

Front Drive Axle and Differential

The front drive axle consists of:

- A cast-aluminum center section, a removable cast-aluminum axle housing tube and a differential housing cover. Both the axle housing tube and the differential housing cover use silicone sealant as a gasket.
- A hypoid-design gearset of an 8.8-inch ring gear and a pinion gear. Two opposed tapered roller bearings support the drive pinion in the axle housing.
- A drive pinion collapsible spacer, located on the pinion shaft, maintains pinion bearing preload. The pinion nut adjusts the preload.
- Differential bearing shims, located between the differential bearing cups and the axle housing, adjust the differential bearing preload and the ring gear backlash.
- A differential case, a 1-piece design with 2 openings to allow for assembly of the internal components and lubricant flow. Two opposed tapered roller bearings (differential bearings) support the differential case in the axle housing. Removable differential bearing caps retain the differential assembly in the axle housing.
- Inside the differential case, the differential pinion shaft supports 2 differential pinion gears. The pinion gear speed is synchronized by a differential clutch spring. The pinion gears engage the differential side gears, to which the left axle shaft and the right axle shaft are splined. The differential pinion shaft bolt retains the differential pinion shaft in the differential case.
- The bar code tag located on the differential cover contains the axle information.

The front drive axle receives input from the transfer case by way of the front driveshaft. Rotational torque is transferred through the drive pinion to the ring gear, which in turn drives the differential case. Inside the differential case are the pinion gears which rotate on the stationary pinion shaft and the side gears which are splined to the axle shafts. The differential assembly is a gear arrangement that allows the drive wheels to be driven at different speeds and divides the input torque of the pinion gear between the axle halfshafts. The front axle transmits torque only and carries no vehicle load. CV joints located at

each end of the halfshafts allow the axle to remain stationary in relationship to front wheels, yet articulate at the knuckle. These CV joints permit the wheels to be driven and turned at the same time.

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