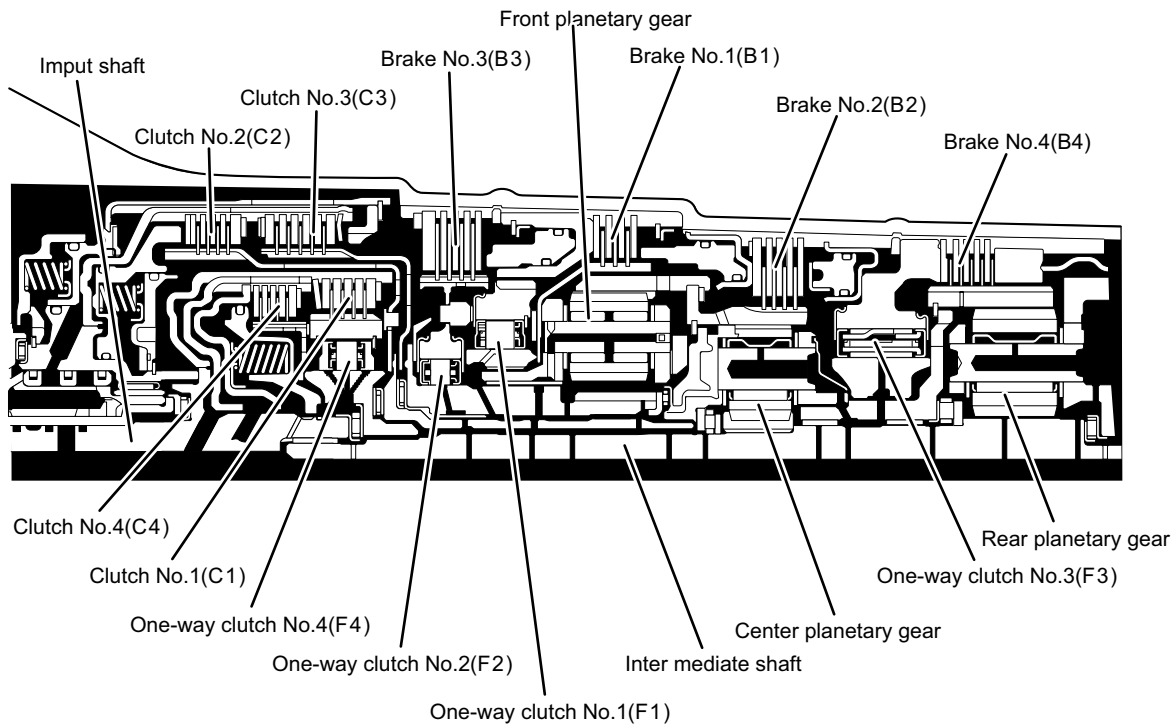


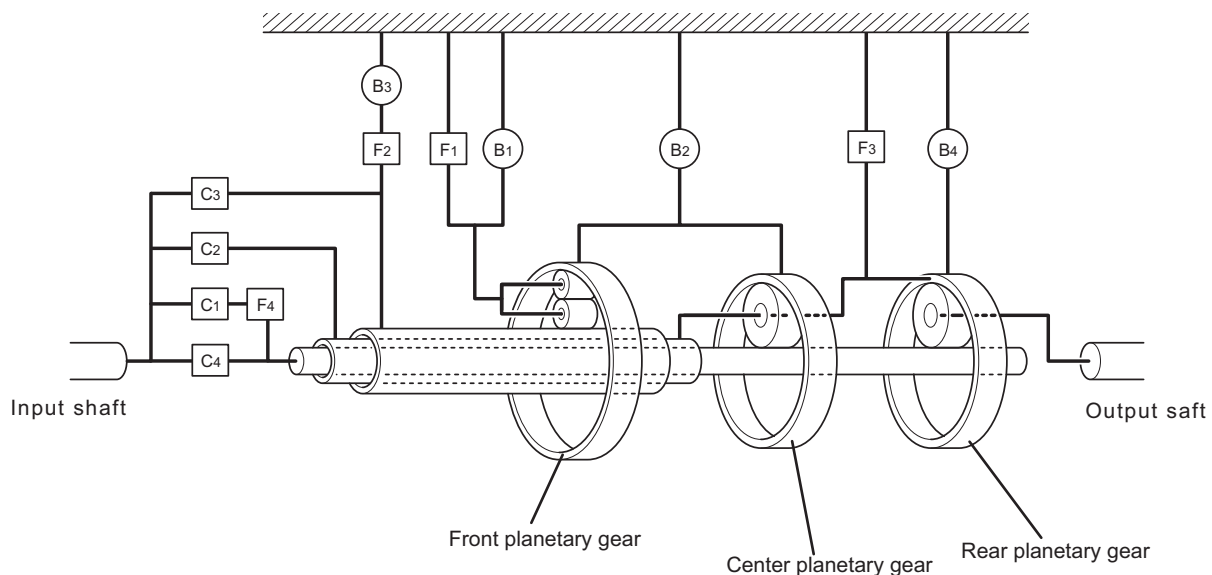
Planetary Gear Unit

- The gear train consists of four sets of multi-disc brakes, four sets of multi-disc clutches, four one-way clutches, and three sets of planetary gears comprising a sun gear, pinion gear, and ring gear.
- The material of the front planetary gear carrier has been changed from the ordinary iron to composite-molded aluminum alloy. As a result, the weight of the gear carrier has been reduced to approximately one-half of an ordinary gear carrier, thus realizing a considerable weight reduction.



A4270381P

A960E Gear Train Operation



A4270367P

Components and Their Operations

Component		Function
No.1 Clutch	C1	Connects input shaft and intermediate shaft.
No.2 Clutch	C2	Connects input shaft and center planetary gear carrier.
No.3 Clutch	C3	Connects input shaft and front sun gear.
No.4 Clutch	C4	Connects input shaft and intermediate shaft.
No.1 Brake	B1	Lock the front planetary gear carrier.
No.2 Brake	B2	Lock the front ring gear and center ring gear.
No.3 Brake	B3	Lock the one-way clutch No.2(F2).
No.4 Brake	B4	Lock the rear ring gear.
No.1 One-way clutch	F1	Prevents front planetary carrier from turning counterclockwise.
No.2 One-way clutch	F2	During operation brake No.3, prevents front sun gear turning from counterclockwise.
No.3 One-way clutch	F3	Prevents rear ring gear from turning counterclockwise. Prevents center planetary carrier from turning counterclockwise.
No.4 One-way clutch	F4	During operation clutch No.1(C1), prevents intermediate shaft from turning counterclockwise.

Components and Their Operating Conditions

		C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
	P													-
	R			○		(○)			○	○				3.168
	N													-
D	1st	○			(○)				(○)			○	○	3.538
	2nd	○			(○)		(○)	○		○	○		○	2.060
	3rd	○		○	(○)	(○)		Δ		○			○	1.404
	4th	○	○	Δ	(○)			Δ					○	1.000
	5th	Δ	○	○		○		Δ						0.713
	6th	Δ	○			Δ	○	Δ						0.582

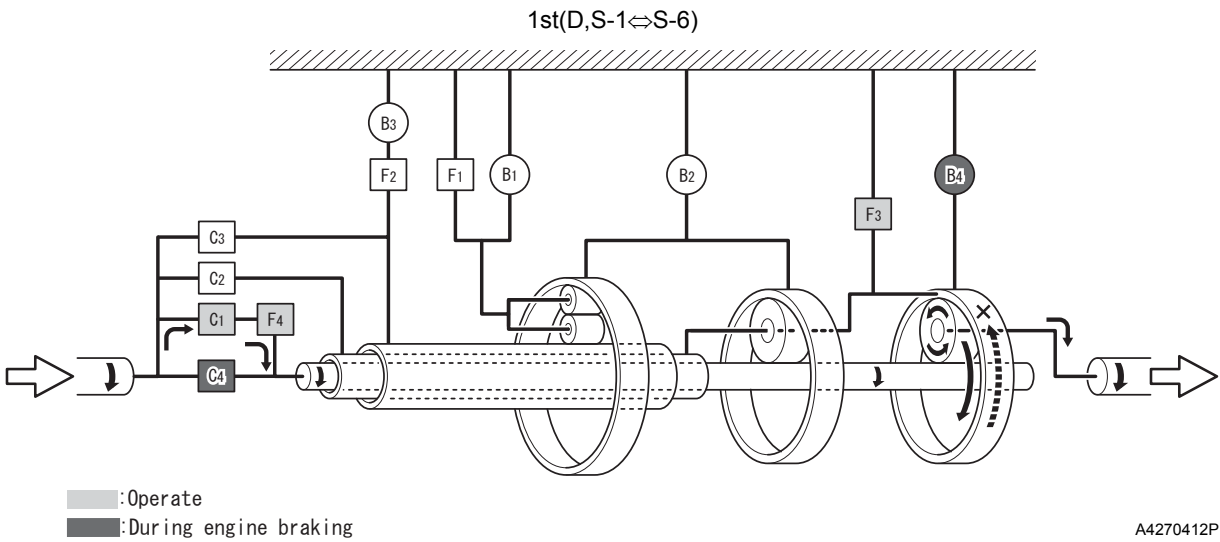
❖REFERENCE❖

○:operation

(○):During engine braking

Δ:Operate but is not related to power transmission

A960E Gear Train Structure



Operating Conditions of Clutches and Brakes

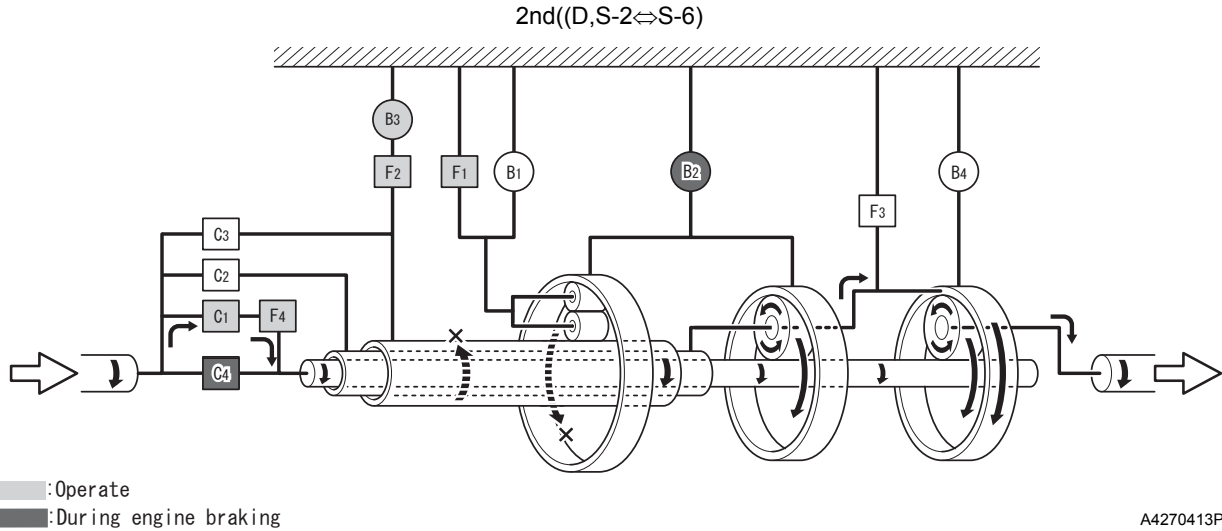
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
1st	○			(○)				(○)			○	○	3.538

❖REFERENCE❖

○:Operation

(○):During engine braking

△:Operate but is not related to power transmission

**Operating Conditions of Clutches and Brakes**

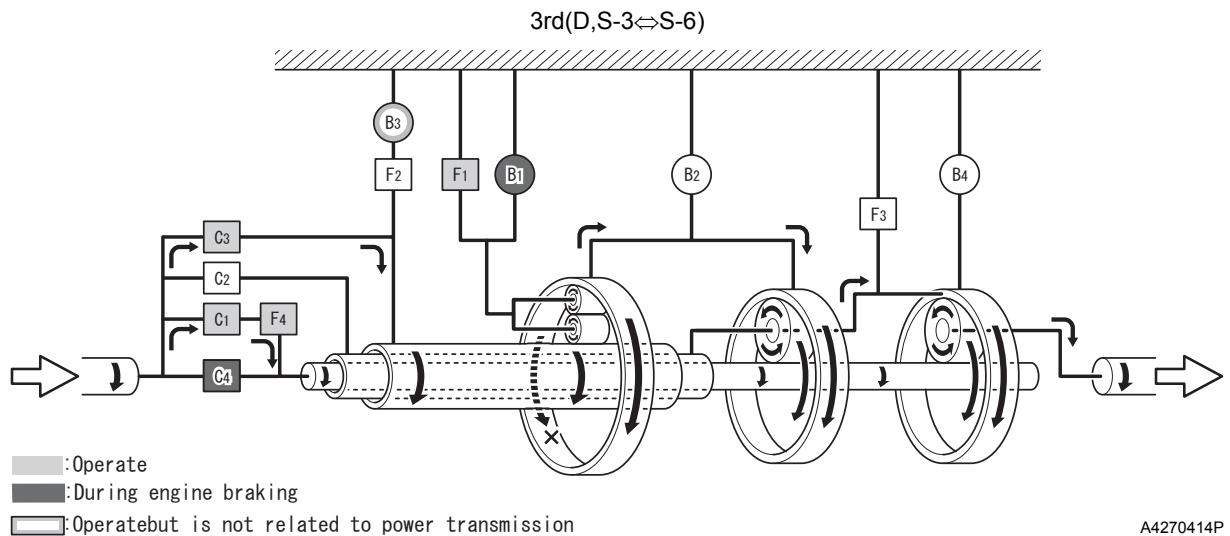
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
2nd	○			(○)		(○)	○		○	○		○	2.060

❖ REFERENCE ❖

○: Operation

(○): During engine braking

△: Operate but is not related to power transmission

**Operating Conditions of Clutches and Brakes**

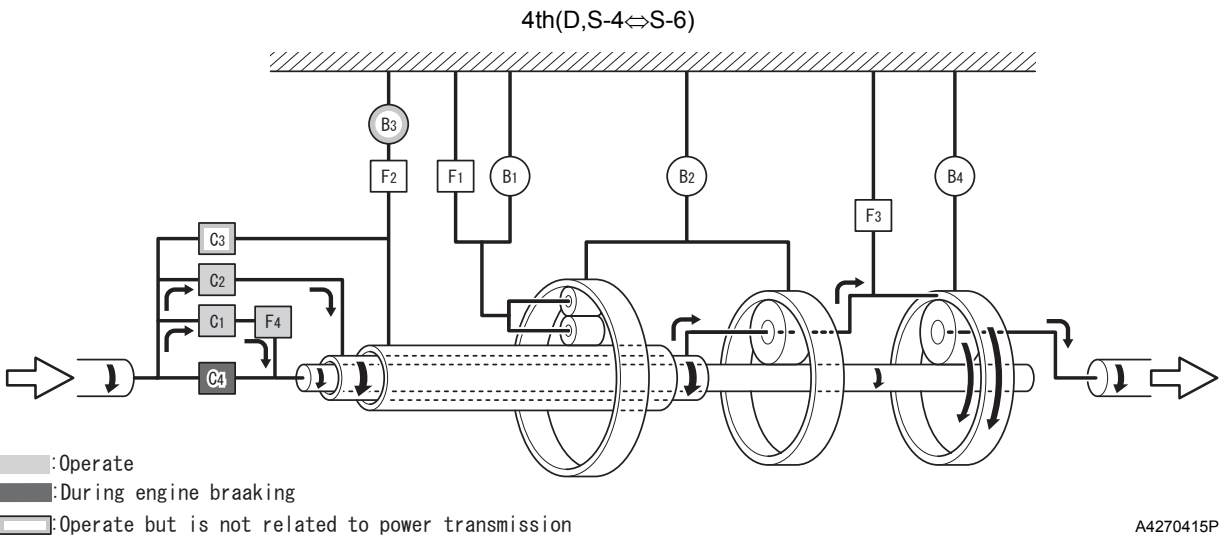
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
3rd	○		○	(○)	(○)		△		○			○	1.404

❖REFERENCE❖

○:Operation

(○):During engine braking

Δ:Operate but is not related to power transmission



Operating Conditions of Clutches and Brakes

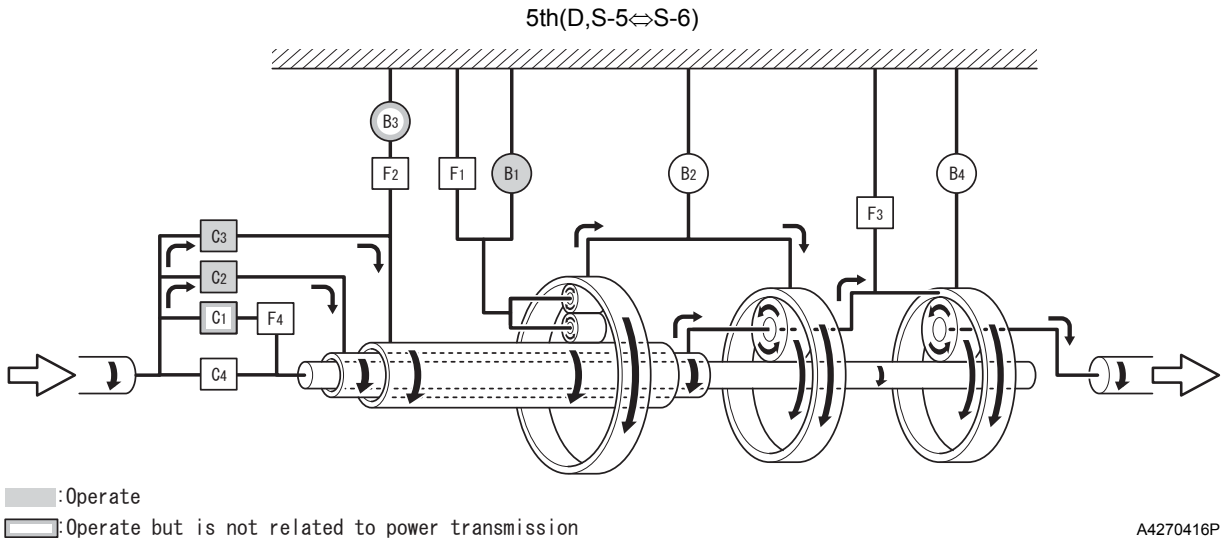
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
4th	○	○	Δ	(○)			Δ					○	1.000

❖REFERENCE❖

○:Operation

(○):During engine braking

Δ:Operate but is not related to power transmission



Operating Conditions of Clutches and Brakes

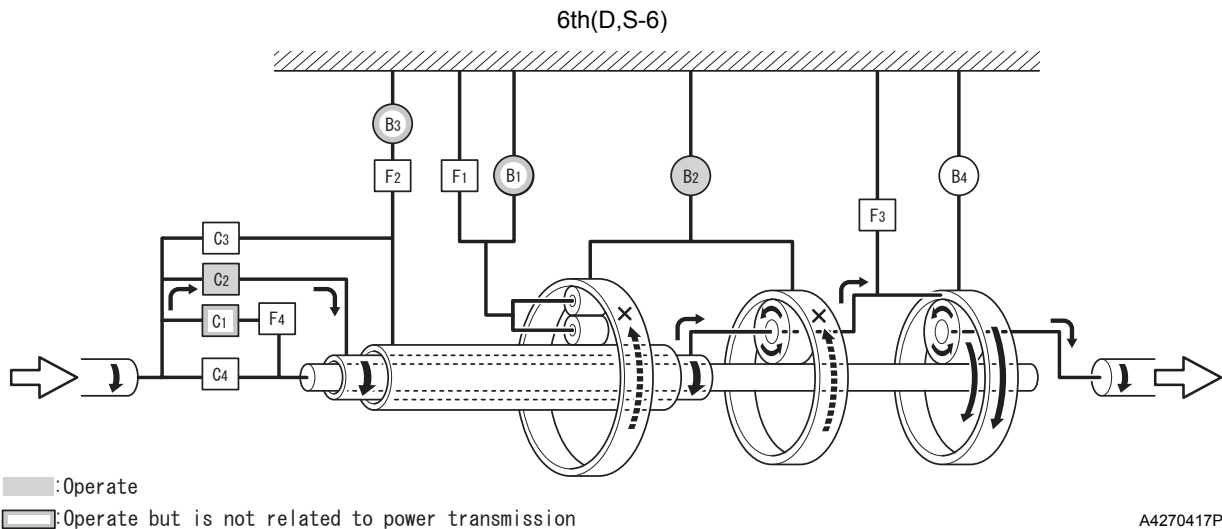
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
5th	Δ	○	○		○		Δ						0.713

❖ REFERENCE ❖

○: Operation

(○): During engine braking

Δ: Operate but is not related to power transmission



Operating Conditions of Clutches and Brakes

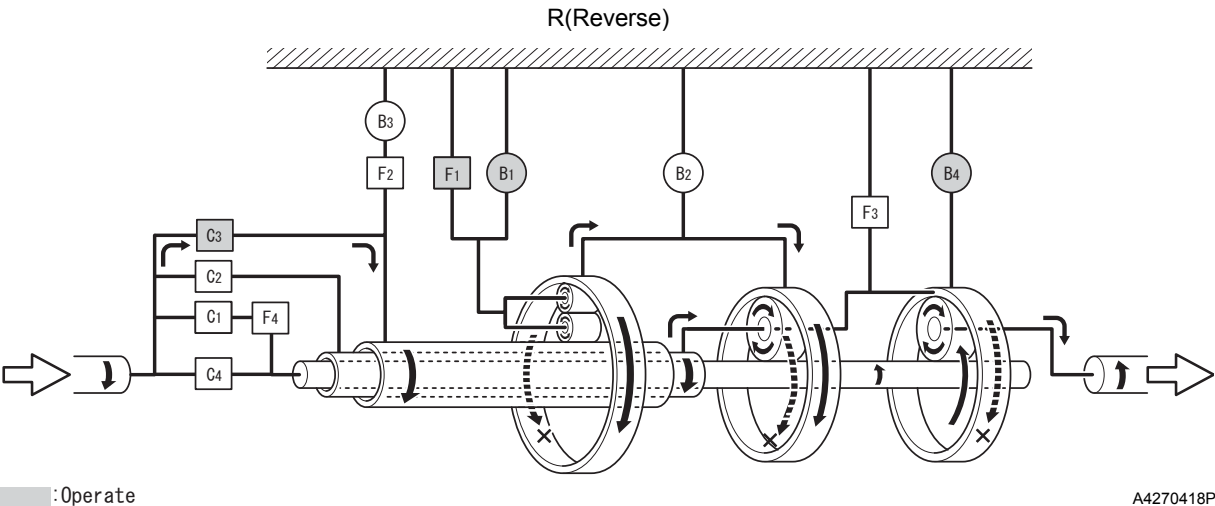
	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
6th	Δ	○			Δ	○	Δ						0.582

❖REFERENCE❖

○:Operation

(○):During engine braking

△:Operate but is not related to power transmission



Operating Conditions of Clutches and Brakes

	C1	C2	C3	C4	B1	B2	B3	B4	F1	F2	F3	F4	Gear Ratio
R			○		(○)			○	○				3.168

❖REFERENCE❖

○:Operation

(○):During engine braking

△:Operate but is not related to power transmission

Parking Lock Mechanism

- A parking lock gear is provided in the rear planetary gear carrier area. A parking lock pawl meshes with the parking lock gear, thus locking the rotational movement of the output shaft.

