

TF
SECTION
TRANSFER

A
B
C

TF

CONTENTS

E

ATX14B

<p>PRECAUTIONS 6</p> <p>Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 6</p> <p>Precautions for Transfer Assembly and Transfer Control Unit Replacement 6</p> <p style="padding-left: 20px;">METHOD FOR POSITION ADJUSTMENT 6</p> <p>Precautions 6</p> <p>Service Notice 7</p> <p>PREPARATION 8</p> <p>Special Service Tools 8</p> <p>Commercial Service Tools 11</p> <p>NOISE, VIBRATION AND HARSHNESS (NVH)</p> <p>TROUBLESHOOTING 12</p> <p>NVH Troubleshooting Chart 12</p> <p>TRANSFER FLUID 13</p> <p>Replacement 13</p> <p style="padding-left: 20px;">DRAINING 13</p> <p style="padding-left: 20px;">FILLING 13</p> <p>Inspection 13</p> <p style="padding-left: 20px;">FLUID LEAKAGE AND FLUID LEVEL 13</p> <p>ALL-MODE 4WD SYSTEM 14</p> <p>Cross-section View 14</p> <p>Power Transfer 15</p> <p style="padding-left: 20px;">POWER TRANSFER DIAGRAM 15</p> <p style="padding-left: 20px;">POWER TRANSFER FLOW 16</p> <p>System Description 17</p> <p style="padding-left: 20px;">CONTROL SYSTEM 17</p> <p style="padding-left: 20px;">TRANSFER MOTOR 18</p> <p style="padding-left: 20px;">WAIT DETECTION SWITCH 19</p> <p style="padding-left: 20px;">NEUTRAL-4LO SWITCH 19</p> <p style="padding-left: 20px;">ATP SWITCH 19</p> <p style="padding-left: 20px;">2-4WD SHIFT SOLENOID VALVE 19</p> <p style="padding-left: 20px;">CLUTCH PRESSURE SOLENOID VALVE 20</p> <p style="padding-left: 20px;">LINE PRESSURE SWITCH 20</p> <p style="padding-left: 20px;">CLUTCH PRESSURE SWITCH 20</p> <p style="padding-left: 20px;">TRANSFER FLUID TEMPERATURE SENSOR.. 20</p> <p style="padding-left: 20px;">TRANSFER CONTROL UNIT 20</p> <p style="padding-left: 20px;">TRANSFER CONTROL DEVICE 20</p>	<p>4WD SHIFT SWITCH AND INDICATOR LAMPS.. 20</p> <p>4WD WARNING LAMP 21</p> <p>ATP WARNING LAMP 21</p> <p>System Diagram 21</p> <p>COMPONENTS FUNCTION 22</p> <p>CAN Communication 22</p> <p>SYSTEM DESCRIPTION 22</p> <p>TROUBLE DIAGNOSIS 23</p> <p>How to Perform Trouble Diagnosis 23</p> <p style="padding-left: 20px;">BASIC CONCEPT 23</p> <p>Location of Electrical Parts 24</p> <p>Schematic 25</p> <p>Wiring Diagram — T/F — 26</p> <p>Inspections Before Trouble Diagnosis 34</p> <p style="padding-left: 20px;">TRANSFER FLUID CHECK 34</p> <p style="padding-left: 20px;">PREPARATION FOR ROAD TEST 34</p> <p style="padding-left: 20px;">CHECK BEFORE ENGINE IS STARTED 34</p> <p style="padding-left: 20px;">CHECK AT IDLE 34</p> <p style="padding-left: 20px;">CRUISE TEST 35</p> <p>Trouble Diagnosis Chart for Symptoms 36</p> <p>Transfer Control Unit Input/Output Signal Reference Values 37</p> <p style="padding-left: 20px;">TRANSFER CONTROL UNIT INSPECTION TABLE 37</p> <p>CONSULT-II Function (ALL MODE AWD/4WD) ... 46</p> <p style="padding-left: 20px;">FUNCTION 46</p> <p style="padding-left: 20px;">CONSULT-II START PROCEDURE 46</p> <p style="padding-left: 20px;">SELF-DIAG RESULT MODE 47</p> <p style="padding-left: 20px;">DATA MONITOR MODE 49</p> <p style="padding-left: 20px;">WORK SUPPORT 51</p> <p>Self-diagnostic Procedure 52</p> <p style="padding-left: 20px;">SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II) 52</p> <p style="padding-left: 20px;">SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II) 52</p> <p style="padding-left: 20px;">ERASE SELF-DIAGNOSIS 55</p> <p>TROUBLE DIAGNOSIS FOR SYSTEM 56</p> <p style="padding-left: 20px;">Power Supply Circuit For Transfer Control Unit 56</p> <p style="padding-left: 20px;">CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE 56</p>
---	---

F
G
H
I
J
K
L
M

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	56	REFERENCE VALUE	87
DIAGNOSTIC PROCEDURE	57	DIAGNOSTIC PROCEDURE	88
COMPONENT INSPECTION	59	COMPONENT INSPECTION	91
Transfer Control Unit	59	2-4WD Solenoid	92
DIAGNOSTIC PROCEDURE	59	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	92
Output Shaft Revolution Signal (TCM)	60	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	92
DIAGNOSTIC PROCEDURE	60	DIAGNOSTIC PROCEDURE	92
Vehicle Speed Sensor (ABS)	60	COMPONENT INSPECTION	95
DIAGNOSTIC PROCEDURE	60	Transfer Motor	96
Neutral-4LO Switch	61	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	96
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	61	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	97
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	61	DIAGNOSTIC PROCEDURE	98
DIAGNOSTIC PROCEDURE	62	COMPONENT INSPECTION	103
COMPONENT INSPECTION	64	Transfer Fluid Temperature	103
4WD Shift Switch	64	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	103
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	64	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	103
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	64	DIAGNOSTIC PROCEDURE	104
DIAGNOSTIC PROCEDURE	65	COMPONENT INSPECTION	105
COMPONENT INSPECTION	68	Clutch Pressure Switch	106
Wait Detection Switch	68	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	106
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	68	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	106
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	68	DIAGNOSTIC PROCEDURE	107
DIAGNOSTIC PROCEDURE	69	COMPONENT INSPECTION	108
COMPONENT INSPECTION	71	Line Pressure Switch	109
PNP Switch Signal (TCM)	71	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	109
DIAGNOSTIC PROCEDURE	71	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	109
Actuator Motor	72	DIAGNOSTIC PROCEDURE	110
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	72	COMPONENT INSPECTION	111
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	72	Throttle Position Signal (ECM)	112
DIAGNOSTIC PROCEDURE	73	DIAGNOSTIC PROCEDURE	112
COMPONENT INSPECTION	78	ABS Operation Signal (ABS)	112
Actuator Position Switch	79	DIAGNOSTIC PROCEDURE	112
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	79	VDC Operation Signal (ABS)	113
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	79	DIAGNOSTIC PROCEDURE	113
DIAGNOSTIC PROCEDURE	80	TCS Operation Signal (ABS)	113
COMPONENT INSPECTION	82	DIAGNOSTIC PROCEDURE	113
Transfer Control Device	83	CAN Communication Line	114
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	83	DIAGNOSTIC PROCEDURE	114
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	83	ATP Switch	114
DIAGNOSTIC PROCEDURE	84	CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	114
Engine Speed Signal (ECM)	87	TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	114
DIAGNOSTIC PROCEDURE	87	DIAGNOSTIC PROCEDURE	115
Clutch Pressure Solenoid	87	COMPONENT INSPECTION	116
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE	87	TROUBLE DIAGNOSIS FOR SYMPTOMS	118
TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE	87	4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON	118
		SYMPTOM:	118

ATP WARNING LAMP	198	TRANSFER CONTROL UNIT TERMINALS AND	
System Diagram	199	REFERENCE VALUE	234
COMPONENTS FUNCTION	199	DIAGNOSTIC PROCEDURE	235
CAN Communication	200	COMPONENT INSPECTION	237
SYSTEM DESCRIPTION	200	PNP Switch Signal	237
TROUBLE DIAGNOSIS	201	DIAGNOSTIC PROCEDURE	237
How to Perform Trouble Diagnosis	201	Actuator Motor	238
BASIC CONCEPT	201	CONSULT-II REFERENCE VALUE IN DATA	
Location of Electrical Parts	202	MONITOR MODE	238
Schematic	204	TRANSFER CONTROL UNIT TERMINALS AND	
Wiring Diagram — T/F —	205	REFERENCE VALUE	238
Trouble Diagnosis Chart for Symptoms	211	DIAGNOSTIC PROCEDURE	239
Transfer Control Unit Input/Output Signal Refer-		COMPONENT INSPECTION	244
ence Values	211	Actuator Position Switch	245
TRANSFER CONTROL UNIT INSPECTION		CONSULT-II REFERENCE VALUE IN DATA	
TABLE	211	MONITOR MODE	245
CONSULT-II Function (ALL MODE AWD/4WD) ..	216	TRANSFER CONTROL UNIT TERMINALS AND	
FUNCTION	216	REFERENCE VALUE	245
CONSULT-II START PROCEDURE	216	DIAGNOSTIC PROCEDURE	246
SELF-DIAG RESULT MODE	217	Transfer Control Device	248
DATA MONITOR MODE	218	CONSULT-II REFERENCE VALUE IN DATA	
Self-Diagnostic Procedure	219	MONITOR MODE	248
SELF-DIAGNOSTIC PROCEDURE (WITH		TRANSFER CONTROL UNIT TERMINALS AND	
CONSULT-II)	219	REFERENCE VALUE	248
SELF-DIAGNOSTIC PROCEDURE (WITHOUT		DIAGNOSTIC PROCEDURE	249
CONSULT-II)	219	Engine Speed Signal	251
ERASE SELF-DIAGNOSIS	221	DIAGNOSTIC PROCEDURE	251
TROUBLE DIAGNOSIS FOR SYSTEM	222	CAN Communication Line	252
Power Supply Circuit For Transfer Control Unit ...	222	DIAGNOSTIC PROCEDURE	252
CONSULT-II REFERENCE VALUE IN DATA		ATP Switch	252
MONITOR MODE	222	CONSULT-II REFERENCE VALUE IN DATA	
TRANSFER CONTROL UNIT TERMINALS AND		MONITOR MODE	252
REFERENCE VALUE	222	TRANSFER CONTROL UNIT TERMINALS AND	
DIAGNOSTIC PROCEDURE	223	REFERENCE VALUE	252
COMPONENT INSPECTION	225	DIAGNOSTIC PROCEDURE	253
Transfer Control Unit	225	COMPONENT INSPECTION	255
DIAGNOSTIC PROCEDURE	225	TROUBLE DIAGNOSIS FOR SYMPTOMS	256
Output Shaft Revolution Signal (TCM)	225	4WD Shift Indicator Lamp and 4LO Indicator Lamp	
DIAGNOSTIC PROCEDURE	225	Do Not Turn ON	256
Vehicle Speed Sensor (ABS)	226	SYMPTOM:	256
DIAGNOSTIC PROCEDURE	226	DIAGNOSTIC PROCEDURE	257
4LO Switch	227	4WD Warning Lamp Does Not Turn ON	259
CONSULT-II REFERENCE VALUE IN DATA		SYMPTOM:	259
MONITOR MODE	227	DIAGNOSTIC PROCEDURE	260
TRANSFER CONTROL UNIT TERMINALS AND		4WD Shift Indicator Lamp or 4LO Indicator Lamp	
REFERENCE VALUE	227	Do Not Change	262
DIAGNOSTIC PROCEDURE	228	SYMPTOM:	262
COMPONENT INSPECTION	230	DIAGNOSTIC PROCEDURE	263
4WD Shift Switch	230	ATP Warning Lamp Does Not Turn ON	264
CONSULT-II REFERENCE VALUE IN DATA		SYMPTOM:	264
MONITOR MODE	230	DIAGNOSTIC PROCEDURE	264
TRANSFER CONTROL UNIT TERMINALS AND		4WD Shift Indicator Lamp Repeats Flashing	266
REFERENCE VALUE	230	SYMPTOM:	266
DIAGNOSTIC PROCEDURE	231	DIAGNOSTIC PROCEDURE	266
COMPONENT INSPECTION	234	4WD Warning Lamp Flashes Slowly	266
Wait Detection Switch	234	SYMPTOM:	266
CONSULT-II REFERENCE VALUE IN DATA		DIAGNOSTIC PROCEDURE	267
MONITOR MODE	234		

TRANSFER CONTROL UNIT	268	PLANETARY CARRIER	295	
Removal and Installation	268	Disassembly and Assembly	295	A
REMOVAL	268	DISASSEMBLY	295	
INSTALLATION	268	INSPECTION AFTER DISASSEMBLY	296	
FRONT OIL SEAL	269	ASSEMBLY	297	B
Removal and Installation	269	FRONT DRIVE SHAFT	299	
REMOVAL	269	Disassembly and Assembly	299	
INSTALLATION	270	DISASSEMBLY	299	C
REAR OIL SEAL	271	INSPECTION AFTER DISASSEMBLY	299	
Removal and Installation	271	ASSEMBLY	300	
REMOVAL	271	SHIFT CONTROL	301	TF
INSTALLATION	271	Disassembly and Assembly	301	
TRANSFER CONTROL DEVICE	273	DISASSEMBLY	301	
Removal and Installation	273	INSPECTION AFTER DISASSEMBLY	301	
REMOVAL	273	ASSEMBLY	302	E
INSTALLATION	273	SERVICE DATA AND SPECIFICATIONS (SDS) ...	303	
AIR BREATHER HOSE	275	General Specifications	303	
Removal and Installation	275	Inspection and Adjustment	303	F
TRANSFER ASSEMBLY	277	PINION GEAR END PLAY	303	
Removal and Installation	277	CLEARANCE BETWEEN SHIFT FORK AND		
REMOVAL	277	SLEEVE	303	G
INSTALLATION	277			
Disassembly and Assembly	278			
COMPONENTS	278			
DISASSEMBLY	280			H
INSPECTION AFTER DISASSEMBLY	285			
ASSEMBLY	286			I

PRECAUTIONS

PFP:00001

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

EDS0035Q

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 for Transfer Assembly and Transfer Control Unit Replacement

EDS0035R

When replacing transfer assembly or transfer control unit, check the 4WD shift indicator lamp as follows.

1. Turn ignition switch “ON”.
2. Check 4WD shift indicator lamp is turned ON for approximately 1 second.
 - If OK, the position between transfer assembly and transfer control unit is correct.
 - If NG, the position is different between transfer assembly and transfer control unit. Adjust the position between transfer assembly and transfer control unit. Refer to [TF-6, "METHOD FOR POSITION ADJUSTMENT"](#).

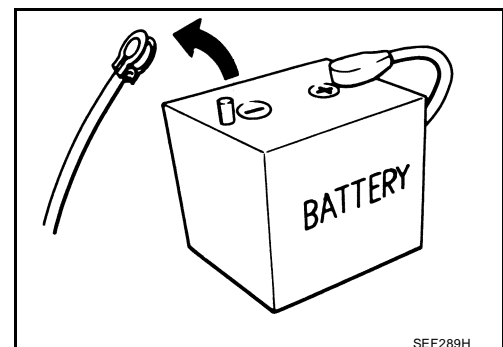
METHOD FOR POSITION ADJUSTMENT

1. Start engine. Run the engine for at least 10 seconds.
2. Stop vehicle and move A/T selector lever to “N” position with brake pedal depressed. Stay in “N” for at least 2 seconds.
3. Turn 4WD shift switch to “2WD” position. Stay in “2WD” for at least 2 seconds.
4. Turn ignition switch “OFF”.
5. Start engine.
6. Erase self-diagnosis. Refer to [TF-49, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-55, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
7. Check 4WD shift indicator lamp. Refer to [TF-34, "CHECK BEFORE ENGINE IS STARTED"](#). If 4WD shift indicator lamp does not indicate “2WD”, install new transfer control unit and retry the above check.

Precautions

EDS0035S

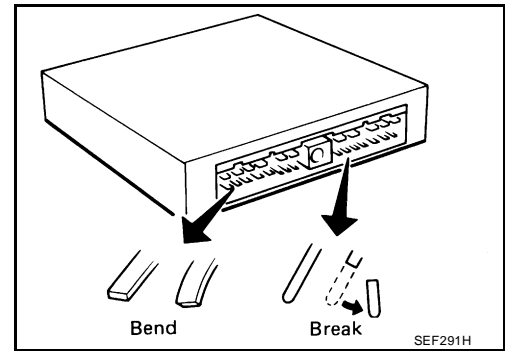
- Before connecting or disconnecting the transfer control unit harness connector, turn ignition switch “OFF” and disconnect battery cables. Failure to do so may damage the transfer control unit. Battery voltage is applied to transfer control unit even if ignition switch is turned “OFF”.



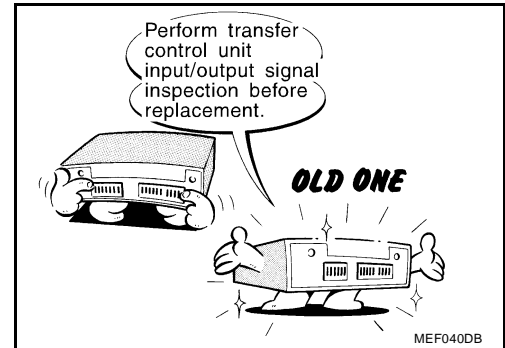
PRECAUTIONS

[ATX14B]

- When connecting or disconnecting pin connectors into or from transfer 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 transfer control unit pin terminals.



- Before replacing transfer control unit, perform transfer control unit input/output signal inspection and make sure transfer control unit functions properly. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).



Service Notice

EDS0035T

- After overhaul refill the transfer with new transfer fluid.
- Check the fluid level or replace the fluid only with the vehicle parked on level ground.
- During removal or installation, keep inside of transfer clear of dust or dirt.
- Disassembly should be done in a clean work area.
- Before proceeding with disassembly, thoroughly clean the transfer. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- Check for the correct installation status prior to removal or disassembly. If matchmarks are required, be certain they do not interfere with the function of the parts when applied.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with new ones if necessary.
- Gaskets, seals and O-rings should be replaced any time the transfer is disassembled.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Observe the specified torque when assembling.
- Clean and flush the parts sufficiently and blow-dry them.
- Be careful not to damage sliding surfaces and mating surfaces.
- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transfer.

PREPARATION

[ATX14B]

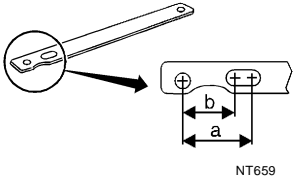
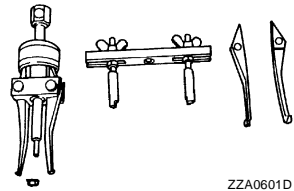
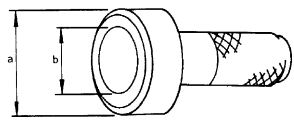
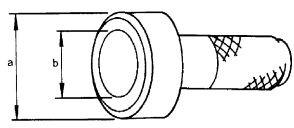
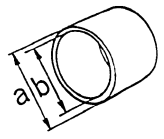
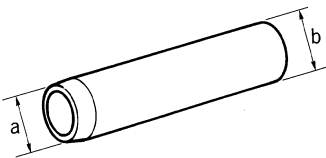
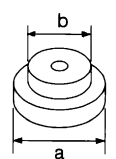
PFP:00002

EDS0035V

PREPARATION

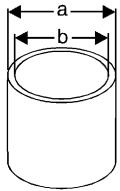
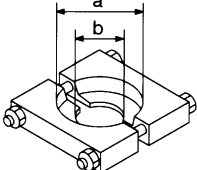
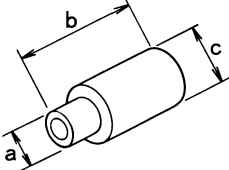
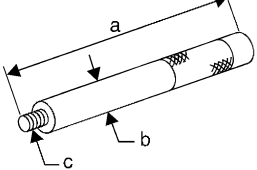
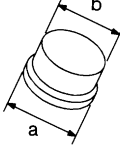
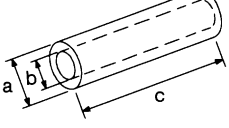
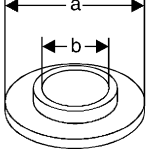
Special Service Tools

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
KV40104000 (—) Flange wrench		<ul style="list-style-type: none"> ● Removing self-lock nut ● Installing self-lock nut <p>a: 85 mm (3.35 in) b: 65 mm (2.56 in)</p>
ST33290001 (J-34286) Puller		<ul style="list-style-type: none"> ● Removing front oil seal ● Removing rear oil seal ● Removing metal bushing
KV38100500 (—) Drift		<ul style="list-style-type: none"> ● Installing front oil seal <p>a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.</p>
ST30720000 (J-25405) Drift		<ul style="list-style-type: none"> ● Installing rear oil seal ● Installing input bearing ● Installing input oil seal <p>a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.</p>
KV40105310 (—) Drift		<ul style="list-style-type: none"> ● Installing dust cover <p>a: 89 mm (3.50 in) dia. b: 80.7 mm (3.17 in) dia.</p>
ST22360002 (J-25679-01) Drift		<ul style="list-style-type: none"> ● Installing side oil seal <p>a: 23 mm (0.91 in) dia. b: 32 mm (1.26 in) dia.</p>
ST35300000 (—) Drift		<ul style="list-style-type: none"> ● Removing sun gear assembly and planetary carrier assembly ● Removing carrier bearing ● Installing metal bushing <p>a: 59 mm (2.32 in) dia. b: 45 mm (1.77 in) dia.</p>

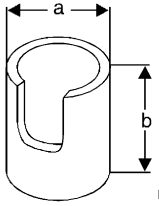
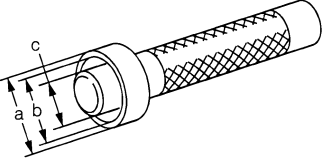
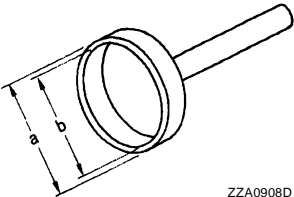
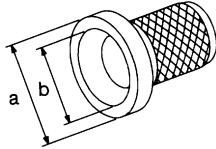
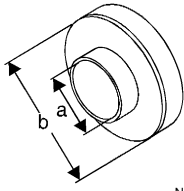
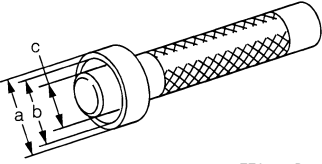
PREPARATION

[ATX14B]

Tool number (Kent-Moore No.) Tool name	Description	A
ST33200000 (J-26082) Drift	 <ul style="list-style-type: none"> ● Removing input bearing ● Installing sun gear assembly and planetary carrier assembly ● Installing input oil seal <p>a: 74.5 mm (2.933 in) dia. b: 62.5 mm (2.461 in) dia.</p>	B
ST30031000 (—) Puller	 <ul style="list-style-type: none"> ● Removing carrier bearing ● Removing front drive shaft front bearing ● Removing front drive shaft rear bearing <p>a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.</p>	TF
ST33710000 (—) Drift	 <ul style="list-style-type: none"> ● Removing needle bearing ● Removing metal bushing <p>a: 24 mm (0.94 in) dia. b: 89 mm (3.5 in) c: 30 mm (1.18 in) dia.</p>	F
ST35325000 (—) Drift bar	 <ul style="list-style-type: none"> ● Removing metal bushing <p>a: 215 mm (8.46 in) b: 25 mm (0.98 in) dia. c: M12 × 1.5P</p>	H
ST33052000 (—) Adapter	 <ul style="list-style-type: none"> ● Removing front drive shaft front bearing ● Removing front drive shaft rear bearing ● Installing mainshaft <p>a: 28 mm (1.10 in) dia. b: 22 mm (0.87 in) dia.</p>	K
ST22452000 (J-34335) Drift	 <ul style="list-style-type: none"> ● Removing press flange snap ring ● Installing press flange snap ring <p>a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia. c: 400 mm (15.76 in) dia.</p>	M
ST30911000 (—) Puller	 <ul style="list-style-type: none"> ● Removing press flange snap ring ● Installing press flange snap ring ● Installing mainshaft ● Installing carrier bearing <p>a: 98 mm (3.86 in) dia. b: 40.5 mm (1.594 in) dia.</p>	L

PREPARATION

[ATX14B]

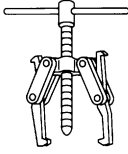
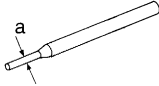
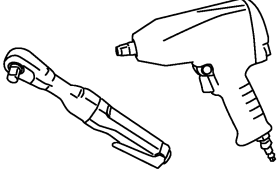
Tool number (Kent-Moore No.) Tool name	Description
KV31103300 (—) Drift	 <p>NT668</p> <ul style="list-style-type: none"> ● Removing press flange snap ring ● Installing press flange snap ring ● Installing carrier bearing <p>a: 76.3 mm (3.004 in) dia. b: 130 mm (5.12 in)</p>
KV38100300 (J-25523) Drift	 <p>ZZA1046D</p> <ul style="list-style-type: none"> ● Removing mainshaft rear bearing <p>a: 54 mm (2.13 in) dia. b: 46 mm (1.81 in) dia. c: 32 mm (1.26 in) dia.</p>
ST15310000 (J-25640-B) Drift	 <p>ZZA0908D</p> <ul style="list-style-type: none"> ● Installing mainshaft rear bearing <p>a: 96 mm (3.78 in) dia. b: 84 mm (3.31 in) dia.</p>
KV40100621 (J-25273) Drift	 <p>NT086</p> <ul style="list-style-type: none"> ● Installing front drive shaft front bearing ● Installing front drive shaft rear bearing <p>a: 76 mm (2.99 in) dia. b: 69 mm (2.72 in) dia.</p>
ST30032000 (J-26010-01) Base	 <p>NT660</p> <ul style="list-style-type: none"> ● Installing front drive shaft front bearing ● Installing front drive shaft rear bearing <p>a: 38 mm (1.50 in) dia. b: 80 mm (3.15 in) dia.</p>
ST3322000 (—) Drift	 <p>ZZA1046D</p> <ul style="list-style-type: none"> ● Installing needle bearing <p>a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia.</p>

PREPARATION

[ATX14B]

Commercial Service Tools

EDS0035W

Tool name	Description
Puller  NT077	<ul style="list-style-type: none"> ● Removing companion flange
Pin punch  NT410	<ul style="list-style-type: none"> ● Removing retainer pin ● Installing retainer pin <p>a: 6 mm (0.24 in) dia.</p>
Power tool  PBIC0190E	<ul style="list-style-type: none"> ● Removing transfer case assembly

A
B
C
TF
E
F
G
H
I
J
K
L
M

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

[ATX14B]

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PF0:00003

NVH Troubleshooting Chart

EDS0035X

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

Reference page		IF-13			IF-146			IF-163	IF-163	IF-163
SUSPECTED PARTS (Possible cause)		TRANSFER FLUID (Level low)	TRANSFER FLUID (Wrong)	TRANSFER FLUID (Level too high)	LIQUID GASKET (Damaged)	O-RING (Worn or damaged)	OIL SEAL (Worn or damaged)	SHIFT FORK (Worn or damaged)	GEAR (Worn or damaged)	BEARING (Worn or damaged)
Symptom	Noise	1	2						3	3
	Transfer fluid leakage		3	1	2	2	2			
	Hard to shift or will not shift		1	1				2		

TRANSFER FLUID

Replacement

CAUTION:

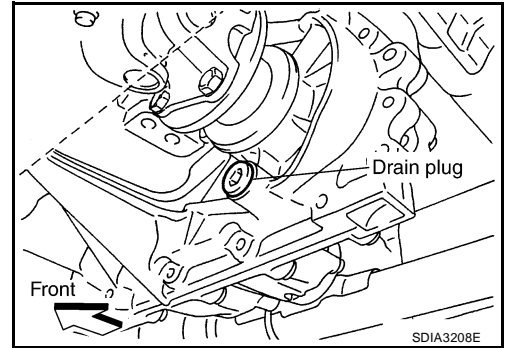
If using the vehicle for towing, the transfer fluid must be replaced as specified. Refer to [MA-7, "PERIODIC MAINTENANCE"](#) .

DRAINING

1. Stop engine.
2. Remove the drain plug and gasket and drain the fluid.
3. Install the drain plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .

CAUTION:

Do not reuse gasket.



FILLING

1. Remove the filler plug and gasket.
2. Fill the transfer with new fluid until the fluid level reaches the specified limit near the filler plug hole.

Fluid grade and capacity : Refer to [MA-11, "Fluids and Lubricants"](#) .

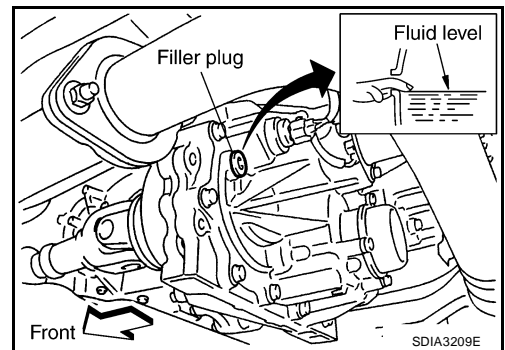
CAUTION:

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

3. Leave the vehicle for 3 minutes, and check fluid level again.
4. Install the filler plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .

CAUTION:

Do not reuse gasket.



Inspection

CAUTION:

If using the vehicle for towing, the transfer fluid must be replaced as specified. Refer to [MA-7, "PERIODIC MAINTENANCE"](#) .

FLUID LEAKAGE AND FLUID LEVEL

1. Make sure that fluid is not leaking from the transfer assembly or around it.
2. Check fluid level from the filler plug hole as shown.

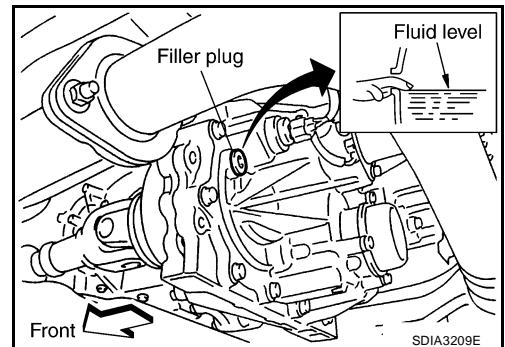
CAUTION:

Do not start engine while checking fluid level.

3. Install the filler plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .

CAUTION:

Do not reuse gasket.

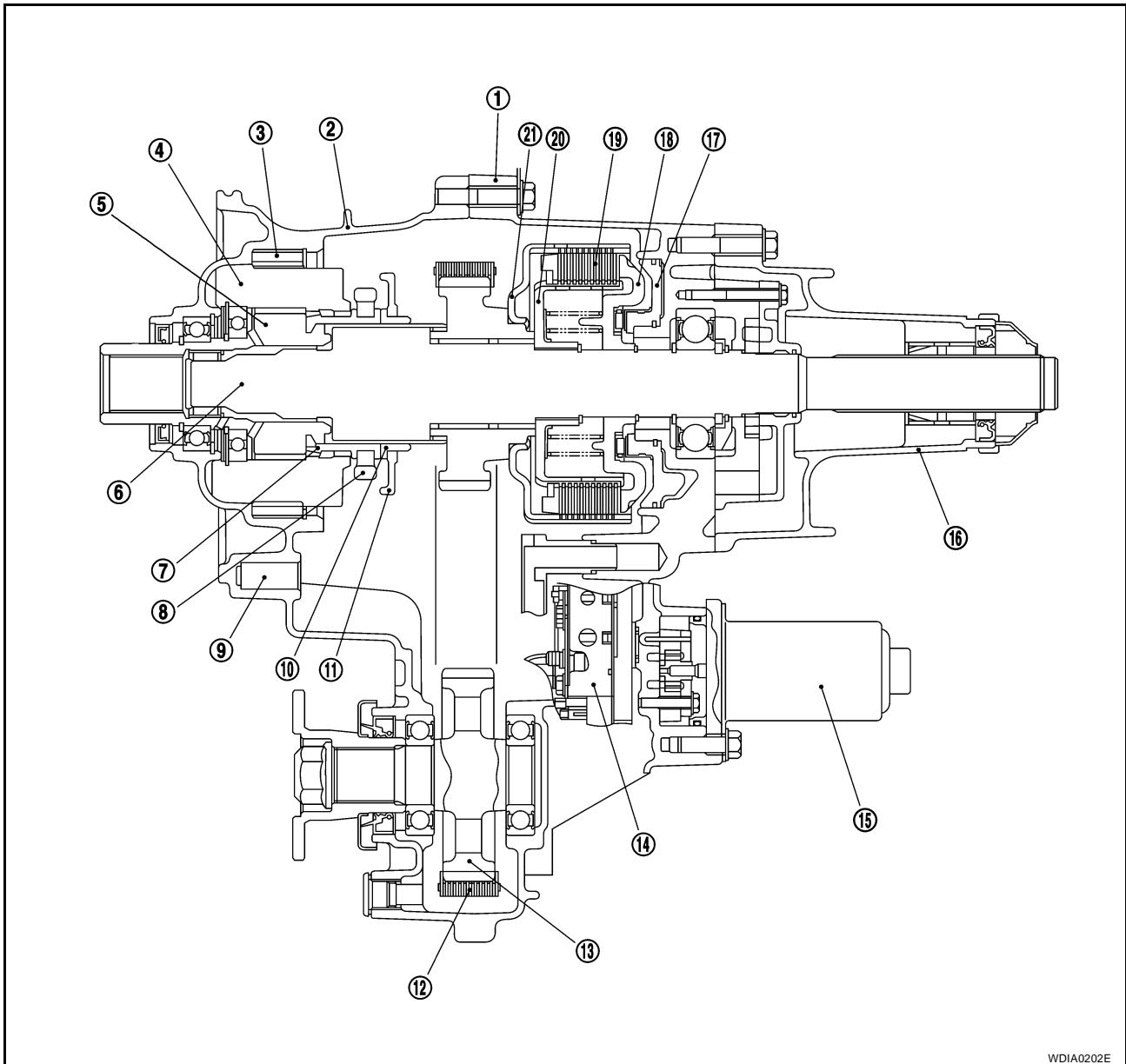


ALL-MODE 4WD SYSTEM

PFP:00000

Cross-section View

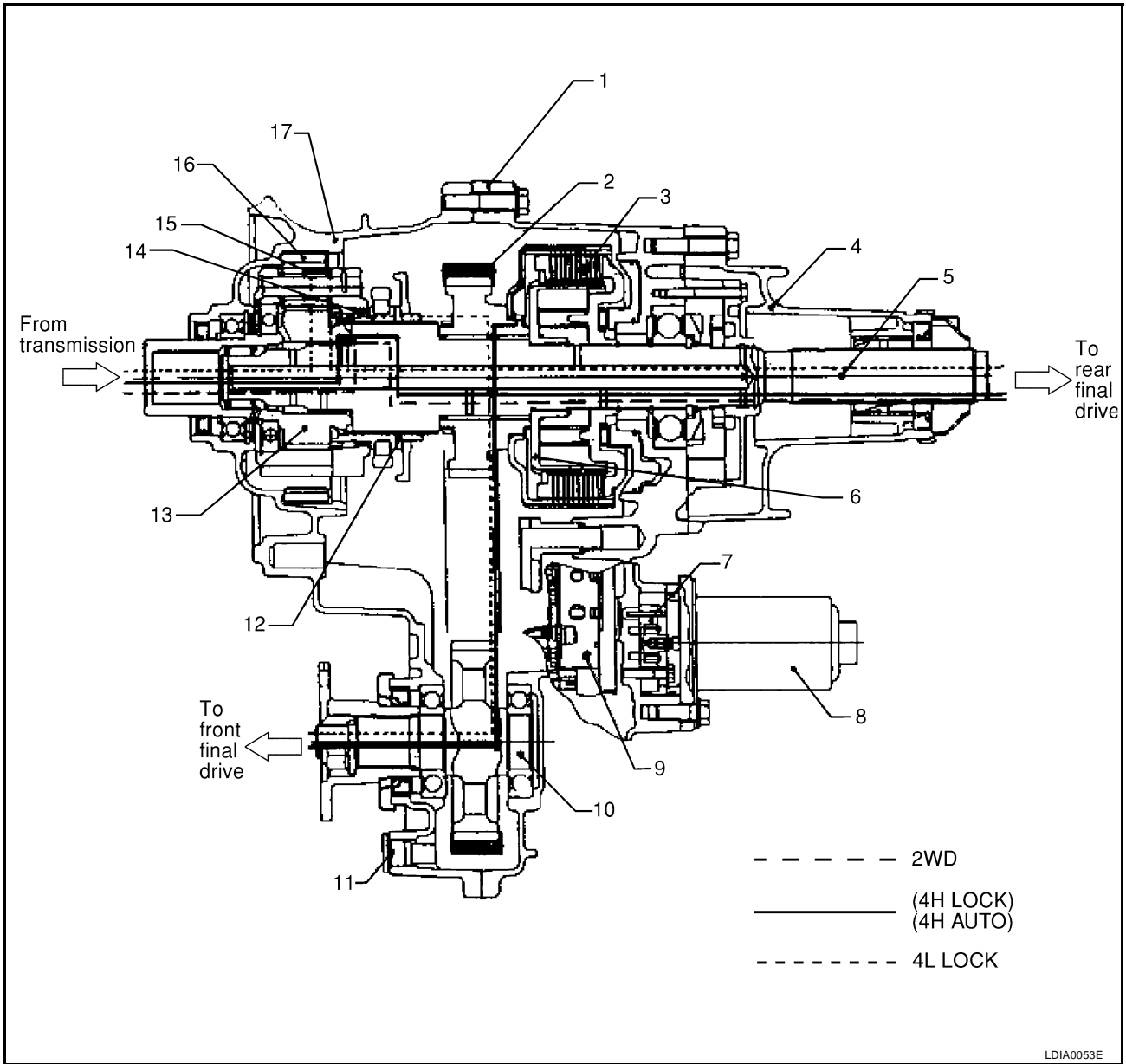
EDS00360



WDIA0202E

- | | | |
|-------------------------------|----------------------------|--------------------------|
| 1. Center case | 2. Front case | 3. Internal gear |
| 4. Planetary carrier assembly | 5. Sun gear assembly | 6. Main shaft |
| 7. L-H sleeve | 8. L-H fork | 9. Shift rod |
| 10. 2-4 sleeve | 11. 2-4 fork | 12. Drive chain |
| 13. Front drive shaft | 14. Control valve assembly | 15. Transfer motor |
| 16. Rear case | 17. Clutch piston | 18. Press flange |
| 19. Multiple disc clutch | 20. Clutch hub assembly | 21. Clutch drum assembly |

Power Transfer
POWER TRANSFER DIAGRAM



- | | | |
|-----------------------|-------------------|--------------------------------|
| 1. Center case | 2. Chain | 3. Multiple disc clutch |
| 4. Rear case | 5. Mainshaft | 6. Clutch hub assembly |
| 7. Sub oil pump | 8. Transfer motor | 9. Control valve |
| 10. Front drive shaft | 11. Drain plug | 12. 2-4 sleeve |
| 13. Sun gear assembly | 14. L-H sleeve | 15. Planetary carrier assembly |
| 16. Internal gear | 17. Front case | |

LDIA0053E

ALL-MODE 4WD SYSTEM

[ATX14B]

POWER TRANSFER FLOW

2WD

From transmisson → Sun gear → L-H sleeve → Mainshaft → To rear final drive

AUTO 4H (LOCK)

From transmisson → Sun gear → L-H sleeve → Mainshaft → To rear final drive

Clutch hub → Multiple disc clutch → Clutch drum → Drive chain → Front drive shaft → To front final drive

Clutch piston → press flange → Multiple disc clutch

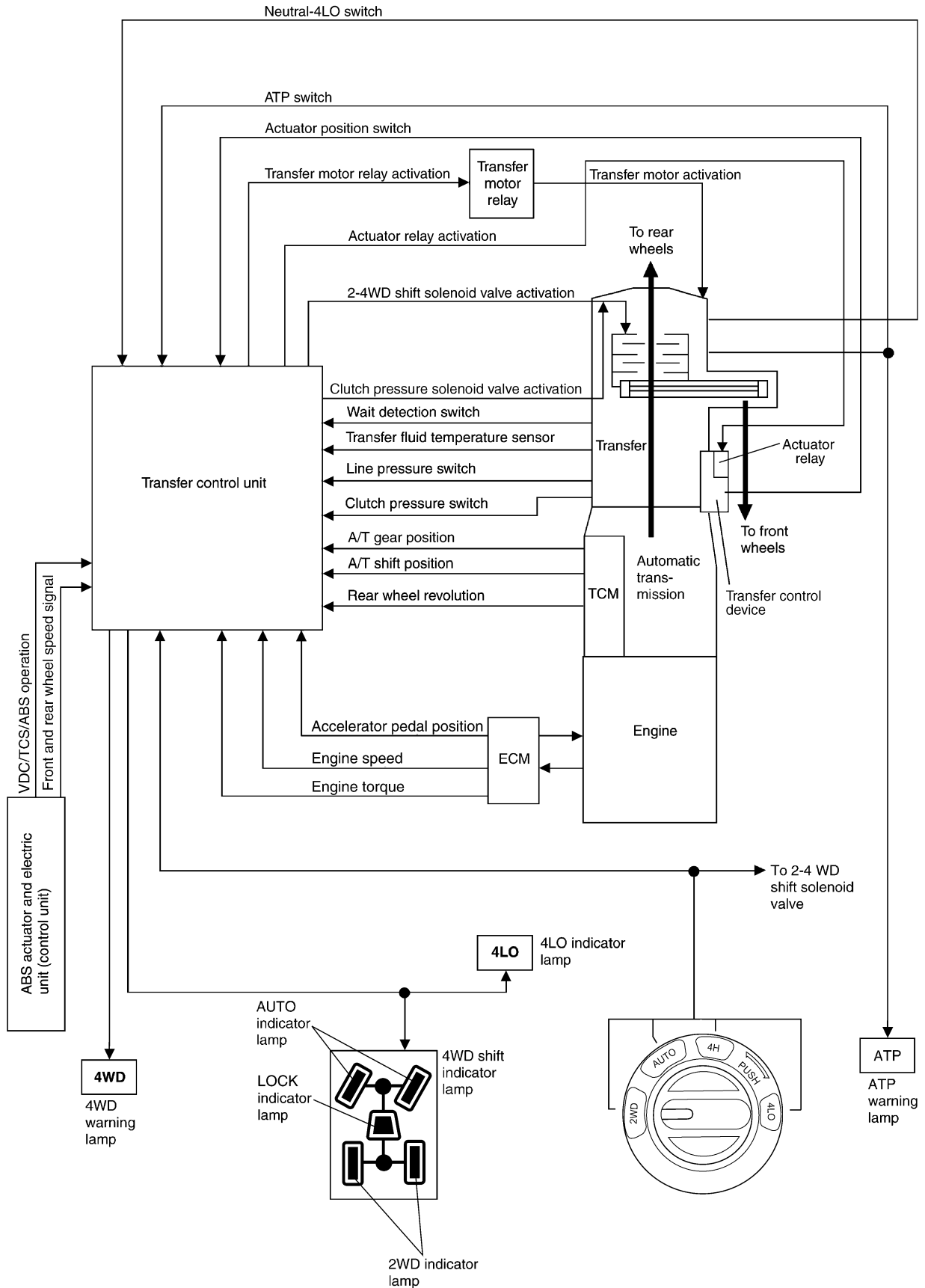
4LO

From transmisson → Sun gear → Planetary carrier → L-H sleeve → Mainshaft → To rear final drive

2-4 sleeve → Clutch drum → Drive chain → Front drive shaft → To front final drive

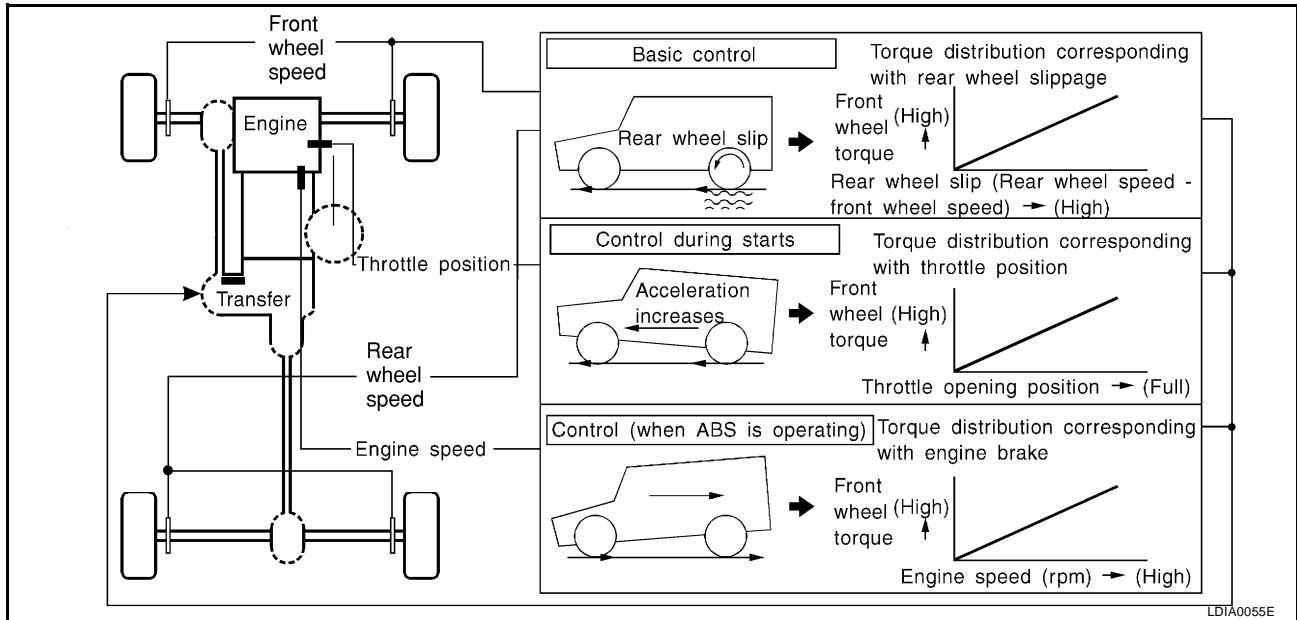
SDIA3327E

System Description CONTROL SYSTEM

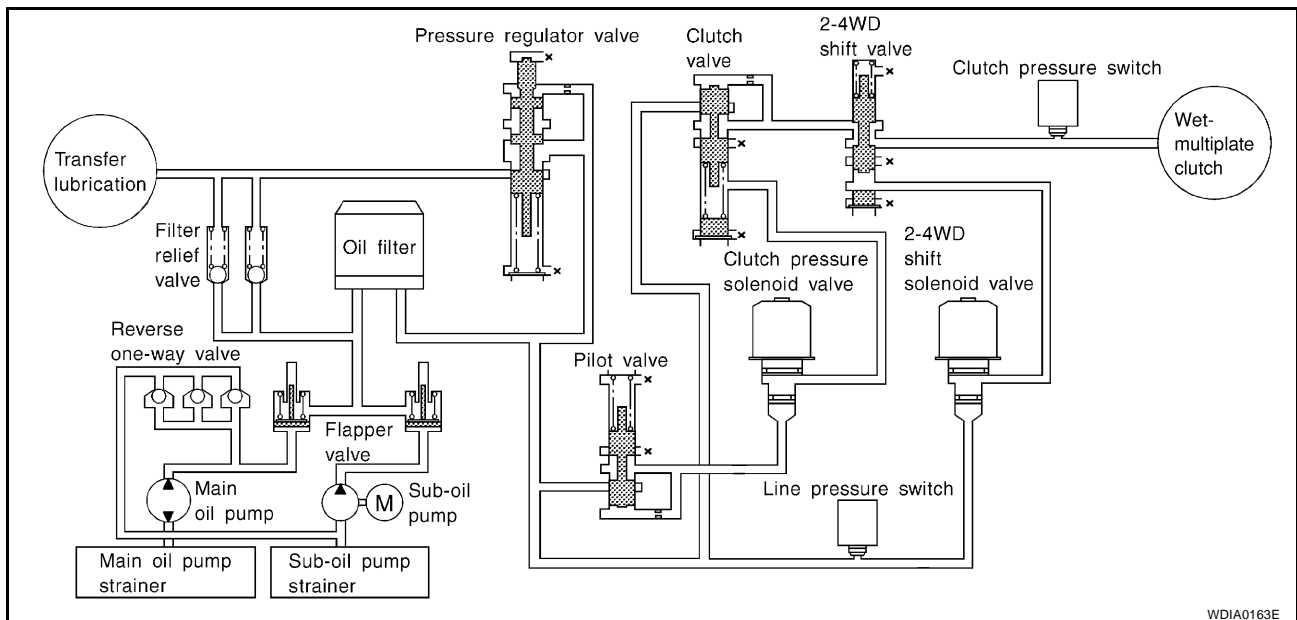


A
B
C
TF
E
F
G
H
I
J
K
L
M

ALL-MODE 4WD Transfer Basic Control



Hydraulic Control Circuits



TRANSFER MOTOR

- The transfer motor drives the sub-oil pump to provide proper lubrication and oil pressure control when the vehicle is at standstill, during low-speed operations or is being driven in reverse.
- The main oil pump is operated by the driving force of the mainshaft. In other words, sufficient oil pressure buildup does not occur when the vehicle is at standstill or during low-speed operations. While the vehicle is being driven in reverse, the main oil pump rotates in the reverse direction. Therefore the main oil pump does not discharge oil pressure. During any of the above vehicle operations, the transfer motor drives the sub-oil pump to compensate for insufficient oil pressure.
- The transfer motor operates as follows.
 - The motor relay turns OFF in the 2WD mode.
 - The motor relay operates as described in the table below in modes other than the 2WD mode.
- 4WD shift switch, PNP switch, Neutral-4LO switch, vehicle speed sensor and throttle position sensor are used in conjunction with the transfer motor.

ALL-MODE 4WD SYSTEM

[ATX14B]

Transfer Motor Relay Operation

4WD shift switch	A/T selector lever position	Vehicle speed (VSS)	Accelerator pedal position	Motor relay drive command	
2WD	—	—	—	OFF	
4H (LOCK) and 4LO	"N" position	0	—	ON	
	"P" position	0	0 - 0.07/8	OFF*	
			0.07/8 - 1/8	HOLD	
			1/8 - MAX	ON	
	Other than "R" position	0 < VSS ≤ 50 km/h (31 MPH)	—	ON	
				50 km/h (31 MPH) < VSS < 55 km/h (34 MPH)	HOLD
				55 km/h (34 MPH) ≤ VSS	OFF
"R" position	—	—	—	ON	
AUTO	"R" position	—	—	ON	
	"P" or "N" position	0	0 - 0.07/8	OFF*	
			0.07/8 - 1/8	HOLD	
			1/8 - MAX	ON	
			0 < VSS ≤ 50 km/h (31 MPH)	ON	
			50 km/h (31 MPH) < VSS < 55 km/h (34 MPH)	HOLD	
			55 km/h (34 MPH) ≤ VSS	OFF	
	Other than "R", "P" and "N" position	0 < VSS ≤ 50 km/h (31 MPH)	—	ON	
				50 km/h (31 MPH) < VSS < 55 km/h (34 MPH)	HOLD
				55 km/h (34 MPH) ≤ VSS	OFF

*: After 2.5 seconds have elapsed.

WAIT DETECTION SWITCH

- The wait detection switch operates when there is "circulating" torque produced in the propeller shaft (L→H) or when there is a phase difference between 2-4 sleeve and clutch drum (H→L). After the release of the "circulating" torque, the wait detection switch helps provide the 4WD lock gear (clutch drum) shifts. A difference may occur between the operation of the 4WD shift switch and actual drive mode. At this point, the wait detection switch senses an actual drive mode.
- The wait detection switch operates as follows.
 - 4WD lock gear (clutch drum) locked: ON
 - 4WD lock gear (clutch drum) released: OFF
- The wait detection switch senses an actual drive mode and the 4WD shift indicator lamp indicates the vehicle drive mode.

NEUTRAL-4LO SWITCH

The neutral-4LO switch detects that transfer gear is in neutral or 4LO (or shifting from neutral to 4LO) condition by L-H shift fork position.

ATP SWITCH

The ATP switch detects that transfer gear is under neutral condition by L-H shift fork position.

NOTE:

Transfer gear may be under neutral condition in 4H-4LO.

2-4WD SHIFT SOLENOID VALVE

The 2-4WD shift solenoid valve operates to apply oil pressure to the wet-multiplate clutch, depending on the drive mode. The driving force is transmitted to the front wheels through the clutch so the vehicle is set in the 4WD mode. Setting the vehicle in the 2WD mode requires no pressure buildup. In other words, pressure force applied to the wet-multiplate clutch becomes zero.

CLUTCH PRESSURE SOLENOID VALVE

The clutch pressure solenoid valve distributes front and rear torque in AUTO mode.

LINE PRESSURE SWITCH

- With the transfer system design, control of the oil pressure provides the transmission of drive torque to the front wheels. The main pressure to control the oil pressure is referred to as the line pressure.
- The line pressure switch determines whether or not adequate line pressure has built up under different operating conditions.
- The line pressure switch closes when line pressure is produced.
- The line pressure switch senses line pressure abnormalities and turns the 4WD warning lamp ON.

CLUTCH PRESSURE SWITCH

- The clutch pressure switch determines whether or not adequate clutch pressure has built up under different operating conditions.
- The clutch pressure switch closes when clutch pressure is produced.
- The clutch pressure switch senses clutch pressure abnormalities and turns the 4WD warning lamp ON.

TRANSFER FLUID TEMPERATURE SENSOR

The transfer fluid temperature sensor detects the transfer fluid temperature and sends a signal to the transfer control unit.

TRANSFER CONTROL UNIT

- Transfer control unit controls transfer control device by input signals of each sensor and each switch.
- Self-diagnosis can be done.

TRANSFER CONTROL DEVICE

The transfer control device changes the state of transfer assembly between 2WD, AUTO, 4H⇔4LO with the 2WD, AUTO, 4H and 4LO signals of 4WD shift switch.

NOTE:

- To shift between 4H⇔4LO, stop the vehicle, depress the brake pedal and shift the transmission selector to the "N" position. Depress and turn the 4WD shift switch. The shift switch will not shift to the desired mode if the transmission is not in "N" or the vehicle is moving. The 4LO indicator lamp will be lit when the 4LO is engaged.
- Actuator motor and actuator position switch are integrated.

4WD SHIFT SWITCH AND INDICATOR LAMPS

4WD Shift Switch

Able to select from 2WD, AUTO, 4H or 4LO.

4WD Shift Indicator Lamp

- Displays driving conditions selected by 4WD shift switch with 2WD, AUTO and 4H indicators while engine is running. (When 4WD warning lamp is turned on, all 4WD shift indicator lamps are turned off.)
- Turns ON for approximately 1 second when ignition switch is turned ON, for purpose of lamp check.

4LO Indicator Lamp

- Displays 4LO condition while engine is running. 4LO indicator lamp flashes if transfer gear does not shift completely under 2WD, AUTO, 4H⇔4LO. (When 4WD warning lamp is turned on, 4LO indicator lamp is turned off.)
- Turns ON for approximately 1 second when ignition switch is turned ON, for purpose of lamp check.

4WD WARNING LAMP

- Turns ON or flashes when there is a malfunction in 4WD system.
- Turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 second after the engine starts if system is normal.

4WD Warning Lamp Indication

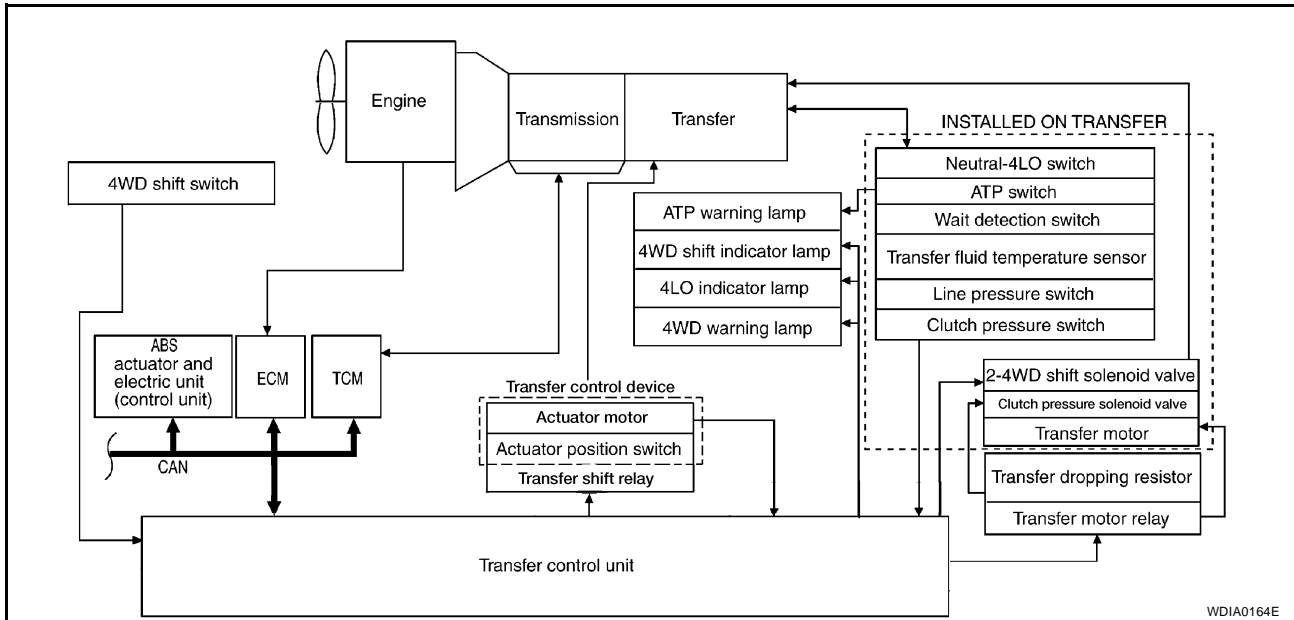
Condition	Content	4WD warning lamp
During self-diagnosis	Indicates the malfunction position by number of flickers.	Flickers at malfunction mode.
Lamp check*	Checks the lamp by turning ON during engine starting. After engine starts, it turns OFF if there are no malfunctions.	ON
Malfunction in 4WD system*	Turns ON to indicate malfunction. When ignition switch is turned to "OFF" or the malfunction is corrected, it turns OFF.	ON
When vehicle is driven with different diameters of front and rear tires	Flickers slowly (once every 2 seconds). Turns OFF when ignition switch is "OFF".	Flickers once every 2 seconds.
High fluid temperature in transfer unit	Flickers rapidly (twice every second) when fluid temperature is high or fluid temperature sensor circuit is shorted. It turns OFF when fluid temperature becomes normal.	Flickers twice a second.
Other than above (System is normal.)	Lamp is OFF.	OFF

*: When 4WD warning lamp is ON, all the 4WD shift indicator lamps turn OFF.

ATP WARNING LAMP

Even if A/T selector lever is in "P" position, vehicle may move because A/T parking mechanism does not operate when transfer is under neutral condition. ATP warning lamp is turned on to indicate this condition to the driver.

System Diagram



ALL-MODE 4WD SYSTEM

[ATX14B]

COMPONENTS FUNCTION

Component parts	Function
Transfer control unit	Controls transfer control device and control valves.
Transfer control device	Actuator motor and actuator position switch are integrated so as to switch driving types.
2-4WD shift solenoid valve	Controls oil pressure and allows selection between 2WD and 4WD.
Clutch pressure solenoid valve	Controls oil pressure and distributes torque (front and rear).
Line pressure switch	Detects line pressure.
Clutch pressure switch	Detects clutch pressure.
Transfer fluid temperature sensor	Detects transfer fluid temperature.
Wait detection switch	Detects whether or not 4WD lock gear is locked.
Neutral-4LO switch	Detects that transfer is under neutral-4LO condition (or shifting through neutral).
ATP switch	Detects that transfer is under neutral condition.
4WD shift switch	Allows selection from 2WD, AUTO, 4H or 4LO.
4WD warning lamp	<ul style="list-style-type: none"> ● Illuminates if malfunction is detected in electrical system of 4WD system. ● There is 1 blink every 2 seconds if rotation difference of front wheels and rear wheels is large. ● There is 2 blinks every 1 second if high transfer fluid temperature is detected.
ATP warning lamp	Indicates that A/T parking mechanism does not operate when A/T selector lever is in "P" position and transfer is under neutral condition.
4WD shift indicator lamp	Displays driving condition selected by 4WD shift switch.
4LO indicator lamp	Displays 4LO condition.
ABS actuator and electric unit (control unit)	Transmits vehicle speed signal via CAN communication to transfer control unit.
TCM	Transmits the following signals via CAN communication to transfer control unit. <ul style="list-style-type: none"> ● Output shaft revolution signal ● A/T position indicator signal (PNP switch signal)
ECM	Transmits the following signals via CAN communication to transfer control unit. <ul style="list-style-type: none"> ● Engine speed signal ● Accelerator pedal position signal

CAN Communication SYSTEM DESCRIPTION

EDS00364

Refer to [LAN-4, "SYSTEM DESCRIPTION"](#) .

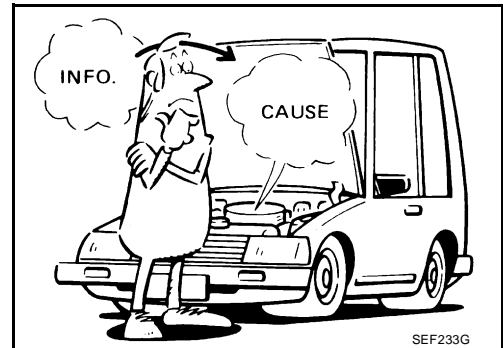
TROUBLE DIAGNOSIS

How to Perform Trouble Diagnosis
BASIC CONCEPT

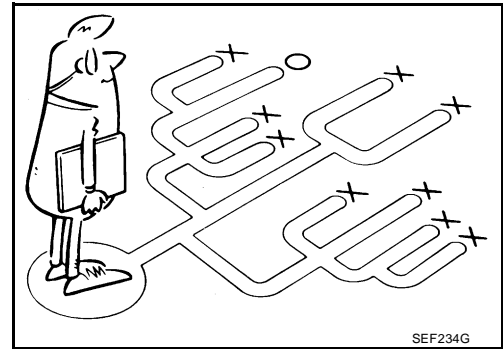
- To perform trouble diagnosis, it is important to have a through understanding about vehicle systems.
- It is also important to clarify customer complaints before inspection. First of all, reproduce symptoms, and understand them fully. Ask customer about his/her complaints carefully. In some cases,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

CAUTION:

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



- It is essential to check symptoms right from the beginning in order to repair malfunctions completely. For intermittent malfunctions, reproduce symptoms based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairing without any symptom diagnosis, you cannot judge if malfunctions have actually been eliminated.
- After completing diagnosis, always erase diagnostic memory. Refer to [TF-55, "ERASE SELF-DIAGNOSIS"](#).
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.



A

B

C

TF

E

F

G

H

I

J

K

L

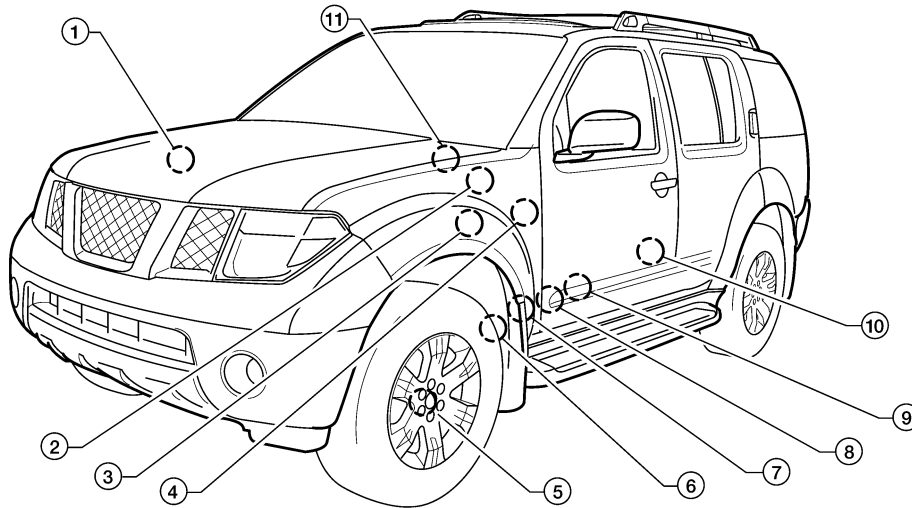
M

TROUBLE DIAGNOSIS

[ATX14B]

Location of Electrical Parts

EDS00366



<p>① Fuse and relay box</p> <p>Transfer shut off relay (E155)</p> <p>Transfer shift high relay (E46)</p> <p>Transfer shift low relay (E47)</p>	<p>②</p> <p>Transfer motor relay (E153)</p> <p>Transfer dropping resistor (E135)</p>	<p>③</p> <p>4WD shift switch (M141)</p>
<p>④ View with lower instrument cover removed</p> <p>Transfer control unit (M152, M153)</p>	<p>⑤</p> <p>Front wheel sensor RH (E117)</p>	<p>⑥</p> <p>Actuator</p> <p>Transfer control device (F58)</p> <p>Front</p> <p>Transfer unit</p>
<p>⑦ View with transfer unit removed</p> <p>Wait detection switch (F59)</p> <p>Front</p>	<p>⑧ Control valve (in transfer unit)</p> <p>Clutch pressure switch (F56)</p> <p>Line pressure switch (F56)</p> <p>Clutch pressure solenoid valve (F56)</p> <p>2-4WD shift solenoid valve (F56)</p> <p>Transfer fluid temperature sensor (F56)</p>	<p>⑨ ATP switch (F55)</p> <p>Neutral 4LO switch (F60)</p> <p>Transfer motor (F57)</p> <p>Transfer terminal cord assembly</p> <p>Oil filter</p>
<p>⑩</p> <p>Rear wheel sensor LH (C13)</p> <p>Rear wheel sensor RH (C13)</p>	<p>⑪</p> <p>Combination meter (M24)</p> <p>ATP warning lamp</p> <p>4WD warning lamp</p> <p>4LO indicator lamp</p> <p>4WD shift indicator lamp</p>	

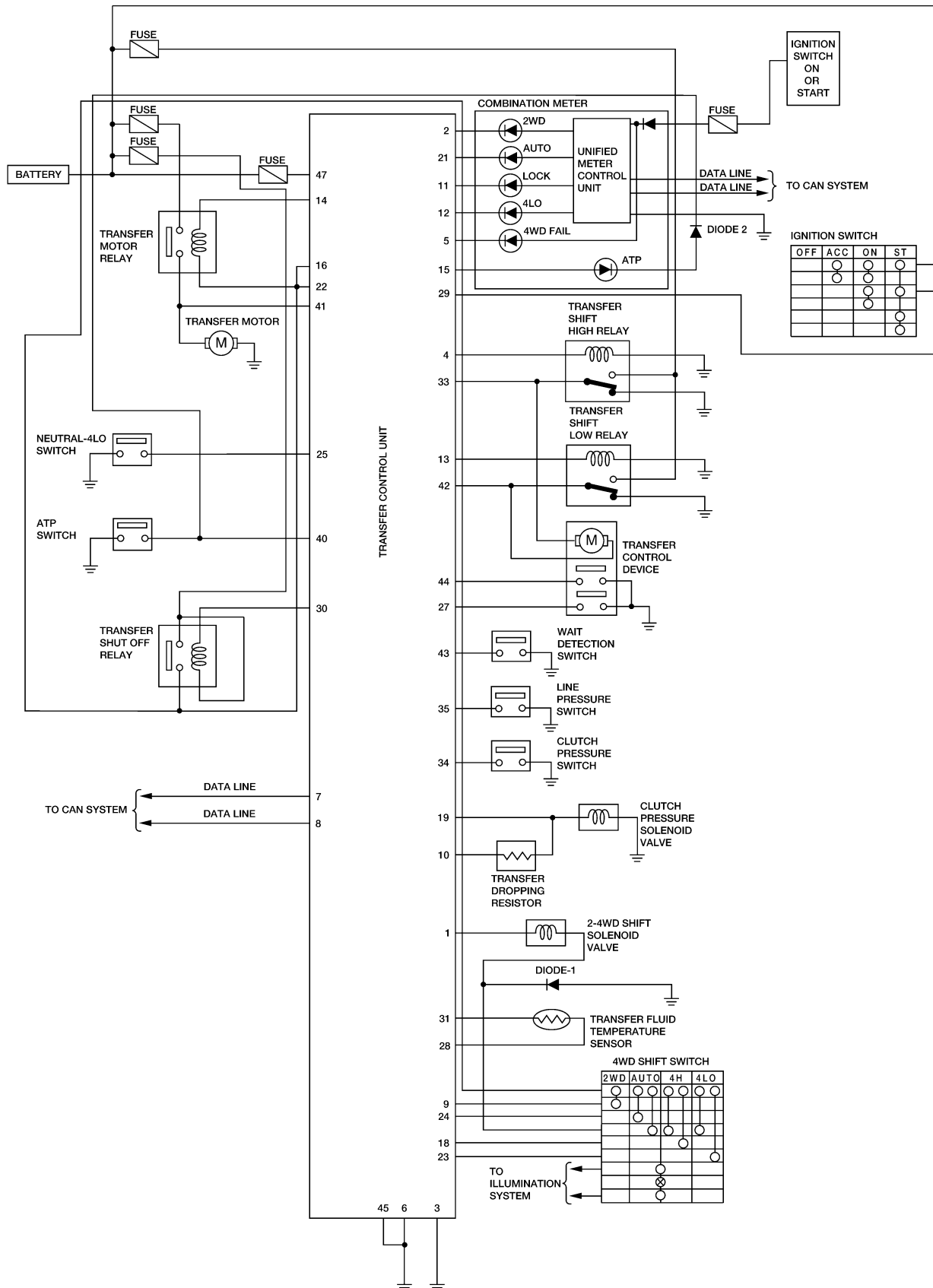
WDIA0124E

TROUBLE DIAGNOSIS

[ATX14B]

EDS00367

Schematic



A
B
C
TF
E
F
G
H
I
J
K
L
M

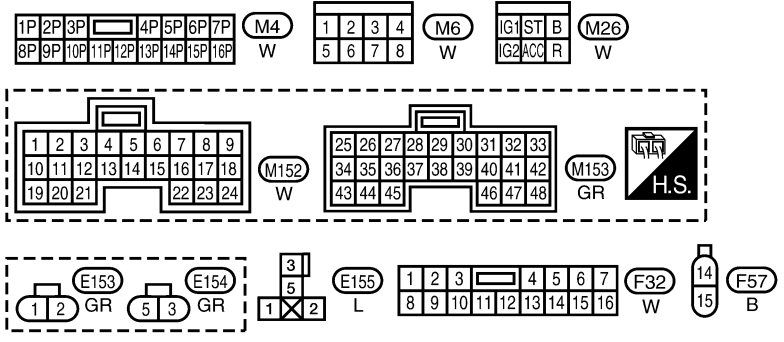
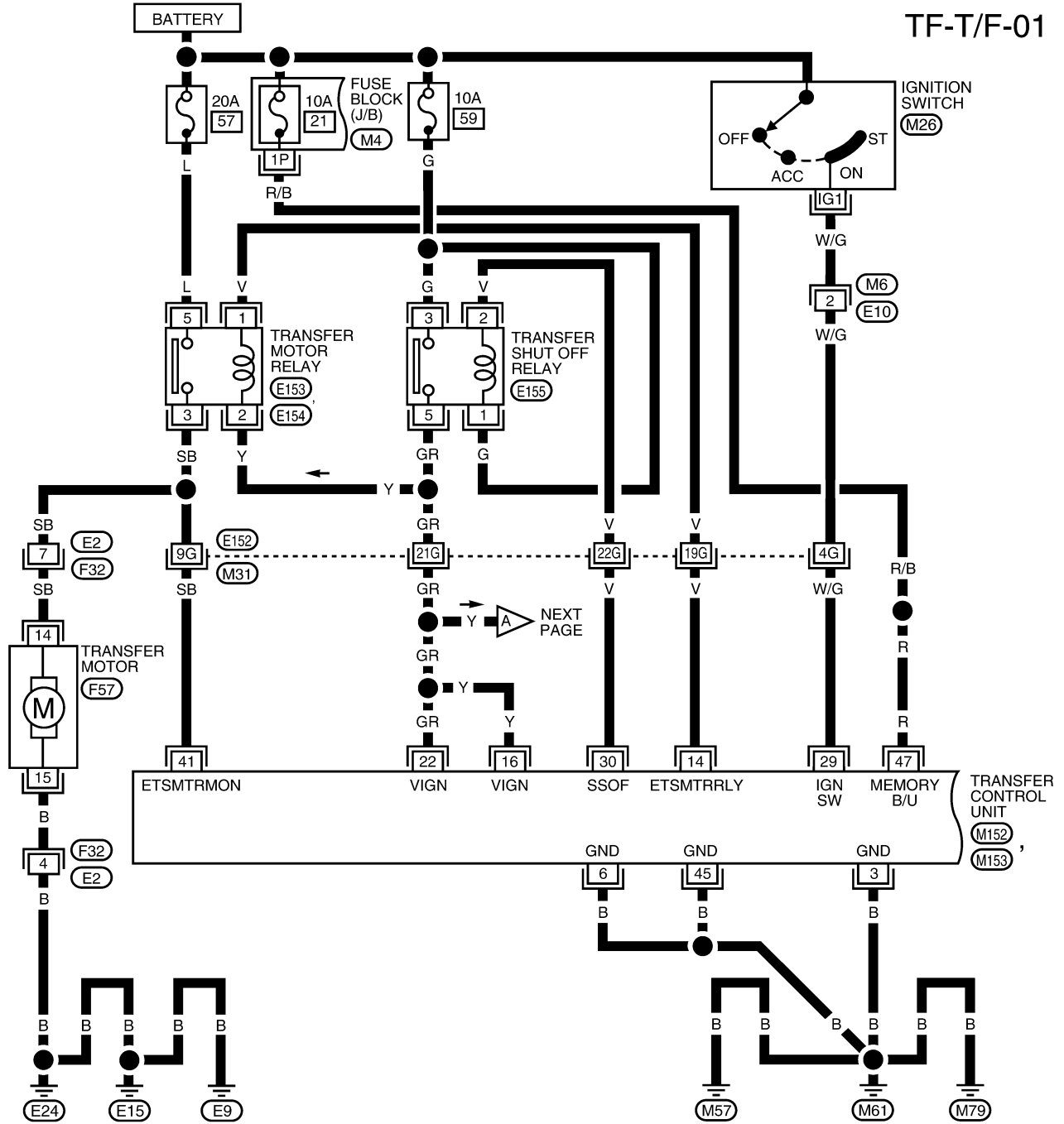
BDWA0079E

TROUBLE DIAGNOSIS

[ATX14B]

Wiring Diagram — T/F —

EDS00368



REFER TO THE FOLLOWING.
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

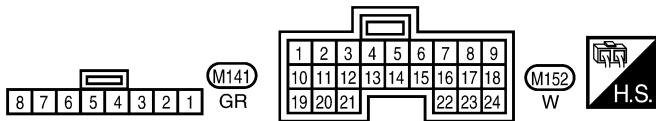
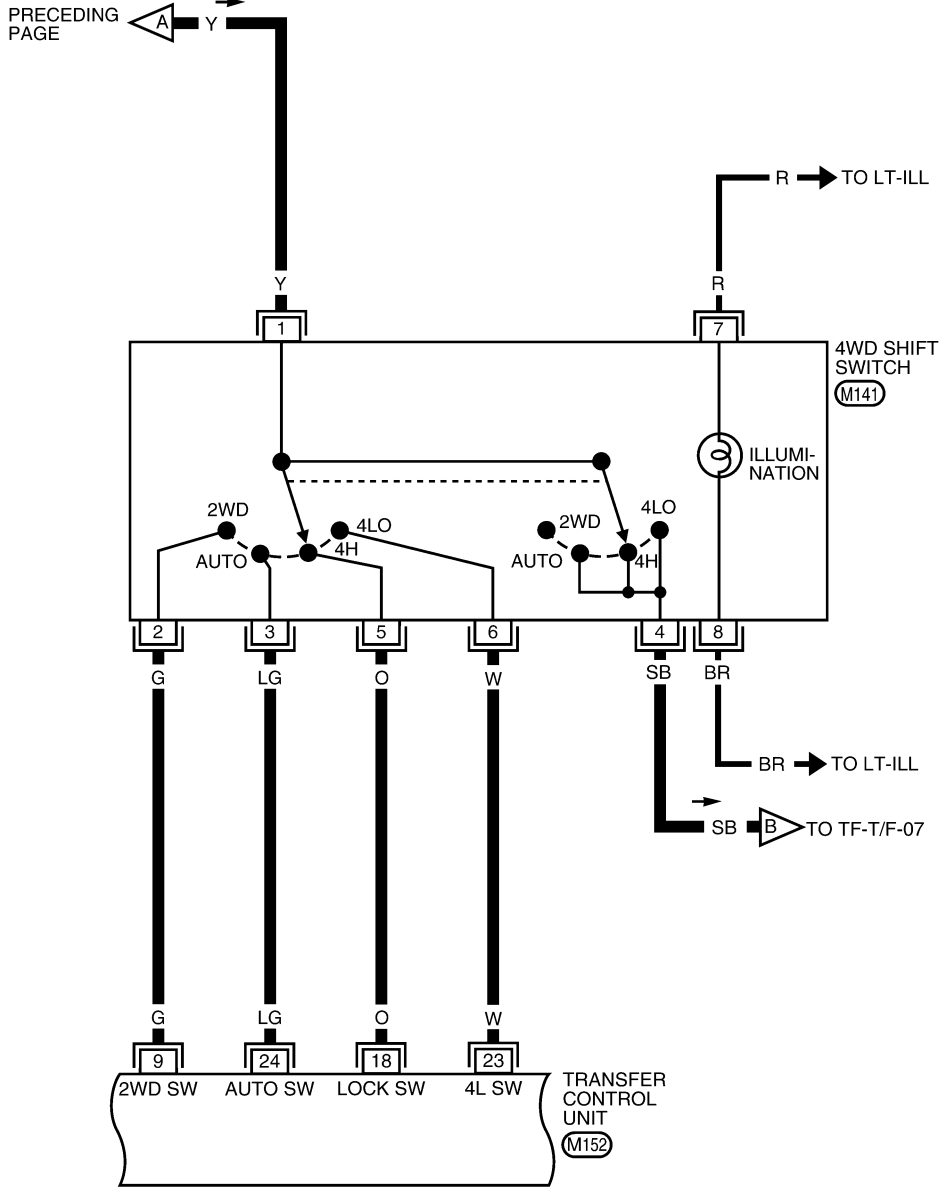
BDWA0156E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-02

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



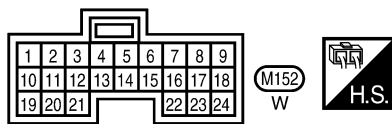
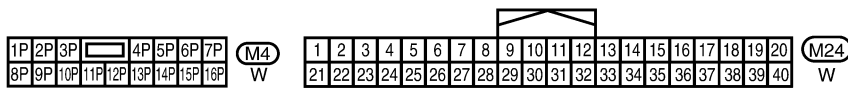
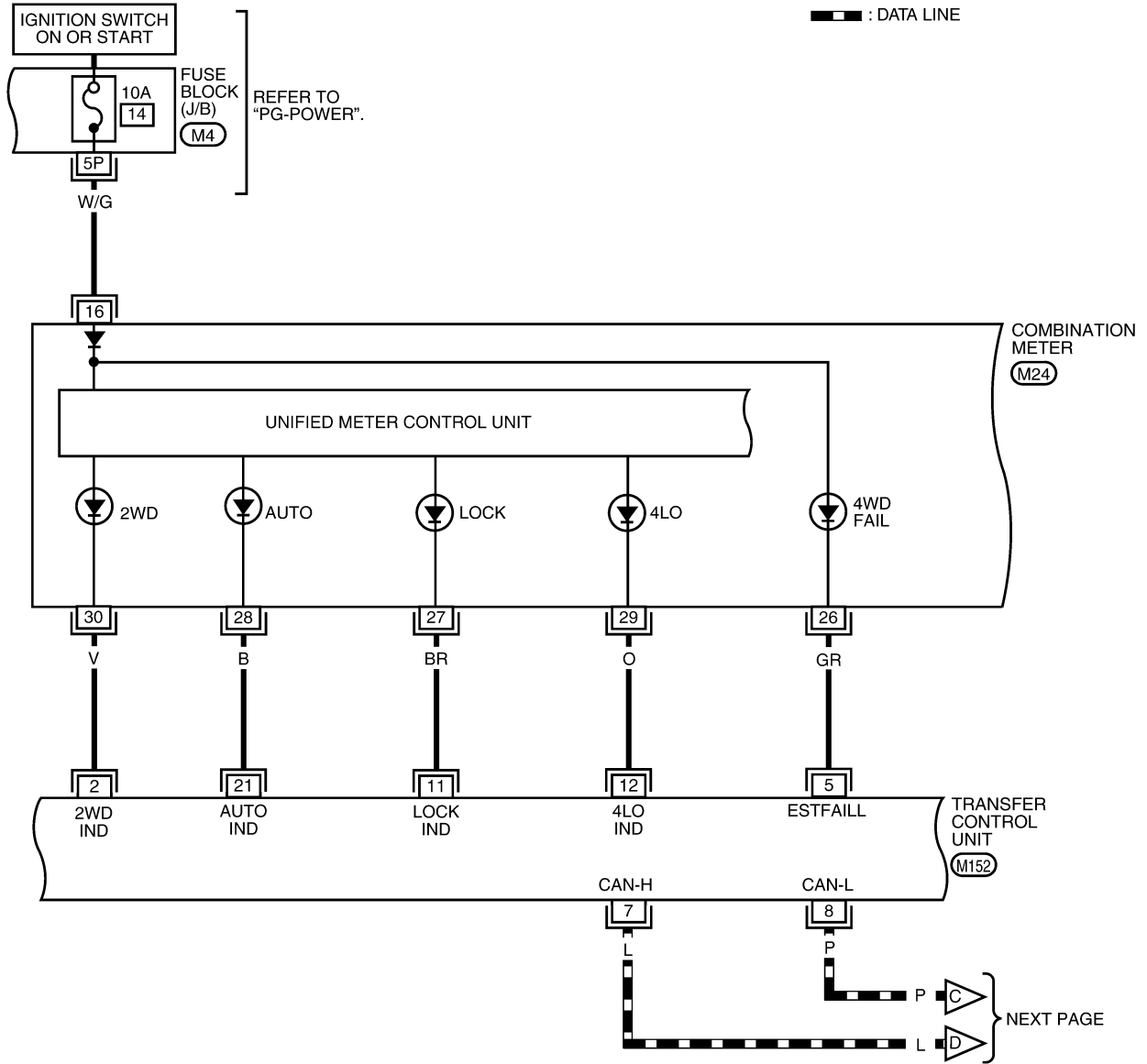
BDWA0157E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-03

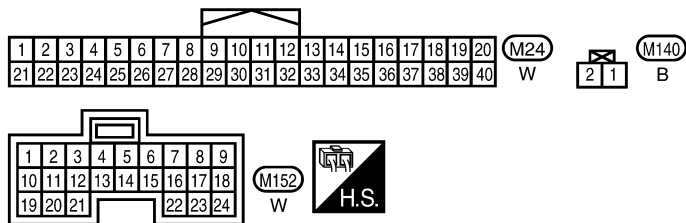
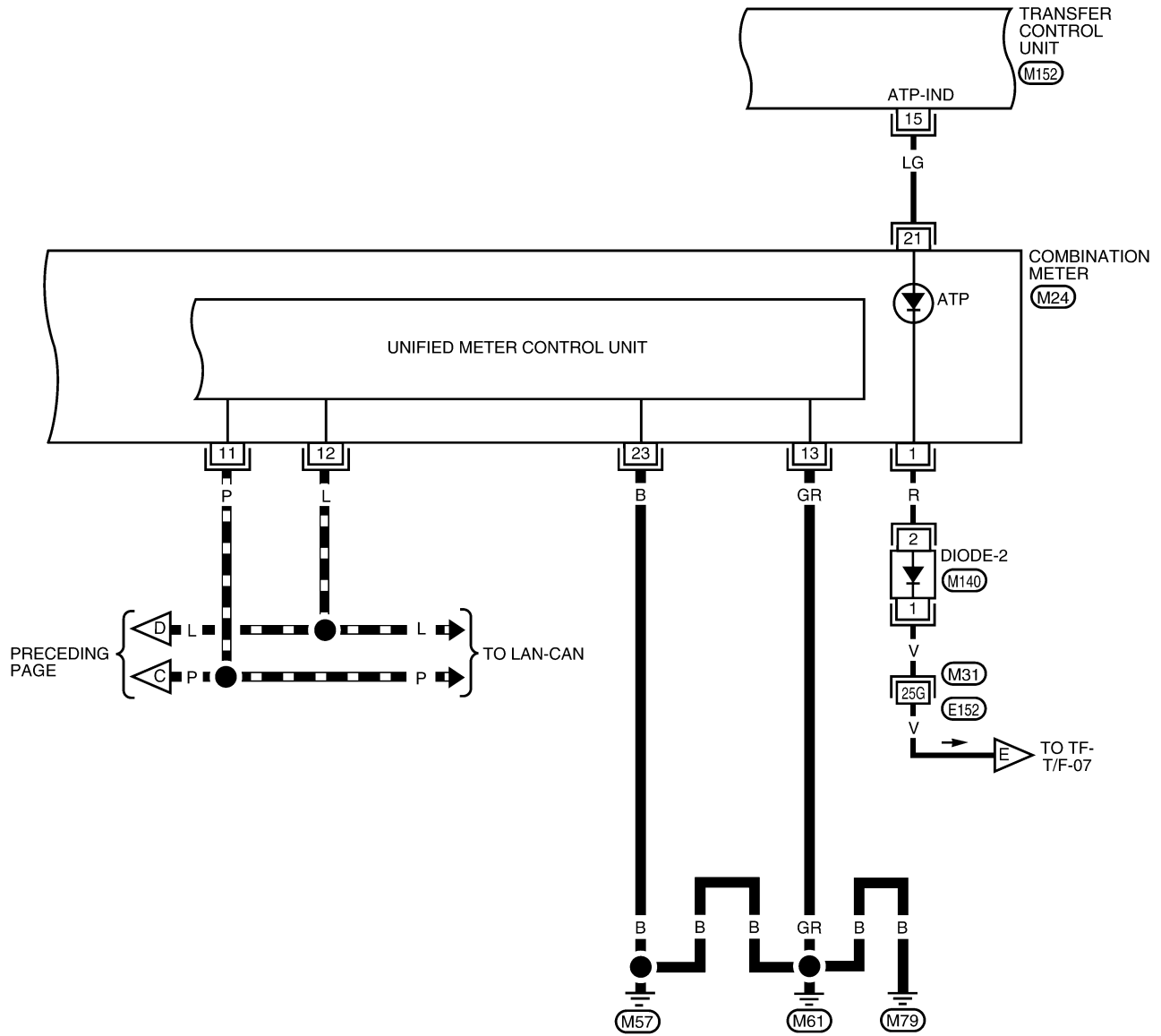
- : DETECTABLE LINE FOR DTC
- : NON-DETECTABLE LINE FOR DTC
- : DATA LINE



BDWA0158E

TF-T/F-04

- : DATA LINE
- : DETECTABLE LINE FOR DTC
- : NON-DETECTABLE LINE FOR DTC



REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

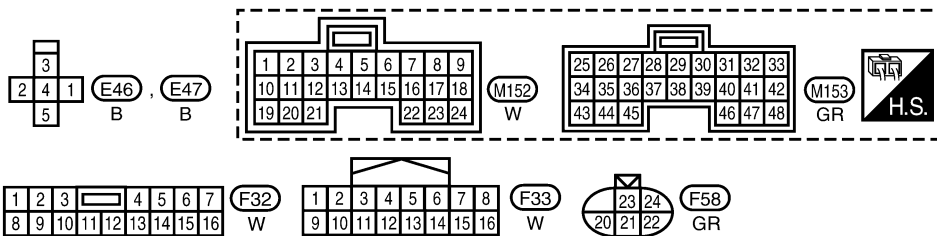
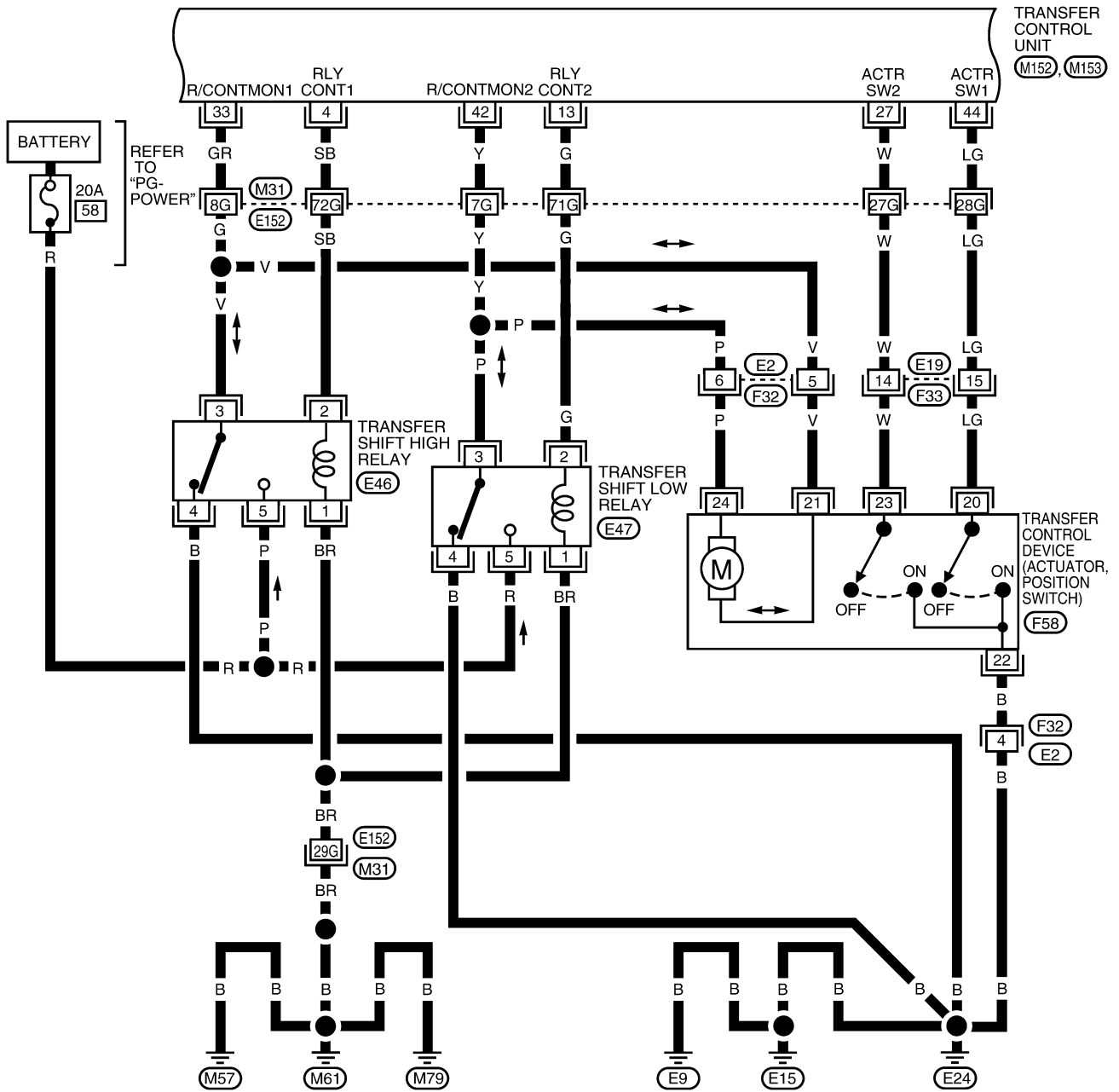
BDWA0159E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-05

— : DETECTABLE LINE FOR DTC — : NON-DETECTABLE LINE FOR DTC



REFER TO THE FOLLOWING.

(M31) - SUPER MULTIPLE JUNCTION (SMJ)

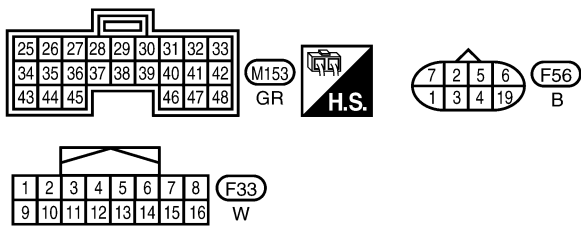
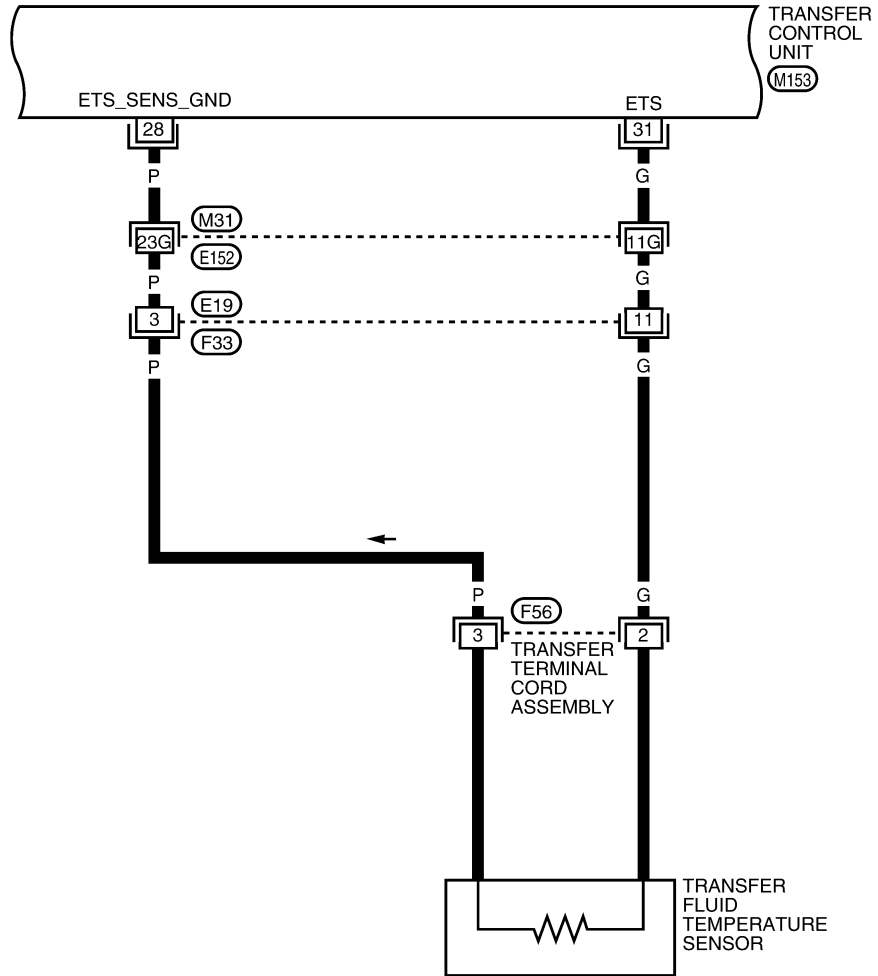
BDWA0160E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-06

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

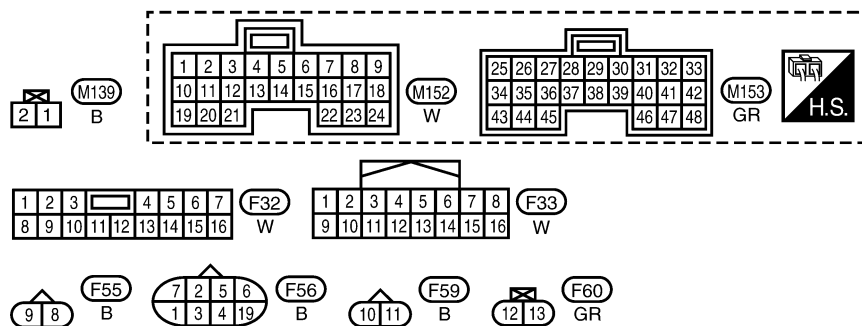
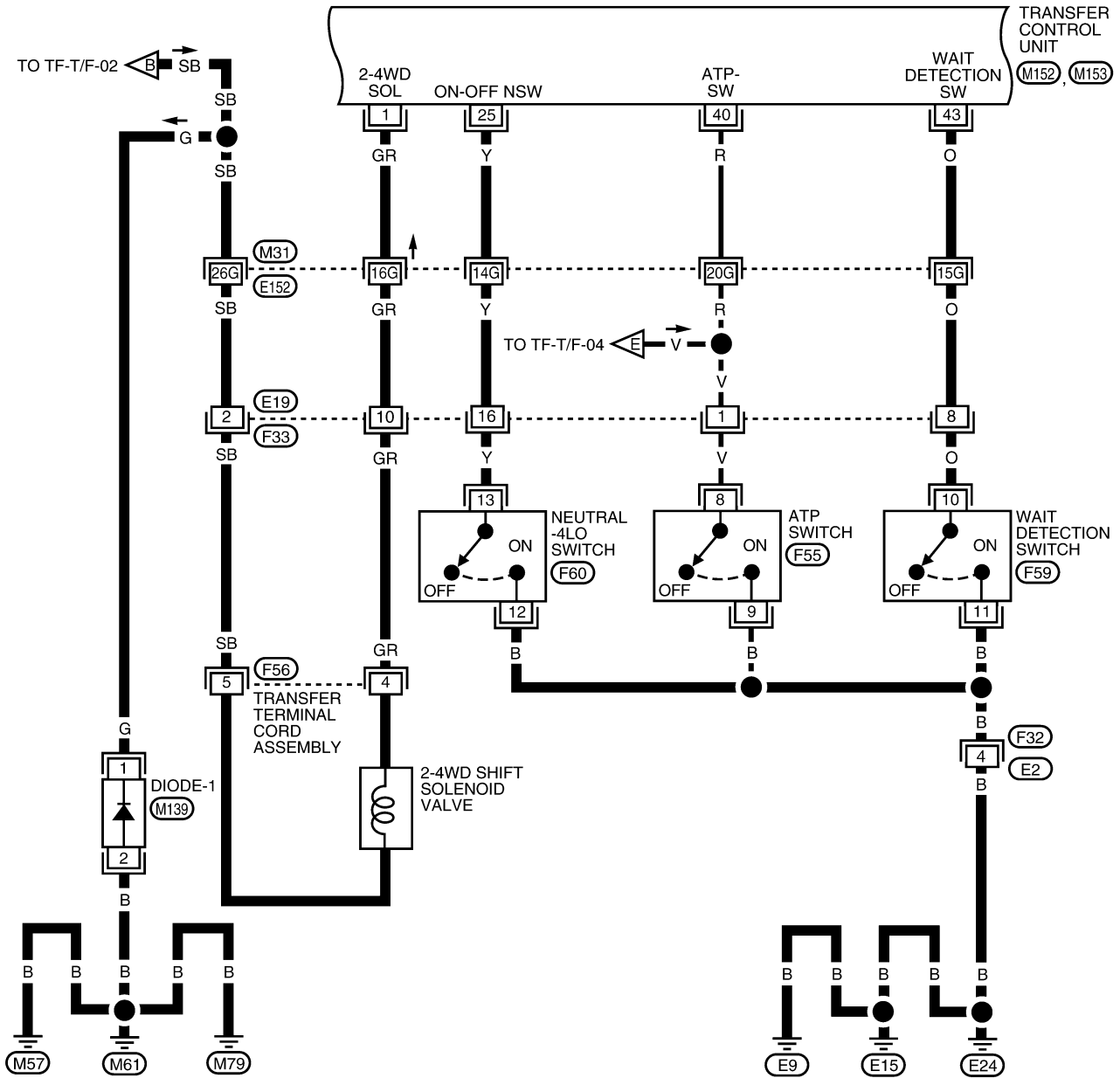
BDWA0161E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-07

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



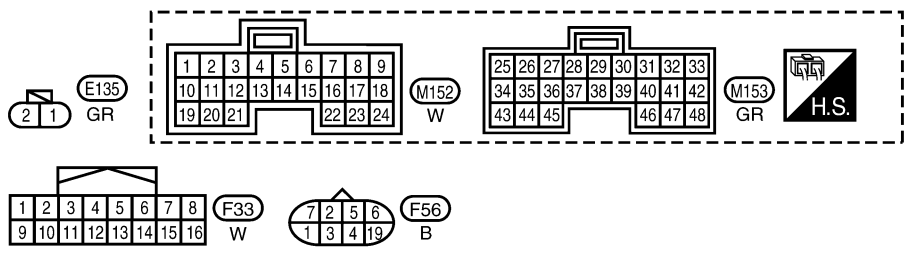
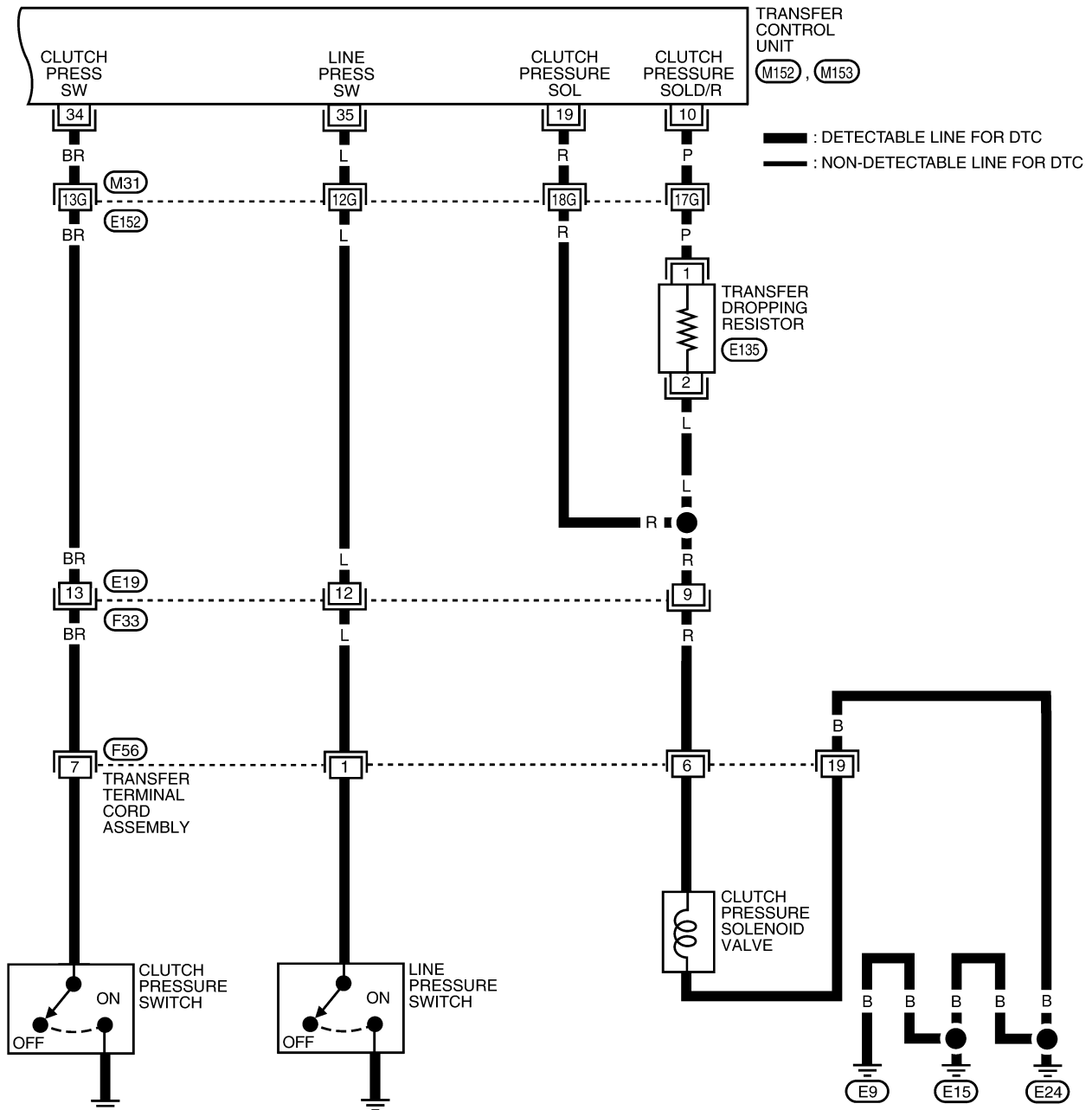
REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

BDWA0162E

TROUBLE DIAGNOSIS

[ATX14B]

TF-T/F-08



REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

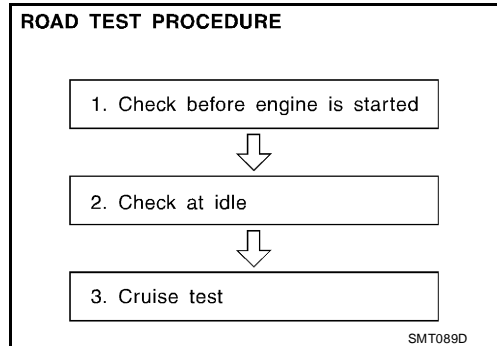
BDWA0163E

Inspections Before Trouble Diagnosis**TRANSFER FLUID CHECK**

Check fluid for leaks and fluid level. Refer to [TF-13, "Inspection"](#) .

PREPARATION FOR ROAD TEST

- The purpose of the test is to determine overall performance of transfer and analyze causes of problems.
- When a malfunction is found in any part of transfer, perform the road test to locate the malfunction area and repair the malfunction parts.
- The road test consists of the following three parts.
 - Check before engine is started. Refer to [TF-34, "CHECK BEFORE ENGINE IS STARTED"](#) .
 - Check at idle. Refer to [TF-34, "CHECK AT IDLE"](#) .
 - Cruise test. Refer to [TF-35, "CRUISE TEST"](#) .

**CHECK BEFORE ENGINE IS STARTED****1. CHECK 4WD SHIFT INDICATOR LAMP**

1. Park vehicle on flat surface.
2. Turn ignition switch to "OFF" position.
3. Move A/T selector lever to "P" position.
4. Set 4WD shift switch to "2WD" position.
5. Turn ignition switch to "ON" position. (Do not start engine.)

Does 4WD shift indicator lamp turn ON for approximately 1 second?

YES >> GO TO 2.

NO >> Go to [TF-118, "4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON"](#) .

2. CHECK 4WD WARNING LAMP

1. Turn ignition switch to "OFF" position.
2. Move A/T selector lever to "P" position.
3. Set 4WD shift switch to "2WD" position.
4. Turn ignition switch to "ON" position. (Do not start engine.)

Does 4WD warning lamp turn ON?

YES >> GO TO [TF-34, "CHECK AT IDLE"](#) .

NO >> GO TO [TF-121, "4WD Warning Lamp Does Not Turn ON"](#) .

CHECK AT IDLE**1. CHECK 4WD SHIFT INDICATOR LAMP**

1. Park vehicle on flat surface and engage the parking brake.
2. Turn ignition switch to "OFF" position.
3. Move A/T selector lever to "P" position.
4. Set 4WD shift switch to "2WD" position.
5. Start engine.

Does 4WD shift indicator lamp turn ON?

YES >> GO TO 3.

NO >> GO TO 2.

2. CHECK 4WD WARNING LAMP

Check 4WD warning lamp state.

Is 4WD warning lamp turned ON?

YES >> Perform the self-diagnosis. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) (with CONSULT-II) or [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) (without CONSULT-II).

NO >> Go to [TF-123, "4WD Shift Indicator Lamp or 4LO Indicator Lamp Does Not Change"](#).

3. CHECK 4WD SHIFT INDICATOR AND 4LO INDICATOR OPERATION








1. Brake pedal depressed.
2. Move A/T selector lever to "N" position.
3. Set 4WD shift switch to "2WD", "AUTO", "4H", "4LO", "4H", "AUTO" and "2WD" in order. (Stay at each switch position for at least 1 second.)

Do 4WD shift indicator and 4LO indicator lamps change properly?

Does buzzer sound?

YES >> GO TO [TF-35, "CRUISE TEST"](#).

NO >> GO TO [TF-123, "4WD Shift Indicator Lamp or 4LO Indicator Lamp Does Not Change"](#).

4WD shift switch	4WD shift indicator lamp	4LO indicator lamp	Buzzer sound
2WD		4LO OFF	
	↓		"Pip"
AUTO		4LO OFF	
	↓		"Pip"
4H		4LO OFF	
	↓	Lamp flasher	"Pip"
4LO		4LO ON	
	↓	Lamp flasher	"Pip"
4H		4LO OFF	
	↓		"Pip"
AUTO		4LO OFF	
	↓		"Pip"
2WD		4LO OFF	

WDIA0136E

CRUISE TEST

1. CHECK INPUT SIGNAL

1. Warm up engine to normal operating temperature.
2. Park vehicle on flat surface.
3. Move A/T selector lever to "P" position.
4. Set 4WD shift switch to "AUTO" position.
5. Start engine.
6. Drive vehicle for at least 30 seconds at a speed higher than 20 km/h (12 MPH).

Is 4WD warning lamp turned ON?

On steady>>Perform the self-diagnosis. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) (with CONSULT-II) or [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) (without CONSULT-II).

Flash rapidly>>GO TO [TF-128, "4WD Warning Lamp Flashes Rapidly"](#).

Flash slowly>>GO TO [TF-129, "4WD Warning Lamp Flashes Slowly"](#).

NO >> GO TO 2.

2. CHECK TIGHT CORNER BRAKING SYMPTOM (1)

1. Set 4WD shift switch to "AUTO" position.
2. Drive vehicle at speed lower than 20 km/h (12 MPH) with steering wheel fully turned.

Does tight corner braking symptom occur?

- YES >> GO TO [TF-130, "Heavy Tight-corner Braking Symptom Occurs"](#) .
 NO >> GO TO 3.

3. CHECK TIGHT CORNER BRAKING SYMPTOM (2)

1. Set 4WD shift switch to "4HI" position.
2. Drive vehicle at speed lower than 20 km/h (12 MPH) with steering wheel fully turned.

Does tight corner braking symptom occur?

- YES >> Inspection End.
 NO >> GO TO [TF-131, "4WD System Does Not Operate"](#) .

Trouble Diagnosis Chart for Symptoms

EDS0036A

If 4WD warning lamp turns ON, perform self-diagnosis. Refer to [TF-52, "Self-diagnostic Procedure"](#) .

Symptom	Condition	Check item	Reference page
4WD shift indicator lamp and 4LO indicator lamp do not turn ON (4WD shift indicator lamp and 4LO indicator lamp check)	Ignition switch: ON	Power supply and ground for transfer control unit	TF-118
		Transfer shut off relay	
		Combination meter	
4WD warning lamp does not turn ON (4WD warning lamp check)	Ignition switch: ON	Power supply and ground for transfer control unit	TF-121
		Transfer shut off relay	
		Combination meter	
4WD shift indicator lamp or 4LO indicator lamp does not change	Engine running	4WD shift switch	TF-123
		Wait detection switch	
		Neutral-4LO switch	
		ATP switch	
		2-4WD solenoid	
		Transfer control device	
		Actuator motor	
		Actuator position switch	
ATP warning lamp turns ON	Engine running	CAN communication line	TF-125
		4WD shift switch	
		PNP switch signal	
		ATP switch	
		Combination meter	
		Transfer inner parts	
4LO indicator lamp repeats flashing	Engine running	Wait detection switch	TF-127
		Neutral-4LO switch	
		Transfer inner parts	
4WD warning lamp flashes rapidly (2 times/second)	While driving	Transfer fluid temperature	TF-128
		Tire size is different between front and rear of vehicle	

TROUBLE DIAGNOSIS

[ATX14B]

Symptom	Condition	Check item	Reference page
4WD warning lamp flashes slowly (1 time/2 seconds)	While driving	Tire size is different between front and rear of vehicle.	TF-129
		Transfer fluid temperature	
		Clutch pressure switch	
Heavy tight-corner braking symptom occurs (See NOTE.)	<ul style="list-style-type: none"> While driving AUTO mode Steering wheel is turned fully to either side 	CAN communication line	TF-130
		4WD shift switch	
		Accelerator pedal position signal	
		Clutch pressure solenoid	
		Transfer inner parts	
4WD system does not operate	While driving	4WD shift switch	TF-131
		Clutch pressure switch	
		Transfer inner parts	

NOTE:

- Light tight-corner braking symptom may occur depending on driving conditions in AUTO mode. This is not a malfunction.
- Heavy tight-corner braking symptom occurs when vehicle is driven in the following conditions: 4WD shift switch is "4H" or "4LO", steering wheel is turned fully to either side.

Transfer Control Unit Input/Output Signal Reference Values

EDS0036B

TRANSFER CONTROL UNIT INSPECTION TABLE

Specifications with CONSULT-II

Monitored item [Unit]	Content	Condition	Display value
VHCL/S SEN-FR [km/h] or [mph]	Wheel speed (Front wheel)	Vehicle stopped	0 km/h (0 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
VHCL/S SEN-RR [km/h] or [mph]	Wheel speed (Rear wheel)	Vehicle stopped	0 km/h (0 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
ENGINE SPEED [rpm]	Engine speed	Engine stopped (Engine speed: Less than 400 rpm)	0 rpm
		Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer
THRTL POS SEN [V]	Accelerator pedal position (APP) sensor signal voltage	Accelerator pedal: Released	Approx. 0.5V
		Accelerator pedal: Fully depressed	Approx. 4.0V
FLUID TEMP SE [V]	Transfer fluid temperature signal voltage	Transfer fluid temperature approx. 20 - 80°C (68 - 176°F)	Approx. 1.1 - 0.3V
BATTERY VOLT [V]	Power supply voltage for transfer control unit	Ignition switch: ON	Battery voltage
2WD SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 2WD	ON
		4WD shift switch: AUTO, 4H or 4LO	OFF
AUTO SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: AUTO	ON
		4WD shift switch: 2WD, 4H or 4LO	OFF

TROUBLE DIAGNOSIS

[ATX14B]

Monitored item [Unit]	Content	Condition		Display value
LOCK SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4H		ON
		4WD shift switch: 2WD, AUTO or 4LO		OFF
4L SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4LO		ON
		4WD shift switch: 2WD, AUTO or 4H		OFF
N POSI SW TF [ON/OFF]	Condition of neutral-4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	OFF
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	OFF→ON
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	ON→OFF
			4WD shift switch: 4LO	ON
ATP SWITCH [ON/OFF]	Condition of ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	ON
			Except the above	OFF
WAIT DETCT SW [ON/OFF]	Condition of wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	OFF
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	OFF→ON
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	ON→OFF
			4WD shift switch: 4LO	ON
LINE PRES SW [ON/OFF]	Condition of line pressure switch	<ul style="list-style-type: none"> ● A/T selector lever "D" position ● 4WD shift switch: AUTO 		ON
		<ul style="list-style-type: none"> ● Except the above ● The vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever: "P" or "N" position ● 4WD shift switch: other than AUTO 	OFF
CL PRES SW [ON/OFF]	Condition of clutch pressure switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "D" position ● 4WD shift switch: AUTO or 4H ("Wait" function is not operating.) 		ON
		<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● 4WD shift switch: 2WD ("Wait" function is not operating.) 		OFF
N POSI SW AT [ON/OFF]	Input condition from A/T PNP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● Brake pedal depressed 	A/T selector lever position: N	ON
			Except the above	OFF
R POSI SW AT [ON/OFF]	Input condition from A/T PNP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● Brake pedal depressed 	A/T selector lever position: R	ON
			Except the above	OFF

TROUBLE DIAGNOSIS

[ATX14B]

Monitored item [Unit]	Content	Condition		Display value
P POSI SW AT [ON/OFF]	Input condition from A/T PNP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● Brake pedal depressed 	A/T selector lever position: P	ON
			Except the above	OFF
ABS OPER SW [ON/OFF]	Condition of ABS operating	ABS is operating.		ON
		ABS is not operating.		OFF
VDC OPER SW [ON/OFF]	Condition of VDC operating	VDC is operating.		ON
		VDC is not operating.		OFF
TCS OPER SW [ON/OFF]	Condition of TCS operating	TCS is operating.		ON
		TCS is not operating.		OFF
THROTTLE POSI [0.0/8]	Condition of throttle opening	When depressing accelerator pedal (Value rises gradually in response to throttle position.)		0.0/8 - 8.0/8
4WD MODE [AUTO/LOCK/2WD/4L]	Control status of 4WD (Output condition of 4WD shift indicator lamp and 4LO indicator lamp)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	2WD
			4WD shift switch: AUTO	AUTO
			4WD shift switch: 4H	LOCK
			4WD shift switch: 4LO	4L
VHCL/S COMP [km/h] or [mph]	Vehicle speed	Vehicle stopped		0 km/h (0 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.		Approximately equal to the indication on speedometer (Inside of ±10%)
COMP CL TORQ [kgm]	Condition of control torque	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	0 kg-m
			4WD shift switch: AUTO	39 - 1,353 N-m (4 - 138 kg-m, 29 - 998 ft-lb)
			4WD shift switch: 4H or 4LO	1,353 N-m (138 kg-m, 998 ft-lb)
DUTY SOLENOID [%]	Condition of clutch pressure solenoid	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	4%
			4WD shift switch: AUTO	96 - 4%
			4WD shift switch: 4H or 4LO	4%
2-4WD SOL [ON/OFF]	Condition of 2-4WD shift solenoid valve	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO	ON
			4WD shift switch: 4H	
			4WD shift switch: 4LO	
			4WD shift switch: AUTO ("Wait" function is operating.)	OFF
			4WD shift switch: 4H ("Wait" function is operating.)	OFF

TROUBLE DIAGNOSIS

[ATX14B]

Monitored item [Unit]	Content	Condition	Display value	
2-4WD SOL MON [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO	ON
			4WD shift switch: 4H	
			4WD shift switch: 4LO	OFF
			4WD shift switch: AUTO ("Wait" function is operating.)	
			4WD shift switch: 4H ("Wait" function is operating.)	
MOTOR RELAY [ON/OFF]	Condition of transfer motor relay	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)
			4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
			4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)
			4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON
MOTOR RELAY MON [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)
			4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
			4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)
			4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON
4WD FAIL LAMP [ON/OFF]	Condition of 4WD warning lamp	4WD warning lamp: ON	ON	
		4WD warning lamp: OFF	OFF	
2WD IND [ON/OFF]	Condition of 4WD shift indicator lamp (2WD indicator lamp)	2WD indicator lamp of 4WD shift indicator lamp: OFF	OFF	
		2WD indicator lamp of 4WD shift indicator lamp: ON	ON	
AUTO IND [ON/OFF]	Condition of 4WD shift indicator lamp (AUTO indicator lamp)	AUTO indicator lamp of 4WD shift indicator lamp: OFF	OFF	
		AUTO indicator lamp of 4WD shift indicator lamp: ON	ON	
LOCK IND [ON/OFF]	Condition of 4WD shift indicator lamp (Lock indicator lamp)	Lock indicator lamp of 4WD shift indicator lamp: OFF	OFF	
		Lock indicator lamp of 4WD shift indicator lamp: ON	ON	
4L IND [ON/OFF]	Condition of 4LO indicator lamp condition	4LO indicator lamp: OFF	OFF	
		4LO indicator lamp: ON	ON	

TROUBLE DIAGNOSIS

[ATX14B]

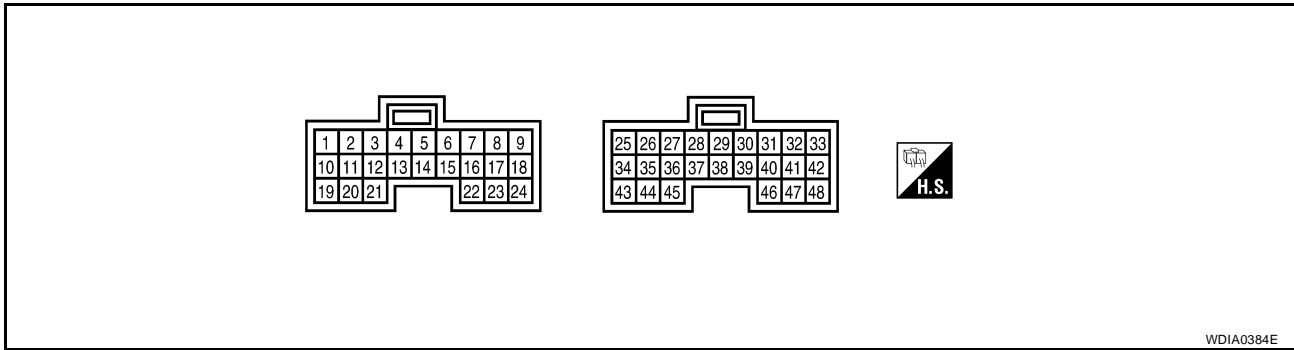
Monitored item [Unit]	Content	Condition	Display value		
ATP IND [ON/OFF]	Condition of ATP indicator lamp	ATP indicator lamp: ON	ON	A	
		ATP indicator lamp: OFF	OFF		
SHIFT POS SW1 [ON/OFF]	Condition of actuator position switch 1 (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO	ON	B
			4WD shift switch: 2WD, AUTO or 4H	OFF	C
SHIFT POS SW2 [ON/OFF]	Condition of actuator position switch 2 (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H, AUTO or 2WD	ON	TF
			4WD shift switch: 4LO	OFF	E
SHIFT ACT1 [ON/OFF]	Output condition to actuator motor (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	ON	F
			Except the above	OFF	G
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	ON	H
			Except the above	OFF	I
SHIFT ACT2 [ON/OFF]	Output condition to actuator motor (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	ON	J
			Except the above	OFF	K
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	ON	L
			Except the above	OFF	M
T/F F SPEED [km/h] or [mph]		Displayed, but do not use.			
A/T R SPEED [km/h] or [mph]	Condition of vehicle speed sensor A/T (Revolution sensor)	During driving	Approximately matches the output shaft speed.		
AT GEAR POSI [1/2/3/4/5]	Condition of A/T selector lever position	Displays actual A/T gear position.	1 2 3 4 5		

TROUBLE DIAGNOSIS

[ATX14B]

Specifications Between Transfer Control Unit Terminals

TRANSFER CONTROL UNIT TERMINAL CONNECTOR LAYOUT



NOTE:

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
1	GR	2-4WD shift solenoid valve	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD	0V
				4WD shift switch: AUTO, 4H or 4LO	Battery voltage
2	V	4WD shift indicator lamp (2WD indicator lamp)	2WD indicator lamp: OFF		Battery voltage
			2WD indicator lamp: ON		0V
3	B	Ground	Always		0V
4	SB	Transfer shift high relay	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
				Except the above	0V
5	GR	4WD warning lamp	4WD warning lamp: ON		0V
			4WD warning lamp: OFF		Battery voltage
6	B	Ground	Always		0V
7	L	CAN-H	—		—
8	P	CAN-L	—		—
9	G	4WD shift switch (2WD)	Ignition switch: ON	4WD shift switch: 2WD	Battery voltage
				4WD shift switch: AUTO, 4H or 4LO	0V
10	P	Transfer dropping resistor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: AUTO	4 - 14V
				4WD shift switch: 2WD, 4H or 4LO	Less than 1V
11	BR	4WD shift indicator lamp (Lock indicator lamp)	Lock indicator lamp of 4WD shift indicator lamp: OFF		Battery voltage
			Lock indicator lamp of 4WD shift indicator lamp: ON		0V
12	O	4LO indicator lamp	4LO indicator lamp: OFF		Battery voltage
			4LO indicator lamp: ON		0V

TROUBLE DIAGNOSIS

[ATX14B]

Terminal	Wire color	Item	Condition	Data (Approx.)	
13	G	Transfer shift low relay	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	Battery voltage
				Except the above	0V
14	V	Transfer motor relay	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	Battery voltage
				4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P" and "N".)
				4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	0V
				4WD shift switch: 4H (A/T selector lever "P" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P".)
				4WD shift switch: 4H (Except for A/T selector lever "P" position)	0V
15	LG	ATP warning lamp	ATP indicator lamp: ON	0V	
			ATP indicator lamp: OFF	Battery voltage	
16	Y	Power supply	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V	
18	O	4WD shift switch (4H)	Ignition switch: ON	4WD shift switch: 4H	Battery voltage
				4WD shift switch: 2WD, AUTO or 4LO	0V
19	R	Clutch pressure solenoid valve	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: AUTO	1.5 - 3V
				4WD shift switch: 2WD, 4H or 4LO	Less than 1V
21	B	4WD shift indicator lamp (AUTO indicator lamp)	AUTO indicator lamp of 4WD shift indicator lamp: OFF	Battery voltage	
			AUTO indicator lamp of 4WD shift indicator lamp: ON	0V	
22	GR	Power supply	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V	
23	W	4WD shift switch (4LO)	Ignition switch: ON	4WD shift switch: 4LO	Battery voltage
				4WD shift switch: 2WD, AUTO or 4H	0V
24	LG	4WD shift switch (AUTO)	Ignition switch: ON	4WD shift switch: AUTO	Battery voltage
				4WD shift switch: 2WD, 4H or 4LO	0V
25	Y	Neutral-4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	Battery voltage
				4WD shift switch: 4H to 4LO (While actuator motor is operating.)	Battery voltage → 0V
				4WD shift switch: 4LO to 4H (While actuator motor is operating.)	0V → Battery voltage
				4WD shift switch: 4LO	0V

A
B
C
TF
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

[ATX14B]

Terminal	Wire color	Item	Condition		Data (Approx.)
27	W	Actuator position switch 2 (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H, AUTO or 2WD	0V
				4WD shift switch: 4LO	Battery voltage
28	P	Sensor ground	Always		0V
29	W/G	Ignition switch monitor	Ignition switch: ON		Battery voltage
			Ignition switch: OFF		0V
30	V	Shut off relay	Ignition switch: ON		0V
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)		Battery voltage
31	G	Transfer fluid temperature sensor	Ignition switch: ON	Transfer fluid temperature approx. 20°C (68°F)	1.1V
				Transfer fluid temperature approx. 80°C (176°F)	0.3V
33	GR	Transfer shift high relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
				Except the above	0V
34	BR	Clutch pressure switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "D" position 	4WD shift switch: AUTO or 4H ("Wait" function is not operating.)	0V
				<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 2WD ("Wait" function is not operating.)
35	L	Line pressure switch	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever "D" position ● 4WD shift switch: AUTO 		0V
			<ul style="list-style-type: none"> ● After the vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever: "P" or "N" position ● 4WD shift switch: other than AUTO 	Battery voltage
40	R	ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" ● Brake pedal depressed 	4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	0V
				Except the above	Battery voltage

TROUBLE DIAGNOSIS

[ATX14B]

Terminal	Wire color	Item	Condition	Data (Approx.)
41	SB	Transfer motor relay monitor	4WD shift switch: 2WD	0V
			4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P" and "N".)
			4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	Battery voltage
			4WD shift switch: 4H (A/T selector lever "P" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P".)
			4WD shift switch: 4H (Except for A/T selector lever "P" position)	Battery voltage
42	Y	Transfer shift low relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.) Battery voltage
			Except the above	0V
43	O	Wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H Battery voltage
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	Battery voltage → 0V
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	0V → Battery voltage
			4WD shift switch: 4LO	0V
44	LG	Actuator position switch 1 (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO 0V
			4WD shift switch: 2WD, AUTO or 4H	Battery voltage
45	B	Ground	Always	0V
47	R	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	Battery voltage

CAUTION:

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

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

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

ALL MODE AWD/4WD diagnostic mode	Description
SELF-DIAG RESULTS	Displays transfer control unit self-diagnosis results.
DATA MONITOR	Displays transfer control unit input/output data in real time.
WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the transfer control unit for setting the status suitable for required operation, input/output signals are received from the transfer control unit and received data is displayed.
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of CAN communication can be read.
ECU PART NUMBER	Transfer control unit part number can be read.

CONSULT-II START PROCEDURE

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

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-46, "CONSULT-II START PROCEDURE"](#).
2. With engine at idle, touch "SELF-DIAG RESULTS".
Display shows malfunction experienced since the last erasing operation.

NOTE:

- The details for "TIME" are as follow:
 - "0": Error currently detected with transfer control unit.
 - Except for "0": Error detected in the past and memorized with transfer control unit.
Detects frequency of driving after DTC occurs (frequency of turning ignition switch "ON/OFF").

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	0
SHIFT ACT POSI SW [P1818]	1
ERASE	PRINT

SDIA2687E

Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
CONTROL UNIT 1 [P1802]	Malfunction is detected in the memory (RAM) system of transfer control unit.	TF-59, "Transfer Control Unit"
CONTROL UNIT 2 [P1803]	Malfunction is detected in the memory (ROM) system of transfer control unit.	TF-59, "Transfer Control Unit"
CONTROL UNIT 3 [P1804]	Malfunction is detected in the memory (EEPROM) system of transfer control unit.	TF-59, "Transfer Control Unit"
VHCL SPEED SEN-AT [P1807]	<ul style="list-style-type: none"> ● Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication. ● Improper signal is input while driving. 	TF-60, "Output Shaft Revolution Signal (TCM)"
VHCL SPEED SEN-ABS [P1808]	<ul style="list-style-type: none"> ● Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. ● Improper signal is input while driving. 	TF-60, "Vehicle Speed Sensor (ABS)"
CONTROL UNIT 4 [P1809]	AD converter system of transfer control unit is malfunctioning.	TF-59, "Transfer Control Unit"
4L POSI SW TF [P1810]	Improper signal from neutral-4LO switch is input due to open or short circuit.	TF-61, "Neutral-4LO Switch"
BATTERY VOLTAGE [P1811]	Power supply voltage for transfer control unit is abnormally low while driving.	TF-56, "Power Supply Circuit For Transfer Control Unit"
4WD MODE SW [P1813]	More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch.	TF-64, "4WD Shift Switch"
4WD DETECT SWITCH [P1814]	Improper signal from wait detection switch is input due to open or short circuit.	TF-68, "Wait Detection Switch"
PNP SW/CIRC [P1816]	When A/T PNP switch signal is malfunction or communication error between the control units.	TF-71, "PNP Switch Signal (TCM)"
SHIFT ACTUATOR [P1817]	<ul style="list-style-type: none"> ● Motor does not operate properly due to open or short circuit in actuator motor. ● Malfunction is detected in the actuator motor. (When 4WD shift switch is operated and actuator motor is not operated) ● Malfunction is detected in transfer shift high relay and transfer shift low relay. 	TF-72, "Actuator Motor"
SHIFT ACT POSI SW [P1818]	<ul style="list-style-type: none"> ● Improper signal from actuator position switch is input due to open or short circuit. ● Malfunction is detected in the actuator position switch. 	TF-79, "Actuator Position Switch"

TROUBLE DIAGNOSIS

[ATX14B]

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
SHIFT ACT CIR [P1819]	<ul style="list-style-type: none"> ● Transfer control device actuator circuit is shorted or open. (Malfunctions are detected when transfer shift relay circuit is open/shorted or relay monitor circuit is open/shorted.) ● Malfunction occurs in transfer control device drive circuit. ● Malfunction is detected in transfer shut off relay. 	TF-83, "Transfer Control Device"
	Malfunction is detected in transfer shut off relay.	TF-56, "Power Supply Circuit For Transfer Control Unit"
ENGINE SPEED SIG [P1820]	<ul style="list-style-type: none"> ● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input while driving. 	TF-87, "Engine Speed Signal (ECM)"
DUTY SOLENOID [P1822]	Proper voltage is not applied to clutch pressure solenoid valve due to open or short circuit.	TF-87, "Clutch Pressure Solenoid"
2-4WD SOLENOID [P1823]	Proper voltage is not applied to 2-4WD solenoid valve due to open or short circuit.	TF-92, "2-4WD Solenoid"
MOTOR RELAY [P1824]	Motor does not operate properly due to open or short circuit in transfer motor or transfer motor relay.	TF-96, "Transfer Motor"
OIL TEMP SEN [P1826]	Signal voltage from transfer fluid temperature sensor is abnormally high (Transfer fluid temperature is abnormally low) while driving.	TF-103, "Transfer Fluid Temperature"
CLUTCH PRES SW [P1827]	<ul style="list-style-type: none"> ● Improper signal from clutch pressure switch is input due to open or short circuit. ● Malfunction occurs in clutch pressure switch or hydraulic circuit. 	TF-106, "Clutch Pressure Switch"
LINE PRES SW [P1828]	<ul style="list-style-type: none"> ● Improper signal from line pressure switch is input due to open or short circuit. ● Malfunction occurs in line pressure switch or hydraulic circuit. 	TF-109, "Line Pressure Switch"
THROTTLE POSI SEN [P1829]	<ul style="list-style-type: none"> ● Malfunction is detected in accelerator pedal position signal that is output from ECM through CAN communication. ● Signal voltage from accelerator pedal position sensor is abnormally high or low. 	TF-112, "Throttle Position Signal (ECM)"
ABS OP SIG [P1830]	Malfunction is detected in ABS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-112, "ABS Operation Signal (ABS)"
VDC OP SIG [P1831]	Malfunction is detected in VDC operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-113, "VDC Operation Signal (ABS)"
TCS OP SIG [P1832]	Malfunction is detected in TCS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-113, "TCS Operation Signal (ABS)"
CAN COMM CIRCUIT [U1000]	Malfunction has been detected from CAN communication line.	TF-114, "CAN Communication Line"
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	No NG item has been detected.	—

CAUTION:

- If "CAN COMM CIRCUIT [U1000]" is displayed with other DTCs, first perform the trouble diagnosis for CAN communication line.
- If "ABS OP SIG [P1830]", "VDC OP SIG [P1831]" or "TCS OP SIG [P1832]" is displayed, first perform the trouble diagnosis for ABS system.
- If "VHCL SPEED SEN-AT [P1807]" is displayed, first perform the trouble diagnosis for A/T system.

NOTE:

- If "SHIFT ACT POSI SW [P1818]" or "SHIFT ACT CIR [P1819]" is displayed, first erase self-diagnostic results. ("SHIFT ACT POSI SW [P1818]" or "SHIFT ACT CIR [P1819]" may be displayed after installing transfer control unit or transfer assembly.)
- If "CL PRES SW [P1827]" or "LINE PRES SW [P1828]" is displayed only while driving in reverse, check the continuity of "R" position on A/T PNP switch. When there is nothing wrong with the electrical system, check the hydraulic system.

How to Erase Self-diagnostic Results

1. Perform applicable inspection of malfunctioning item and then repair or replace.
2. Start engine and select "SELF-DIAG RESULTS" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Touch "ERASE" on CONSULT-II screen to erase DTC memory.

CAUTION:

If memory cannot be erased, perform applicable diagnosis.

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-46, "CONSULT-II START PROCEDURE"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

NOTE:

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

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

Display Item List

×: Standard -: Not applicable

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL/S SEN-FR [km/h] or [mph]	×	-	×	Wheel speed calculated by ABS actuator and electric unit (control unit). Signal input with CAN communication line.
VHCL/S SEN-RR [km/h] or [mph]	×	-	×	Wheel speed calculated by TCM. Signal input with CAN communication line.
ENGINE SPEED [rpm]	×	-	×	Engine speed calculated by ECM. Signal input with CAN communication line.
THRTL POS SEN [V]	×	-	×	Accelerator pedal position (APP) sensor signal voltage is displayed. Signal input with CAN communication line.
FLUID TEMP SE [V]	×	-	×	Transfer fluid temperature sensor signal voltage is displayed.
BATTERY VOLT [V]	×	-	×	Power supply voltage for transfer control unit.
2WD SWITCH [ON/OFF]	×	-	×	4WD shift switch status is displayed.
AUTO SWITCH [ON/OFF]	×	-	×	4WD shift switch status is displayed.
LOCK SWITCH [ON/OFF]	×	-	×	4WD shift switch status is displayed. (LOCK means 4H of 4WD shift switch.)
4L SW [ON/OFF]	×	-	×	4WD shift switch status is displayed. (4L means 4LO of 4WD shift switch.)
N POSI SW TF [ON/OFF]	×	-	×	Neutral-4LO switch signal status is displayed.
ATP SWITCH [ON/OFF]	×	-	×	ATP switch signal status is displayed.
WAIT DETCT SW [ON/OFF]	×	-	×	Wait detection switch status is displayed.
LINE PRES SW [ON/OFF]	×	-	×	Line pressure switch status is displayed.
CL PRES SW [ON / OFF]	×	-	×	Clutch pressure switch status is displayed.
N POSI SW AT [ON/OFF]	×	-	×	"N" position signal of A/T PNP switch status is displayed. Signal input with CAN communication line.
R POSI SW AT [ON/OFF]	×	-	×	"R" position signal of A/T PNP switch status is displayed. Signal input with CAN communication line.

TROUBLE DIAGNOSIS

[ATX14B]

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
P POSI SW AT [ON/OFF]	×	-	×	"P" position signal of A/T PNP switch status is displayed. Signal input with CAN communication line.
ABS OPER SW [ON/OFF]	×	-	×	ABS operation signal status is displayed. Signal input with CAN communication line.
VDC OPER SW [ON/OFF]	×	-	×	VDC operation signal status is displayed. Signal input with CAN communication line.
TCS OPER SW [ON/OFF]	×	-	×	TCS operation signal status is displayed. Signal input with CAN communication line.
THROTTLE POSI [0.0/8]	-	×	×	Thottle position status is displayed. Signal input with CAN communication line.
4WD MODE [AUTO/LOCK/2WD/4L]	-	×	×	Control status of 4WD recognized by transfer control unit. (AUTO, 4H, 2WD or 4LO)
VHCL/S COMP [km/h] or [mph]	-	×	×	Vehicle speed recognized by transfer control unit.
COMP CL TORQ [kgm]	-	×	×	Calculated torque recognized by transfer control unit.
DUTY SOLENOID [%]	-	×	×	Control value of clutch pressure solenoid.
2-4WD SOL [ON/OFF]	-	×	×	Output condition to 2-4WD solenoid.
2-4WD SOL MON [ON/OFF]	-	-	×	Check signal for transfer control unit signal output.
MOTOR RELAY [ON/OFF]	-	×	×	Transfer motor relay signal status is displayed.
MOTOR RELAY MON [ON/OFF]	-	-	×	Check signal for transfer control unit signal output.
4WD FAIL LAMP [ON/OFF]	-	×	×	Control status of 4WD warning lamp is displayed.
2WD IND [ON/OFF]	-	-	×	Control status of 4WD shift indicator lamp (2WD indicator lamp) is displayed.
AUTO IND [ON/OFF]	-	-	×	Control status of 4WD shift indicator lamp (2WD and AUTO indicator lamp) is displayed.
LOCK IND [ON/OFF]	-	-	×	Control status of 4WD shift indicator lamp (2WD, AUTO and Lock indicator) is displayed.
4L IND [ON/OFF]	-	-	×	Control status of 4LO indicator lamp is displayed.
ATP IND [ON/OFF]	-	-	×	Control status of ATP warning lamp is displayed.
SHIFT POS SW1 [ON/OFF]	×	-	×	Actuator position switch 1 (Low) signal status is displayed.
SHIFT POS SW2 [ON/OFF]	×	-	×	Actuator position switch 2 (high) signal status is displayed.
SHIFT ACT1 [ON/OFF]	-	×	×	Output condition to actuator motor (clockwise)
SHIFT AC MON1 [ON/OFF]	×	-	×	Check signal for transfer control unit signal output
SHIFT ACT2 [ON/OFF]	-	×	×	Output condition to actuator motor (counterclockwise)
SHIFT AC MON2 [ON/OFF]	×	-	×	Check signal for transfer control unit signal output

TROUBLE DIAGNOSIS

[ATX14B]

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
T/F F SPEED [km/h] or [mph]	×	–	×	Displayed, but do not use.
A/T R SPEED [km/h] or [mph]	×	–	×	Output shaft revolution signal (Revolution sensor) calculated by TCM. Signal input with CAN communication line.
AT GEAR POSI [1/2/3/4/5]	×	–	×	A/T actual gear position 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]	–	–	×	

WORK SUPPORT

When there is no problem with transfer and 4WD system, following symptom in “AUTO” mode may be claimed by a customer.

- Vibration when accelerating on a low μ road (snow-covered or icy road)
It is possible to deal with these symptoms by changing “CLUTCH FORCE RELEASE LIMIT VALUE”.
However, be careful when changing the values because it may adversely affect driving performance.

NOTE:

A slight shock is felt at a few hertz as if it were being pushed lightly from behind.

Operation Procedure

1. Perform “CONSULT-II SETTING PROCEDURE”. Refer to [TF-46, "CONSULT-II START PROCEDURE"](#) .
2. Touch “WORK SUPPORT”.
3. Select from “CLUTCH/F RLS LIM ADJ”, screen of data monitor mode is displayed.

Clutch Force Release Limit Adjustment

1. Initial CLUTCH FORCE RELEASE LIMIT value “0.3 kgm” appears under “CONDITION SETTING” on CONSULT-II display.

1.2 kg-m : Tight corner braking symptom is alleviated. However, vibration may occur when accelerating on a low μ road (icy road, etc.).

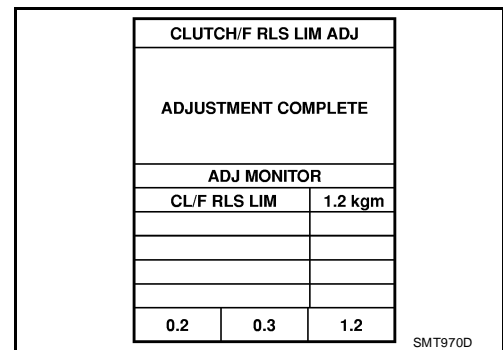
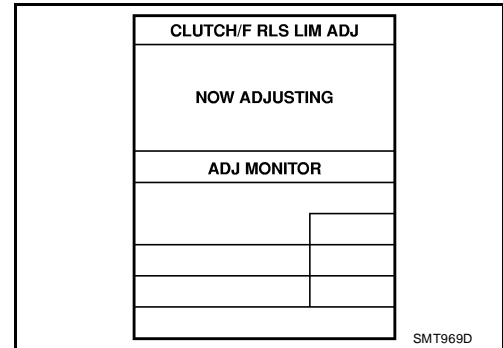
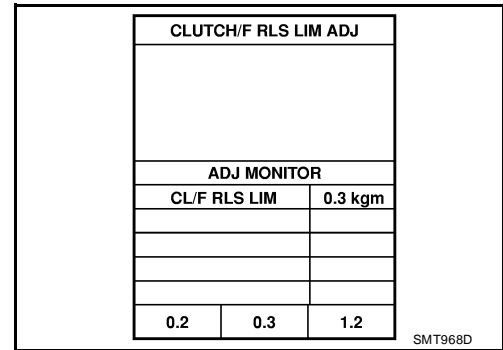
0.3 kg-m : Initial set value.

0.2 kg-m : Do not set to this value because the tight corner braking symptom will get worse.

2. Touch “1.2” on the display.

3. Display changes to “NOW ADJUSTING” in a short time.

4. When clutch force release limit value is set to “1.2 kgm”, current value “0.3 kgm” shown on display will be replaced by “1.2 kgm” and “ADJUSTMENT COMPLETE” will appear at the same time. Clutch force release limit value setting is now complete.



EDS0036D

Self-diagnostic Procedure

Ⓟ SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

Refer to [TF-47, "SELF-DIAG RESULT MODE"](#) .

ⓧ SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)

Description

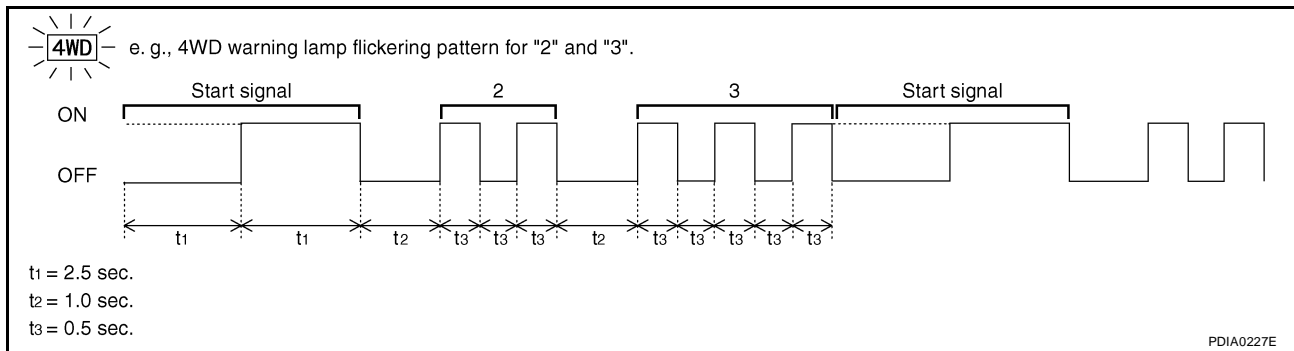
If the engine starts when there is something wrong with the 4WD system, the 4WD warning lamp turns ON or flickers in the combination meter. When the system functions properly, the warning lamp turns ON when the ignition switch is turned to “ON”, and it turns OFF after engine starts. To locate the cause of a problem, start the self-diagnosis function. The 4WD warning lamp in the combination meter will indicate the problem area by flickering according to the self-diagnostic results. As for the details of the 4WD warning lamp flickering patterns, refer to [TF-53, "Diagnostic Procedure"](#) .

Diagnostic Procedure

1. Warn up engine.
2. Move A/T selector lever to "P" position.
3. Turn 4WD shift switch to "2WD" position.
4. Turn ignition switch "ON" and "OFF" at least twice, and then turn ignition switch "OFF".
5. Turn 4WD shift switch to "AUTO" position.
6. Turn ignition switch "ON". (Do not start engine.)
7. 4WD warning lamp ON.
If 4WD warning lamp does not turn ON, refer to [TF-121, "4WD Warning Lamp Does Not Turn ON"](#).
8. Move A/T selector lever to "R" position.
9. Turn 4WD shift switch to "2WD", "AUTO" and "2WD" in order.
10. Move A/T selector lever to "D" position.
11. Turn 4WD shift switch to "4H", "AUTO" and "4H" in order.
12. Move A/T selector lever to "N" position.
13. Turn 4WD shift switch to "AUTO" position.
14. Move A/T selector lever to "P" position.
15. Read the flickering of 4WD warning lamp.
Refer to [TF-53, "Judgement Self-diagnosis"](#).

Judgement Self-diagnosis

When a malfunction is detected, the malfunction route is indicated by flickering of the 4WD warning lamp.



Flickering pattern or flickering condition	Items	Malfunction	Check items
2	Output shaft revolution signal (from TCM)	<ul style="list-style-type: none"> ● Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication. ● Improper signal is input while driving. 	TF-60, "Output Shaft Revolution Signal (TCM)"
3	Clutch pressure solenoid signal	Proper voltage is not applied to clutch pressure solenoid valve due to open or short circuit.	TF-87, "Clutch Pressure Solenoid"
4	2-4WD solenoid signal	Proper voltage is not applied to 2-4WD solenoid valve due to open or short circuit.	TF-92, "2-4WD Solenoid"
5	Transfer motor	Transfer motor does not operate properly due to open or short circuit in transfer motor or transfer motor relay.	TF-96, "Transfer Motor"
6	Vehicle speed signal (from ABS)	<ul style="list-style-type: none"> ● Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. ● Improper signal is input while driving. 	TF-60, "Vehicle Speed Sensor (ABS)"
7	CAN communication	Malfunction has been detected from CAN communication line.	TF-114, "CAN Communication Line"
8	AD converter	AD converter system of transfer control unit is malfunctioning.	TF-56, "Power Supply Circuit For Transfer Control Unit"

TROUBLE DIAGNOSIS

[ATX14B]

Flickering pattern or flickering condition	Items	Malfunction	Check items
9	Transfer fluid temperature	Signal voltage from transfer fluid temperature sensor is abnormally high (Transfer fluid temperature is abnormally low) while driving.	TF-103, "Transfer Fluid Temperature"
10	Neutral-4LO switch	Improper signal from neutral-4LO switch is input due to open or short circuit.	TF-61, "Neutral-4LO Switch"
11	Clutch pressure switch	<ul style="list-style-type: none"> ● Improper signal is input due to open or short circuit. ● Malfunction occurs in clutch pressure switch or hydraulic circuit. 	TF-106, "Clutch Pressure Switch"
12	Line pressure switch	<ul style="list-style-type: none"> ● Improper signal is input due to open or short circuit. ● Malfunction occurs in line pressure switch or hydraulic circuit. 	TF-109, "Line Pressure Switch"
13	Engine speed signal (from ECM)	<ul style="list-style-type: none"> ● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input while driving. 	TF-87, "Engine Speed Signal (ECM)"
14	Accelerator pedal position sensor (from ECM)	<ul style="list-style-type: none"> ● Malfunction is detected in accelerator pedal position signal that is output from ECM through CAN communication. ● Signal voltage from accelerator pedal position sensor is abnormally high or low. 	ACC-3, "ACCELERATOR CONTROL SYSTEM"
15	Power supply	Power supply voltage for transfer control unit is abnormally low while driving.	TF-56, "Power Supply Circuit For Transfer Control Unit"
16	4WD shift switch	More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch.	TF-64, "4WD Shift Switch"
17	ABS operation signal (from ABS)	Malfunction is detected in ABS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-112, "ABS Operation Signal (ABS)"
18	Wait detection switch	Improper signal from wait detection switch is input due to open or short circuit.	TF-68, "Wait Detection Switch"
19	Actuator motor	<ul style="list-style-type: none"> ● Motor does not operate properly due to open or short circuit in actuator motor. ● Malfunction is detected in the actuator motor. (When 4WD shift switch is operated and actuator motor is not operated) ● Malfunction is detected in transfer shift high relay and transfer shift low relay. 	TF-72, "Actuator Motor" , TF-56, "Power Supply Circuit For Transfer Control Unit"
20	Actuator position switch	<ul style="list-style-type: none"> ● Improper signal from actuator position switch is input due to open or short circuit. ● Malfunction is detected in the actuator position switch. 	TF-79, "Actuator Position Switch"
21	Actuator circuit	<ul style="list-style-type: none"> ● Transfer control device actuator circuit is shorted or open. (Malfunctions are detected when motor relay circuit is open/shorted or relay transfer shift circuit is open/shorted.) ● Malfunction occurs in transfer control device drive circuit. 	TF-83, "Transfer Control Device"
		Malfunction is detected in transfer shut off relay.	TF-56, "Power Supply Circuit For Transfer Control Unit"
22	VDC operation signal (from VDC)	Malfunction is detected in VDC operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-113, "VDC Operation Signal (ABS)"
23	TCS operation signal (from TCS)	Malfunction is detected in TCS operation signal that is output from ABS actuator and electric unit (control unit) through CAN communication.	TF-113, "TCS Operation Signal (ABS)"

TROUBLE DIAGNOSIS

[ATX14B]

Flickering pattern or flickering condition	Items	Malfunction	Check items
24	PNP switch signal (from TCM)	When A/T PNP switch signal is malfunction or communication error between the vehicles.	TF-71, "PNP Switch Signal (TCM)"
Repeats flickering every 2 to 5 sec.	—	Circuits that the self-diagnosis covers have no malfunction.	—
Repeats flickering every 0.25 sec.	Data erase display	<ul style="list-style-type: none"> ● Power supply failure of memory back-up. ● Battery performance is poor. 	TF-56, "Power Supply Circuit For Transfer Control Unit"
No flickering	PNP switch or 4WD shift switch	PNP switch or 4WD shift switch circuit is shorted or open.	TF-71, "PNP Switch Signal (TCM)" , TF-64, "4WD Shift Switch"

CAUTION:

- If “CAN communication” is displayed with other DTCs, first perform the trouble diagnosis for CAN communication line.
- If “ABS operation signal”, “VDC operation signal” or “TCS operation signal” is displayed, first perform the trouble diagnosis for ABS system.
- If “Output shaft revolution signal” is displayed, first perform the trouble diagnosis for A/T system.

NOTE:

- If "actuator position switch" or "actuator circuit" is displayed, first erase self-diagnostic results. ("Actuator position switch" or "actuator circuit" may be displayed after installing transfer control unit or transfer assembly.)
- If "clutch pressure switch" or "line pressure switch" is displayed only while driving in reverse, check the continuity of "R" position on A/T PNP switch. When there is nothing wrong with the electrical system, check the hydraulic system.

ERASE SELF-DIAGNOSIS

- In order to make it easier to find the cause of hard-to-duplicate malfunctions, malfunction information is stored into the control unit as necessary during use by the user. This memory is not erased no matter how many times the ignition switch is turned ON and OFF.
- However, this information is erased by turning ignition switch “OFF” after performing self-diagnostics or by erasing the memory using the CONSULT-II.

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Power Supply Circuit For Transfer Control Unit CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

EDS0036E

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
BATTERY VOLT [V]	Power supply voltage for transfer control unit	Ignition switch: ON	Battery voltage

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
3	B	Ground	Always	0V
6	B	Ground	Always	0V
16	Y	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V
22	GR	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V
29	W/G	Ignition switch monitor	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0V
30	V	Shut off relay	Ignition switch: ON	0V
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	Battery voltage
45	B	Ground	Always	0V
47	R	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	Battery voltage

CAUTION:

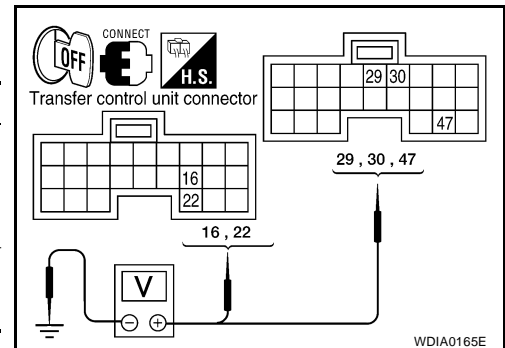
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

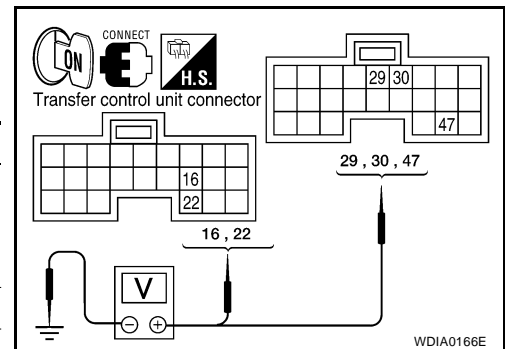
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	0V
	22 - Ground	
M153	29 - Ground	Battery voltage
	30 - Ground	
	47 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	Battery voltage
	22 - Ground	
M153	29 - Ground	0V
	30 - Ground	
	47 - Ground	



OK or NG

OK >> GO TO 2.

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

- 10A fuses [No. 21 located in fuse block (J/B) and No. 59 located in the fuse and relay box. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer control unit harness connector M153 terminals 47.
- Harness for short or open between ignition switch and transfer control unit harness connector M153 terminal 29.
- Harness for short or open between battery and transfer shut off relay harness connector E155 terminal 1 and 3.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 2 and transfer control unit harness connector M153 terminal 30.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 5 and transfer control unit harness connector M152 terminals 16 and 22.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay. Refer to [TF-59, "COMPONENT INSPECTION"](#) .

2. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 3, 6, M153 terminal 45 and ground.

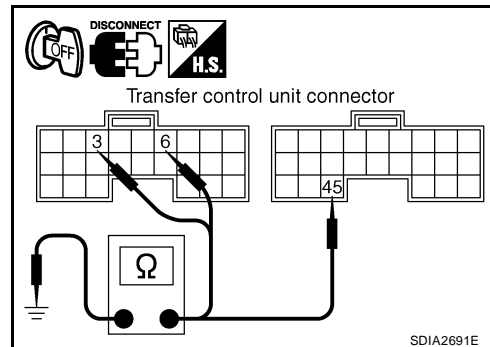
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 3.

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



3. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 4.

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

4. CHECK DTC

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

OK or NG

OK >> Inspection End.

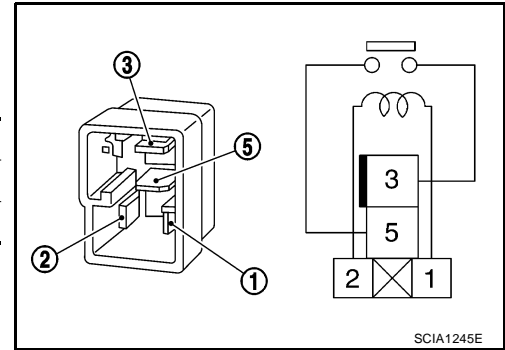
NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#).

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shut off relay. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Apply 12V direct current between transfer shut off relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
OFF	No

5. If NG, replace the transfer shut off relay.



**Transfer Control Unit
DIAGNOSTIC PROCEDURE**

1. INSPECTION START

Do you have CONSULT-II?

YES or NO

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

2. PERFORM SELF-DIAGNOSIS (WITH CONSULT-II)

With CONSULT-II

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

Is the "CONTROL UNIT 1 [P1802]", "CONTROL UNIT 2 [P1803]", "CONTROL UNIT 3 [P1804]" or "CONTROL UNIT 4 [P1809]" displayed?

- YES >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .
- NO >> Inspection End.

3. PERFORM SELF-DIAGNOSIS (WITHOUT CONSULT-II)

Without CONSULT-II

1. Perform the self-diagnosis and then erase self-diagnostic results. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-55, "ERASE SELF-DIAGNOSIS"](#) .
2. Perform the self-diagnosis again.

Do the self-diagnostic results indicate AD converter?

- YES >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .
- NO >> Inspection End.

Output Shaft Revolution Signal (TCM)**DIAGNOSTIC PROCEDURE****1. CHECK DTC WITH TCM**

Perform self-diagnosis with TCM. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 3.

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

3. CHECK DTC

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

OK or NG

OK >> Inspection End.

NG >> Perform self-diagnosis with TCM again. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Vehicle Speed Sensor (ABS)**DIAGNOSTIC PROCEDURE****1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)**

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#) .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 3.

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

3. CHECK DTC

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

OK or NG

OK >> Inspection End.

NG >> Perform self-diagnosis with ABS actuator and electric unit (control unit) again. Refer to [BRC-29, "SELF-DIAGNOSIS"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS00361

Neutral-4LO Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value	
N POSI SW TF [ON/OFF]	Condition of neutral-4LO switch	4WD shift switch: 2WD, AUTO or 4H	OFF	
		<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO (While actuator motor is operating.)	OFF → ON
		4WD shift switch: 4LO to 4H (While actuator motor is operating.)	ON → OFF	
		4WD shift switch: 4LO	ON	

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
25	Y	Neutral-4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	Battery voltage
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	Battery voltage → 0V	
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	0V → Battery voltage	
			4WD shift switch: 4LO	0V	

CAUTION:

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

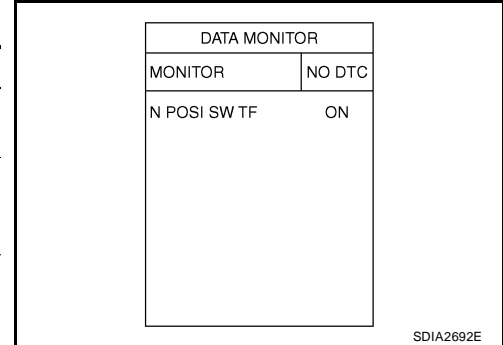
DIAGNOSTIC PROCEDURE

1. CHECK 4LO POSITION SWITCH SIGNAL

④ With CONSULT-II

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

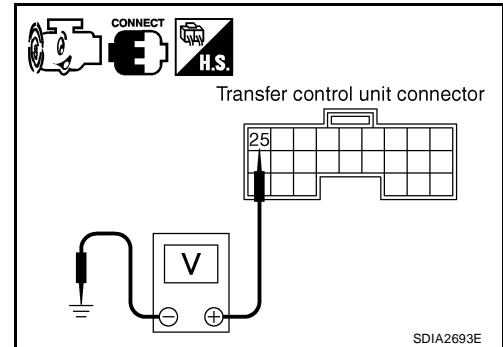
	Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	OFF
	4WD shift switch: 4H to 4LO (While actuator motor is operating.)	OFF → ON
	4WD shift switch: 4LO to 4H (While actuator motor is operating.)	ON → OFF
	4WD shift switch: 4LO	ON



⊗ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)	
M153	25 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	Battery voltage
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	Battery voltage → 0V
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	0V → Battery voltage
			4WD shift switch: 4LO	0V



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND NEUTRAL-4LO SWITCH

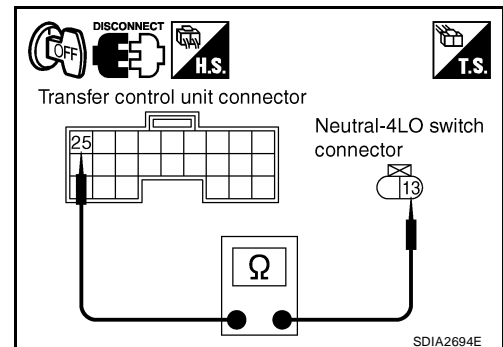
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the neutral-4LO switch harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 25 and neutral-4LO switch harness connector F60 terminal 13.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

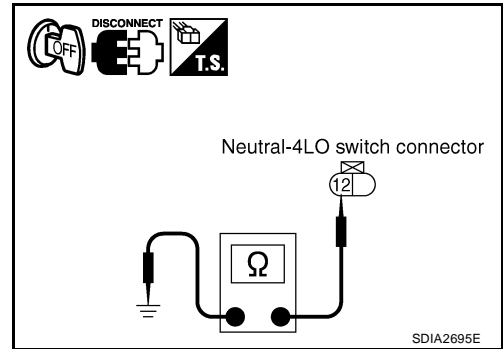
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect neutral-4LO switch harness connector.
3. Check continuity between neutral-4LO switch harness connector F60 terminal 12 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
- NG >> Repair open circuit or short to power in harness or connectors.



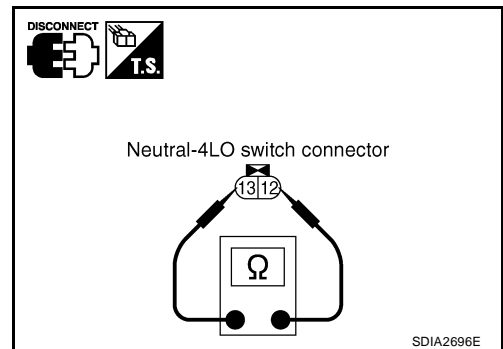
4. CHECK 4LO SWITCH

1. Turn ignition switch "OFF".
2. Disconnect neutral-4LO switch harness connector.
3. Remove neutral-4LO switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
4. Push and release neutral-4LO switch and check continuity between neutral-4LO switch terminals 12 and 13.

Terminal	Condition	Continuity
12 - 13	Push neutral-4LO switch	Yes
	Release neutral-4LO switch	No

OK or NG

- OK >> GO TO 5.
- NG >> Replace neutral-4LO switch. Refer to [TF-24, "Location of Electrical Parts"](#) .



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

OK or NG

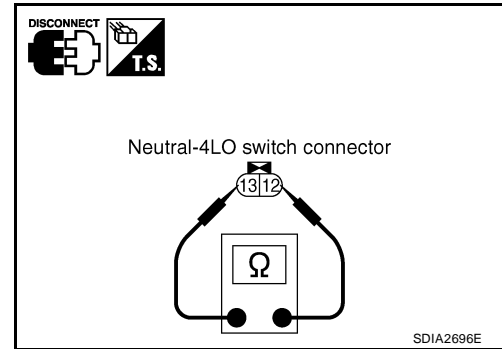
- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect neutral-4LO switch harness connector.
3. Remove neutral-4LO switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
4. Push and release neutral-4LO switch and check continuity between neutral-4LO switch terminals 12 and 13.

Terminal	Condition	Continuity
12 - 13	Push neutral-4LO switch	Yes
	Release neutral-4LO switch	No

5. If NG, replace the neutral-4LO switch. Refer to [TF-24, "Location of Electrical Parts"](#) .



4WD Shift Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

EDS0036J

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value	
2WD SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 2WD	ON	
		4WD shift switch: AUTO, 4H or 4LO	OFF	
AUTO SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: AUTO	ON	
		4WD shift switch: 2WD, 4H or 4LO	OFF	
LOCK SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4H	ON	
		4WD shift switch: 2WD, AUTO or 4LO	OFF	
4L SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4LO	ON	
		4WD shift switch: 2WD, AUTO or 4H	OFF	
4WD MODE [AUTO/LOCK/2WD/4L]	Control status of 4WD (Output condition of 4WD shift indicator lamp and 4LO indicator lamp)	● Vehicle stopped	4WD shift switch: 2WD	2WD
		● Engine running	4WD shift switch: AUTO	AUTO
		● A/T selector lever "N" position	4WD shift switch: 4H	LOCK
		● Brake pedal depressed	4WD shift switch: 4LO	4L

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
9	G	4WD shift switch (2WD)	Ignition switch: ON	4WD shift switch: 2WD	Battery voltage
				4WD shift switch: AUTO, 4H or 4LO	0V
18	O	4WD shift switch (4H)	Ignition switch: ON	4WD shift switch: 4H	Battery voltage
				4WD shift switch: 2WD, AUTO or 4LO	0V
23	W	4WD shift switch (4LO)	Ignition switch: ON	4WD shift switch: 4LO	Battery voltage
				4WD shift switch: 2WD, AUTO or 4H	0V
24	LG	4WD shift switch (AUTO)	Ignition switch: ON	4WD shift switch: AUTO	Battery voltage
				4WD shift switch: 2WD, 4H or 4LO	0V

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK 4WD SHIFT SWITCH SIGNAL

 With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out ON/OFF switching action of the "2WD SWITCH", "AUTO SWITCH", "LOCK SWITCH" and "4L SWITCH" while operating 4WD shift switch.

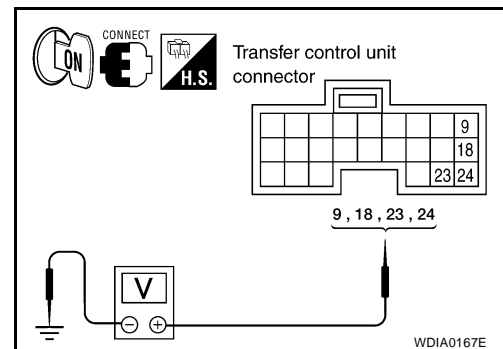
DATA MONITOR	
MONITOR	NO DTC
2WD SWITCH	OFF
AUTO SWITCH	ON
LOCK SWITCH	OFF
4L SWITCH	OFF

SDIA2697E

 Without CONSULT-II

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

Connector	Terminal	Condition	Voltage (Approx.)
M152	9 - ground	4WD shift switch: 2WD	Battery voltage
		4WD shift switch: AUTO, 4H or 4LO	0V
	18 - ground	4WD shift switch: 4H	Battery voltage
		4WD shift switch: 2WD, AUTO or 4LO	0V
	23 - ground	4WD shift switch: 4LO	Battery voltage
		4WD shift switch: 2WD, AUTO or 4H	0V
24 - ground	4WD shift switch: AUTO	Battery voltage	
	4WD shift switch: 2WD, 4H or 4LO	0V	



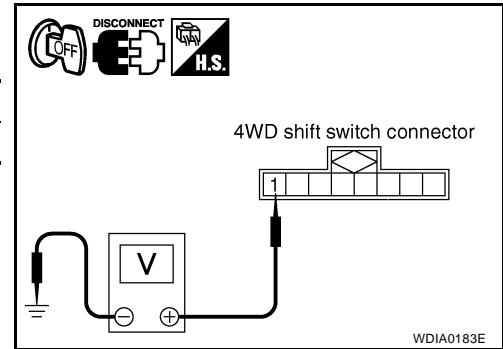
OK or NG

- OK >> GO TO 5.
 NG >> GO TO 2.

2. CHECK 4WD SHIFT SWITCH POWER SUPPLY CIRCUIT

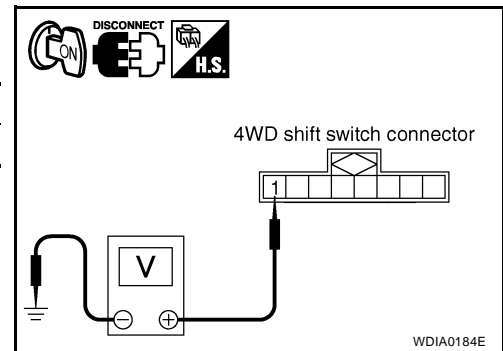
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector.
3. Check voltage between 4WD shift switch harness connector terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
M141	1 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between 4WD shift switch harness connector terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
M141	1 - Ground	Battery voltage



OK or NG

OK >> GO TO 3.

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

- Harness for short or open between transfer shut off relay harness connector E155 terminal 5.
- Power supply circuit for transfer control unit. Refer to [TF-56, "Power Supply Circuit For Transfer Control Unit"](#).

3. CHECK HARNESS BETWEEN 4WD SHIFT SWITCH AND TRANSFER CONTROL UNIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the 4WD shift switch harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 9 and 4WD shift switch harness connector M141 terminal 2.
 - Transfer control unit harness connector M152 terminal 18 and 4WD shift switch harness connector M141 terminal 5.
 - Transfer control unit harness connector M152 terminal 23 and 4WD shift switch harness connector M141 terminal 6.
 - Transfer control unit harness connector M152 terminal 24 and 4WD shift switch harness connector M141 terminal 3.

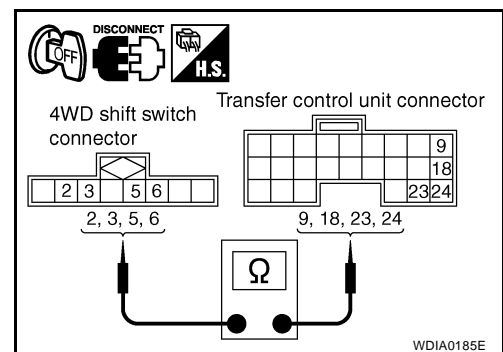
Continuity should exist.

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

OK or NG

OK >> GO TO 4.

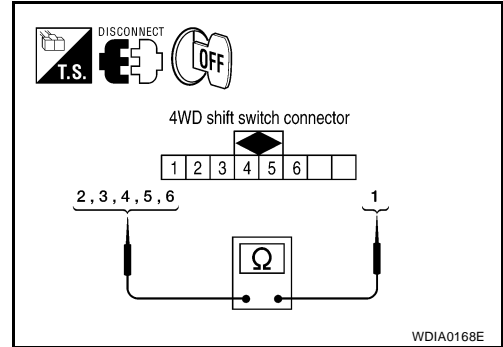
NG >> Repair or replace damaged parts.



4. CHECK 4WD SHIFT SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector.
3. Operate 4WD shift switch and check continuity between 4WD shift switch terminals.

Connector	Terminal	Condition	Continuity
M141	1 - 2	4WD shift switch: 2WD	Yes
		4WD shift switch: AUTO, 4H and 4LO	No
	1 - 3	4WD shift switch: AUTO	Yes
		4WD shift switch: 2WD, 4H and 4LO	No
	1 - 4	4WD shift switch: 2WD	No
		4WD shift switch: AUTO, 4H and 4LO	Yes
	1 - 5	4WD shift switch: 4H	Yes
		4WD shift switch: 2WD, AUTO, and 4LO	No
	1 - 6	4WD shift switch: 4LO	Yes
		4WD shift switch: 2WD, AUTO and 4H	No



OK or NG

- OK >> GO TO 5.
- NG >> Replace 4WD shift switch.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

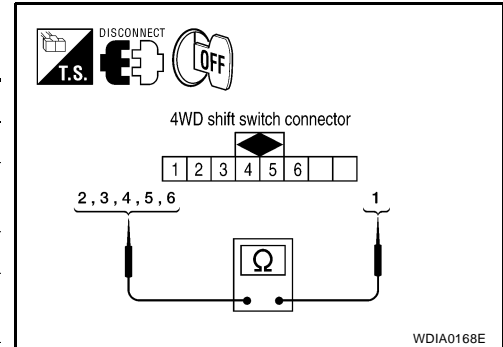
OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector.
3. Operate 4WD shift switch and check continuity between 4WD shift switch terminals.

Connector	Terminal	Condition	Continuity
M141	1 - 2	4WD shift switch: 2WD	Yes
		4WD shift switch: AUTO, 4H and 4LO	No
	1 - 3	4WD shift switch: AUTO	Yes
		4WD shift switch: 2WD, 4H and 4LO	No
	1 - 4	4WD shift switch: 2WD	No
		4WD shift switch: AUTO, 4H and 4LO	Yes
	1 - 5	4WD shift switch: 4H	Yes
		4WD shift switch: 2WD, AUTO, and 4LO	No
	1 - 6	4WD shift switch: 4LO	Yes
		4WD shift switch: 2WD, AUTO and 4H	No



4. If NG, replace the 4WD shift switch.

Wait Detection Switch

EDS0036K

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
WAIT DETCT SW [ON/OFF]	Condition of wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H OFF
		4WD shift switch: 4H to 4LO (While actuator motor is operating.) OFF → ON	
		4WD shift switch: 4LO to 4H (While actuator motor is operating.) ON → OFF	
		4WD shift switch: 4LO ON	

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
43	O	Wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H Battery voltage
			4WD shift switch: 4H to 4LO (While actuator motor is operating.) Battery voltage → 0V	
			4WD shift switch: 4LO to 4H (While actuator motor is operating.) 0V → Battery voltage	
			4WD shift switch: 4LO 0V	

CAUTION:

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

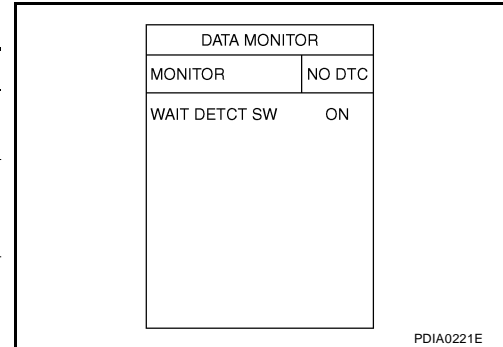
DIAGNOSTIC PROCEDURE

1. CHECK WAIT DETECTION SWITCH SIGNAL

With CONSULT-II

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

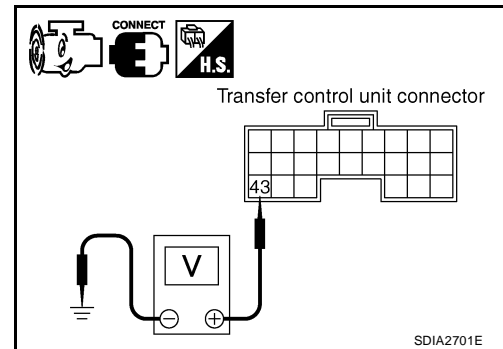
	Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	OFF
	4WD shift switch: 4H to 4LO (While actuator motor is operating.)	OFF → ON
	4WD shift switch: 4LO to 4H (While actuator motor is operating.)	ON → OFF
	4WD shift switch: 4LO	ON



Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)	
M153	43 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H	Battery voltage
			4WD shift switch: 4H to 4LO (While actuator motor is operating.)	Battery voltage → 0V
			4WD shift switch: 4LO to 4H (While actuator motor is operating.)	0V → Battery voltage
			4WD shift switch: 4LO	0V



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND WAIT DETECTION SWITCH

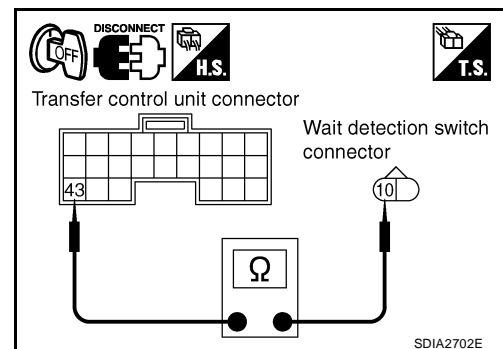
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the wait detection switch harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 43 and wait detection switch harness connector F59 terminal 10.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Check continuity between wait detection switch harness connector F59 terminal 11 and ground.

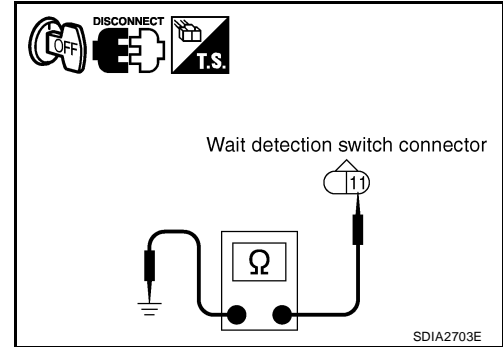
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 4.

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



4. CHECK WAIT DETECTION SWITCH

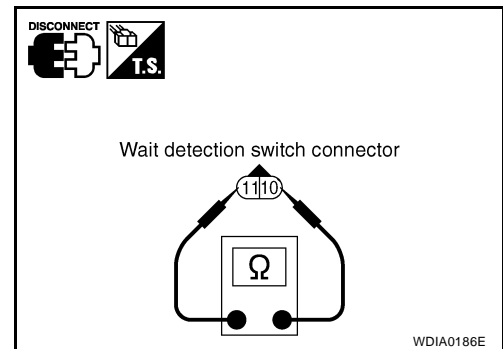
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Remove wait detection switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
4. Push and release wait detection switch and check continuity between wait detection switch terminals 10 and 11.

Terminal	Condition	Continuity
10 - 11	Push wait detection switch	Yes
	Release wait detection switch	No

OK or NG

OK >> GO TO 5.

NG >> Replace wait detection switch. Refer to [TF-24, "Location of Electrical Parts"](#) .



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 6.

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

6. CHECK DTC

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

OK or NG

OK >> Inspection End.

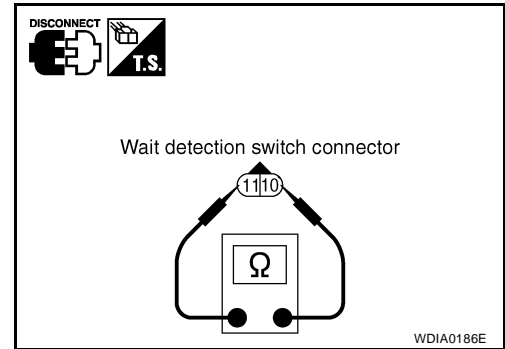
NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Remove wait detection switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
4. Push and release wait detection switch and check continuity between wait detection switch terminals 10 and 11.

Terminal	Condition	Continuity
10 - 11	Push wait detection switch	Yes
	Release wait detection switch	No

5. If NG, replace the wait detection switch. Refer to [TF-24, "Location of Electrical Parts"](#) .



EDS0036L

PNP Switch Signal (TCM) DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH TCM

Perform self-diagnosis with TCM. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .
Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with TCM again. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS0036M

Actuator Motor

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value	
SHIFT ACT1 [ON/OFF]	Output condition to actuator motor (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	ON
			Except the above	OFF
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	ON
			Except the above	OFF
SHIFT ACT2 [ON/OFF]	Output condition to actuator motor (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	ON
			Except the above	OFF
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	ON
			Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
4	SB	Transfer shift high relay	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
				Except the above	0V
13	G	Transfer shift low relay	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	Battery voltage
				Except the above	0V
33	GR	Transfer shift high relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
				Except the above	0V
42	Y	Transfer shift low relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	Battery voltage
				Except the above	0V

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK ACTUATOR MOTOR SIGNAL

☑ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out the value of "SHIFT ACT1", "SHIFT AC MON1", "SHIFT ACT2" and "SHIFT AC MON2".

DATA MONITOR	
MONITOR	NO DTC
SHIFT ACT1	OFF
SHIFT AC MON1	OFF
SHIFT ACT2	OFF
SHIFT AC MON2	OFF

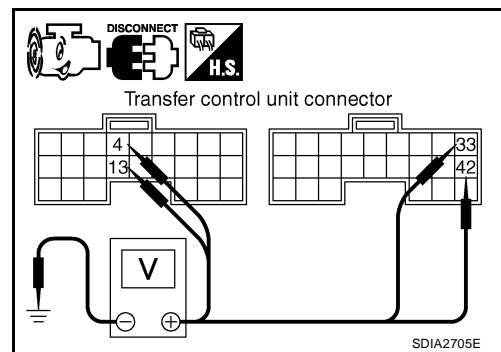
PDIA0223E

Monitored item	Condition	Display value
SHIFT ACT1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4H to 4LO ("Wait" function is operating.) ON
	<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above OFF
SHIFT AC MON1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4H to 4LO ("Wait" function is operating.) ON
	<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above OFF
SHIFT ACT2	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4LO to 4H ("Wait" function is operating.) ON
	<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above OFF
SHIFT AC MON2	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4LO to 4H ("Wait" function is operating.) ON
	<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above OFF

☒ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	4 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4H to 4LO ("Wait" function is operating.) Battery voltage
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above 0V
	13 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4LO to 4H ("Wait" function is operating.) Battery voltage
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above 0V



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

Connector	Terminal	Condition		Voltage (Approx.)
M153	33 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above	0V
	42 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	Battery voltage
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above	0V

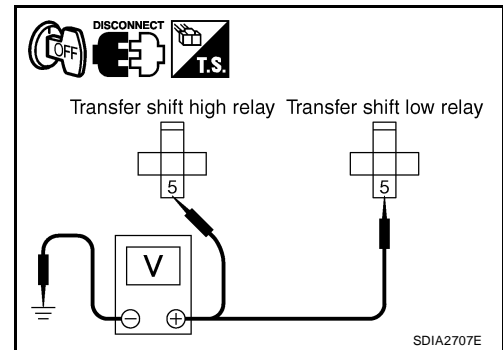
OK or NG

- OK >> GO TO 7.
- NG >> GO TO 2.

2. CHECK ACTUATOR MOTOR POWER SUPPLY CIRCUIT

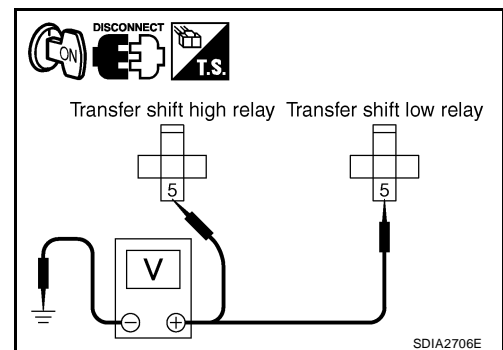
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay.
3. Check voltage between transfer shift high relay harness connector E46 terminal 5, transfer shift low relay harness connector E47 terminal 5 and ground.

Connector	Terminal	Voltage (Approx.)
E46	5 - Ground	Battery voltage
E47	5 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer shift high relay harness connector E46 terminal 5, transfer shift low relay harness connector E47 terminal 5 and ground.

Connector	Terminal	Voltage (Approx.)
E46	5 - Ground	Battery voltage
E47	5 - Ground	



OK or NG

- OK >> GO TO 3.
- NG >> Check the following. If any items are damaged, repair or replace damaged parts.
 - 20A fuse [No. 58, located in the fuse block (J/B)]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
 - Harness for short or open between battery, transfer shift high harness connector terminal 5 and transfer shift low harness connector terminal 5.

3. CHECK ACTUATOR MOTOR GROUND CIRCUIT

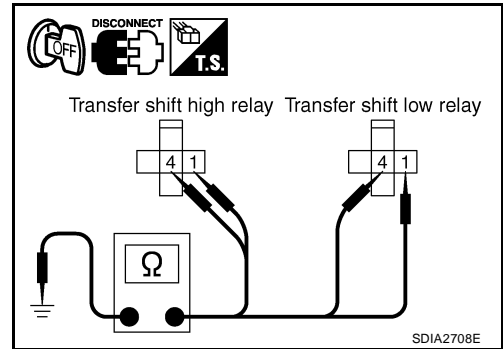
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-24, "Location of Electrical Parts"](#).
3. Check continuity between transfer shift high relay harness connector E46 terminals 1 and 4, and transfer shift low relay harness connector E47 terminals 1 and 4 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
- NG >> Repair open circuit or short to power in harness or connectors.



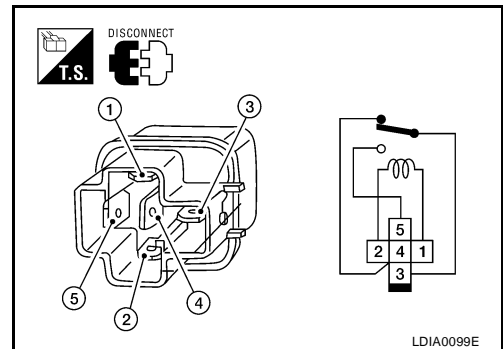
4. CHECK TRANSFER SHIFT RELAYS

1. Turn ignition switch "OFF".
2. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-24, "Location of Electrical Parts"](#).
3. Apply 12V direct current between transfer shift relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 4, 3 and 5.

Terminal	Condition	Continuity
3 - 4	12V direct current supply between terminals 1 and 2	No
	OFF	Yes
3 - 5	12V direct current supply between terminals 1 and 2	Yes
	OFF	No

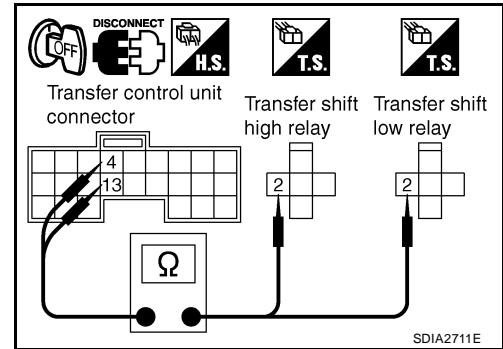
OK or NG

- OK >> GO TO 5.
- NG >> Replace the transfer shut off relay. Refer to [TF-24, "Location of Electrical Parts"](#).



5. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER SHIFT RELAY

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer control device (actuator motor) harness connector.
3. Remove transfer shift high relay and transfer shift low relay.
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 4 and transfer shift high relay harness connector E46 terminal 2.
 - Transfer control unit harness connector M152 terminal 13 and transfer shift low relay harness connector E47 terminal 2.



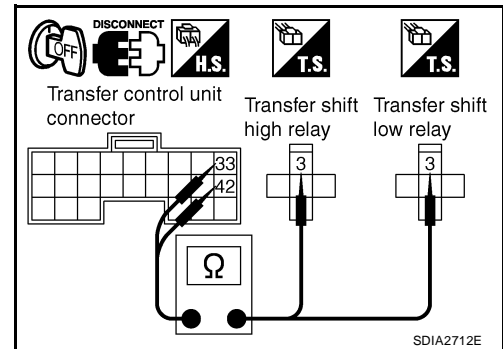
- Transfer control unit harness connector M153 terminal 33 and transfer shift high relay harness connector E46 terminal 3.
- Transfer control unit harness connector M153 terminal 42 and transfer shift low relay harness connector E47 terminal 3.

Continuity should exist.

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

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.



6. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND ACTUATOR MOTOR

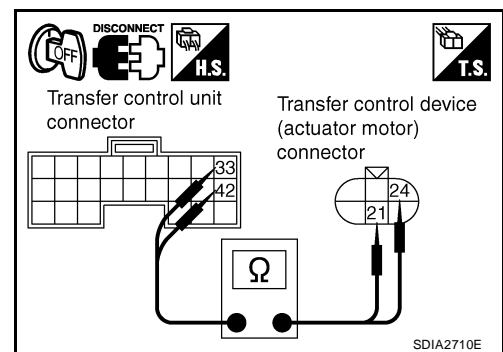
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer control device (actuator motor) harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 33 and transfer control device (actuator motor) harness connector F58 terminal 21.
 - Transfer control unit harness connector M153 terminal 42 and transfer control device (actuator motor) harness connector F58 terminal 24.

Continuity should exist.

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

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.



7. CHECK ACTUATOR MOTOR

1. Remove transfer control device. Refer to [TF-138, "Removal and Installation"](#) .
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 21 and 24.

CAUTION:

- Do not operate actuator motor for more than 1 second.
- Change the actuator motor position to "HIGH" when installing.
- Be careful not to overheat the harness.

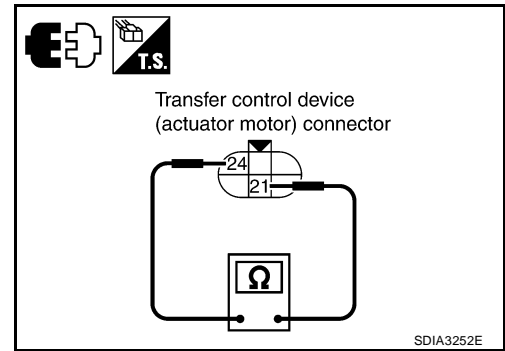
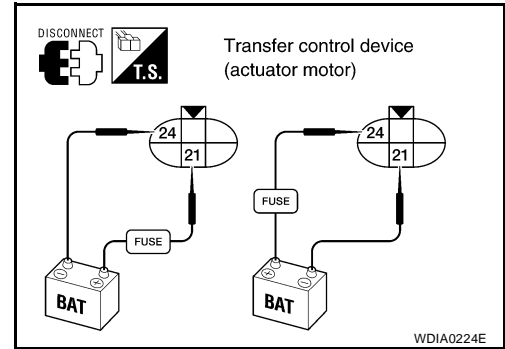
Terminal	Actuator motor
21 (Battery voltage) - 24 (Ground)	Clockwise rotate
24 (Battery voltage) - 21 (Ground)	Counterclockwise rotate

3. Check resistance between transfer control device (actuator motor) terminals 21 and 24.

21 - 24 : Approx. 0.2 Ω

OK or NG

- OK >> GO TO 8.
- NG >> Replace transfer control device (actuator motor). Refer to [TF-138, "Removal and Installation"](#) .



8. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 9.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

9. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .

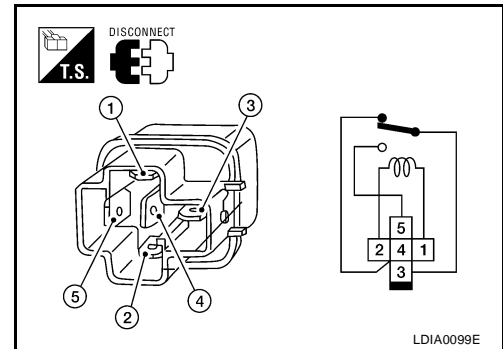
COMPONENT INSPECTION

Transfer Shift Relay

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Apply 12V direct current between transfer shift relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 4, 3 and 5.

Terminal	Condition	Continuity
3 - 4	12V direct current supply between terminals 1 and 2	Yes
	OFF	No
3 - 5	12V direct current supply between terminals 1 and 2	Yes
	OFF	No

5. If NG, replace transfer shift relay.



Transfer Control Device

1. Remove transfer control device. Refer to [TF-138, "Removal and Installation"](#) .
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 21 and 24.

CAUTION:

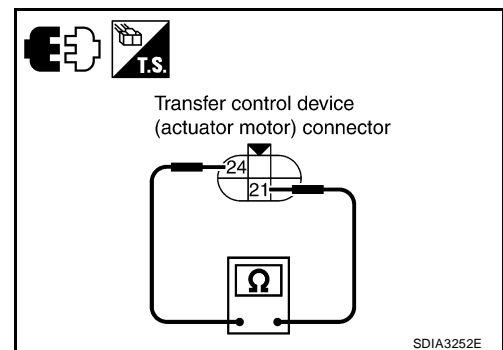
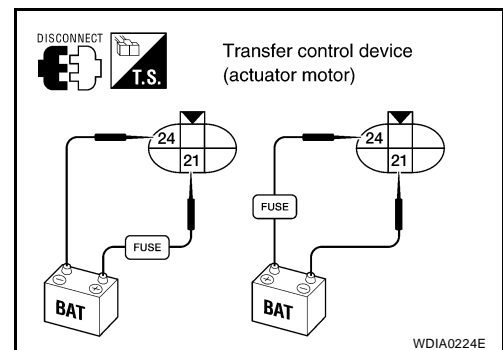
- Do not operate actuator motor for more than 1 second.
- Change the actuator motor position to "HIGH" when installing.
- Be careful not to overheat the harness.

Terminal	Actuator motor
21 (Battery voltage) - 24 (Ground)	Clockwise rotate
24 (Battery voltage) - 21 (Ground)	Counterclockwise rotate

3. Check resistance between transfer control device (actuator motor) terminals 21 and 24.

21 - 24 : Approx. 0.2 Ω

4. If NG, replace transfer control device (actuator motor). Refer to [TF-138, "Removal and Installation"](#) .



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS0036N

Actuator Position Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
SHIFT POS SW1 [ON/OFF]	Condition of actuator position switch 1 (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO ON
			4WD shift switch: 2WD, AUTO or 4H OFF
SHIFT POS SW2 [ON/OFF]	Condition of actuator position switch 2 (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H, AUTO or 2WD ON
			4WD shift switch: 4LO OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
27	W	Actuator position switch 2 (High)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H, AUTO or 2WD 0V
				4WD shift switch: 4LO Battery voltage
44	LG	Actuator position switch 1 (Low)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO 0V
				4WD shift switch: 2WD, AUTO or 4H Battery voltage

CAUTION:

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

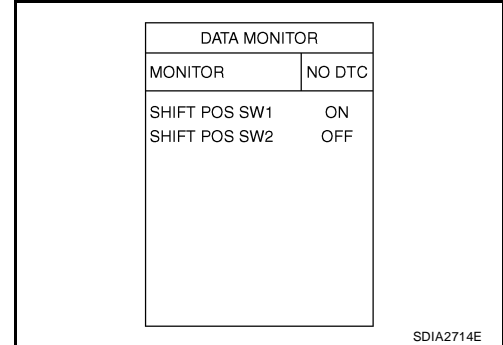
DIAGNOSTIC PROCEDURE

1. CHECK ACTUATOR POSITION SWITCH SIGNAL

④ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out the value of "SHIFT POS SW1" and "SHIFT POS SW2".

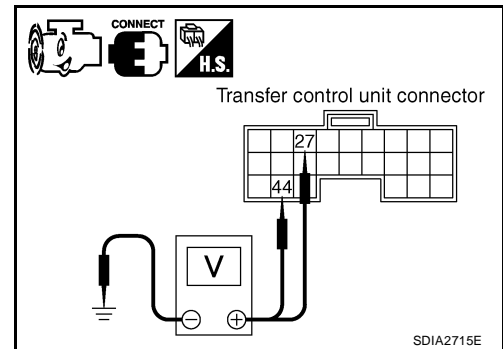
Monitored item	Condition	Display value
SHIFT POS SW1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 4LO ON
	<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H OFF
SHIFT POS SW2	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 4H, AUTO or 2WD ON
	<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO OFF



⊗ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M153	27 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 4H, AUTO or 2WD 0V
		<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO Battery voltage
	44 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 4LO 0V
		<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, AUTO or 4H Battery voltage



OK or NG

- OK >> GO TO 5.
 NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND ACTUATOR POSITION SWITCH

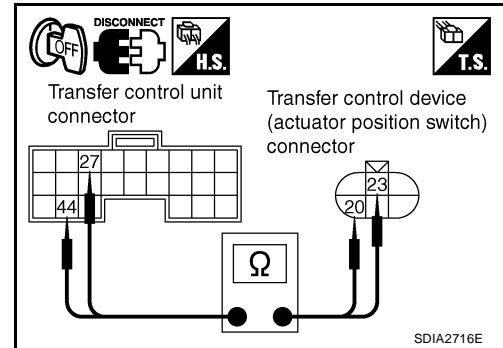
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer control device (actuator position switch) harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 27 and transfer control device (actuator position switch) harness connector F58 terminal 23.
 - Transfer control unit harness connector M153 terminal 44 and transfer control device (actuator position switch) harness connector F58 terminal 20.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

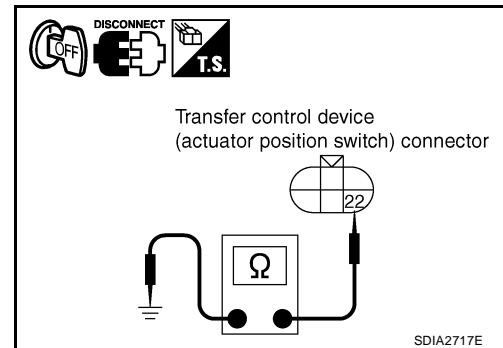
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control device (actuator position switch) harness connector.
3. Check continuity between transfer control device (actuator position switch) harness connector F58 terminal 22 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
- NG >> Repair open circuit or short to power in harness or connectors.



4. CHECK ACTUATOR POSITION SWITCH

1. Remove transfer control device. Refer to [TF-138, "Removal and Installation"](#).
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 21 and 24.

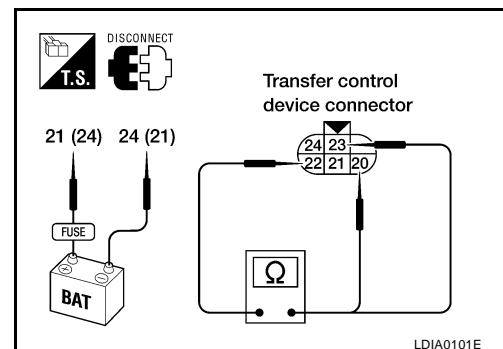
CAUTION:

- Do not operate actuator motor for more than 1 second.
- Change the actuator motor position to "HIGH" when installing.
- Be careful not to overheat the harness.

Terminal	Continuity	Continuity
24 (Battery voltage) - 21 (Ground)	20 - 22	YES
	22 - 23	NO
21 (Battery voltage) - 24 (Ground)	22 - 23	YES
	20 - 22	NO

OK or NG

- YES >> GO TO 5.
- NO >> Replace transfer control device. Refer to [TF-138, "Removal and Installation"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control device. Refer to [TF-138, "Removal and Installation"](#) .

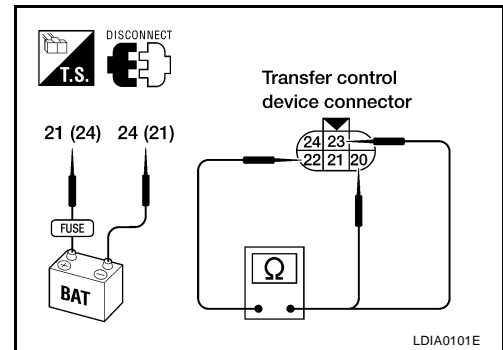
COMPONENT INSPECTION

1. Remove transfer control device. Refer to [TF-138, "Removal and Installation"](#) .
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 21 and 24.

CAUTION:

- Do not operate actuator motor for more than 1 second.
- Change the actuator motor position to "HIGH" when installing.
- Be careful not to overheat the harness.

Terminal	Continuity	Continuity
24 (Battery voltage) - 21 (Ground)	20 - 22	YES
	22 - 23	NO
21 (Battery voltage) - 24 (Ground)	22 - 23	YES
	20 - 22	NO



3. If NG, replace transfer control device. Refer to [TF-138, "Removal and Installation"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS00360

Transfer Control Device

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value	
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	ON
			Except the above	OFF
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	ON
			Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
16	Y	Power supply	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V	
22	GR	Power supply	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V	
30	V	Shut off relay	Ignition switch: ON	0V	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	Battery voltage	
33	GR	Transfer shift high relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H to 4LO ("Wait" function is operating.)	Battery voltage
				Except the above	0V
42	Y	Transfer shift low relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO to 4H ("Wait" function is operating.)	Battery voltage
				Except the above	0V

CAUTION:

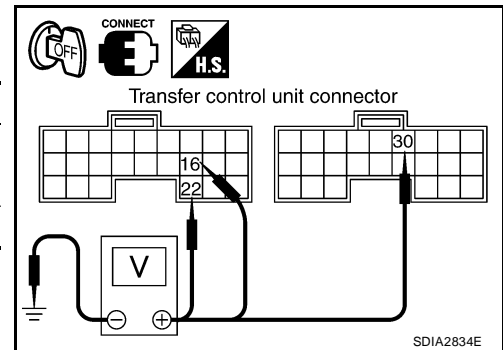
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

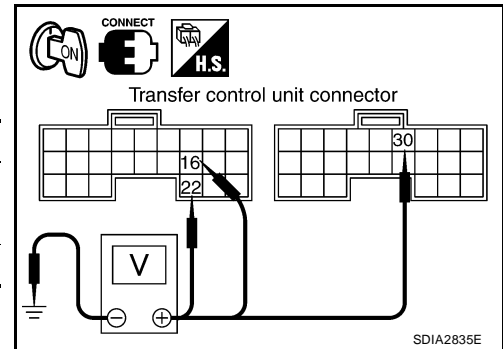
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	0V
	22 - Ground	
M153	30 - Ground	Battery voltage



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	Battery voltage
	22 - Ground	
M153	30 - Ground	0V



OK or NG

OK >> GO TO 2.

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

- 10A fuse (No. 59, located in the fuse and relay box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer shut off relay harness connector E155 terminal 1.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 2 and transfer control unit harness connector terminal 30.
- Harness for short or open between battery and transfer shut off relay harness connector E155 terminal 3.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 5 and transfer control unit harness connector 22.
- Transfer shut off relay. Refer to [TF-59, "COMPONENT INSPECTION"](#) .

2. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 3, 6 and M153 terminal 45 and ground.

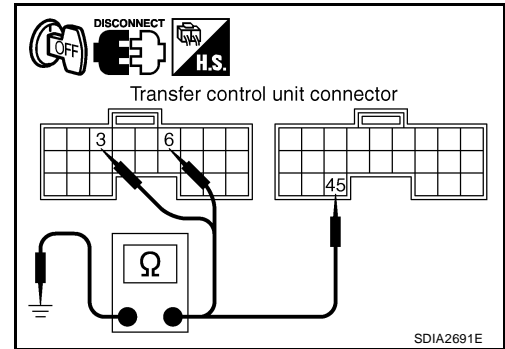
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 3.

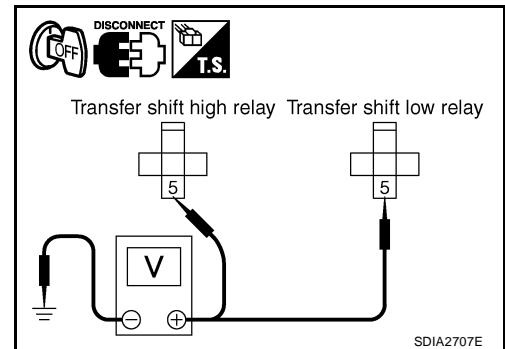
NG >> Repair open circuit or short to power in harness or connectors.



3. CHECK ACTUATOR MOTOR POWER SUPPLY CIRCUIT

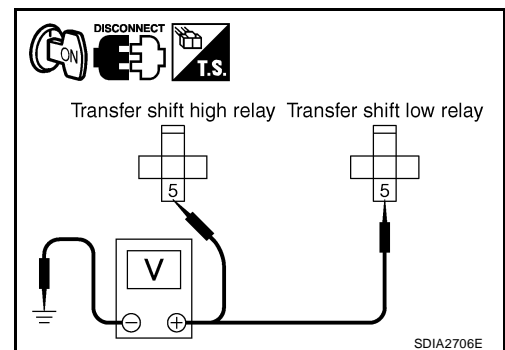
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-24, "Location of Electrical Parts"](#).
3. Check voltage between transfer shift high relay harness connector E46 terminal 5, transfer shift low relay harness connector E47 terminal 5 and ground.

Connector	Terminal	Voltage (Approx.)
E46	5 - Ground	Battery voltage
E47	5 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer shift high relay harness connector E46 terminal 5, transfer shift low relay harness connector E47 terminal 5 and ground.

Connector	Terminal	Voltage (Approx.)
E46	5 - Ground	Battery voltage
E47	5 - Ground	



OK or NG

OK >> GO TO 4.

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

- 20A fuse [No. 58, located in the fuse and relay box]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
- Harness for short or open between battery, transfer shift high harness connector E46 terminal 5 and transfer shift low harness connector E47 terminal 5.

4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER SHIFT RELAY

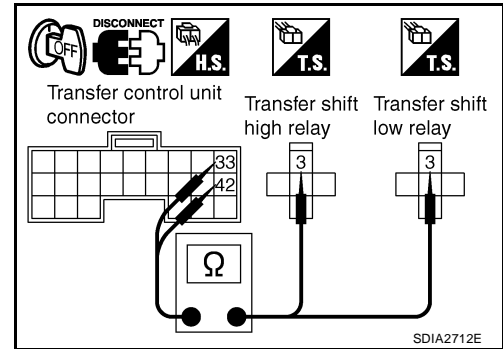
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer control device (actuator motor) harness connector.
3. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-24, "Location of Electrical Parts"](#) .
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 33 and transfer shift high relay harness connector E46 terminal 3.
 - Transfer control unit harness connector M153 terminal 42 and transfer shift low relay harness connector E47 terminal 3.

Continuity should exist.

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.



5. CHECK TRANSFER SHIFT RELAY GROUND CIRCUIT

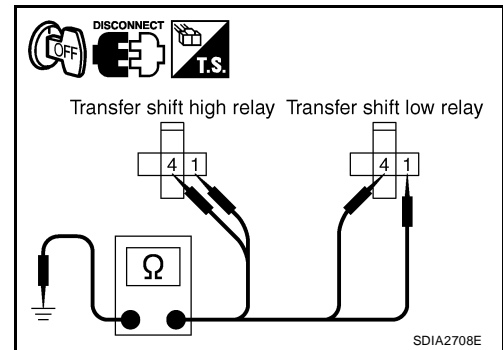
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay.
3. Check continuity between transfer shift high relay harness connector E46 terminals 1 and 4 and transfer shift low relay harness connector E47 terminal 1 and 4 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 6.
- NG >> Repair open circuit or short to power in harness or connectors.



6. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK-1 >> With CONSULT-II: GO TO 7.
- OK-2 >> Without CONSULT-II: GO TO 8.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

7. PERFORM SELF-DIAGNOSIS (WITH CONSULT-II)

With CONSULT-II

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

Is the "SHIFT ACT CIR [P1819]" displayed?

- YES >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .
- NO >> Inspection End.

8. PERFORM SELF-DIAGNOSIS (WITHOUT CONSULT-II)

⊗ Without CONSULT-II

1. Perform the self-diagnosis and then erase self-diagnostic results. Refer to [TF-52, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-55, "ERASE SELF-DIAGNOSIS"](#) .

2. Perform the self-diagnosis again.

Do the self-diagnostic results indicate transfer control device?

- YES >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .
- NO >> Inspection End.

**Engine Speed Signal (ECM)
DIAGNOSTIC PROCEDURE**

EDS0036P

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with ECM again. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

**Clutch Pressure Solenoid
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE**

EDS0036Q

Data are reference value.

Monitored item	Content	Condition	Display value
DUTY SOLENOID [%]	Condition of clutch pressure solenoid	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 4WD shift switch: 2WD	4%
		4WD shift switch: AUTO	96 - 4%
		4WD shift switch: 4H or 4LO	4%

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
10	P	Transfer dropping resistor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 4WD shift switch: AUTO	4 - 14V
			4WD shift switch: 2WD, 4H or 4LO	Less than 1V

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

Terminal	Wire color	Item	Condition	Data (Approx.)	
19	R	Clutch pressure solenoid valve	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: AUTO	1.5 - 3V
			<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, 4H or 4LO	Less than 1V

CAUTION:

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

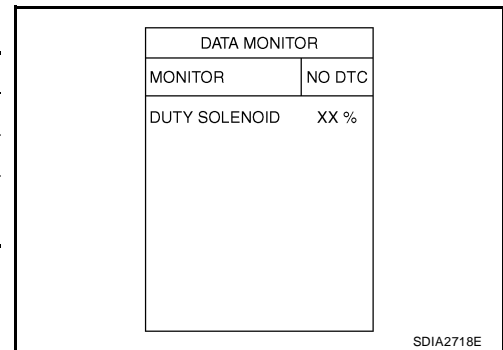
DIAGNOSTIC PROCEDURE

1. CHECK CLUTCH PRESSURE SIGNAL

With CONSULT-II

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

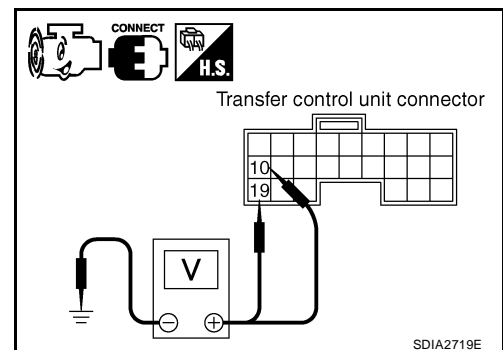
Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped 	4WD shift switch: 2WD 4%
<ul style="list-style-type: none"> ● Engine running 	4WD shift switch: AUTO 96 - 4%
<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H or 4LO 4%



Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	10 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped 	4WD shift switch: AUTO 4 - 14V
		<ul style="list-style-type: none"> ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, 4H or 4LO Less than 1V
	19 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: AUTO 1.5 - 3V
		<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD, 4H or 4LO Less than 1V



OK or NG

- OK >> GO TO 8.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER TERMINAL CORD ASSEMBLY

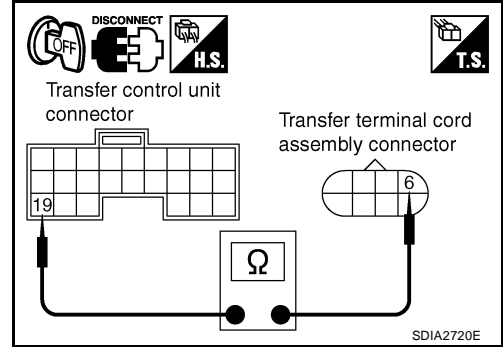
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer terminal cord assembly harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 19 and transfer terminal cord assembly harness connector F56 terminal 6.

Continuity should exist.

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

OK or NG

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



3. CHECK HARNESS BETWEEN TRANSFER DROPPING RESISTOR AND TRANSFER TERMINAL CORD ASSEMBLY

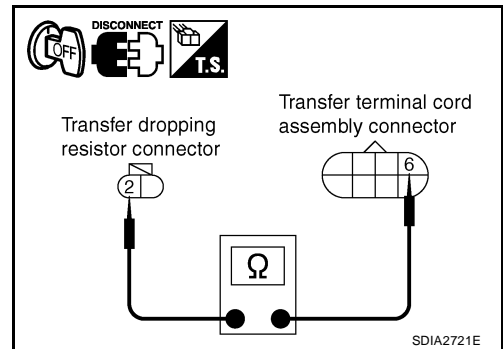
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector and transfer dropping resistor harness connector.
3. Check continuity between transfer dropping resistor harness connector E135 terminal 2 and transfer terminal cord assembly harness connector F56 terminal 6.

Continuity should exist.

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

OK or NG

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



4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER DROPPING RESISTOR

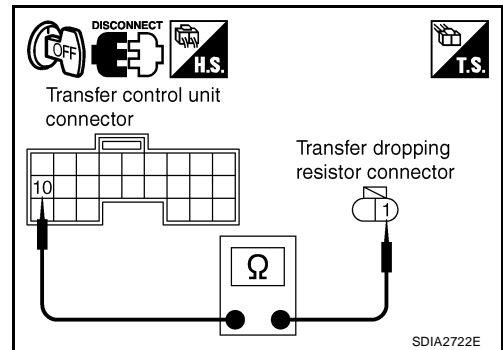
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer dropping resistor harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 10 and transfer dropping resistor harness connector E135 terminal 1.

Continuity should exist.

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.



5. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check continuity between transfer terminal cord assembly harness connector F56 terminal 19 and ground.

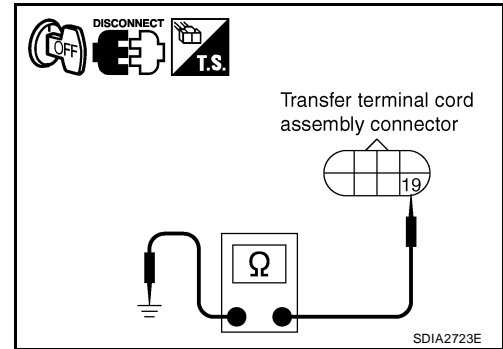
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 6.

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



6. CHECK CLUTCH PRESSURE SOLENOID

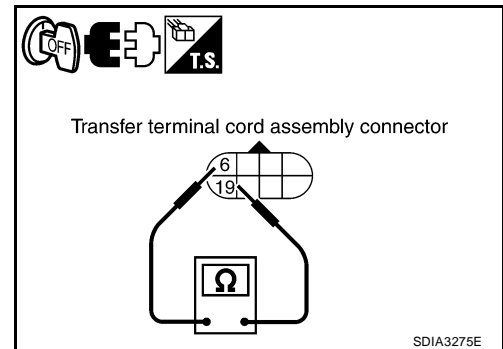
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly harness connector F56 terminals 6 and 19.

6 - 19 : Approx. 3.0 - 3.4 Ω

OK or NG

OK >> GO TO 7.

NG >> Replace clutch pressure solenoid. Refer to [TF-146](#), "[Disassembly and Assembly](#)".



7. CHECK TRANSFER DROPPING RESISTOR

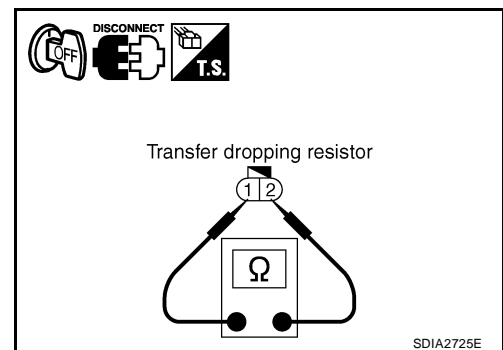
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer dropping resistor harness connector.
3. Check resistance between transfer dropping resistor terminals 1 and 2.

1 - 2 : Approx. 11.2 - 12.8 Ω

OK or NG

OK >> GO TO 8.

NG >> Replace transfer dropping resistor. Refer to [TF-24](#), "[Location of Electrical Parts](#)".



8. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37](#), "[Transfer Control Unit Input/Output Signal Reference Values](#)".

OK or NG

OK >> GO TO 9.

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

9. CHECK DTC

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

OK or NG

OK >> Inspection End.

NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#).

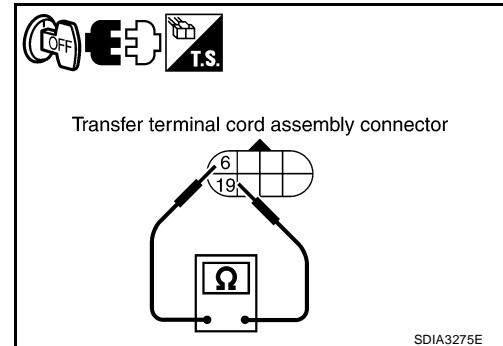
COMPONENT INSPECTION

Clutch Pressure Solenoid

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly terminals 6 and 19.

6 - 19 : Approx. 3.0 - 3.4 Ω

4. If NG, replace clutch pressure solenoid. Refer to [TF-24, "Location of Electrical Parts"](#).

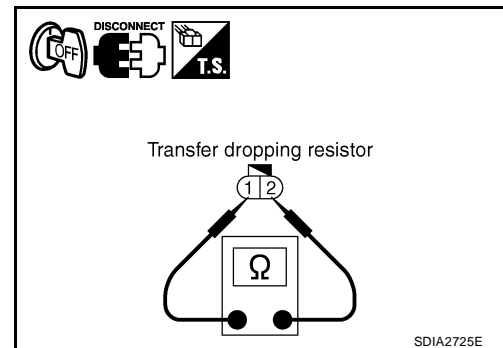


Transfer Dropping Resistor

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer dropping resistor harness connector.
3. Check resistance between transfer dropping resistor terminals 1 and 2.

1 - 2 : Approx. 11.2 - 12.8 Ω

4. If NG, replace transfer dropping resistor. Refer to [TF-24, "Location of Electrical Parts"](#).



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS0036R

2-4WD Solenoid

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
2-4WD SOL [ON/OFF]	Condition of 2-4WD shift solenoid valve	4WD shift switch: 2WD	OFF
		4WD shift switch: AUTO	ON
		4WD shift switch: 4H	
		4WD shift switch: 4LO	
		4WD shift switch: AUTO ("Wait" function is operating.)	OFF
		4WD shift switch: 4H ("Wait" function is operating.)	OFF
2-4WD SOL MON [ON/OFF]	Check signal for transfer control unit signal output	4WD shift switch: 2WD	OFF
		4WD shift switch: AUTO	ON
		4WD shift switch: 4H	
		4WD shift switch: 4LO	
		4WD shift switch: AUTO ("Wait" function is operating.)	OFF
		4WD shift switch: 4H ("Wait" function is operating.)	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
1	GR	2-4WD shift solenoid valve	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 2WD	0V
			<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: AUTO, 4H or 4LO	Battery voltage

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK 4WD SHIFT SWITCH SYSTEM

Perform self-diagnosis. Refer to [TF-52, "Self-diagnostic Procedure"](#) .

Is the "4WD MOD SW [P1814]" (with CONSULT-II) or "Flickering pattern:16" (without CONSULT-II) detected?

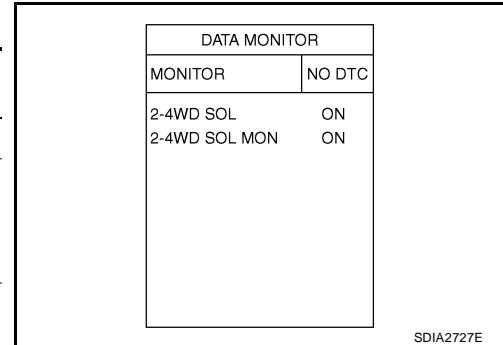
- YES >> Perform trouble diagnosis for 4WD shift switch. Refer to [TF-64, "4WD Shift Switch"](#) .
- NO >> GO TO 2

2. CHECK 2-4WD SHIFT SOLENOID SIGNAL

With CONSULT-II

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

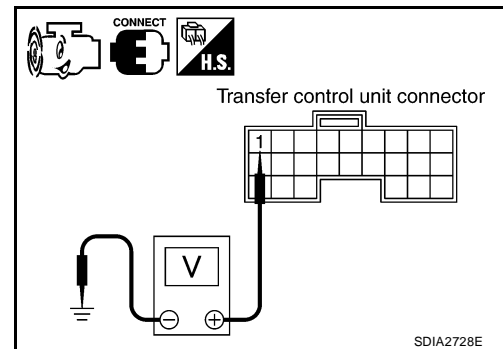
Monitored item	Condition	Display value	
2-4WD SOL	4WD shift switch: 2WD	OFF	
	4WD shift switch: AUTO	ON	
	4WD shift switch: 4H		
	4WD shift switch: 4LO		
	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: AUTO ("Wait" function is operating.)	OFF
		4WD shift switch: 4H ("Wait" function is operating.)	OFF
2-4WD SOL MON	4WD shift switch: 2WD	OFF	
	4WD shift switch: AUTO	ON	
	4WD shift switch: 4H		
	4WD shift switch: 4LO		
	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: AUTO ("Wait" function is operating.)	OFF
		4WD shift switch: 4H ("Wait" function is operating.)	OFF



Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	1 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 2WD 0V
		<ul style="list-style-type: none"> ● Brake pedal depressed 	4WD shift switch: AUTO, 4H or 4LO Battery voltage



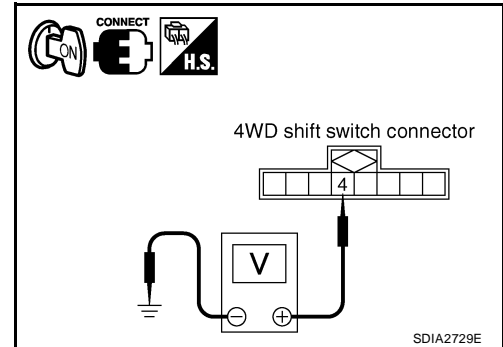
OK or NG

- OK >> GO TO 7.
- NG >> GO TO 3.

3. CHECK 4WD SHIFT SWITCH SIGNAL

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

Connector	Terminal	Condition	Voltage (Approx.)
M141	4 - ground	4WD shift switch: AUTO, 4H or 4LO	Battery voltage
		4WD shift switch: 2WD	0V



OK or NG

OK >> GO TO 4.

NG >> Check 4WD shift switch. Refer to [TF-68, "COMPONENT INSPECTION"](#) .

4. CHECK HARNESS BETWEEN 4WD SHIFT SWITCH AND TRANSFER TERMINAL CORD ASSEMBLY

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector and transfer terminal cord assembly harness connector.
3. Check continuity between 4WD shift switch harness connector M141 terminal 4 and transfer terminal cord assembly harness connector F56 terminal 5.

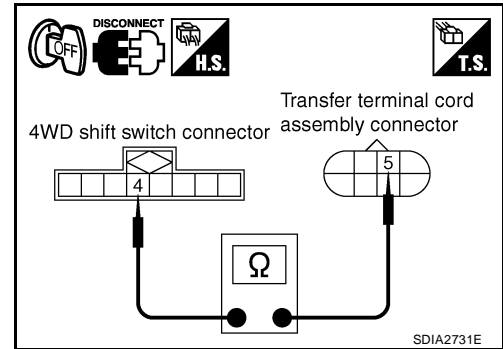
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.



5. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER TERMINAL CORD ASSEMBLY

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer terminal cord assembly harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 1 and transfer terminal cord assembly harness connector F56 terminal 4.

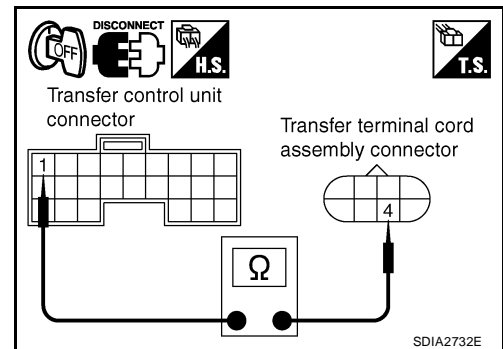
Continuity should exist.

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

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.



6. CHECK 2-4WD SOLENOID

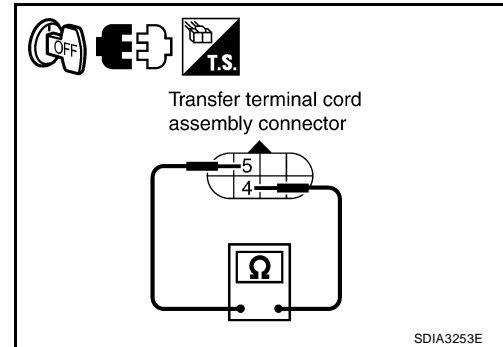
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly terminals 4 and 5.

4 - 5 : Approx. 22.8 - 25.2 Ω

OK or NG

OK >> GO TO 7.

NG >> 2-4WD solenoid is malfunctioning. Refer to [TF-24, "Location of Electrical Parts"](#).

**7. CHECK TRANSFER CONTROL UNIT**

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 8.

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

8. CHECK DTC

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

OK or NG

OK >> Inspection End.

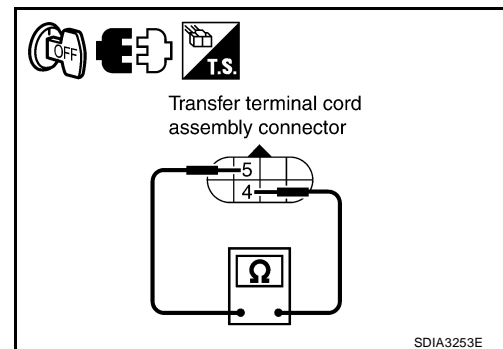
NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#).

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly terminals 4 and 5.

4 - 5 : Approx. 22.8 - 25.2 Ω

4. If NG, replace the 2-4WD solenoid. Refer to [TF-24, "Location of Electrical Parts"](#).



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS0036S

Transfer Motor

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value	
MOTOR RELAY [ON/OFF]	Condition of transfer motor relay	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)
			4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
			4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)
			4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON
MOTOR RELAY MON [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	OFF
			4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)
			4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
			4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)
			4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
14	V	Transfer motor relay	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	Battery voltage
				4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P" and "N".)
				4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	0V
				4WD shift switch: 4H (A/T selector lever "P" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P".)
				4WD shift switch: 4H (Except for A/T selector lever "P" position)	0V
41	SB	Transfer motor relay monitor	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: 2WD	0V
				4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P" and "N".)
				4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	Battery voltage
				4WD shift switch: 4H (A/T selector lever "P" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P".)
				4WD shift switch: 4H (Except for A/T selector lever "P" position)	Battery voltage

CAUTION:

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

A
B
C
TF
E
F
G
H
I
J
K
L
M

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER MOTOR RELAY SIGNAL

④ With CONSULT-II

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

DATA MONITOR	
MONITOR	NO DTC
MOTOR RELAY	ON
MOTOR RELAY MON	ON

SDIA2734E

Monitored item	Condition	Display value (Approx.)	
MOTOR RELAY	4WD shift switch: 2WD	OFF	
	4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)	
	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
	4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)	
	4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON	
MOTOR RELAY MON	4WD shift switch: 2WD	OFF	
	4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	OFF ("ON" for approx. 2 sec. after shifting to "P" and "N".)	
	<ul style="list-style-type: none"> ● Accelerator pedal depressed ● Vehicle stopped ● Engine running ● Brake pedal depressed 	4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	ON
	4WD shift switch: 4H (A/T selector lever "P" position)	OFF ("ON" for approx. 2 sec. after shifting to "P".)	
	4WD shift switch: 4H (Except for A/T selector lever "P" position)	ON	

⊗ Without CONSULT-II

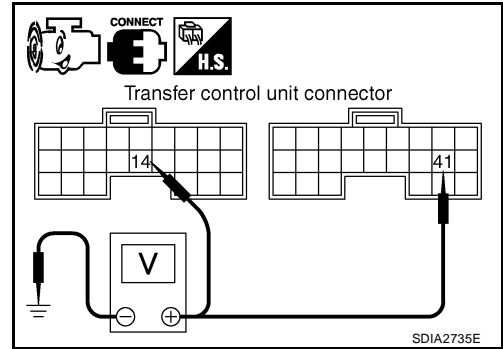
1. Start engine.

TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	14 - Ground	4WD shift switch: 2WD	Battery voltage
		4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P" and "N".)
		4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	0V
		4WD shift switch: 4H (A/T selector lever "P" position)	Battery voltage (0V for approx. 2 sec. after shifting to "P".)
		4WD shift switch: 4H (Except for A/T selector lever "P" position)	0V
M153	41 - Ground	4WD shift switch: 2WD	0V
		4WD shift switch: AUTO or 4LO (A/T selector lever "P" or "N" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P" and "N".)
		4WD shift switch: AUTO or 4LO (Except for A/T selector lever "P" or "N" position)	Battery voltage
		4WD shift switch: 4H (A/T selector lever "P" position)	0V (Battery voltage for approx. 2 sec. after shifting to "P".)
		4WD shift switch: 4H (Except for A/T selector lever "P" position)	Battery voltage



OK or NG

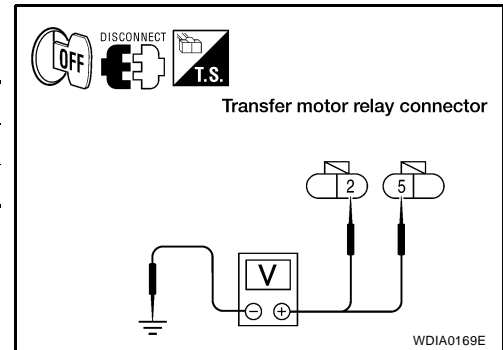
- OK >> GO TO 8.
- NG >> GO TO 2.

A
B
C
TF
E
F
G
H
I
J
K
L
M

2. CHECK TRANSFER MOTOR RELAY POWER SUPPLY CIRCUIT

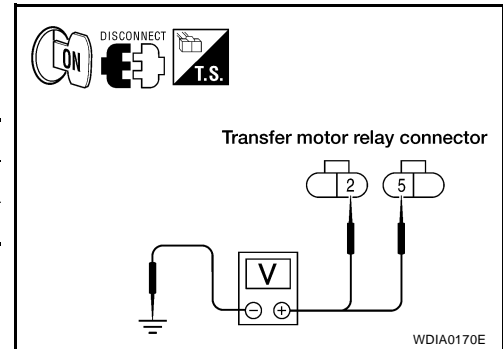
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Disconnect transfer motor relay.
4. Check voltage between transfer motor relay harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
E153	2 - Ground	0V
E154	5 - Ground	Battery voltage



5. Turn ignition switch "ON". (Do not start engine.)
6. Check voltage between transfer motor relay harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
E153	2 - Ground	Battery voltage
E154	5 - Ground	Battery voltage



OK or NG

OK >> GO TO 3.

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

- 20A fuse (No. 57, located in the fuse and relay box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- 10A fuse (No. 59, located in the fuse and relay box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer motor relay harness connector E154 terminals 5.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 5 and transfer motor relay harness connector E153 terminal 2.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .

3. CHECK TRANSFER MOTOR RELAY

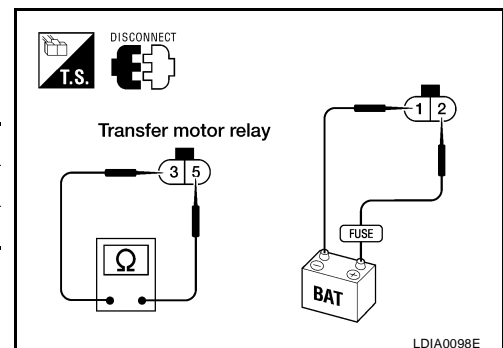
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Apply 12V direct current between transfer motor relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
OFF	No

OK or NG

OK >> GO TO 4.

NG >> Replace the transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#) .



4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER MOTOR RELAY

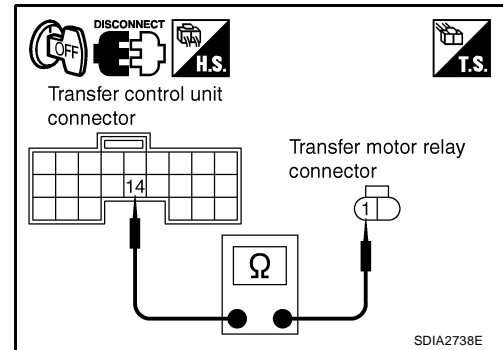
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Remove transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#)
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 14 and transfer motor relay harness connector E154 terminal 1.

Continuity should exist.

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.



5. CHECK TRANSFER MOTOR POWER SUPPLY CIRCUIT

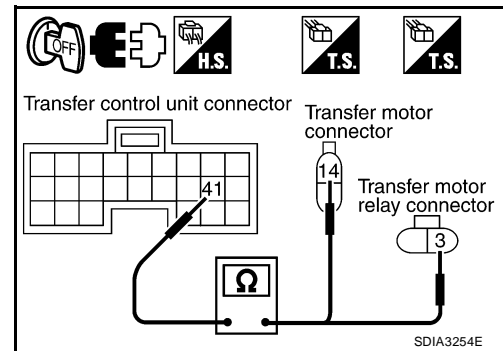
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer motor harness connector.
3. Remove transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#).
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 41 and transfer motor relay harness connector E154 terminal 3.
 - Transfer control unit harness connector M153 terminal 41 and transfer motor harness connector F57 terminal 14.

Continuity should exist.

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

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.



6. CHECK TRANSFER MOTOR GROUND CIRCUIT

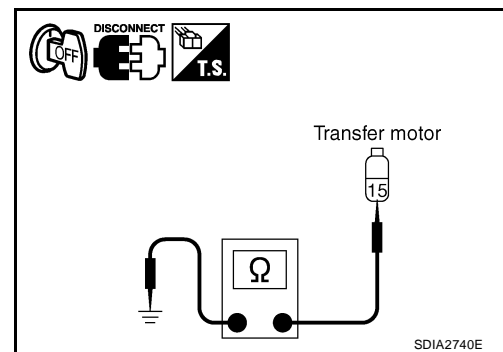
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer motor harness connector.
3. Check continuity between transfer motor harness connector F57 terminal 15 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 7.
- NG >> Repair open circuit or short to power in harness or connectors.

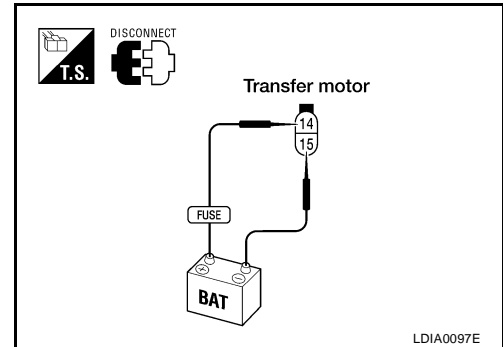


7. CHECK TRANSFER MOTOR

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer motor harness connector.
3. Apply 12V direct current between transfer motor terminals 14 and 15.

Does transfer motor operate?

- YES >> GO TO 8.
 NO >> Replace transfer motor. Refer to [TF-142, "Removal and Installation"](#).



8. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 9.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

9. CHECK DTC

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

OK or NG

- OK >> Inspection End.
 NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#).

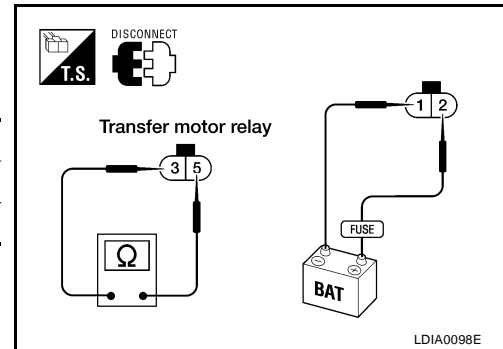
COMPONENT INSPECTION

Transfer Motor Relay

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Apply 12V direct current between transfer motor relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 5.

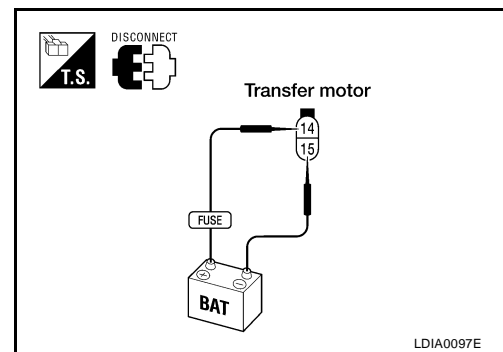
Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
OFF	No

5. If NG, replace transfer motor relay. Refer to [TF-24, "Location of Electrical Parts"](#) .



Transfer Motor

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer motor. Refer to [TF-142, "Removal and Installation"](#) .
3. Apply 12V direct current between transfer motor terminals 14 and 15.
4. If transfer motor does not operate, replace transfer motor. Refer to [TF-142, "Removal and Installation"](#) .



Transfer Fluid Temperature

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value (Approx.)
FLUID TEMP SE [V]	Condition of transfer fluid temperature	Transfer fluid temperature approx. 20 - 80°C (68 - 176°F)	1.1 - 0.3V

EDS0036T

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
28	P	Sensor ground	Always	0V
31	G	Transfer fluid temperature sensor	Ignition switch: OFF	1.1V
			Ignition switch: ON	0.3V

CAUTION:

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

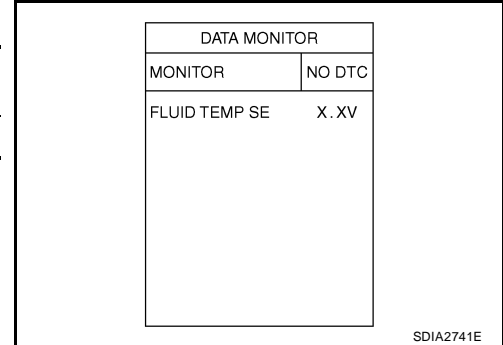
DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER FLUID TEMPERATURE SENSOR SIGNAL

④ With CONSULT-II

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

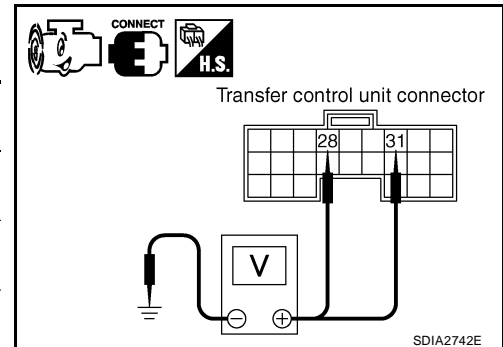
Condition	Display value (Approx.)
Transfer fluid temperature approx. 20 - 80°C (68 - 176°F)	1.1 - 0.3V



⊗ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Condition	Data (Approx.)	
M153	28 - Ground	Always	0V	
	31 - Ground	Ignition switch: ON	Transfer fluid temperature approx. 20°C (68°F)	1.1V
			Transfer fluid temperature approx. 80°C (176°F)	0.3V



OK or NG

- OK >> GO TO 4.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER TERMINAL CORD ASSEMBLY

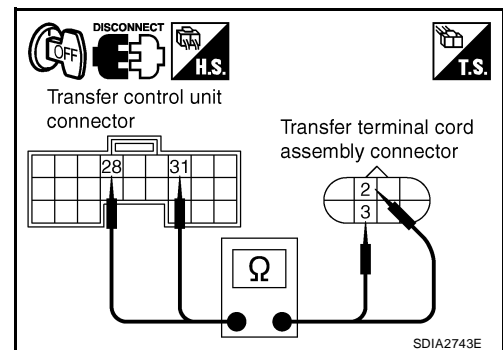
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and transfer terminal cord assembly harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 28 and transfer terminal cord assembly harness connector F56 terminal 3.
 - Transfer control unit harness connector M153 terminal 31 and transfer terminal cord assembly harness connector F56 terminal 2.

Continuity should exist.

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

OK or NG

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



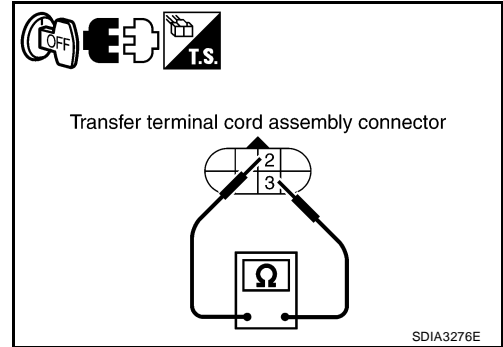
3. CHECK TRANSFER FLUID TEMPERATURE SENSOR

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly terminals 2 and 3.

Temperature °C (°F)	Resistance (Approx.)
20 (68)	2.5 kΩ
80 (176)	0.3 kΩ

OK or NG

- OK >> GO TO 4.
- NG >> Replace transfer fluid temperature sensor. Refer to [TF-146, "Disassembly and Assembly"](#).



4. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 5.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK DTC

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

OK or NG

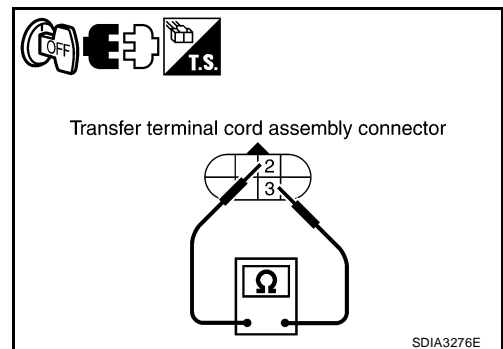
- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#).

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer terminal cord assembly harness connector.
3. Check resistance between transfer terminal cord assembly terminals 2 and 3.

Temperature °C (°F)	Resistance (Approx.)
20 (68)	2.5 kΩ
80 (176)	0.3 kΩ

4. If NG, replace the transfer fluid temperature sensor. Refer to [TF-24, "Location of Electrical Parts"](#).



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

EDS0036U

Clutch Pressure Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
CL PRES SW [ON / OFF]	Condition of clutch pressure switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "D" position ● 4WD shift switch: AUTO or 4H ("Wait" function is not operating.) 	ON
		<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● 4WD shift switch: 2WD ("Wait" function is not operating.) 	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
34	BR	Clutch pressure switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "D" position 4WD shift switch: AUTO or 4H ("Wait" function is not operating.)	0V
			<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 4WD shift switch: 2WD ("Wait" function is not operating.)	Battery voltage

CAUTION:

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

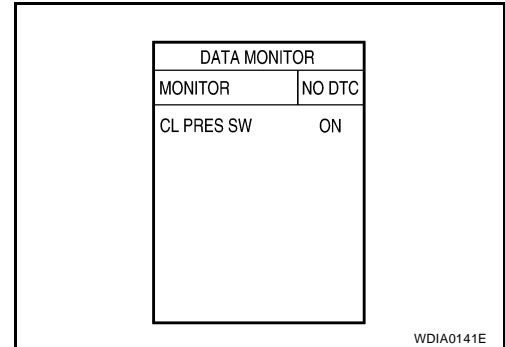
DIAGNOSTIC PROCEDURE

1. CHECK CLUTCH PRESSURE SWITCH SIGNAL

Ⓜ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out ON/OFF switching action of the "CL PRES SW" while operating 4WD shift switch.

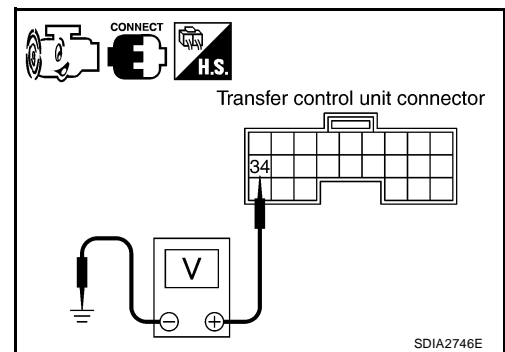
	Condition	Display value
<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever "D" position 	4WD shift switch: AUTO or 4H ("Wait" function is not operating.)	ON
Ignition switch: ON	4WD shift switch: 2WD ("Wait" function is not operating.)	OFF



ⓧ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M153	34 - Ground	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever "D" position 	4WD shift switch: AUTO or 4H ("Wait" function is not operating.) 0V
		Ignition switch: ON	4WD shift switch: 2WD ("Wait" function is not operating.) Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

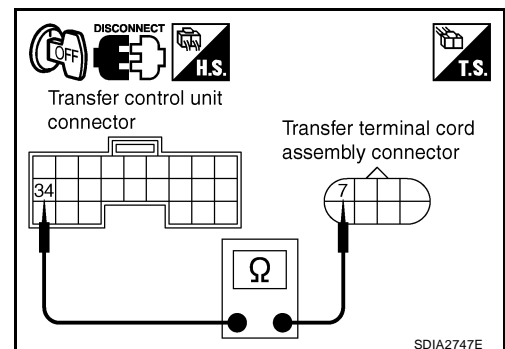
2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND CLUTCH PRESSURE SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer terminal cord assembly harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 34 and transfer terminal cord assembly harness connector F56 terminal 7.

Continuity should exist.

OK or NG

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



3. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

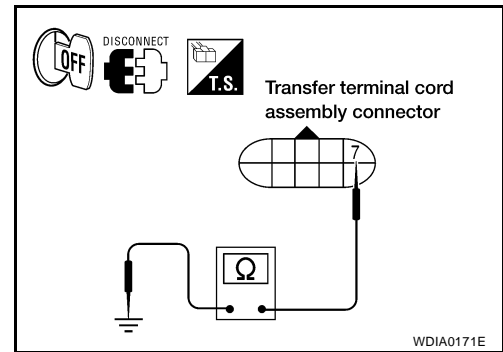
OK or NG

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

4. CHECK CLUTCH PRESSURE SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove clutch pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Push and release clutch pressure switch and check continuity between transfer terminal cord assembly terminal 7 and ground.

Terminal	Condition	Continuity
7 - Ground	Push clutch pressure switch	Yes
	Release clutch pressure switch	No



OK or NG

- OK >> GO TO 5.
- NG >> Replace clutch pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .

5. CHECK DTC

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

OK or NG

- OK >> GO TO 6.
- NG >> Replace transfer control unit. Refer to [TF-132, "TRANSFER CONTROL UNIT"](#) .

6. CRUISE TEST

Perform cruise test. Refet to [TF-35, "CRUISE TEST"](#) .

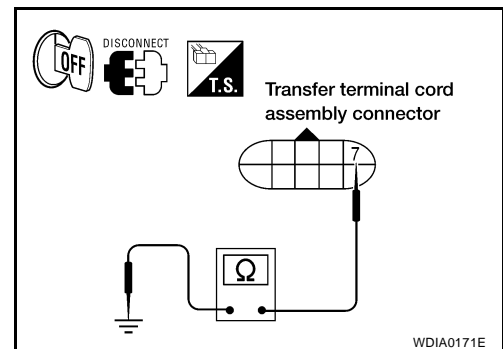
OK or NG

- OK >> Inspection End.
- NG >> Perform the applicable trouble diagnosis.

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove clutch pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Push and release clutch pressure switch and check continuity between transfer terminal cord assembly terminal 7 and ground.

Terminal	Condition	Continuity
7 - Ground	Push clutch pressure switch	Yes
	Release clutch pressure switch	No



TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

4. If NG, replace the clutch pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#).

Line Pressure Switch

EDS0036V

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
LINE PRES SW [ON/OFF]	Condition of line pressure switch	<ul style="list-style-type: none"> ● A/T selector lever "D" position ● 4WD shift switch: AUTO 	ON
		<ul style="list-style-type: none"> ● Except the above ● The vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever: "P" or "N" position ● 4WD shift switch: Other than AUTO

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
35	L	Line pressure switch	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever "D" position 	4WD shift switch: AUTO 0V
			<ul style="list-style-type: none"> ● Except the above ● The vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	<ul style="list-style-type: none"> ● Ignition switch: ON ● A/T selector lever: "P" or "N" position ● 4WD shift switch: Other than AUTO

CAUTION:

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

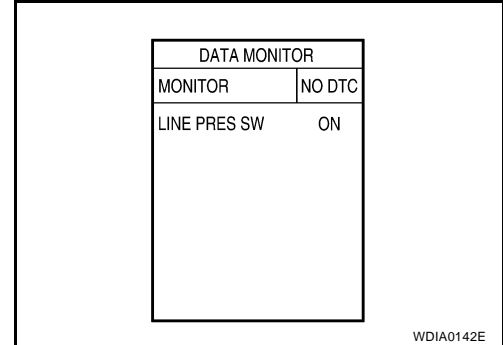
DIAGNOSTIC PROCEDURE

1. CHECK LINE PRESSURE SWITCH SIGNAL

④ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out ON/OFF switching action of "LINE PRES SW" while operating 4WD shift switch.

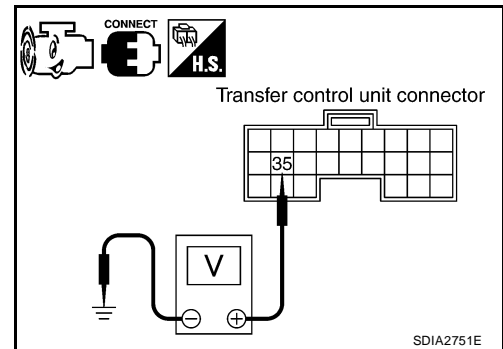
Condition	Display value
<ul style="list-style-type: none"> ● A/T selector lever "D" position ● 4WD shift switch: AUTO 	ON
<ul style="list-style-type: none"> ● Except the above ● The vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	OFF



⊗ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M153	35 - Ground	<ul style="list-style-type: none"> ● A/T selector lever "D" position 	0V
		<ul style="list-style-type: none"> ● Except the above ● The vehicle has been left at room temperature for 5 minutes and more with ignition switch in "OFF" position. 	Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND LINE PRESSURE SWITCH

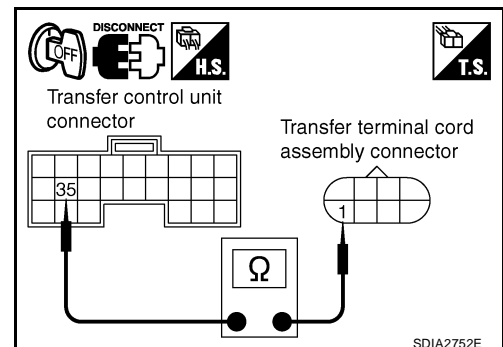
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer terminal cord assembly harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 35 and transfer terminal cord assembly harness connector F56 terminal 1.

Continuity should exist.

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

OK or NG

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



3. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

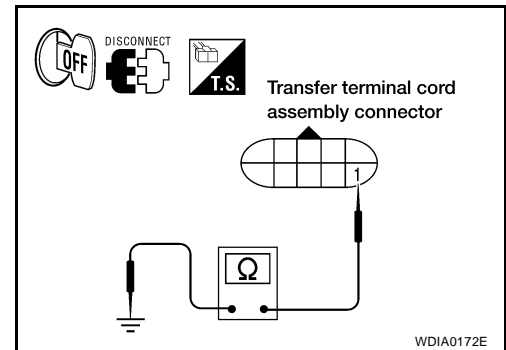
OK or NG

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

4. CHECK LINE PRESSURE SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove line pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Push and release line pressure switch and check continuity between transfer terminal cord assembly terminal 1 and ground.

Terminal	Condition	Continuity
1 - Ground	Push line pressure switch	Yes
	Release line pressure switch	No



OK or NG

- OK >> GO TO 5.
- NG >> Replace line pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .

5. CHECK DTC

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

OK or NG

- OK >> GO TO 6.
- NG >> Replace transfer control unit. Refer to [TF-132, "Removal and Installation"](#) .

6. CRUISE TEST

Perform cruise test. Refet to [TF-35, "CRUISE TEST"](#) .

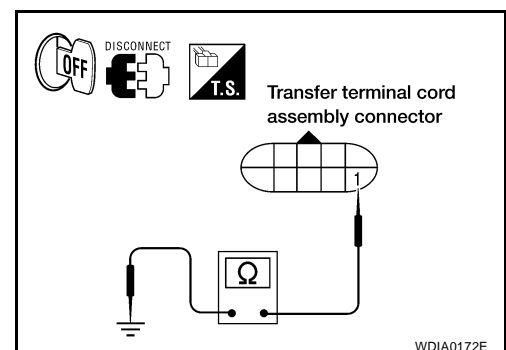
OK or NG

- OK >> Inspection End.
- NG >> Perform the applicable trouble diagnosis.

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove line pressure switch. Refer to [TF-24, "Location of Electrical Parts"](#) .
3. Push and release line pressure switch and check continuity between transfer terminal cord assembly terminal and ground.

Terminal	Condition	Continuity
1 - Ground	Push line pressure switch	Yes
	Release line pressure switch	No



4. If NG, replace the clutch pressure switch.

Throttle Position Signal (ECM)**DIAGNOSTIC PROCEDURE****1. CHECK DTC WITH ECM**

Perform self-diagnosis with ECM. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 3.

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

3. CHECK DTC

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

OK or NG

OK >> Inspection End.

NG >> Perform self-diagnosis with ECM again. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

ABS Operation Signal (ABS)**DIAGNOSTIC PROCEDURE****1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)**

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#) .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

OK >> GO TO 3.

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

3. CHECK DTC

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

OK or NG

OK >> Inspection End.

NG >> Perform self-diagnosis with ABS actuator and electric unit (control unit) again. Refer to [BRC-29, "SELF-DIAGNOSIS"](#) .

VDC Operation Signal (ABS) DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#).

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with ABS actuator electric unit (control unit) again. Refer to [BRC-29, "SELF-DIAGNOSIS"](#).

TCS Operation Signal (ABS) DIAGNOSTIC PROCEDURE

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

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#).

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with ABS actuator and electric unit (control unit) again. Refer to [BRC-29, "SELF-DIAGNOSIS"](#).

CAN Communication Line DIAGNOSTIC PROCEDURE

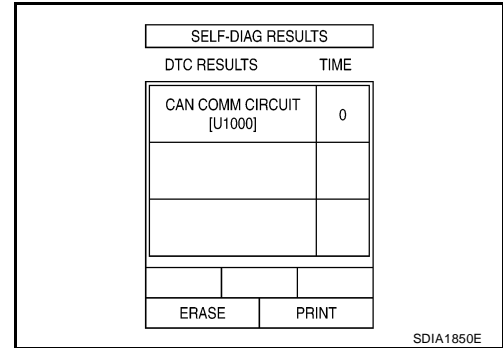
1. CHECK CAN COMMUNICATION CIRCUIT

Ⓟ With CONSULT-II

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

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

- YES >> Print out CONSULT-II screen and go to [LAN-7, "TROUBLE DIAGNOSIS"](#) .
- NO >> Inspection End.



ATP Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
ATP SWITCH [ON/OFF]	Condition of ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" ● Brake pedal depressed 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
		Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
40	R	ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" ● Brake pedal depressed 	4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
			Except the above	Battery voltage

CAUTION:

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

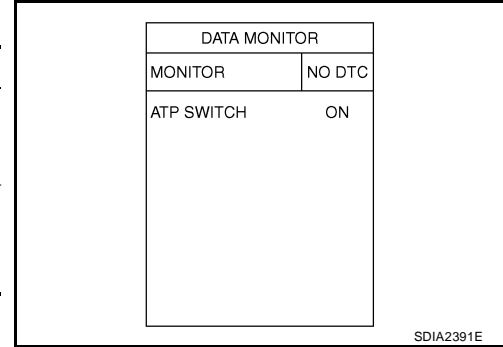
DIAGNOSTIC PROCEDURE

1. CHECK ATP SWITCH SIGNAL

Ⓜ With CONSULT-II

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

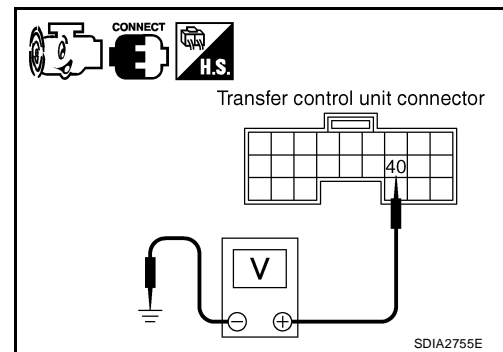
	Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	ON
<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above	OFF



ⓧ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M153	40 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" 	4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND ATP SWITCH

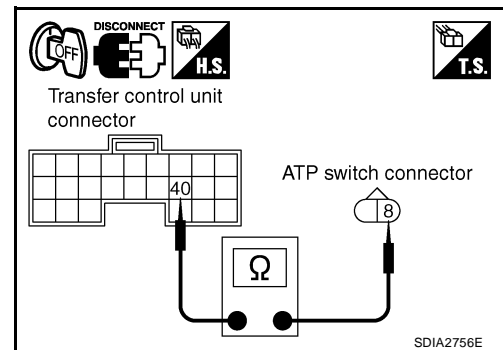
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the ATP switch harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 40 and ATP switch harness connector F55 terminal 8.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

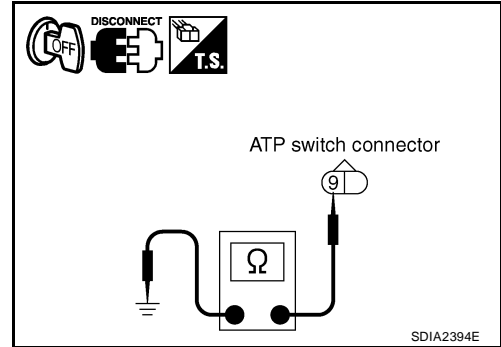
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Check continuity between ATP switch harness connector F55 terminal 9 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to power in harness or connectors.



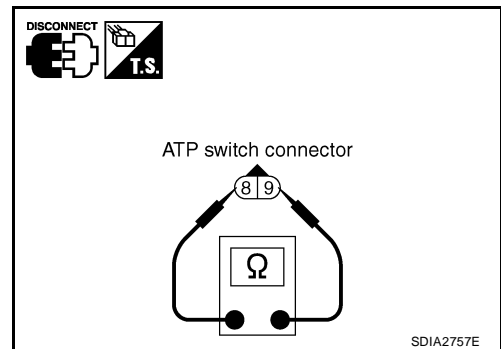
4. CHECK ATP SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Remove ATP switch. Refer to [TF-24, "Location of Electrical Parts"](#).
4. Push and release ATP switch and check continuity between ATP switch terminals 8 and 9.

Terminal	Condition	Continuity
8 - 9	Push ATP switch	Yes
	Release ATP switch	No

OK or NG

- OK >> GO TO 5.
 NG >> Replace ATP switch. Refer to [TF-24, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 6.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK ATP WARNING LAMP

1. Turn ignition switch "ON". (Do not start engine.)
2. Move A/T selector lever to "P" position.
3. Set 4WD shift switch from "4H" to "4LO" or "4LO" to "4H".

Does ATP warning lamp turn ON while switching?

- YES >> GO TO [TF-125, "ATP Warning Lamp Turns ON"](#).
 NO >> Inspection End.

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Remove ATP switch. Refer to [TF-24, "Location of Electrical Parts"](#).

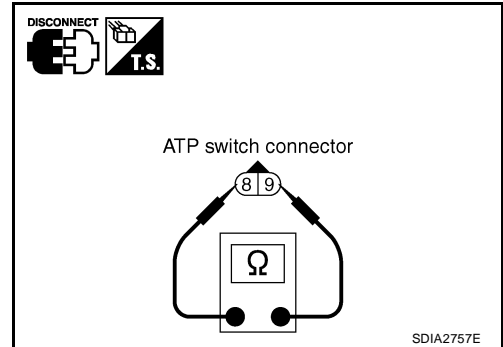
TROUBLE DIAGNOSIS FOR SYSTEM

[ATX14B]

4. Push and release ATP switch and check continuity between ATP switch terminals 8 and 9.

Terminal	Condition	Continuity
8 - 9	Push ATP switch	Yes
	Release ATP switch	No

5. If NG, replace the ATP switch. Refer to [TF-24, "Location of Electrical Parts"](#).



A
B
C

TF

E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS FOR SYMPTOMS

4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON
SYMPTOM:

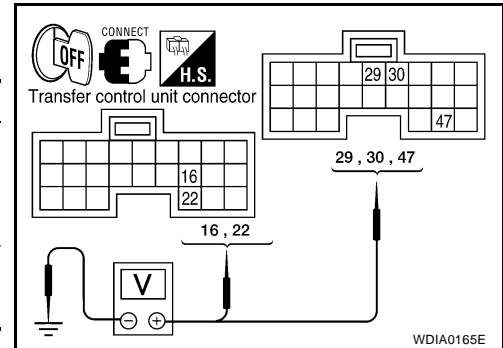
4WD shift indicator lamp and 4LO indicator lamp do not turn ON for approx. 1 second when turning ignition switch to "ON".

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

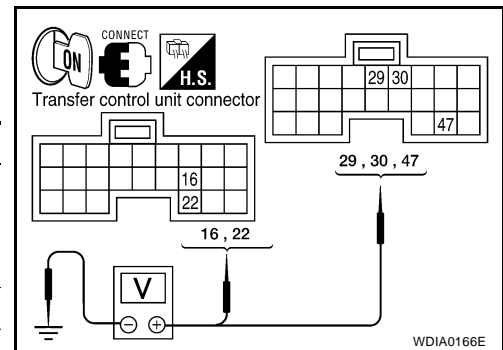
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	0V
	22 - Ground	
M153	29 - Ground	Battery voltage
	30 - Ground	
	47 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	Battery voltage
	22 - Ground	
M153	29 - Ground	0V
	30 - Ground	
	47 - Ground	



OK or NG

OK >> GO TO 2.

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

- 10A fuses [No. 21 located in fuse block (J/B) and No. 59 located in the fuse and relay box. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer control unit harness connector M153 terminals 47.
- Harness for short or open between ignition switch and transfer control unit harness connector M153 terminal 29.
- Harness for short or open between battery and transfer shut off relay harness connector E155 terminal 1 and 3.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 2 and transfer control unit harness connector M153 terminal 30.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 5 and transfer control unit harness connector M152 terminals 16 and 22.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay. Refer to [TF-59, "COMPONENT INSPECTION"](#) .

2. CHECK TRANSFER CONTROL UNIT GROUND CIRCUIT

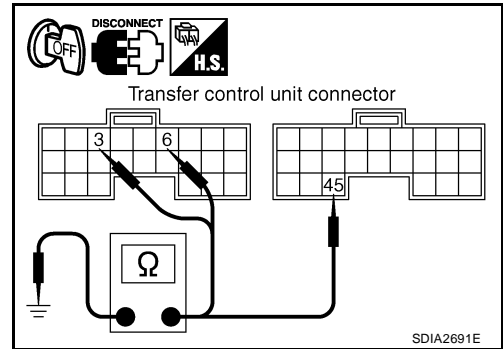
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 3 and 6, and M153 terminal 45 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

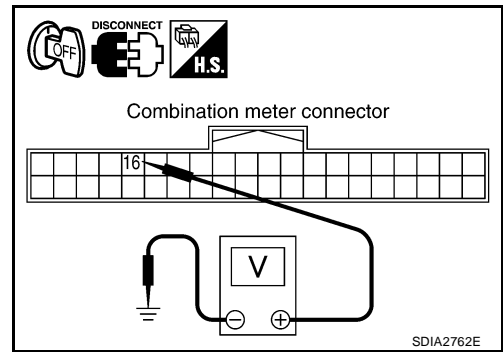
- OK >> GO TO 3.
- NG >> Repair open circuit or short to power in harness or connectors.



3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

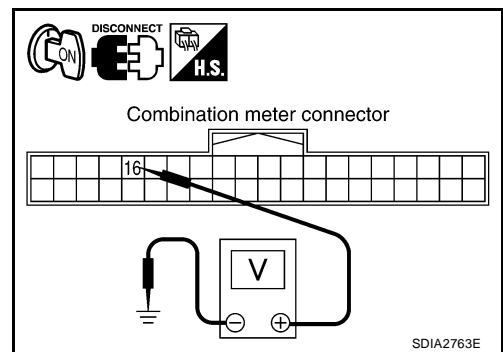
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	Battery voltage



OK or NG

- OK >> GO TO 4.
- NG >> Check the following. If any items are damaged, repair or replace damaged parts.
 - 10A fuse [No. 14, located in the fuse block (J/B)]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
 - Harness for short or open between ignition switch and combination meter harness connector M24 terminal 16.
 - Ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

A
B
C
TF
E
F
G
H
I
J
K
L
M

4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

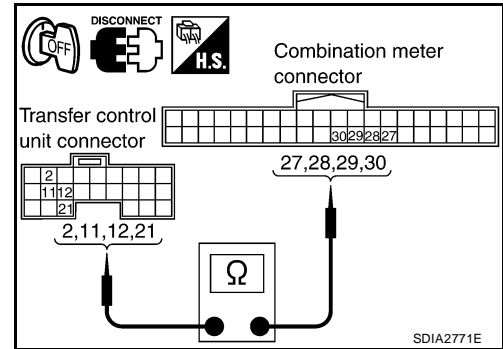
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and combination meter harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 2 and combination meter harness connector M24 terminal 30.
 - Transfer control unit harness connector M152 terminal 11 and combination meter harness connector M24 terminal 27.
 - Transfer control unit harness connector M152 terminal 12 and combination meter harness connector M24 terminal 29.
 - Transfer control unit harness connector M152 terminal 21 and combination meter harness connector M24 terminal 28.

Continuity should exist.

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

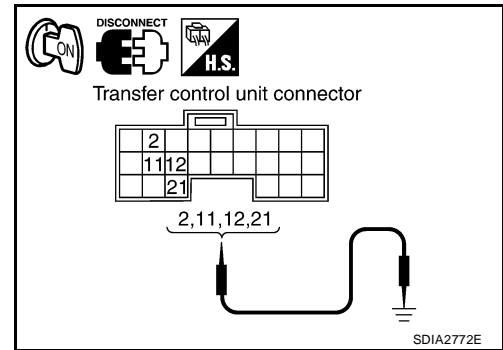


5. CHECK INDICATOR LAMP CIRCUIT

1. Connect combination meter harness connector.
2. Disconnect transfer control unit harness connector.
3. Turn ignition switch "ON".
4. Ground the following terminals using suitable wiring.
 - Transfer control unit harness connector M152 terminal 2 and ground.
 - Transfer control unit harness connector M152 terminal 11 and ground.
 - Transfer control unit harness connector M152 terminal 12 and ground.
 - Transfer control unit harness connector M152 terminal 21 and ground.

Do indicator lamps turn on?

- OK >> GO TO 6.
- NG >> Replace combination meter. Refer to [IP-14, "COMBINATION METER"](#) .



6. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
- NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

4WD Warning Lamp Does Not Turn ON

SYMPTOM:

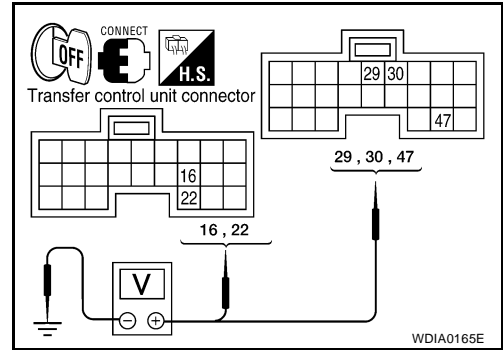
4WD warning lamp does not turn ON when turning ignition switch to "ON".

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

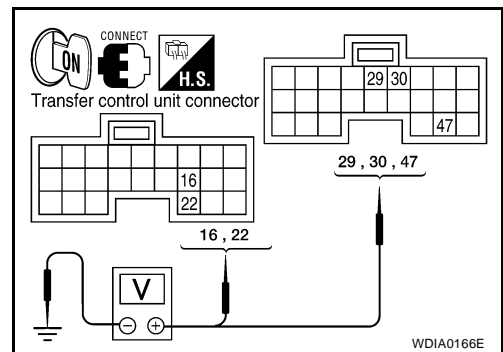
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	0V
	22 - Ground	
M153	29 - Ground	Battery voltage
	30 - Ground	
	47 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	16 - Ground	Battery voltage
	22 - Ground	
M153	29 - Ground	0V
	30 - Ground	
	47 - Ground	



OK or NG

OK >> GO TO 2.

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

- 10A fuses [No. 21 located in fuse block (J/B) and No. 59 located in the fuse and relay box]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer control unit harness connector M153 terminals 47.
- Harness for short or open between ignition switch and transfer control unit harness connector M153 terminal 29.
- Harness for short or open between battery and transfer shut off relay harness connector E155 terminal 1 and 3.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 2 and transfer control unit harness connector M153 terminal 30.
- Harness for short or open between transfer shut off relay harness connector E155 terminal 5 and transfer control unit harness connector M152 terminals 16 and 22.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay. Refer to [TF-59, "COMPONENT INSPECTION"](#) .

A
B
C
TF
E
F
G
H
I
J
K
L
M

2. CHECK TRANSFER CONTROL UNIT GROUND CIRCUIT

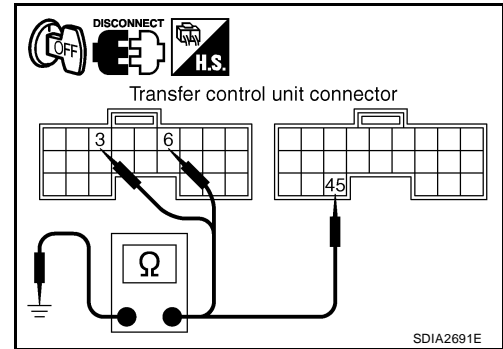
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 3 and 6, and M153 terminal 45 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

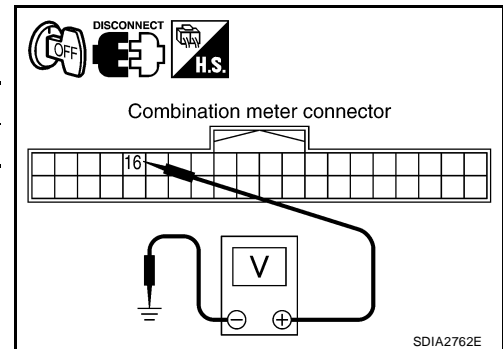
- OK >> GO TO 3.
 NG >> Repair open circuit or short to power in harness or connectors.



3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

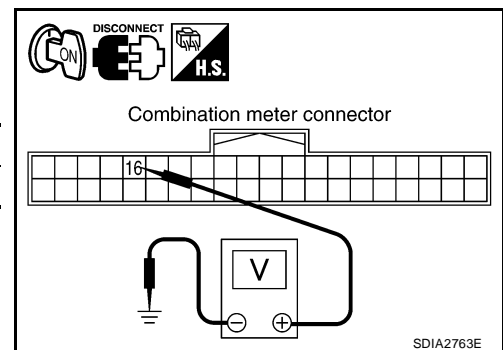
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	Battery voltage



OK or NG

- OK >> GO TO 4.
 NG >> Check the following. If any items are damaged, repair or replace damaged parts.
- 10A fuse [No. 14, located in the fuse block (J/B)]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
 - Harness for short or open between ignition switch and combination meter harness connector M24 terminal 16.
 - Ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

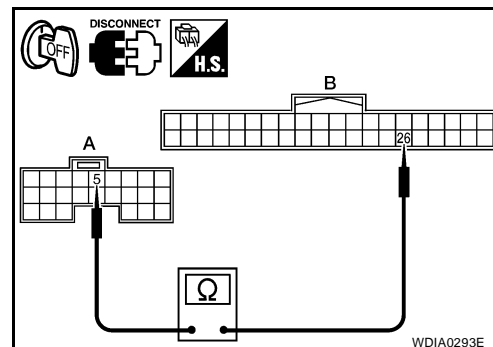
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and combination meter harness connector.
3. Check continuity between transfer control unit and combination meter.

A		B		Continuity
Connector	Terminal	Connector	Terminal	
Transfer control unit: M152	5	Combination meter: M24	26	Yes

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

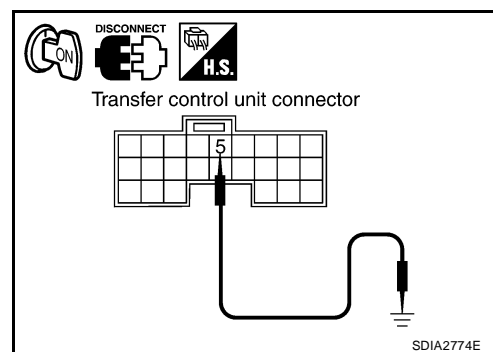


5. CHECK INDICATOR LAMP CIRCUIT

1. Connect combination meter harness connector.
 2. Disconnect transfer control unit harness connector.
 3. Turn ignition switch "ON". (Do not start engine.)
 4. Ground the following terminal using suitable wiring.
- Transfer control unit harness connector M152 terminal 5 and ground.

Does 4WD warning lamp turn on?

- OK >> GO TO 6.
- NG >> Replace combination meter. Refer to [IP-14, "COMBINATION METER"](#).



6. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End
- NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

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

4WD Shift Indicator Lamp or 4LO Indicator Lamp Does Not Change

EDS00374

SYMPTOM:

4WD shift indicator lamp or 4LO indicator lamp does not change when switching 4WD shift switch.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Confirm 4WD shift indicator lamp and 4LO indicator lamp turn on when ignition switch is turned to ON.
Do 4WD shift indicator lamp and 4LO indicator lamp turn on?

YES >> GO TO 2.

NO >> Go to [TF-118, "4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON"](#) .

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-64, "4WD Shift Switch"](#) .

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR WAIT DETECTION SWITCH

Perform trouble diagnosis for wait detection switch system. Refer to [TF-68, "Wait Detection Switch"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SYSTEM FOR NEUTRAL-4LO SWITCH

Perform trouble diagnosis for neutral-4LO switch system. Refer to [TF-61, "Neutral-4LO Switch"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK SYSTEM FOR ATP SWITCH

Perform trouble diagnosis for ATP switch system. Refer to [TF-114, "ATP Switch"](#) .

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYSTEM FOR 2-4WD SOLENOID

Perform trouble diagnosis for 2-4WD solenoid system. Refer to [TF-92, "2-4WD Solenoid"](#) .

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

7. CHECK SYSTEM FOR TRANSFER CONTROL DEVICE

Perform trouble diagnosis for transfer control device system. Refer to [TF-83, "Transfer Control Device"](#) .

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

8. CHECK SYSTEM FOR ACTUATOR MOTOR

Perform trouble diagnosis for actuator motor system. Refer to [TF-72, "Actuator Motor"](#) .

OK or NG

OK >> GO TO 9.

NG >> Repair or replace damaged parts.

9. CHECK SYSTEM FOR ACTUATOR POSITION SWITCH

Perform trouble diagnosis for actuator position switch system. Refer to [TF-79, "Actuator Position Switch"](#) .

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

10. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
NG >> GO TO 11.

11. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 12.
NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

12. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-146, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
NG >> Repair or replace damaged parts.

**ATP Warning Lamp Turns ON
SYMPTOM:**

EDS00375

ATP warning lamp turns ON when 4WD shift switch is switched from "4H" to "4LO" or "4LO" to "4H" with A/T selector lever "N" or "P" position.

DIAGNOSTIC PROCEDURE**1. CHECK SYSTEM FOR CAN COMMUNICATION LINE**

Perform self-diagnosis. Refer to [TF-52, "Self-diagnostic Procedure"](#) .

Do the self-diagnostic results indicate CAN communication?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-114, "CAN Communication Line"](#) .
NO >> GO TO 2.

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-64, "4WD Shift Switch"](#) .

OK or NG

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

3. CHECK SYSTEM FOR PNP SWITCH SIGNAL

Perform trouble diagnosis for PNP switch signal system. Refer to [TF-71, "PNP Switch Signal \(TCM\)"](#) .

OK or NG

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

4. CHECK SYSTEM FOR ATP SWITCH

Perform trouble diagnosis for ATP switch system. Refer to [TF-114, "ATP Switch"](#) .

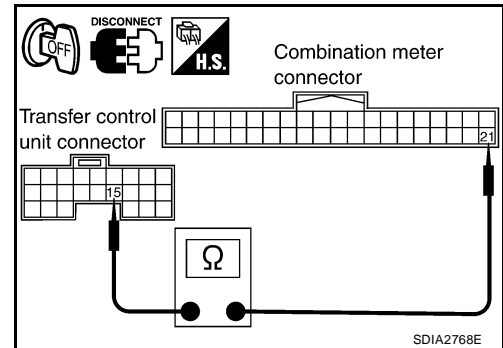
OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and combination meter harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 15 and combination meter harness connector M24 terminal 21.

Continuity should exist.



- Transfer control unit harness connector M153 terminal 40 and combination meter harness connector M24 terminal 1.

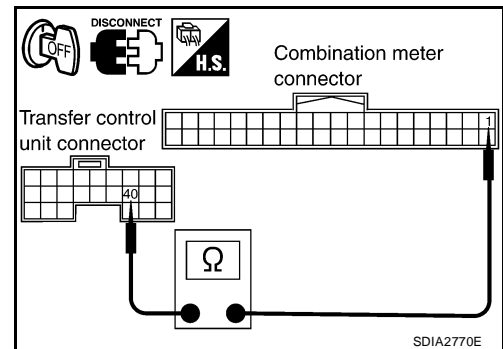
40 TO 1: Continuity should not exist.

1 to 40: Continuity should exist.

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

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

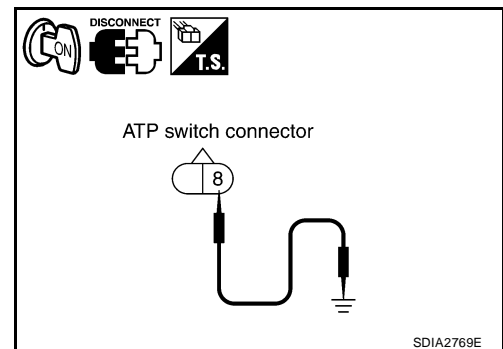


6. CHECK ATP WARNING LAMP CIRCUIT

1. A/T selector lever "P" position.
2. Connect combination meter harness connector and transfer control unit harness connector.
3. Disconnect ATP switch harness connector.
4. Ground the following terminal using suitable wiring.
5. Turn ignition switch "ON". (Do not start engine.)
 - ATP switch harness connector F55 terminal 8 and ground.

Does indicator lamp turn on?

- OK >> GO TO 7.
- NG >> Replace combination meter. Refer to [.IP-14, "COMBINATION METER"](#) .



7. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
NG >> GO TO 8.

8. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 9.
NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

9. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-146, "Disassembly and Assembly"](#).
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
NG >> Repair or replace damaged parts.

4LO Indicator Lamp Repeats Flashing

EDS00376

SYMPTOM:

4LO indicator lamp keeps flashing.

DIAGNOSTIC PROCEDURE**1. CONFIRM THE SYMPTOM**

1. Set 4WD shift switch to "2WD".
 2. Move vehicle forward and backward, or drive straight increasing or decreasing under 20 km/h (12 MPH).
- Does 4WD shift indicator lamp keep flashing?

- YES >> GO TO 2.
NO >> Inspection End.

2. CHECK SYSTEM FOR WAIT DETECTION SWITCH

Perform trouble diagnosis for wait detection switch system. Refer to [TF-68, "Wait Detection Switch"](#).

OK or NG

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

3. CHECK SYSTEM FOR NEUTRAL-4LO SWITCH

Perform trouble diagnosis for neutral-4LO switch system. Refer to [TF-61, "Neutral-4LO Switch"](#).

OK or NG

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

4. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
NG >> GO TO 5.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector.
 If any items are damaged, repair or replace damaged parts.

6. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-146, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
 NG >> Repair or replace damaged parts.

4WD Warning Lamp Flashes Rapidly

EDS00377

SYMPTOM:

While driving, 4WD warning lamp flashes rapidly.

NOTE:

Rapid flashing: 2 times/second

DIAGNOSTIC PROCEDURE

1. CHECK TIRE

Check the following.

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

OK or NG

- OK >> GO TO 2.
 NG >> Repair or replace damaged parts.

2. CHECK 4WD WARNING LAMP

Stop the vehicle and allow it to idle for a short period of time.

Does the 4WD warning lamp stop flashing?

- YES >> Inspection End.
 NO >> GO TO 3.

3. CHECK TRANSFER FLUID TEMPERATURE

Perform trouble diagnosis for transfer fluid temperature system. Refer to [TF-103, "Transfer Fluid Temperature"](#) .

OK or NG

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

4. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
 NG >> GO TO 5.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

4WD Warning Lamp Flashes Slowly

EDS00378

SYMPTOM:

While driving, 4WD warning lamp flashes slowly. (Continues to flash until turning ignition switch OFF.)

NOTE:

Slow flashing: 1 time/2 seconds

DIAGNOSTIC PROCEDURE**1. CHECK TIRE**

Check the following.

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

OK or NG

- OK >> GO TO 2.
- NG >> Repair or replace damaged parts.

2. CHECK TRANSFER FLUID TEMPERATURE

Perform trouble diagnosis for transfer fluid temperature system. Refer to [TF-103, "Transfer Fluid Temperature"](#) .

OK or NG

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

3. CHECK CLUTCH PRESSURE SWITCH

Perform trouble diagnosis for clutch pressure switch system. Refer to [TF-106, "Clutch Pressure Switch"](#) .

OK or NG

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

4. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
- NG >> GO TO 5.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

Heavy Tight-corner Braking Symptom Occurs**SYMPTOM:**

Heavy tight-corner braking symptom occurs when vehicle is driven in AUTO mode and steering wheel is turned fully to either side.

DIAGNOSTIC PROCEDURE**NOTE:**

- Light tight-corner braking symptom may occur depending on driving conditions in AUTO mode. This is not a malfunction.
- Heavy tight-corner braking symptom occurs when vehicle is driven in the following conditions: 4WD shift switch is "4H" or "4LO", steering wheel is turned fully to either side.

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TF-47, "SELF-DIAG RESULT MODE"](#) .

Is "CAN COMM CIRCUIT [U1000]" displayed?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-114, "CAN Communication Line"](#) .
- NO >> GO TO 2.

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-64, "4WD Shift Switch"](#) .

OK or NG

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

3. CHECK ACCELERATOR PEDAL POSITION SIGNAL CIRCUIT

Perform self diagnosis for ECM. Refer to [EC-48, "Emission-related Diagnostic Information"](#) .

Is any malfunction detected by self-diagnosis?

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

4. CHECK SYSTEM FOR CLUTCH PRESSURE SOLENOID

Perform trouble diagnosis for clutch pressure solenoid system. Refer to [TF-87, "Clutch Pressure Solenoid"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
- NG >> GO TO 6.

6. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 7.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

7. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-146, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
 NG >> Repair or replace damaged parts.

4WD System Does Not Operate**SYMPTOM:**

The vehicle cannot be put into 4WD mode. (Hydraulic system failure)

EDS0037A

DIAGNOSTIC PROCEDURE**1. CHECK SYSTEM FOR 4WD SHIFT SWITCH**

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-64, "4WD Shift Switch"](#) .

OK or NG

- OK >> GO TO 2.
 NG >> Repair or replace damaged parts.

2. CHECK SYSTEM FOR CLUTCH PRESSURE SWITCH

Perform trouble diagnosis for clutch pressure switch system. Refer to [TF-106, "Clutch Pressure Switch"](#) .

OK or NG

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

3. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
 NG >> GO TO 4.

4. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-37, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 5.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-146, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
 NG >> Repair or replace damaged parts.

TRANSFER CONTROL UNIT

PFP:33084

Removal and Installation

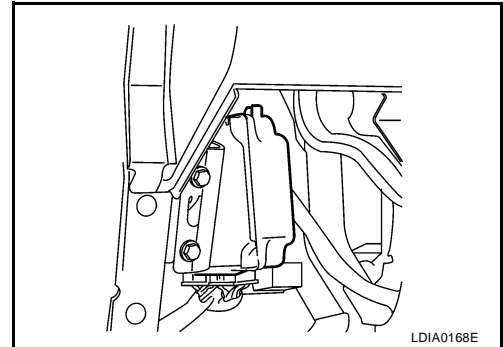
EDS0037B

REMOVAL

1. Set transfer state as 2WD when 4WD shift switch is at 2WD, or as AUTO when 4WD shift switch is at AUTO.

CAUTION:**When removing transfer control unit, transfer state must be at 2WD or AUTO.**

2. Turn the ignition switch OFF and disconnect negative battery terminal.
3. Remove the lower instrument panel LH. Refer to [IP-14, "LOWER INSTRUMENT PANEL LH"](#) .
4. Disconnect the two transfer control unit connectors.
5. Remove the transfer control unit bolts.
6. Remove the transfer control unit.

**INSTALLATION**

Installation is in the reverse order of removal.

- When installing the transfer control unit, tighten bolts to the specified torque.

Transfer control unit bolts : 3.4 N-m (0.35 kg-m, 30 in-lb)

CAUTION:**Do not connect harness connector to transfer control unit when 4WD shift switch is at 4LO.**

- After the installation, check perform self-diagnosis. Refer to [TF-52, "Self-diagnostic Procedure"](#) . If NG, adjust position between transfer assembly and transfer control unit. Refer to [TF-6, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#) .

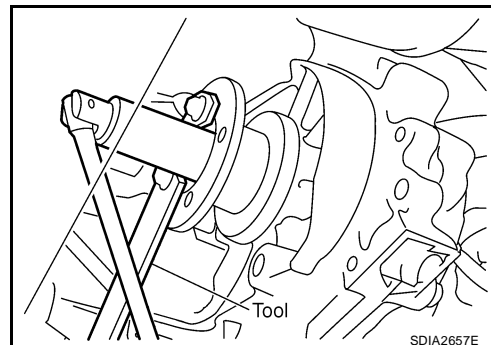
FRONT OIL SEAL

Removal and Installation

REMOVAL

1. Partially drain the transfer fluid. Refer to [TF-13, "TRANSFER FLUID"](#) .
2. Remove the front propeller shaft. Refer to [PR-5, "Removal and Installation"](#) .
3. Remove the companion flange self-lock nut using Tool.

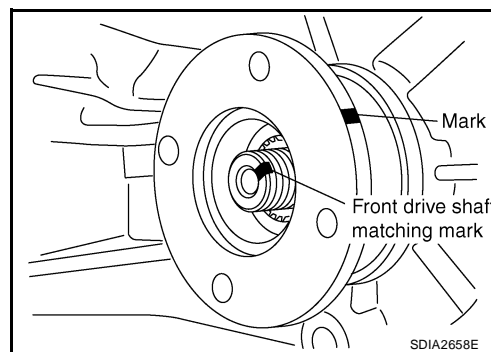
Tool number : KV40104000 (—)



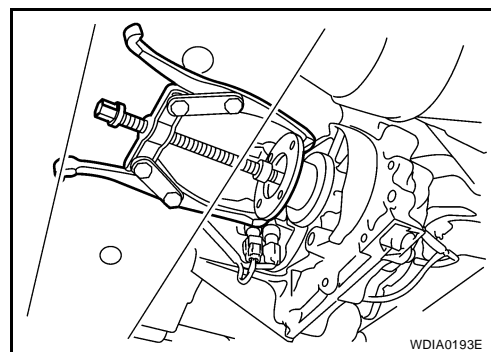
4. Put a matching mark on top of the front drive shaft in line with the mark on the companion flange.

CAUTION:

Use paint to make the matching mark on the front drive shaft. Do not damage the front drive shaft.



5. Remove the companion flange using suitable tool.

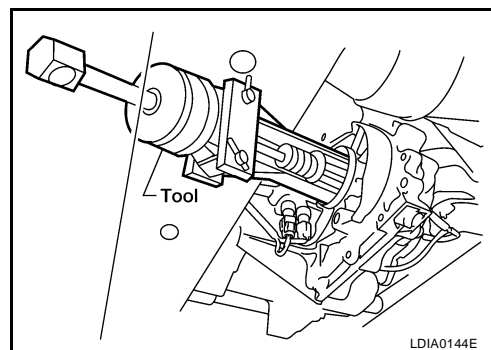


6. Remove the front oil seal from the front case using Tool.

Tool number : ST33290001 (J-34286)

CAUTION:

Do not damage front case.



A
B
C
TF
E
F
G
H
I
J
K
L
M

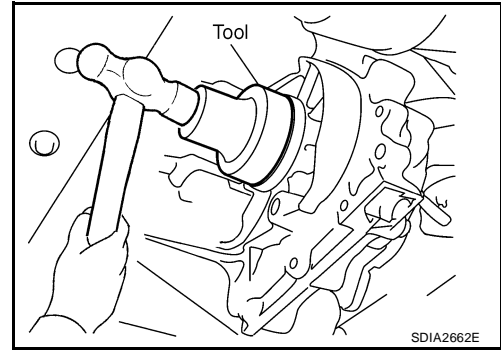
INSTALLATION

1. Install the new front oil seal until it is flush with the end face of the front case using Tool.

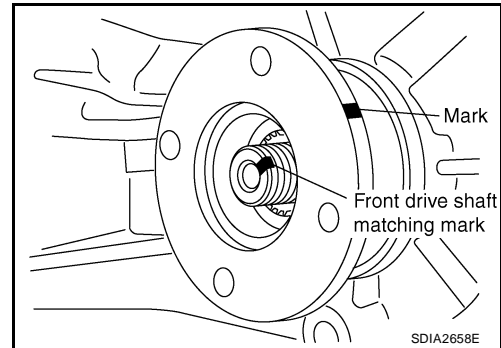
Tool number : KV38100500 (—)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



2. Align the matching mark of the front drive shaft with the matching mark of the companion flange, then install the companion flange.



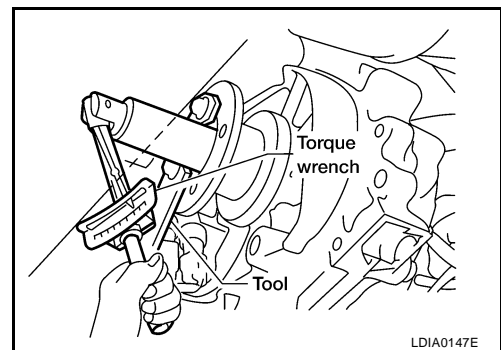
3. Install the new self-lock nut. Tighten to the specified torque using Tool. Refer to [TF-146, "COMPONENTS"](#).

Tool number : KV40104000 (—)

CAUTION:

Do not reuse self-lock nut.

4. Install the front propeller shaft. Refer to [PR-5, "Removal and Installation"](#).
5. Refill the transfer with fluid and check for fluid leakage and fluid level. Refer to [TF-13, "TRANSFER FLUID"](#).



REAR OIL SEAL

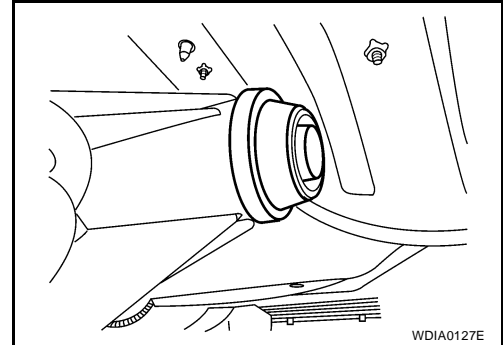
Removal and Installation

REMOVAL

1. Partially drain the transfer fluid. Refer to [TF-13, "TRANSFER FLUID"](#) .
2. Remove the rear propeller shaft. Refer to [PR-10, "Removal and Installation"](#) .
3. Remove the dust cover from the rear case.

CAUTION:

Do not damage the rear case.

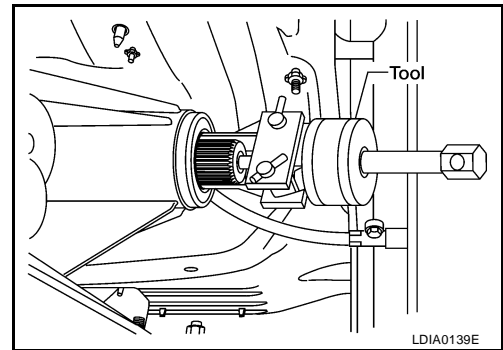


4. Remove the rear oil seal from the rear case using Tool.

Tool number : ST33290001 (J-34286)

CAUTION:

Do not damage the rear case.



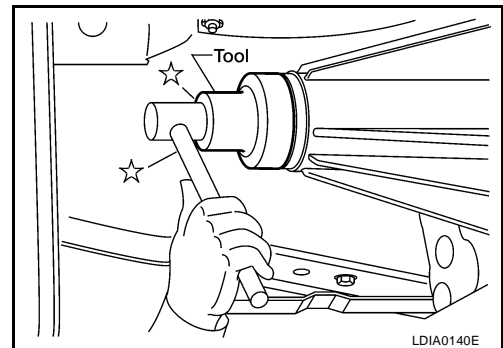
INSTALLATION

1. Install the new rear oil seal until it is flush with the end face of the rear case using Tool.

Tool number : ST30720000 (J-25405)

CAUTION:

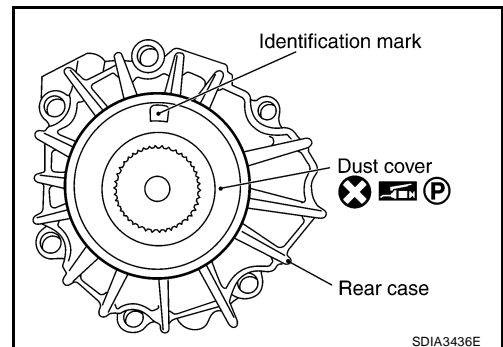
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



2. Apply petroleum jelly to the circumference of the new dust cover. Position the new dust cover using the identification mark as shown.

CAUTION:

- Do not reuse dust cover.
- Position the identification mark at the position shown.



A
B
C
TF
E
F
G
H
I
J
K
L
M

REAR OIL SEAL

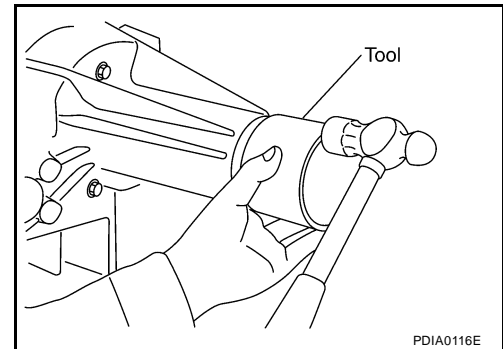
[ATX14B]

3. Install the new dust cover to the rear case using Tool.

Tool number : KV40105310 (—)

CAUTION:

- Do not reuse dust cover.
 - Apply petroleum jelly to dust cover.
4. Install the rear propeller shaft. Refer to [PR-10, "Removal and Installation"](#).
 5. Refill the transfer with fluid and check for fluid leakage and fluid level. Refer to [TF-13, "TRANSFER FLUID"](#).



PDIA0116E

SIDE OIL SEAL

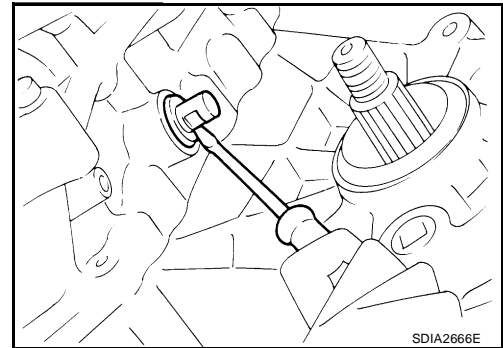
Removal and Installation

REMOVAL

1. Remove the front propeller shaft. Refer to [PR-5, "REMOVAL"](#) .
2. Remove the companion flange. Refer to [TF-133, "REMOVAL"](#) .
3. Remove the transfer control device from the transfer assembly. Refer to [TF-138, "Removal and Installation"](#) .
4. Remove the side oil seal using suitable tool.

CAUTION:

Do not damage shift cross.



INSTALLATION

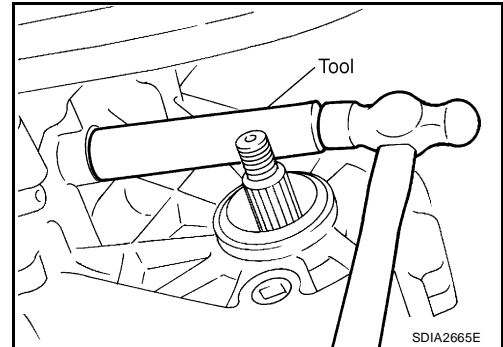
1. Install the new side oil seal until it is flush with the end face of case using Tool.

Tool number : ST22360002 (J-25679-01)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.

2. Install the transfer control device to the transfer assembly. Refer to [TF-138, "Removal and Installation"](#) .
3. Install the companion flange. Refer to [TF-134, "INSTALLATION"](#) .
4. Install the front propeller shaft. Refer to [PR-6, "INSTALLATION"](#) .



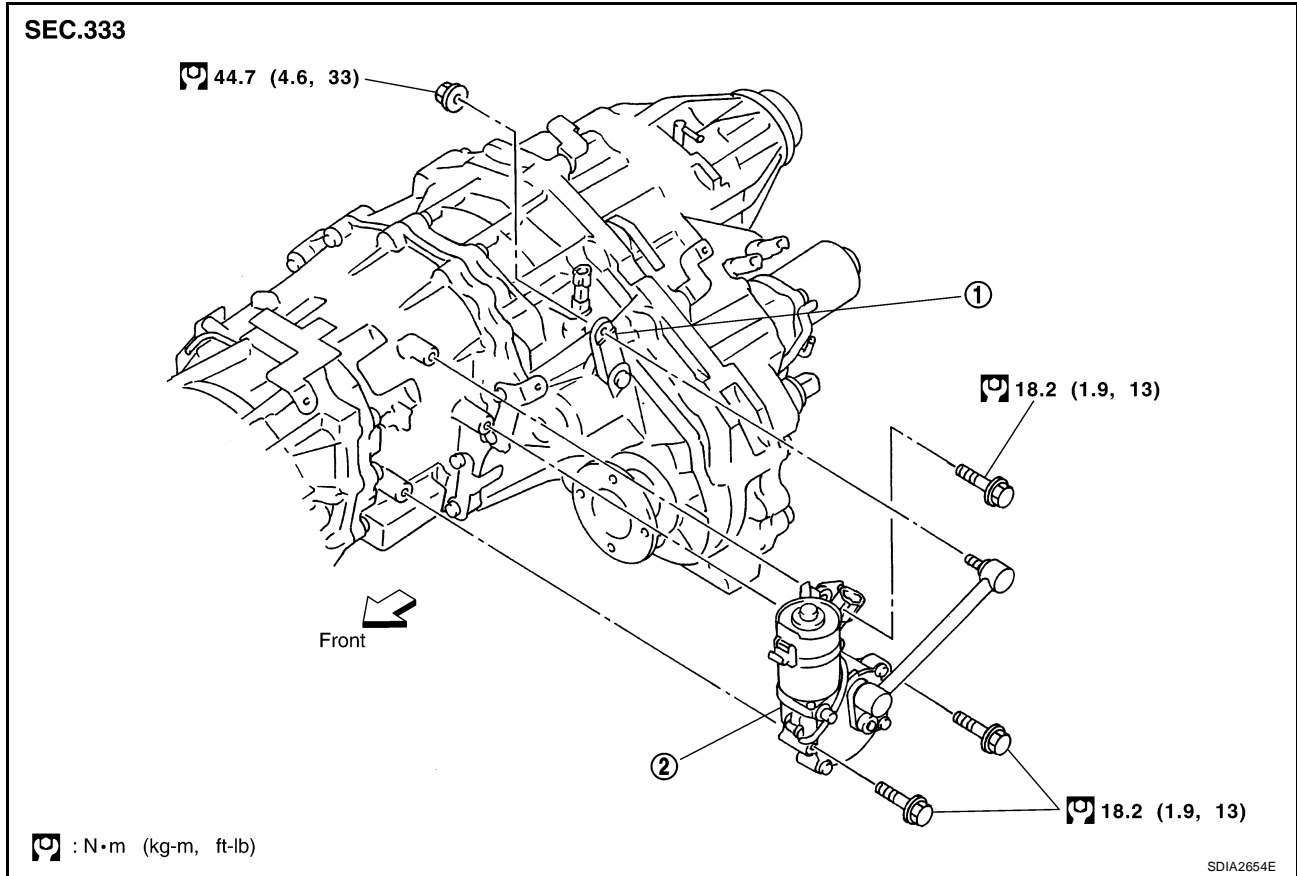
A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER CONTROL DEVICE

PFP:33251

Removal and Installation

EDS0037F



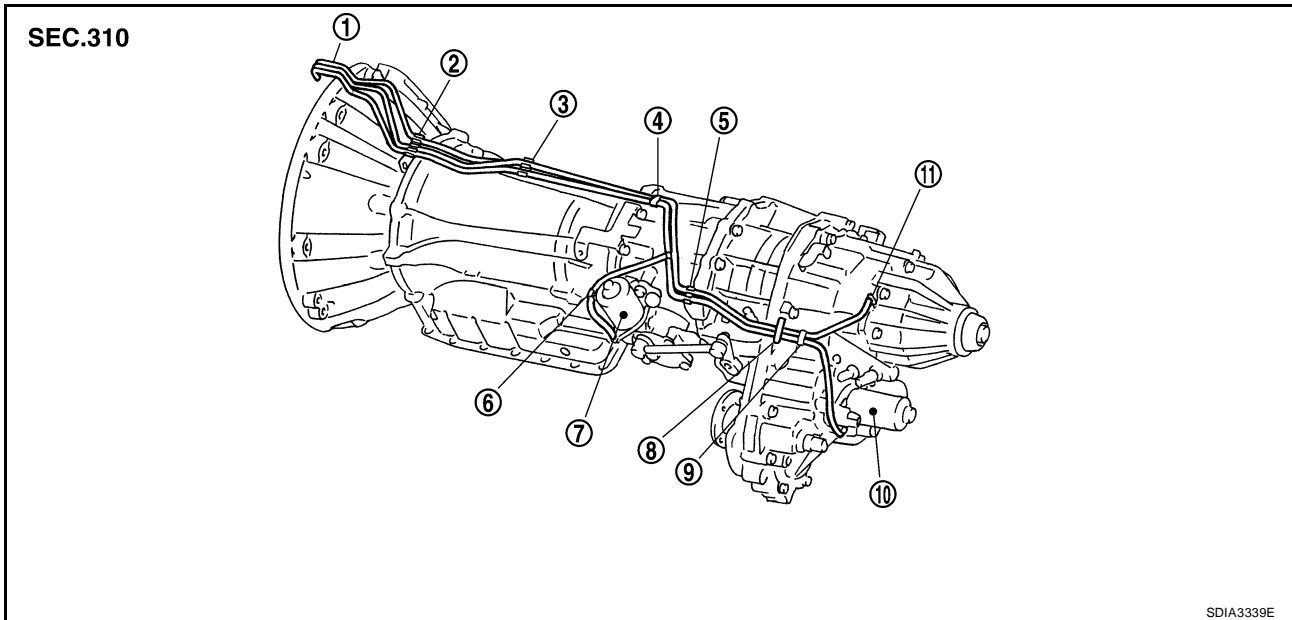
1. Shift lever

2. Actuator

CAUTION:

- Change vehicle state to 2WD, and then remove and install transfer control device.
- Check 4WD shift indicator after installation. Refer to [TF-6, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).

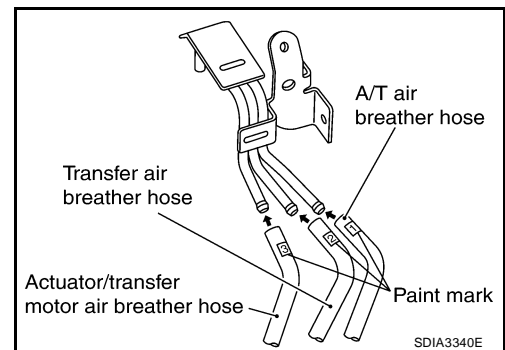
AIR BREATHER HOSE Removal and Installation



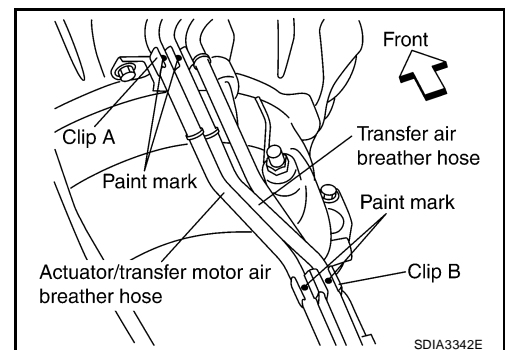
- | | | |
|--------------------|------------------------------|-----------|
| 1. Breather tube | 2. Clip A | 3. Clip B |
| 4. Clip C | 5. Clip D | 6. Clip E |
| 7. Actuator | 8. Air breather hose clamp | 9. Clip F |
| 10. Transfer motor | 11. Breather tube (transfer) | |

CAUTION:

- Make sure there are no pinched or restricted areas on each air breather hose caused by folding or bending when installing it.
- Install each air breather hose into the breather tube (metal connector) until the hose end reaches the end of the curve section. Set each air breather hose with paint mark facing upward.



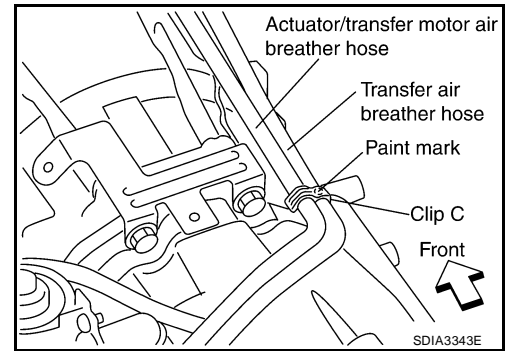
- Install actuator/transfer motor air breather hose and transfer air breather hose on clip A and clip B with the paint mark facing upward.



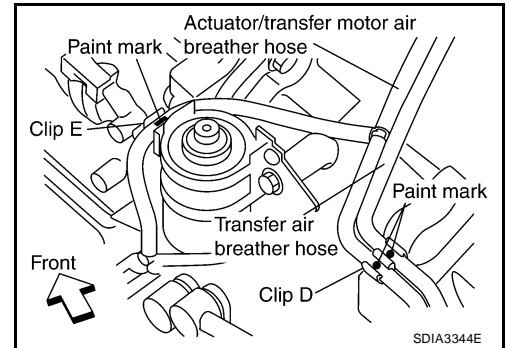
AIR BREATHER HOSE

[ATX14B]

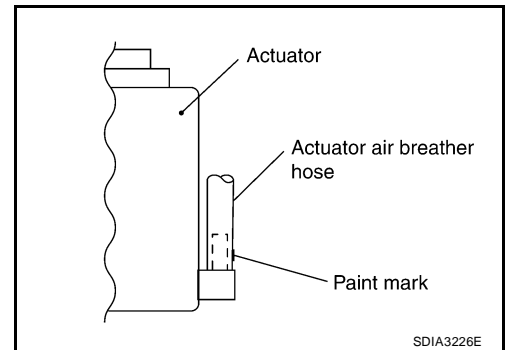
- Install clip C on actuator/transfer motor air breather hose and transfer air breather hose with the paint mark matched.



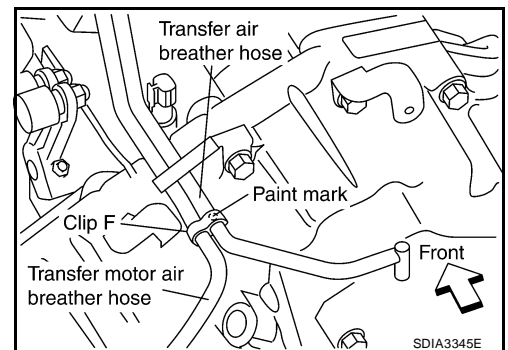
- Install actuator/transfer motor air breather hose and transfer air breather hose on clip D and clip E with the paint mark facing upward.



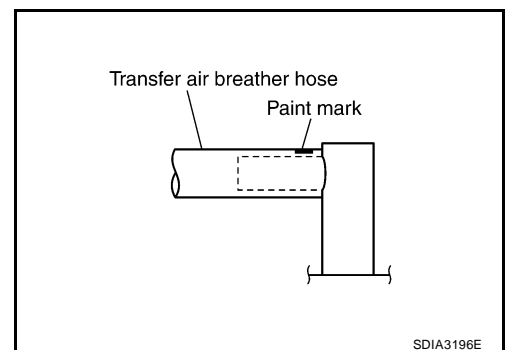
- Install the actuator air breather hose into the actuator (case connector) until the hose end reaches the base of the tube. Set actuator air breather hose with paint mark facing leftward.



- Install clip F on transfer motor air breather hose and transfer air breather hose with the paint mark matched.



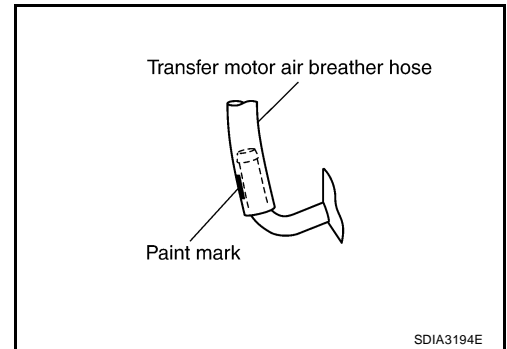
- Install the transfer air breather hose into the breather tube (transfer, metal connector) until the hose end reaches the base of the tube. Set transfer air breather hose with paint mark facing upwards.



AIR BREATHER HOSE

[ATX14B]

- Install the transfer motor air breather hose into the transfer motor (case connector) until the hose end reaches the end of the curved section. Set transfer motor air breather hose with paint mark facing leftward.



A

B

C

TF

E

F

G

H

I

J

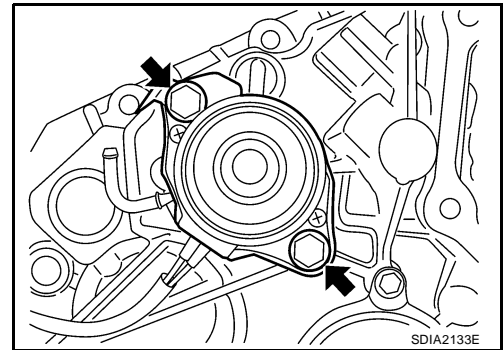
K

L

M

TRANSFER MOTOR**Removal and Installation**
REMOVAL

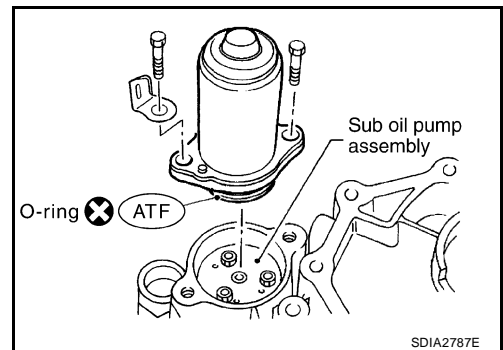
1. Disconnect the transfer motor connector.
2. Remove the transfer motor air breather hose from the transfer motor. Refer to [TF-139, "Removal and Installation"](#).
3. Remove the transfer motor bolts.
4. Remove the transfer motor.

**INSTALLATION**

1. Apply ATF to the new O-ring and install it to the transfer motor.

CAUTION:
Do not reuse O-rings.
2. Fit the double-flat end of the transfer motor shaft into the slot of the sub-oil pump assembly. Then tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

CAUTION:
Be sure to install connector bracket.
3. Install the transfer motor air breather hose to the transfer motor. Refer to [TF-139, "Removal and Installation"](#).
4. Connect the transfer motor connector.
5. Check the transfer fluid. Refer to [TF-13, "FLUID LEAKAGE AND FLUID LEVEL"](#).
6. Start the engine for one minute. Then stop the engine and recheck the transfer fluid. Refer to [TF-13, "FLUID LEAKAGE AND FLUID LEVEL"](#).



TRANSFER OIL FILTER

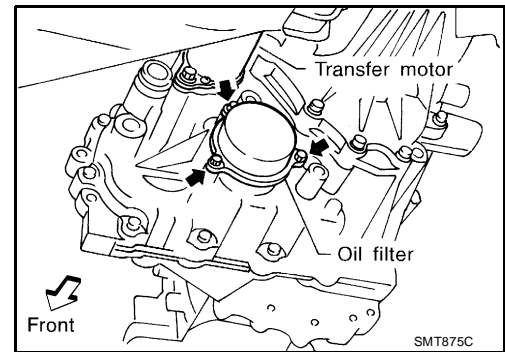
Removal and Installation

REMOVAL

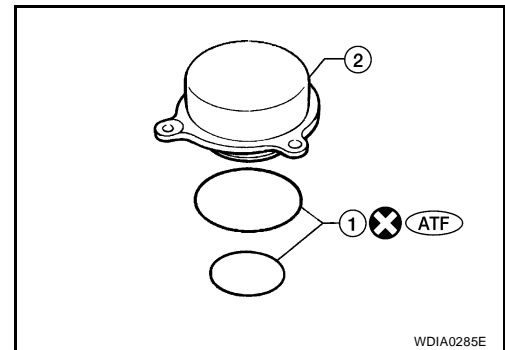
1. Remove the oil filter bolts and oil filter.

CAUTION:

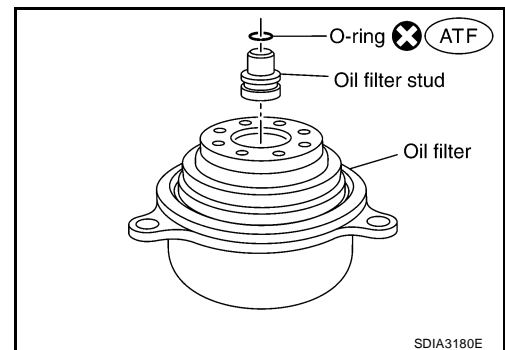
- Do not damage center case or oil filter.
- Loosen bolts and detach oil filter evenly.



2. Remove the O-rings (1) from the oil filter (2).



3. Remove the oil filter stud from the oil filter.
4. Remove the O-ring from the oil filter stud.



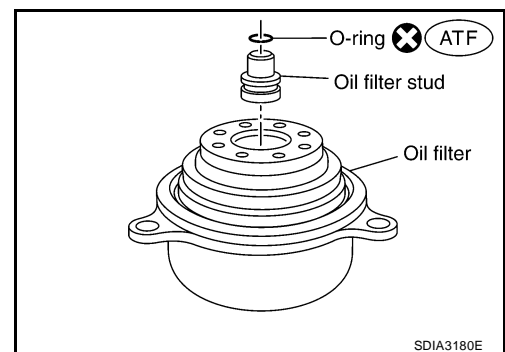
INSTALLATION

1. Apply ATF to the new O-ring, and install it on the oil filter stud.

CAUTION:

Do not reuse O-ring.

2. Install the oil filter stud to the oil filter.



A
B
C
TF
E
F
G
H
I
J
K
L
M

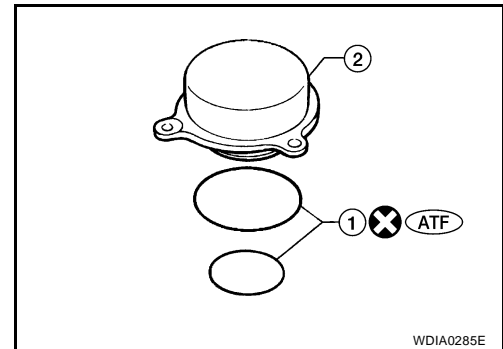
TRANSFER OIL FILTER

[ATX14B]

3. Apply ATF to the two new O-rings (1), and install them on the oil filter (2).

CAUTION:

Do not reuse O-rings.

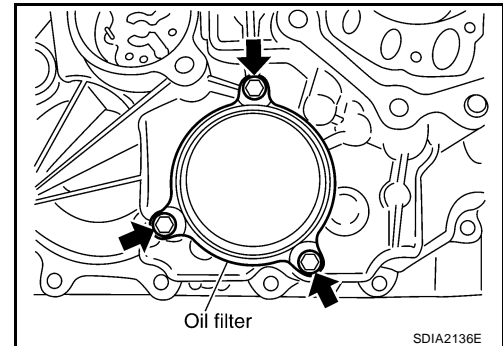


4. Install the oil filter to the transfer assembly. Tighten the bolts to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

CAUTION:

- Do not damage oil filter.
- Attach oil filter and tighten bolts evenly.

5. Check the transfer fluid. Refer to [TF-13, "FLUID LEAKAGE AND FLUID LEVEL"](#).
6. Start the engine for one minute. Then stop the engine and recheck the transfer fluid. Refer to [TF-13, "FLUID LEAKAGE AND FLUID LEVEL"](#).



TRANSFER ASSEMBLY**Removal and Installation****REMOVAL**

1. Set transfer state as 2WD when 4WD shift switch is at 2WD.
2. Remove the undercovers using power tool.
3. Drain the transfer fluid. Refer to [TF-13, "DRAINING"](#) .
4. Remove the center exhaust tube and main muffler. Refer to [EX-3, "Removal and Installation"](#) .
5. Remove the front and rear propeller shafts. Refer to [PR-5, "REMOVAL"](#) (front), [PR-10, "REMOVAL"](#) (rear).

CAUTION:

Do not damage spline, sleeve yoke and rear oil seal when removing rear propeller shaft.

NOTE:

Insert a plug into the rear oil seal after removing the rear propeller shaft.

6. Remove the A/T nuts from the A/T crossmember. Refer to [AT-243, "COMPONENTS"](#) .
7. Position two suitable jacks under the A/T and transfer assembly.
8. Remove the crossmember. Refer to [AT-243, "COMPONENTS"](#) .

WARNING:

Support A/T and transfer assembly using two suitable jacks while removing crossmember.

9. Disconnect the electrical connectors from the following:
 - ATP switch
 - Neutral 4LO switch
 - Wait detection switch
 - Transfer motor
 - Transfer control device
 - Transfer terminal cord assembly
10. Disconnect each air breather hose from the following. Refer to [TF-139, "Removal and Installation"](#) .
 - Actuator
 - Breather tube (transfer)
 - Transfer motor
11. Remove the transfer control device from the extension housing.
12. Remove the transfer to A/T and A/T to transfer bolts.
13. Remove the transfer assembly.

WARNING:

Support transfer assembly with suitable jack while removing it.

CAUTION:

Do not damage rear oil seal (A/T).

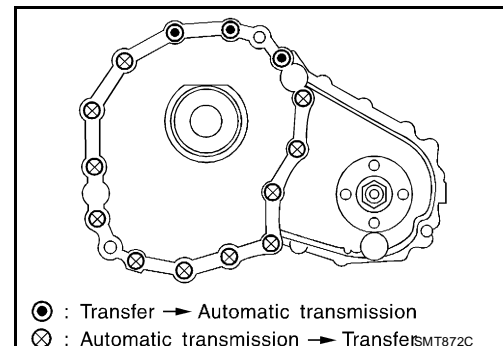
INSTALLATION

Installation is in the reverse order of removal.

- Tighten the bolts to specification.

Transfer bolt torque : 36 N·m (3.7 kg-m, 27 ft-lb)

- Fill the transfer with new fluid and check for fluid leakage and fluid level. Refer to [TF-13, "TRANSFER FLUID"](#) .
- Start the engine for one minute. Then stop the engine and recheck the transfer fluid. Refer to [TF-13, "FLUID LEAKAGE AND FLUID LEVEL"](#) .

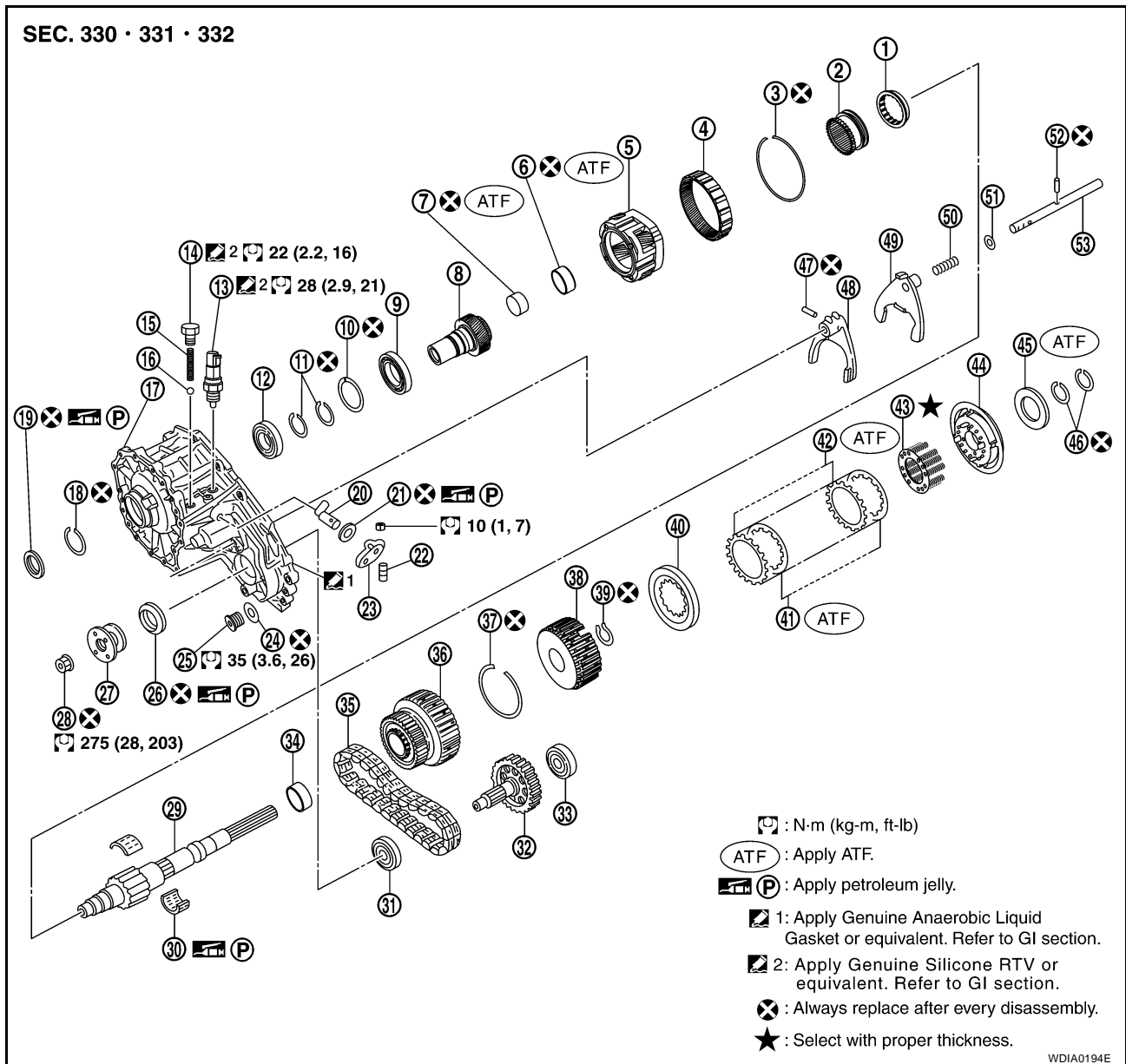


TRANSFER ASSEMBLY

[ATX14B]

EDS0037K

Disassembly and Assembly COMPONENTS



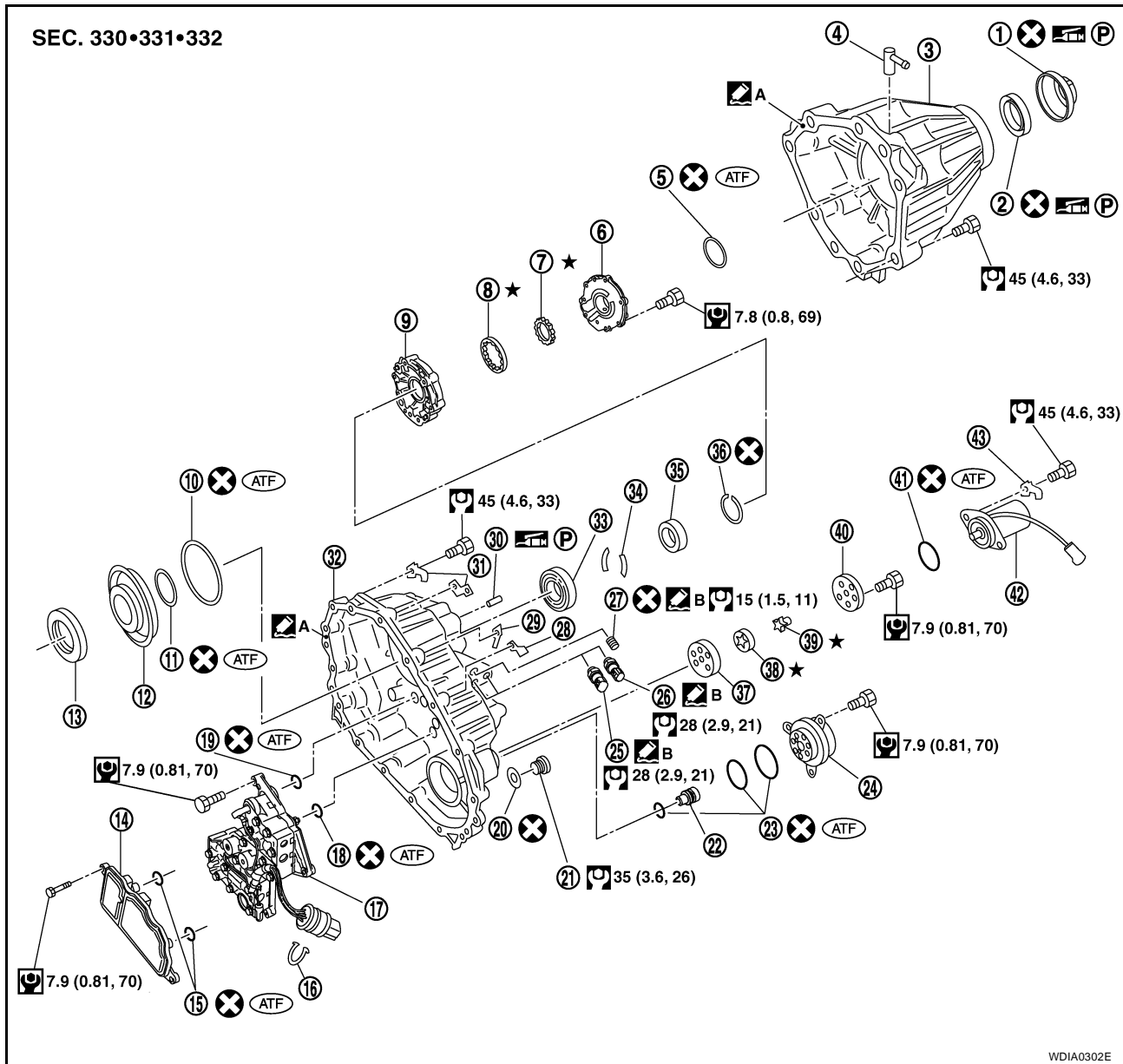
WDIA0194E

- | | | |
|----------------------------|-------------------------------|----------------------------|
| 1. 2-4 sleeve | 2. L-H sleeve | 3. Snap ring |
| 4. Internal gear | 5. Planetary carrier assembly | 6. Metal bushing |
| 7. Needle bearing | 8. Sun gear | 9. Carrier bearing |
| 10. Snap ring | 11. Snap ring | 12. Input bearing |
| 13. Wait detection switch | 14. Check plug | 15. Check spring |
| 16. Check ball | 17. Front case | 18. Snap ring |
| 19. Input oil seal | 20. Shift cross | 21. Side oil seal |
| 22. Lock pin | 23. Shift lever | 24. Gasket |
| 25. Drain plug | 26. Front oil seal | 27. Companion flange |
| 28. Self-lock nut | 29. Mainshaft | 30. Needle bearing |
| 31. Front bearing | 32. Front drive shaft | 33. Rear bearing |
| 34. Spacer | 35. Drive chain | 36. Clutch drum |
| 37. Snap ring | 38. Clutch hub | 39. Snap ring |
| 40. Retaining plate | 41. Driven plate (10 sheet) | 42. Drive plate (10 sheet) |
| 43. Return spring assembly | 44. Press flange | 45. Thrust needle bearing |
| 46. Snap ring | 47. Retaining pin | 48. L-H fork |

TRANSFER ASSEMBLY

[ATX14B]

- | | | |
|------------------|-----------------------|----------------|
| 49. 2-4 fork | 50. Shift fork spring | 51. Fork guide |
| 52. Retainer pin | 53. Shift rod | |



- | | | |
|--------------------------------|-----------------------------|-------------------------------|
| 1. Dust cover | 2. Rear oil seal | 3. Rear case |
| 4. Breather tube | 5. Seal ring | 6. Main oil pump cover |
| 7. Inner gear | 8. Outer gear | 9. Main oil pump housing |
| 10. D-ring | 11. D-ring | 12. Clutch piston |
| 13. Thrust needle bearing race | 14. Oil strainer | 15. O-ring |
| 16. Snap ring | 17. Control valve assembly | 18. Lip seal (large 5 pieces) |
| 19. Lip seal (small 2 pieces) | 20. Gasket | 21. Filler plug |
| 22. Oil filter stud | 23. O-ring | 24. Oil filter |
| 25. ATP switch | 26. Neutral-4LO switch | 27. Oil pressure check plug |
| 28. Harness bracket | 29. Air breather hose clamp | 30. Stem bleeder |
| 31. Harness bracket | 32. Center case | 33. Mainshaft rear bearing |
| 34. C-ring | 35. Washer holder | 36. Snap ring |
| 37. Sub oil pump housing | 38. Outer gear | 39. Inner gear |

WDIA0302E

- 40. Sub oil pump cover
- 43. Connector bracket

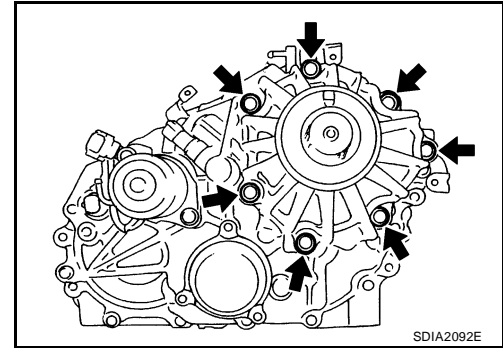
- 41. O-ring
- A. Apply Genuine Anaerobic Liquid Gasket, Three Bond TB1133C or equivalent.

- 42. Transfer motor
- B. Apply Genuine Liquid Gasket, Three Bond TB1215 or equivalent.

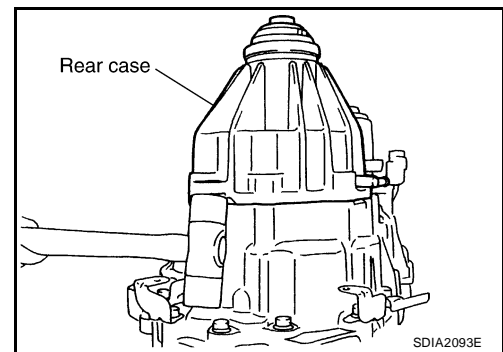
DISASSEMBLY

Rear Case

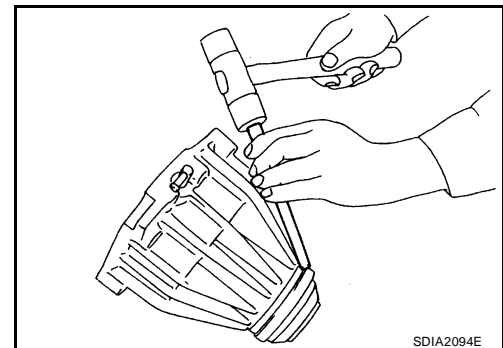
1. Remove the rear case bolts.



2. Remove the rear case from the center case.



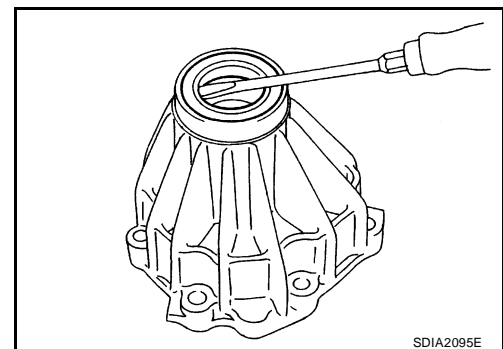
3. Remove the dust cover using suitable tool.



4. Remove the rear oil seal using suitable tool.

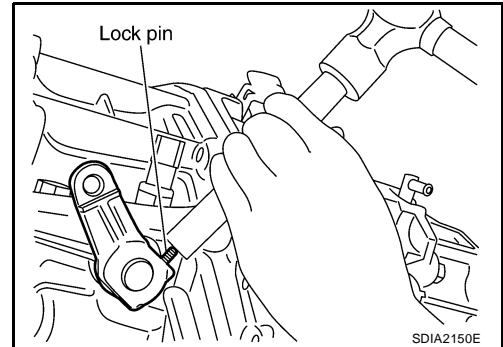
CAUTION:
Do not damage rear case.

5. Remove the breather tube.

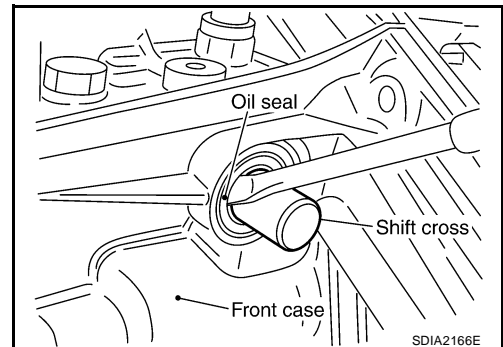


Front Case

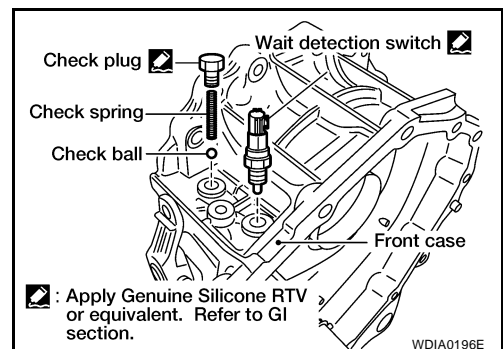
1. Remove the rear case assembly. Refer to [TF-148, "Rear Case"](#) .
2. Remove the lock pin nut.
3. Remove the lock pin using suitable tool.
4. Remove the shift lever.



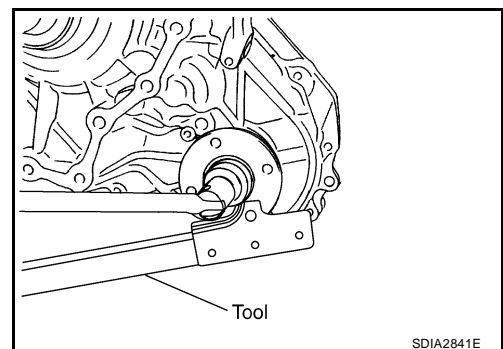
5. Remove the side oil seal from the front case using suitable tool.
CAUTION:
Do not damage front case or shift cross.



6. Remove the check plug, check spring and check ball.
7. Remove the wait detection switch.



8. Remove the self-lock nut from the companion flange using Tool.
Tool number : KV40104000 (—)



A
B
C
TF
E
F
G
H
I
J
K
L
M

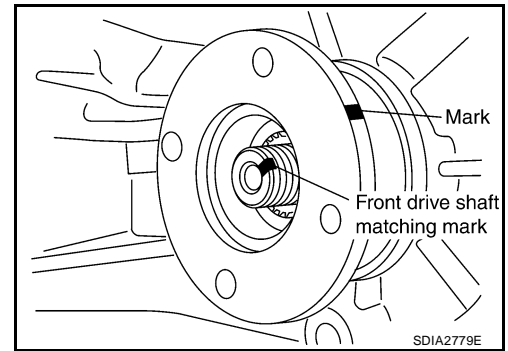
TRANSFER ASSEMBLY

[ATX14B]

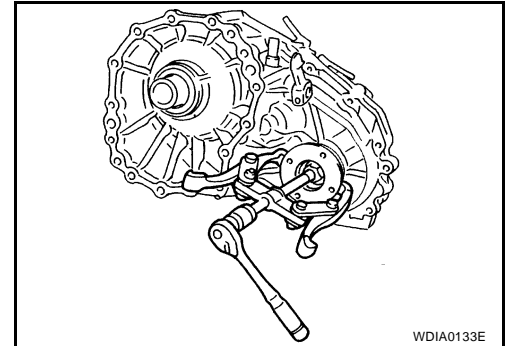
9. Put a matching mark on top of the front drive shaft thread in line with the mark on the companion flange.

CAUTION:

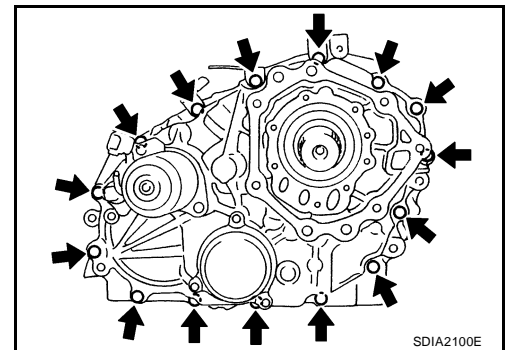
Use paint to make the matching mark on the front drive shaft thread. Never damage the front drive shaft.



10. Remove the companion flange using suitable tool.



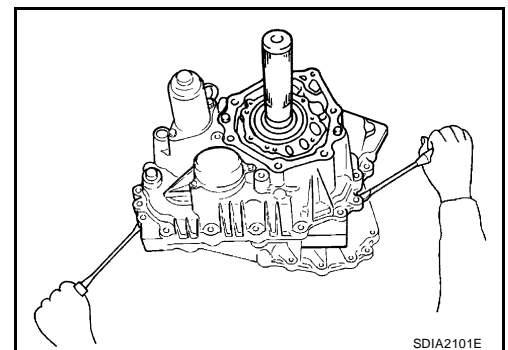
11. Remove the center case bolts, harness bracket and air breather.
12. Remove the filler plug and gasket.



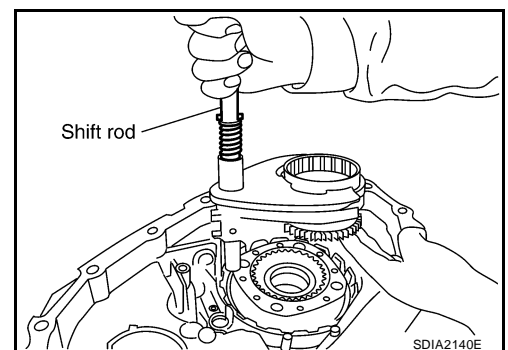
13. Separate the center case from the front case. Then remove the center case from the front case by prying it up using suitable tool.

CAUTION:

Do not damage the mating surfaces.



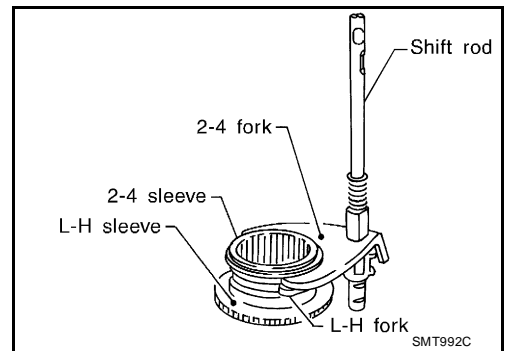
14. Remove the shift rod components together with the 2-4 sleeve and L-H sleeve.
15. Remove the shift cross from the front case.



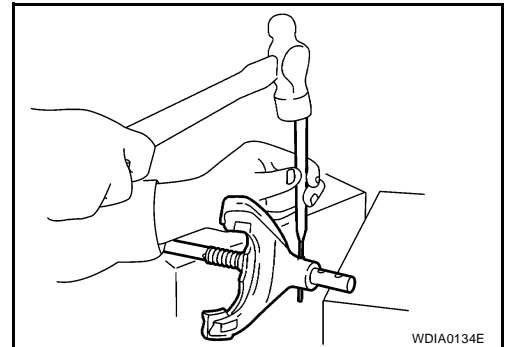
TRANSFER ASSEMBLY

[ATX14B]

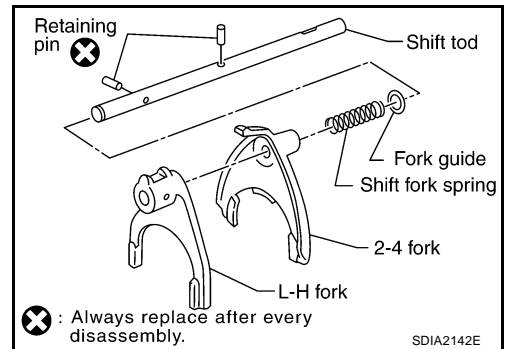
16. Remove the 2-4 sleeve and L-H sleeve from the 2-4 fork and L-H fork respectively.



17. Drive out the retaining pin from the shift rod using suitable tool.

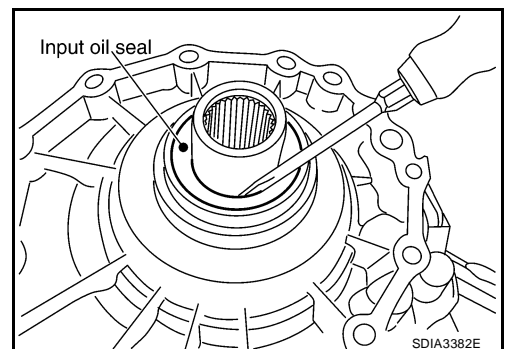


18. Remove the L-H fork, 2-4 fork, shift fork spring and fork guide from the shift rod.



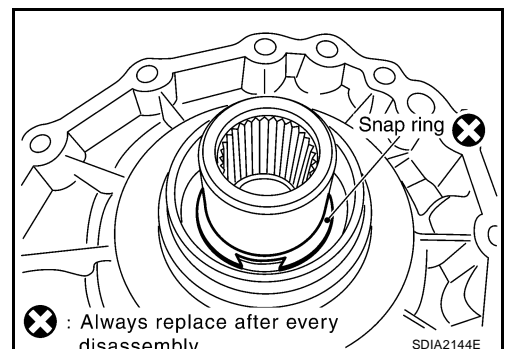
19. Remove the input oil seal from the front case using suitable tool.

CAUTION:
Do not damage front case or sun gear.



20. Remove the snap ring from the sun gear.

CAUTION:
Do not damage front case or sun gear.



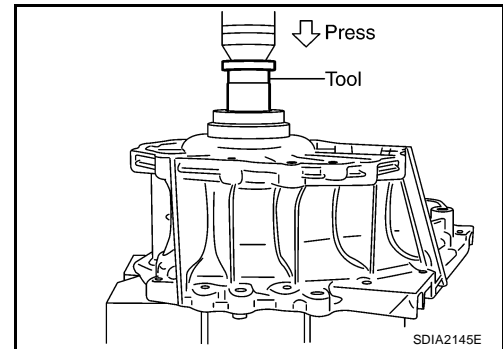
A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER ASSEMBLY

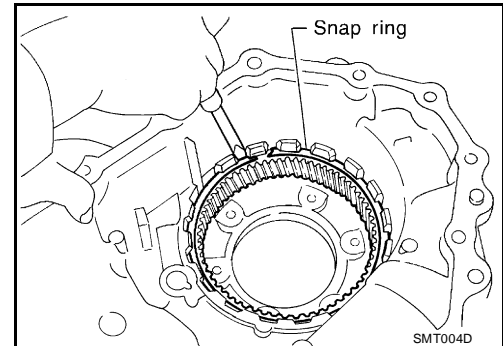
[ATX14B]

21. Remove the sun gear assembly and planetary carrier assembly from the front case using Tool.

Tool number : ST35300000 (—)

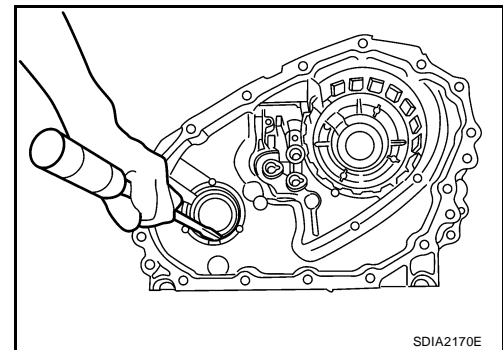


22. Remove the snap ring and internal gear using suitable tool.

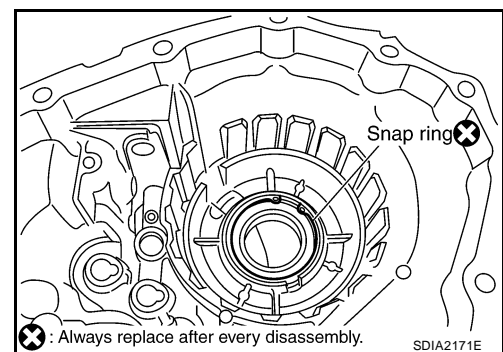


23. Remove the front oil seal using suitable tool.

CAUTION:
Do not damage front case.

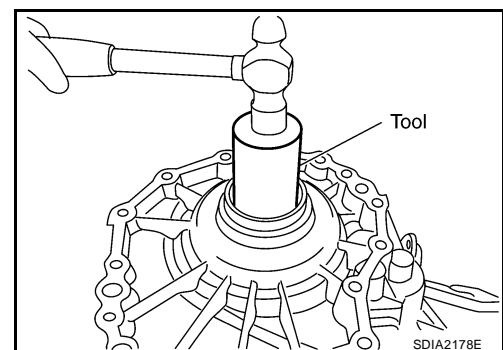


24. Remove the snap ring from the front case.



25. Remove the input bearing from the front case using Tool.

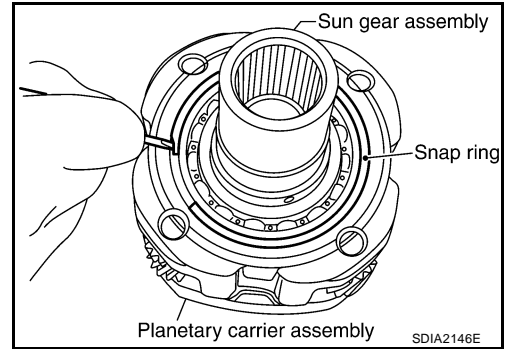
Tool number : ST33200000 (J-26082)



TRANSFER ASSEMBLY

[ATX14B]

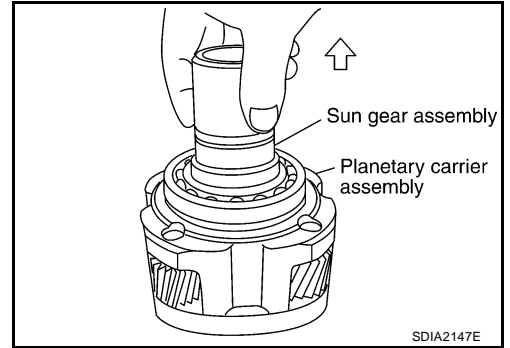
26. Remove the snap ring from the planetary carrier assembly using suitable tool.



A
B
C

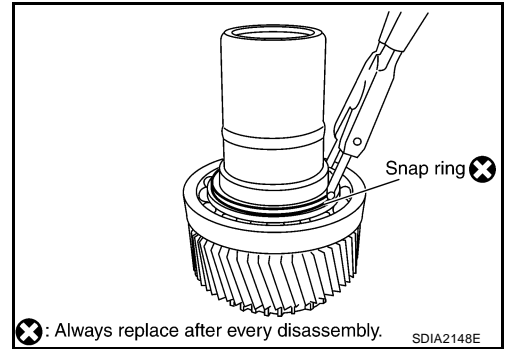
TF

27. Remove the sun gear assembly from the planetary carrier assembly.



E
F
G

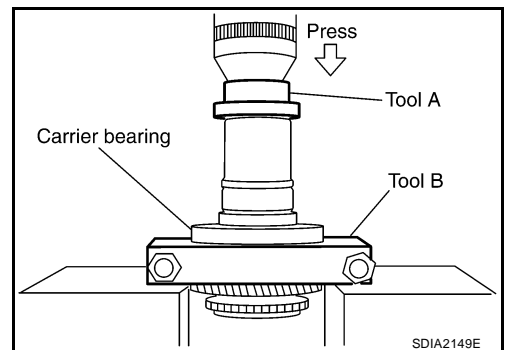
28. Remove the snap ring from the sun gear assembly using suitable tool.



H
I
J

29. Remove the carrier bearing from the sun gear using Tools.

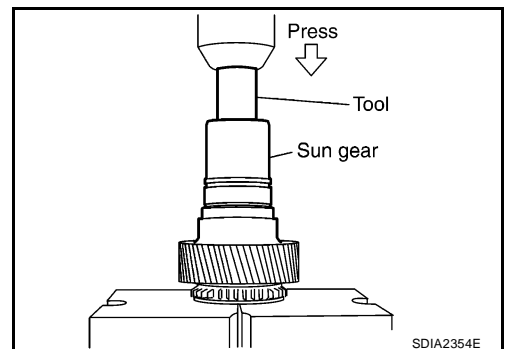
Tool number **A: ST35300000 (—)**
 B: ST30031000 (—)



K
L
M

30. Remove the needle bearing from the sun gear using Tool.

Tool number **: ST33710000 (—)**

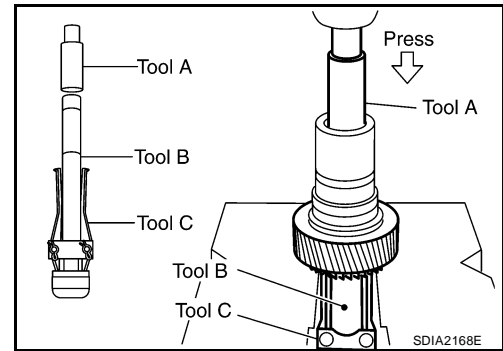


TRANSFER ASSEMBLY

[ATX14B]

31. Remove the metal bushing from the sun gear using Tools.

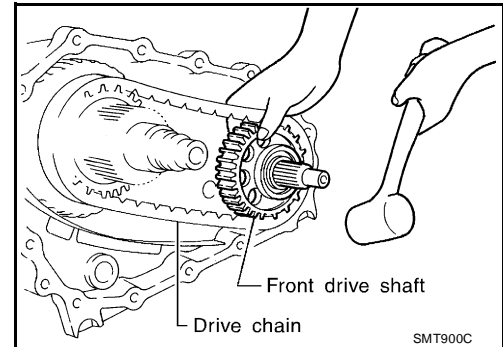
Tool number **A: ST33710000 (—)**
 B: ST35325000 (—)
 C: ST33290001 (J-34286)



Center Case

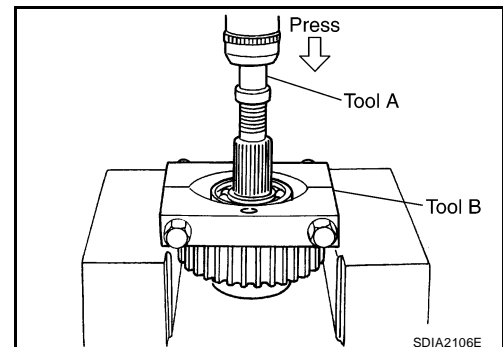
1. Remove the rear case assembly. Refer to [TF-148, "Rear Case"](#).
2. Remove the front case assembly. Refer to [TF-149, "Front Case"](#).
3. Hold the front drive shaft with one hand and tap to remove the front drive shaft with the drive chain.

CAUTION:
Do not tap drive chain.



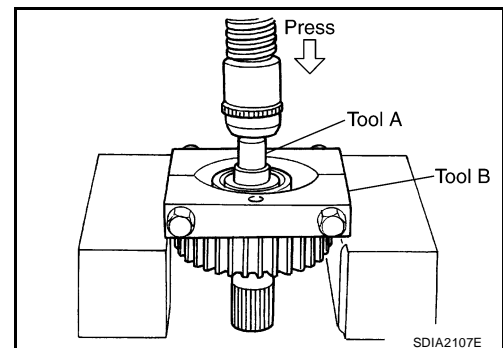
4. Remove the front drive shaft front bearing using Tools.

Tool number **A: ST33052000 (—)**
 B: ST30031000 (—)



5. Remove the front drive shaft rear bearing using Tools.

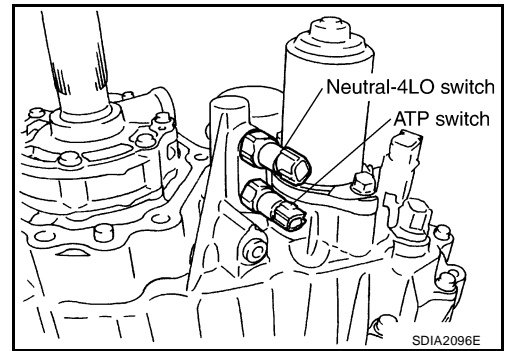
Tool number **A: ST33052000 (—)**
 B: ST30031000 (—)



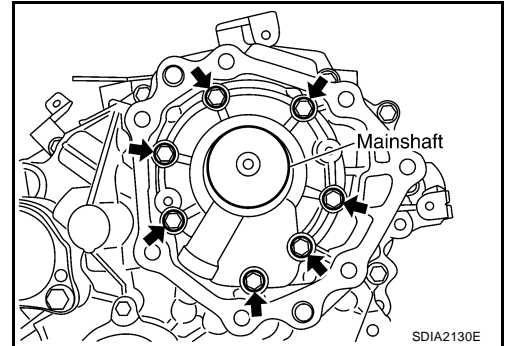
TRANSFER ASSEMBLY

[ATX14B]

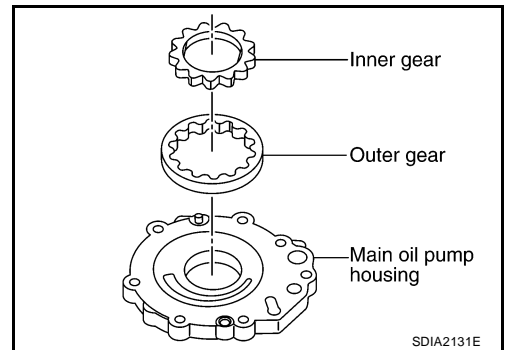
6. Remove the neutral-4LO and ATP switches.



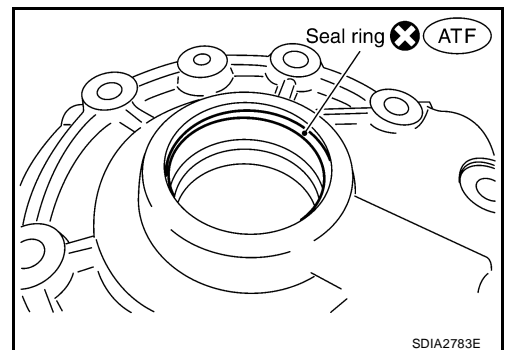
7. Remove the bolts and main oil pump cover.



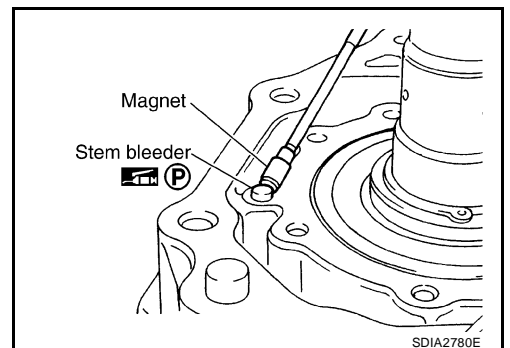
8. Remove the outer gear, inner gear and main oil pump housing from the center case.



9. Remove the seal ring from the main oil pump cover.



10. Remove the stem bleeder from the bleed hole.

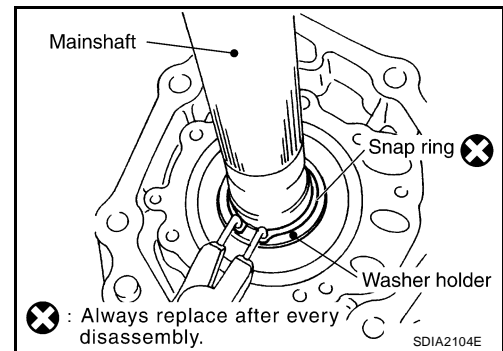


A
B
C
TF
E
F
G
H
I
J
K
L
M

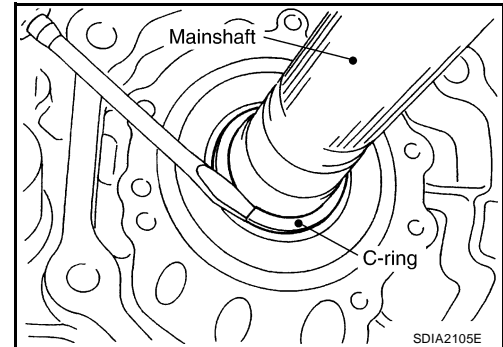
TRANSFER ASSEMBLY

[ATX14B]

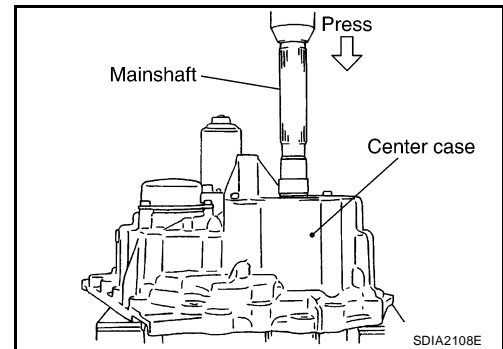
11. Remove the snap ring and washer holder from the mainshaft.



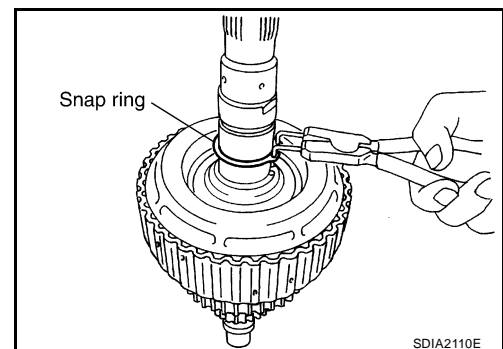
12. Remove the C-rings from the mainshaft using suitable tool.



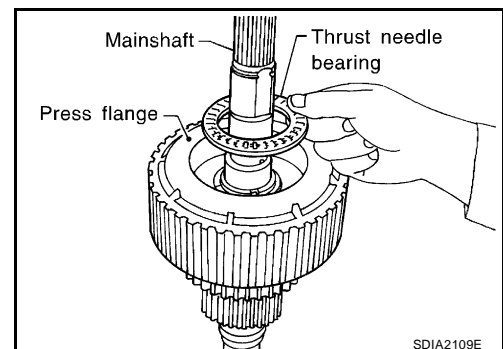
13. Set the center case on the press stand. Remove the mainshaft from the center case.



14. Remove the snap ring from the mainshaft using suitable tool.



15. Remove the thrust needle bearing from the press flange.

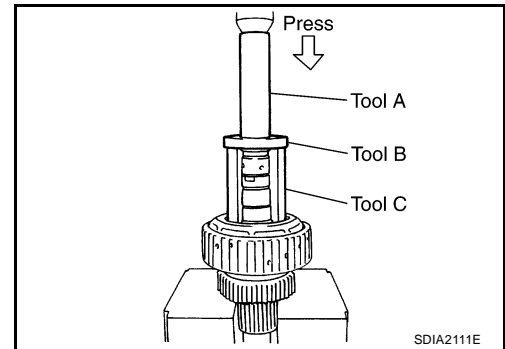


TRANSFER ASSEMBLY

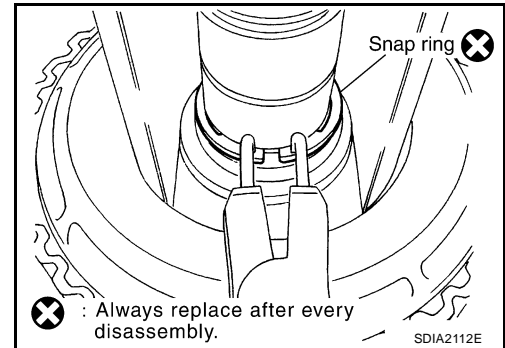
[ATX14B]

16. Press the press flange until the snap ring is out of place using Tools.

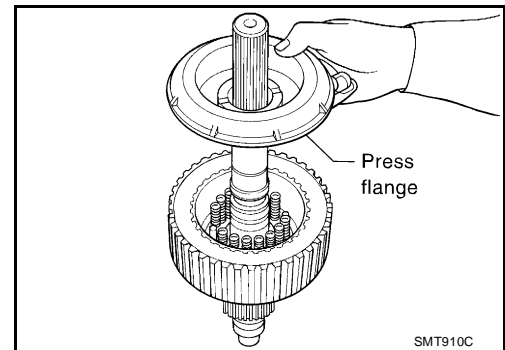
Tool number **A: ST22452000 (J-34335)**
 B: ST30911000 (—)
 C: KV31103300 (—)



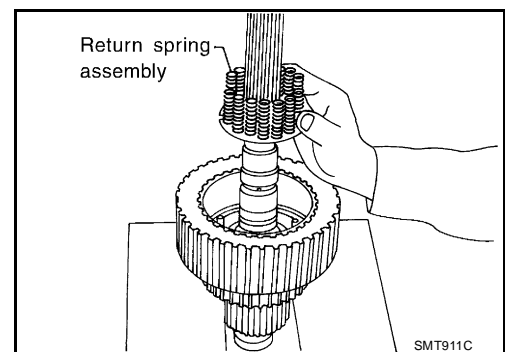
17. Remove the snap ring from the mainshaft using suitable tool.



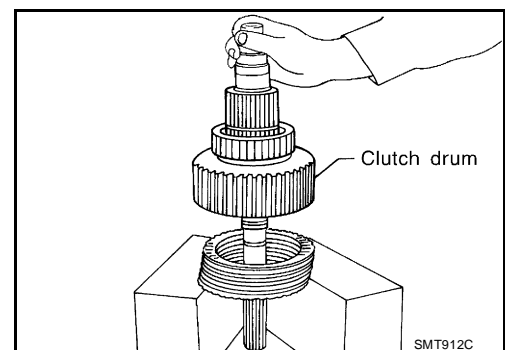
18. Remove the press flange from the mainshaft.



19. Remove the return spring assembly from the clutch hub.



20. Remove each plate from the clutch drum.

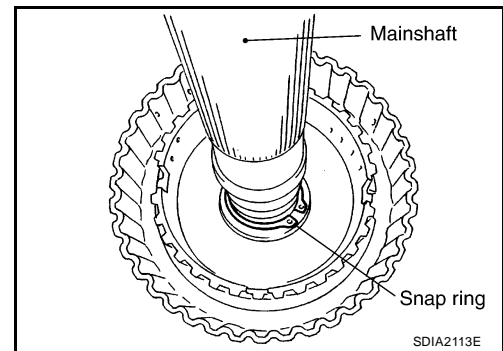


A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER ASSEMBLY

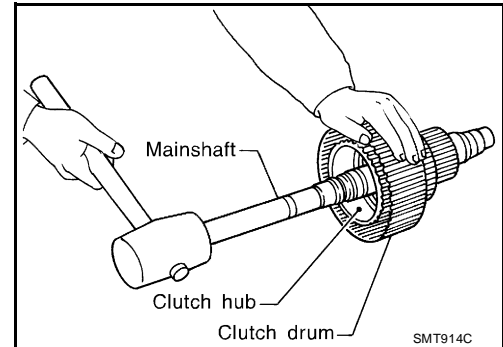
[ATX14B]

21. Remove the snap ring from the mainshaft.

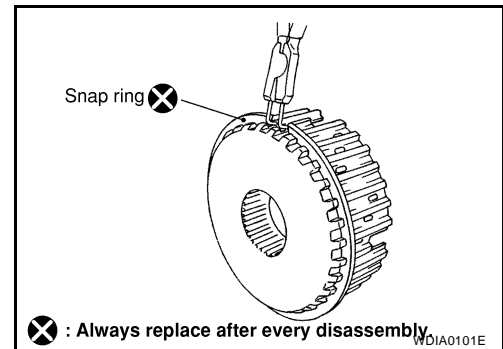


22. Remove the mainshaft from the clutch drum and clutch hub using suitable tool.

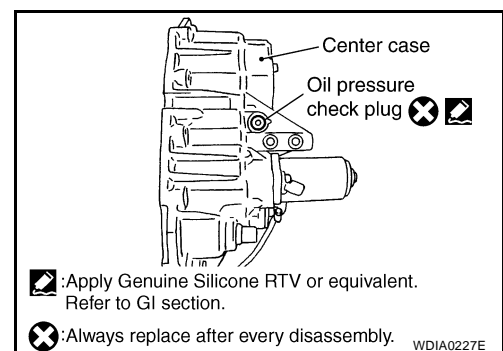
23. Remove the needle bearing and spacer from the mainshaft.



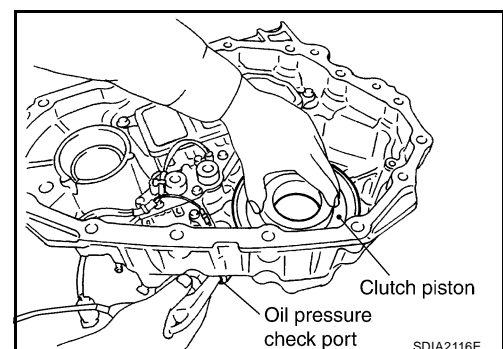
24. Remove the snap ring from the clutch hub using suitable tool.



25. Remove the oil pressure check plug from the oil pressure check port.



26. Apply air gradually from the oil pressure check port, and remove the clutch piston assembly from the center case.



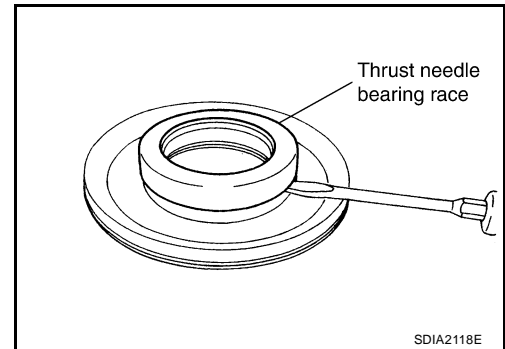
TRANSFER ASSEMBLY

[ATX14B]

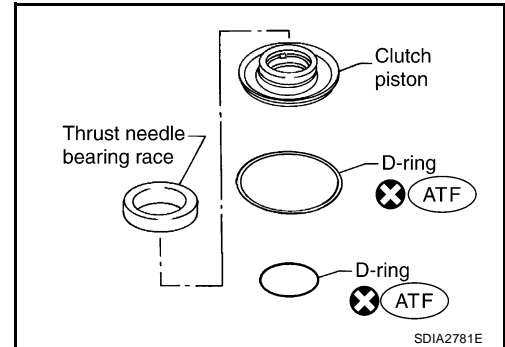
27. Remove the thrust needle bearing race from the clutch piston by hooking a edge into 3 notches of the thrust needle bearing race using suitable tool.

CAUTION:

Do not damage clutch piston or thrust needle bearing race.

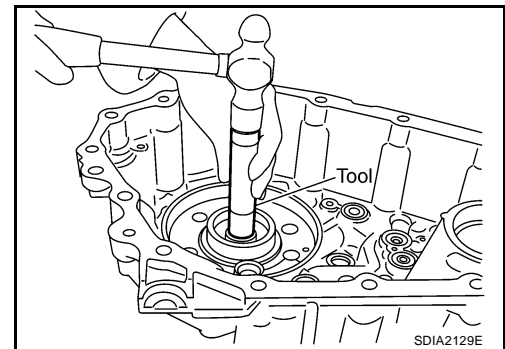


28. Remove the two D-rings from the clutch piston.

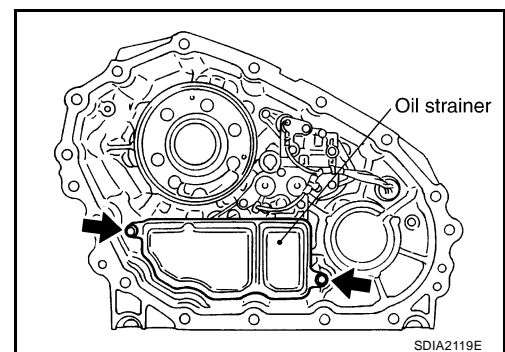


29. Remove the mainshaft rear bearing from the center case using Tool.

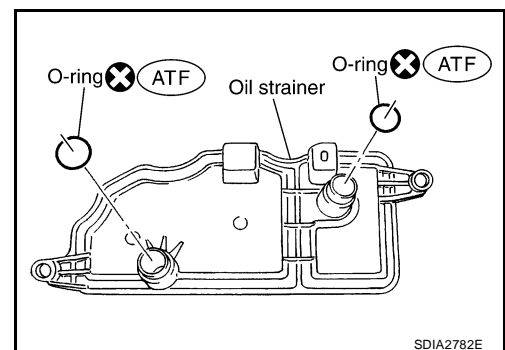
Tool number : KV38100300 (J-25523)



30. Remove the two bolts and oil strainer.



31. Remove the two O-rings from the oil strainer.

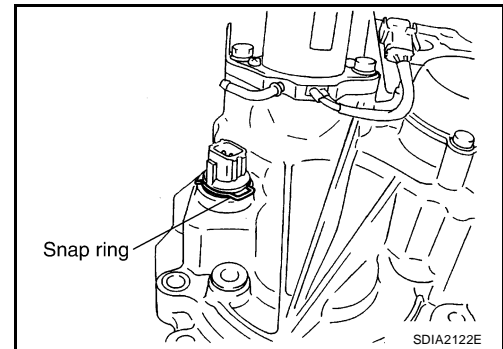


A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER ASSEMBLY

[ATX14B]

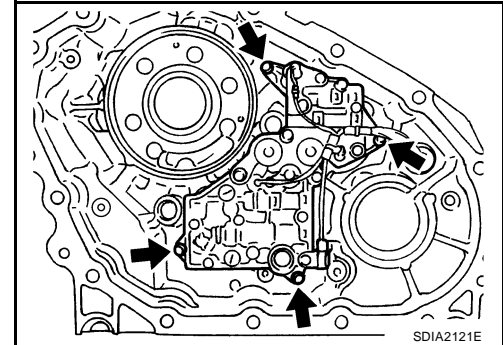
32. Remove the snap ring. Then push the connector assembly into the center case to remove the control valve assembly.



33. Remove the control valve assembly bolts.
34. Remove the control valve assembly.

CAUTION:

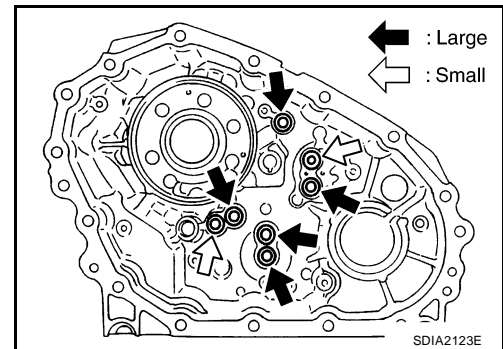
- Do not reuse any part that has been dropped or damaged.
- Make sure valve is assembled in the proper direction.
- Do not use a magnet because residual magnetism stays during disassembly.



35. Remove the lip seals from the center case.

CAUTION:

There are two kinds of lip seals (lip seal of large inner diameter: 5 pieces, lip seal of small inner diameter: 2 pieces). Confirm the position before disassembly.

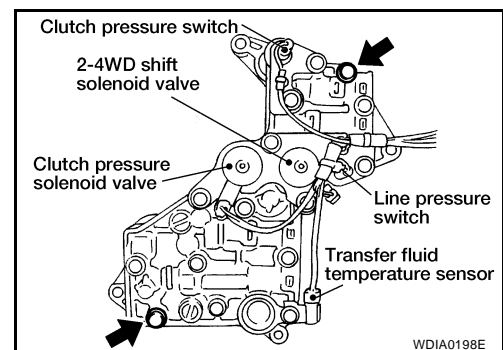


36. Disassemble the control valve assembly with the following procedure.

CAUTION:

- Do not reuse any part that has been dropped or damaged.
- Make sure valve is assembled in the proper direction.
- Do not use a magnet because residual magnetism stays during disassembly.

- a. Remove all the bolts except for the two shown.



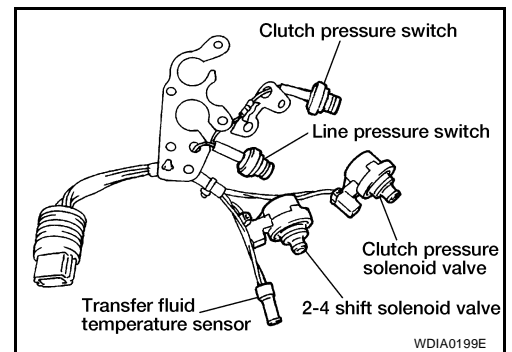
TRANSFER ASSEMBLY

[ATX14B]

b. Remove the following from the control valve assembly:

- Clutch pressure solenoid valve
- Clutch pressure switch
- 2-4WD shift solenoid valve
- Line pressure switch
- Transfer fluid temperature sensor

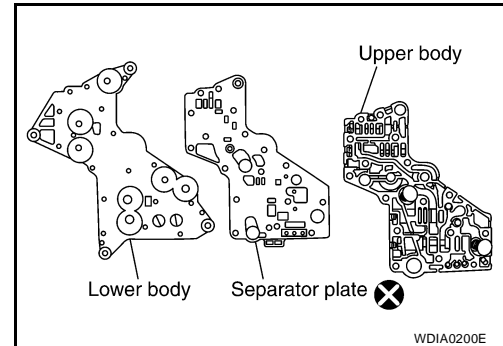
c. Remove the O-rings from each solenoid valve, switch and terminal body.



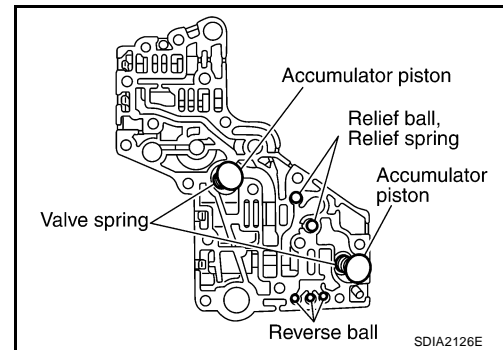
d. Place the control valve with the lower body facing up. Remove the two bolts, and then remove the lower body and separator plate from the upper body.

CAUTION:

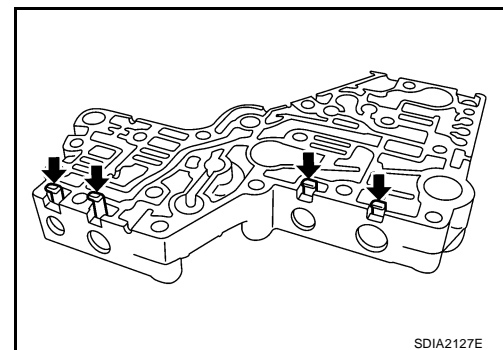
Do not drop relief balls. Detach lower body carefully.



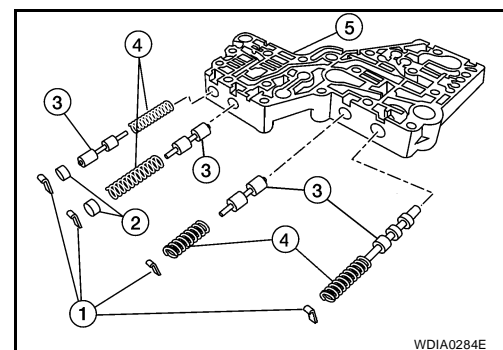
e. Make sure the reverse balls, relief balls, relief springs, accumulator pistons and valve springs are securely installed as shown, and remove them.



f. Remove the retainer plates.



g. Remove each retainer plate (1), plug (2), control valve (3) and spring (4) from the upper body (5).

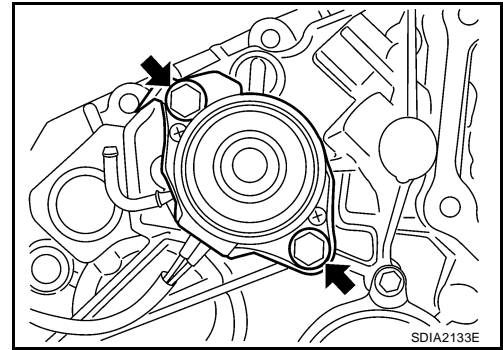


A
B
C
TF
E
F
G
H
I
J
K
L
M

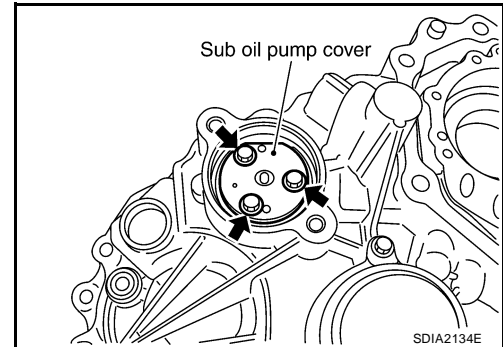
TRANSFER ASSEMBLY

[ATX14B]

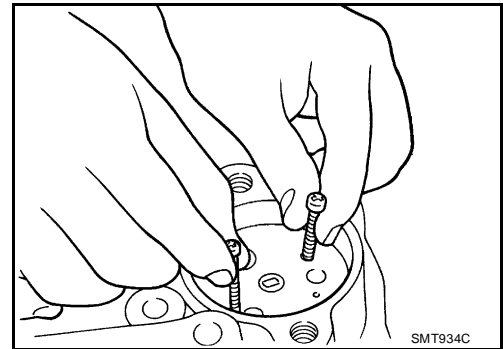
37. Remove the transfer motor bolts and motor from the center case. Then remove the O-ring from the transfer motor.



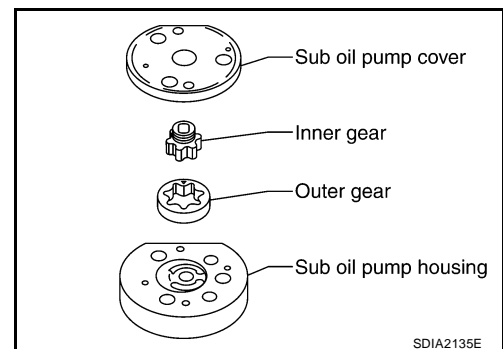
38. Remove the sub oil pump cover bolts.



39. Thread two bolts (M4 x 0.8) into the holes of sub oil pump cover as shown, and pull out to remove the sub oil pump assembly.



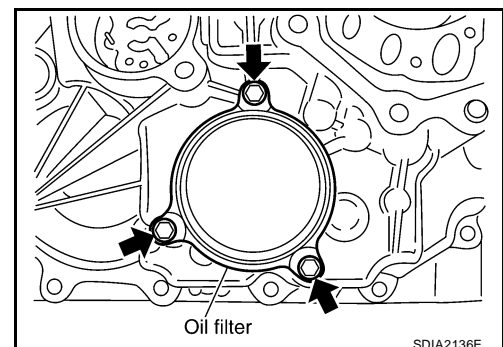
40. Remove the outer gear and inner gear from the sub oil pump housing.



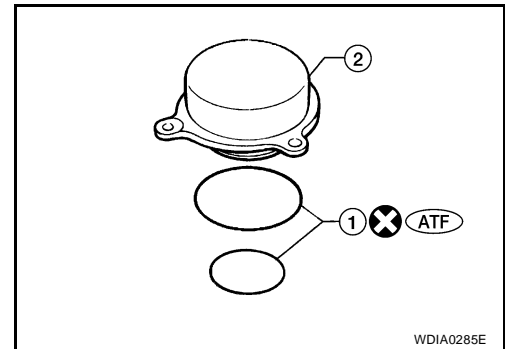
41. Remove the oil filter bolts and oil filter.

CAUTION:

- Do not damage center case and oil filter.
- Loosen bolts and detach oil filter evenly.

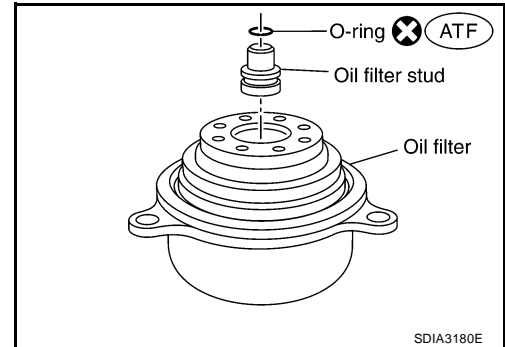


42. Remove the O-rings (1) from the oil filter (2).



43. Remove the oil filter stud from the oil filter.

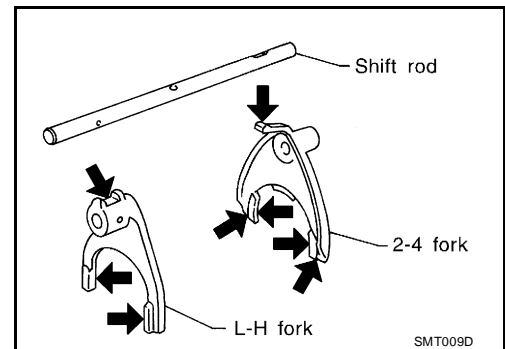
44. Remove the O-ring from the oil filter stud.



INSPECTION AFTER DISASSEMBLY

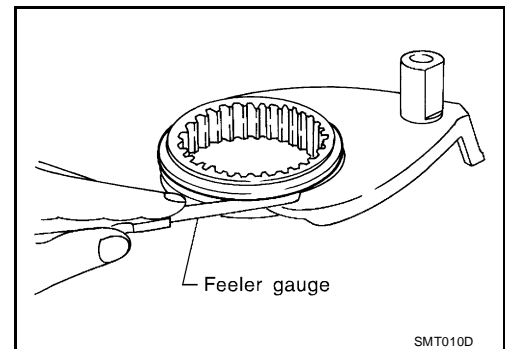
Shift Rod Components

- Check the working face of the shift rod and fork for wear, partial wear, bending and other abnormality. If any is found, replace with a new one.



- Measure the clearance between the shift fork and sleeve. If it is out of specification, replace it with a new one.

Specification : Less than 0.36 mm (0.0142 in)

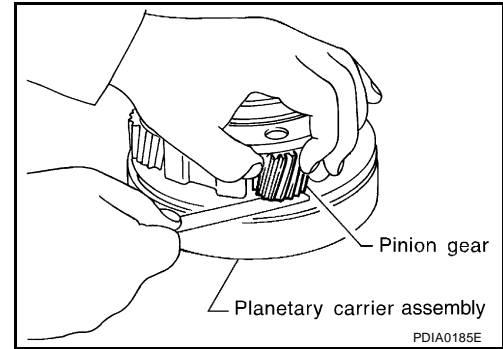


Planetary Carrier

- Measure the end play of each pinion gear. If it is out of specification, replace the planetary carrier assembly with a new one.

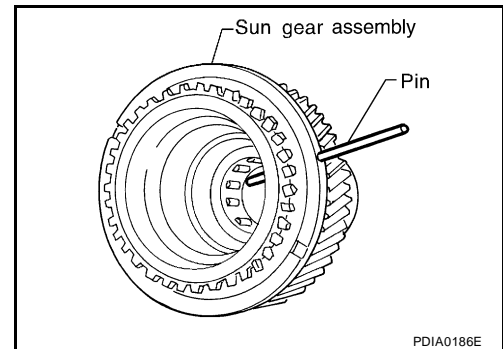
Pinion gear end play : 0.1 - 0.7 mm (0.004 - 0.028 in)

- Check the working face of each gear and bearing for damage, burrs, partial wear, dents and other abnormality. If any is found, replace the planetary carrier assembly with a new one.



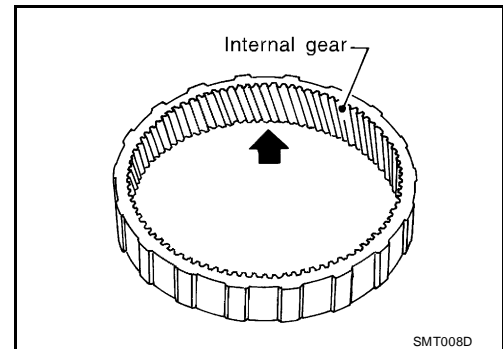
Sun Gear

- Check if the oil passage of the sun gear assembly is clogged. For this, try to pass a 3.6 mm (0.142 in) dia. pin through the oil passage as shown.
- Check the sliding and contact surface of each gear and bearing for damage, burrs, partial wear, dents, and other abnormality. If any is found, replace the sun gear assembly with a new one.



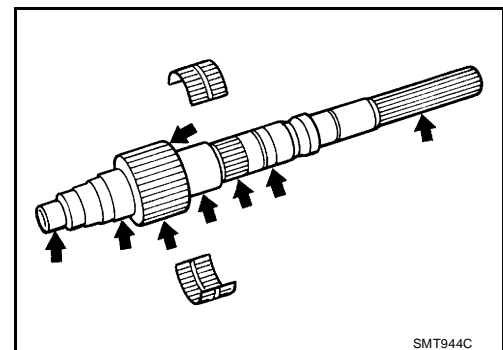
Internal Gear

- Check the internal gear teeth for damage, partial wear, dents and other abnormality. If any is found, replace the internal gear with a new one.



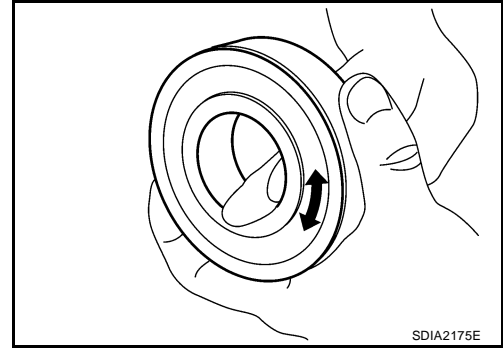
Gears and Drive Chain

- Check the gear faces and shaft for wear, cracks, damage, and seizure.
- Check the surfaces which contact the sun gear, clutch drum, clutch hub, press flange, clutch piston and each bearing for damage, peel, partial wear, dents, bending, or other abnormal damage. If any is found, replace with a new one.



Bearing

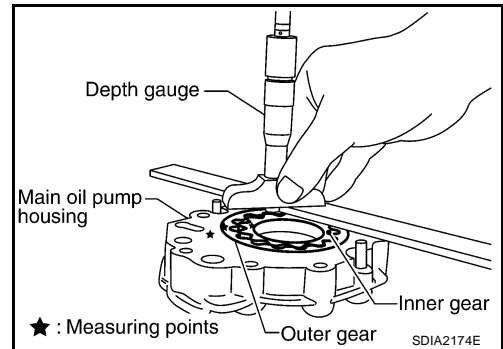
- Make sure the bearings roll freely and are free from noise, pitting and cracks.



Main Oil Pump

1. Check the inner and outer circumference, tooth face, and side-face of the inner and outer gears for damage or abnormal wear.
2. Measure the side clearance between the main oil pump housing and the inner and outer gears.
3. Make sure the side clearance is within specification. If the measurement is out of specification, replace the inner and outer gears with new ones as a set. Refer to [TF-183, "Main Oil Pump"](#).

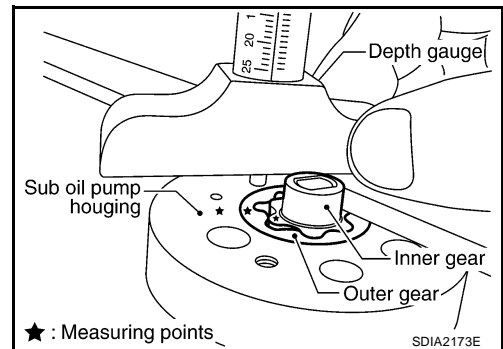
Specification : 0.015 - 0.035 mm (0.0006 - 0.0014 in)



Sub-oil Pump

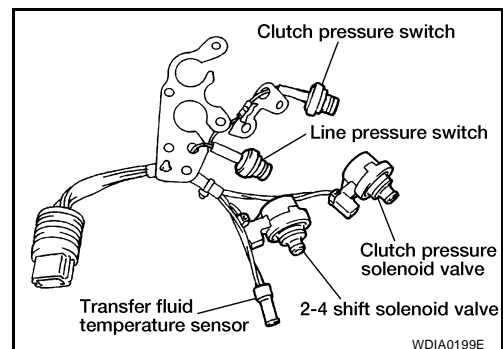
1. Check the inner and outer circumference, tooth face, and side-face of the inner and outer gears for damage or abnormal wear.
2. Measure the side clearance between the sub oil pump housing and the inner and outer gears.
3. Make sure the side clearance is within specification. If the measurement is out of specification, replace the inner and outer gears with new ones as a set. Refer to [TF-183, "Sub-oil Pump"](#).

Specification : 0.015 - 0.035 mm (0.0006 - 0.0014 in)



Control Valve

- Check resistance between the terminals of the clutch pressure solenoid valve, 2-4WD shift solenoid valve, clutch pressure switch, line pressure switch and the transfer fluid temperature sensor. Refer to [TF-91, "Clutch Pressure Solenoid"](#) (clutch pressure solenoid valve), [TF-95, "COMPONENT INSPECTION"](#) (2-4WD solenoid valve), [TF-108, "COMPONENT INSPECTION"](#) (clutch pressure switch), [TF-111, "COMPONENT INSPECTION"](#) (line pressure switch) and [TF-105, "COMPONENT INSPECTION"](#) (transfer fluid temperature sensor).



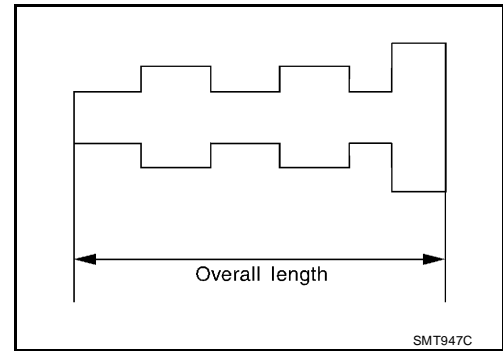
TRANSFER ASSEMBLY

[ATX14B]

- Check the sliding faces of the control valves and plugs for abnormality. If any is found, replace the control valve assembly with a new one. Refer to [TF-184, "Control Valve"](#) .

CAUTION:

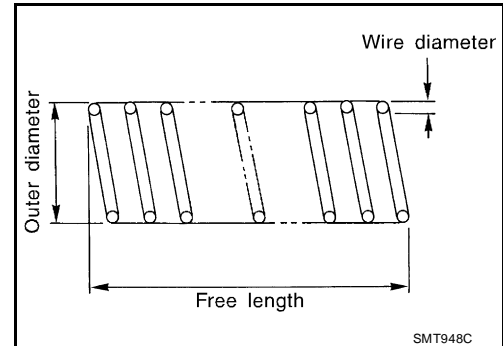
Replace control valve body together with clutch return spring as a set.



- Check each control valve spring for damage or distortion. Also check its free length, outer diameter and wire diameter. If any damage or fatigue is found, replace the control valve body with a new one. Refer to [TF-184, "Control Valve Spring"](#) .

CAUTION:

Replace control valve body together with clutch return spring as a set.

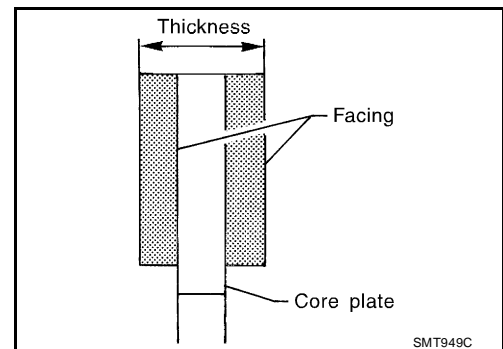


Clutch

- Check the drive plate facings and driven plate for damage, cracks or other abnormality. If any abnormalities are found, replace with a new one.
- Check the thickness of the drive plate facings and driven plate. Refer to [TF-183, "CLUTCH"](#) .

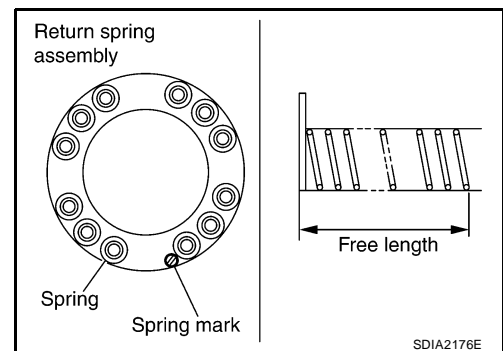
CAUTION:

- Measure facing thickness at 3 points to take an average.
- Check all drive and driven plates.
- Check return spring for damage or deformation.
- Do not remove spring from plate.



Return Spring

- Check the stamped mark shown. Then, check that the free lengths, (include thickness of plate) are within specifications. If any abnormality is found, replace with a new return spring assembly of the same stamped number. Refer to [TF-184, "Return Spring"](#) .



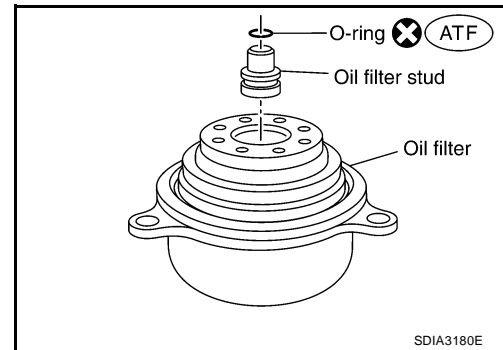
ASSEMBLY

Center Case

1. Apply ATF to the new O-ring, and install it on the oil filter stud.

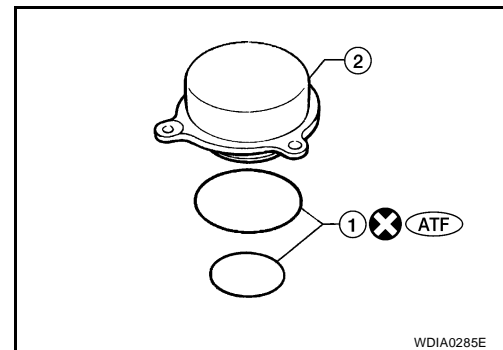
CAUTION:
Do not reuse O-rings.

2. Install the oil filter stud to the oil filter.



3. Apply ATF to the two new O-rings (1), and install them on the oil filter (2).

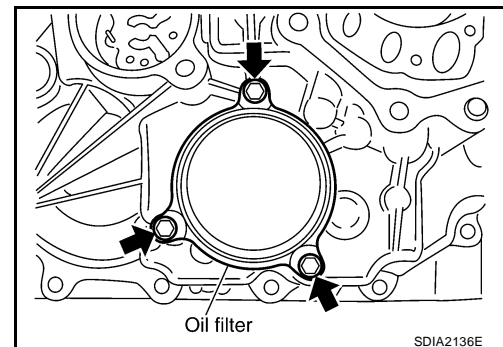
CAUTION:
Do not reuse O-rings.



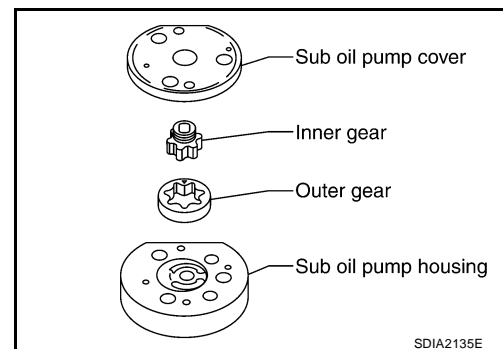
4. Install the oil filter to the center case. Tighten the bolts to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

CAUTION:

- Do not damage oil filter.
- Attach oil filter and tighten bolts evenly.



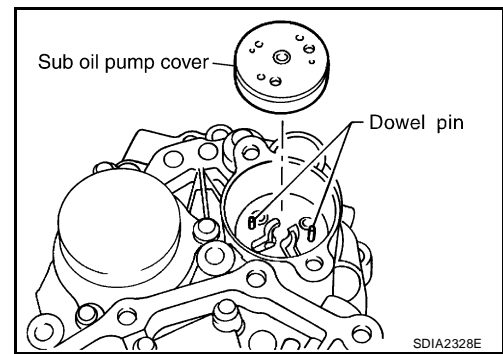
5. Install the outer gear and inner gear into the sub oil pump housing, and measure the side clearance. Refer to [TF-165, "Sub-oil Pump"](#).



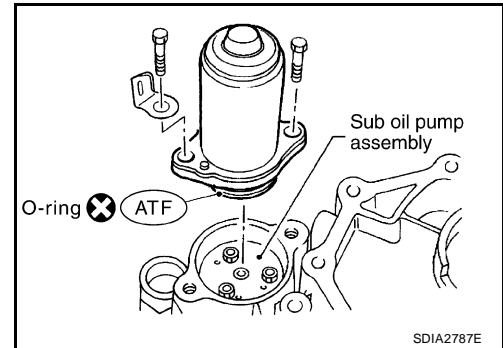
TRANSFER ASSEMBLY

[ATX14B]

6. Align the dowel pin hole and bolt hole of the sub oil pump assembly with the center case. Install the sub oil pump cover. Then tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .



7. Apply ATF to the new O-ring and install it to the transfer motor.
CAUTION:
Do not reuse O-rings.
8. Fit the double-flat end of the transfer motor shaft into the slot of the sub-oil pump assembly. Then tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .



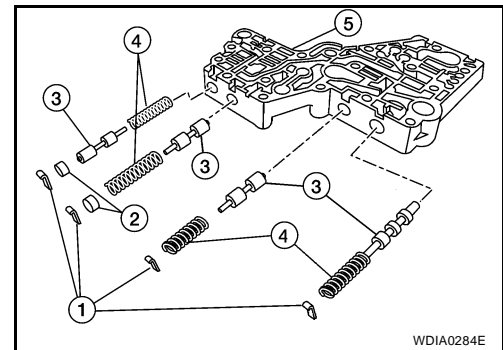
CAUTION:
Be sure to install connector bracket.

9. Assemble the control valve assembly with the following procedure.

CAUTION:

- Do not reuse any part that has been dropped or damaged.
- Make sure valve is assembled in the proper direction.
- Do not use a magnet because residual magnetism stays during assembly.

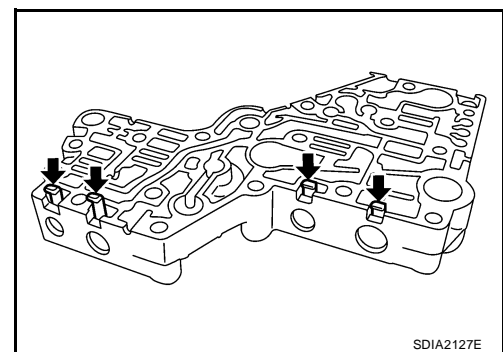
- a. Clean the upper body (5), control valves (3) and springs (4) with cleaning agent, and dry with compressed air.
- b. Dip the control valves in ATF, and apply ATF to the valve-mounting area of the upper body.



- c. Install each control valve, spring, and plug to the upper body, and install retainer plates to hold them in place.

CAUTION:

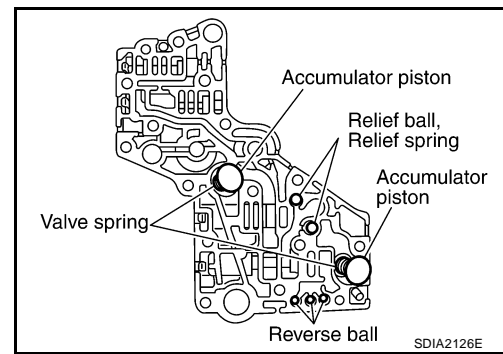
- To insert control valves into upper body, place upper body on a level surface in order to prevent flaw or damage.
- Make sure each control valve is smoothly inserted.



TRANSFER ASSEMBLY

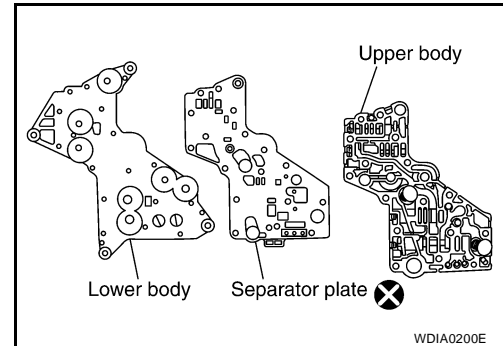
[ATX14B]

- d. Install the reverse balls, relief balls and relief springs, accumulator pistons and valve springs to the upper body.



- e. Install the lower body and separator plate to the upper body.

CAUTION:
Do not reuse separator plates.

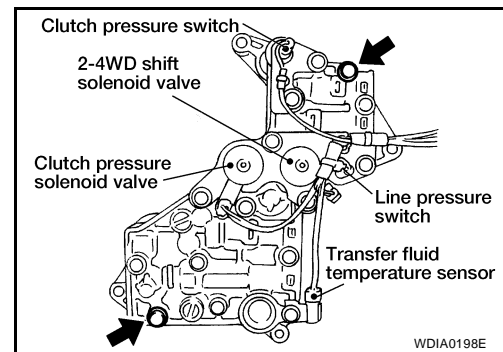


- f. With the lower body down, tighten the two bolts shown.
g. Apply ATF to the new O-rings, and install them to each solenoid valve, switch and terminal body.

CAUTION:
Do not reuse O-rings.

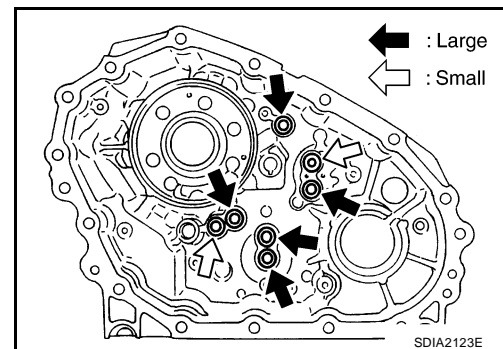
- h. Install the following to the control valve assembly:

- Clutch pressure solenoid valve
- Clutch pressure switch
- 2-4WD shift solenoid valve
- Line pressure switch
- Transfer fluid temperature sensor



10. Apply ATF to the new lip seals, and install them to the center case.

CAUTION:
● Do not reuse lip seals.
● There are 2 kinds of lip seals (lip seal of large inner diameter: 5 pieces, lip seal of small inner diameter: 2 pieces). Confirm their position for installation.



A
B
C
TF
E
F
G
H
I
J
K
L
M

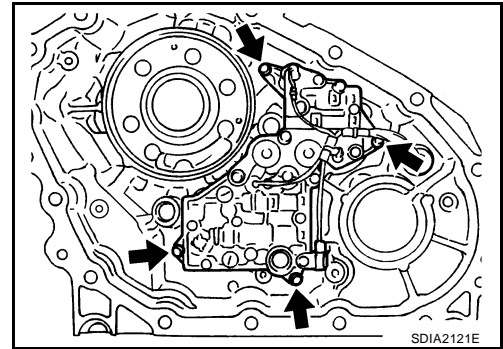
TRANSFER ASSEMBLY

[ATX14B]

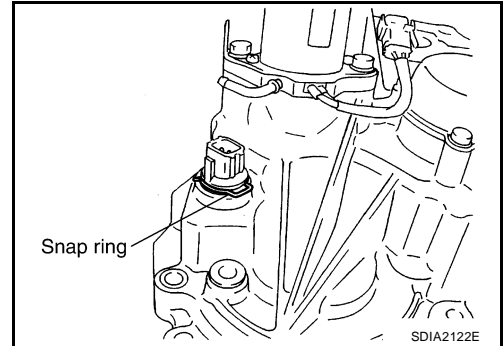
11. Install the control valve assembly to the center case, and tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

CAUTION:

- Do not reuse any part that has been dropped or damaged.
- Make sure valve is assembled in the proper direction.
- Do not use a magnet because residual magnetism stays during assembly.



12. Install the connector assembly into the center case, and secure with a snap ring.

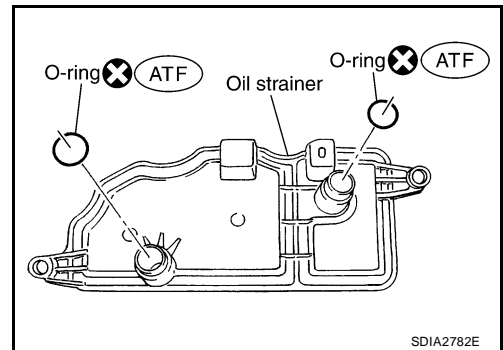


13. Apply ATF to the new O-rings, and install them on the oil strainer.

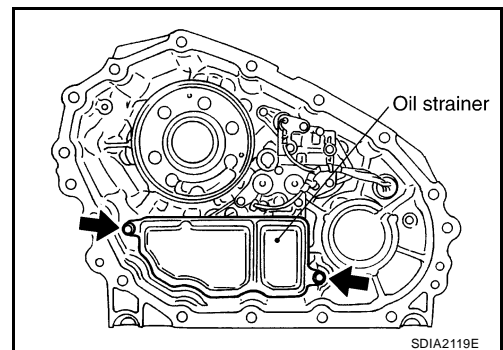
CAUTION:

Do not reuse O-rings.

14. Install the oil strainer to the control valve assembly.



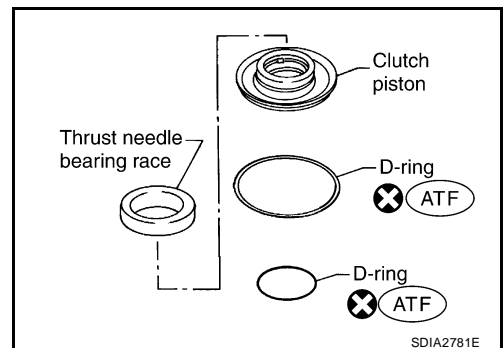
15. Tighten the bolts to the specified torque. Refer to [TF-146, "COMPONENTS"](#).



16. Apply ATF to the new D-rings, and install them to the clutch piston.

CAUTION:

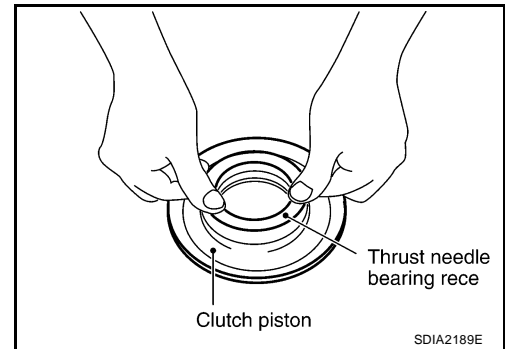
Do not reuse D-rings.



TRANSFER ASSEMBLY

[ATX14B]

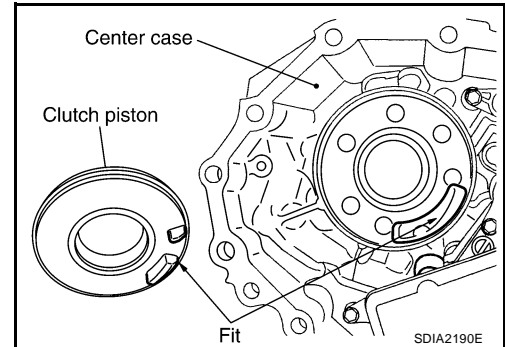
17. Install the thrust needle bearing race to the clutch piston.



18. Install the clutch piston to the center case as shown.

CAUTION:

Install so the fitting protrusion of clutch piston aligns with the dent of center case.



19. Remove all the sealant from the oil pressure check port and inside the center case.

CAUTION:

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

20. Thread the new oil pressure check plug in 1 or 2 pitches and apply sealant to the oil pressure check plug threads. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

- Use Genuine Silicone RTV or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#).

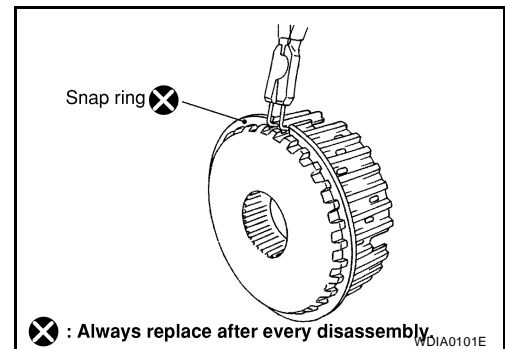
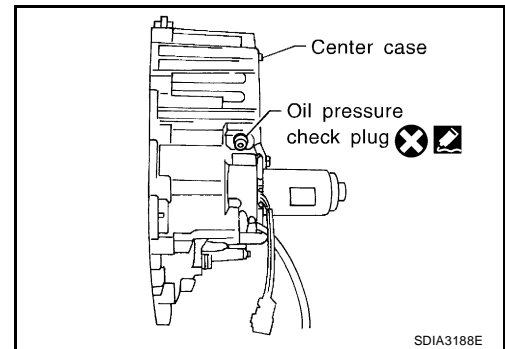
CAUTION:

Do not reuse oil pressure check plug.

21. Install the new snap ring to the clutch hub using suitable tool.

CAUTION:

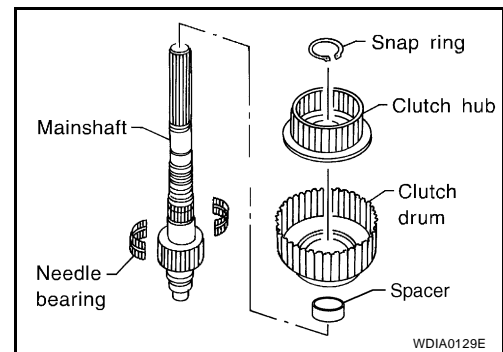
Do not reuse snap ring.



TRANSFER ASSEMBLY

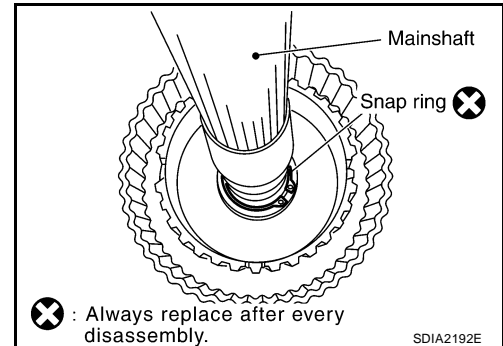
[ATX14B]

22. Apply petroleum jelly to the needle bearing, and install the needle bearing, spacer, clutch drum and clutch hub to the mainshaft.

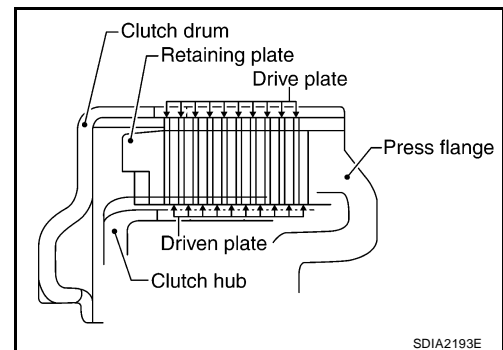


23. Install the new snap ring to the mainshaft.

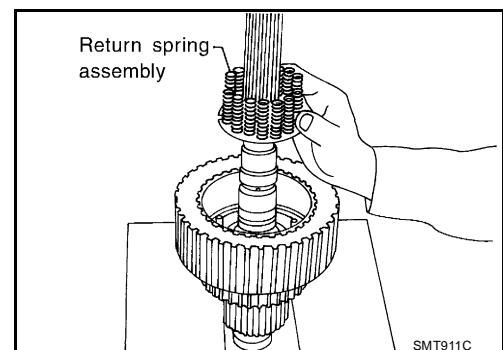
CAUTION:
Do not reuse snap rings.



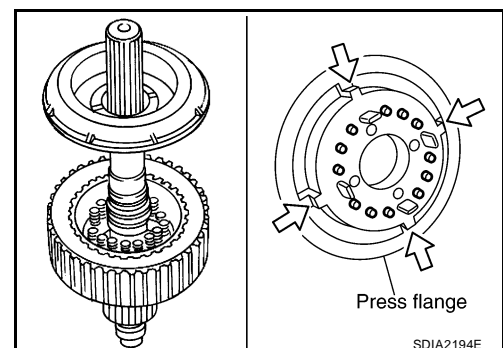
24. Apply ATF each plate, then install them into the clutch drum as shown.



25. Install the return spring assembly into the clutch hub.



26. Install the press flange by aligning the notches to the clutch hub as shown.



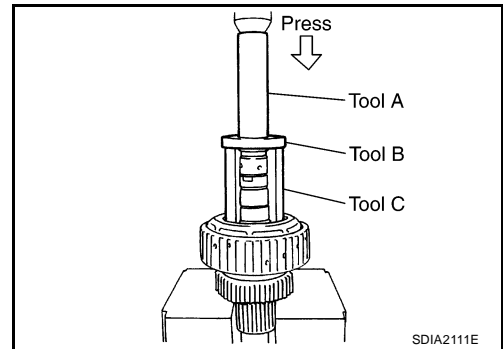
TRANSFER ASSEMBLY

[ATX14B]

27. Press the press flange to install the new snap ring into snap ring groove on mainshaft using Tools.

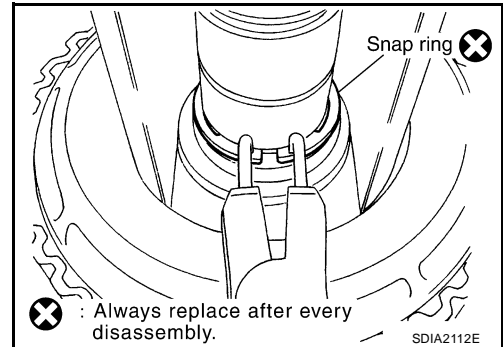
Tool number **A: ST22452000 (J-34335)**
 B: ST30911000 (—)
 C: KV31103300 (—)

CAUTION:
Do not reuse snap ring.

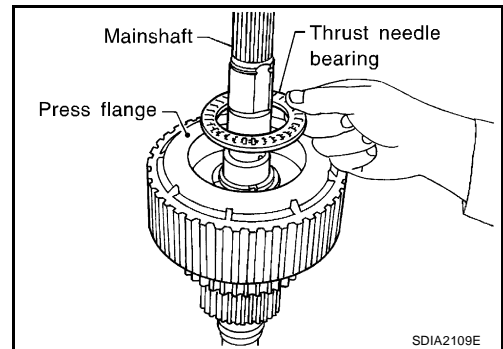


28. Install the new snap ring to the mainshaft using suitable tool.

CAUTION:
Do not reuse snap ring.

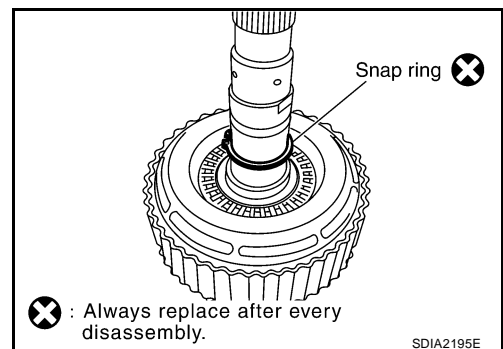


29. Apply ATF to the thrust needle bearing and install it on the press flange.



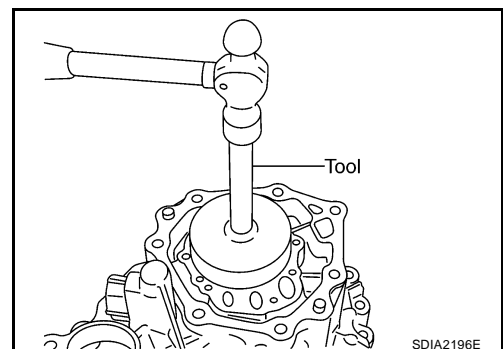
30. Install the new snap ring to the main shaft.

CAUTION:
Do not reuse snap ring.



31. Install the mainshaft rear bearing to the center case using Tool.

Tool number **: ST15310000 (J-25640-B)**



A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER ASSEMBLY

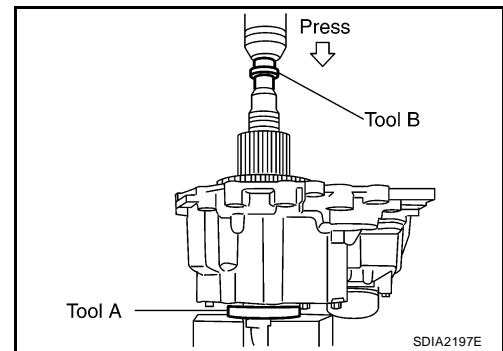
[ATX14B]

32. Install the mainshaft assembly using a press.

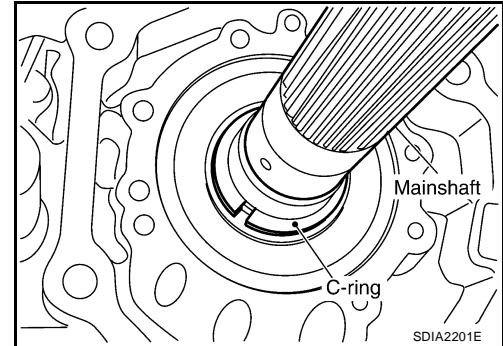
- Press the mainshaft into the center case using Tools.

Tool number **A: ST30911000 (—)**

B: ST33052000 (—)

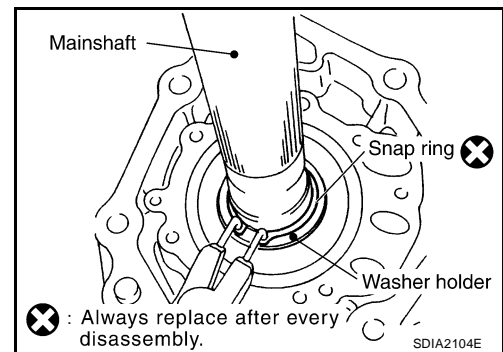


33. Install the C-rings to the mainshaft.

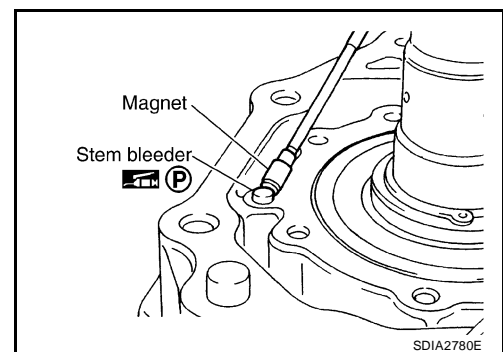


34. Set the washer holder on the mainshaft, and secure it with a new snap ring.

- CAUTION:**
Do not reuse snap ring.

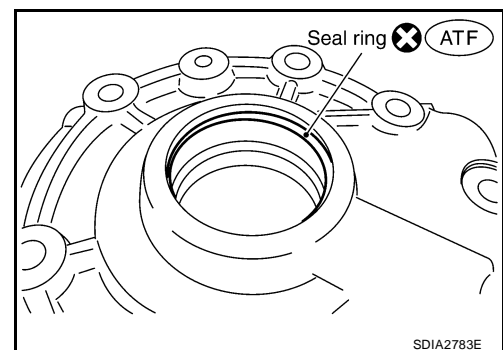


35. Apply petroleum jelly to the stem bleeder and install it to the center case.



36. Apply ATF to the new seal ring and install it to the main oil pump cover.

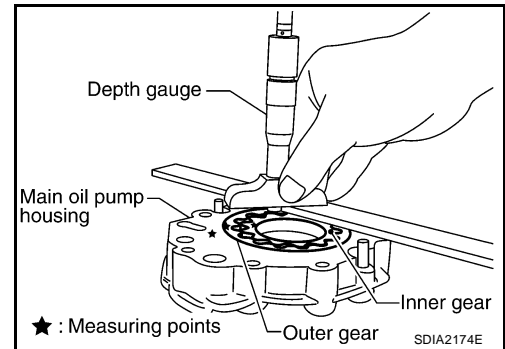
- CAUTION:**
Do not reuse seal ring.



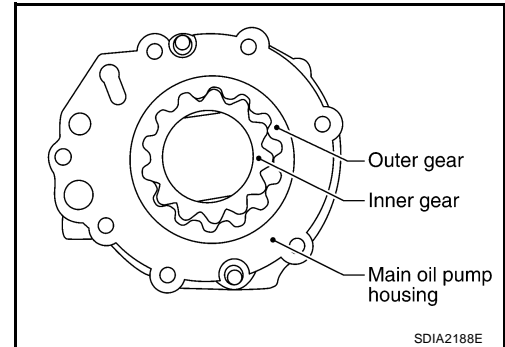
TRANSFER ASSEMBLY

[ATX14B]

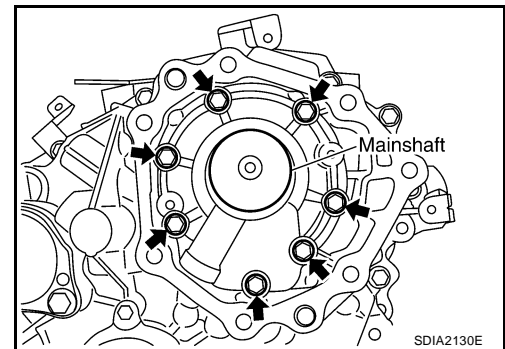
37. Install the inner gear and outer gear in the main oil pump housing. Then, measure the side clearance. Refer to [TF-165, "Main Oil Pump"](#).



38. Install the main oil pump housing, outer gear and inner gear to the center case.



39. Install the main oil pump cover to the center case, and tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).



40. Remove all the sealant from the switch mounting area and inside the center case.

CAUTION:

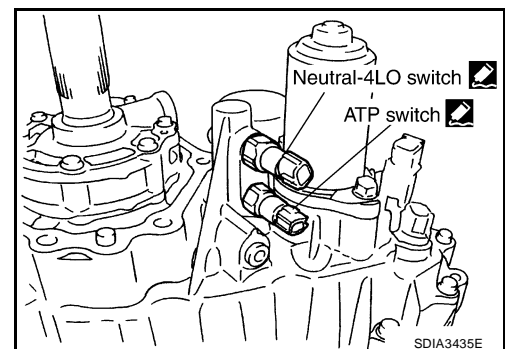
Remove old sealant adhering to mounting surfaces. Also remove any moisture, oil, or foreign material adhering to application and mounting surfaces.

41. Thread the ATP switch and neutral-4LO switch in one to two pitches and apply sealant to the threads of the switches. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

- Use Genuine Silicone RTV or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#).

NOTE:

- Neutral-4LO switch harness connector is gray.
- ATP switch harness connector is black.

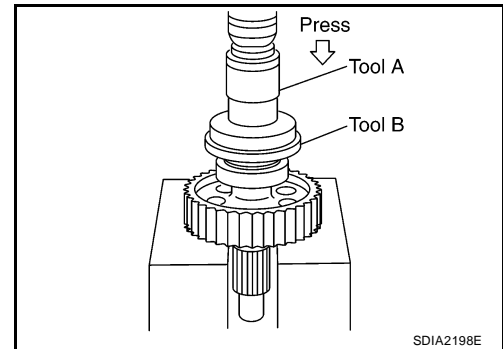


TRANSFER ASSEMBLY

[ATX14B]

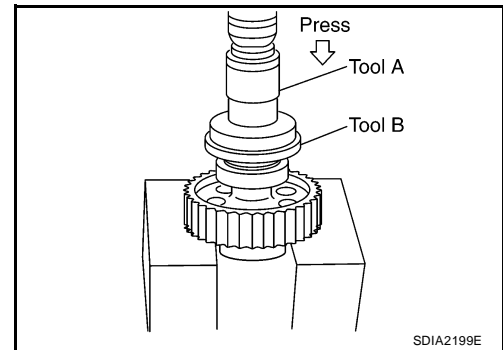
42. Install the front drive shaft rear bearing using Tools.

Tool number **A: KV40100621 (J-25273)**
 B: ST30032000 (J-26010-01)



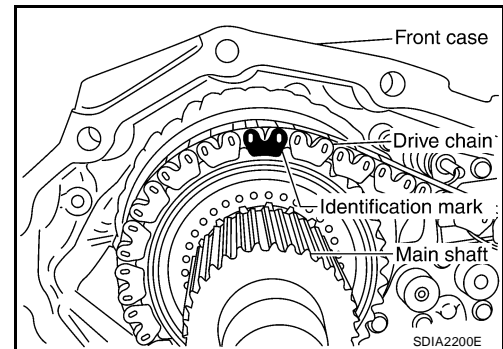
43. Install the front drive shaft to the front bearing using Tools.

Tool number **A: KV40100621 (J-25273)**
 B: ST30032000 (J-26010-01)



44. Install the drive chain to the front drive shaft and clutch drum.

CAUTION:
Install drive chain by aligning identification marks to the rear as shown.

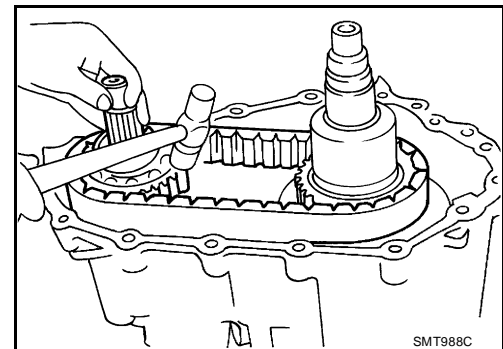


45. Tap the front drive shaft while keeping it upright and press-fit the front drive shaft rear bearing.

CAUTION:
Do not tap drive chain.

46. Install the front case assembly. Refer to [TF-176, "Front Case"](#).

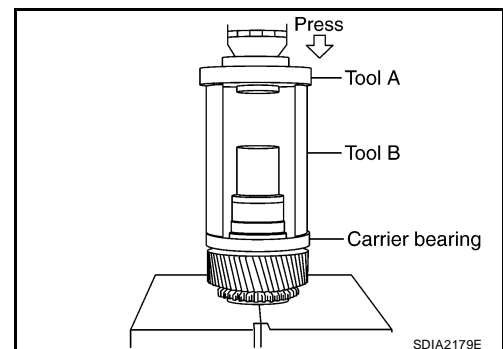
47. Install the rear case assembly. Refer to [TF-181, "Rear Case"](#).



Front Case

1. Install the carrier bearing to the sun gear using Tools.

Tool number **A: ST30911000 (—)**
 B: KV31103300 (—)



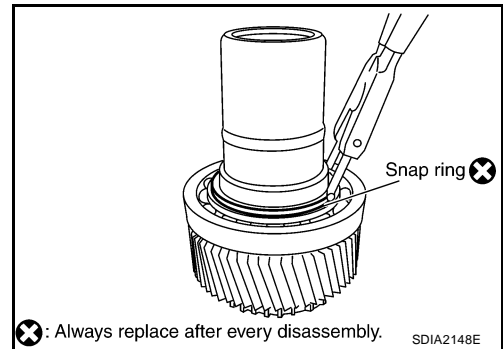
TRANSFER ASSEMBLY

[ATX14B]

- Install the new snap ring to the sun gear assembly using suitable tool.

CAUTION:

Do not reuse snap ring.



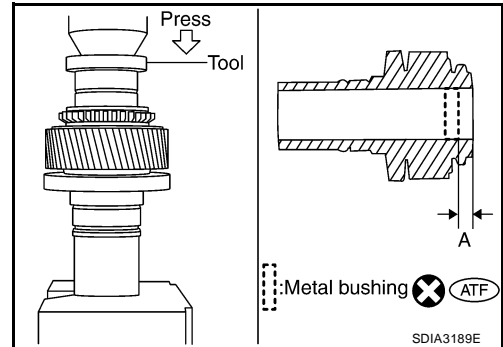
- Apply ATF to the circumference of the new metal bushing and install it to the sun gear assembly using Tool.

Tool number : ST35300000 (—)

Dimension A : 7.7 - 8.3 mm (0.303 - 0.327 in)

CAUTION:

- Do not reuse metal bushing.
- Apply ATF to metal bushing before installing.



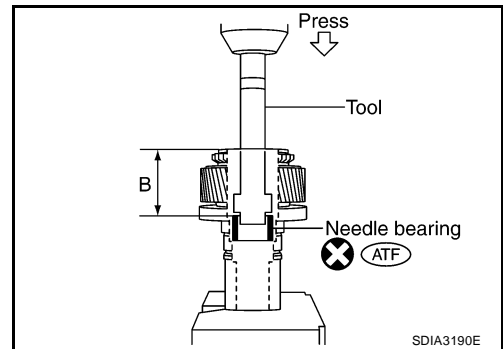
- Apply ATF to the new needle bearing and install it to the sun gear assembly using Tool.

Tool number : ST33220000 (—)

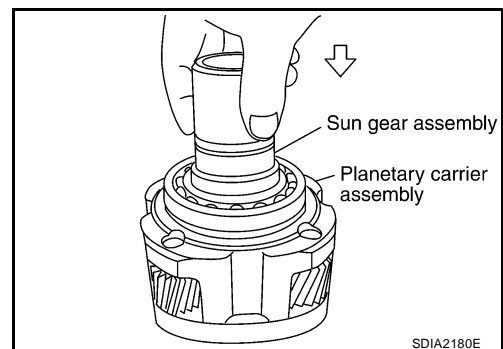
Dimension B : 62.5 - 63.1 mm (2.461 - 2.484 in)

CAUTION:

- Do not reuse needle bearing.
- Apply ATF to needle bearing before installing.



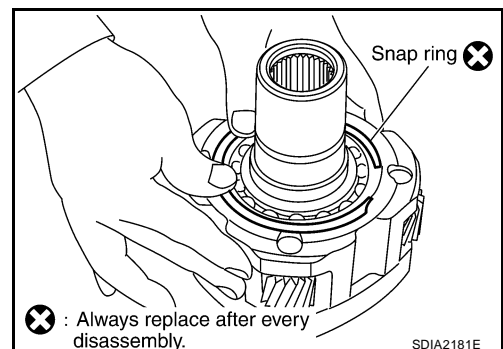
- Install the sun gear assembly to the planetary carrier assembly.



- Install the new snap ring to the planetary carrier assembly.

CAUTION:

Do not reuse snap ring.



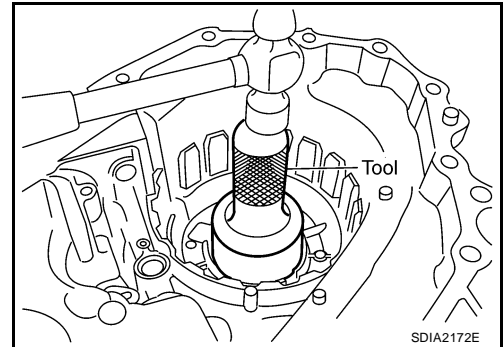
A
B
C
TF
E
F
G
H
I
J
K
L
M

TRANSFER ASSEMBLY

[ATX14B]

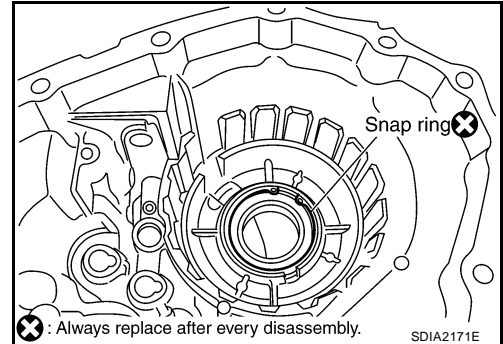
7. Set the input bearing into the front case and install using Tool.

Tool number : ST30720000 (J-25405)



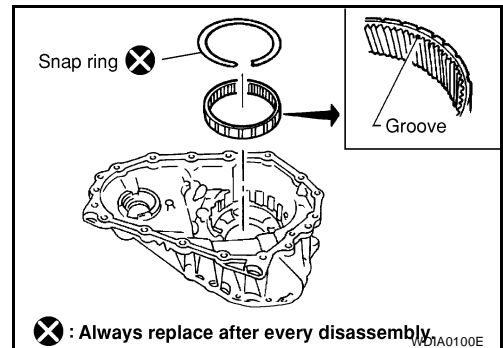
8. Install the new snap ring into the front case.

CAUTION:
Do not reuse snap ring.



9. Install the internal gear with its groove facing the snap ring into the front case. Then secure it with the new snap ring.

CAUTION:
Do not reuse snap ring.

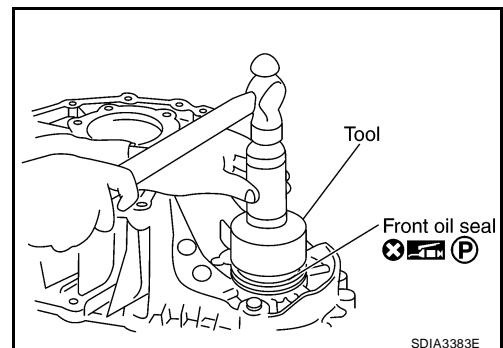


10. Install the new front oil seal until it is seated flush with the end face of the front case using Tool.

Tool number : KV38100500 (—)

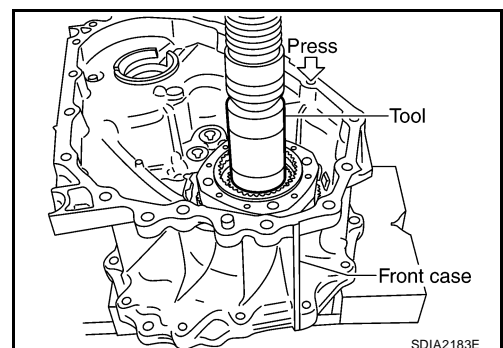
CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal lip before installing.



11. Install the planetary carrier assembly and sun gear assembly to the front case using Tool.

Tool number : ST33200000 (J-26082)



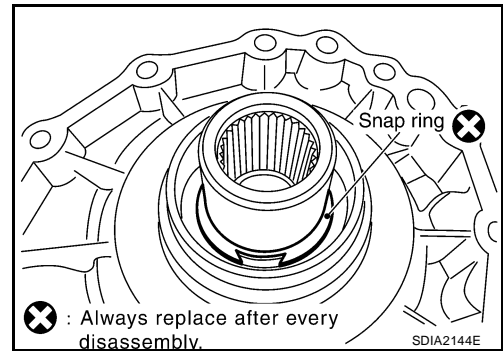
TRANSFER ASSEMBLY

[ATX14B]

12. Install the new snap ring to the sun gear.

CAUTION:

Do not reuse snap ring.



13. Apply petroleum jelly to the circumference of the new oil seal, and install it to the front case using Tools.

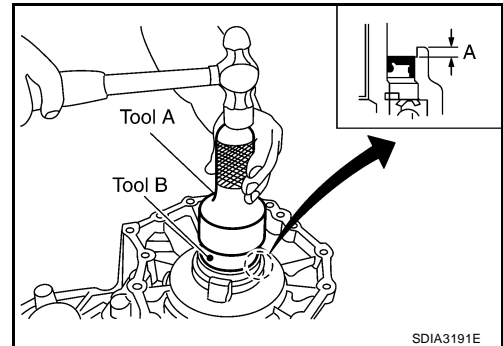
Tool number **A: ST30720000 (J-25405)**

B: ST33200000 (J-26082)

Dimension **: 4.0 - 4.6 mm (0.157 - 0.181 mm)**

CAUTION:

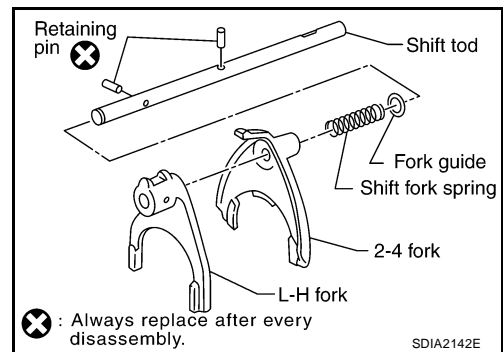
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



14. Install the fork guide, shift fork spring, 2-4 fork, and L-H fork to the shift rod, and secure them with new retaining pins.

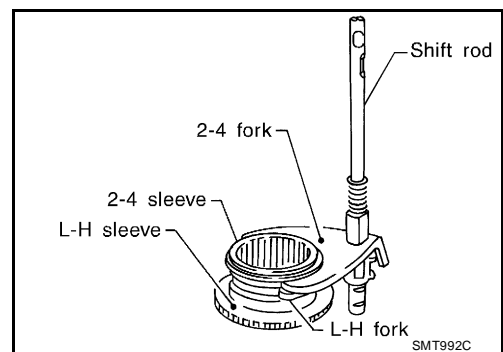
CAUTION:

Do not reuse retaining pins.

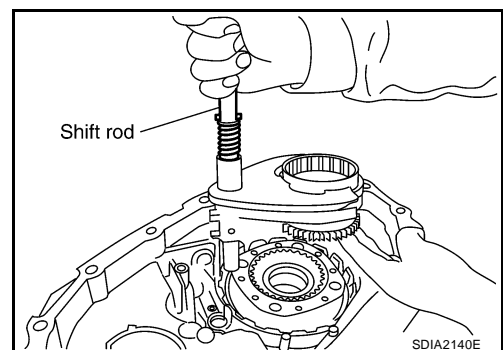


15. Install the 2-4 sleeve and L-H sleeve to each fork.

16. Install the shift cross to the front case.



17. While aligning the L-H sleeve with the planetary carrier, install the shift rod assembly to the front case.



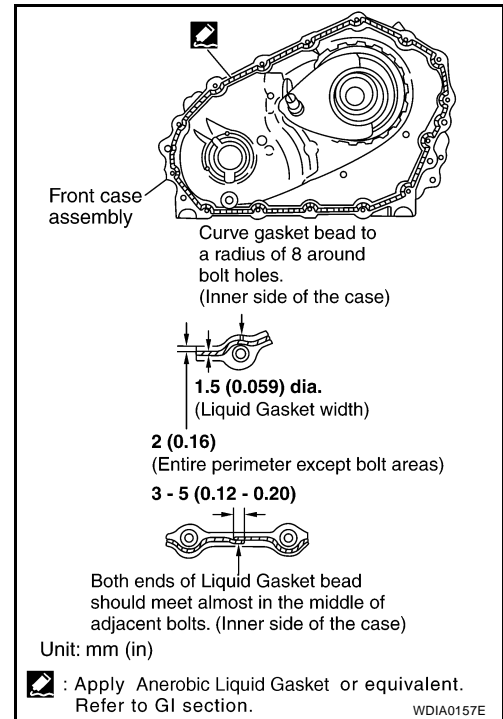
A
B
C
TF
E
F
G
H
I
J
K
L
M

18. Apply liquid gasket to the entire center case mating surface of the front case assembly as shown.

- Use **Genuine Anaerobic Liquid Gasket** or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#).

CAUTION:

Remove all foreign materials such as water, oil and grease from center case and front case mating surfaces.

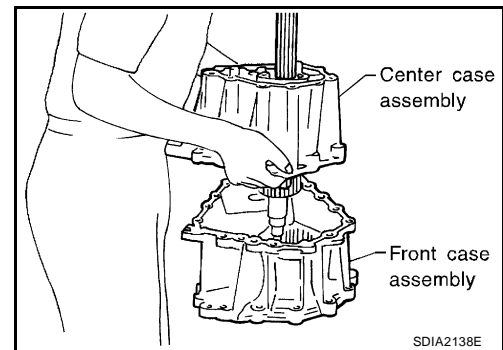


19. Install the center case assembly to the front case assembly.

CAUTION:

Do not damage mainshaft end.

20. Tap the center case lightly and press-fit the front drive shaft bearing into the front case.



21. Tighten the front case bolts to the specified torque. Refer to [IF-146, "COMPONENTS"](#).

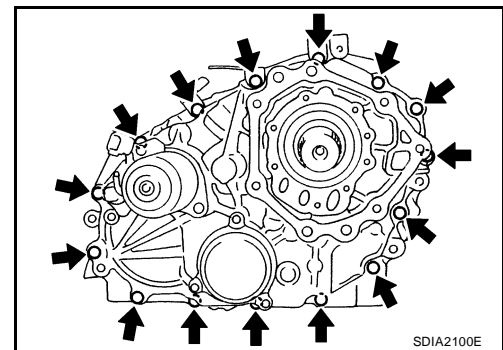
CAUTION:

Be sure to install air breather hose clamp, connector bracket and harness clip.

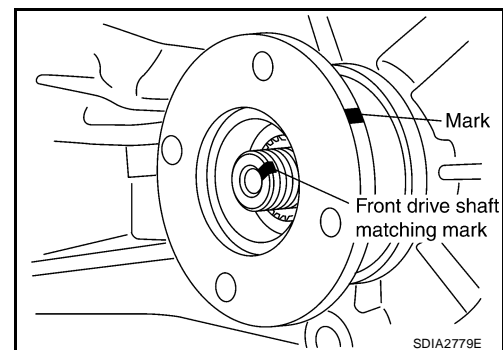
22. Install the drain plug with a new gasket.

CAUTION:

Do not reuse gasket.



23. Align the matching mark on the front drive shaft with the mark on the companion flange, then install the companion flange.

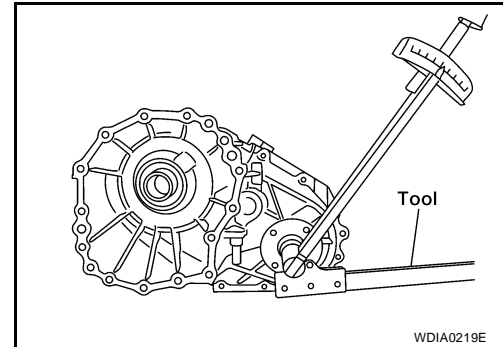


24. Install a new companion flange self-lock nut. Tighten to the specified torque using Tool. Refer to [TF-146, "COMPONENTS"](#).

Tool number : KV40104000 (—)

CAUTION:

Do not reuse self-lock nut.



25. Remove all the sealant from the check plug, switch mounting and front case.

CAUTION:

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

26. Install the check ball and check spring to the front case. Apply sealant to the check plug and wait detection switch and install them to the front case. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).

- Use Genuine Silicone RTV or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#).

NOTE:

Wait detection switch harness connector is black.

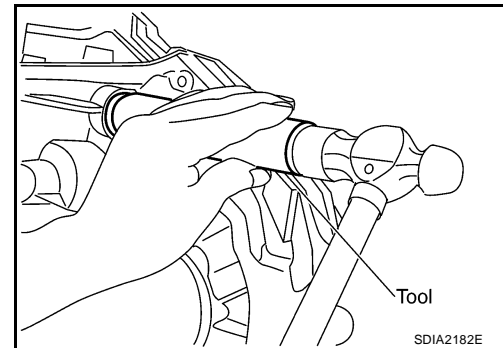
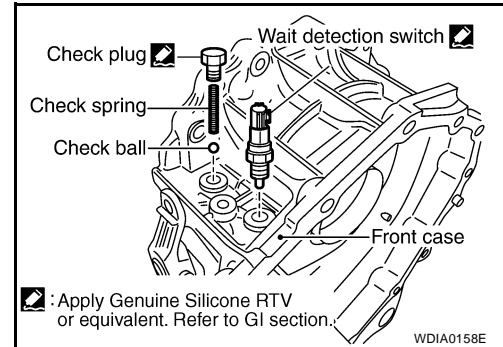
27. Install the new oil seal in the front case using Tool.

Tool number : ST22360002 (J-25679-01)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to seal lip before installing.

28. Install the shift lever to the shift cross.
29. Install the lock pin and lock pin nut. Tighten to the specified torque. Refer to [TF-146, "COMPONENTS"](#).



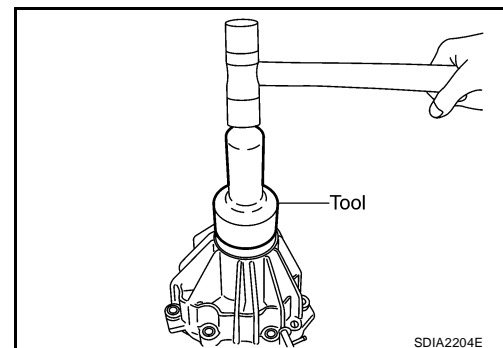
Rear Case

1. Apply petroleum jelly to the circumference of the new rear oil seal. Install the new rear oil seal so that it is flush with the case tip face using Tool.

Tool number : ST30720000 (J-25405)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to seal lip before installing.



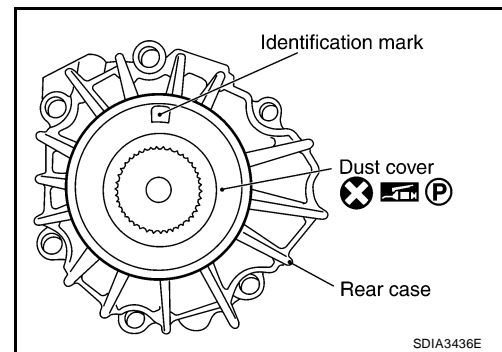
TRANSFER ASSEMBLY

[ATX14B]

2. Apply petroleum jelly to the circumference of the new dust cover. Position the new dust cover using the identification mark as shown.

CAUTION:

- Do not reuse dust cover.
- Position the identification mark at the position shown.



3. Install the new dust cover using Tool.

Tool number : KV40105310 (—)

4. Install the air breather into the rear case.
5. Remove all the sealant from the rear case to center case mating surfaces.

CAUTION:

Remove all foreign materials such as water, oil, and grease from center case and rear case mating surfaces.

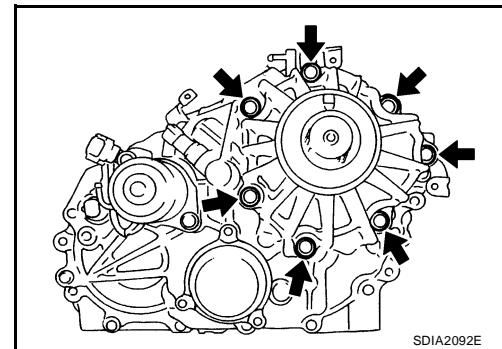
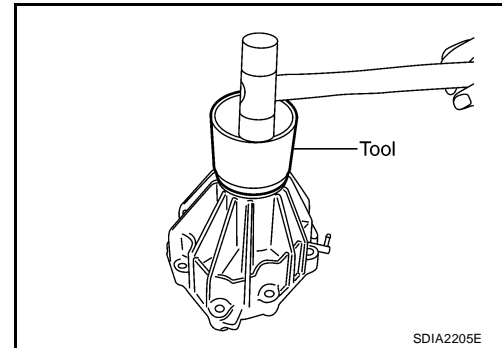
6. Apply liquid gasket to the entire rear case mating surface of the center case.

- Use Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#) .

CAUTION:

Do not to allow Liquid Gasket to enter stem bleeder hole.

7. Install the rear case to the center case. Tighten the bolts to the specified torque. Refer to [TF-146, "COMPONENTS"](#) .



SERVICE DATA AND SPECIFICATIONS (SDS)

[ATX14B]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

EDS0037L

Applied model		VQ40DE	
Transfer model		ATX14B	
Fluid capacity (Approx.) ℓ (US qt, Imp qt)		3.0 (3-1/8, 2-5/8)	
Gear ratio	High	1.000	
	Low	2.596	
Number of teeth	Planetary gear	Sun gear	57
		Internal gear	91
	Front drive sprocket		38
	Front drive shaft		38

Inspection and Adjustment

EDS0037M

CLEARANCE BETWEEN INNER GEAR AND OUTER GEAR

Unit: mm (in)

Item	Specification
Sub-oil pump	0.015 - 0.035 (0.0006 - 0.0014)
Main oil pump	0.015 - 0.035 (0.0006 - 0.0014)

CLUTCH

Unit: mm (in)

Item	Limit value
Drive plate	1.4 (0.055)

PINION GEAR END PLAY

Unit: mm (in)

Item	Standard
Pinion gear end play	0.1 - 0.7 (0.004 - 0.028)

CLEARANCE BETWEEN SHIFT FORK AND SLEEVE

Unit: mm (in)

Item	Standard
Shift fork and sleeve	Less than 0.36 (0.0142)

SELECTIVE PARTS

Sub-oil Pump

Unit: mm (in)

Gear thickness	Part number*	
	Inner gear	Outer gear
9.27 - 9.28 (0.3650 - 0.3654)	31346 0W462	31347 0W462
9.28 - 9.29 (0.3654 - 0.3657)	31346 0W461	31347 0W461
9.29 - 9.30 (0.3657 - 0.3661)	31346 0W460	31347 0W460

*: Always check with the Parts Department for the latest parts information.

Main Oil Pump

Unit: mm (in)

Gear thickness	Part number*	
	Inner gear	Outer gear
8.27 - 8.28 (0.3256 - 0.3260)	31346 7S112	31347 7S112
8.28 - 8.29 (0.3260 - 0.3264)	31346 7S111	31347 7S111
8.29 - 8.30 (0.3264 - 0.3268)	31346 7S110	31347 7S110

SERVICE DATA AND SPECIFICATIONS (SDS)

[ATX14B]

*: Always check with the Parts Department for the latest parts information.

Control Valve

Unit: mm (in)

Mounting position (Part name)	Part number*	Outer dia.	Overall length
L1 (2-4 shift valve)	31772 21X00	8.0 (0.315)	38.5 (1.516)
L2 (Clutch valve)	31772 80X11	10.0 (0.394)	40.0 (1.575)
L4 (Pilot valve)	31772 80X11	10.0 (0.394)	40.0 (1.575)
L5 (Regulator valve)	31741 0W410	12.0 (0.472)	68.0 (2.677)

*: Always check with the Parts Department for the latest parts information.

Control Valve Spring

Unit: mm (in)

Mounting position (Part name)	Part number*	Free length	Outer dia.	Overall length
L1 (2-4 shift valve spring)	31742 2W500	31.85 (1.2539)	7.0 (0.276)	0.6 (0.024)
L2 (Clutch valve spring)	31742 2W505	40.6 (1.598)	8.9 (0.350)	0.7 (0.028)
L4 (Pilot valve spring)	31742 0W410	28.1 (1.106)	9.0 (0.354)	1.2 (0.047)
L5 (Regulator valve spring)	31742 2W515	39.7 (1.563)	11.0 (0.433)	1.3 (0.051)

*: Always check with the Parts Department for the latest parts information.

Return Spring

Unit: mm (in)

Stamped mark	Part number*	Free length
1	31521 7S111	42.7 (1.168)
2	31521 7S112	43.1 (1.697)
3	31521 7S113	43.6 (1.717)
4	31521 7S114	44.0 (1.731)

*: Always check with the Parts Department for the latest parts information.

PRECAUTIONS

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

EDS0037N

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 for Transfer Assembly and Transfer Control Unit Replacement

EDS0037O

When replacing transfer assembly or transfer control unit, check the 4WD shift indicator pattern and adjustment of the position between transfer assembly and transfer control unit if necessary.

CHECK 4WD SHIFT INDICATOR PATTERN

1. Set 4WD shift switch to “2WD”, “4H”, “4LO”, “4H” and “2WD” in order. Stay at each switch position for at least 2 seconds.
2. Confirm 4WD shift indicator lamp and 4LO indicator lamp are changed properly as follows.

4WD shift switch	Indicator lamp		Operation of 4WD shift switch
	4WD shift	4LO	
2WD		OFF	2WD ⇌ 4H switching can be done while driving. The indicator lamp will change when the driving mode is changed. Gear shifting between 2WD ⇌ 4H position must be performed at speeds below 100km/h (60 MPH).
4H			
4LO		Flashing	To shift between 4H ⇌ 4LO, stop the vehicle and select the A/T selector lever to the “N” position with the brake pedal depressed. Depress and turn the 4WD shift switch. The 4WD shift switch will not shift to the desired mode if the transmission is not in “N” or the vehicle is moving with the brake pedal depressed. The 4LO indicator lamp will be lit when the 4LO is engaged.
		ON	

WDIA0137E

- If OK, the position between transfer assembly and transfer control unit is correct.
- If NG, the position is different between transfer assembly and transfer control unit. Adjust the position between transfer assembly and transfer control unit. Refer to pattern table below.

PRECAUTIONS

[TX15B]

Transfer position adjustment pattern

4WD shift switch condition	Refer procedure
4WD shift switch is under "2WD" condition when engine is being stopped.	TF-186, "METHOD FOR ADJUSTMENT WITH 4WD SHIFT SWITCH AT "2WD""
4WD shift switch is under "4H" or "4LO" condition when engine is being stopped.	TF-186, "METHOD FOR ADJUSTMENT WITH 4WD SHIFT SWITCH AT "4H" OR "4LO""

NOTE:

Method of adjustment can be chosen voluntarily, according to location of 4WD shift switch.

METHOD FOR ADJUSTMENT WITH 4WD SHIFT SWITCH AT "2WD"

Select Adjustment Pattern

1. Start engine. Run engine for at least 10 seconds.
2. Check 4WD shift indicator lamp and 4LO indicator lamp.

Indicator lamp condition	Refer procedure
When 4WD shift indicator lamp or 4LO indicator lamp is flashing.	TF-186, "Pattern A"
Except for above.	TF-186, "Pattern B"

Pattern A

1. Stop vehicle and move A/T selector lever to "N" position with brake pedal depressed. Stay in "N" for at least 2 seconds.
2. Turn 4WD shift switch to "4LO" position. Stay in "4LO" for at least 2 seconds.
3. Turn ignition switch "OFF".
4. Start engine.
5. Erase self-diagnosis. Refer to [TF-218, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-221, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
6. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-185, "CHECK 4WD SHIFT INDICATOR PATTERN"](#).
If 4WD shift indicator lamp and 4LO indicator lamp do not indicate proper pattern, install new transfer control unit and retry the above check.

Pattern B

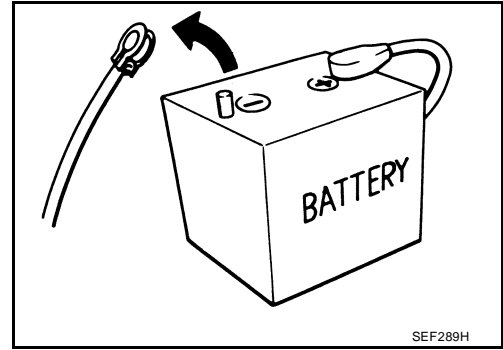
1. Stop vehicle and move A/T selector lever to "N" position with brake pedal depressed. Stay in "N" for at least 2 seconds.
2. Turn ignition switch "OFF".
3. Start engine.
4. Erase self-diagnosis. Refer to [TF-218, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-221, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
5. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-185, "CHECK 4WD SHIFT INDICATOR PATTERN"](#).
If 4WD shift indicator lamp and 4LO indicator lamp do not indicate proper pattern, install new transfer control unit and retry the above check.

METHOD FOR ADJUSTMENT WITH 4WD SHIFT SWITCH AT "4H" OR "4LO"

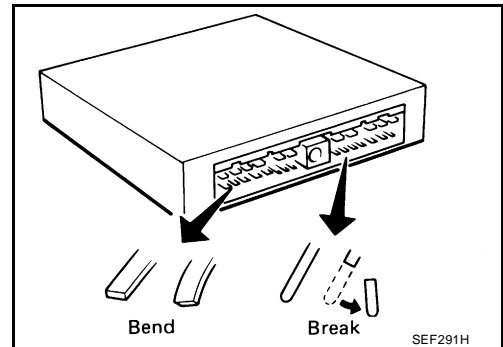
1. Start engine. Run the engine for at least 10 seconds.
2. Stop vehicle and move A/T selector lever to "N" position with brake pedal depressed. Stay in "N" for at least 2 seconds.)
3. Turn 4WD shift switch to "2WD" position. Stay in "2WD" for at least 2 seconds.
4. Turn ignition switch "OFF".
5. Start engine.
6. Erase self-diagnosis. Refer to [TF-218, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-221, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
7. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-185, "CHECK 4WD SHIFT INDICATOR PATTERN"](#).
If 4WD shift indicator lamp and 4LO indicator lamp do not indicate proper pattern, install new transfer control unit and retry the above check.

Precautions

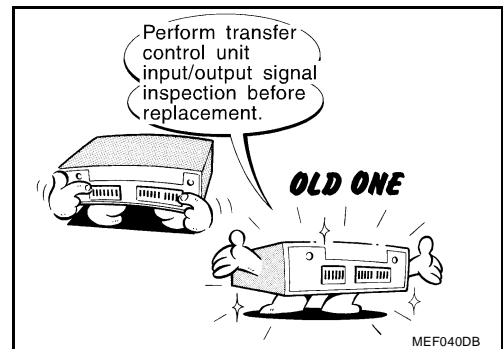
- Before connecting or disconnecting the transfer control unit harness connector, turn ignition switch "OFF" and disconnect the battery cables. Battery voltage is applied to transfer control unit even if ignition switch is turned "OFF".



- When connecting or disconnecting pin connectors into or from transfer 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 transfer control unit pin terminals.



- Before replacing transfer control unit, perform transfer control unit input/output signal inspection and make sure transfer control unit functions properly. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).



Service Notice

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

A
B
C
TF
E
F
G
H
I
J
K
L
M

PRECAUTIONS

[TX15B]

-
- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transfer.

PREPARATION

[TX15B]

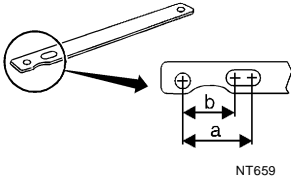
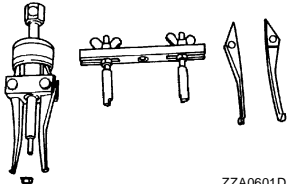
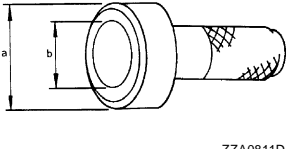
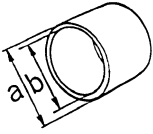
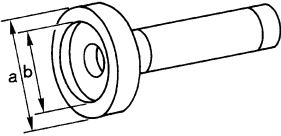
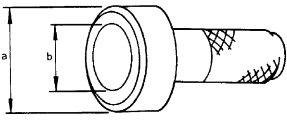
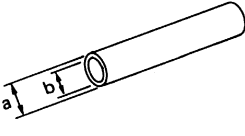
PF0:00002

EDS0037S

PREPARATION

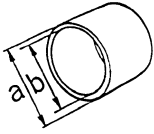
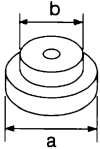
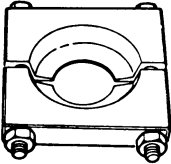
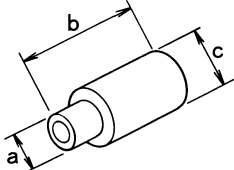
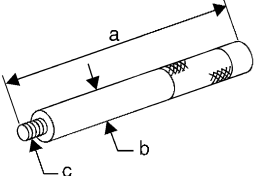
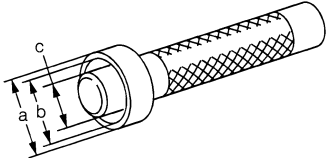
Special Service Tools

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
KV40104000 (—) Flange wrench 	<ul style="list-style-type: none"> ● Removing self-lock nut ● Installing self-lock nut a: 85 mm (3.35 in) b: 65 mm (2.56 in)
ST33290001 (J-34286) Puller 	<ul style="list-style-type: none"> ● Removing front oil seal ● Removing rear oil seal ● Removing metal bushing
KV38100500 (—) Drift 	<ul style="list-style-type: none"> ● Installing front oil seal ● Installing rear oil seal ● Installing rear bearing ● Installing front bearing a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.
KV40105310 (—) Drift 	<ul style="list-style-type: none"> ● Installing dust cover a: 89 mm (3.50 in) dia. b: 80.7 mm (3.17 in) dia.
KV38100200 (—) Drift 	<ul style="list-style-type: none"> ● Removing sun gear assembly and planetary carrier assembly ● Removing input bearing ● Installing sun gear assembly and planetary carrier assembly a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.
ST30720000 (J-25405) Drift 	<ul style="list-style-type: none"> ● Installing input bearing ● Installing input oil seal ● Installing carrier bearing a: 77 mm (3.03 in) dia. b: 55 mm (2.17 in) dia.
KV32102700 (—) Drift 	<ul style="list-style-type: none"> ● Installing mainshaft rear bearing a: 48 mm (1.89 in) dia. b: 41 mm (1.61 in) dia.

PREPARATION

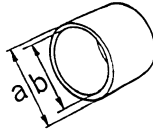
[TX15B]

Tool number (Kent-Moore No.) Tool name	Description
KV40104830 (—) Drift  ZZA1003D	<ul style="list-style-type: none"> ● Installing input oil seal <p>a: 70 mm (2.76 in) dia. b: 63.5 mm (2.50 in) dia.</p>
ST35300000 (—) Drift  NT073	<ul style="list-style-type: none"> ● Removing carrier bearing ● Installing metal bushing ● Removing front bearing <p>a: 59 mm (2.32 in) dia. b: 45 mm (1.77 in) dia.</p>
ST30021000 (J-22912-01) Puller  ZZA0537D	<ul style="list-style-type: none"> ● Removing carrier bearing ● Removing front bearing ● Removing rear bearing
ST33710000 (—) Drift  ZZA1057D	<ul style="list-style-type: none"> ● Removing needle bearing ● Removing metal bushing ● Removing rear bearing <p>a: 89 mm (3.5 in) b: 30 mm (1.18 in) dia. c: 24 mm (0.94 in) dia.</p>
ST35325000 (—) Drift bar  NT663	<ul style="list-style-type: none"> ● Removing metal bushing <p>a: 215 mm (8.46 in) b: 25 mm (0.98 in) dia. c: M12 × 1.5P</p>
ST33220000 (—) Drift  ZZA1046D	<ul style="list-style-type: none"> ● Installing needle bearing <p>a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia.</p>

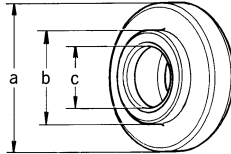
PREPARATION

[TX15B]

Tool number (Kent-Moore No.) Tool name	Description
ST27863000 (—) Drift	<ul style="list-style-type: none"> ● Installing carrier bearing a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia.
ST30901000 (J-26010-01) Drift	<ul style="list-style-type: none"> ● Installing rear bearing ● Installing front bearing a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.38 in) dia.



ZZA1003D

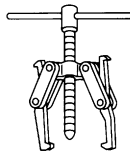


ZZA0978D

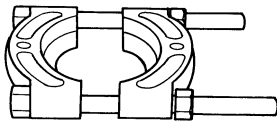
Commercial Service Tools

EDS0037T

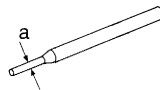
Tool name	Description
Puller	<ul style="list-style-type: none"> ● Removing companion flange ● Removing mainshaft rear bearing
Puller	<ul style="list-style-type: none"> ● Removing mainshaft rear bearing
Pin punch	<ul style="list-style-type: none"> ● Removing retaining pin a: 6 mm (0.24 in) dia.
Power tool	<ul style="list-style-type: none"> ● Loosening bolts and nuts



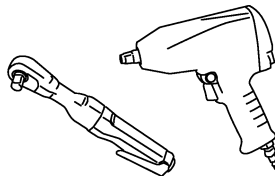
NT077



ZZB0823D



NT410



PBIC0190E

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

[TX15B]

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PF0:00003

NVH Troubleshooting Chart

EDS0037U

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

Reference page		TF-193			TF-278			TF-301	TF-286	TF-296
SUSPECTED PARTS (Possible cause)		TRANSFER FLUID (Level low)	TRANSFER FLUID (Wrong)	TRANSFER FLUID (Level too high)	LIQUID GASKET (Damaged)	O-RING (Worn or damaged)	OIL SEAL (Worn or damaged)	SHIFT FORK (Worn or damaged)	GEAR (Worn or damaged)	BEARING (Worn or damaged)
Symptom	Noise	1	2						3	3
	Transfer fluid leakage		3	1	2	2	2			
	Hard to shift or will not shift		1	1				2		

TRANSFER FLUID

Replacement

CAUTION:

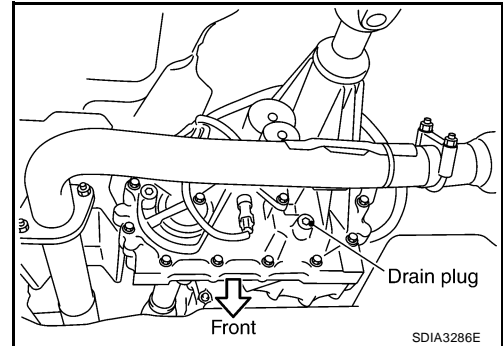
If using the vehicle for towing, the transfer fluid must be replaced as specified. Refer to [MA-7, "PERIODIC MAINTENANCE"](#).

DRAINING

1. Stop engine.
2. Remove the drain plug and gasket and drain the fluid.
3. Install the drain plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



FILLING

1. Remove the filler plug and gasket.
2. Fill the transfer with new fluid until the fluid level reaches the specified limit near the filler plug hole.

Fluid grade and capacity : Refer to [MA-11, "Fluids and Lubricants"](#).

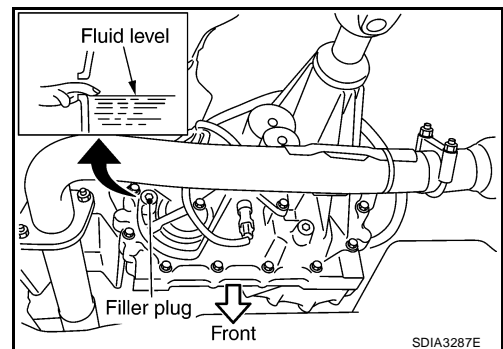
CAUTION:

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

3. Leave the vehicle for 3 minutes, and check fluid level again.
4. Install the filler plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



Inspection

CAUTION:

If using the vehicle for towing, the transfer fluid must be replaced as specified. Refer to [MA-7, "PERIODIC MAINTENANCE"](#).

FLUID LEAKAGE AND FLUID LEVEL

1. Make sure that fluid is not leaking from the transfer assembly or around it.
2. Check fluid level from the filler plug hole as shown.

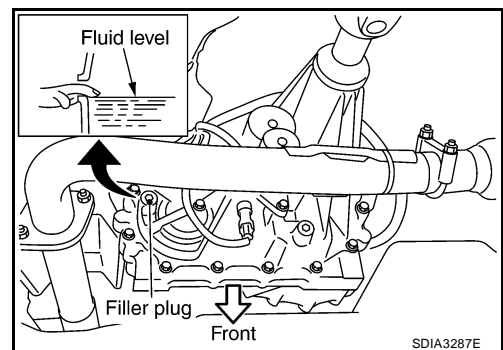
CAUTION:

Do not start engine while checking fluid level.

3. Install the filler plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



4WD SYSTEM

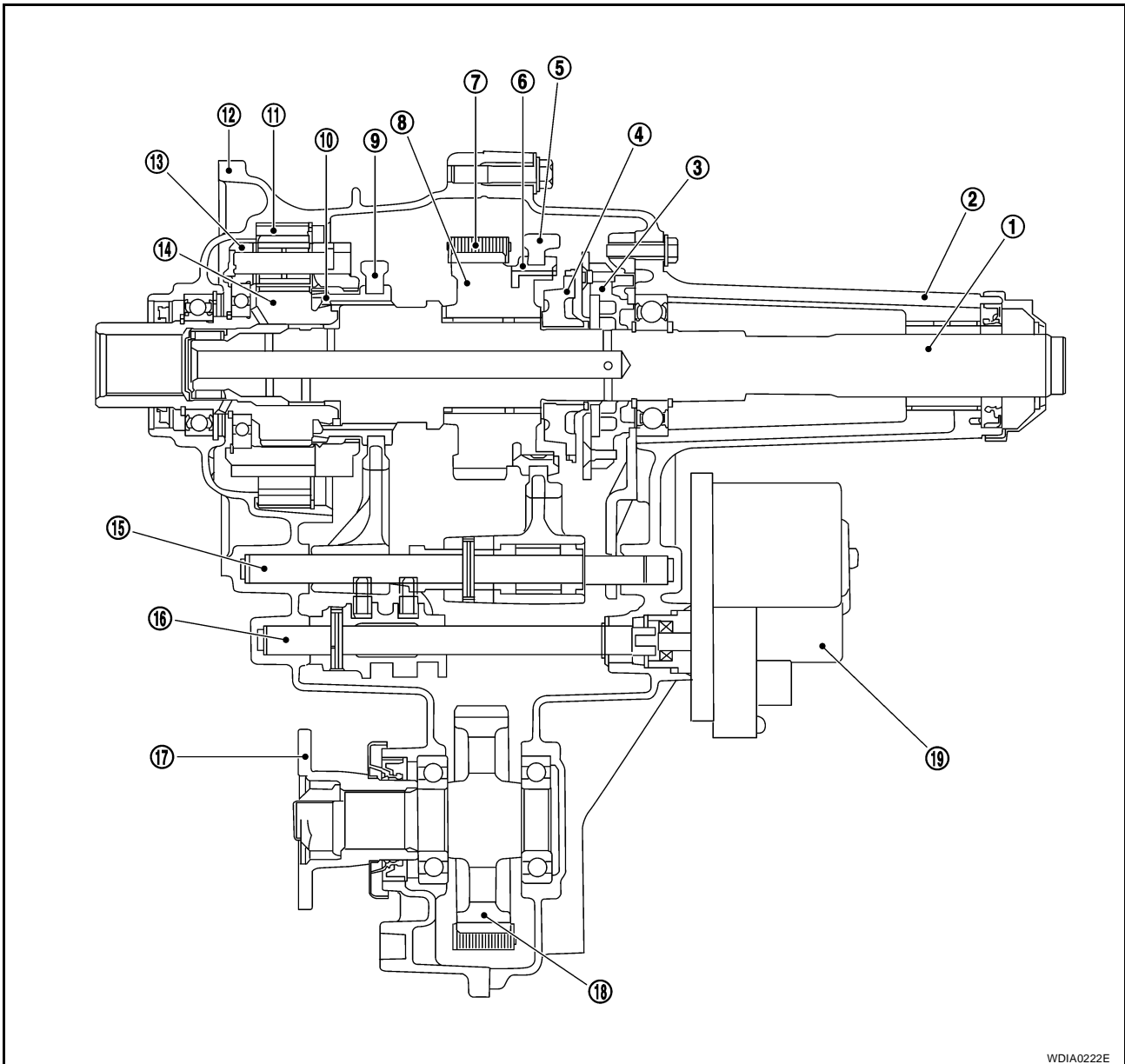
[TX15B]

4WD SYSTEM

PF0:33084

Cross-section View

EDS0037X



WDIA0222E

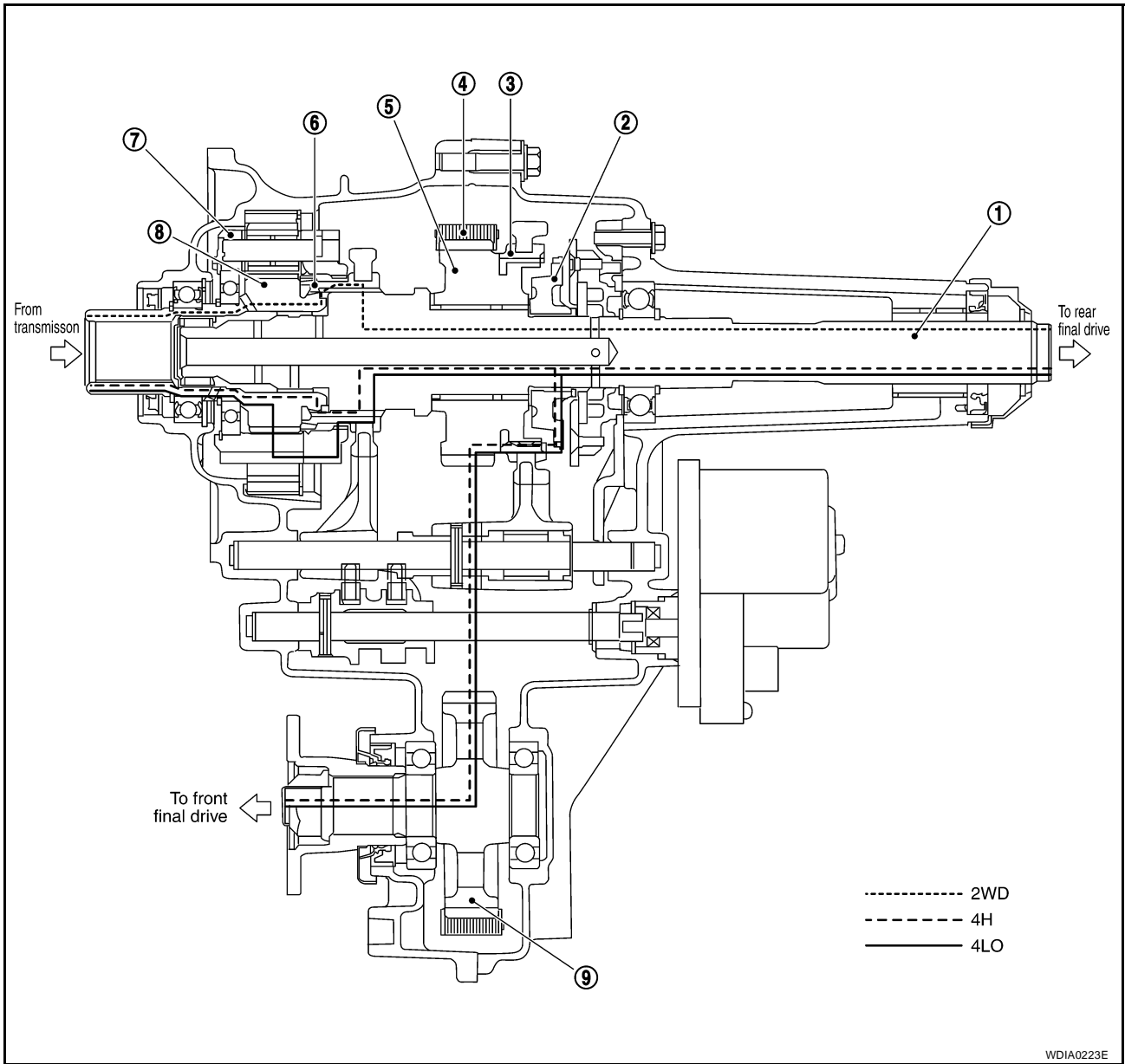
- | | | |
|--------------------------------|-----------------------|-----------------------|
| 1. Mainshaft | 2. Rear case | 3. Oil pump assembly |
| 4. Clutch gear | 5. 2-4 shift fork | 6. 2-4 sleeve |
| 7. Drive chain | 8. Sprocket | 9. L-H shift fork |
| 10. L-H sleeve | 11. Internal gear | 12. Front case |
| 13. Planetary carrier assembly | 14. Sun gear assembly | 15. L-H shift rod |
| 16. Control shift rod | 17. Companion flange | 18. Front drive shaft |
| 19. Transfer control device | | |

4WD SYSTEM

[TX15B]

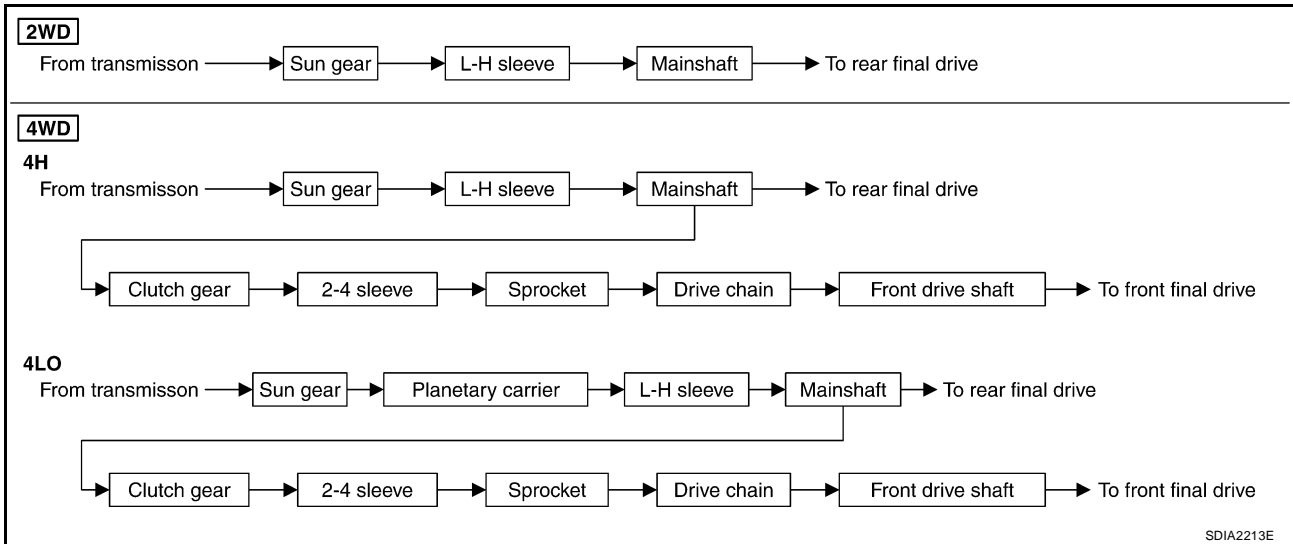
EDS0037Y

Power Transfer POWER TRANSFER DIAGRAM



- | | | |
|-------------------------------|----------------------|----------------------|
| 1. Mainshaft | 2. Clutch gear | 3. 2-4 sleeve |
| 4. Drive chain | 5. Sprocket | 6. L-H sleeve |
| 7. Planetary carrier assembly | 8. Sun gear assembly | 9. Front drive shaft |

POWER TRANSFER FLOW



System Description TRANSFER CONTROL DEVICE

EDS0037Z

Actuator motor and actuator position switch are integrated. Transfer control device shifts from 4H-4LO and between 2WD-4WD.

Actuator Motor

Actuator motor is operated by signal from transfer control unit and it operates control shift rod so as to shift from 4H-4LO and between 2WD-4WD.

Actuator Position Switch

Actuator position switch detects actuator motor position and sends it to transfer control unit.

WAIT DETECTION SWITCH

Wait detection switch detects if transfer gear is in 4WD by 2-4 shift fork position.

NOTE:

If 4WD shift switch is switched to 4H or 4LO, transfer is not in 4WD completely when gear does not engage. (Wait detection system is operating.)

4LO SWITCH

4LO switch detects if transfer gear is under 4LO condition by L-H shift fork position.

ATP SWITCH

ATP switch detects if transfer gear is under neutral condition by L-H shift fork position.

NOTE:

Transfer gear may be under neutral condition when shifting between 4H-4LO.

TRANSFER CONTROL UNIT

- Transfer control unit controls transfer control device by input signals of each sensor and each switch, and it directs shifts from 4H-4LO and 2WD-4WD.
- Self-diagnosis can be done.





TRANSFER SHIFT HIGH AND LOW RELAYS

Transfer shift high and low relays apply power supply to transfer control device (actuator motor).

TRANSFER SHUT OFF RELAYS

Transfer shut off relays 1 and 2 apply power supply to transfer control unit.

4WD SHIFT SWITCH AND INDICATOR LAMP

4WD shift switch	Indicator lamp		Operation of 4WD shift switch	Use condition
	4WD shift	4LO		
2WD		OFF	2WD ⇌ 4H switching can be done while driving. The indicator lamp will change when the driving mode is changed. Gear shifting between 2WD ⇌ 4H position must be performed at speeds below 100km/h (60 MPH).	For driving on dry, paved roads.
4H				For driving on rough, sandy or snow-covered roads.
4LO		Flashing	To shift between 4H ⇌ 4LO, stop the vehicle and select the A/T selector lever to the "N" position with the brake pedal depressed. Depress and turn the 4WD shift switch. The 4WD shift switch will not shift to the desired mode if the transmission is not in "N" or the vehicle is moving with the brake pedal depressed. The 4LO indicator lamp will be lit when the 4LO is engaged.	The 4LO indicator lamp flashes when shifting between 4LO ⇌ 4H.
		ON		For use when maximum power and traction is required at low speed (for example on steep grades or rocky, sandy, muddy roads.).

WDIA0138E

4WD Shift Switch

4WD shift switch able to select from 2WD, 4H or 4LO.

4WD Shift Indicator Lamp

- Displays driving conditions selected by 4WD shift switch with rear indicator, front and center indicator while engine is running. (When 4H or 4LO, 4LO indicator lamp also works on. And when 4WD warning lamp is turned on, all 4WD shift indicator lamps are turned off.)
- Turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 second after the engine starts if system is normal.

4LO Indicator Lamp

- Displays 4LO condition while engine is running. 4LO indicator lamp flashes if transfer gear does not shift completely under 4H⇌4LO. In this condition, transfer may be under neutral condition and A/T parking mechanism may not be operated.
- Turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 second after the engine starts if system is normal.

A
B
C
TF
E
F
G
H
I
J
K
L
M

4WD WARNING LAMP

Turns ON or FLASH when there is a malfunction in 4WD system.

Also turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 second after the engine starts if system is normal.

4WD Warning Lamp Indication

Condition	4WD warning lamp
Lamp check	Turns ON when ignition switch is turned ON. Turns OFF after engine start.
4WD system malfunction	ON (For indicated malfunction items, see the "NOTE")
During self-diagnosis	Flickers at malfunction mode.
Large difference in diameter of front/rear tires	Slow flashing: 1 time/2 seconds (Continuing to flash until turning ignition switch OFF)
Other than above (system normal)	OFF

NOTE:

4WD warning lamp is turned on when the following one or more parts are malfunctioning.

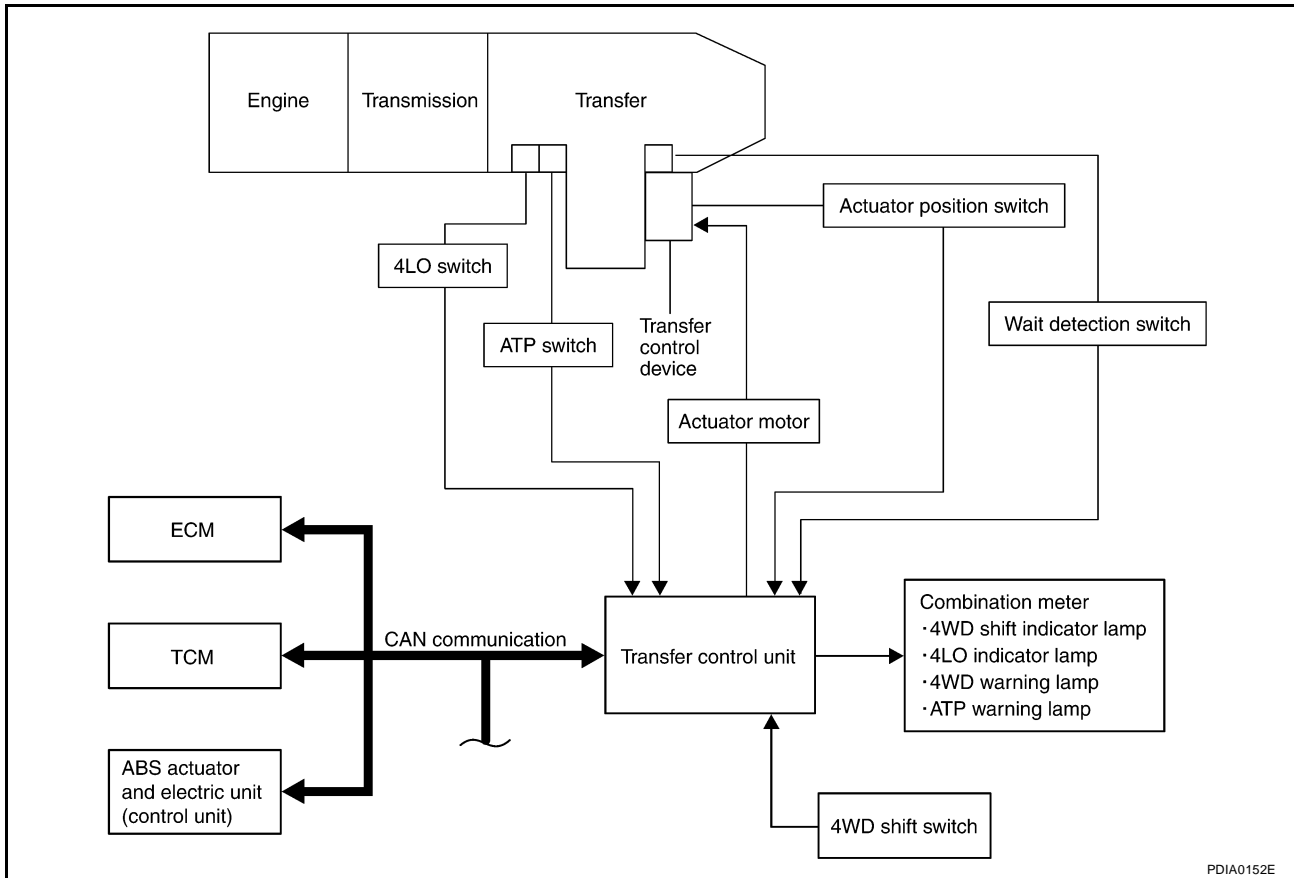
- Vehicle speed signal [from ABS actuator and electric unit (control unit)]
- CAN communication line
- AD converter
- Engine speed signal
- 4WD shift switch
- Wait detection switch
- Actuator motor
- Transfer control device
- Transfer shut off relays
- Transfer shift high and low relays
- PNP switch signal

ATP WARNING LAMP

When A/T selector lever is in "P" position, vehicle may move because A/T parking mechanism does not operate when transfer is under neutral condition. ATP warning lamp is turned on to indicate this condition to the driver.

System Diagram

EDS00380



PDIA0152E

COMPONENTS FUNCTION

Component parts	Function
Transfer control unit	Controls transfer control device and switches 4H-4LO under 4WD condition and 2WD-4WD.
Transfer control device	Actuator motor and actuator position switch are integrated so as to switch driving types.
Actuator motor	Controls shift rods by signals from transfer control unit.
Actuator position switch	Detects actuator motor position.
Wait detection switch	Detects that transfer is under 4WD condition.
4LO switch	Detects that transfer is under 4LO condition.
ATP switch	Detects that transfer is under neutral condition.
4WD shift switch	Able to select from 2WD, 4H or 4LO.
4WD warning lamp	<ul style="list-style-type: none"> ● Illuminates if malfunction is detected in electrical system of 4WD system. ● There is 1 blink in 2 seconds if rotation difference of front wheels and rear wheels is large.
ATP warning lamp	Indicates that A/T parking mechanism does not operate when A/T selector lever is in "P" position and transfer is under neutral condition.
4WD shift indicator lamp	Displays driving condition selected by 4WD shift switch.
4LO indicator lamp	Displays 4LO condition.
ABS actuator and electric unit (control unit)	Transmits the following signals via CAN communication to Transfer control unit. <ul style="list-style-type: none"> ● Vehicle speed signal ● Stop lamp switch signal (brake signal)
TCM	Transmits the following signal via CAN communication to Transfer control unit. <ul style="list-style-type: none"> ● Output shaft revolution signal ● A/T position indicator signal (PNP switch signal)
ECM	Transmits engine speed signal via CAN communication to Transfer control unit.

CAN Communication
SYSTEM DESCRIPTION

Refer to [LAN-4, "SYSTEM DESCRIPTION"](#) .

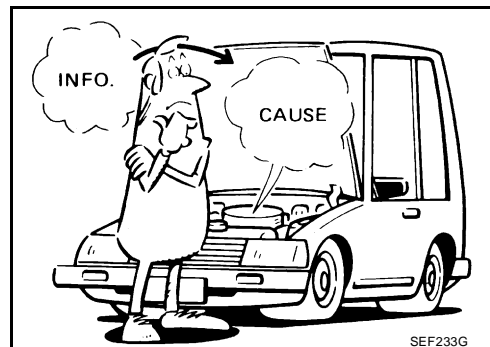
TROUBLE DIAGNOSIS

How to Perform Trouble Diagnosis BASIC CONCEPT

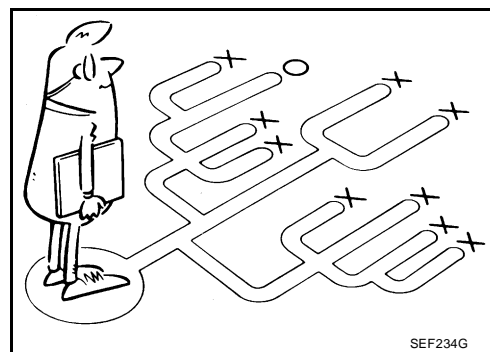
- To perform trouble diagnosis, it is the most important to have understanding about vehicle systems (control and mechanism) thoroughly.
- It is also important to clarify customer complaints before inspection.
First of all, reproduce symptoms, and understand them fully. Ask customer about his/her complaints 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".

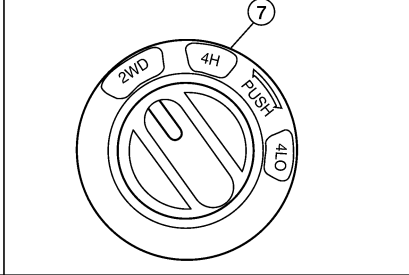
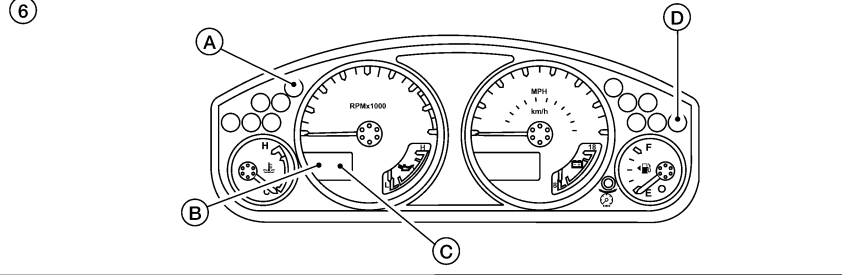
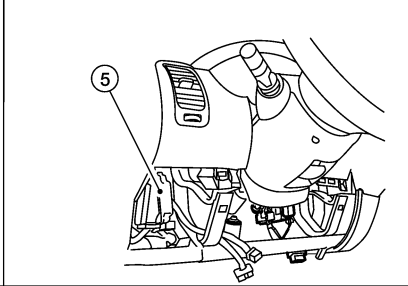
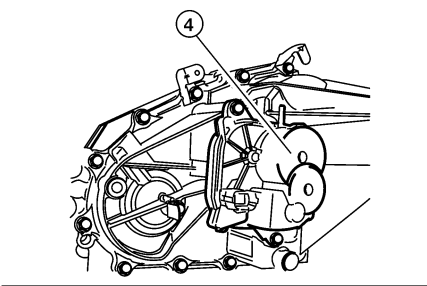
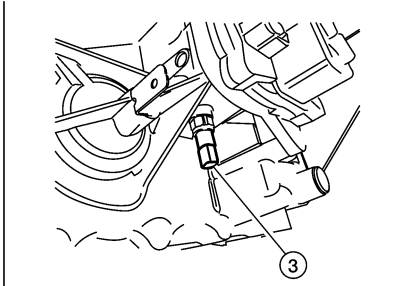
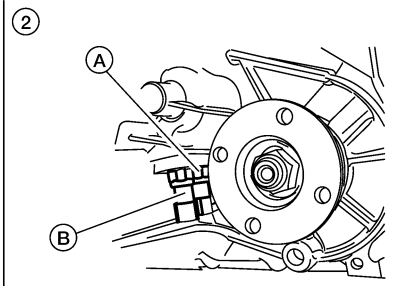
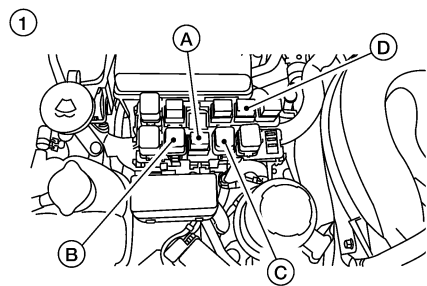
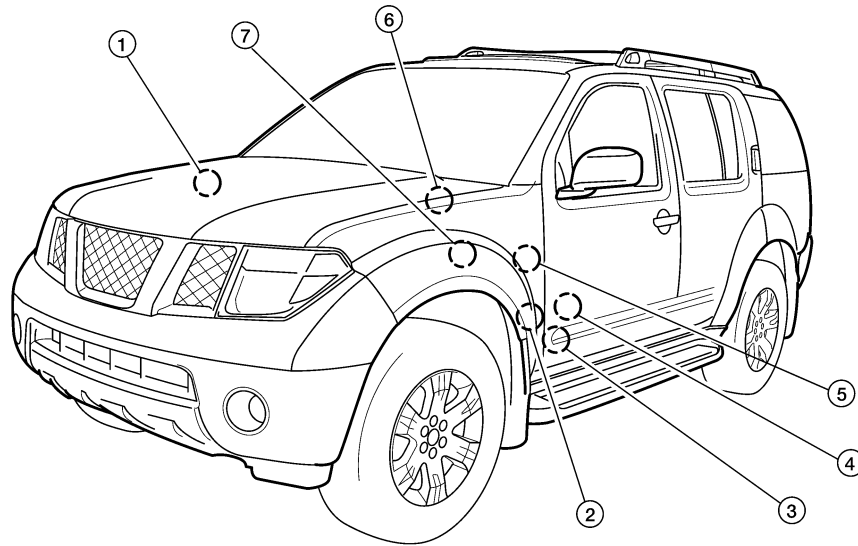


- It is essential to check symptoms right from the beginning in order to repair malfunctions completely. For intermittent malfunctions, reproduce symptoms based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. 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-221, "ERASE SELF-DIAGNOSIS"](#).
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.



Location of Electrical Parts

EDS00383



WDIA0337E

TROUBLE DIAGNOSIS

[TX15B]

- | | | | |
|--|--|--|--------|
| 1. Fuse and relay box
A: Transfer shut off relay 1 E156
B: Transfer shift high relay E46
C: Transfer shift low relay E47
D: Transfer shut off relay 2 E157 | 2. A: ATP switch F55
B: 4 LO switch F60
(View with front propeller shaft removed.) | 3. Wait detection switch F59 | A |
| 4. Transfer control device F58 | 5. Transfer control unit M152, M153
(View with lower instrument cover removed.) | 6. Combination meter M24
A: 4WD warning lamp
B: 4LO indicator lamp
C: 4WD shift indicator lamp
D: ATP warning lamp | B
C |
| 7. 4WD shift switch M141 | | | |

TF

E

F

G

H

I

J

K

L

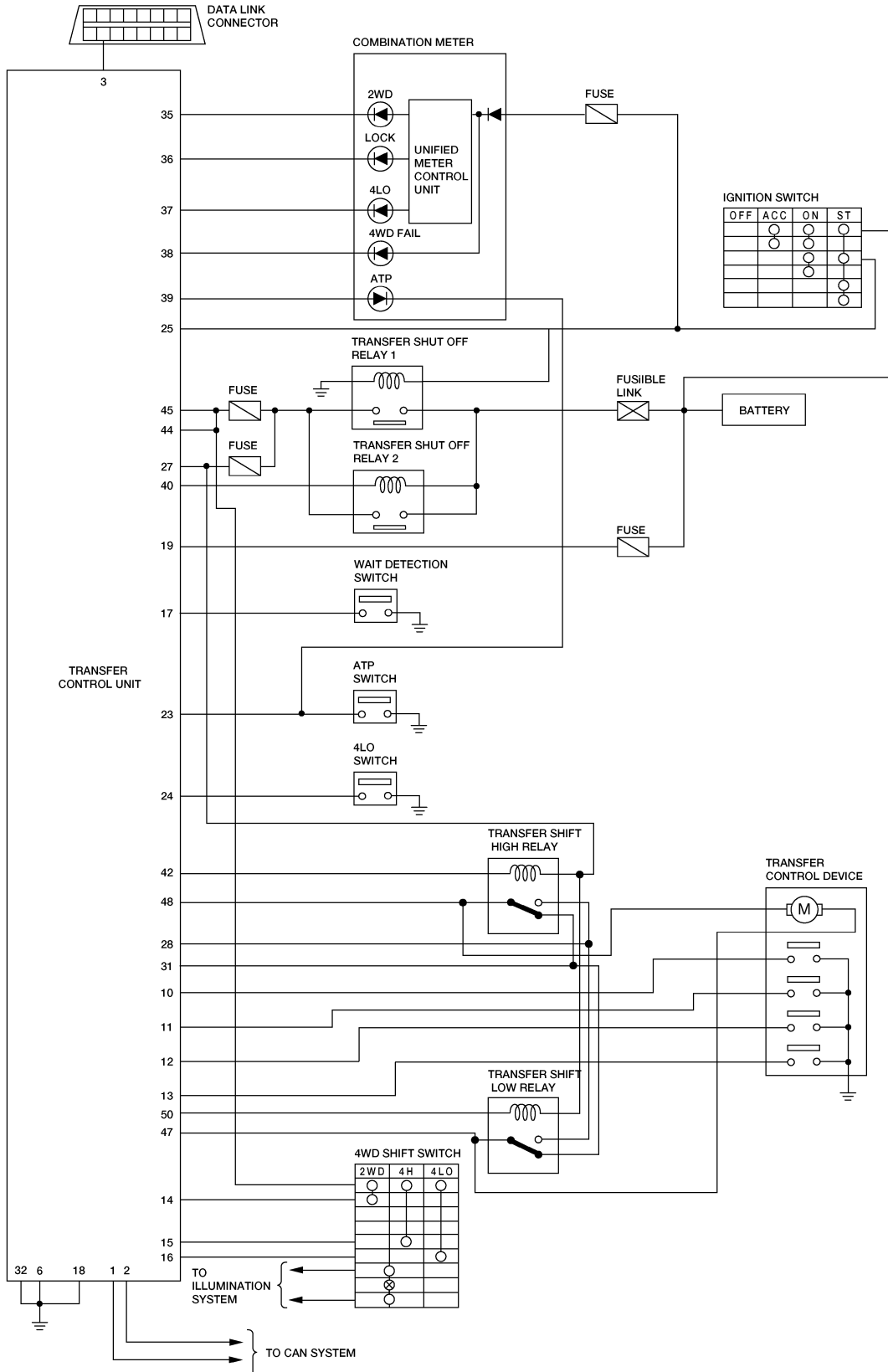
M

TROUBLE DIAGNOSIS

[TX15B]

EDS00384

Schematic

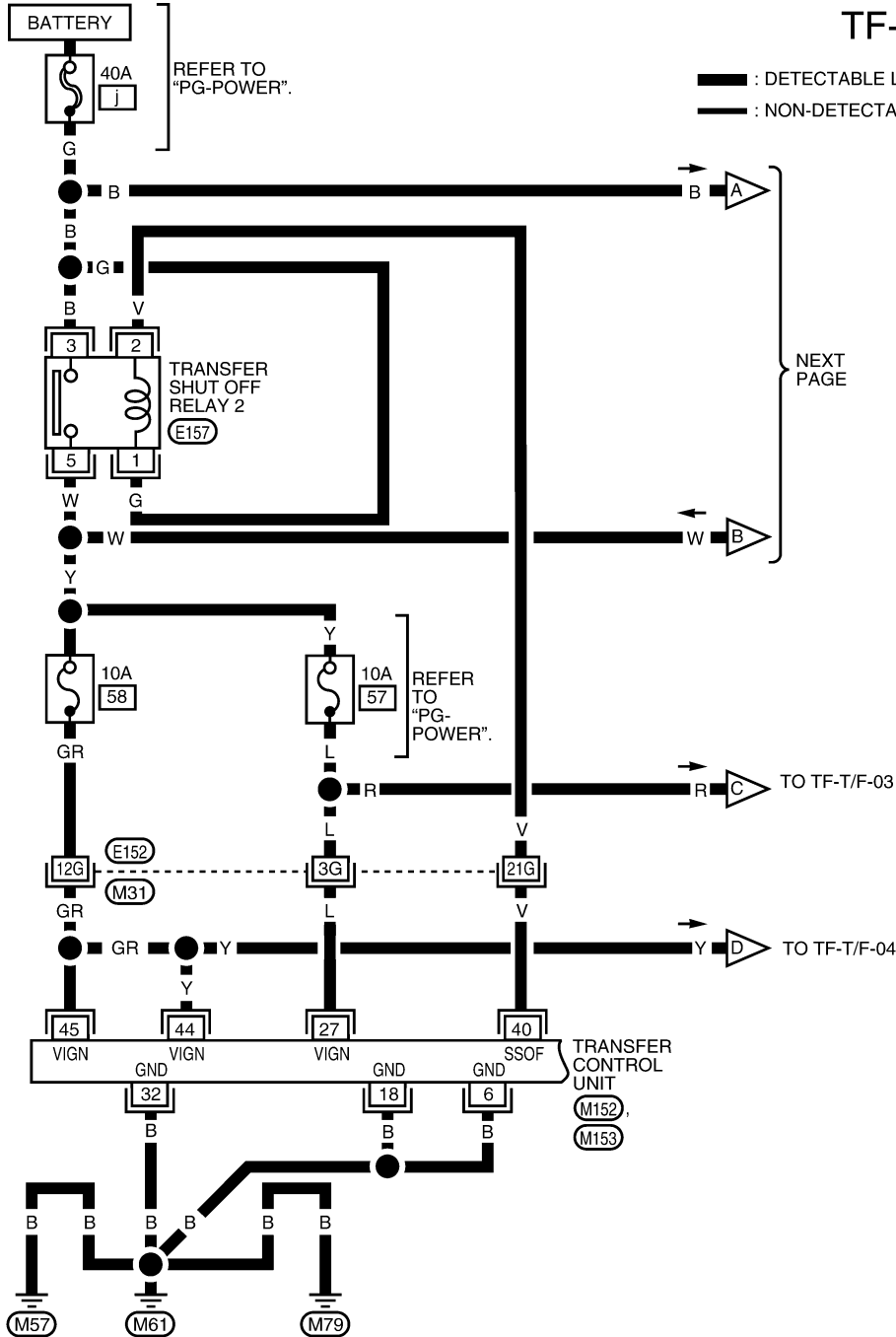


BDWA0126E

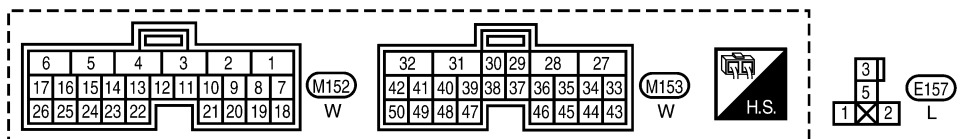
Wiring Diagram — T/F —

TF-T/F-01

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



A
 B
 C
TF
 E
 F
 G
 H
 I
 J
 K
 L
 M



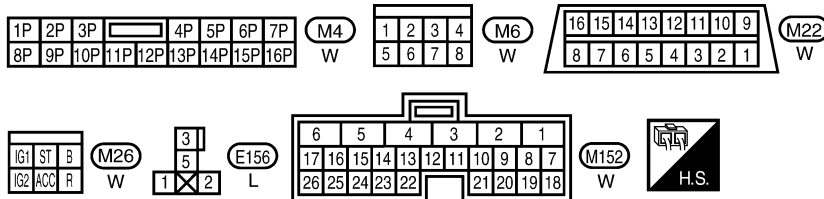
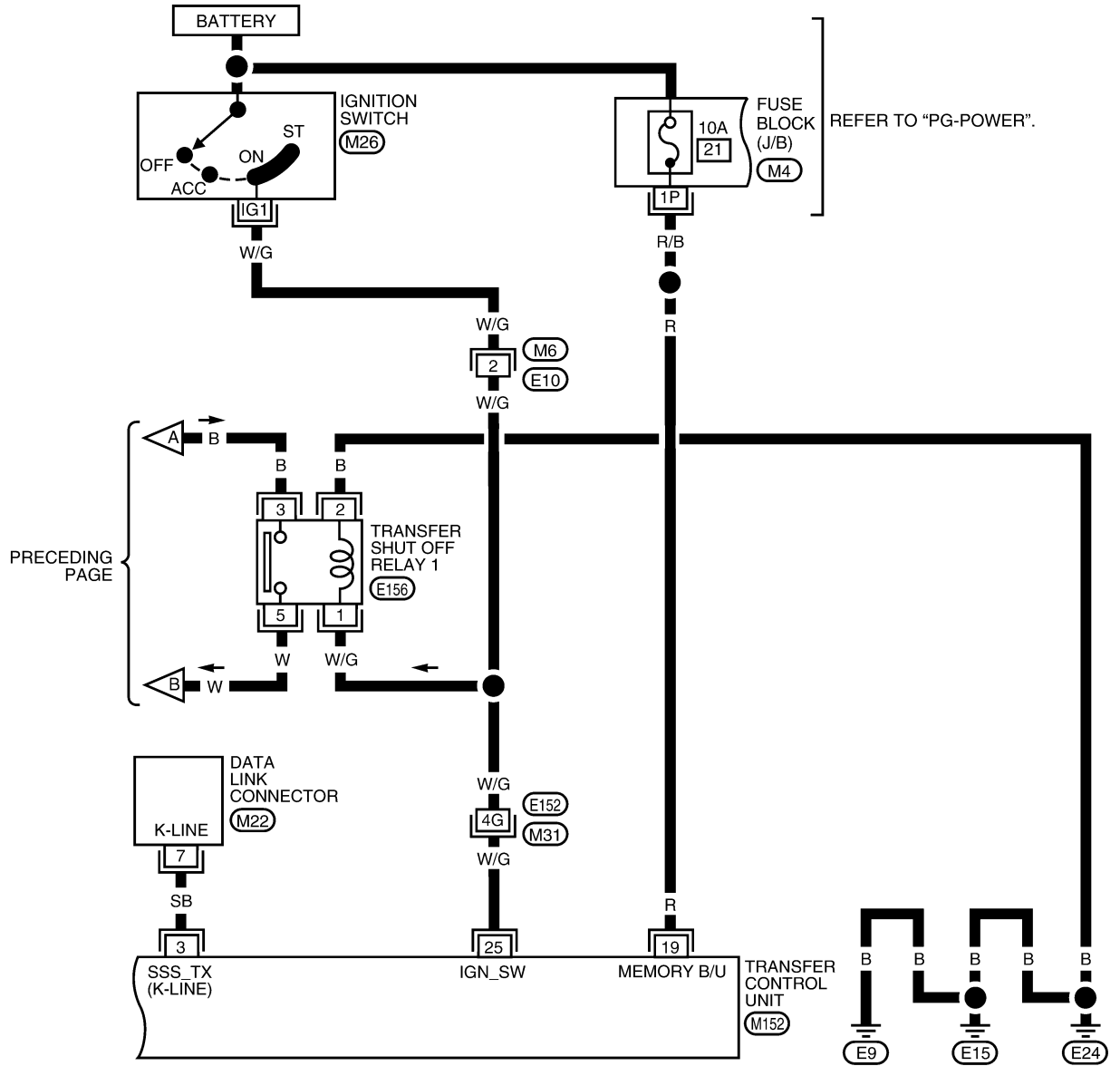
REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

TROUBLE DIAGNOSIS

[TX15B]

TF-T/F-02

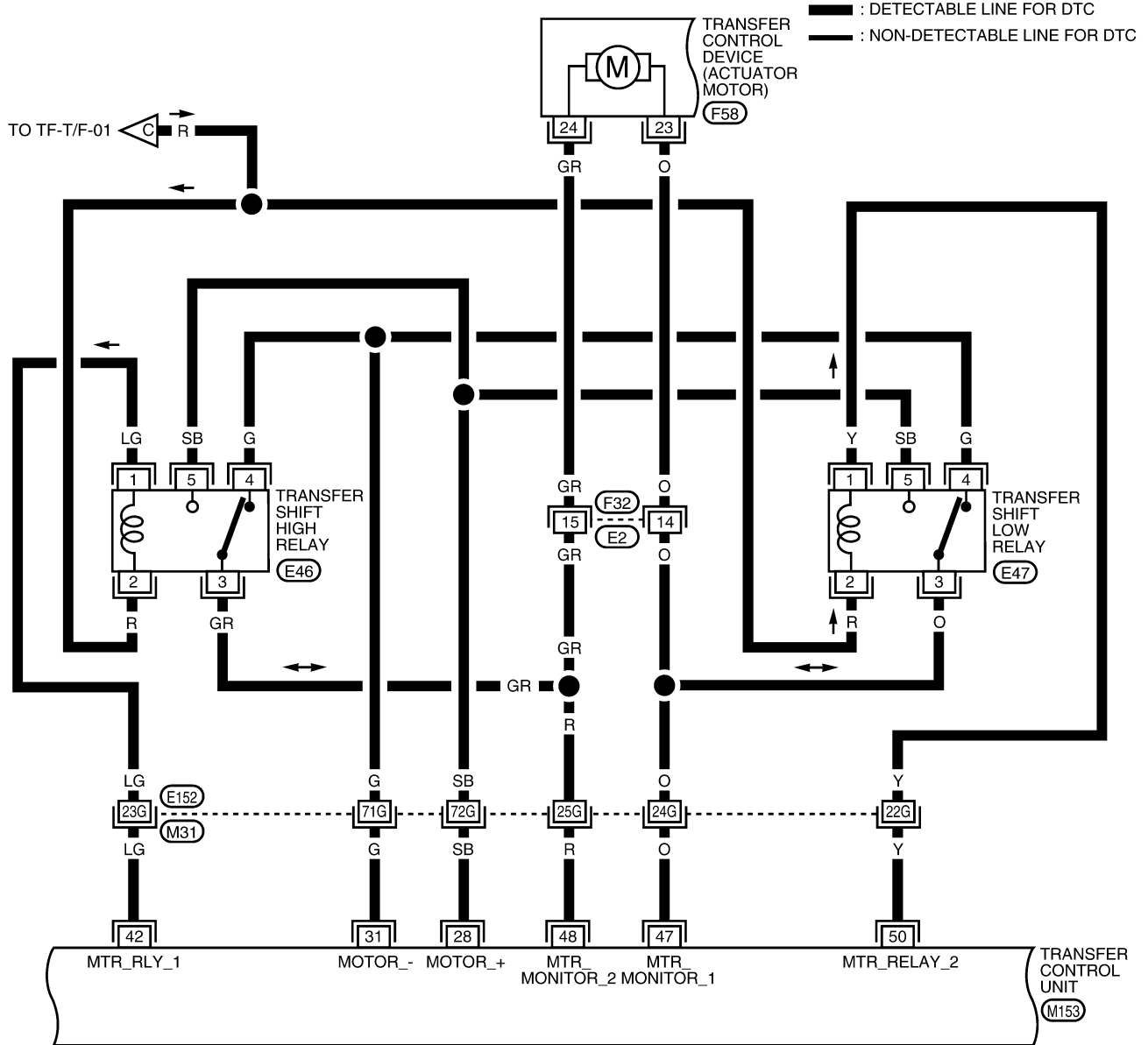
— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



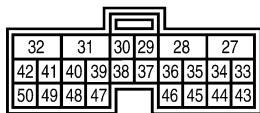
REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

BDWA0123E

TF-T/F-03



A
B
C
TF
E
F
G
H
I
J
K
L
M

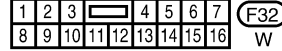


(M153)
W



(E46)
B

(E47)
B



(F32)
W



(F58)
B

REFER TO THE FOLLOWING.

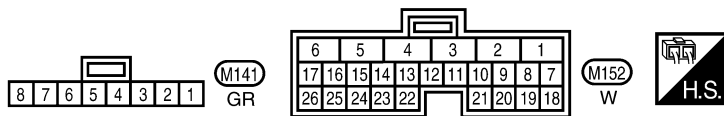
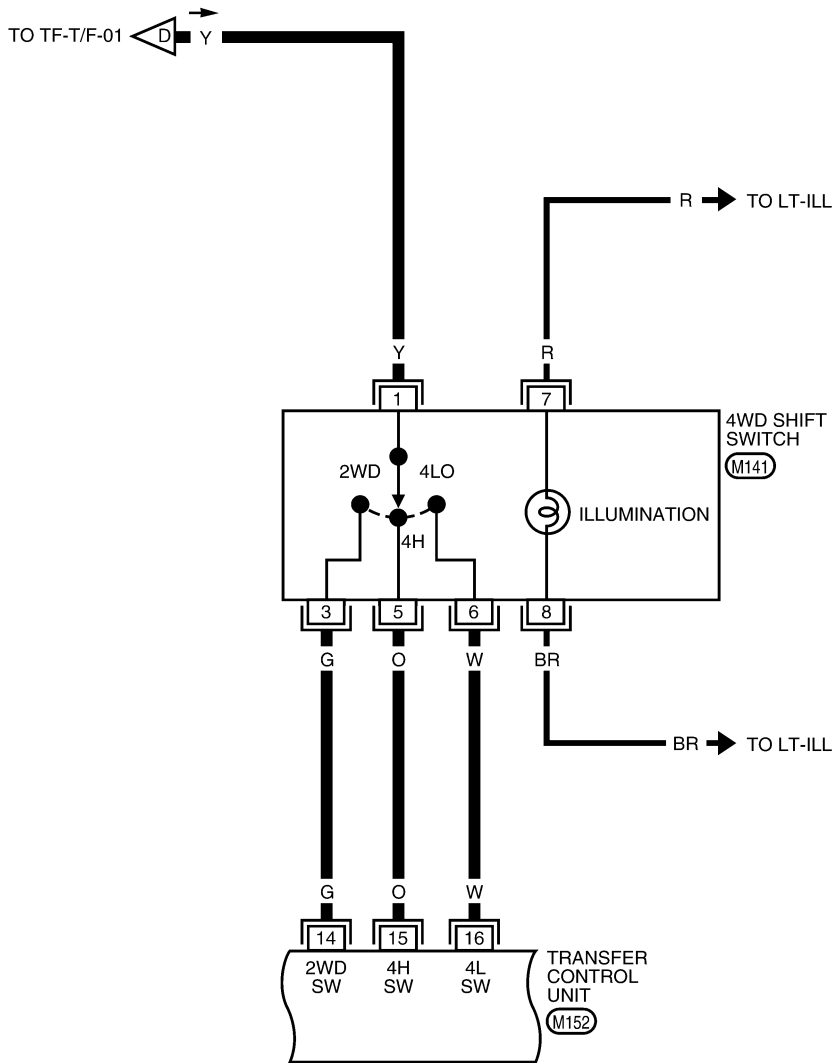
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

TROUBLE DIAGNOSIS

[TX15B]

TF-T/F-04

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC

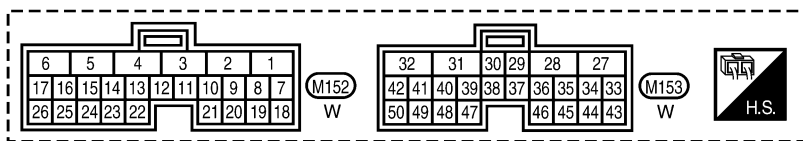
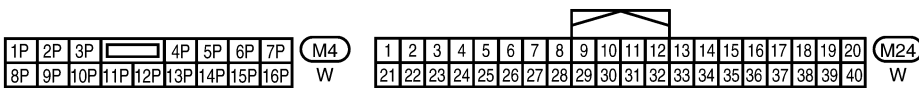
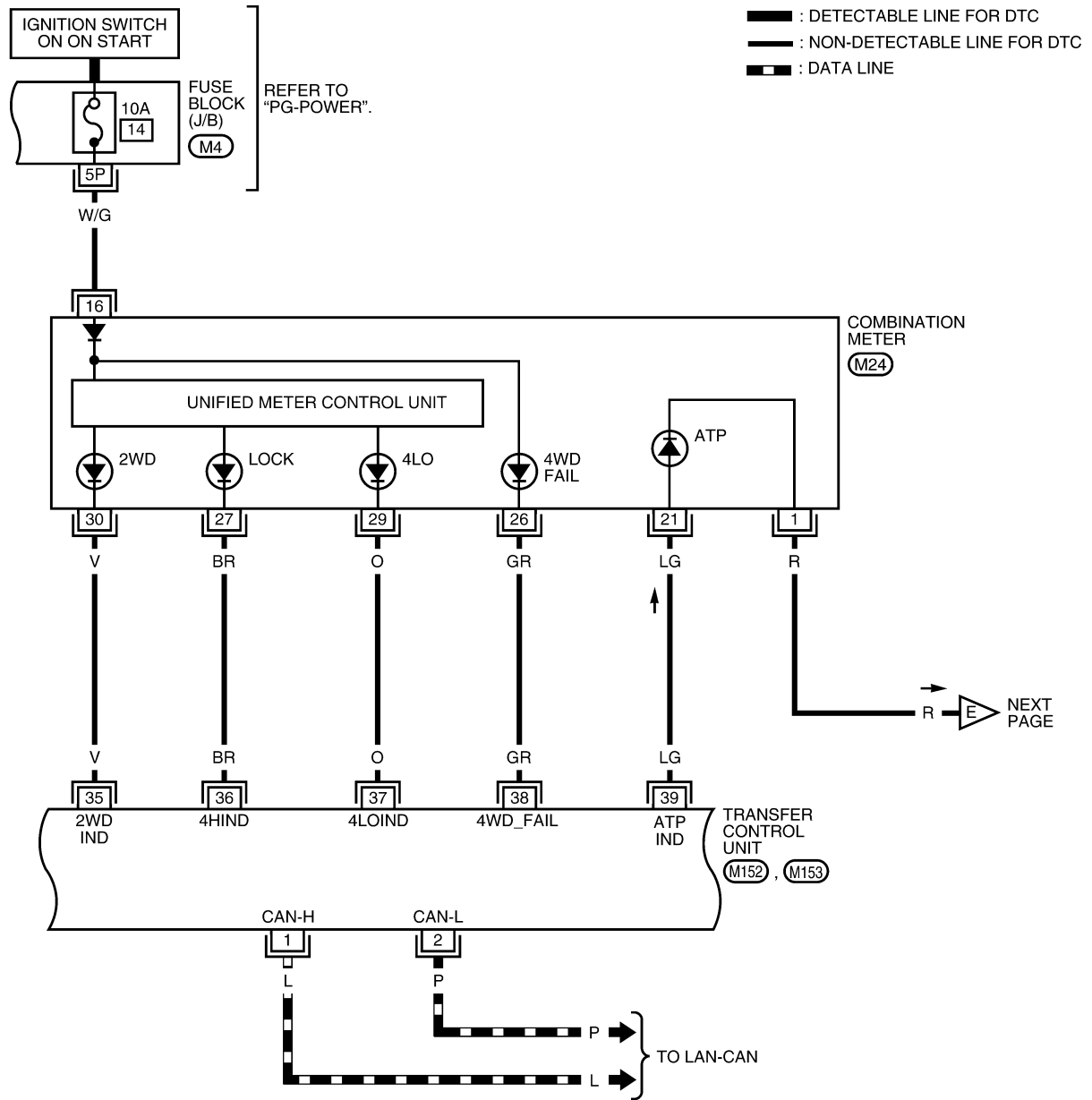


BDWA0010E

TROUBLE DIAGNOSIS

[TX15B]

TF-T/F-05



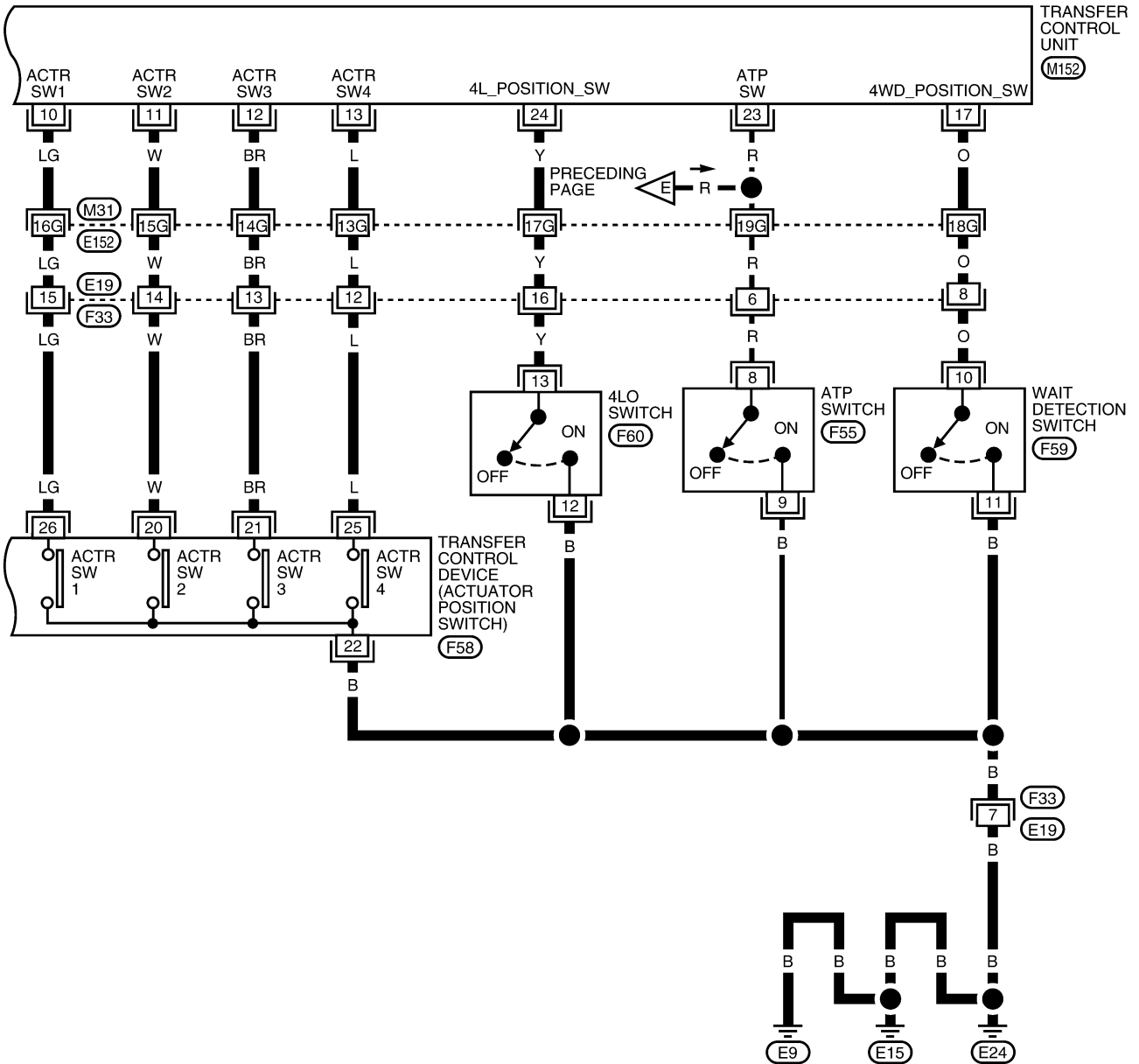
BDWA0125E

TROUBLE DIAGNOSIS

[TX15B]

TF-T/F-06

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

BDWA0088E

TROUBLE DIAGNOSIS

[TX15B]

EDS00386

Trouble Diagnosis Chart for Symptoms

If 4WD warning lamp turns ON, perform self-diagnosis. Refer to [TF-219, "Self-Diagnostic Procedure"](#).

Symptom	Condition	Check item	Reference page
4WD shift indicator lamp and 4LO indicator lamp do not turn ON (4WD shift indicator lamp and 4LO indicator lamp check)	Ignition switch: ON	Power supply and ground for transfer control unit	TF-256
		Transfer shut off relay	
		Combination meter	
4WD warning lamp does not turn ON (4WD warning lamp check)	Ignition switch: ON	Power supply and ground for transfer control unit	TF-259
		Transfer shut off relay	
		Combination meter	
4WD shift indicator lamp or 4LO indicator lamp does not change	Engine running	4WD shift switch	TF-262
		Wait detection switch	
		4LO switch	
		ATP switch	
		Transfer inner parts	
ATP warning lamp does not turn ON	Engine running	CAN communication line	TF-264
		4WD shift switch	
		PNP switch signal	
		ATP switch	
		Combination meter	
		Transfer inner parts	
4WD shift indicator lamp repeats flashing	Engine running	Wait detection switch	TF-266
		4LO switch	
		Transfer inner parts	
4WD warning lamp flashes slowly Slow flashing: 1 time/2 seconds	While driving	Tire size is different between front and rear of vehicle.	TF-266

Transfer Control Unit Input/Output Signal Reference Values

EDS00387

TRANSFER CONTROL UNIT INSPECTION TABLE

Specifications with CONSULT-II

Monitored item [Unit]	Content	Condition	Display value
VHCL/S SEN-FR [km/h] or [mph]	Wheel speed (Front wheel)	Vehicle stopped	0 km/h (0 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
VHCL/S SEN-RR [km/h] or [mph]	Wheel speed (Rear wheel)	Vehicle stopped	0 km/h (0 mph)
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)
ENGINE SPEED [rpm]	Engine speed	Engine stopped (Engine speed: Less than 400 rpm)	0 rpm
		Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer
BATTERY VOLT [V]	Power supply voltage for transfer control unit	Ignition switch: ON	Battery voltage

TROUBLE DIAGNOSIS

[TX15B]

Monitored item [Unit]	Content	Condition	Display value	
2WD SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 2WD	ON	
		4WD shift switch: 4H and 4LO	OFF	
4H SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4H	ON	
		4WD shift switch: 2WD and 4LO	OFF	
4L SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4LO	ON	
		4WD shift switch: 2WD and 4H	OFF	
4L POSI SW [ON/OFF]	Condition of 4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO	ON
		Except the above	OFF	
ATP SWITCH [ON/OFF]	Condition of ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	ON
		Except the above	OFF	
WAIT DETCT SW [ON/OFF]	Condition of wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4H and 4LO	ON
		4WD shift switch: 2WD	OFF	
4WD MODE [2H/4H/4L]	Control status of 4WD (Output condition of 4WD shift indicator lamp and 4LO indicator lamp)	4WD shift switch (Engine running)	2WD	2H
			4H	4H
			4LO	4L
VHCL/S COMP [km/h] or [mph]	Vehicle speed	Vehicle stopped	0 km/h (0 mph)	
		Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approximately equal to the indication on speedometer (Inside of ±10%)	
SHIFT ACT 1 [ON/OFF]	Output condition to actuator motor (clockwise)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 2WD to 4H or 4H to 4LO or 2WD to 4LO	ON
		Except the above	OFF	
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 2WD to 4H or 4H to 4LO or 2WD to 4LO	ON
		Except the above	OFF	
SHIFT ACT 2 [ON/OFF]	Output condition to actuator motor (counterclockwise)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4LO to 4H or 4H to 2WD or 4LO to 2WD	ON
		Except the above	OFF	
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4LO to 4H or 4H to 2WD or 4LO to 2WD	ON
		Except the above	OFF	

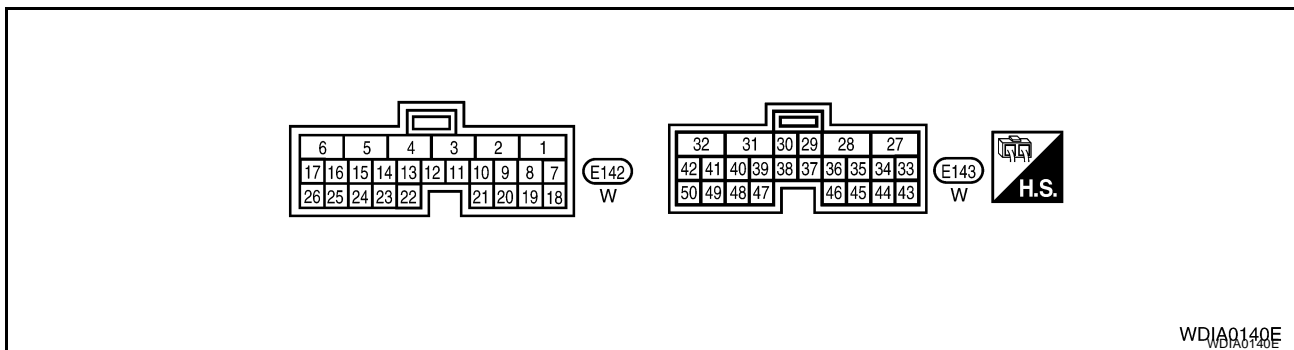
TROUBLE DIAGNOSIS

[TX15B]

Monitored item [Unit]	Content	Condition		Display value
SHIFT ACT/R MON [ON/OFF]	Operating condition of actuator motor relay (integrated in transfer control unit)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	When 4WD shift switch is operated	ON
			When 4WD shift switch is not operated	OFF
SHIFT POS SW1 [ON/OFF]	Condition of actuator position switch 1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD and 4LO	ON
			4WD shift switch: 4H	OFF
SHIFT POS SW2 [ON/OFF]	Condition of actuator position switch 2		4WD shift switch: 4LO	ON
			4WD shift switch: 2WD and 4H	OFF
SHIFT POS SW3 [ON/OFF]	Condition of actuator position switch 3		4WD shift switch: 2WD and 4H	ON
			4WD shift switch: 4LO	OFF
SHIFT POS SW4 [ON/OFF]	Condition of actuator position switch 4		4WD shift switch: 4H and 4LO	ON
			4WD shift switch: 2WD	OFF
4WD FAIL LAMP [ON/OFF]	4WD warning lamp condition	4WD warning lamp: ON	ON	
		4WD warning lamp: OFF	OFF	
2WD IND [ON/OFF]	Rear indicator of 4WD shift indicator lamp condition	Rear indicator of 4WD shift indicator lamp: ON	ON	
		Rear indicator of 4WD shift indicator lamp: OFF	OFF	
4H IND [ON/OFF]	Front and center indicator of 4WD shift indicator lamp condition	Front and center indicator of 4WD shift indicator lamp : ON	ON	
		Front and center indicator of 4WD shift indicator lamp : OFF	OFF	
4L IND [ON/OFF]	4LO indicator lamp condition	4LO indicator lamp: ON	ON	
		4LO indicator lamp: OFF	OFF	

Specifications Between Transfer Control Unit Terminals

TRANSFER CONTROL UNIT TERMINAL CONNECTOR LAYOUT



NOTE:

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

Terminal	Wire color	Item	Condition	Data (Approx.)
1	L	CAN-H	-	-
2	P	CAN-L	-	-
3	SB	K-LINE (CONSULT-II signal)	-	-
6	B	Ground	Always	0V

TROUBLE DIAGNOSIS

[TX15B]

Terminal	Wire color	Item	Condition		Data (Approx.)
10	LG	Actuator position switch 1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD and 4LO	0V
				4WD shift switch: 4H	Battery voltage
11	W	Actuator position switch 2		4WD shift switch: 4LO	0V
				4WD shift switch: 2WD and 4H	Battery voltage
12	BR	Actuator position switch 3		4WD shift switch: 2WD and 4H	0V
				4WD shift switch: 4LO	Battery voltage
13	L	Actuator position switch 4		4WD shift switch: 4H and 4LO	0V
			4WD shift switch: 2WD	Battery voltage	
14	G	4WD shift switch (2WD)	4WD shift switch: 2WD	Battery voltage	
			4WD shift switch: 4H and 4LO	0V	
15	O	4WD shift switch (4H)	4WD shift switch: 4H	Battery voltage	
			4WD shift switch: 2WD and 4LO	0V	
16	W	4WD shift switch (4LO)	4WD shift switch: 4LO	Battery voltage	
			4WD shift switch: 2WD and 4H	0V	
17	O	Wait detection switch	4WD shift switch: 4H and 4LO	0V	
			4WD shift switch: 2WD	Battery voltage	
18	B	Ground	Always		0V
19	R	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF	Battery voltage	
23	R	ATP switch	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	0V	
			Except the above	Battery voltage	
24	Y	4LO switch	4WD shift switch: 4LO	0V	
			Except the above	Battery voltage	
25	W/G	Ignition switch monitor	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF	0V	
27	L	Actuator motor power supply	Ignition switch: ON	Battery voltage	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V	
28	SB	Actuator motor (+)	When 4WD shift switch is operated (while actuator motor is operating)	Battery voltage → 0V	
31	G	Actuator motor (-)	When 4WD shift switch is not operated	0V	
			Always	0V	
32	B	Ground	Always		0V

TROUBLE DIAGNOSIS

[TX15B]

Terminal	Wire color	Item	Condition		Data (Approx.)	
35	V	4WD shift indicator lamp (Rear indicator)	Engine running	Rear indicator of 4WD shift indicator lamp : ON	0V	A
				Rear indicator of 4WD shift indicator lamp : OFF	Battery voltage	B
36	BR	4WD shift indicator lamp (Front and center indicator)		Front and center indicator of 4WD shift indicator lamp: ON	0V	C
				Front and center indicator of 4WD shift indicator lamp: OFF	Battery voltage	
37	O	4LO indicator lamp		4LO indicator lamp: ON	0V	TF
				4LO indicator lamp: OFF	Battery voltage	
38	GR	4WD warning lamp		4WD warning lamp: ON	0V	E
				4WD warning lamp: OFF	Battery voltage	
39	LG	ATP warning lamp	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "P" position ● Brake pedal depressed 4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	Battery voltage	F	
			Except the above	0V	G	
40	V	Transfer shut off relay	Ignition switch: ON	0V	H	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	Battery voltage		
42	LG	Transfer shift high relay	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	0V	I	
			Except the above	Battery voltage	J	
44	Y	Power supply	Ignition switch: ON	Battery voltage	K	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V		
45	GR	Power supply	Ignition switch: ON	Battery voltage	L	
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V		
47	O	Transfer shift high relay monitor	4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO (while actuator motor is operating)	Battery voltage → 0V	M	
			Except the above	0V		
48	R	Transfer shift low relay monitor	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD (while actuator motor is operating)	Battery voltage → 0V		
			Except the above	0V		
50	Y	Transfer shift low relay	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	0V		
			Except the above	Battery voltage		

CAUTION:

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

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

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

ALL MODE AWD/4WD diagnostic mode	Description
SELF-DIAG RESULTS	Displays transfer control unit self-diagnosis results.
DATA MONITOR	Displays transfer control unit input/output data in real time.
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of CAN communication can be read.
ECU PART NUMBER	Transfer control unit part number can be read.

CONSULT-II START PROCEDURE

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

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-216, "CONSULT-II START PROCEDURE"](#).
2. With engine at idle, touch "SELF-DIAG RESULTS".
Display shows malfunction experienced since the last erasing operation.

NOTE:

The details for "TIME" are as follows:

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

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	0
SHIFT ACT POSI SW [P1818]	1
ERASE	PRINT

SDIA2687E

Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
INITIAL START [P1801]	Due to removal of battery which cuts off power supply to transfer control unit, self-diagnosis memory function is suspended.	TF-222, "Power Supply Circuit For Transfer Control Unit"
CONTROL UNIT 1 [P1802]	Malfunction is detected in the memory (RAM) system of transfer control unit.	TF-225, "Transfer Control Unit"
CONTROL UNIT 2 [P1803]	Malfunction is detected in the memory (ROM) system of transfer control unit.	TF-225, "Transfer Control Unit"
CONTROL UNIT 3 [P1804]	Malfunction is detected in the memory (EEPROM) system of transfer control unit.	TF-225, "Transfer Control Unit"
VHCL SPEED SEN-AT [P1807]	<ul style="list-style-type: none"> ● Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication. ● Improper signal is input while driving. 	TF-225, "Output Shaft Revolution Signal (TCM)"
VHCL SPEED SEN-ABS [P1808]	<ul style="list-style-type: none"> ● Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. ● Improper signal is input while driving. 	TF-226, "Vehicle Speed Sensor (ABS)"
CONTROL UNIT 4 [P1809]	AD converter system of transfer control unit is malfunctioning.	TF-225, "Transfer Control Unit"
4L POSI SW TF [P1810]	Improper signal from 4LO switch is input due to open or short circuit.	TF-227, "4LO Switch"
BATTERY VOLTAGE [P1811]	Power supply voltage for transfer control unit is abnormally low while driving.	TF-222, "Power Supply Circuit For Transfer Control Unit"
4WD MODE SW [P1813]	More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch.	TF-230, "4WD Shift Switch"
4WD DETECT SWITCH [P1814]	Improper signal from wait detection switch is input due to open or short circuit.	TF-234, "Wait Detection Switch"
PNP SW/CIRC [P1816]	When A/T PNP switch signal is malfunction or communication error between the vehicles.	TF-237, "PNP Switch Signal"
SHIFT ACTUATOR [P1817]	<ul style="list-style-type: none"> ● Motor does not operate properly due to open or short circuit in actuator motor. ● Malfunction is detected in the actuator motor. (When 4WD shift switch is operated and actuator motor is not operated) ● Malfunction is detected in transfer shift high relay or transfer shift low relay. 	TF-238, "Actuator Motor"
SHIFT ACT POSI SW [P1818]	<ul style="list-style-type: none"> ● Improper signal from actuator position switch is input due to open or short circuit. ● Malfunction is detected in actuator position switch. 	TF-245, "Actuator Position Switch"

TROUBLE DIAGNOSIS

[TX15B]

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
SHIFT ACT CIR [P1819]	<ul style="list-style-type: none"> ● Malfunction is detected in transfer shut off relay 1 and transfer shut off relay 2. ● Malfunction occurs in transfer control device drive circuit. 	TF-222, "Power Supply Circuit For Transfer Control Unit" , TF-248, "Transfer Control Device"
ENGINE SPEED SIG [P1820]	<ul style="list-style-type: none"> ● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input while driving. 	TF-251, "Engine Speed Signal"
CAN COMM CIRCUIT [U1000]	Malfunction has been detected from CAN communication line.	TF-252, "CAN Communication Line"
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	No NG item has been detected.	—

CAUTION:

If "CAN COMM CIRCUIT [U1000]" is displayed with other DTCs, first perform the trouble diagnosis for CAN communication line.

NOTE:

If "SHIFT ACT POSI SW [P1818]" or "SHIFT ACT CIR [P1819]" is displayed, first erase self-diagnostic results. ("SHIFT ACT POSI SW [P1818]" or "SHIFT ACT CIR [P1819]" may be displayed after installing transfer control unit or transfer assembly.)

How to Erase Self-diagnostic Results

1. Perform applicable inspection of malfunctioning item and then repair or replace.
2. Start engine and select "SELF-DIAG RESULTS" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Touch "ERASE" on CONSULT-II screen to erase DTC memory.

CAUTION:

If memory cannot be erased, perform applicable diagnosis.

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-216, "CONSULT-II START PROCEDURE"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

NOTE:

When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS. Also, any malfunction detected while in this mode will be displayed at real time.

Display Item List

×: Standard –: Not applicable

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL/S SEN-FR [km/h] or [mph]	×	–	×	Wheel speed calculated by ABS actuator and electric unit (control unit). Signal input with CAN communication line.
VHCL/S SEN-RR [km/h] or [mph]	×	–	×	Wheel speed calculated by TCM. Signal input with CAN communication line.
ENGINE SPEED [rpm]	×	–	×	Engine speed is displayed. Signal input with CAN communication line.
BATTERY VOLT [V]	×	–	×	Power supply voltage for transfer control unit.
2WD SWITCH [ON/OFF]	×	–	×	4WD shift switch signal status is displayed. (4L means 4LO of 4WD shift switch.)
4H SWITCH [ON/OFF]	×	–	×	
4L SWITCH [ON/OFF]	×	–	×	
4L POSI SW [ON/OFF]	×	–	×	This means 4LO switch. 4LO switch signal status is displayed.

TROUBLE DIAGNOSIS

[TX15B]

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ATP SWITCH [ON/OFF]	×	-	×	ATP switch signal status is displayed.
WAIT DETCT SW [ON/OFF]	×	-	×	Wait detection switch signal status is displayed.
4WD MODE [2H/4H/4L]	-	×	×	Control status of 4WD recognized by transfer control unit. (2WD, 4H or 4LO)
VHCL/S COMP [km/h] or [mph]	-	×	×	Vehicle speed recognized by transfer control unit.
SHIFT ACT 1 [ON/OFF]	-	×	×	Output condition to actuator motor (clockwise)
SHIFT AC MON 1 [ON/OFF]	-	-	×	Check signal for transfer control unit signal output
SHIFT ACT 2 [ON/OFF]	-	×	×	Output condition to actuator motor (counterclockwise)
SHIFT AC MON 2 [ON/OFF]	-	-	×	Check signal for transfer control unit signal output
SFT ACT/R MON [ON/OFF]	-	-	×	Operating condition of actuator motor relay (integrated in transfer control unit)
SHIFT POS SW 1 [ON/OFF]	×	-	×	Condition of actuator position switch 1
SHIFT POS SW 2 [ON/OFF]	×	-	×	Condition of actuator position switch 2
SHIFT POS SW 3 [ON/OFF]	×	-	×	Condition of actuator position switch 3
SHIFT POS SW 4 [ON/OFF]	×	-	×	Condition of actuator position switch 4
4WD FAIL LAMP [ON/OFF]	-	×	×	Control status of 4WD warning lamp is displayed.
2WD IND [ON/OFF]	-	-	×	Control status of 4WD shift indicator lamp (rear) is displayed.
4H IND [ON/OFF]	-	-	×	Control status of 4WD shift indicator lamp (front and center) is displayed.
4L IND [ON/OFF]	-	-	×	Control status of 4LO indicator lamp 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]	-	-	×	

Self-Diagnostic Procedure

EDS00389

SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

Refer to [TF-217, "SELF-DIAG RESULT MODE"](#) .

SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)

Description

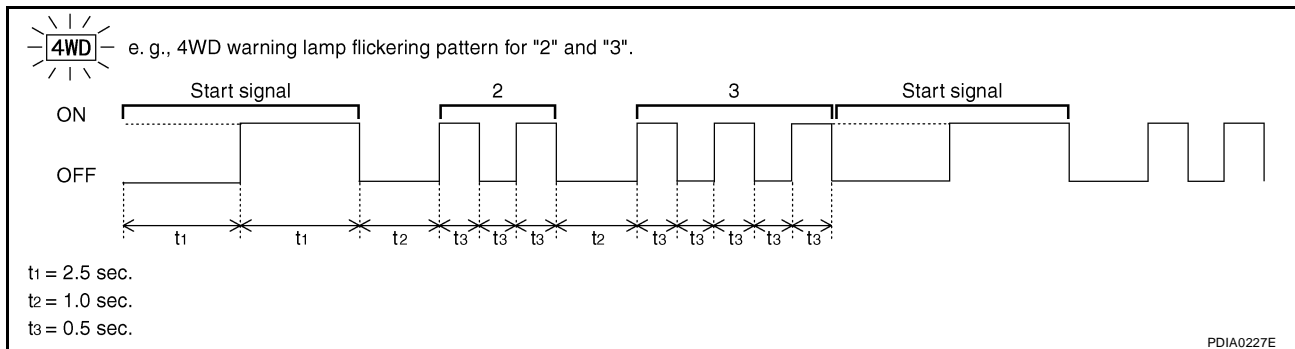
If the engine starts when there is something wrong with the 4WD system, the 4WD warning lamp turns ON or flickers in the combination meter. When the system functions properly, the warning lamp turns ON when the ignition switch is turned to "ON", and it turns OFF after engine starts. To locate the cause of a problem, start the self-diagnosis function. The 4WD warning lamp in the combination meter will indicate the problem area by flickering according to the self-diagnostic results. As for the details of the 4WD warning lamp flickering patterns, refer to [TF-220, "Diagnostic Procedure"](#) .

Diagnostic Procedure

1. Warn up engine.
2. Turn ignition switch "ON" and "OFF" at least twice, and then turn ignition switch "OFF".
3. Move A/T selector lever to "P" position.
4. Turn 4WD shift switch to "2WD" position.
5. Turn ignition switch "ON". (Do not start engine.)
6. 4WD warning lamp ON.
If 4WD warning lamp does not turn ON, refer to [TF-259, "4WD Warning Lamp Does Not Turn ON"](#) .
7. Move A/T selector lever to "R" position.
8. Turn 4WD shift switch to "2WD", "4H" and "2WD" in order.
9. Move A/T selector lever to "P" position.
10. Turn 4WD shift switch to "4H", "2WD" and "4H" in order.
11. Move A/T selector lever to "N" position.
12. Turn 4WD shift switch to "2WD" position.
13. Move A/T selector lever to "P" position.
14. Read the flickering of 4WD warning lamp.
Refer to [TF-220, "Judgement Self-diagnosis"](#) .

Judgement Self-diagnosis

When a malfunction is detected, the malfunction route is indicated by flickering of the 4WD warning lamp.



Flickering pattern or flickering condition	Items	Diagnostic item is detected when...	Check item
2	Output shaft revolution signal (from TCM)	<ul style="list-style-type: none"> ● Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication. ● Improper signal is input while driving. 	TF-225, "Output Shaft Revolution Signal (TCM)"
3	Vehicle speed signal (from ABS)	<ul style="list-style-type: none"> ● Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. ● Improper signal is input while driving. 	TF-226, "Vehicle Speed Sensor (ABS)"
4	CAN communication	Malfunction has been detected from CAN communication.	TF-252, "CAN Communication Line"
5	AD converter	AD converter system of transfer control unit is malfunctioning.	TF-225, "Transfer Control Unit"
6	4LO switch	Improper signal from 4LO switch is input due to open or short circuit.	TF-227, "4LO Switch"
7	Engine speed signal	<ul style="list-style-type: none"> ● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input while driving. 	TF-251, "Engine Speed Signal"
8	Power supply	Power supply voltage for transfer control unit is abnormally low while driving.	TF-222, "Power Supply Circuit For Transfer Control Unit"

TROUBLE DIAGNOSIS

[TX15B]

Flickering pattern or flickering condition	Items	Diagnostic item is detected when...	Check item
9	4WD shift switch	More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch.	TF-230, "4WD Shift Switch"
10	Wait detection switch	Improper signal from wait detection switch is input due to open or short circuit.	TF-234, "Wait Detection Switch"
11	Actuator motor	<ul style="list-style-type: none"> Motor does not operate properly due to open or short circuit in actuator motor. Malfunction is detected in the actuator motor. (When 4WD shift switch is operated and actuator motor is not operated.) Malfunction is detected in transfer shift high relay or transfer shift low relay. 	TF-238, "Actuator Motor"
12	Actuator position switch	<ul style="list-style-type: none"> Improper signal from actuator position switch is input due to open or short circuit. Malfunction is detected in the actuator position switch. 	TF-245, "Actuator Position Switch"
13	Transfer control device	<ul style="list-style-type: none"> Malfunction is detected in transfer shut off relay 1 and transfer shut off 2. Malfunction occurs in transfer control device drive circuit. 	TF-222, "Power Supply Circuit For Transfer Control Unit" , TF-248, "Transfer Control Device"
14	PNP switch signal	When A/T PNP switch signal is malfunction or communication error between the vehicles.	TF-237, "PNP Switch Signal"
Repeats flickering every 0.25 sec.	Data erase display	<ul style="list-style-type: none"> Power supply failure of memory back-up. Battery is disconnected for a long time. Battery performance is poor. 	TF-222, "Power Supply Circuit For Transfer Control Unit"
Repeats flickering every 2 to 5 sec.	—	Circuits that the self-diagnosis covers have no malfunction.	—
No flickering	PNP switch or 4WD shift switch	PNP switch or 4WD shift switch circuit is shorted or open.	TF-237, "PNP Switch Signal" or TF-230, "4WD Shift Switch"

NOTE:

If "actuator position switch" or "transfer control device" is displayed, first erase self-diagnostic results. (They may be displayed after installing transfer control unit or transfer assembly.)

ERASE SELF-DIAGNOSIS

- In order to make it easier to find the cause of hard-to-duplicate malfunctions, malfunction information is stored into the control unit as necessary during use by the user. This memory is not erased no matter how many times the ignition switch is turned ON and OFF.
- However, this information is erased by turning ignition switch "OFF" after performing self-diagnostics or by erasing the memory using the CONSULT-II.

TROUBLE DIAGNOSIS FOR SYSTEM

[TX15B]

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Power Supply Circuit For Transfer Control Unit CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

EDS0038A

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
BATTERY VOLT [V]	Power supply voltage for transfer control unit	Ignition switch: ON	Battery voltage

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
6	B	Ground	Always	0V
18	B	Ground	Always	0V
19	R	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	Battery voltage
25	W/G	Ignition switch monitor	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0V
32	B	Actuator motor ground	Always	0V
40	V	Transfer shut off relay	Ignition switch: ON	0V
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	Battery voltage
44	Y	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V
45	GR	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V

CAUTION:

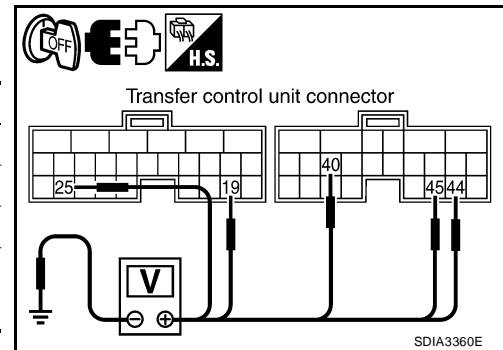
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

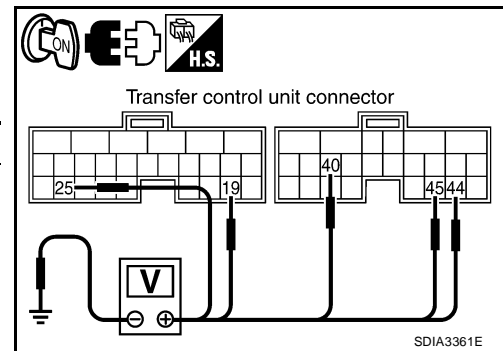
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	0V
M153	40 - Ground	Battery voltage
	44 - Ground	0V
	45 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	
M153	40 - Ground	
	44 - Ground	
	45 - Ground	



OK or NG

OK >> GO TO 2.

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

- 40A fuse (No. j, located in the fuse and fusible link box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
- 10A fuses (No. 21, located in the fuse block-junction block (J/B) and 60 and 61 located in the fuse and relay box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
- Harness for short or open between battery and transfer control unit harness connector M152 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E157 terminal 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E156 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M152 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E156 terminal 1.
- Harness for short or open between transfer shut off relay 2 harness connector E157 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E156 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E157 terminal 2 and transfer control unit harness connector M153 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E156 terminal 2 and ground.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
- Transfer shut off relay 1, 2. Refer to [TF-225, "COMPONENT INSPECTION"](#).

2. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 6 and 18, and M153 terminal 32 and ground.

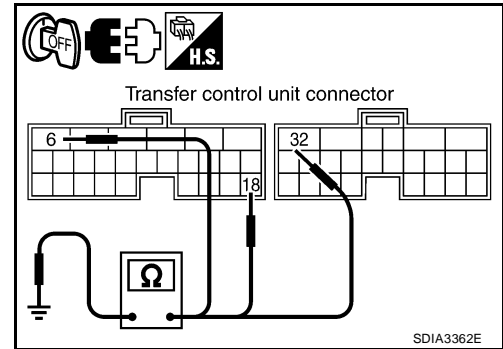
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 3.

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



3. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 4.

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

4. CHECK DTC

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

OK or NG

OK >> Inspection End.

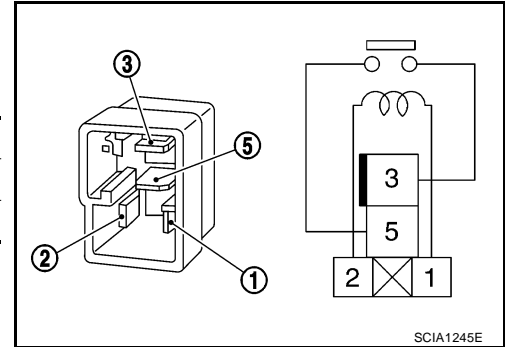
NG >> Replace transfer control unit. Refer to [TF-268, "Removal and Installation"](#).

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shut off relay 1 and transfer shut off relay 2. Refer to [TF-202, "Location of Electrical Parts"](#).
3. Apply 12V direct current between transfer shut off relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
OFF	No

5. If NG, replace the transfer shut off relay 1 or 2. Refer to [TF-202, "Location of Electrical Parts"](#).



EDS0038B

Transfer Control Unit DIAGNOSTIC PROCEDURE

1. INSPECTION START

Do you have CONSULT-II?

YES or NO

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

2. PERFORM SELF-DIAGNOSIS (WITH CONSULT-II)

With CONSULT-II

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

Is the "CONTROL UNIT 1 [P1802]", "CONTROL UNIT 2 [P1803]", "CONTROL UNIT 3 [P1804]" or "CONTROL UNIT 4 [P1809]" displayed?

- YES >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#).
- NO >> Inspection End.

3. PERFORM SELF-DIAGNOSIS (WITHOUT CONSULT-II)

Without CONSULT-II

1. Perform the self-diagnosis and then erase self-diagnostic results. Refer to [TF-219, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-221, "ERASE SELF-DIAGNOSIS"](#).
2. Perform the self-diagnosis again.

Do the self-diagnostic results indicate AD converter?

- YES >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#).
- NO >> Inspection End.

Output Shaft Revolution Signal (TCM) DIAGNOSTIC PROCEDURE

EDS0038C

1. CHECK DTC WITH TCM

Perform self-diagnosis with TCM. Refer to [AT-88, "CONSULT-II START PROCEDURE"](#).

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with TCM again. Refer to [AT-88, "SELF-DIAGNOSTIC RESULT MODE"](#) .

Vehicle Speed Sensor (ABS) DIAGNOSTIC PROCEDURE

EDS0038D

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

Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#) (without HDC/HSA) or [BRC-92, "SELF-DIAGNOSIS"](#) (with HDC/HSA).

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with ABS actuator and electric unit (control unit). Refer to [BRC-29, "SELF-DIAGNOSIS"](#) (without HDC/HSA) or [BRC-92, "SELF-DIAGNOSIS"](#) (with HDC/HSA).

TROUBLE DIAGNOSIS FOR SYSTEM

[TX15B]

EDS0038E

4LO Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
4L POSI SW [ON/OFF]	Condition of 4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO ON
		Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
24	Y	4LO switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO 0V
			Except the above	Battery voltage

CAUTION:

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

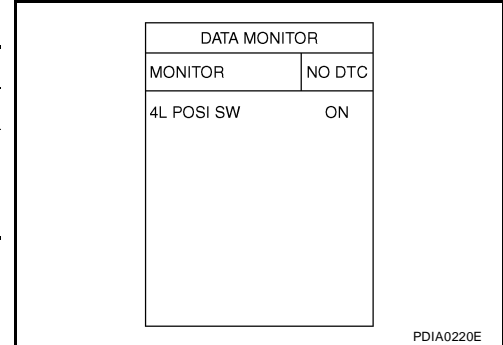
DIAGNOSTIC PROCEDURE

1. CHECK 4LO POSITION SWITCH SIGNAL

④ With CONSULT-II

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

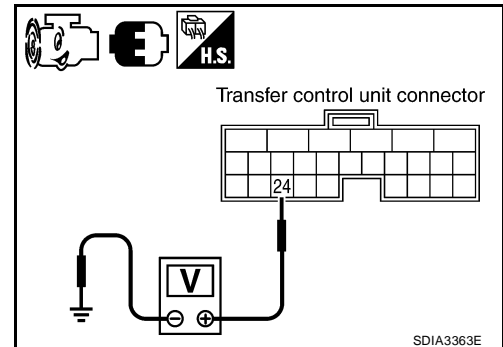
Condition	4WD shift switch: 4LO	Display value
<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO	ON
	Except the above	OFF



⊗ Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
E142	24 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4LO 0V
		Except the above	Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND 4LO SWITCH

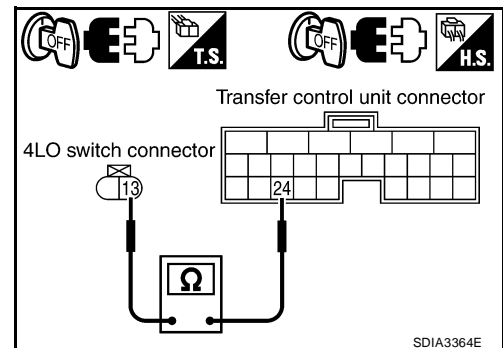
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the 4LO switch harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 24 and 4LO switch harness connector F60 terminal 13.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

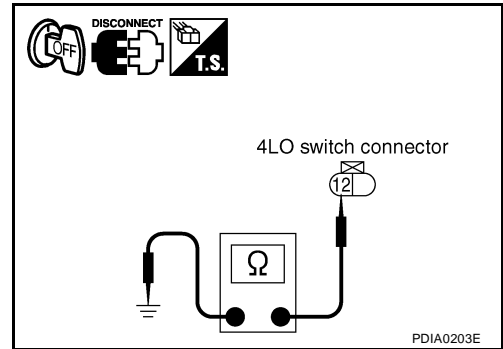
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4LO switch harness connector.
3. Check continuity between 4LO switch harness connector F60 terminal 12 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to power in harness or connectors.



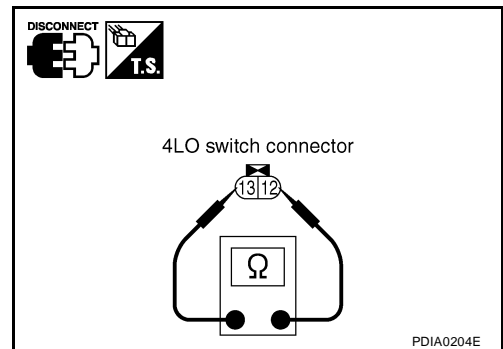
4. CHECK 4LO SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4LO switch harness connector.
3. Remove 4LO switch. Refer to [TF-202, "Location of Electrical Parts"](#) .
4. Push and release 4LO switch and check continuity between 4LO switch terminals 12 and 13.

Terminal	Condition	Continuity
12 - 13	Push 4LO switch	Yes
	Release 4LO switch	No

OK or NG

- OK >> GO TO 5.
 NG >> Replace 4LO switch. Refer to [TF-202, "Location of Electrical Parts"](#) .



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

OK or NG

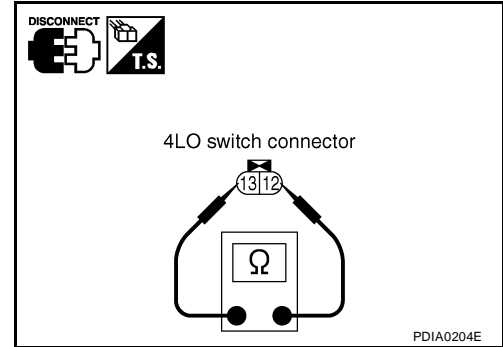
- OK >> Inspection End.
 NG >> Replace transfer control unit. Refer to [TF-268, "Removal and Installation"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4LO switch harness connector.
3. Remove 4LO switch. Refer to [TF-202, "Location of Electrical Parts"](#) .
4. Push and release 4LO switch and check continuity between 4LO switch terminals 12 and 13.

Terminal	Condition	Continuity
12 - 13	Push 4LO switch	Yes
	Release 4LO switch	No

5. If NG, replace the 4LO switch.



4WD Shift Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

EDS0038F

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
2WD SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 2WD	ON
		4WD shift switch: 4H and 4LO	OFF
4H SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4H	ON
		4WD shift switch: 2WD and 4LO	OFF
4L SWITCH [ON/OFF]	Input condition from 4WD shift switch	4WD shift switch: 4LO	ON
		4WD shift switch: 2WD and 4H	OFF
4WD MODE [2H/4H/4L]	Control status of 4WD (Output condition of 4WD shift indicator lamp and 4LO indicator lamp)	4WD shift switch (Engine running): 2WD	2H
		4WD shift switch (Engine running): 4H	4H
		4WD shift switch (Engine running): 4LO	4L

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
14	G	4WD shift switch (2WD)	4WD shift switch: 2WD	Battery voltage
			4WD shift switch: 4H and 4LO	0V
15	O	4WD shift switch (4H)	4WD shift switch: 4H	Battery voltage
			4WD shift switch: 2WD and 4LO	0V
16	W	4WD shift switch (4LO)	4WD shift switch: 4LO	Battery voltage
			4WD shift switch: 2WD and 4H	0V

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK 4WD SHIFT SWITCH SIGNAL

Ⓜ With CONSULT-II

1. Turn ignition switch "ON".
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out ON/OFF switching action of the "2WD SWITCH", "4H SWITCH", "4L SWITCH" with operating 4WD shift switch.

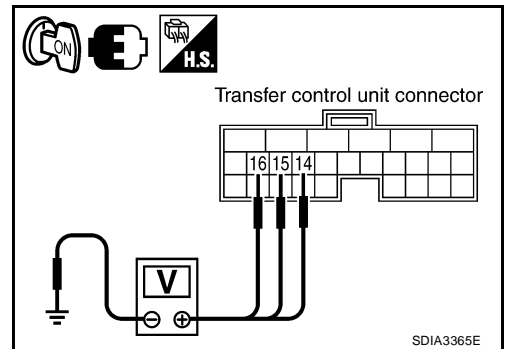
DATA MONITOR	
MONITOR	NO DTC
2WD SWITCH	OFF
4H SWITCH	ON
4L SWITCH	OFF

SDIA2382E

ⓧ Without CONSULT-II

1. Turn ignition switch "ON".
2. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	14 - Ground	4WD shift switch: 2WD	Battery voltage
		4WD shift switch: 4H and 4LO	0V
	15 - Ground	4WD shift switch: 4H	Battery voltage
		4WD shift switch: 2WD and 4LO	0V
	16 - Ground	4WD shift switch: 4LO	Battery voltage
		4WD shift switch: 2WD and 4H	0V



OK or NG

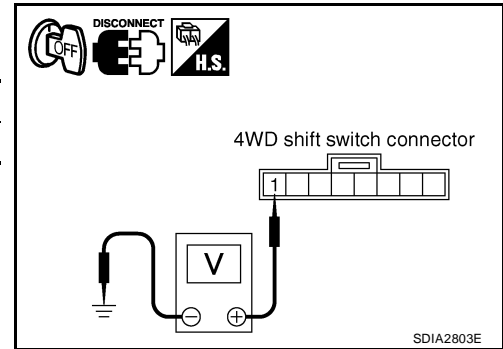
- OK >> GO TO 5.
 NG >> GO TO 2.

A
B
C
TF
E
F
G
H
I
J
K
L
M

2. CHECK 4WD SHIFT SWITCH POWER SUPPLY CIRCUIT

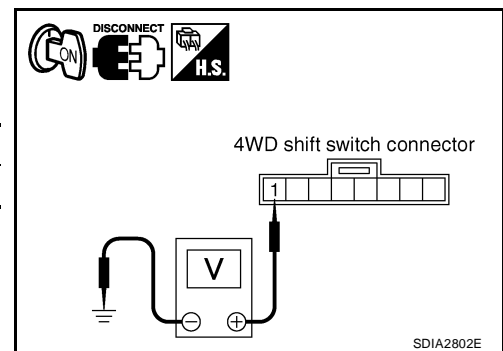
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector.
3. Check voltage between 4WD shift switch harness connector terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
M141	1 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between 4WD shift switch harness connector terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
M141	1 - Ground	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> 1. Check harness for short or open between 4WD shift switch harness connector terminal 1 and transfer shut off relay 2 harness connector E157 terminal 5 and 10A fuse (No. 61 located in the fuse block). If any items are damaged, repair or replace damaged parts.

2. Perform trouble diagnosis for power supply circuit. Refer to [TF-222, "Power Supply Circuit For Transfer Control Unit"](#).

3. CHECK HARNESS BETWEEN 4WD SHIFT SWITCH AND TRANSFER CONTROL UNIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the 4WD shift switch harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 14 and 4WD shift switch harness connector M141 terminal 3.
 - Transfer control unit harness connector M152 terminal 15 and 4WD shift switch harness connector M141 terminal 5.
 - Transfer control unit harness connector M152 terminal 16 and 4WD shift switch harness connector M141 terminal 6.

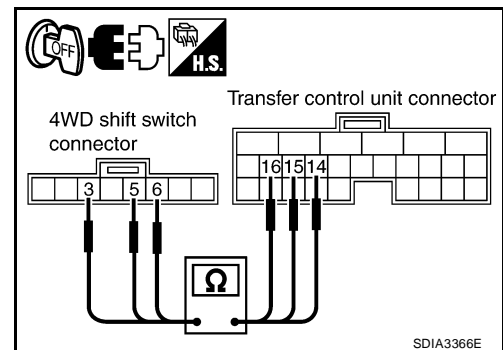
Continuity should exist.

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

OK or NG

OK >> GO TO 4.

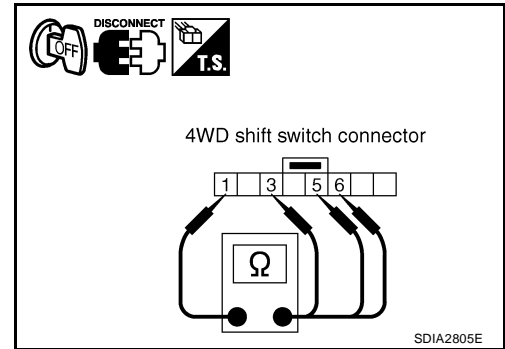
NG >> Repair or replace damaged parts.



4. CHECK 4WD SHIFT SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove 4WD shift switch harness connector.
3. Operate 4WD shift switch and check continuity between 4WD shift switch terminals.

Terminal	Condition	Continuity
1 - 3	4WD shift switch: 2WD	Yes
	4WD shift switch: 4H and 4LO	No
1 - 5	4WD shift switch: 4H	Yes
	4WD shift switch: 2WD and 4LO	No
1 - 6	4WD shift switch: 4LO	Yes
	4WD shift switch: 2WD and 4H	No



OK or NG

- OK >> GO TO 5.
- NG >> Replace 4WD shift switch.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

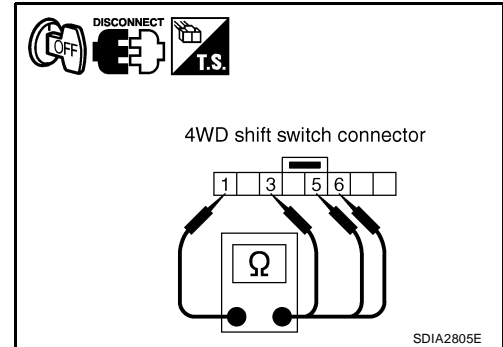
OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove 4WD shift switch harness connector.
3. Operate 4WD shift switch and check continuity between 4WD shift switch terminals.

Terminal	Condition	Continuity
1 - 3	4WD shift switch: 2WD	Yes
	4WD shift switch: 4H and 4LO	No
1 - 5	4WD shift switch: 4H	Yes
	4WD shift switch: 2WD and 4LO	No
1 - 6	4WD shift switch: 4LO	Yes
	4WD shift switch: 2WD and 4H	No



4. If NG, replace the 4WD shift switch.

Wait Detection Switch

EDS0038G

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
WAIT DETCT SW [ON/OFF]	Condition of wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4H and 4LO
			4WD shift switch: 2WD
			ON
			OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
17	O	Wait detection switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 4H and 4LO
				4WD shift switch: 2WD
				0V
				Battery voltage

CAUTION:

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

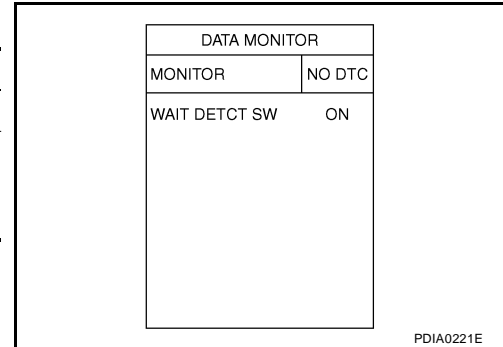
DIAGNOSTIC PROCEDURE

1. CHECK WAIT DETECTION SWITCH SIGNAL

With CONSULT-II

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

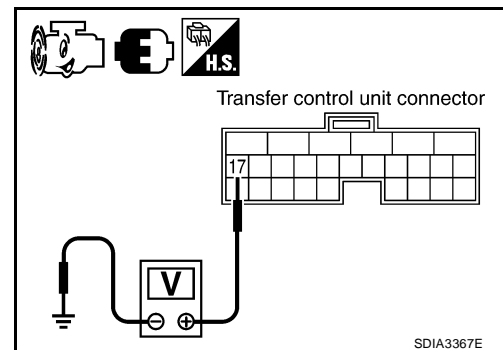
Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped 	4WD shift switch: 4H and 4LO ON
<ul style="list-style-type: none"> ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD OFF



Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
E142	17 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped 	4WD shift switch : 4H and 4LO 0V
		<ul style="list-style-type: none"> ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch: 2WD Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND WAIT DETECTION SWITCH

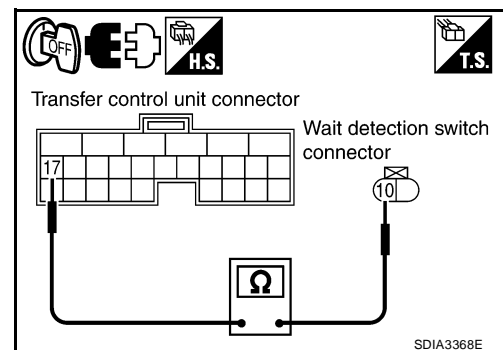
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the wait detection switch harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 17 and wait detection switch harness connector F59 terminal 10.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

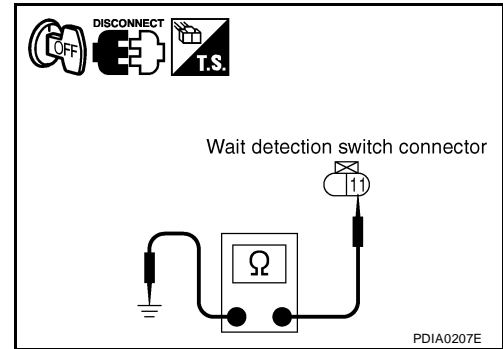
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Check continuity between wait detection switch harness connector F59 terminal 11 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to power in harness or connectors.



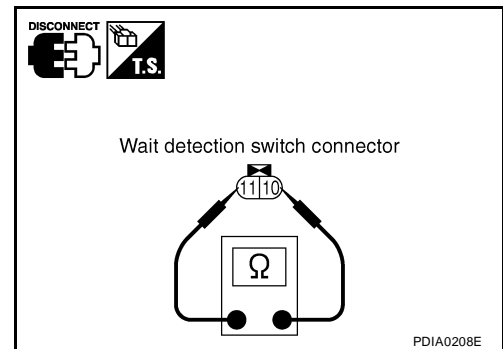
4. CHECK WAIT DETECTION SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Remove wait detection switch. Refer to [TF-202, "Location of Electrical Parts"](#) .
4. Push and release wait detection switch and check continuity between wait detection switch terminals 10 and 11.

Terminal	Condition	Continuity
10 - 11	Push wait detection switch	Yes
	Release wait detection switch	No

OK or NG

- OK >> GO TO 5.
 NG >> Replace wait detection switch. Refer to [TF-202, "Location of Electrical Parts"](#) .



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
 NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

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

OK or NG

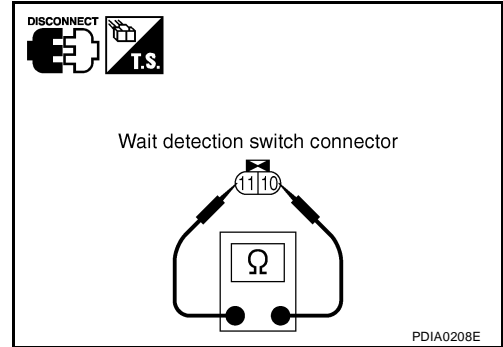
- OK >> Inspection End.
 NG >> Replace transfer control unit. Refer to [TF-268, "Removal and Installation"](#) .

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Remove wait detection switch. Refer to [TF-202, "Location of Electrical Parts"](#) .
4. Push and release wait detection switch and check continuity between wait detection switch terminals 10 and 11.

Terminal	Condition	Continuity
10 - 11	Push wait detection switch	Yes
	Release wait detection switch	No

5. If NG, replace the wait detection switch. Refer to [TF-202, "Location of Electrical Parts"](#) .



EDS0038H

**PNP Switch Signal
DIAGNOSTIC PROCEDURE**

1. CHECK DTC WITH TCM

Perform self-diagnosis with TCM. Refer to [AT-88, "CONSULT-II START PROCEDURE"](#) .

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Perform self-diagnosis with TCM again. Refer to [AT-88, "CONSULT-II START PROCEDURE"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

[TX15B]

EDS0038I

Actuator Motor

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
SHIFT ACT 1 [ON/OFF]	Output condition to actuator motor (clockwise)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 2WD to 4H or 4H to 4LO or 2WD to 4LO ON
			Except the above OFF
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 2WD to 4H or 4H to 4LO or 2WD to 4LO ON
			Except the above OFF
SHIFT ACT 2 [ON/OFF]	Output condition to actuator motor (counterclockwise)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4LO to 4H or 4H to 2WD or 4LO to 2WD ON
			Except the above OFF
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	4WD shift switch : 4LO to 4H or 4H to 2WD or 4LO to 2WD ON
			Except the above OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
27	L	Actuator motor power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)	0V
28	SB	Actuator motor (+)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	When 4WD shift switch is operated (while actuator motor is operating) Battery voltage
31	G	Actuator motor (-)	<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	When 4WD shift switch is not operated 0V
				Always 0V
42	LG	Transfer shift high relay	4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	0V
			Except the above	Battery voltage
47	O	Transfer shift high relay monitor	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO Battery voltage → 0V
			<ul style="list-style-type: none"> ● A/T selector lever "N" position 	Except the above 0V
48	R	Transfer shift low relay monitor	<ul style="list-style-type: none"> ● Brake pedal depressed 	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD Battery voltage → 0V
				Except the above 0V
50	Y	Transfer shift low relay	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	0V
			Except the above	Battery voltage

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK ACTUATOR MOTOR SIGNAL

④ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
3. Read out the value of "SHIFT ACT1", "SHIFT AC MON1", "SHIFT ACT2", "SHIFT AC MON2".

Monitored item	Condition	Display value
SHIFT ACT1	4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	ON
	Except the above	OFF
SHIFT AC MON1	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	ON
	Except the above	OFF
SHIFT ACT2	<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	ON
	Except the above	OFF
SHIFT AC MON2	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	ON
	Except the above	OFF

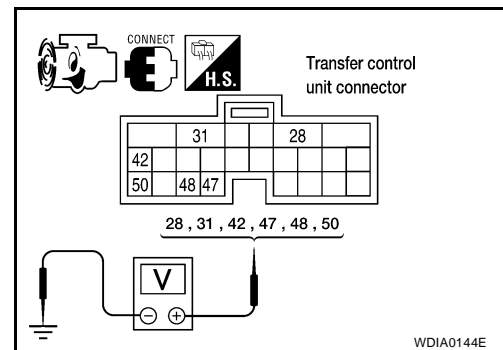
DATA MONITOR	
MONITOR	NO DTC
SHIFT ACT1	OFF
SHIFT AC MON1	OFF
SHIFT ACT2	OFF
SHIFT AC MON2	OFF

PDIA0223E

⊗ Without CONSULT-II

1. Start engine.
2. Depress brake pedal and stop vehicle.
3. Set A/T selector lever to "N" position.
4. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M153	28 - Ground	When 4WD shift switch is operated (While actuator motor is operating.)	Battery voltage → 0V
		When 4WD shift switch is not operated	0V
	31 - Ground	Always	0V
	42 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	0V
<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed Except the above		Battery voltage	



Connector	Terminal	Condition		Voltage (Approx.)
M153	47 - Ground	● Vehicle stopped	4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO	Battery voltage → 0V
			Except the above	0V
	48 - Ground	● Engine running ● A/T selector lever "N" position	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	Battery voltage → 0V
			Except the above	0V
	50 - Ground	● Brake pedal depressed	4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD	0V
			Except the above	Battery voltage

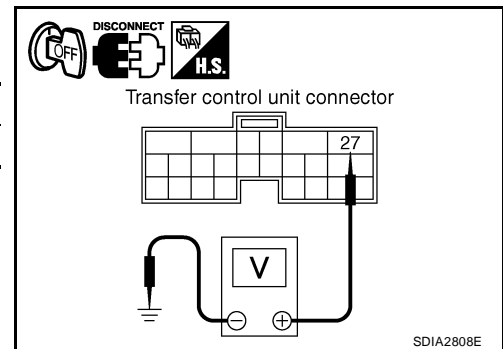
OK or NG

- OK >> GO TO 9.
- NG >> GO TO 2.

2. CHECK ACTUATOR MOTOR POWER SUPPLY CIRCUIT

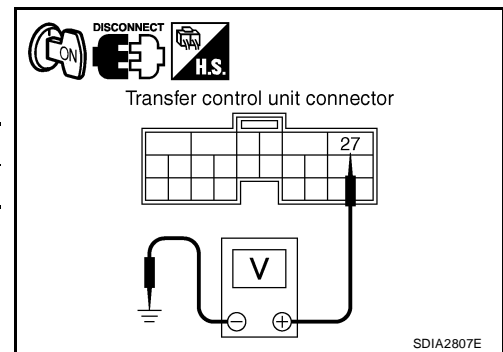
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminal 27 and ground.

Connector	Terminal	Voltage (Approx.)
M153	27 - Ground	0V



4. Turn ignition switch "ON".
5. Check voltage between transfer control unit harness connector terminal 27 and ground.

Connector	Terminal	Voltage (Approx.)
M153	27 - Ground	Battery voltage



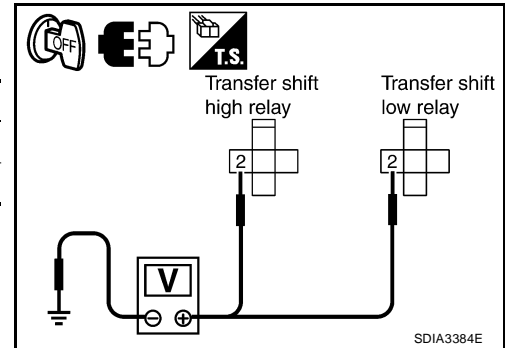
OK or NG

- OK >> GO TO 3.
- NG >> 1. Check harness for short or open between transfer control unit harness connector M153 terminal 27 and transfer shut off relay 2 harness connector E157 terminal 5 and 10A fuse (No. 57, located in the fuse and relay block). If any items are damaged, repair or replace damaged parts.
- 2. Perform trouble diagnosis for power supply circuit. Refer to [TF-222, "Power Supply Circuit For Transfer Control Unit"](#).

3. CHECK TRANSFER RELAY POWER SUPPLY CIRCUIT

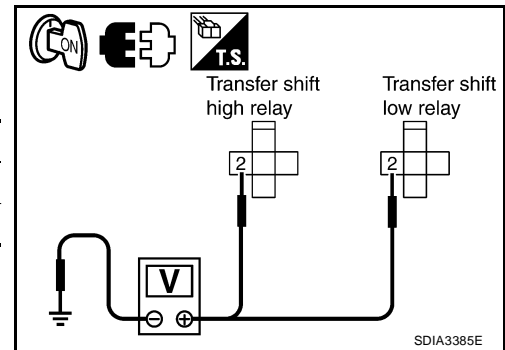
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-202, "Location of Electrical Parts"](#).
3. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
E46	2 - Ground	0V
E47	2 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
E46	2 - Ground	Battery voltage
E47	2 - Ground	Battery voltage



OK or NG

OK >> GO TO 4.

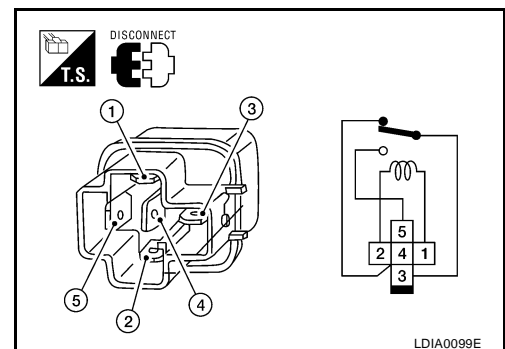
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between transfer control unit harness connector terminal 27 and transfer shift high relay harness connector E46 terminal 2.
- Harness for short or open between transfer control unit harness connector terminal 27 and transfer shift low relay harness connector terminal E47 terminal 2.

4. CHECK TRANSFER RELAY

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay.
3. Apply 12V direct current between transfer shift high and low relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 4, 3 and 5.

Terminal	Condition	Continuity
3 - 4	12V direct current supply between terminals 1 and 2	No
	OFF	Yes
3 - 5	12V direct current supply between terminals 1 and 2	Yes
	OFF	No



OK or NG

OK >> GO TO 5.

NG >> Replace the transfer shift high or low relay.

5. CHECK (1): HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER SHIFT RELAY

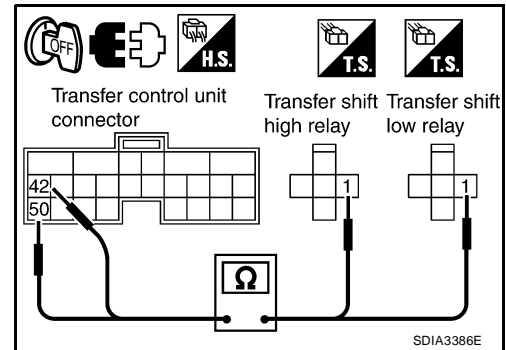
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Remove transfer shift high relay and transfer shift low relay.
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 42 and transfer shift high relay harness connector E46 terminal 1.
 - Transfer control unit harness connector M153 terminal 50 and transfer shift low relay harness connector E47 terminal 1.

Continuity should exist.

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

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.



6. CHECK (2): HARNESS BETWEEN TRANSFER CONTROL UNIT AND TRANSFER SHIFT RELAY

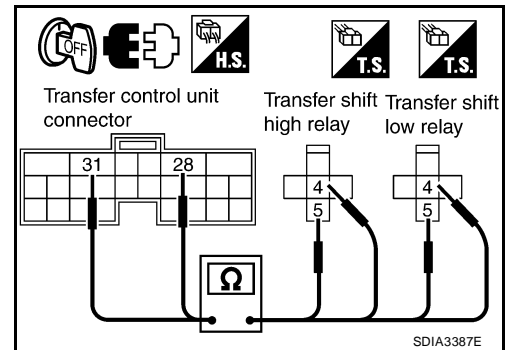
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Remove transfer shift high relay and transfer shift low relay.
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 28 and transfer shift high relay harness connector E46 terminal 5.
 - Transfer control unit harness connector M153 terminal 28 and transfer shift low relay harness connector E47 terminal 5.
 - Transfer control unit harness connector M153 terminal 31 and transfer shift high relay harness connector E46 terminal 4.
 - Transfer control unit harness connector M153 terminal 31 and transfer shift low relay harness connector E47 terminal 4.

Continuity should exist.

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

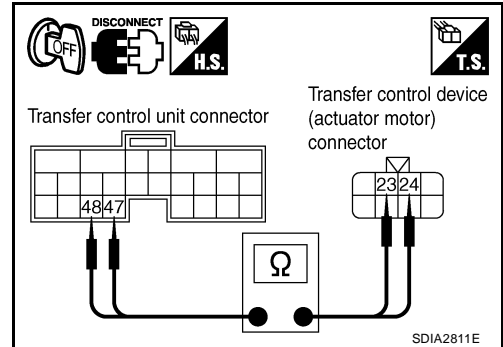
OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.



7. CHECK ACTUATOR MOTOR OPERATION CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer control device (actuator motor) harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 47 and transfer control device (actuator motor) harness connector F58 terminal 23.
 - Transfer control unit harness connector M153 terminal 48 and transfer control device (actuator motor) harness connector F58 terminal 24.



- Transfer control device (actuator motor) harness connector F58 terminal 24 and transfer shift high relay harness connector E46 terminal 3.
- Transfer control device (actuator motor) harness connector F58 terminal 23 and transfer shift low relay harness connector E47 terminal 3.

Continuity should exist.

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

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.



8. CHECK ACTUATOR MOTOR

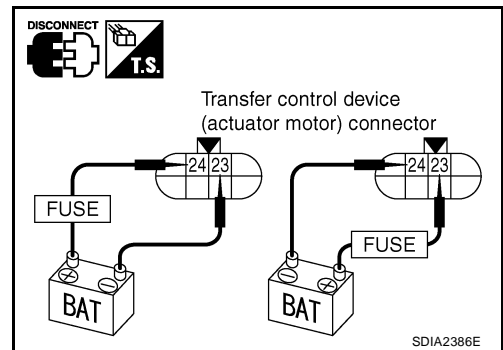
1. Remove transfer control device. Refer to [TF-268, "Removal and Installation"](#).
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 23 and 24.

CAUTION:
Be careful not to overheat the harness.

Terminal	Actuator motor
24 (Battery voltage) - 23 (Ground)	Clockwise rotate
23 (Battery voltage) - 24 (Ground)	Counterclockwise rotate

Does actuator motor rotate?

- YES >> GO TO 9.
- NO >> Replace transfer control device (actuator motor). Refer to [TF-273, "Removal and Installation"](#).



9. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 10.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

10. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#) .

COMPONENT INSPECTION

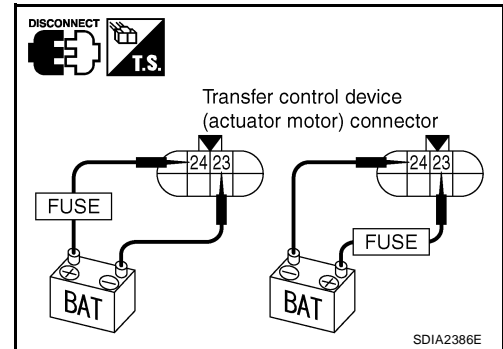
Actuator Motor

1. Remove transfer control device. Refer to [TF-273, "Removal and Installation"](#) .
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 23 and 24.

CAUTION:
Be careful not to overheat the harness.

Terminal	Actuator motor
24 (Battery voltage) - 23 (Ground)	Clockwise rotate
23 (Battery voltage) - 24 (Ground)	Counterclockwise rotate

3. If NG, replace transfer control device (actuator motor). Refer to [TF-273, "Removal and Installation"](#) .

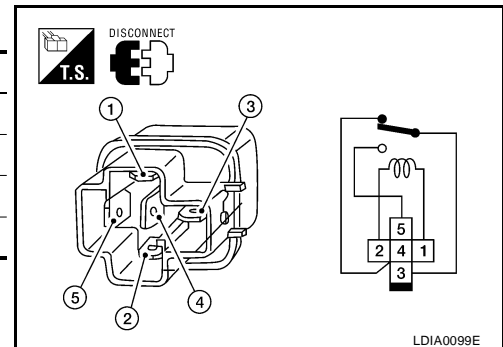


Transfer Relay

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove transfer shift high relay and transfer shift low relay 2. Refer to [TF-202, "Location of Electrical Parts"](#) .
3. Apply 12V direct current between transfer shift high and low relay terminals 1 and 2.
4. Check continuity between relay terminals 3 and 4, and 3 and 5.

Terminal	Condition	Continuity
3 - 4	12V direct current supply between terminals 1 and 2	No
	OFF	Yes
3 - 5	12V direct current supply between terminals 1 and 2	Yes
	OFF	No

5. If NG, replace transfer shift high or low relay. Refer to [TF-202, "Location of Electrical Parts"](#) .



TROUBLE DIAGNOSIS FOR SYSTEM

[TX15B]

EDS0038J

Actuator Position Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
SHIFT POS SW1 [ON/OFF]	Condition of actuator position switch 1	4WD shift switch: 2WD and 4LO	ON
		4WD shift switch: 4H	OFF
SHIFT POS SW2 [ON/OFF]	Condition of actuator position switch 2	4WD shift switch: 4LO	ON
		4WD shift switch: 2WD and 4H	OFF
SHIFT POS SW3 [ON/OFF]	Condition of actuator position switch 3	4WD shift switch: 2WD and 4H	ON
		4WD shift switch: 4LO	OFF
SHIFT POS SW4 [ON/OFF]	Condition of actuator position switch 4	4WD shift switch: 4H and 4LO	ON
		4WD shift switch: 2WD	OFF

- Vehicle stopped
- Engine running
- A/T selector lever "N" position
- Brake pedal depressed

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
10	LG	Actuator position switch 1	4WD shift switch: 2WD and 4LO	0V
			4WD shift switch: 4H	Battery voltage
11	W	Actuator position switch 2	4WD shift switch: 4LO	0V
			4WD shift switch: 2WD and 4H	Battery voltage
12	BR	Actuator position switch 3	4WD shift switch: 2WD and 4H	0V
			4WD shift switch: 4LO	Battery voltage
13	L	Actuator position switch 4	4WD shift switch: 4H and 4LO	0V
			4WD shift switch: 2WD	Battery voltage

CAUTION:

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

DIAGNOSTIC PROCEDURE

1. CHECK ACTUATOR POSITION SWITCH SIGNAL

④ With CONSULT-II

1. Start engine.
2. Depress brake pedal and stop vehicle.
3. Set A/T selector lever to "N" position.
4. Select "DATA MONITOR" mode for "ALL MODE AWD/4WD" with CONSULT-II.
5. Read out the value of "SHIFT POS SW1", "SHIFT POS SW2", "SHIFT POS SW3", "SHIFT POS SW4".

Monitored item	Condition	Display value
SHIFT POS SW1	4WD shift switch: 2WD and 4LO	ON
	4WD shift switch: 4H	OFF
SHIFT POS SW2	4WD shift switch: 4LO	ON
	4WD shift switch: 2WD and 4H	OFF
SHIFT POS SW3	4WD shift switch: 2WD and 4H	ON
	4WD shift switch: 4LO	OFF
SHIFT POS SW4	4WD shift switch: 4H and 4LO	ON
	4WD shift switch: 2WD	OFF

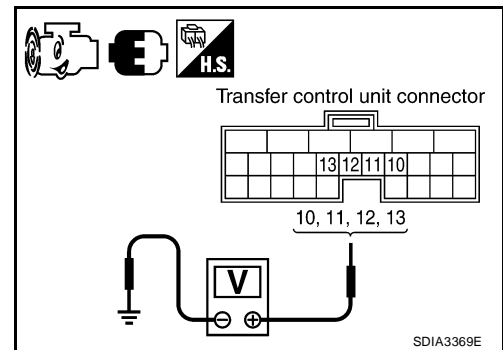
DATA MONITOR	
MONITOR	NO DTC
SHIFT POS SW1	ON
SHIFT POS SW2	OFF
SHIFT POS SW3	OFF
SHIFT POS SW4	OFF

PDIA0224E

⊗ Without CONSULT-II

1. Start engine.
2. Depress brake pedal and stop vehicle.
3. Set A/T selector lever to "N" position.
4. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
E142	10 - Ground	4WD shift switch: 2WD and 4LO	0V
		4WD shift switch: 4H	Battery voltage
	11 - Ground	4WD shift switch: 4LO	0V
		4WD shift switch: 2WD and 4H	Battery voltage
	12 - Ground	4WD shift switch: 2WD and 4H	0V
		4WD shift switch: 4LO	Battery voltage
13 - Ground	4WD shift switch: 4H and 4LO	0V	
	4WD shift switch: 2WD	Battery voltage	

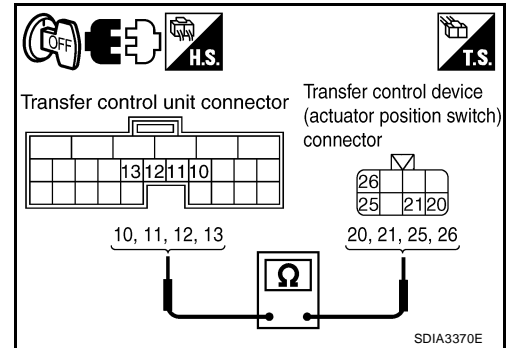


OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND ACTUATOR POSITION SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the transfer control device (actuator position switch) harness connector.
3. Check continuity between the following terminals.
 - Transfer control unit harness connector M152 terminal 10 and transfer control device (actuator position switch) harness connector F58 terminal 26.
 - Transfer control unit harness connector M152 terminal 11 and transfer control device (actuator position switch) harness connector F58 terminal 20.
 - Transfer control unit harness connector M152 terminal 12 and transfer control device (actuator position switch) harness connector F58 terminal 21.
 - Transfer control unit harness connector M152 terminal 13 and transfer control device (actuator position switch) harness connector F58 terminal 25.



Continuity should exist.

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

OK or NG

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

3. CHECK GROUND CIRCUIT

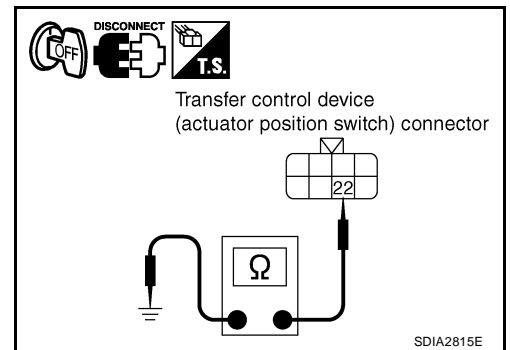
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Check continuity between transfer control device (actuator position switch) harness connector F58 terminal 22 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

- OK >> GO TO 4.
- NG >> Repair open circuit or short to power in harness or connectors.



4. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK DTC

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

OK or NG

- OK >> Inspection End.
- NG >> Replace transfer control device. Refer to [TF-273, "Removal and Installation"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

[TX15B]

EDS0038K

Transfer Control Device

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value	
SHIFT ACT/R MON [ON/OFF]	Operating condition of actuator motor relay (integrated in transfer control unit)	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position ● Brake pedal depressed 	When 4WD shift switch is operated	ON
			When 4WD shift switch is not operated	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
25	W/G	Ignition switch monitor	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0V
27	L	Actuator motor power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF.)	0V
32	B	Ground	Always	0V
40	V	Transfer shut off relay	Ignition switch: ON	0V
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF.)	Battery voltage

CAUTION:

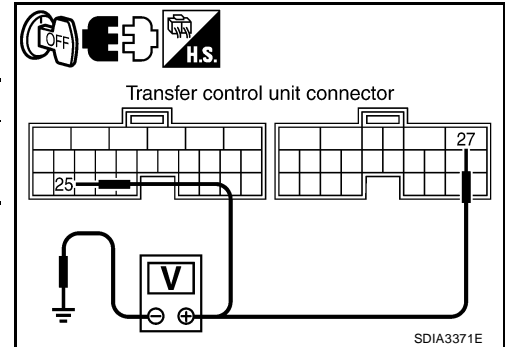
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

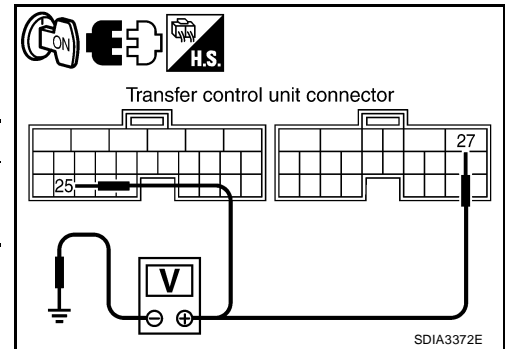
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M152	25 - Ground	0V
M153	27 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	25 - Ground	Battery voltage
M153	27 - Ground	



OK or NG

OK >> GO TO 2.

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

- 10A fuse (No. 57, located in the fuse and relay block).
- 40A fuse (No. j , located in the fuse and fusible link box).
- Harness for short or open between battery and transfer shut off relay 1 harness connector E156 terminal 3.
- Harness for short or open between transfer control unit harness connector M153 terminal 27 and transfer shut off relay 1 harness connector E156 terminal 5.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E156 terminal 1.
- Harness for short or open between transfer shut off relay 1 harness connector E156 terminal 2 and ground.
- Harness for short or open between ignition switch and transfer control unit harness connector M152 terminal 25.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay 1. Refer to [TF-225, "COMPONENT INSPECTION"](#) .

2. CHECK GROUND CIRCUIT

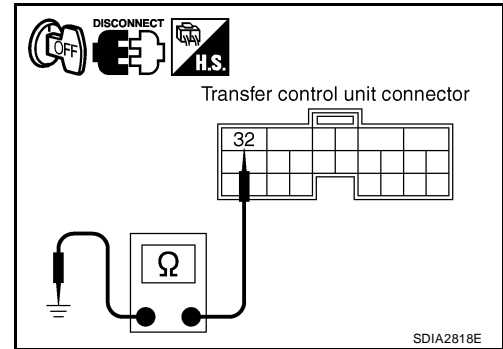
1. Turn ignition switch "OFF".
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 32 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

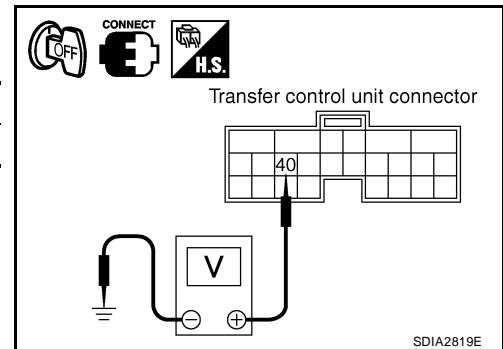
- OK >> GO TO 3.
- NG >> Repair open circuit or short to power in harness or connectors.



3. CHECK POWER SUPPLY SIGNAL

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M153	40 - Ground	Battery voltage

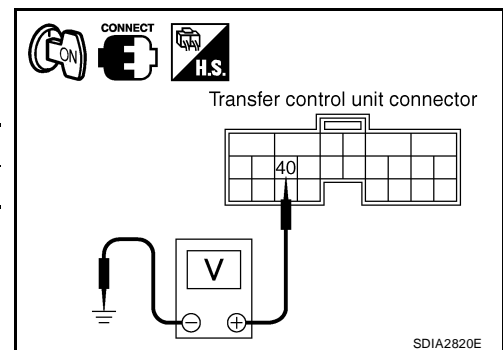


4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M153	40 - Ground	0V

OK or NG

- OK >> GO TO 4.
- NG >> Check the following. If any items are damaged, repair or replace damaged parts.
 - Harness for short or open between battery and transfer shut off relay 2 harness connector E157 terminal 1.
 - Harness for short or open between transfer shut off relay 2 harness connector E157 terminal 2 and transfer control unit harness connector M153 terminal 40.
 - Transfer shut off relay 2. Refer to [TF-225, "COMPONENT INSPECTION"](#) .



4. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK-1 >> With CONSULT-II: GO TO 5.
- OK-2 >> Without CONSULT-II: GO TO 6.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. PERFORM SELF-DIAGNOSIS (WITH CONSULT-II)

Ⓜ With CONSULT-II

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

Is the "SHIFT ACT CIR [P1819]" displayed?

- YES >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#) .
 NO >> Inspection End.

6. PERFORM SELF-DIAGNOSIS (WITHOUT CONSULT-II)

ⓧ Without CONSULT-II

1. Perform the self-diagnosis and then erase self-diagnostic results. Refer to [TF-219, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-221, "ERASE SELF-DIAGNOSIS"](#) .
2. Perform the self-diagnosis again.

Do the self-diagnostic results indicate transfer control device?

- YES >> Replace transfer control unit. Refer to [TF-268, "TRANSFER CONTROL UNIT"](#) .
 NO >> Inspection End.

**Engine Speed Signal
DIAGNOSTIC PROCEDURE**

EDS0038L

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

Is any malfunction detected by self-diagnosis?

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

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

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

3. CHECK DTC

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

OK or NG

- OK >> Inspection End.
 NG >> Perform self-diagnosis with ECM again. Refer to [EC-117, "SELF-DIAG RESULTS MODE"](#) .

CAN Communication Line DIAGNOSTIC PROCEDURE

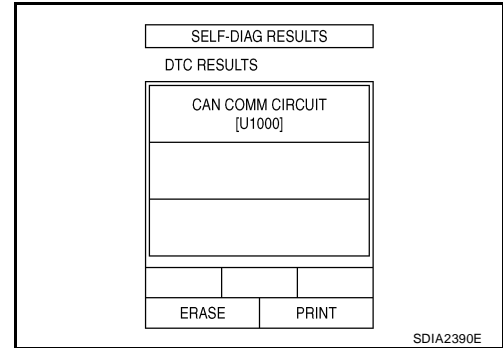
1. CHECK CAN COMMUNICATION CIRCUIT

Ⓜ With CONSULT-II

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

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

- YES >> Print out CONSULT-II screen and go to [LAN-7, "TROUBLE DIAGNOSIS"](#) .
- NO >> Inspection End



ATP Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition	Display value
ATP SWITCH [ON/OFF]	Condition of ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

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

Terminal	Wire color	Item	Condition	Data (Approx.)
23	R	ATP switch	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch : 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
			<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above

CAUTION:

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

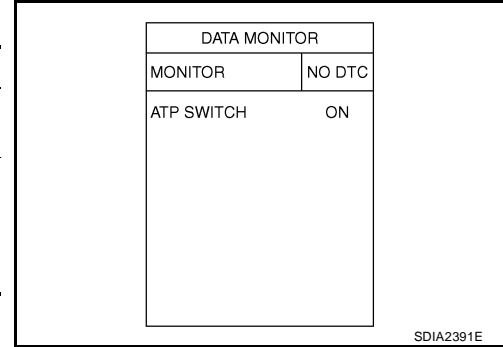
DIAGNOSTIC PROCEDURE

1. CHECK ATP SWITCH SIGNAL

With CONSULT-II

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

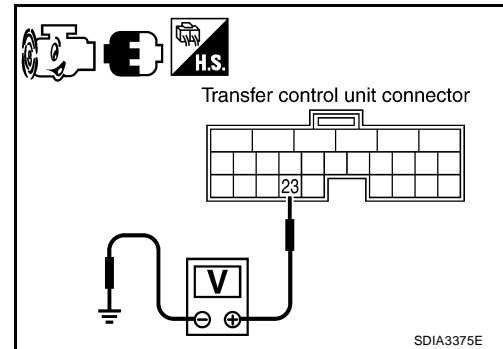
	Condition	Display value
<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running 	4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)	ON
<ul style="list-style-type: none"> ● A/T selector lever "N" position ● Brake pedal depressed 	Except the above	OFF



Without CONSULT-II

1. Start engine.
2. Check voltage between transfer control unit harness connector terminal and ground.

Connector	Terminal	Condition	Voltage (Approx.)
M152	23 - Ground	<ul style="list-style-type: none"> ● Vehicle stopped ● Engine running ● A/T selector lever "N" position 	4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.)
		<ul style="list-style-type: none"> ● Brake pedal depressed 	Except the above
			0V
			Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND ATP SWITCH

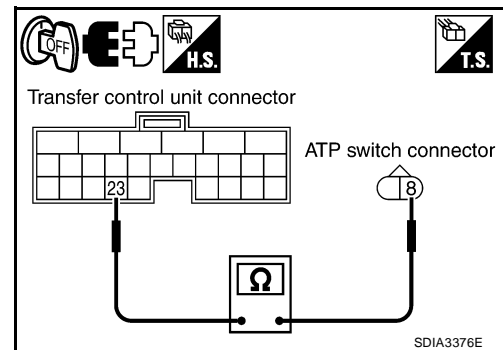
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the ATP switch harness connector.
3. Check continuity between transfer control unit harness connector M152 terminal 23 and ATP switch harness connector F55 terminal 8.

Continuity should exist.

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

OK or NG

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



3. CHECK GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Check continuity between ATP switch harness connector F55 terminal 9 and ground.

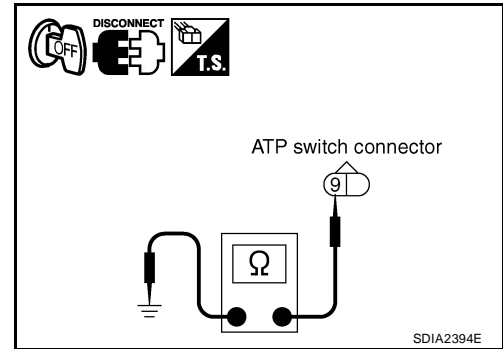
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 4.

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



4. CHECK ATP SWITCH

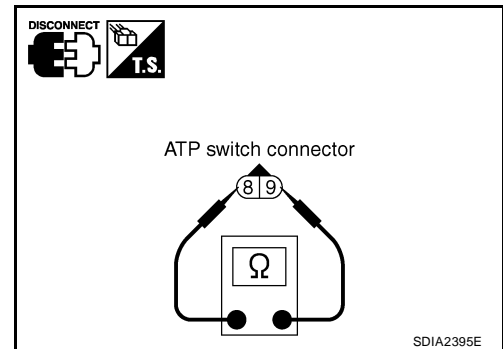
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove ATP switch. Refer to [TF-202, "Location of Electrical Parts"](#).
3. Push and release ATP switch and check continuity between ATP switch terminals 8 and 9.

Terminal	Condition	Continuity
8 - 9	Push ATP switch	Yes
	Release ATP switch	No

OK or NG

OK >> GO TO 5.

NG >> Replace ATP switch. Refer to [TF-202, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 6.

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

6. CHECK ATP WARNING LAMP

1. Turn ignition switch "ON". (Do not start engine.)
2. A/T selector lever "N" position and engage the parking brake.
3. Switch 4WD shift switch from 4H to 4LO or 4LO to 4H.

Does ATP warning lamp "ON", while actuator motor is operating?

YES >> Inspection End.

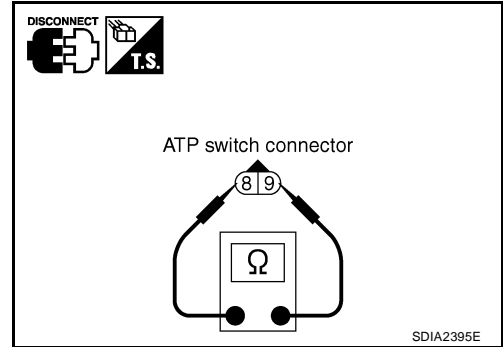
NO >> Go to [TF-264, "ATP Warning Lamp Does Not Turn ON"](#).

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Remove ATP switch. Refer to [TF-202, "Location of Electrical Parts"](#) .
4. Push and release ATP switch and check continuity between ATP switch terminals 8 and 9.

Terminal	Condition	Continuity
8 - 9	Push ATP switch	Yes
	Release ATP switch	No

5. If NG, replace the ATP switch. Refer to [TF-202, "Location of Electrical Parts"](#) .



A
B
C
TF
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS FOR SYMPTOMS

[TX15B]

TROUBLE DIAGNOSIS FOR SYMPTOMS

PF0:00007

4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON

EDS00380

SYMPTOM:

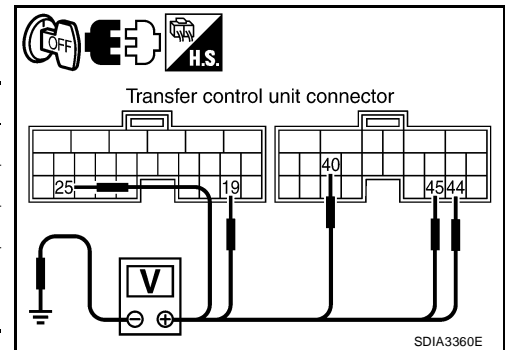
4WD shift indicator lamp and 4LO indicator lamp do not turn ON for approx. 1 second when turning ignition switch to "ON".

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

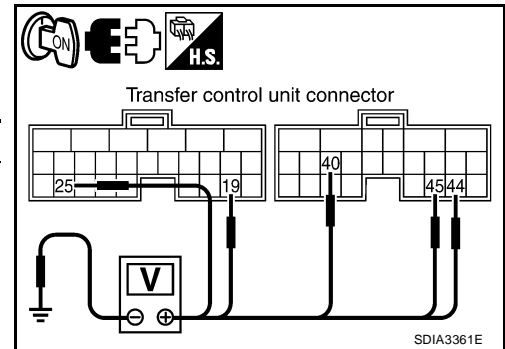
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	0V
M153	40 - Ground	Battery voltage
	44 - Ground	0V
	45 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	
M153	40 - Ground	
	44 - Ground	
	45 - Ground	



OK or NG

OK >> GO TO 2.

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

- 40A fusible link (No. j located in the fuse and fusible link box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- 10A fuses [No. 21 located in the fuse block-junction block (J/B) and 57 and 58 located in the fuse and relay box]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer control unit harness connector M152 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E157 terminal 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E156 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M152 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E156 terminal 1.
- Harness for short or open transfer shut off relay 2 harness connector E157 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E156 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E157 terminal 2 and transfer control unit harness connector M153 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E156 terminal 2 and ground.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay 1, 2. Refer to [TF-225, "COMPONENT INSPECTION"](#) .

2. CHECK TRANSFER CONTROL UNIT GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connectors.
3. Check continuity between transfer control unit harness connector M152 terminals 6, 18, M153 terminal 32 and ground.

Continuity should exist.

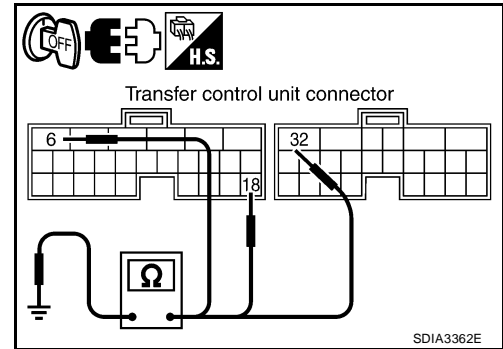
Also check harness for short to power.

OK or NG

OK >> GO TO 3.

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

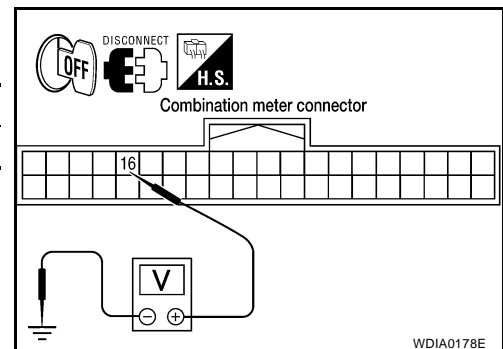
- Harness for short or open between transfer shut off relay harness connector E157 terminal 2 and transfer control unit harness connector terminal 40.



3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

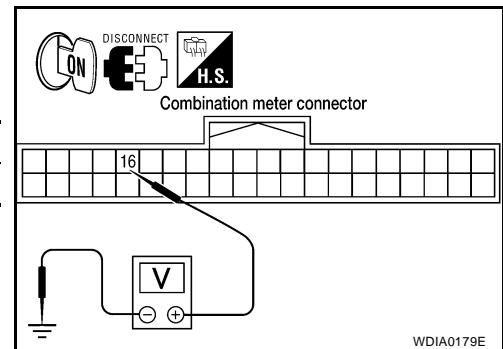
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect combination meter harness connector.
3. Check voltage between combination meter harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between combination meter harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	Battery voltage



OK or NG

OK >> GO TO 4.

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

- 10A fuse [No. 14, located in the fuse block (J/B) or] ignition switch.
- Harness for short or open between ignition switch and combination meter harness connector terminal 16

4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Check continuity between the following terminals.
 - Transfer control unit harness connector M153 terminal 35 and combination meter harness connector M24 terminal 30.
 - Transfer control unit harness connector M153 terminal 36 and combination meter harness connector M24 terminal 27.
 - Transfer control unit harness connector M153 terminal 37 and combination meter harness connector M24 terminal 29.

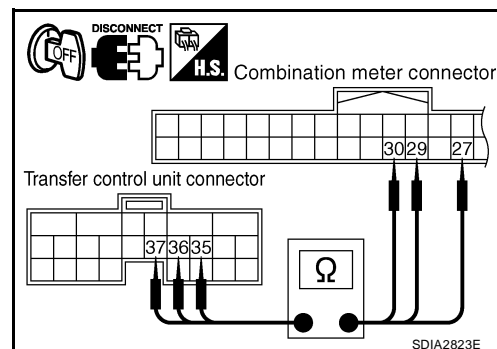
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.



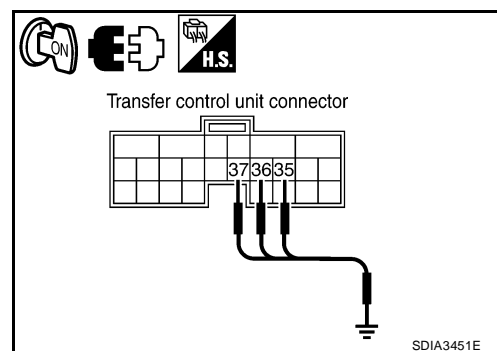
5. CHECK INDICATOR LAMP CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect combination meter harness connector.
3. Disconnect transfer control unit harness connector.
4. Turn ignition switch "ON". (Do not start engine.)
5. Ground the following terminals using suitable wiring.
 - Transfer control unit harness connector M153 terminal 35 and ground.
 - Transfer control unit harness connector M153 terminal 36 and ground.
 - Transfer control unit harness connector M153 terminal 37 and ground.

Do indicator lamps turn on?

OK >> GO TO 6.

NG >> Replace the combination meter. Refer to [IP-14, "COMBINATION METER"](#).



6. SYMPTOM CHECK

Check again.

OK or NG

OK >> Inspection End.

NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> Inspection End.

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

4WD Warning Lamp Does Not Turn ON

SYMPTOM:

4WD warning lamp does not turn ON when turning ignition switch to "ON".

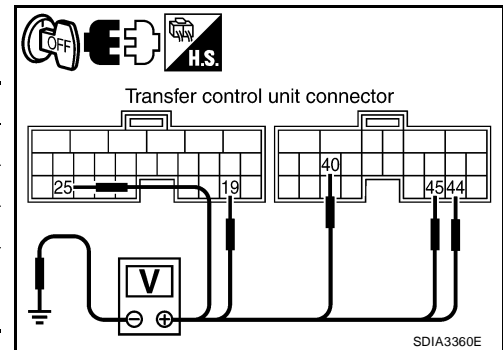
EDS0038P

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

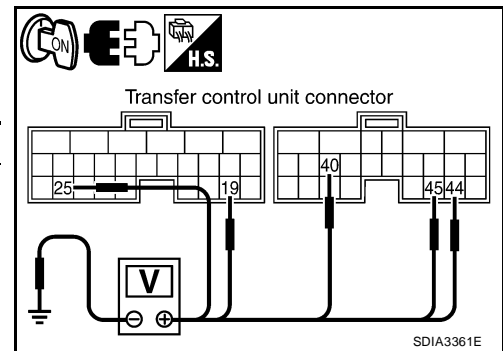
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	0V
M153	40 - Ground	Battery voltage
	44 - Ground	0V
	45 - Ground	



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between transfer control unit harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M152	19 - Ground	Battery voltage
	25 - Ground	
M153	40 - Ground	
	44 - Ground	
	45 - Ground	



OK or NG

OK >> GO TO 2.

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

- 40A fusible link (No. j located in the fuse and fusible link box). Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- 10A fuses [No. 21 located in the fuse block-junction block (J/B) and 57 and 58 located in the fuse and relay box]. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Harness for short or open between battery and transfer control unit harness connector M152 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E157 terminal 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E156 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M152 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E156 terminal 1.
- Harness for short or open transfer shut off relay 2 harness connector E157 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E156 terminal 5 and transfer control unit harness connector M153 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E157 terminal 2 and transfer control unit harness connector M153 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E156 terminal 2 and ground.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- Transfer shut off relay 1, 2. Refer to [TF-225, "COMPONENT INSPECTION"](#) .

2. CHECK TRANSFER CONTROL UNIT GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 6, 18, M153 terminal 32 and ground.

Continuity should exist.

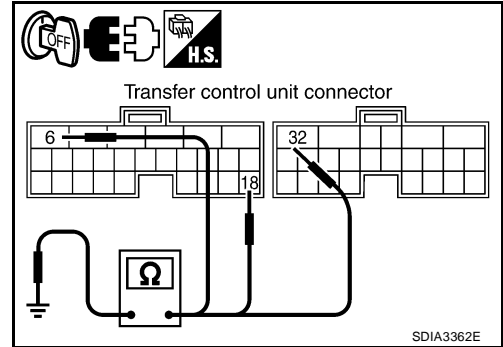
Also check harness for short to power.

OK or NG

OK >> GO TO 3.

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

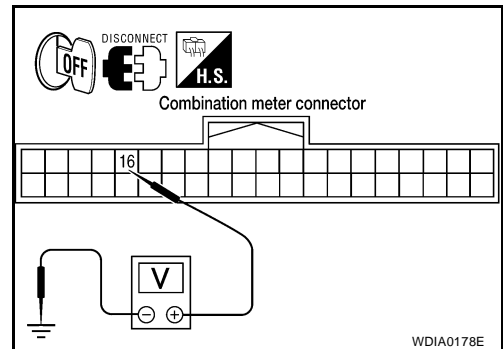
- Harness for short or open between transfer shut off relay harness connector E157 terminal 2 and transfer control unit harness connector terminal 40.



3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

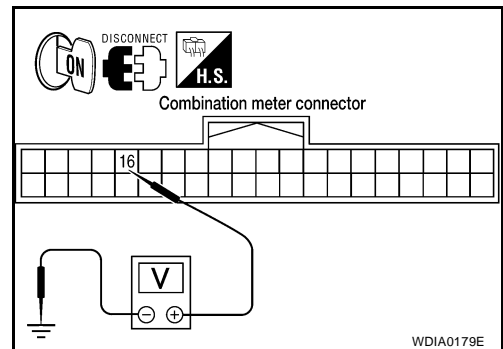
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect combination meter harness connector.
3. Check voltage between combination meter harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	0V



4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between combination meter harness connector terminals and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	Battery voltage



OK or NG

OK >> GO TO 4.

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

- 10A fuse [No. 14, located in the fuse block (J/B)] or ignition switch.
- Harness for short or open between ignition switch and combination meter harness connector terminal 16

A
B
C
TF
E
F
G
H
I
J
K
L
M

4. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

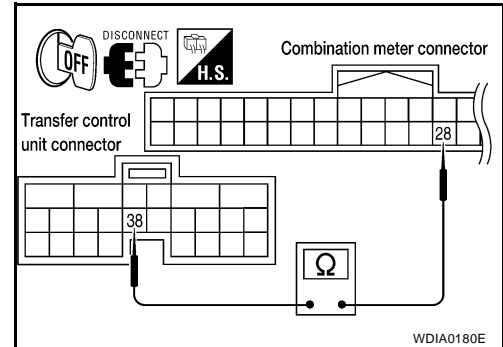
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Check continuity between transfer control unit harness connector M153 terminal 38 and combination meter harness connector M24 terminal 28.

Continuity should exist.

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

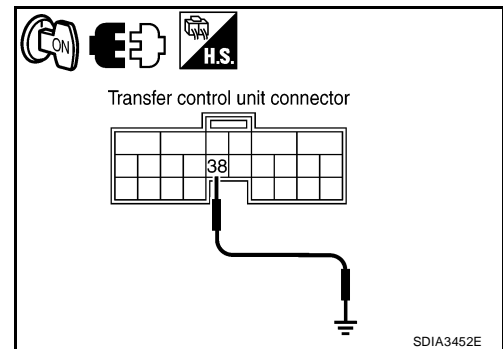


5. CHECK INDICATOR LAMP CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Connect combination meter harness connector.
3. Disconnect transfer control unit harness connector.
4. Turn ignition switch "ON". (Do not start engine.)
5. Ground the following terminal using suitable wiring.
 - Transfer control unit harness connector M153 terminal 38 and ground.

Does the indicator lamp turn on?

- OK >> GO TO 6.
- NG >> Replace the combination meter. Refer to [IP-14, "COMBINATION METER"](#).



6. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
- NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

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

4WD Shift Indicator Lamp or 4LO Indicator Lamp Do Not Change

EDS00380

SYMPTOM:

4WD shift indicator lamp or 4LO indicator lamp do not change when switch 4WD shift switch.

DIAGNOSTIC PROCEDURE**1. CONFIRM THE SYMPTOM**

Confirm 4WD shift indicator lamp and 4LO indicator lamp when ignition switch is turned to ON.
Do 4WD shift indicator lamp and 4LO indicator lamp turn on?

YES >> GO TO 2.

NO >> Go to [TF-256, "4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON"](#).

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-230, "4WD Shift Switch"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR WAIT DETECTION SWITCH

Perform trouble diagnosis for wait detection switch system. Refer to [TF-234, "Wait Detection Switch"](#).

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SYSTEM FOR 4LO SWITCH

Perform trouble diagnosis for 4LO switch system. Refer to [TF-227, "4LO Switch"](#).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK SYSTEM FOR ATP SWITCH

Perform trouble diagnosis for ATP switch system. Refer to [TF-252, "ATP Switch"](#).

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. SYMPTOM CHECK

Check again.

OK or NG

OK >> Inspection End

NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 8.

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

8. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-278, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
- NG >> Repair or replace damaged parts.

ATP Warning Lamp Does Not Turn ON SYMPTOM:

EDS0038R

ATP warning lamp does not turn ON when 4WD shift switch from "4H" to "4LO" or "4LO" to "4H" with A/T selector lever in "N" position.

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TF-219, "Self-Diagnostic Procedure"](#) .

Do the self-diagnostic results indicate CAN communication?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-252, "CAN Communication Line"](#) .
- NO >> GO TO 2.

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to [TF-230, "4WD Shift Switch"](#) .

OK or NG

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

3. CHECK SYSTEM FOR PNP SWITCH SIGNAL

Perform trouble diagnosis for PNP switch signal system. Refer to [TF-237, "PNP Switch Signal"](#) .

OK or NG

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

4. CHECK SYSTEM FOR ATP SWITCH

Perform trouble diagnosis for ATP switch system. Refer to [TF-252, "ATP Switch"](#) .

OK or NG

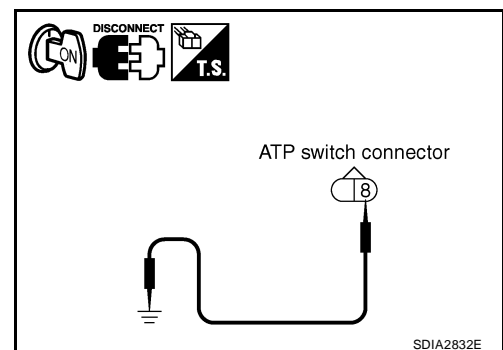
- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. CHECK ATP WARNING LAMP CIRCUIT

1. Disconnect ATP switch harness connector.
2. Turn ignition switch "ON". (Do not start engine.)
3. Ground the following terminal using suitable wiring.
 - ATP switch harness connector F55 terminal 8 and ground.
4. Turn ignition switch "OFF". (Stay for at least 5 seconds.)

Does ATP warning lamp turn on?

- OK >> GO TO 9.
- NG >> GO TO 6.



6. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

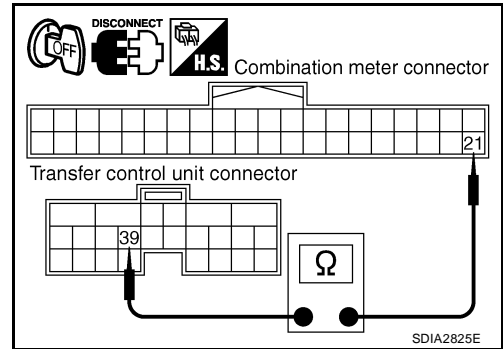
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and combination meter harness connector.
3. Check continuity between transfer control unit harness connector M153 terminal 39 and combination meter harness connector M24 terminal 21.

Continuity should exist.

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

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.



7. CHECK HARNESS BETWEEN COMBINATION METER AND ATP SWITCH

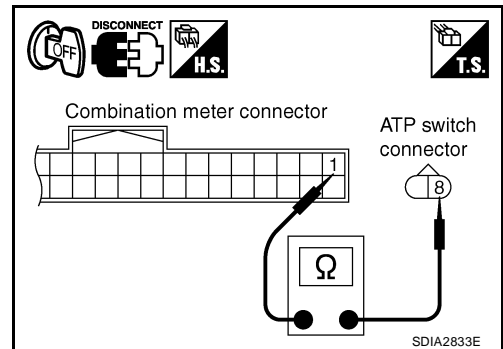
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Check continuity between combination meter harness connector M24 terminal 1 and ATP switch harness connector F55 terminal 8.

Continuity should exist.

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

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.



8. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
- NG >> GO TO 9.

9. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

- OK >> GO TO 10.
- NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

10. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-278, "Disassembly and Assembly"](#).
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
- NG >> Repair or replace damaged parts.

4WD Shift Indicator Lamp Repeats Flashing**SYMPTOM:**

4WD shift indicator lamp keeps flashing.

DIAGNOSTIC PROCEDURE**1. CONFIRM THE SYMPTOM**

1. Set 4WD shift switch to "2WD".
2. Move vehicle forward and backward, or drive straight increasing or decreasing under 20 km/h (12 MPH).

Does 4WD shift indicator lamp keep flashing?

- YES >> GO TO 2.
NO >> Inspection End.

2. CHECK SYSTEM FOR WAIT DETECTION SWITCH

Perform trouble diagnosis for wait detection switch system. Refer to [TF-234, "Wait Detection Switch"](#) .

OK or NG

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

3. CHECK SYSTEM FOR 4LO SWITCH

Perform trouble diagnosis for 4LO switch system. Refer to [TF-227, "4LO Switch"](#) .

OK or NG

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

4. SYMPTOM CHECK

Check again.

OK or NG

- OK >> Inspection End.
NG >> GO TO 5.

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#) .

OK or NG

- OK >> GO TO 6.
NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector.
If any items are damaged, repair or replace damaged parts.

6. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-278, "Disassembly and Assembly"](#) .
2. Check transfer inner parts.

OK or NG

- OK >> Inspection End.
NG >> Repair or replace damaged parts.

4WD Warning Lamp Flashes Slowly**SYMPTOM:**

While driving, 4WD warning lamp flashes slowly. (Continues to flash until turning ignition switch OFF.)

NOTE:

Slow flashing: 1 time/2 seconds

DIAGNOSTIC PROCEDURE**1. CHECK TIRES**

Check the following.

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

OK or NG

OK >> GO TO 2.

NG >> Repair or replace damaged parts.

2. SYMPTOM CHECK

Check again.

OK or NG

OK >> Inspection End.

NG >> GO TO 3.

3. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-211, "Transfer Control Unit Input/Output Signal Reference Values"](#).

OK or NG

OK >> Inspection End.

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

A

B

C

TF

E

F

G

H

I

J

K

L

M

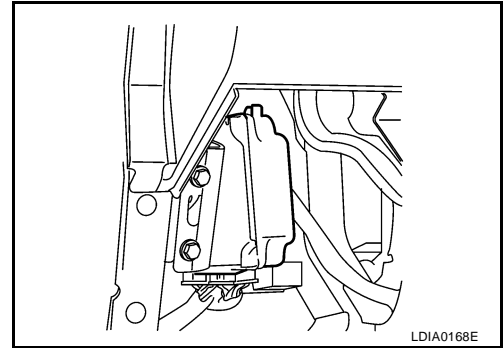
TRANSFER CONTROL UNIT**Removal and Installation**
REMOVAL

1. Switch 4WD shift switch to 2WD and set transfer assembly to 2WD.

CAUTION:

When removing transfer control unit, transfer state must be at 2WD.

2. Turn the ignition switch OFF and disconnect negative battery terminal.
3. Remove the lower instrument panel LH. Refer to [IP-14, "LOWER INSTRUMENT PANEL LH"](#).
4. Disconnect the two transfer control unit connectors.
5. Remove the transfer control unit bolts.
6. Remove the transfer control unit.

**INSTALLATION**

Installation is in the reverse order of removal.

- When installing the transfer control unit, tighten bolts to the specified torque.

Transfer control unit bolts : 3.4 N·m (0.35 kg-m, 30 in-lb)

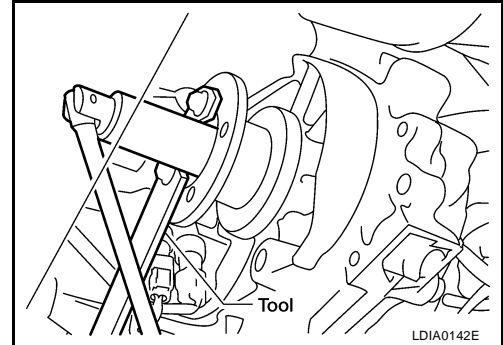
- After the installation, check 4WD shift indicator pattern. If NG, adjust position between transfer assembly and transfer control unit. Refer to [TF-185, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).

FRONT OIL SEAL

Removal and Installation REMOVAL

1. Partially drain the transfer fluid. Refer to [MA-26, "Changing Transfer Fluid"](#) .
2. Remove the front propeller shaft. Refer to [PR-5, "Removal and Installation"](#) .
3. Remove the companion flange self-lock nut using Tool.

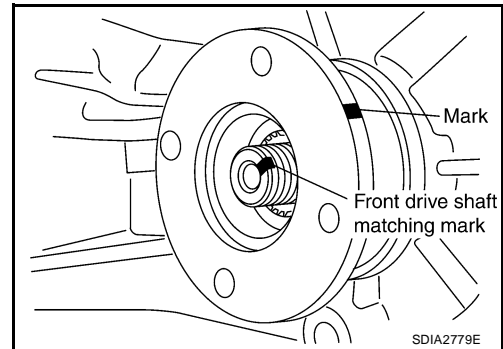
Tool number : KV40104000 (—)



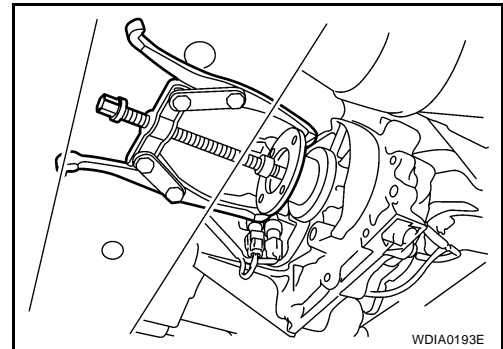
4. Put a matching mark on top of the front drive shaft in line with the mark on the companion flange.

CAUTION:

Use paint to make the matching mark on the front drive shaft. Do not damage the front drive shaft.



5. Remove the companion flange using suitable tool.

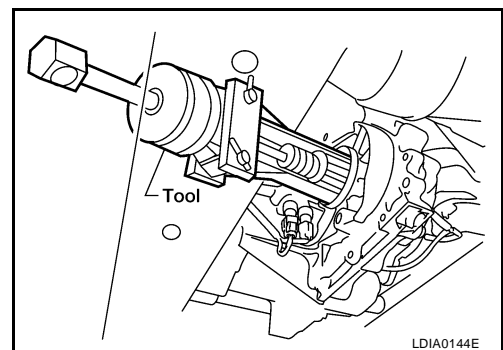


6. Remove the front oil seal from the front case using Tool.

Tool number : ST33290001 (J-34286)

CAUTION:

Do not damage front case.



A
B
C
TF
E
F
G
H
I
J
K
L
M

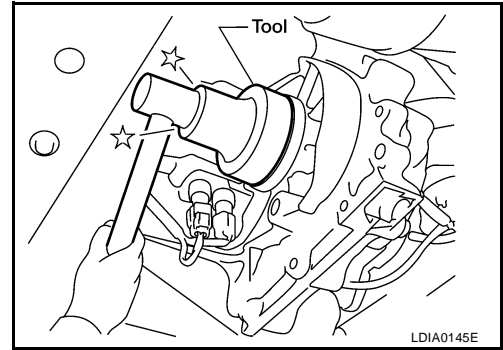
INSTALLATION

1. Install the new front oil seal until it is flush with the end face of the front case using Tool.

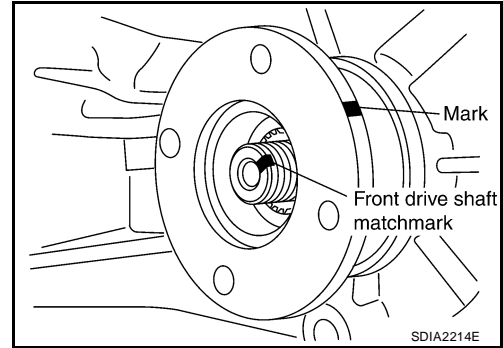
Tool number : KV38100500 (—)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



2. Align the matching mark of the front drive shaft with the matching mark of the companion flange, then install the companion flange.



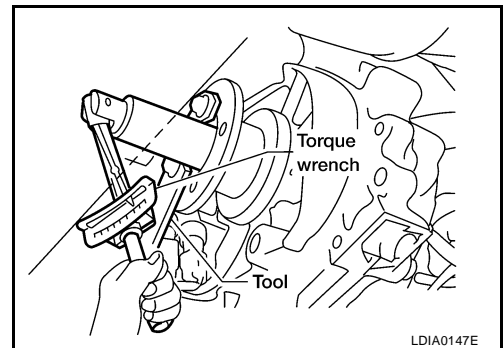
3. Install the new self-lock nut and tighten to the specified torque using Tool. Refer to [TF-278, "COMPONENTS"](#).

Tool number : KV40104000 (—)

CAUTION:

Do not reuse self-lock nut.

4. Install the front propeller shaft. Refer to [PR-5, "Removal and Installation"](#).
5. Refill the transfer with fluid and check for fluid leakage and fluid level. Refer to [TF-193, "TRANSFER FLUID"](#).



REAR OIL SEAL

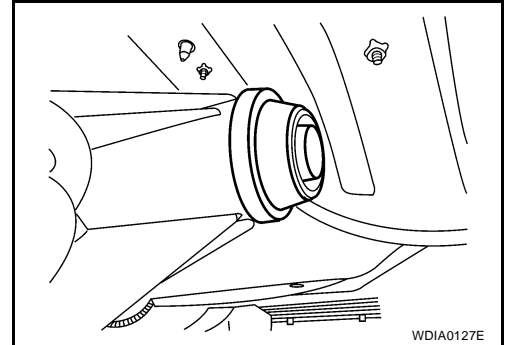
Removal and Installation

REMOVAL

1. Partially drain the transfer fluid. Refer to [MA-26, "Changing Transfer Fluid"](#) .
2. Remove the rear propeller shaft. Refer to [PR-10, "Removal and Installation"](#) .
3. Remove the dust cover from the rear case.

CAUTION:

Do not damage the rear case.

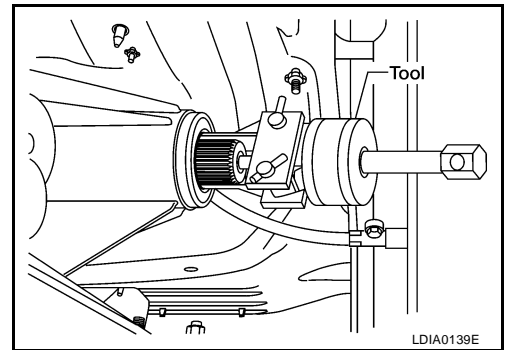


4. Remove the rear oil seal from the rear case using Tool.

CAUTION:

Do not damage the rear case.

Tool number : ST33290001 (J-34286)



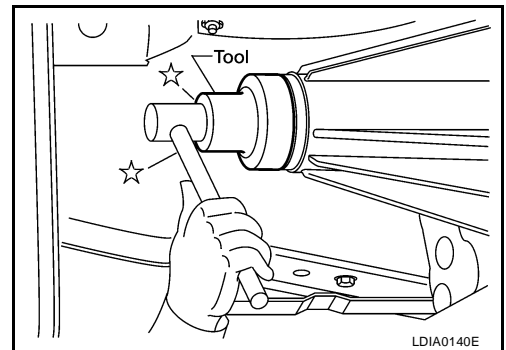
INSTALLATION

1. Install the new rear oil seal until it is flush with the end face of the rear case using Tool.

Tool number : KV38100500 (—)

CAUTION:

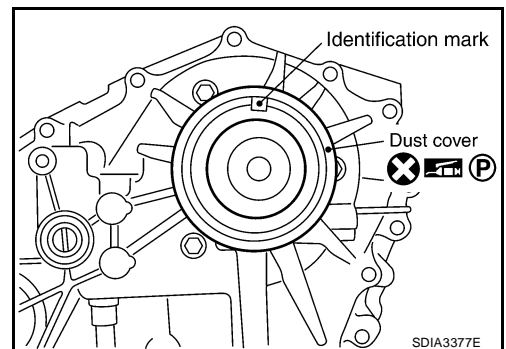
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



2. Apply petroleum jelly to the circumference of the new dust cover. Position the new dust cover using the identification mark as shown.

CAUTION:

- Do not reuse dust cover.
- Position the identification mark at the position shown.



A
B
C
TF
E
F
G
H
I
J
K
L
M

REAR OIL SEAL

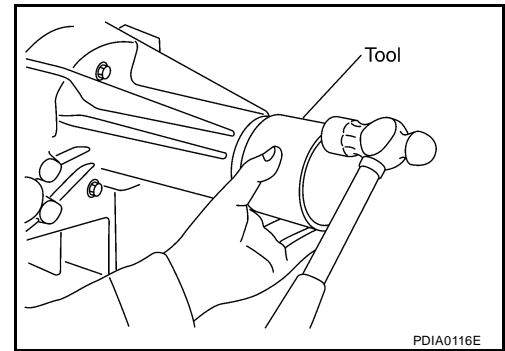
[TX15B]

3. Install the new dust cover to the rear case using Tool.

Tool number : KV40105310 (—)

CAUTION:

- Do not reuse dust cover.
 - Apply petroleum jelly to dust cover.
4. Install the rear propeller shaft. Refer to [PR-10, "Removal and Installation"](#).
 5. Refill the transfer with fluid and check for fluid leakage and fluid level. Refer to [TF-193, "TRANSFER FLUID"](#).

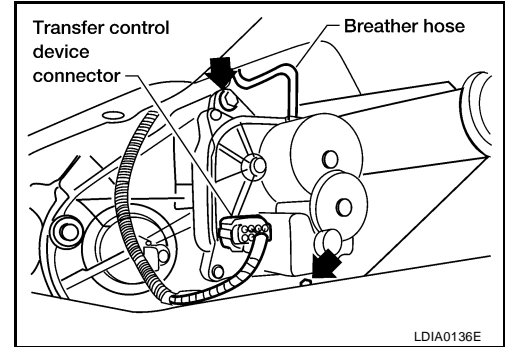


TRANSFER CONTROL DEVICE

Removal and Installation

REMOVAL

1. Switch the 4WD shift switch to 2WD and set the transfer assembly to 2WD.
2. Disconnect the transfer control device connector.
3. Remove the breather hose from the transfer control device.
4. Remove the bolts and detach the transfer control device.

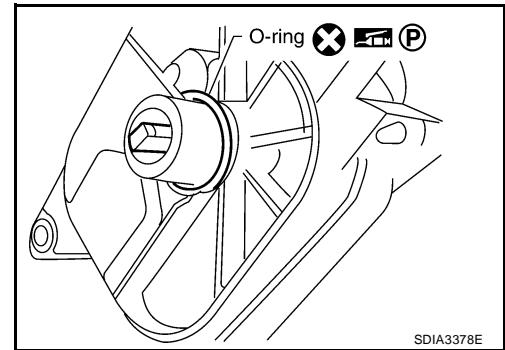


INSTALLATION

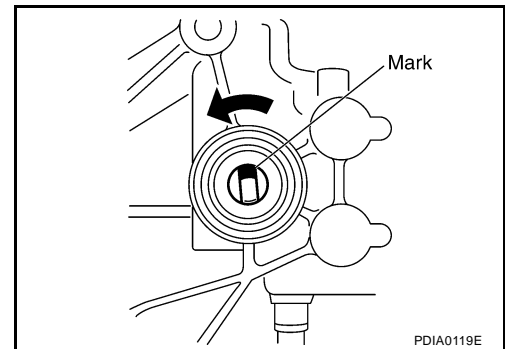
1. Install the new O-ring to the transfer control device.

CAUTION:

- Do not reuse O-ring.
- Apply petroleum jelly to O-ring.



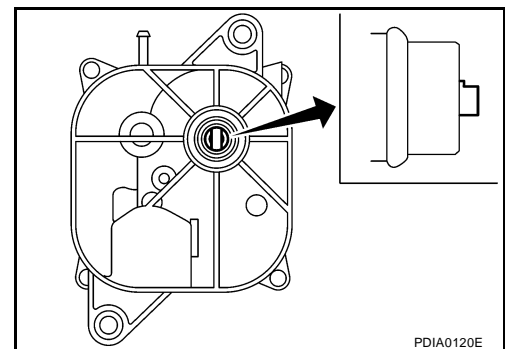
2. Install the transfer control device.
 - a. Turn the control shift rod fully counterclockwise using a flat-bladed screwdriver, and then put a mark on the control shift rod.



- b. Align the transfer control device shaft cutout with the mark on the control shift rod, and install.

NOTE:

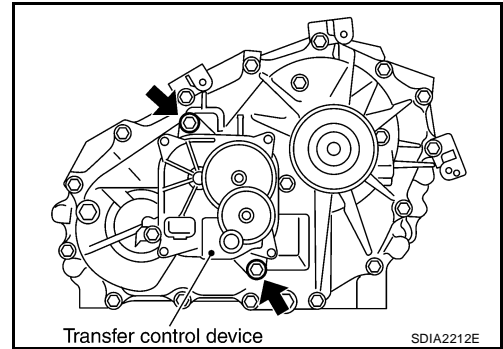
Turn the transfer control device when the transfer control device connection does not match.



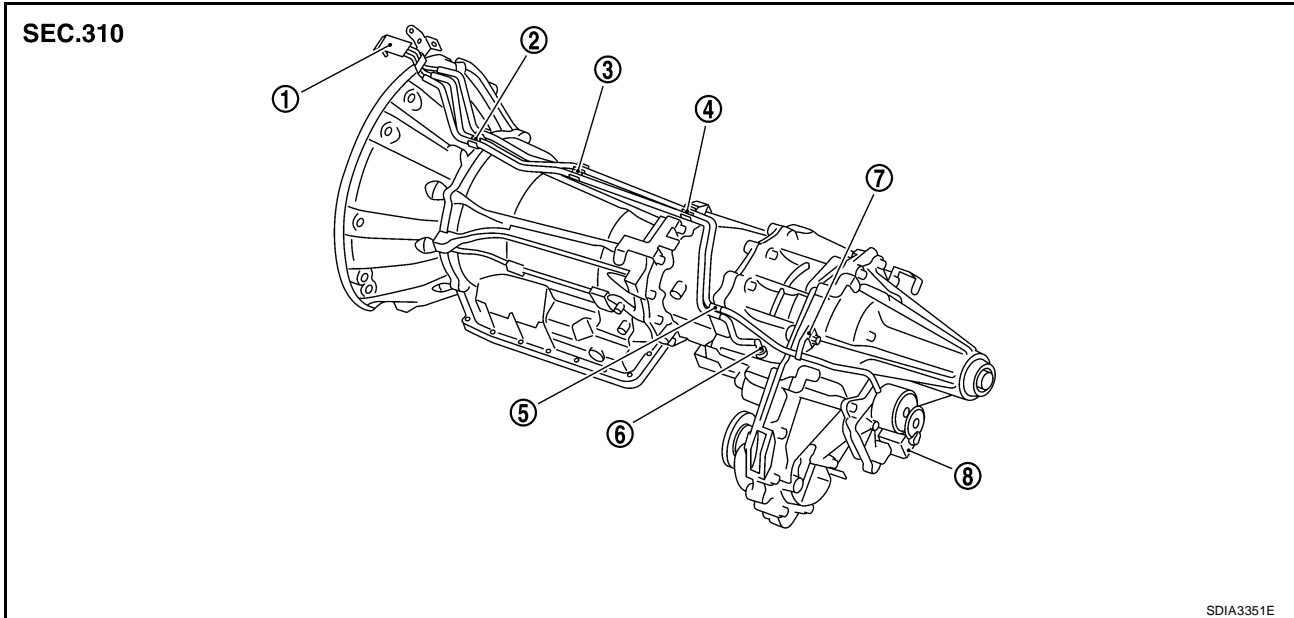
TRANSFER CONTROL DEVICE

[TX15B]

- c. Tighten the bolts to the specified torque. Refer to [TF-278](#), "[COMPONENTS](#)".
3. Install the breather hose to the transfer control device.
4. Connect the transfer control device connector.
5. After the installation, check the 4WD shift indicator pattern. If NG, adjust the position between the transfer assembly and transfer control unit. Refer to [TF-185](#), "[Precautions for Transfer Assembly and Transfer Control Unit Replacement](#)".



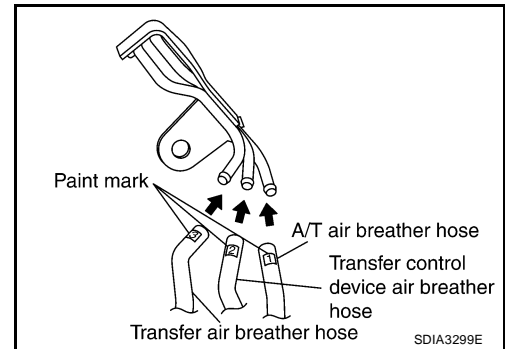
AIR BREATHER HOSE Removal and Installation



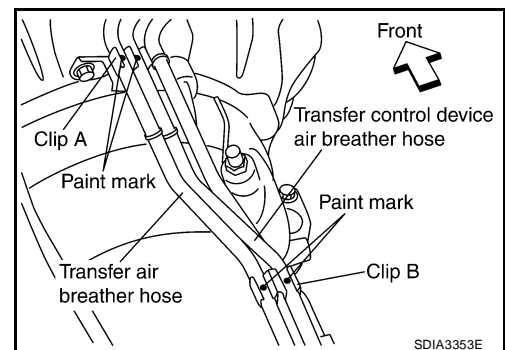
- | | | |
|----------------------------|----------------------------|-----------------------------|
| 1. Breather tube | 2. Clip A | 3. Clip B |
| 4. Clip C | 5. Clip D | 6. Breather tube (transfer) |
| 7. Air breather hose clamp | 8. Transfer control device | |

CAUTION:

- Make sure there are no pinched or restricted areas on each air breather hose caused by folding or bending when installing it.
- Install each air breather hose into the breather tube (metal connector) until the hose end reaches the end of the curved section. Set each air breather hose with paint mark facing upward.



- Install transfer control device air breather hose and transfer air breather hose on clip A and clip B with the paint mark facing upward.

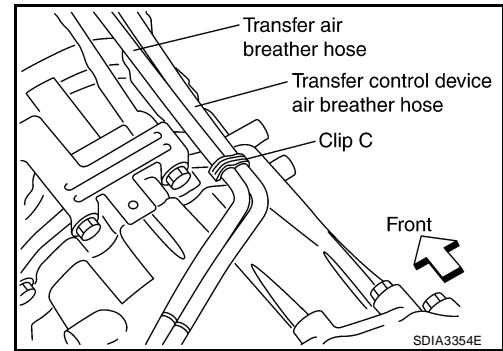


A
B
C
TF
E
F
G
H
I
J
K
L
M

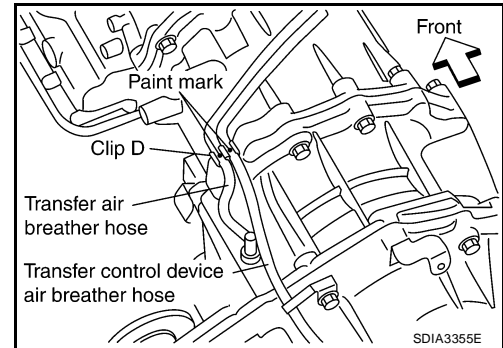
AIR BREATHER HOSE

[TX15B]

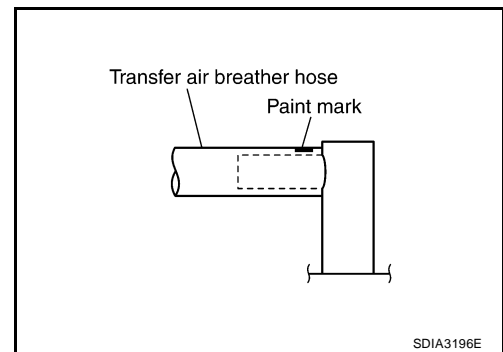
- Install clip C on transfer control device air breather hose and transfer air breather hose with the paint mark matched.



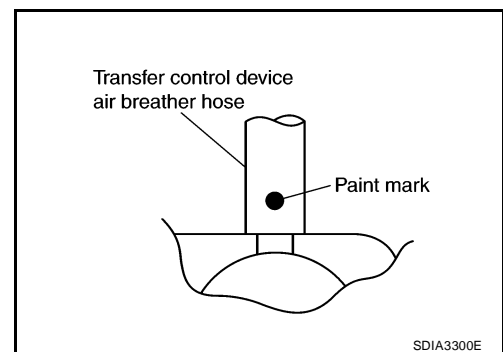
- Install transfer control device air breather hose and transfer air breather hose on clip D with the paint mark facing upward.



- Install transfer air breather hose into the breather tube (transfer, metal connector) until the hose end reaches the base of the tube. Set transfer air breather hose with paint mark facing upward.



- Install transfer control device air breather hose into transfer control device (case connector) until the hose end reaches the base of the tube. Set transfer control device air breather hose with paint mark facing forward.



TRANSFER ASSEMBLY**Removal and Installation**
REMOVAL

1. Switch 4WD shift switch to 2WD and set transfer assembly to 2WD.
2. Remove the undercovers using power tool.
3. Drain the transfer fluid. Refer to [TF-193, "TRANSFER FLUID"](#).
4. Remove the center exhaust tube and main muffler. Refer to [EX-3, "Removal and Installation"](#).
5. Remove the front and rear propeller shafts. Refer to [PR-5, "Removal and Installation"](#) (front), [PR-10, "Removal and Installation"](#) (rear).

CAUTION:

Do not damage spline, sleeve yoke and rear oil seal when removing rear propeller shaft.

NOTE:

Insert a plug into the rear oil seal after removing the rear propeller shaft.

6. Remove the A/T nuts from the A/T crossmember. Refer to [AT-243, "COMPONENTS"](#).
7. Position two suitable jacks under the A/T and transfer assembly.
8. Remove the A/T crossmember. Refer to [AT-243, "COMPONENTS"](#).

WARNING:

Support A/T and transfer assembly using two suitable jacks while removing A/T crossmember.

9. Disconnect the electrical connectors from the following:
 - ATP switch
 - 4LO switch
 - Wait detection switch
 - Transfer control device
10. Disconnect each air breather hose from the following. Refer to [TF-139, "Removal and Installation"](#).
 - Transfer control device
 - Breather tube (transfer)
11. Remove the transfer to A/T and A/T to transfer bolts.
12. Remove the transfer assembly.

WARNING:

support transfer assembly with suitable jack while removing it.

CAUTION:

Do not damage rear oil seal (A/T).

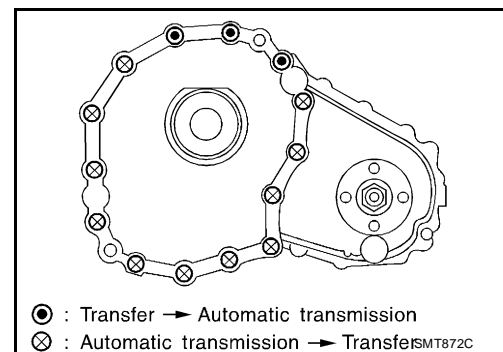
INSTALLATION

Installation is in the reverse order of removal.

- Tighten the bolts to specification.

Tightening torque : 36 N·m (3.7kg·m, 27 ft·lb)

- Fill the transfer with new fluid and check for fluid leakage and fluid level. Refer to [TF-193, "TRANSFER FLUID"](#).
- Start the engine for one minute. Then stop the engine and recheck the transfer fluid. Refer to [TF-193, "FLUID LEAKAGE AND FLUID LEVEL"](#).
- After the installation, check the 4WD shift indicator pattern. If NG, adjust the position between the transfer assembly and transfer control unit. Refer to [TF-185, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).

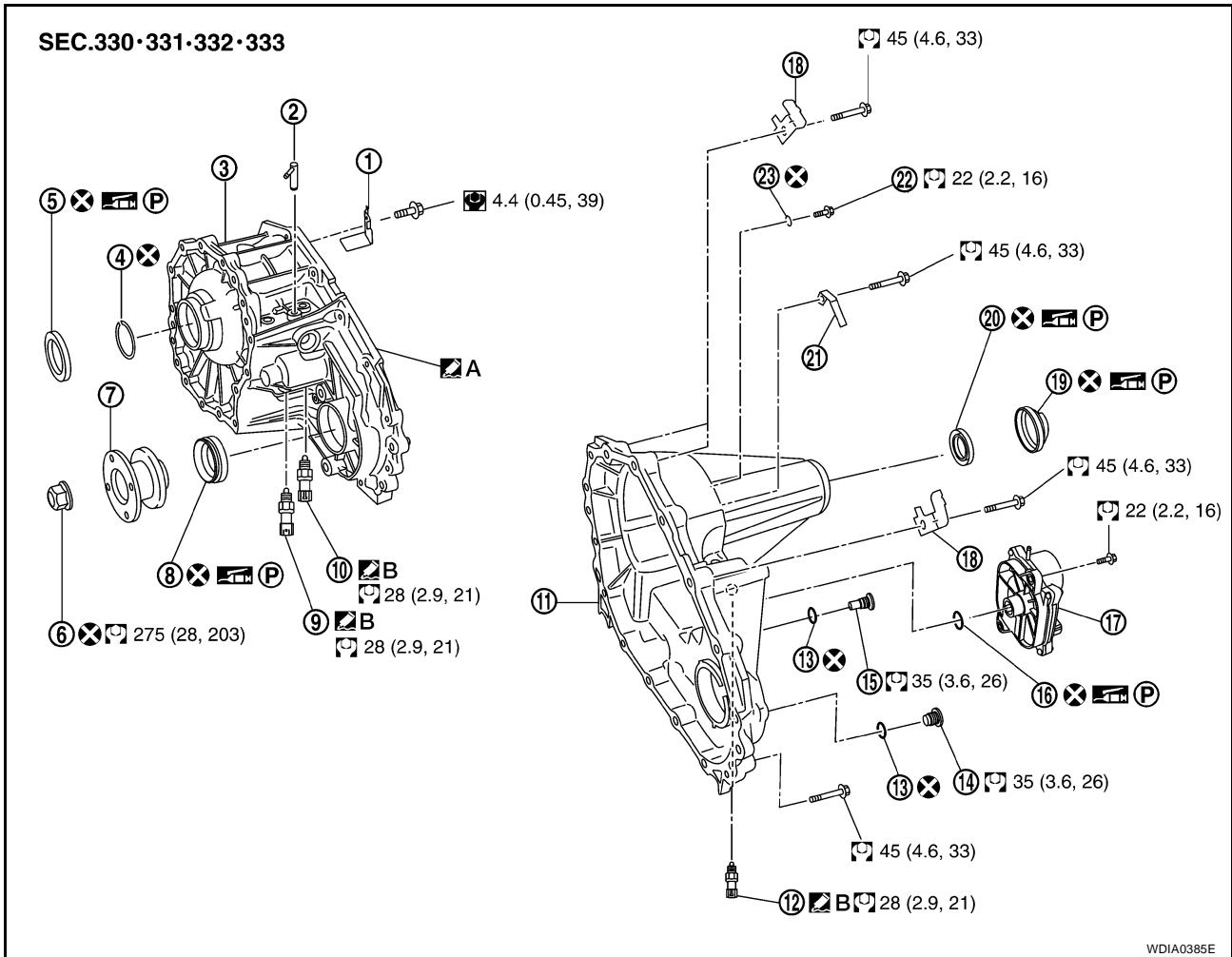


TRANSFER ASSEMBLY

[TX15B]

EDS00390

Disassembly and Assembly COMPONENTS



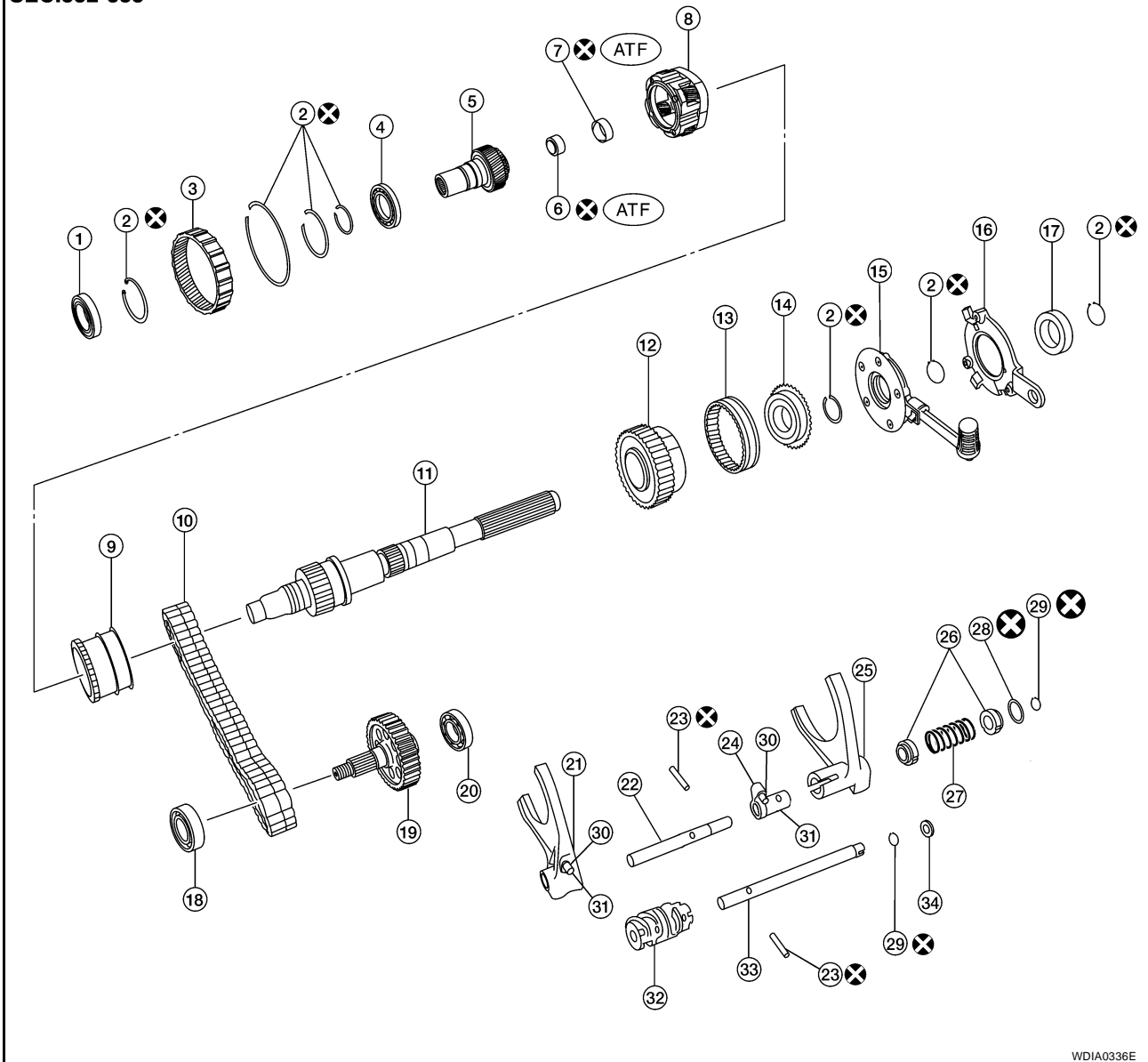
WDIA0385E

- | | | |
|------------------------|-----------------------------|---|
| 1. Baffle plate | 2. Breather tube | 3. Front case |
| 4. Snap ring | 5. Input oil seal | 6. Self-lock nut |
| 7. Companion flange | 8. Front oil seal | 9. 4LO switch (gray with green paint) |
| 10. ATP switch (black) | 11. Rear case | 12. Wait detection switch (gray) |
| 13. Gasket | 14. Filler plug | 15. Drain plug |
| 16. O-ring | 17. Transfer control device | 18. Harness bracket |
| 19. Dust cover | 20. Rear oil seal | 21. Air breather hose clamp |
| 22. Retainer bolt | 23. Gasket | A. Apply Genuine Anaerobic Liquid Gasket or equivalent. |
- B. Apply Genuine Silicone RTV or equivalent.

TRANSFER ASSEMBLY

[TX15B]

SEC.332•333



- | | | |
|-----------------------|-------------------------------|---------------------------|
| 1. Input bearing | 2. Snap ring | 3. Internal gear |
| 4. Carrier bearing | 5. Sun gear | 6. Needle bearing |
| 7. Metal bushing | 8. Planetary carrier assembly | 9. L-H sleeve |
| 10. Drive chain | 11. Mainshaft | 12. Sprocket |
| 13. 2-4 sleeve | 14. Clutch gear | 15. Oil pump assembly |
| 16. Retainer | 17. Mainshaft rear bearing | 18. Front bearing |
| 19. Front drive shaft | 20. Rear bearing | 21. L-H shift fork |
| 22. L-H shift rod | 23. Retaining pin | 24. 2-4 shift bracket |
| 25. 2-4 shift fork | 26. Fork guide collar | 27. 2-4 shift fork spring |
| 28. Retaining ring | 29. Snap ring | 30. Shift collar |
| 31. Clevis pin | 32. Drum cam | 33. Control shift rod |
| 34. Spacer | | |

WDIA0336E

A
B
C
TF
E
F
G
H
I
J
K
L

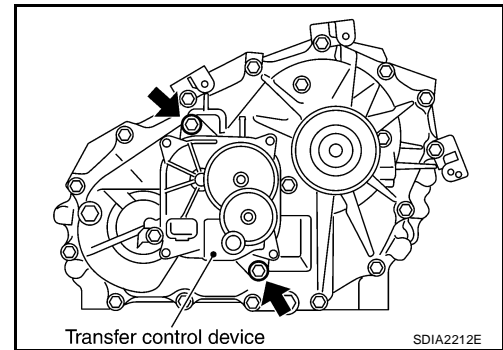
M

TRANSFER ASSEMBLY

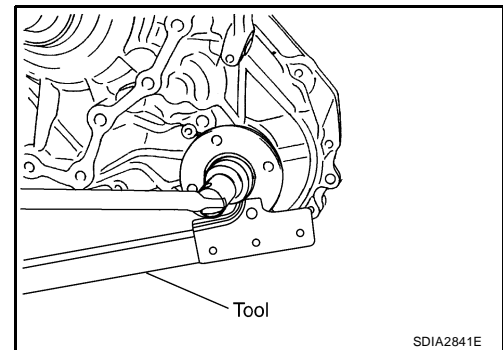
[TX15B]

DISASSEMBLY

1. Remove the drain plug and filler plug.
2. Remove the transfer control device from the rear case.
3. Remove the O-ring from the transfer control device.



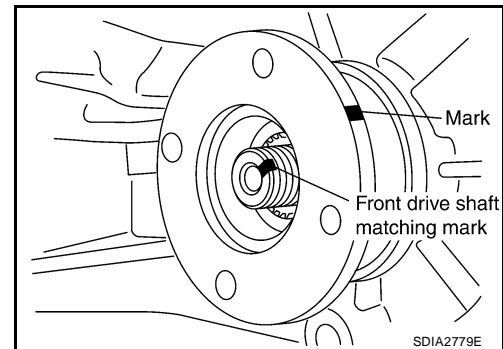
4. Remove the self-lock nut from the companion flange using Tool.
Tool number : KV40104000 (—)



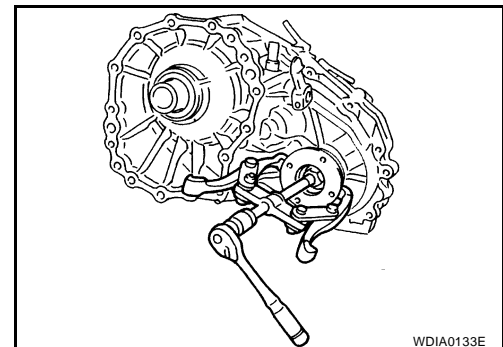
5. Put a matching mark on top of the front drive shaft in line with the mark on the companion flange.

CAUTION:

Use paint to make the matching mark on the front drive shaft. Do not damage the front drive shaft.



6. Remove the companion flange using suitable tool.



TRANSFER ASSEMBLY

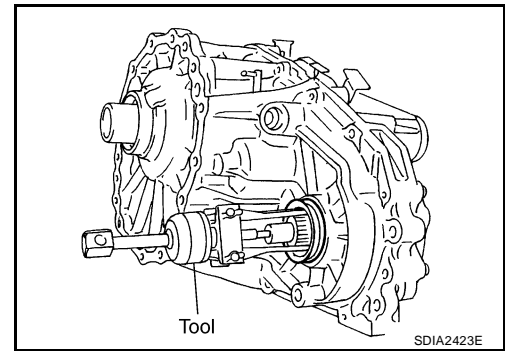
[TX15B]

7. Remove the front oil seal from the front case using Tool.

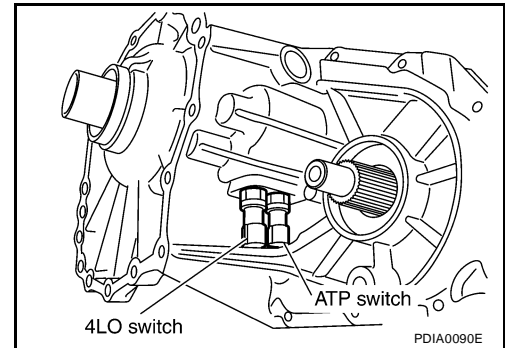
Tool number : ST33290001 (J-34286)

CAUTION:

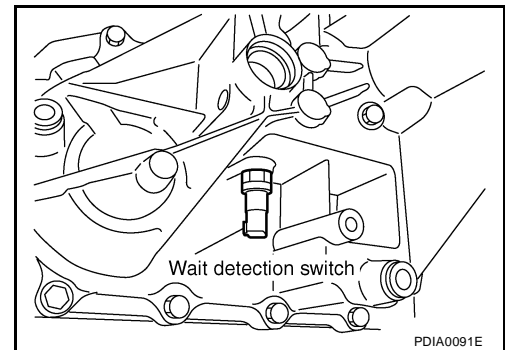
Do not damage front case or front drive shaft.



8. Remove the 4LO switch [gray (with green paint)] and ATP switch (black) from the front case.



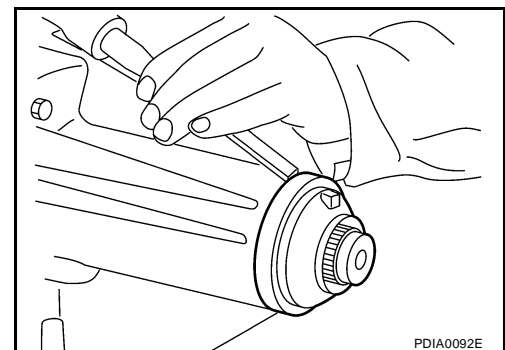
9. Remove the wait detection switch (gray) from the rear case.



10. Remove the dust cover from the rear case using suitable tool.

CAUTION:

Do not damage rear case.

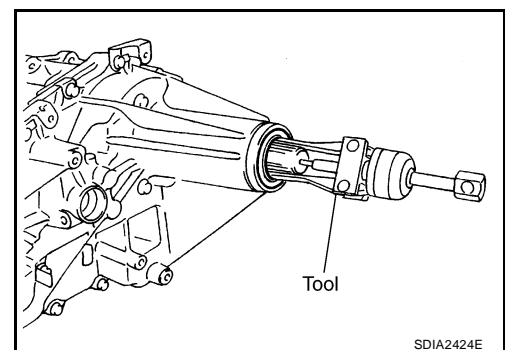


11. Remove the rear oil seal from the rear case using Tool.

Tool number : ST33290001 (J-34286)

CAUTION:

Do not damage rear case or mainshaft.



A
B
C
TF
E
F
G
H
I
J
K
L
M

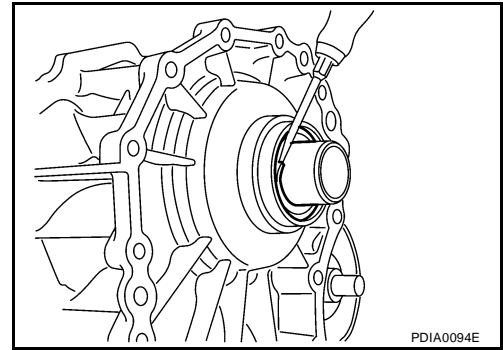
TRANSFER ASSEMBLY

[TX15B]

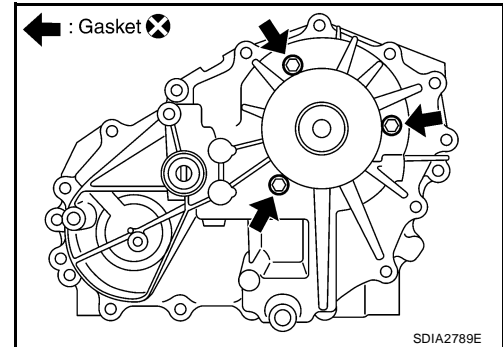
12. Remove the input oil seal from the front case using suitable tool.

CAUTION:

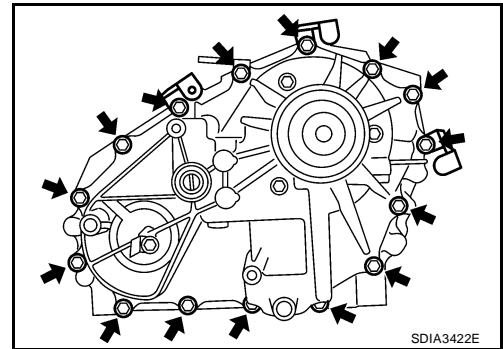
Do not damage front case, sun gear or input bearing.



13. Remove the retainer bolts and gaskets.



14. Remove the rear case bolts, harness bracket and air breather hose clamp from the rear case.



15. Separate the front case from the rear case. Then remove the rear case by prying it up using suitable tool.

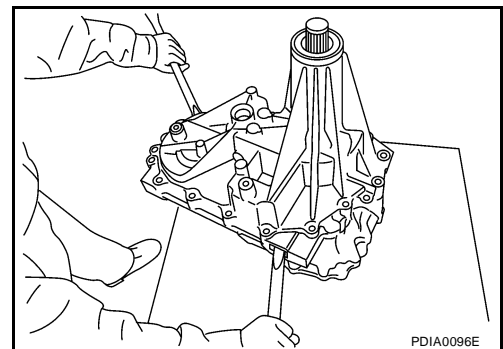
CAUTION:

Do not damage the mating surface.

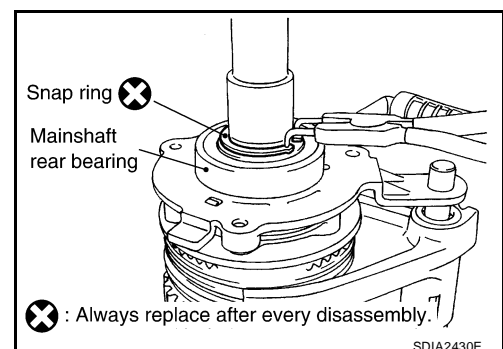
16. Remove the spacer from the control shift rod.

CAUTION:

Do not drop spacer.



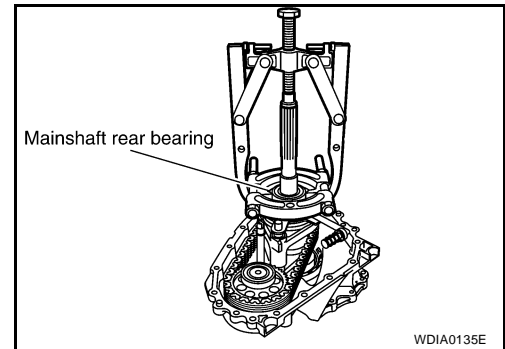
17. Remove the snap ring from the mainshaft using suitable tool.



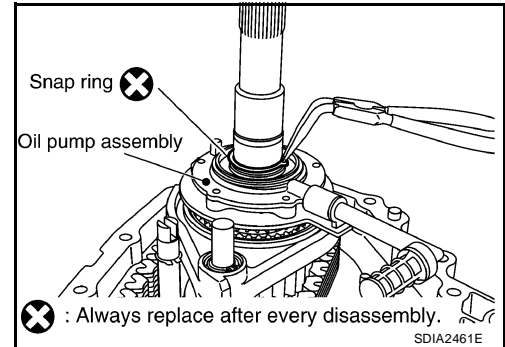
TRANSFER ASSEMBLY

[TX15B]

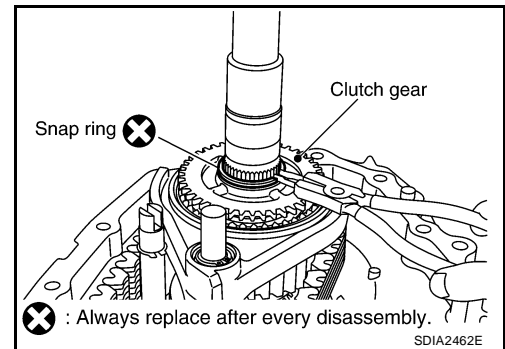
18. Remove the mainshaft rear bearing from the mainshaft using suitable tool.
19. Remove the retainer from the mainshaft.



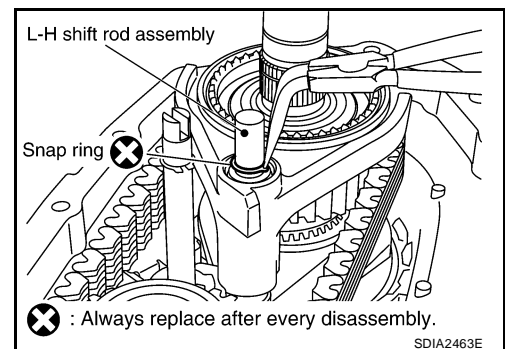
20. Remove the snap ring from the mainshaft using suitable tool.
21. Remove the oil pump assembly from the mainshaft.



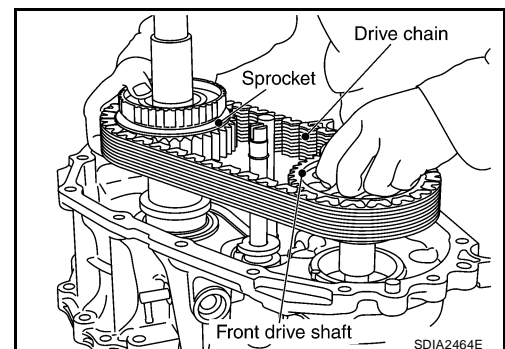
22. Remove the snap ring from the mainshaft using suitable tool.
23. Remove the clutch gear from the mainshaft.



24. Remove the snap ring from the L-H shift rod assembly using suitable tool.
25. Remove the 2-4 sleeve and 2-4 shift fork assembly from the mainshaft.



26. Remove the drive chain together with the sprocket and front drive shaft from the front case.
27. Remove the mainshaft from the sun gear assembly.
28. Remove the L-H shift rod assembly and control shift rod assembly from the front case.
29. Remove the L-H sleeve together with the L-H shift fork from the planetary carrier assembly.



A
B
C
TF
E
F
G
H
I
J
K
L
M

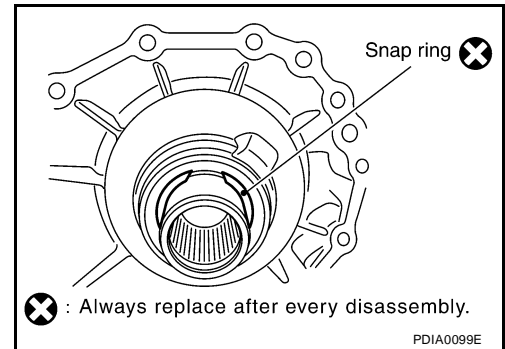
TRANSFER ASSEMBLY

[TX15B]

30. Remove the snap ring from the sun gear.

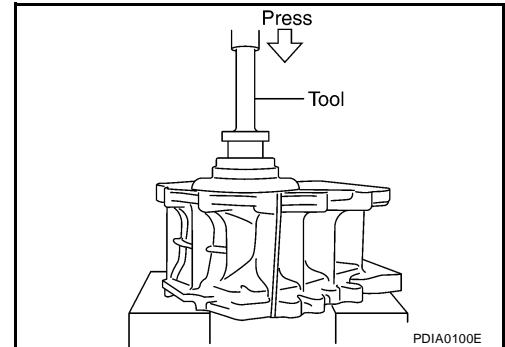
CAUTION:

Do not damage sun gear or input bearing.

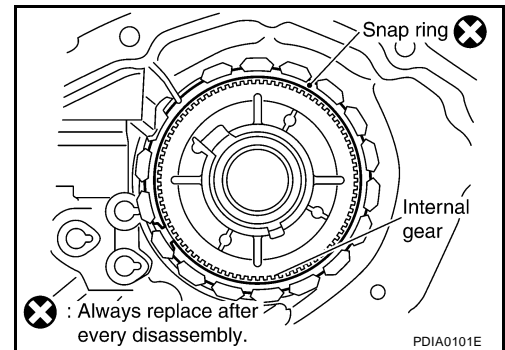


31. Press the sun gear assembly and planetary carrier assembly from the front case using Tool.

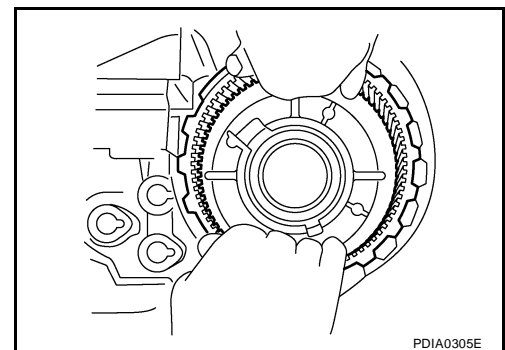
Tool number : KV38100200 (—)



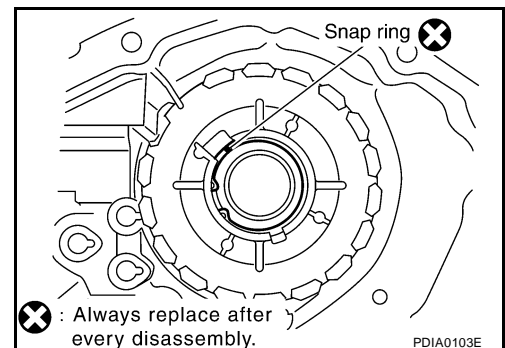
32. Remove the snap ring from the front case.



33. Remove the internal gear from the front case.



34. Remove the snap ring from the front case.

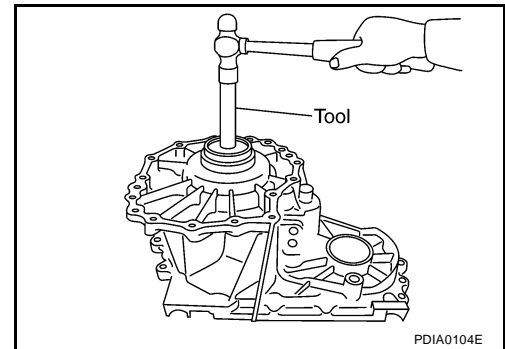


TRANSFER ASSEMBLY

[TX15B]

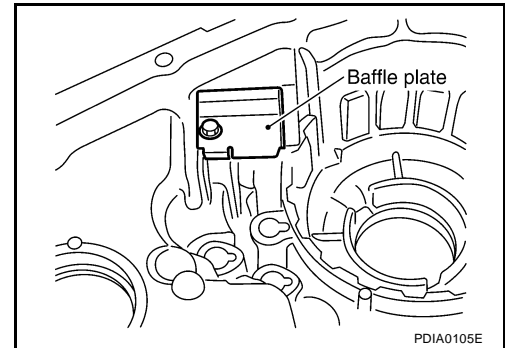
35. Remove the input bearing from the front case using Tool.

Tool number : KV38100200 (—)



36. Remove the baffle plate from the front case.

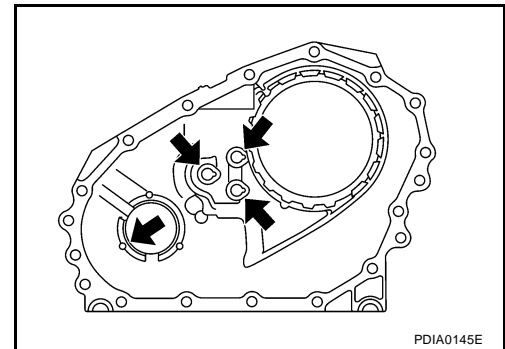
37. Remove the breather tube from the front case.



INSPECTION AFTER DISASSEMBLY

Case

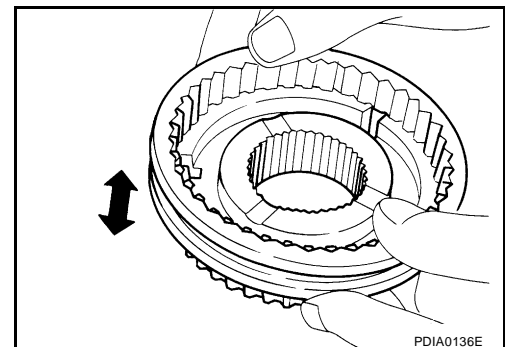
Check the contact surfaces of the shift rod and bearing for wear and damage. If any is found, replace with a new one.



Sleeve

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

- Damage and excessive wear of the contact surfaces of the sprocket, mainshaft and sleeve.
- Sleeve must move smoothly.

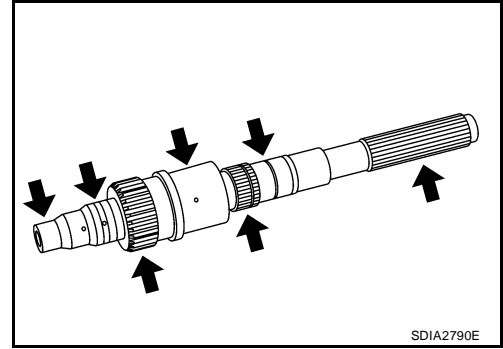


A
B
C
TF
E
F
G
H
I
J
K
L
M

Gear, Shaft and Drive Chain

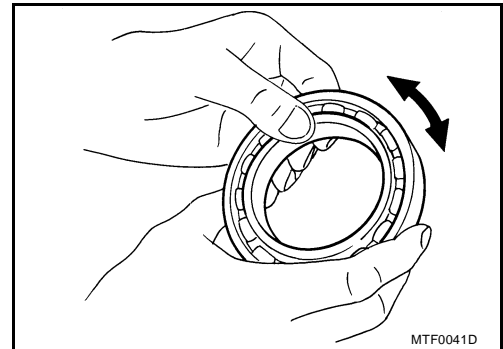
Check the items below. If necessary, replace them with new ones.

- Damage, peeling, uneven wear and bending of the shaft.
- Excessive wear, damage and peeling of the gear.



Bearing

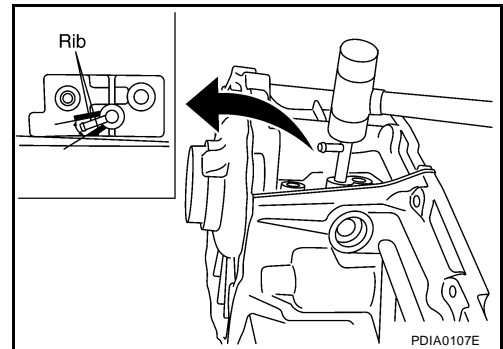
Check the bearing for damage and rough rotation. If necessary, replace it with a new one.



ASSEMBLY

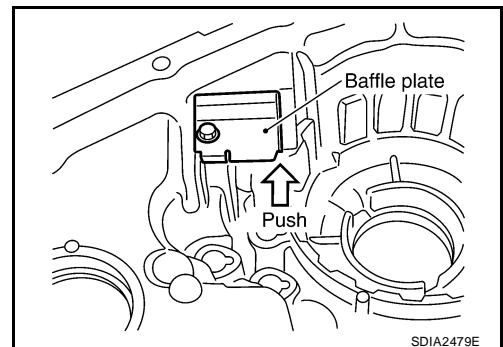
1. Install the breather tube.

CAUTION:
Install breather tube in the direction shown.



2. Install the baffle plate to the front case. Tighten the bolt to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:
Install baffle plate by pushing it in the direction shown while tightening the bolt.

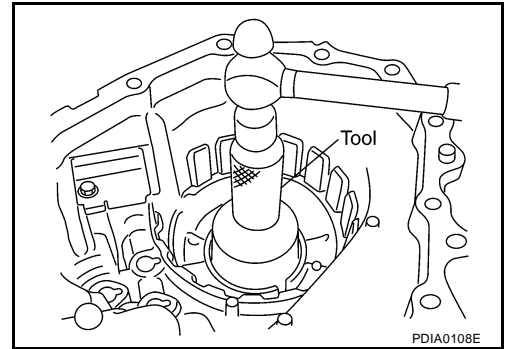


TRANSFER ASSEMBLY

[TX15B]

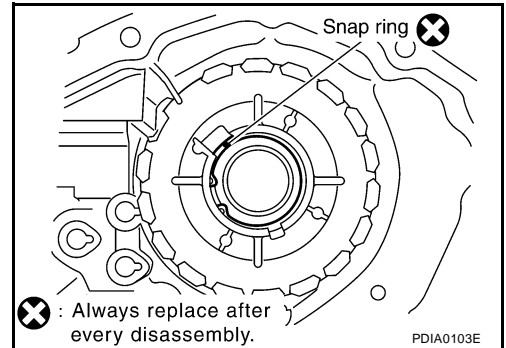
3. Install the input bearing to the front case using Tool.

Tool number : ST30720000 (J-25405)

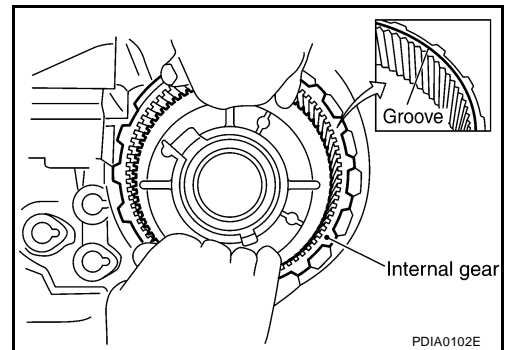


4. Install the new snap ring to the front case.

CAUTION:
Do not reuse snap ring.

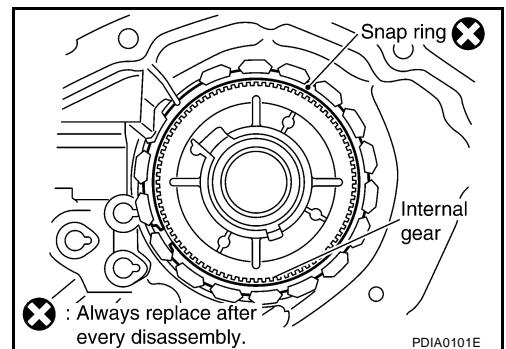


5. Install the internal gear with the groove facing up into the front case.



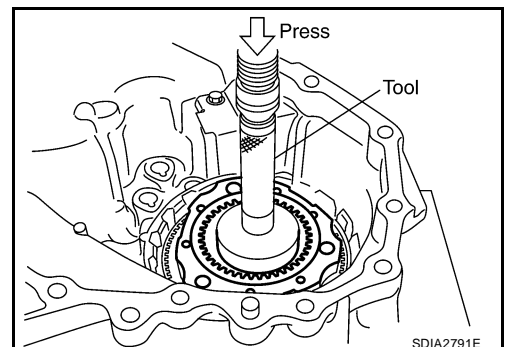
6. Install the new snap ring to the front case.

CAUTION:
Do not reuse snap ring.



7. Install the planetary carrier assembly and sun gear assembly to the front case using Tool.

Tool number : KV38100200 (—)



A
B
C
TF
E
F
G
H
I
J
K
L
M

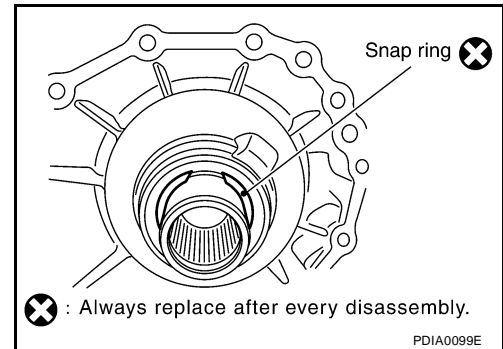
TRANSFER ASSEMBLY

[TX15B]

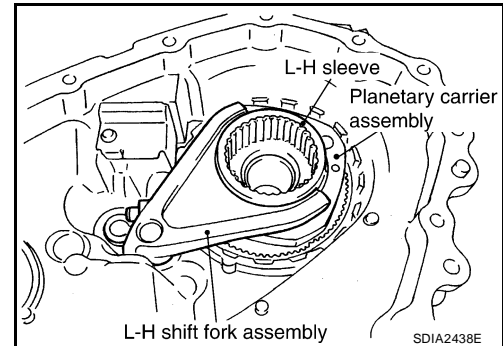
8. Install the new snap ring to the sun gear.

CAUTION:

- Do not reuse snap ring.
- Do not damage sun gear.



9. Set the L-H sleeve together with the L-H shift fork assembly onto the planetary carrier assembly.

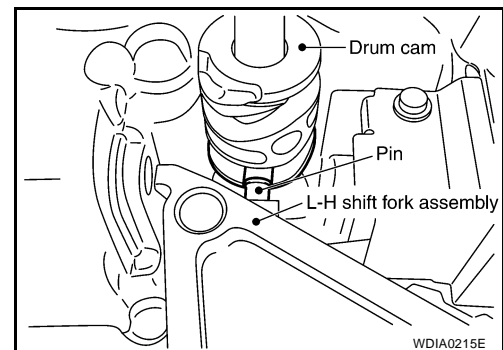


10. Install the control shift rod assembly to the front case.

CAUTION:

Set pin of L-H shift fork assembly into the groove of drum cam.

11. Turn the control shift rod assembly fully counterclockwise.

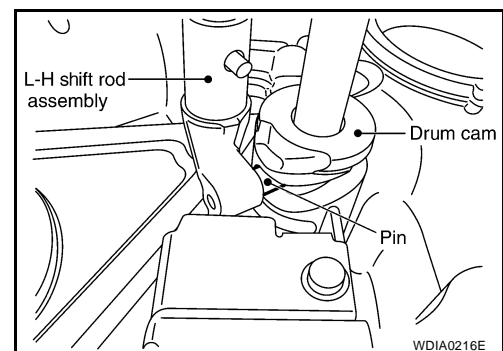


12. Install the L-H shift rod assembly through the L-H shift fork assembly opening to the front case.

CAUTION:

Set pin of L-H shift rod assembly into the groove of drum cam.

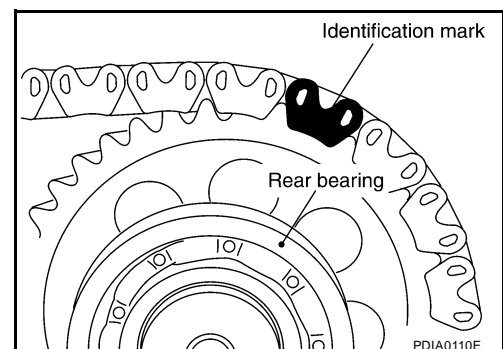
13. Install the mainshaft to the sun gear assembly.



14. Install the drive chain to the front drive shaft and sprocket.

CAUTION:

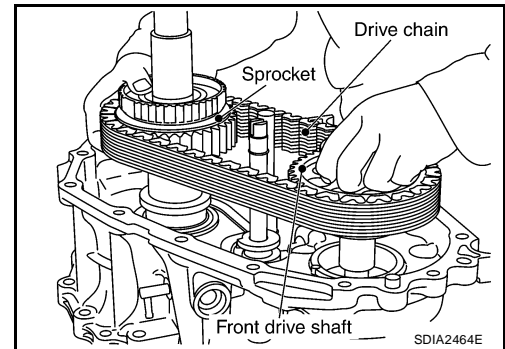
Install with the Identification mark of drive chain on the side of the rear bearing of front drive shaft.



TRANSFER ASSEMBLY

[TX15B]

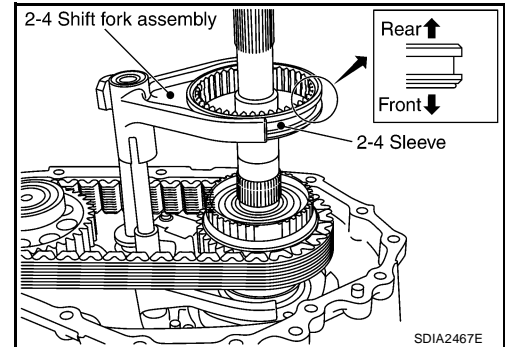
15. Install the drive chain together with the front drive shaft and sprocket to the front case.



16. Install the 2-4 sleeve and 2-4 shift fork assembly to the mainshaft.

CAUTION:

- Install with proper orientation of 2-4 sleeve.
- Install 2-4 shift fork with engaging the grooves of 2-4 shift fork in the retaining pin of 2-4 shift bracket.

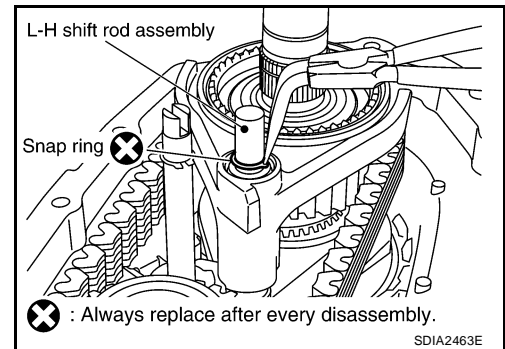


17. Install the new snap ring to the L-H shift rod assembly using suitable tool.

CAUTION:

Do not reuse snap ring.

18. Install the clutch gear to the mainshaft.

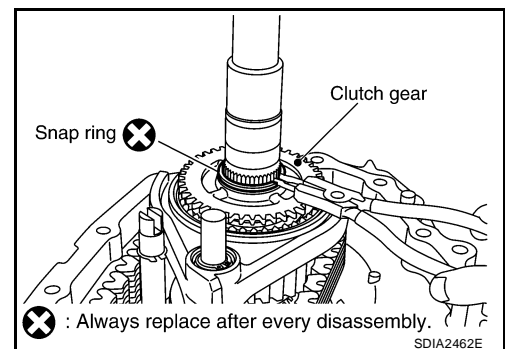


19. Install the new snap ring to the mainshaft using suitable tool.

CAUTION:

Do not reuse snap ring.

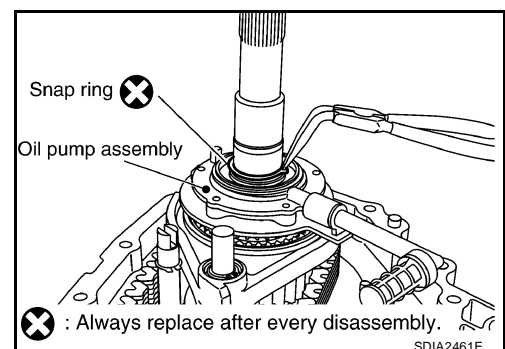
20. Install the oil pump assembly to the mainshaft.



21. Install the new snap ring to the mainshaft using suitable tool.

CAUTION:

Do not reuse snap ring.



A
B
C
TF

E
F
G

H
I
J
K

L
M

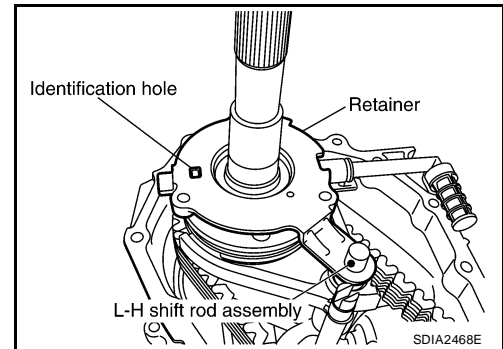
TRANSFER ASSEMBLY

[TX15B]

22. Install the retainer to the mainshaft.

CAUTION:

Set the projection of oil pump assembly to the identification hole, and then align locating hole of retainer to the L-H shift rod assembly.

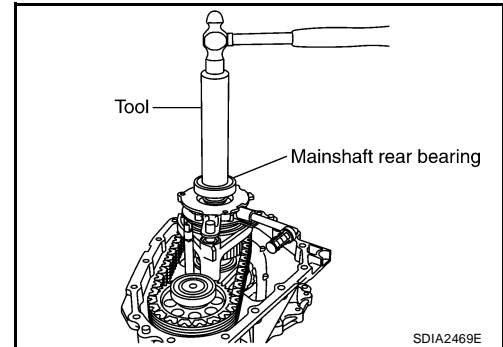


23. Install the mainshaft rear bearing to the mainshaft using Tool.

Tool number : KV32102700 (—)

CAUTION:

Do not push too hard in order to avoid snap rings becoming dislodged from mainshaft.

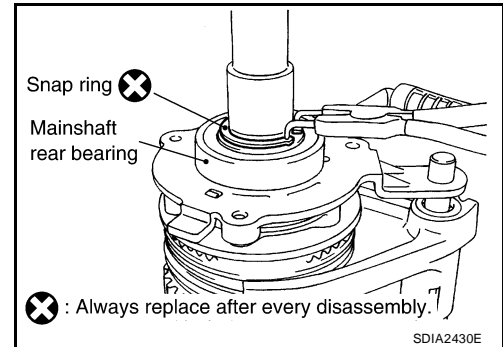


24. Install the new snap ring to the mainshaft using suitable tool.

CAUTION:

Do not reuse snap ring.

25. Install the spacer to the control shift rod.



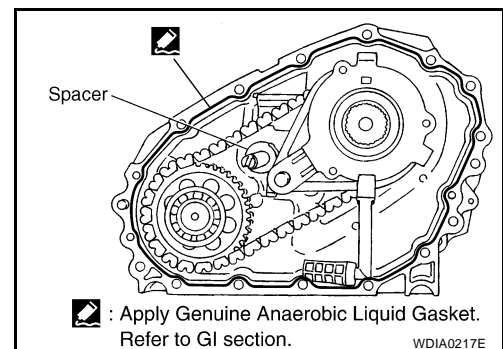
26. Apply liquid gasket to the mating surface of the front case.

- Use Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#).

CAUTION:

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

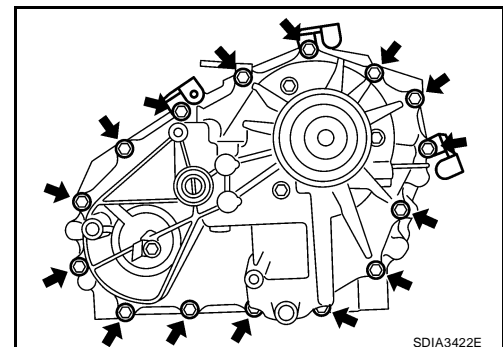
27. Install the rear case to the front case.



28. Tighten the bolts to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:

Be sure to install the harness brackets and air breather hose clamp.



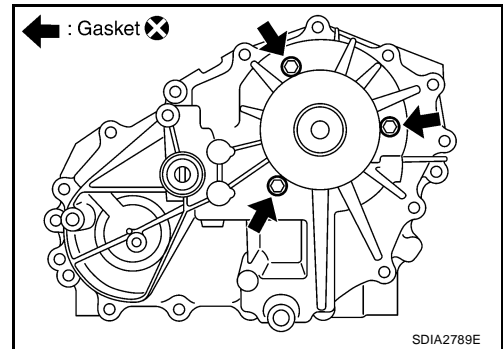
TRANSFER ASSEMBLY

[TX15B]

29. Install the retainer bolts with new gaskets. Tighten the bolts to the specified torque. Refer to [TF-278, "COMPONENTS"](#).

CAUTION:

- Do not reuse gasket.
- Tighten them to the specified torque again.



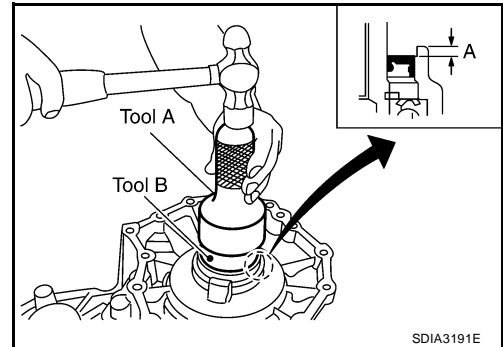
30. Apply petroleum jelly to the circumference of the new oil seal, and install it to the front case using Tools.

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

Dimension A **: 4.0 - 4.6 mm (0.157 - 0.181 in)**

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.

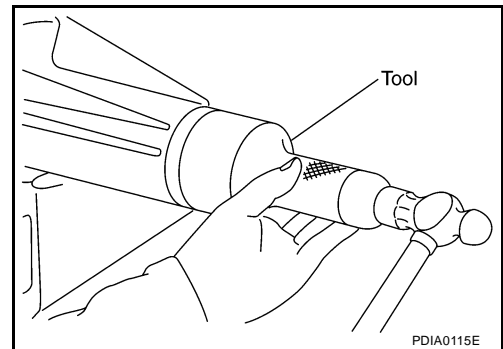


31. Install the new rear oil seal until it is flush with the end face of the rear case using Tool.

Tool number **: KV38100500 (—)**

CAUTION:

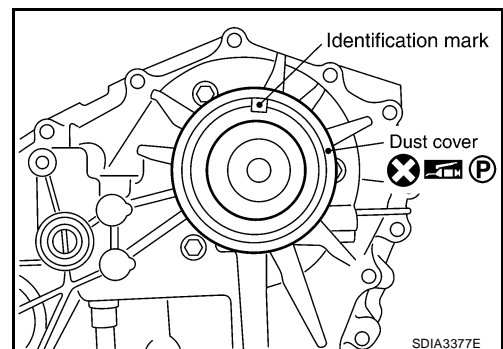
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



32. Apply petroleum jelly to the circumference of the new dust cover. Position the new dust cover using the identification mark as shown.

CAUTION:

- Do not reuse dust cover.
- Position the identification mark at the position shown.

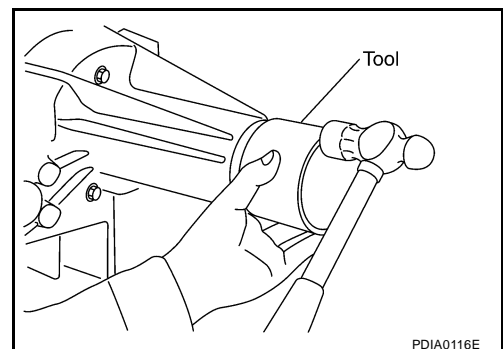


33. Install the new dust cover to the rear case using Tool.

Tool number **: KV40105310 (—)**

CAUTION:

- Do not reuse dust cover.
- Apply petroleum jelly to dust cover.



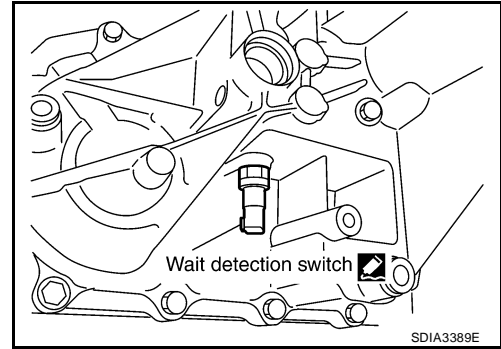
A
B
C
TF
E
F
G
H
I
J
K
L
M

34. Apply sealant to the threads of the wait detection switch (gray). Then install it to the rear case and tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#) .

- Use Genuine Silicone RTV or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#) .

CAUTION:

Remove old sealant and oil adhering to threads.

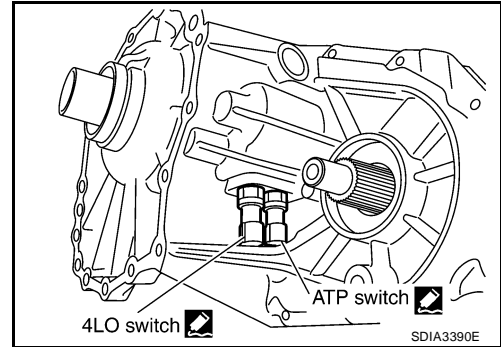


35. Apply sealant to the threads of the 4LO switch (gray with green paint) and ATP switch (black). Then install them to the front case and tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#) .

- Use Genuine Silicone RTV or equivalent. Refer to [GI-47, "Recommended Chemical Products and Sealants"](#) .

CAUTION:

Remove old sealant and oil adhering to threads.

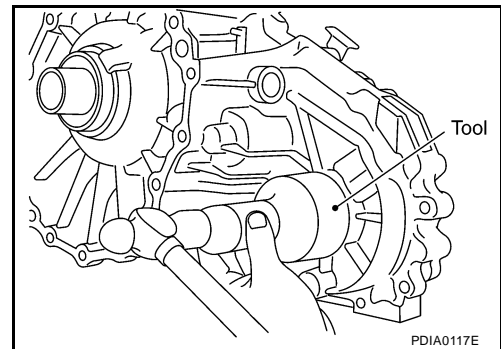


36. Install the new front oil seal until it is flush with the end face of the front case using Tool.

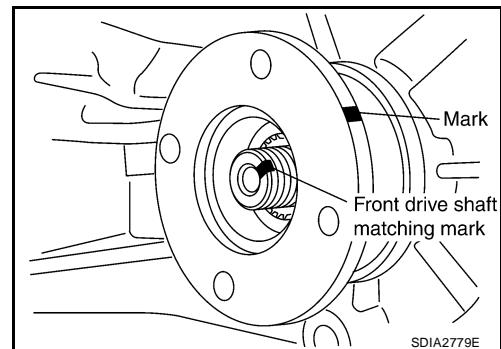
Tool number : KV38100500 (—)

CAUTION:

- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



37. Align the matching mark on the front drive shaft with the mark on the companion flange, then install the companion flange.



TRANSFER ASSEMBLY

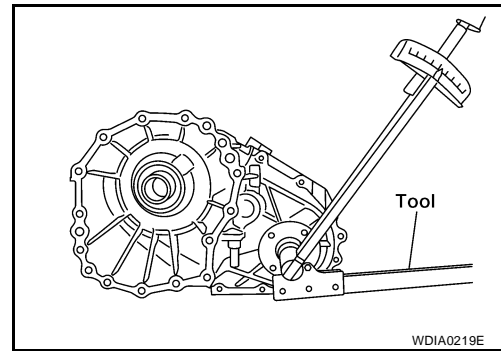
[TX15B]

38. Install the new companion flange self-lock nut. Tighten to the specified torque using Tool. Refer to [TF-278, "COMPONENTS"](#).

Tool number : KV40104000 (—)

CAUTION:

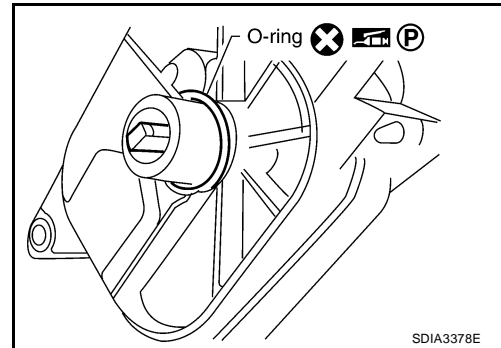
Do not reuse self-lock nut.



39. Install the new O-ring to the transfer control device.

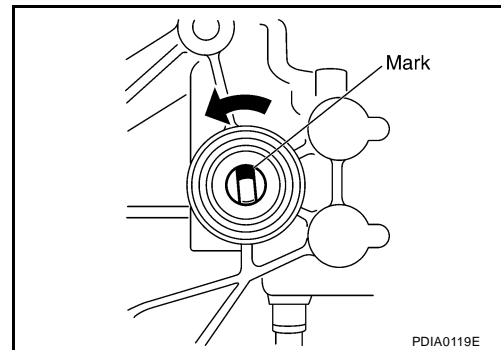
CAUTION:

- Do not reuse O-ring.
- Apply petroleum jelly to O-ring.



40. Install the transfer control device to the rear case.

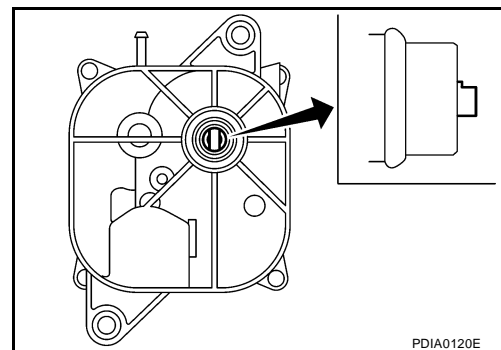
- a. Turn the control shift rod fully counterclockwise using a flat-bladed screwdriver, and then put a mark on the control shift rod.



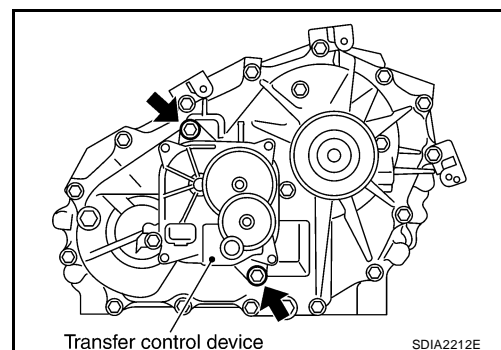
- b. Align the transfer control device shaft cutout with the mark on the control shift rod, and install it.

NOTE:

Turn the transfer control device when the transfer control device connection does not match.



- c. Tighten the bolts to the specified torque. Refer to [TF-278, "COMPONENTS"](#).



A
B
C
TF
E
F
G
H
I
J
K
L
M

41. Install the drain plug and filler plug with new gaskets to the rear case. Tighten to the specified torque. Refer to [TF-278, "COMPONENTS"](#) .

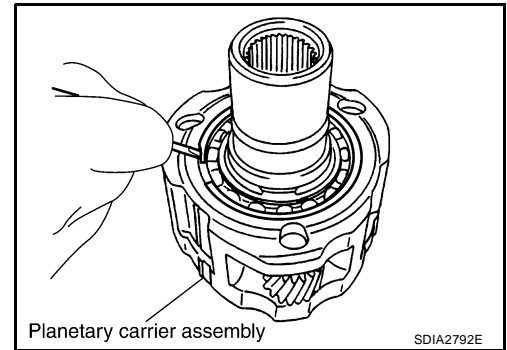
CAUTION:

Do not reuse gaskets.

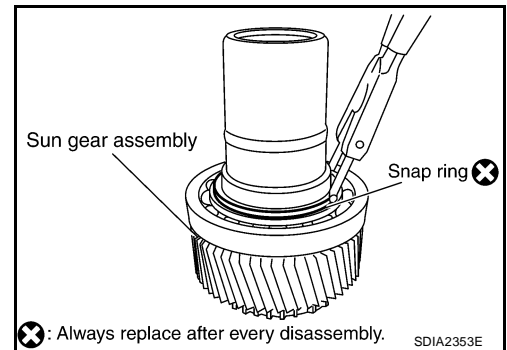
PLANETARY CARRIER

Disassembly and Assembly

1. Remove the snap ring.
2. Remove the sun gear assembly from the planetary carrier assembly using suitable tool.

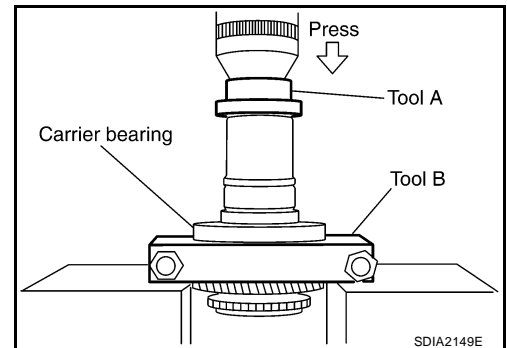


3. Remove the snap ring from the sun gear assembly using suitable tool.



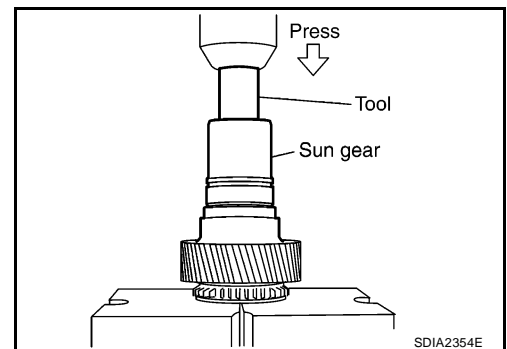
4. Remove the carrier bearing from the sun gear using Tools.

Tool number **A: ST35300000 (—)**
 B: ST30021000 (J-22912-01)



5. Remove the needle bearing from the sun gear using Tool.

Tool number **: ST33710000 (—)**



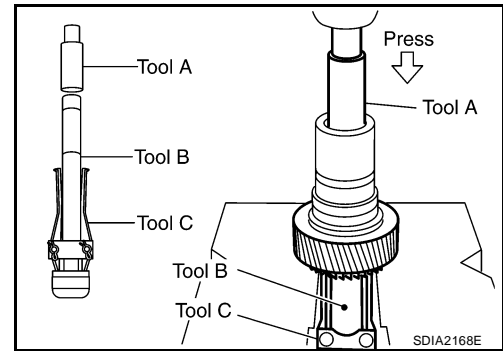
A
B
C
TF
E
F
G
H
I
J
K
L
M

PLANETARY CARRIER

[TX15B]

6. Remove the metal bushing from the sun gear using Tools.

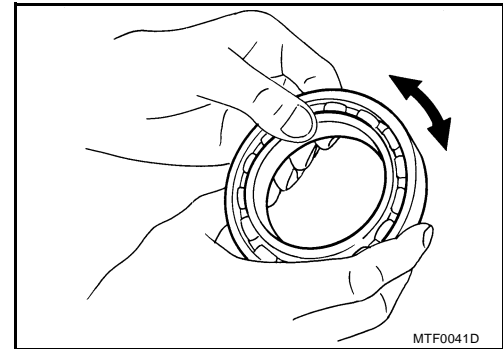
Tool number **A: ST33710000 (—)**
 B: ST35325000 (—)
 C: ST33290001 (J-34286)



INSPECTION AFTER DISASSEMBLY

Bearing

Check the bearing for damage and rough rotation. If necessary, replace the bearing with a new one.

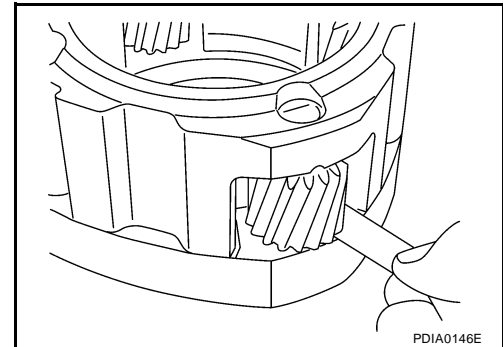


Planetary Carrier

- Measure the end play of each pinion gear. If it is out of specification, replace the planetary carrier assembly with new one.

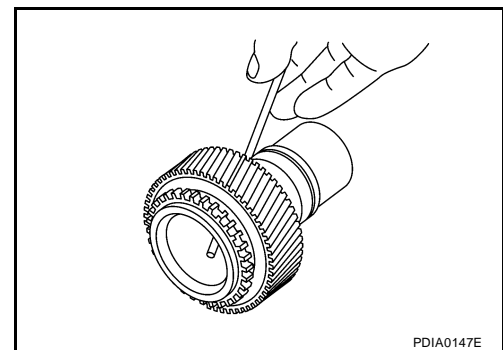
Pinion gear end play : 0.1 - 0.7 mm (0.004 - 0.028 in)

- Check the working face of each gear and bearing for damage, burrs, partial wear, dents and other abnormality. If any is found, replace the planetary carrier assembly with a new one.



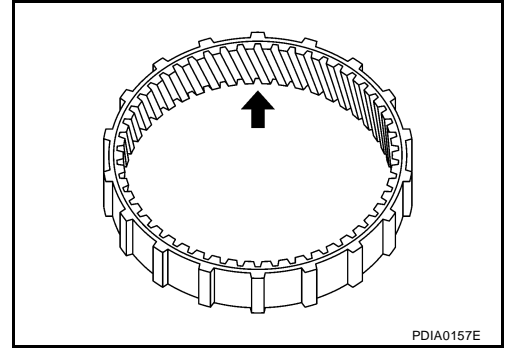
Sun Gear

- Check if the oil passage of the sun gear assembly is clogged. For this, try to pass a 3.6 mm (0.142 in) dia. wire through the oil passage as shown.
- Check the sliding and contact surface of each gear and bearing for damage, burrs, partial wear, dents and other abnormality. If any is found, replace the sun gear assembly with a new one.



Internal Gear

Check the internal gear teeth for damage, partial wear, dents or other abnormality. If any is found, replace the internal gear with a new one.



A
B
C

TF

ASSEMBLY

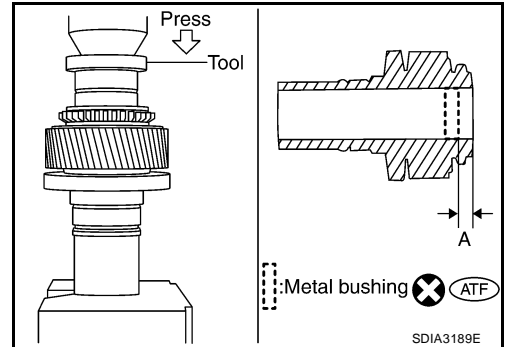
1. Apply ATF to the new metal bushing, then install the new metal bushing until it becomes "Dimension A" using Tool.

Tool number : ST35300000 (—)

Dimension A : 7.7 - 8.3mm (0.303 - 0.327in)

CAUTION:

Do not reuse metal bushing.



E
F
G

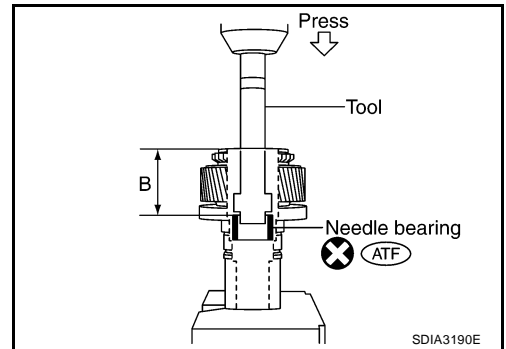
2. Apply ATF to the new needle bearing, then install the new needle bearing until it becomes "Dimension B" using Tool.

Tool number : ST33220000 (—)

Dimension B : 62.5 - 63.1mm (2.461 - 2.484in)

CAUTION:

Do not reuse needle bearing.

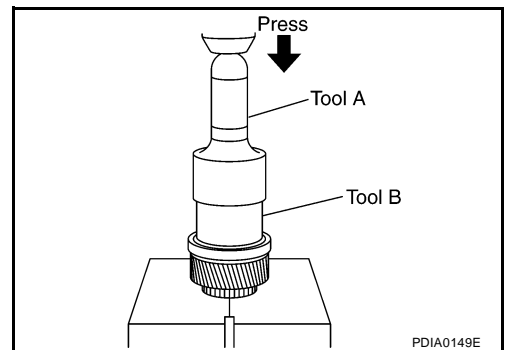


H
I
J
K

3. Install the carrier bearing to the sun gear using Tools.

Tool number A: ST30720000 (J-25405)

B: ST27863000 (—)



L
M

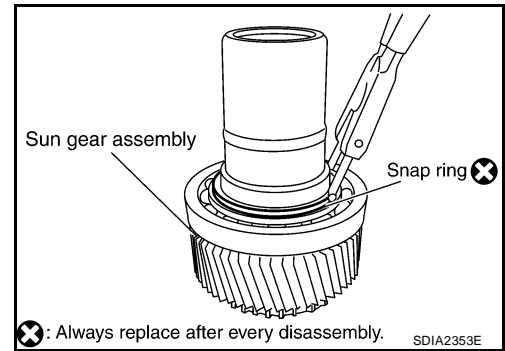
PLANETARY CARRIER

[TX15B]

4. Install the new snap ring to the sun gear assembly using suitable tool.

CAUTION:

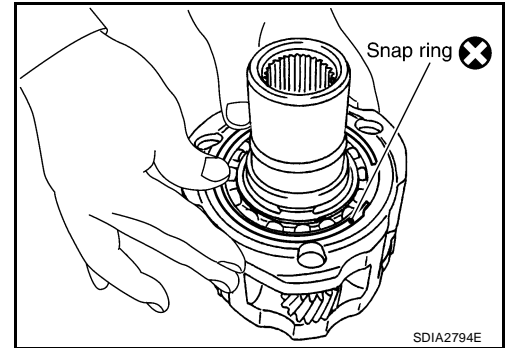
Do not reuse snap ring.



5. Install the sun gear assembly to the planetary carrier assembly.
6. Install the new snap ring to the planetary carrier assembly.

CAUTION:

Do not reuse snap ring.



FRONT DRIVE SHAFT

[TX15B]

PF3:39100

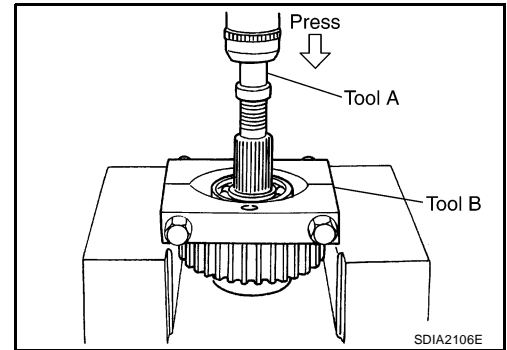
EDS00392

FRONT DRIVE SHAFT

Disassembly and Assembly DISASSEMBLY

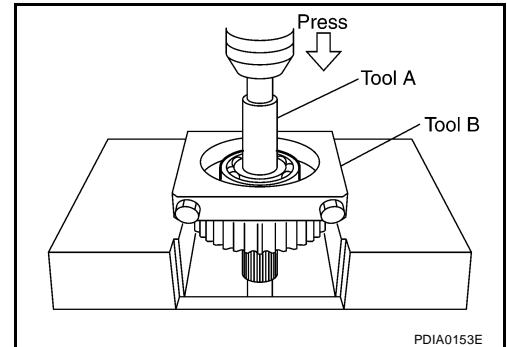
1. Remove the front bearing using Tools.

- Tool number** **A: ST35300000 (—)**
 B: ST30021000 (J-22912-01)



2. Remove the rear bearing using Tools.

- Tool number** **A: ST33710000 (—)**
 B: ST30021000 (J-22912-01)

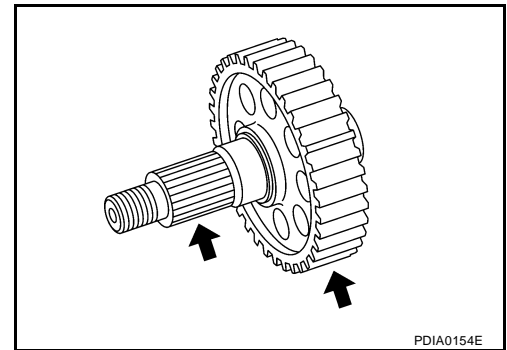


INSPECTION AFTER DISASSEMBLY

Front Drive Shaft

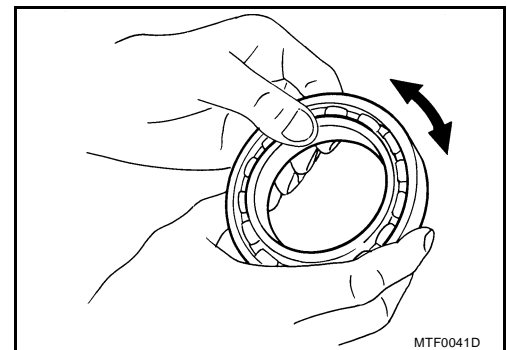
Check the items below. If necessary, replace them with new ones.

- Damage, peeling, dent, uneven wear and bending of the shaft.
- Excessive wear, damage and peeling of the gear.



Bearing

Check the bearing for damage and rough rotation. If necessary, replace the bearing with a new one.



A
B
C
TF
E
F
G
H
I
J
K
L
M

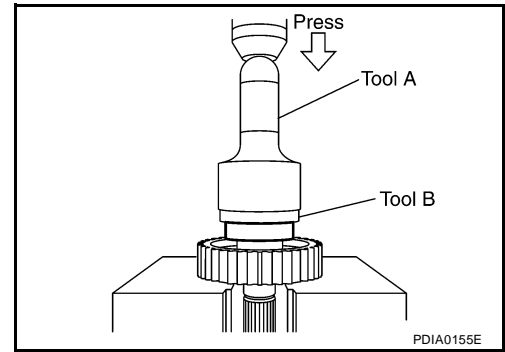
FRONT DRIVE SHAFT

[TX15B]

ASSEMBLY

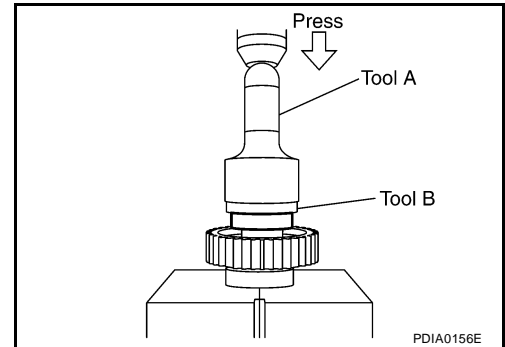
1. Install the rear bearing using Tools.

Tool number **A: KV38100500 (—)**
 B: ST30901000 (J-26010-01)



2. Install the front bearing using Tools.

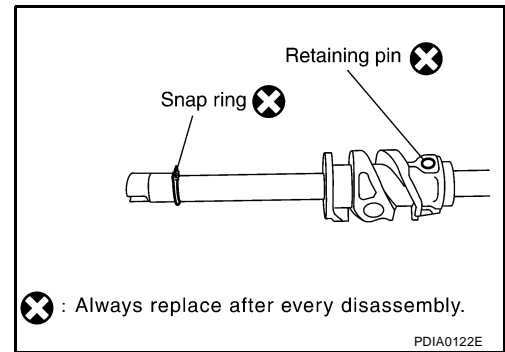
Tool number **A: KV38100500 (—)**
 B: ST30901000 (J-26010-01)



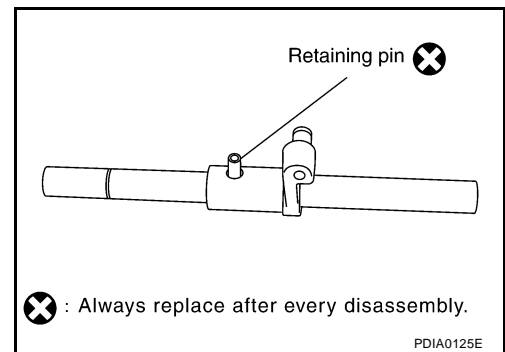
SHIFT CONTROL

Disassembly and Assembly

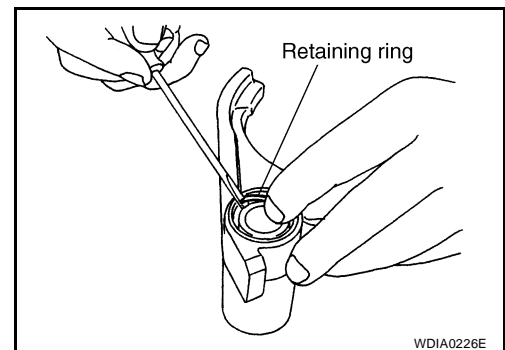
1. Remove the snap ring.
2. Remove the retaining pin.
3. Remove the drum cam from the control shift rod.



4. Remove the retaining pin from the L-H shift rod.
5. Remove the 2-4 shift bracket.



6. Remove the retaining ring from the 2-4 shift fork using suitable tool.
7. Remove the fork guide collar and 2-4 shift fork spring from the 2-4 shift fork.



INSPECTION AFTER DISASSEMBLY

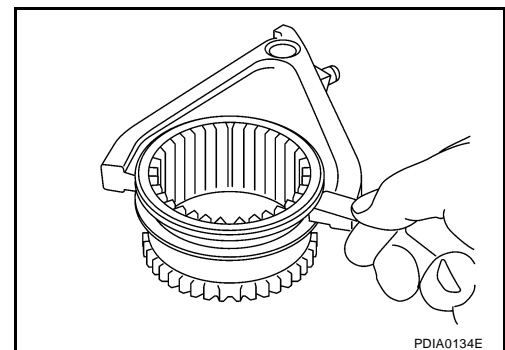
Shift Fork

- Measure the clearance between the shift fork and sleeve. If it is out of specification, replace it with a new one.

Standard value

2-4 : Less than 0.46 mm (0.018 in)

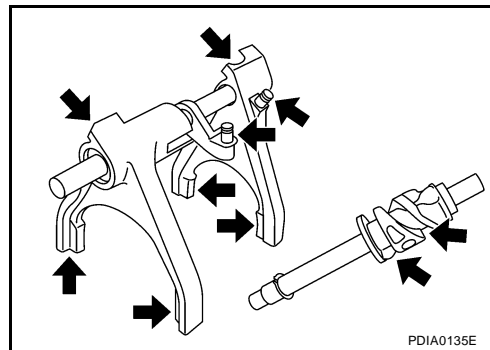
L-H : Less than 0.46 mm (0.018 in)



A
B
C
TF
E
F
G
H
I
J
K
L
M

Shift Rod and Fork Components

- Check the working face of the shift rod and fork for wear, partial wear, abrasion, bending and other abnormality. If any is found, replace with a new one.



ASSEMBLY

1. Install clevis pin and shift collar to L-H shift fork after assembling them.

CAUTION:

Use caution when installing L-H shift fork, clevis pin or shift collar.

2. Install clevis pin and shift collar to 2-4 shift bracket after assembling them.

CAUTION:

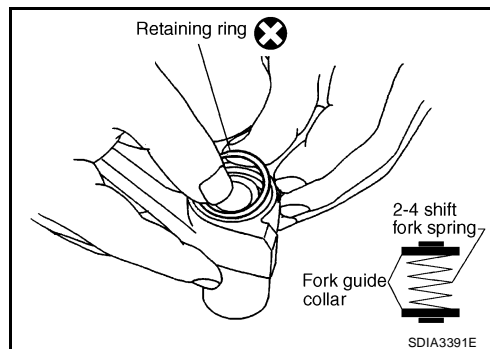
Use caution when installing 2-4 shift bracket.

3. Install guide fork collar and 2-4 shift fork spring to the 2-4 shift fork, and then secure it with the new retaining ring.

CAUTION:

- Do not reuse retaining ring.

- Be careful with orientation.

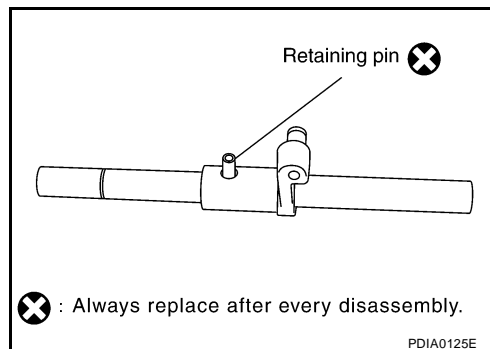


4. Install the 2-4shift bracket to the L-H shift rod.

5. Install the new retaining pin evenly to the L-H shift rod.

CAUTION:

Do not reuse retaining pin.



⊗ : Always replace after every disassembly.

6. Install the drum cam to the control shift rod, and then secure it with the new retaining pin.

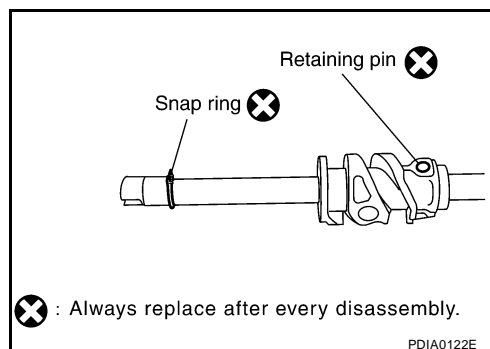
CAUTION:

Do not reuse retaining pin.

7. Install the new snap ring to the control shift rod.

CAUTION:

Do not reuse snap ring.



⊗ : Always replace after every disassembly.

SERVICE DATA AND SPECIFICATIONS (SDS)

[TX15B]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

EDS00394

Applied model		VQ40DE	
Transfer model		TX15B	
Fluid capacity (Approx.)		2.0 (2-1/8, 1-3/4)	
Gear ratio	High	1.000	
	Low	2.625	
Number of teeth	Planetary gear	Sun gear	56
		Internal gear	91
	Front drive sprocket		38
	Front drive shaft		38

Inspection and Adjustment PINION GEAR END PLAY

EDS00395

Unit: mm (in)

Item	Standard
Pinion gear end play	0.1 - 0.7 (0.004 - 0.028)

CLEARANCE BETWEEN SHIFT FORK AND SLEEVE

Unit: mm (in)

Item	Standard
2-4 shift fork to 2-4 sleeve	Less than 0.46 (0.018)
L-H shift fork to L-H sleeve	Less than 0.46 (0.018)

