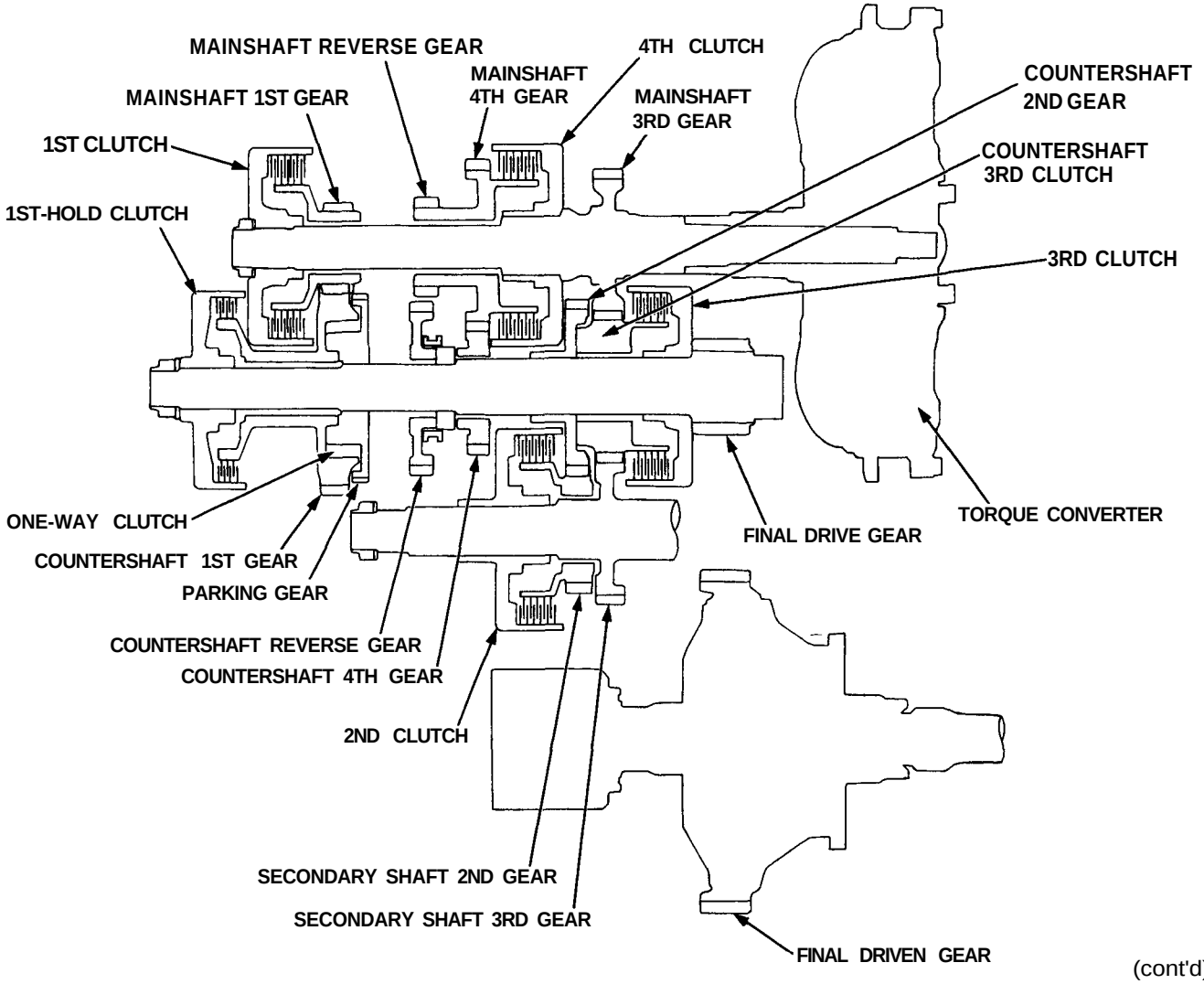
Power Flow

PART / RANGE	TORQUE CONVERTER	1ST GEAR 1ST HOLD CLUTCH	1ST GEAR 1ST CLUTCH	1ST GEAR ONE-WAY CLUTCH	2ND GEAR 2ND CLUTCH	3RD GEAR 3RD CLUTCH	4th GEAR	4th CLUTCH	REVERSE GEAR	PARKING GEAR
P	○	×	×	×	×	×	×	×	×	○
R	○	×	×	×	×	×	×	○	○	×
N	○	×	×	×	×	×	×	×	×	×
D 1ST	○	×	○	○	×	×	×	×	×	×
D 2ND	○	×	○*	×	○	×	×	×	×	×
D 3RD	○	×	○*	×	×	○	×	×	×	×
D 4TH	○	×	○*	×	×	×	○	○	×	×
3	○	×	○*	×	×	○	×	×	×	×
2	○	×	○*	×	○	×	×	×	×	×
1	○	○	○	×	×	×	×	×	×	×

O: Operates, x : Doesn't operate. *: Although the 1st clutch engages, driving power is not transmitted as the one-way clutch slips.



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Description

Power Flow (cont'd)

1 Position

At 1 position, hydraulic pressure is applied to the 1st clutch and to the 1st-hold clutch.

The power flow when accelerating is as follows;

1. Hydraulic pressure is applied to the 1st clutch on the mainshaft and power is transmitted via the 1st clutch to the mainshaft 1st gear.

2. Power transmitted to the mainshaft 1st gear is conveyed via the countershaft 1st gear to the one-way clutch on the inside of the countershaft 1st gear. The one-way clutch is used to drive the countershaft.

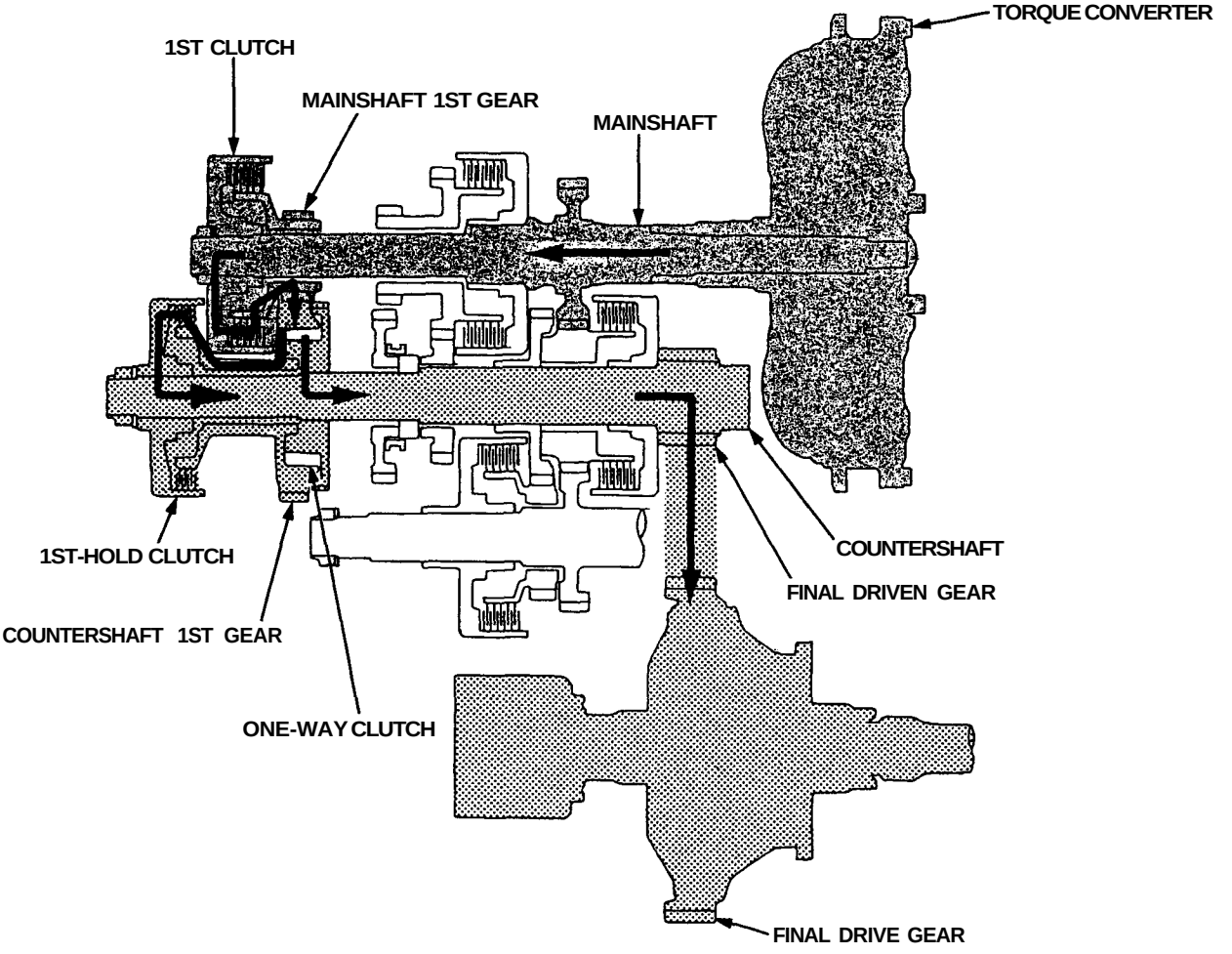
3. Power is transmitted to the final drive gear and drives the final driven gear.
   Hydraulic pressure is applied to the 1st-hold clutch but the countershaft is rotated by the one-way clutch.

The power flow when decelerating is as follows;

1. Rolling resistance from the road surface through the rear wheels to the final drive gear, then to the countershaft 1st gear via the Ist-hold clutch which is applied during deceleration.

2. The one-way clutch becomes free at this time because of the countershaft rotates in reverse at the time of accelerating.

3. The counterforce conveyed to the countershaft 1st gear turns the mainshaft 1st gear. At this time, since hydraulic pressure is also applied to the 1 st clutch, counterforce is also transmitted to the mainshaft. As a result, engine braking can be obtained with 1st gear.



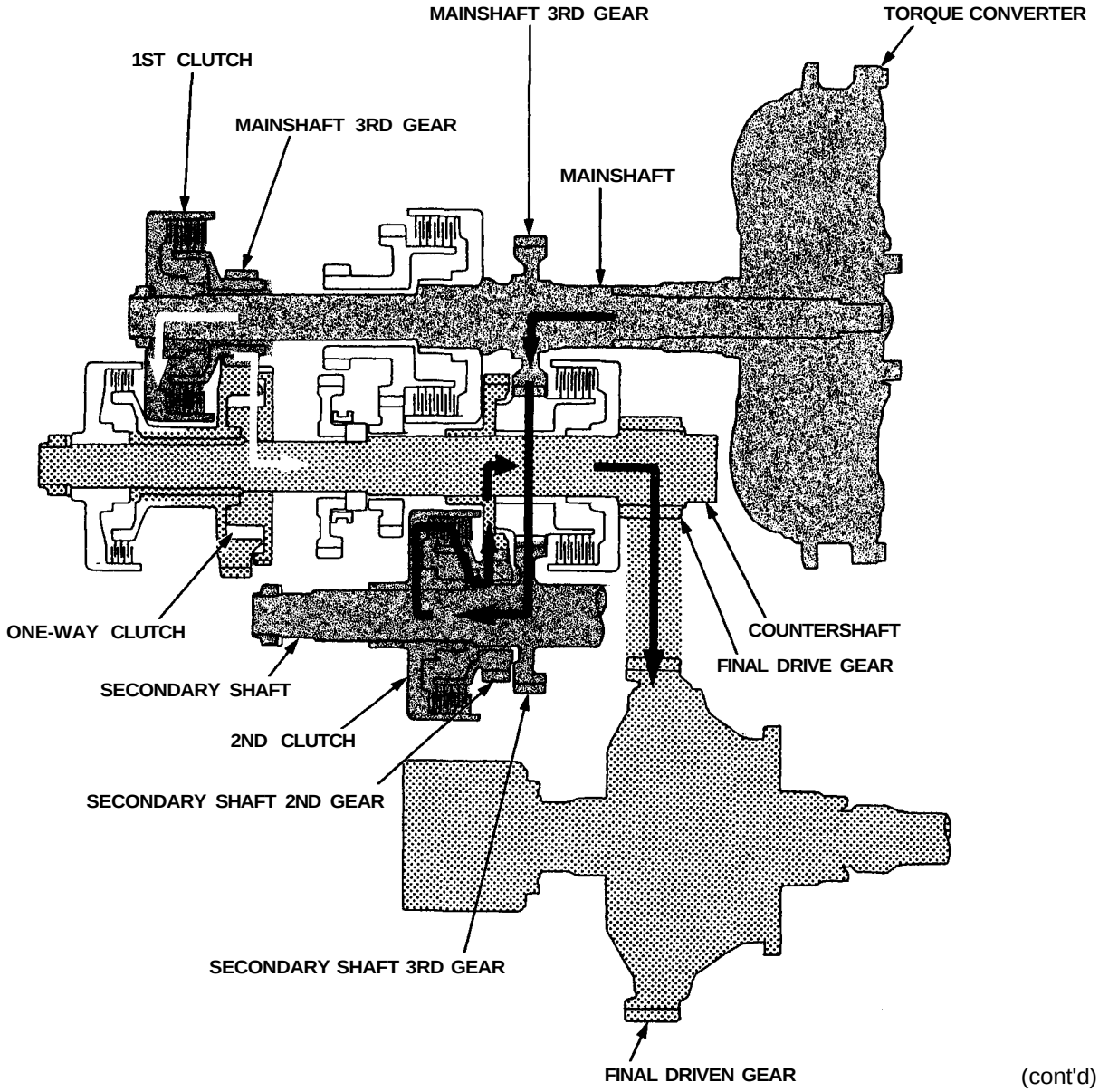
[2] Position is provided to drive only in 2nd speed.

1. Power from the mainshaft 3rd gear drives the countershaft 3rd gear. Since at this time there is no hydraulic pressure to the 3rd clutch. The countershaft 3rd gear turns freely and drives the secondary shaft 3rd gear.

2. The power is also transmitted to the secondary shaft 2nd gear because hydraulic pressure is applied to 2nd clutch.

3. The secondary shaft 2nd gear drives the countershaft 2nd gear. Power is transmitted to the final drive gear and drives the final driven gear.

NOTE:
- At [2] position, hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of the 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.
- Power flow in [D] position, 2nd speed is the same as [2] position.



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Description

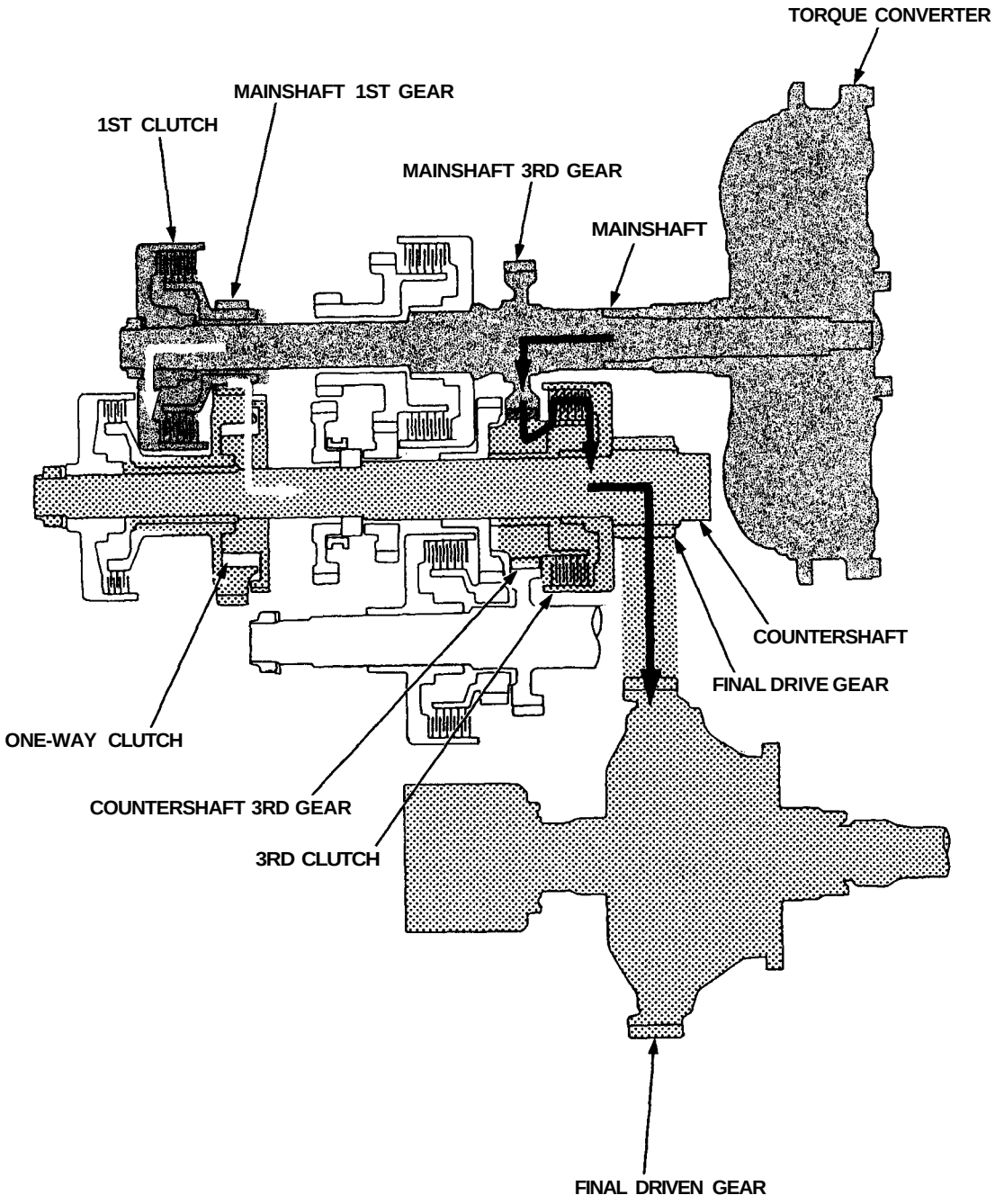
Power Flow (cont'd)

[3] Position is provided to drive only in 3rd speed.

1. Hydraulic pressure is applied to the 3rd clutch. Power from the mainshaft 3rd is transmitted to the countershaft 3rd gear.
2. Power is transmitted to the final drive gear and drives the final driven gear.

NOTE:

- At 3 position, hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of the 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.
- Power flow in [D] position, 3rd speed is the same as [3] position.



In [D] position, the optimum gear is automatically selected from the gear ratios of 1st, 2nd 3rd and 4th speeds, according to conditions such as the balance between throttle opening (engine load) and vehicle speed.

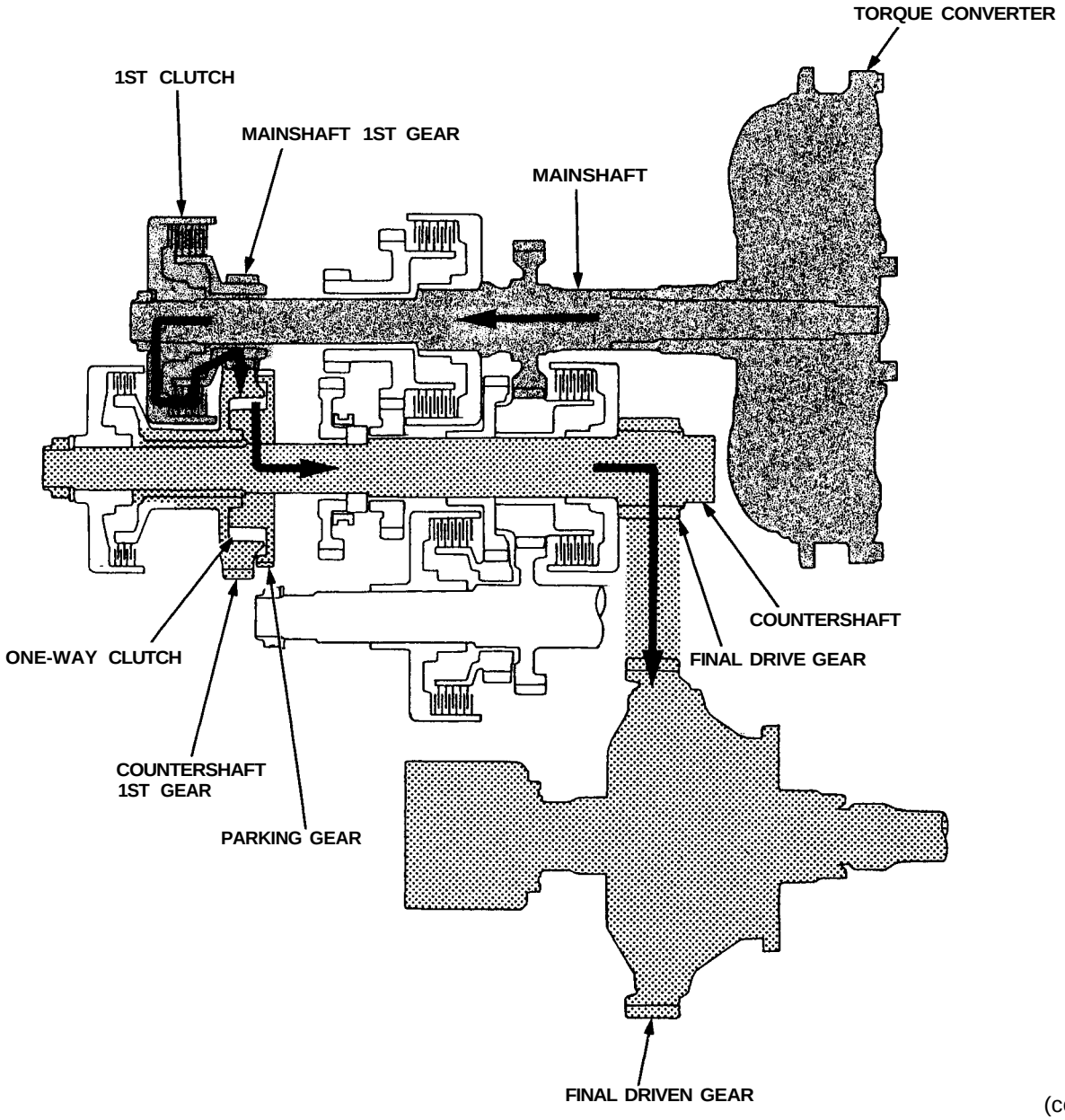
[D] Position, 1st speed

1 . Hydraulic pressure is applied to the 1st clutch, which rotates together with the mainshaft, and the mainshaft 1st gear rotates.

2. Power is transmitted to the countershaft 1st gear, and drives the countershaft via the one-way clutch.

3. Power is transmitted to the final drive gear and drives the final driven gear.

NOTE: In the [D] position, hydraulic pressure is not applied to the 1st-hold clutch.



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Description

Power Flow (cont'd)

D Position, 4th speed

1. Hydraulic pressure is applied to the 4th clutch, which rotates together with the mainshaft, and the mainshaft 4th gear rotates.

2. Power is transmitted through countershaft 4th gear to the countershaft.

3. Power is transmitted to the final drive gear and drives the final driven gear.

NOTE: At D position, 4th speed, hydraulic pressure is also applied to the 1 st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.