SECTION TF
TRANSFER

CONTENTS

PRECAUTIONS

PFP:00001

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

ADS000LC

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.

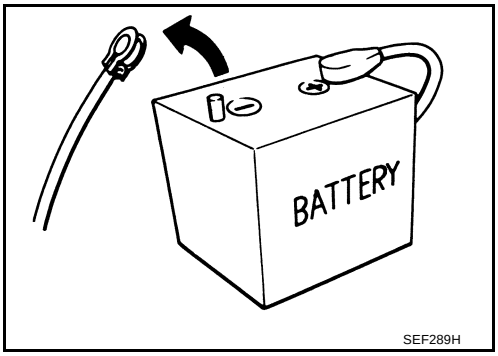
WARNING:

- **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

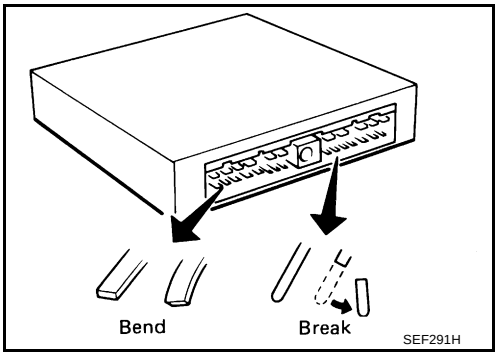
ADS000LD

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



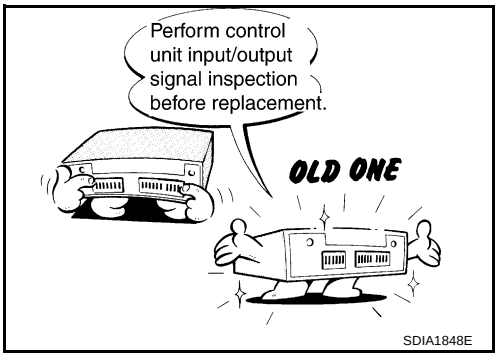
SEF289H

- **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 not any bends or breaks on AWD control unit pin terminal.



SEF291H

- **Before replacing AWD control unit, perform AWD control unit input/output signal inspection and make sure whether AWD control unit functions properly or not.** **TF-41, "AWD Control Unit Input/Output Signal Reference Values"**.



SDIA1848E

Service Notice

ADS000LE

- 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.
- Disassembly should be done in a clean work area.
- Use lint-free cloth or towels for wiping parts clean. Common shop regs can leave fibers that could interfere with the operation of the transfer.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should replaced any time the transfer is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place removed parts in a parts rack in order to replace them in correct positions and sequences.Care will also prevent springs and small parts from becoming scattered or lost.
- Before assembly, apply a coat of recommended transfer fluid to all parts. Apply petroleum jelly to protect O-rings and seals, and to hold bearings and washers in place during assembly. Do not use grease.
- Extreme care should be taken to avoid damage to O-rings and seals when assembling.
- After overhaul refill the transfer with new transfer fluid.

Wiring Diagrams and Trouble Diagnosis

ADS000LF

When you read wiring diagrams, refer to the following:

- GI-15, "How to Read Wiring Diagrams".
- PG-3, "POWER SUPPLY ROUTING CIRCUIT".

When you perform trouble diagnosis, refer to the following:

- GI-11, "How to Follow Trouble Diagnoses".
- GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident".

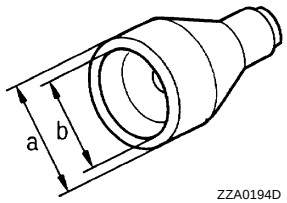
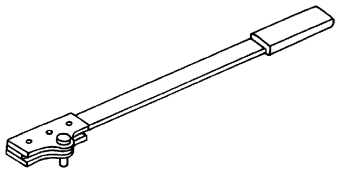
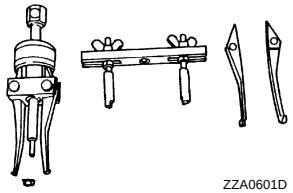
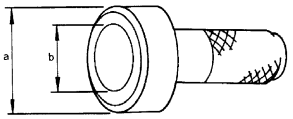
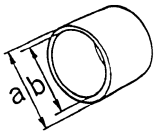
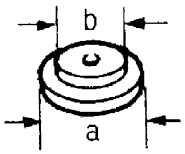
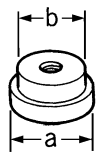
PREPARATION

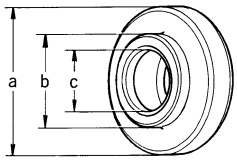
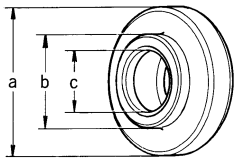
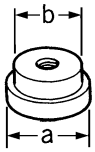
PFP:00002

Special Service Tools

ADS000LG

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 (—) a: 62.5 mm (2.461 in) dia. b: 42 mm (1.654 in) dia. Drift	 ZZA0194D	Installing front oil seal into front case
KV38108300 (J44195) Companion flange wrench	 NT771	Removing and installing companion flange lock nut
KV381054S0 (J34286) Puller	 ZZA0601D	● Removing rear oil seal
ST30720000 (J25405) a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia. Drift	 ZZA0811D	● Installing rear oil seal
KV40104830 (—) a: 76.3 mm (3.004 in) dia. b: 67.9 mm (2.673 in) dia. Drift	 ZZA1003D	Installing rear oil seal
ST33061000 (J8107-2) a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia. Drift	 ZZA0810D	Removing front drive shaft front bearing
ST35322000 (—) a: 39 mm (1.54 in) dia. b: 31 mm (1.22 in) dia. Drift	 ZZA1000D	Removing front drive shaft rear bearing

Tool number (Kent-Moore No.) Tool name	Description
ST30022000 (—) a: 110 mm (4.33 in) dia. b: 56 mm (2.20 in) dia. c: 46 mm (1.81 in) dia. Drift  ZZA0978D	● Installing front drive shaft front bearing ● Installing main shaft into rear case
ST30914000 (—) a: 98 mm (3.86 in) dia. b: 51 mm (2.01 in) dia. c: 40 mm (1.57 in) dia. Drift  ZZA0978D	Installing front drive shaft rear bearing
ST30613000 (—) a: 72 mm (2.83 in) dia. b: 48 mm (1.89 in) dia. Drift  ZZA1000D	Installing main shaft oil seal into front case

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

ADS000LH

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

Reference page		TF-8			TF-14	TF-14	TF-19	TF-19
Possible cause and Suspected parts		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)
Symptom	Noise	1	2				3	3
	Transfer fluid leakage		3	1	2	2		

TRANSFER FLUID

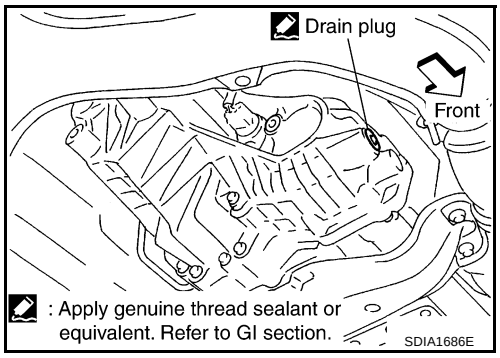
PFP:31001

Replacement

ADS000LI

DRAINING

1. Run the vehicle to warm up the transfer body sufficiently.
2. Stop the engine, and remove the drain plug to drain the transfer fluid.
3. Apply recommended sealant to drain plug. Install drain plug on transfer and tighten to the specified torque. Refer to TF-14, "Components" .



FILLING

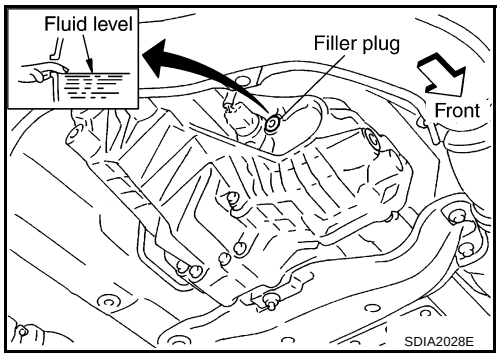
1. Remove filler plug and add transfer fluid until fluid level reaches the specified limit near filler plug mounting hole.

   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. Apply recommended sealant to filler plug. Install filler plug on transfer and tighten to the specified torque. Refer to TF-14, "Components" .

   CAUTION:
   Discard the seal washer. Always replace with new one.



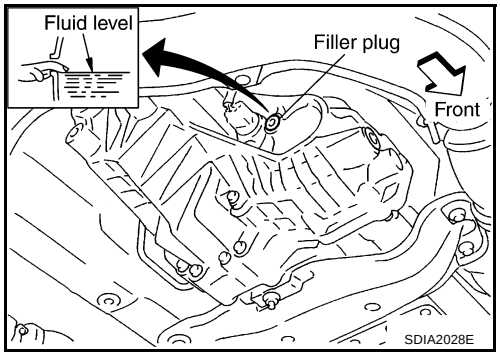
Inspection

ADS000LJ

FLUID LEAKAGE AND FLUID LEVEL

1. Check fluid level from filler plug mounting hole as shown in the figure.
2. Before installing filler plug, apply recommended sealant. Install filler plug on transfer and tighten to the specified torque. Refer to TF-14, "Components" .

   CAUTION:
   Discard the seal washer. Always replace with new one.



FRONT OIL SEAL

PFP:38189

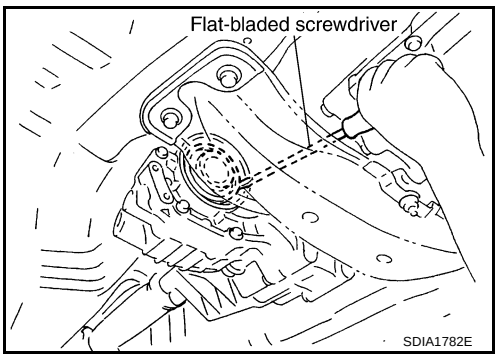
Removal and Installation

ADS000OD

REMOVAL

1. Remove the drain plug to drain the transfer fluid. Refer to TF-8, "Replacement" .
2. Remove the front propeller shaft. Refer to PR-4, "Removal and Installation" .
3. Remove front oil seal using a flat-bladed screwdriver.

CAUTION:
Be careful not to damage the center case.



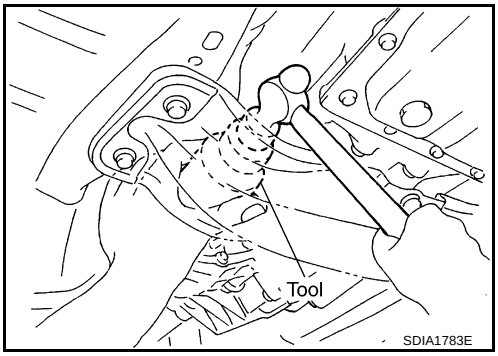
INSTALLATION

1. Apply multi-purpose grease to oil seal lips. Install the front oil seal with a drift to fit the position as shown in the figure.

Tool number : ST27862000 (—)

CAUTION:
- **Discard old oil seal, replace with new one.**
- **When installing, do not incline the oil seal.**

2. Install front propeller shaft. Refer to PR-4, "Removal and Installation" .
3. Install transfer fluid, check fluid level and for fluid leakage. Refer to TF-8, "TRANSFER FLUID" .



REAR OIL SEAL

PFP:33140

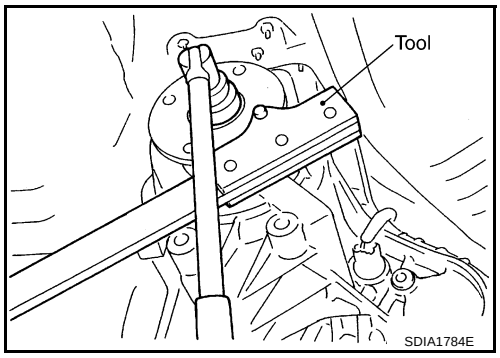
Removal and Installation

ADS000LK

REMOVAL

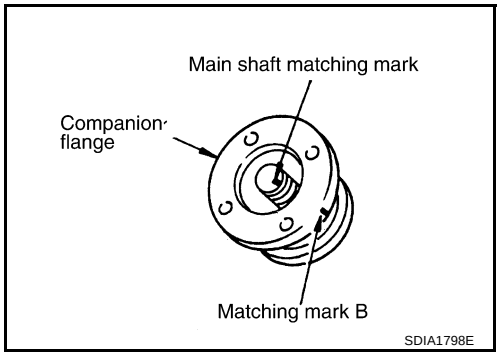
1. Remove the rear propeller shaft. Refer to PR-7, "REAR PROPELLER SHAFT" .
2. Remove companion flange lock nut using the drive pinion flange wrench.

   Tool number : KV38108300 (J44195)

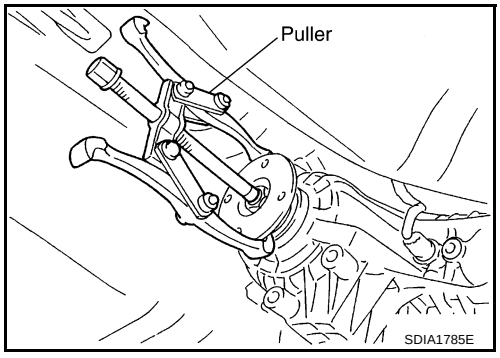


3. Put matching mark on the end of the main shaft corresponding to the B position matching mark on the companion flange.

   CAUTION:
   - **For matching mark, use paint. Never damage main shaft.**
   - **The mark on the transfer companion flange indicates the maximum vertical runout position.**



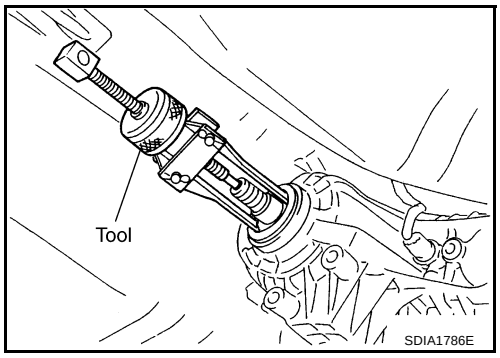
4. Remove the companion flange using a puller.



5. Remove the rear oil seal using a tool.

   Tool number : KV381054S0 (J34286)

   CAUTION:
   Be careful not to damage the rear case.

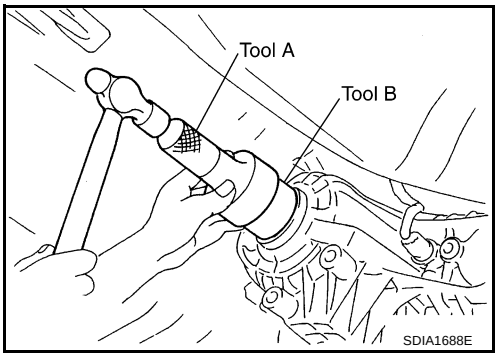


INSTALLATION

1. Apply multi-purpose grease to oil seal lips. Install the rear oil seal with a drift to fit the position as shown in the figure.

   Tool number **A: ST30720000 (J25405)**
   B: KV40104830 (—)

   CAUTION:
   - **Discard old oil seals, replace with new ones.**
   - **When installing, do not incline the oil seal.**

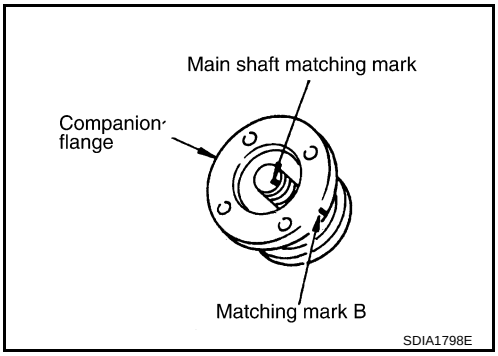


2. Align the matching mark of main shaft with the matching mark B of companion flange, then install the companion flange.
3. Install the companion flange lock nuts. Using the drive pinion flange wrench.

   Tool number **: KV38108300 (J44195)**

   : 314 N·m (32 kg-m, 232 ft-lb)

   CAUTION:
   Discard old lock nuts, replace with new ones.
4. Install the rear propeller shaft. Refer to PR-7, "REAR PROPELLER SHAFT" .
5. Check fluid level. Refer to TF-8, "TRANSFER FLUID" .



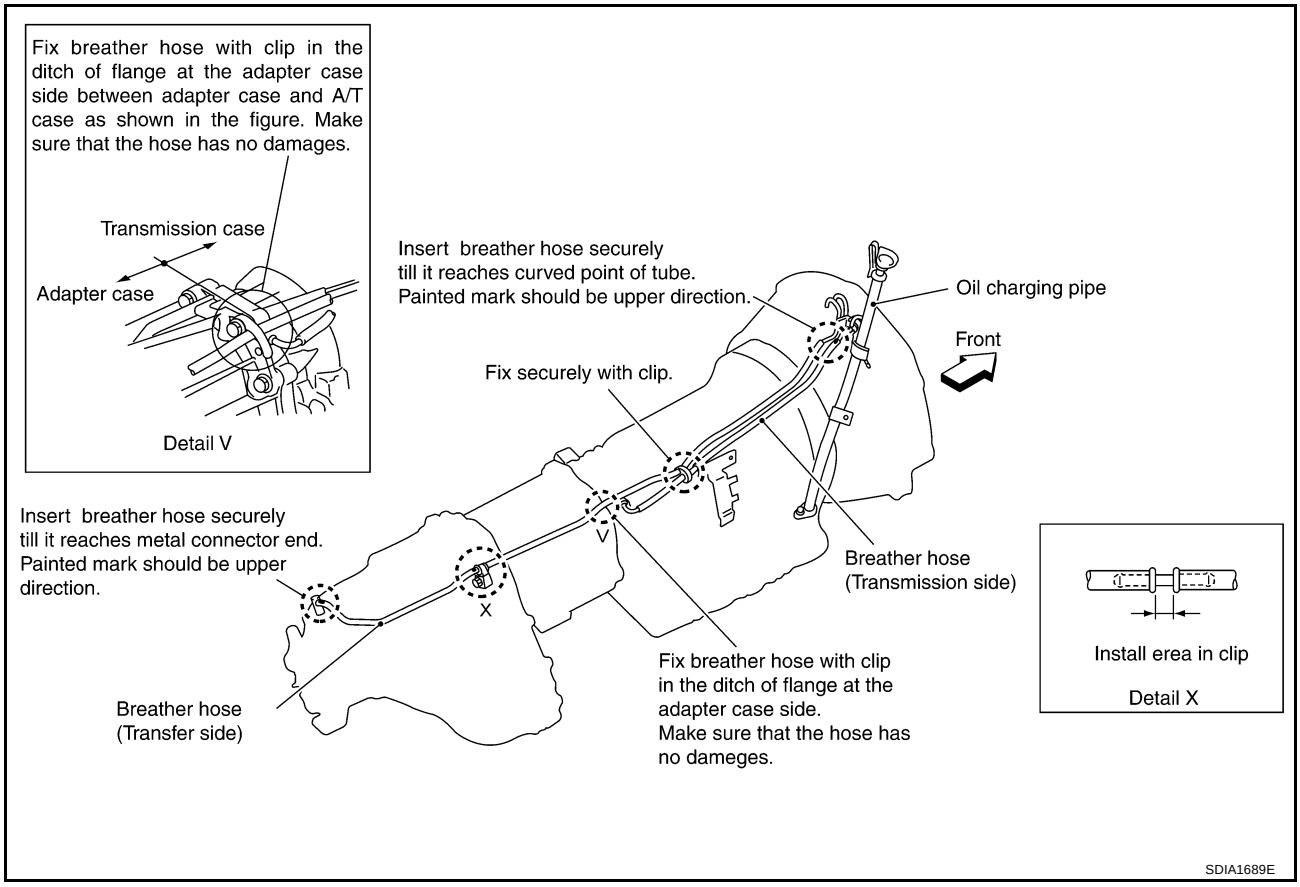
AIR BREATHER HOSE

PFP:31098

Removal and Installation

ADS000LL

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



CAUTION:

- **Be sure to insert air breather hose into transfer tube (metal connector) until hose end reaches the tube's base.**
- **Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.**

TRANSFER ASSEMBLY

PFP:33100

Removal and Installation from Vehicle

ADS000LM

REMOVAL

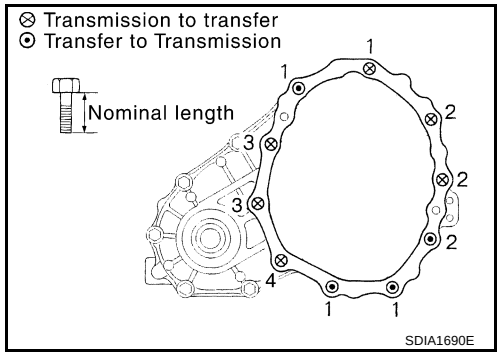
1. Remove tunnel stay. Refer to RSU-17, "REAR SUSPENSION MEMBER" .
2. Remove exhaust front tube. Refer to EX-3, "EXHAUST SYSTEM" .
3. Remove front and rear propeller shaft. Refer to PR-4, "FRONT PROPELLER SHAFT" and PR-7, "REAR PROPELLER SHAFT" .
4. Disconnect electric controlled coupling harness connector from transfer assembly, separate harness from transfer assembly.
5. Remove air breather hose. Refer to TF-12, "AIR BREATHER HOSE" .
6. Support transfer assembly from with a jack.
7. Remove engine rear mounting. Refer to EM-108, "ENGINE ASSEMBLY" (VQ35DE) or EM-227, "ENGINE ASSEMBLY" (VK45DE).
8. Remove transfer mounting bolts and separate transfer from transmission.

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.

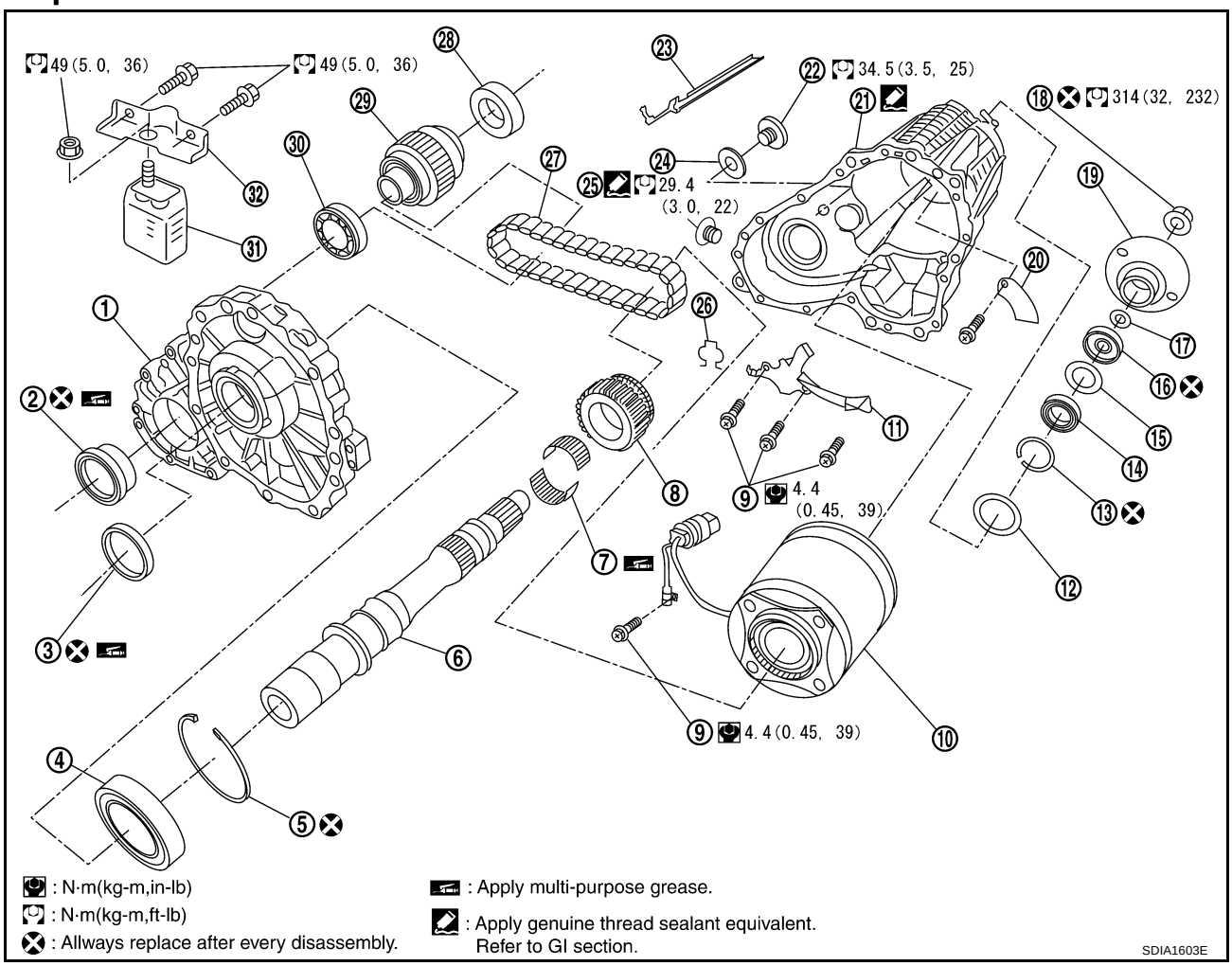
Bolt No.	1	2	3	4
Quantity	4	3	2	1
Nominal length mm (in)	75 (2.95)	45 (1.77)	40 (1.57)	30 (1.18)
Tightening torque [N·m (kg-m, ft-lb)]	36.5 (3.7, 27)			



- After the installation, check the fluid level and for fluid leakage. Refer to TF-8, "TRANSFER FLUID" .

Components

ADS000LN



1. Front case
2. Front oil seal
3. Main shaft oil seal
4. Main shaft bearing
5. Snap ring (hole)
6. Main shaft
7. Needle bearing
8. Sprocket
9. Bolts
10. Electric controlled coupling
11. Oil cover
12. Spacer
13. Snap ring (shaft)
14. Rear bearing
15. Snap ring (hole)
16. Rear oil seal
17. Spacer
18. Companion flange lock nut
19. Companion flange
20. Baffle plate
21. Rear case
22. Filler plug
23. Oil gutter
24. Seal washer
25. Drain plug
26. Retainer
27. Drive chain
28. Front drive shaft rear bearing
29. Front drive shaft
30. Front drive shaft front bearing
31. Dynamic damper
32. Dynamic damper bracket

Disassembly and Assembly

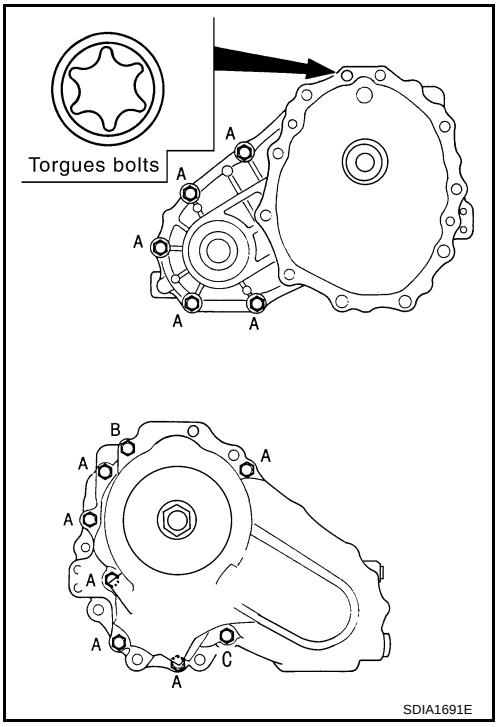
ADS000LP

DISASSEMBLY

Removal Front Case

1. Remove front case fixing bolts.

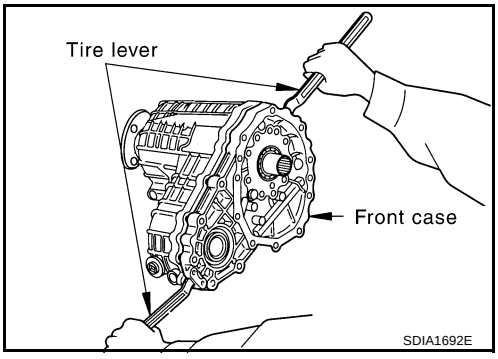
Bolts No.	Quantity	Nominal length mm (in)
A	11	42 (1.65)
B	1	162 (6.38)
C	1	97 (3.82)
Torques bolts	1	40 (1.57)



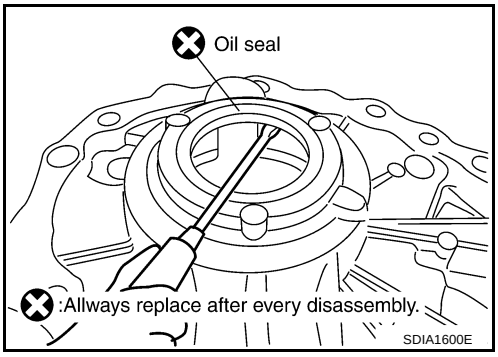
2. Insert tire lever as shown in the figure, separate front case and front case. Then, remove rear case by levering it up with a tire lever or the like.

CAUTION:

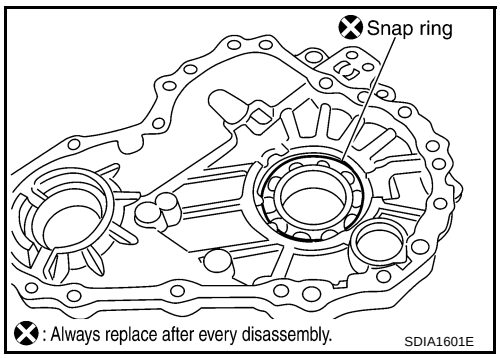
Be careful not to damage the mating surface.



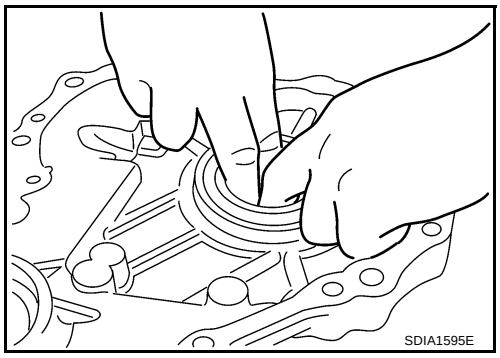
3. Remove the front oil seal and main shaft oil seal, from front case.



4. Remove snap ring from front case.

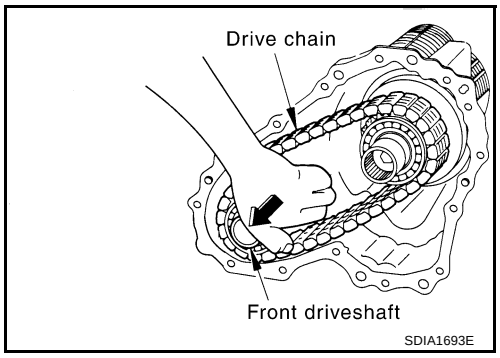


5. Remove main shaft bearing from front case.



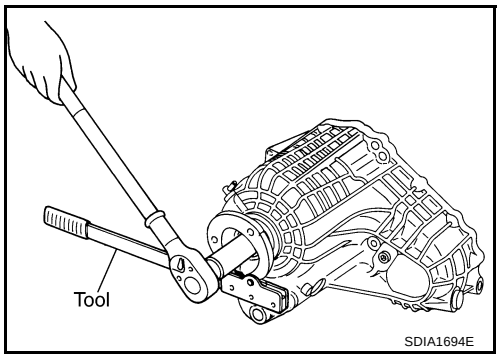
Rear Case

1. Remove the drive chain and front drive shaft from rear case.

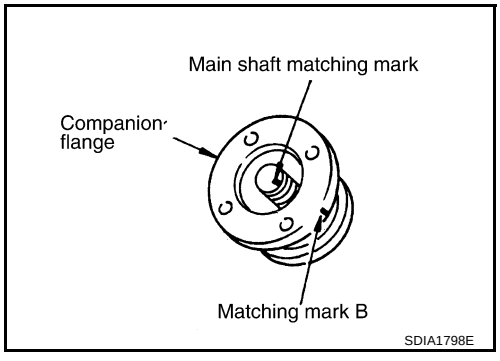


2. Remove companion flange lock nut from main shaft using the drive pinion flange wrench.

Tool number : KV38108300 (J44195)

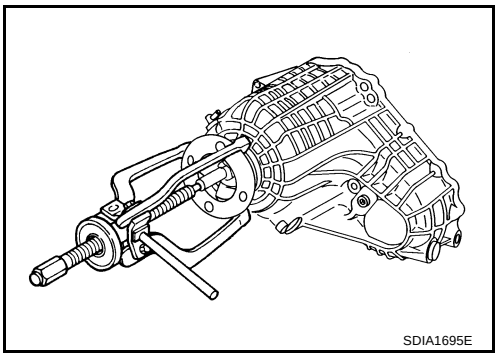


3. Put matching mark on the end of the main shaft corresponding to the B position matching mark on the companion flange.

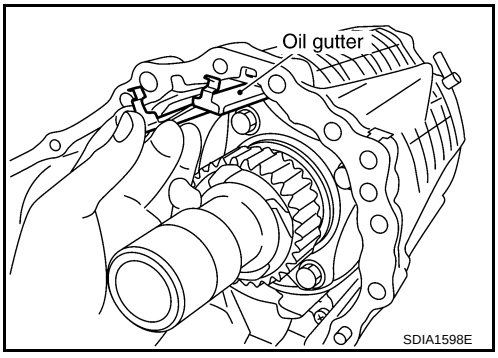


4. Remove the companion flange from main shaft using a suitable puller.
5. Remove spacer at the end of companion flange.

CAUTION:
Be careful not to damage oil seal.

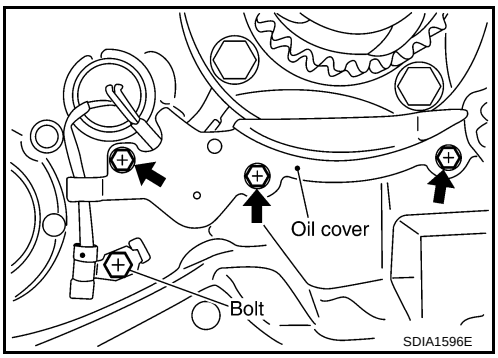

SDIA1695E

6. Remove the oil gutter from rear case.



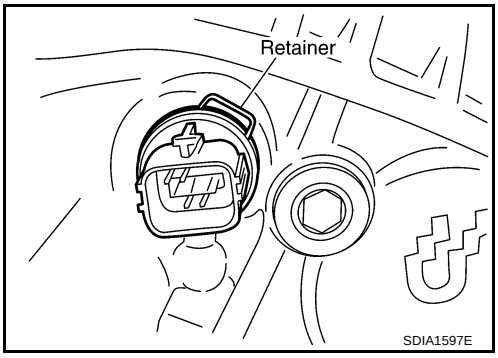
SDIA1598E

7. Remove the oil cover bolt from rear case.



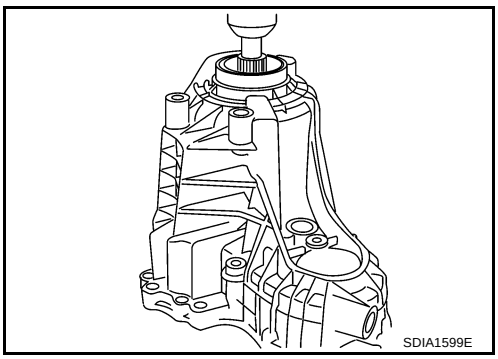
SDIA1596E

8. Remove the retainer into connector.
9. Remove the coupling connector into rear case.



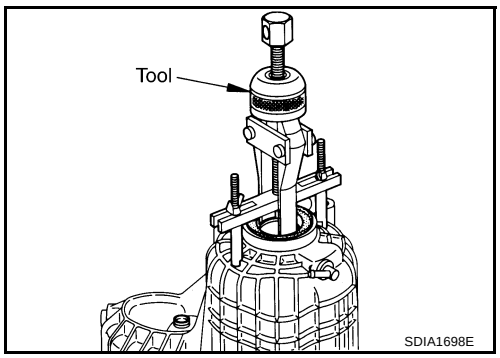
SDIA1597E

10. Remove the main shaft and electric controlled coupling from rear case using a press.


SDIA1599E

11. Using a puller, remove the rear oil seal from rear case.

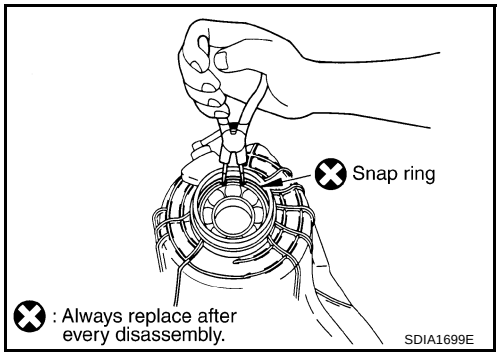
Tool number : KV381054S0 (J34286)



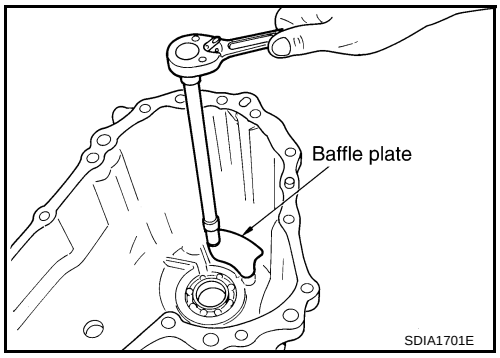
12. Remove snap ring from rear case.

CAUTION:
Do not reuse snap ring.

13. Remove the rear bearing from rear case.



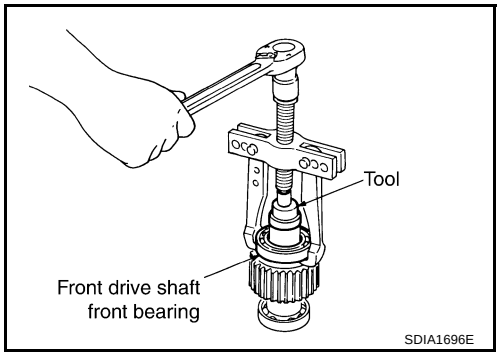
14. Remove the baffle plate from rear case.



Front Drive Shaft

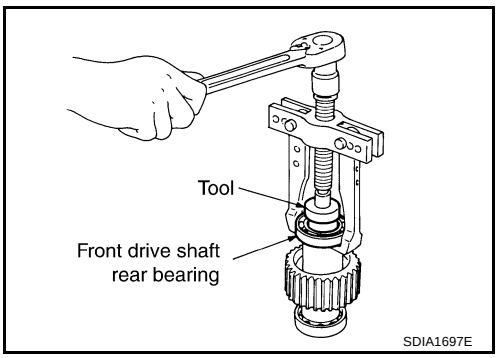
1. Remove the front drive shaft front bearing from front drive shaft.

Tool number : ST33061000 (J8107-2)



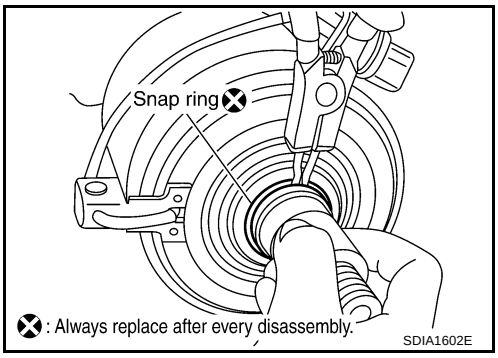
2. Remove the front drive shaft rear bearing from front drive shaft.

Tool number : ST35322000 (—)



Main Shaft and Electric Controlled Coupling

1. Remove the snap ring from main shaft.
2. Remove the spacer, electric controlled coupling, sprocket and needle bearing from main shaft.



INSPECTION

Gears

- Check the gear faces and shaft for wear, cracks, damage, and seizure.

Bearings

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

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

Front Case and Rear Case

- Replace with a new one if found any wear or cracks on the contact sides of the case.

Washers

- Check for seizure, damage, and unusual wear.

Oil Seals

- Discard old oil seals, replace with new ones.
- If wear, deterioration of adherence (sealing force of lips), or damage is detected on the lips, replace them.

Snap Ring

- Discard old snap rings, replace with new ones.

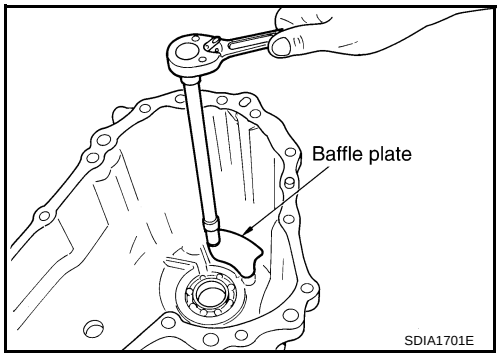
Lock Nut

- Discard old lock nut, replace with new ones.

ASSEMBLY

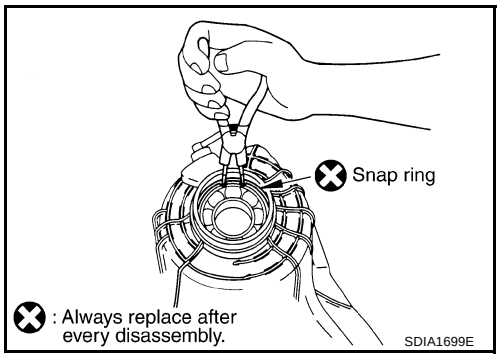
Rear Case

1. Install the baffle plate into rear case.
2. Install the main shaft rear bearing into rear case.



3. Install the snap ring into rear case.

CAUTION:
Do not reuse snap ring.

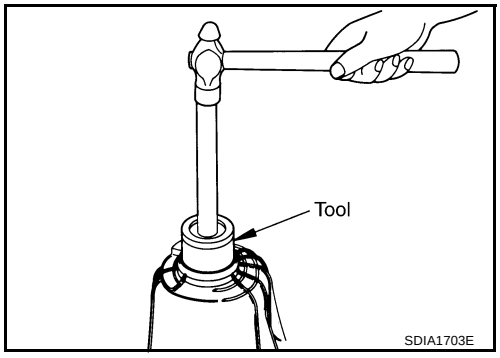


4. Using a drift, install the rear oil seal into the rear case.

Tool number : KV40104830 (—)

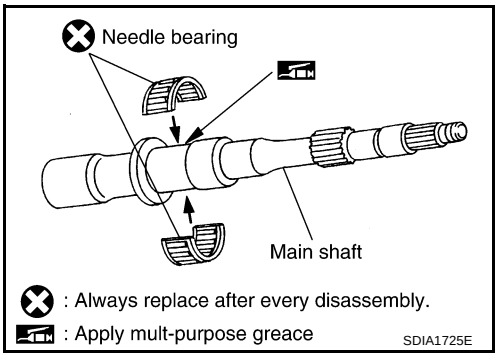
CAUTION:

- **Discard old oil seals; replace with new ones.**
- **Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.**



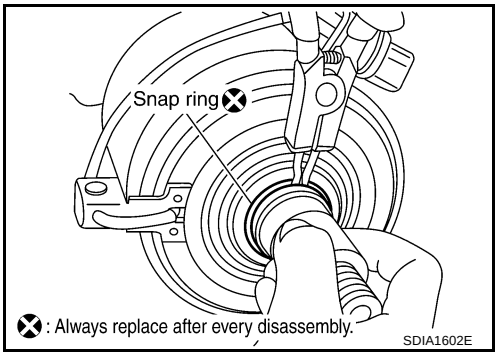
Main Shaft and Electric Controlled Coupling

1. Fixing needle bearing to main shaft with grease.
2. Install the sprocket, electric controlled coupling and spacer into main shaft.



3. Install the snap ring into main shaft.

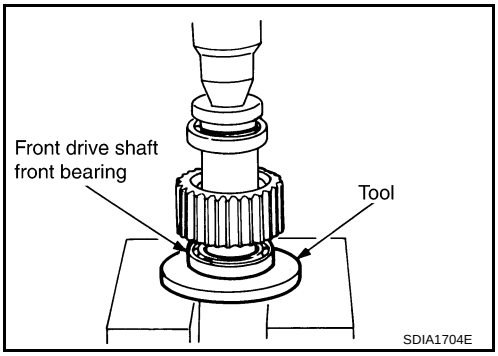
CAUTION:
Do not reuse snap ring.



Front Drive Shaft

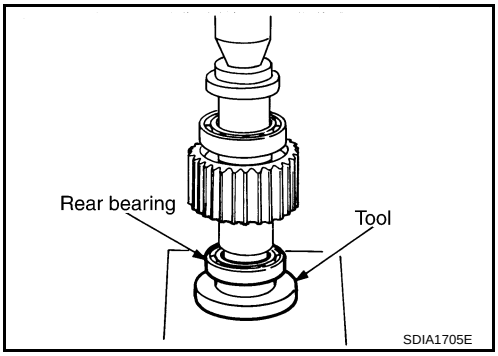
1. Using a press and drift, install the front drive shaft front bearing into front drive shaft.

Tool number : ST30022000 (—)



2. Using a press and drift, install the front drive shaft rear bearing into front drive shaft.

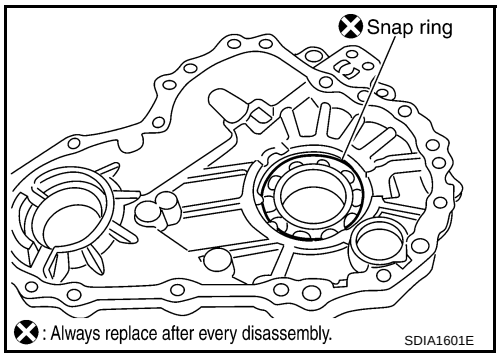
Tool number : ST30914000 (—)



Front Case

1. Install the main shaft bearing into front case.
2. Install the snap ring into front case.

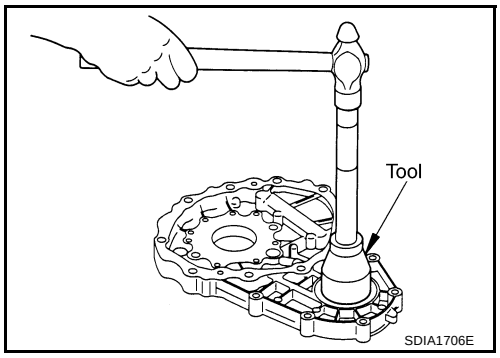
CAUTION:
Do not reuse snap ring.



3. Using a drift, install the front oil seal into front case.

Tool number : ST27862000 (—)

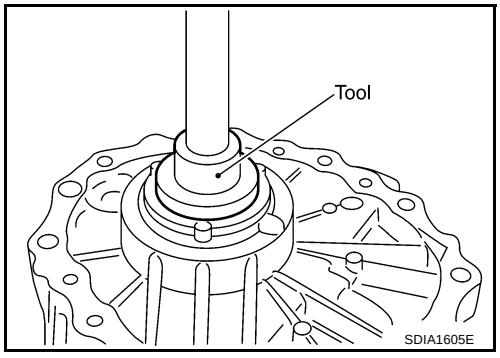
CAUTION:
- **Discard old oil seals; replace with new ones.**
- **Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.**



4. Using a drift, install the main shaft oil seal into front case.

Tool number : ST30613000 (—)

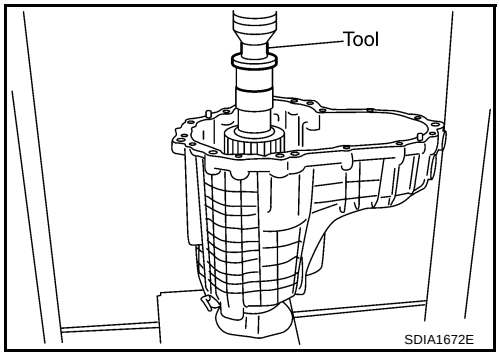
CAUTION:
- **Discard old oil seals; replace with new ones.**
- **Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of the oil seal.**



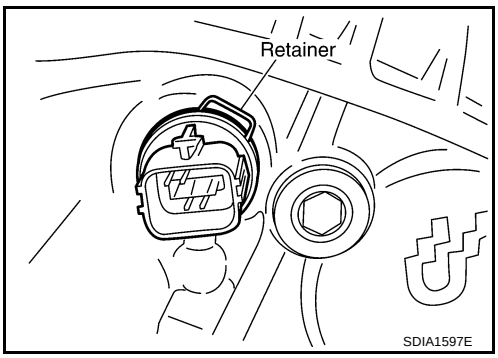
Install Rear Case

1. Using a press and drift, install the main shaft into rear case. When installing, make sure to fit electric controlled coupling detent to rear case ditch.

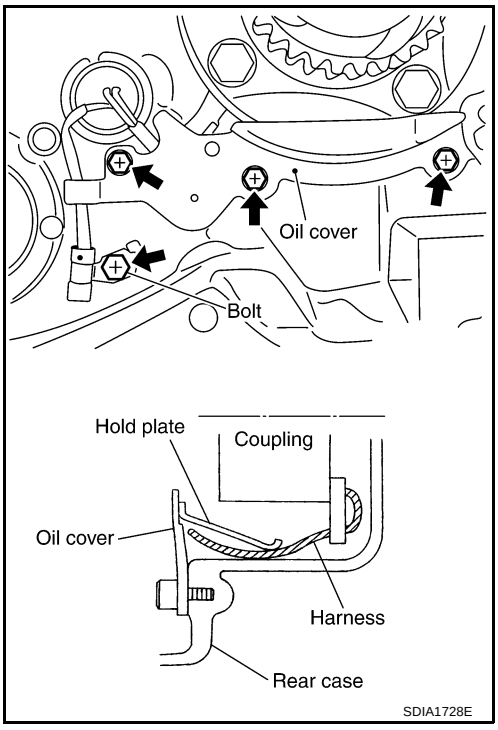
Tool number : ST30022000 (—)



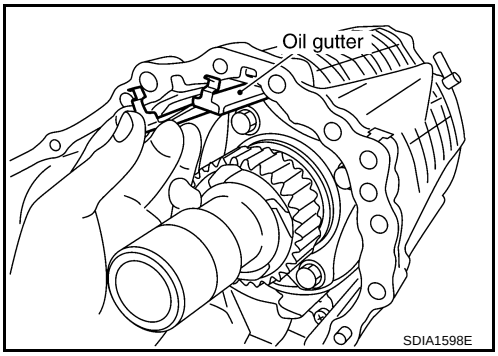
2. Install the coupling connector into rear case.
3. Install coupling connector to the ring after applying grease to the ring.
4. Install the retainer into connector.



5. Install the oil cover and temperature sensor bolt into rear case. Using harness dolly of oil cover, install electric controlled coupling harness between dolly and case.
6. Apply grease to both side of spacer. Insert the spacer from the back end of main shaft.

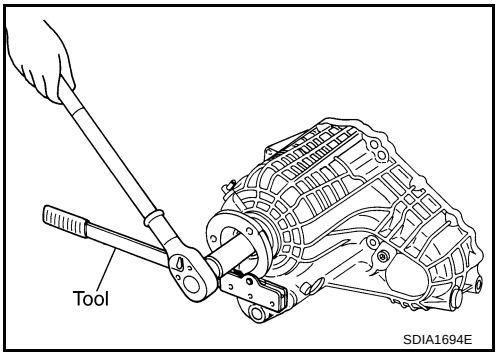


7. Install the oil gutter into rear case.

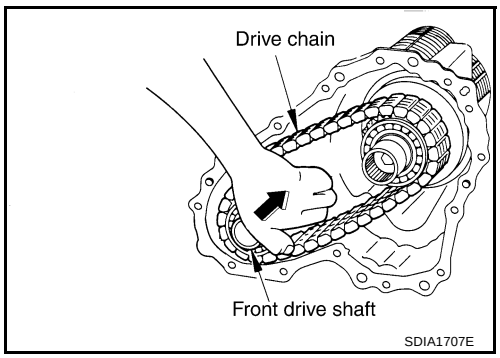


8. Install the companion flange and spacer into main shaft.
9. Install companion flange lock nut into companion flange.

CAUTION:
Discard old companion flange lock nut, replace with new ones.

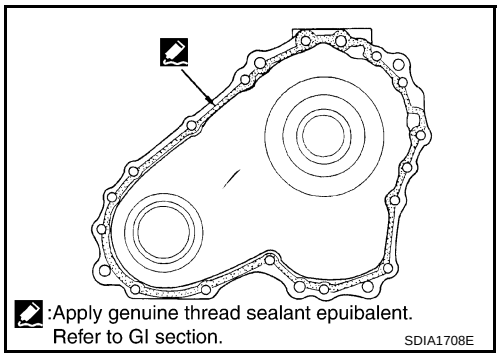


10. Install the drive chain and front drive shaft into rear case.



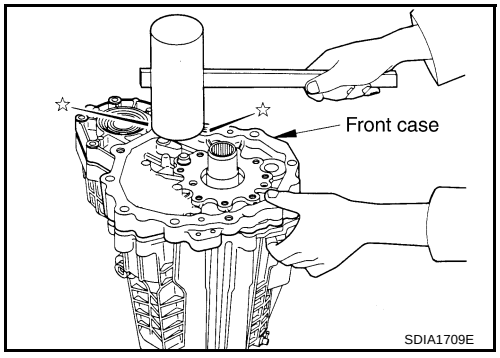
11. Apply Genuine Liquid Gasket or equivalent to the entire front case mounting surface of rear case as shown in the figure.

CAUTION:
Be careful not to damage the mating surface.



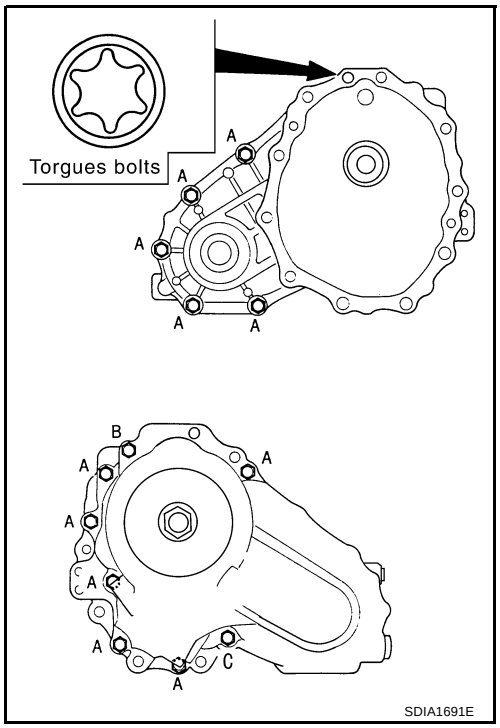
12. Install front case into rear case.

CAUTION:
Be careful not to damage the mating surface transmission side.



13. Tighten bolts to specified torque.

Bolts No.	Quantity	Nominal length mm (in)	Tighten torque N·m (kg-m, ft-lb)
A	11	42 (1.65)	21.6 (2.2, 16)
B	1	162 (6.38)	
C	1	97 (3.82)	
Torques bolts	1	40 (1.57)	18.15 (1.9, 13)

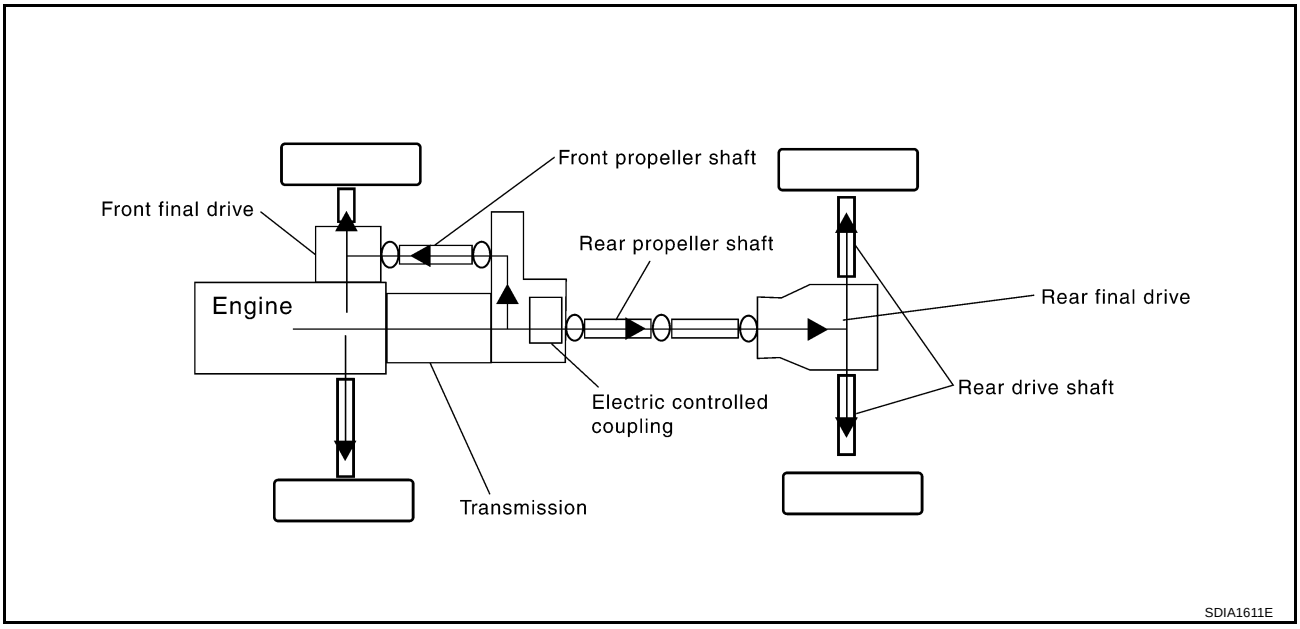


AWD SYSTEM

PFP:41650

System Component

ADS000MP

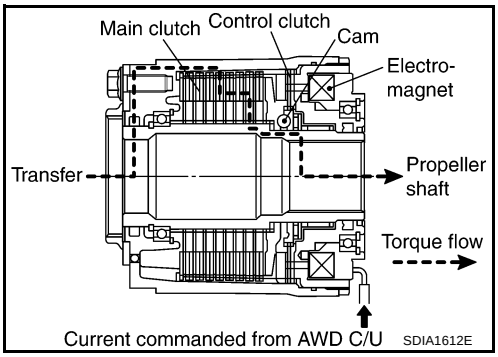


System Description

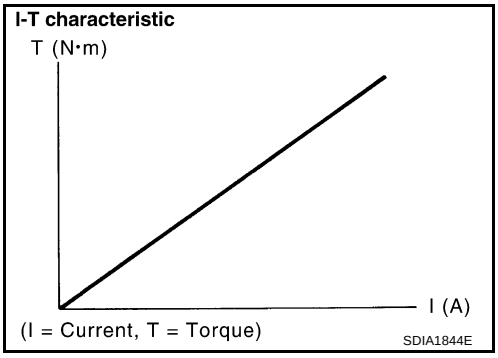
ADS000MQ

ELECTRIC CONTROLLED COUPLING

- In response to command current from AWD control unit, control clutch pull-in force is generated at the electromagnet and torque is generated at the control clutch.
- The cam operates in response to control clutch torque and applies pressure to main clutch.
- Main clutch transmits torque from input shaft to output shaft, according to the amount of pressure.

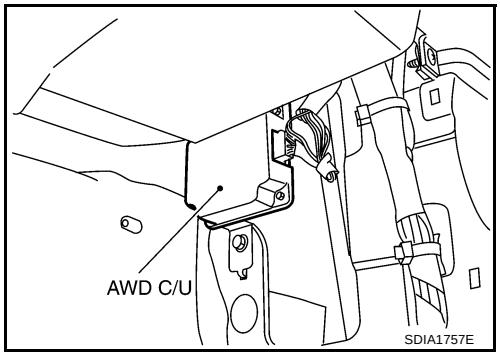


- The actual amount of torque transfer is determined by control current as shown in figure.



AWD CONTROL UNIT

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



AWD LOCK SWITCH

AUTO Mode

- 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.
- Sensors determine the vehicle's turning condition, and in response tight cornering/braking are controlled by distributing optimum torque to front wheels.

NOTE:

- When driving in AUTO mode or LOCK mode, if there is a large difference between front and rear wheel speed which continues for a long time, oil 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.)
- When driving in AUTO mode, 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 AWD warning lamp is flashing rapidly, stop vehicle and allow it to idle for some time. Flashing will stop and AUTO mode will be restored.
- 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 with AUTO mode the shift occasionally changes to LOCK mode automatically. This is not malfunction.

LOCK Mode (AWD LOCK Indicator Lamp ON)

- Front/rear wheel torque distribution is fixed, ensuring stable driving when climbing slopes.
- When LOCK mode is selected, vehicle will switch automatically to AUTO mode if vehicle speed increases. If vehicle speed then decreases, the vehicle automatically returns to direct 4-wheel driving conditions.
- LOCK mode will change to AUTO mode automatically, when the vehicle speed exceeds approximately 30 km/h (19 MPH). The AWD LOCK indicator light keeps illuminating.

NOTE:

If there is a significant difference in pressure or wear between tires, full vehicle performance is not available. Tire conditions are detected, and LOCK mode may be prohibited, or else speeds at which LOCK mode is enabled may be restricted.

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 bulb check. Turns OFF approximately for 1 seconds after the engine starts if system is normal.

AWD Warning Lamp Indication

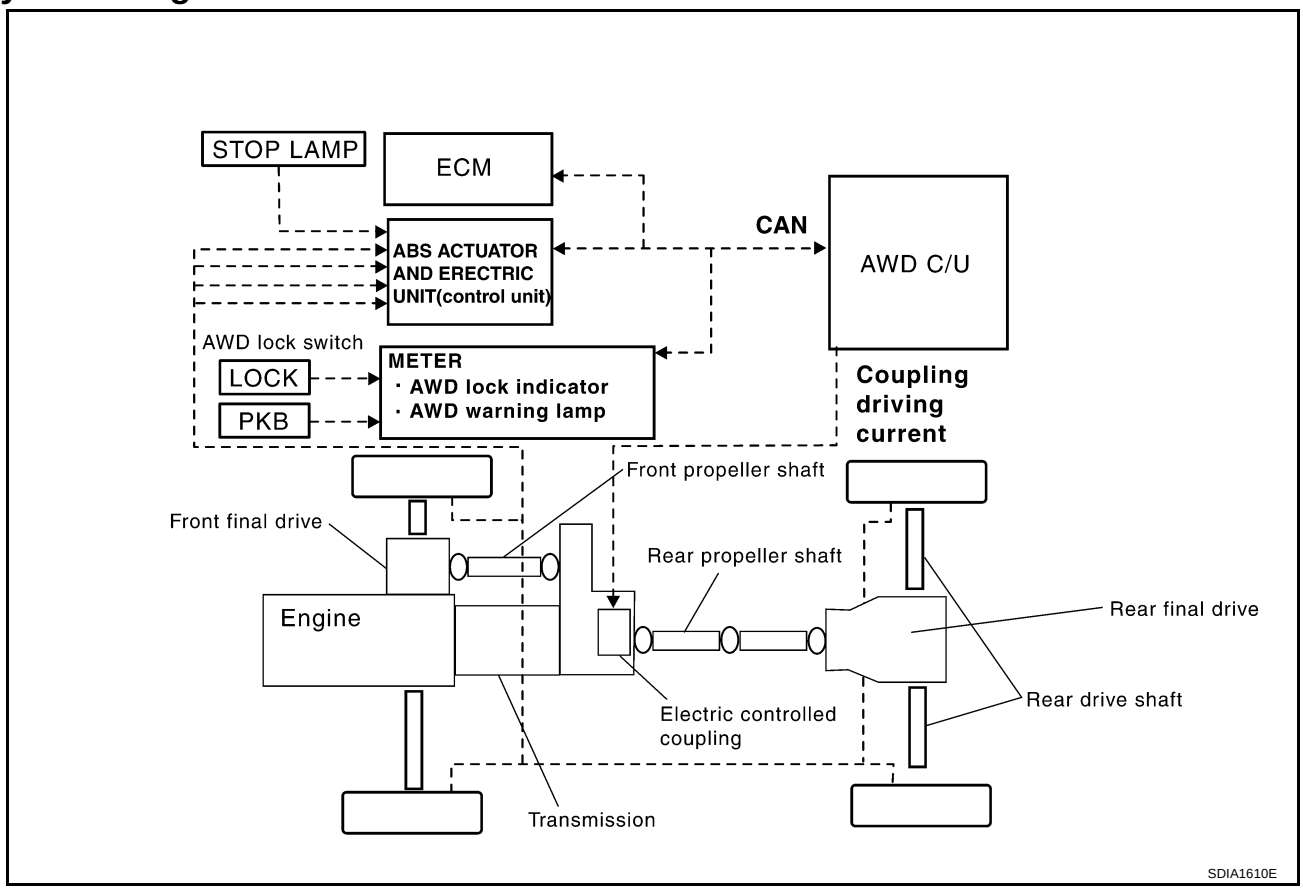
Condition	Display	AWD warning lamp
Lamp check	Turns ON when engine is started to check for burned-out lamps.	Turns ON when ignition switch is turned ON. Turns OFF approximately 1 seconds after engine start.
AWD system malfunction	Turns ON if there is malfunction in AWD system.	ON
Large difference in diameter of front/ rear tires	AWD warning lamp flashes slowly.	Flashes once every 2 seconds.
Difference in front/rear wheel speed continues and oil temperature of drive system has increased.	AWD warning lamp flashes rapidly.	Flashes twice each second.
Other than above (system normal)	OFF	OFF

FAIL- SAFE FUNCTION

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

System Diagram

ADS000MR



CAN Communication

ADS000OW

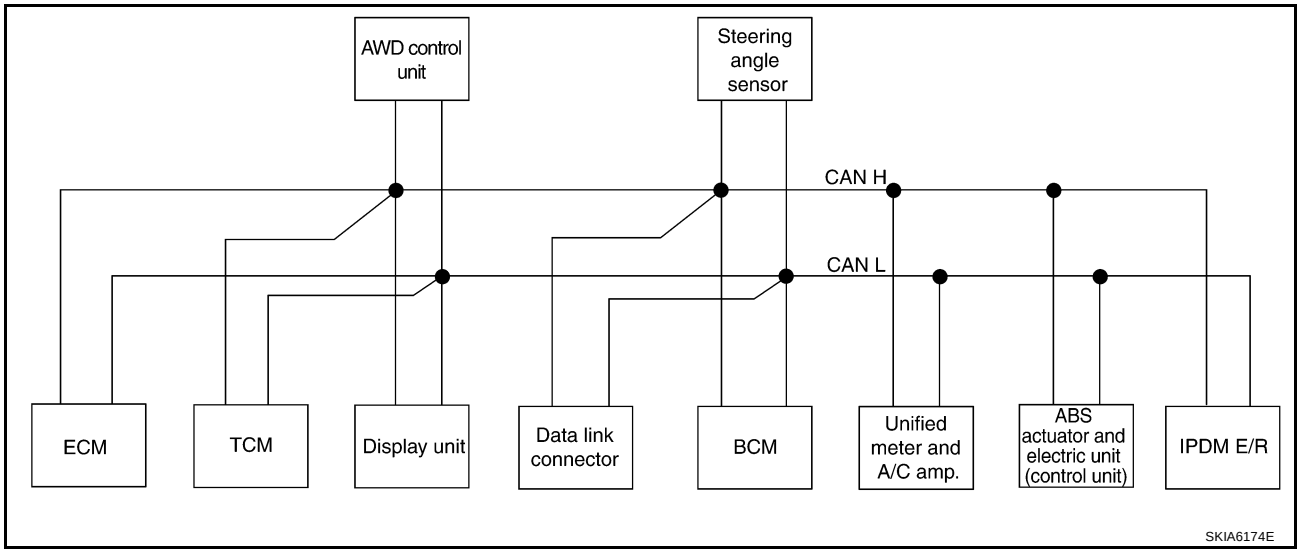
SYSTEM DESCRIPTION

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

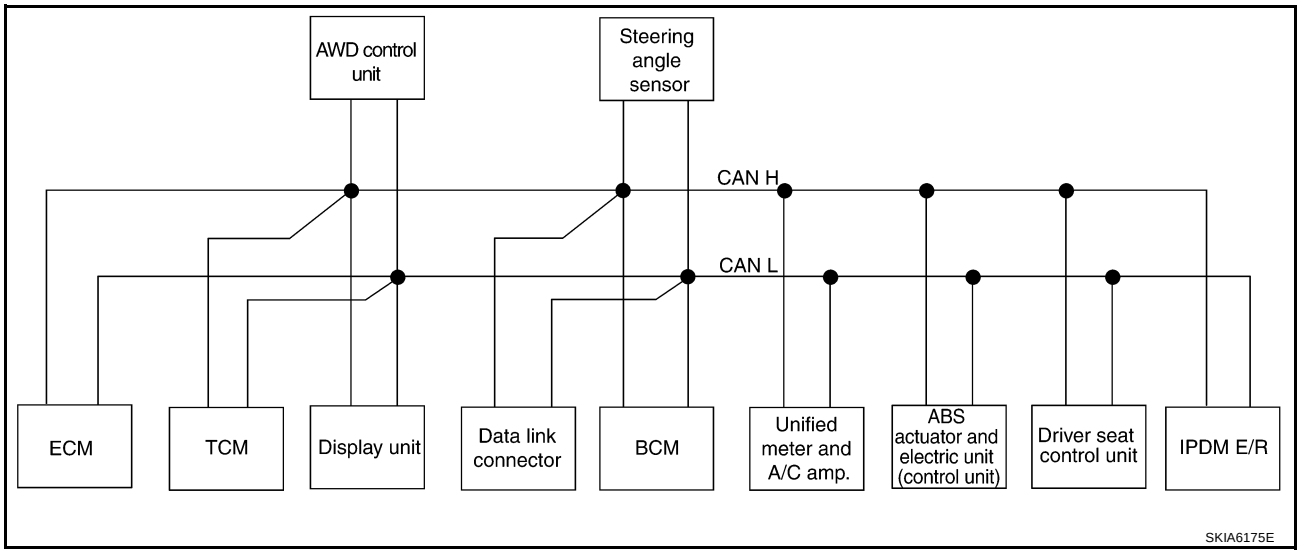
CAN COMMUNICATION UNIT (WITHOUT ICC)

System Diagram

- Models without automatic drive positioner



- Models with automatic drive positioner



Input/output Signal Chart

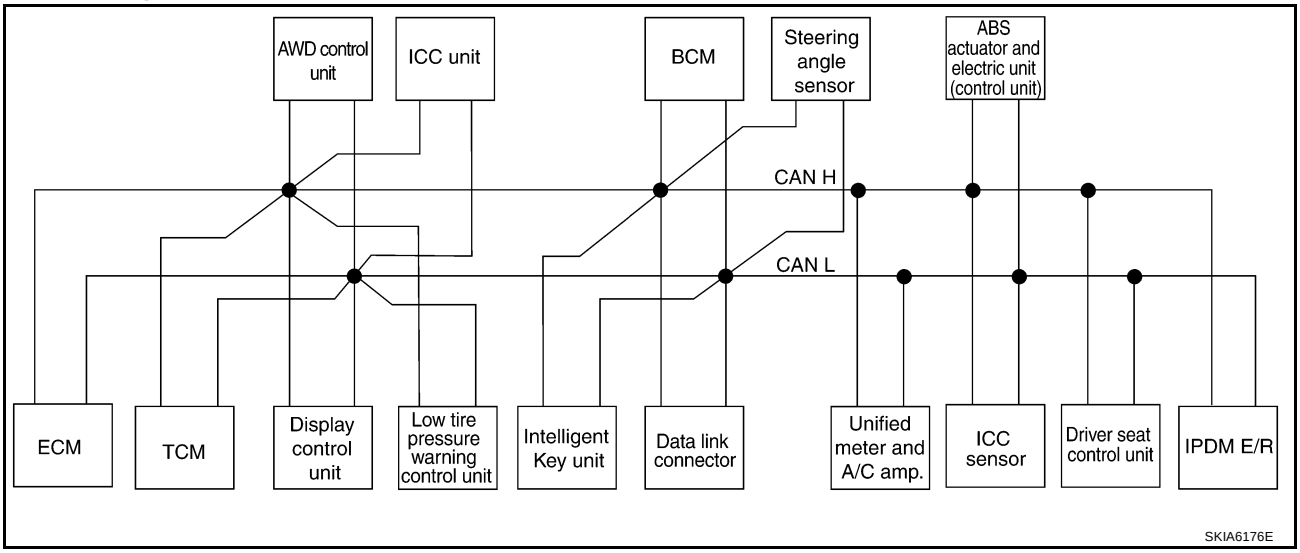
T: Transmit R: Receive

Signals	ECM	TCM	Display unit	AWD control unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
A/T self-diagnosis signal	R	T								
ABS operation signal	R			R				T		
TCS operation signal	R							T		
VDC operation signal	R			R				T		
Stop lamp switch signal		R		R			T			
Battery voltage signal	T	R								
Key switch signal					T				R	
Ignition switch signal					T				R	R
P range signal		T						R	R	
Closed throttle position signal	T	R								
Wide open throttle position signal	T	R								
Engine speed signal	T	R	R	R			R	R		
Engine status signal	T				R					
Engine coolant temperature signal	T	R					R			
Accelerator pedal position signal	T	R		R				R		
Fuel consumption monitor signal	T		R				R			
Input shaft revolution signal	R	T								
Output shaft revolution signal	R	T								
A/C switch signal	R				T					
A/C compressor request signal	T									R
A/C relay status signal	R									T
A/C compressor feedback signal	T						R			
Blower fan motor switch signal	R				T					
A/C control signal			T				R			
			R				T			
Cooling fan speed signal	R									T
Position light request signal			R		T		R			R
Low beam request signal					T					R
Low beam status signal	R									T
High beam request signal					T		R			R
High beam status signal	R									T
Front fog light request signal					T					R
Day time running light request signal					T		R			
Turn LED burnout status signal					R		T			
Vehicle speed signal							R	T		
	R	R	R		R		T		R	
Sleep wake up signal					T		R		R	R

Signals	ECM	TCM	Display unit	AWD control unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Door switch signal			R		T		R		R	R
Turn indicator signal					T		R			
Key fob ID signal					T				R	
Key fob door unlock signal					T				R	
Oil pressure switch signal					R					T
					T		R			
Buzzer output signal					T		R			
Fuel level sensor signal	R						T			
Fuel level low warning signal			R				T			
Front wiper request signal					T					R
Front wiper stop position signal					R					T
Rear window defogger switch signal					T					R
Rear window defogger control signal	R		R		R					T
Hood switch signal					R					T
Theft warning horn request signal					T					R
Horn chirp signal					T					R
Steering angle sensor signal						T		R		
ABS warning lamp signal							R	T		
VDC OFF indicator lamp signal							R	T		
SLIP indicator lamp signal							R	T		
Brake warning lamp signal							R	T		
System setting signal			T		R				R	
AWD warning lamp signal				T			R			
AWD lock indicator lamp signal				T			R			
Distance to empty signal			R				T			
Hand brake switch signal				R	R		T			
ASCD operation signal	T	R								
ASCD OD cancel request	T	R								
A/T CHECK indicator lamp signal		T					R			
A/T position indicator lamp signal		T					R			
A/T shift schedule change demand signal		R						T		
Manual mode signal		R					T			
Not manual mode signal		R					T			
Manual mode shift up signal		R					T			
Manual mode shift down signal		R					T			
Manual mode indicator signal		T					R			

CAN COMMUNICATION UNIT (WITH ICC)

System Diagram



Input/output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
A/T self-diagnosis signal	R	T												
ABS operation signal	R				R	R						T		
TCS operation signal	R					R						T		
VDC operation signal	R				R	R					R	T		
Stop lamp switch signal		R			R					T				
Battery voltage signal	T	R												
Key switch signal								T					R	
Ignition switch signal								T					R	R
P range signal		T				R						R	R	
Closed throttle position signal	T	R				R								
Wide open throttle position signal	T	R												
Engine speed signal	T	R	R		R	R				R		R		
Engine status signal	T							R						
Engine coolant temperature signal	T	R				R				R				
Accelerator pedal position signal	T	R			R	R						R		
Fuel consumption monitor signal	T		R							R				
A/T self-diagnosis signal	R	T												
Input shaft revolution signal	R	T				R								

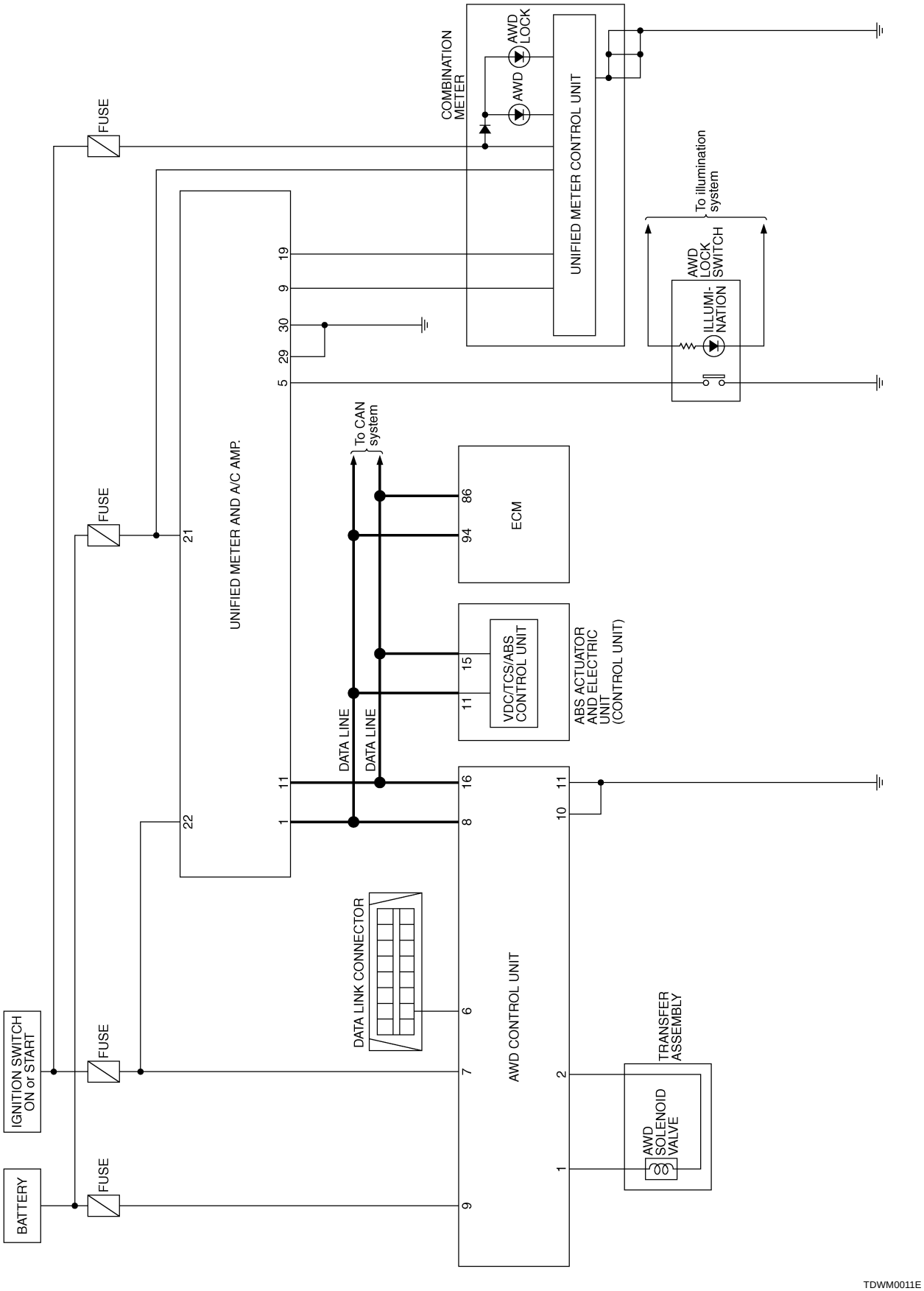
Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Output shaft revolution signal	R	T				R								
A/C switch signal	R							T						
A/C compressor request signal	T													R
A/C relay status signal	R													T
A/C compressor feedback signal	T									R				
Blower fan motor switch signal	R							T						
A/C control signal			T							R				
			R							T				
Cooling fan speed signal	R													T
Position light request signal			R					T		R				R
Low beam request signal								T						R
Low beam status signal	R													T
High beam request signal								T		R				R
High beam status signal	R													T
Front fog light request signal								T						R
Day time running light request signal								T		R				
Turn LED burnout status signal								R		T				
Vehicle speed signal						R				R		T		
	R	R	R	R			R	R		T	R		R	
Sleep wake up signal								T		R			R	R
							T	R						
Door switch signal			R				R	T		R			R	R
Key fob ID signal								T					R	
Key fob door unlock signal								T					R	
Oil pressure switch signal								R						T
								T		R				
Buzzer output signal								T		R				
							T			R				
						T				R				
Fuel level sensor signal	R									T				
Fuel level low warning signal			R							T				
ICC operation signal	R					T								
Front wiper request signal						R		T						R

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Front wiper stop position signal								R						T
Rear window defogger switch signal								T						R
Rear window defogger control signal	R		R					R						T
Hood switch signal								R						T
Theft warning horn request signal								T						R
Horn chirp signal								T						R
Steering angle sensor signal									T			R		
Tire pressure signal				T						R				
Tire pressure data signal			R	T										
ABS warning lamp signal						R				R		T		
VDC OFF indicator lamp signal						R				R		T		
SLIP indicator lamp signal										R		T		
Brake warning lamp signal										R		T		
System setting signal			T				R						R	
AWD warning lamp signal					T					R				
AWD lock indicator lamp signal					T					R				
Distance to empty signal			R							T				
Hand brake switch signal					R			R		T				
Door lock/unlock request signal							T	R						
Door lock/unlock status signal							R	T						
Starter permission signal							T	R						
Back door open request signal							T	R						
Power window open request signal							T	R						
Alarm request signal							T	R						
Key warning signal							T			R				
ICC sensor signal						R					T			
ICC warning lamp signal						T				R				
ICC system display signal						T				R				
Current gear position signal		T				R						R		
Steering switch signal	T					R								
ASCD operation signal	T	R												

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
ASCD OD cancel request	T	R												
ICC OD cancel request	R	R				T								
A/T CHECK indicator lamp signal		T								R				
A/T position indicator lamp signal		T								R				
A/T shift schedule change demand signal		R										T		
Manual mode signal		R								T				
Not manual mode signal		R								T				
Manual mode shift up signal		R								T				
Manual mode shift down signal		R								T				
Manual mode indicator signal		T								R				
Ignition knob switch signal							T	R						

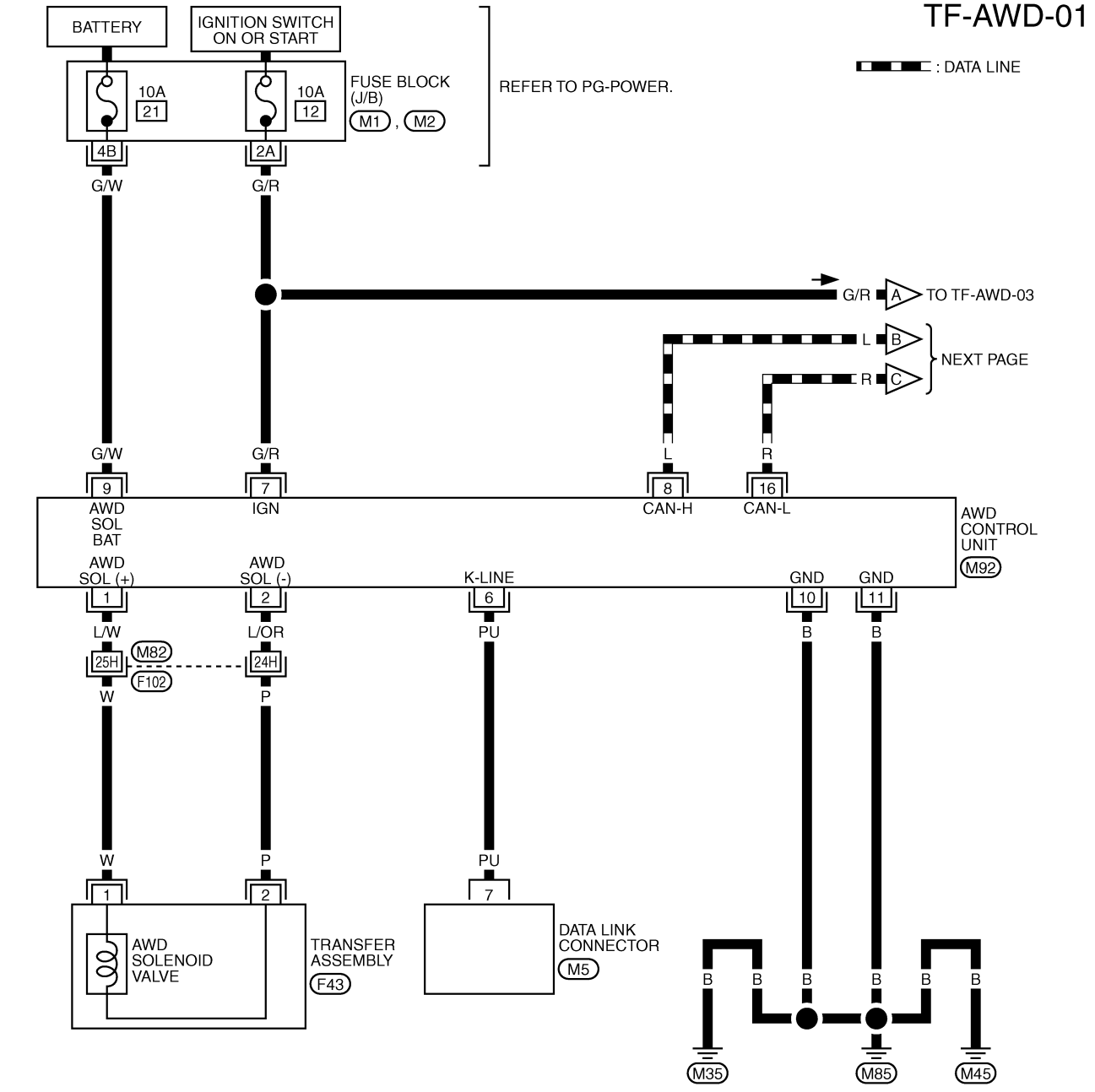
Circuit Diagram

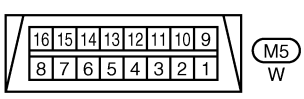
ADS000MT



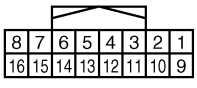
Wiring Diagram

ADS000MU

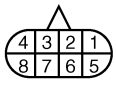




M5
W



M92
W

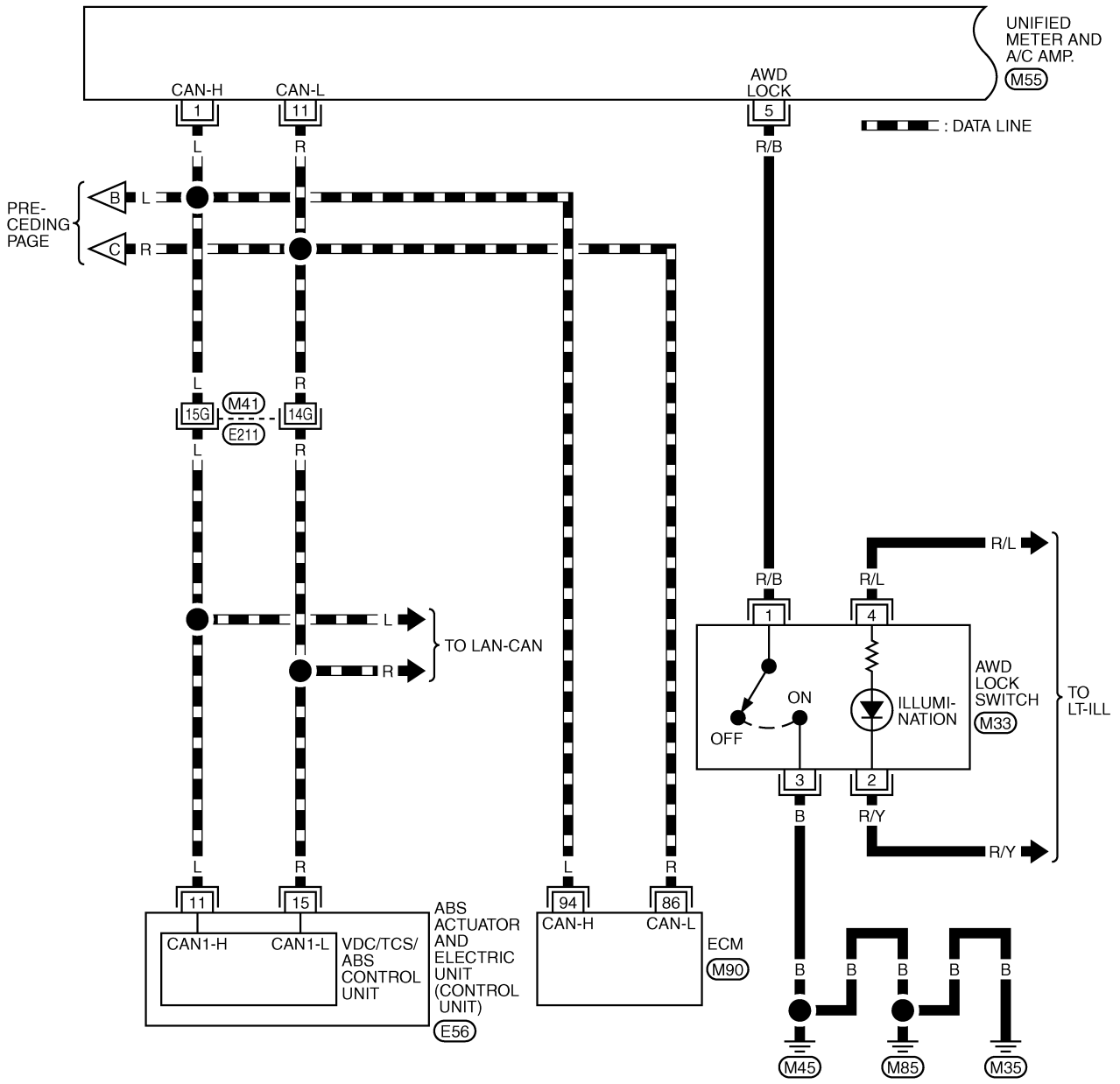


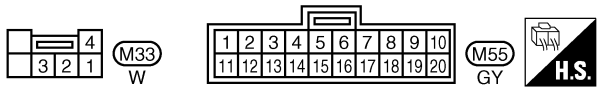
F43
B

REFER TO THE FOLLOWING.
F102 -SUPER MULTIPLE JUNCTION (SMJ)
M1 , M2 -FUSE BLOCK JUNCTION BOX (J/B)

TDWM0012E

TF-AWD-02

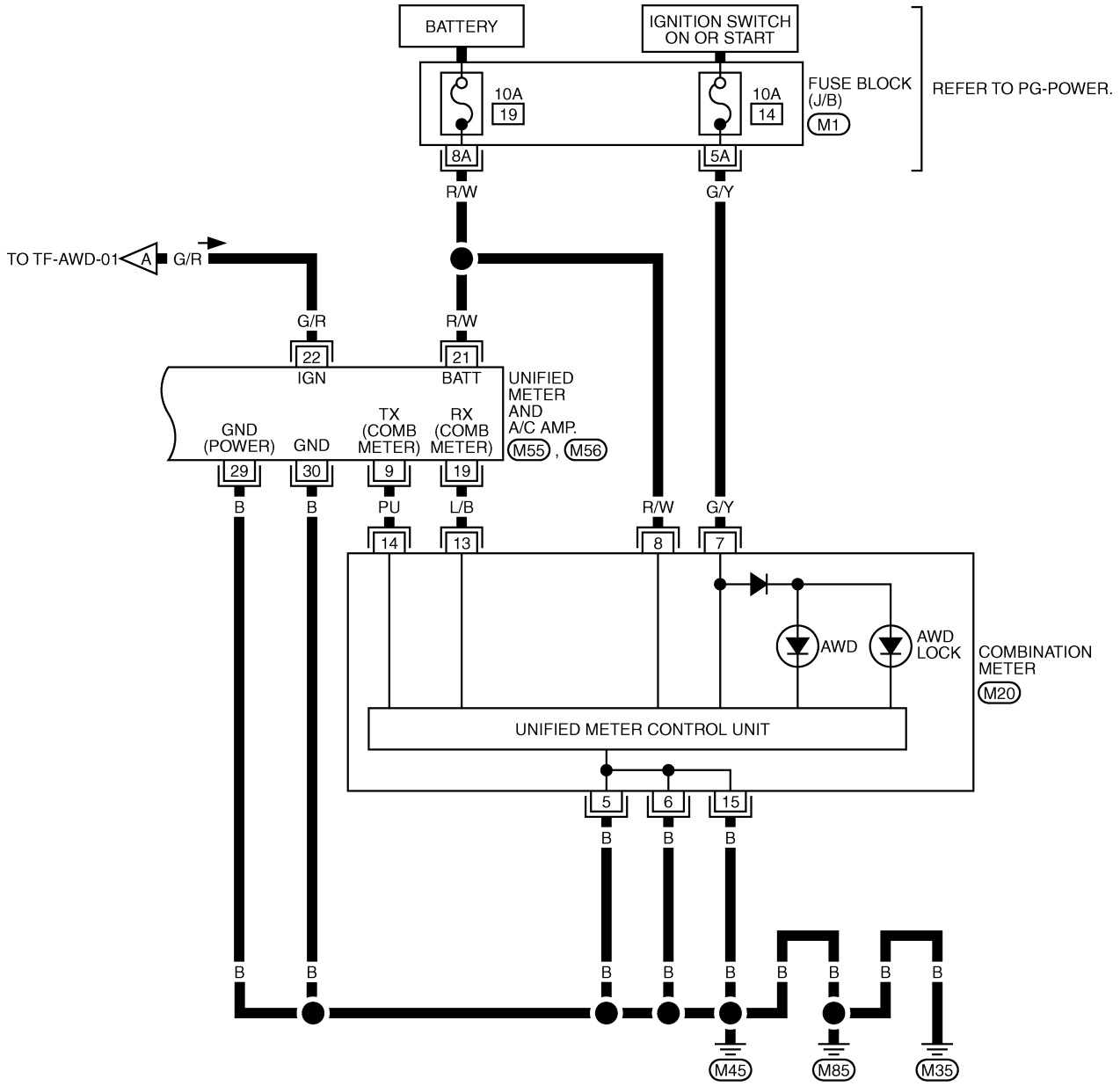


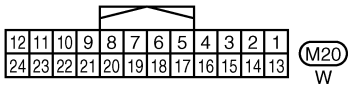


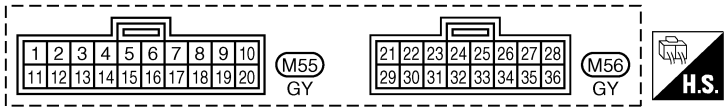
REFER TO THE FOLLOWING.
E211 -SUPER MULTIPLE JUNCTION (SMJ)
M90, E56 -ELECTRICAL UNITS

TDWM0013E

TF-AWD-03







REFER TO THE FOLLOWING.
M1 -FUSE BLOCK-JUNCTION BOX (J/B)

TDWM0014E

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function

ADS000MV

- 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

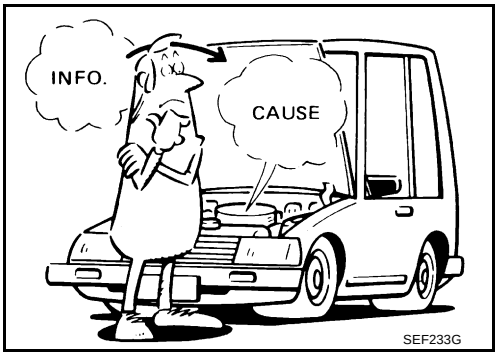
ADS000MW

BASIC CONCEPT

- To perform trouble diagnosis, it is the most important to have understanding about vehicle systems (control and mechanism) thoroughly.

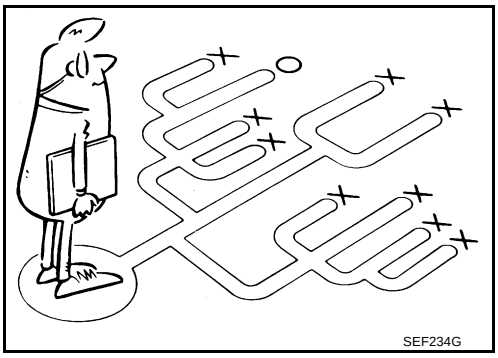
- It is also important to clarify customer complaints before inspection.
  First of all, reproduce symptoms, and understand them fully.
  Ask customer about his/her complaints carefully. In some cases, it will be necessary to check symptoms by driving vehicle with customer.

  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".



SEF233G

- 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-43, "Operation Procedure" .
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or false open circuit.


SEF234G

Trouble Diagnosis Chart for Symptoms

ADS000MX

Symptom	Condition	Check items	Reference page
When ignition switch is turned ON, AWD LOCK indicator lamp does not illuminate for approx. 1 second. (AWD LOCK indicator lamp check)	IGN-ON	● Malfunction AWD LOCK indicator lamp circuit. ● Fuse between ignition and AWD LOCK indicator lamp is blown out. ● Open circuit between ignition and AWD LOCK indicator lamp. ● Malfunction of unified meter control unit. ● AWD control unit does not receive the CAN communication signal from the unified meter control unit.	TF-53, "AWD LOCK INDICATOR LAMP DOES NOT COME ON FOR APPROXIMATELY 1 SECOND WHEN THE IGNITION SWITCH IS TURNED TO ON."
AWD warning lamp does not illuminate with ignition switch ON. (AWD warning lamp check)	IGN-ON	● Malfunction of AWD warning lamp circuit. ● Fuse between ignition and AWD warning lamp blown out. ● Open circuit between ignition and AWD warning lamp. ● Malfunction of unified meter control unit. ● AWD control unit does not receive the CAN communication signal from the unified meter and A/C amp..	TF-54, "AWD WARNING LAMP DOES NOT ILLUMINATE WITH IGNITION SWITCH ON."
AWD warning lamp does not go out several seconds after engine is started. (AWD LOCK indicator lamp goes out)	Engine running	● AWD control unit connector disconnected ● Malfunction in AWD system. ● Malfunction of unified meter control unit. ● AWD control unit does not receive the CAN communication signal from the unified meter and A/C amp..	TF-55, "AWD WARNING LAMP DOES NOT GO OUT SEVERAL SECONDS AFTER ENGINE STARTED.(AWD LOCK INDICATOR LAMP GOES OUT.)"
Heavy tight-corner braking symptom occurs when vehicle is driven in the following conditions: AUTO mode and steering wheel is turned fully to either sides after engine is started. (Note 1, Note 2)	● Engine running ● AUTO mode ● Steering wheel fully turned	● AUTO mode does not operate. (LOCK mode operate.) ● Throttle position signal error. ● Mechanical malfunction of electric controlled coupling. ● Malfunction in AWD system.	TF-55, "HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS WHEN THE VEHICLE IS DRIVEN IN AUTO MODE AND THE STEERING WHEEL IS TURNED FULLY TO EITHER SIDE AFTER THE ENGINE IS STARTED."
AWD mode cannot be switched after engine is started.(Note 3)	Engine running	● AWD lock switch disconnected ● Open circuit between AWD lock switch and unified meter and A/C amp.. ● Open circuit between AWD lock switch and ground. ● Malfunction of unified meter control unit. ● AWD control unit does not receive the CAN communication signal from the unified meter and A/C amp..	TF-57, "AWD MODE CANNOT BE SWITCHED AFTER ENGINE IS STARTED."
While driving, AWD warning lamp flashes rapidly. (when it flashes for approximately 1 minute, then does not illuminate) Rapid flashing: Two times flashing per 1 second.	Engine running	Protection function was activated due to heavy load to electric controlled coupling. (AWD system is not malfunctioning)	TF-57, "WHILE DRIVING, AWD WARNING LAMP FLASHES RAPIDLY. (WHEN IT FLASHES FOR APPROX. ONE MINUTE, THEN DOES NOT ILLUMINATE.)"

Symptom	Condition	Check items	Reference page
While driving, AWD warning lamp flashes slowly. (when it continues flashing until engine stop) Slow flashing: One flashing per 2 seconds.	● Engine running ● Driving at vehicle speed 20 km/h (12 MPH)	Tire size is different between front and rear of vehicle.	TF-57, "WHILE DRIVING, AWD WARNING LAMP FLASHES SLOWLY. (WHEN IT CONTINUES TO ILLUMINATE UNTIL ENGINE TURNS OFF.)"
Vehicle does not enter AWD mode cannot be switched even though AWD warning lamp is OFF.	Engine running	Mechanical malfunction of electric controlled coupling. (Mechanical engagement of clutch is not possible.)	TF-58, "VEHICLE DOES NOT ENTER AWD MODE EVEN THOUGH AWD WARNING LAMP IS OFF."

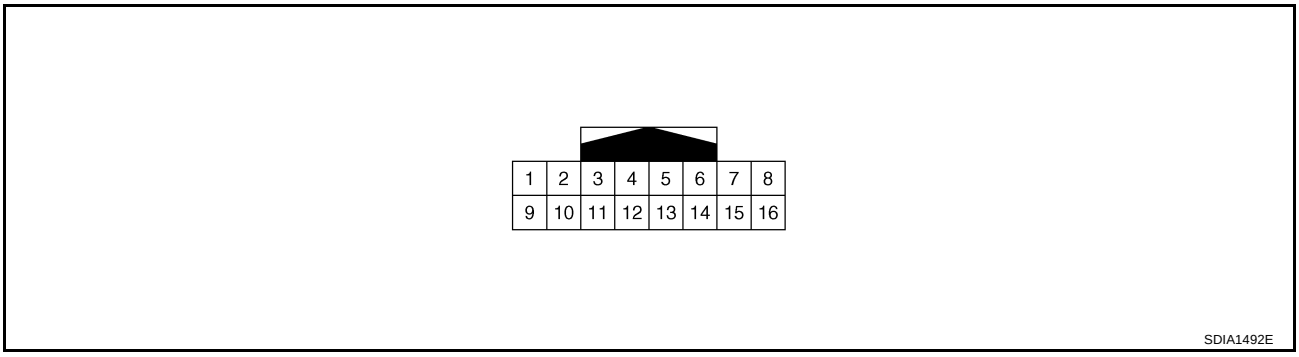
NOTE:

1. Light tight-corner braking symptom may occur depending on driving conditions in AUTO mode. This is not malfunction.
2. Heavy tight-corner braking symptom occurs when vehicle is driven in the following conditions: LOCK mode, steering wheel is turned fully to either sides, and accelerator pedal was depressed.
3. When the difference of revolution speed between the front and rear wheel with AUTO mode the shift occasionally changes to LOCK mode automatically. This is not malfunction.

AWD Control Unit Input/Output Signal Reference Values

ADS000MY

AWD CONTROL UNIT CONNECTOR TERMINAL LAYOUT



AWD CONTROL UNIT INSPECTION TABLE

Specifications Between AWD Control Unit Terminals

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition		Data (Approx.)
1	L/W	AWD solenoid (+)	● Engine running ● LOCK mode	When releasing accelerator pedal.	0V
				After warming up engine, depress accelerator pedal slowly.	Voltage rises gradually in response to throttle position.
2	L/OR	AWD solenoid (-)	Engine idling		0V
6	PU	K-LINE (CONSULT-II signal)	—		—
7	G/R	Power supply	Ignition switch: “ON”		Battery voltage
			Ignition switch: “OFF”		0V
8	L	CAN communication H line	—		—
9	G/W	Solenoid battery	Ignition switch: “ON”		Battery voltage
			Ignition switch: “OFF”		Battery voltage
10	B	Ground	Always		0V
11	B				
16	R	CAN communication L line	—		—

CAUTION:

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

Specifications With CONSULT-II

Items to be monitored	Contents	Data monitor	
		Condition	Reference values
FR RH SENSOR (km/h)	Right front wheel speed	When stopping	0 km/h
		When running *1	Almost the same as speed meter indication
FR LH SENSOR (km/h)	Left front wheel speed	When stopping	0 km/h
		When running *1	Almost the same as speed meter indication
RR RH SENSOR (km/h)	Right rear wheel speed	When stopping	0 km/h
		When running *1	Almost the same as speed meter indication
RR LH SENSOR (km/h)	Left rear wheel speed	When stopping	0 km/h
		When running *1	Almost the same as speed meter indication
BATTERY VOLT (V)	Battery voltage supplied to control unit	Ignition switch ON	Approx. 10 - 16 V
THRTL POS SEN (%)	Throttle valve open/close condition	When depressing accelerator pedal	0 - 100% (Value rises gradually in response to throttle position.)
ETS SOLENOID (A) *2	AWD solenoid valve condition of electric current value monitor	LOCK mode, when engine running (Accelerator pedal depressed)	Approx. 2.0 A
STOP LAMP SW (ON/OFF)	Condition of brake pedal operation	Brake pedal depressed	ON
		Brake pedal without depressed	OFF
ENG SPEED SIG (STOP/RUN)	With engine running	Engine speed below 400 rpm	STOP
		Engine speed 400 rpm or higher	RUN
ETS ACTUATOR (ON/OFF)	AWD actuator relay (integrated in AWD control unit) activation condition	Engine stop (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 SW (AUTO, LOCK)	Input condition of AWD lock switch	Engine running, vehicle stopped, AWD lock switch ON	LOCK
		Engine running, vehicle stopped, AWD lock switch OFF	AUTO
4WD MODE MON (AUTO, LOCK)	Input condition of AWD LOCK indicator lamp signal	Engine running, vehicle stopped	Using AWD lock switch
DIS-TIRE MONI (mm)	Improper size tire installed condition	Normal size tire installed	0 - 4 mm
		Front/rear tire size difference, wear condition	4 - 8 mm, 8 - mm
P BRAKE SW (ON/OFF)	Parking brake switch operating condition	Parking brake operated	ON
		Parking brake not operated	OFF

*1: Check air pressure of tire under normal condition.
*2: Unit name is indicated by the one used in circuit diagram (AWD solenoid valve). However, it is "ETS SOLENOID" in CONSULT-II data.

CONSULT-II Functions

ADS000MZ

FUNCTION

Diagnostic test mode	Function	Reference page
Self-diagnostic results	● Self-diagnostic results can be read and erased quickly.	TF-43
Data monitor	● Input/Output data in the AWD control unit can be read.	TF-44
CAN diagnostic support monitor	● The results of transmit/receive diagnosis of CAN communication can be read.	—
Active test	● 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-46
ECU part number	● AWD control unit part number can be read.	TF-46

CONSULT-II FUNCTION APPLICATION TABLE

Item	Self-diagnosis	DATA MONITOR	ACTIVE TEST
FR RH SENSOR	X	X	–
FR LH SENSOR	X	X	–
RR RH SENSOR	X	X	–
RR LH SENSOR	X	X	–
BATTERY VOLT	X	X	–
THRTL POS SEN	X	X	–
ETS SOLENOID	X	X	X
STOP LAMP SW	X	X	–
ENG SPEED SIG	X	X	–
ETS ACTUATOR	–	X	–
4WD WARN LAMP	–	X	–
4WD MODE SW	X	X	–
4WD MODE MON	–	X	–
DIS-TIRE MONI	–	X	–
P BRAKE SW	–	X	–

SELF-DIAGNOSIS

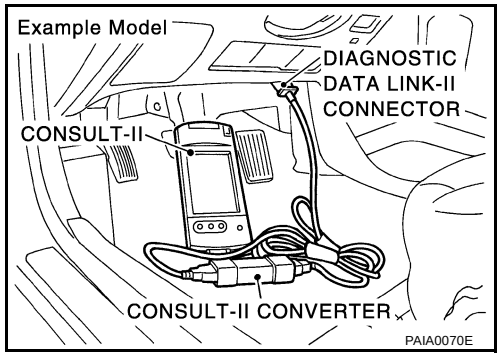
Operation Procedure

- For details, refer to the separate "CONSULT-II OPERATION MANUAL".

CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self- diagnosis depending on control unit which carry out CAN communication.

1. Turn the ignition switch to OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector on vehicle.
3. Start engine and drive at approx. 30 km/h (19MPH) for approx. 1 minute.
4. Stop vehicle. With engine at idle, touch "START (NISSAN BASED VHCL)", "ALL MODE 4WD" and "SELF-DIAG RESULTS" on CONSULT-II screen in this order.



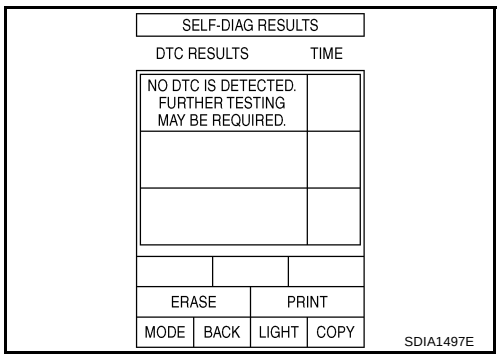
CAUTION:

"ALL MODE 4WD" may not be displayed on the system selection screen in the following case: When "START (NISSAN BASED VHCL)" was touched just after engine is started or ignition switch is turned to ON. In this case, repeat procedure from step 1.

If "ALL MODE 4WD" is not detected, go to GI-40, "CONSULT-II Data Link Connector (DLC) Circuit" .

5. DTC RESULT is displayed. (If necessary, touch "PRINT" to print self-diagnostic results.)
   - If "NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED." is displayed. Check AWD warning lamp.
6. Check the malfunctioning part indicated by the chart to repair or replace. Refer to TF-44, "Display Item List" .
7. Start engine and drive at approx. 30 km/h (19 MPH) for approx. 1 minute.

   CAUTION:
   - **Check again to make sure that there is NO FAILURE on other parts.**
   - **If AWD warning lamp is turned ON because of "ABS SYSTEM" incident, AWD warning lamp may not be turned OFF even if "ABS SYSTEM" is restored. In this case, turn OFF the key switch, restart engine, run vehicle at 30 km/h (19 MPH) for 1 minute.**



8. Turn the ignition switch to OFF prepare for erasing memory.
9. Start engine. Touch "START (NISSAN BASED VHCL)", "ALL MODE 4WD", "SELF-DIAG RESULTS," and "ERASE" on CONSULT-II screen in this order to erase fault memory.

   CAUTION:
   If memory cannot be erased, proceed to 6.
10. Drive at approx. 30 km/h (19 MPH) for approx. 1 minute. Be sure AWD warning lamp is OFF. And turn ON-OFF AWD lock switch, make sure that AWD LOCK indicator lamp in the meter changes properly.

Display Item List

Item	Malfunction detecting condition	Check parts
CONTROLLER FAILURE	Malfunction of AWD control unit	Check or replace AWD control unit.
ABS SYSTEM	Non-standard condition of wheel speed signal	● Check ABS actuator and electric unit (control unit) connector. ● Check wheel sensor connector. ● Check wheel sensor harness. ● Check or replace ABS actuator and electric unit (control unit).
4WD SOLENOID	● Malfunction AWD solenoid, or open or short circuit in harness ● Malfunction of AWD control unit	● Check AWD control unit connector. ● Check AWD solenoid harness. ● Check or replace AWD control unit.
4WD ACTUATOR RLY	Malfunction of AWD actuator relay (integrated in AWD control unit)	● Check AWD control unit connector. ● Check or replace AWD control unit.
CAN COMM CIRCUIT	● Malfunction of CAN communication line ● Malfunction of AWD control unit ● Malfunction of ECM ● Malfunction of ABS actuator and electric unit (control unit) ● Malfunction of unified meter and A/C amp.	● Check connector and harness of each control unit. ● Check each control unit.

CAUTION:
- **If "ALL MODE 4WD" is not displayed on system selection screen, check the following: AWD CONTROL UNIT, data link connector harness, and No. of CONSULT-II program card.**
- **When several systems including CAN communication system indicates malfunctions, perform trouble diagnosis of the CAN communication primarily.**

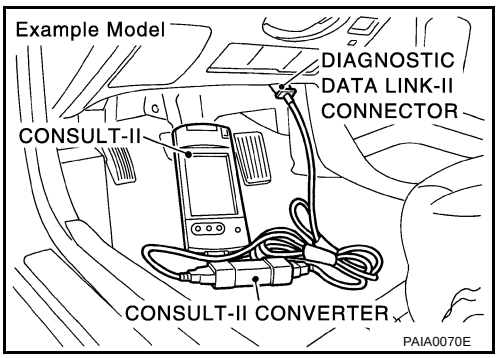
DATA MONITOR

Operation Procedure

- For details, refer to the separate "CONSULT-II OPERATION MANUAL".

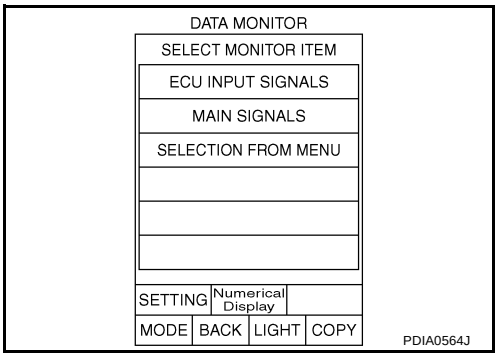
CAUTION:
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self- diagnosis depending on control unit which carry out CAN communication.

1. Turn the ignition switch to OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector on vehicle.
3. Turn ignition switch ON.
4. Touch "START" on the display.
5. Touch "ALL MODE 4WD" on the display.



CAUTION:
"ALL MODE 4WD" may not be displayed on the system selection screen in the following case: When "START (NISSAN BASED VHCL)" was touched just after engine is started or ignition switch is turned to ON. In this case, repeat procedure from step 1.
If "ALL MODE 4WD" is not detected, go to GI-40, "CONSULT-II Data Link Connector (DLC) Circuit" .

6. Touch "DATA MONITOR".
7. Return to monitor item selection screen. Touch any of "ECU INPUT SIGNALS," "MAIN SIGNALS," or "SELECTION FROM MENU".
   Refer to TF-45, "Display Item List" .
8. Touch "START".
9. Screen of data monitor is displayed.



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.

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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.
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)	● Vehicle stopped ● Engine running ● No DTC detected	● Change command current value to AWD solenoid, and then change driving mode. (Monitor value is normal if it is within approximately ±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.

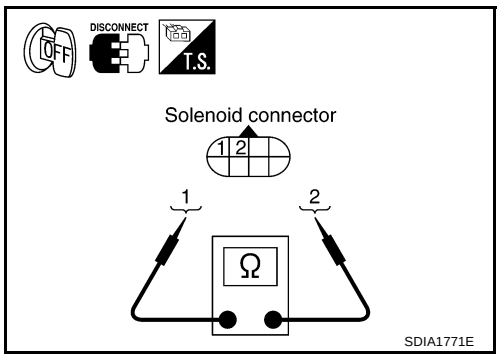
Component Inspection

ADS000N0

AWD SOLENOID VALVE

- Disconnect connector and measure resistance between terminals 1 and 2.

1 - 2 : Approx. 2.45Ω



System Inspection

ADS000RF

CAUTION:

- **After inspection, be sure to perform self-diagnosis again and make sure that there in no incidents in the result.**
- **After diagnosis, be sure to erase the memory. When erasing the memory, make sure that AWD LOCK indicator lamp in the combination meter changes according to the switch position by operating AWD lock switch.**

CONTROL UNIT POWER SUPPLY AND GROUND

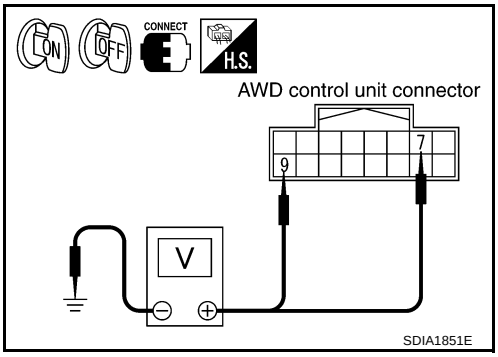
1. CHECK POWER SUPPLY

1. Turn ignition switch “ON”. (Do not start engine.)
2. Check voltage between AWD control unit terminals and ground.

Connector	Terminal (Wire color)	Voltage (Approx.)
M92	7 (G/R) - Ground	Battery voltage
	9 (G/W) - Ground	

3. Turn ignition switch “OFF”.
4. Check voltage between AWD control unit terminals and ground.

Connector	Terminal (Wire color)	Voltage (Approx.)
M92	7 (G/R) - Ground	0V
	9 (G/W) - Ground	Battery voltage



OK or NG

OK >> GO TO 3.
NG >> GO TO 2.

2. DETECT MALFUNCTIONING ITEM

Check the following:

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

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK GROUND CIRCUIT

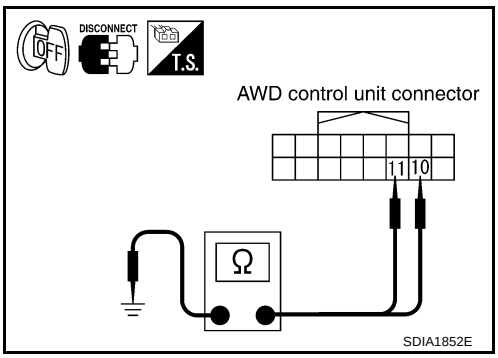
1. Turn ignition switch “OFF”.
2. Disconnect AWD control unit harness connector.
3. Check continuity between AWD control unit M92 terminals 10 (B), 11 (B) and ground.

Continuity should exist.

If OK, check harness for short to ground and short to power.

OK or NG

OK >> **INSPECTION END**
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



AWD CONTROL UNIT SYSTEM

1. PERFORM SELF-DIAGNOSIS

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the “CONTROLLER FAILREN” indication in the results?

YES or NO

YES >> GO TO 2.
NO >> 1. Drive vehicle at 30 km/h (19 MPH) for at least 1 minute. Make sure AWD warning lamp does not turn ON.
2. **INSPECTION END**

2. AWD CONTROL UNIT CONNECTOR INSPECTION

1. Disconnect the AWD control unit connector.
2. Check that terminals are not deformed and the connectors were connected properly.

OK or NG

OK >> Replace AWD control unit.
NG >> Repair or replace the connectors.

ABS SYSTEM

1. PERFORM SELF-DIAGNOSIS

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the “ABS SYSTEM” indication in the results?

YES or NO

YES >> GO TO 2.
NO >> 1. Drive vehicle at 30 km/h (19 MPH) for at least 1 minute. Make sure AWD warning lamp does not turn ON.
2. **INSPECTION END**

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

Refer to BRC-25, "TROUBLE DIAGNOSIS" .

OK or NG

OK >> GO TO 3.
NG >> Check the malfunctioning system.

3. AWD CONTROL UNIT CONNECTOR INSPECTION

1. Disconnect the AWD control unit connector.
2. Check that terminals are not deformed and the connectors were connected properly.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace the connectors.

AWD ACTUATOR SYSTEM

1. PERFORM SELF-DIAGNOSIS

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the “4WD ACTUATOR RLY” indication in the results?

YES or NO

YES >> GO TO 2.
NO >> 1. Drive vehicle at 30 km/h (19 MPH) for at least 1 minute. Make sure AWD warning lamp does not turn ON.
2. **INSPECTION END**

2. AWD CONTROL UNIT CONNECTOR INSPECTION

1. Disconnect the AWD control unit connector.
2. Check that terminals are not deformed and the connectors were connected properly.

OK or NG

OK >> Replace AWD control unit.
NG >> Repair or replace the connectors.

AWD WARNING LAMP SYSTEM

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Is a malfunction in the “CAN COMM CIRCUIT” indication in the results?

YES or NO

YES >> Check the CAN communication line. Refer to TF-52, "CAN COMMUNICATION SYSTEM" .
NO >> GO TO 2.

2. CHECK AWD WARNING LAMP

1. Check if AWD warning lamp turns on when ignition switch is turned on.

OK or NG

OK >> **INSPECTION END**
NG >> Check the combination meters. Refer to DI-4, "COMBINATION METERS" .

AWD LOCK SWITCH SIGNAL CIRCUIT

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Is a malfunction in the “CAN COMM CIRCUIT” indication in the results?

YES or NO

YES >> Check the CAN communication line. Refer to TF-52, "CAN COMMUNICATION SYSTEM" .
NO >> GO TO 2.

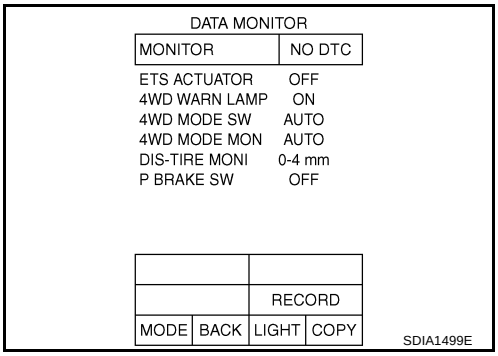
2. CHECK AWD LOCK SWITCH SIGNAL

WITH CONSULT-II

1. Turn ignition switch “ON”.
2. Select “ALL MODE 4WD” with “DATA MONITOR” mode in CONSULT-II.
3. Is it the same as "4WD MODE SW" indication when operating switch?

YES or NO

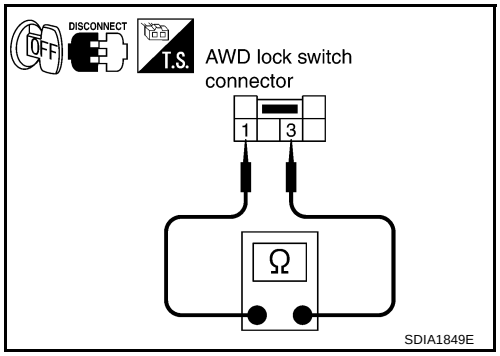
YES >> **INSPECTION END**
NO >> GO TO 3.



3. CHECK AWD LOCK SWITCH

1. Turn ignition switch “OFF”.
2. Disconnect AWD lock switch connector.
3. Check continuity between AWD lock switch connector M33 terminals 1and 3.

Switch position	Continuity
LOCK	Yes
AUTO	No



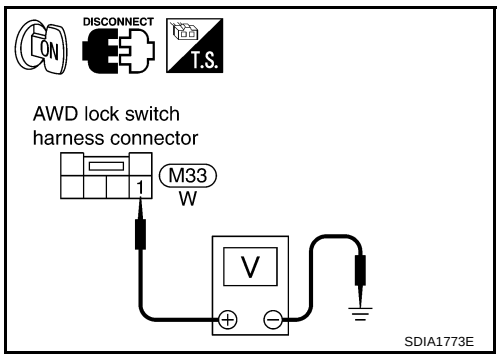
OK or NG

OK >> GO TO 4.
NG >> Repair AWD lock switch.

4. CHECK AWD LOCK SWITCH POWER SUPPLY

1. Turn ignition switch “ON”.
2. Check the voltage between the AWD lock switch connector M33 terminal 1(R/B) and ground.

1 (R/B) - Ground : Approx. 4V



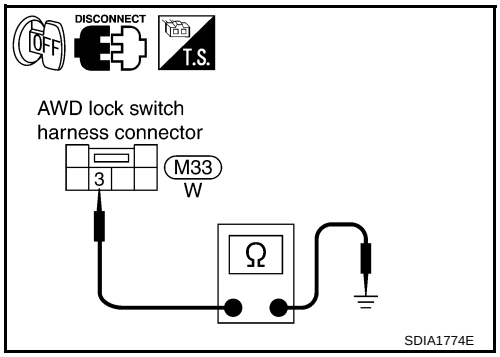
OK or NG

OK >> GO TO 5.
NG >> GO TO 6.

5. CHECK GROUND CIRCUIT

1. Turn ignition switch “OFF”.
2. Check continuity between the AWD lock switch connector M33 terminal 3 (B) and ground.

3 (B) - Ground : Continuity should exist.



OK or NO

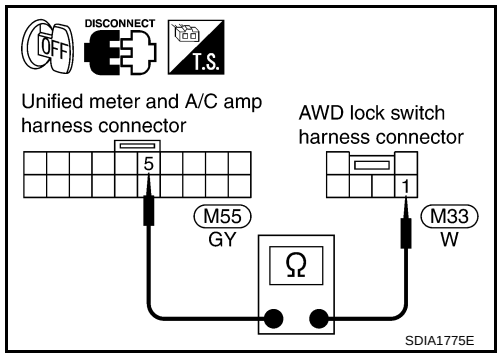
OK >> Check the unified meter and A/C amp. Refer to DI-31, "UNIFIED METER AND A/C AMP" .
NG >> Repair or replace the harness or connectors.

6. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect unified meter and A/C amp. connector.
3. Check the continuity between the following terminals.

– Unified meter and A/C amp. harness connector M55 terminal 5 (R/B) and AWD lock switch harness connector M33 terminal 1 (R/B).

5 (BR/Y) - 1 (BR/Y) : Continuity should exist.



OK >> Check the unified meter and A/C amp. Refer to DI-31, "UNIFIED METER AND A/C AMP" .
NG >> Repair or replace the harness or connectors.

AWD SOLENOID SYSTEM

1. PERFORM SELF-DIAGNOSIS

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the “AWD SOLENOID” indication in the results?

YES or NO

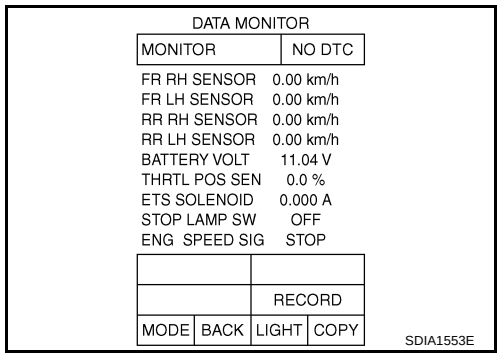
YES >> GO TO 2.
NO >> 1. Drive vehicle at 30 km/h (19 MPH) for at least 1 minute. Make sure AWD warning lamp does not turn ON.
2. **INSPECTION END**

2. CHECK INPUT SIGNAL

WITH CONSULT-II

1. Turn ignition switch “ON”.
2. Select “ALL MODE 4WD” with “DATA MONITOR” mode in CONSULT-II.
3. While monitoring the AWD solenoid items "ETS SOLENOID".

Condition			Specification
Ignition switch	AWD lock switch	Accelerator pedal	
ON	LOCK	Accelerator pedal depressed	Approx.2.0A



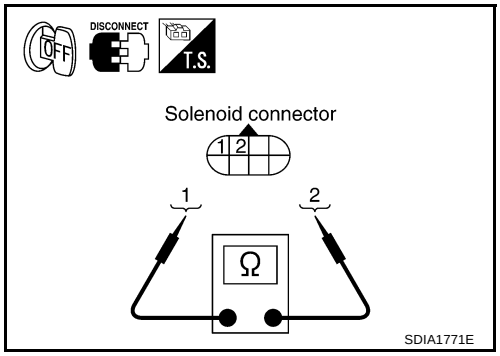
OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. CHECK AWD SOLENOID

1. Turn ignition switch “OFF”.
2. Disconnect the AWD solenoid valve connector F43.
3. Measure resistance between terminals 1 and 2.

1 - 2 : Approx. 2.45Ω



OK or NG

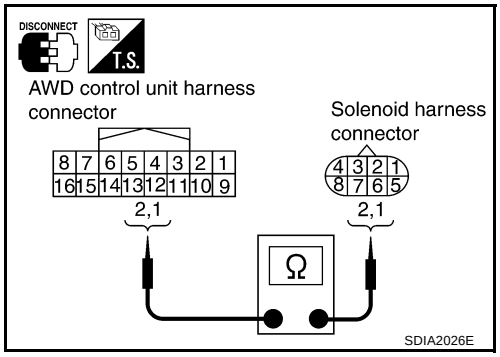
OK >> GO TO 4.
NG >> Replace AWD solenoid.

4. CHECK AWD SOLENOID CIRCUIT

1. Disconnect the AWD control unit connector and the AWD solenoid valve connector.
2. Check the continuity between the following terminals.

- AWD control unit harness connector M92 terminal 1 (L/W) and AWD solenoid valve harness connector F43 terminal 1 (W).
- AWD control unit harness connector M92 terminal 2 (L/OR) and AWD solenoid valve harness connector F43 terminal 2 (P).

1 (L/W) - 1 (W), 2 (L/OR) - 2 (P)
: Continuity should exist.



OK or NG

OK >> Check Battery and AWD control unit harness connector M92 terminal No. 9 (G/W). If NG, Repair or replace the parts.
NG >> Repair or replace the harness or connectors.

CAN COMMUNICATION SYSTEM

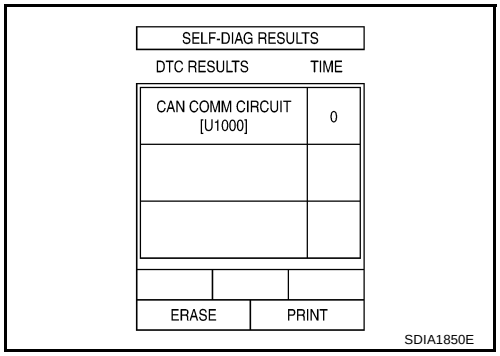
1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

1. Turn ignition switch “ON” and start engine.
2. Select “ALL MODE 4WD” with “SELF-DIAG RESULTS” mode in CONSULT-II.
3. The “CAN COMM CIRCUIT” is detected.

YES or NO?

YES >> Refer to LAN-6, "CAN Communication Unit" .
NO >> **INSPECTION END**



Trouble Diagnosis for Symptoms

ADS000RG

AWD LOCK INDICATOR LAMP DOES NOT COME ON FOR APPROXIMATELY 1 SECOND WHEN THE IGNITION SWITCH IS TURNED TO ON.

1. CHECK CAN COMMUNICATION LINE

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the “CAN COMM CIRCUIT” indicated in the results?

NOTE:

If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

YES or NO

YES >> Check the CAN communication line. Refer to TF-52, "CAN COMMUNICATION SYSTEM" .
NO >> GO TO 2.

2. CHECK AWD LOCK INDICATOR LAMP CIRCUIT

1. Turn ignition switch “OFF”.
2. Check the combination meter.
   Refer to DI-4, "COMBINATION METERS" .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following:

- 10A fuse [No. 14, located in the fuse block (J/B)]
- Harness for short or open between ignition switch and combination meter M20 terminal 7 (G/Y)
- Ignition switch. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

OK or NG

OK >> Replace the combination meter. Refer to DI-28, "Removal and Installation" .
NG >> Repair or replace damaged parts.

4. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 5.

5. CHECK AWD CONTROL UNIT

1. Check AWD control unit input/output signal.
2. If NG, recheck AWD control unit pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

AWD WARNING LAMP DOES NOT ILLUMINATE WITH IGNITION SWITCH ON.

1. CHECK CAN COMMUNICATION LINE

WITH CONSULT-II

Perform the self-diagnosis. Is a malfunction in the CAN communication indicated in the results?

NOTE:

If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

YES or NO

YES >> Check the CAN communication line. Refer to TF-52, "CAN COMMUNICATION SYSTEM" .
NO >> GO TO 2.

2. CHECK AWD WARNING LAMP CIRCUIT

1. Turn ignition switch “OFF”.
2. Check the combination meter.
   Refer to DI-4, "COMBINATION METERS" .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following:

- 10A fuse [No. 14, located in the fuse block (J/B)]
- Harness for short or open between ignition switch and combination meter M20 terminal 7 (G/Y)
- Ignition switch. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

OK or NG

OK >> Replace the combination meter. Refer to DI-28, "Removal and Installation" .
NG >> Repair or replace damaged parts.

4. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 5.

5. CHECK AWD CONTROL UNIT

1. Check AWD control unit input/output signal.
2. If NG, recheck AWD control unit pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

AWD WARNING LAMP DOES NOT GO OUT SEVERAL SECONDS AFTER ENGINE STARTED.(AWD LOCK INDICATOR LAMP GOES OUT.)

1. CHECK SELF-DIAGNOSTIC RESULTS

WITH CONSULT-II

Perform the self-diagnosis.

NOTE:

If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

Is any malfunction detected by self-diagnostic?

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

2. CHECK AWD WARNING LAMP CIRCUIT

1. Turn ignition switch “OFF”.
2. Check the combination meter.
   Refer to DI-4, "COMBINATION METERS" .

OK or NG

OK >> GO TO 3.
NG >> Replace the combination meter. Refer to DI-28, "Removal and Installation" .

3. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 4.

4. CHECK AWD CONTROL UNIT

1. Check AWD control unit input/output signal.
2. If NG, recheck AWD control unit pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS WHEN THE VEHICLE IS DRIVEN IN AUTO MODE AND THE STEERING WHEEL IS TURNED FULLY TO EITHER SIDE AFTER THE ENGINE IS STARTED.

1. CHECK SELF-DIAGNOSTIC RESULTS

WITH CONSULT-II

Perform the self-diagnosis.

NOTE:

If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

Is any malfunction detected by self-diagnostic?

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

2. CHECK INPUT SIGNAL STEP 1

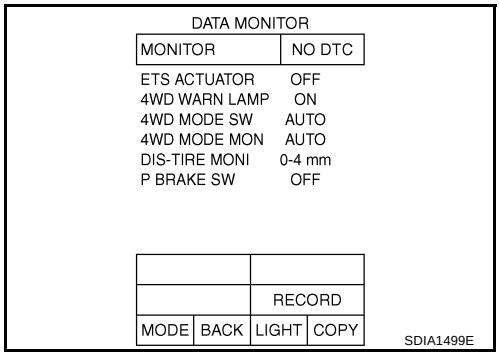
WITH CONSULT-II

Check indication of "4WD MODE SW" with CONSULT data monitor.

- Operating AWD lock switch, check if "LOCK" is indicated when AWD lock switch is turned "ON", and "AUTO" when "OFF".

OK or NG

OK >> GO TO 3.
NG >> Check switch. If there is an incident, replace the switch with new one and check again. If there is no incident, perform trouble diagnosis for combination meter, and repair incident or replace combination meter. Refer to DI-4, "COMBINATION METERS" .



3. CHECK INPUT SIGNAL STEP 2

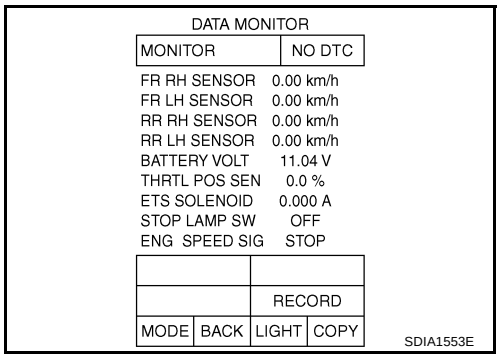
WITH CONSULT-II

Check "ETS SOLENOID" value with CONSULT data monitor.

- Check if AWD solenoid electric current is "0.000 A" when releasing accelerator pedal.

OK or NG

OK >> GO TO 4.
NG >> Check AWD control unit connector. If there is an incident, repair the part or replace it. If there is no incident, replace AWD control unit.



4. CHECK INPUT SIGNAL STEP 3

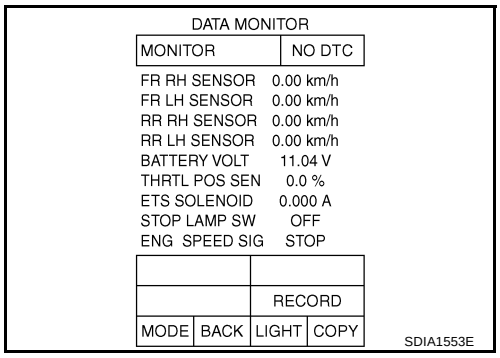
WITH CONSULT-II

Check "THRTL POS SEN" value with CONSULT data monitor.

- Check if accelerator position sensor is "0%" when releasing accelerator pedal.

OK or NG

OK >> GO TO 5.
NG >> Perform trouble diagnosis for ECM.



5. SYMPTOM CHECK

Check again.

OK or NG

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

6. CHECK AWD CONTROL UNIT

1. Check AWD control unit input/output signal.
2. If NG, recheck AWD control unit pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

AWD MODE CANNOT BE SWITCHED AFTER ENGINE IS STARTED.

1. CHECK INPUT SIGNAL

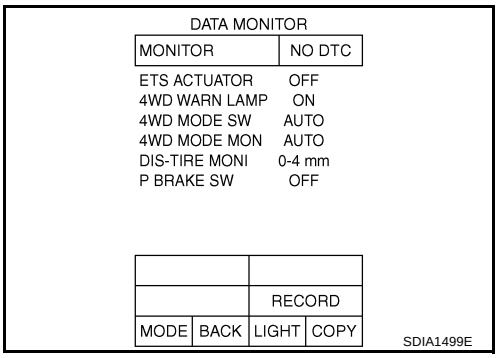
WITH CONSULT-II

Check "4WD MODE SW" indications with CONSULT data monitor.

- Operating AWD lock switch, check if "LOCK" is indicated when AWD lock switch is turned "ON", and "AUTO" when "OFF".

OK or NG

OK >> GO TO 2.
NG >> Check switch. If there is an incident, replace the switch with new one and check again. If there is no incident, perform trouble diagnosis for combination meter. Refer to DI-4, "COMBINATION METERS" .



2. SYMPTOM CHECK

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. CHECK AWD CONTROL UNIT

1. Check AWD control unit input/output signal.
2. If NG, recheck AWD control unit pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

WHILE DRIVING, AWD WARNING LAMP FLASHES RAPIDLY. (WHEN IT FLASHES FOR APPROX. ONE MINUTE, THEN DOES NOT ILLUMINATE.)

- While driving, AWD warning lamp flashes rapidly. (when it flashes for approximately 1 minute, then does not illuminate.)
  Rapid flashing: 2 times/second
  This phenomenon protects drivetrain parts when a heavy load is applied to the electric controlled coupling and multiple disc clutch temperature increases. It is not a malfunction.
  When the difference of revolution speed between the front and rear wheel with AUTO mode, the shift switch occasionally changes to LOCK mode automatically. This is not a malfunction.

WHILE DRIVING, AWD WARNING LAMP FLASHES SLOWLY. (WHEN IT CONTINUES TO ILLUMINATE UNTIL ENGINE TURNS OFF.)

1. CHECK SELF-DIAGNOSTIC RESULTS

WITH CONSULT-II

Perform the self-diagnosis.

NOTE:
If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

Is any malfunction detected by self-diagnostic?

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

2. CHECK INPUT SIGNAL

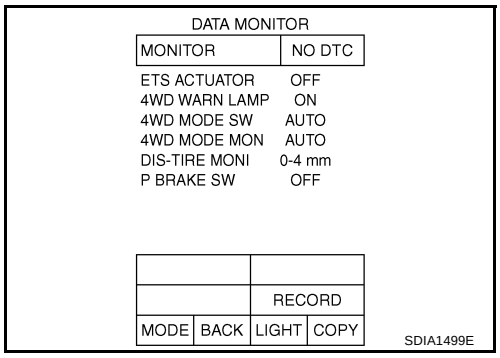
WITH CONSULT-II

Check "DIS-TIRE MONI" value with CONSULT data monitor.

- Check if "DIS-TIRE MONI" value is "0-4 mm".

NOTE:

When tire diameter difference has no incident, and when running vehicle at about 20 km/h (12 MPH) or more for approximately 5 seconds, "DIS-TIRE MONI" value becomes "0-4 mm". (Becomes normal condition.)



OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. TIRE DIFFERENTIAL CHECK

- Check if front and rear tires have different diameter.

OK or NG

OK >> GO TO 4.
NG >> Set specified tires.

4. TIRE ABRASION CONDITION CHECK

- Check that tires do not have marked difference on abrasion condition.

OK or NG

OK >> GO TO 5.
NG >> Replace the tires.

5. TIRE PRESSURE CHECK

- Check if tire pressure has specified value.

OK or NG

OK >> GO TO 6.
NG >> Make the value to the specified tire pressure.

6. CHECK AWD WARNING LAMP WITH RUNNING VEHICLE

1. Stop engine. Restart engine and run at 20 km/h (12 MPH) or more for about 200 seconds.
2. Check if AWD warning lamp indication.

OK or NG

OK >> **INSPECTION END**
NG >> Check step 1-2 again.

VEHICLE DOES NOT ENTER AWD MODE EVEN THOUGH AWD WARNING LAMP IS OFF.

1. CHECK AWD WARNING LAMP

Check if AWD warning lamp indicate with ignition ON.

OK or NG

OK >> GO TO 2.
NG >> Refer to TF-54, "AWD WARNING LAMP DOES NOT ILLUMINATE WITH IGNITION SWITCH ON." .

2. PARKING BRAKE CHECK

Does brake warning lamp keeps "OFF" with parking brake inoperative?

YES or NO

YES >> GO TO 3.
NO >> Cancel parking brake. (No AWD with parking switch "ON")

3. CHECK SELF-DIAGNOSTIC RESULTS

WITH CONSULT-II

Perform the self-diagnosis.

NOTE:

If self-diagnosis is not carried out, check power supply and ground. Refer to TF-47, "CONTROL UNIT POWER SUPPLY AND GROUND" .

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.
NO >> GO TO 4.

4. CHECK SELF-DIAGNOSTIC RESULTS WITH ABS

WITH CONSULT-II

Perform the self-diagnosis for ABS actuator and electric unit (control unit). Refer to BRC-25, "TROUBLE DIAGNOSIS" .

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.
NO >> GO TO 5.

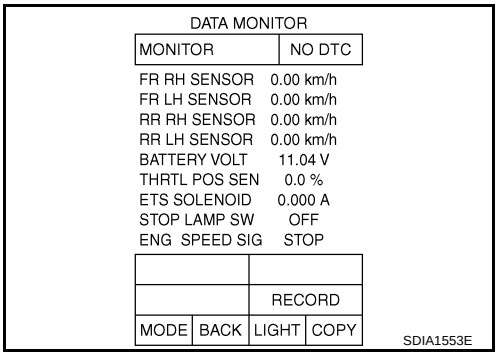
5. CHECK INPUT SIGNAL

WITH CONSULT-II

Check "ETS SOLENOID" value with CONSULT data monitor.

1. LOCK mode with AWD lock switch.
2. Check that AWD LOCK indicator is turned ON.
3. Check "ETS SOLENOID" with CONSULT data monitor.

Condition			Specification
Ignition switch	AWD lock switch	Accelerator pedal	
ON	LOCK	Accelerator pedal depressed	Approx.2.0A



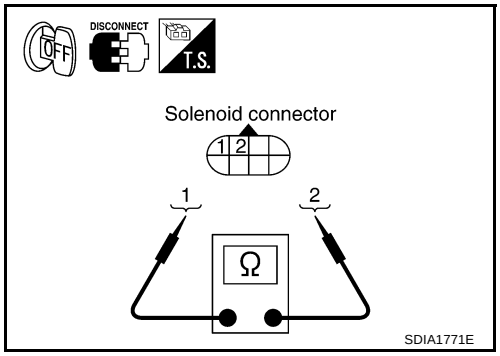
OK or NG

OK >> Repair or replace electric controlled coupling. Refer to TF-15, "Disassembly and Assembly" .
NG >> GO TO 6.

6. CHECK AWD SOLENOID VALVE

1. Turn ignition switch “OFF”.
2. Disconnect the AWD solenoid valve connector F43.
3. Measure resistance between terminals 1 and 2.

1 - 2 : Approx. 2.45Ω



OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

ADS000LQ

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