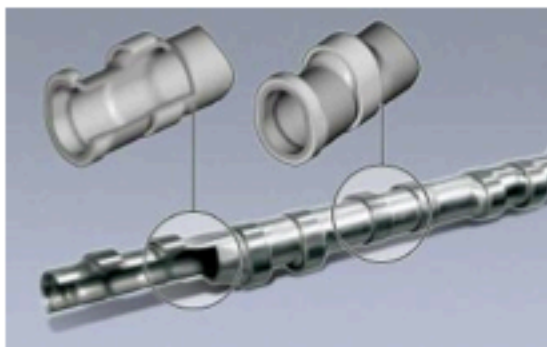


## Camshafts

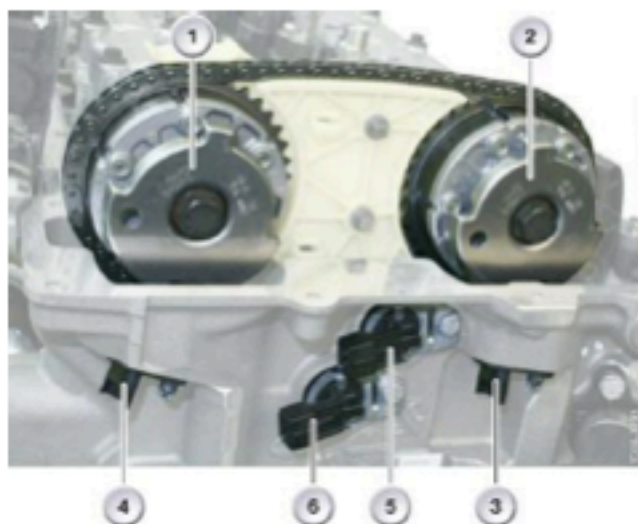
All of the new engine variants will take advantage of the lightweight, hydroformed camshafts from the N52. For supply and production reasons, it is possible that some engines may be fitted with cast camshafts.

Consequently, it is possible to interchange these camshafts with no problem. Cast camshafts and hydroformed camshafts can be fitted as replacement parts. It is even possible to have cast and hydroformed camshafts on the same engine as well.



## VANOS

The infinitely variable double VANOS system is still in use on all NG6 engines. The system still retains the use of the lightweight VANOS units from the N52. The only change to the system is that the N54 uses different spread ranges as compared to the other engines (N52, N52KP and N51). As with the previous systems, the VANOS units should not be mixed up as the spread ranges for the intake and exhaust are different and engine damage could result.



Index	Explanation	Index	Explanation
1	VANOS unit, Exhaust	4	Exhaust camshaft sensor
2	VANOS unit, intake	5	VANOS solenoid valve
3	Intake camshaft sensor	6	VANOS solenoid valve