

## Camshaft Failure Prevention & Correct Installation

Correct removal and installation of the VAG 1.9 TDI camshaft are essential to prevent damage to the camshaft, bearings, injection pump, and valves.

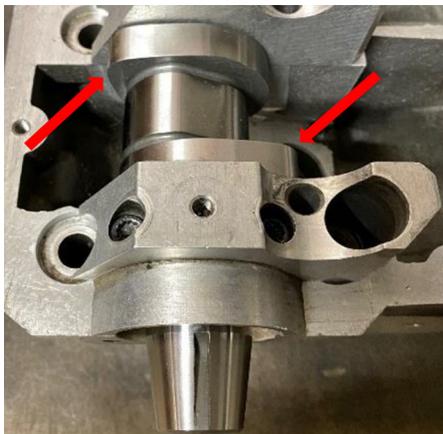
Incorrect methods can cause distortion, binding, or timing errors leading to failure.

### Cause of Failure

A common shortcut involves not removing the injection pump and rotating the camshaft 90° to disengage it.

This method can result in:

- Camshaft binding or breakage during fitting
- Drive slot or bearing damage
- Camshaft distortion and premature wear
- Incorrect timing causing valve-to-piston contact



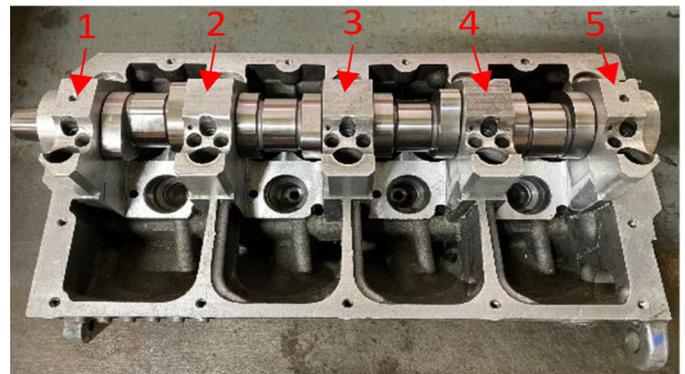
**Fig. 1**

### Correct Installation

Always follow OE repair data for your vehicle. The injection pump must be removed.

Procedure:

1. Set engine to TDC – No.1 cam lobes pointing up (**Fig. 1**)
2. Remove bearing caps 5, 1, 3. Loosen 2 and 4 alternately and diagonally (**Fig. 2**)
3. Check bearing shells are correctly seated and lubricated
4. Use new bearing cap bolts
5. Refit bearing caps 2 and 4, tighten diagonally to torque spec, then install 5, 1, and 3



**Fig. 2**

### Key Fitting Tips

1. Hydraulic Tappets: Compress/purge oil before fitting to ensure correct height. Manually rotate the engine twice before start-up to confirm free movement
2. Tappet Bores: Ensure tappets move freely. Clean or replace if worn or damaged
3. Injector Rocker Arms: Retract and reset all adjustment screws after camshaft installation
4. Cylinder Head Condition: Check for distortion or thrust face wear that may cause axial loading
5. Bearing Cap Sequence: Always follow the correct removal/installation order – even if the injection pump is removed
6. Camshaft Break-In: After starting the engine, maintain 2,000–2,500 RPM for 20–30 min, varying speed slightly. Monitor oil pressure and temperature. Then shut down, change oil/filter, and refill with break-in oil or additive.