

3. Limited Slip Differential (LSD)

A: OUTLINE

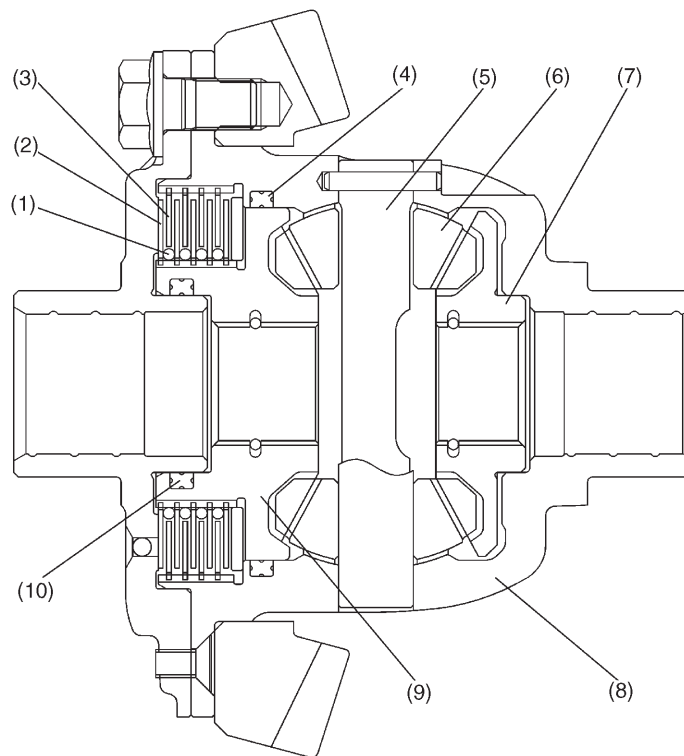
The limited slip differential is of a viscous coupling (V/C) type in which the differential torque distribution to the left and right wheels is automatically limited to enhance the driving stability when a rotation speed difference between the left and right wheels occurs during driving on a slippery road (muddy, snow-covered or slushy road) or cornering.

B: STRUCTURE

This V/C type LSD has outer plates and inner plates incorporated one after the other between the differential case and side gear (LH). The former is spline-coupled to the inside of the differential case at its outer periphery and the latter is spline-coupled to the outer circumference of the side gear (LH) at its inner periphery.

The inner plates are held in position by spacer rings while the outer rings slide in the axial direction along the spline.

The space between the differential case and side gear (LH) is filled with a mixture of high viscosity silicone oil and air and hermetically sealed with X-ring.



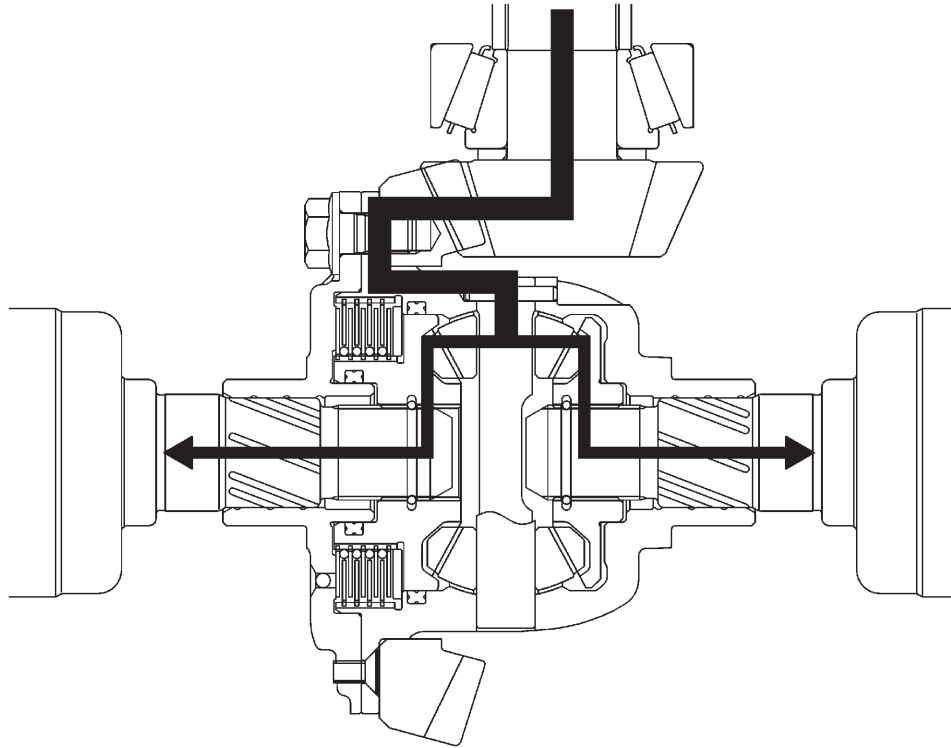
S3H0174B

- | | |
|------------------|-----------------------|
| (1) Spacer ring | (6) Pinion gear |
| (2) Inner plate | (7) Side gear (RH) |
| (3) Outer plate | (8) Differential case |
| (4) X-ring | (9) Side gear (LH) |
| (5) Pinion shaft | (10) X-ring |

3-4 [M3C1]**MECHANISM AND FUNCTION****3. Limited Slip Differential (LSD)**

C: OPERATION**1. WHEN RIGHT AND LEFT WHEELS TURN AT EQUAL SPEED.**

During normal straight-road driving where the right and left wheels run at an equal speed, the differential case and side gears rotate together, just as in conventional differentials. As a result, driving torque is transmitted equally to the right and left side gears.

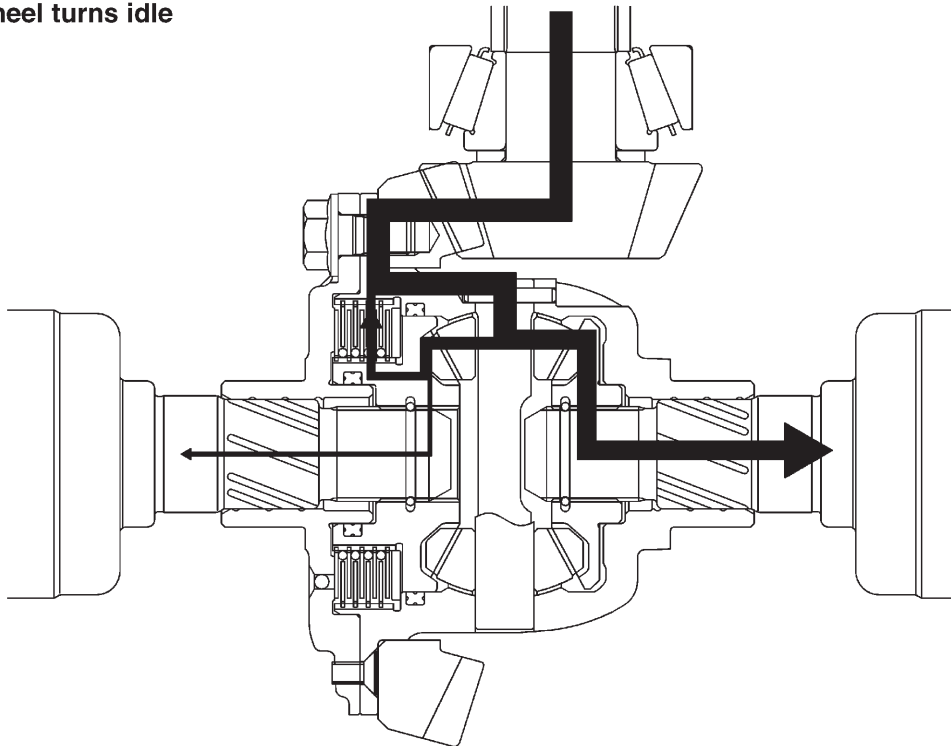


S3H0175

2. WHEN RIGHT AND LEFT WHEELS TURN AT DIFFERENT SPEEDS.

When a speed difference occurs between the right and left wheels, the differential case and V/C side gear (LH) turn relatively at the same speed difference as that between the rear drive shaft. Because of the shearing force caused in the silicon oil, a differential torque is generated, which controls differential operation (idle rotation). For example, if the left wheel turns idle due to a difference in the road resistance, a speed difference occurs between the right and left wheels. Since the V/C is installed between the right and left wheels, a differential torque is generated in the V/C corresponding to this speed difference, and this differential torque is transferred from the left wheel to the right wheel. Accordingly, a greater driving force is transferred to the right wheel which is rotating at a lower speed.

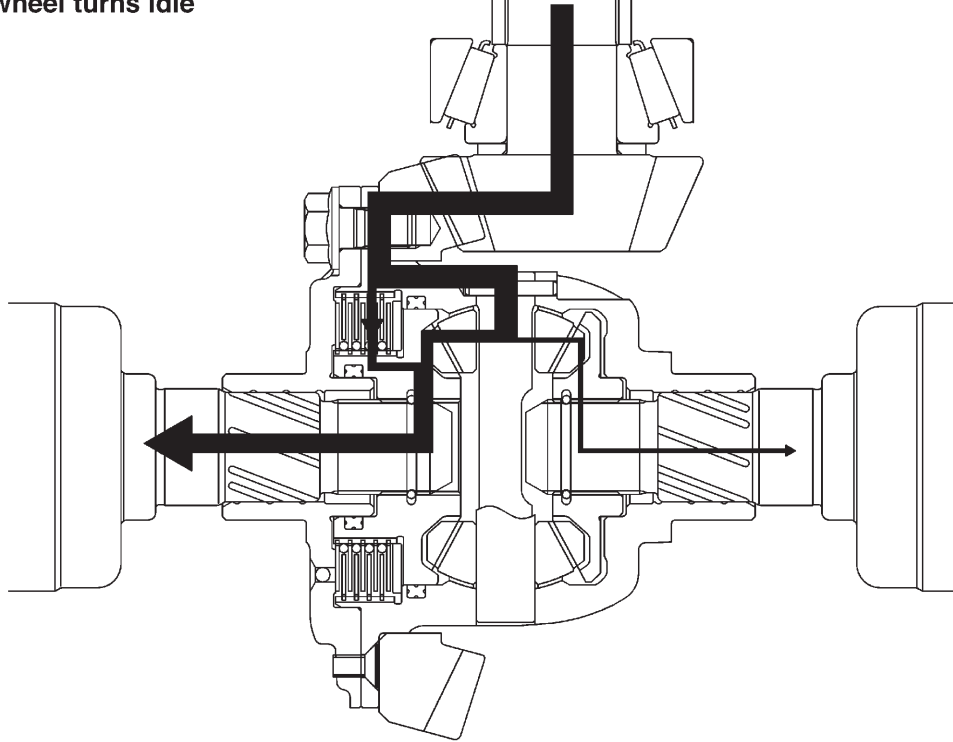
When the right wheel turns idle (spins), the differential torque is transferred from the right wheel to the left wheel. That is, also in this case, a greater driving force corresponding to the differential torque is transmitted to the wheel having a lower rotating speed.

When left wheel turns idle

S3H0176A

3-4 [M3D0]**MECHANISM AND FUNCTION****3. Limited Slip Differential (LSD)**

When right wheel turns idle



S3H0177A

D: SERVICE PROCEDURES FOR LSD

The component parts of LSD assembly are not available as piece parts. Therefore, it is recommended to not disassemble LSD assembly.