

4WD SYSTEM

< FUNCTION DIAGNOSIS >

[TRANSFER: TY30A]

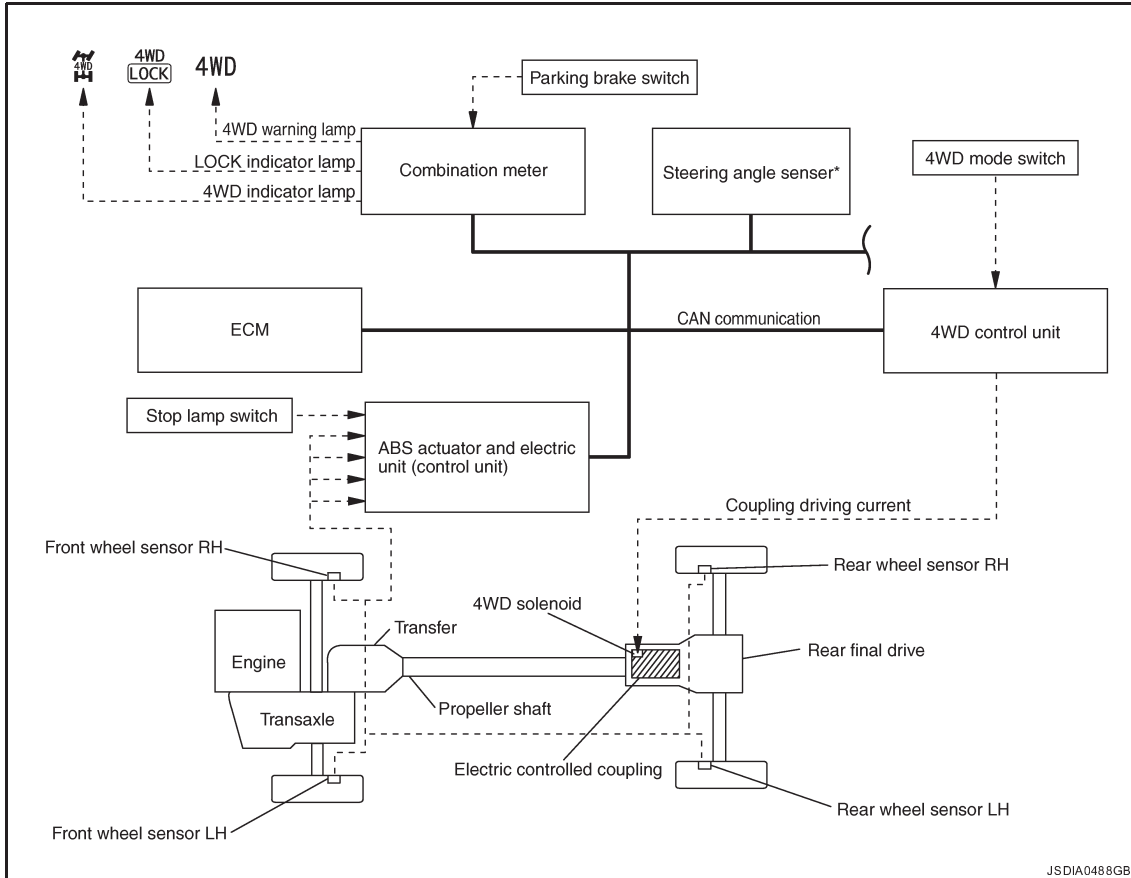
FUNCTION DIAGNOSIS

4WD SYSTEM

System Diagram

INFOID:000000001181172

CONTROL DIAGRAM



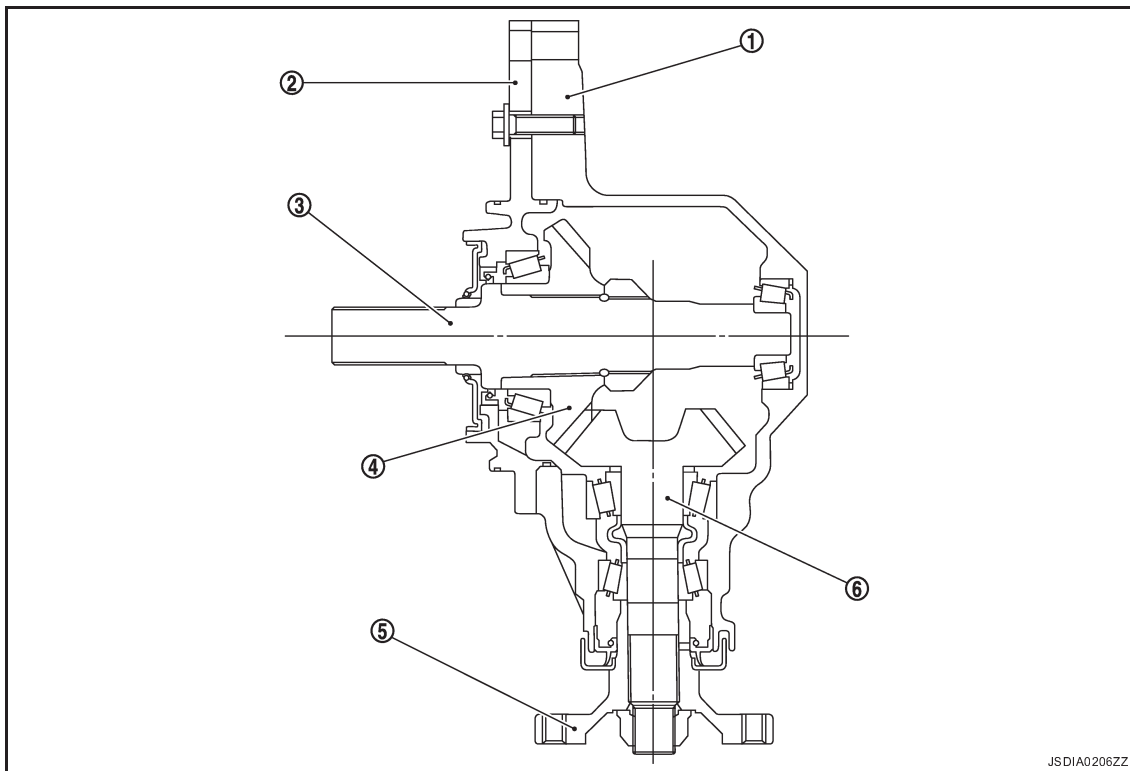
*: With ESP

CROSS-SECTIONAL VIEW (M/T, A/T)

4WD SYSTEM

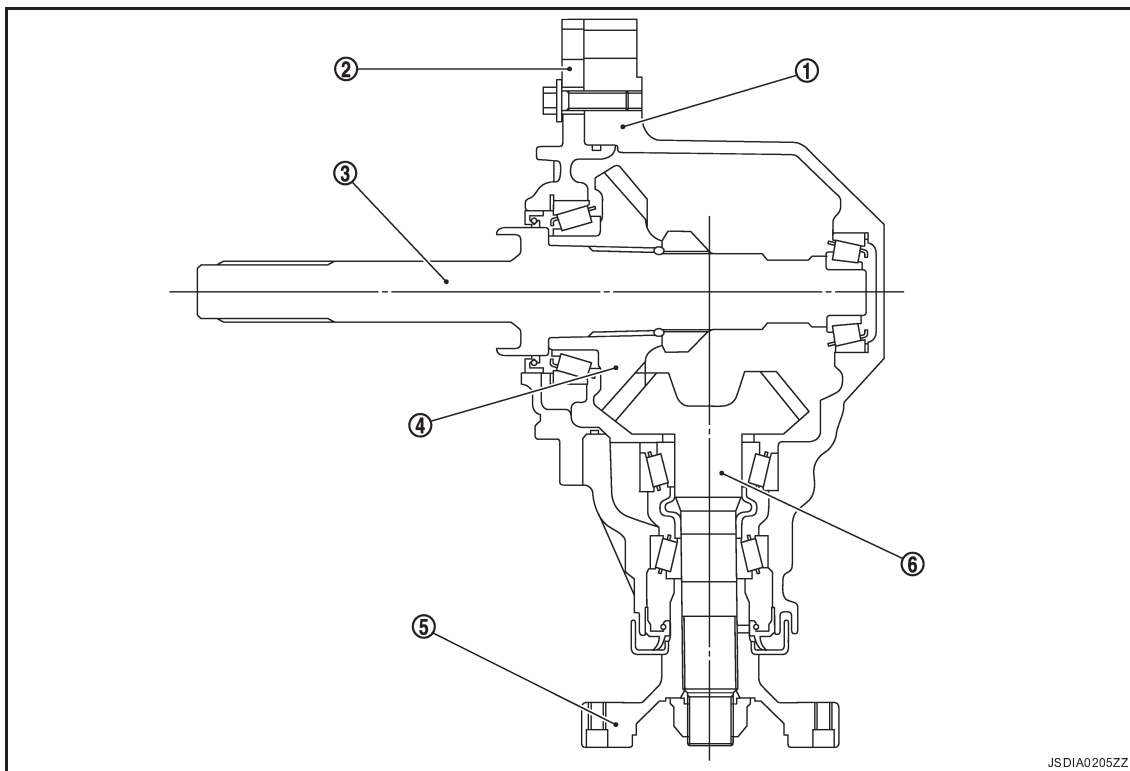
< FUNCTION DIAGNOSIS >

[TRANSFER: TY30A]



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

CROSS-SECTIONAL VIEW (CVT)



DLN-7

A

B

C

DLN

E

F

G

H

I

J

K

L

M

N

O

P

4WD SYSTEM

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- | | | |
|------------------|---------------------|--------------------|
| 1. Transfer case | 2. Adapter case | 3. Ring gear shaft |
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System Description

INFOID:000000001181173

DESCRIPTION

- 4WD controls distribution of drive power between front-wheel drive (100:0) and 4WD (50:50) conditions according to signals from sensors.
- It transmits/receives each signal from the following control unit via CAN communication line.

Component parts	Function
ABS actuator and electric unit (control unit)	Transmits the following signals via CAN communication to 4WD control unit. <ul style="list-style-type: none">• Vehicle speed signal• Stop lamp switch signal (brake signal)
ECM	Transmits the following signals via CAN communication to 4WD control unit. <ul style="list-style-type: none">• Accelerator pedal position signal• Engine speed signal
Combination meter	Transmits conditions of parking brake switch signal via CAN communication to 4WD control unit.
Steering angle sensor*	Transmits conditions of steering angle sensor signal via CAN communication to 4WD control unit.

*: With ESP

AUTO Mode

- Electronic control allows optimal distribution of torque to front/rear wheels to match road conditions.
- 4WD mode makes possible stable driving, with no wheel spin, on snowy roads or other slippery surfaces.
- On roads which do not require 4WD, AUTO mode contributes to improved fuel economy by driving in conditions close to front-wheel drive.
- Sensor inputs determine the vehicle's turning condition, and tight cornering/braking are controlled by distributing optimum torque to rear wheels.

LOCK Mode

- Front/rear wheel torque distribution is fixed, ensuring stable driving when climbing slopes.
- Vehicle will switch automatically to AUTO mode if vehicle speed increases. If vehicle speed then decreases, the vehicle automatically returns to direct 4-wheel driving conditions.
- LOCK mode will change to AUTO mode automatically, when the vehicle speed exceeds approx. 10 km/h (6 MPH). The LOCK indicator light keeps illuminating.

NOTE:

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

2WD Mode

Vehicle is in front-wheel drive.

NOTE:

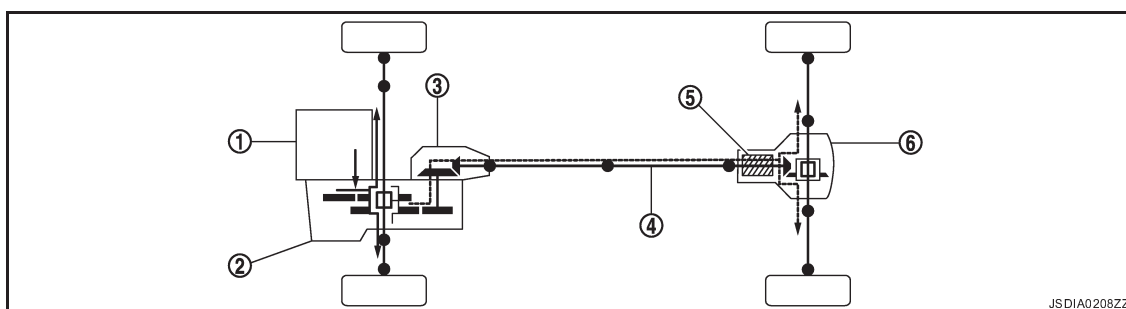
- If front wheels are slipping in 2WD mode, do not switch to AUTO or LOCK. This can cause difficulties for the system.
- Even if the 4WD mode switch is in 2WD mode, the 4WD control unit occasionally automatically change to AUTO mode depending on the driving condition (For example; Depressing the acceleration firmly). This is not malfunction. However, 4WD indicator lamp dose not illuminate.

POWER TRANSFER DIAGRAM

4WD SYSTEM

< FUNCTION DIAGNOSIS >

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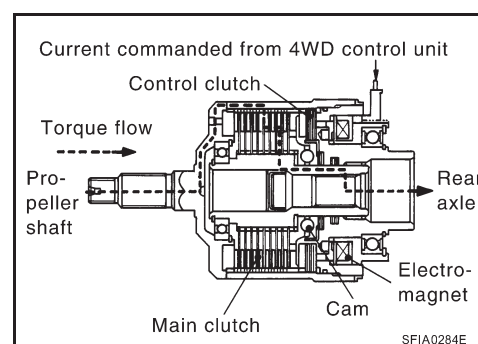


- | | | |
|--------------------|---------------------------------|---------------------|
| 1. Engine | 2. Transaxle | 3. Transfer |
| 4. Propeller shaft | 5. Electric controlled coupling | 6. Rear final drive |

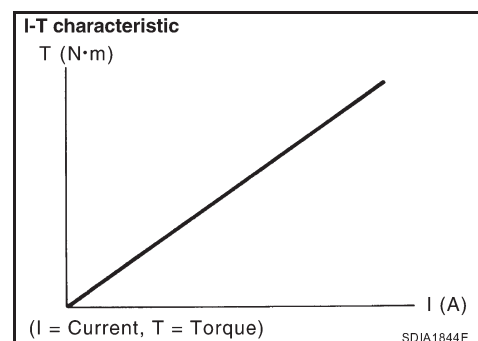
OPERATION PRINCIPLE

Electric Controlled Coupling

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



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



Component Parts Location

LHD MODELS

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