

SECTION **TF**

TRANSFER

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B
C

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PRECAUTIONS

PRECAUTIONS

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

EDS0031D

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

EDS0031A

- 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 100 km/h (60MPH). |
| 4H |  | | |
| 4LO |  | Flashing | For M/T models, to shift between 4H ⇄ 4LO, stop the vehicle and shift the transmission shift lever to the Neutral position with the clutch pedal depressed. For A/T models, to shift between 4H ⇄ 4LO, stop the vehicle and shift the transmission selector to the “N” with the brake pedal depressed. |
| |  | ON | 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. You must wait for the 4LO indicator lamp to stop flashing and remain lit or turned off before shifting your transmission into gear or releasing the clutch pedal. |

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- 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.

Transfer position adjustment pattern

| 4WD shift switch condition | Refer procedure |
|---|--|
| 4WD shift switch is under “2WD” condition when engine is being stopped. | TF-5. "METHOD FOR ADJUSTMENT WITH 4WD SHIFT SWITCH AT “2WD”" |
| 4WD shift switch is under “4H” or “4LO” condition when engine is being stopped. | TF-5. "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.

PRECAUTIONS

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-5, "Pattern A" |
| Except for above. | TF-5, "Pattern B" |

Pattern A

1. Stay in the below for at least 2 seconds.
 - For A/T models, stop the vehicle and move A/T selector lever to “N” position with the brake pedal depressed.
 - For M/T models, stop the vehicle and move M/T shift lever to the neutral position with the brake and clutch pedal depressed.
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-46, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-51, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
6. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-4, "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. Stay in the below for at least 2 seconds.
 - For A/T models, stop the vehicle and move A/T selector lever to “N” position with the brake pedal depressed.
 - For M/T models, stop the vehicle and move M/T shift lever to the neutral position with the brake and clutch pedal depressed.
2. Turn ignition switch “OFF”.
3. Start engine.
4. Erase self-diagnosis. Refer to [TF-46, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-51, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
5. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-4, "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. Stay in the below for at least 2 seconds.
 - For A/T models, stop the vehicle and move A/T selector lever to “N” position with the brake pedal depressed.
 - For M/T models, stop the vehicle and move M/T shift lever to the neutral position with the brake and clutch pedal depressed.
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-46, "How to Erase Self-diagnostic Results"](#) (with CONSULT-II) or [TF-51, "ERASE SELF-DIAGNOSIS"](#) (without CONSULT-II).
7. Check 4WD shift indicator lamp and 4LO indicator lamp again. Refer to [TF-4, "CHECK 4WD SHIFT INDICATOR PATTERN"](#) .

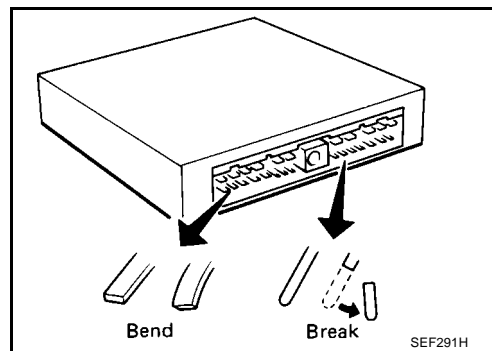
PRECAUTIONS

If 4WD shift indicator lamp and 4LO indicator lamp do not indicate proper pattern, install new transfer control unit and retry the above check.

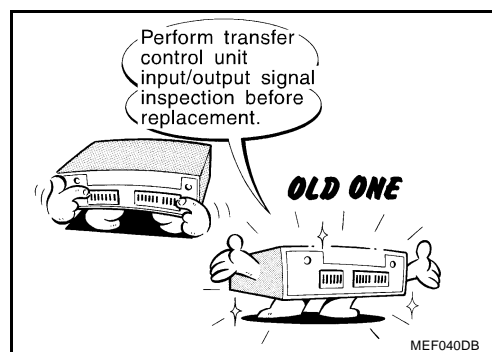
Precautions

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- 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 whether transfer control unit functions properly or not. Refer to [TF-38, "Transfer Control Unit Input/Output Signal Reference Values"](#).



Service Notice

EDS0031C

- 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 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.

PRECAUTIONS

Wiring Diagrams and Trouble Diagnosis

EDS0031D

When reading wiring diagrams, refer to the following:

- [GI-15, "How to Read Wiring Diagrams".](#)
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT".](#)

When performing trouble diagnosis, refer to the following:

- [GI-11, "How to Follow Trouble Diagnoses".](#)
- [GI-24, "How to Perform Efficient Diagnosis for an Electrical Incident".](#)

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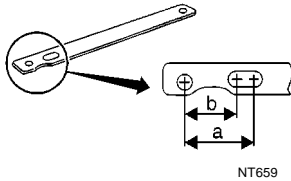
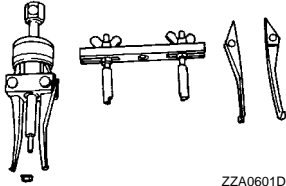
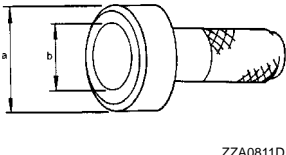
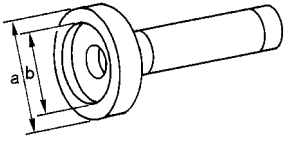
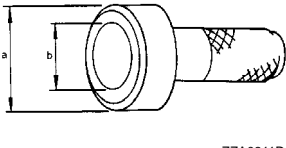
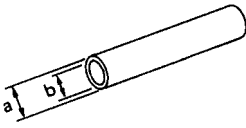
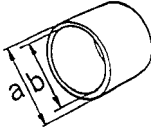
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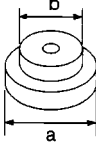
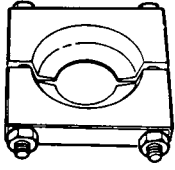
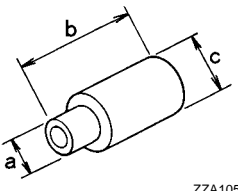
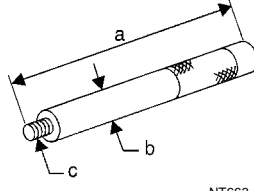
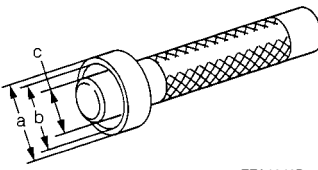
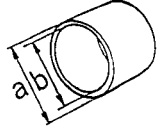
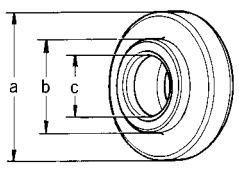
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Special Service Tools

EDS0031E

| Tool number Tool name | | Description |
|---|---|--|
| KV40104000 Flange wrench a: 85 mm (3.35 in) b: 65 mm (2.56 in) |  | <ul style="list-style-type: none"> ● Removing self-lock nut ● Installing self-lock nut |
| KV381054S0 Puller |  | <ul style="list-style-type: none"> ● Removing front oil seal ● Removing rear oil seal ● Removing metal bushing |
| KV38100500 Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia. |  | <ul style="list-style-type: none"> ● Installing front oil seal ● Installing rear oil seal ● Installing rear bearing ● Installing front bearing |
| KV38100200 Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia. |  | <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 |
| ST30720000 Drift a: 77 mm (3.03 in) dia. b: 55 mm (2.17 in) dia. |  | <ul style="list-style-type: none"> ● Installing input bearing ● Installing input oil seal ● Installing carrier bearing |
| KV32102700 Drift a: 48 mm (1.89 in) dia. b: 41 mm (1.61 in) dia. |  | Installing mainshaft rear bearing |
| KV40104830 Drift a: 70 mm (2.76 in) dia. b: 63.5 mm (2.50 in) dia. |  | Installing input oil seal |

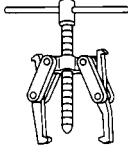
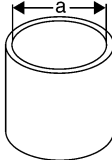
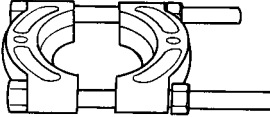
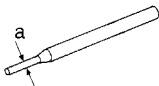
PREPARATION

| Tool number Tool name | | Description | |
|--|---|--|-------------|
| ST35300000 Drift a: 59 mm (2.32 in) dia. b: 45 mm (1.77 in) dia. |  NT073 | <ul style="list-style-type: none"> ● Removing carrier bearing ● Installing metal bushing ● Removing front bearing | A B C |
| ST30021000 Puller |  ZZA0537D | <ul style="list-style-type: none"> ● Removing carrier bearing ● Removing front bearing ● Removing rear bearing | TF E |
| ST33710000 Drift a: 89 mm (3.5 in) b: 30 mm (1.18 in) dia. c: 24 mm (0.94 in) dia. |  ZZA1057D | <ul style="list-style-type: none"> ● Removing needle bearing ● Removing metal bushing ● Removing rear bearing | F G |
| ST35325000 Drift bar a: 215 mm (8.46 in) b: 25 mm (0.98 in) dia. c: M12 × 1.5P |  NT663 | Removing metal bushing | H I J |
| ST33220000 Drift a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia. |  ZZA1046D | Installing needle bearing | K L |
| ST27863000 Drift a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia. |  ZZA1003D | Installing carrier bearing | M |
| ST30901000 Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.38 in) dia. |  ZZA0978D | <ul style="list-style-type: none"> ● Installing rear bearing ● Installing front bearing | |

PREPARATION

Commercial Service Tools

EDS0031F

| Tool name | | Description |
|-------------------------------------|---|--|
| Puller |  <p>NT077</p> | <ul style="list-style-type: none"> ● Removing companion flange ● Removing mainshaft rear bearing |
| Drift a: 81 mm (3.19 in) dia. |  <p>ZZA1236D</p> | Installing dust cover |
| Puller |  <p>ZZB0823D</p> | Removing mainshaft rear bearing |
| Pin punch a: 6 mm (0.24 in) dia. |  <p>NT410</p> | Removing retaining pin |

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

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NVH Troubleshooting Chart

EDS0031G

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-12 | | | TF-112 | | | TF-136 | TF-120 | TF-120 |
|-------------------------------------|---------------------------------|----------------------------|------------------------|---------------------------------|-------------------------|--------------------------|----------------------------|------------------------------|------------------------|---------------------------|
| 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

TRANSFER FLUID

PFP:31001

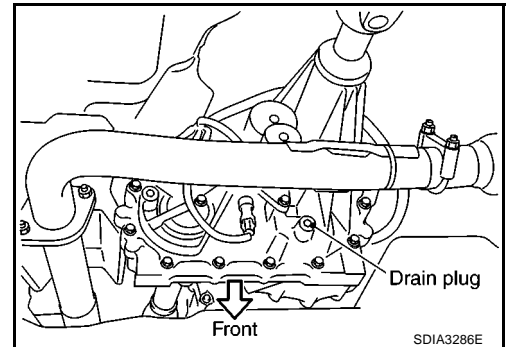
Replacement DRAINING

EDS0031H

1. Stop engine.
2. Remove the drain plug and gasket. Drain the fluid.
3. Install the drain plug with a new gasket to the transfer. Tighten to the specified torque. Refer to [TF-112, "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:

Refer to [MA-14, "Fluids and Lubricants"](#).

Fluid capacity:

Approx. 2.0 ℓ (1-3/4 Imp qt)

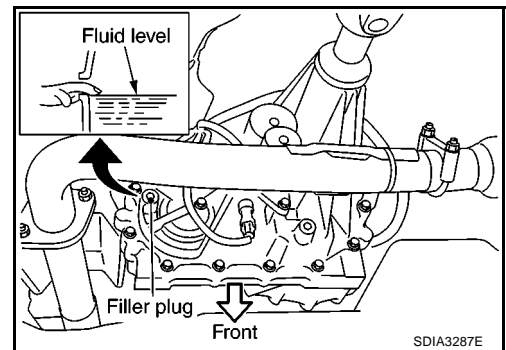
CAUTION:

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-112, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



Inspection

FLUID LEAKAGE AND FLUID LEVEL

EDS0031I

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.

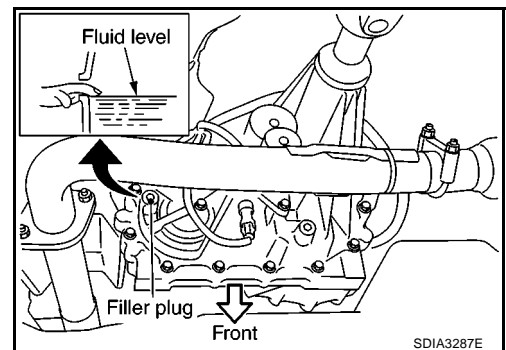
CAUTION:

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-112, "COMPONENTS"](#).

CAUTION:

Do not reuse gasket.



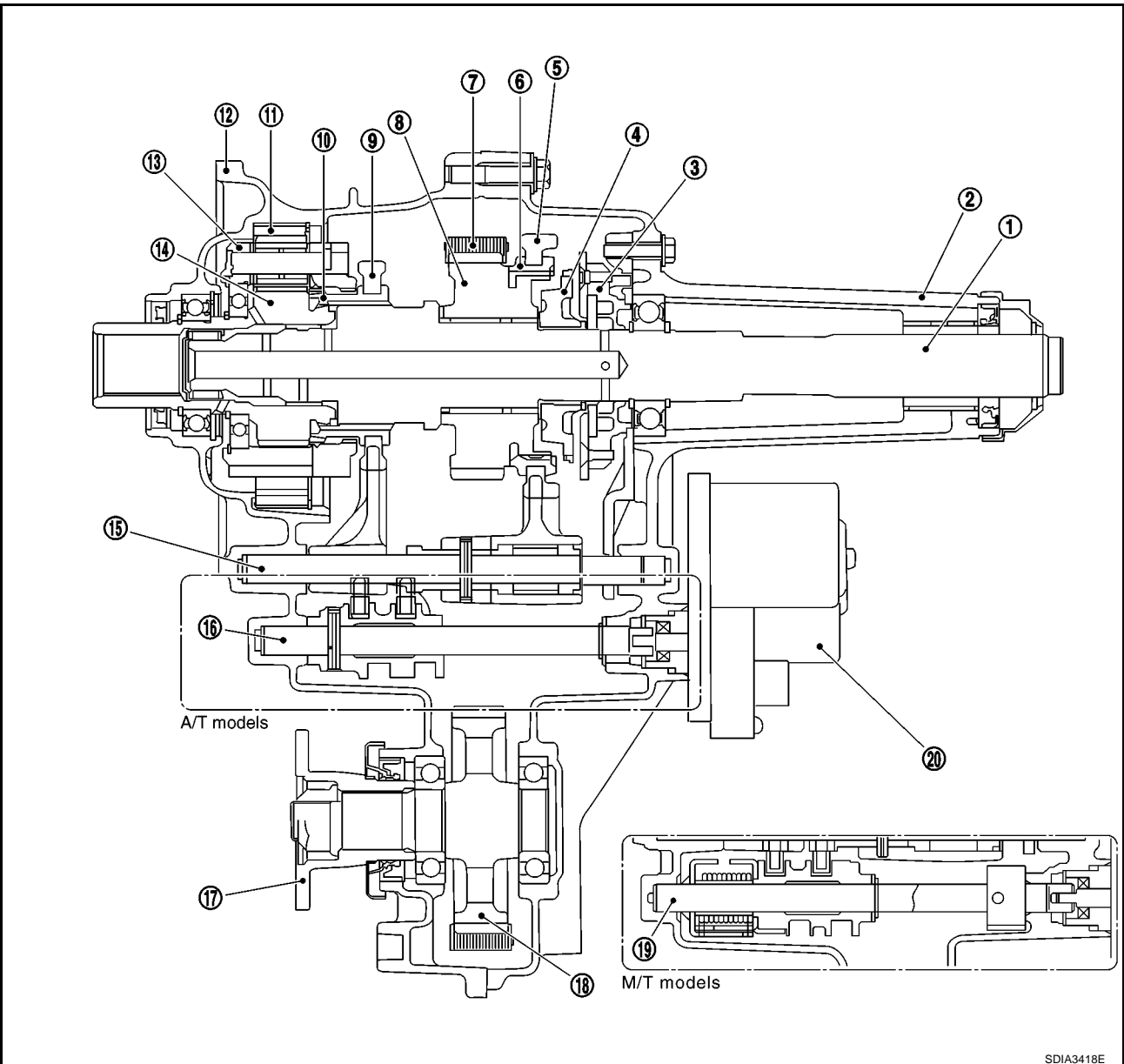
4WD SYSTEM

4WD SYSTEM

PFP:33084

Cross-Section View

EDS0031J



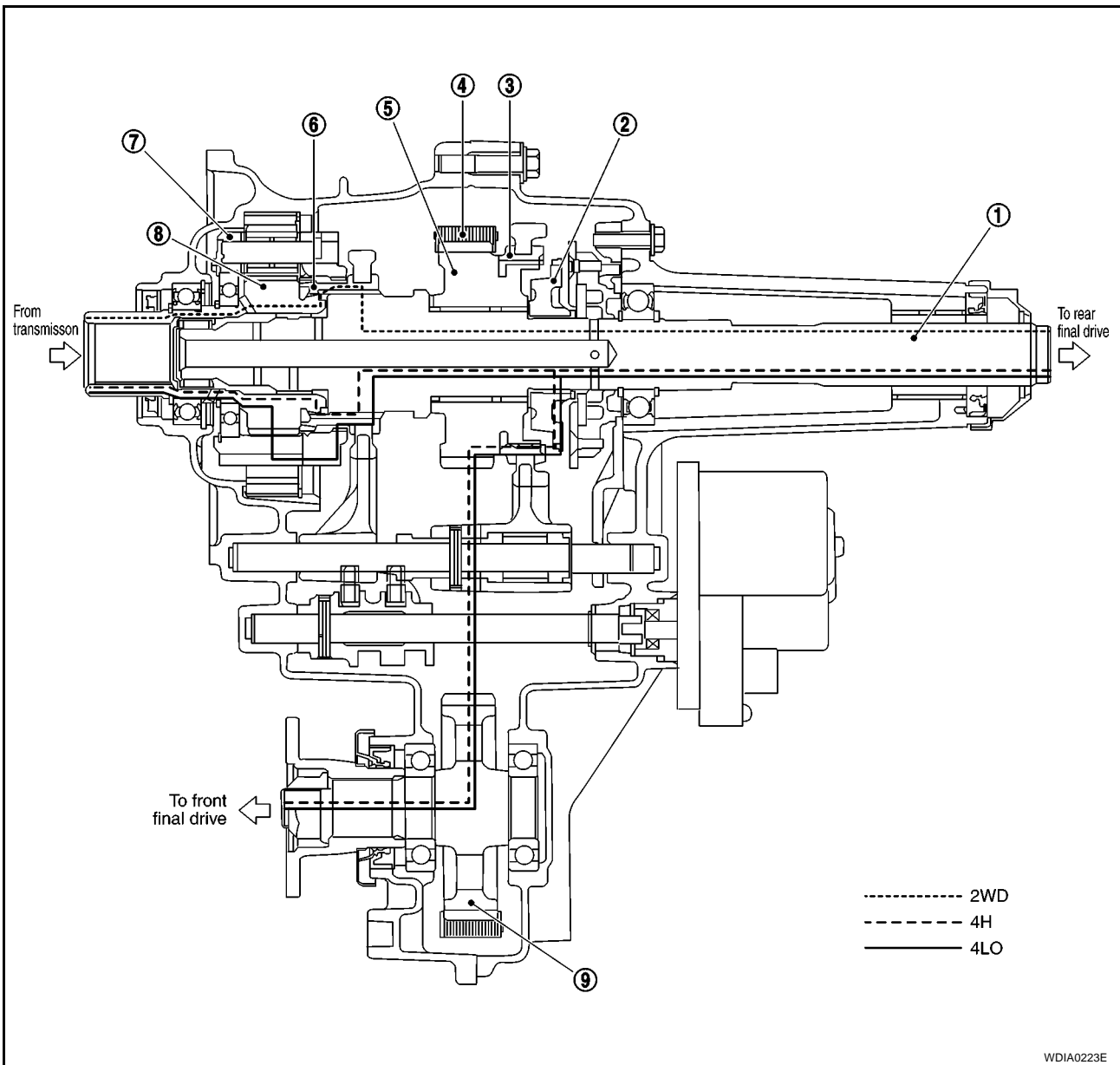
- | | | |
|--|-----------------------------|-----------------------|
| 1. Mainshaft | 2. Rear case | 3. Oil pump assembly |
| 4. Clutch gear | 5. 2-4 shift fork | 6. 2-4 sleeve |
| 7. Drive chain | 8. Sprocket | 9. L-H shift fork |
| 10. L-H sleeve | 11. Internal gear | 12. Front case |
| 13. Planetary carrier assembly | 14. Sun gear assembly | 15. L-H shift rod |
| 16. Control shift rod (A/T models) | 17. Companion flange | 18. Front drive shaft |
| 19. Control shift rod assembly (M/T models) | 20. Transfer control device | |

SDIA3418E

4WD SYSTEM

Power Transfer POWER TRANSFER DIAGRAM

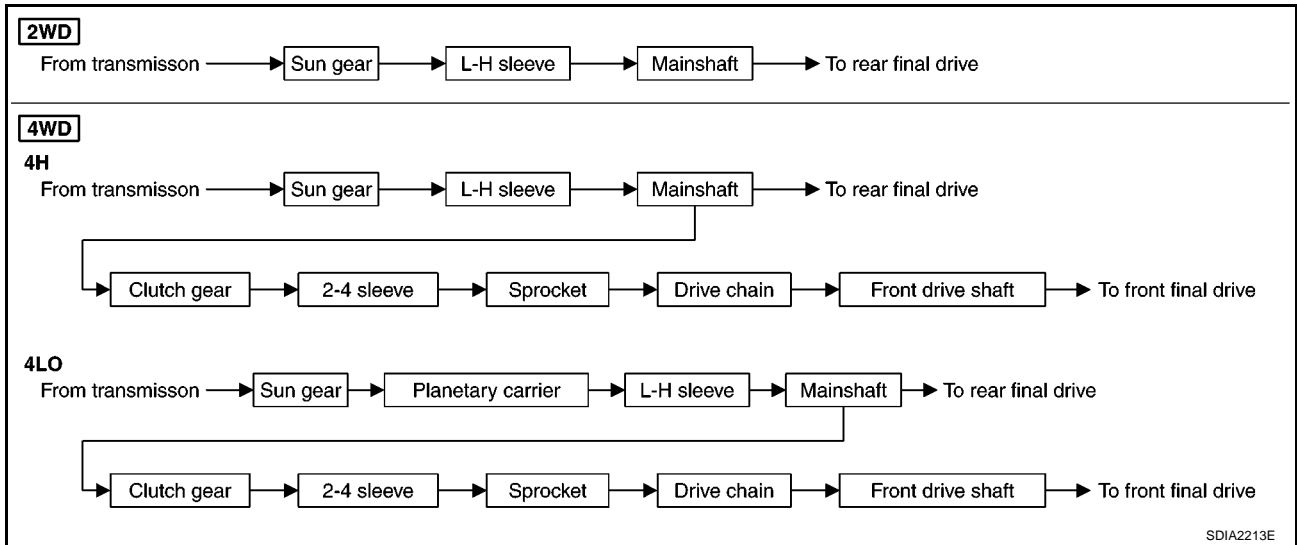
EDS0031K



- | | | |
|-------------------------------|----------------------|----------------------|
| 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 |

4WD SYSTEM

POWER TRANSFER FLOW



System Description TRANSFER CONTROL DEVICE

EDS0031L

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 RELAY





Transfer shift high relay and transfer shift low relay apply power supply to transfer control device (actuator motor).

TRANSFER SHUT OFF RELAY

Transfer shut off relay 1 and transfer shut off relay 2 apply power supply to transfer control unit.

4WD SYSTEM

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 shift in between 2WD⇌4H position must be performed at speeds below 100 km/h (60 MPH). | For driving on dry, paved roads. |
| 4H |  | | | For driving on rough, sandy or snow-covered roads. |
| 4LO |  | Flashing | For M/T models, to shift between 4H⇌4LO, stop the vehicle and shift the transmission shift lever to the Neutral position with the clutch pedal depressed. For A/T models, to shift between 4H⇌4LO, stop the vehicle and shift the transmission selector to the "N" position with the brake pedal depressed. Depressed 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. You must wait for the 4LO indicator lamp to stop flashing and remain lit or turned off before shifting your transmission into gear or releasing the clutch pedal. | The 4LO indicator lamp flashes when shifting between 4LO⇌4H. |
| |  | ON | | For use when maximum power and traction is required at low speeds (for example on steep grades or rocky, sandy, muddy roads.). |

SDIA3290E

4WD Shift Switch

4WD shift switch is able to select from 2WD, 4H or 4LO.

4WD Shift Indicator Lamp

- Displays driving conditions selected by 4WD shift switch with front, rear and center indicators, while engine is running. (When shifting from 4H to 4LO, 4LO indicator lamp also turns 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 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 operate.
- Turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately 1 second after the engine starts if system is normal.

4WD SYSTEM

4WD WARNING LAMP

Turns ON or flashes 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 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 | Flashes at malfunction mode. |
| Large difference in diameter of front/rear tires | Slow flashing: 1 time/2 seconds (Continues to flash until ignition switch is turned 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 relay
- Transfer shift relay
- PNP switch signal

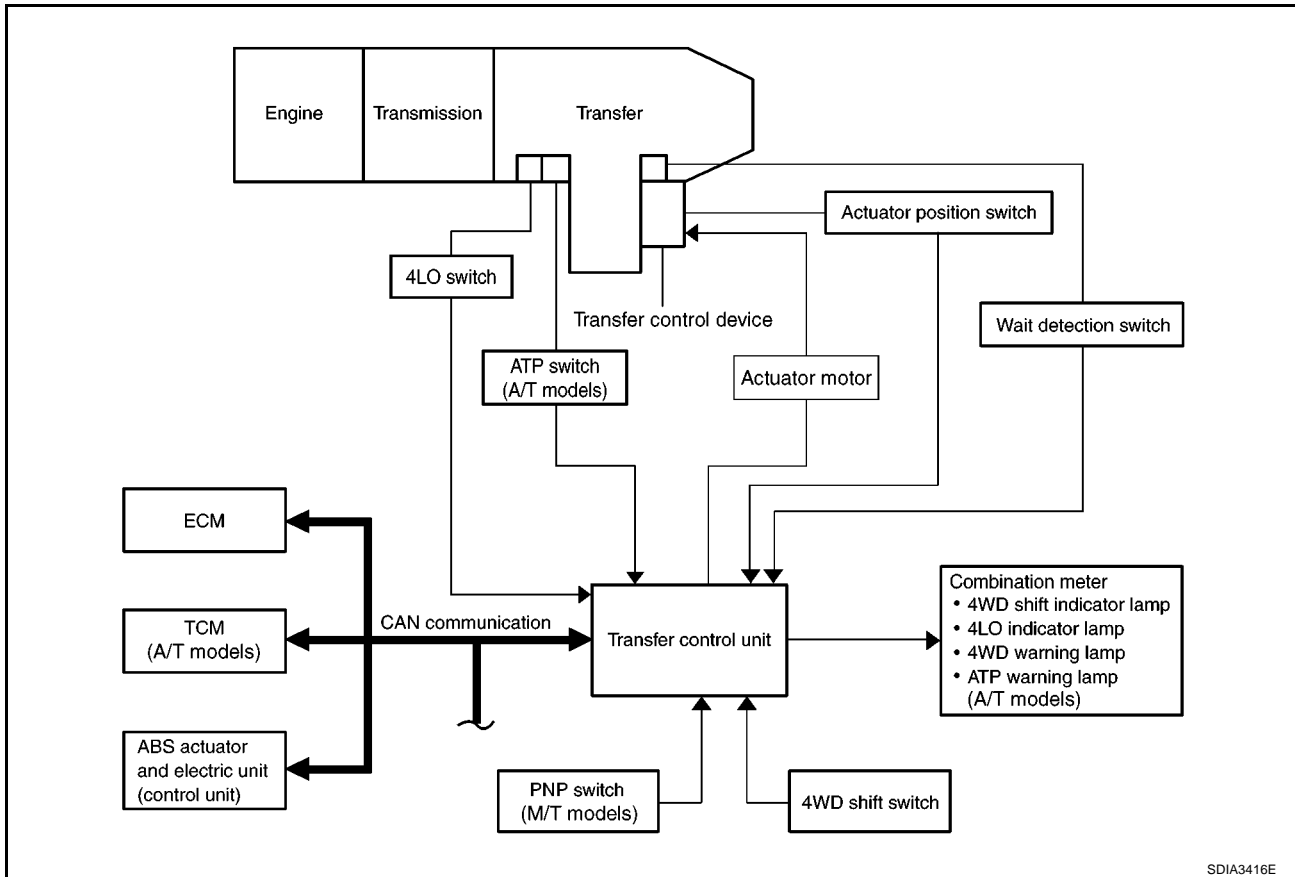
ATP WARNING LAMP (A/T MODELS)

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.

4WD SYSTEM

System Diagram

EDS0031M



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 modes. |
| Actuator motor | Controls shift rod 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 (A/T models) | 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 (A/T models) | 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. |
| PNP switch (M/T models) | Detects that manual transmission is under neutral 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) |

4WD SYSTEM

| Component parts | Function |
|---------------------|---|
| TCM (A/T models) | 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. <ul style="list-style-type: none">● Engine speed signal |

CAN Communication SYSTEM DESCRIPTION

EDS0031N

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

For details, refer to [LAN-23, "CAN COMMUNICATION"](#).

TROUBLE DIAGNOSIS

PFP:00004

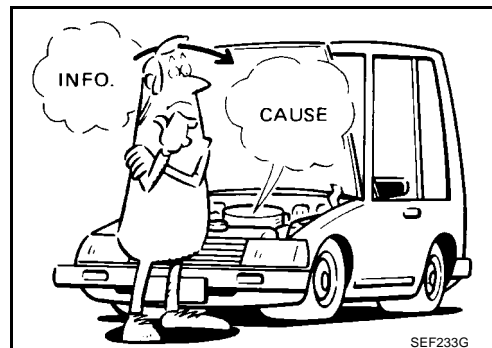
How to Perform Trouble Diagnosis BASIC CONCEPT

EDS00310

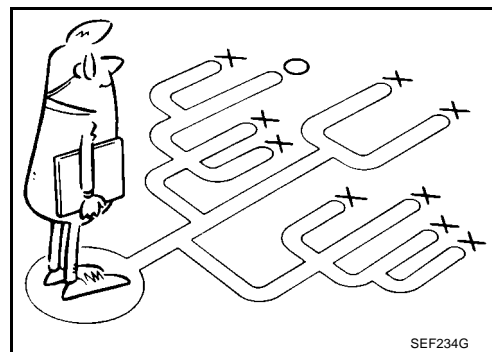
- To perform trouble diagnosis, it is important to have understanding about vehicle systems (control and mechanism).
- It is also important to clarify customer complaints before inspection.
First of all, reproduce symptoms, and understand them fully.
Ask customer about his/her complaints carefully. In 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-51, "ERASE SELF-DIAGNOSIS"](#).
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.



TROUBLE DIAGNOSIS

Location of Electrical Parts A/T MODELS

EDS0031P

A

B

C

TF

E

F

G

H

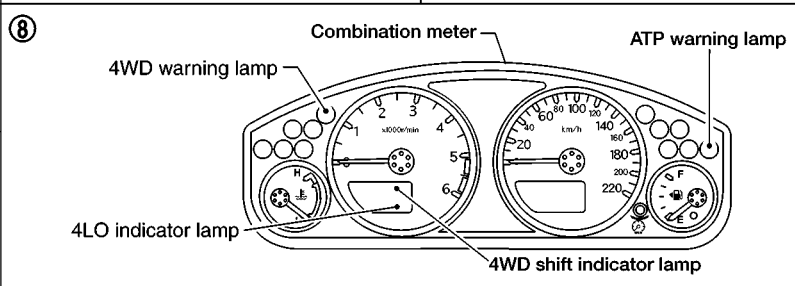
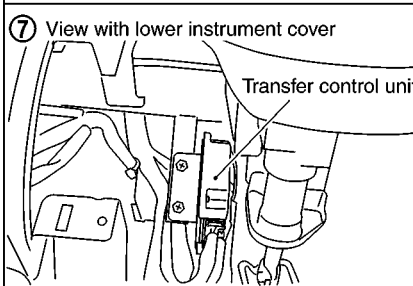
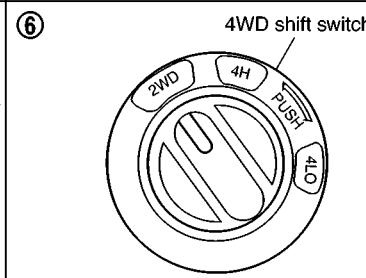
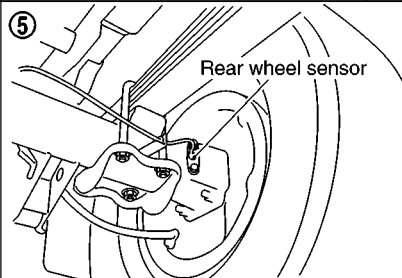
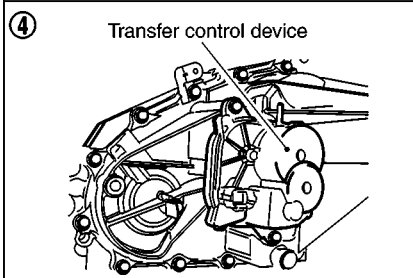
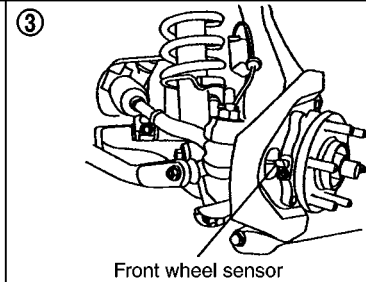
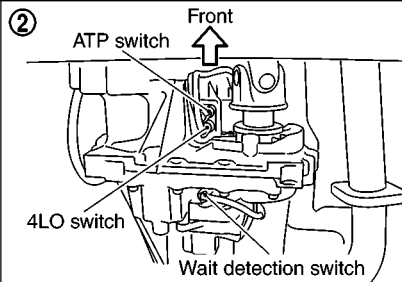
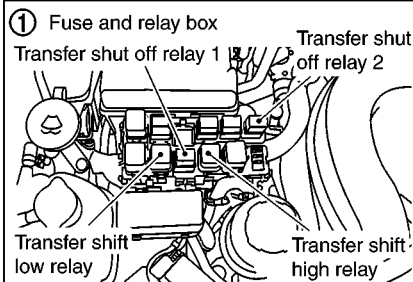
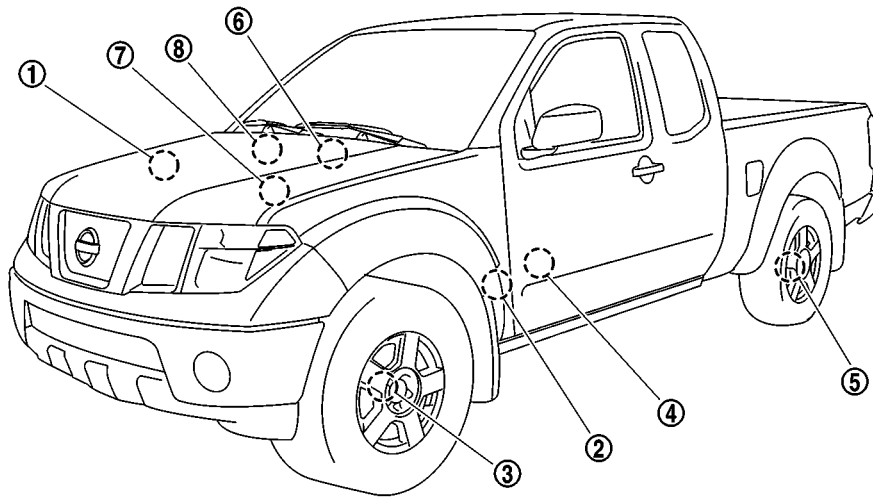
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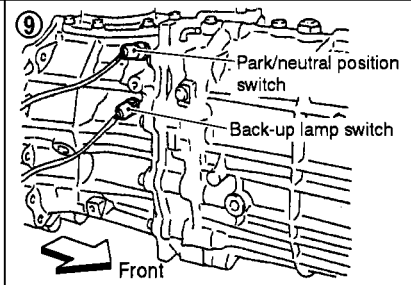
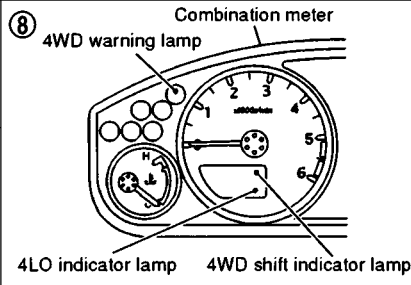
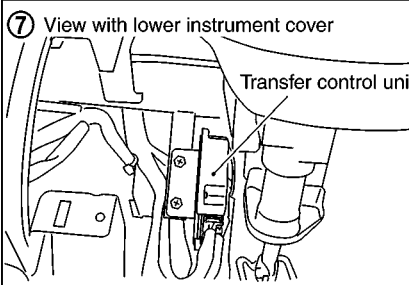
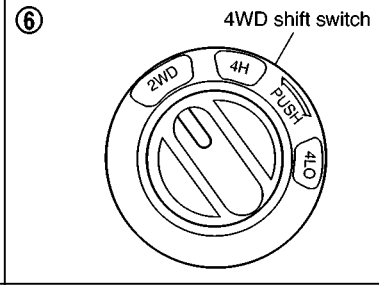
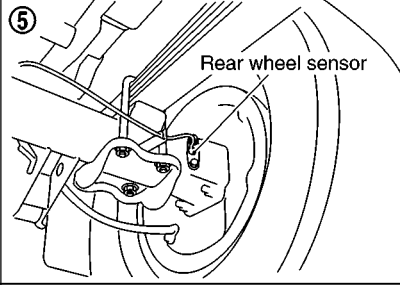
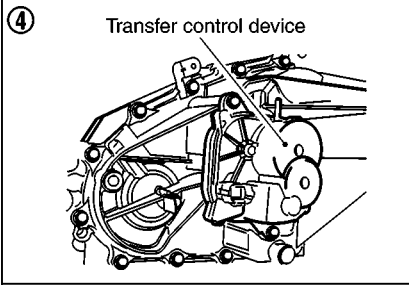
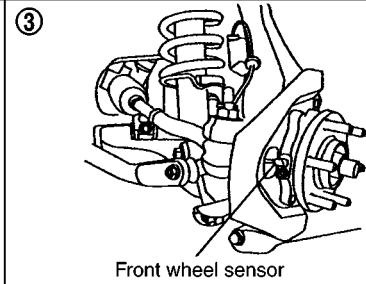
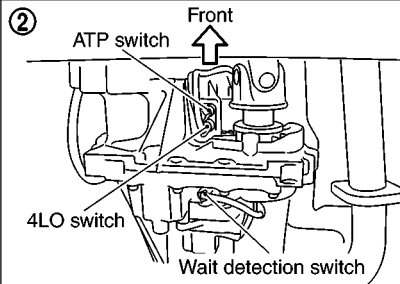
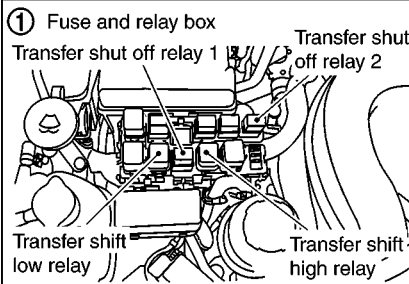
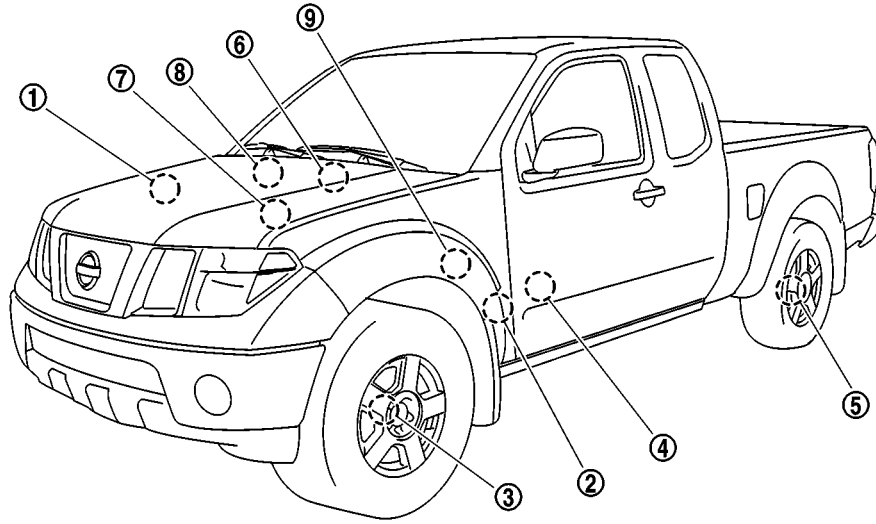
M



SDIA3414E

TROUBLE DIAGNOSIS

M/T MODELS

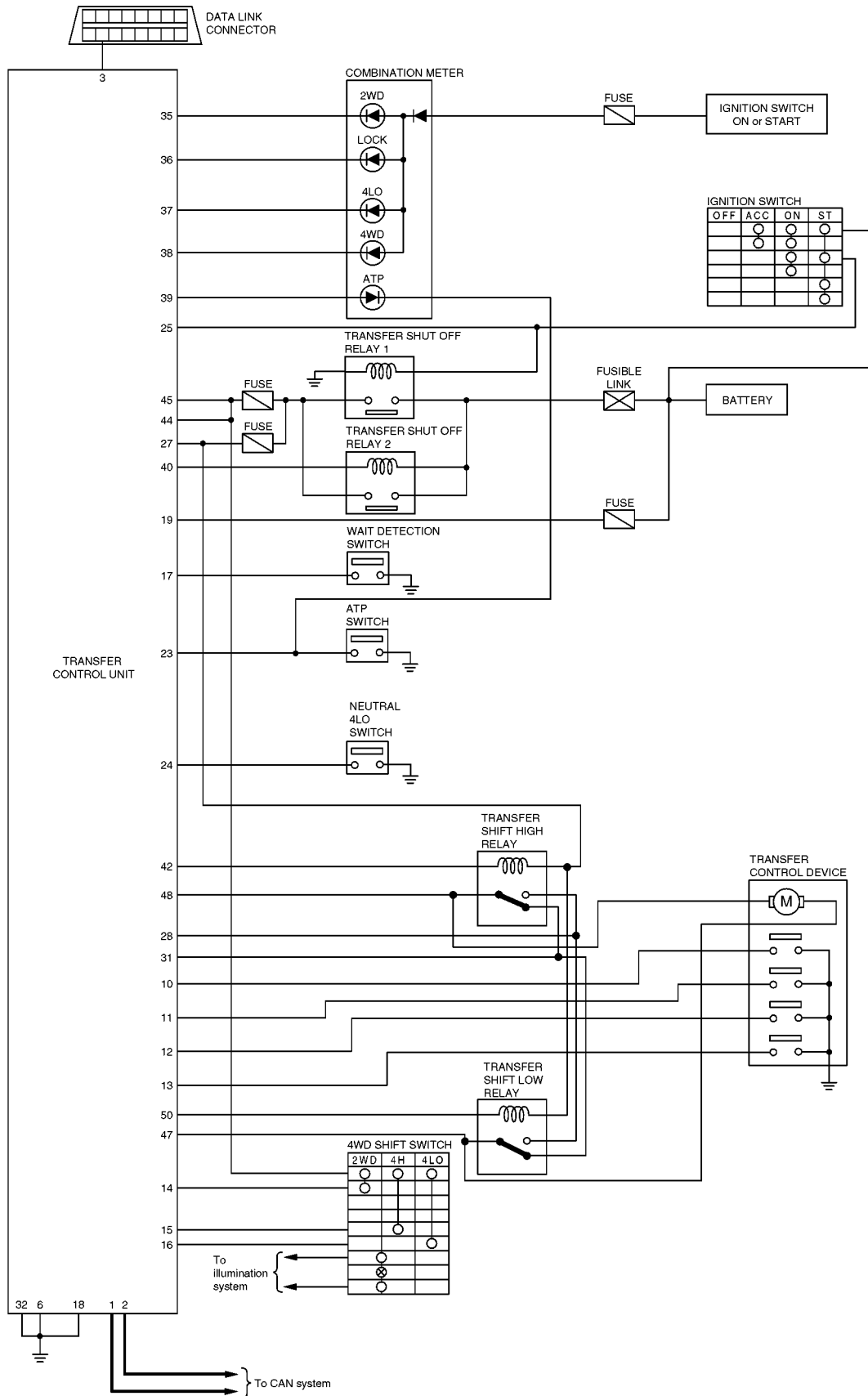


SDIA3415E

TROUBLE DIAGNOSIS

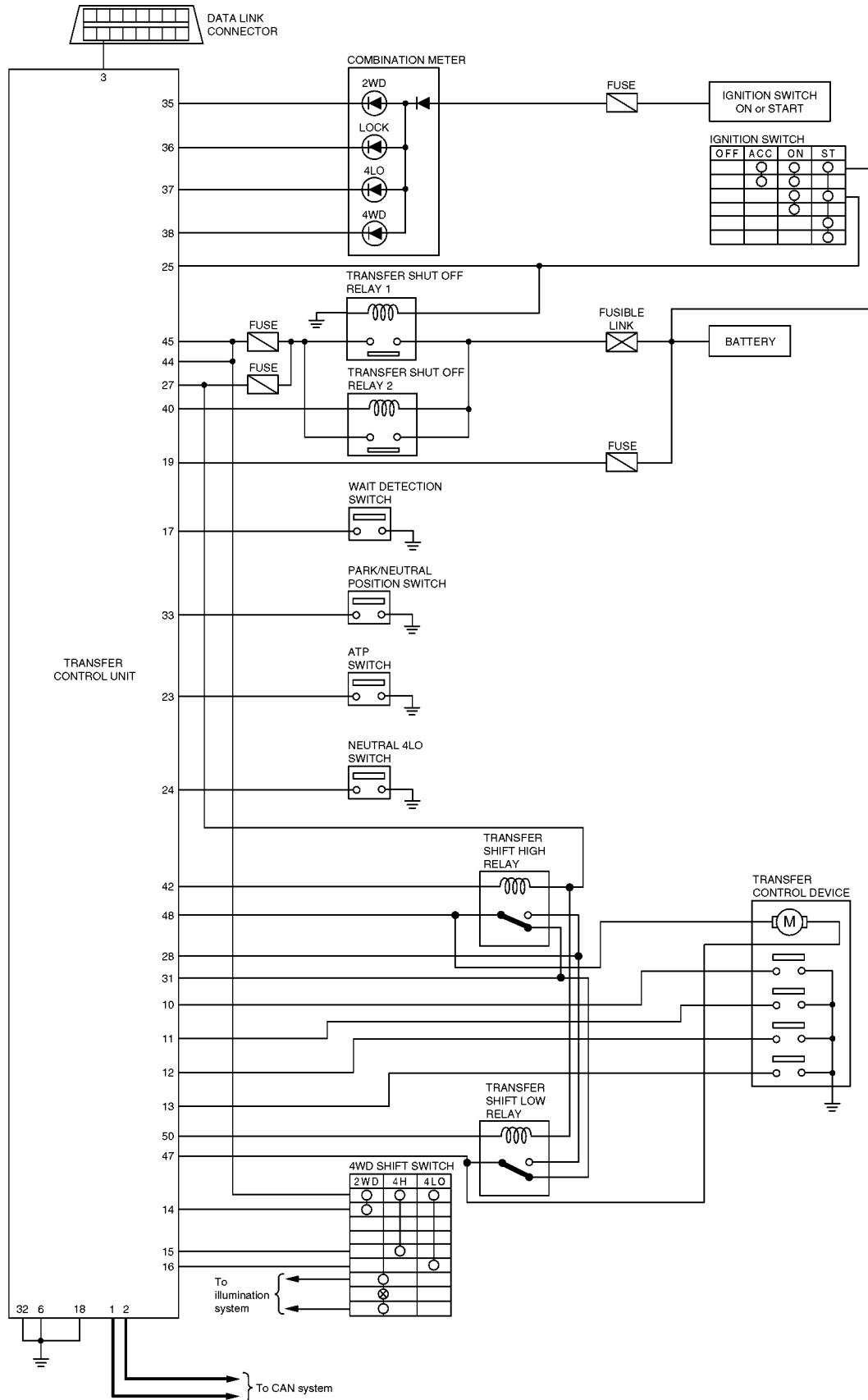
Circuit Diagram A/T MODELS

EDS0031Q



MDWA0069E

M/T MODELS



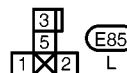
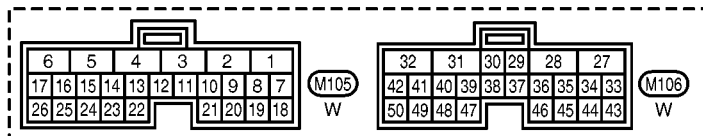
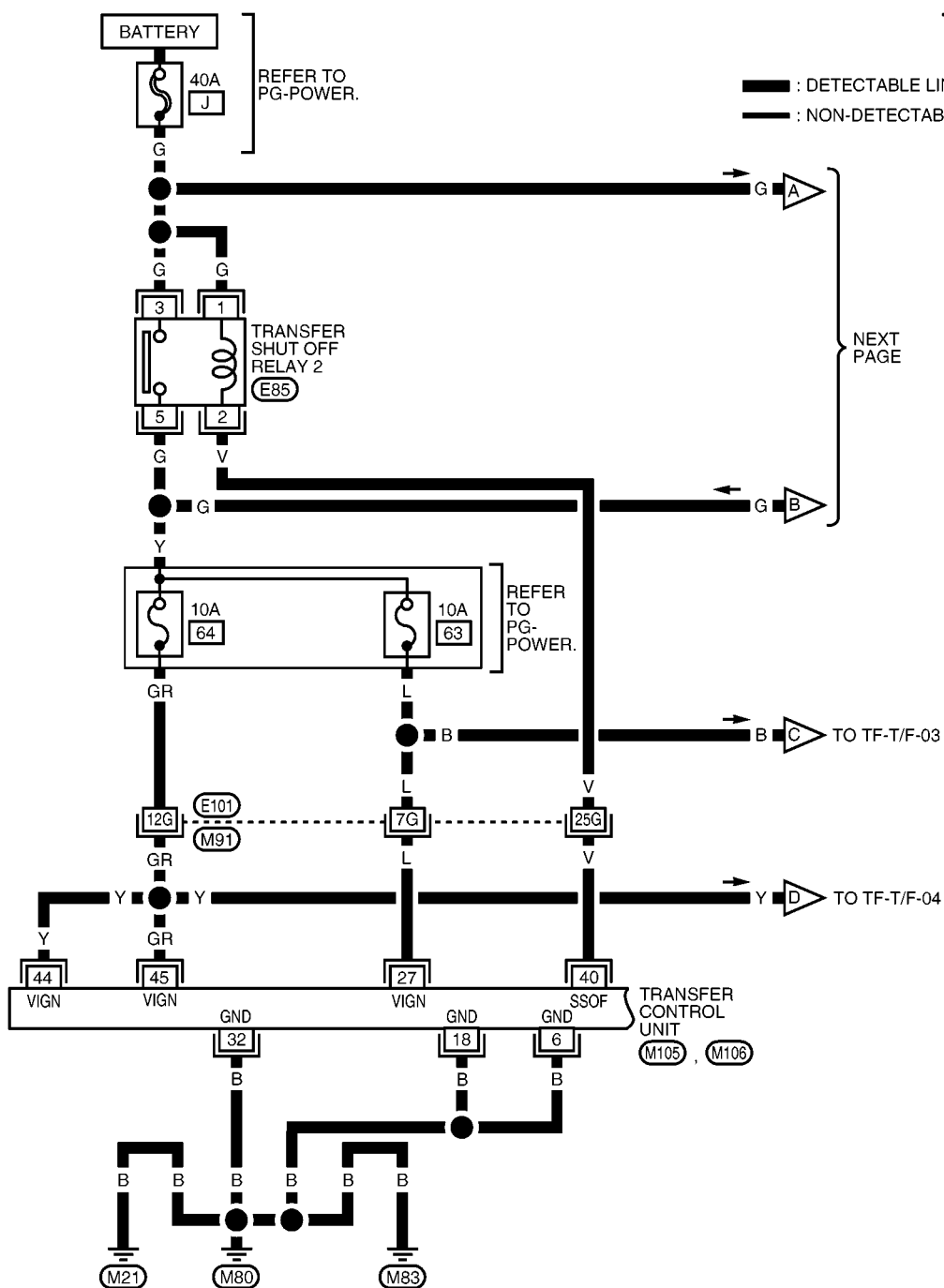
MDWA0070E

TROUBLE DIAGNOSIS

Wiring Diagram — T/F — A/T MODELS

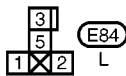
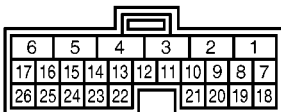
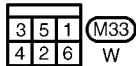
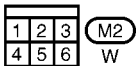
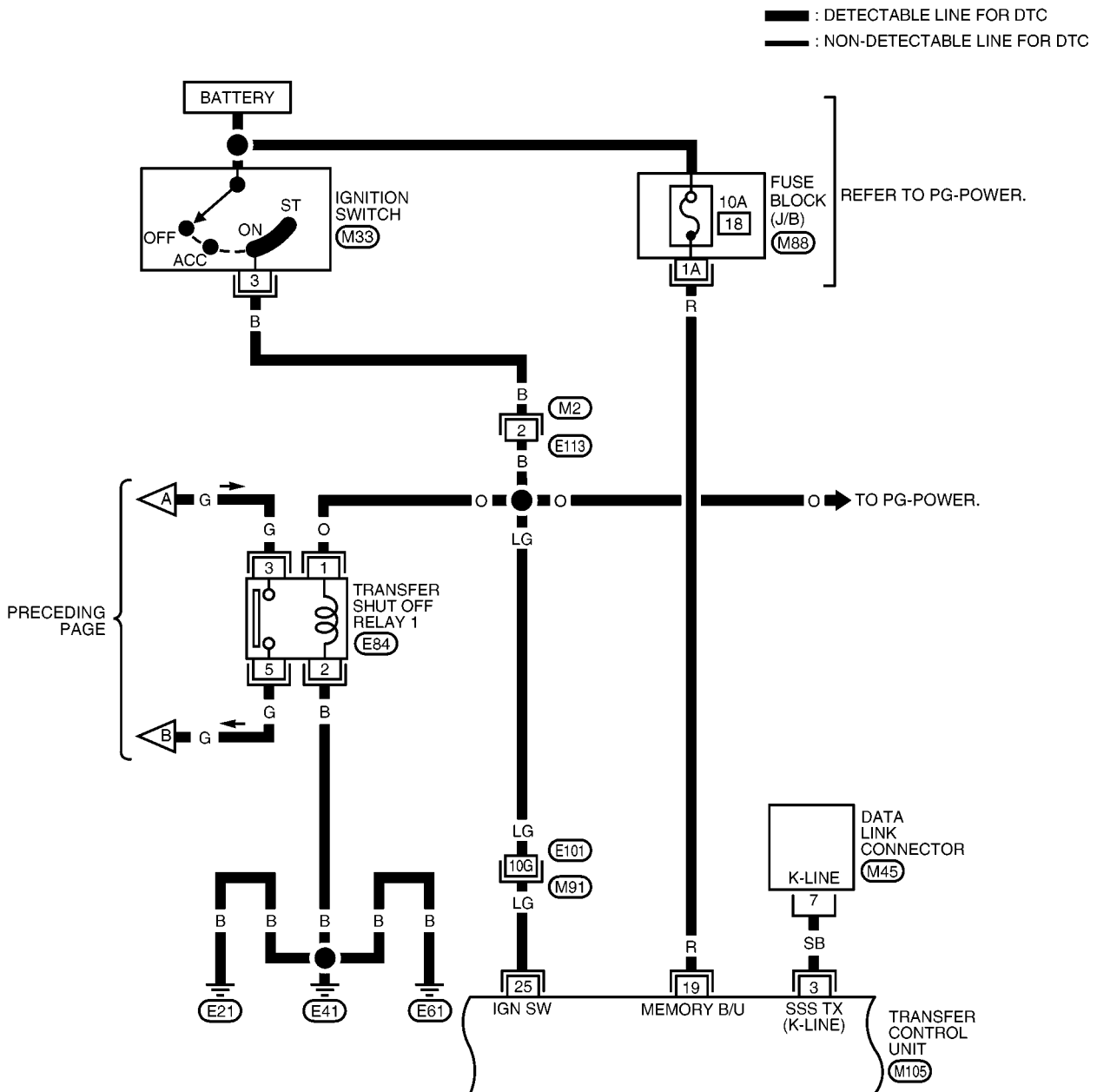
EDS0031R

TF-T/F-01



REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)



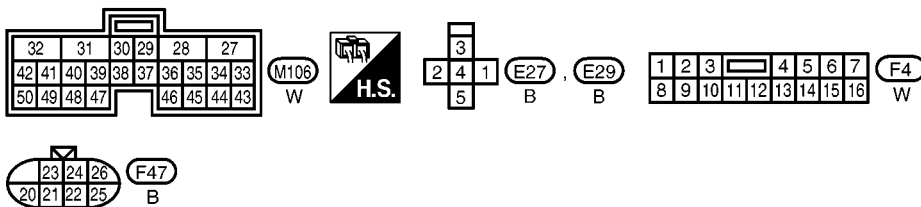
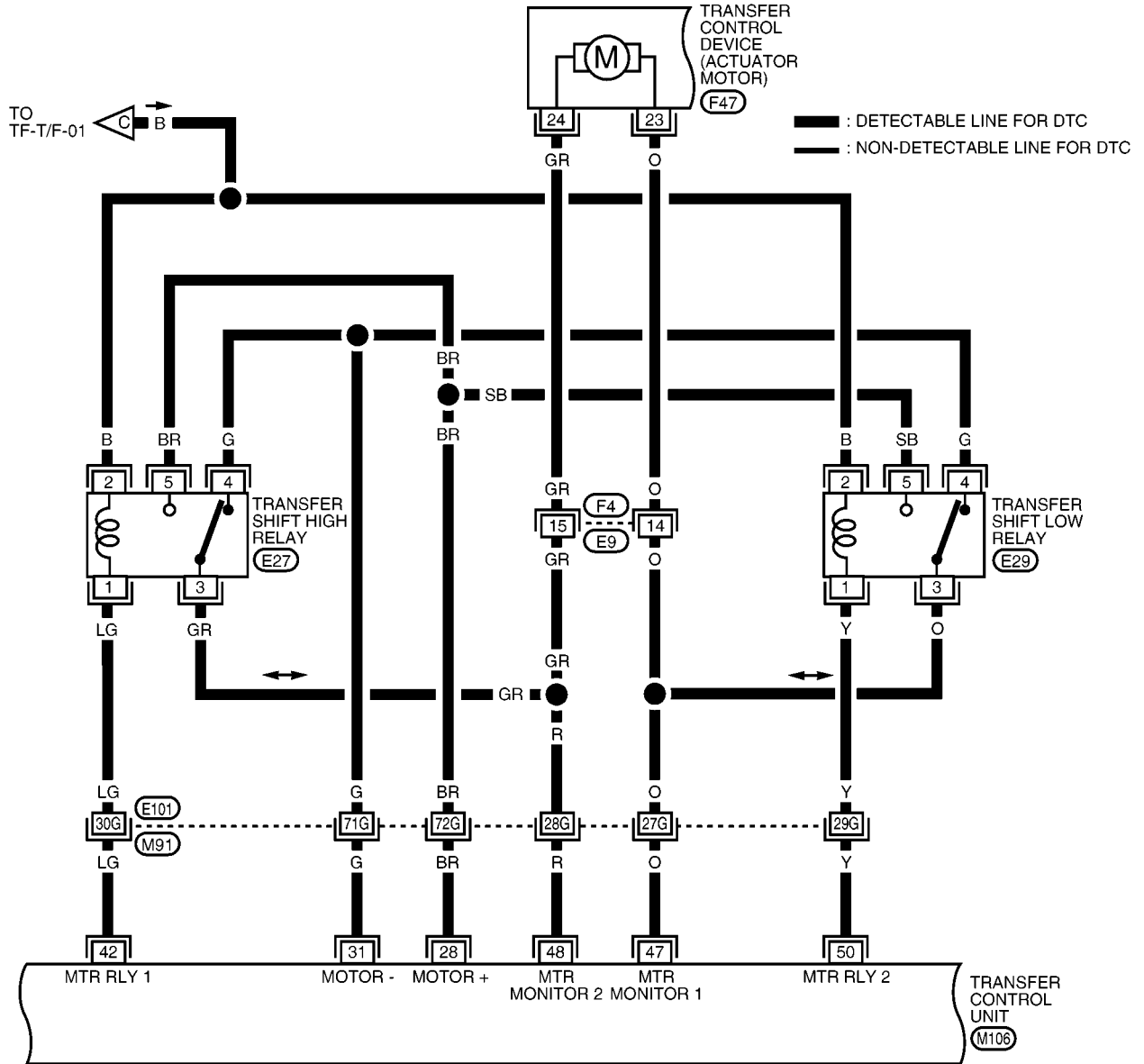
REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

(M88) - FUSE BLOCK - JUNCTION BOX (J/B)

TROUBLE DIAGNOSIS

TF-T/F-03



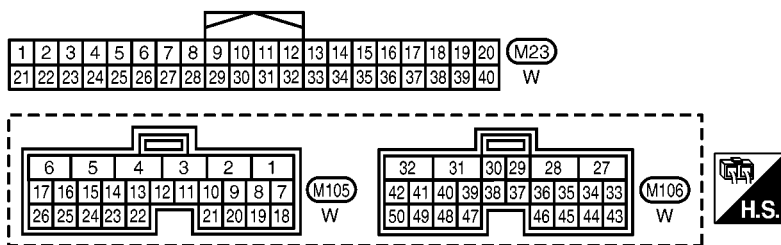
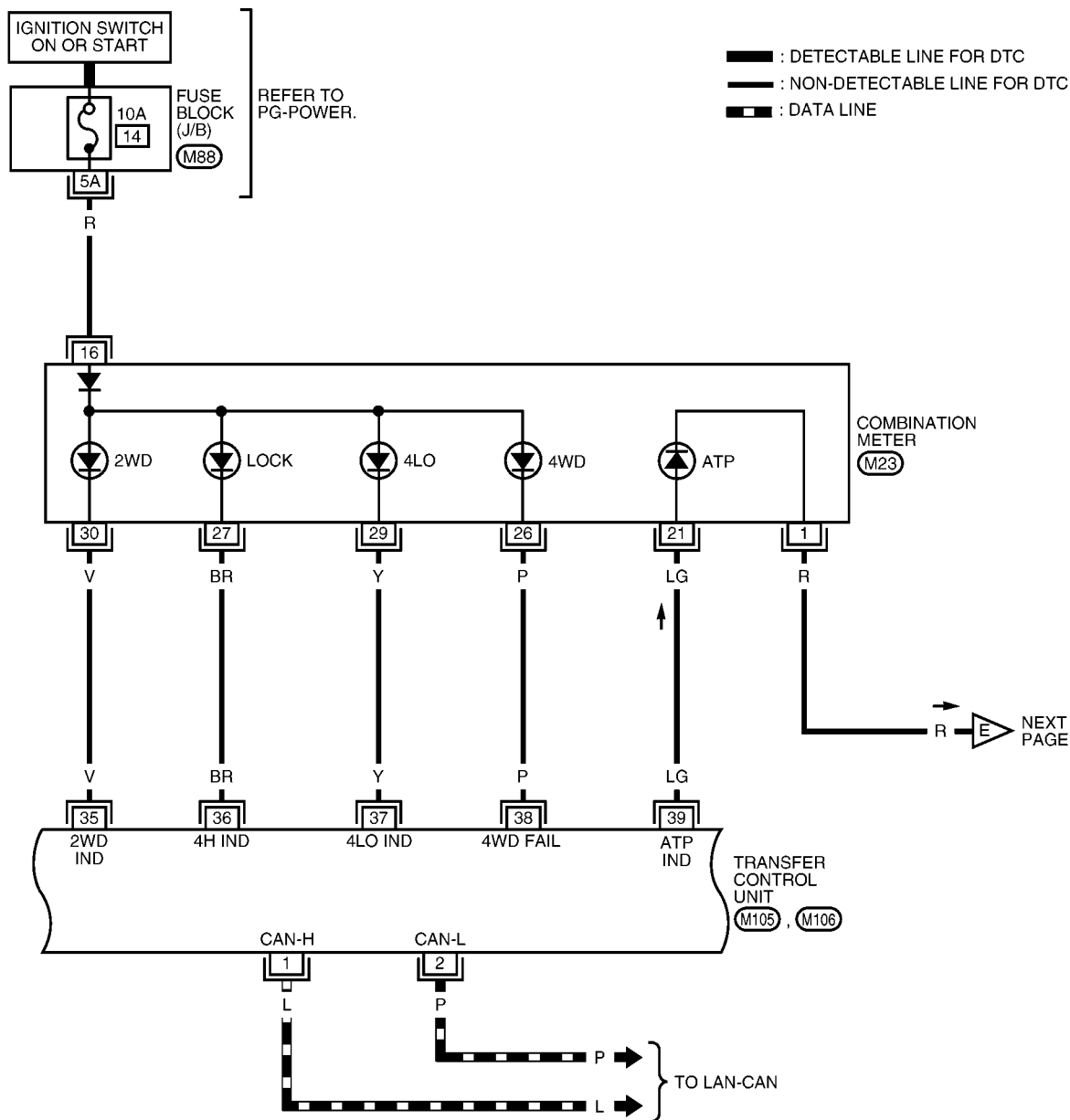
REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

MDWA0049E

TROUBLE DIAGNOSIS

TF-T/F-05



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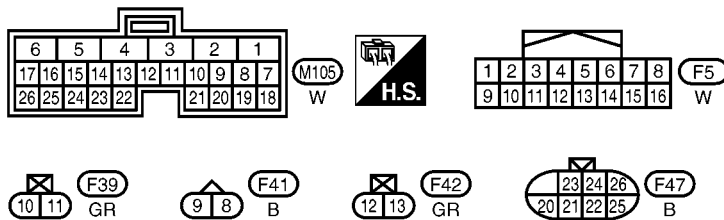
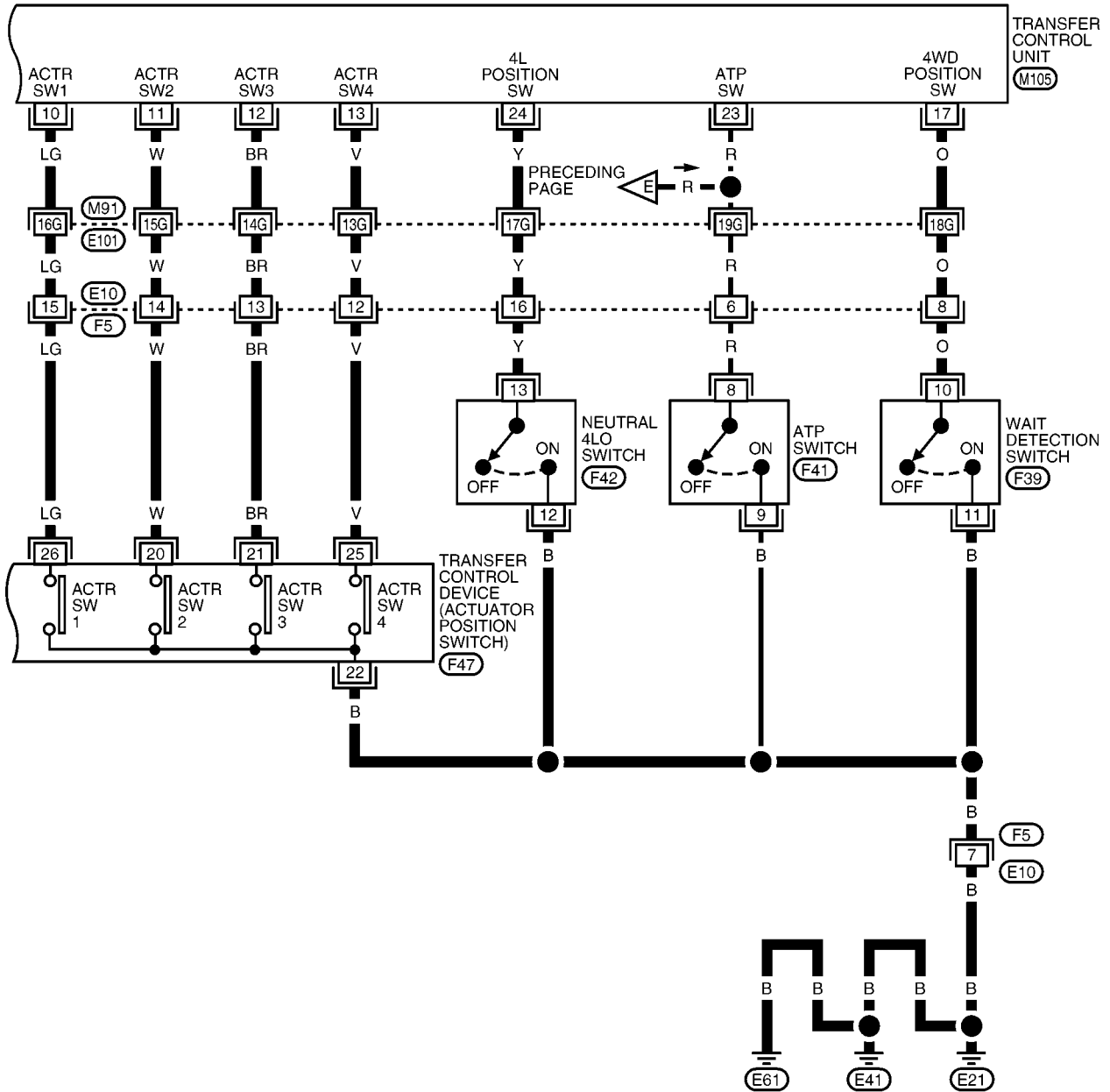
(M88) - FUSE BLOCK -
JUNCTION BOX (J/B)

MDWA0051E

TROUBLE DIAGNOSIS

TF-T/F-06

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



REFER TO THE FOLLOWING.

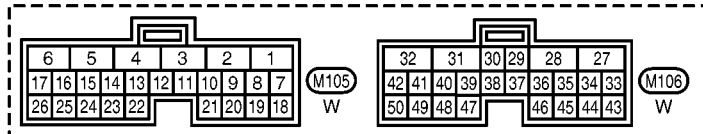
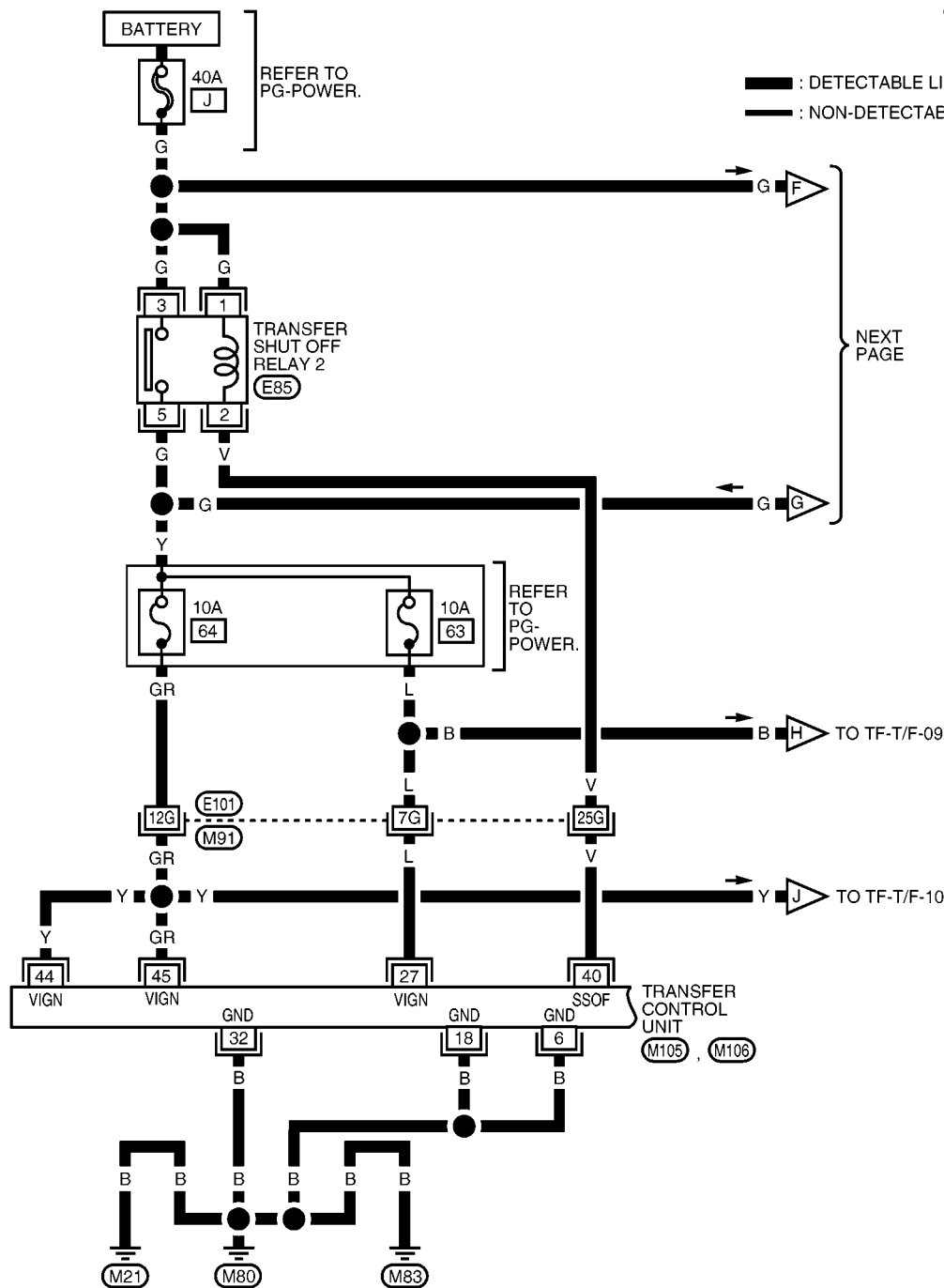
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MDWA0052E

TROUBLE DIAGNOSIS

M/T MODELS

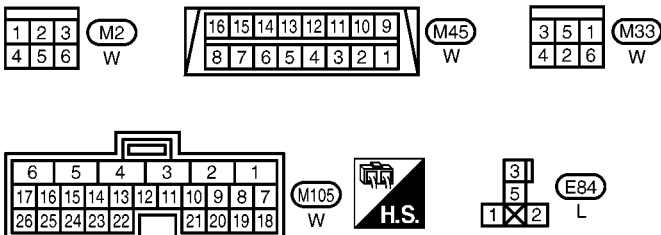
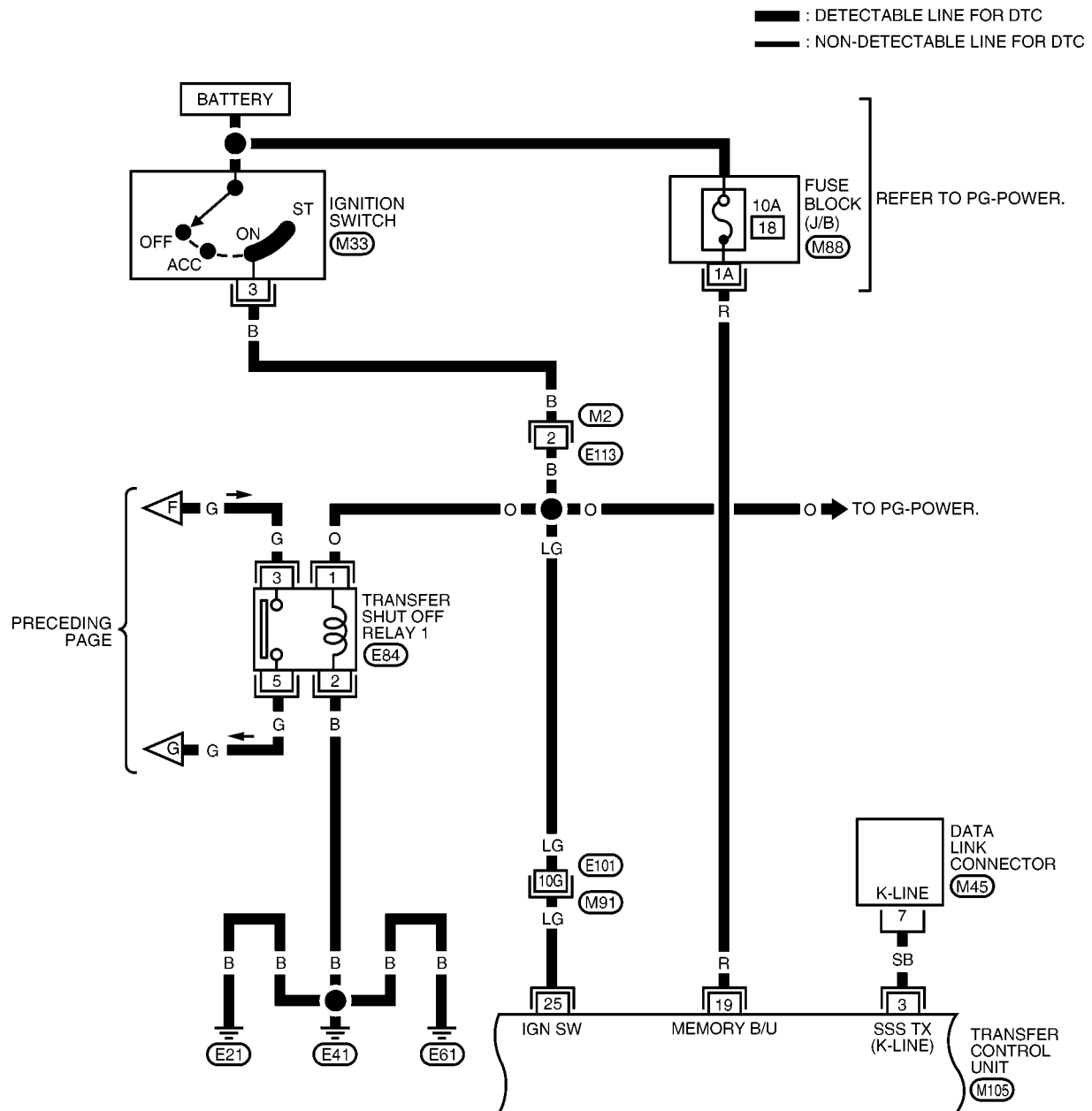
TF-T/F-07



REFER TO THE FOLLOWING.
(M91) - SUPER MULTIPLE JUNCTION (SMJ)

TROUBLE DIAGNOSIS

TF-T/F-08



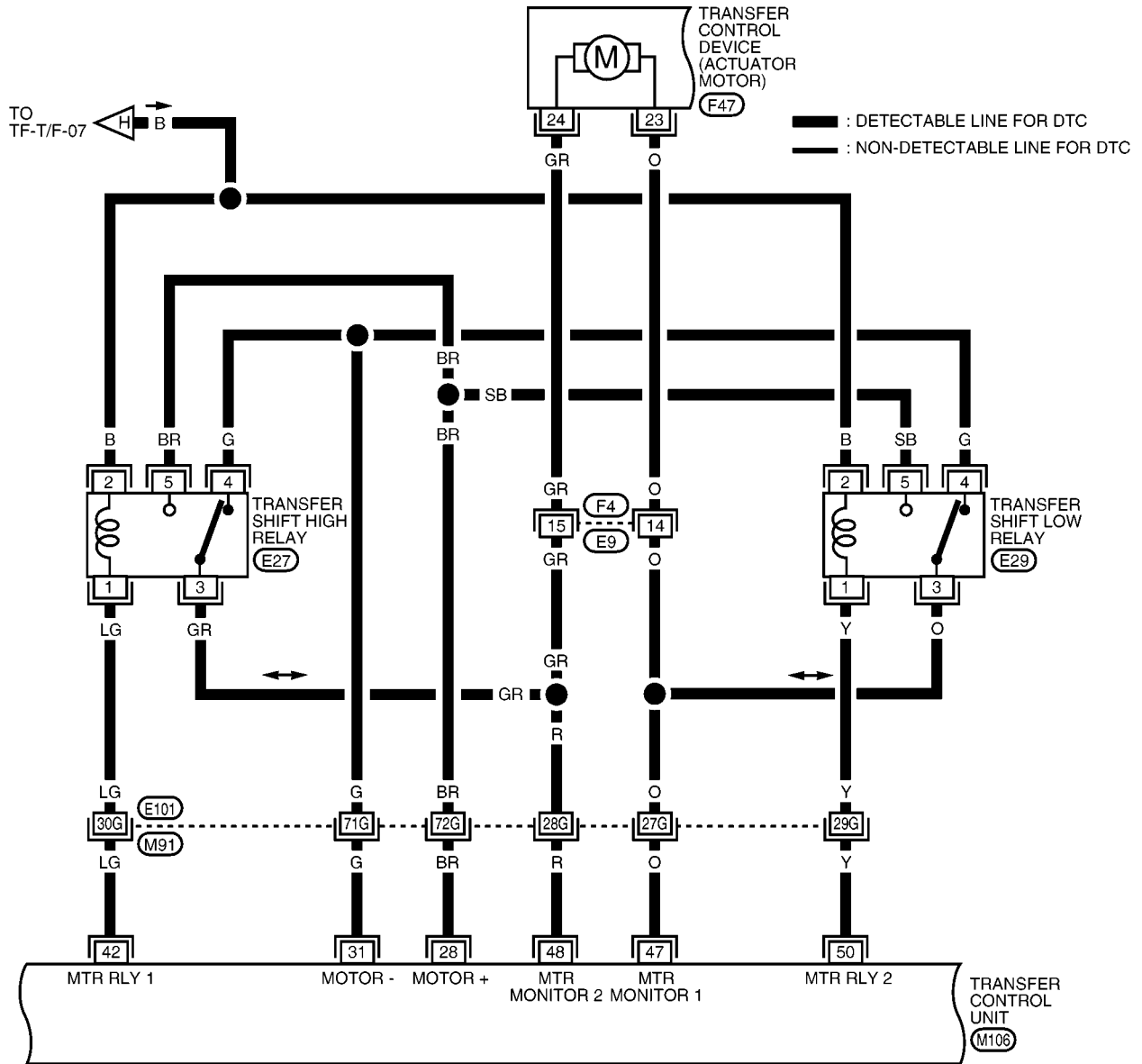
REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

(M88) - FUSE BLOCK - JUNCTION BOX (J/B)

TROUBLE DIAGNOSIS

TF-T/F-09



| | | | | | |
|----|----|----|----|----|----|
| 32 | 31 | 30 | 29 | 28 | 27 |
| 42 | 41 | 40 | 39 | 38 | 37 |
| 50 | 49 | 48 | 47 | 46 | 45 |
| 44 | 43 | | | | |

M106
W



| |
|-------|
| 3 |
| 2 4 1 |
| 5 |

E27
B

E29
B

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | | | | | |

F4
W

| | | |
|----|----|----|
| 23 | 24 | 26 |
| 20 | 21 | 22 |
| 25 | | |

F47
B

REFER TO THE FOLLOWING.

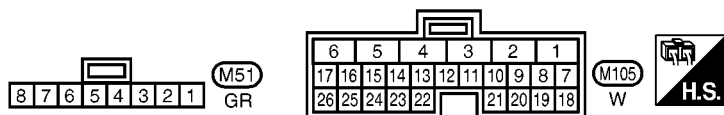
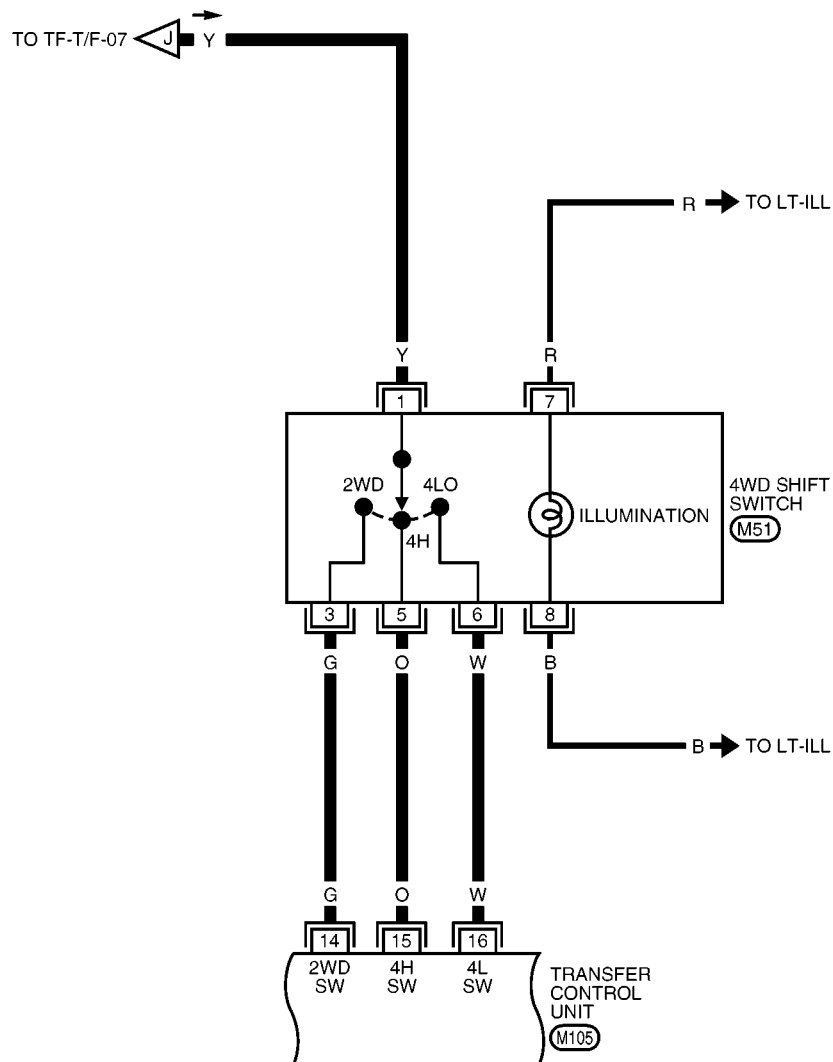
(M91) - SUPER MULTIPLE JUNCTION (SMJ)

MDWA0056E

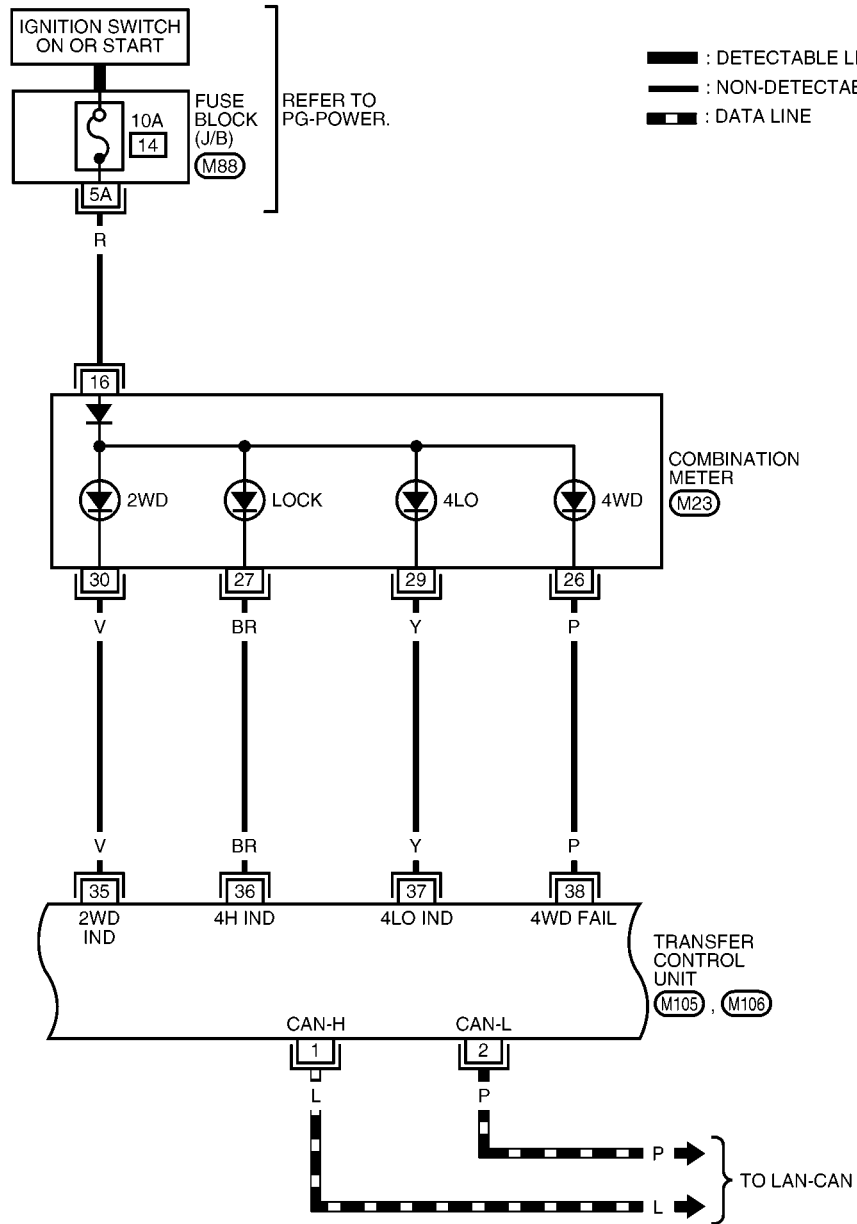
TROUBLE DIAGNOSIS

TF-T/F-10

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



MDWA0057E



A

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TF

E

F

G

H

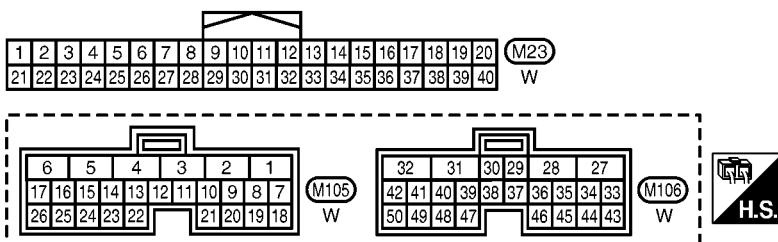
I

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K

L

M



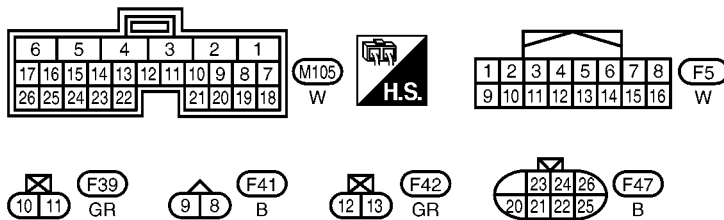
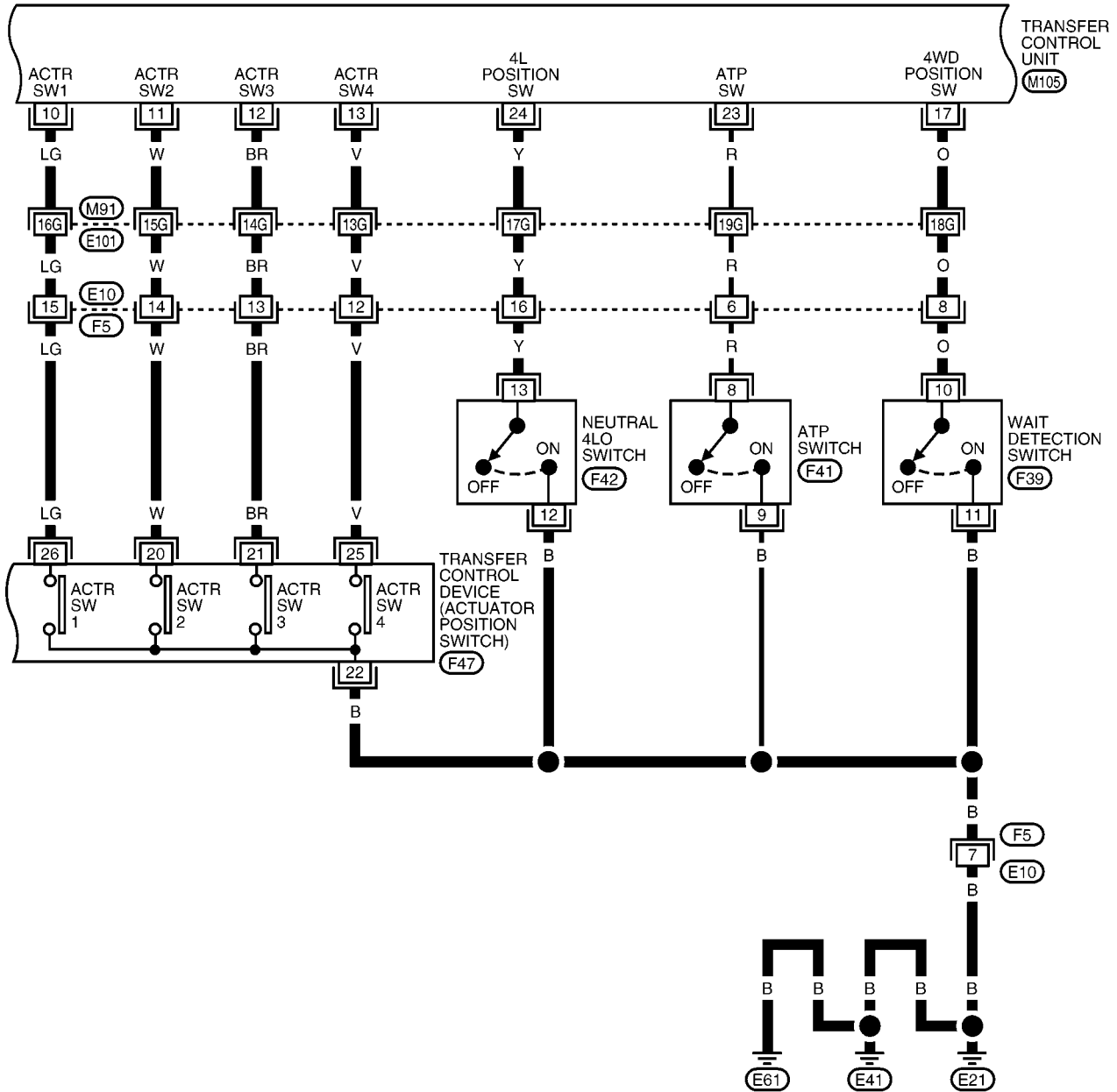
REFER TO THE FOLLOWING.

(M88) - FUSE BLOCK -
JUNCTION BOX (J/B)

TROUBLE DIAGNOSIS

TF-T/F-12

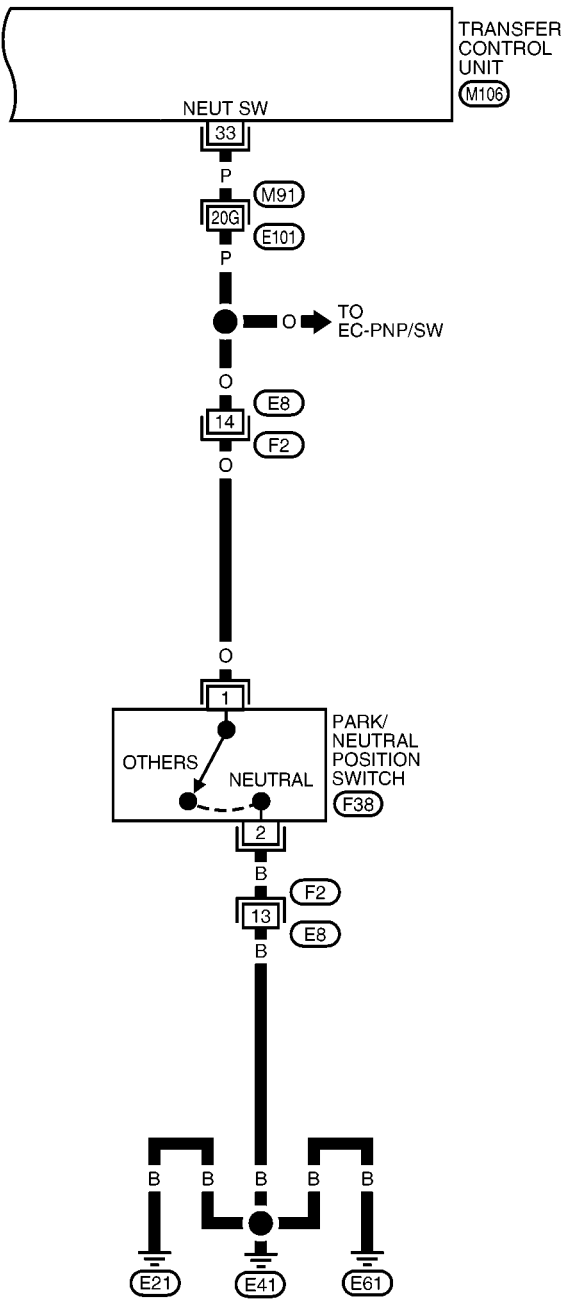
— : DETECTABLE LINE FOR DTC
 — : NON-DETECTABLE LINE FOR DTC



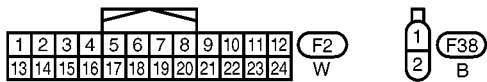
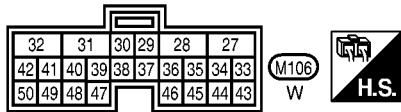
REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

MDWA0059E



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



REFER TO THE FOLLOWING.
M91 - SUPER MULTIPLE JUNCTION (SMJ)

TROUBLE DIAGNOSIS

Trouble Diagnosis Chart for Symptoms

EDS0031U

If 4WD warning lamp turns ON, perform self-diagnosis. Refer to [TF-49, "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-88 |
| | | 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-91 |
| | | Transfer shut off relay | |
| | | Combination meter | |
| 4WD shift indicator lamp or 4LO indicator lamp does not change | Engine running | 4WD shift switch | TF-94 |
| | | Wait detection switch | |
| | | 4LO switch | |
| | | ATP switch | |
| | | Transfer inner parts | |
| ATP warning lamp does not turn ON | Engine running | CAN communication line | TF-96 |
| | | 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-98 |
| | | 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-99 |

Transfer Control Unit Input/Output Signal Reference Values

EDS0031V

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 $\pm 10\%$) |
| 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 $\pm 10\%$) |
| 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

| 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and 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 with 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and 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 tires 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO | ON |
| | | | Except the above | OFF |

TROUBLE DIAGNOSIS

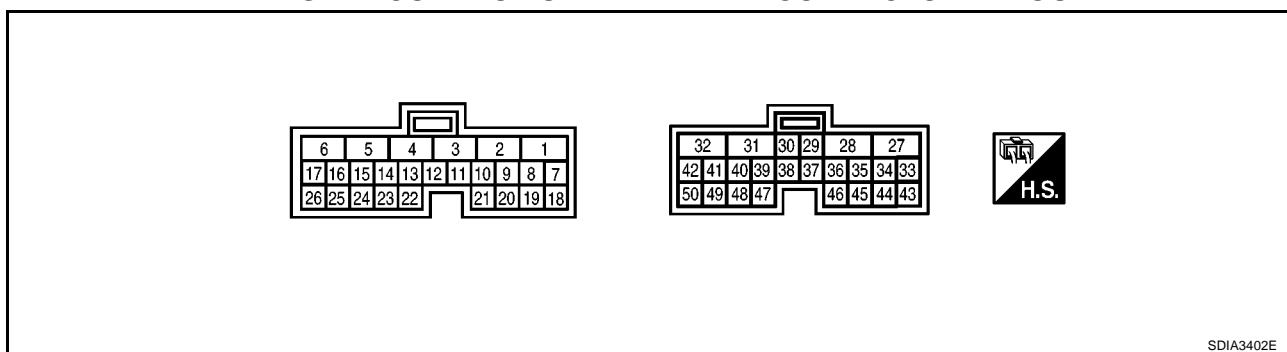
| Monitored item [Unit] | Content | Condition | | Display value |
|----------------------------|---|--|--|---------------|
| SHIFT AC MON1 [ON/ OFF] | Check signal for transfer control unit signal output | <ul style="list-style-type: none">● Vehicle stopped● Engine running● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD | ON |
| | | | Except the above | OFF |
| 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and 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● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 2WD and 4LO | ON |
| SHIFT POS SW2 [ON/ OFF] | Condition of actuator position switch 2 | | 4WD shift switch: 4H | OFF |
| | | | 4WD shift switch: 4LO | ON |
| SHIFT POS SW3 [ON/ OFF] | Condition of actuator position switch 3 | | 4WD shift switch: 2WD and 4H | OFF |
| | | | 4WD shift switch: 2WD and 4H | ON |
| SHIFT POS SW4 [ON/ OFF] | Condition of actuator position switch 4 | | 4WD shift switch: 4LO | OFF |
| | | | 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 |

TROUBLE DIAGNOSIS

| Monitored item [Unit] | Content | Condition | Display value |
|-----------------------|--|---|---------------|
| 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 |
| 10 | LG | Actuator position switch 1 | <ul style="list-style-type: none"> Vehicle stopped Engine running | 4WD shift switch: 2WD and 4LO 0V 4WD shift switch: 4H Battery voltage |
| 11 | W | Actuator position switch 2 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 4LO 0V 4WD shift switch: 2WD and 4H Battery voltage |
| 12 | BR | Actuator position switch 3 | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 2WD and 4H 0V 4WD shift switch: 4LO Battery voltage |
| 13 | V | Actuator position switch 4 | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4H and 4LO 0V 4WD shift switch: 2WD Battery voltage |
| 14 | G | 4WD shift switch (2WD) | Ignition switch: ON | 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 |

TROUBLE DIAGNOSIS

| Terminal | Wire color | Item | Condition | | Data (Approx.) |
|----------|------------|-------------------------------|--|---|-----------------|
| 17 | O | Wait detection switch | <ul style="list-style-type: none">● Vehicle stopped● Engine running● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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 | | |
| 23 | R | ATP switch | <ul style="list-style-type: none">● Vehicle stopped● Engine running● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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 | <ul style="list-style-type: none">● Vehicle stopped● Engine running● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4LO | 0V |
| | | | | Except the above | Battery voltage |
| 25 | LG | 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 |

TROUBLE DIAGNOSIS

| Terminal | Wire color | Item | Condition | | Data (Approx.) |
|------------------------|------------|---|---|---|----------------------|
| 28 | BR | Actuator motor (+) | <ul style="list-style-type: none"> Vehicle stopped Engine running For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | When 4WD shift switch is operated (while actuator motor is operating) | Battery voltage → 0V |
| | | | | When 4WD shift switch is not operated | 0V |
| 31 | G | Actuator motor (-) | | Always | 0V |
| 32 | B | Ground | | Always | 0V |
| 33 (For M/T models) | P | Park/Neutral position switch | Ignition switch: ON | M/T shift lever neutral position | 0V |
| | | | | Except the above | Battery voltage |
| 35 | V | 4WD shift indicator lamp (Rear indicator) | Engine running | Rear indicator of 4WD shift indicator lamp: ON | 0V |
| | | | | Rear indicator of 4WD shift indicator lamp: OFF | Battery voltage |
| 36 | BR | 4WD shift indicator lamp (Front and center indicator) | | Front and center indicator of 4WD shift indicator lamp: ON | 0V |
| | | | | Front and center indicator of 4WD shift indicator lamp: OFF | Battery voltage |
| 37 | Y | 4LO indicator lamp | | 4LO indicator lamp: ON | 0V |
| | | | | 4LO indicator lamp: OFF | Battery voltage |
| 38 | P | 4WD warning lamp | | 4WD warning lamp: ON | 0V |
| | | | | 4WD warning lamp: OFF | Battery voltage |
| 39 (For A/T models) | 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 |
| | | | | Except the above | 0V |
| 40 | V | Transfer shut off relay | Ignition switch: ON | | 0V |
| | | | 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 For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO | 0V |
| | | | | Except the above | Battery voltage |

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TROUBLE DIAGNOSIS

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|-----------------------------------|---|----------------------|
| 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 |
| 47 | O | Transfer shift high relay monitor | <ul style="list-style-type: none"> Vehicle stopped Engine running For A/T models, A/T selector lever "N" position with brake pedal depressed. 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO (while actuator motor is operating) | Battery voltage → 0V |
| | | | Except the above | 0V |
| 48 | R | Transfer shift low relay monitor | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. 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

EDS0031W

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

| Diagnostic test mode | Function | Reference page |
|--------------------------------|---|------------------------|
| Self-diagnostic results | <ul style="list-style-type: none"> Self-diagnostic results can be read and erased quickly. | TF-45 |
| Data monitor | <ul style="list-style-type: none"> Input/Output data in the transfer control unit can be read. | TF-47 |
| CAN diagnostic support monitor | <ul style="list-style-type: none"> The results of transmit/receive diagnosis of CAN communication can be read. | LAN-15 |

CONSULT-II SETTING PROCEDURE

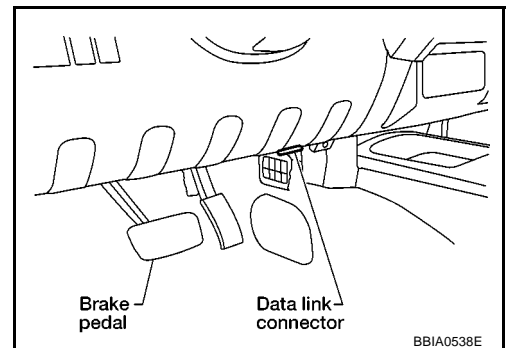
CAUTION:

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

NOTE:

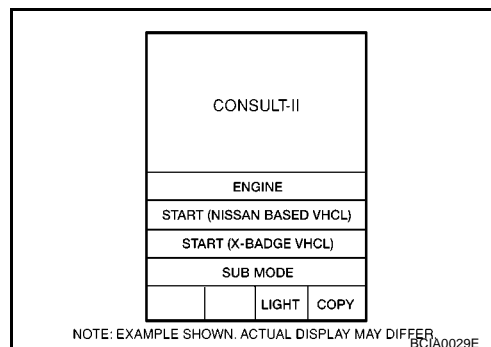
For details, refer to the separate "CONSULT-II Operations Manual".

1. Turn ignition switch "OFF".
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector on vehicle.
3. Turn ignition switch "ON".

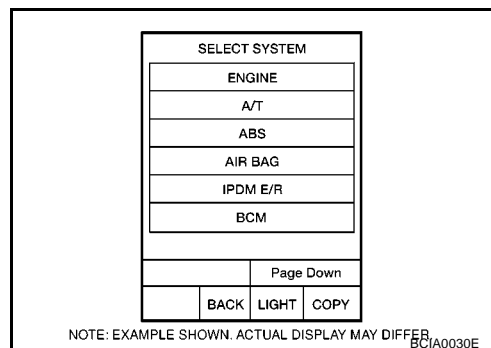


TROUBLE DIAGNOSIS

4. Touch "START (NISSAN BASED VHCL)".



5. Touch "ALL MODE AWD/4WD".
If "ALL MODE AWD/4WD" is not indicated, go to [GI-50, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).
6. Perform each diagnostic test mode according to each service procedure.



SELF-DIAG RESULT MODE

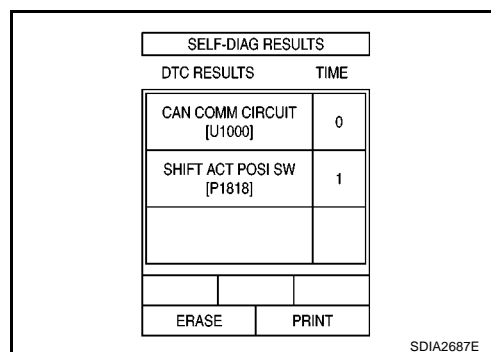
Operation Procedure

- Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-44, "CONSULT-II SETTING PROCEDURE"](#).
- 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").



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-52, "Power Supply Circuit For Transfer Control Unit" |
| CONTROL UNIT 1 [P1802] | Malfunction is detected in the memory (RAM) system of transfer control unit. | TF-54, "Transfer Control Unit" |
| CONTROL UNIT 2 [P1803] | Malfunction is detected in the memory (ROM) system of transfer control unit. | TF-54, "Transfer Control Unit" |
| CONTROL UNIT 3 [P1804] | Malfunction is detected in the memory (EEPROM) system of transfer control unit. | TF-54, "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-55, "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-55, "Vehicle Speed Sensor (ABS)" |

TROUBLE DIAGNOSIS

| Items (CONSULT-II screen terms) | Diagnostic item is detected when... | Check item |
|--|--|---|
| CONTROL UNIT 4 [P1809] | AD converter system of transfer control unit is malfunctioning. | TF-54, "Transfer Control Unit" |
| 4L POSI SW TF [P1810] | Improper signal from 4LO switch is input due to open or short circuit. | TF-56, "4LO Switch" |
| BATTERY VOLTAGE [P1811] | Power supply voltage for transfer control unit is abnormally low while driving. | TF-52, "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-59, "4WD Shift Switch" |
| 4WD DETECT SWITCH [P1814] | Improper signal from wait detection switch is input due to open or short circuit. | TF-63, "Wait Detection Switch" |
| PNP SW/CIRC [P1816] | When A/T PNP switch signal is malfunction or communication error between the vehicles. | TF-66, "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-67, "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-75, "Actuator Position Switch" |
| 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-52, "Power Supply Circuit For Transfer Control Unit", TF-78, "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-81, "Engine Speed Signal (ECM)" |
| CAN COMM CIRCUIT [U1000] | Malfunction has been detected from CAN communication line. | TF-82, "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.

TROUBLE DIAGNOSIS

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [TF-44, "CONSULT-II SETTING 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 in 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] | × | — | × | For ABS models, 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] | × | — | × | For ABS models, 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. |
| 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 |

TROUBLE DIAGNOSIS

| Monitored item (Unit) | Monitor item selection | | | Remarks |
|------------------------|------------------------|--------------|---------------------|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| 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**⑧ SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)**

Refer to [TF-45, "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 begin trouble diagnosis, start the self-diagnosis function. The 4WD warning lamp in the combination meter will flicker according to the self-diagnostic results. As for the details of the 4WD warning lamp flickering patterns, refer to [TF-49, "Diagnostic Procedure \(A/T models\)"](#) , [TF-49, "Diagnostic Procedure \(M/T models\)"](#) .

Diagnostic Procedure (A/T models)

1. Warm 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-91, "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-50, "Judgement Self-diagnosis"](#) .

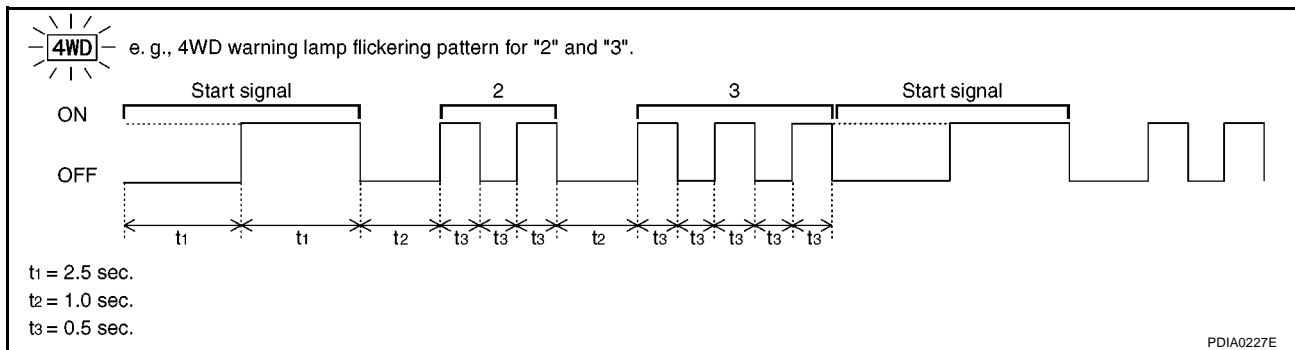
Diagnostic Procedure (M/T models)

1. Warm up engine.
2. Turn ignition switch "ON" and "OFF" at least twice, and then turn ignition switch "OFF".
3. Move M/T shift lever to neutral 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-91, "4WD Warning Lamp Does Not Turn ON"](#) .
7. Move M/T shift lever to any position other than neutral.
8. Turn 4WD shift switch to "2WD", "4H" and "2WD" in order.
9. Move M/T shift lever to neutral position.
10. Turn 4WD shift switch to "4H", "2WD" and "4H" in order.
11. Move M/T shift lever to any position other than neutral.
12. Turn 4WD shift switch to "2WD" position.
13. Move M/T shift lever to neutral position.
14. Read the flickering of 4WD warning lamp.
Refer to [TF-50, "Judgement Self-diagnosis"](#) .

TROUBLE DIAGNOSIS

Judgement Self-diagnosis

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



| Flickering pattern | 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-55. "Output Shaft Revolution Signal (TCM)" |
| 3 | Vehicle speed signal [from ABS actuator and electric unit (control unit)] | <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-55. "Vehicle Speed Sensor (ABS)" |
| 4 | CAN communication | Malfunction has been detected from CAN communication. | TF-82. "CAN Communication Line" |
| 5 | AD converter | AD converter system of transfer control unit is malfunctioning. | TF-54. "Transfer Control Unit" |
| 6 | 4LO switch | Improper signal from 4LO switch is input due to open or short circuit. | TF-56. "4LO Switch" |
| 7 | 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-81. "Engine Speed Signal (ECM)" |
| 8 | Power supply | Power supply voltage for transfer control unit is abnormally low while driving. | TF-52. "Power Supply Circuit For Transfer Control Unit" |
| 9 | 4WD shift switch | More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch. | TF-59. "4WD Shift Switch" |
| 10 | Wait detection switch | Improper signal from wait detection switch is input due to open or short circuit. | TF-63. "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 and transfer shift low relay. | TF-67. "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-75. "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 relay 2. Malfunction occurs in transfer control device drive circuit. | TF-52. "Power Supply Circuit For Transfer Control Unit", TF-78. "Transfer Control Device" |
| 14 | PNP switch signal | When A/T PNP switch signal is malfunction or communication error between the vehicles. | TF-66. "PNP Switch Signal (TCM)" |

TROUBLE DIAGNOSIS

| Flickering pattern | Items | Diagnostic item is detected when... | Check item |
|--------------------------------------|--------------------------------|---|---|
| Repeats flickering every 0.25 sec. | Data erase display | <ul style="list-style-type: none"> ● Power supply malfunction of memory back-up. ● Battery is disconnected for a long time. ● Battery performance is poor. | TF-52, "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-66, "PNP Switch Signal (TCM)" or TF-59, "4WD Shift Switch" |

NOTE:

If flickering pattern 12 or 13 is displayed, first erase self-diagnostic results. Flickering pattern 12 or 13 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

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

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

EDS0031Y

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 | |
| 25 | LG | Ignition switch monitor | Ignition switch: ON | Battery voltage |
| | | | Ignition switch: 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 |
| 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.

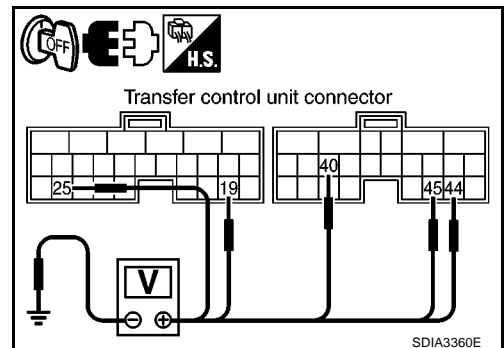
TROUBLE DIAGNOSIS FOR SYSTEM

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

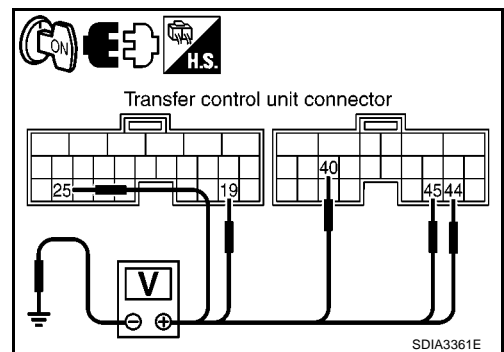
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | 0V |
| M106 | 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.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | |
| M106 | 40 - Ground | 0V |
| | 44 - Ground | Battery voltage |
| | 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. 18, located in the fuse block (J/B) and No. 63 and 64 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 M105 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E85 terminals 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E84 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M105 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E84 terminal 1.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E84 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E84 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-54, "COMPONENT INSPECTION"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

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 M105 terminals 6 and 18, and M106 terminal 32 and ground.

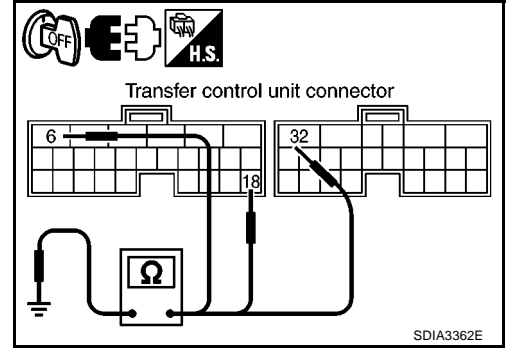
Continuity should exist.

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-38, "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 vehicle.

OK or NG

OK >> **INSPECTION END**

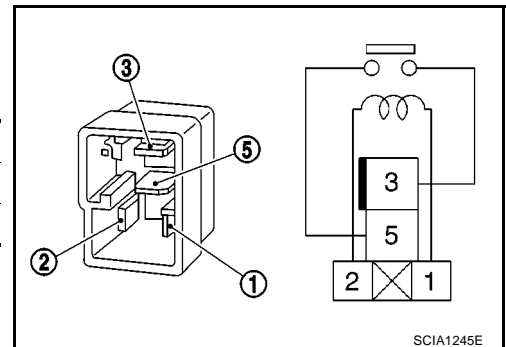
NG >> Replace transfer control unit. Refer to [TF-100, "Removal and Installation"](#).

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-21, "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 transfer shut off relay 1 or transfer shut off relay 2. Refer to [TF-21, "Location of Electrical Parts"](#).



Transfer Control Unit DIAGNOSTIC PROCEDURE

1. INSPECTION START

Do you have CONSULT-II?

YES or NO

YES >> GO TO 2.

NO >> GO TO 3.

TROUBLE DIAGNOSIS FOR SYSTEM

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-100, "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-49, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-51, "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-100, "Removal and Installation"](#) .
NO >> **INSPECTION END**

Output Shaft Revolution Signal (TCM) DIAGNOSTIC PROCEDURE

EDS00320

1. CHECK DTC WITH TCM

Perform self-diagnosis with TCM. Refer to [AT-80, "SELF-DIAGNOSTIC RESULT 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-38, "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-80, "SELF-DIAGNOSTIC RESULT MODE"](#) .

Vehicle Speed Sensor (ABS) DIAGNOSTIC PROCEDURE

EDS00321

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-18, "Self-Diagnosis"](#) .

Is any malfunction detected by self-diagnosis?

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

TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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-18, "Self-Diagnosis"](#).

4LO Switch

EDS00322

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 stoppedEngine running | 4WD shift switch: 4LO | ON |
| | | <ul style="list-style-type: none">For A/T models, A/T selector lever "N" position with brake pedal depressed.For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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 | 4WD shift switch: 4LO | 0V |
| | | | <ul style="list-style-type: none">● For A/T models, A/T selector lever “N” position with brake pedal depressed.● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

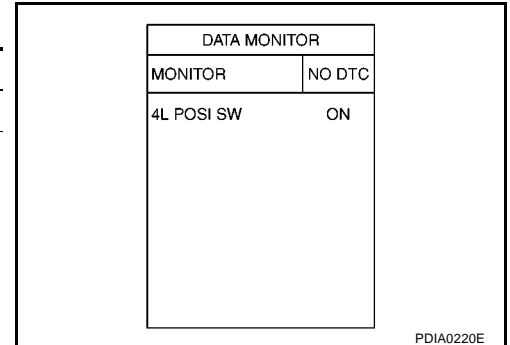
DIAGNOSTIC PROCEDURE

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".

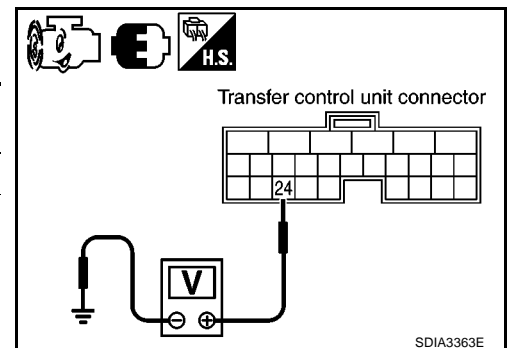
| Condition | | Display value |
|---|-----------------------|---------------|
| ● Vehicle stopped | 4WD shift switch: 4LO | ON |
| ● Engine running | Except the above | OFF |
| ● For A/T models, A/T selector lever "N" position with brake pedal depressed. | | |
| ● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | | |



⊗ Without CONSULT-II

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

| Connector | Terminal | Condition | | Voltage (Approx.) |
|-----------|-------------|---|-----------------------|-------------------|
| M105 | 24 - Ground | ● Vehicle stopped | 4WD shift switch: 4LO | 0V |
| | | ● Engine running | Except the above | Battery voltage |
| | | ● For A/T models, A/T selector lever "N" position with brake pedal depressed. | | |
| | | ● For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | | |



OK or NG

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

TROUBLE DIAGNOSIS FOR SYSTEM

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

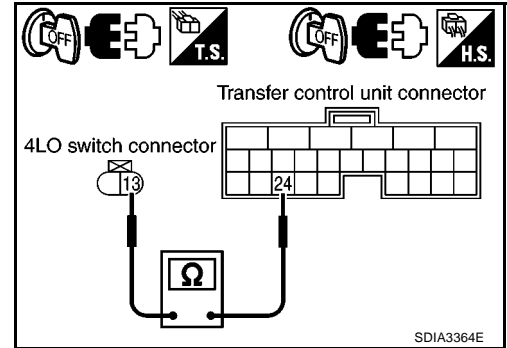
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the 4LO switch harness connector.
3. Check continuity between transfer control unit harness connector M105 terminal 24 and 4LO switch harness connector F42 terminal 13.

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

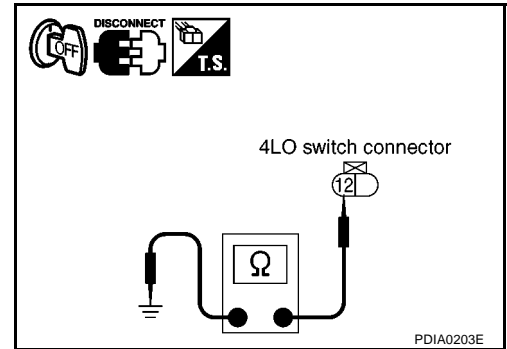
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4LO switch harness connector.
3. Check continuity between 4LO switch harness connector F42 terminal 12 and ground.

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.



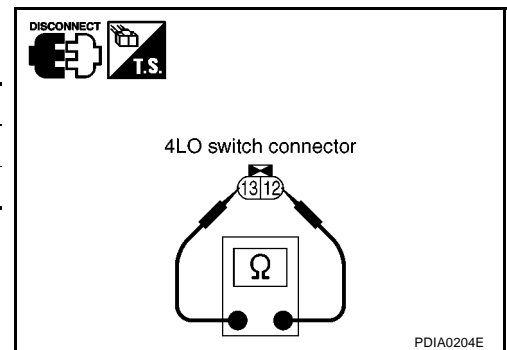
4. CHECK 4LO SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4LO switch harness connector.
3. Remove 4LO switch. Refer to [TF-21, "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-21, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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.

TROUBLE DIAGNOSIS FOR SYSTEM

6. CHECK DTC

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

OK or NG

OK >> **INSPECTION END**

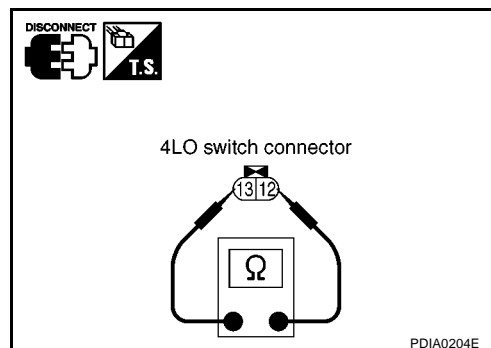
NG >> Replace transfer control unit. Refer to [TF-100, "Removal and Installation"](#).

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-21, "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. Refer to [TF-21, "Location of Electrical Parts"](#).



4WD Shift Switch

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

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 |
| | | | 4H | 4H |
| | | | 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) | Ignition switch: ON | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

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" while operating 4WD shift switch.

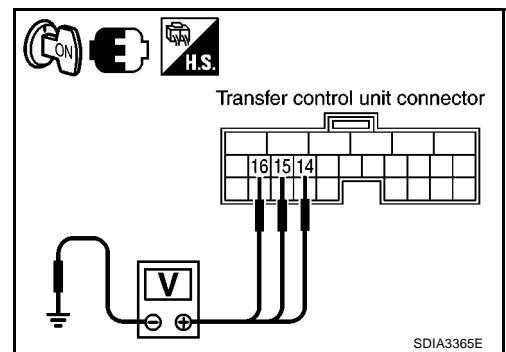
| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| 2WD SWITCH | OFF |
| 4H SWITCH | ON |
| 4L SWITCH | OFF |

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.) |
|-----------|-------------|-------------------------------|-------------------|
| M105 | 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

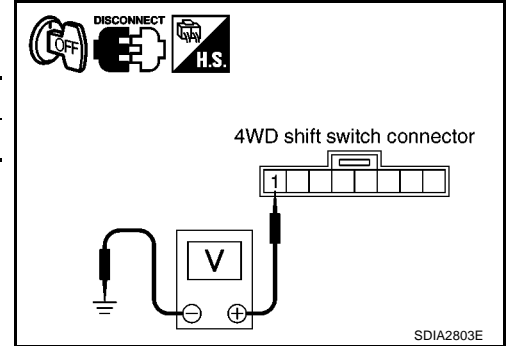
- OK >> GO TO 5.
NG >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK 4WD SHIFT SWITCH POWER SUPPLY CIRCUIT

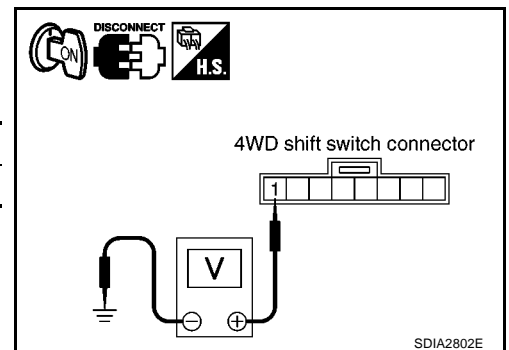
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect 4WD shift switch harness connector.
3. Check voltage between 4WD shift switch harness connector terminal 1 and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|------------|-------------------|
| M51 | 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.) |
|-----------|------------|-------------------|
| M51 | 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 M51 terminal 1 and transfer shut off relay 2 harness connector E85 terminal 5 and 10A fuse (No. 64 located in the fuse and relay box). If any items are damaged, repair or replace damaged parts.

2. Perform trouble diagnosis for power supply circuit. Refer to [TF-52, "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 M105 terminal 14 and 4WD shift switch harness connector M51 terminal 3.
 - Transfer control unit harness connector M105 terminal 15 and 4WD shift switch harness connector M51 terminal 5.
 - Transfer control unit harness connector M105 terminal 16 and 4WD shift switch harness connector M51 terminal 6.

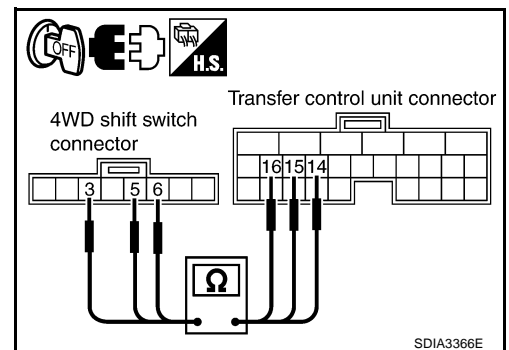
Continuity should exist.

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

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

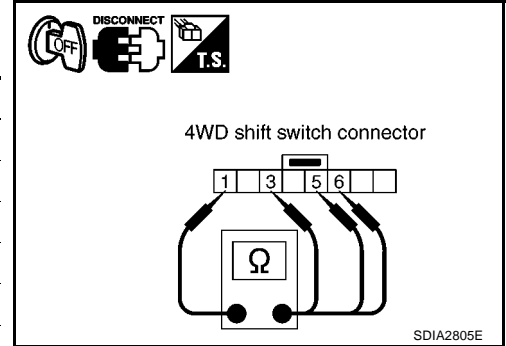


TROUBLE DIAGNOSIS FOR SYSTEM

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-38, "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.

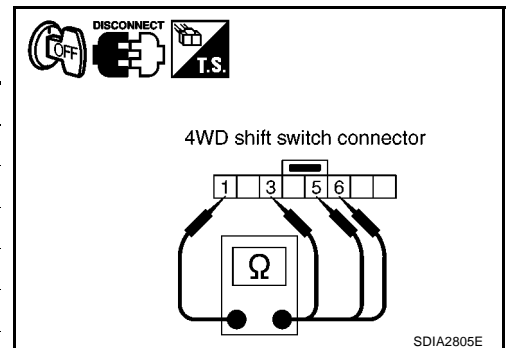
OK or NG

- OK >> **INSPECTION END**
NG >> Replace transfer control unit. Refer to [TF-100, "Removal and Installation"](#).

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.

TROUBLE DIAGNOSIS FOR SYSTEM

Wait Detection Switch

EDS00324

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 For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4H and 4LO | ON |
| | | | 4WD shift switch: 2WD | 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 For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

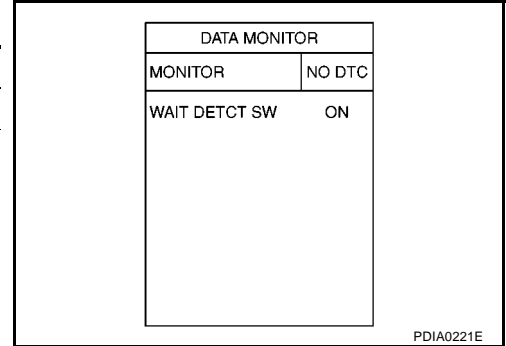
DIAGNOSTIC PROCEDURE

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".

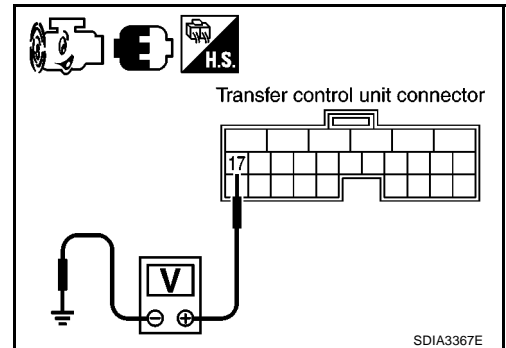
| Condition | | Display value |
|--|------------------------------|---------------|
| <ul style="list-style-type: none"> Vehicle stopped | 4WD shift switch: 4H and 4LO | ON |
| <ul style="list-style-type: none"> Engine running For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and 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.) |
|-----------|-------------|--|------------------------------|-------------------|
| M105 | 17 - Ground | <ul style="list-style-type: none"> Vehicle stopped Engine running | 4WD shift switch: 4H and 4LO | 0V |
| | | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 2WD | Battery voltage |



OK or NG

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

TROUBLE DIAGNOSIS FOR SYSTEM

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

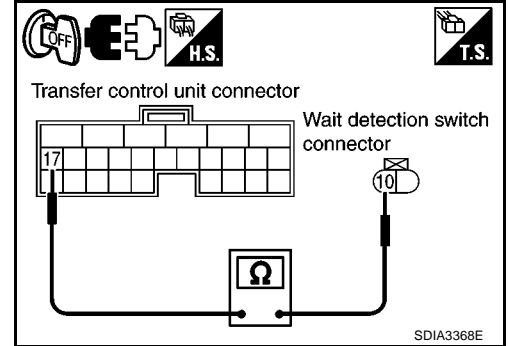
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the wait detection switch harness connector.
3. Check continuity between transfer control unit harness connector M105 terminal 17 and wait detection switch harness connector F39 terminal 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

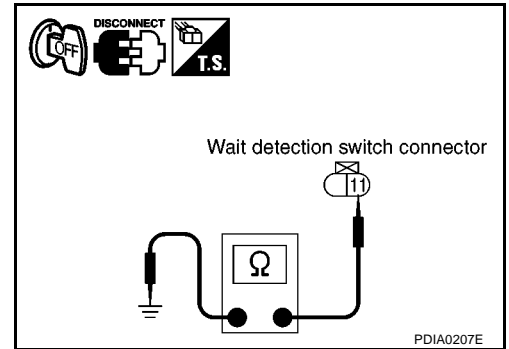
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect wait detection switch harness connector.
3. Check continuity between wait detection switch harness connector F39 terminal 11 and ground.

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.



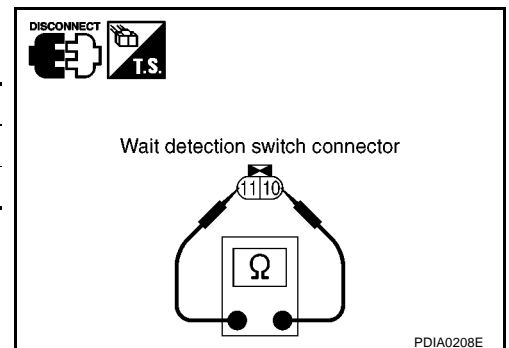
4. CHECK WAIT DETECTION SWITCH

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-21, "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-21, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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.

TROUBLE DIAGNOSIS FOR SYSTEM

6. CHECK DTC

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

OK or NG

OK >> **INSPECTION END**

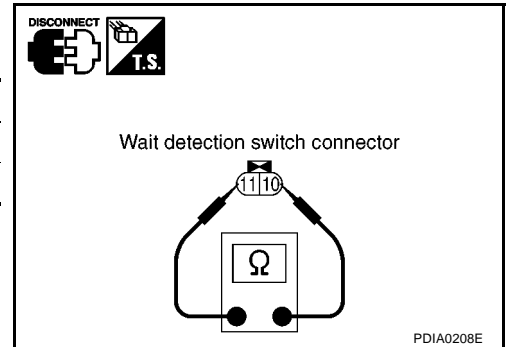
NG >> Replace transfer control unit. Refer to [TF-100, "Removal and Installation"](#) .

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-21, "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-21, "Location of Electrical Parts"](#) .



EDS00325

PNP Switch Signal (TCM) DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH TCM

Perform self-diagnosis with TCM. Refer to [AT-80, "SELF-DIAGNOSTIC RESULT 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-38, "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 vehicle.

OK or NG

OK >> **INSPECTION END**

NG >> Perform self-diagnosis with TCM again. Refer to [AT-80, "SELF-DIAGNOSTIC RESULT MODE"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

Actuator Motor

EDS00326

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) | 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 | 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) | 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 | 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 | BR | Actuator motor (+) | When 4WD shift switch is operated (while actuator motor is operating) | Battery voltage → 0V |
| | | | When 4WD shift switch is not operated | 0V |
| 31 | G | Actuator motor (-) | 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 | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO (while actuator motor is operating) | Battery voltage → 0V |
| | | | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

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".

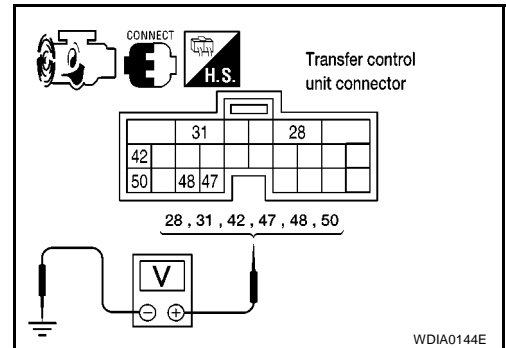
| Monitored item | Condition | Display value |
|----------------|---|--|
| SHIFT ACT1 | <ul style="list-style-type: none"> Vehicle stopped | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO |
| | <ul style="list-style-type: none"> Engine running | Except the above |
| SHIFT AC MON1 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO |
| | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | Except the above |
| SHIFT ACT2 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD |
| | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | Except the above |
| SHIFT AC MON2 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 4LO to 4H or 4H to 2WD or 4LO to 2WD |
| | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | Except the above |

| 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. For A/T models, move A/T selector lever to "N" position. For M/T models, shift lever to neutral position.
4. Check voltage between transfer control unit harness connector terminal and ground.



TROUBLE DIAGNOSIS FOR SYSTEM

| Connector | Terminal | Condition | | Voltage (Approx.) |
|-----------|-------------|---|--|----------------------|
| M106 | 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 |
| | | | Except the above | Battery voltage |
| | 47 - Ground | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 2WD to 4H or 4H to 4LO or 2WD to 4LO (while actuator motor is operating) | Battery voltage → 0V |
| | | | Except the above | 0V |
| | 48 - Ground | <ul style="list-style-type: none"> For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 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 - Ground | | 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.

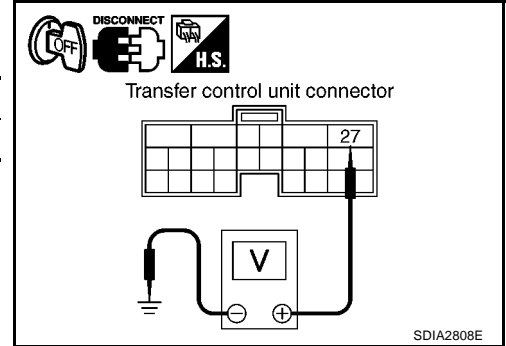
NG >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK ACTUATOR MOTOR POWER SUPPLY CIRCUIT

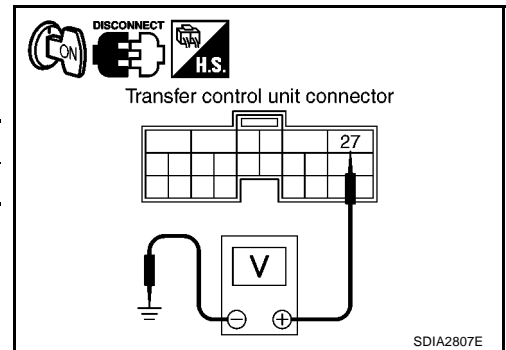
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector M106 terminal 27 and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M106 | 27 - Ground | 0V |



4. Turn ignition switch "ON".
5. Check voltage between transfer control unit harness connector M106 terminal 27 and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M106 | 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 M106 terminal 27 and transfer shut off relay 2 harness connector E85 terminal 5 and 10A fuse (No. 63, located in the fuse and relay box). If any items are damaged, repair or replace damaged parts.

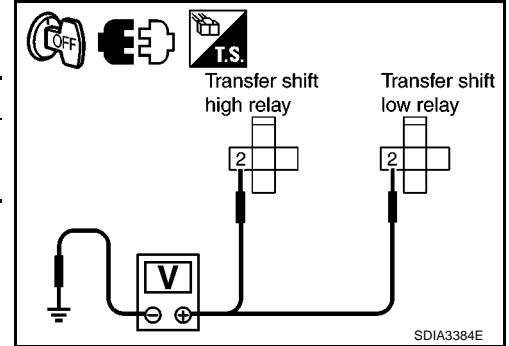
2. Perform trouble diagnosis for power supply circuit. Refer to [TF-52, "Power Supply Circuit For Transfer Control Unit"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

3. CHECK TRANSFER SHIFT RELAY POWER SUPPLY CIRCUIT

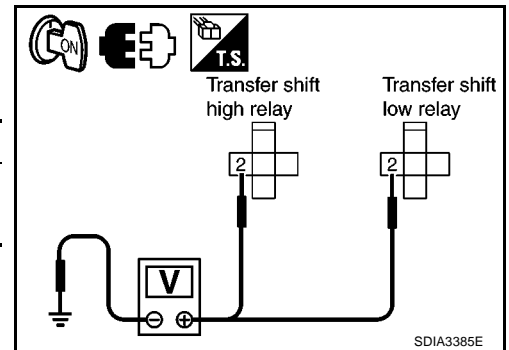
- Turn ignition switch "OFF". (Stay for at least 5 seconds.)
- Remove transfer shift high relay and transfer shift low relay. Refer to [TF-21, "Location of Electrical Parts"](#).
- Check voltage between transfer control unit harness connector terminal and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|------------|-------------------|
| E27 | 2 - Ground | 0V |
| E29 | 2 - Ground | |



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

| Connector | Terminal | Voltage (Approx.) |
|-----------|------------|-------------------|
| E27 | 2 - Ground | Battery voltage |
| E29 | 2 - Ground | |



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 E27 terminal 2.
- Harness for short or open between transfer control unit harness connector terminal 27 and transfer shift low relay harness connector E29 terminal 2.

4. CHECK TRANSFER SHIFT RELAY

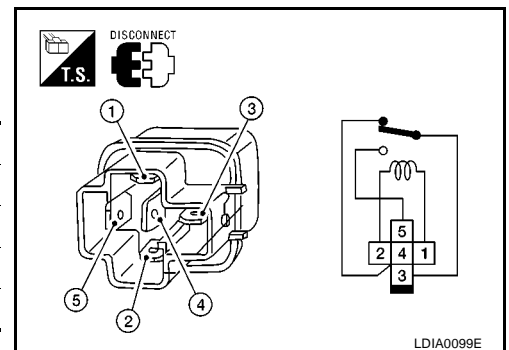
- Turn ignition switch "OFF". (Stay for at least 5 seconds.)
- Remove transfer shift high relay and transfer shift low relay.
- Apply 12V direct current between transfer shift high relay and transfer shift low relay terminals 1 and 2.
- Check continuity between relay terminals 3 and 4, 3 and 5.

| 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 transfer shift high relay or transfer shift low relay.



TROUBLE DIAGNOSIS FOR SYSTEM

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 M106 terminal 42 and transfer shift high relay harness connector E27 terminal 1.
 - Transfer control unit harness connector M106 terminal 50 and transfer shift low relay harness connector E29 terminal 1.

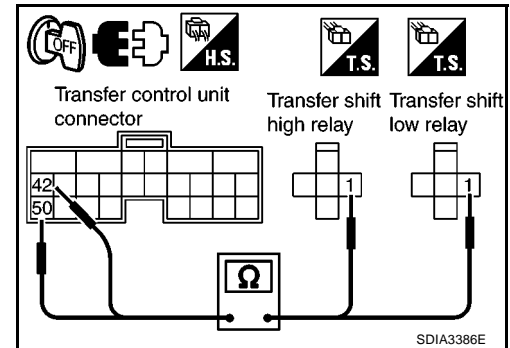
Continuity should exist.

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 RELAYS

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 M106 terminal 28 and transfer shift high relay harness connector E27 terminal 5.
 - Transfer control unit harness connector M106 terminal 28 and transfer shift low relay harness connector E29 terminal 5.
 - Transfer control unit harness connector M106 terminal 31 and transfer shift high relay harness connector E27 terminal 4.
 - Transfer control unit harness connector M106 terminal 31 and transfer shift low relay harness connector E29 terminal 4.

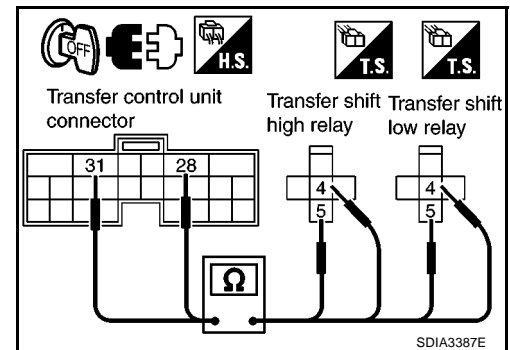
Continuity should exist.

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

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.



TROUBLE DIAGNOSIS FOR SYSTEM

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. Remove transfer shift high relay and transfer shift low relay. Refer to [TF-21, "Location of Electrical Parts"](#).
4. Check continuity between the following terminals.
 - Transfer control unit harness connector M106 terminal 47 and transfer control device (actuator motor) harness connector F47 terminal 23.
 - Transfer control unit harness connector M106 terminal 48 and transfer control device (actuator motor) harness connector F47 terminal 24.
 - Transfer control device (actuator motor) harness connector F47 terminal 24 and transfer shift high relay harness connector E27 terminal 3.
 - Transfer control device (actuator motor) harness connector F47 terminal 23 and transfer shift low relay harness connector E29 terminal 3.

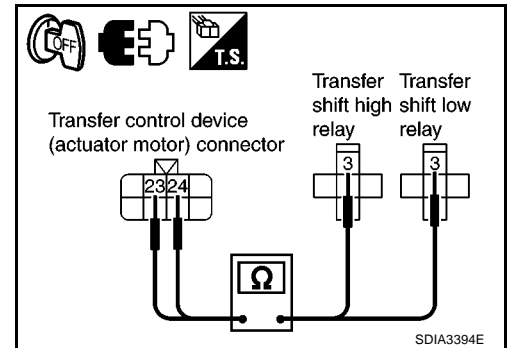
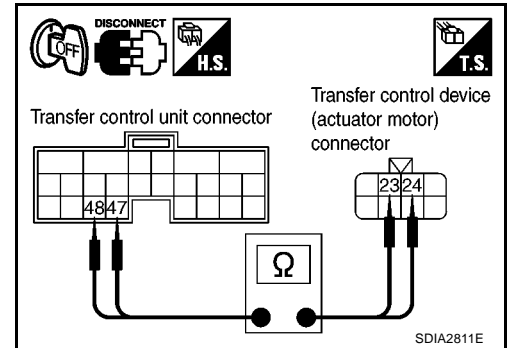
Continuity should exist.

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-105, "Removal and Installation"](#).
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 23 and 24.

CAUTION:

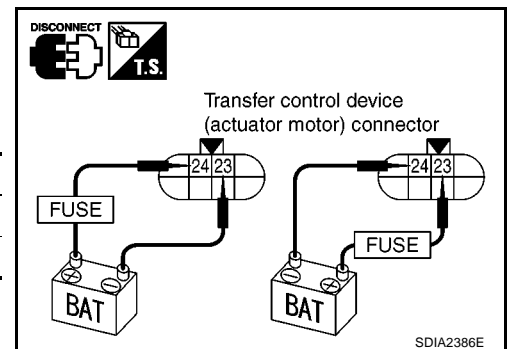
Be careful not to overheat the harness.

| 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-105, "Removal and Installation"](#).



9. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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.

TROUBLE DIAGNOSIS FOR SYSTEM

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-100, "Removal and Installation"](#).

COMPONENT INSPECTION

Actuator Motor

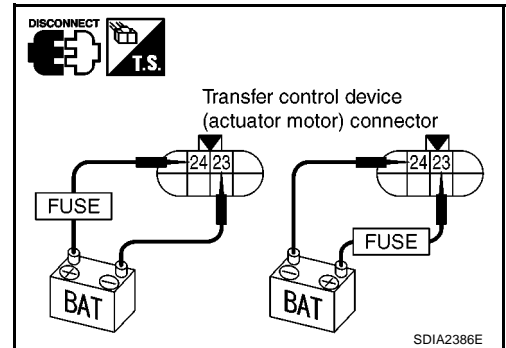
1. Remove transfer control device. Refer to [TF-105, "Removal and Installation"](#).
2. Check operation by applying battery voltage to transfer control device (actuator motor) terminals 23 and 24.

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-105, "Removal and Installation"](#).

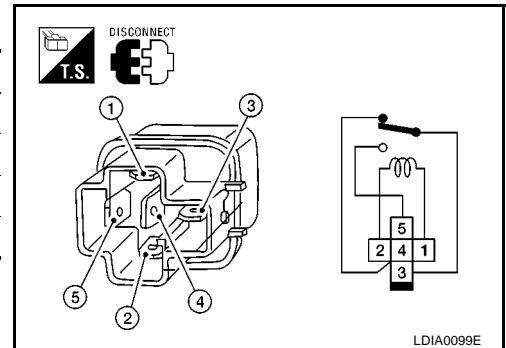


Transfer Shift Relay

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-21, "Location of Electrical Parts"](#).
3. Apply 12V direct current between transfer 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 relay or transfer shift low relay. Refer to [TF-21, "Location of Electrical Parts"](#).



TROUBLE DIAGNOSIS FOR SYSTEM

Actuator Position Switch

EDS00327

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 | <ul style="list-style-type: none"> Vehicle stopped Engine running | 4WD shift switch: 2WD and 4LO ON |
| SHIFT POS SW2 [ON/OFF] | Condition of actuator position switch 2 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4H OFF |
| SHIFT POS SW3 [ON/OFF] | Condition of actuator position switch 3 | | 4WD shift switch: 4LO ON |
| SHIFT POS SW4 [ON/OFF] | Condition of actuator position switch 4 | | 4WD shift switch: 2WD and 4H OFF |
| | | | 4WD shift switch: 2WD and 4H ON |
| | | | 4WD shift switch: 4LO OFF |
| | | | 4WD shift switch: 4H and 4LO ON |
| | | | 4WD shift switch: 2WD 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.) |
|----------|------------|----------------------------|--|---|
| 10 | LG | Actuator position switch 1 | <ul style="list-style-type: none"> Vehicle stopped Engine running | 4WD shift switch: 2WD and 4LO 0V |
| 11 | W | Actuator position switch 2 | <ul style="list-style-type: none"> For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and brake pedal depressed. | 4WD shift switch: 4H Battery voltage |
| 12 | BR | Actuator position switch 3 | | 4WD shift switch: 4LO 0V |
| | | | | 4WD shift switch: 2WD and 4H Battery voltage |
| | | | | 4WD shift switch: 2WD and 4H 0V |
| | | | | 4WD shift switch: 4LO Battery voltage |
| | | | | 4WD shift switch: 4H and 4LO 0V |
| 13 | V | Actuator position switch 4 | | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

DIAGNOSTIC PROCEDURE

1. CHECK ACTUATOR POSITION SWITCH SIGNAL

④ With CONSULT-II

1. Start engine.
2. Depress brake pedal and stop vehicle.
3. For A/T models, move A/T selector lever to "N" position. For M/T models, move M/T shift lever to neutral 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 |

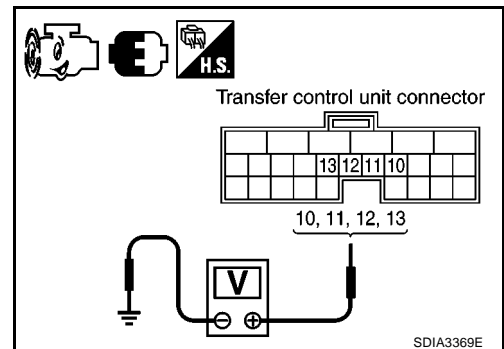
| DATA MONITOR | |
|---------------|--------|
| MONITOR | NO DTC |
| SHIFT POS SW1 | ON |
| SHIFT POS SW2 | OFF |
| SHIFT POS SW3 | OFF |
| SHIFT POS SW4 | OFF |

PDIA0224E

⊗ Without CONSULT-II

1. Start engine.
2. Depress brake pedal and stop vehicle.
3. For A/T models, move A/T selector lever to "N" position. For M/T models, move M/T shift lever to neutral position.
4. Check voltage between transfer control unit harness connector terminal and ground.

| Connector | Terminal | Condition | Voltage (Approx.) |
|-----------|-------------|-------------------------------|-------------------|
| E105 | 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 |



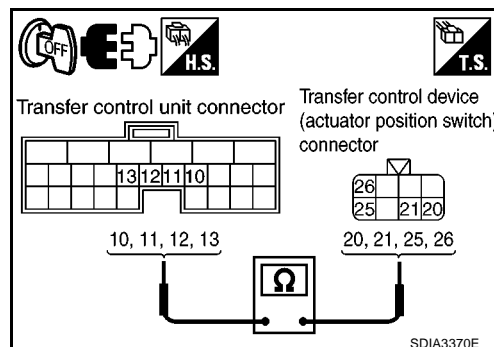
OK or NG

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

TROUBLE DIAGNOSIS FOR SYSTEM

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 M105 terminal 10 and transfer control device (actuator position switch) harness connector F47 terminal 26.
 - Transfer control unit harness connector M105 terminal 11 and transfer control device (actuator position switch) harness connector F47 terminal 20.
 - Transfer control unit harness connector M105 terminal 12 and transfer control device (actuator position switch) harness connector F47 terminal 21.
 - Transfer control unit harness connector M105 terminal 13 and transfer control device (actuator position switch) harness connector F47 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 F47 terminal 22 and ground.

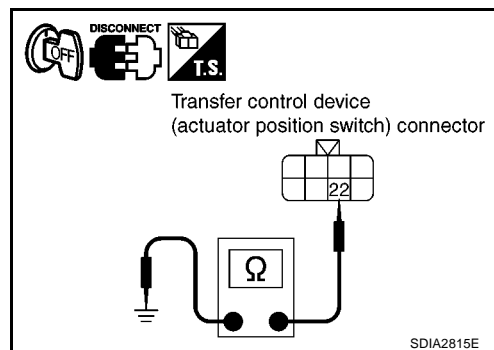
Continuity should exist.

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-38, "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-105, "Removal and Installation"](#).

TROUBLE DIAGNOSIS FOR SYSTEM

Transfer Control Device

EDS00328

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 For A/T models, A/T selector lever "N" position with brake pedal depressed. For M/T models, M/T shift lever neutral position with clutch and 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 | LG | 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.

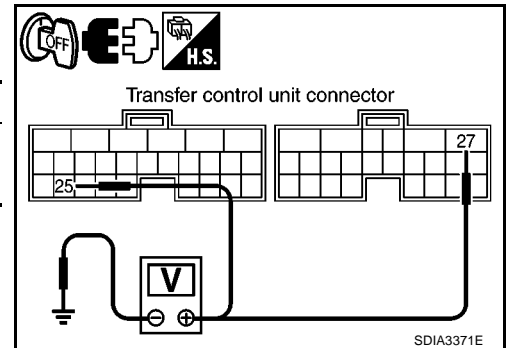
TROUBLE DIAGNOSIS FOR SYSTEM

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

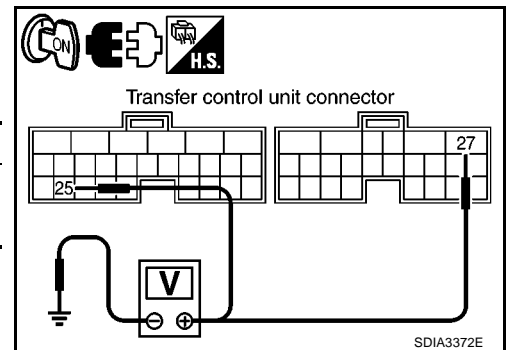
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminal and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M105 | 25 - Ground | 0V |
| M106 | 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.) |
|-----------|-------------|-------------------|
| M105 | 25 - Ground | Battery voltage |
| M106 | 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. 63, located in the fuse and relay box).
- 40A fusible link (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 E84 terminal 3.
- Harness for short or open between transfer control unit harness connector M106 terminal 27 and transfer shut off relay 1 harness connector E84 terminal 5.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E84 terminal 1.
- Harness for short or open between transfer shut off relay 1 harness connector E84 terminal 2 and ground.
- Harness for short or open between ignition switch and transfer control unit harness connector M105 terminal 25.
- Battery and ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).
- Transfer shut off relay 1. Refer to [TF-54, "COMPONENT INSPECTION"](#).

TROUBLE DIAGNOSIS FOR SYSTEM

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 M106 terminal 32 and ground.

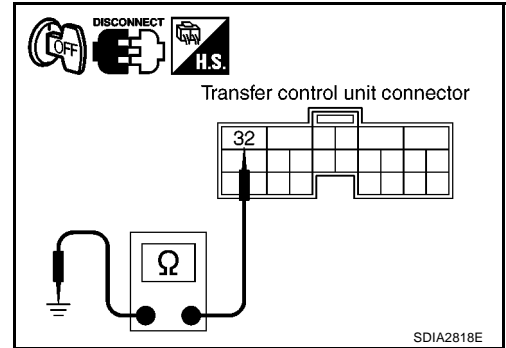
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 3.

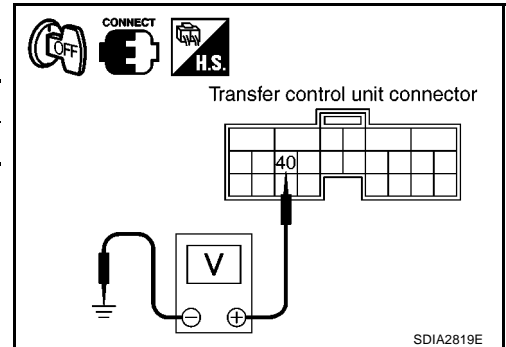
NG >> Repair open circuit or short to power in harness or connectors.



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.) |
|-----------|-------------|-------------------|
| M106 | 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.

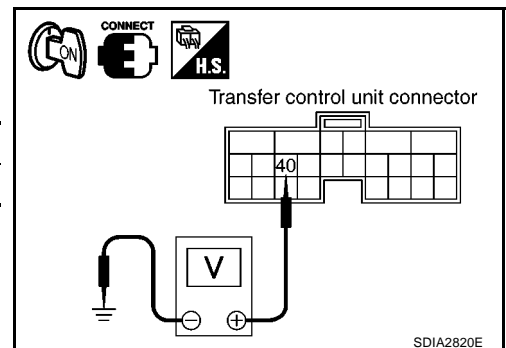
| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M106 | 40 - Ground | 0V |

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 E85 terminal 1.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.
- Transfer shut off relay 2. Refer to [TF-54, "COMPONENT INSPECTION"](#).



4. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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.

TROUBLE DIAGNOSIS FOR SYSTEM

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-100, "Removal and Installation"](#) .
- 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-49, "SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) and [TF-51, "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-100, "Removal and Installation"](#) .
- NO >> **INSPECTION END**

Engine Speed Signal (ECM) DIAGNOSTIC PROCEDURE

EDS00329

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to [EC-27, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#) .

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-38, "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-27, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

CAN Communication Line DIAGNOSTIC PROCEDURE

EDS0032A

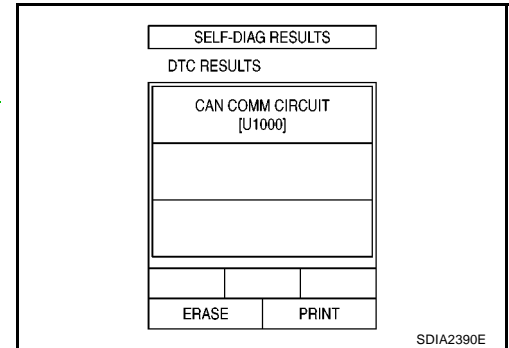
1. CHECK CAN COMMUNICATION CIRCUIT

④ 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-3, "Precautions When Using CONSULT-II"](#) .
- NO >> **INSPECTION END**



ATP Switch CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

EDS0032B

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 with brake pedal depressed. 4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor 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.) |
|----------|------------|------------|--|-----------------|
| 23 | R | ATP switch | <ul style="list-style-type: none">● Vehicle stopped● Engine running● A/T selector lever "N" position with brake pedal depressed. 4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.) | 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.

TROUBLE DIAGNOSIS FOR SYSTEM

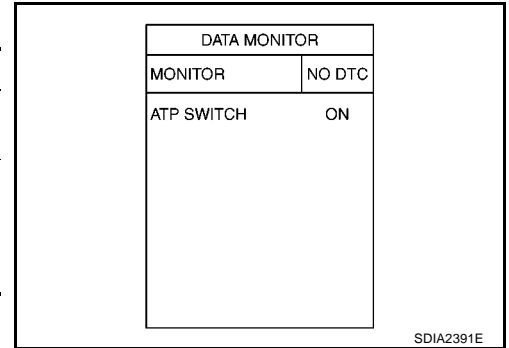
DIAGNOSTIC PROCEDURE

1. CHECK ATP 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 "ATP SWITCH".

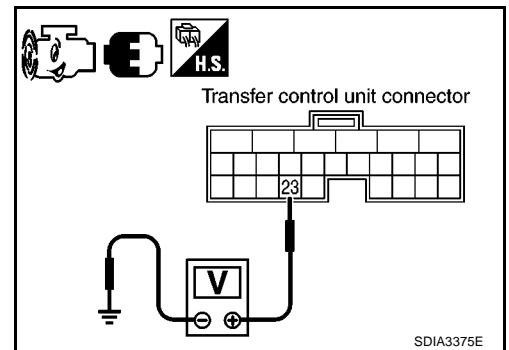
| Condition | | Display value |
|--|---|---------------|
| <ul style="list-style-type: none"> Vehicle stopped Engine running A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.) | ON |
| | Except the above | OFF |



⊗ Without CONSULT-II

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

| Connector | Terminal | Condition | | Voltage (Approx.) |
|-----------|-------------|--|---|-------------------|
| M105 | 23 - Ground | <ul style="list-style-type: none"> Vehicle stopped Engine running A/T selector lever "N" position with brake pedal depressed. | 4WD shift switch: 4H to 4LO or 4LO to 4H (While actuator motor is operating.) | 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 ATP SWITCH

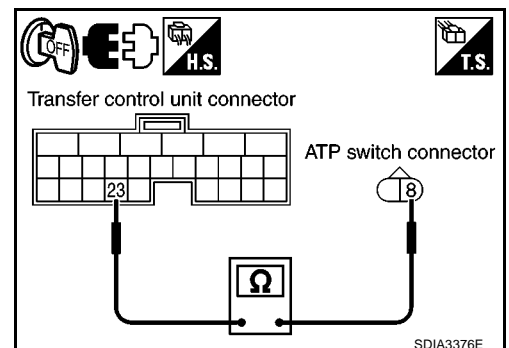
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the ATP switch harness connector.
3. Check continuity between transfer control unit harness connector M105 terminal 23 and ATP switch harness connector F41 terminal 8.

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.



TROUBLE DIAGNOSIS FOR SYSTEM

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 F41 terminal 9 and ground.

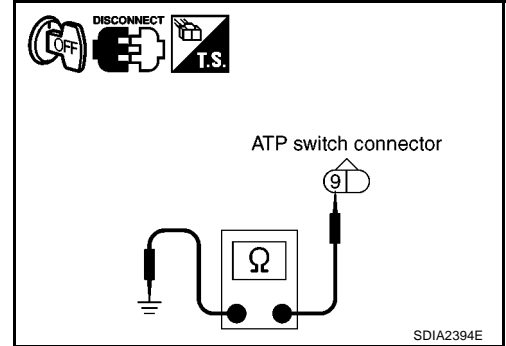
Continuity should exist.

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

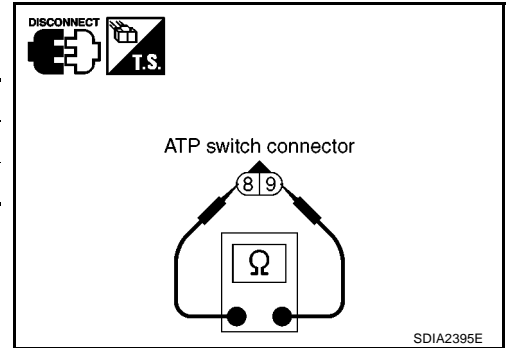
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove ATP switch. Refer to [TF-21, "Location of Electrical Parts"](#).
3. Push and release ATP switch and check continuity between ATP switch terminals 8 and 9.

| 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-21, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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. Shift A/T selector lever to "N" position and engage the parking brake.
3. Switch 4WD shift switch from 4H to 4LO or 4LO to 4H.

Does ATP warning lamp turn "ON", while actuator motor is operating?

YES >> **INSPECTION END**

NO >> Go to [TF-96, "ATP Warning Lamp Does Not Turn ON"](#).

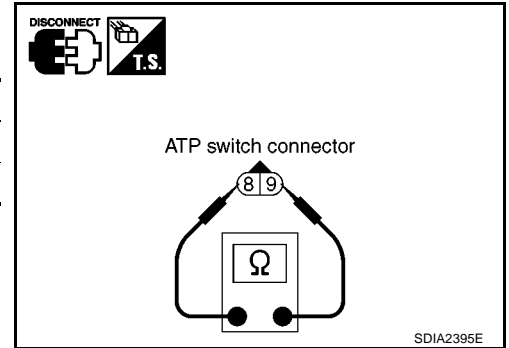
TROUBLE DIAGNOSIS FOR SYSTEM

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-21, "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-21, "Location of Electrical Parts"](#).



Park/Neutral Position Switch

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

EDS0032C

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------------|---------------------|----------------------------------|
| 33 | P | Park/Neutral position switch | Ignition switch: ON | M/T shift lever neutral position |
| | | | 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

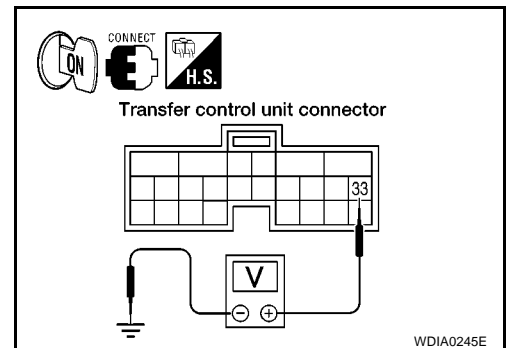
1. CHECK PARK/NEUTRAL POSITION SWITCH SIGNAL

1. Start engine.
2. Check voltage between transfer control unit harness connector M105 terminal 33 and ground.

| Connector | Terminal | Condition | Voltage (Approx.) |
|-----------|-------------|---------------------|----------------------------------|
| M105 | 33 - Ground | Ignition switch: ON | M/T shift lever neutral position |
| | | Except the above | Battery voltage |

OK or NG

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



TROUBLE DIAGNOSIS FOR SYSTEM

2. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND PARK/NEUTRAL POSITION SWITCH

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and the park/neutral position switch harness connector.
3. Check continuity between transfer control unit harness connector M105 terminal 33 and park/neutral position switch harness connector F38 terminal 1.

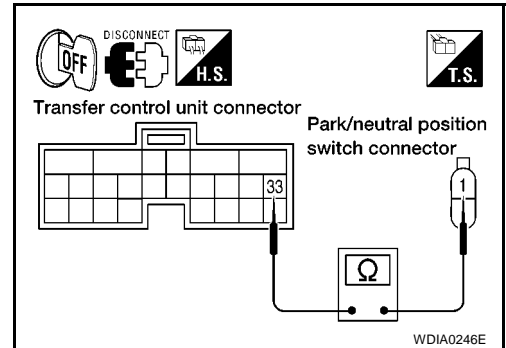
Continuity should exist.

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 GROUND CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect park/neutral position switch harness connector.
3. Check continuity between park/neutral position switch harness connector F38 terminal 2 and ground.

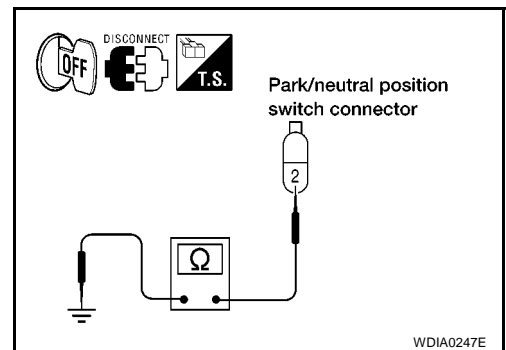
Continuity should exist.

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 PARK/NEUTRAL POSITION SWITCH

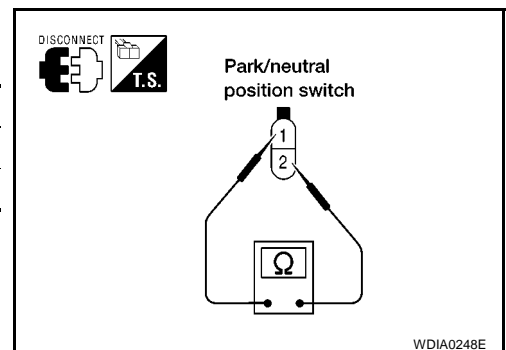
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Remove park/neutral position switch. Refer to [TF-21, "Location of Electrical Parts"](#).
3. Push and release park/neutral position switch and check continuity between park/neutral position switch terminals 1 and 2.

| Terminal | Condition | Continuity |
|----------|--------------------------------------|------------|
| 1 - 2 | Push park/neutral position switch | Yes |
| | Release park/neutral position switch | No |

OK or NG

OK >> GO TO 5.

NG >> Replace park/neutral position switch. Refer to [TF-21, "Location of Electrical Parts"](#).



5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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.

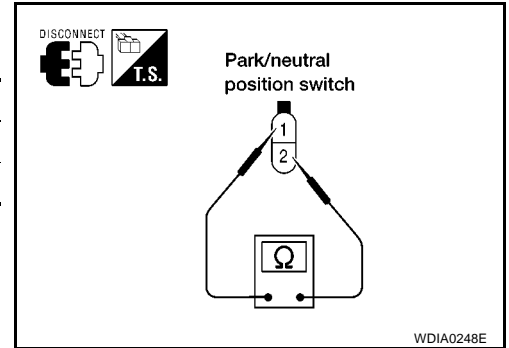
TROUBLE DIAGNOSIS FOR SYSTEM

COMPONENT INSPECTION

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect neutral position switch harness connector.
3. Remove neutral position switch. Refer to [TF-21, "Location of Electrical Parts"](#).
4. Push and release neutral position switch and check continuity between neutral position switch terminals 1 and 2.

| Terminal | Condition | Continuity |
|----------|--------------------------------------|------------|
| 1 - 2 | Push park/neutral position switch | Yes |
| | Release park/neutral position switch | No |

5. If NG, replace the neutral position switch. Refer to [TF-21, "Location of Electrical Parts"](#).



TROUBLE DIAGNOSIS FOR SYMPTOMS

TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

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

EDS0032D

SYMPTOM:

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

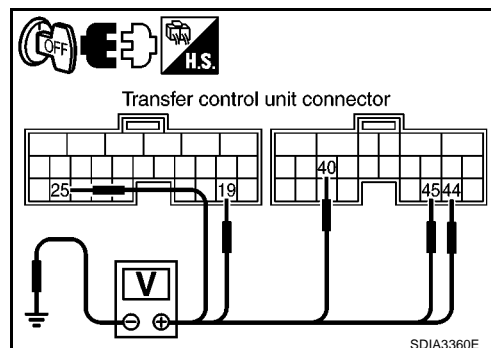
TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

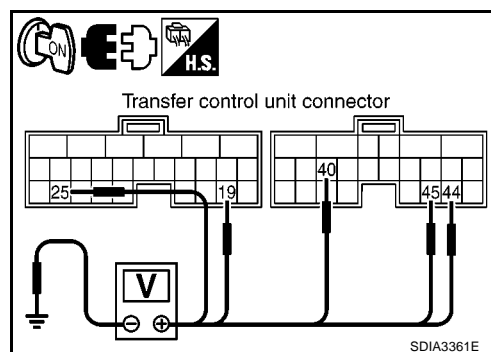
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | 0V |
| M106 | 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.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | |
| M106 | 40 - Ground | 0V |
| | 44 - Ground | Battery voltage |
| | 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. 18, located in the fuse block (J/B) and No. 63 and 64 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 M105 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E85 terminals 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E84 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M105 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E84 terminal 1.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E84 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E84 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-54, "COMPONENT INSPECTION"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

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 M105 terminals 6, 18, M106 terminal 32 and ground.

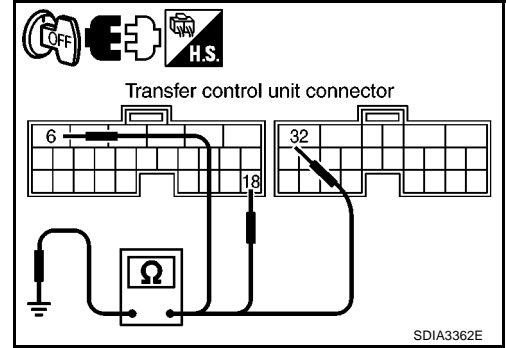
Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 3.

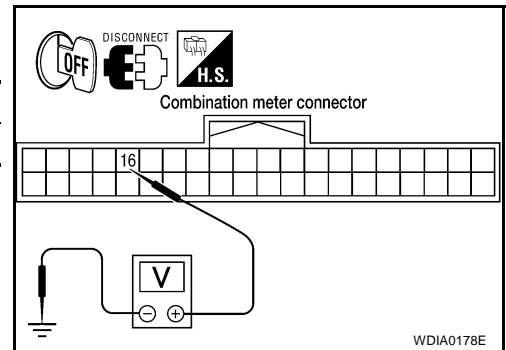
- NG >> ● Repair open circuit or short to power in harness or connectors.
- Harness for short or open between transfer shut off relay harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.



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.) |
|-----------|-------------|-------------------|
| M23 | 16 - Ground | 0V |



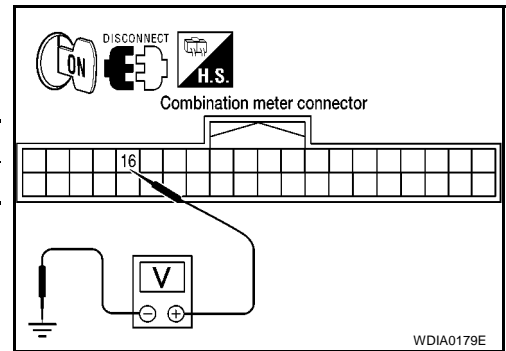
4. Turn ignition switch "ON". (Do not start engine.)
5. Check voltage between combination meter harness connector terminals and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M23 | 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 M23 terminal 16.



TROUBLE DIAGNOSIS FOR SYMPTOMS

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 M106 terminal 35 and combination meter harness connector M23 terminal 30.
 - Transfer control unit harness connector M106 terminal 36 and combination meter harness connector M23 terminal 27.
 - Transfer control unit harness connector M106 terminal 37 and combination meter harness connector M23 terminal 29.

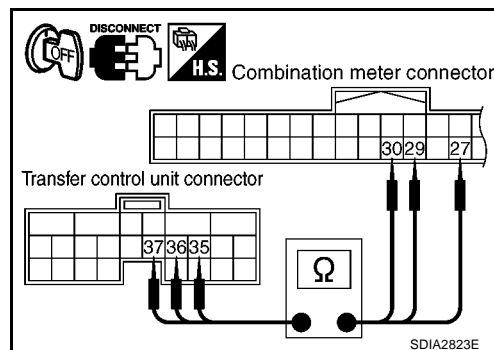
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.



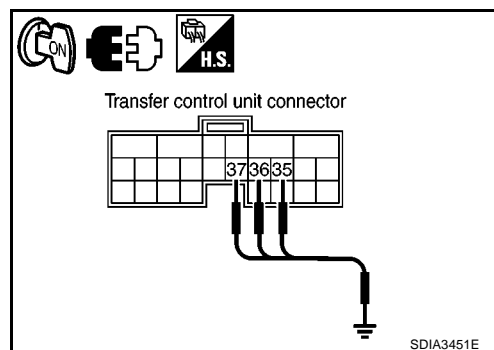
5. CHECK INDICATOR LAMP CIRCUIT

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 M106 terminal 35 and ground.
 - Transfer control unit harness connector M106 terminal 36 and ground.
 - Transfer control unit harness connector M106 terminal 37 and ground.

Do indicator lamps turn on?

OK >> GO TO 6.

NG >> Replace combination meter. Refer to [DI-27, "Removal and Installation of Combination Meter"](#).



6. CHECK SYMPTOM

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-38, "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".

EDS0032E

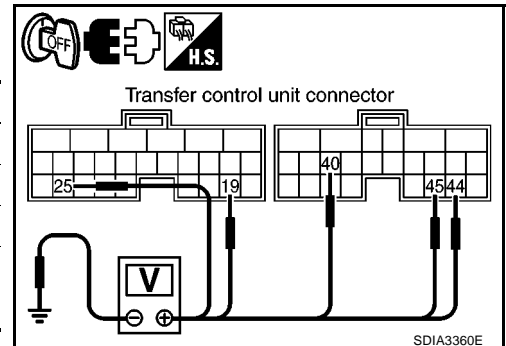
TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK TRANSFER CONTROL UNIT POWER SUPPLY CIRCUIT

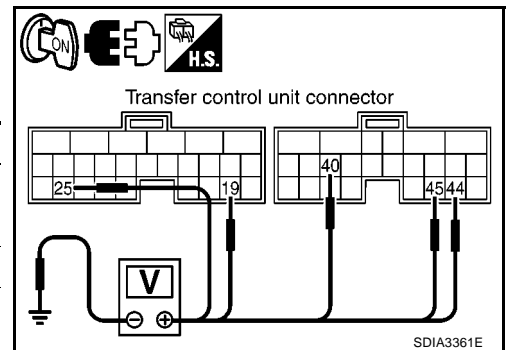
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between transfer control unit harness connector terminals and ground.

| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | 0V |
| M106 | 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.) |
|-----------|-------------|-------------------|
| M105 | 19 - Ground | Battery voltage |
| | 25 - Ground | |
| M106 | 40 - Ground | 0V |
| | 44 - Ground | Battery voltage |
| | 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. 18, located in the fuse block (J/B) and No. 63 and 64 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 M105 terminal 19.
- Harness for short or open between battery and transfer shut off relay 2 harness connector E85 terminals 1 and 3.
- Harness for short or open between battery and transfer shut off relay 1 harness connector E84 terminal 3.
- Harness for short or open between ignition switch and transfer control unit harness connector M105 terminal 25.
- Harness for short or open between ignition switch and transfer shut off relay 1 harness connector E84 terminal 1.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 1 harness connector E84 terminal 5 and transfer control unit harness connector M106 terminals 44, 45.
- Harness for short or open between transfer shut off relay 2 harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.
- Harness for open between transfer shut off relay 1 harness connector E84 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-54, "COMPONENT INSPECTION"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

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 M105 terminals 6, 18, M106 terminal 32 and ground.

Continuity should exist.

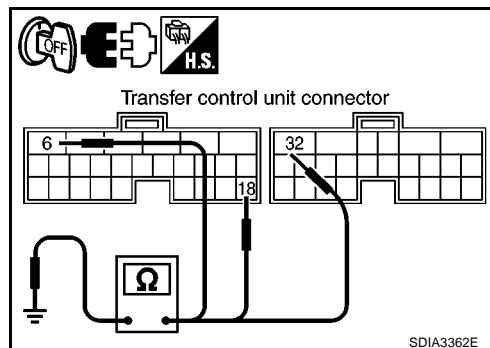
Also check harness for short to power.

OK or NG

OK >> GO TO 3.

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

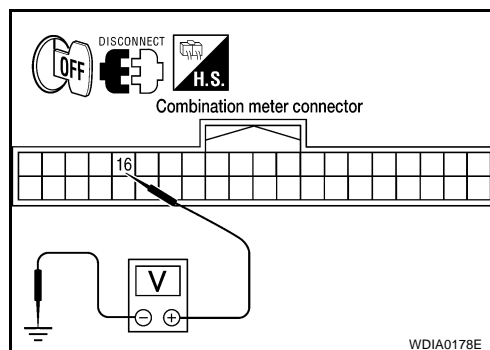
- Harness for short or open between transfer shut off relay harness connector E85 terminal 2 and transfer control unit harness connector M106 terminal 40.



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.) |
|-----------|-------------|-------------------|
| M23 | 16 - Ground | 0V |



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

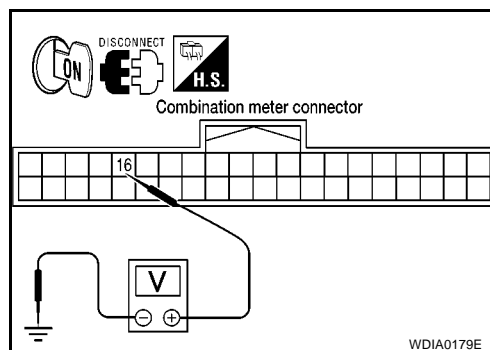
| Connector | Terminal | Voltage (Approx.) |
|-----------|-------------|-------------------|
| M23 | 16 - Ground | Battery voltage |

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 M23 terminal 16.



TROUBLE DIAGNOSIS FOR SYMPTOMS

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 M106 terminal 38 and combination meter harness connector M23 terminal 26.

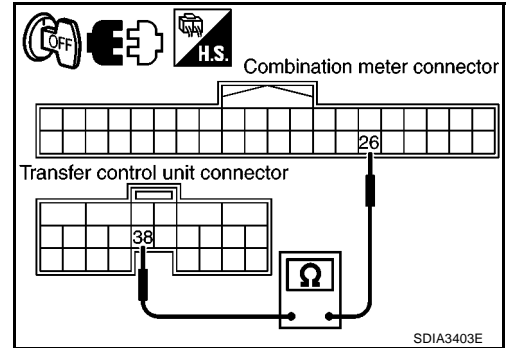
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.



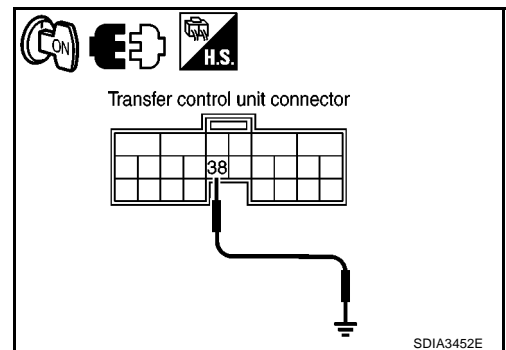
5. CHECK INDICATOR LAMP CIRCUIT

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 M106 terminal 38 and ground.

Do indicator lamps turn on?

OK >> GO TO 6.

NG >> Replace combination meter. Refer to [DI-27, "Removal and Installation of Combination Meter"](#).



6. CHECK SYMPTOM

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-38, "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

EDS0032F

SYMPTOM:

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

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-88, "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-59, "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-63, "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-56, "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-82, "ATP Switch"](#) .

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

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-38, "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.

TROUBLE DIAGNOSIS FOR SYMPTOMS

8. CHECK TRANSFER INNER PARTS

1. Disassemble transfer assembly. Refer to [TF-112, "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

EDS0032G

SYMPTOM:

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-49, "Self-Diagnostic Procedure"](#) .

Do the self-diagnostic results indicate CAN communication?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [TF-82, "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-59, "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-66, "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-82, "ATP Switch"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

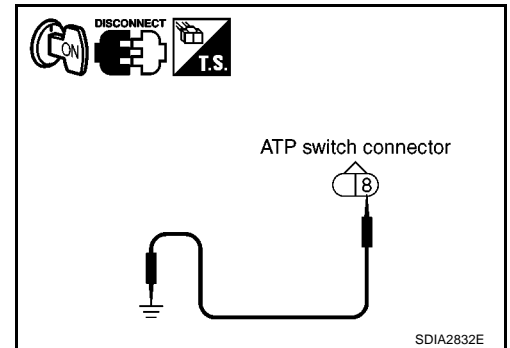
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK ATP WARNING LAMP CIRCUIT

1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Turn ignition switch "ON". (Do not start engine.)
4. Ground the following terminal using suitable wiring.
 - ATP switch harness connector F55 terminal 8 and ground.

Does ATP warning lamp turn on?

- OK >> GO TO 8.
NG >> GO TO 6.



6. CHECK HARNESS BETWEEN TRANSFER CONTROL UNIT AND COMBINATION METER

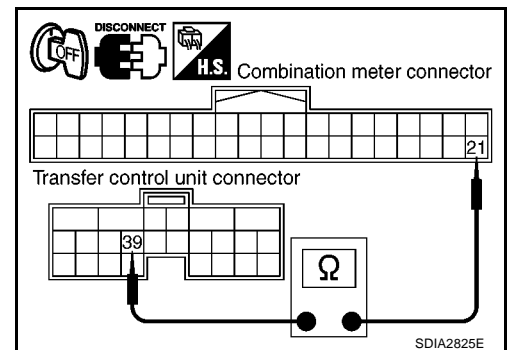
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector and combination meter harness connector.
3. Check continuity between transfer control unit harness connector M106 terminal 39 and combination meter harness connector M23 terminal 21.

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

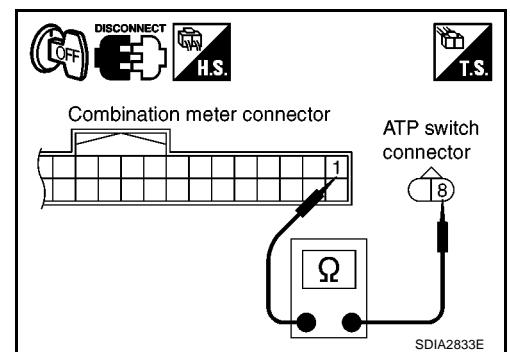
1. Turn ignition switch "OFF". (Stay for at least 5 seconds.)
2. Disconnect ATP switch harness connector.
3. Check continuity between combination meter harness connector M23 terminal 1 and ATP switch harness connector F41 terminal 8.

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. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 9.

TROUBLE DIAGNOSIS FOR SYMPTOMS

9. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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-112, "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

EDS0032H

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).

Dose 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-63, "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-56, "4LO Switch"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 5.

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to [TF-38, "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-112, "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

EDS0032I

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. CHECK SYMPTOM

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-38, "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.

TRANSFER CONTROL UNIT

TRANSFER CONTROL UNIT

PFP:33084

Removal and Installation

EDS0032J

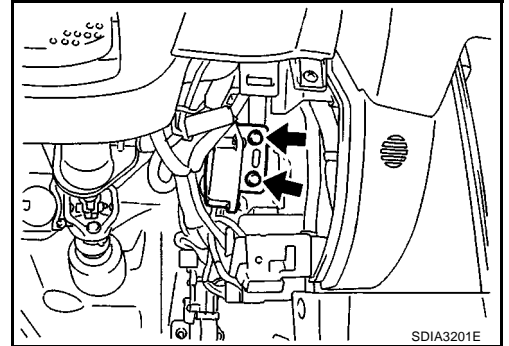
REMOVAL

1. Switch 4WD shift switch to 2WD and set transfer assembly to 2WD.

CAUTION:

When removal transfer control unit, transfer state must be at 2WD or AUTO.

2. Turn the ignition switch OFF and disconnect the battery cables.
3. Remove the lower instrument panel LH (LHD models) or lower instrument panel RH (RHD models). Refer to [IP-13, "LOWER INSTRUMENT PANEL LH"](#) (LHD models) or [IP-13, "LOWER INSTRUMENT PANEL LH"](#) (RHD models).
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 4WD shift indicator pattern. If NG, adjust position between transfer assembly and transfer control unit. Refer to [TF-4, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).

FRONT OIL SEAL

FRONT OIL SEAL

PFP:38189

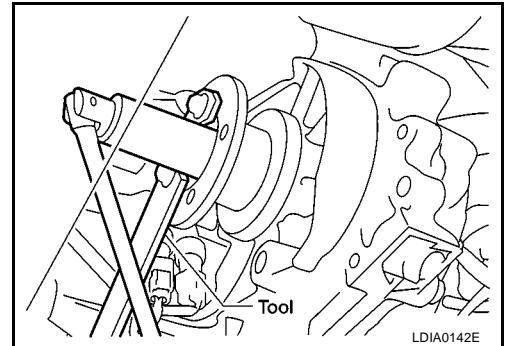
EDS0032K

Removal and Installation

REMOVAL

1. Partially drain the transfer fluid. Refer to [TF-12, "DRAINING"](#) .
2. Remove the front propeller shaft. Refer to [PR-4, "Removal and Installation"](#) .
3. Remove the companion flange self-lock nut, using Tool.

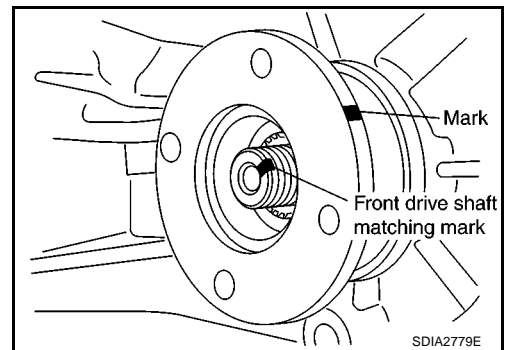
Tool number : KV40104000



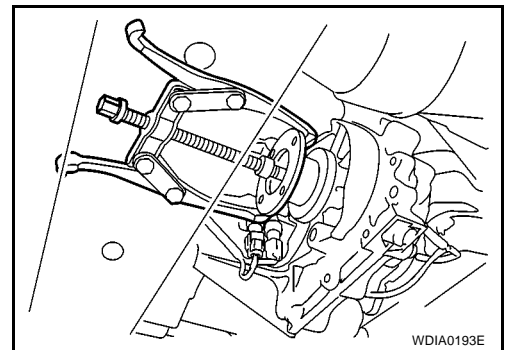
4. Put a matching mark on top of the front drive shaft in line with the mark on the companion flange.

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.

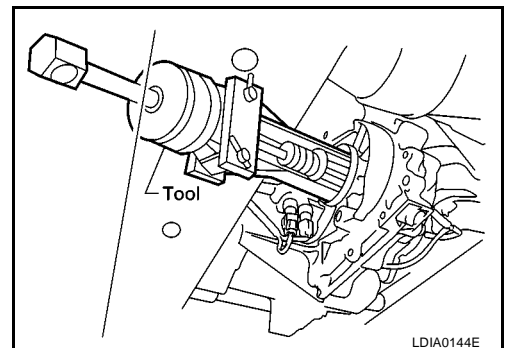


6. Remove the front oil seal from the front case, using Tool.

Tool number : KV381054S0

CAUTION:

Do not damage front case.



FRONT OIL SEAL

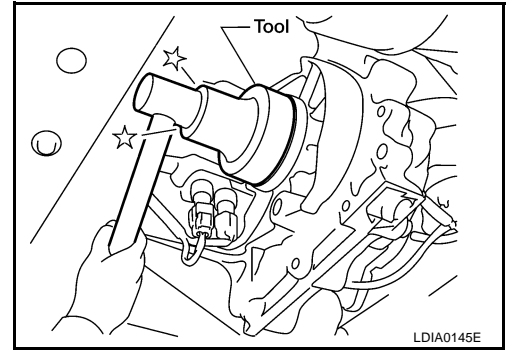
INSTALLATION

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

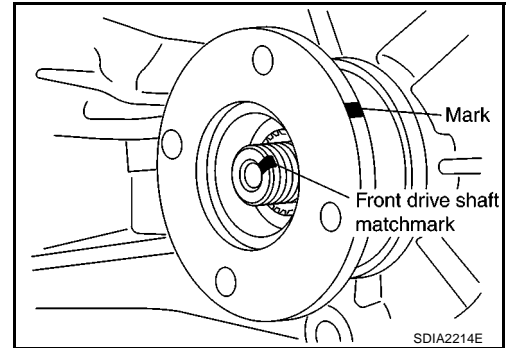
Tool number : KV38100500

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.



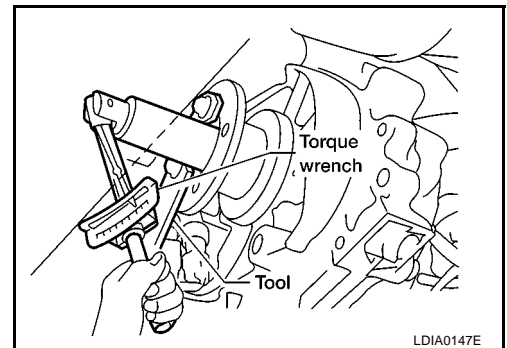
3. Install the self-lock nut and tighten to the specified torque, using Tool. Refer to [TF-112, "COMPONENTS"](#).

Tool number : KV40104000

CAUTION:

Do not reuse self-lock nut.

4. Install the front propeller shaft. Refer to [PR-4, "Removal and Installation"](#).
5. Refill the transfer with fluid and check fluid level. Refer to [TF-12, "FILLING"](#).
6. Check the transfer for fluid leakage. Refer to [TF-12, "FLUID LEAKAGE AND FLUID LEVEL"](#).



REAR OIL SEAL

REAR OIL SEAL

PPF:33140

Removal and Installation

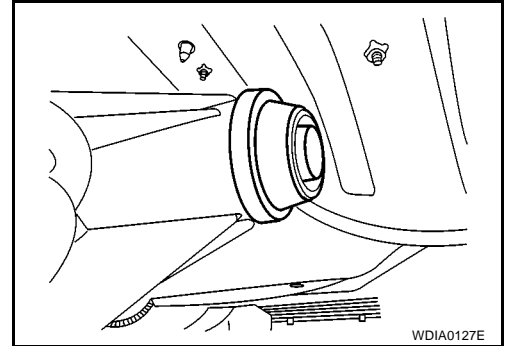
EDS0032L

REMOVAL

1. Partially drain the transfer fluid. Refer to [TF-12, "DRAINING"](#).
2. Remove the rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
3. Remove the dust cover from the rear case.

CAUTION:

Do not damage the rear case.

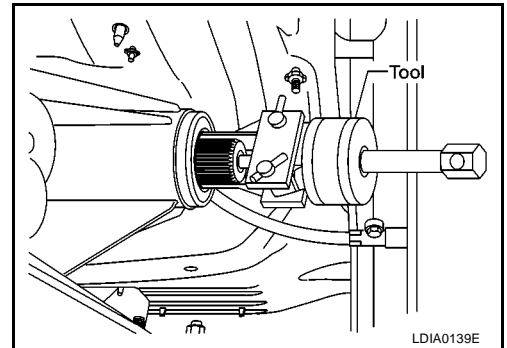


4. Remove the rear oil seal from the rear case, using Tool.

CAUTION:

Do not damage the rear case.

Tool number : KV381054S0



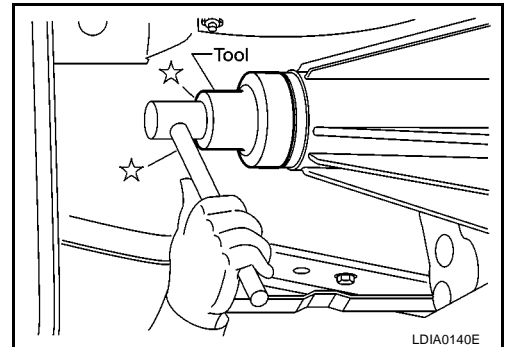
INSTALLATION

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

Tool number : KV38100500

CAUTION:

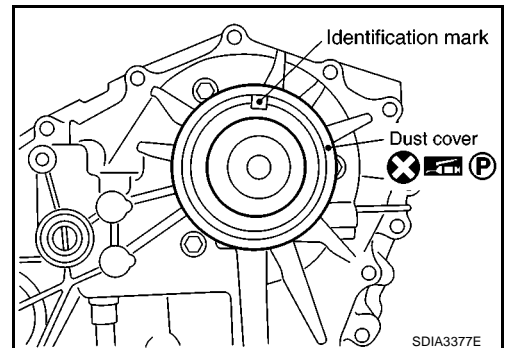
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



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

CAUTION:

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

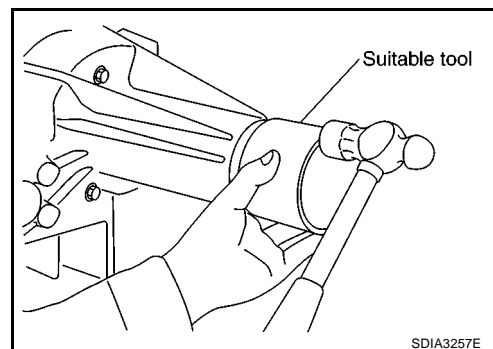


REAR OIL SEAL

3. Install the dust cover to the rear case, using suitable tool.

CAUTION:

- Do not reuse dust cover.
 - Apply petroleum jelly to dust cover.
4. Install the rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
 5. Refill the transfer with fluid and check fluid level. Refer to [TF-12, "FILLING"](#).
 6. Check the transfer for fluid leakage. Refer to [TF-12, "FLUID LEAKAGE AND FLUID LEVEL"](#).



TRANSFER CONTROL DEVICE

TRANSFER CONTROL DEVICE

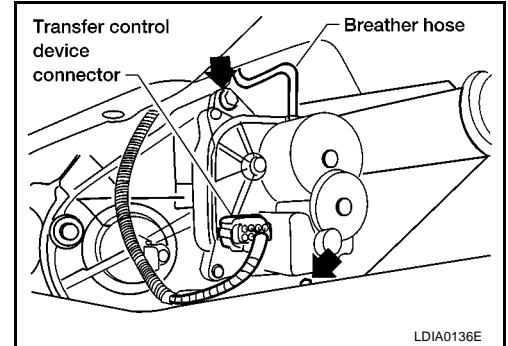
PFP:33251

Removal and Installation

EDS0032M

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.

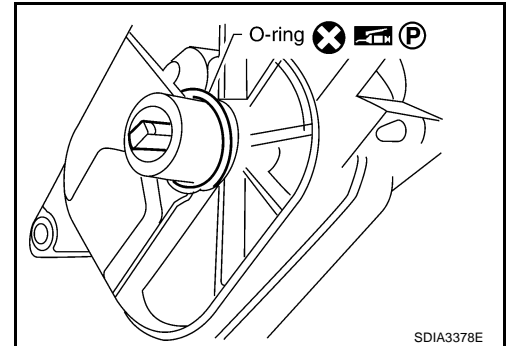


INSTALLATION

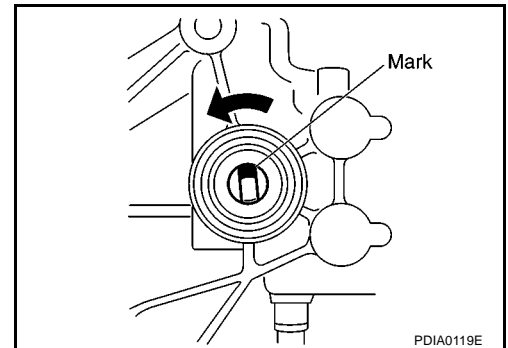
1. Install the O-ring to the transfer control device.

CAUTION:

- Do not reuse O-ring.
- Apply petroleum jelly to O-ring.



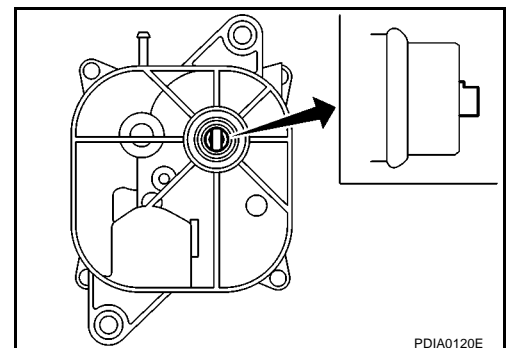
2. Install the transfer control device.
 - a. Turn the control shift rod fully counterclockwise using a flat-bladed screwdriver, and then put a mark on the control shift rod.



- b. Align the transfer control device shaft cutout with the mark on the control shift rod, and install.

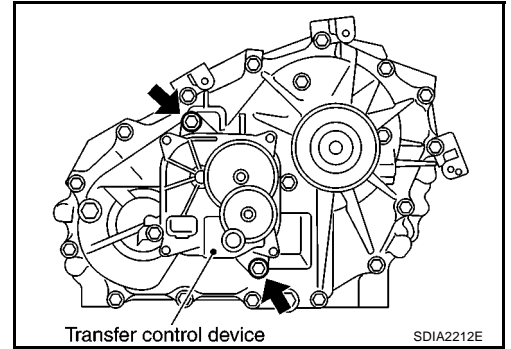
NOTE:

Turn the transfer control device when the transfer control device connection does not match.



TRANSFER CONTROL DEVICE

- c. Tighten the bolts to the specified torque. Refer to [TF-112, "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-4, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).



AIR BREATHER HOSE

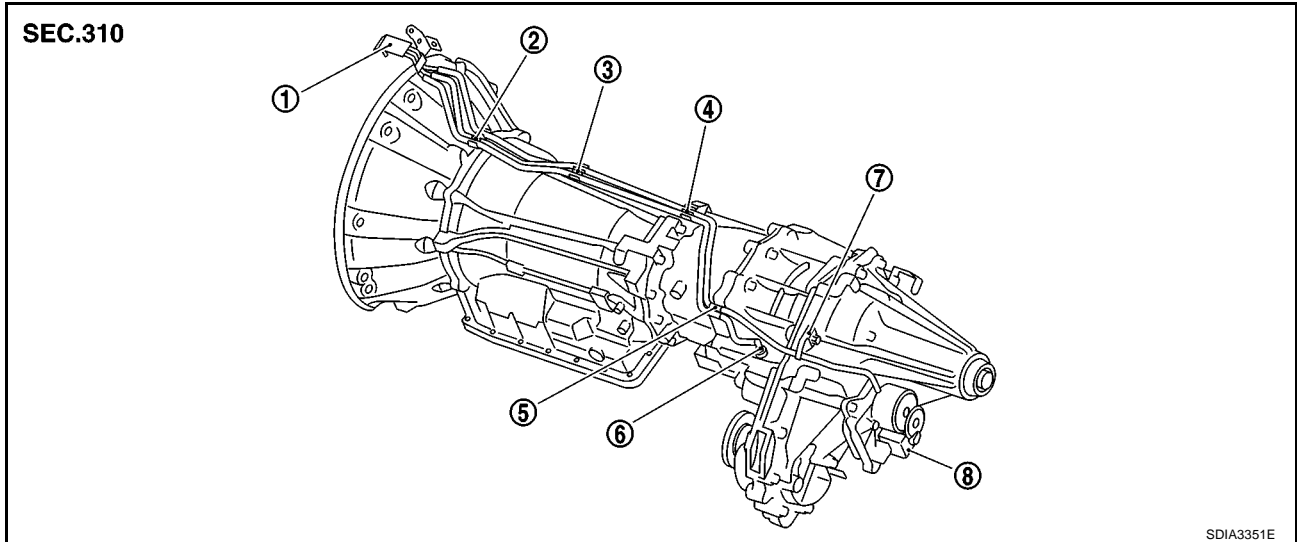
AIR BREATHER HOSE

PPF:31098

Removal and Installation A/T MODELS

EDS0032N

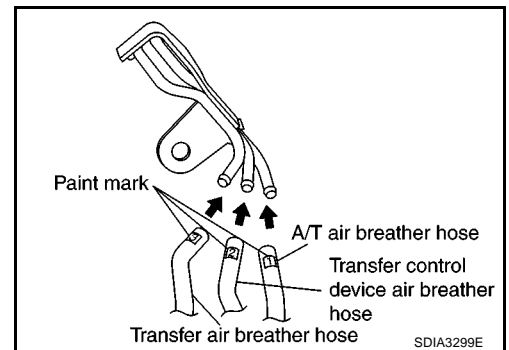
Refer to the figure for air breather hose removal and installation information.



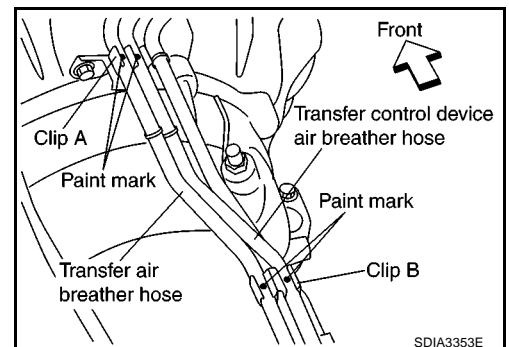
- | | | |
|----------------------------|----------------------------|-----------------------------|
| 1. Breather tube | 2. Clip A | 3. Clip B |
| 4. Clip C | 5. Clip D | 6. Breather tube (transfer) |
| 7. Air breather hose clamp | 8. Transfer control device | |

CAUTION:

- Make sure there are no pinched or restricted areas on each air breather hose caused by bending or winding 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.

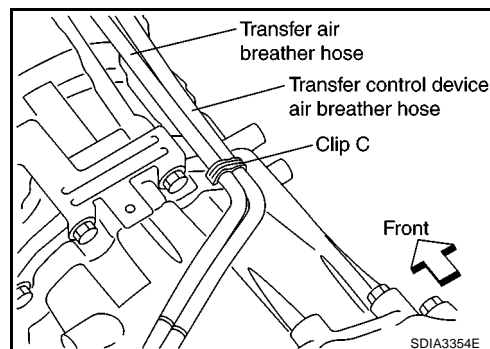


- Install transfer control device air breather hose and transfer air breather hose on clip A and clip B with the paint mark facing upward.

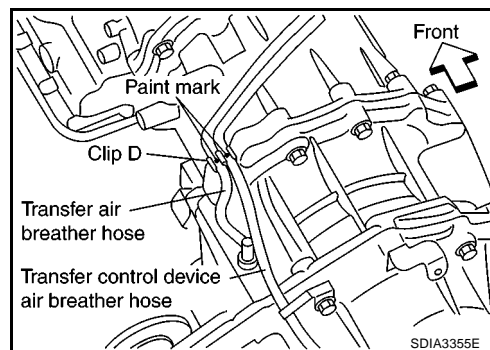


AIR BREATHER HOSE

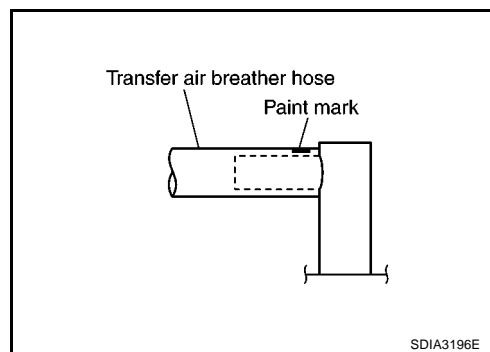
- Install clip C on transfer control device air breather hose and transfer air breather hose with the paint mark matched.



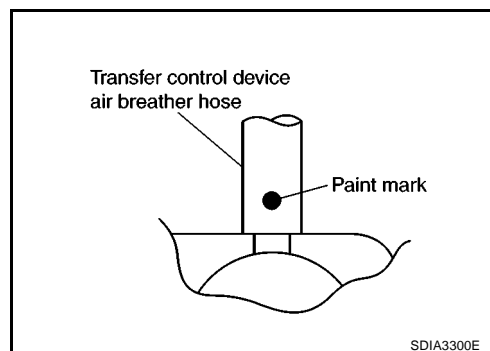
- Install transfer control device air breather hose and transfer air breather hose on clip D with the paint mark facing upward.



- 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.



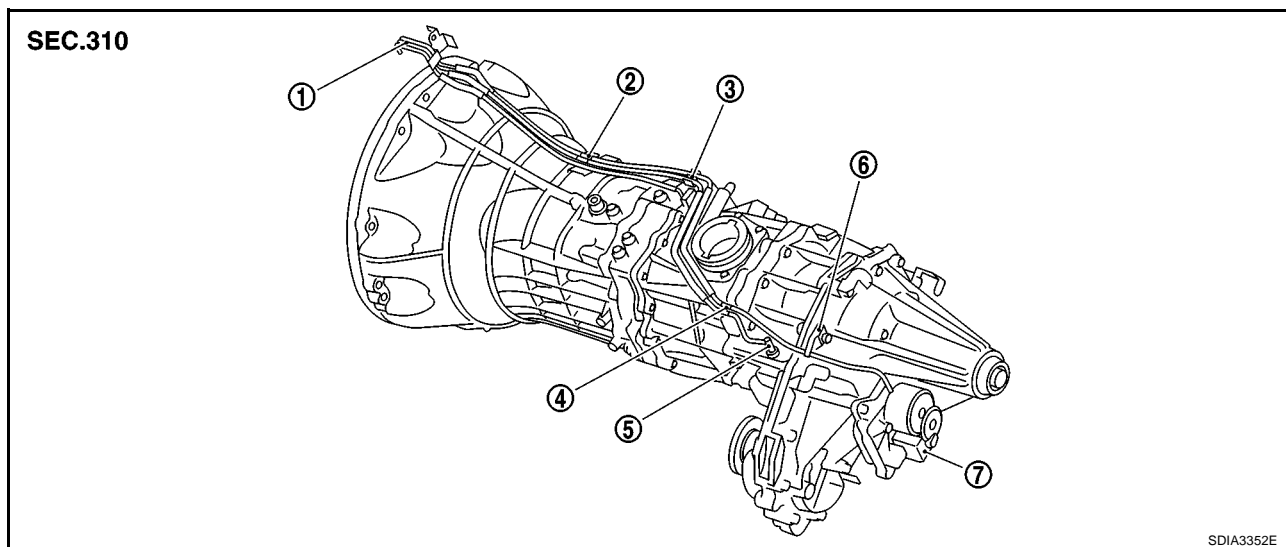
- Install transfer control device air breather hose into transfer control device (case connector) until the hose end reaches the base of the tube. Set transfer control device air breather hose with paint mark facing forward.



AIR BREATHER HOSE

M/T MODELS

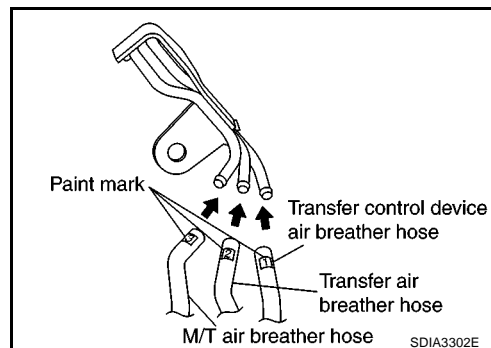
Refer to the figure for air breather hose removal and installation information.



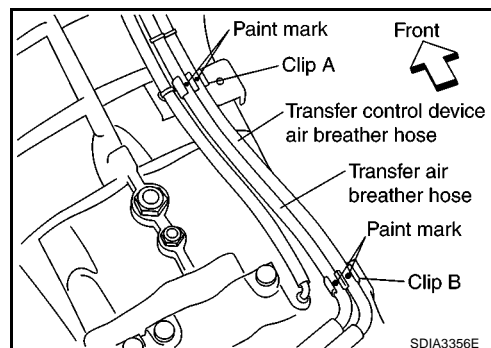
- | | | |
|----------------------------|-----------------------------|----------------------------|
| 1. Breather tube | 2. Clip A | 3. Clip B |
| 4. Clip C | 5. Breather tube (transfer) | 6. Air breather hose clamp |
| 7. Transfer control device | | |

CAUTION:

- Make sure there are no pinched or restricted areas on each air breather hose caused by bending or winding 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.

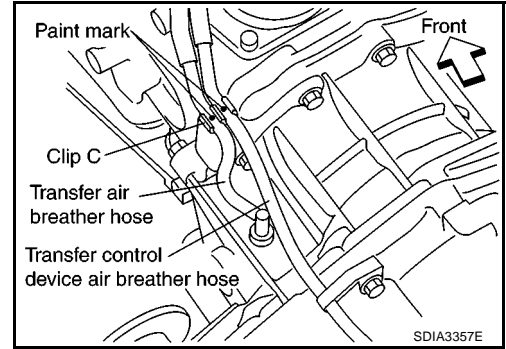


- Install transfer control device air breather hose and transfer air breather hose on clip A and clip B with the paint mark facing upward.

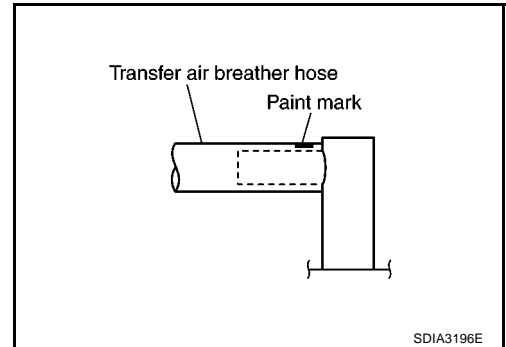


AIR BREATHER HOSE

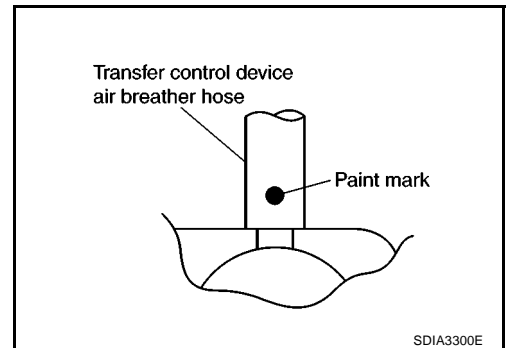
- Install transfer control device air breather hose and transfer air breather hose on clip C with the paint mark facing upward.



- 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

PPF:33100

Removal and Installation

EDS00320

REMOVAL

1. Switch 4WD shift switch to 2WD and set transfer assembly to 2WD.
2. Remove the drain plug and gasket. Drain the fluid. Refer to [TF-12, "Replacement"](#).
3. Remove the transmission undercover.
4. Remove the main muffler. Refer to [EX-3, "Removal and Installation"](#).
5. Remove the front and rear propeller shafts. Refer to [PR-4, "Removal and Installation"](#) (front) and [PR-8, "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 transmission bolts. Refer to [AT-247, "Removal and Installation"](#) (A/T models) or [MT-16, "Removal and Installation from Vehicle"](#) (M/T models).
7. Position two suitable jacks under the transmission and transfer assembly.
8. Remove the transmission crossmember. Refer to [AT-247, "Removal and Installation"](#) (A/T models) or [MT-16, "Removal and Installation from Vehicle"](#) (M/T models).

WARNING:

Support transmission and transfer assembly using two suitable jacks while removing transmission 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-107, "A/T MODELS"](#) (A/T models) or [TF-109, "M/T MODELS"](#) (M/T models).
 - Transfer control device
 - Breather tube (transfer)
11. Remove the transfer to transmission and transmission to transfer bolts.

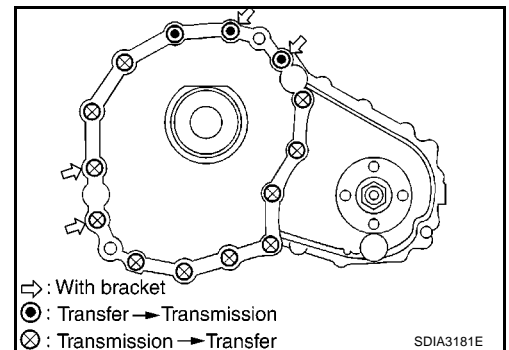
WARNING:

Support transfer assembly with suitable jack while removing it.

12. Remove the transfer assembly.

CAUTION:

Do not damage transmission rear oil seal.



TRANSFER ASSEMBLY

INSTALLATION

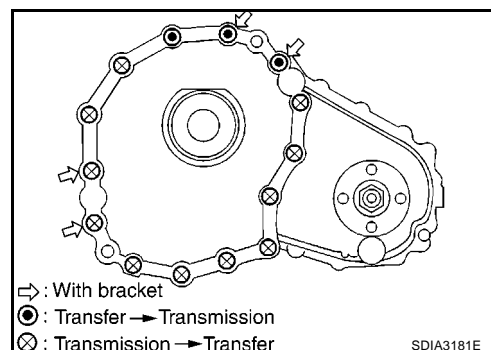
Note the following, and install in the reverse order of removal.

- Tighten the bolts to specification.

Bolt length : 45 mm (1.77 in)

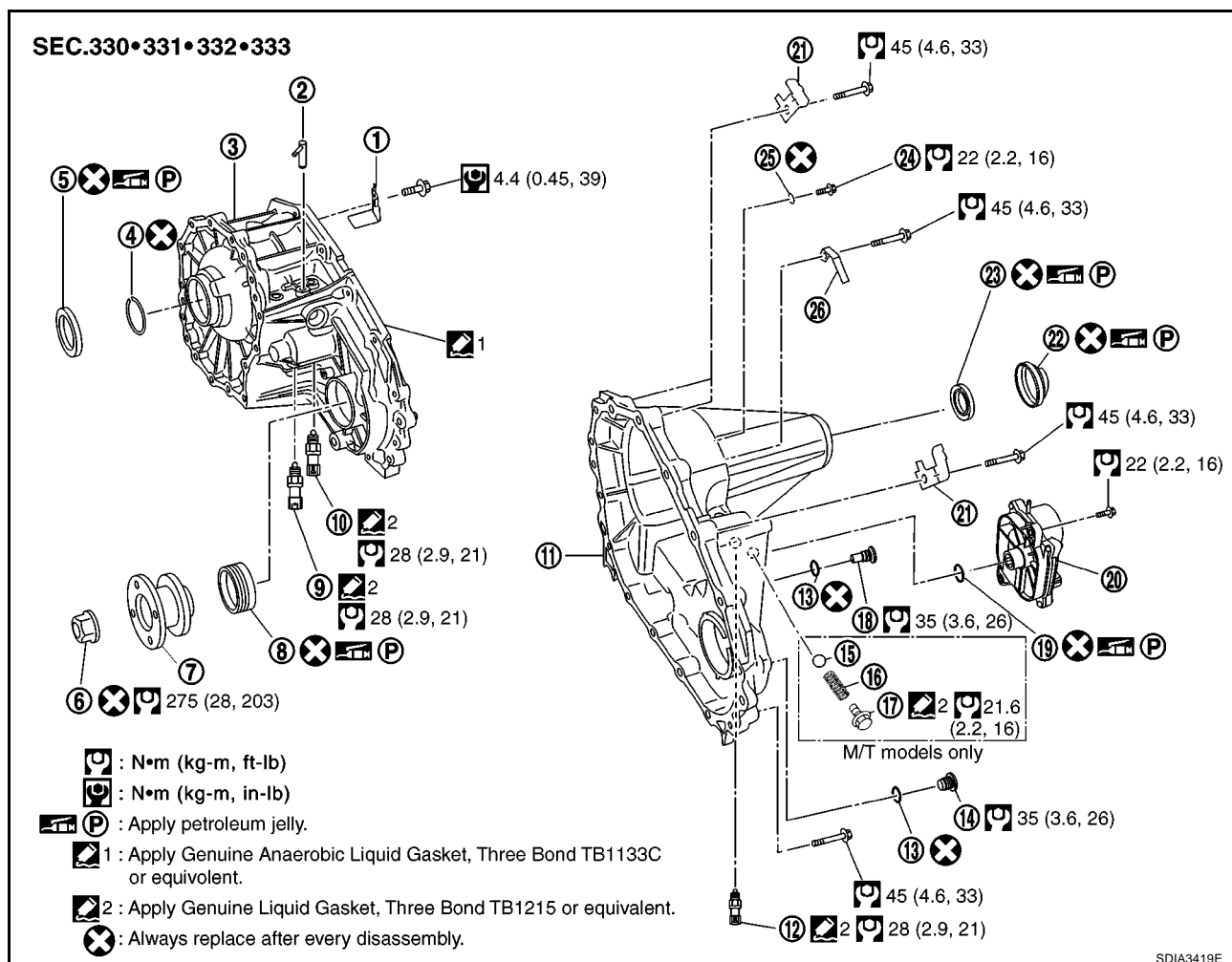
Tightening torque : 36 N·m (3.7kg-m, 27 ft-lb)

- After the installation, check the transfer fluid level and fluid leakage. Refer to [TF-12, "FLUID LEAKAGE AND FLUID LEVEL"](#).
- After filling, start the engine for one minute. Then stop the engine and recheck the transfer fluid.
- 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-4, "Precautions for Transfer Assembly and Transfer Control Unit Replacement"](#).



Disassembly and Assembly COMPONENTS

EDS0032P



- | | | |
|------------------------|-----------------------------|---------------------------------------|
| 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. Check ball |
| 16. Check spring | 17. Check plug | 18. Drain plug |
| 19. O-ring | 20. Transfer control device | 21. Harness bracket |

TRANSFER ASSEMBLY

22. Dust cover

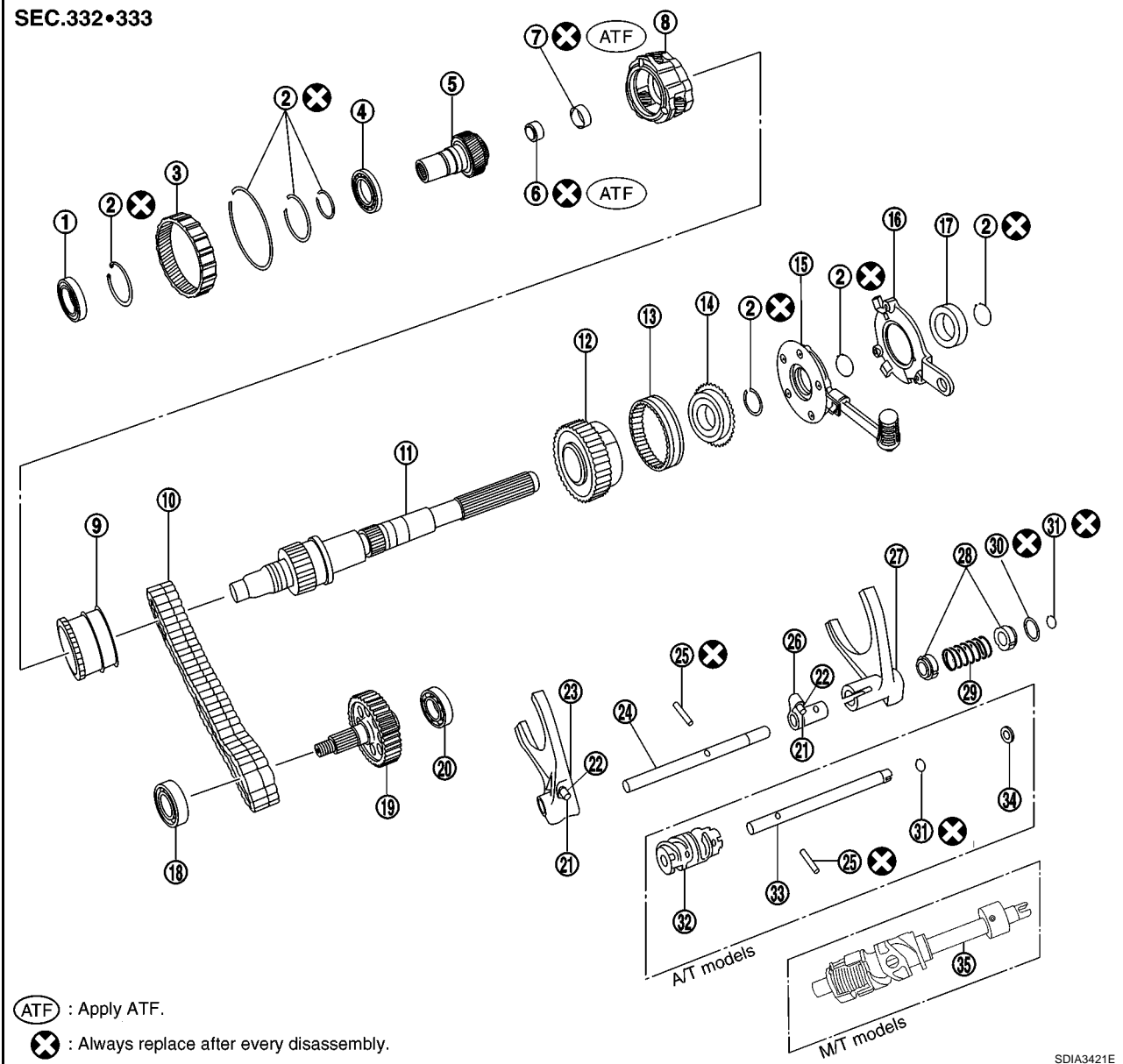
25. Gasket

23. Rear oil seal

26. Air breather hose clamp

24 Retainer bolt

SEC.332•333



1. Input bearing

4. Carrier bearing

7. Metal bushing

10. Drive chain

13. 2-4 sleeve

16. Retainer

19. Front drive shaft

22. Shift collar

25. Retaining pin

28. Fork guide collar

31. Snap ring

34. Spacer

2. Snap ring

5. Sun gear

8. Planetary carrier assembly

11. Mainshaft

14. Clutch gear

17. Mainshaft rear bearing

20. Rear bearing

23. L-H shift fork

26. 2-4 shift bracket

29. 2-4 shift fork spring

32. Drum cam

35. Control shift rod assembly

3. Internal gear

6. Needle bearing

9. L-H sleeve

12. Sprocket

15. Oil pump assembly

18. Front bearing

21. Clevis pin

24. L-H shift rod

27. 2-4 shift fork

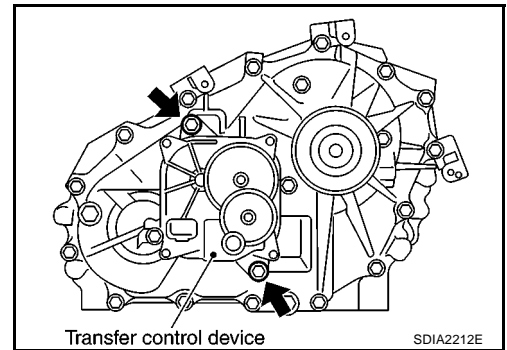
30. Retaining ring

33. Control shift rod

TRANSFER ASSEMBLY

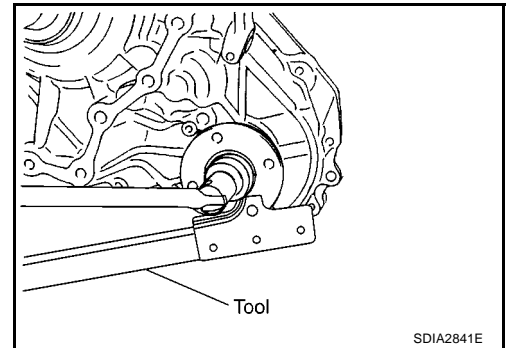
DISASSEMBLY

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.

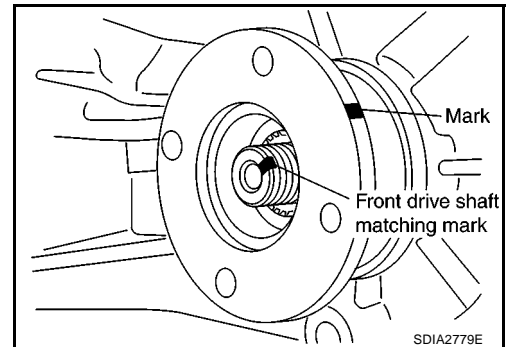
Tool number : KV40104000



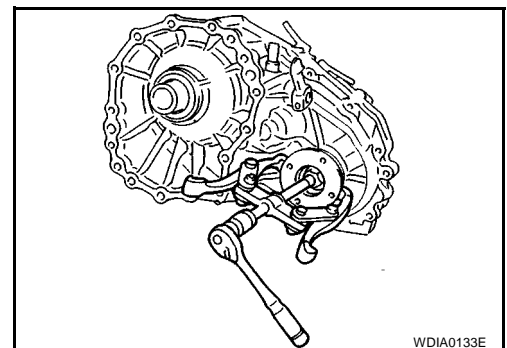
5. Put a matching mark on top of the front drive shaft in line with the mark on the companion flange.

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.



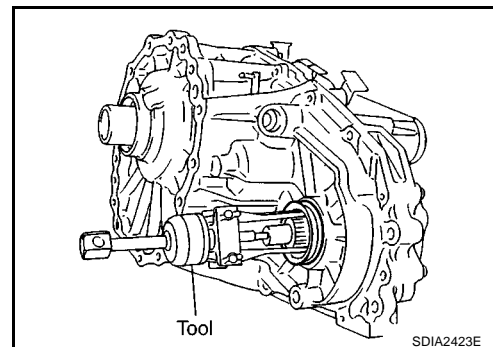
TRANSFER ASSEMBLY

7. Remove the front oil seal from the front case, using Tool.

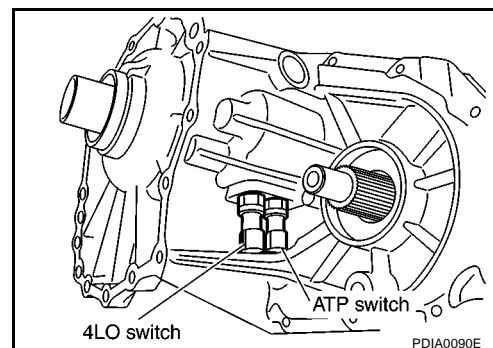
Tool number : KV381054S0

CAUTION:

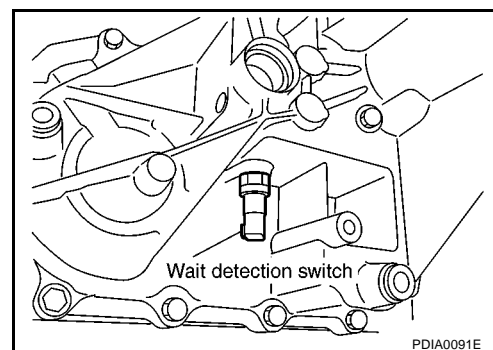
Do not damage front case or front drive shaft.



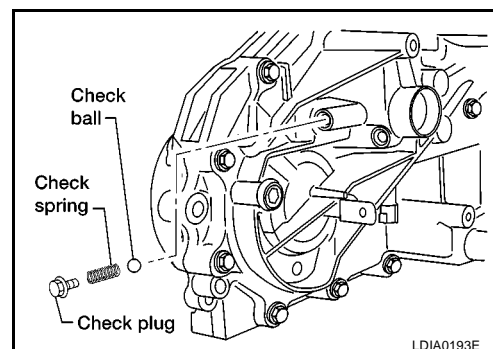
8. Remove the 4LO switch [gray (with green paint)] and ATP switch (black) from the front case.



9. Remove the wait detection switch (gray) from the rear case.



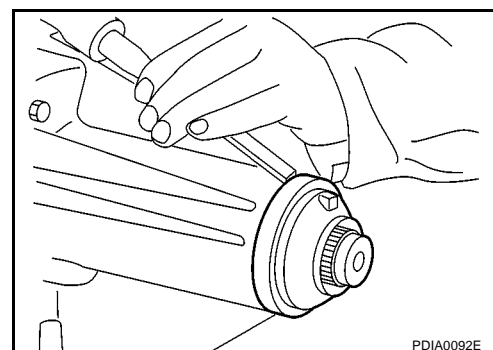
10. Remove check plug, check spring and check ball (M/T models only).



11. Remove the dust cover from the rear case, using suitable tool.

CAUTION:

Do not damage rear case.



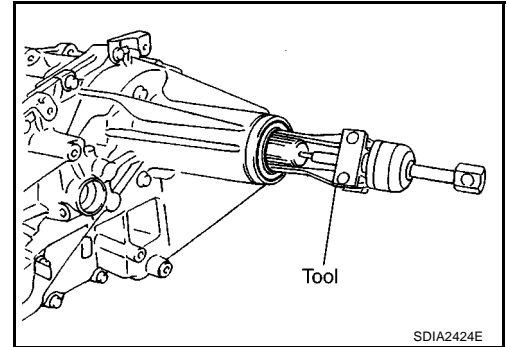
TRANSFER ASSEMBLY

12. Remove the rear oil seal from the rear case, using Tool.

CAUTION:

Do not damage rear case or mainshaft.

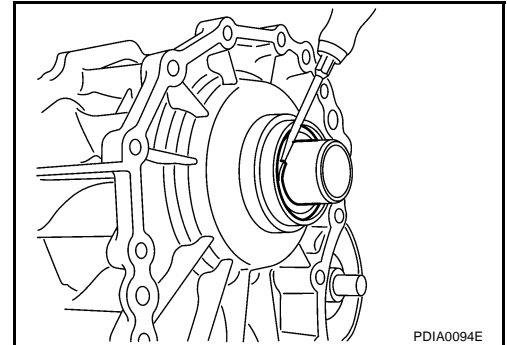
Tool number : KV381054S0



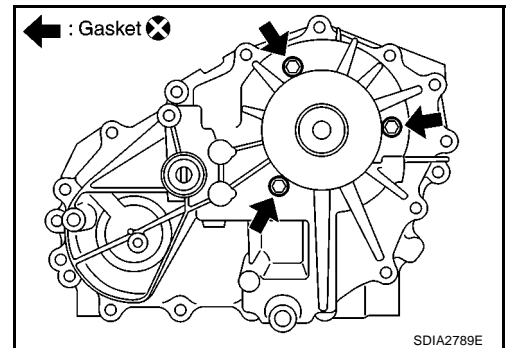
13. Remove the input oil seal from the front case, using suitable tool.

CAUTION:

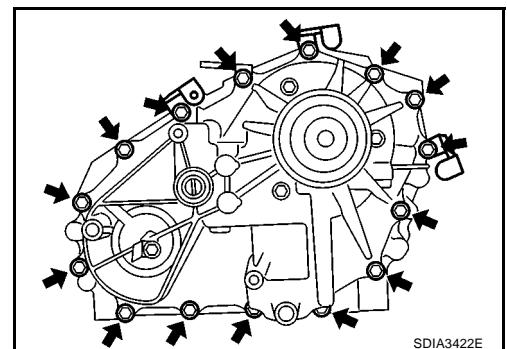
Do not damage front case, sun gear or input bearing.



14. Remove the retainer bolts and gaskets.



15. Remove rear case bolts, harness bracket and air breather hose clamp from the rear case.



16. Separate the front case from the rear case. Then remove the rear case by prying it up, using suitable tool.

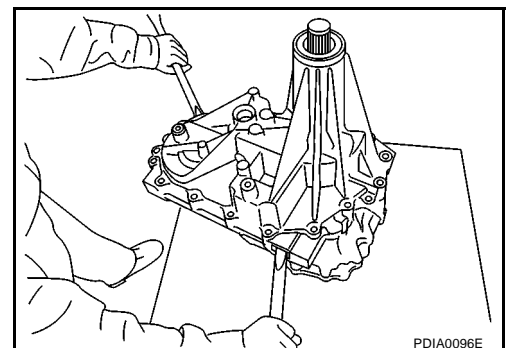
CAUTION:

Do not damage the mating surface.

17. Remove the spacer from the control shift rod (A/T models only).

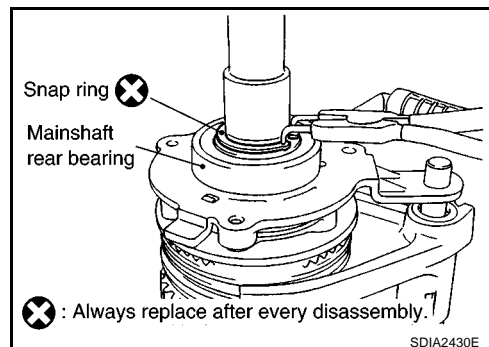
CAUTION:

Do not drop spacer.



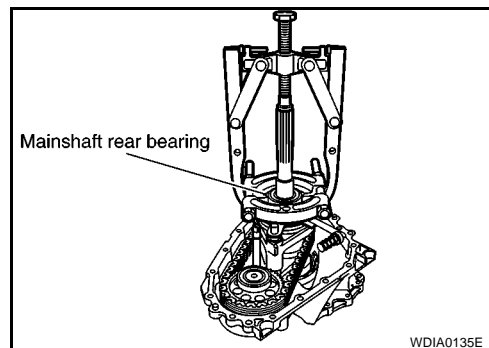
TRANSFER ASSEMBLY

18. Remove the snap ring from the mainshaft, using suitable tool.



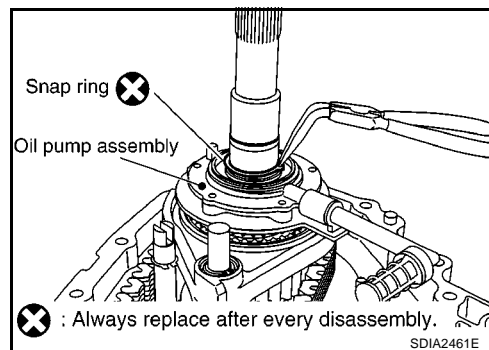
19. Remove the mainshaft rear bearing from the mainshaft, using suitable tool.

20. Remove the retainer from the mainshaft.



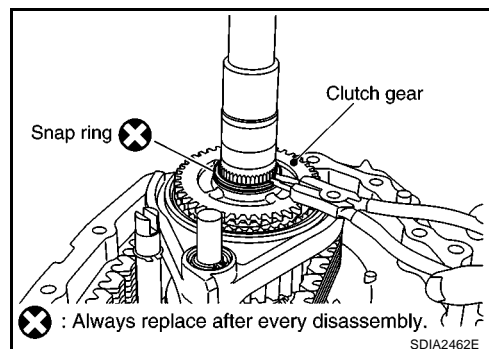
21. Remove the snap ring from the mainshaft, using suitable tool.

22. Remove the oil pump assembly from the mainshaft.



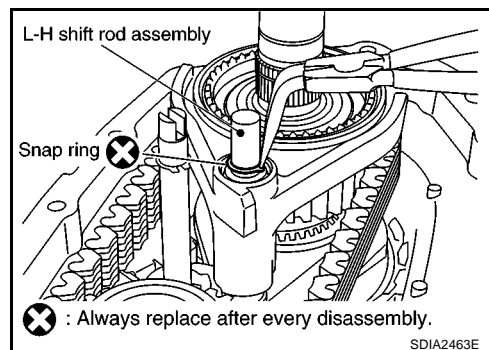
23. Remove the snap ring from the mainshaft, using suitable tool.

24. Remove the clutch gear from the mainshaft.



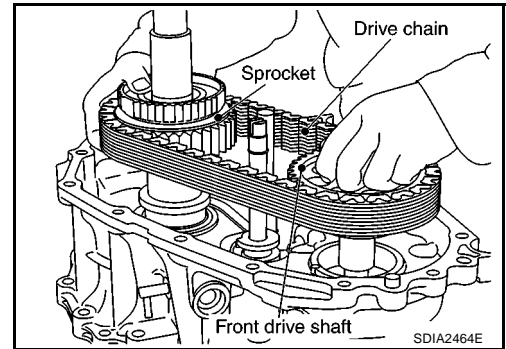
25. Remove the snap ring from the L-H shift rod assembly, using suitable tool.

26. Remove the 2-4 sleeve and 2-4 shift fork assembly from the mainshaft.



TRANSFER ASSEMBLY

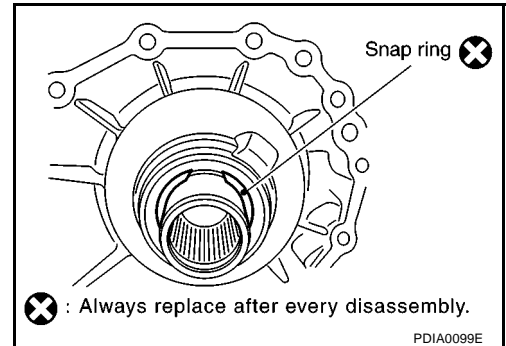
27. Remove the drive chain together with the sprocket and front drive shaft from the front case.
28. Remove the mainshaft from the sun gear assembly.
29. Remove the L-H shift rod assembly and control shift rod assembly from the front case.
30. Remove the L-H sleeve together with the L-H shift fork from the planetary carrier assembly.



31. Remove the snap ring from the sun gear.

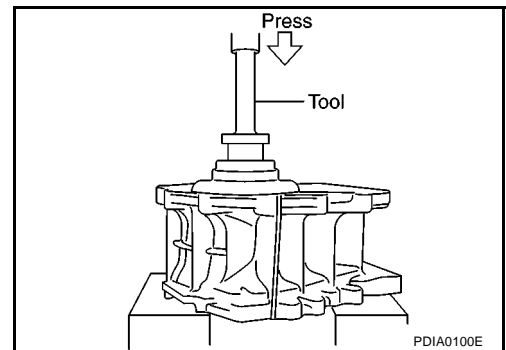
CAUTION:

Do not damage sun gear or input bearing.

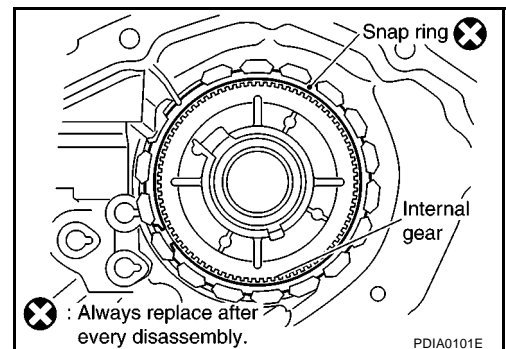


32. Press the sun gear assembly and planetary carrier assembly from the front case, using Tool.

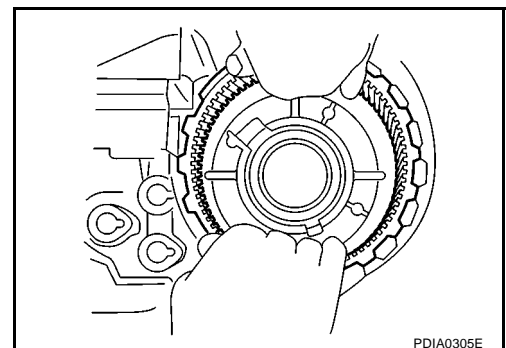
Tool number : KV38100200



33. Remove the snap ring from the front case.

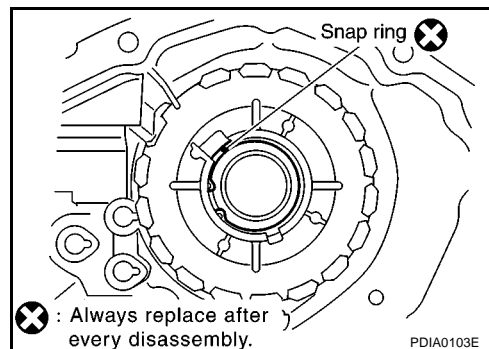


34. Remove the internal gear from the front case.



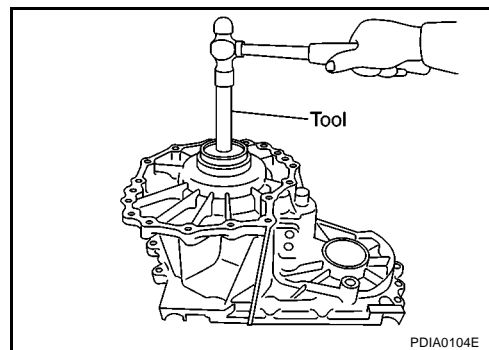
TRANSFER ASSEMBLY

35. Remove the snap ring from the front case.



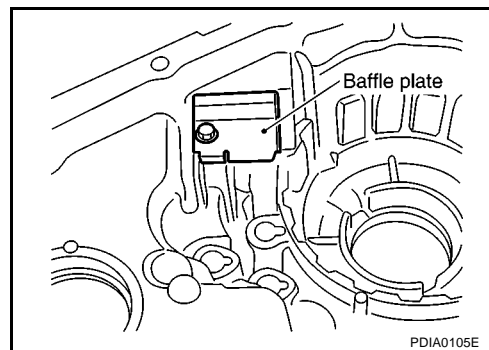
36. Remove the input bearing from the front case, using Tool.

Tool number : KV38100200



37. Remove the baffle plate from the front case.

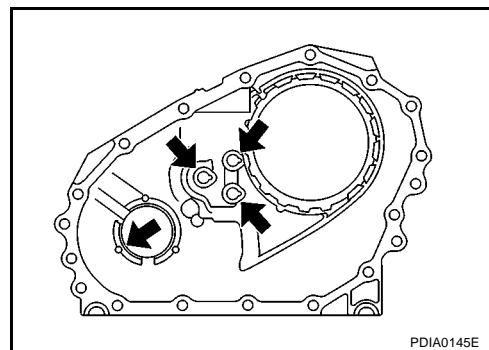
38. Remove the breather tube from the front case.



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.

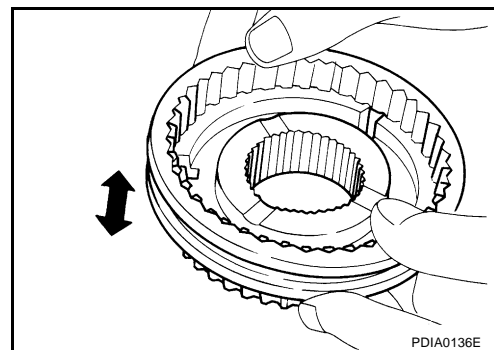


TRANSFER ASSEMBLY

Sleeve

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

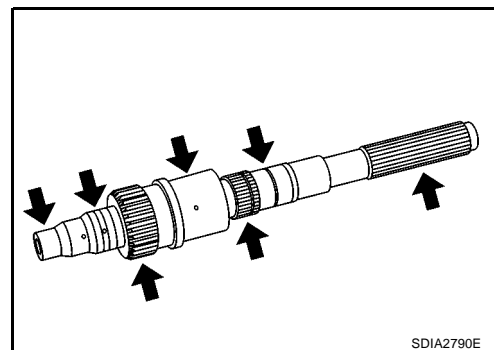
- Damage and excessive wear of the contact surfaces of the sprocket, mainshaft and sleeve.
- Sleeve must move smoothly.



Gear, Shaft and Drive Chain

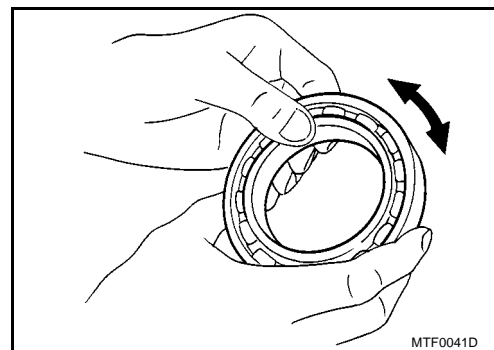
Check the items below. If necessary, replace them with new ones.

- 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.

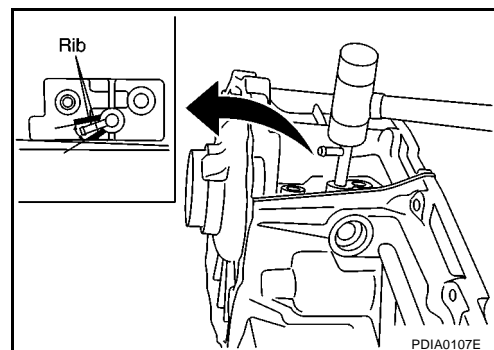


ASSEMBLY

1. Install the breather tube.

CAUTION:

Install breather tube in the direction shown.

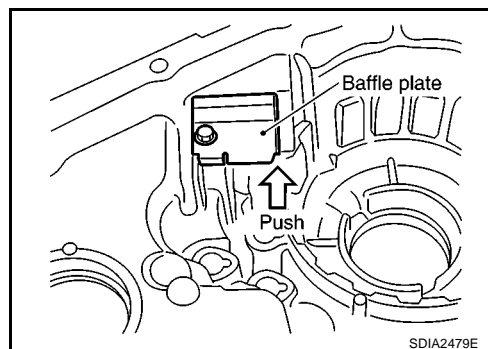


TRANSFER ASSEMBLY

2. Install the baffle plate to the front case. Tighten the bolt to the specified torque. Refer to [TF-112, "COMPONENTS"](#).

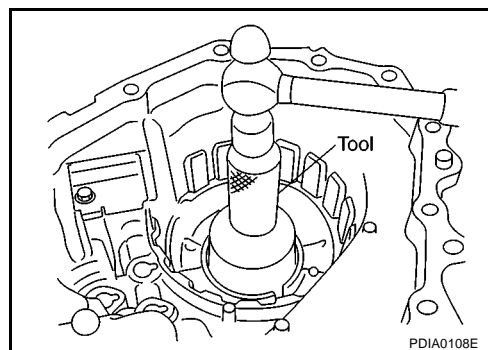
CAUTION:

Install baffle plate by pushing it in the direction shown while tightening the bolt.



3. Install the input bearing to the front case, using Tool.

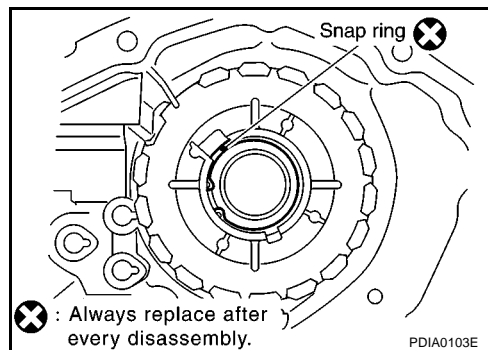
Tool number : ST30720000



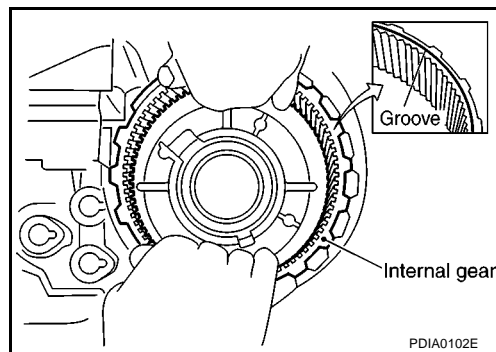
4. Install the snap ring to the front case.

CAUTION:

Do not reuse snap ring.



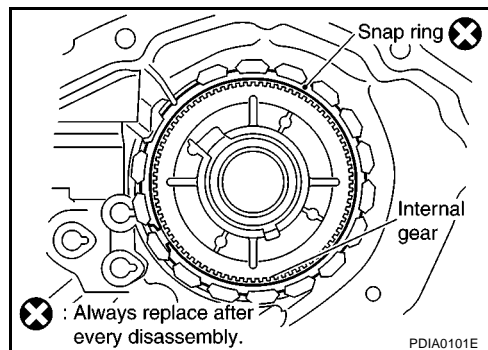
5. Install the internal gear with the groove facing up into the front case.



6. Install the snap ring to the front case.

CAUTION:

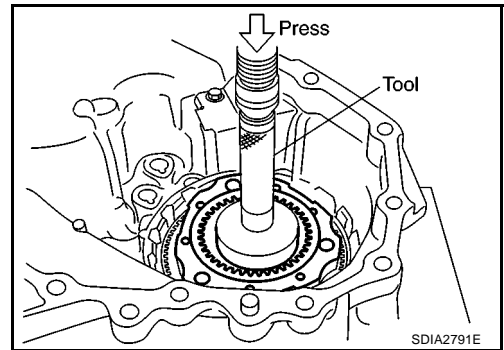
Do not reuse snap ring.



TRANSFER ASSEMBLY

7. Install the planetary carrier assembly and sun gear assembly to the front case, using Tool.

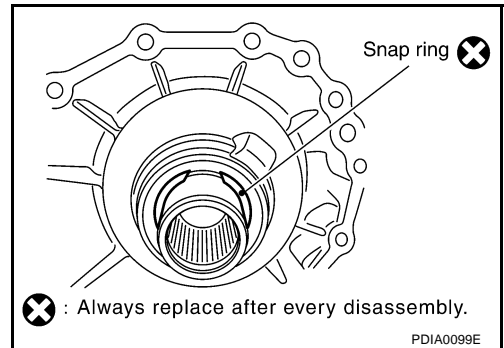
Tool number : KV38100200



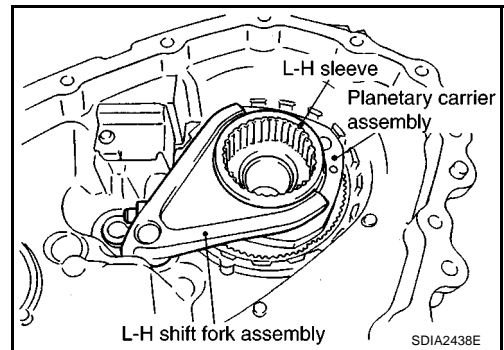
8. Install the snap ring to the sun gear.

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.

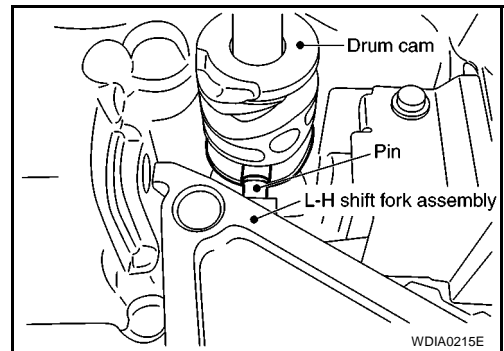


10. Install the control shift rod assembly to the front case.

CAUTION:

Set pin of L-H shift fork assembly into the groove of drum cam.

11. Turn the control shift rod assembly fully counterclockwise.

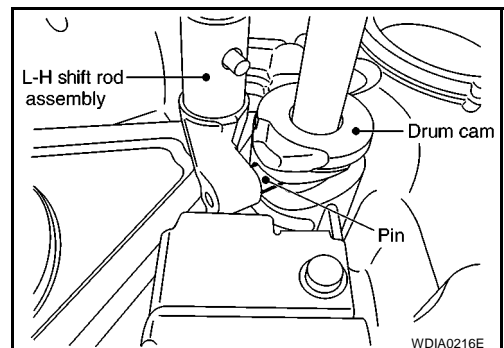


12. Install the L-H shift rod assembly through the L-H shift fork assembly opening to the front case.

CAUTION:

Set pin of L-H shift rod assembly into the groove of drum cam.

13. Install the mainshaft to the sun gear assembly.

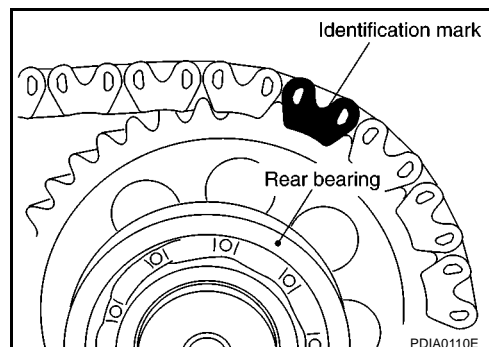


TRANSFER ASSEMBLY

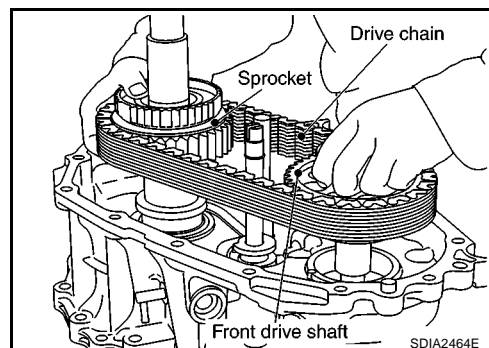
14. Install the drive chain to the front drive shaft and sprocket.

CAUTION:

Install with the identification mark of drive chain on the side of the rear bearing of front drive shaft.



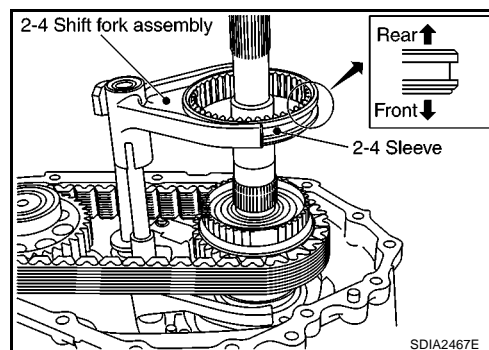
15. Install the drive chain together with the front drive shaft and sprocket to the front case.



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.

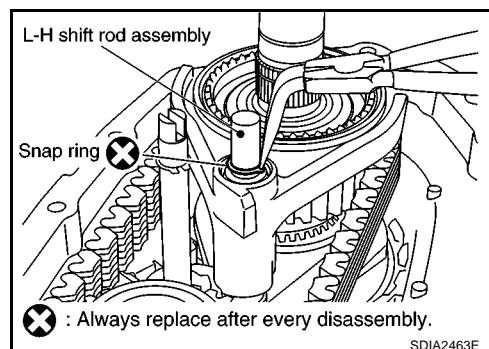


17. Install the snap ring to the L-H shift rod assembly, using suitable tool.

CAUTION:

Do not reuse snap ring.

18. Install the clutch gear to the mainshaft.

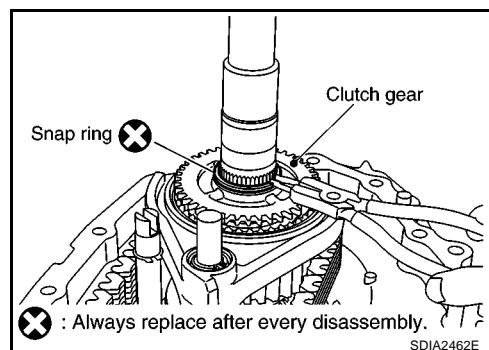


19. Install the snap ring to the mainshaft, using suitable tool.

CAUTION:

Do not reuse snap ring.

20. Install the oil pump assembly to the mainshaft.

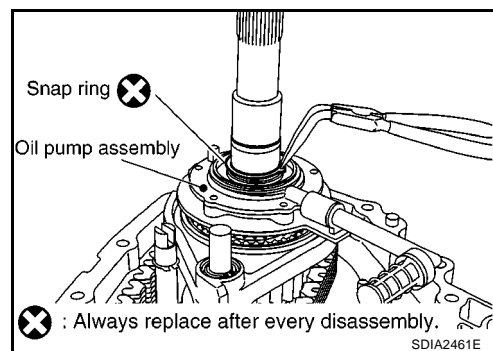


TRANSFER ASSEMBLY

21. Install the snap ring to the mainshaft, using suitable tool.

CAUTION:

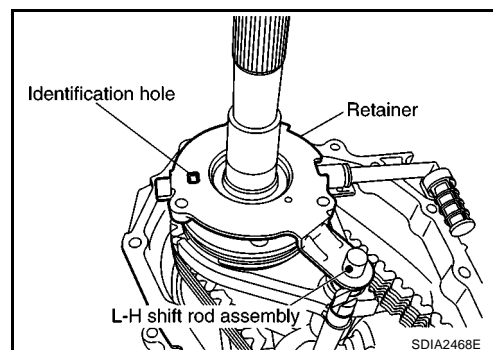
Do not reuse snap ring.



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.

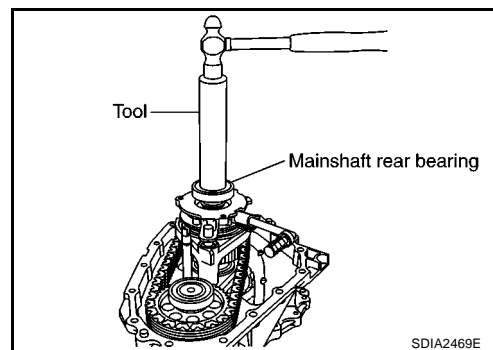


23. Install the mainshaft rear bearing to the mainshaft, using Tool.

Tool number : KV32102700

CAUTION:

Do not push too hard in order to avoid snap rings becoming dislodged from mainshaft.

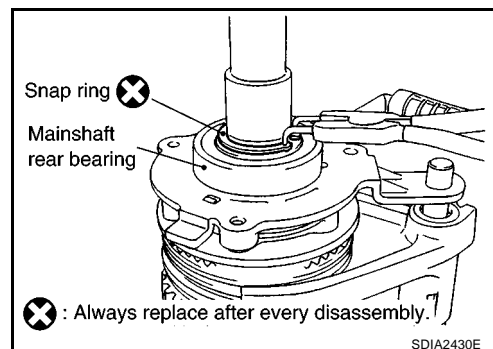


24. Install the snap ring to the mainshaft, using suitable tool.

CAUTION:

Do not reuse snap ring.

25. Install the spacer to the control shift rod (A/T models only).

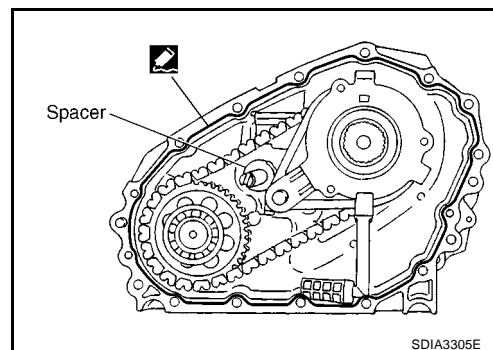


26. Apply recommended sealant to the mating surface of the front case. Refer to [TF-112, "COMPONENTS"](#).

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.

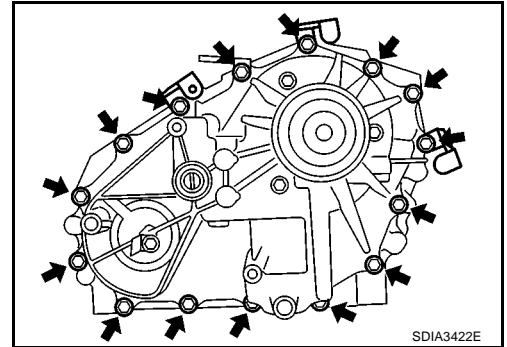


TRANSFER ASSEMBLY

28. Tighten the bolts to the specified torque. Refer to [TF-112, "COMPONENTS"](#).

CAUTION:

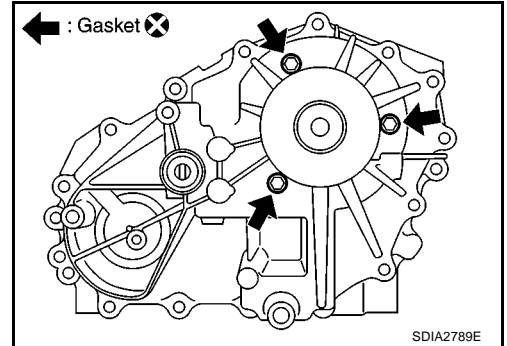
Be sure to install the harness brackets and air breather hose clamp.



29. Install the retainer bolts with new gaskets. Tighten the bolts to the specified torque. Refer to [TF-112, "COMPONENTS"](#).

CAUTION:

- Do not reuse gasket.
- Tighten them to the specified torque again.



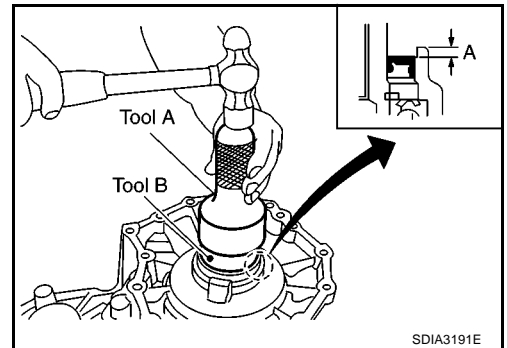
30. Apply petroleum jelly to the circumference of the input oil seal, and install it to the front case, using Tools.

Dimension A : 4.0 - 4.6 mm (0.157 - 0.181 in)

Tool number A: ST30720000
B: KV40104830

CAUTION:

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

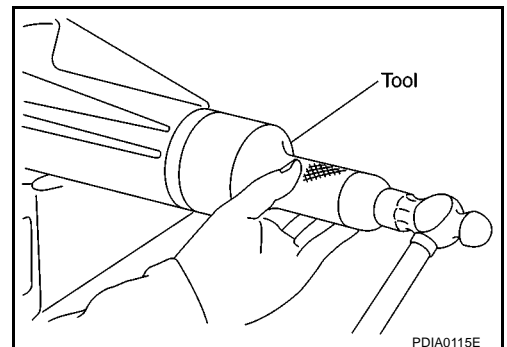


31. Install the rear oil seal until it is flush with the end face of the rear case, using Tool.

Tool number : KV38100500

CAUTION:

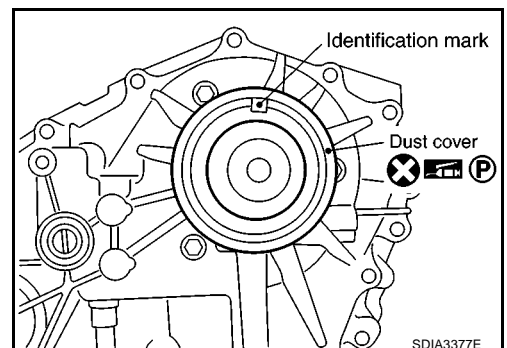
- Do not reuse oil seal.
- Apply petroleum jelly to oil seal.



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

CAUTION:

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

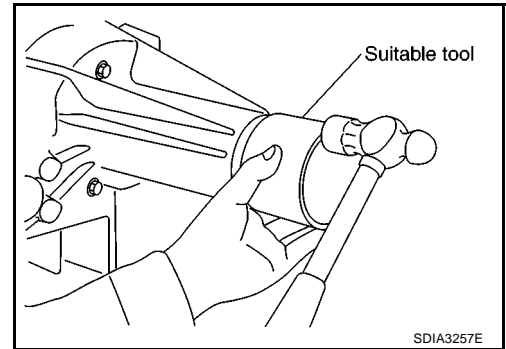


TRANSFER ASSEMBLY

33. Install the dust cover to the rear case, using suitable tool.

CAUTION:

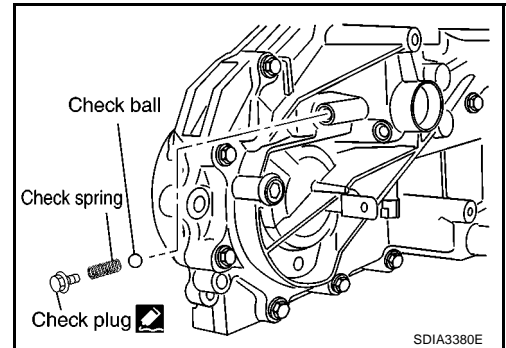
- Do not reuse dust cover.
- Apply petroleum jelly to dust cover.



34. Install check ball and check spring to rear case (M/T models only).
35. Apply recommended sealant to thread of check plug, then install it to rear case and tighten to the specified torque (M/T models only). Refer to [TF-112, "COMPONENTS"](#).

CAUTION:

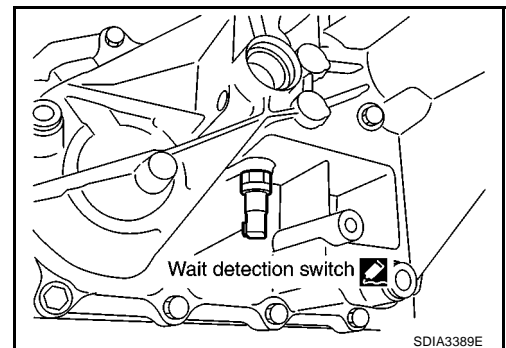
Remove old sealant and oil adhering to threads.



36. Apply recommended 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-112, "COMPONENTS"](#).

CAUTION:

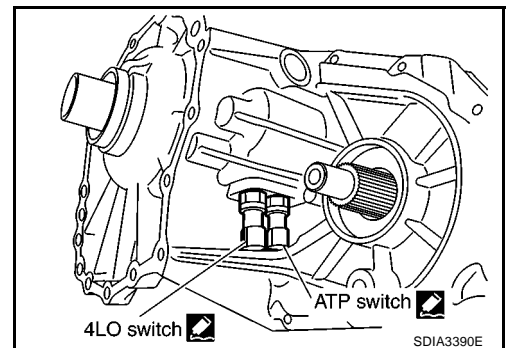
Remove old sealant and oil adhering to threads.



37. Apply recommended 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-112, "COMPONENTS"](#).

CAUTION:

Remove old sealant and oil adhering to threads.



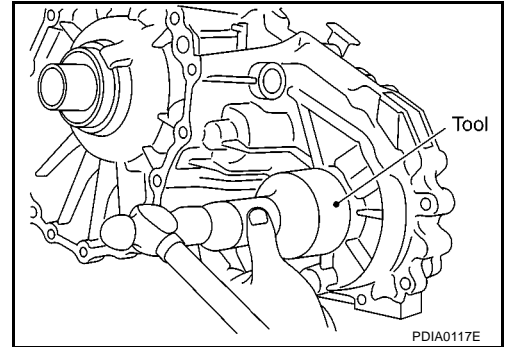
TRANSFER ASSEMBLY

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

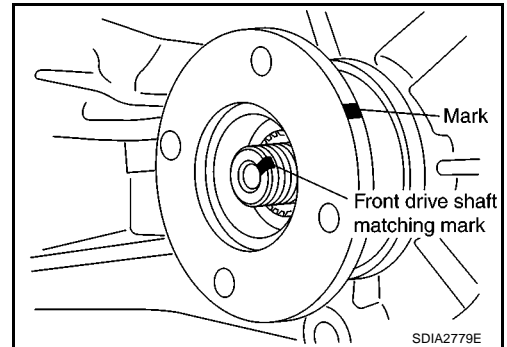
Tool number : KV38100500

CAUTION:

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



39. Align the matching mark on the front drive shaft with the mark on the companion flange, then install the companion flange.

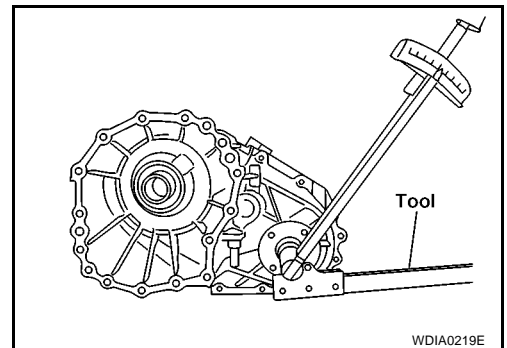


40. Install the companion flange self-lock nut. Tighten to the specified torque, using Tool. Refer to [TF-112, "COMPONENTS"](#).

Tool number : KV40104000

CAUTION:

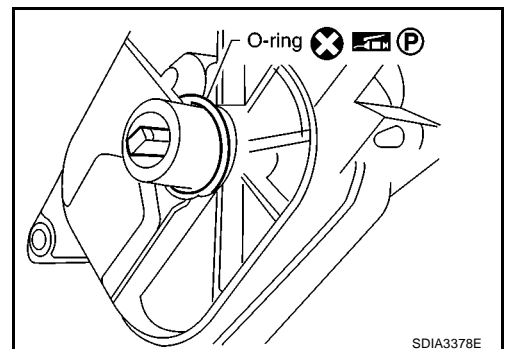
- Do not reuse self-lock nut.



41. Install the O-ring to the transfer control device.

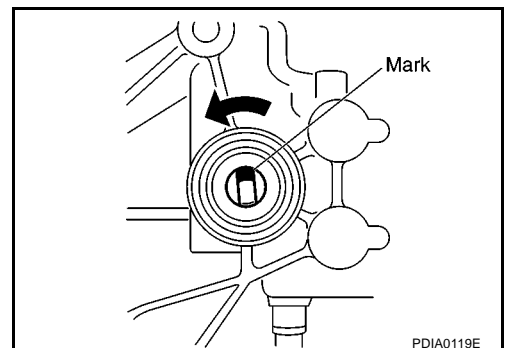
CAUTION:

- Do not reuse O-ring.
- Apply petroleum jelly to O-ring.



42. 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.

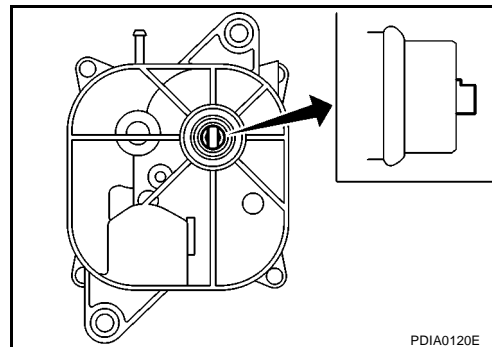


TRANSFER ASSEMBLY

- b. Align the transfer control device shaft cutout with the mark on the control shift rod, and install it.

NOTE:

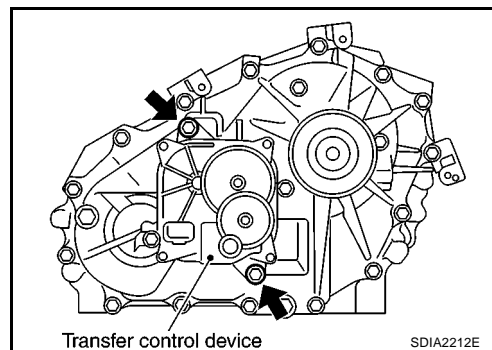
Turn the transfer control device when the transfer control device connection does not match.



- c. Tighten the bolts to the specified torque. Refer to [TF-112, "COMPONENTS"](#).
43. Install the drain plug and filler plug with new gaskets to the rear case. Tighten to the specified torque. Refer to [TF-112, "COMPONENTS"](#).

CAUTION:

Do not reuse gaskets.



PLANETARY CARRIER

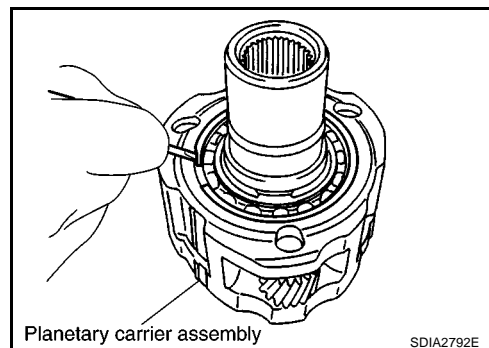
PLANETARY CARRIER

PFP:33113

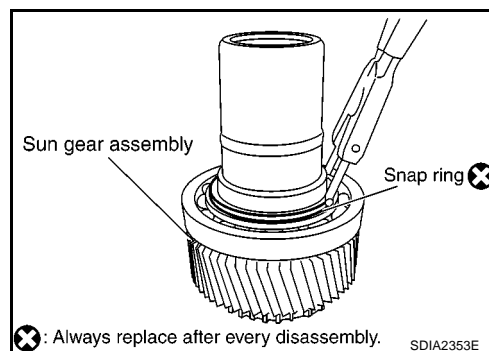
Disassembly and Assembly

EDS0032Q

1. Remove the snap ring.
2. Remove the sun gear assembly from the planetary carrier assembly, using suitable tool.

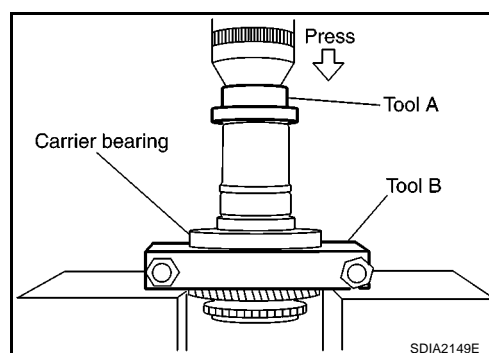


3. Remove the snap ring from the sun gear assembly, using suitable tool.



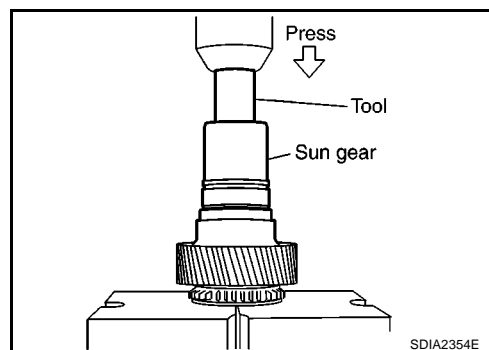
4. Remove the carrier bearing from the sun gear, using Tools.

Tool number **A: ST35300000**
B: ST30021000



5. Remove the needle bearing from the sun gear, using Tools.

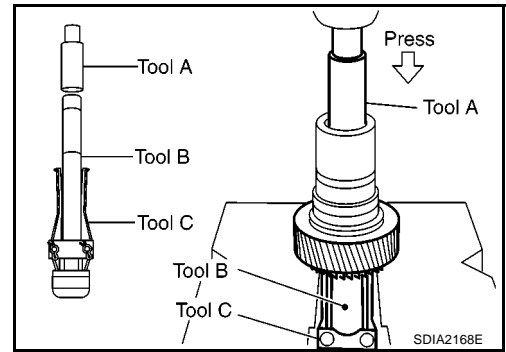
Tool number **: ST33710000**



PLANETARY CARRIER

6. Remove the metal bushing from the sun gear, using Tools.

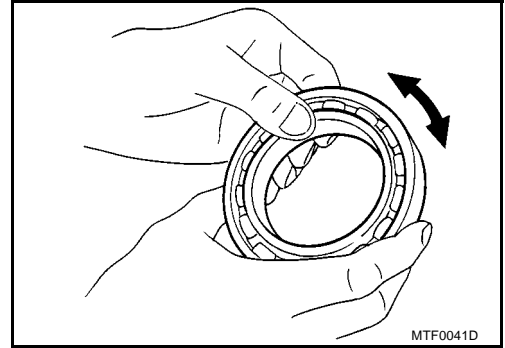
Tool number **A: ST33710000**
 B: ST35325000
 C: KV381054S0



INSPECTION AFTER DISASSEMBLY

Bearing

Check the bearing for damage and rough rotation. If necessary, replace the bearing with a new one.

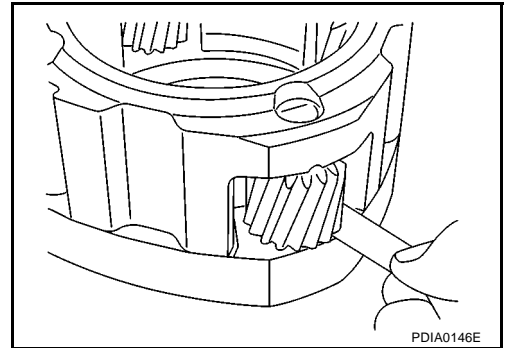


Planetary Carrier

- Measure the end play of each pinion gear. If it is out of specification, replace the planetary carrier assembly with new one.

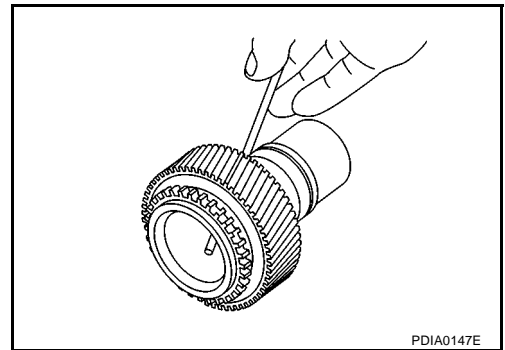
Pinion gear end play : 0.1 - 0.7 mm (0.004 - 0.028 in)

- 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

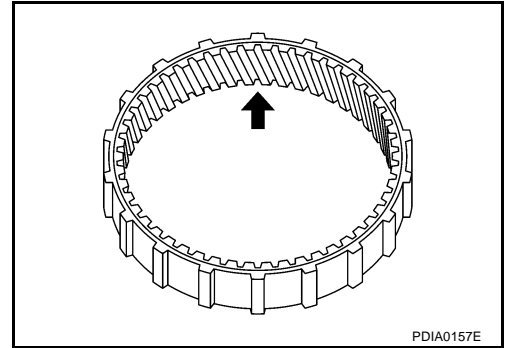
- Check if the oil passage of the sun gear assembly is clogged. For this, try to pass a 3.6 mm (0.142 in) dia. wire through the oil passage as shown.
- Check the sliding and contact surface of each gear and bearing for damage, burrs, partial wear, dents and other abnormality. If any is found, replace the sun gear assembly with a new one.



PLANETARY CARRIER

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.



ASSEMBLY

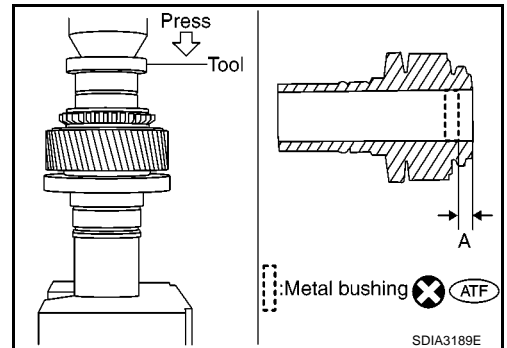
1. Apply ATF to the metal bushing, then install the metal bushing until it becomes "Dimension A", using Tool.

Dimension A : 7.7 - 8.3mm (0.303 - 0.327in)

Tool number : ST35300000

CAUTION:

Do not reuse metal bushing.



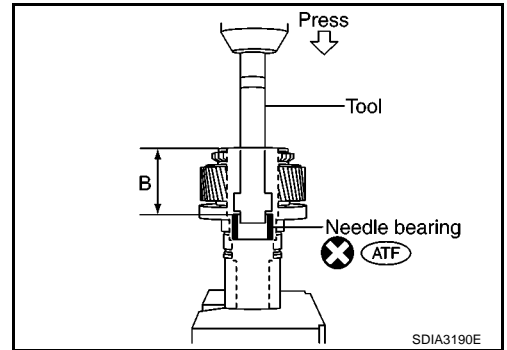
2. Apply ATF to the needle bearing, then install the needle bearing until it becomes "Dimension B", using Tool.

Dimension B : 62.5 - 63.1mm (2.461 - 2.484in)

Tool number : ST33220000

CAUTION:

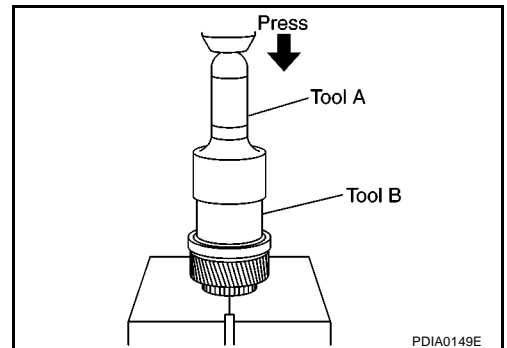
Do not reuse needle bearing.



3. Install the carrier bearing to the sun gear, using Tools.

Tool number A: ST30720000

B: ST27863000

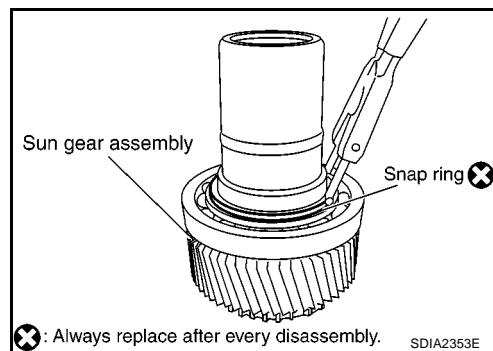


PLANETARY CARRIER

4. Install the snap ring to the sun gear assembly, using suitable tool.

CAUTION:

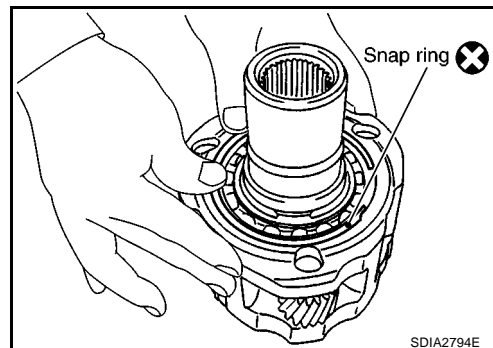
Do not reuse snap ring.



5. Install the sun gear assembly to the planetary carrier assembly.
6. Install the snap ring to the planetary carrier assembly.

CAUTION:

Do not reuse snap ring.



FRONT DRIVE SHAFT

FRONT DRIVE SHAFT

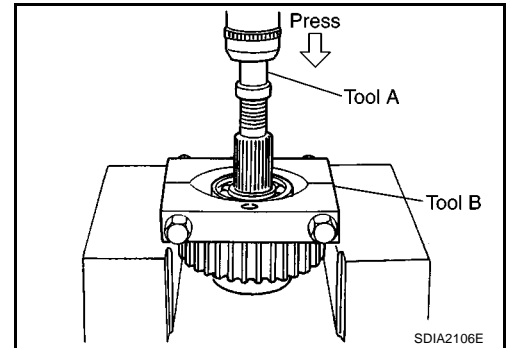
PFP:39100

Disassembly and Assembly DISASSEMBLY

EDS0032R

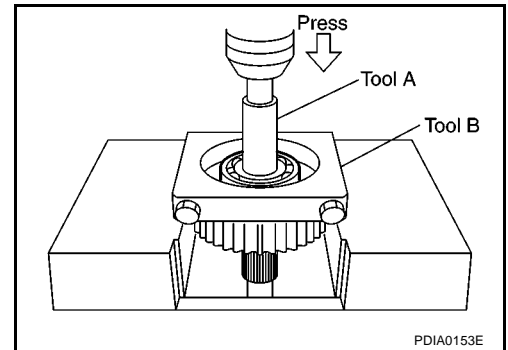
1. Remove the front bearing, using Tools.

Tool number **A: ST35300000**
 B: ST30021000



2. Remove the rear bearing, using Tools.

Tool number **A: ST33710000**
 B: ST30021000

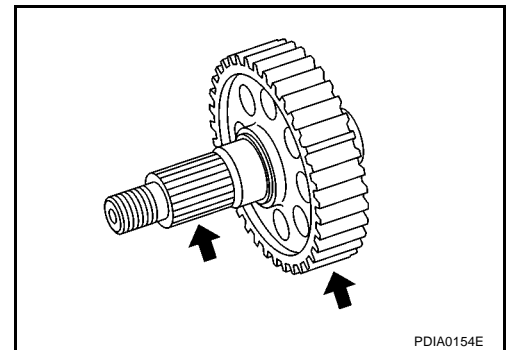


INSPECTION AFTER DISASSEMBLY

Front Drive Shaft

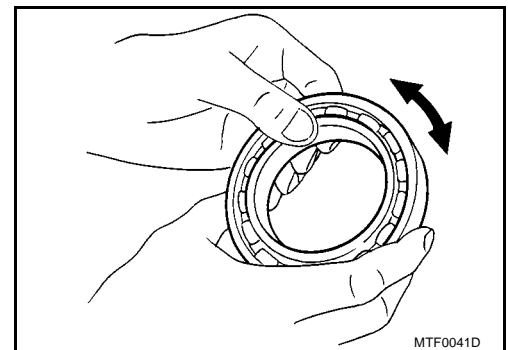
Check the items below. If necessary, replace them with new ones.

- 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.

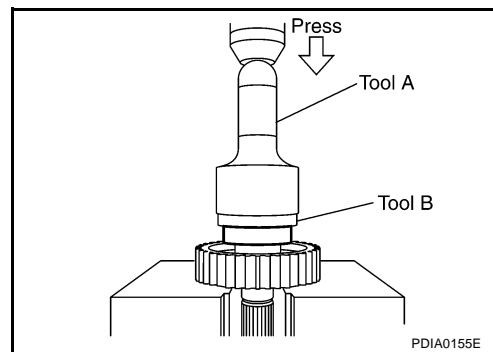


FRONT DRIVE SHAFT

ASSEMBLY

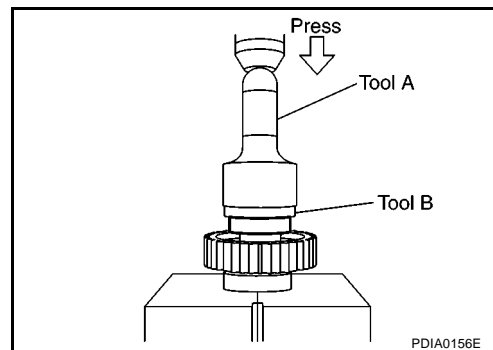
1. Install the rear bearing, using Tools.

Tool number **A: KV38100500**
 B: ST30901000



2. Install the front bearing, using Tools.

Tool number **A: KV38100500**
 B: ST30901000



SHIFT CONTROL

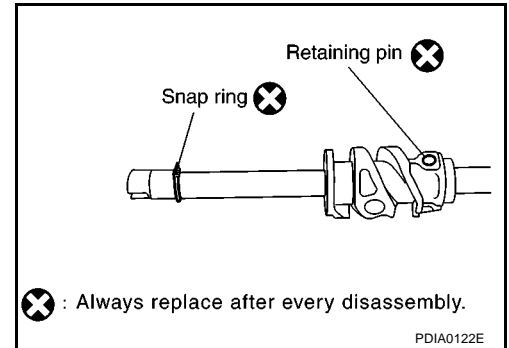
SHIFT CONTROL

PFP:33167

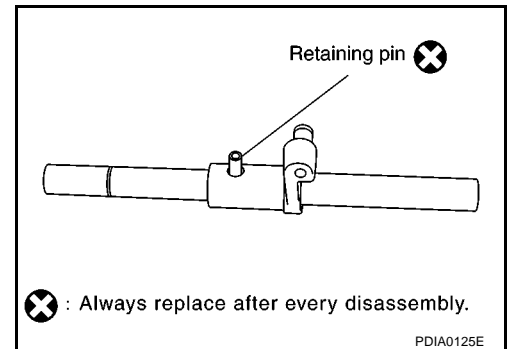
EDS0032S

Disassembly and Assembly DISASSEMBLY (A/T MODELS)

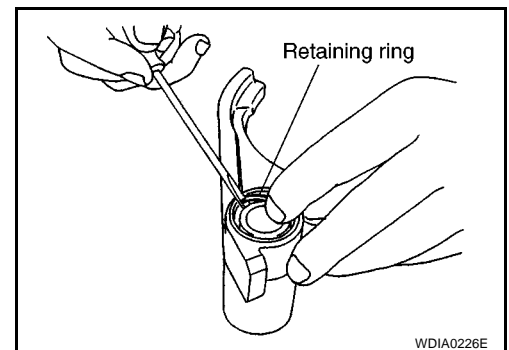
1. Remove the snap ring.
2. Remove the retaining pin.
3. Remove the drum cam from the control shift rod.



4. Remove the retaining pin from the L-H shift rod.
5. Remove the 2-4 shift bracket.

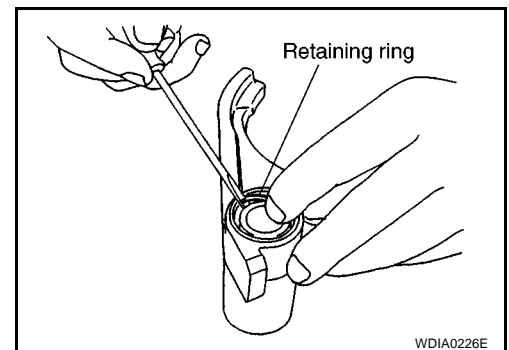


6. Remove the retaining ring from the 2-4 shift fork, using suitable tool.
7. Remove the fork guide collar and 2-4 shift fork spring from the 2-4 shift fork.



DISASSEMBLY (M/T MODELS)

1. Remove the retaining ring from the 2-4 shift fork, using suitable tool.
2. Remove the fork guide collar and 2-4 shift fork spring from the 2-4 shift fork.



SHIFT CONTROL

INSPECTION AFTER DISASSEMBLY

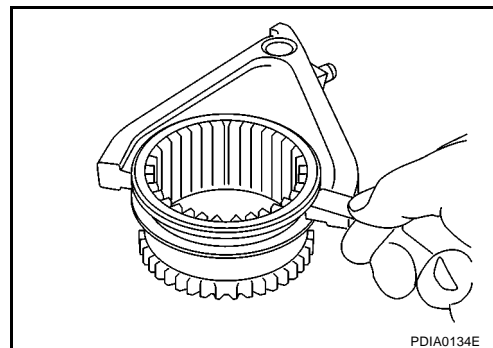
Shift Fork

- Measure the clearance between the shift fork and sleeve. If it is out of specification, replace it with a new one.

Standard value

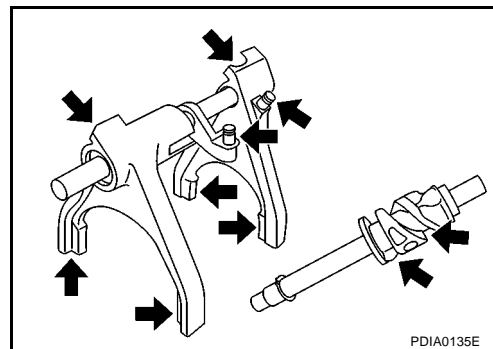
2-4 : Less than 0.46 mm (0.018 in)

L-H : Less than 0.46 mm (0.018 in)



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 (A/T MODELS)

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.

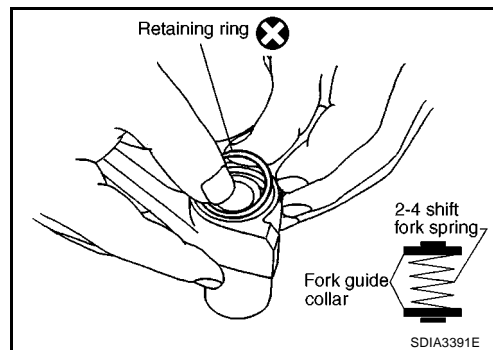
CAUTION:

Use caution when installing 2-4 shift bracket.

3. Install the fork guide collar and 2-4 shift fork spring to the 2-4 shift fork, and then secure it with the retaining ring.

CAUTION:

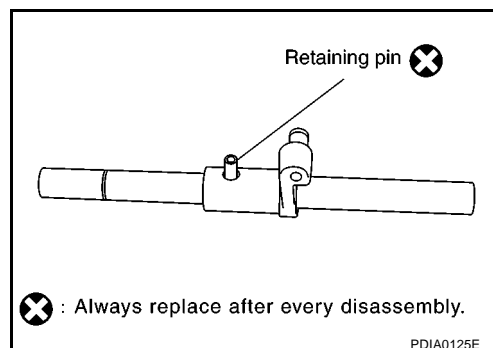
- Do not reuse retaining ring.
- Be careful with orientation.



4. Install the 2-4 shift bracket to the L-H shift rod.
5. Install the retaining pin evenly to the L-H shift rod.

CAUTION:

Do not reuse retaining pin.



SHIFT CONTROL

6. Install the drum cam to the control shift rod, and then secure it with the retaining pin.

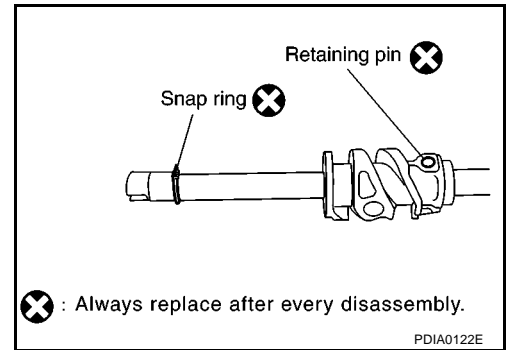
CAUTION:

Do not reuse retaining pin.

7. Install the snap ring to the control shift rod.

CAUTION:

Do not reuse snap ring.



ASSEMBLY (M/T MODELS)

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.

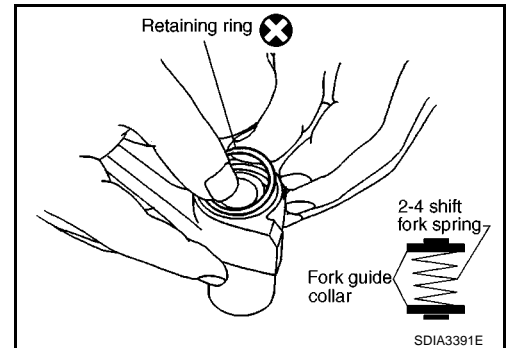
CAUTION:

Use caution when installing 2-4 shift bracket.

3. Install the fork guide collar and 2-4 shift fork spring to the 2-4 shift fork, and then secure it with the retaining ring.

CAUTION:

- Do not reuse retaining ring.
- Be careful with orientation.



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

EDS0032T

| | | | |
|--------------------------|----------------------|---------------|-------------|
| Applied model | | YD25DDTi | |
| Transfer model | | TX15B | |
| Fluid capacity (Approx.) | | ℓ (Imp qt) | 2.0 (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

EDS0032U

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) |