

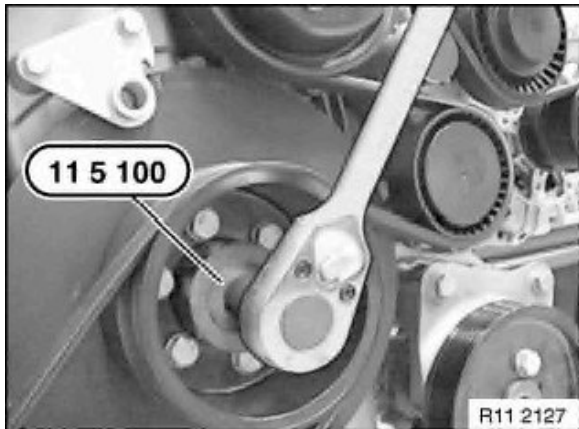
Remove fan clutch with fan cowl.  
Remove cylinder head cover.  
Remove all spark plugs.



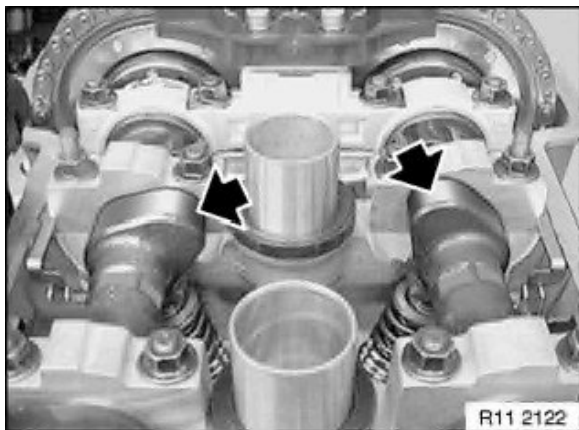
When the engine is switched off, VANOS moves the camshafts to a position which is advantageous to engine starting.

**Caution!**

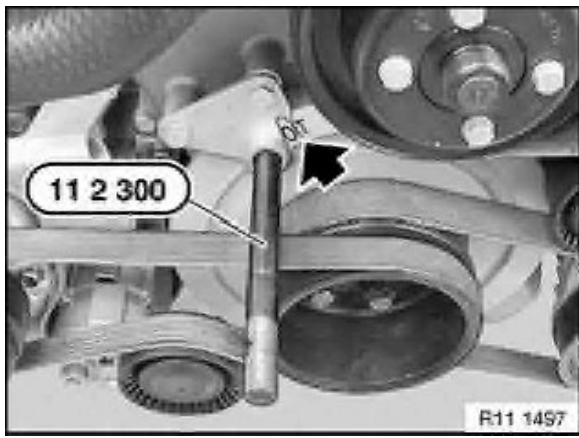
The timing must "not" be checked in this position.  
The camshafts must first be turned back to their initial position.



Attach special tool 11 5 100 to four screws of crankshaft hub.



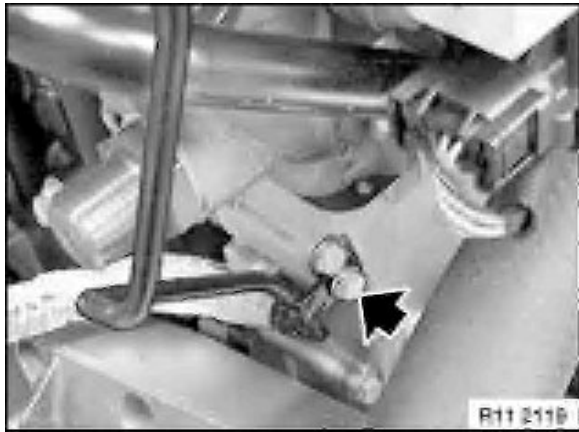
Rotate crankshaft in direction of rotation as far as firing TDC position of 1st cylinder.



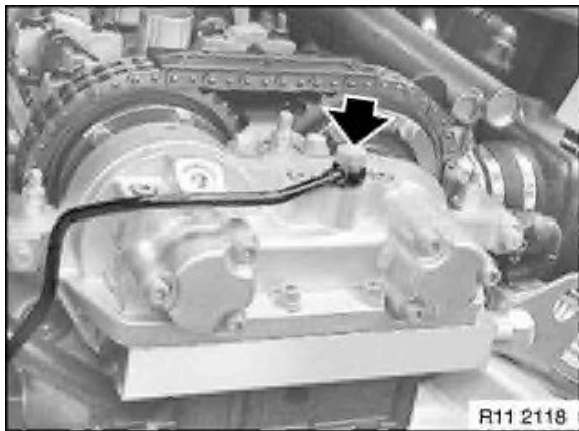
**Caution!**

Do not turn the engine back.

Rotate crankshaft in direction of rotation as far as ignition TDC position of cylinder 1. Secure vibration damper in position with special tool 11 2 300.



Detach bracket of oil line from timing case cover.

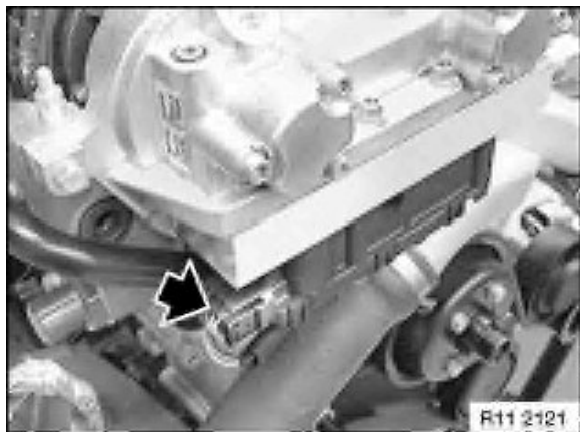


Remove oil line from VANOS adjustment unit.



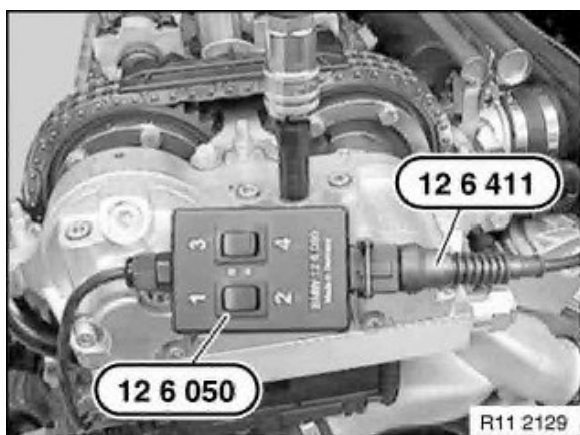
Fit special tool 11 7 130 to VANOS adjustment unit.  
Connect compressed air (2 to 8 bar).

Disconnect plug connection on solenoid valve.



Connect special tool 12 6 050 in conjunction with special tool 12 6 411 (from special tool kit 12 6 410) to solenoid valves. Connect special tool 12 6 411 to correct terminals on car battery.

Alternately press toggle switch buttons 1 and 2 several times on special tool 12 6 050.

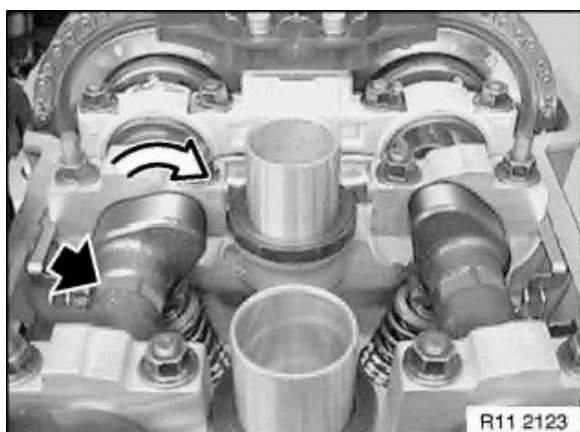


Press and hold down toggle switch button 1 on special tool 12 6 050.

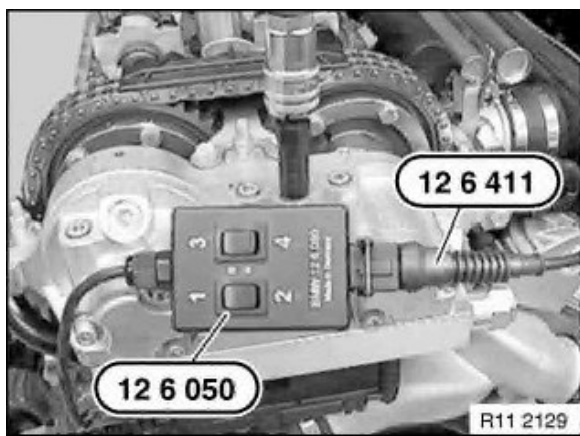
At same time, rotate inlet camshaft at hexagon drive against direction of rotation as far as it will go.

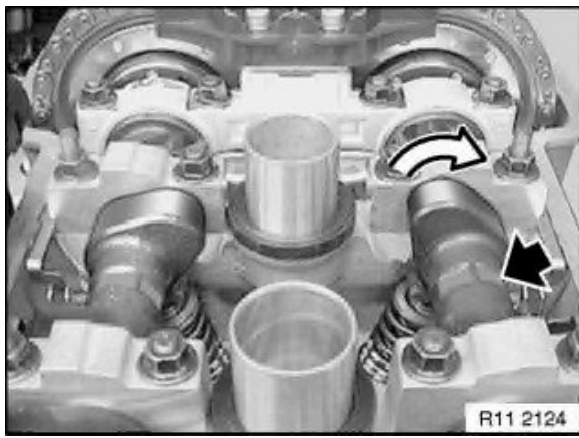
*Note:*

Spline teeth in VANOS gear are engaged; and inlet camshaft cannot be rotated further.



Alternately press toggle switch buttons 3 and 4 several times on special tool 12 6 050.



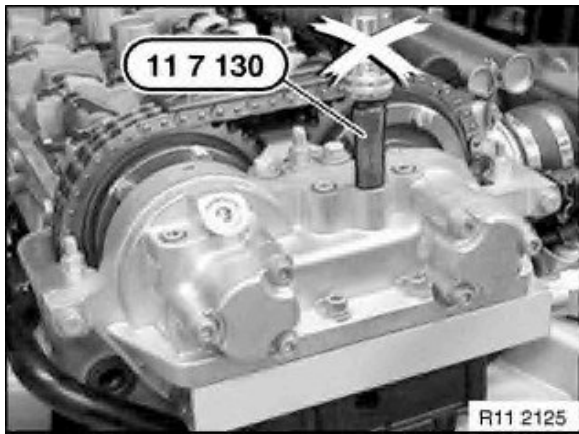


Press and hold down toggle switch button 3 on special tool 12 6 050.

At same time, rotate exhaust camshaft at hexagon drive against direction of rotation as far as it will go.

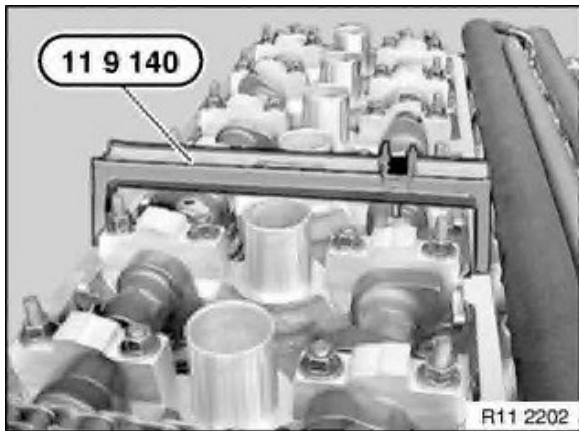
*Note:*

Spline teeth in VANOS gear are engaged; and exhaust camshaft cannot be rotated further.



Disconnect compressed air from special tool 11 7 130.

Remove special tool 11 7 130.



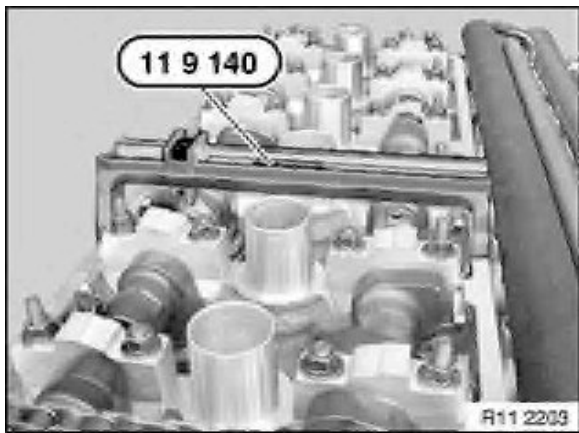
Check camshaft setting:

Attach special tool 11 9 140 and join in locating bore of inlet camshaft.

*Note:*

The inlet camshaft is correctly adjusted when special tool 11 9 140 rests flat on the cylinder head or protrudes by max. 0.5 mm to the exhaust side.

If the special tool 11 9 140 protrudes to the inlet side, the timing must be readjusted.



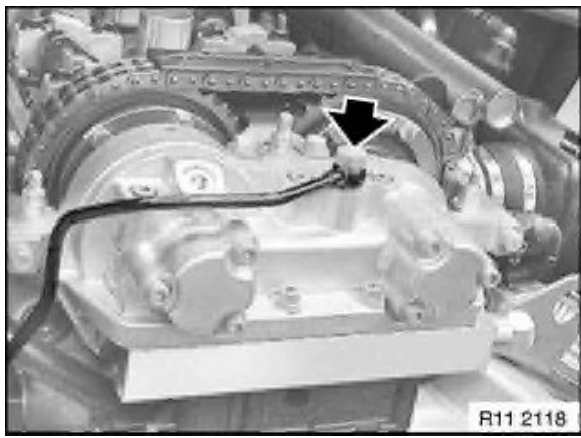
Join special tool 11 9 140 in locating bore of exhaust camshaft.

*Note:*

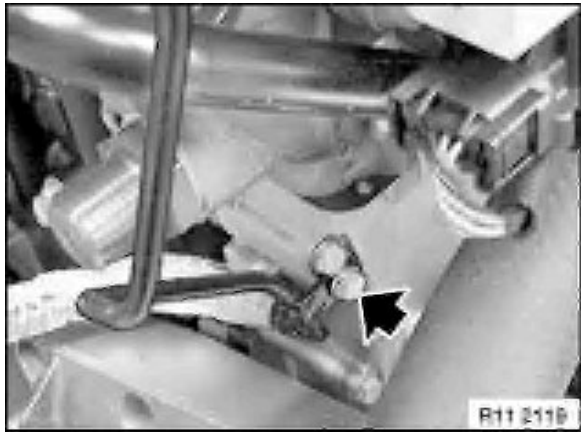
The exhaust camshaft is correctly adjusted when special tool 11 9 140 rests flat on the cylinder head or protrudes by max. 0.5 mm to the exhaust side.

If the special tool 11 9 140 protrudes to the inlet side, the timing must be readjusted.

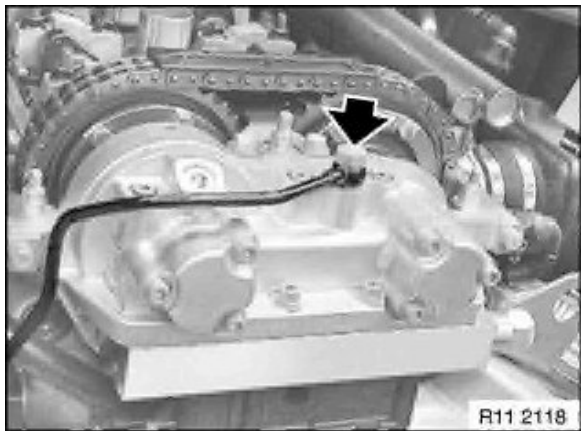
If necessary, adjust camshaft timing.



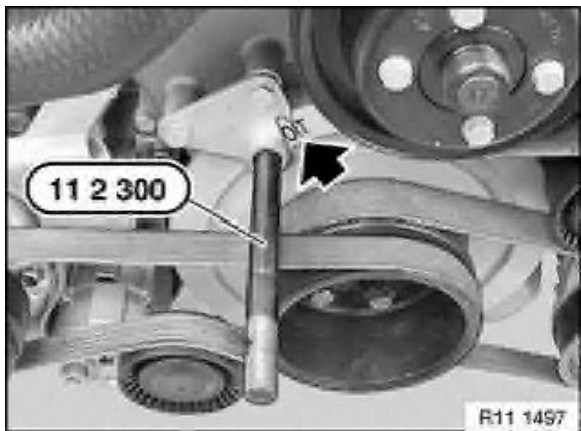
Replace sealing rings of banjo bolt.  
Insert banjo bolt but do not tighten down yet.



Install bracket of oil line. Install screw and tighten down.



Tighten down banjo bolt of oil line.  
Tightening torque, 11 36 9AZ.



Remove special tool 11 2 300.  
Assemble engine.

**Caution!**

There is air in the VANOS system once it is opened.  
In the first few seconds after startup this results in a clearly discernible "rattling noise".  
This rattling noise does "not" indicate incorrect assembly.  
The rattling noise will disappear as soon as the oil pressure has built up and the system has vented.