

Avoiding gearbox misalignment issues

The Valeo warranty department often receive clutches that show clear evidence of gearbox misalignment. Misalignment between the engine and gearbox is a common problem that can result in serious damage to the gearbox as well as premature and recurring clutch failures.

Gearbox checks to perform

Most vehicles have dowel pins or bush locations on the rear engine flange or front bellhousing flange, and some vehicles have a separate gearbox and bellhousing that has dowel locations on the front gearbox flange and rear bellhousing flange. The dowel locations are designed to centralise the engine and gearbox to within 0,1mm, as it is impossible to centralise the engine and gearbox correctly by means of the gearbox mounting bolts and/or flywheel pilot bearing alone. Valeo Service recommend checking the dowel pins or bushes as to ensure they are not missing, damaged or warped in anyway.

Misalignment is commonly caused by damaged or missing dowels or damaged dowel locating holes between the engine and gearbox, with the result that the engine and gearbox are no longer correctly centralised. All damaged or missing dowels should be replaced with new components. Valeo Service also advise cleaning all dowel pins with an emery cloth in order to ensure they locate correctly into the dowel holes on the gearbox. Clean dowel pins will also prevent the gearbox from seizing which avoid any difficulties when removing the gearbox in the future.



Misalignment can also be caused by bellhousing distortion or cracking, welding repairs to a damaged bellhousing, and engine or gearbox conversions where the adaptor plate or conversion bellhousing has missing or inaccurately-positioned dowel locations. Misalignment can also be caused by failure to clean old hardened dirt or sealant from the mating surfaces of the engine and gearbox flanges before fitting the gearbox. Valeo recommend cleaning the mating surfaces of the gearbox and engine prior to reinstalling the gearbox.



Misalignment of the gearbox input shaft relative to the engine crankshaft in excess of the maximum permissible tolerance of 0,1mm can causes failure to the major components in the clutch friction plate. These include the torsional damper spring(s), spring window, friction washer, hub spline and stop pin wear. Excessive wear or failure of these components will results in severe torsional vibration, which can cause severe damage to the gears and bearings in the gearbox.

Misalignment can also place excessive strain on the flywheel pilot bearing, resulting in premature and recurring pilot bearing failure and subsequent clutch non-release and noise problems in the vehicle. It can also prevent a standard clutch release bearing from centralising itself on the clutch cover diaphragm fingers, resulting in clutch judder, vibration, severe diaphragm finger wear, premature release bearing failure, and difficulty in gear selection. Clutch systems with a self-aligning release bearing can help remedy these issues.

Before fitting a new clutch to a vehicle, the original friction plate should be carefully inspected for evidence of excessive wear or damage to the torsional damper spring(s), spring window, friction washer, hub spline and stop pin wear, and cushion segment failure, which often indicates the presence of a misalignment condition. Misalignment problems should be properly rectified by ensuring that all damaged or missing dowel locating pins or bushes are replaced with new parts and all dowel locating holes are undamaged and clear of debris. A new or undamaged bellhousing should be fitted if the dowel holes are damaged or the bellhousing is cracked or distorted.

