ALL WHEEL DRIVE

3260-01

GENERAL

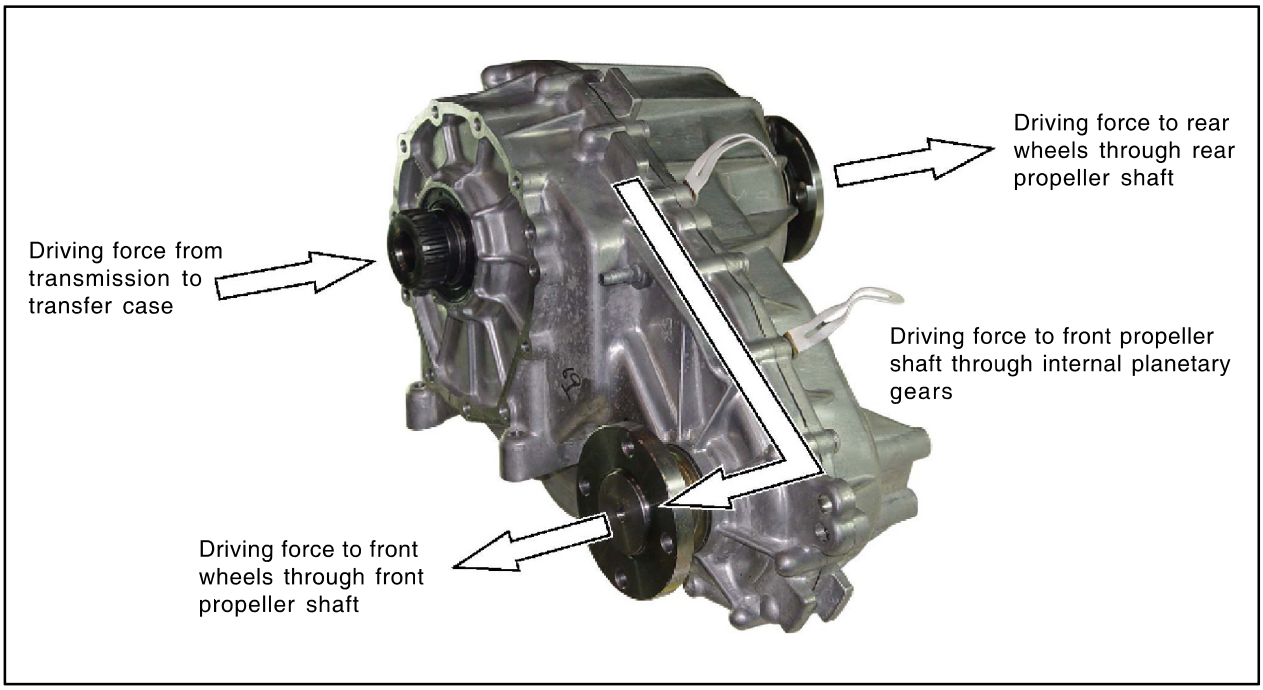
1. SPECIFICATIONS

Description	Part Time T/C	
Total length	271 mm	
Mating surface of front flange	11.9 mm	
Weight	27.1 Kg (with oil)	26.5 Kg (without oil)
Oil capacity and Service Interval	1.1 L (Inspect at every 10,000 km, Change at every 60,000 km)	
Oil specification	ATF DEXRON III	
Distribution ratio of driving force	40 (Front) : 60 (Rear)	
Bolt	11EA, M8 x 1.25	

OVERVIEW AND OPERATION PROCESS

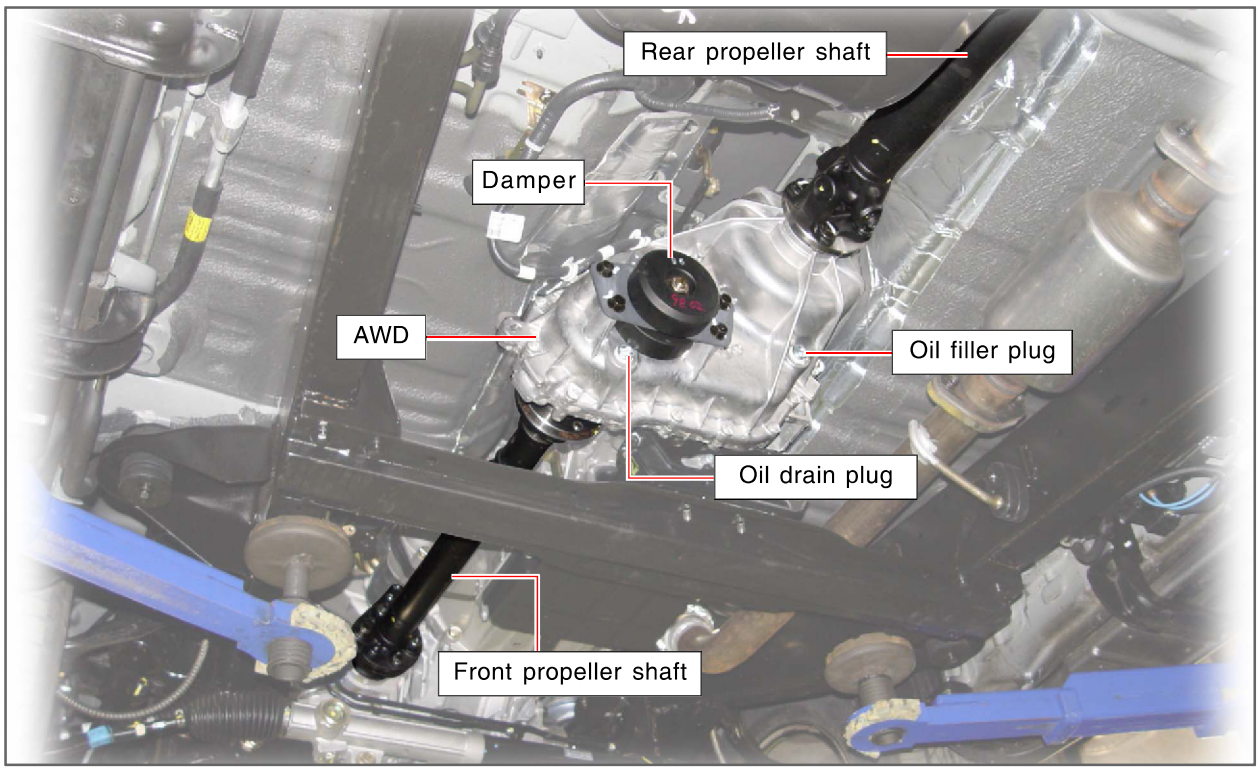
1. OVERVIEW

The AWD transfer case is installed to the full time 4WD vehicle. Unlike the TOD (Torque On Demand) transfer case, it delivers the driving force to the front wheels through the internal planetary gears without a control unit to operate AWD function. It also doesn't have the TC (Transfer Case) shift motor and 4WD transfer switch. Since it doesn't have a control unit such as TCCU (Transfer Case Control Unit), it delivers the driving force to the front and rear propeller shafts according to the gear ratio based on the gear combinations. The distribution ratio of driving force is 40:60 (front wheels:rear wheels).

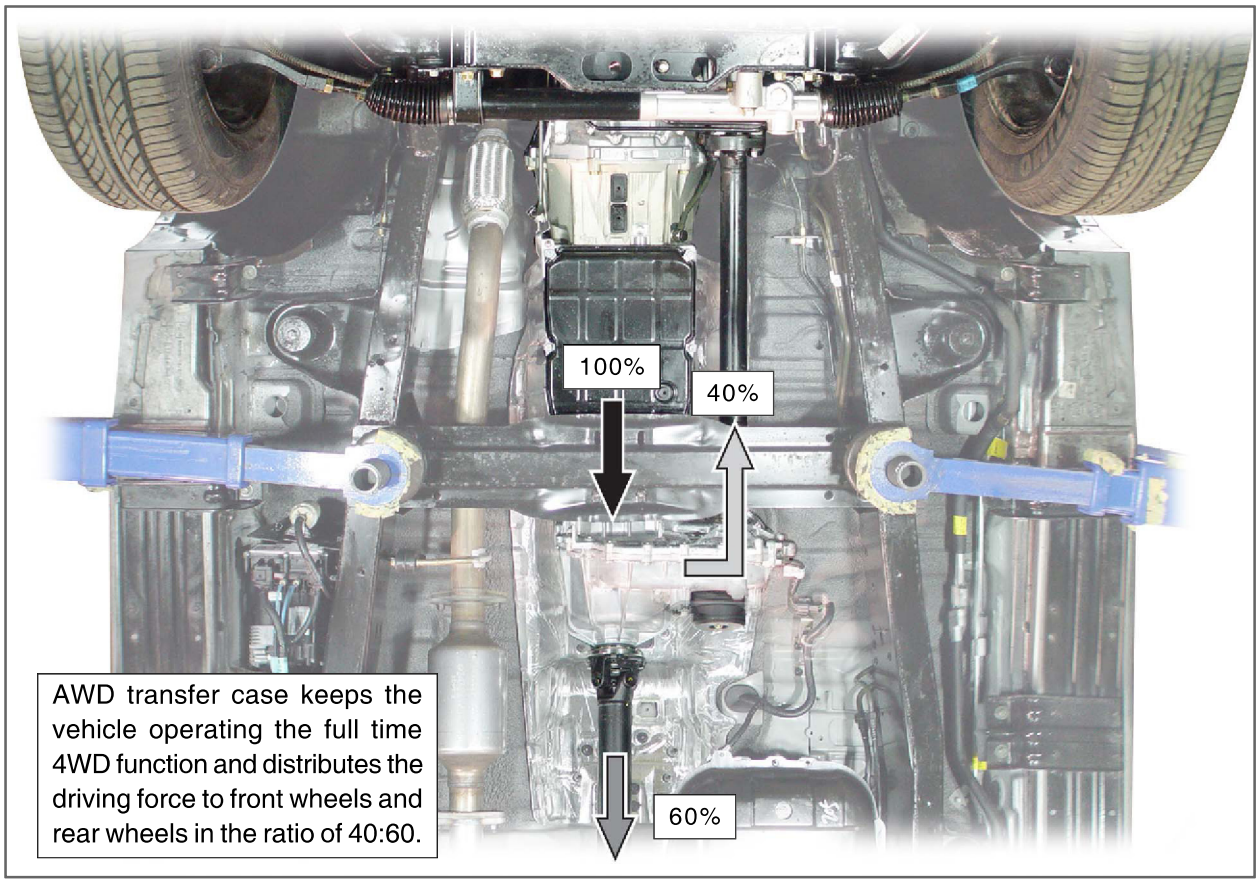


Modification basis	
Application basis	
Affected VIN	

2. LOCATION



▶ **Distribution of Driving Force in AWD**



Modification basis	
Application basis	
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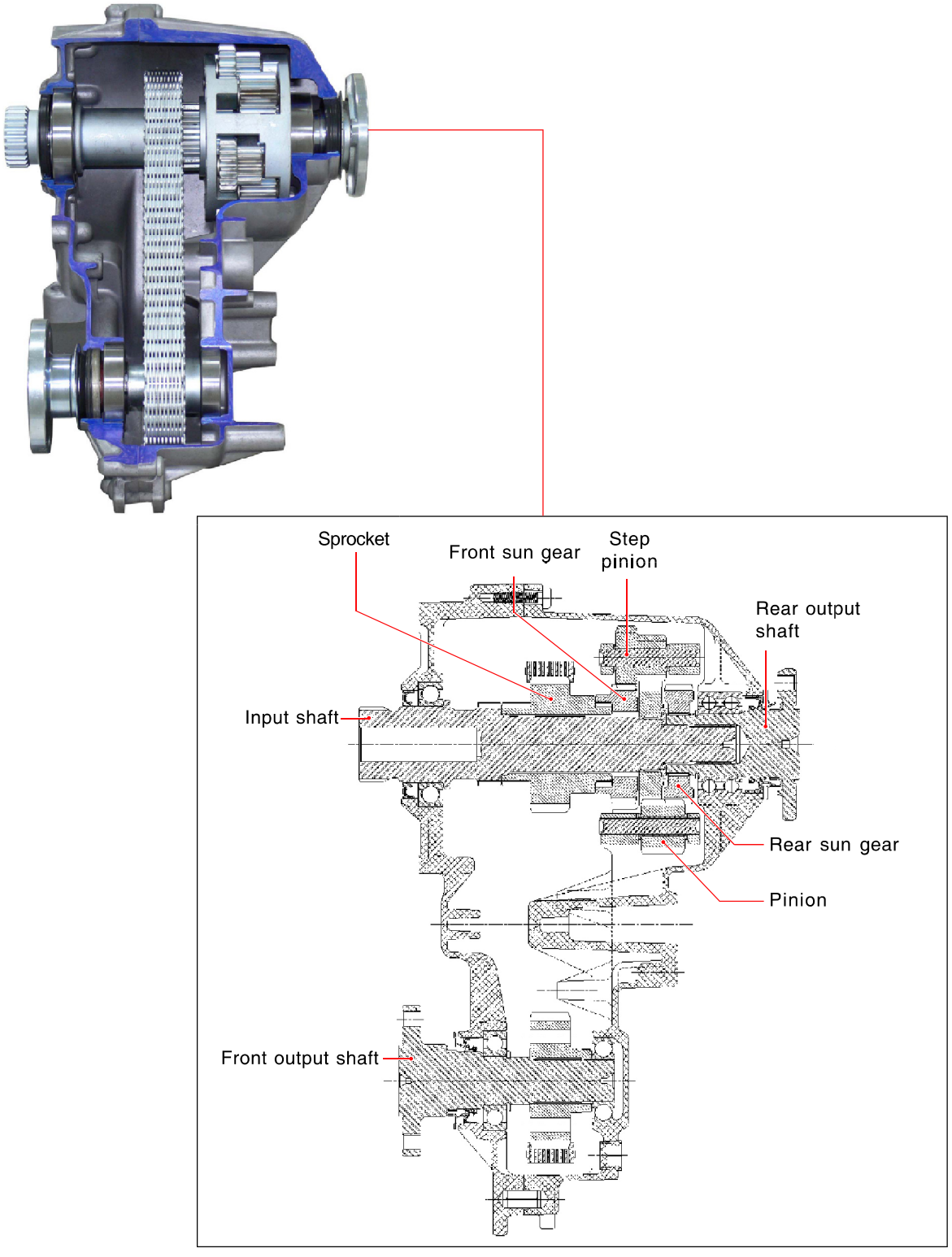
3. STRUCTURE

1) Sectional View



Modification basis	
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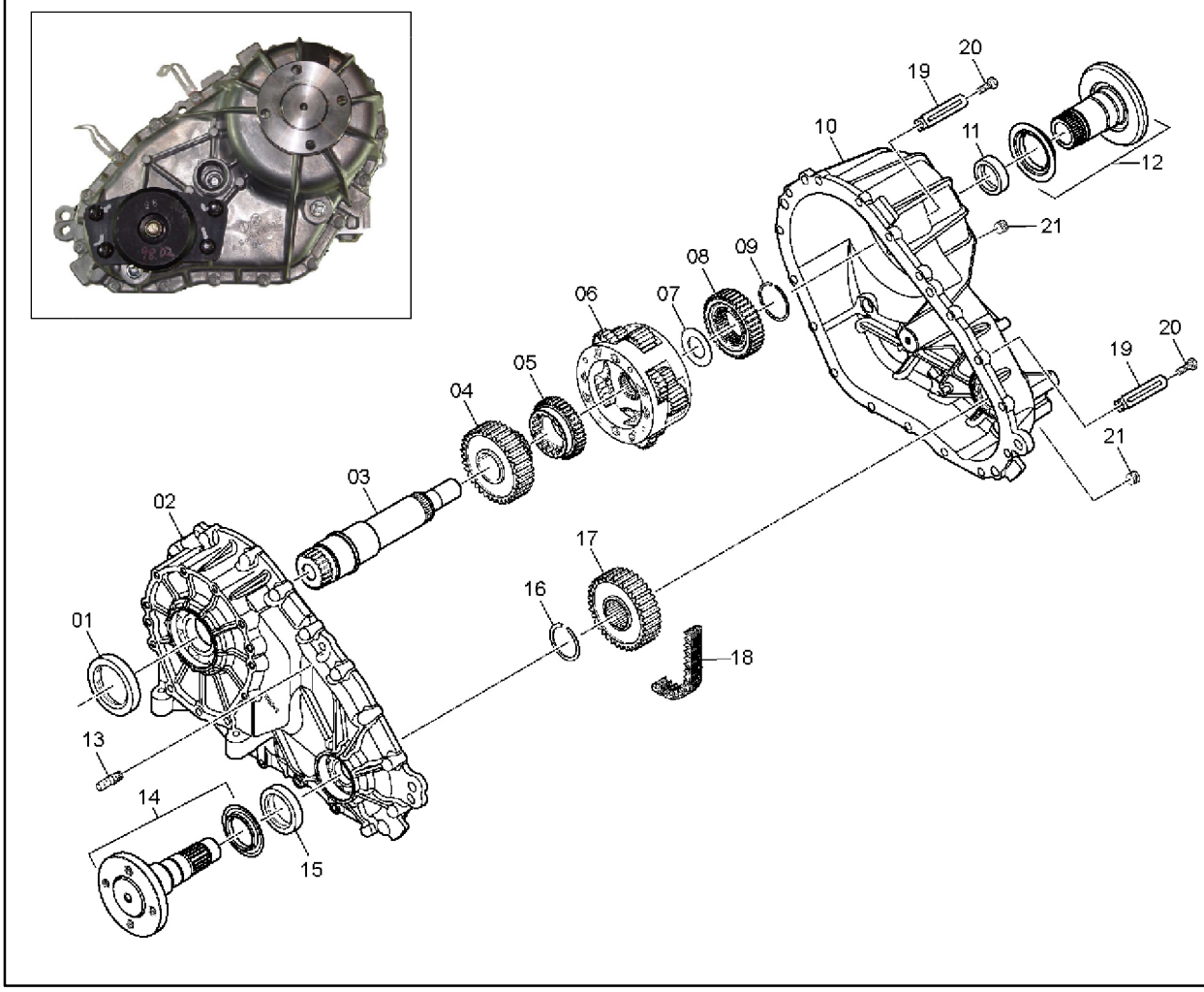
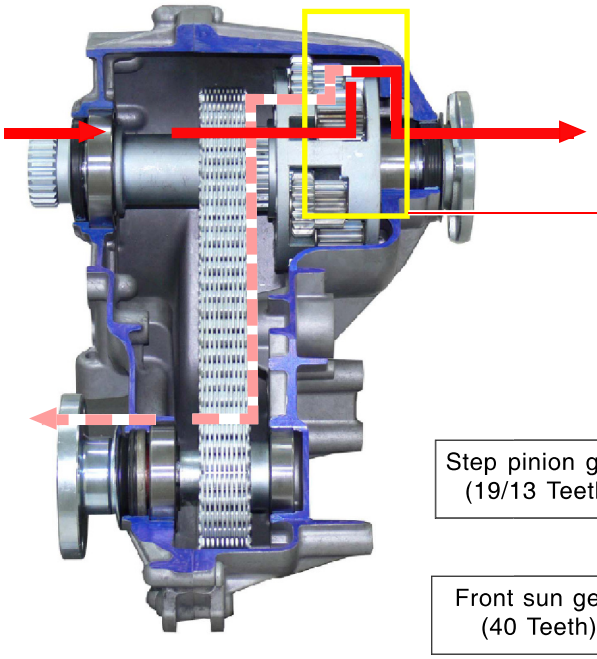
2) EXPLODED VIEW



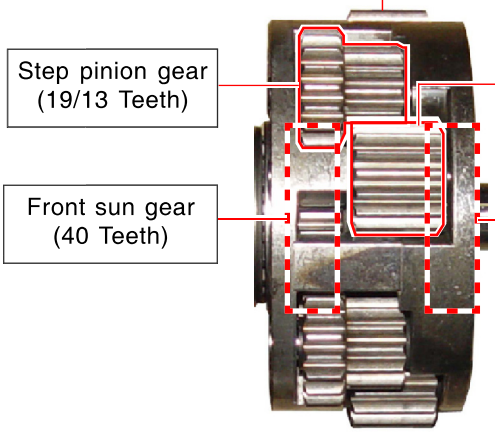
1. Oil seal
2. Case assembly
3. Input shaft
4. Sprocket
5. Front sun gear
6. Differential carrier assembly
7. Thrust washer
8. Rear sun gear
9. Snap ring
10. Cover assembly
11. Oil seal
12. Rear output shaft assembly
13. Air breather
14. Front output shaft assembly
15. Oil seal
16. Retaining ring
17. Driven sprocket
18. Chain
19. Clip
20. Bolt
21. Plug

Modification basis	
Application basis	
Affected VIN	

4. POWER FLOW



Rear output shaft
Input shaft →Carrier →Pinion (16T) →
Rear sun gear (40T) →Rear output shaft



Front output shaft
Input shaft →Carrier →Step pinion (19T/13T) →Front sun gear (40T) → Sprocket →Chain →Front output shaft

▶ Distribution of Front Output Torque

$$\frac{\dfrac{\text{Front sun gear (40T)}}{\text{Step pinion (19T)}}}{\left(\dfrac{\text{Front sun gear (40T)}}{\text{Step pinion (19T)}}\right) + \left(\dfrac{\text{Rear sun gear (40T)}}{\text{Pinion (16T)}} \times \dfrac{\text{Pinion (16T)}}{\text{Step pinion (13T)}}\right)} = 0.40625$$

▶ Distribution of Rear Output Torque

$$\frac{\left(\dfrac{\text{Rear sun gear (40T)}}{\text{Pinion (16T)}}\right) \times \left(\dfrac{\text{Pinion (16T)}}{\text{Step pinion (13T)}}\right)}{\left(\dfrac{\text{Front sun gear (40T)}}{\text{Step pinion (19T)}}\right) + \left(\dfrac{\text{Rear sun gear (40T)}}{\text{Pinion (16T)}} \times \dfrac{\text{Pinion (16T)}}{\text{Step pinion (13T)}}\right)} = 0.59375$$

Modification basis	
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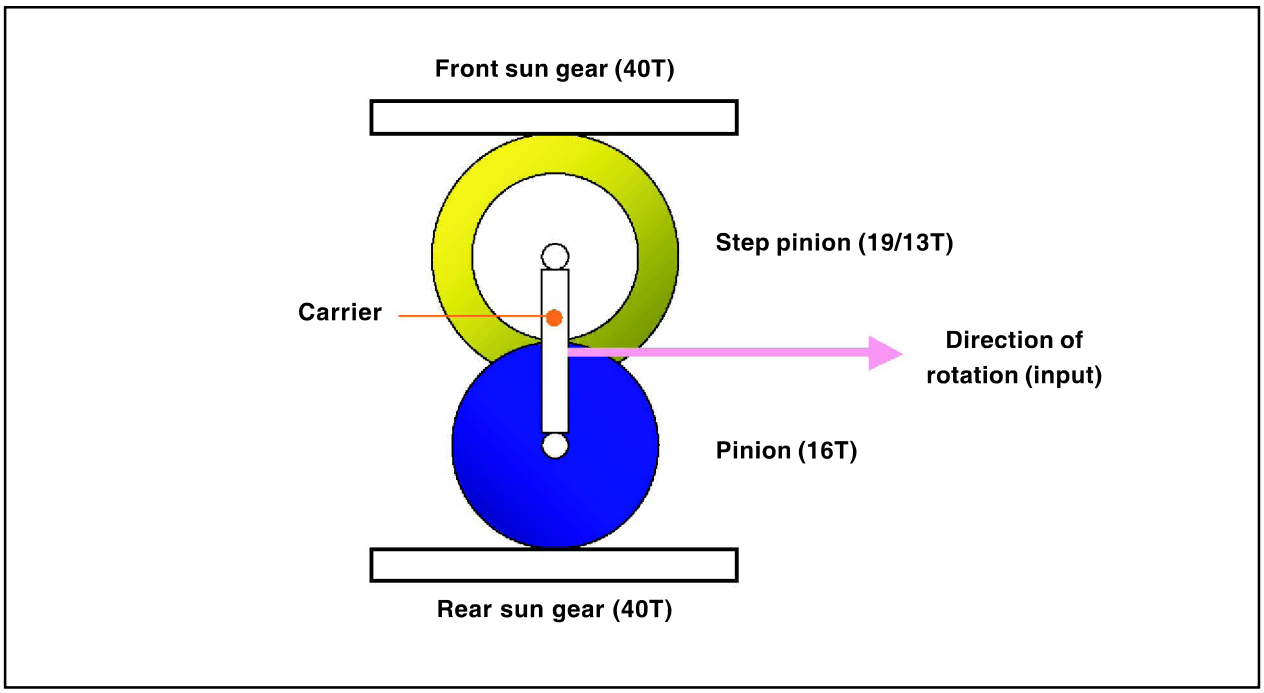
Affected VIN	

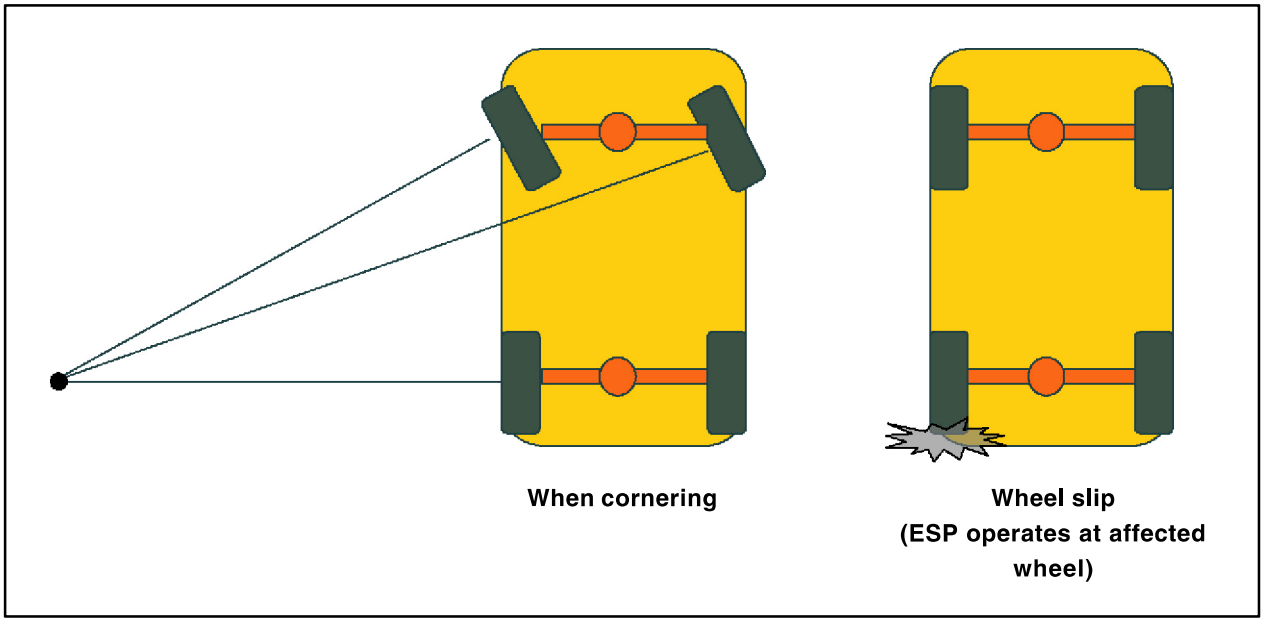
5. OPERATION OF DIFFERENTIAL

1) Systematic Diagram

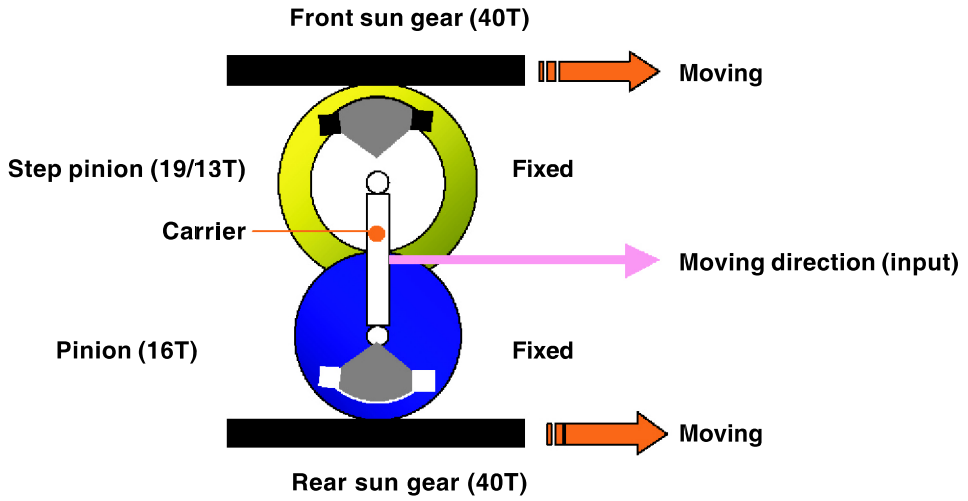


2) Revolution Control

When there is a revolution difference due to the gap of turning radius while cornering, the tight corner braking symptom occurs in part time transfer case. However, for the AWD, this gap of turning radius is compensated by the differential so that the tight corner braking symptom will not occur. The ESP also operates the wheel slip under control in order to keep the vehicle stable under severe conditions such as icy road.

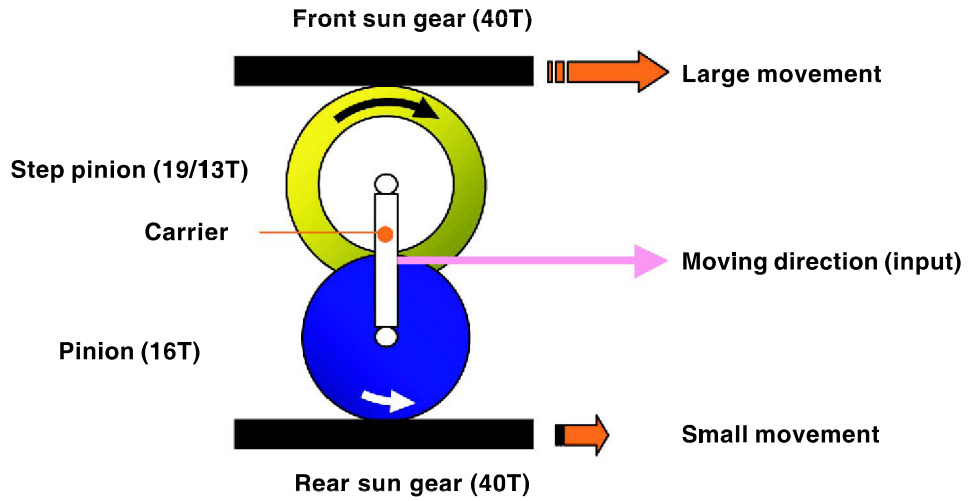


▶ When Revolution Difference Does not Occur



If there is no revolution difference in front and rear shafts, the step pinion (19T/13T) and the pinion (16T) are fixed (integrated to the carrier) even when the carrier rotates. It makes the front sun gear and the rear sun gear move toward the moving direction with the torque ratio of 40:60.

▶ When Revolution Difference Occurs



The front wheels should rotate faster than the rear wheels while cornering (including wheel slip) since the front wheels' turning radius is larger than the rear wheels'. At this moment, the step pinion (19T/13T) should rotate faster than the pinion (13T) in relation to the carrier's movement. This function is similar to the regular differential function, which also compensates the revolution difference while maintaining the torque ratio in 40:60 (front:rear).

Modification basis	
Application basis	
Affected VIN	