:000000006359790



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| 1. Pinion lock nut | 2. Companion flange | 3. Drive pion oil seal |
| 4. Pinion rear bearing | 5. Transfer case | 6. Gasket |
| 7. Filler plug | 8. Collapsible spacer | 9. Drive pinion adjust shim |
| 10. Drive pinion | 11. Pinion front bearing | 12. Ring gear |
| 13. Ring gear shaft | 14. Ring gear bearing (right) | 15. Ring gear bearing adjust shim (right) |
| 16. Spacer (right) | 17. Transfer case oil seal (right) | 18. Drive shaft oil seal |
| 19. Transfer cover | 20. Oil defense | 21. Ring gear bearing (left) |
| 22. Ring gear bearing adjust shim (left) | 23. Spacer (left) | 24. Transfer case oil seal (left) |
| 25. Drain plug | 26. Dowel pin | |
| A. Oil seal lip | B. Transfer case mounting face | |

: N·m (kg·m, ft·lb)

: Always replace after every disassembly.

: Apply gear oil.

: Apply anti-corrosive oil.

: Apply multi purpose grease

: Apply Genuine Liquid Gasket 1215 or equivalent.

★: Select with proper thickness.

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TRANSFER CASE

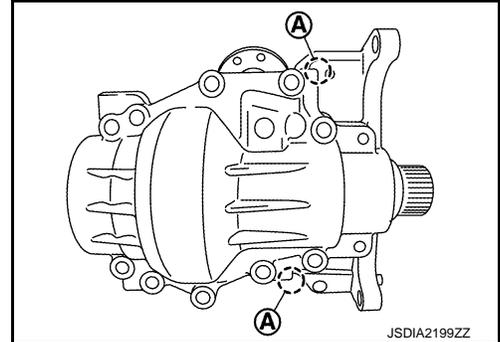
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

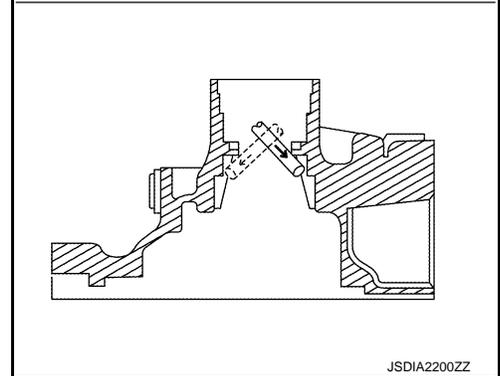
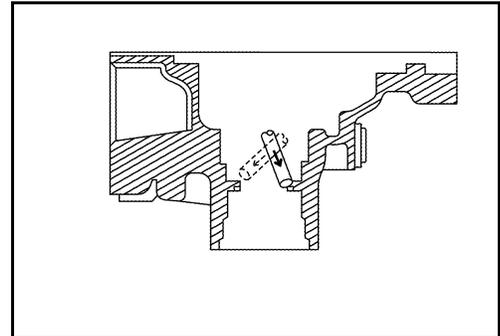
Disassembly

INFOID:000000006359791

1. Remove transfer cover mounting bolts.
2. Lightly tap (A) position of transfer cover with a plastic hammer to remove transfer cover.
3. Remove ring gear shaft assembly. Refer to [DLN-96, "Disassembly"](#),



4. Tap the outer race of drive pinion bearing from transfer case with a brass rod to remove outer race of drive pinion bearing (front side and rear side).
CAUTION:
Never damage transfer case.
5. Remove dowel pin.
CAUTION:
Never remove dowel pin, if it is not necessary to replace.
6. Remove the filler plug and drain plug from the transfer case, and then remove each gasket.
7. Remove oil defense from transfer cover.
8. Perform inspection after disassembly. Refer to [DLN-116, "Inspection"](#).



Assembly

INFOID:000000006359792

1. Install the oil defense to transfer cover.
2. Install gaskets onto filler plug and drain plug and install them into transfer case.
CAUTION:
 - Never reuse gaskets.
 - Install filler plug after oil is filled.
3. Install the dowel pin to transfer case.
CAUTION:
Never reuse the dowel pin.

TRANSFER CASE

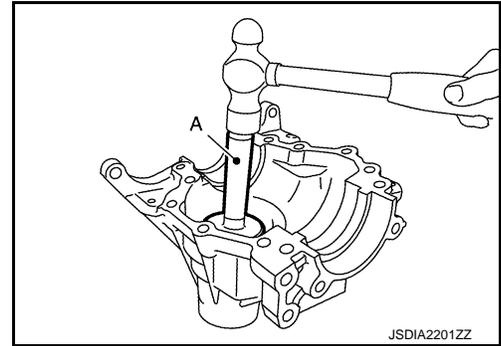
< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

4. Install outer race of drive pinion bearing (front side) to the transfer case with drift (A) (SST: ST17130000).

CAUTION:

- Never reuse drive pinion bearing (front side).
- Apply gear oil to the drive pinion bearing (front side)



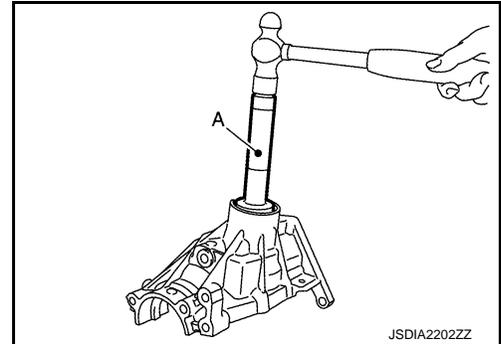
5. Install outer race of drive pinion bearing (rear side) to transfer case with a drift (A) (SST: ST33230000).

CAUTION:

- Never reuse drive pinion bearing (rear side).
- Apply gear oil to the drive pinion bearing (rear side).

6. Install drive pinion assembly to transfer case. Refer to [DLN-110, "Assembly"](#).

7. Install ring gear shaft assembly to transfer case. Refer to [DLN-97, "Assembly"](#).



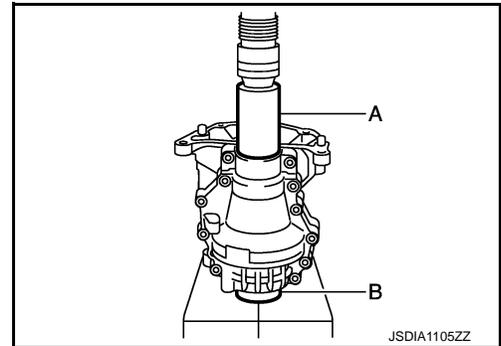
8. Set the drifts (A and B) to right and left side spacers individually. Compress ring gear shaft assembly and ring gear bearing to install transfer cover to transfer case.

A : Drift (commercial service tool)

B : Drift (commercial service tool)

CAUTION:

- Clean the mounting surface of transfer case and transfer cover to degrease sufficiently.
- Never apply gasket fluid on the mounting surface.
- The drift shall be placed on the center of the spacers.
- The pressure shall be as low as to install ring gear shaft assembly into transfer case. The maximum pressure shall be 10 kN (1 ton, 1.0 Imp ton).
- If the adjusting shims and spacers are installed by tapping, the transfer cover may be damaged. Avoid tapping.



9. Check backlash, tooth contact, total preload and companion flange runout. Refer to [DLN-98, "Adjustment"](#).

CAUTION:

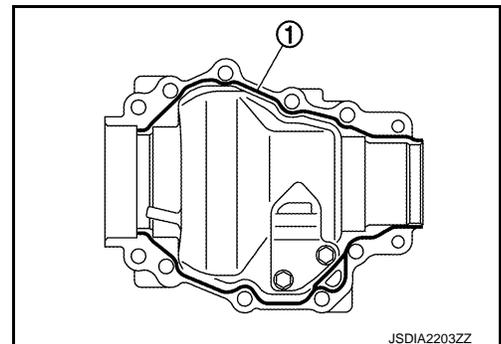
Measure the total preload without the transfer case oil seals.

10. Remove transfer cover. Refer to [DLN-114, "Disassembly"](#).

11. Apply liquid gasket (1) to mating surface of rear cover.

CAUTION:

- Remove old gasket adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.
- Overlap both ends of the bead for at least 3 mm (0.12 in).



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TRANSFER CASE

< UNIT DISASSEMBLY AND ASSEMBLY >

[TRANSFER: TY21B]

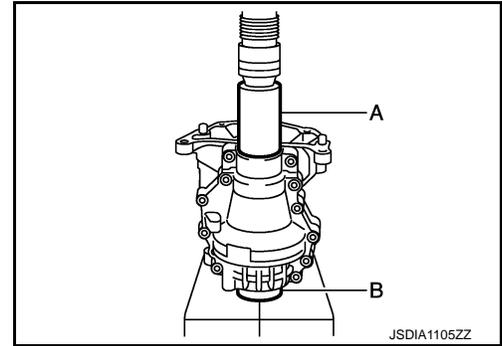
12. Set the drifts (A and B) to right and left side spacers individually. Compress ring gear shaft assembly and ring gear bearing to install transfer cover to transfer case.

A : Drift (commercial service tool)

B : Drift (commercial service tool)

CAUTION:

- Immediately install after applying gasket.
- The drift shall be placed on the center of the spacers.
- The pressure shall be as low as to install ring gear shaft assembly into transfer case. The maximum pressure shall be 10 kN (1 ton, 1.0 Imp ton).
- If the adjusting shims and spacers are installed by tapping, the transfer cover may be damaged. Avoid tapping.



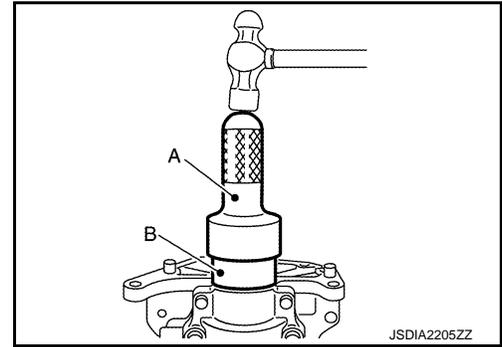
13. Tighten rear cover mounting bolts to the specified torque.
14. Install transfer case oil seal (right side) until it becomes flush with ring gear shaft end, using the drifts (A and B).

A : Drift (SST: ST30720000)

B : Drift (SST: ST19820000)

CAUTION:

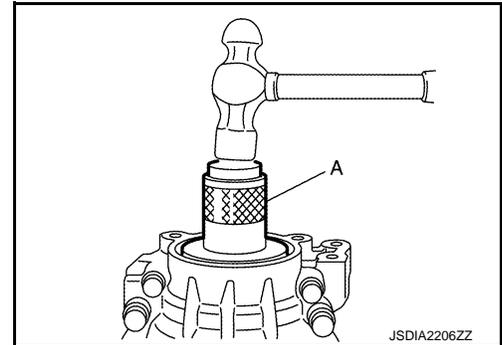
- Never reuse oil seals.
- When installing, do not incline oil seals.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- Immediately install after installing transfer cover.



15. Install transfer case oil seal (left side) until it becomes flush with ring gear shaft end, using the drift (A) (SST: KV40100620).

CAUTION:

- Never reuse oil seals.
- When installing, do not incline oil seals.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- Immediately install after installing transfer cover.
- After installing oil seal, immediately wipe out gasket squeezed out inward of transfer case.



Inspection

INFOID:000000006359793

INSPECTION AFTER DISASSEMBLY

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

Case

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

CAUTION:

Replace transfer case and transfer cover as a set if any malfunction is detected on transfer case or transfer cover.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[TRANSFER: TY21B]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000006360067

Applied model		4WD
Transfer model		TY21B
Oil capacity (Approx.)	ℓ (Imp pt)	0.37 (5/8)
Gear ratio		0.404
Number of teeth	Ring gear	42
	Drive pinion	17

Preload Torque

INFOID:0000000006360068

Unit: N·m (kg·m, in·lb)

Item	Standard	
Drive pinion bearing preload (P1)	0.30 – 0.80 (0.03 – 0.08, 3.0 – 7.0)	
Total preload	With all oil seals	P1 + 0.55 – 0.80 (0.06 – 0.08, 5.0 – 7.0)
	Without adapter case oil seal	P1 + 0.35 – 0.60 (0.04 – 0.06, 3.0 – 5.0)

Backlash

INFOID:0000000006360069

Unit: mm (in)

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

Companion Flange Runout

INFOID:0000000006360070

Unit: mm (in)

Item	Limit
Companion flange face (inner side of the propeller shaft bolt holes)	0.15 (0.0059)
Inside of companion flange (socket diameter)	0.2 (0.008)

PRECAUTIONS

< PRECAUTION >

[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

PRECAUTION

PRECAUTIONS

Service Notice or Precautions for Rear Propeller Shaft

INFOID:000000006359815

- 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.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000006600701

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

Symptom	Possible cause and SUSPECTED PARTS													
	Reference													
	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
	DLN-120, "Inspection"	DLN-123, "Inspection"	—	DLN-123, "Inspection"	—	DLN-123, "Inspection"	DLN-120, "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
Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Shake		x			x				x	x	x	x		x
Vibration	x	x	x	x	x	x	x		x	x		x		x

x: Applicable

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REAR PROPELLER SHAFT

< PERIODIC MAINTENANCE >

[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

PERIODIC MAINTENANCE

REAR PROPELLER SHAFT

Inspection

INFOID:000000006359818

APPEARANCE AND NOISE

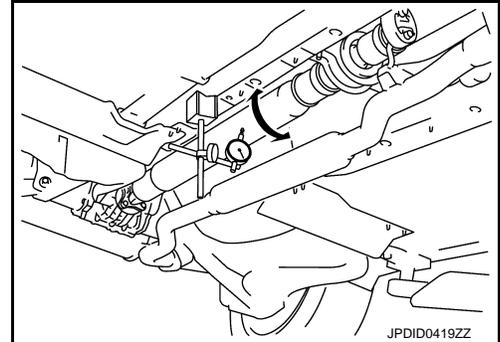
- Check the propeller shaft tube surface for dents or cracks. If damaged, replace propeller shaft assembly.
- If center bearing is noisy or damaged, replace propeller shaft assembly.

VIBRATION

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

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

Propeller shaft runout : Refer to [DLN-125, "Propeller Shaft Runout"](#).

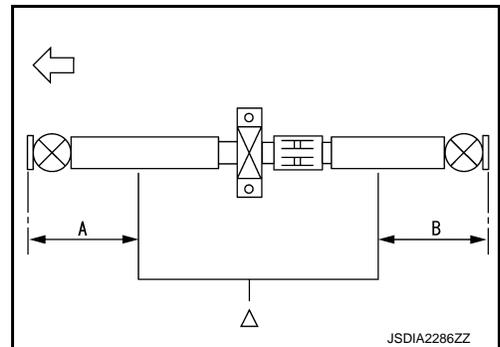


- Propeller shaft runout measuring point (Point "△")

↔ : Front

Dimension **A: 542 mm (21.34 in)**
 B: 516.5 mm (20.33 in)

2. If runout still exceeds specifications, separate propeller shaft at final drive companion flange or transfer companion flange; then change the phase between companion flange and propeller shaft by the one bolt hole at a time and install propeller shaft.
3. Check runout again. If runout still exceeds specifications, replace propeller shaft assembly.
4. Check the vibration by driving vehicle.



REAR PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

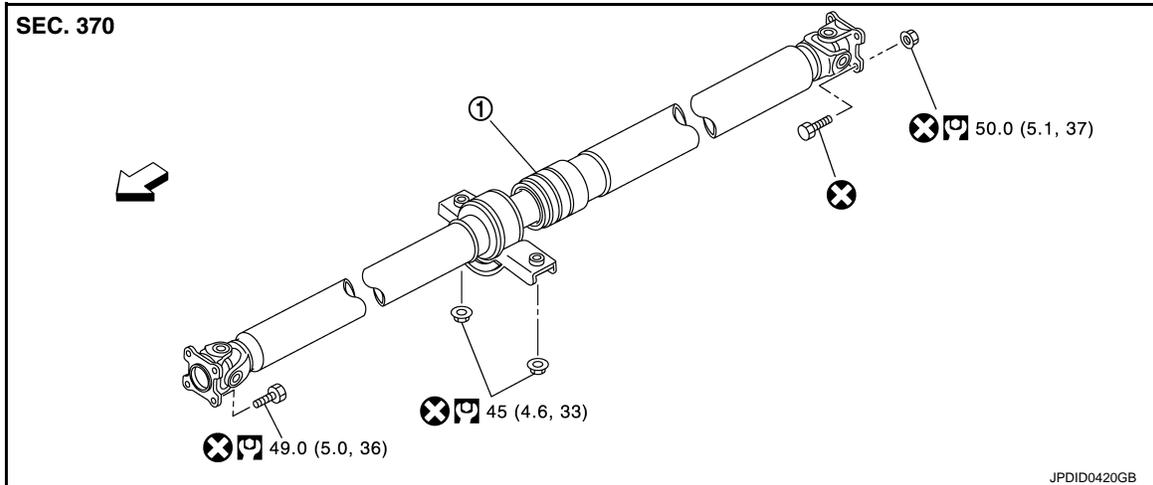
[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

REMOVAL AND INSTALLATION

REAR PROPELLER SHAFT

Exploded View

INFOID:000000006359819



1. Propeller shaft assembly

←: Vehicle front

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

Removal and Installation

INFOID:000000006359820

REMOVAL

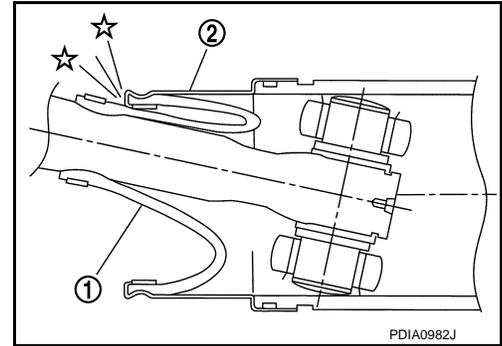
1. Shift the transaxle to the neutral position, and then release the parking brake.
2. Put matching marks on propeller shaft flange yoke and final drive companion flanges.
CAUTION:
For matching marks, use paint. Never damage propeller shaft flange yoke and final drive companion flange.
3. Put matching marks on propeller shaft flange yoke and transfer companion flanges.
CAUTION:
For matching marks, use paint. Never damage propeller shaft flange yoke and transfer companion flange.
4. Loosen mounting nuts of center bearing mounting bracket.
NOTE:
Tighten mounting nuts temporarily.
5. Remove propeller shaft assembly fixing bolts and nuts.
6. Remove center bearing mounting bracket fixing nuts.
7. Remove propeller shaft assembly.
CAUTION:
• This procedure requires 2 workers. Constant velocity joint must be handled with care.

REAR PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

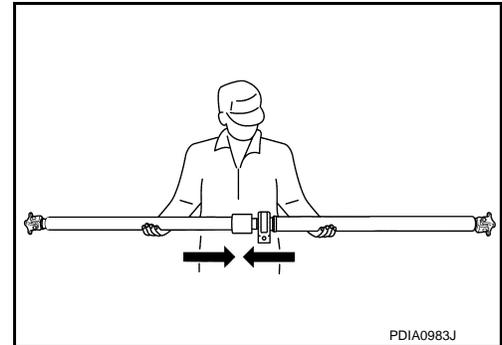
[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

- If constant velocity joint was bent during propeller shaft assembly removal, installation, or transportation, its boot (1) may be damaged. Wrap boot interference area to metal part (2) with shop cloth or rubber to protect boot from breakage.



- Since no retaining pin is included in sliding direction, the boot may be damaged or dropped if the constant velocity joint is slid out 25 mm (0.98 in) or more from the original length. Therefore, handle constant velocity joint by sliding it inward.

8. Perform inspection after removal. Refer to [DLN-123, "Inspection"](#).

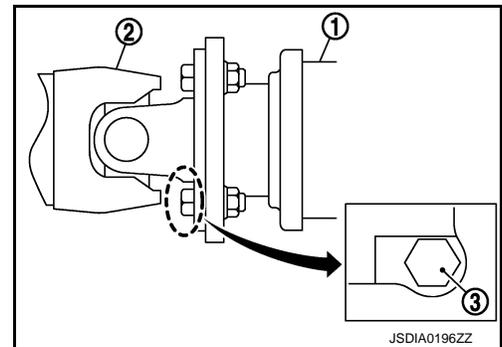


INSTALLATION

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

- Align matching marks to install propeller shaft assembly to final drive and transfer companion flanges.
- To install, adjust front and rear position of mount bracket to avoid deflection (front-rear direction of the vehicle) to the center bearing insulator.
- Perform inspection after installation. Refer to [DLN-123, "Inspection"](#).
- After tightening the bolts and nuts to the specification torque, check that the bolts (3) on the flange side is tightened as shown in the figure.

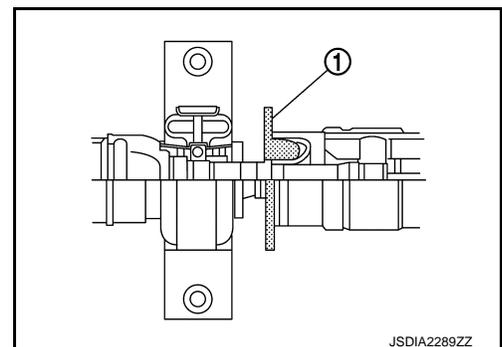
1. Final drive assembly
2. Propeller shaft assembly



- If propeller shaft assembly or final drive assembly has been replaced, connect them as follows:

CAUTION:

Constant velocity joint of a new propeller shaft has a pre-installed protector (1). Protector must be removed after installing propeller shaft.

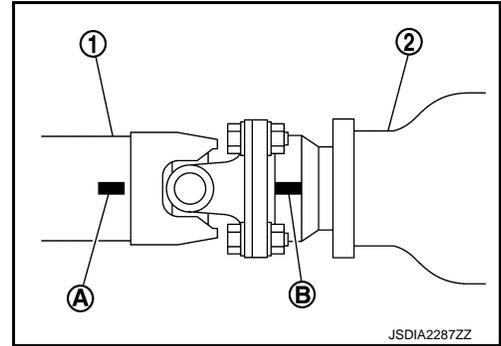


REAR PROPELLER SHAFT

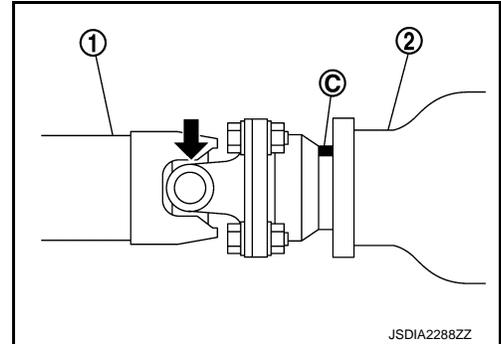
< REMOVAL AND INSTALLATION >

[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

1. Install propeller shaft (1) while aligning its matching mark (A) of propeller shaft with the matching mark (B) of final drive (2) on the joint as close as possible.
2. Temporary tighten bolts and nuts.



3. Press down propeller shaft (1) with matching mark (C) of final drive (2) facing upward. Then tighten fixing bolts and nuts to the specified torque.



Inspection

INFOID:000000006359821

INSPECTION AFTER REMOVAL

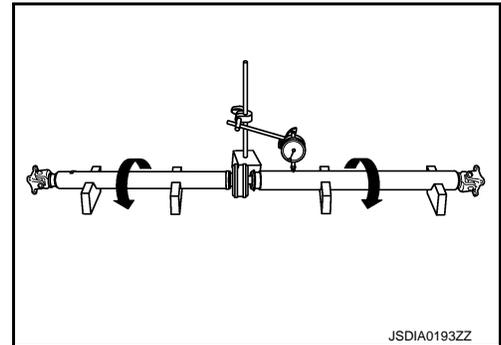
Appearance

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

Propeller Shaft Runout

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

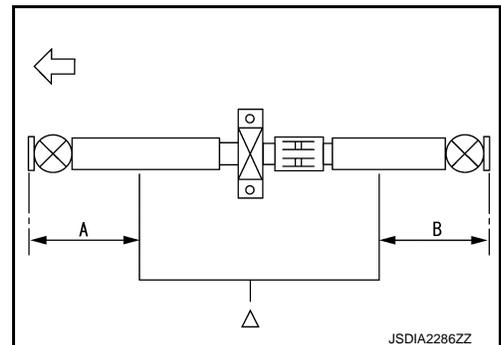
Propeller shaft runout : Refer to [DLN-125, "Propeller Shaft Runout"](#).



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

← : Front

Dimension **A: 542 mm (21.34 in)**
 B: 516.5 mm (20.33 in)



Journal Axial Play

REAR PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

[REAR PROPELLER SHAFT: 3Fφ16-ETJ75]

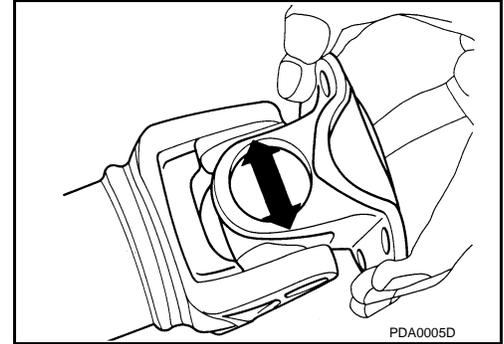
As shown in the figure, while fixing yoke on one side, check axial play of joint. If it is outside the standard, replace propeller shaft assembly.

Journal axial play

: Refer to [DLN-125, "Journal Axial Play"](#).

CAUTION:

Never disassemble joints.



PDA0005D

Center Bearing

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

CAUTION:

Never disassemble center bearing.

INSPECTION AFTER INSTALLATION

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

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[REAR PROPELLER SHAFT: 3F ϕ 16-ETJ75]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:000000006360071

Applied model		4WD
Propeller shaft model		3F ϕ 16-ETJ75
Number of joints		3
Shaft length	1st (Spider to CVJ joint center)	1051 mm (41.38 in)
	2nd (CVJ joint center to spider)	1000 mm (39.37 in)
Shaft outer diameter	1st	57 mm (2.500 in)
	2nd	75 mm (2.95 in)
Type of journal bearings (Non-disassembly type)	1st joint	Sell type
	2nd joint	CVJ type
	3rd joint	Shell type
Coupling method	Transfer side	Flange type
	Rear final drive side	Flange type

Propeller Shaft Runout

INFOID:000000006360072

Unit: mm (in)

Item	Limit
Propeller shaft runout	1.0 (0.031)

Journal Axial Play

INFOID:000000006360073

Unit: mm (in)

Item	Standard
Journal axial play	0 (0)

PRECAUTION

PRECAUTIONS

Service Notice or Precautions for Rear Final Drive

INFOID:000000006359829

- 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.
- Overhaul should be done in a clean work area, it is preferable to work in dustproof area.
- Before disassembly, using steam or white gasoline, completely remove sand and mud from the exterior of the unit, preventing them from entering into the unit during disassembly or assembly.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new one if necessary.
- Gaskets, seals and O-rings should be replaced any time when the unit is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Clean and flush the parts sufficiently and blow-dry them.
- Never damage sliding surfaces and mating surfaces.
- When applying sealant, remove the old sealant from the mounting surface; then remove any moisture, oil, and foreign materials from the application and mounting surfaces.
- Always use shop paper for cleaning the inside of components.
- Avoid using cotton gloves or shop rags to prevent entering of lint.
- During assembly, observe the specified tightening torque, and apply new gear oil, petroleum jelly, or multi-purpose grease as specified for each vehicle, if necessary.

PREPARATION

< PREPARATION >

[REAR FINAL DRIVE: RTVS]

PREPARATION

PREPARATION

Special Service Tools

INFOID:000000006706411

Tool number Tool name	Description
ST3127S000 Preload gauge	Measuring pinion bearing preload and total preload
KV38100200 Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.	Installing side oil seal (right side)
KV38100500 Drift a: 85 mm (3.35 in) dia. b: 60 mm (2.36 in) dia.	Installing side oil seal (left side)
KV38109700 Drift	Installing electric controlled coupling oil seal
KV38109820 Drift a: 54.6 mm (2.150 in) dia.	<ul style="list-style-type: none"> • Removing and Installing rear cover • Removing and Installing center stem assembly
KV38109210 Base tube a: 79.9 mm (3.146 in) dia. b: 60 mm (2.36 in) dia.	<ul style="list-style-type: none"> • Removing and Installing rear cover • Removing and Installing center stem assembly

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PREPARATION

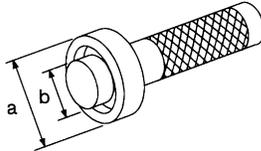
[REAR FINAL DRIVE: RTVS]

< PREPARATION >

Tool number Tool name	Description
ST33052000 Drift a: 28 mm (1.10 in) dia. b: 22 mm (0.87 in) dia.	Removing side bearing inner race
ST33220000 Drift a: 37 mm (1.46 in) dia. b: 22 mm (0.87 in) dia.	Removing center stem
ST33052000 Drift a: 28 mm (1.10 in) dia. b: 22 mm (0.87 in) dia.	Installing center stem
KV40104810 Attachment A: 49 mm (1.93 in) B: 42 mm (1.65 in) C: 25 mm (0.98 in)	Installing side bearing inner race
KV381096S0 Dummy cover set <ol style="list-style-type: none"> 1. KV38109610 Bearing guide 90 2. KV38109620 Bearing guide 68 3. KV38109630 Dammy cap spacer 90 4. KV38109640 Dammy cap spacer 68 5. KV38109640 Angle 	<ul style="list-style-type: none"> • Checking backlash • Checking drive gear runout • Checking tooth contact
ST17130000 Drift a: 31.8 mm (1.252 in) dia. b: 58 mm (2.28 in) dia.	Installing pinion front bearing outer race.



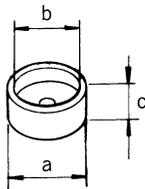
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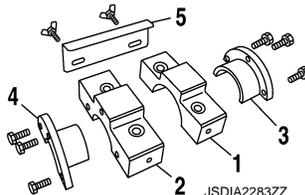
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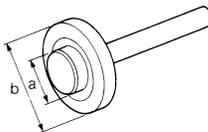
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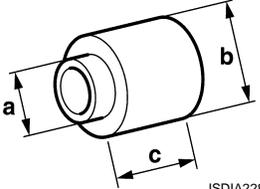
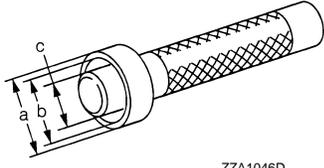
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PREPARATION

< PREPARATION >

[REAR FINAL DRIVE: RTVS]

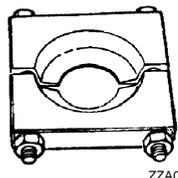
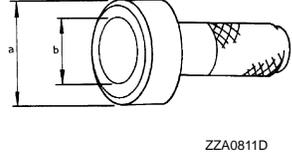
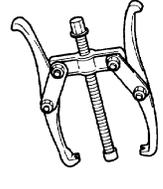
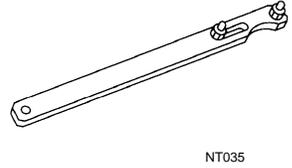
Tool number Tool name	Description
KV38100300 Drift a: 54 mm (2.13 in) dia. b: 46 mm (1.81 in) dia. c: 32 mm (1.26 in) dia.	Installing pinion rear bearing outer race.
KV37710000 Drift a: 38 mm (1.50 in) dia. b: 60 mm (2.36 in) dia. c: 77 mm (3.03 in) dia.	Installing pinion rear bearing outer race.



Commercial Service Tools

INFOID:000000006706412

Tool name	Description
Flange wrench	Removing and installing drive pinion lock nut
Puller	Removing companion flange
Drift a: 76 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	Installing front oil seal
Replacer	Removing pinion rear bearing inner race

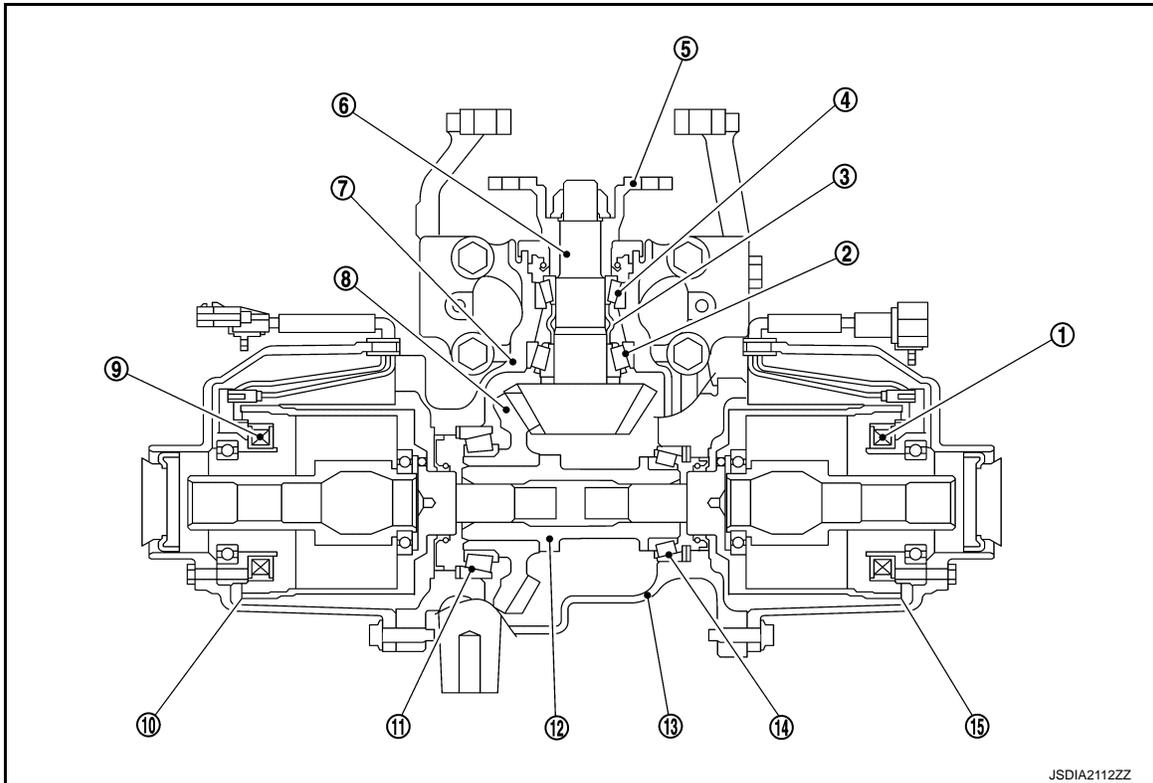


SYSTEM DESCRIPTION

STRUCTURE AND OPERATION

Sectional View

INFOID:000000006359833



JSDIA2112ZZ

- | | | |
|---------------------------------------|------------------------|---------------------------------------|
| 1. 4WD solenoid (RH) | 2. Pinion rear bearing | 3. Collapsible spacer |
| 4. Pinion front bearing | 5. Companion flange | 6. Drive pinion |
| 7. Gear carrier | 8. Drive gear | 9. 4WD solenoid (LH) |
| 10. Electric controlled coupling (LH) | 11. Side bearing (LH) | 12. Center stem |
| 13. Rear cover | 14. Side bearing (RH) | 15. Electric controlled coupling (RH) |

Electric controlled coupling

INFOID:000000006603826

The electric controlled coupling operates as the 4WD system. For the operation, refer to [DLN-15. "Operation Principle"](#).

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[REAR FINAL DRIVE: RTVS]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000006600702

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

Symptom	Noise														
Reference		DLN-157, "Inspection"	DLN-154, "Adjustment"	DLN-157, "Inspection"	DLN-154, "Adjustment"	DLN-154, "Adjustment"	DLN-154, "Adjustment"	DLN-132, "Inspection"	NVH of REAR PROPELLER SHAFT in this section	NVH in FAX, RAX, FSU and RSU sections	NVH in WT section	NVH in WT section	NVH in FAX and RAX section	NVH in BR section	NVH in ST section
Possible cause and SUSPECTED PARTS		Gear tooth rough	Gear contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING	
		x	x	x	x	x	x	x	x	x	x	x	x	x	x

x: Applicable

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PERIODIC MAINTENANCE

REAR DIFFERENTIAL GEAR OIL

Inspection

INFOID:000000006359834

OIL LEAKAGE

Check rear final drive surrounding area (oil seal, drain plug, filler plug, and carrier case, etc.) for oil leakage.

OIL LEVEL

1. Remove filler plug (1) and check oil level from filler plug mounting hole as shown in the figure.

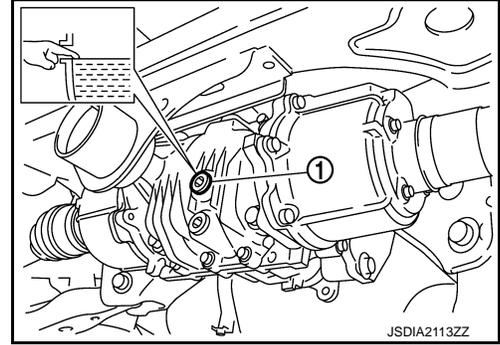
CAUTION:

Never start engine while checking oil level.

2. Set a new gasket on filler plug and install it on final drive assembly. Refer to [DLN-151, "Exploded View"](#).

CAUTION:

Never reuse gasket.



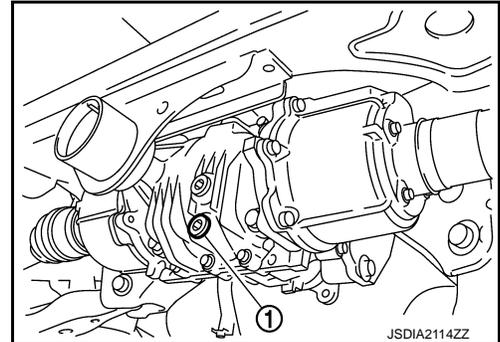
INFOID:000000006359835

Draining

1. Stop engine.
2. Remove drain plug (1) and drain gear oil.
3. Set a new gasket on drain plug and install it to final drive assembly and tighten to the specified torque. Refer to [DLN-151, "Exploded View"](#).

CAUTION:

Never reuse gasket.



INFOID:000000006359836

Refilling

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

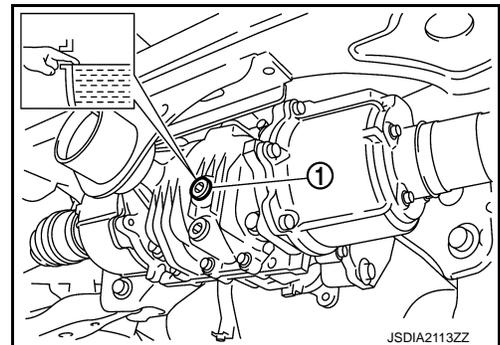
Oil grade and viscosity : Refer to [MA-13, "Fluids and Lubricants"](#).

Oil capacity : Refer to [DLN-167, "General Specification"](#).

2. After refilling oil, check oil level. Set a new gasket to filler plug, then install it to final drive assembly. Refer to [DLN-151, "Exploded View"](#).

CAUTION:

Never reuse gasket.

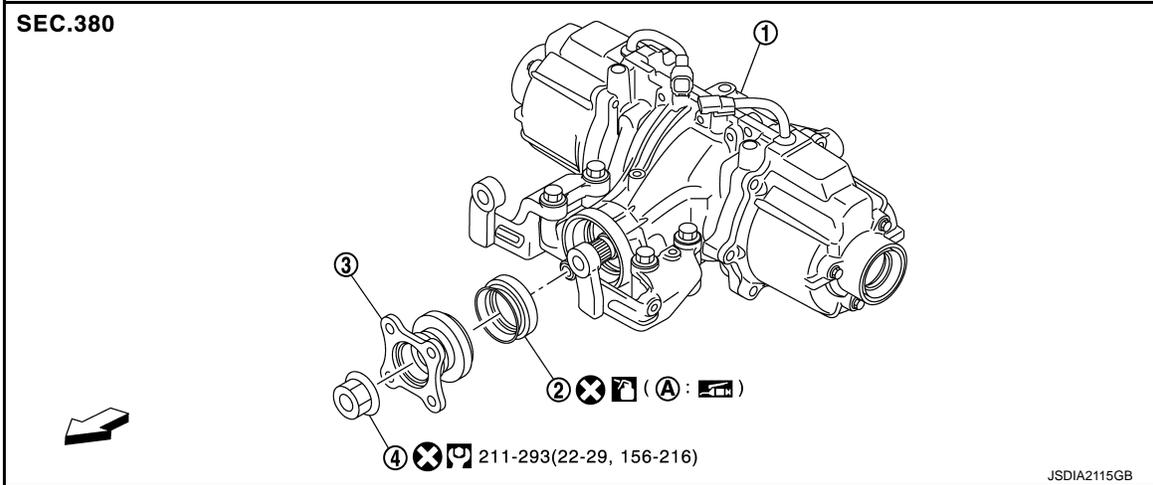


REMOVAL AND INSTALLATION

FRONT OIL SEAL

Exploded View

INFOID:000000006361778



- 1. Rear final drive assembly
- 2. Front oil seal
- 3. Companion flange
- 4. Companion flange lock nut
- A. Oil seal lip

←: Vehicle front

: N·m (kg-m, ft-lb)

: Never reuse parts

: Apply multi purpose grease

: Apply gear oil.

Removal and Installation

INFOID:000000006361779

REMOVAL

CAUTION:

Verify identification stamp of replacement frequency put in the lower part of gear carrier to determine replacement for collapsible spacer when replacing front oil seal. Refer to "Identification stamp of replacement frequency of front oil seal". If collapsible spacer replacement is necessary, remove final drive assembly and disassemble it to replace front oil seal and collapsible spacer. Refer to [DLN-144, "Removal and Installation"](#) and [DLN-160, "Disassembly"](#).

NOTE:

The reuse of collapsible spacer is prohibited in principle. However, it is reusable on a one-time basis only in cases when replacing front oil seal.

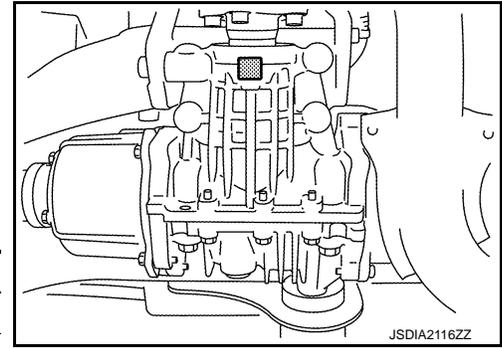
Identification stamp of replacement frequency of front oil seal

FRONT OIL SEAL

[REAR FINAL DRIVE: RTVS]

< REMOVAL AND INSTALLATION >

- The diagonally shaded area in the figure shows stamping point for replacement frequency of front oil seal.
- The following table shows if collapsible spacer replacement is needed before replacing front oil seal. When collapsible spacer replacement is required, disassemble final drive assembly to replace collapsible spacer and front oil seal. Refer to [DLN-160, "Disassembly"](#).



Stamp	collapsible spacer replacement
No stamp	Not required
"0" or "0" on the far right of stamp	Required
"01" or "1" on the far right of stamp	Not required

CAUTION:

Make a stamping after replacing front oil seal.

- After replacing front oil seal, make a stamping on the stamping point in accordance with the table below in order to identify replacement frequency.

CAUTION:

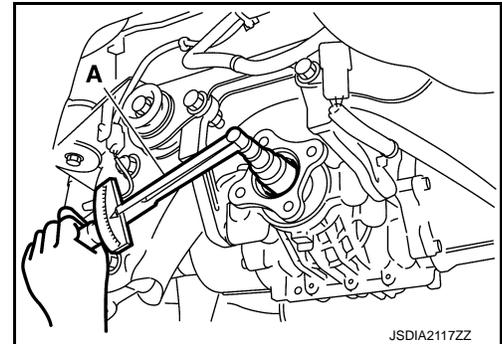
Make a stamping from left to right.

Stamp before stamping	Stamping on the far right	Stamping
No stamp	0	0
"0" (Front oil seal was replaced once.)	1	01
"01" (Collapsible spacer and front oil seal were replaced last time.)	0	010
"0" is on the far right. (Only front oil seal was replaced last time.)	1	...01
"1" is on the far right. (Collapsible spacer and front oil seal were replaced last time.)	0	...010

1. Make a judgment if a collapsible spacer replacement is required.
2. Remove rear propeller shaft. Refer to [DLN-121, "Removal and Installation"](#).
3. Measure the total preload with the preload gauge (A) (SST: ST3127S000).

NOTE:

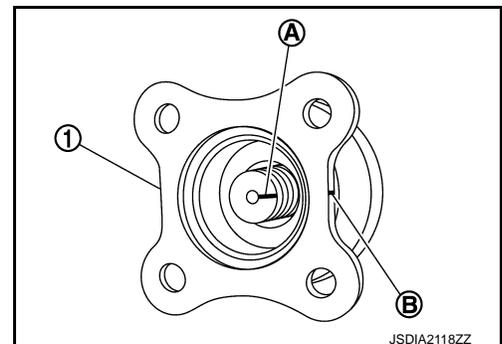
Record the preload measurement.



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

CAUTION:

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

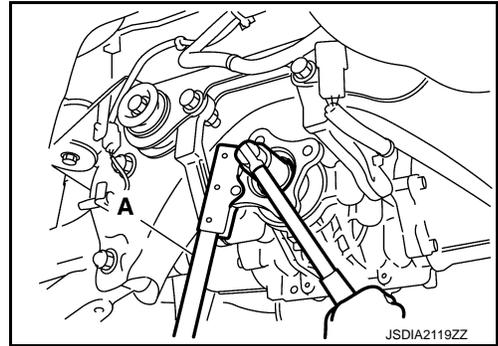


FRONT OIL SEAL

< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

5. Remove companion flange lock nut using the flange wrench (A) (commercial service tool).

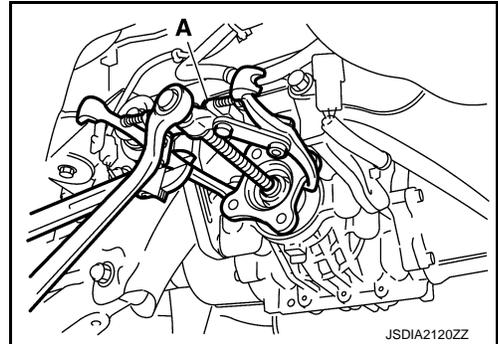


6. Remove companion flange using pullers (A) (commercial service tool).

7. Remove front oil seal using a suitable tool.

CAUTION:

Never damage carrier case.

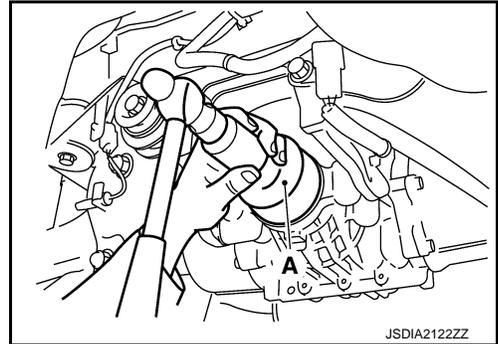


INSTALLATION

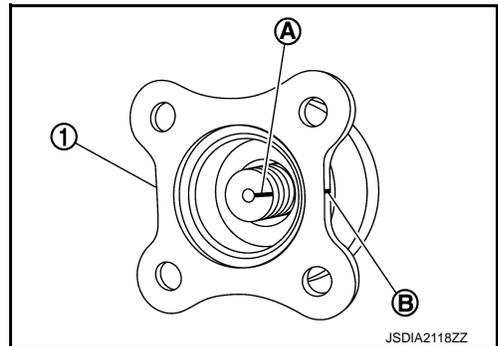
1. Apply multi-purpose grease to front oil seal lips.
2. Install front oil seal using the drift (A) (commercial service tool) as shown in figure.

CAUTION:

- **Never reuse oil seal.**
- **Never incline oil seal when installing.**



3. Align the matching mark (B) of drive pinion with the matching mark (A) of companion flange (1), and then install the companion flange (1).



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FRONT OIL SEAL

< REMOVAL AND INSTALLATION >

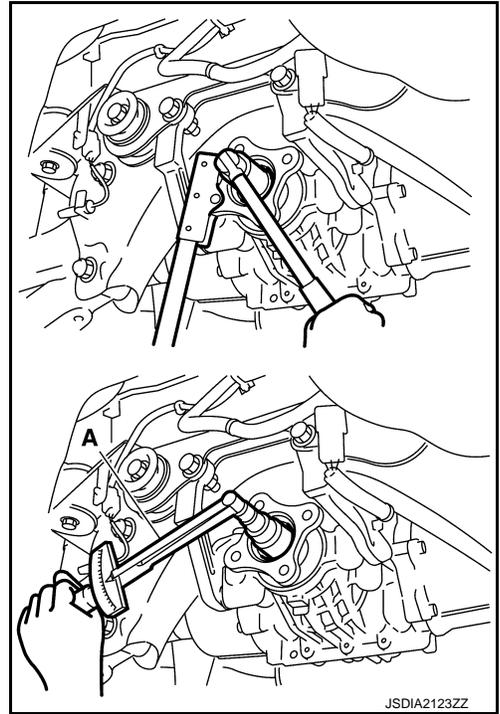
[REAR FINAL DRIVE: RTVS]

4. Temporarily tighten drive pinion lock nut to drive pinion, using flange wrench (commercial service tool).
- CAUTION:**
- Never reuse drive pinion lock nut.
 - Apply anti-corrosion oil to the thread and seat of new drive pinion lock nut.
5. Tighten drive pinion lock nut within the limits of specified torque so as to keep the pinion bearing preload within a standard values, using preload gauge (A) (SST: ST3127S000).

Total preload torque : A value that add 0.1 – 0.4 N·m (0.01 – 0.04 kg·m, 0.1 – 0.3 in·lb) to the measured value before removing.

CAUTION:

- Adjust to the lower limit of the drive pinion lock nut tightening torque first.
- If the preload torque exceeds the specified value, replace collapsible spacer and tighten it again to adjust. Never loosen drive pinion lock nut to adjust the preload torque.

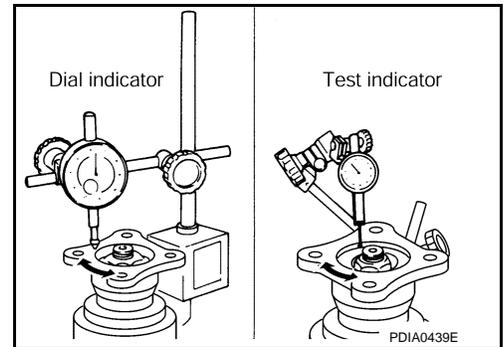


6. Fit a dial indicator onto the companion flange face (inner side of the rear propeller shaft mounting bolt holes).
7. Rotate companion flange to check for runout.

Companion flange runout : Refer to [DLN-167, "Companion Flange Runout"](#).

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

Companion flange runout : Refer to [DLN-167, "Companion Flange Runout"](#).



10. If the runout value is outside the runout limit, follow the procedure below to adjust.
 - a. Check for runout while changing the phase between companion flange and drive pinion by 90° step, and search for the position where the runout is the minimum.
 - b. If the runout value is still outside of the limit after the phase has been changed, replace companion flange.
 - c. If the runout value is still outside of the limit after companion flange has been replaced, possible cause will be an assembly malfunction of drive pinion and electric controlled coupling, malfunctioning coupling bearing, or malfunctioning of electric controlled coupling.
11. Make a stamping for identification of front oil seal replacement frequency. Refer to "Identification stamp of replacement frequency of front oil seal".

CAUTION:

Make a stamping after replacing front oil seal.

12. Install rear propeller shaft. Refer to [DLN-121, "Removal and Installation"](#).
13. Check the final drive for oil leakage. Refer to [DLN-132, "Inspection"](#).

SIDE OIL SEAL

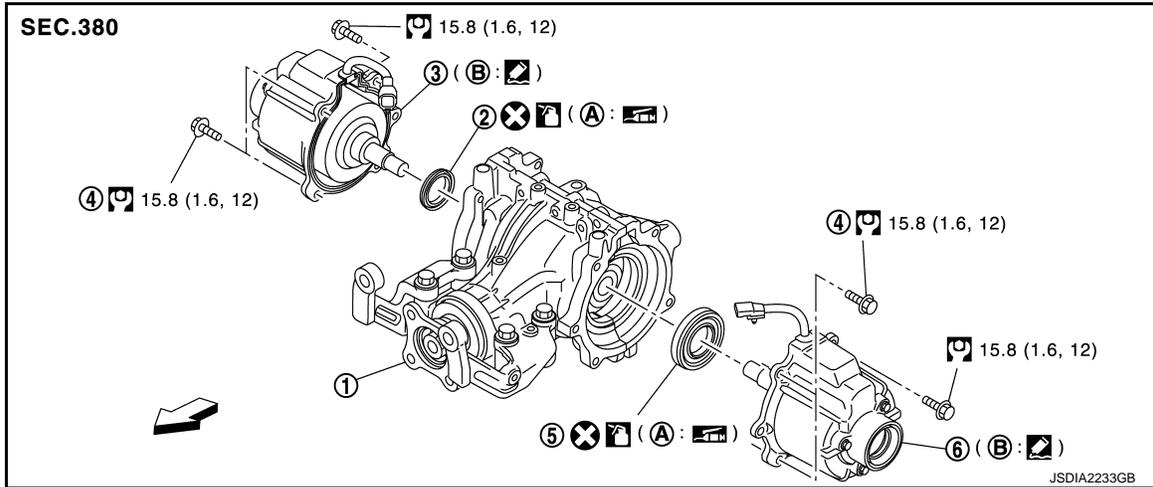
< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

SIDE OIL SEAL

Exploded View

INFOID:000000006361780



- | | | |
|------------------------------|------------------------------|---|
| 1. Rear final drive assembly | 2. Side oil seal (right) | 3. Electric controlled coupling (right) |
| 4. Reamer bolt | 5. Side oil seal (left) | 6. Electric controlled coupling (left) |
| A. Oil seal lip | B. Gear carrier mouting face | |

←: Vehicle front

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

: Apply multi purpose grease

: Apply gear oil.

: Apply Genuine Liquid Gasket 1217 or equivalent.

Removal and Installation

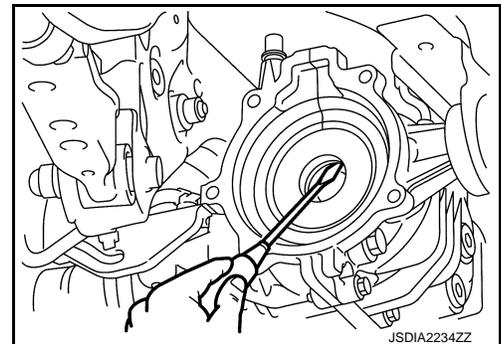
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REMOVAL

1. Remove electric controlled couplings. Refer to [DLN-139. "Removal and Installation"](#).
2. Remove side oil seals with a suitable tool.

CAUTION:

Never damage gear carrier and rear cover.



INSTALLATION

SIDE OIL SEAL

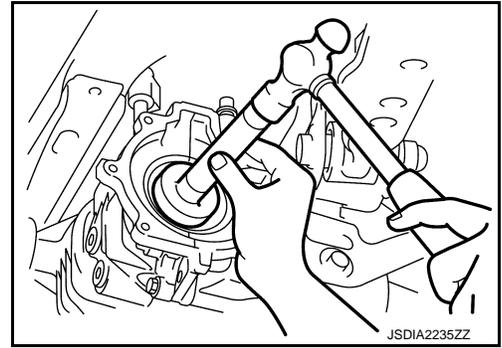
< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

1. Install side oil seal (right side) until it becomes flush with the carrier end, using the drift (A) (SST: KV38100200).

CAUTION:

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

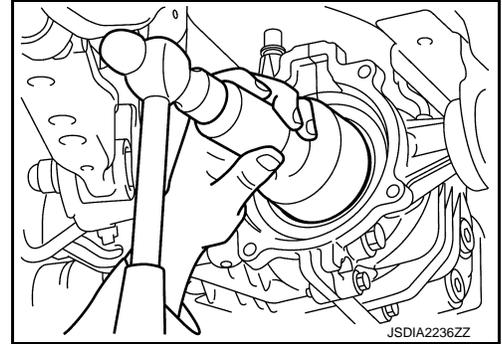


2. Install side oil seal (left side) until it becomes flush with the carrier end, using the drift (A) (SST: KV38100500).

CAUTION:

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

3. Install electric controlled couplings. Refer to [DLN-139, "Removal and Installation"](#).
4. When oil leaks while removing, check oil level after the installation. Refer to [DLN-132, "Inspection"](#).



ELECTRIC CONTROLLED COUPLING

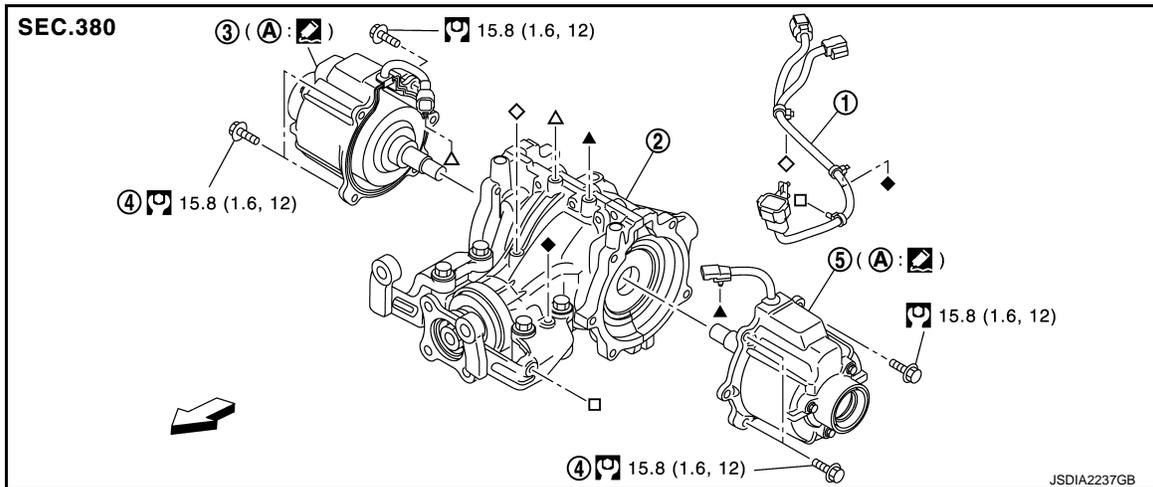
< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

ELECTRIC CONTROLLED COUPLING

Exploded View

INFOID:000000006361782



- 1. Sub-harness
- 2. Rear final drive assembly
- 3. Electric controlled coupling (right)
- 4. Reamer bolt
- 5. Electric controlled coupling (left)
- A. Gear carrier mounting face

←: Vehicle front

: N·m (kg-m, ft-lb)

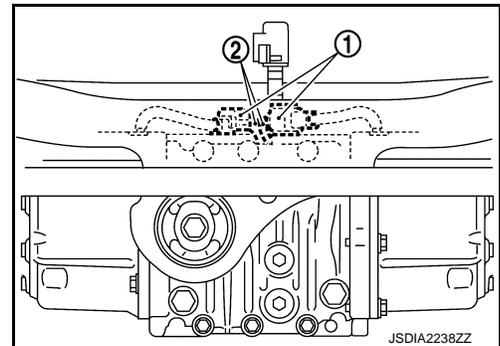
: Apply Genuine Liquid Gasket 1217 or equivalent.

Removal and Installation

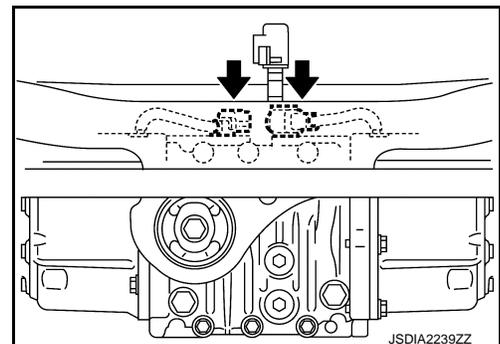
INFOID:000000006361783

REMOVAL

1. Remove rear drive shaft. Refer to [RAX-17, "Removal and Installation"](#).
2. Disconnect electric controlled coupling connector (1) from sub-harness (2).



3. Remove connector clip (←) from final drive assembly.



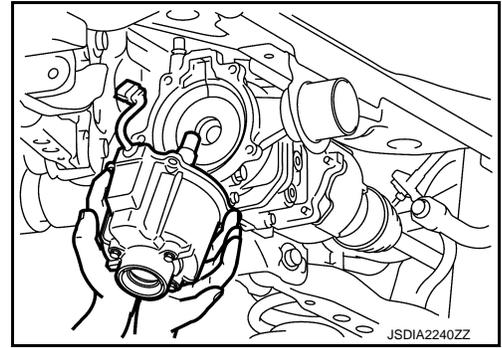
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ELECTRIC CONTROLLED COUPLING

< REMOVAL AND INSTALLATION >

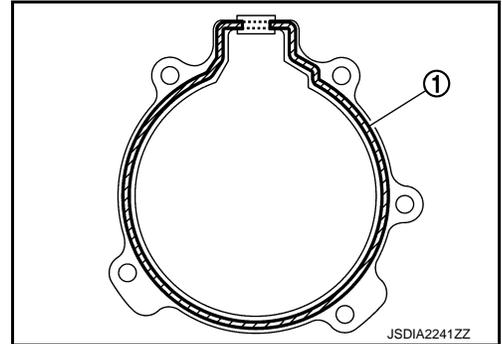
[REAR FINAL DRIVE: RTVS]

4. Remove electric controlled coupling from final drive assembly.
5. Remove sub-harness from final drive assembly.
CAUTION:
Remove sub-harness only when necessary.



INSTALLATION

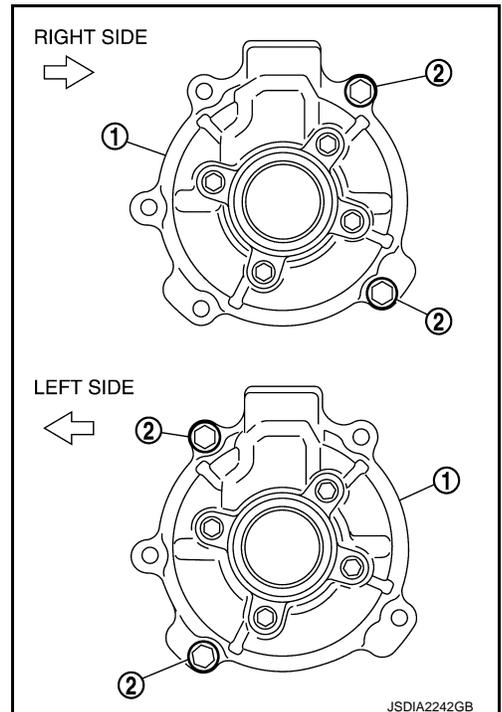
1. Install new sub-harness clip to sub-harness.
CAUTION:
 - Check original mounting dimensions to install clip to the original position.
 - Baffle pin must be functioning normally.
2. Install sub-harness to final drive assembly.
CAUTION:
Check the area around the rotating object to see that there is no interference.
3. Apply liquid gasket (1) to mating surface of coupling cover.
CAUTION:
 - Remove old gasket adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.
 - Overlap both ends of the bead for at least 3 mm (0.12 in).



4. Install electric controlled coupling (1) to spline of stem center with grommet of harness facing upward, temporarily tighten reamer bolts (2) to the positions shown in the figure.
5. Tighten reamer bolts and coupling cover mounting bolts to the specified torque.

←: Vehicle front

CAUTION:
Never allow harness to get caught in the bolt.



ELECTRIC CONTROLLED COUPLING

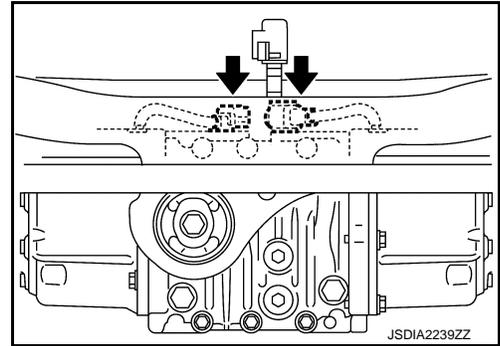
< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

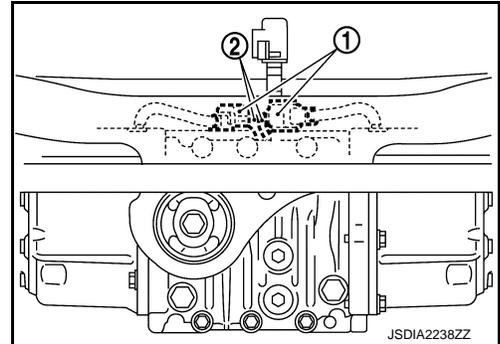
6. Install the new connector clip (←) to final drive assembly.

CAUTION:

Never reuse connector clip.



7. Connect electric controlled coupling connector (1) to sub-harness (2).
8. Install rear drive shaft. Refer to [RAX-17, "Removal and Installation"](#).
9. When oil leaks while removing, check oil level after the installation. Refer to [DLN-132, "Inspection"](#).
10. When replacing electric controlled coupling, perform writing unit parameter. Refer to [DLN-39, "Work Procedure"](#).



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ELECTRIC CONTROLLED COUPLING OIL SEAL

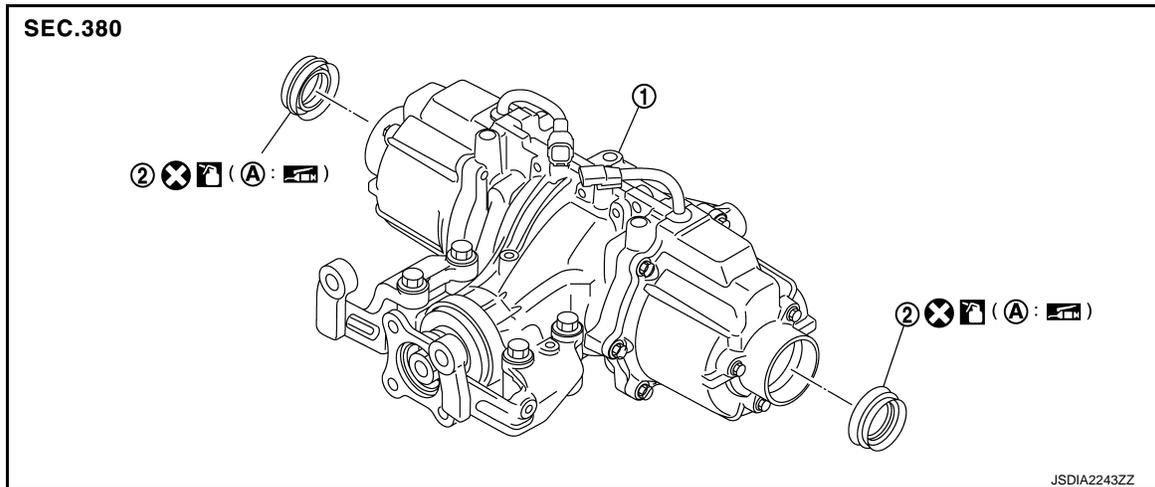
< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

ELECTRIC CONTROLLED COUPLING OIL SEAL

Exploded View

INFOID:000000006361896



1. Rear final drive assembly 2. Electric controlled coupling oil seal
A. Oil seal lip

←: Vehicle front

⊗: Always replace after every disassembly.

☑: Apply multi purpose grease

🔧: Apply gear oil.

Removal and Installation

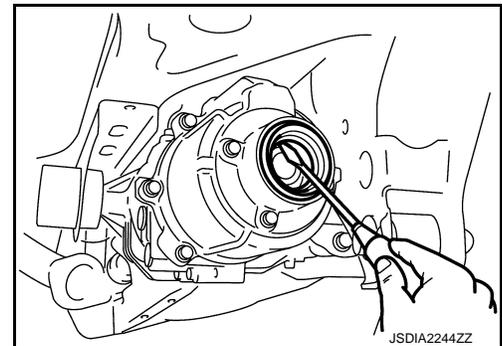
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REMOVAL

1. Remove rear drive shafts. Refer to [RAX-17, "Removal and Installation"](#).
2. Remove electric controlled coupling oil seals from electric controlled coupling, using a suitable tool.

CAUTION:

Never damage electric controlled coupling.



INSTALLATION

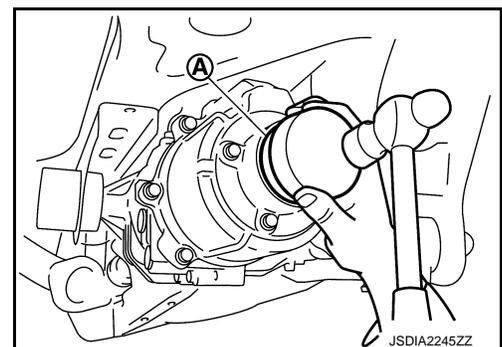
1. Install electric controlled coupling oil seals to electric controlled coupling, using the drift (A) (SST: KV38109700).

NOTE:

The use of the special service tool satisfies the mounting dimensions.

CAUTION:

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



ELECTRIC CONTROLLED COUPLING OIL SEAL

< REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

2. Install rear drive shafts. Refer to [RAX-17, "Removal and Installation"](#).
3. When oil leaks while removing, check oil level after the installation. Refer to [DLN-132, "Inspection"](#).

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REAR FINAL DRIVE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

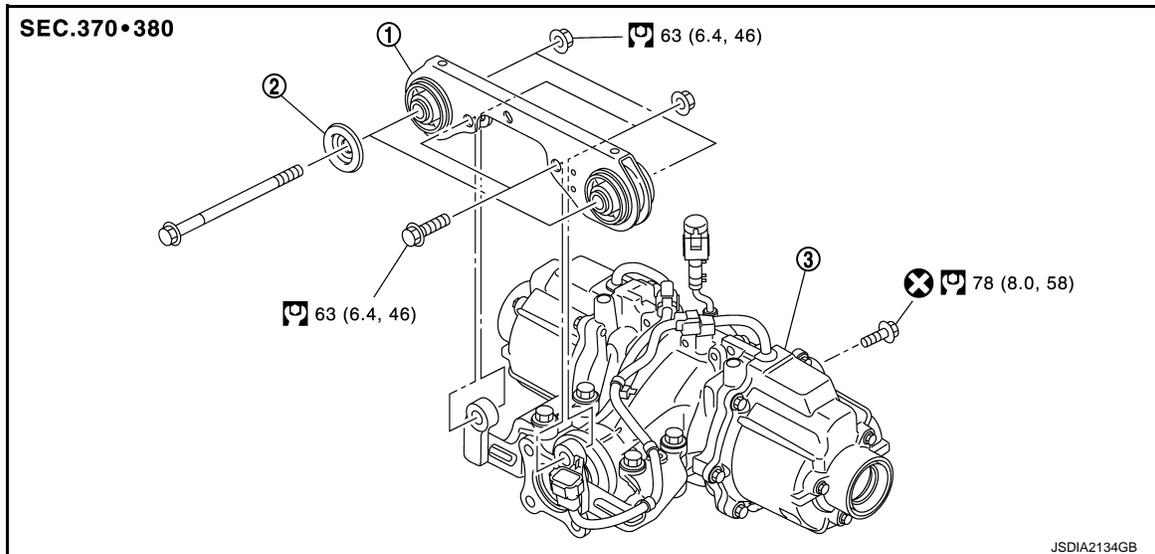
[REAR FINAL DRIVE: RTVS]

UNIT REMOVAL AND INSTALLATION

REAR FINAL DRIVE ASSEMBLY

Exploded View

INFOID:000000006361898



1. Final drive mounting bracket

2. Washer

3. Rear final drive assembly

←: Vehicle front

: N·m (kg·m, ft·lb)

: Never reuse parts

: Apply multi purpose grease

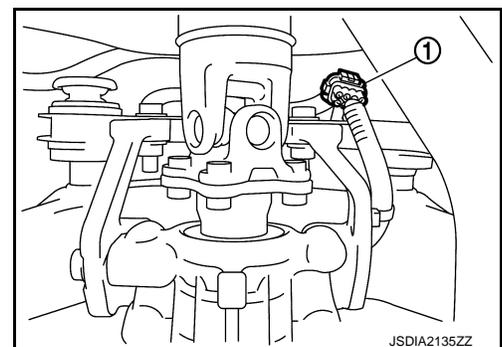
: Apply gear oil.

Removal and Installation

INFOID:000000006361899

REMOVAL

1. Remove rear propeller shaft assembly. Refer to [DLN-121, "Removal and Installation"](#).
2. Remove rear drive shaft. Refer to [RAX-17, "Removal and Installation"](#).
3. Disconnect sub-harness connector (1).
4. Remove rear final drive breather hose.
5. Support rear final drive assembly with a suitable jack.

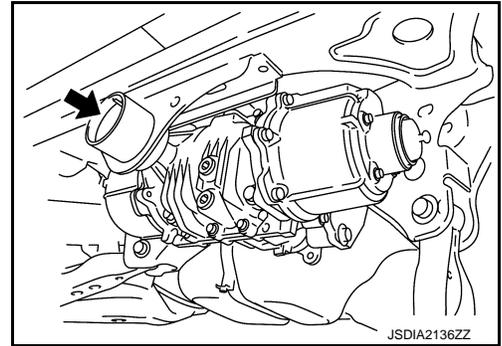


REAR FINAL DRIVE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE: RTVS]

- Remove rear final drive mounting bolt (←) at rear suspension member.

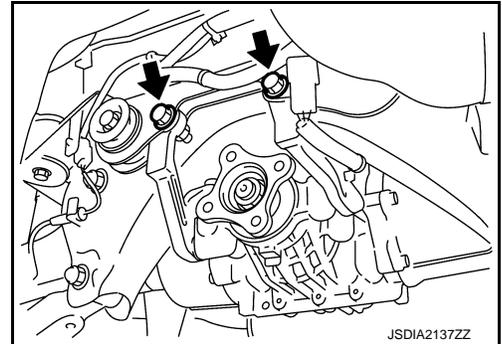


- Remove final drive mounting bolts and nuts (←), and then remove rear final drive assembly from final drive mounting bracket.

CAUTION:

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

- Remove fuel tank. Refer to [FL-23. "4WD : Removal and Installation"](#).
- Remove final drive mounting bracket.



INSTALLATION

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

- Install the breather hose (1) to breather tube until dimension (A) shown as follows.

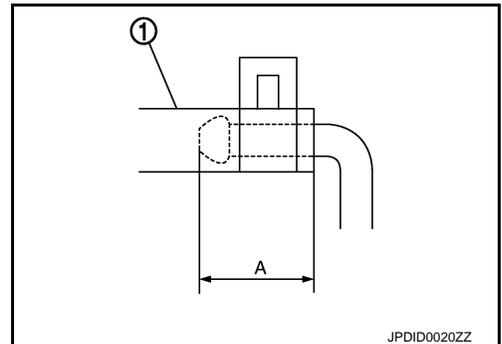
A:

Final drive side : 20mm (0.79 in)

Breather side : 20mm (0.79 in)

CAUTION:

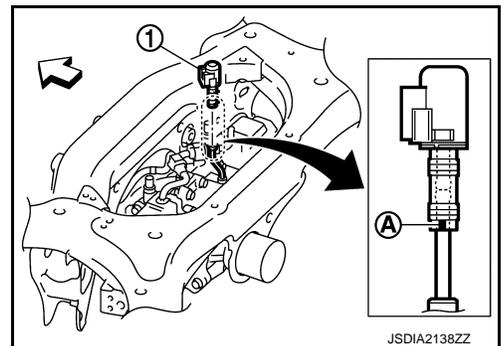
- Never reuse hose clamps.
- Install the hose clamps, with the tab facing vehicle rear.



- If remove breather hose, install breather hose (1) as shown in the figure.

← Vehicle front

- Install breather hose with paint mark (A) facing vehicle rear.
- When oil leaks while removing final drive assembly, check oil level after the installation. Refer to [DLN-132. "Inspection"](#).
- When replacing rear final drive assembly, perform writing unit parameter. Refer to [DLN-39. "Work Procedure"](#).



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ELECTRIC CONTROLLED COUPLING

< UNIT DISASSEMBLY AND ASSEMBLY >

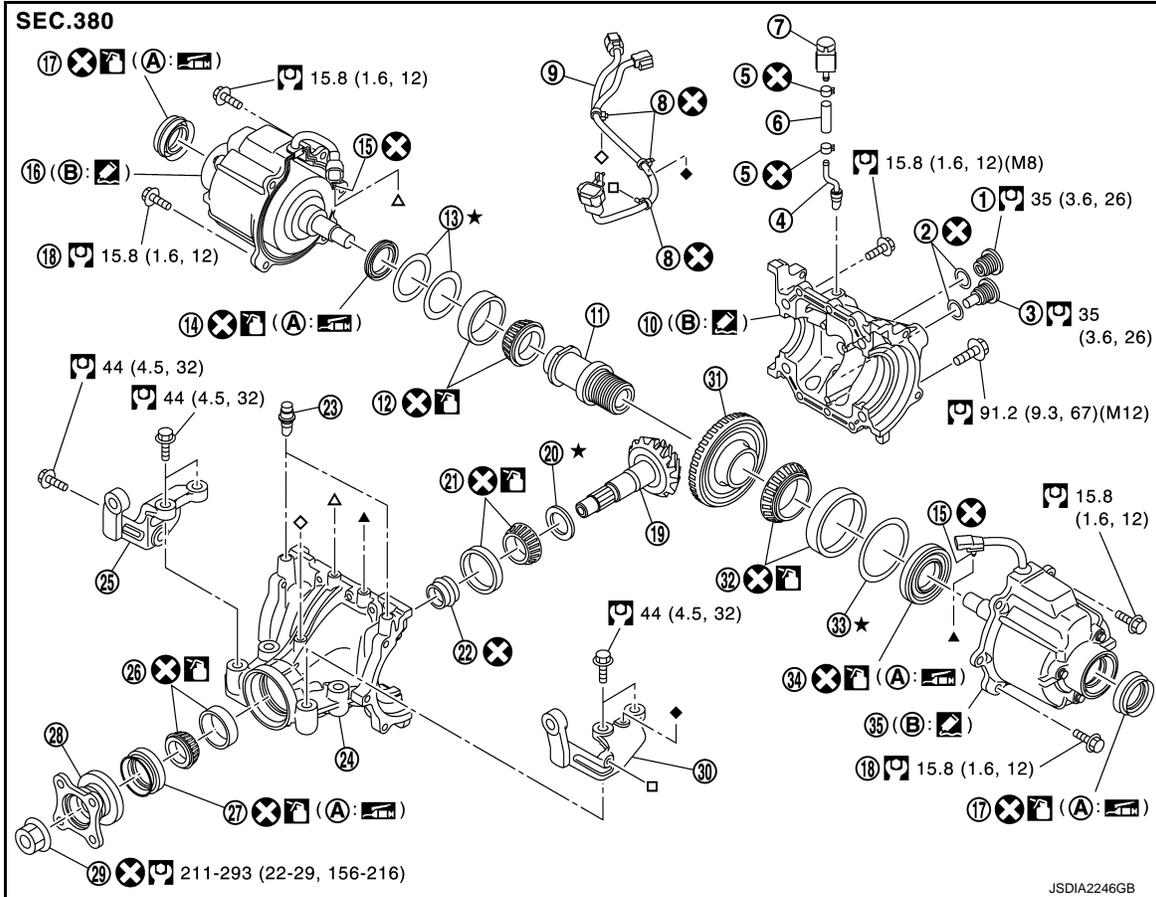
[REAR FINAL DRIVE: RTVS]

UNIT DISASSEMBLY AND ASSEMBLY

ELECTRIC CONTROLLED COUPLING

Exploded View

INFOID:000000006361900



- | | | |
|--|---|--|
| 1. Filler plug | 2. Gasket | 3. Drain plug |
| 4. Breather tube | 5. Clip | 6. Breather hose |
| 7. Breather | 8. sub-harness clip | 9. sub-harness |
| 10. Rear cover | 11. Center stem | 12. Side bearing (right) |
| 13. Side bearing adjusting shim (right) | 14. Side oil seal (right) | 15. Connector clip |
| 16. Electric controlled coupling (right) | 17. Electric controlled coupling oil seal | 18. Reamer bolt |
| 19. Drive pinion | 20. Drive pinion adjusting shim | 21. Pinion rear bearing |
| 22. Collapsible spacer | 23. Breather | 24. Gear carrier |
| 25. Carrier bracket (right) | 26. Pinion front bearing | 27. Front oil seal |
| 28. Companion flange | 29. Drive pinion lock nut | 30. Carrier bracket (left) |
| 31. Drive gear | 32. Side bearing (left) | 33. Side bearing adjusting shim (left) |
| 34. Electric controlled coupling (left) | 35. Side oil seal (left) | |
| A. Oil seal lip | B. Gear carrier mounting face | |

: N-m (kg-m, ft-lb)

: Always replace after every disassembly.

: Apply gear oil.

*: Apply anti-corrosive oil.

: Apply multi purpose grease

ELECTRIC CONTROLLED COUPLING

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

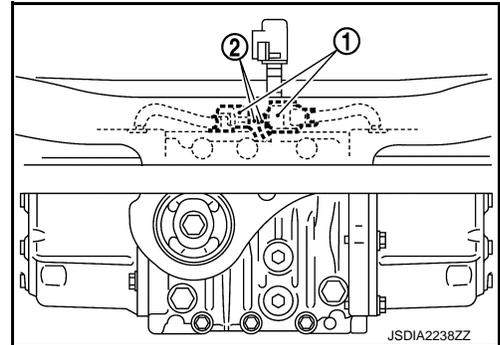
: Apply Genuine Liquid Gasket 1217 or equivalent.

★: Select with proper thickness.

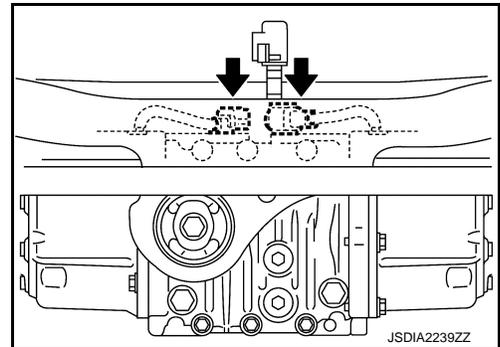
Disassembly

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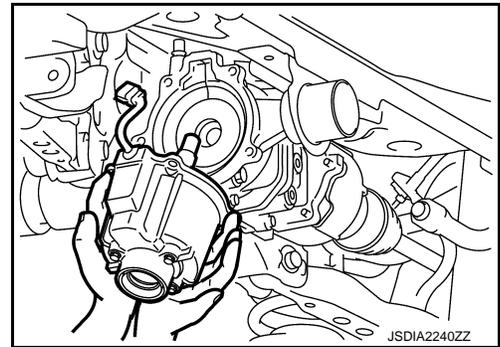
1. Disconnect electric controlled coupling connector (1) from sub-harness (2).



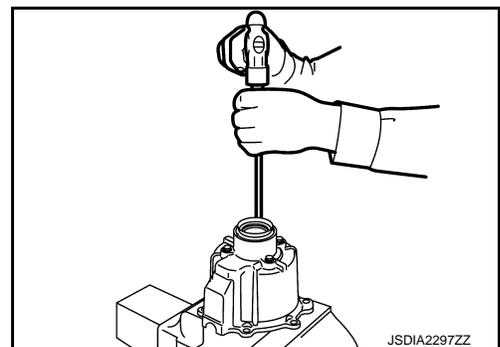
2. Remove connector clip (←) from final drive assembly.



3. Remove electric controlled coupling from final drive assembly.
4. Remove sub-harness from final drive assembly.
CAUTION:
Remove sub-harness only when necessary.



5. Remove electric controlled coupling oil seals from electric controlled coupling, using a suitable tool.
CAUTION:
Never damage electric controlled coupling.



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ELECTRIC CONTROLLED COUPLING

< UNIT DISASSEMBLY AND ASSEMBLY >

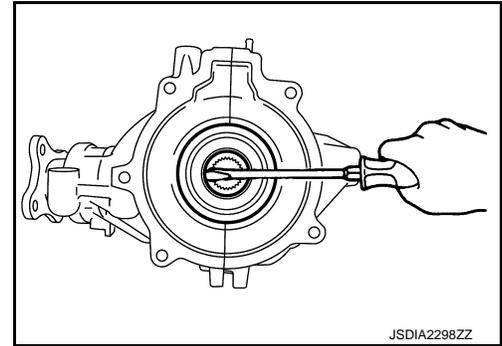
[REAR FINAL DRIVE: RTVS]

6. Remove side oil seals with a suitable tool.

CAUTION:

Never damage gear carrier and rear cover.

7. Perform inspection after disassembly. Refer to [DLN-150](#). "[Inspection](#)".



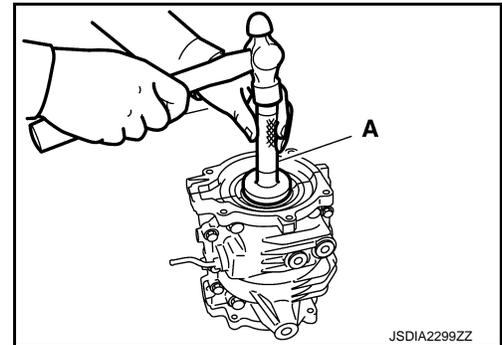
INFOID:000000006361902

Assembly

1. Install side oil seal (right side) until it becomes flush with the carrier end, using the drift (A) (SST: KV38100200).

CAUTION:

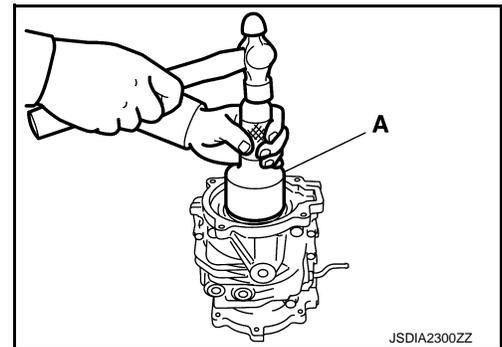
- Never reuse oil seals.
- When installing, never incline oil seals.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.



2. Install side oil seal (left side) until it becomes flush with the carrier end, using the drift (A) (SST: KV38100500).

CAUTION:

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



3. Install electric controlled coupling oil seals to electric controlled coupling, using the drift (A) (SST: KV38109700).

NOTE:

The use of the special service tool satisfies the mounting dimensions.

CAUTION:

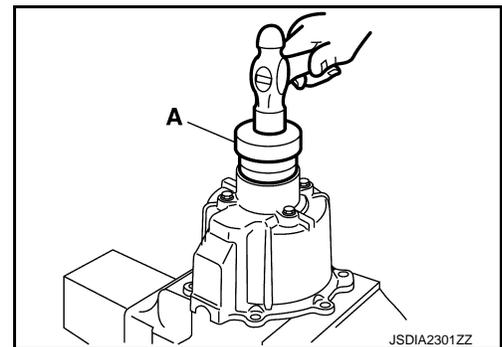
- Never reuse oil seals.
- When installing, never incline oil seals.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.

4. Install new sub-harness clip to sub-harness.

CAUTION:

- Check original mounting dimensions to install clip to the original position.
- Baffle pin must be functioning normally.

5. Install sub-harness to final drive assembly.



ELECTRIC CONTROLLED COUPLING

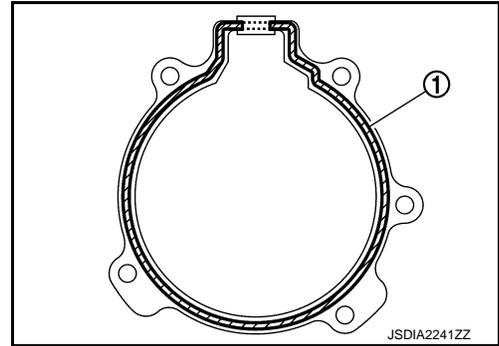
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

6. Apply liquid gasket (1) to mating surface of coupling cover.

CAUTION:

- Remove old gasket adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.
- Overlap both ends of the bead for at least 3 mm (0.12 in).

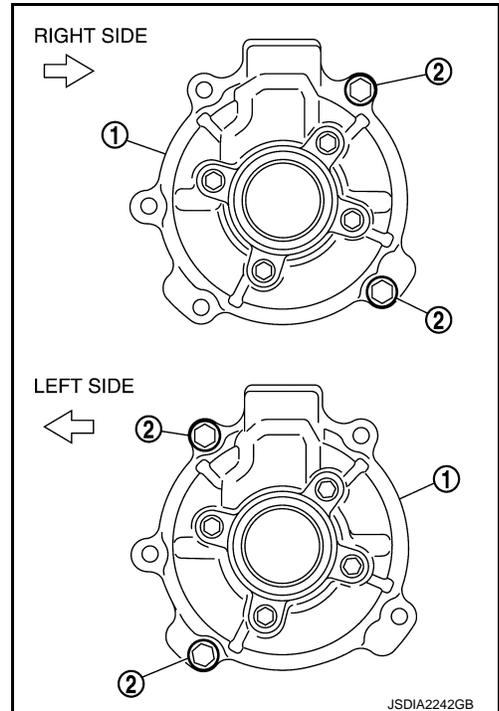


7. Install electric controlled coupling (1) to spline of stem center with grommet of harness facing upward, temporarily tighten reamer bolts (2) to the positions shown in the figure.
8. Tighten reamer bolts and coupling cover mounting bolts to the specified torque.

←: Vehicle front

CAUTION:

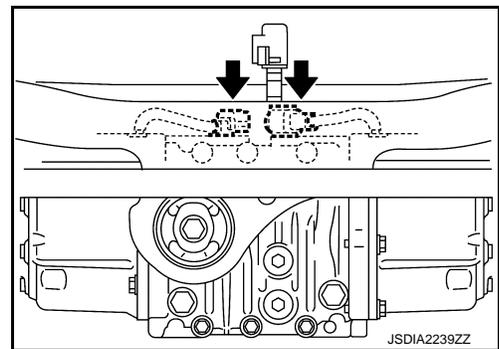
Never allow harness to get caught in the bolt.



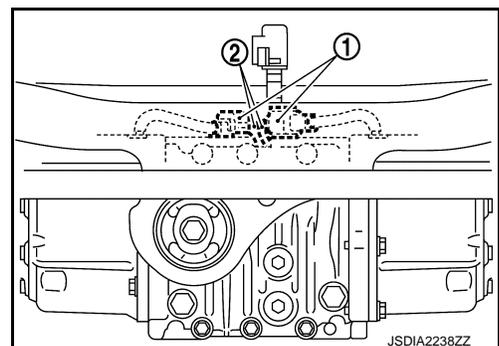
9. Install the new connector clip (←) to final drive assembly.

CAUTION:

Never reuse connector clip.



10. Connect electric controlled coupling connector (1) to sub-harness (2).
11. When oil leaks while removing, check oil level after the installation. Refer to [DLN-132. "Inspection"](#).



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ELECTRIC CONTROLLED COUPLING

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

Inspection

INFOID:000000006361904

INSPECTION AFTER DISASSEMBLY

Oil Seal

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

CENTER STEM ASSEMBLY

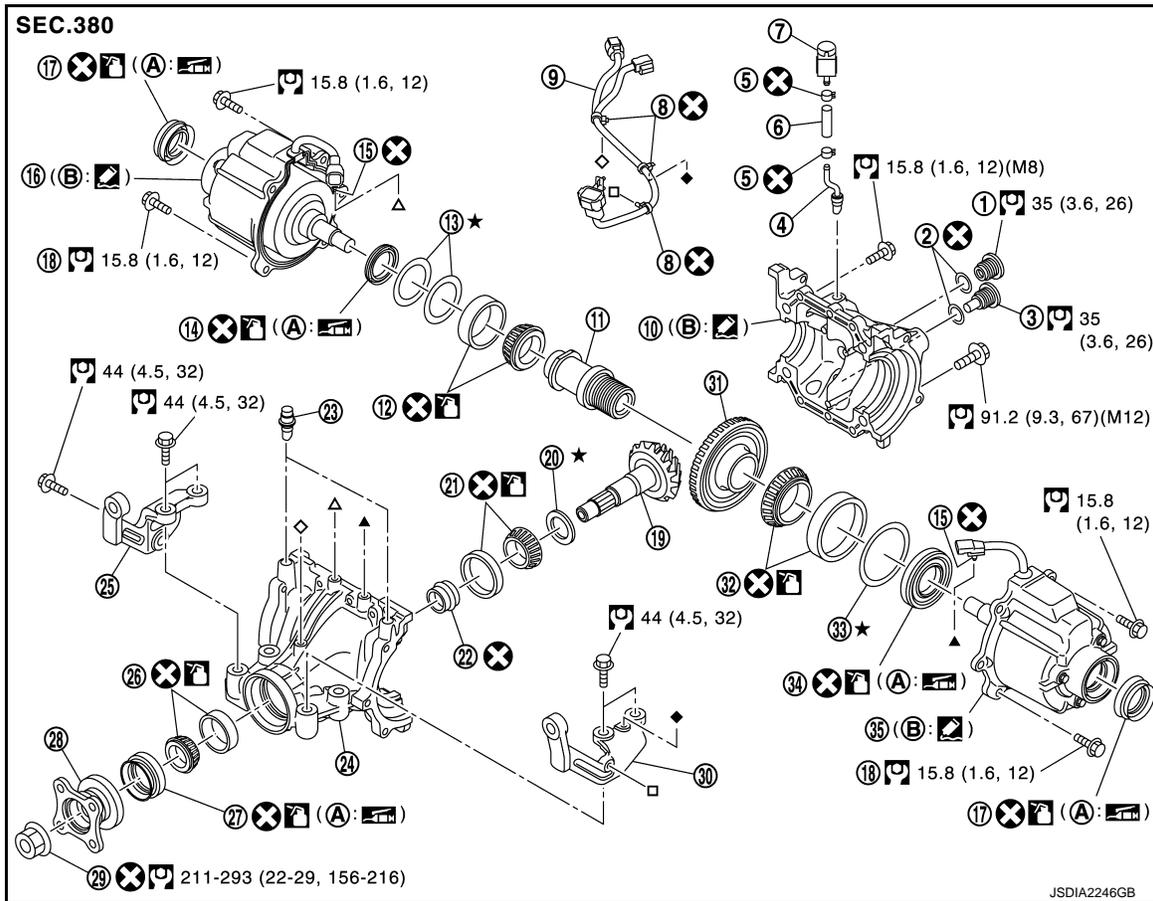
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

CENTER STEM ASSEMBLY

Exploded View

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- | | | |
|--|---|--|
| 1. Filler plug | 2. Gasket | 3. Drain plug |
| 4. Breather tube | 5. Clip | 6. Breather hose |
| 7. Breather | 8. sub-harness clip | 9. sub-harness |
| 10. Rear cover | 11. Center stem | 12. Side bearing (right) |
| 13. Side bearing adjusting shim (right) | 14. Side oil seal (right) | 15. Connector clip |
| 16. Electric controlled coupling (right) | 17. Electric controlled coupling oil seal | 18. Reamer bolt |
| 19. Drive pinion | 20. Drive pinion adjusting shim | 21. Pinion rear bearing |
| 22. Collapsible spacer | 23. Breather | 24. Gear carrier |
| 25. Carrier bracket (right) | 26. Pinion front bearing | 27. Front oil seal |
| 28. Companion flange | 29. Drive pinion lock nut | 30. Carrier bracket (left) |
| 31. Drive gear | 32. Side bearing (left) | 33. Side bearing adjusting shim (left) |
| 34. Electric controlled coupling (left) | 35. Side oil seal (left) | |
- A. Oil seal lip
B. Gear carrier mounting face

: N-m (kg-m, ft-lb)

: Always replace after every disassembly.

: Apply gear oil.

*: Apply anti-corrosive oil.

: Apply multi purpose grease

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CENTER STEM ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

: Apply Genuine Liquid Gasket 1217 or equivalent.

★: Select with proper thickness.

Disassembly

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1. Remove carrier bracket.
2. Remove electric controlled coupling. Refer to [DLN-147. "Disassembly"](#).
3. Remove side oil seal. Refer to [DLN-147. "Disassembly"](#).
4. Remove rear cover mounting bolts.
5. Set drifts (A and B) to the right and left side bearing adjusting shims individually. Press center stem assembly with side bearing to remove gear carrier assembly and rear cover assembly.

A : Drift (SST: KV38109820)

B : Drift (SST: KV38109810)

CAUTION:

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

NOTE:

Center stem assembly, side bearings, and adjusting shims are compressed and integrated in gear carrier and rear cover.

6. Remove drain plug and filler plug.
7. Remove side bearing adjusting shims and side bearing outer races.

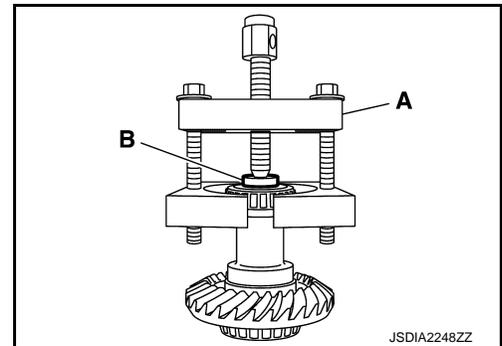
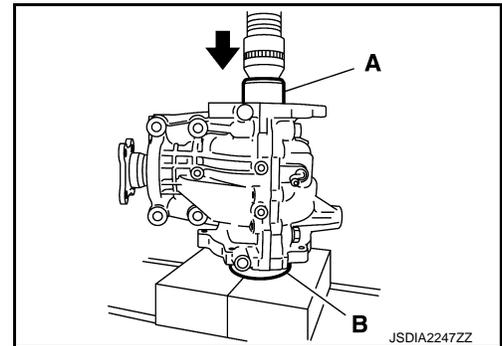
CAUTION:

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

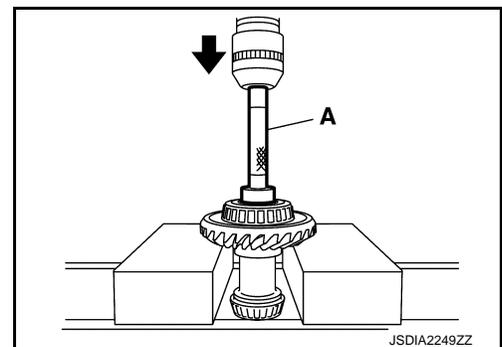
8. Remove side bearing inner race, using a puller (A) and drift (B).

A : Puller (commercial service tool)

B : Drift (SST: ST33052000)



9. Remove drive gear from center stem, using a drift (A) (SST:ST33220000).
10. Perform inspection after disassembly. Refer to [DLN-157. "Inspection"](#).



CENTER STEM ASSEMBLY

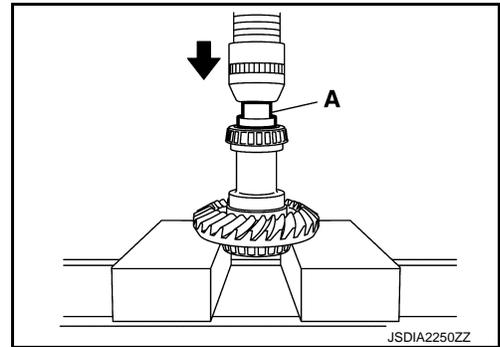
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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Assembly

1. Press drive gear to center stem, using a drift (A) (SST:ST33052000).



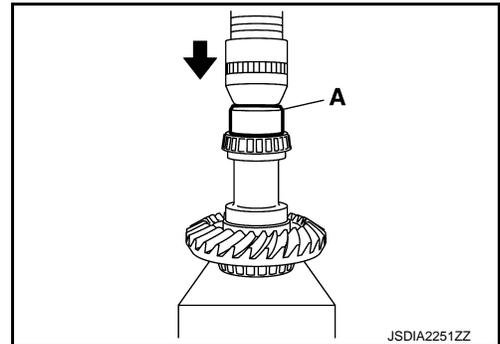
2. Press side bearing inner race to center stem assembly, using a drift (A) (SST: KV40104840).

3. Install new side bearing adjusting shims (2 pieces for one side) with the same thickness as the ones installed prior to disassembly or re-install the old ones, with side bearing outer race to center stem assembly.

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

CAUTION:

- Never reuse side bearing outer race.
- Apply gear oil to side bearings.



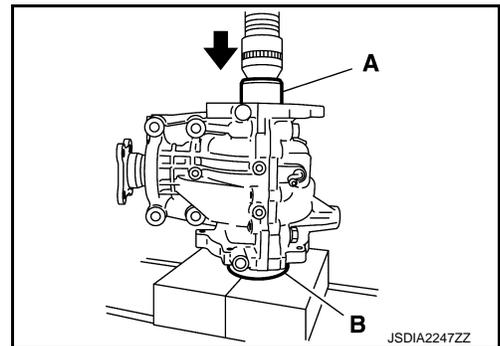
4. Set drifts (A and B) to the right and left side bearing adjusting shims individually. Press center stem assembly with side bearing to install gear carrier to center stem assembly.

A : Drift (SST: KV38109820)

B : Drift (SST: KV38109810)

CAUTION:

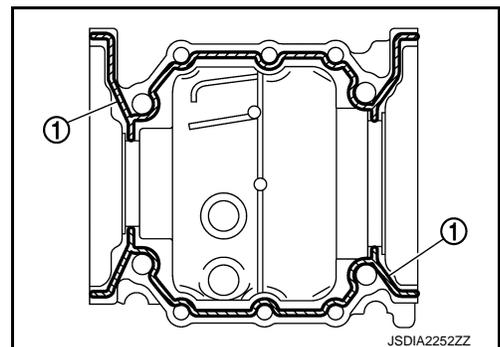
- The drift shall be placed on the center of the adjusting shims.
- The pressure shall be as low as possible to install differential assembly into gear carrier assembly. The maximum pressure shall be 10 kN (1 ton, 1.0 Imp ton).
- If the adjusting shims are installed by tapping, the gear carrier may be damaged. Avoid tapping.



5. Install dummy cover set, check and adjust drive gear runout, tooth contact, backlash, and total preload torque. Refer to [DLN-154. "Adjustment"](#).
6. Remove dummy cover set.
7. Apply liquid gasket (1) to mating surface of rear cover. Overlap both ends of the bead for at least 3 mm (0.12 in).

CAUTION:

Remove old gasket adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to the mounting surfaces.



CENTER STEM ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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

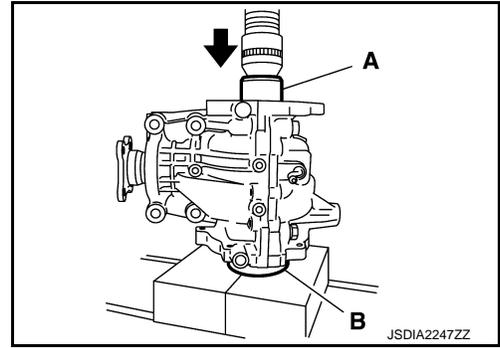
A : Drift (SST: KV38109820)

B : Drift (SST: KV38109810)

CAUTION:

- The drift shall be placed on the center of the adjusting shims.
- The pressure shall be as low as possible to install the rear cover. The maximum pressure shall be 10 kN (1 ton, 1.0 Imp ton).
- If rear cover is forced in by tapping, rear cover may be damaged by adjusting shims. Avoid tapping.

- Tighten rear cover mounting bolts to the specified torque.
- Install side oil seal. Refer to [DLN-148, "Assembly"](#).
- Check total preload torque. Refer to [DLN-154, "Adjustment"](#).



Adjustment

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TOTAL PRELOAD TORQUE

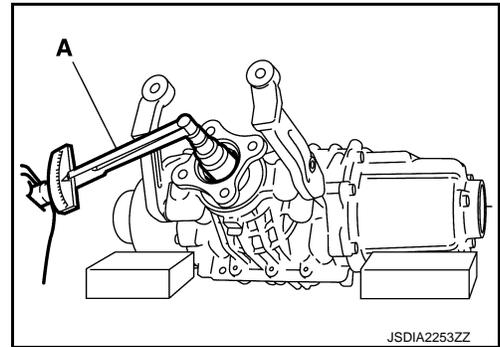
- Remove electric controlled coupling assembly. Refer to [DLN-147, "Disassembly"](#).
- Rotate drive pinion back and forth 2 to 3 times to check for unusual noise and rotation malfunction.
- Rotate drive pinion at least 20 times to check for smooth operation of the bearing.
- Measure the total preload, using the preload gauge (A) (SST: 3127S000).

Total preload torque : Refer to [DLN-167, "Preload Torque"](#).

NOTE:

Total preload torque = Pinion bearing torque + Side bearing torque

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



When the preload torque is large

On pinion bearings: Replace the collapsible spacer.

On side bearings: Use thinner side bearing adjusting shims.

When the preload is small

On pinion bearings: Tighten the drive pinion nut.

On side bearings: Use thicker side bearing adjusting shims.

DRIVE GEAR RUNOUT

- Remove rear cover. Refer to [DLN-152, "Disassembly"](#).
- Following the procedure below, install a dummy cover set (SST: KV381096S0) to gear carrier.
 - Temporarily tighten bearing guides (SST: KV38109610, KV38109620) to gear carrier.
 - Position dummy cap spacers (SST: KV38109630, KV38109640) and angle (SST:KV38109650) to bearing guide.
 - Tighten rear cover mounting bolts to the specified torque. Refer to [DLN-151, "Exploded View"](#).
 - Tighten dummy cap spacer mounting bolts evenly to the specified torque.

CENTER STEM ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

Tightening torque : 5.9 N-m (0.6 kg-m, 52 in-lb)

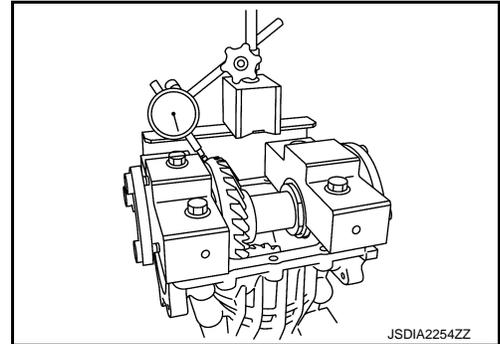
3. Fit a dial indicator to the drive gear back face.
4. Rotate the drive gear to measure runout.

Drive gear back face runout : Refer to [DLN-167, "Drive Gear Runout"](#).

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

CAUTION:

Replace drive gear and drive pinion as a set.



TOOTH CONTACT

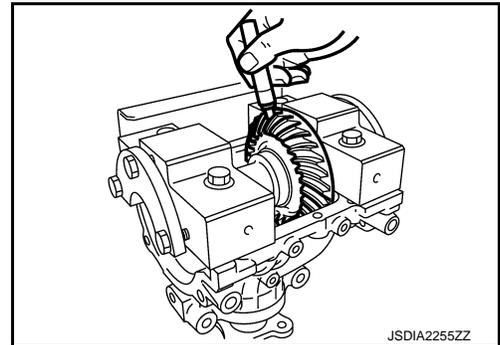
1. Remove rear cover. Refer to [DLN-152, "Disassembly"](#).
2. Following the procedure below, install a dummy cover set (SST: KV381096S0) to gear carrier.
 - a. Temporarily tighten bearing guides (SST: KV38109610, KV38109620) to gear carrier.
 - b. Position dummy cap spacers (SST: KV38109630, KV38109640) and angle (SST:KV38109650) to bearing guide.
 - c. Tighten rear cover mounting bolts to the specified torque. Refer to [DLN-151, "Exploded View"](#).
 - d. Tighten dummy cap spacer mounting bolts evenly to the specified torque.

Tightening torque : 5.9 N-m (0.6 kg-m, 52 in-lb)

3. Apply red lead to drive gear.

CAUTION:

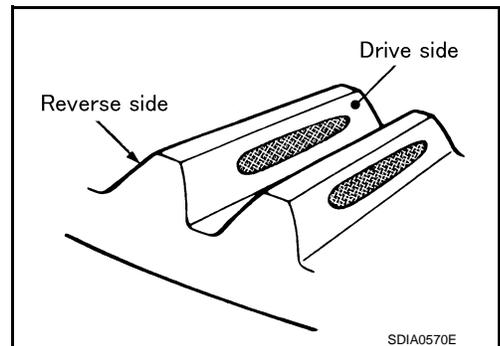
Apply red lead to both the faces of 3 to 4 gears at 4 locations evenly spaced on drive gear.



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

CAUTION:

Check tooth contact on drive side and reverse side.



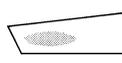
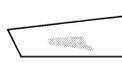
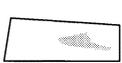
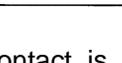
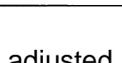
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CENTER STEM ASSEMBLY

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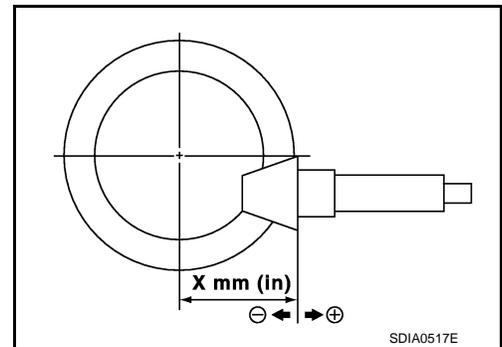
[REAR FINAL DRIVE: RTVS]

Tooth Contact Judgment Guide

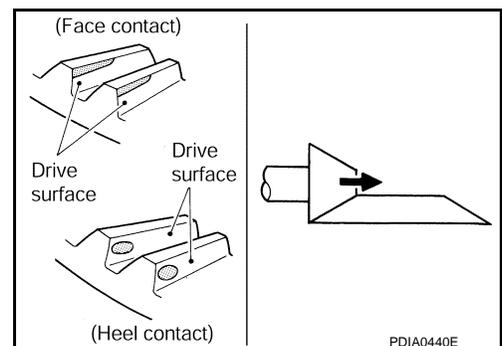
Tooth contact condition		Drive pinion adjusting shim selection value [mm (in)]	Adjustment (Yes/No)	Possible cause	
Drive side	Back side				
Heel side 	Toe side 	↑ Thicker	Yes	Occurrence of noise and scoring sound in all speed ranges.	
				+0.09 (+0.0035)	Occurrence of noise when accelerating.
				+0.06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

SDIA2549E

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



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

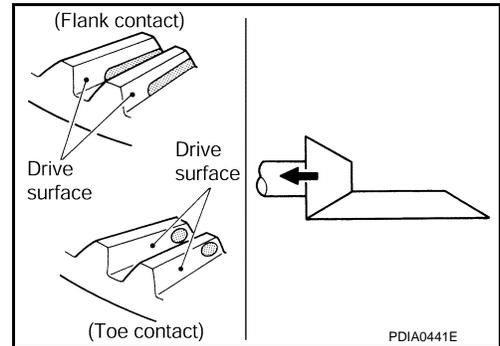


CENTER STEM ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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



BACKLASH

1. Remove rear cover. Refer to [DLN-152, "Disassembly"](#).
2. Following the procedure below, install a dummy cover set (SST: KV381096S0) to gear carrier.
 - a. Temporarily tighten bearing guides (SST: KV38109610, KV38109620) to gear carrier.
 - b. Position dummy cap spacers (SST: KV38109630, KV38109640) and angle (SST:KV38109650) to bearing guide.
 - c. Tighten rear cover mounting bolts to the specified torque. Refer to [DLN-151, "Exploded View"](#).
 - d. Tighten dummy cap spacer mounting bolts evenly to the specified torque.

Tightening torque : 5.9 N·m (0.6 kg·m, 52 in·lb)

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

Backlash : Refer to [DLN-167, "Backlash"](#).

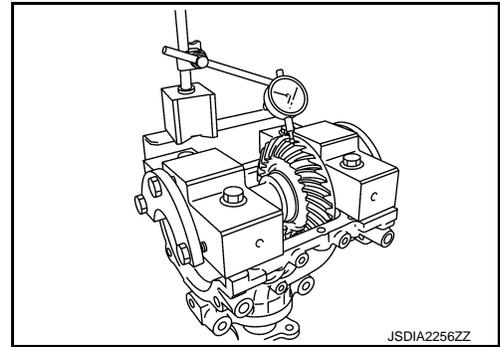
- If the backlash is outside of the specified value, change the thickness of side bearing adjusting shims.

When the backlash is large:

Make drive gear back adjusting shims thicker, and drive gear front adjusting shims thinner.

When the backlash is small:

Make drive gear back adjusting shims thinner, and drive gear front adjusting shims thicker.



Inspection

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INSPECTION AFTER DISASSEMBLY

Drive Gear and Drive Pinion

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

Bearing

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

Oil Seal

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

Companion Flange

- Clean up the disassembled parts.

CENTER STEM ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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

DRIVE PINION

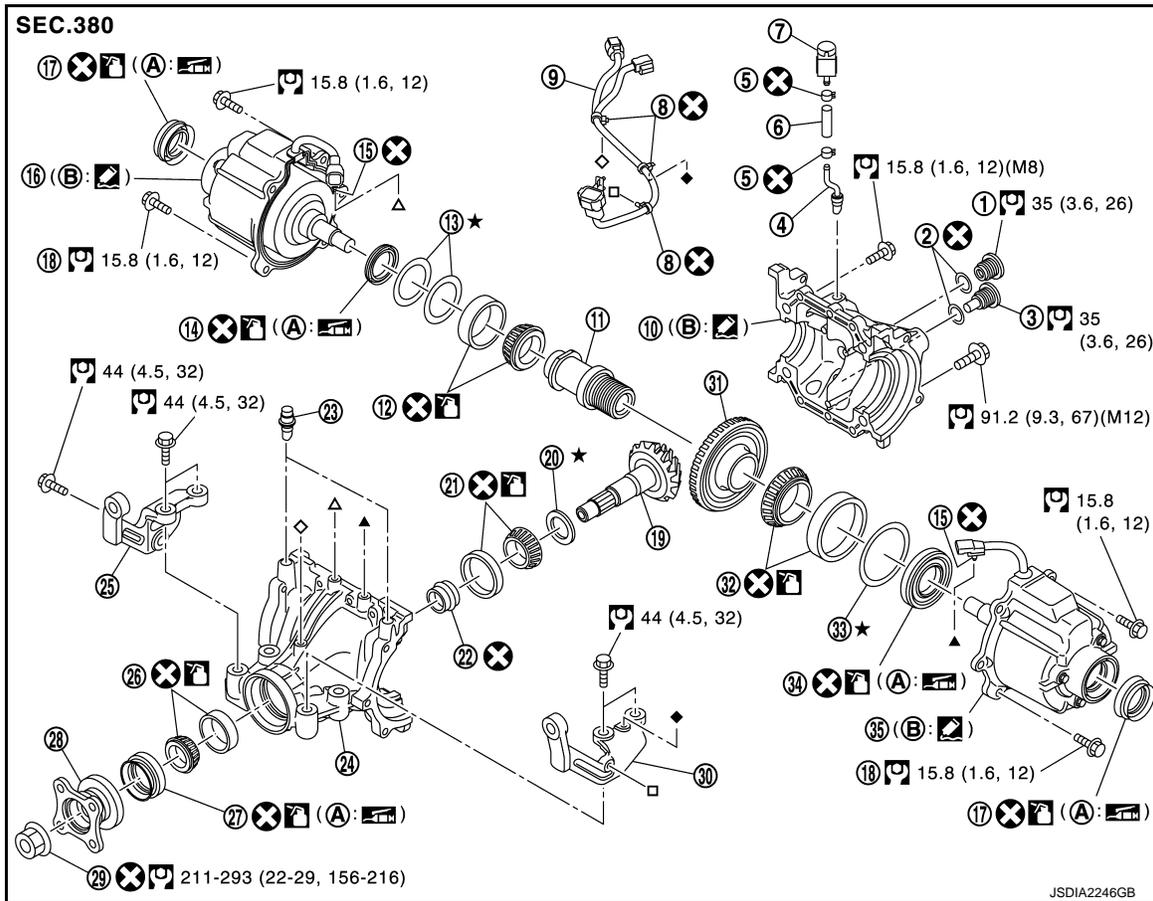
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[REAR FINAL DRIVE: RTVS]

DRIVE PINION

Exploded View

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|--|---|--|
| 1. Filler plug | 2. Gasket | 3. Drain plug |
| 4. Breather tube | 5. Clip | 6. Breather hose |
| 7. Breather | 8. sub-harness clip | 9. sub-harness |
| 10. Rear cover | 11. Center stem | 12. Side bearing (right) |
| 13. Side bearing adjusting shim (right) | 14. Side oil seal (right) | 15. Connector clip |
| 16. Electric controlled coupling (right) | 17. Electric controlled coupling oil seal | 18. Reamer bolt |
| 19. Drive pinion | 20. Drive pinion adjusting shim | 21. Pinion rear bearing |
| 22. Collapsible spacer | 23. Breather | 24. Gear carrier |
| 25. Carrier bracket (right) | 26. Pinion front bearing | 27. Front oil seal |
| 28. Companion flange | 29. Drive pinion lock nut | 30. Carrier bracket (left) |
| 31. Drive gear | 32. Side bearing (left) | 33. Side bearing adjusting shim (left) |
| 34. Electric controlled coupling (left) | 35. Side oil seal (left) | |
- A. Oil seal lip
B. Gear carrier mounting face

⊗: Always replace after every disassembly.

★: Select with proper thickness.

🔧: N·m (kg·m, ft·lb)

🛢️: Apply gear oil.

🛢️★: Apply anti-corrosive oil.

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DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

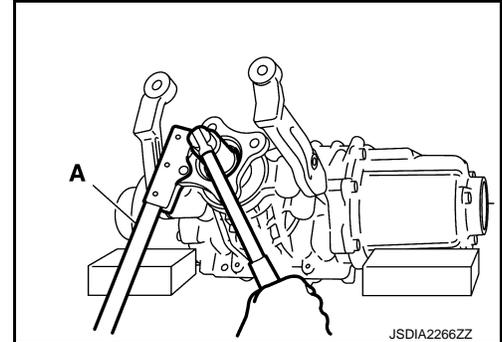
 Apply multi purpose grease

 Apply Genuine Liquid Gasket 1217 or equivalent.

Disassembly

INFOID:000000006363823

1. Remove electric controlled coupling. Refer to [DLN-147. "Disassembly"](#).
2. Remove center stem assembly. Refer to [DLN-152. "Disassembly"](#).
3. Remove drive pinion lock nut with the flange wrench (A) (commercial service tool).



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

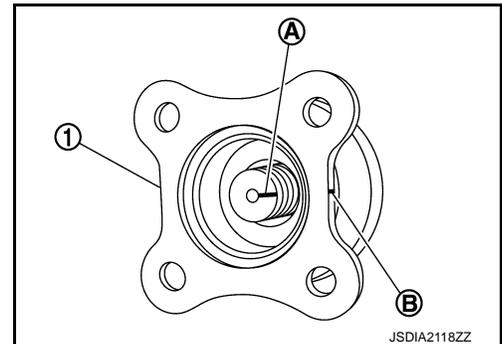
CAUTION:

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

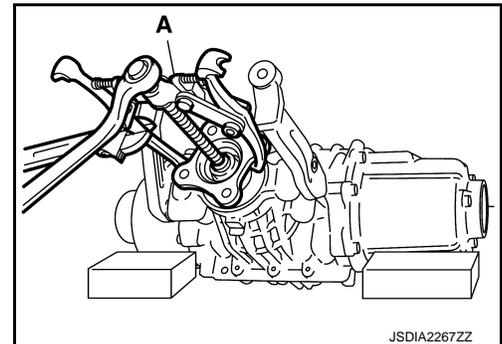
NOTE:

The matching mark on the final drive companion flange indicates the maximum vertical runout position.

When replacing companion flange, matching mark is not necessary.



5. Remove companion flange using the pullers (A) (commercial service tool).

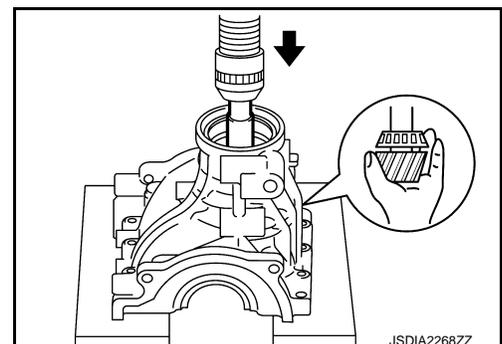


6. Press drive pinion assembly out of gear carrier.

CAUTION:

Never drop drive pinion assembly.

7. Remove front oil seal.
8. Remove pinion front bearing inner race.
9. Remove collapsible spacer.

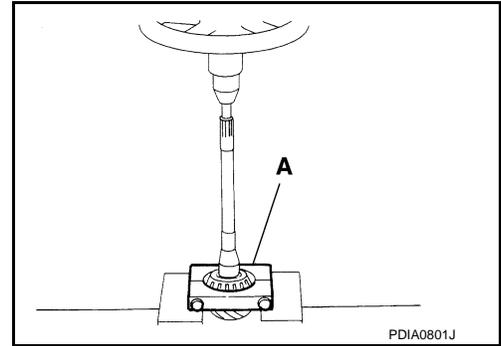


DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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

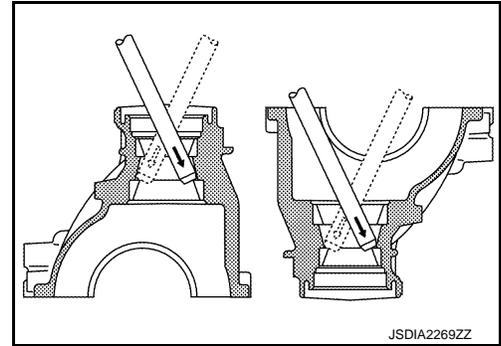


12. Tap pinion front/rear bearing outer races uniformly using a brass rod or equivalent to remove them.

CAUTION:

Never damage gear carrier.

13. Perform inspection after disassembly. Refer to [DLN-165](#), "[Inspection](#)".



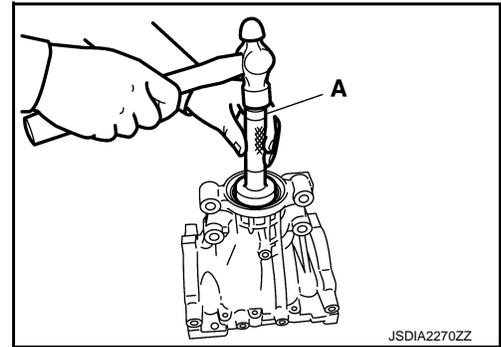
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Assembly

1. Install pinion front bearing outer race to the gear carrier with drift (A) (SST: ST17130000).

CAUTION:

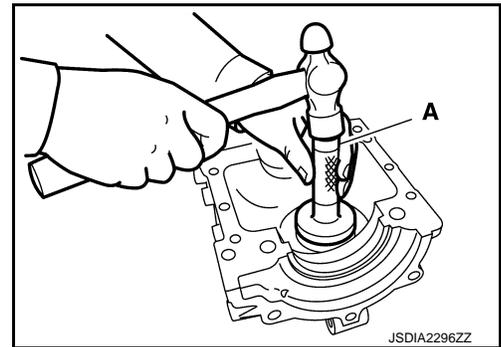
- At first, using a hammer, tap bearing outer race until it becomes flat to gear carrier.
- Never reuse pinion front and rear bearing outer race.



2. Install pinion rear bearing outer race to the gear carrier with drift (A) (SST: KV38100300).

CAUTION:

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



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DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

3. Temporarily install pinion height adjusting washer (1).

When hypoid gear set has been replaced

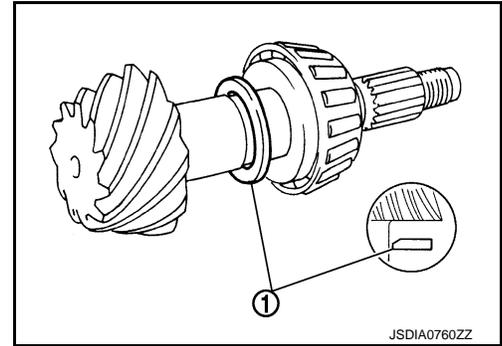
- Select pinion height adjusting washer. Refer to [DLN-164](#), "[Adjustment](#)".

When hypoid gear set has been reused

- Temporarily install the removed pinion height adjusting washer or same thickness washer to drive pinion.

CAUTION:

Pay attention to the direction of pinion height adjusting washer. (Assemble as shown in the figure.)



4. Install pinion rear bearing inner race (1) to drive pinion with the drift (A) (SST: ST30032000).

CAUTION:

Never reuse pinion rear bearing inner race.

5. Check and adjust the tooth contact and back lash of drive gear and drive pinion following the procedure below.

- a. Assemble drive pinion into gear carrier.

CAUTION:

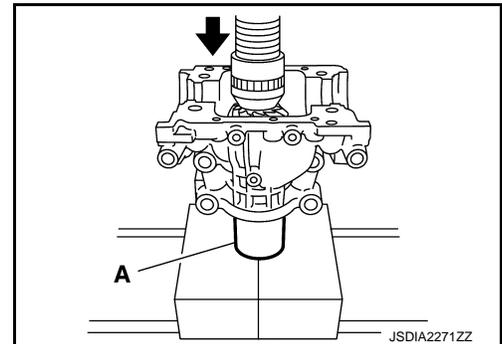
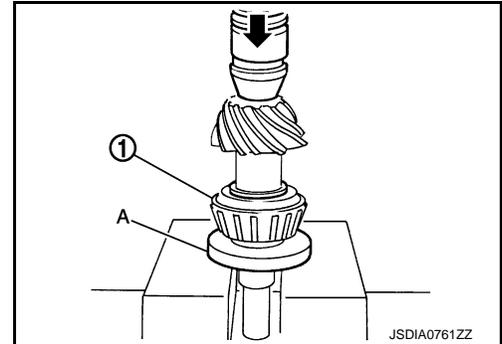
- **Never assemble a collapsible spacer.**
- **Apply gear oil to pinion rear bearing.**

- b. Assemble pinion front bearing inner race to drive pinion assembly.

CAUTION:

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

- c. Using drift (A) (SST: ST37710000), press the pinion front bearing inner race to drive pinion as far as drive pinion nut can be tightened.



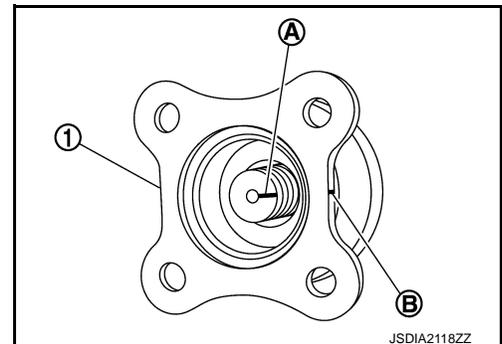
- d. Install companion flange (1).

CAUTION:

Never assemble front oil seal.

NOTE:

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



DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

- e. Temporarily tighten removed drive pinion nut to drive pinion using flange wrench (commercial service tool).
- NOTE:**
Use removed drive pinion nut only for the preload measurement.
- f. Rotate drive pinion more than 20 times to adjust bearing.
 - g. Tighten to drive pinion lock nut using flange wrench (commercial service tool), while adjusting pinion bearing preload torque using preload gauge (A) (SST: ST3127S000).

Pinion bearing preload (without oil seal) : 1.0 - 1.3 N·m (0.11 – 0.13 kg-m, 9 – 11 in-lb)

CAUTION:

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

- h. Assemble removed drive side bearing adjusting washer or same thickness of it and install center stem assembly. Refer to [DLN-153, "Assembly"](#).

CAUTION:

Apply differential gear oil to the side bearings.

- i. Check and adjust tooth contact, drive gear to drive pinion backlash. Refer to [DLN-154, "Adjustment"](#).
- j. Remove center stem assembly.
- k. Remove companion flange.
- l. Remove drive pinion assembly from gear carrier.
- m. Remove pinion front bearing inner race.
- 6. Assemble collapsible spacer.

CAUTION:

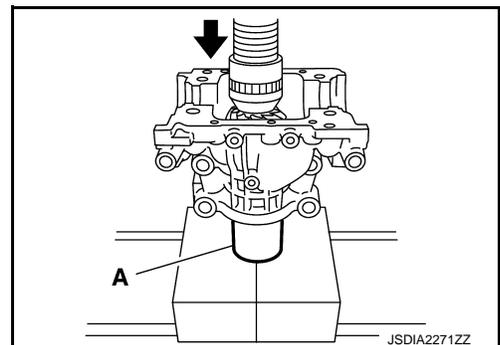
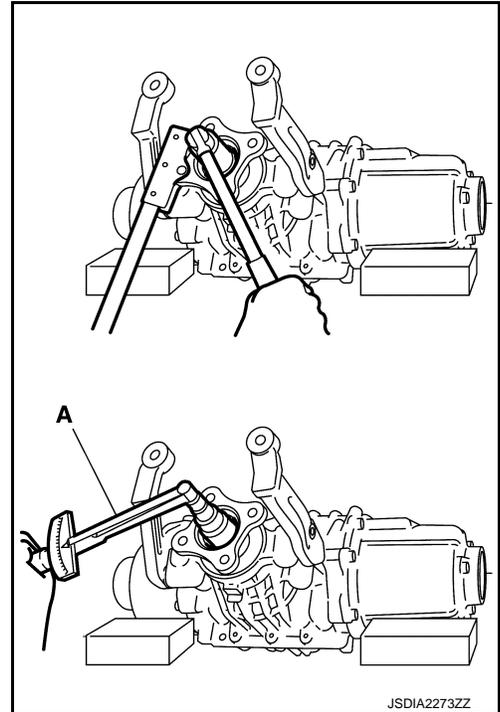
Never reuse collapsible spacer.

- 7. Assemble drive pinion into gear carrier.
- CAUTION:**
Apply gear oil to pinion rear bearing.
- 8. Assemble pinion front bearing inner race to drive pinion assembly.

CAUTION:

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

- 9. Using drift (A) (SST: ST37710000), press the pinion front bearing inner race to drive pinion as far as drive pinion nut can be tightened.



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DRIVE PINION

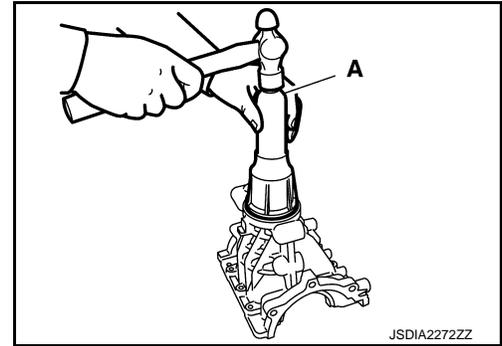
< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

10. Install front oil seal as shown in figure with the drift (A) (commercial service tool).

CAUTION:

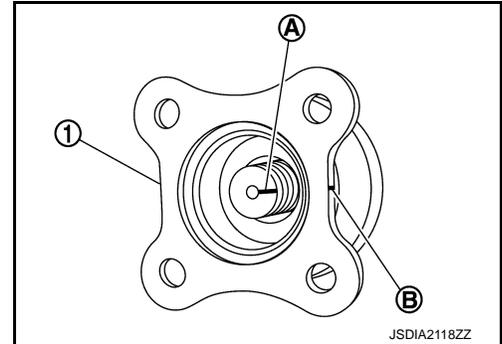
- Never reuse oil seal.
- When installing, never incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.



11. Install companion flange (1).

NOTE:

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



12. Apply anti-corrosion oil to the thread and seat of drive pinion lock nut, and temporarily tighten drive pinion lock nut to drive pinion, using flange wrench (commercial service tool).

CAUTION:

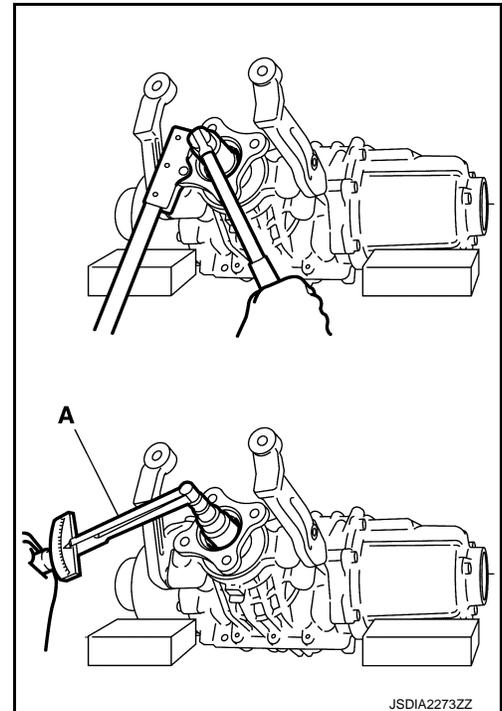
Never reuse drive pinion lock nut.

13. Adjust to the drive pinion lock nut tightening torque and pinion bearing preload torque, using preload gauge (A) (SST: ST3127S000).

Pinion bearing preload : Refer to [DLN-167, "Pre-load Torque"](#).

CAUTION:

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



14. Install center stem assembly. Refer to [DLN-153, "Assembly"](#).

CAUTION:

Never install rear cover at this timing.

15. Check and adjust drive gear runout, tooth contact, drive gear to drive pinion backlash, and companion flange runout. Refer to [DLN-154, "Adjustment"](#) and [DLN-164, "Adjustment"](#).

16. Check total preload torque. Refer to [DLN-154, "Adjustment"](#).

17. Install rear cover. Refer to [DLN-153, "Assembly"](#).

Adjustment

PINION GEAR HEIGHT

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

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DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

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

Washer selection equation:

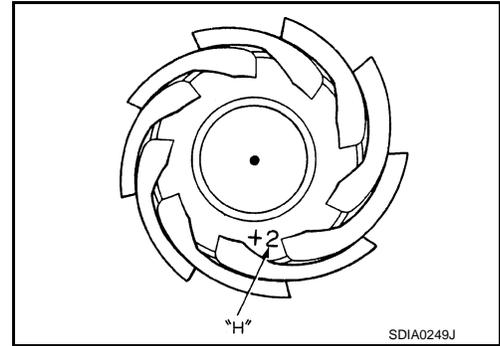
$$T = T_0 + (t_1 - t_2)$$

T: Correct washer thickness

T₀: Removed washer thickness

t₁: Old drive pinion head letter "H × 0.01"
("H": machined tolerance 1/100 mm × 100)

t₂: New drive pinion head letter "H × 0.01"
("H": machined tolerance 1/100 mm × 100)



Example:

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

T₀: 3.21

t₁: +2

t₂: -1

2. Select the proper pinion height adjusting washer. For selecting adjusting washer, refer to the latest parts information.

CAUTION:

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

Example:

Calculated value... T = 3.22 mm

Used washer... T = 3.21 mm

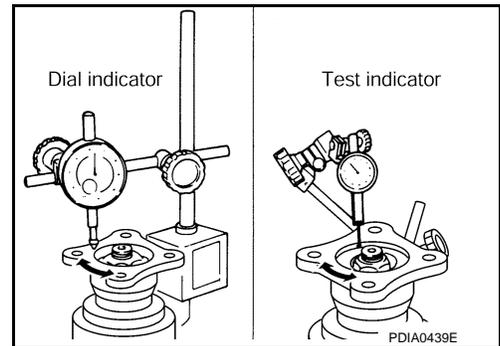
COMPANION FLANGE RUNOUT

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

Companion flange runout : Refer to [DLN-167, "Companion Flange Runout"](#).

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

Companion flange runout : Refer to [DLN-167, "Companion Flange Runout"](#).



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

Inspection

INFOID:000000006363826

INSPECTION AFTER DISASSEMBLY

DRIVE PINION

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE: RTVS]

Drive Gear and Drive Pinion

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

Bearing

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

Oil Seal

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

Companion Flange

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

SERVICE DATA AND SPECIFICATIONS (SDS)

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[REAR FINAL DRIVE: RTVS]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000006363828

Applied model	4WD
Final drive model	RTVS
Gear ratio	2.416
Number of teeth (Drive gear/Drive pinion)	29/12
Oil capacity (Approx.) ℓ (Imp pt)	0.40 (3/4)
Drive pinion adjustment spacer type	Collapsible

Drive Gear Runout

INFOID:0000000006359860

Unit: mm (in)

Item	Limit
Drive gear back face runout	0.05 (0.0020)

Preload Torque

INFOID:0000000006359862

Unit: N·m (kg·m, in·lb)

Item	Standard
Pinion bearing (P1)	1.06 – 1.76 N·m (0.11 – 0.18 kg·m)
Side bearing (P2)	0.33 – 0.70 N·m (0.03 – 0.07 kg·m)
Side bearing to pinion bearing (Total preload) (Total preload = P1 + P2)	1.39 – 2.46 N·m (0.14 – 0.25 kg·m)

Backlash

INFOID:0000000006359863

Unit: mm (in)

Item	Standard
Drive gear to drive pinion gear	0.13 – 0.18 (0.0051 – 0.0071)

Companion Flange Runout

INFOID:0000000006359864

Unit: mm (in)

Item	Limit
Companion flange face	0.13 (0.0051)
Inner side of the companion flange	0.19 (0.0075)