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PRECAUTIONS

PRECAUTIONS

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

NDS0009M

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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

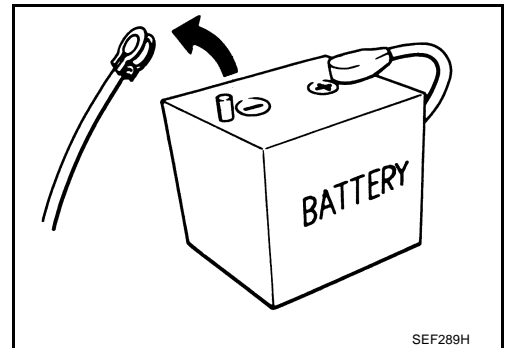
WARNING:

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

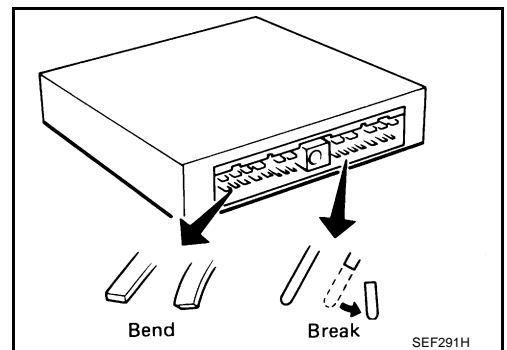
Precautions

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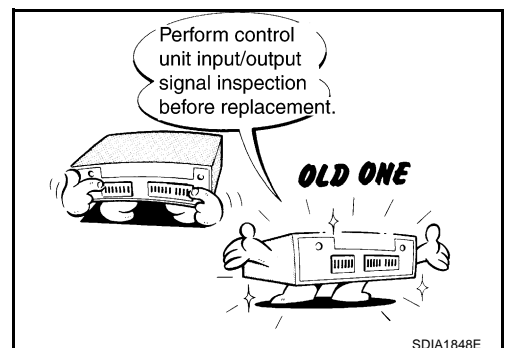
- Before connecting or disconnecting the AWD control unit harness connector, turn ignition switch "OFF" and disconnect battery ground cable. Because battery voltage is applied to AWD control unit even if ignition switch is turned "OFF".



- When connecting or disconnecting pin connectors into or from AWD control unit, take care not to damage pin terminals (bend or break). When connecting pin connectors, make sure that there are no bends or breaks on AWD control unit pin terminal.



- Before replacing AWD control unit, perform AWD control unit input/output signal inspection and make sure whether AWD control unit functions properly or not. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#).



PRECAUTIONS

Service Notice or Precautions

NDS00090

- Do not reuse transfer fluid, once it has been drained.
- Check the fluid level or replace the fluid only with the vehicle parked on level ground.
- 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, it is preferable to work in dustproof area.
- Before proceeding with disassembly, thoroughly clean the transfer. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they do not interfere with the function of the parts when applied.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new ones if necessary.
- Gaskets, seals and O-rings should be replaced any time when the transfer is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Observe the specified torque when assembling.
- Clean and flush the parts sufficiently and blow-dry them.
- Be careful not to damage sliding surfaces and mating surfaces.
- Clean innerparts with lint-free cloth or towels. Do not use cotton work gloves and rags to prevent adhering fibers.

PREPARATION

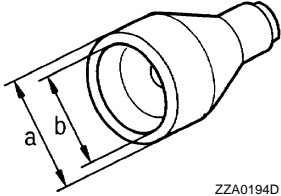
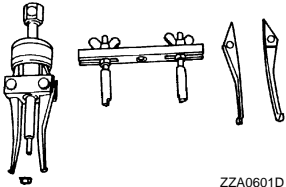
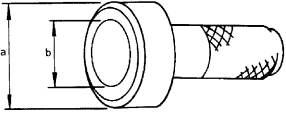
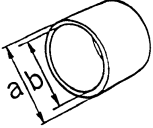
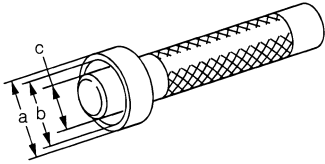
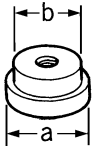
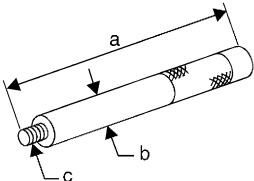
PREPARATION

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Special Service Tools

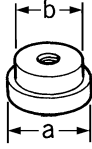
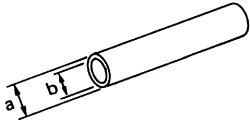
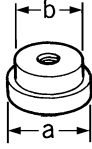
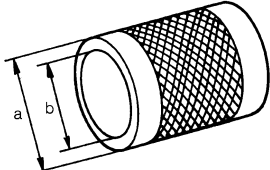
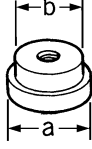
NDS0009P

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST27862000 (—) Drift a: 62.5 mm (2.461 in) dia. b: 42 mm (1.65 in) dia.	 <p>ZZA0194D</p> <ul style="list-style-type: none"> ● Installing front oil seal
KV381054S0 (J-34286) Puller	 <p>ZZA0601D</p> <ul style="list-style-type: none"> ● Removing rear oil seal
ST30720000 (J-25405) Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	 <p>ZZA0811D</p> <ul style="list-style-type: none"> ● Installing rear oil seal ● Installing mainshaft oil seal
KV40104830 (—) Drift a: 70 mm (2.76 in) dia. b: 63.5 mm (2.500 in) dia.	 <p>ZZA1003D</p> <ul style="list-style-type: none"> ● Installing rear oil seal
KV38100300 (J-25523) Drift a: 54 mm (2.13 in) dia. b: 46 mm (1.81 in) dia. c: 32 mm (1.26 in) dia.	 <p>ZZA1046D</p> <ul style="list-style-type: none"> ● Removing mainshaft bearing
ST33052000 (—) Drift a: 28 mm (1.10 in) dia. b: 22 mm (0.87 in) dia.	 <p>ZZA1000D</p> <ul style="list-style-type: none"> ● Removing mainshaft assembly
ST30611000 (J-25742-1) Drift bar a: 350 mm (1.10 in) b: 25 mm (1.10 in) dia. c: M12 x 1.5P	 <p>NT663</p> <ul style="list-style-type: none"> ● Removing rear bearing

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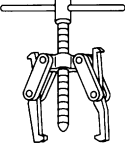
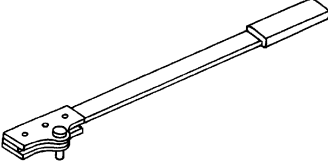
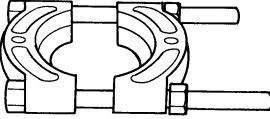
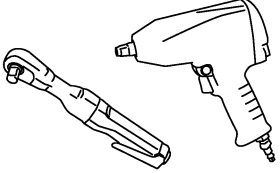
PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
ST35321000 (—) Drift a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia.	 <p style="text-align: center;">ZZA1000D</p> <ul style="list-style-type: none"> ● Removing rear bearing ● Installing mainshaft assembly
ST31214000 (J-25269-B) Drift a: 34 mm (1.34 in) dia. b: 25.5 mm (1.004 in) dia.	 <p style="text-align: center;">ZZA0534D</p> <ul style="list-style-type: none"> ● Removing front drive shaft front bearing ● Removing front drive shaft rear bearing
KV38104010 (—) Drift a: 67 mm (2.64 in) dia. b: 49 mm (1.93 in) dia.	 <p style="text-align: center;">ZZA1000D</p> <ul style="list-style-type: none"> ● Installing front drive shaft rear bearing ● Installing rear bearing
ST33200000 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	 <p style="text-align: center;">ZZA1002D</p> <ul style="list-style-type: none"> ● Installing front drive shaft front bearing
ST30621000 (J-25742-5) Drift a: 80 mm (3.15 in) dia. b: 59 mm (2.32 in) dia.	 <p style="text-align: center;">ZZA1000D</p> <ul style="list-style-type: none"> ● Installing mainshaft bearing

PREPARATION

Commercial Service Tools

NDS0009Q

Tool name	Description
Puller  NT077	<ul style="list-style-type: none"> ● Removing companion flange
Flange wrench  NT771	<ul style="list-style-type: none"> ● Removing and installing self-lock nut
Puller  ZZB0823D	<ul style="list-style-type: none"> ● Removing front drive shaft front bearing ● Removing front drive shaft rear bearing
Power tool  PBIC0190E	<ul style="list-style-type: none"> ● Loosening bolts and nuts

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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

NDS0009R

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

Reference page		IF-9			IF-45	IF-45	IF-51	IF-51	IF-51
SUSPECTED PARTS (Possible cause)		TRANSFER FLUID (Level low)	TRANSFER FLUID (Wrong)	TRANSFER FLUID (Level too high)	LIQUID GASKET (Damaged)	OIL SEAL (Worn or damaged)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	TRANSFER CASE (Damaged)
Symptom	Noise	1	2				3	3	3
	Transfer fluid leakage		4	1	2	2			3

TRANSFER FLUID

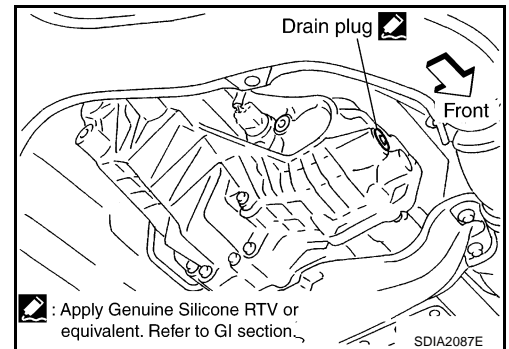
TRANSFER FLUID

PFP:31001

Replacement DRAINING

NDS0009S

1. Run the vehicle to warm up the transfer unit sufficiently.
2. Stop the engine, and remove the drain plug to drain the transfer fluid.
3. Apply sealant to drain plug. Install drain plug on transfer and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#).
 - Use Genuine Silicone RTV or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#).



FILLING

1. Remove filler plug and add transfer fluid until fluid level reaches the specified limit near filler plug mounting hole.

Fluid capacity

: Approx. 1.25 l (2-5/8 US pt, 2-1/4 Imp pt)

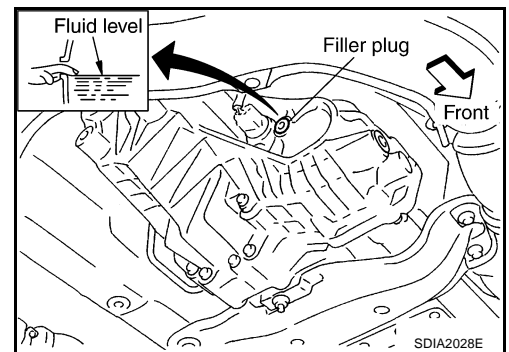
CAUTION:

Carefully fill the fluid. (Fill up for approx. 3 minutes.)

2. Leave the vehicle for 3 minutes, and check the fluid level again.
3. Set a new gasket onto filler plug and install it on transfer and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



Inspection

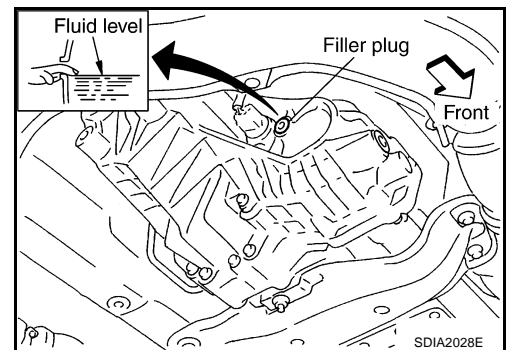
FLUID LEAKAGE AND FLUID LEVEL

NDS0009T

1. Check fluid level from filler plug mounting hole as shown in the figure.
2. Before installing filler plug, set a new gasket. Install filler plug on transfer and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



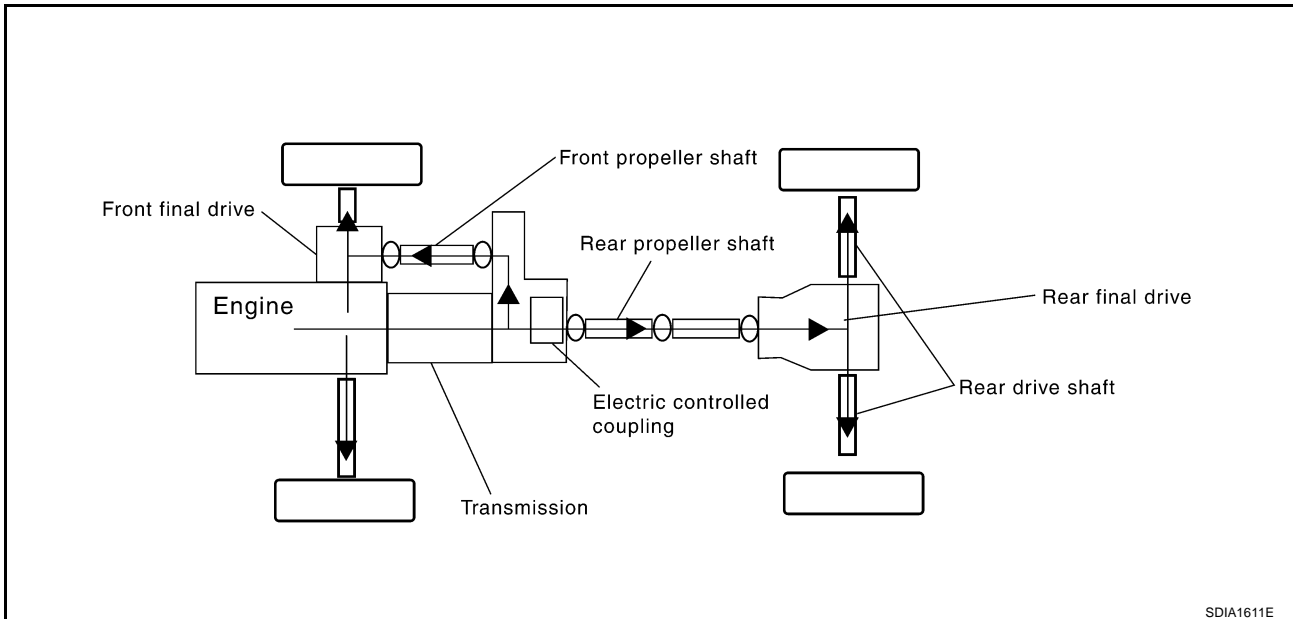
AWD SYSTEM

AWD SYSTEM

PF:41650

Power Transfer Diagram

NDS0009U



System Description DESCRIPTION

NDS0009V

- Electronic control allows optimal distribution of torque to front/rear wheels to match road conditions.
- Makes possible stable driving, with no wheel spin, on snowy roads or other slippery surfaces.
- On roads which do not require AWD, it contributes to improved fuel economy by driving in conditions close to rear-wheel drive.
- Sensor inputs determine the vehicle's turning condition, and in response tight cornering/braking are controlled by distributing optimum torque to front wheels.

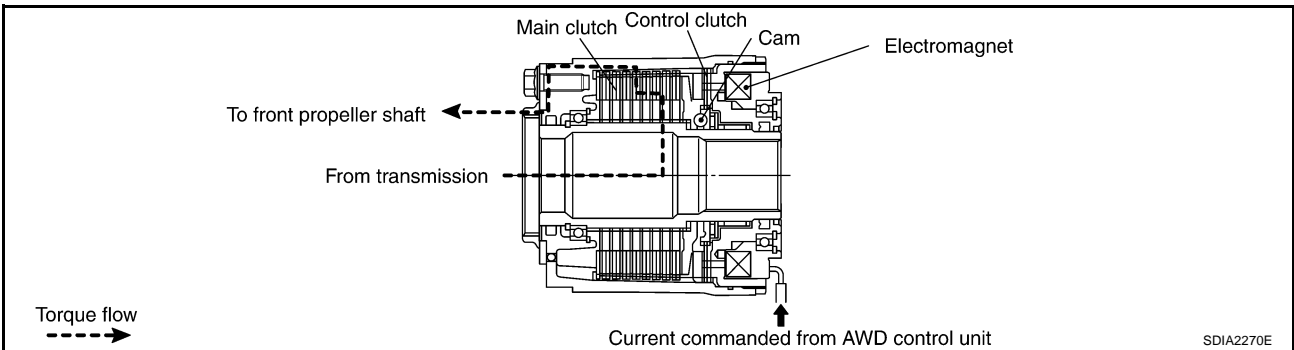
NOTE:

- When driving, if there is a large difference between front and rear wheel speed which continues for a long time, fluid temperature of drive system parts becomes too high and AWD warning lamp flashes rapidly. (When AWD warning lamp flashes, vehicle changes to rear-wheel drive conditions.) Also, optional distribution of torque sometimes becomes rigid before lamp flashes rapidly, but it is not malfunction.
- If AWD warning lamp is flashing rapidly, stop vehicle and allow it to idle for some time. Flashing will stop and AWD system will be restored.
- When driving, AWD warning lamp may flash slowly if there is a significant difference in diameter of the tires. At this time, vehicle performance is not fully available and cautious driving is required. (Continues until engine is turned OFF.)
- If the warning lamp flashes slowly during driving but remains OFF after engine is restarted, the system is normal. If it again flashes slowly after driving for some time, vehicle must be inspected.
- When the difference of revolution speed between the front and rear wheel mode the shift occasionally changes to direct 4-wheel driving conditions automatically. This is not malfunction.

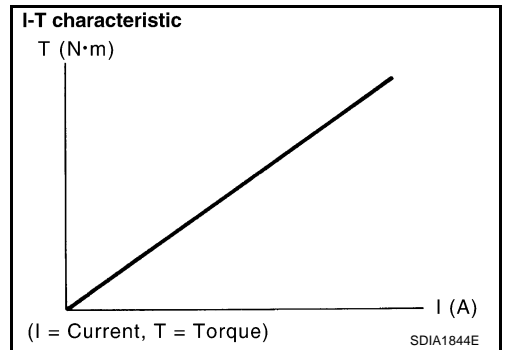
AWD SYSTEM

ELECTRIC CONTROLLED COUPLING

Operation Principle

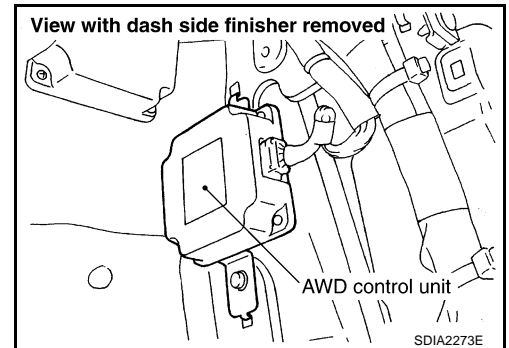


1. AWD control unit supplies command current to electric controlled coupling (AWD solenoid).
2. Control clutch is engaged by electromagnet and torque is detected in control clutch.
3. The cam operates in response to control clutch torque and applies pressure to main clutch.
4. Main clutch transmits torque to front wheels according to pressing power.
 - Transmission torque to front wheels is determined according to command current.



AWD CONTROL UNIT

- Controls distribution of drive power between rear-wheel drive (0:100) and AWD (50:50) conditions according to signals from sensors.
- Self-diagnosis can be done with CONSULT-II.



AWD SYSTEM

AWD WARNING LAMP

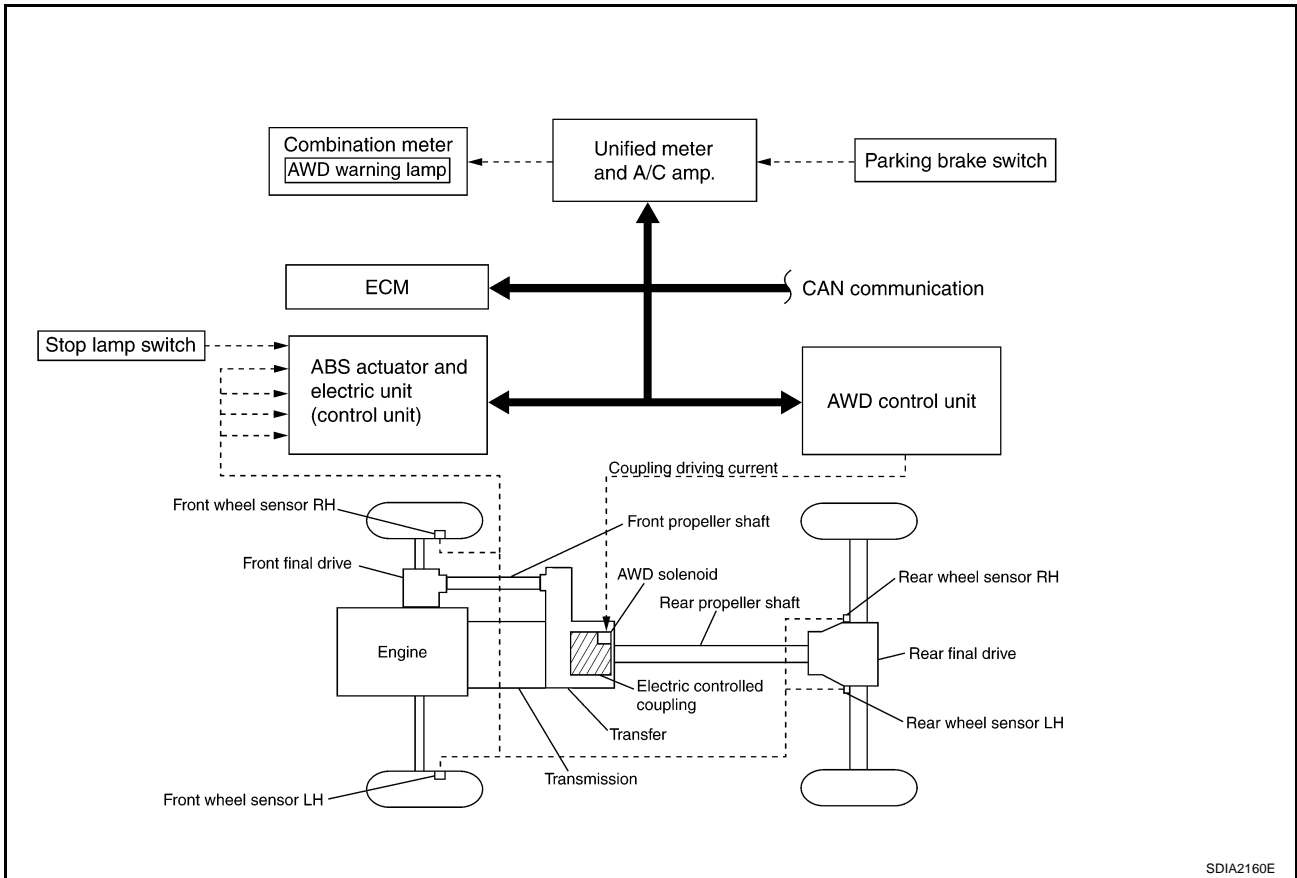
Turns ON when there is a malfunction in AWD system. It indicates that fail-safe mode is engaged and vehicle change to rear-wheel drive or shifting driving force-AWD (Front-wheels still have some driving torque). Also turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 seconds after the engine starts if system is normal.

AWD Warning Lamp Indication

Condition	AWD warning lamp
Lamp check	Turns ON when ignition switch is turned ON. Turns OFF approx. 1 second after engine start.
AWD system malfunction	ON
Protection function is activated due to heavy load to electric controlled coupling. (AWD system is not malfunctioning and AWD system changes to 2WD mode.)	Rapid flashing: 2 times/second (Flashing in approx. 1 minute and then turning OFF.)
Large difference in diameter of front/rear tires	Slow flashing: 1 time/2 seconds (Continuing to flash until turning ignition switch OFF)
Other than above (system normal)	OFF

System Diagram

NDS0009W



AWD SYSTEM

COMPONENTS FUNCTION DESCRIPTION

Component parts	Function
AWD control unit	<ul style="list-style-type: none"> ● Controls driving force distribution by signals from each sensor and switch from rear wheel driving mode (0:100) to AWD mode (50:50). ● 2WD mode is available by fail-safe function if malfunction is detected in AWD system.
Wheel sensors	Detects wheel speed.
AWD solenoid	Controls electric controlled coupling by command current from AWD control unit.
Electric controlled coupling	Transmits driving force to front final drive.
AWD warning lamp	<ul style="list-style-type: none"> ● Illuminates if malfunction is detected in electrical system of AWD system. ● There is 1 blink in 2 seconds if rotation difference of front wheels and rear wheels is large. ● There are 2 blinks in 1 second if load is still applied to driving parts.
ABS actuator and electric unit (control unit)	Transmits the following signals via CAN communication to AWD control unit. <ul style="list-style-type: none"> ● Vehicle speed signal ● Stop lamp switch signal (brake signal)
ECM	Transmits the following signals via CAN communication to AWD control unit. <ul style="list-style-type: none"> ● Accelerator pedal position signal ● Engine speed signal
Unified meter and A/C amp.	Transmits conditions of parking brake switch via CAN communication to AWD control unit.

CAN Communication SYSTEM DESCRIPTION

NDS0009X

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 transmits/receives data but selectively reads required data only. For details, refer to [LAN-49, "CAN System Specification Chart"](#).

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function

NDS0009Y

- If any malfunction occurs in AWD electrical system, and control unit detects the malfunction, AWD warning lamp on combination meter turns ON to indicate system malfunction.
- When AWD warning lamp is ON, vehicle changes to rear-wheel drive or shifting driving force-AWD (Front-wheels still have some driving torque).

How to Perform Trouble Diagnosis BASIC CONCEPT

NDS0009Z

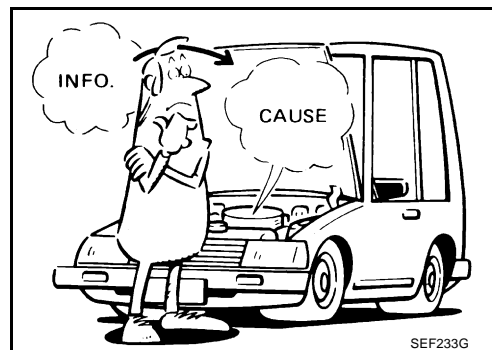
- To perform trouble diagnosis, it is the most important to have understanding about vehicle systems (control and mechanism) thoroughly.
- It is also important to clarify customer complaints before inspection.

First of all, reproduce symptoms, and understand them fully.

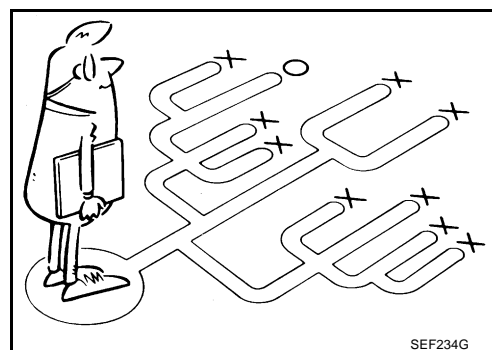
Ask customer about his/her complaints carefully. In some cases, it will be necessary to check symptoms by driving vehicle with customer.

CAUTION:

Customers are not professional. It is dangerous to make an easy guess like “maybe the customer means that...,” or “maybe the customer mentions this symptom”.



- It is essential to check symptoms right from the beginning in order to repair malfunctions completely. For intermittent malfunctions, reproduce symptoms based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairing without any symptom diagnosis, you cannot judge if malfunctions have actually been eliminated.



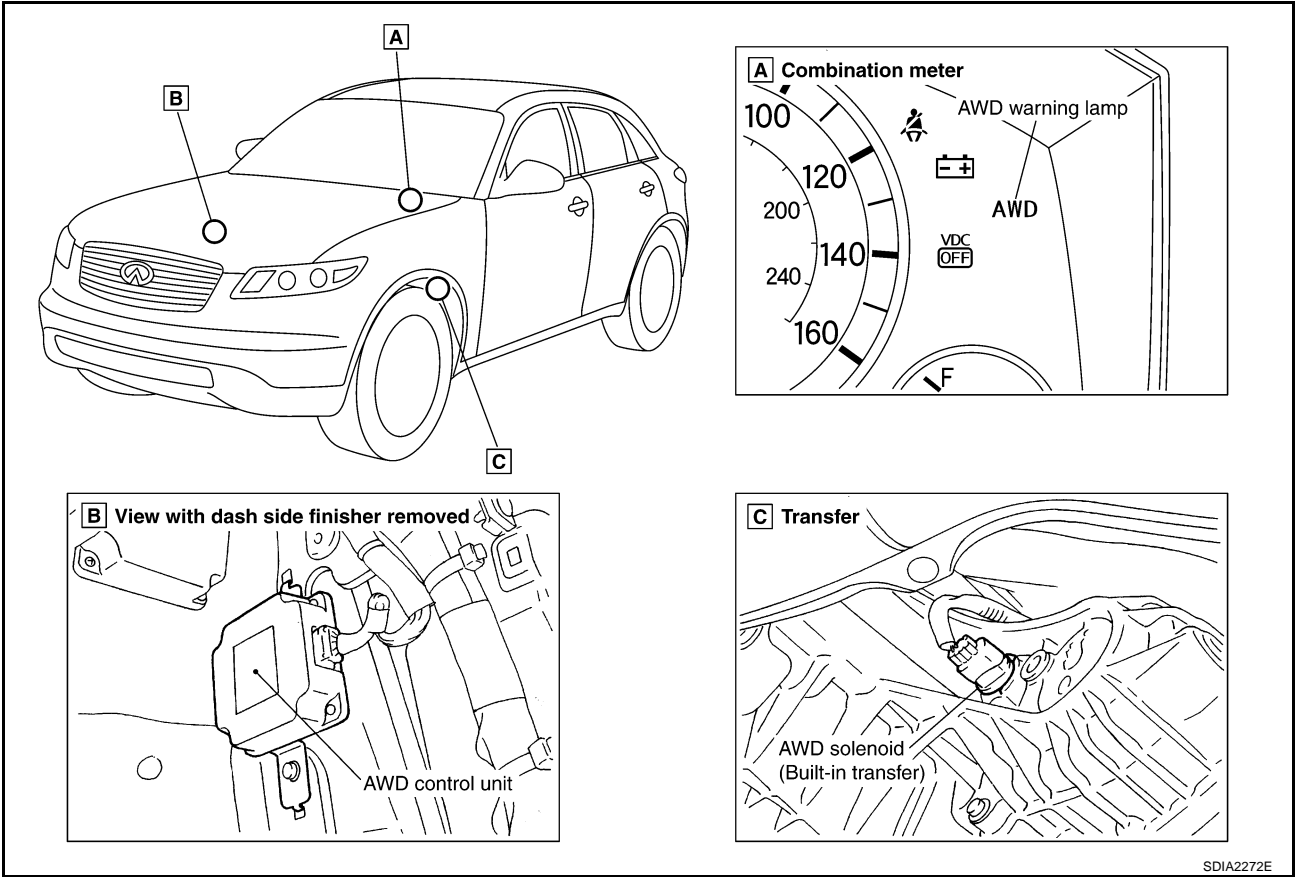
- After completing diagnosis, always erase diagnostic memory. Refer to [TF-23, "How to Erase Self-Diagnostic Results"](#) .
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.

TROUBLE DIAGNOSIS

Location of Electrical Parts

NDS000A0

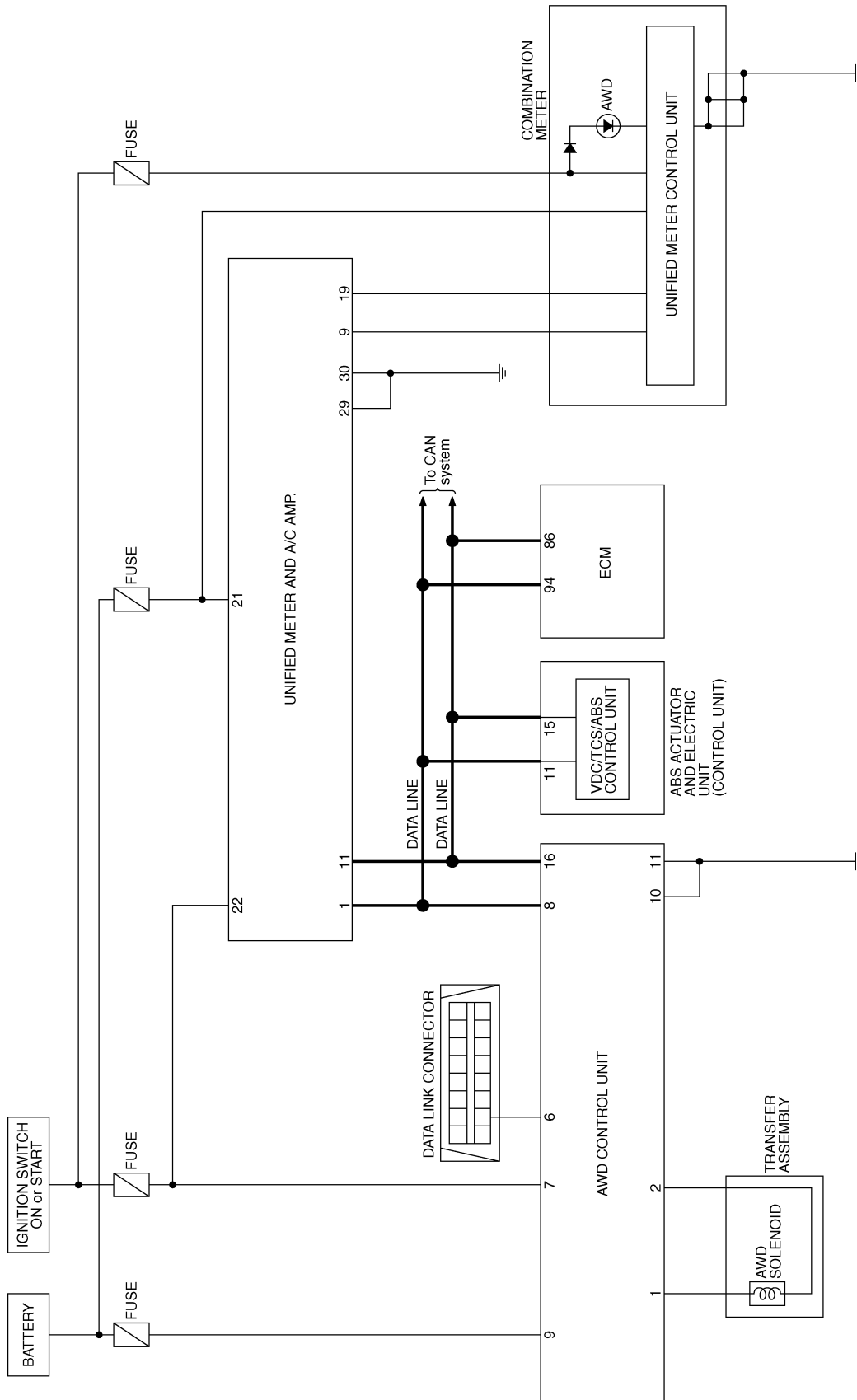
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TROUBLE DIAGNOSIS

Circuit Diagram

NDS000A1



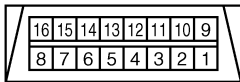
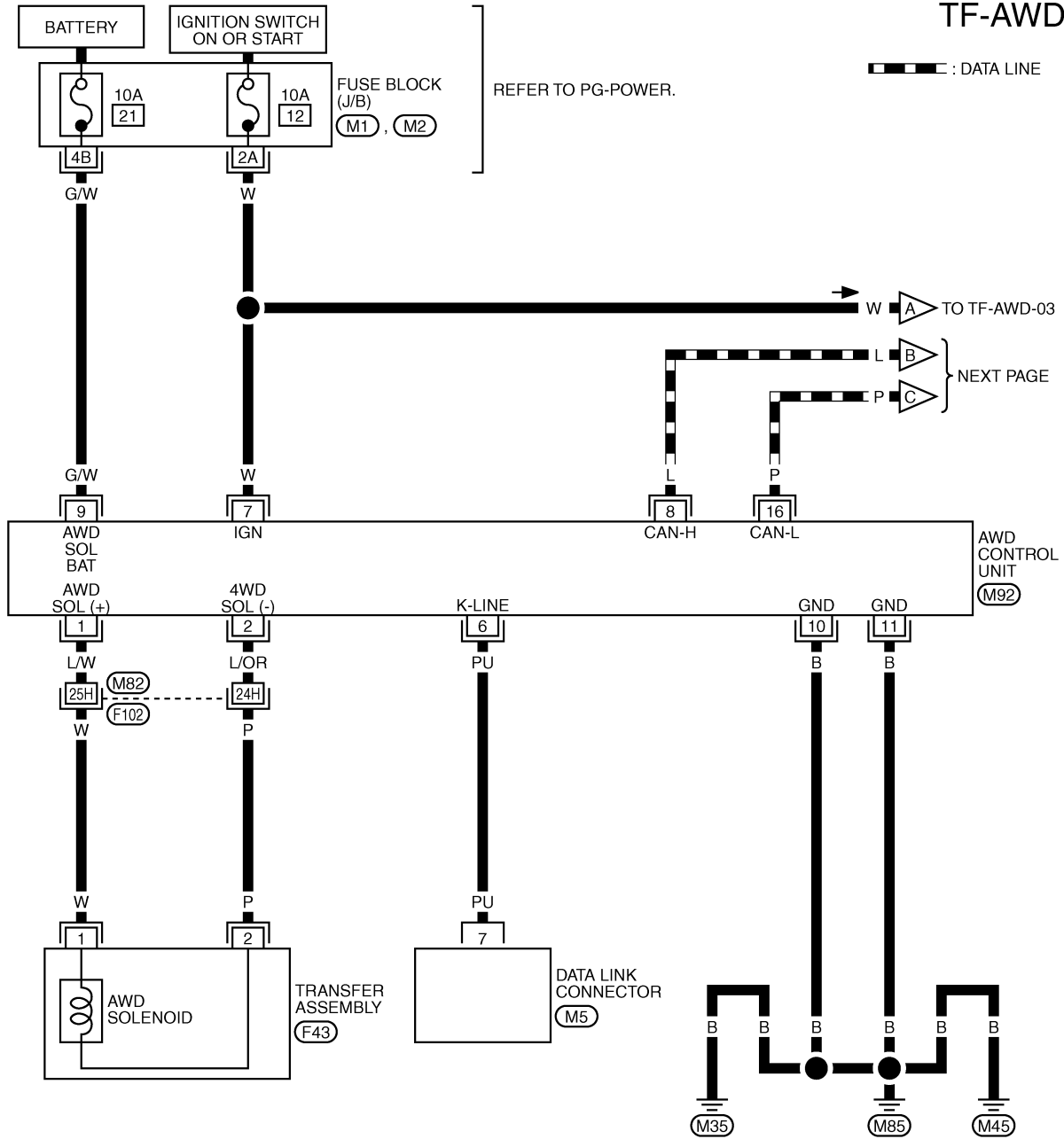
TDWM0055E

TROUBLE DIAGNOSIS

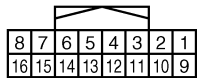
Wiring Diagram — AWD —

NDS000A2

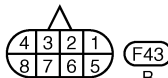
TF-AWD-01



(M5)
W



(M92)
W



(F43)
B

REFER TO THE FOLLOWING.

(F102) -SUPER MULTIPLE JUNCTION (SMJ)

(M1), (M2) -FUSE BLOCK JUNCTION BOX (J/B)

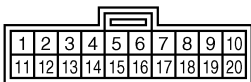
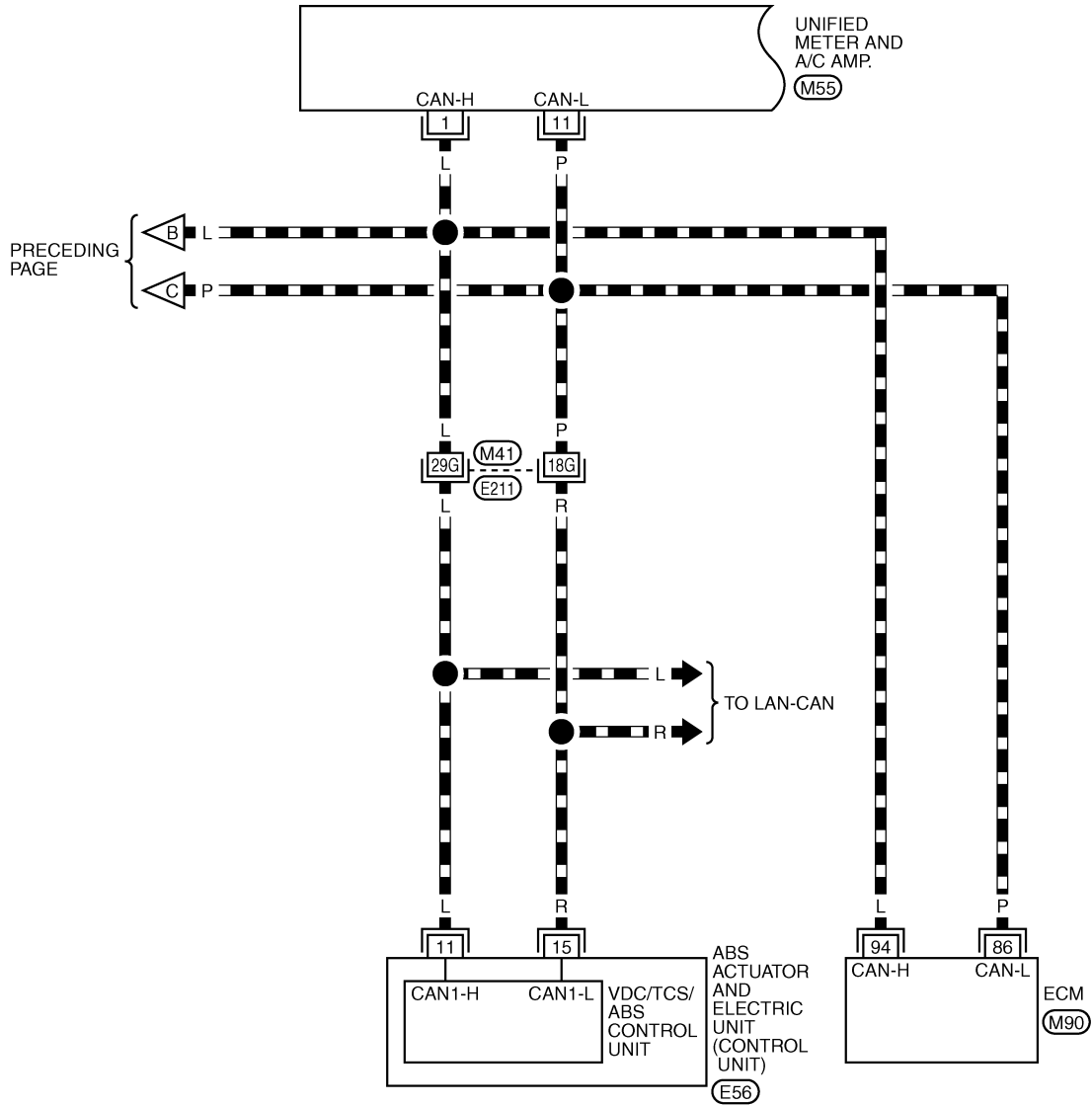
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TDWM0056E

TROUBLE DIAGNOSIS

TF-AWD-02

▬ : DATA LINE



(M55)
GY



REFER TO THE FOLLOWING.

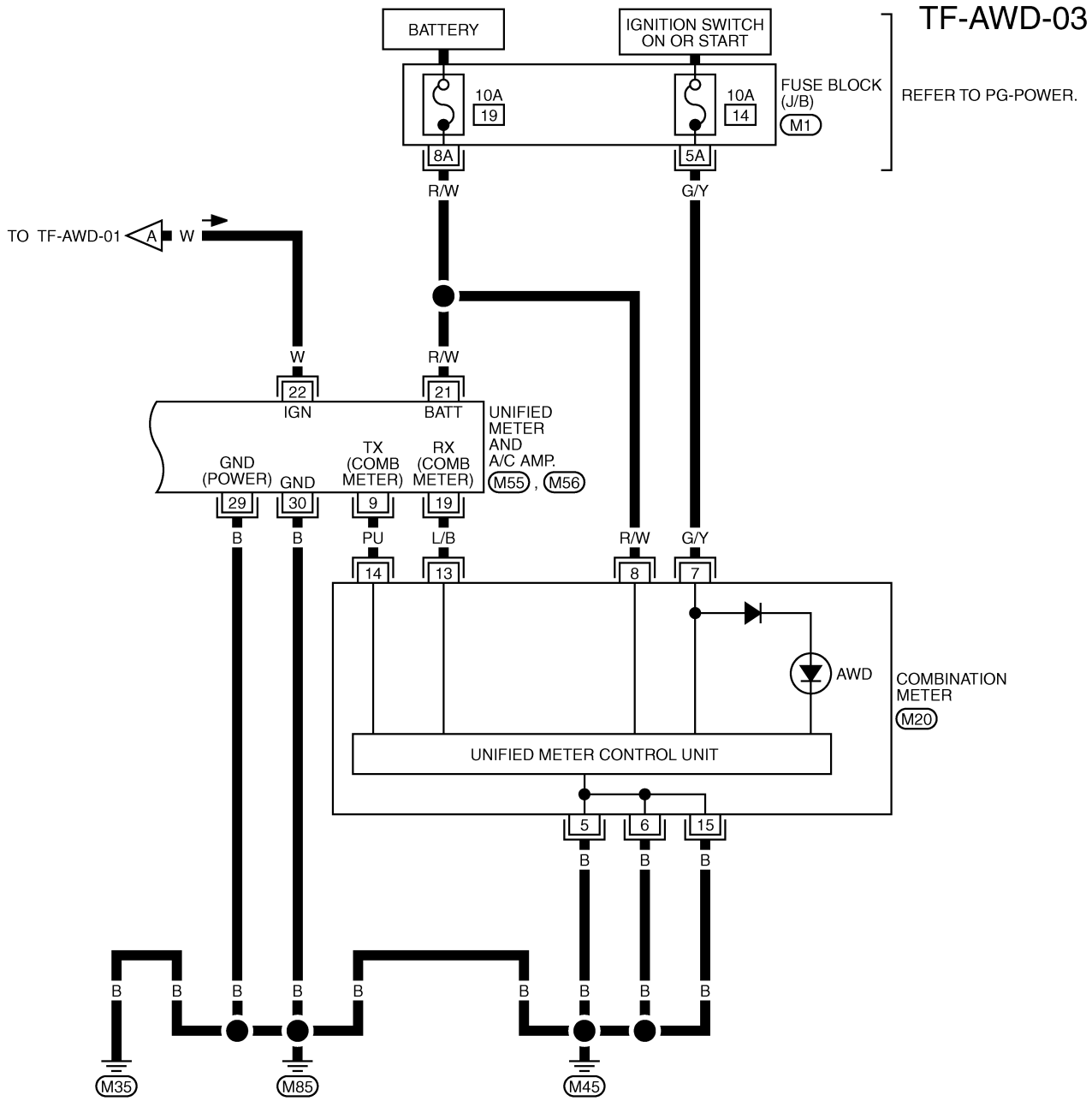
(E211) -SUPER MULTIPLE JUNCTION (SMJ)

(M90), (E56) -ELECTRICAL UNITS

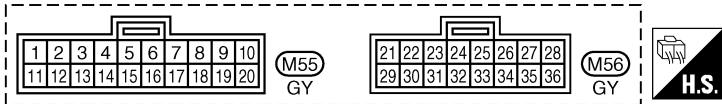
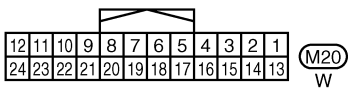
TDWM0057E

TROUBLE DIAGNOSIS

TF-AWD-03



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REFER TO THE FOLLOWING.

(M1) - FUSE BLOCK-JUNCTION BOX (J/B)

TDWM0058E

TROUBLE DIAGNOSIS

Trouble Diagnosis Chart for Symptoms

NDS000A3

If AWD warning lamp turns ON, perform self-diagnosis. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#) .

Symptom	Condition	Check item	Reference page
AWD warning lamp does not turn ON when the ignition switch is turned to ON. (AWD warning lamp check)	Ignition switch: ON	CAN communication line	TF-33
		Unified meter and A/C amp.	
		Unified meter control unit	
AWD warning lamp does not turn OFF several seconds after engine started.	Engine running	CAN communication line	TF-33
		Power supply and ground for AWD control unit	
		Unified meter and A/C amp.	
		Unified meter control unit	
		AWD solenoid	
		AWD actuator relay (integrated in AWD control unit)	
		Wheel sensor	
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. (See NOTE.)	<ul style="list-style-type: none"> ● While driving ● Steering wheel is turned fully to either sides 	CAN communication line	TF-35
		Accelerator pedal position signal	
		AWD solenoid	
		Mechanical malfunction of electric controlled coupling (clutch sticking etc.)	
Vehicle does not enter AWD mode even though AWD warning lamp turned to OFF.	While driving	AWD solenoid	TF-36
		Mechanical malfunction of electric controlled coupling (Mechanical engagement of clutch is not possible.)	
While driving, AWD warning lamp flashes rapidly. (When flashing in approx. 1 minute and then turning OFF.) Rapid flashing: 2 times/second	While driving	Protection function is activated due to heavy load to electric controlled coupling. (AWD system is not malfunctioning. Also, optional distribution of torque sometimes becomes rigid before lamp flashes rapidly, but it is not malfunctioning.)	TF-37
While driving, AWD warning lamp flashes slowly. (When continuing to flash until turning ignition switch OFF) Slow flashing: 1 time/2 seconds	<ul style="list-style-type: none"> ● While driving ● Vehicle speed: 20 km/h (12 MPH) or more 	Tire size is different between front and rear of vehicle.	TF-37

NOTE:

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

TROUBLE DIAGNOSIS

AWD Control Unit Input/Output Signal Reference Values

NDS000A4

AWD CONTROL UNIT INSPECTION TABLE

Specifications with CONSULT-II

Monitored item [Unit]	Content	Condition	Display value
FR RH SENSOR (km/h) or (mph)	Wheel speed (Front wheel right)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
FR LH SENSOR (km/h) or (mph)	Wheel speed (Front wheel left)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
RR RH SENSOR (km/h) or (mph)	Wheel speed (Rear wheel right)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
RR LH SENSOR (km/h) or (mph)	Wheel speed (Rear wheel left)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
BATTERY VOLT (V)	Power supply voltage for AWD control unit	Ignition switch: ON	Battery voltage
THRTL POS SEN (%)	Throttle opening condition	When depressing accelerator pedal (Value rises gradually in response to throttle position.)	0 - 100%
ETS SOLENOID (A)	Monitored value of current at AWD solenoid	Engine running ● At idle speed	Approx. 0.000A
		Engine running ● When depressing accelerator pedal	Approx. 0.000 - 2.400A*
STOP LAMP SW (ON/OFF)	Condition of brake pedal operation	Brake pedal: Depressed	ON
		Brake pedal: Released	OFF
ENG SPEED SIG (RUN/STOP)	Condition of engine running	Engine stopped (Engine speed: Less than 400 rpm)	STOP
		Engine running (Engine speed: 400 rpm or more)	RUN
ETS ACTUATOR (ON/OFF)	Operating condition of AWD actuator relay (integrated in AWD control unit)	Engine stopped (Ignition switch: ON)	OFF
		Engine running	ON
4WD WARN LAMP (ON/OFF)	AWD warning lamp condition	AWD warning lamp: ON	ON
		AWD warning lamp: OFF	OFF
4WD MODE MON (AUTO)	Control status of AWD	Engine running	AUTO
DIS-TIRE MONI (mm)	Improper size tire installed condition	Vehicle running with normal size tire installed	0-4 mm
		Vehicle running with improper size tire installed (Front/rear tire size difference, wear condition)	4-8 mm, 8- mm

TROUBLE DIAGNOSIS

Monitored item [Unit]	Content	Condition	Display value
P BRAKE SW (ON/OFF)	Condition of parking brake	Parking brake operated	ON
		Parking brake not operated	OFF

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

CONSULT-II Function (ALL MODE AWD/4WD) FUNCTION

NDS000A5

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

Diagnostic test mode	Function	Reference page
Self-diagnostic results	<ul style="list-style-type: none"> Self-diagnostic results can be read and erased quickly. 	TF-22
Data monitor	<ul style="list-style-type: none"> Input/Output data in the AWD control unit can be read. 	TF-24
CAN diagnostic support monitor	<ul style="list-style-type: none"> The results of transmit/receive diagnosis of CAN communication can be read. 	LAN-44
Active test	<ul style="list-style-type: none"> Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the AWD control unit and also shifts some parameters in a specified range. 	TF-25
ECU part number	<ul style="list-style-type: none"> AWD control unit part number can be read. 	TF-25

CONSULT-II SETTING PROCEDURE

Refer to [GI-38, "CONSULT-II Start Procedure"](#).

SELF-DIAG RESULT MODE

Operation Procedure

- Perform "CONSULT-II Start Procedure". Refer to [GI-38, "CONSULT-II Start Procedure"](#).
- Start engine and drive at 30 km/h (19 MPH) or more for approx. 1 minute.
- Stop vehicle. With engine at idle, touch "SELF-DIAG RESULTS". Display shows malfunction experienced since the last erasing operation.

NOTE:

- The details for "TIME" are as follow:

- "0": Error currently detected with AWD control unit.
- Except for "0": Error detected in the past and memorized with AWD control unit.
Detects frequency of driving after DTC occurs (frequency of turning ignition switch "ON").

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	0
4WD SOLENOID [C1204]	1
ERASE	PRINT

SDIA2217E

Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
CONTROLLER FAILURE [C1201]	Malfunction has occurred inside AWD control unit.	TF-27, "AWD Control Unit"
ABS SYSTEM [C1203]	Malfunction related to wheel sensor has been detected by ABS actuator and electric unit (control unit).	TF-27, "ABS System"
4WD SOLENOID [C1204]	Malfunction related to AWD solenoid has been detected.	TF-28, "AWD Solenoid"
4WD ACTUATOR RLY [C1205]	Malfunction has been detected from AWD actuator relay integrated with AWD control unit, or malfunction related to AWD solenoid has been detected.	TF-31, "AWD Actuator Relay" or TF-28, "AWD Solenoid"
ENGINE SIGNAL 1 [C1210]	Malfunction has been detected from ECM.	TF-32, "Engine Control Signal"
CAN COMM CIRCUIT [U1000]	When AWD control unit is not transmitting or receiving CAN communication signal for 2 seconds or more.	TF-32, "CAN Communication Line"
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	No NG item has been detected.	—

TROUBLE DIAGNOSIS

CAUTION:

- If “CAN COMM CIRCUIT [U1000]” is displayed with other DTCs, first perform the trouble diagnosis for CAN communication line. A
- Make sure that ABS warning lamp turns OFF by driving for a minute at vehicle speed of 30 km/h (19 MPH) or more after turning ignition switch “OFF” if AWD warning lamp turns ON with system malfunction of “ABS SYSTEM [C1203]”. AWD warning lamp may not turn OFF if it is normal unless ignition switch turns OFF at once and engine restarts after that. B

How to Erase Self-Diagnostic Results

1. Perform applicable inspection of malfunctioning item and then repair or replace. C
2. Start engine and drive at 30 km/h (19 MPH) or more for approx. 1 minute.
3. Make sure that ABS warning lamp turns OFF.

NOTE:

Make sure that ABS warning lamp turns OFF by driving for a minute at vehicle speed of 30 km/h (19 MPH) or more after turning ignition switch “OFF” if AWD warning lamp turns ON with system malfunction of “ABS SYSTEM [C1203]”. AWD warning lamp may not turn OFF if it is normal unless ignition switch turns OFF at once and engine restarts after that. TF

4. Turn ignition switch “OFF” to erase memory. E
5. Start engine and select “SELF-DIAG RESULTS” mode for “ALL MODE AWD/4WD” with CONSULT-II. F
6. Touch “ERASE” on CONSULT-II screen to erase DTC memory.

CAUTION:

If memory cannot be erased, perform applicable diagnosis. G

7. Drive at 30 km/h (19 MPH) or more for approx. 1 minute. Be sure AWD warning lamp is OFF. H

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TROUBLE DIAGNOSIS

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II Start Procedure". Refer to [GI-38, "CONSULT-II Start Procedure"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

NOTE:

When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.

Also, any malfunction detected while in this mode will be displayed at real time.

Display Item List

×: Standard -: Not applicable

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR RH SENSOR (km/h) or (mph)	×	×	×	Wheel speed calculated by front wheel sensor RH signal is displayed.
FR LH SENSOR (km/h) or (mph)	×	×	×	Wheel speed calculated by front wheel sensor LH signal is displayed.
RR RH SENSOR (km/h) or (mph)	×	×	×	Wheel speed calculated by rear wheel sensor RH signal is displayed.
RR LH SENSOR (km/h) or (mph)	×	×	×	Wheel speed calculated by rear wheel sensor LH signal is displayed.
BATTERY VOLT (V)	-	-	×	Power supply voltage for AWD control unit
THRTL POS SEN (%)	-	-	×	Throttle opening status is displayed.
ETS SOLENOID (A)	-	-	×	Monitored value of current at AWD solenoid
STOP LAMP SW (ON/OFF)	-	-	×	Stop lamp switch signal status via CAN communication line is displayed.
ENG SPEED SIG (RUN/STOP)	-	-	×	Engine status is displayed.
ETS ACTUATOR (ON/OFF)	-	-	×	Operating condition of AWD actuator relay (integrated in AWD control unit) is displayed.
4WD WARN LAMP (ON/OFF)	-	-	×	Control status of AWD warning lamp is displayed.
4WD MODE SW (AUTO)	-	-	×	AWD lock switch is not equipped, but displayed.
4WD MODE MON (AUTO)	-	-	×	Control status of AWD is displayed.
DIS-TIRE MONI (mm)	-	-	×	Improper size tire installed condition is displayed.
P BRAKE SW (ON/OFF)	-	-	×	Parking switch signal status via CAN communication line is displayed.
Voltage (V)	-	-	×	The value measured by the voltage probe is displayed.

TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Frequency (Hz)	-	-	×	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	-	-	×	
DUTY-LOW (low) (%)	-	-	×	
PLS WIDTH-HI (msec)	-	-	×	
PLS WIDTH-LOW (msec)	-	-	×	

ACTIVE TEST MODE

Description

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

Test Item

Test item	Condition	Description
ETS S/V (Detects AWD solenoid valve)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● No DTC detected 	<ul style="list-style-type: none"> ● Change command current value to AWD solenoid, and then change driving mode. (Monitor value is normal if it is within approximately $\pm 10\%$ of command value.) Qu: Increase current value in increments of 0.20A Qd: Decrease current value in increments of 0.20A UP: Increase current value in increments of 0.02A DOWN: Decrease current value in increments of 0.02A

CAUTION:

Do not continuously energize for a long time.

AWD CONTROL UNIT PART NUMBER

Ignore the AWD control unit part number displayed in the "ECU PART NUMBER". Refer to parts catalog to order the AWD control unit.

TROUBLE DIAGNOSIS FOR SYSTEM

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Power Supply Circuit for AWD Control Unit CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

NDS000A6

Data are reference value.

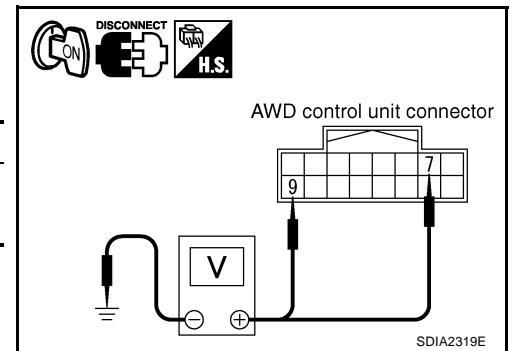
Monitored item [Unit]	Condition	Display value (Approx.)
BATTERY VOLT [V]	Ignition switch: ON	Battery voltage

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

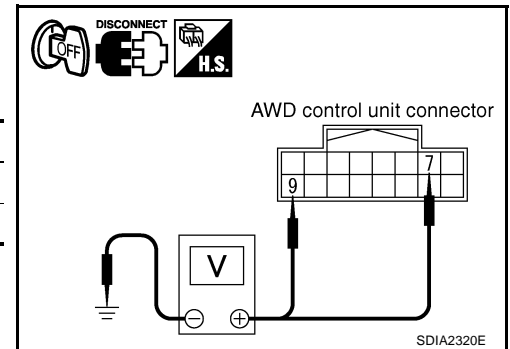
1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector.
3. Turn ignition switch "ON". (Do not start engine.)
4. Check voltage between AWD control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M92	7 - Ground	Battery voltage
	9 - Ground	



5. Turn ignition switch "OFF".
6. Check voltage between AWD control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M92	7 - Ground	0V
	9 - Ground	Battery voltage



OK or NG

OK >> GO TO 2.

NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- 10A fuse [No. 12 or 21, located in the fuse block (J/B)]
- Harness for short or open between battery and AWD control unit harness connector terminal 9
- Harness for short or open between ignition switch and AWD control unit harness connector terminal 7
- Ignition switch. Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector.
3. Check continuity between AWD control unit harness connector M92 terminals 10, 11 and ground.

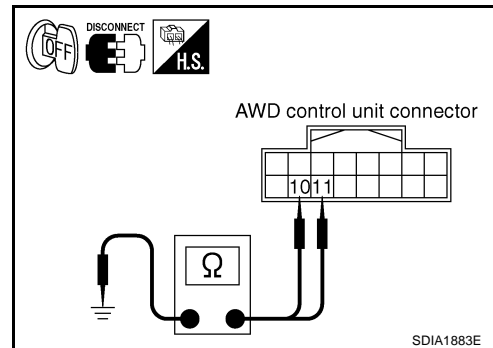
Continuity should exist.

Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 3.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK DTC

Start engine.

Does AWD warning lamp turn OFF?

YES >> **INSPECTION END**

NO >> Perform the self-diagnosis, repair or replace damaged parts. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#).

AWD Control Unit DIAGNOSTIC PROCEDURE

NDS000A7

- Check the following if "CONTROLLER FAILURE [C1201]" is displayed in self-diagnostic results of CONSULT-II.

1. PERFORM SELF-DIAGNOSIS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform the self-diagnosis again.

Is the "CONTROLLER FAILURE [C1201]" displayed?

YES >> Replace AWD control unit. Refer to [TF-39, "AWD CONTROL UNIT"](#).

NO >> **INSPECTION END**

ABS System DIAGNOSTIC PROCEDURE

NDS000A8

- Check the following if "ABS SYSTEM [C1203]" is displayed in self-diagnostic results of CONSULT-II.

1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-25, "DESCRIPTION"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK DTC AFTER DRIVING

1. Turn ignition switch "OFF".
2. Start engine and drive vehicle at 30 km/h (19 MPH) for at least 1 minute.
3. Make sure that ABS warning lamp turns OFF.
4. Perform erase self-diagnostic results. Refer to [TF-23, "How to Erase Self-Diagnostic Results"](#).
5. Stop vehicle and turn ignition switch "OFF".
6. Turn ignition switch "ON".
7. Perform self-diagnosis.

Is the "ABS SYSTEM [C1203]" displayed?

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

3. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 4.
NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

- OK >> **INSPECTION END**
NG >> Perform self-diagnosis with ABS actuator and electric unit (control unit) again. Refer to [BRC-25, "DESCRIPTION"](#).

AWD Solenoid

NDS000A9

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Condition	Display value
ETS SOLENOID [A]	At idle speed	Approx. 0.000A
	When depressing accelerator pedal	Approx. 0.000 - 2.400A*

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

DIAGNOSTIC PROCEDURE

- Check the following if "4WD SOLENOID [C1204]" is displayed in self-diagnostic results of CONSULT-II.

TROUBLE DIAGNOSIS FOR SYSTEM

1. CHECK AWD SOLENOID SIGNAL

With CONSULT-II

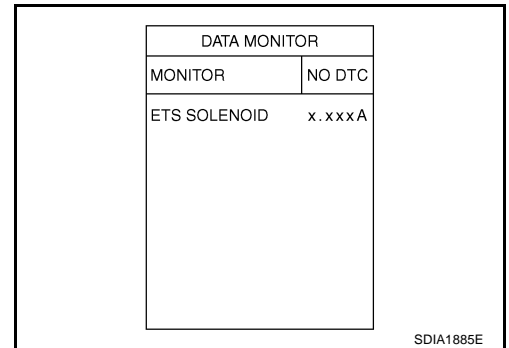
1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out the value of "ETS SOLENOID".

Condition		Display value
Engine running	At idle speed	Approx. 0.000A
	When depressing accelerator pedal	Approx. 0.000 - 2.400A*

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

OK or NG

- OK >> GO TO 6.
 NG >> GO TO 2.



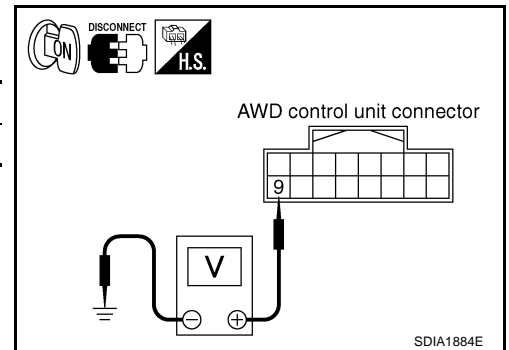
2. CHECK POWER SUPPLY

1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector.
3. Turn ignition switch "ON". (Do not start engine.)
4. Check voltage between AWD control unit harness connector terminal 9 and ground.

Connector	Terminal	Voltage (Approx.)
M92	9 - Ground	Battery voltage

OK or NG

- OK >> GO TO 3.
 NG >> Check the following. If any items are damaged, repair or replace damaged parts.
- 10A fuse [No. 21, located in the fuse block (J/B)]
 - Harness for short or open between battery and AWD control unit harness connector terminal 9



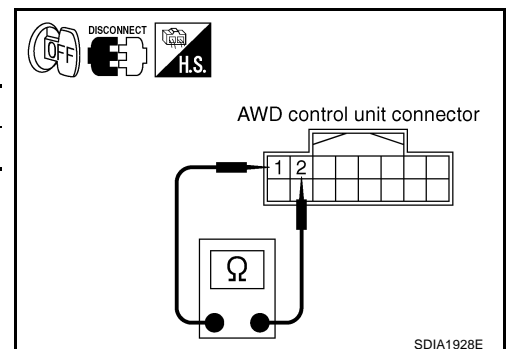
3. CHECK AWD SOLENOID CIRCUIT

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

Connector	Terminal	Resistance (Approx.)
M92	1 - 2 (Ground)	2.45 Ω

OK or NG

- OK >> GO TO 6.
 NG >> GO TO 4.



TROUBLE DIAGNOSIS FOR SYSTEM

4. CHECK AWD SOLENOID

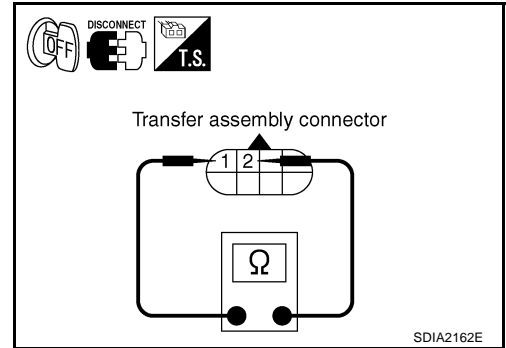
1. Turn ignition switch "OFF".
2. Disconnect transfer assembly harness connector.
3. Check resistance between transfer assembly harness connector F43 terminals 1 and 2.

1 - 2 : Approx. 2.45Ω

OK or NG

OK >> GO TO 5.

NG >> AWD solenoid is malfunctioning. Replace electric controlled coupling. Refer to [TF-45, "Disassembly and Assembly"](#).



5. CHECK HARNESS BETWEEN AWD CONTROL UNIT AND AWD SOLENOID

1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector and transfer assembly harness connector.
3. Check continuity between the following terminals.
 - AWD control unit harness connector M92 terminal 1 and transfer assembly harness connector F43 terminal 1.
 - AWD control unit harness connector M92 terminal 2 and transfer assembly harness connector F43 terminal 2.

1 - 1 : Continuity should exist.

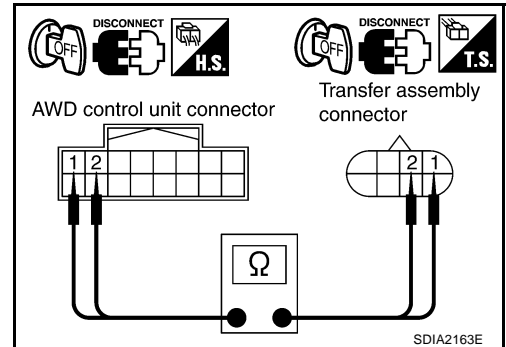
2 - 2 : Continuity should exist.

Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.



6. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 7.

NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

7. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**

NG >> Replace AWD control unit.

COMPONENT INSPECTION

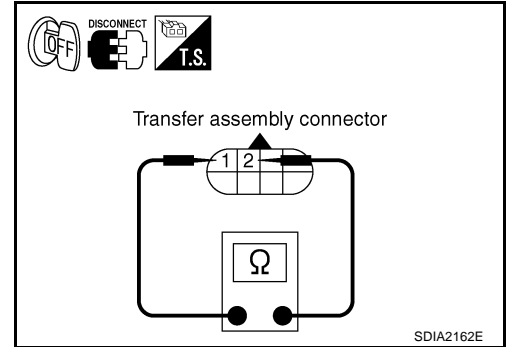
1. Turn ignition switch "OFF".
2. Disconnect transfer assembly harness connector.

TROUBLE DIAGNOSIS FOR SYSTEM

3. Check resistance between transfer assembly harness connector F43 terminals 1 and 2.

1 - 2 : Approx. 2.45Ω

4. If NG, replace electric controlled coupling. Refer to [TF-45, "Dis-assembly and Assembly"](#) .



AWD Actuator Relay CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Condition	Display value
ETS ACTUATOR [ON/OFF]	Engine stopped (Ignition switch: ON)	OFF
	Engine running	ON

DIAGNOSTIC PROCEDURE

- Check the following if "4WD ACTUATOR RLY [C1205]" is displayed in self-diagnostic results of CONSULT-II.

1. CHECK AWD SOLENOID SYSTEM

Perform self-diagnosis. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#) .

Is the "4WD SOLENOID [C1204]" displayed?

- YES >> Perform trouble diagnosis for AWD solenoid. Refer to [TF-28, "AWD Solenoid"](#) .
NO >> GO TO 2.

2. CHECK AWD ACTUATOR RELAY SIGNAL

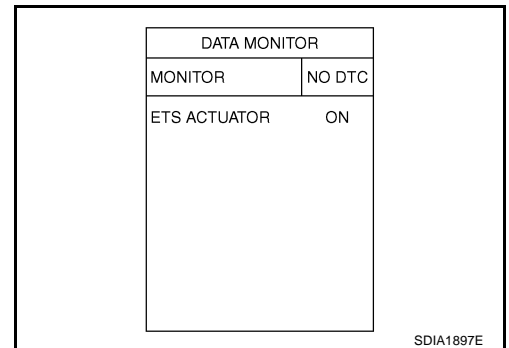
With CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
- Start engine and read out ON/OFF signal of "ETS ACTUATOR".

Monitor item	Condition	Display value
ETS ACTUATOR	Engine stopped (Ignition switch: ON)	OFF
	Engine running	ON

OK or NG

- OK >> GO TO 4.
NG >> GO TO 3.



3. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 4.
NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYSTEM

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace AWD control unit.

Engine Control Signal DIAGNOSTIC PROCEDURE

NDS000AB

- Check the following if "ECM SIGNAL 1 [C1210]" is displayed in self-diagnostic results of CONSULT-II.

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to [EC-54, "Emission-Related Diagnostic Information"](#) (VQ engine models) or [EC-716, "Emission-related Diagnostic Information"](#) (VK engine models).

Is any malfunction detected by self-diagnosis?

- YES >> Check the malfunctioning system.
- NO >> GO TO 2.

2. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

3. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

- OK >> **INSPECTION END**
- NG >> Perform self-diagnosis with ECM again. Refer to [EC-54, "Emission-Related Diagnostic Information"](#) (VQ engine models) or [EC-716, "Emission-related Diagnostic Information"](#) (VK engine models).

CAN Communication Line DIAGNOSTIC PROCEDURE

NDS000AC

- Check the following if "CAN COMM CIRCUIT [U1000]" is detected in self-diagnostic results of CONSULT-II.

1. CHECK CAN COMMUNICATION CIRCUIT

 **With CONSULT-II**

1. Turn ignition switch "ON" and start engine.
2. Select "SELF-DIAG RESULTS" mode for "ALL MODE AWD/4WD" with in CONSULT-II.
3. Perform the self-diagnosis.

Is the "CAN COMM CIRCUIT [U1000]" displayed?

- YES >> Print out CONSULT-II screen and go to [LAN-49, "CAN System Specification Chart"](#).
- NO >> **INSPECTION END**

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	0
ERASE	PRINT

SDIA1850E

TROUBLE DIAGNOSIS FOR SYMPTOMS

TROUBLE DIAGNOSIS FOR SYMPTOMS

PF0:00007

AWD Warning Lamp Does Not Turn ON When The Ignition Switch Is Turned to ON

NDS000AD

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#).

Is the "CAN COMM CIRCUIT [U1000]" displayed?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-32, "CAN Communication Line"](#).

NO >> GO TO 2.

2. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 3.

NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

3. CHECK OUTPUT SIGNAL WITH UNIFIED METER AND A/C AMP.

 With CONSULT-II

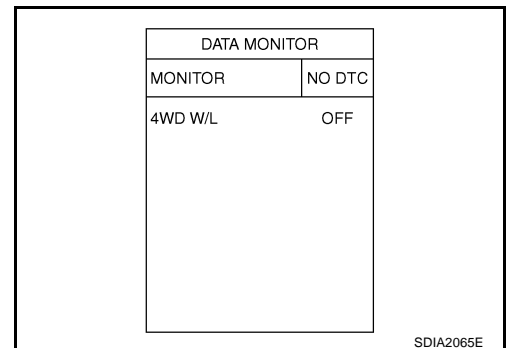
1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "METER A/C AMP" with CONSULT-II.
3. Start the engine, and then make sure that "4WD W/L" display turns from "ON" to "OFF" after several seconds.

Monitor item	Condition	Display value
4WD W/L	Ignition switch ON	ON
	Start engine (after several seconds)	OFF

OK or NG

OK >> GO TO 4.

NG >> Perform trouble diagnosis for combination meter. Refer to [DI-16, "Trouble Diagnosis"](#).



4. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Replace unified meter control unit assembly. Refer to [DI-25, "Disassembly and Assembly of Combination Meter"](#).

AWD Warning Lamp Does Not Turn OFF Several Seconds after Engine Started

NDS000AE

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

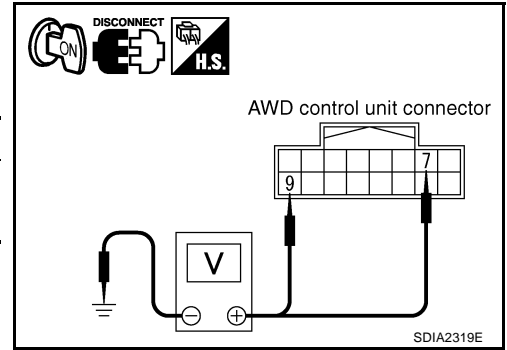
NO >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK AWD CONTROL UNIT POWER SUPPLY CIRCUIT

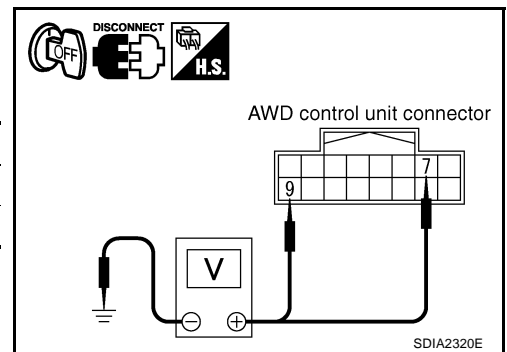
1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector.
3. Turn ignition switch "ON". (Do not start engine.)
4. Check voltage between AWD control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M92	7 - Ground	Battery voltage
	9 - Ground	



5. Turn ignition switch "OFF".
6. Check voltage between AWD control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M92	7 - Ground	0V
	9 - Ground	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- 10A fuse [No. 12 or 21, located in the fuse block (J/B)]
- Harness for short or open between battery and AWD control unit harness connector terminal 9
- Harness for short or open between ignition switch and AWD control unit harness connector terminal 7
- Ignition switch. Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) .

3. CHECK AWD CONTROL UNIT GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect AWD control unit harness connector.
3. Check continuity between AWD control unit harness connector M92 terminals 10, 11 and ground.

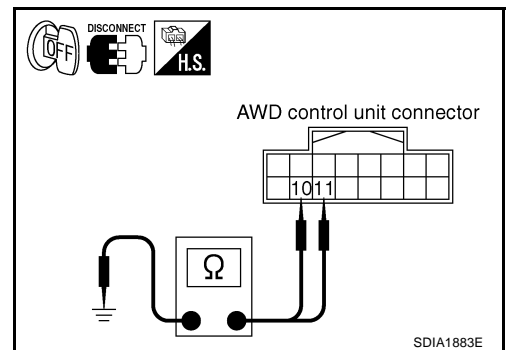
Continuity should exist.

Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 4.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 5.

NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK OUTPUT SIGNAL WITH UNIFIED METER AND A/C AMP.

 With CONSULT-II

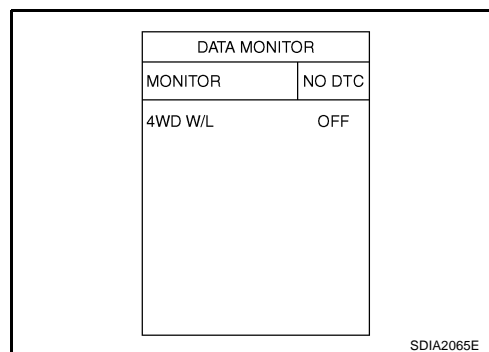
1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "METER A/C AMP" with CONSULT-II.
3. Start the engine, and then make sure that "4WD W/L" display turns from "ON" to "OFF" after several seconds.

Monitor item	Condition	Display value
4WD W/L	Ignition switch ON	ON
	Start engine (after several seconds)	OFF

OK or NG

OK >> GO TO 6.

NG >> Perform trouble diagnosis for combination meter. Refer to [DI-16, "Trouble Diagnosis"](#) .



6. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Replace unified meter control unit assembly. Refer to [DI-25, "Disassembly and Assembly of Combination Meter"](#) .

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

NDS000AF

NOTE:

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

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TF-22, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT [U1000]" displayed?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-32, "CAN Communication Line"](#) .

NO >> GO TO 2.

2. CHECK ACCELERATOR PEDAL POSITION SIGNAL CIRCUIT

Perform self-diagnosis for ECM. Refer to [EC-54, "Emission-Related Diagnostic Information"](#) (VQ35DE models) or [EC-716, "Emission-related Diagnostic Information"](#) (VK45DE models).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 3.

TROUBLE DIAGNOSIS FOR SYMPTOMS

3. CHECK SYSTEM FOR AWD SOLENOID

Perform trouble diagnosis for AWD solenoid system. Refer to [TF-28, "AWD Solenoid"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace damaged parts.

4. CHECK ELECTRIC CONTROLLED COUPLING

1. Turn ignition switch "OFF".
2. Set the selector lever to "N" (neutral) position and disengage the parking brake.
3. Lift up the vehicle.
4. Rotate the rear propeller shaft by hand.
5. Hold front propeller shaft lightly.

Does front propeller shaft rotate?

- YES >> Replace electric controlled coupling for mechanical malfunction (clutch sticking etc.). Refer to [TF-45, "Disassembly and Assembly"](#) .
- NO >> GO TO 5.

5. SYMPTOM CHECK

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

Vehicle Does Not Enter AWD Mode Even Though AWD Warning Lamp Turned to OFF

NDS000AG

DIAGNOSTIC PROCEDURE

1. CHECK AWD SOLENOID

Check AWD solenoid. Refer to [TF-30, "COMPONENT INSPECTION"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Replace electric controlled coupling for malfunction of AWD solenoid. Refer to [TF-45, "Disassembly and Assembly"](#) .

2. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

3. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Replace electric controlled coupling for mechanical malfunction (mechanical engagement of clutch is not possible.). Refer to [TF-45, "Disassembly and Assembly"](#).

While Driving, AWD Warning Lamp Flashes Rapidly (When Flashing in Approx. 1 Minute and Then Turning OFF)

NDS000AH

NOTE:

Rapid flashing: 2 times/second

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 flashes rapidly. Both cases are not malfunction.

When this symptom occurs, stop vehicle and allow it to idle for some times. Flashing will stop and system will be restored.

While Driving, AWD Warning Lamp Flashes Slowly (When Continuing to Flash until Turning Ignition Switch OFF)

NDS000AI

NOTE:

Slow flashing: 1 time/2 seconds

DIAGNOSTIC PROCEDURE

1. CHECK TIRE

Check the following.

- Tire pressure
- Wear condition
- Longitudinal tire size (There is no difference between longitudinal tires.)

OK or NG

OK >> GO TO 2.

NG >> Drive at vehicle speed of 20 km/h (12 MPH) or more for 5 seconds or more after repairing or replacing damaged parts. (Initialize improper size tire information.)

2. CHECK INPUT SIGNAL OF TIRE DIAMETER

 **With CONSULT-II**

1. Start engine.
2. Drive at 20 km/h (12 MPH) or more for approx. 200 seconds.
3. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
4. Check monitor "DIS-TIRE MONI".

Display of "DIS-TIRE MONI"

"0-4mm">>**INSPECTION END**

Except for "0-4mm">>GO TO 3.

DATA MONITOR	
MONITOR	NO DTC
DIS-TIRE MONI	0-4mm

SDIA1900E

TROUBLE DIAGNOSIS FOR SYMPTOMS

3. CHECK AWD CONTROL UNIT

Check AWD control unit input/output signal. Refer to [TF-21, "AWD Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 4.

NG >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Replace AWD control unit.

AWD CONTROL UNIT

AWD CONTROL UNIT

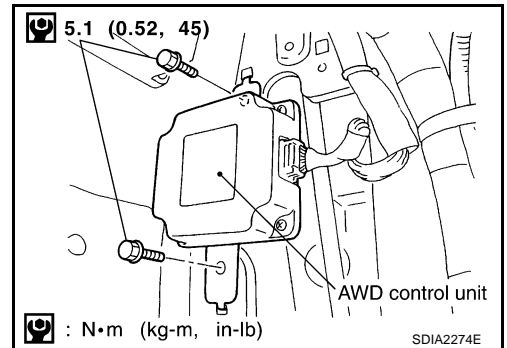
PFP:41650

Removal and Installation

NDS000AJ

REMOVAL

1. Remove the dash side finisher. Refer to [EI-39, "DASH SIDE FINISHER"](#) .
2. Disconnect AWD control unit connector.
3. Remove the AWD control unit.



INSTALLATION

Install in the reverse order of removal.

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FRONT OIL SEAL

PFP:38189

NDS000AK

FRONT OIL SEAL

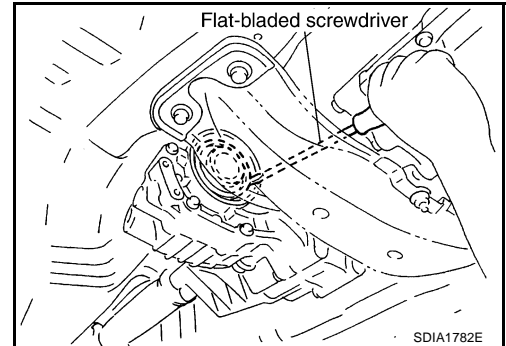
Removal and Installation

REMOVAL

1. Remove the drain plug to drain the transfer fluid. Refer to [TF-9, "Replacement"](#) .
2. Remove the front propeller shaft. Refer to [PR-4, "FRONT PROPELLER SHAFT"](#) .
3. Remove front oil seal using a flat-bladed screwdriver.

CAUTION:

Be careful not to damage the front case and front drive shaft.



INSTALLATION

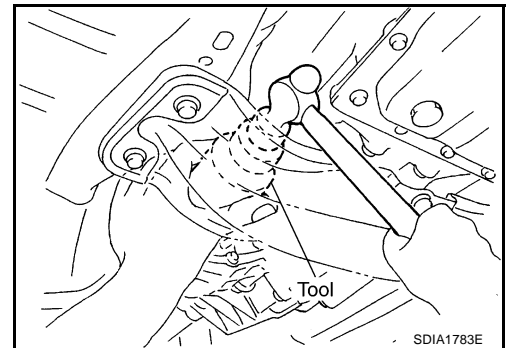
1. Apply ATF to front oil seal, install it with a drift until the end face of front case.

Tool number : ST27862000 (—)

CAUTION:

- Do not reuse front oil seal.
- When installing, do not incline front oil seal.

2. Install front propeller shaft. Refer to [PR-4, "FRONT PROPELLER SHAFT"](#) .
3. Install transfer fluid, check fluid level and for fluid leakage. Refer to [TF-9, "Inspection"](#) .



REAR OIL SEAL

REAR OIL SEAL

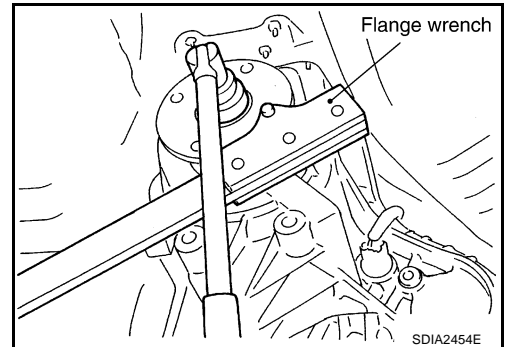
PFP:33140

Removal and Installation

NDS000AL

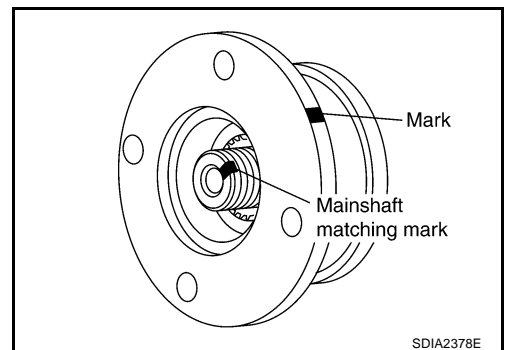
REMOVAL

1. Remove the rear propeller shaft. Refer to [PR-7, "REAR PROPELLER SHAFT"](#).
2. Remove self-lock nut of companion flange using the flange wrench.

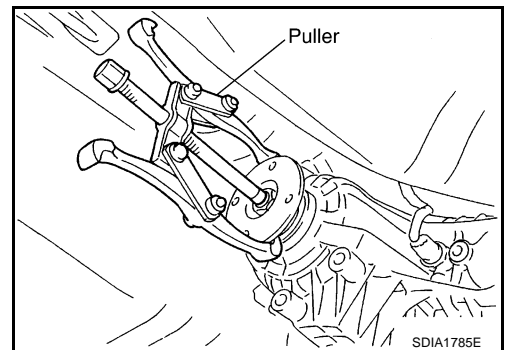


3. Put matching mark on the end of the mainshaft. The mark should be in line with the mark on the companion flange.

CAUTION:
For matching mark, use paint. Do not damage mainshaft.

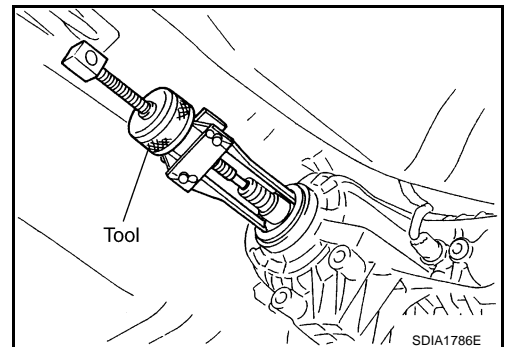


4. Remove the companion flange using a puller.
- CAUTION:**
Be careful not to damage the companion flange.



5. Remove the rear oil seal using a puller.
- Tool number** : KV381054S0 (J-34286)

CAUTION:
Be careful not to damage the rear case.



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REAR OIL SEAL

INSTALLATION

1. Apply ATF to rear oil seal, install it with a drift.

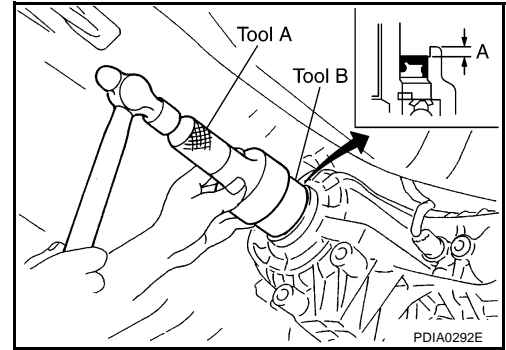
Dimension A : 6.7 - 7.3 mm (0.264 - 0.287 in)

Tool number A: ST30720000 (J-25405)

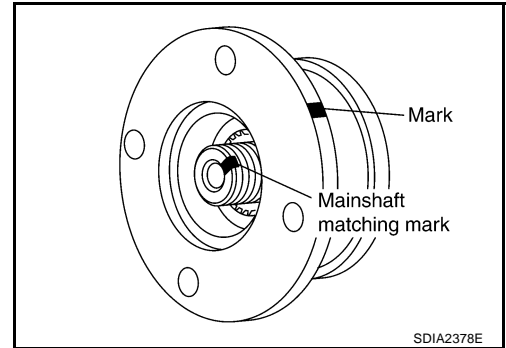
B: KV40104830 (—)

CAUTION:

- Do not reuse rear oil seal.
- When installing, do not incline rear oil seal.



2. Align the matching mark of mainshaft with the mark of companion flange, then install the companion flange.

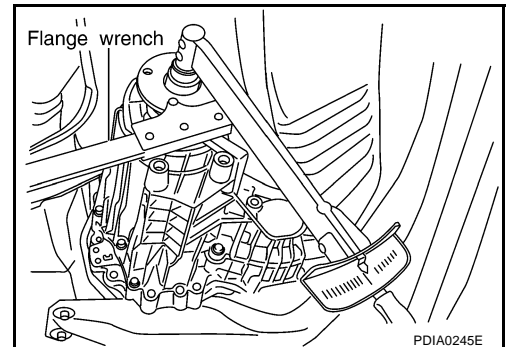


3. Using flange wrench, install the self-lock nut of companion flange and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

CAUTION:

Do not reuse self-lock nut.

4. Install the rear propeller shaft. Refer to [PR-7, "REAR PROPELLER SHAFT"](#).
5. Check fluid level. Refer to [TF-9, "Inspection"](#).



AIR BREATHER HOSE

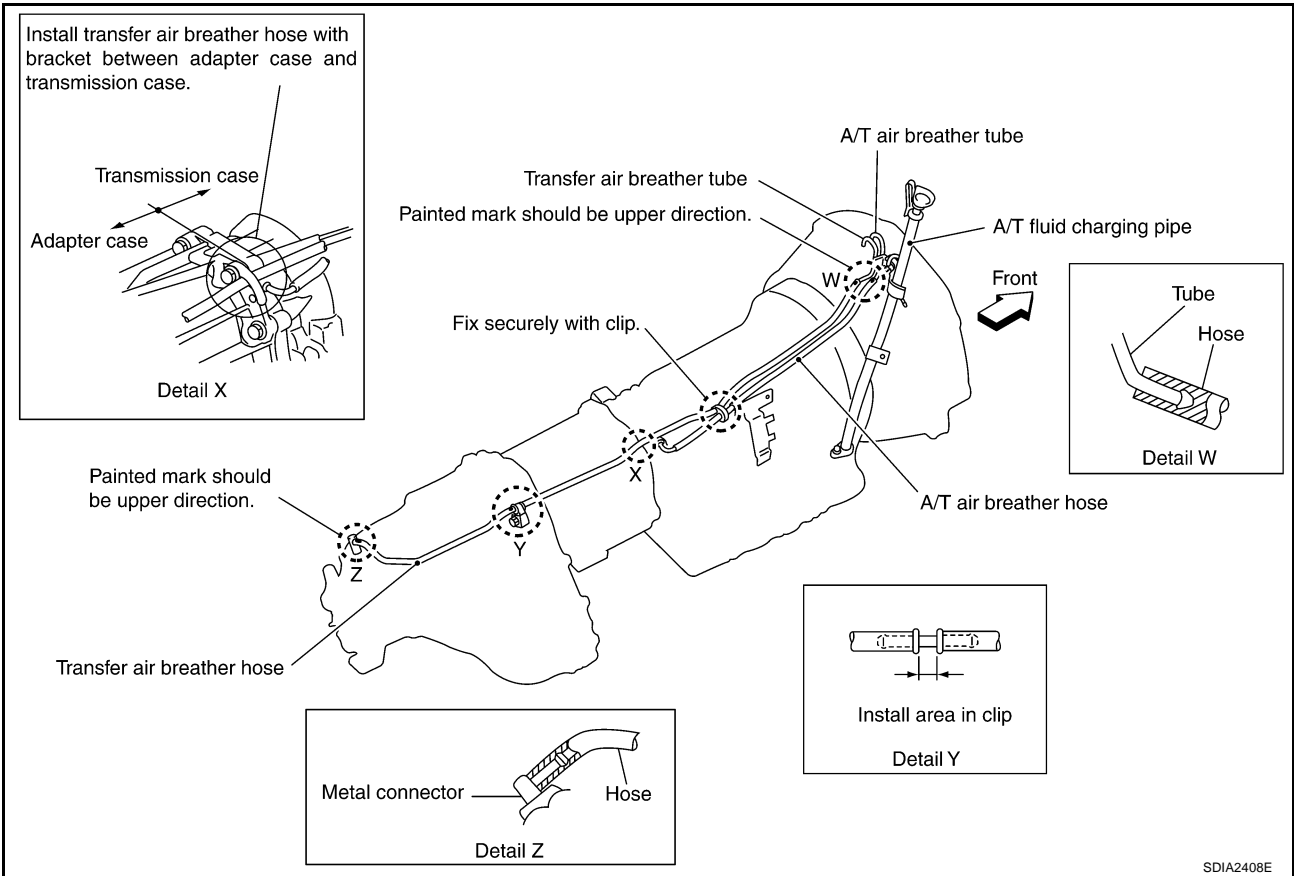
PFP:31098

AIR BREATHER HOSE

Removal and Installation

NDS000AM

Refer to the figure for air breather hose removal and installation information.



CAUTION:

- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- Be sure to insert air breather hose to transfer tube (metal connector) until hose end reaches the tube's base and another hose end reaches the tube bend R portion of A/T fluid charging pipe.

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TRANSFER ASSEMBLY

PFP:33100

NDS000AN

TRANSFER ASSEMBLY

Removal and Installation

REMOVAL

1. Remove tunnel stay with power tool. Refer to [RSU-7, "Removal and installation"](#) .
2. Remove exhaust front tube with power tool. Refer to [EX-3, "EXHAUST SYSTEM"](#) .
3. Remove front and rear propeller shaft. Refer to [PR-4, "FRONT PROPELLER SHAFT"](#) and [PR-7, "REAR PROPELLER SHAFT"](#) .
4. Disconnect transfer assembly harness connector and separate harness from transfer assembly.
5. Remove air breather hose. Refer to [TF-43, "AIR BREATHER HOSE"](#) .
6. Support transfer assembly and transmission assembly with a jack.
7. Remove engine rear member with power tool. Refer to [EM-113, "ENGINE ASSEMBLY"](#) (VQ35DE) or [EM-243, "ENGINE ASSEMBLY"](#) (VK45DE).
8. Remove transfer mounting bolts and separate transfer from transmission.

CAUTION:

Secure transfer assembly to a jack.

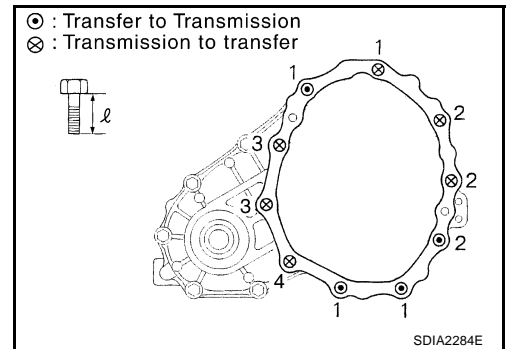
INSTALLATION

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

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

Bolt No.	1	2	3	4
Quantity	4	3	2	1
Bolt length "ℓ" mm (in)	75 (2.95)	45 (1.77)	40 (1.57)	30 (1.18)
Tightening torque N-m (kg-m, ft-lb)	37 (3.8, 27)			

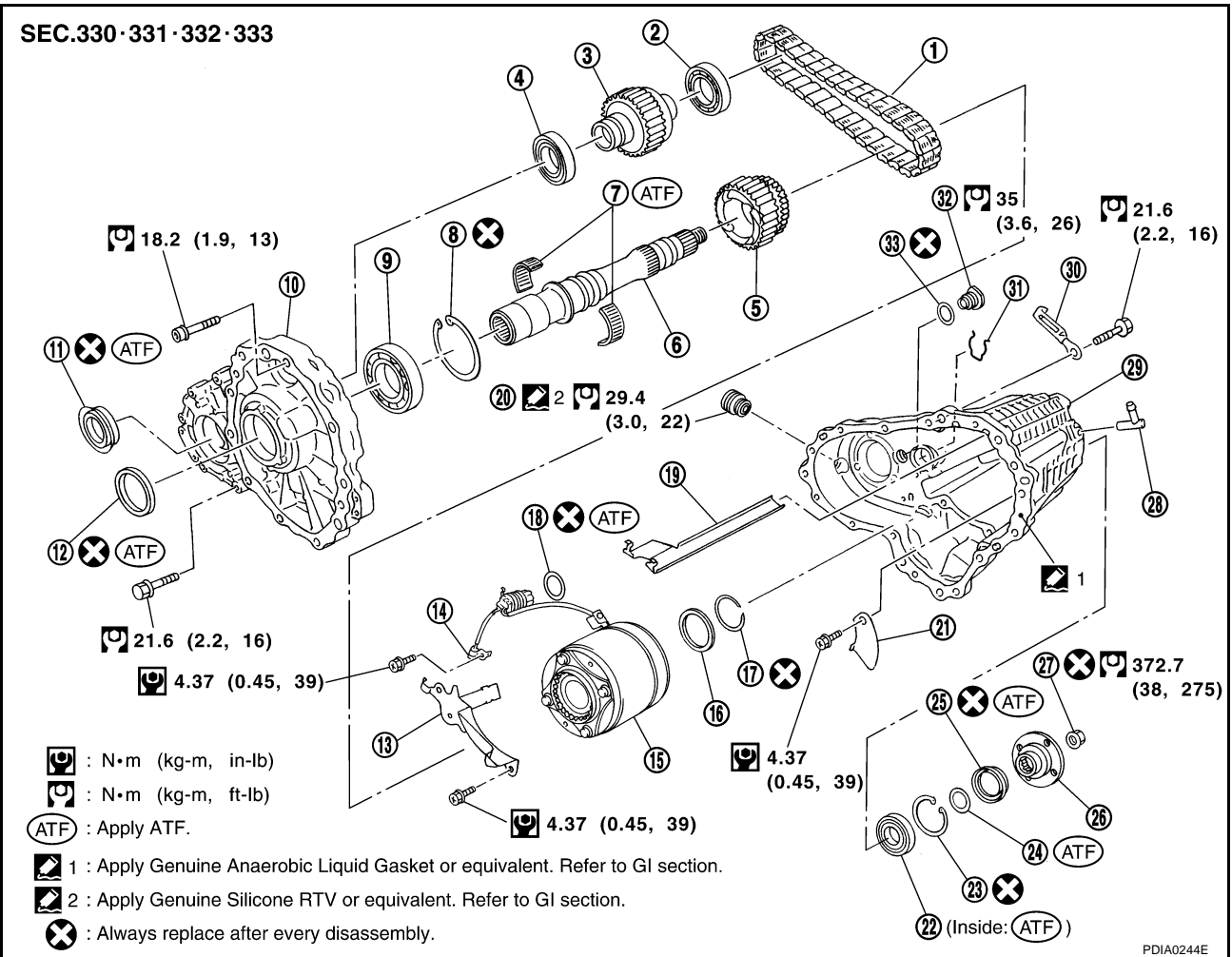
- After the installation, check the fluid level and for fluid leakage. Refer to [TF-9, "Inspection"](#) .



TRANSFER ASSEMBLY

NDS000AO

Disassembly and Assembly COMPONENTS



- | | | |
|------------------------------------|-----------------------------------|----------------------------------|
| 1. Drive chain | 2. Front drive shaft rear bearing | 3. Front drive shaft |
| 4. Front drive shaft front bearing | 5. Sprocket | 6. Mainshaft |
| 7. Needle bearing | 8. Snap ring | 9. Mainshaft bearing |
| 10. Front case | 11. Front oil seal | 12. Mainshaft oil seal |
| 13. Oil cover | 14. Temperature sensor | 15. Electric controlled coupling |
| 16. Spacer | 17. Snap ring | 18. O-ring |
| 19. Oil gutter | 20. Drain plug | 21. Baffle plate |
| 22. Rear bearing | 23. Snap ring | 24. Spacer |
| 25. Rear oil seal | 26. Companion flange | 27. Self-lock nut |
| 28. Breather tube | 29. Rear case | 30. Harness bracket |
| 31. Retainer | 32. Filler plug | 33. Gasket |

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TRANSFER ASSEMBLY

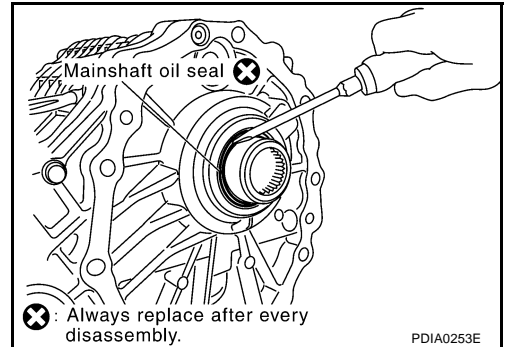
DISASSEMBLY

Front Case and Rear Case

1. Remove drain plug and filler plug.
2. Remove mainshaft oil seal from front case, using a flat-bladed screwdriver.

CAUTION:

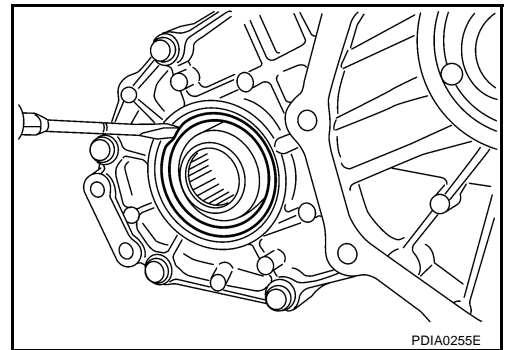
Be careful not to damage the front case and mainshaft.



3. Remove front oil seal from front case, using a flat-bladed screwdriver.

CAUTION:

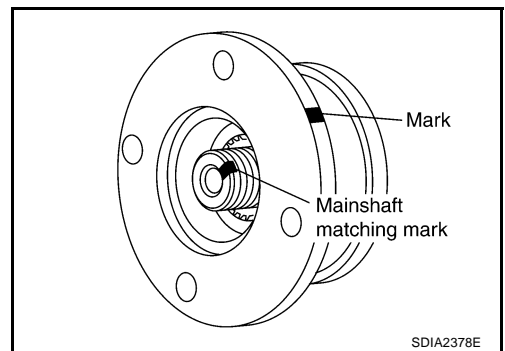
Be careful not to damage the front case and front drive shaft.



4. Remove self-lock nut.
5. Put a matching mark on the end of mainshaft. The mark should be in line with the mark on the companion flange.

CAUTION:

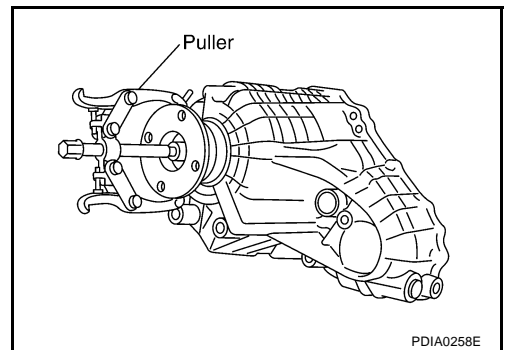
For matching mark, use paint. Do not damage mainshaft.



6. Remove companion flange, using a puller.

CAUTION:

Be careful not to damage the companion flange.

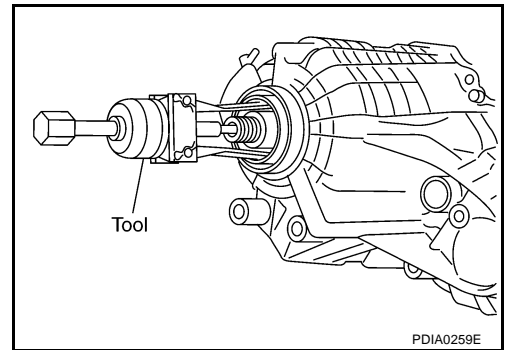


TRANSFER ASSEMBLY

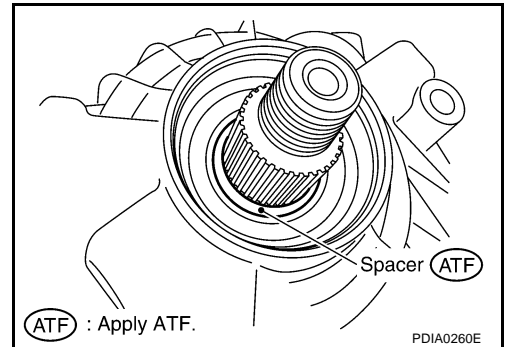
7. Remove rear oil seal from rear case, using a puller.

Tool number : KV381054S0 (J-34286)

CAUTION:
Be careful not to damage the rear case.

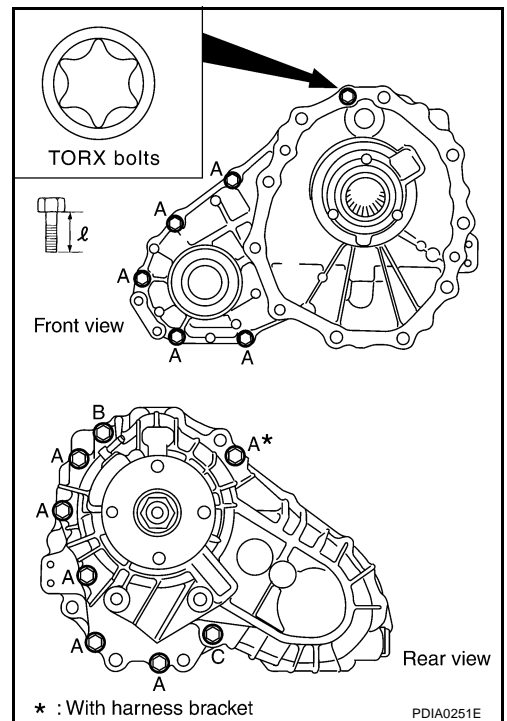


8. Remove spacer from mainshaft.



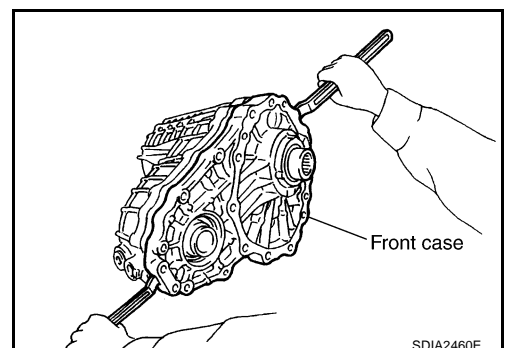
9. Remove front case and rear case fixing bolts, then remove harness bracket.

Bolts symbol	Quantity	Bolt length "ℓ" mm (in)
A	11	42 (1.65)
B	1	162 (6.38)
C	1	97 (3.82)
TORX bolts	1	40 (1.57)



10. Separate front case and rear case. Then, remove front case by levering it up with a tire lever or the like.

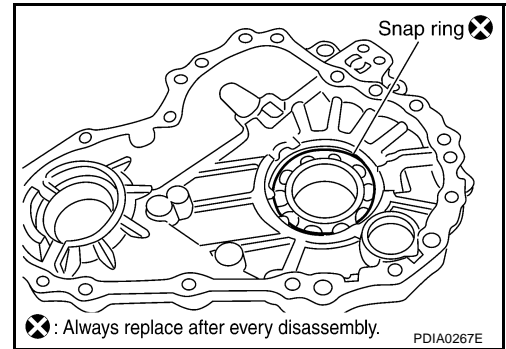
CAUTION:
Be careful not to damage the mating surface.



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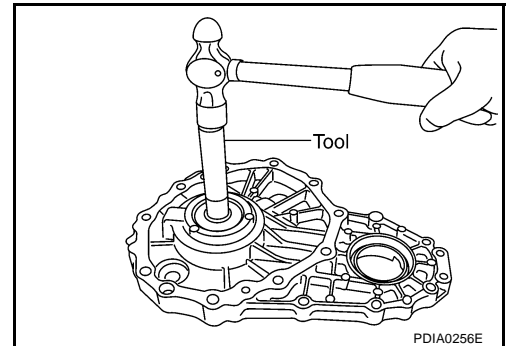
TRANSFER ASSEMBLY

11. Remove snap ring from front case.



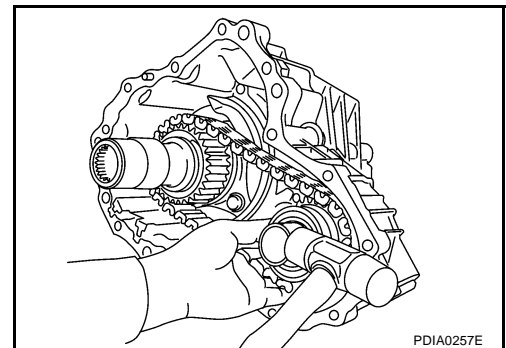
12. Remove mainshaft bearing from front case, using a drift.

Tool number : KV38100300 (J-25523)

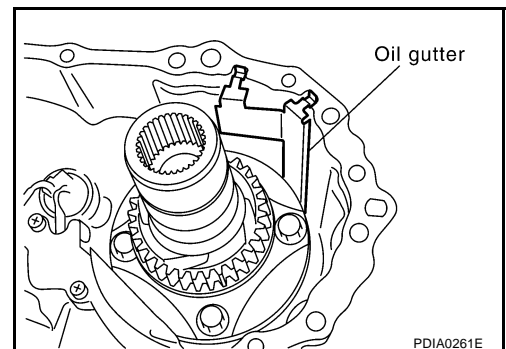


13. Remove drive chain and front drive shaft while tapping front drive shaft with plastic hammer.

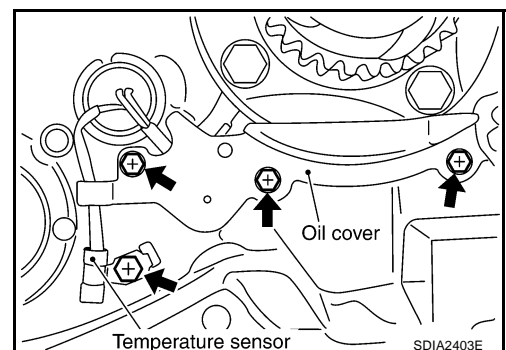
CAUTION:
Be careful not to tap drive chain.



14. Remove oil gutter from rear case.

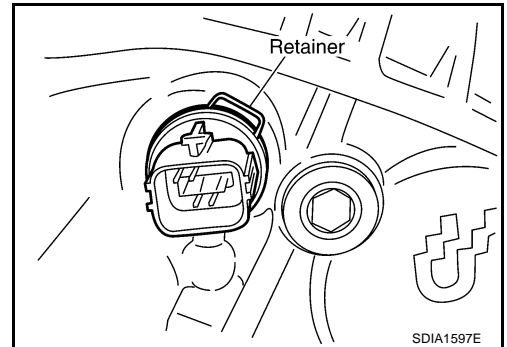


15. Remove oil cover bolt and sensor fixing bolt from rear case. And then, remove oil cover.



TRANSFER ASSEMBLY

16. Remove retainer from transfer assembly harness connector.
17. Remove transfer assembly harness connector from rear case.
18. Remove O-ring from transfer assembly harness connector.

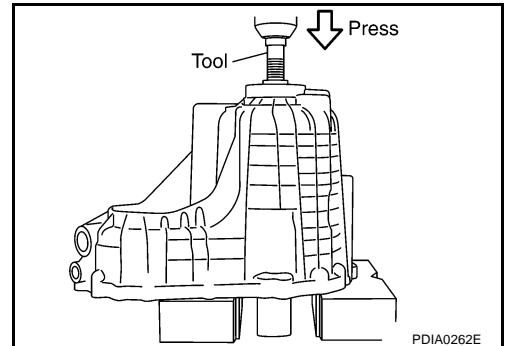


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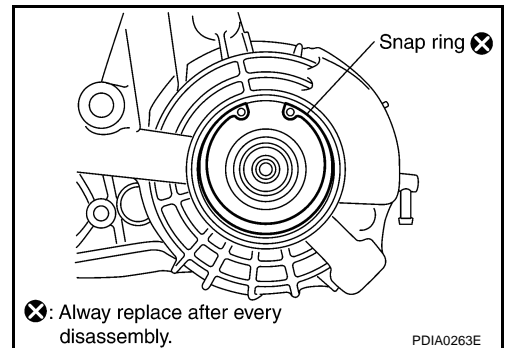
19. Remove mainshaft assembly from rear case, using a drift.

Tool number : ST33052000 (—)



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20. Remove snap ring from rear case.

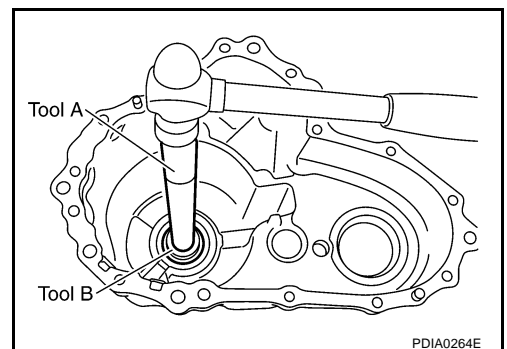


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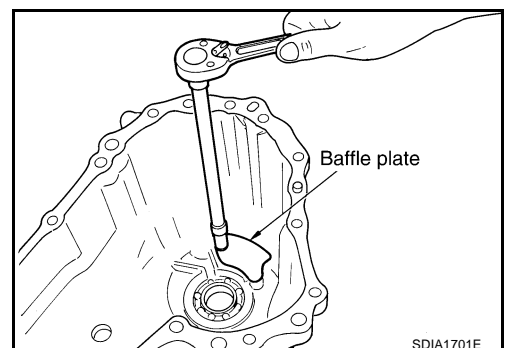
21. Remove rear bearing from rear case, using a drift.

Tool number **A:** ST30611000 (J-25742-1)
 B: ST35321000 (—)



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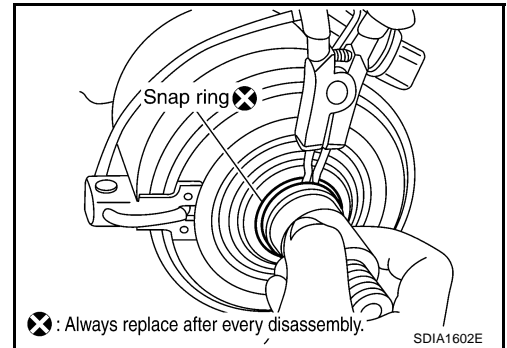
22. Remove baffle plate from rear case.
23. Remove breather tube from rear case.



TRANSFER ASSEMBLY

Mainshaft Assembly

1. Separate front case and rear case, then remove mainshaft assembly. Refer to [TF-46, "Front Case and Rear Case"](#).
2. Remove snap ring from mainshaft.
3. Remove spacer from mainshaft.
4. Remove electric controlled coupling and sprocket from mainshaft.
5. Remove needle bearing from mainshaft.

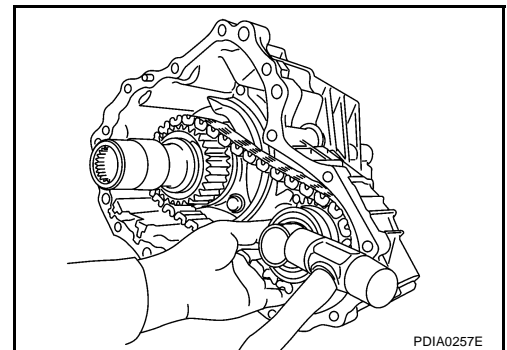


Front Drive Shaft and Drive Chain

1. Separate front case and rear case. Refer to [TF-46, "Front Case and Rear Case"](#).
2. Remove drive chain and front drive shaft while tapping front drive shaft with plastic hammer.

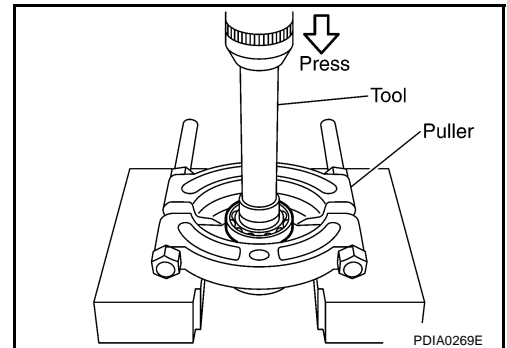
CAUTION:

Be careful not to tap drive chain.



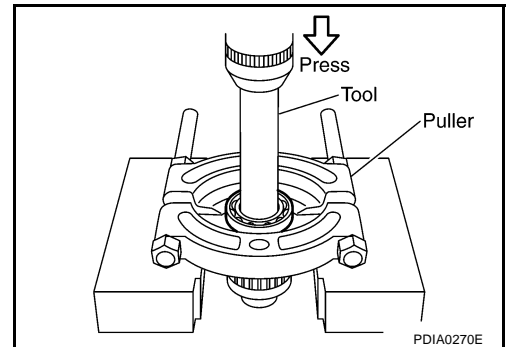
3. Remove front drive shaft front bearing, using drift and puller.

Tool number : ST31214000 (J-25269-B)



4. Remove front drive shaft rear bearing, using drift and puller.

Tool number : ST31214000 (J-25269-B)



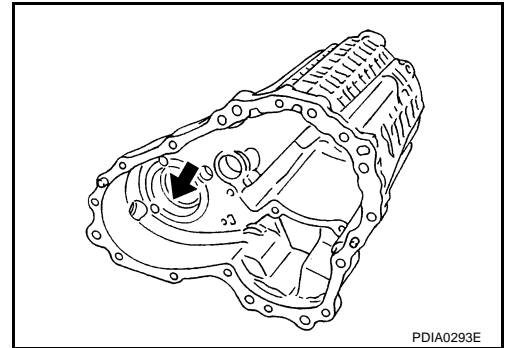
TRANSFER ASSEMBLY

INSPECTION

Cases

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

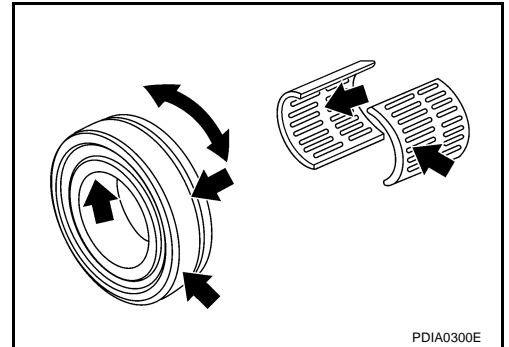
- Contact surfaces of bearing for wear, damage, etc.
- Damage and cracks of case.



Bearing

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

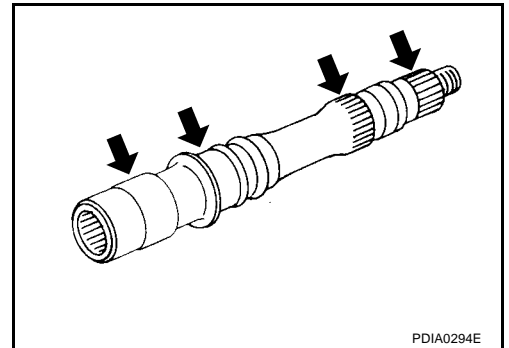
- Damage and rough rotation of bearing.



Shaft

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

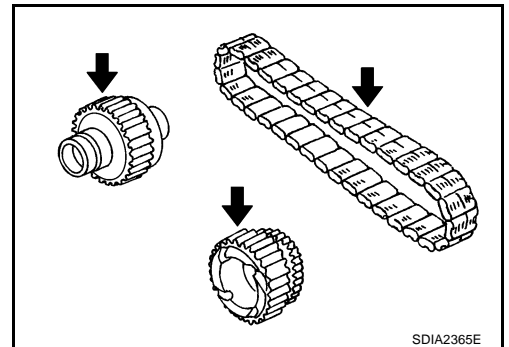
- Damage, peeling, dent, uneven wear, bending, etc. of shaft.



Gears and Chain

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

- Excessive wear, damage, peeling, etc. of gear and chain.



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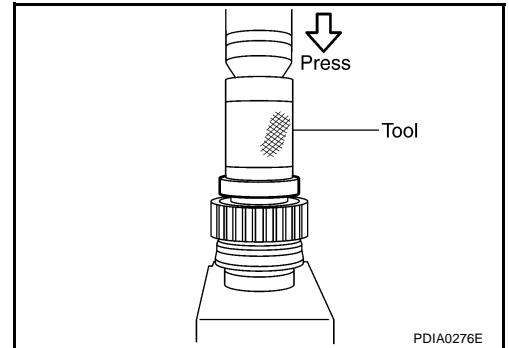
TRANSFER ASSEMBLY

ASSEMBLY

Front Drive Shaft and Drive Chain

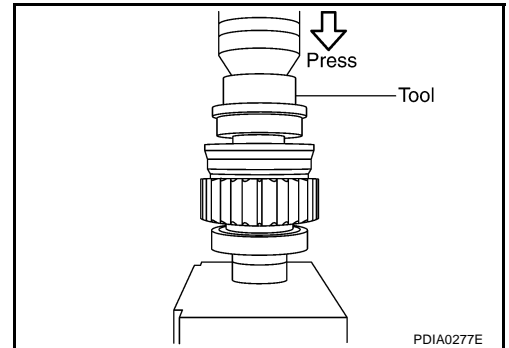
1. Install front drive shaft front bearing, using drifts.

Tool number : ST33200000 (J-26082)



2. Install front drive shaft rear bearing, using a drift.

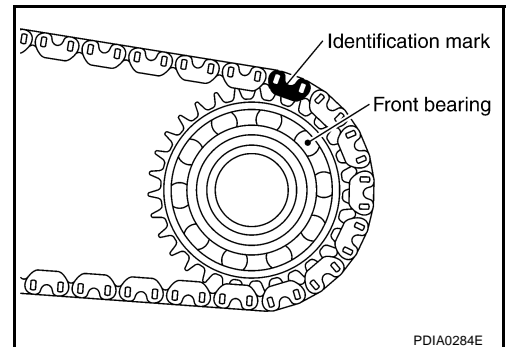
Tool number : KV38104010 (—)



3. Install drive chain to front drive shaft.

CAUTION:

Identification mark of drive chain should be in the side of front bearing of front drive shaft.

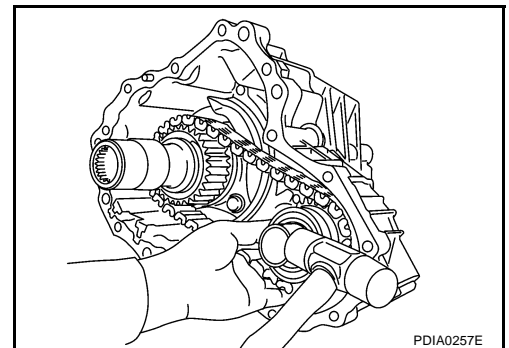


4. Install drive chain to mainshaft, and then install tap front drive shaft with plastic hammer. Press-fit rear bearing of front drive shaft to rear case.

CAUTION:

Be careful not to tap drive chain.

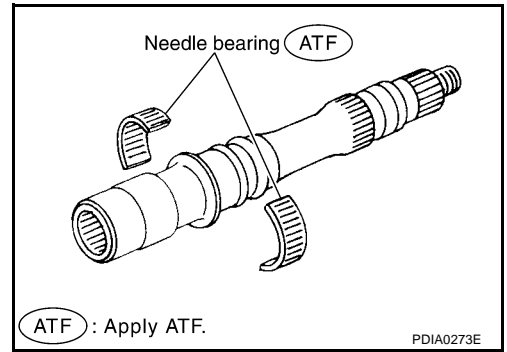
5. Install front case to rear case. Refer to [TF-53, "Front Case and Rear Case"](#) .



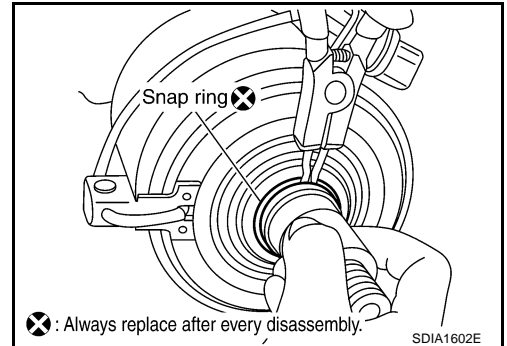
TRANSFER ASSEMBLY

Mainshaft Assembly

1. Install needle bearing to mainshaft.
CAUTION:
Apply ATF to periphery of needle bearing.
2. Install sprocket and electric controlled coupling to mainshaft.
3. Install spacer to main shaft.

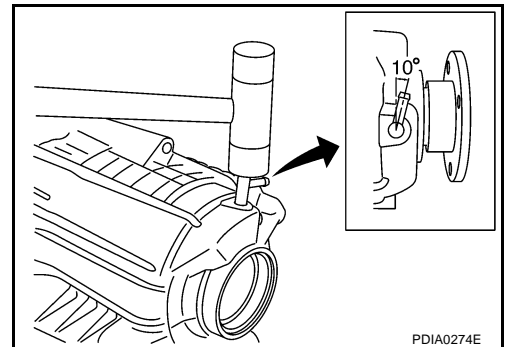


4. Install snap ring to mainshaft.
CAUTION:
Do not reuse snap ring.
5. Install mainshaft assembly to rear case, then install front case and rear case. Refer to [TF-53, "Front Case and Rear Case"](#).



Front Case and Rear Case

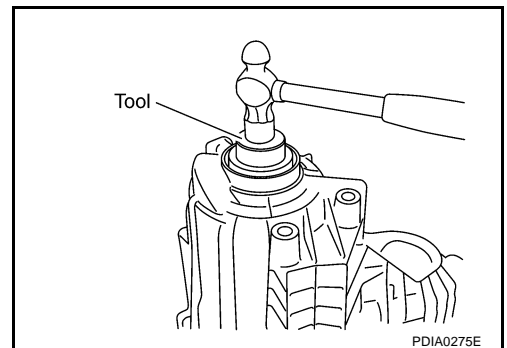
1. Install breather tube, with plastic hammer.
CAUTION:
Pay attention to the direction of breather tube.
2. Install baffle plate to rear case, and tighten bolt to the specified torque. Refer to [TF-45, "COMPONENTS"](#).



3. Install rear bearing to rear case, using a drift.

Tool number : KV38104010 (—)

CAUTION:
Apply ATF to inside of rear bearing.



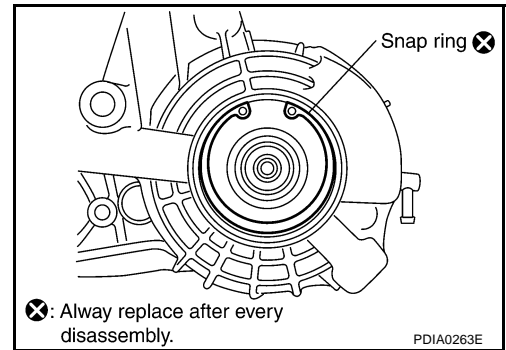
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TRANSFER ASSEMBLY

4. Install snap ring to rear case.

CAUTION:

Do not reuse snap ring.



5. Install mainshaft assembly to rear case, using a drift.

Tool number : ST35321000 (—)

CAUTION:

ATF should be applied to contact surface of mainshaft and rear bearing.

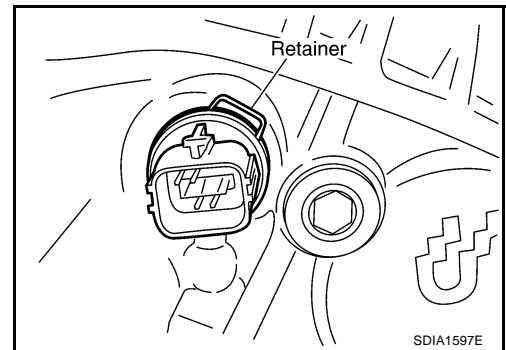
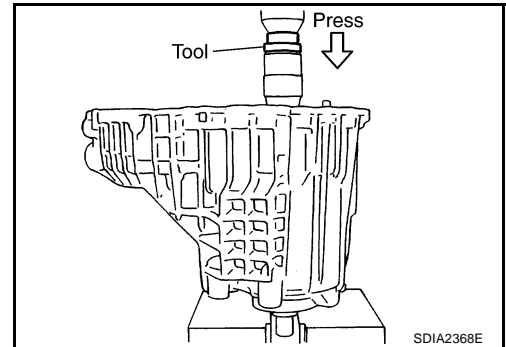
6. Install O-ring to transfer assembly harness connector.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.

7. Install transfer assembly harness connector into rear case.

8. Install retainer to transfer assembly harness connector.

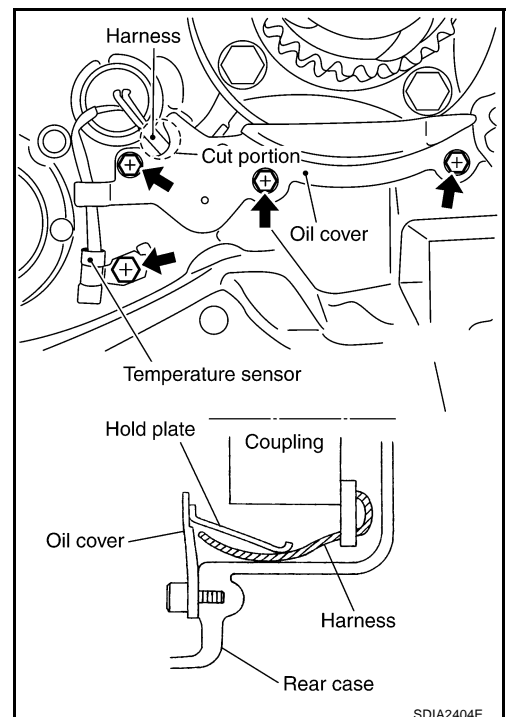


9. Set temperature sensor and tighten bolt to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

10. Hold electric controlled coupling harness with oil cover hold plate, install oil cover to rear case, and tighten bolt to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

CAUTION:

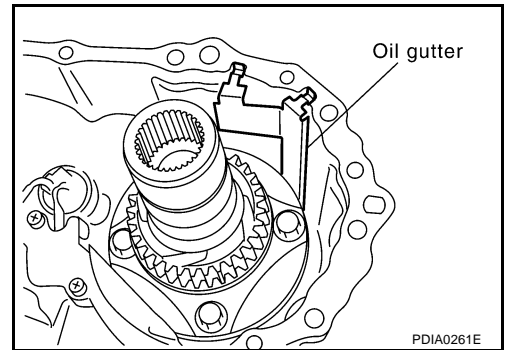
The harness should be guided by a cut portion.



TRANSFER ASSEMBLY

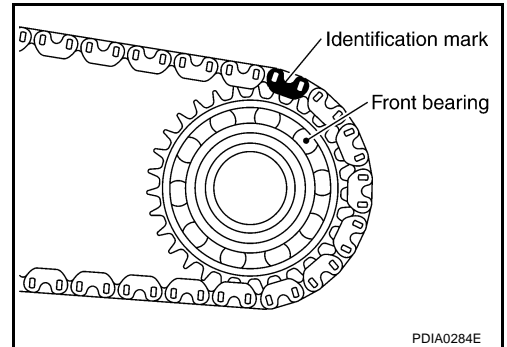
11. Install oil gutter to rear case.

CAUTION:
The tip of oil gutter should be put into rear case groove.



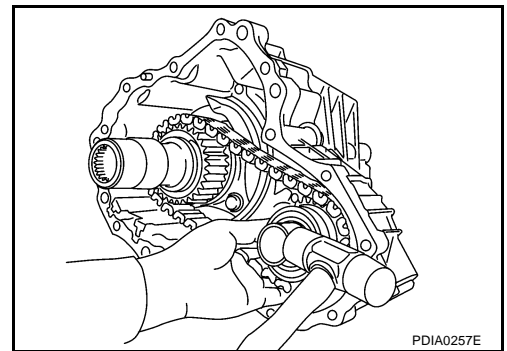
12. Install drive chain to front drive shaft.

CAUTION:
Identification mark of drive chain should be in the side of front bearing of front drive shaft.



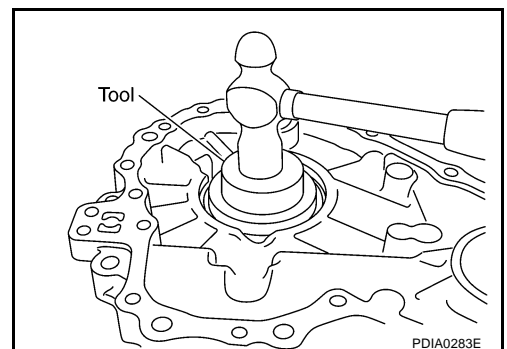
13. Install drive chain to mainshaft, and then install tap front drive shaft with plastic hammer. Press-fit rear bearing of front drive shaft to rear case.

CAUTION:
Be careful not to tap drive chain.



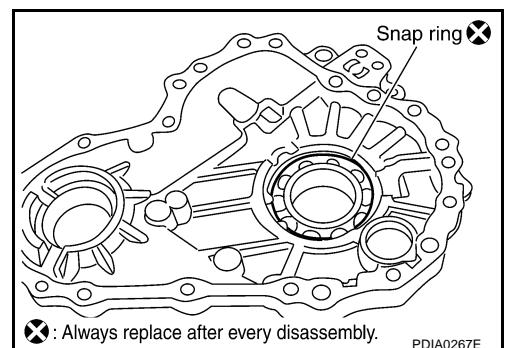
14. Install mainshaft bearing to front case, using a drift.

Tool number : ST30621000 (J-25742-5)



15. Install snap ring to front case.

CAUTION:
Do not reuse snap ring.



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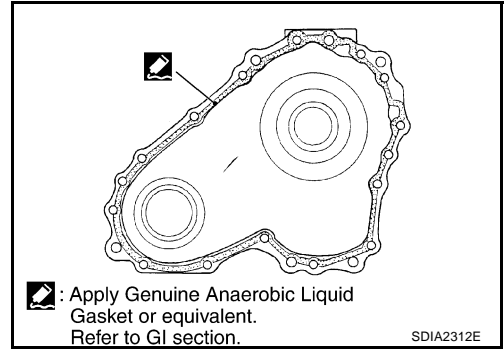
TRANSFER ASSEMBLY

16. Apply liquid gasket to mating surface of rear case.

- Use **Genuine Anaerobic Liquid Gasket** or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#).

CAUTION:

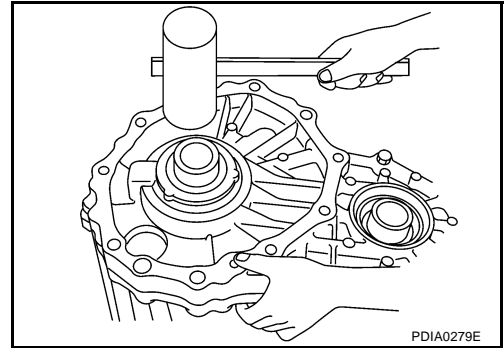
Remove old sealant adhering to mounting surfaces. Also remove any moisture, oil, or foreign material adhering to application and mounting surfaces.



17. Set front case to rear case.

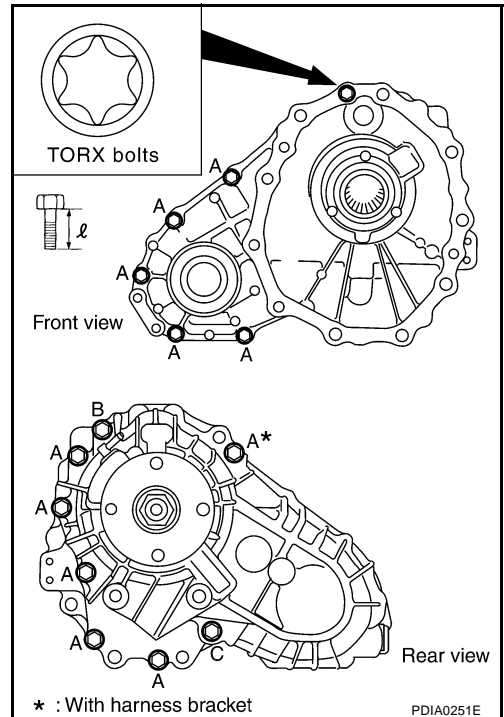
CAUTION:

Be careful not to damage the mating surface transmission side.



18. Tighten front case and rear case fixing bolts to the specified torque. Refer to [TF-45, "COMPONENTS"](#).

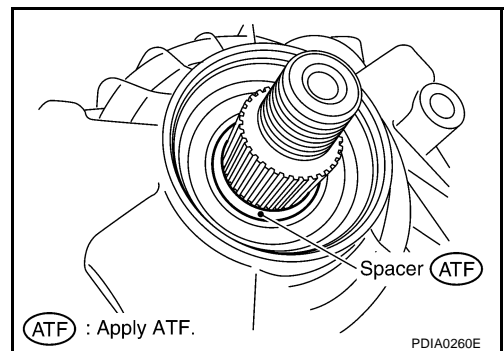
Bolts symbol	Quantity	Bolt length " ℓ " mm (in)
A	11	42 (1.65)
B	1	162 (6.38)
C	1	97 (3.82)
TORX bolts	1	40 (1.57)



19. Install spacer to mainshaft.

CAUTION:

Apply ATF to spacer.



TRANSFER ASSEMBLY

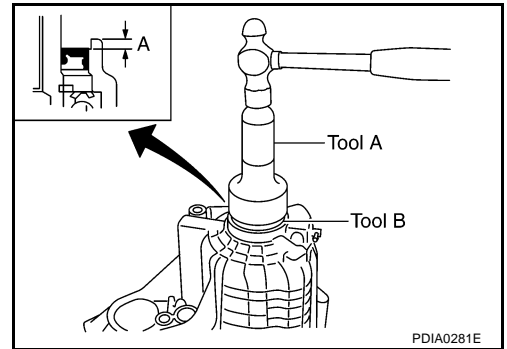
20. Install rear oil seal to rear case, using a drift.

Dimension A : 6.7 - 7.3 mm (0.264 - 0.287 in)

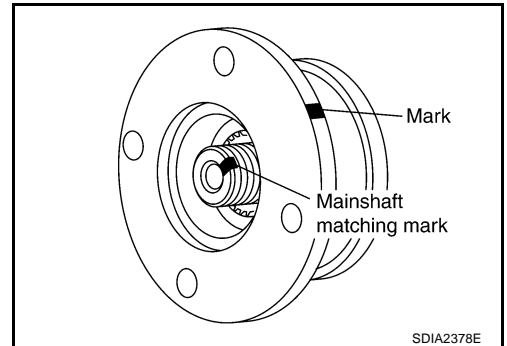
Tool number A: ST30720000 (J-25405)
B: KV40104830 (—)

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.
- When installing, do not incline rear oil seal.



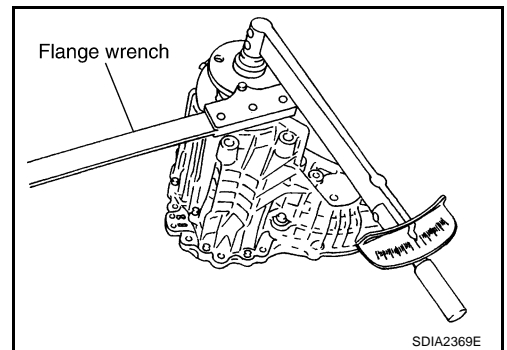
21. Install companion flange while align the matching mark of mainshaft with the mark of companion flange.



22. Tighten self-lock nut to the specified torque, with flange wrench. Refer to [TF-45, "COMPONENTS"](#).

CAUTION:

Do not reuse self-lock nut.

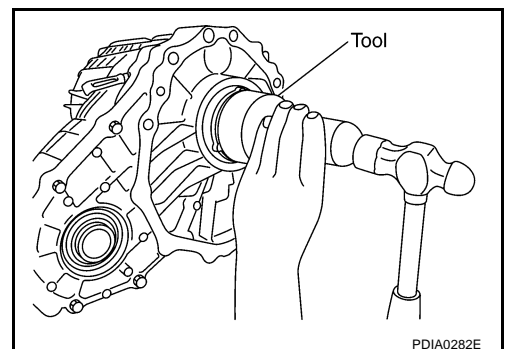


23. Install mainshaft oil seal until it is flush with end face of front case, using drift.

Tool number : ST30720000 (J-25405)

CAUTION:

- Do not reuse mainshaft oil seal.
- Apply ATF to mainshaft oil seal.
- When installing, do not incline mainshaft oil seal.



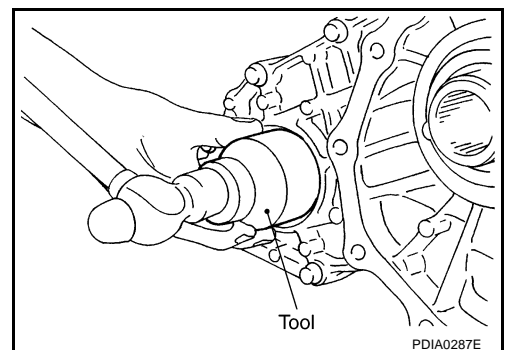
24. Install front oil seal until it is flush with end face of front case, using drift.

Tool number : ST27862000 (—)

CAUTION:

- Do not reuse front oil seal.
- Apply ATF to front oil seal.
- When installing, do not incline front oil seal.

25. Apply sealant to threads of drain plug. Then install it to rear case and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#).



TRANSFER ASSEMBLY

- Use Genuine Silicone RTV or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#) .

CAUTION:

Remove old sealant and oil adhering to threads.

26. Set gasket to filler plug. Install it to rear case and tighten to the specified torque. Refer to [TF-45, "COMPONENTS"](#) .

CAUTION:

Do not reuse gasket.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

NDS000AP

Applied model	VQ35DE	VK45DE
Transfer model	ETX13B	
Fluid capacity (Approx.)	1.25 ℓ (2-5/8 US pt, 2-1/4 Imp pt)	

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SERVICE DATA AND SPECIFICATIONS (SDS)
