

A component journey

In gear – Pinion gear

A pinion gear is a critical automotive component used in virtually all transmission units. During use, a vehicle places heavy demand on its transmission, requiring a fast and reliable response to the drive controls. The gears require high strength and wear resistance in order to withstand the stresses applied to each gear during use. Bodycote's heat treatment processes, in particular Low Pressure Carburising (LPC), enable modern transmissions to deliver high performance and seamless response, even reducing noise during gear changes.



The gears begin life as low alloy steel.



The gears are machined to shape using a shaving or hobbing method.



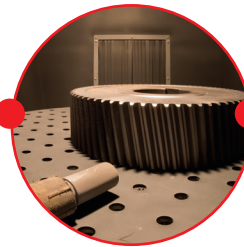
B The gears are quenched using Nitrogen gas to minimise part distortion, then tempered to relieve internal stresses.



B The gears are dimensionally measured before heat treatment to monitor and maintain repeatability of distortion. The gears are then heat treated using LPC to enhance functionality by adding a 'case depth' to provide strength and resistance to wear and tear.



B The parts are inspected and tested for surface hardness, core hardness and effective case depth.



B The gears are shot peened to add compressive residual stress – this allows the parts to withstand more wear and tear. The gears are measured again after heat treatment to check any distortion is within limits.



End application, **automobile.**



The gears are assembled into the transmission unit.

B Denotes the parts of the component journey undertaken by Bodycote