



BMW M52TU/M54/M56

DOUBLE VANOS CAMSHAFT ALIGNMENT TOOL

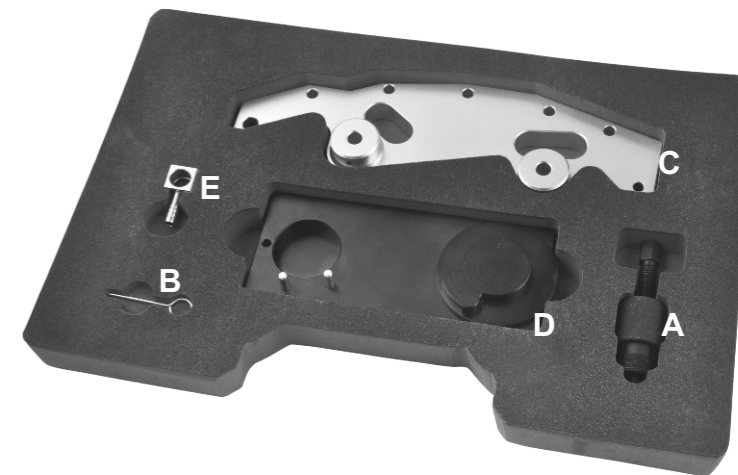
CT3586



SAFETY INSTRUCTIONS

- **WARNING!** Ensure Health and Safety, local authority and general workshop practice regulations are adhered to when using tools.
- **DO NOT** use tools if damaged. Maintain tools in good and clean condition for best and safest performance.
- Ensure that a vehicle which has been jacked up is adequately supported with axle stands.
- Turn the engine in the normal direction (clockwise unless stated otherwise).
- **DO NOT** turn the camshaft, crankshaft or diesel injection pump once the timing chain has been removed (unless specifically stated).
- **DO NOT** use the timing chain to lock the engine when slackening or tightening crankshaft pulley bolts.
- **DO NOT** turn the crankshaft or camshaft when the timing belt/chain has been removed.
- Mark the direction of the chain before removing.
- It is always recommended to turn the engine slowly, by hand and to re-check the camshaft and crankshaft timing positions.
- Crankshafts and Camshafts may only be turned with the chain drive mechanism fully installed.
- **DO NOT** turn crankshaft via camshaft or other gears.
- Check the diesel injection pump timing after replacing the chain.
- Observe all tightening torques.
- Always refer to the vehicle manufacturer's service manual or a suitable proprietary instruction book.
- Incorrect or out of phase engine timing can result in damage to the valves.
- It is always recommended to turn the engine slowly, by hand, and to re-check the camshaft and crankshaft timing positions.
- Wear approved eye protection. A full range of personal safety equipment is available from your dealer.
- Wear suitable clothing to avoid snagging. **DO NOT** wear jewellery and tie back long hair.
- **DO NOT** attempt to start engine or move vehicle whilst in gear with timing devices fitted.
- Always display warning notification on steering wheel when timing engine components.
- Account for all tools, locking bolts, pins and parts being used and do not leave them in or near the engine.
- **WARNING!** Incorrect camshaft timing can result in contact between valve head and piston crown causing damage to the engine.

PLAN LAYOUT



Ref	Code	OEM Ref	Description
A	C385	11 4 220	Timing Chain Pre-tensioning tool
B	C026	11 3 292	Tensioner Locking Tool
C	C379	11 6 150	Camshaft Timing Setting Tool
D	C381	11 6 180	Camshafts Sprockets Alignment Tool
E	C380	11 3 450	Compressed Air Connector

APPLICATIONS

The application list for this product has been compiled cross referencing the OEM Tool Code with the Component Code.

In most cases the tools are specific to this type of engine and are necessary for Cam belt or chain maintenance.

If the engine has been identified as an interference engine valve to piston damage will occur if the engine is run with a broken Cam belt.

A compression check of all cylinders should be performed before removing the cylinder head. Always consult a suitable work shop manual before attempting to change the Cam belt or Chain.

ALWAYS USE A REPUTABLE WORKSHOP MANUAL

Manufacturer	Model	Type	Engine Code	Year
BMW	320i 323i 328i Coupe	E46	20 25 28 6S 2 (M52)	1998-2001
	520i 523i 528i	E39	20 25 6S 4 28 6S 2 (M52)	1998-2001
	728i	E38	28 6S 2 (M52)	1998-2002
	Z3 2.0i 2.8i		20 6S 4 28 6S 2 (M52)	1999-2003
	Z3 2.2i 3.0i		22 6S 30 6S 3 (M54)	2000-2003
	X5 3.0i	E53	30 6S 3 (M54)	1999-2007
	320i	E46	22 6S 1	2000-2007
	520i	E39	22 6S 1	2000-2003
	520i	E60 61	22 6S 1	2003-2005
	325i Compact	E46	25 6S 5	2000-2007
	330i	E46	30 6S 3	2000-2007
	525i 530i	E39	25 6S 5 30 6S 3	2000-2003
	525i 530i	E60 61	25 6S 5 30 6S 3	2003-2005
	730i	E65 66	30 6S 3	2002-2005
	X3 3.0	E83	30 6S 3	2003-2007
Z4 2.5 3.0	E85	25 6S 5 30 6S 3	2003-2006	

INSTRUCTIONS

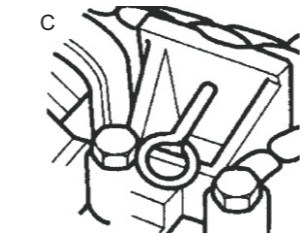
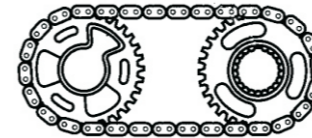
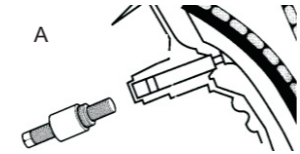
BMW introduced a Twin VANOS System (Variable Valve Control) on the 6 cylinder twin camshaft petrol, chain driven engines. VANOS Adjustment Units are fitted to both camshafts (inlet and exhaust) and must be re-set to align with camshafts when setting engine timing after Cam Chain replacement etc.

1. Remove the timing chain tensioner and insert in its place Tool (A) to pre-load the tensioning rail by applying a torque of 0.7Nm.
2. Unscrew the oil pressure pipe to the Vanes Unit and insert the VANOS unit checking tool (E) and connect a compressed air supply to pressurise the VANOS unit between 2 and 8 bar

WARNING: Some oil may be forced out of the VANOS Unit when compressed air is introduced. Cover unit with a suitable cloth. It is possible that the camshafts will not be in the correct position when the engine is switched off.

3. With the compressed air supply connected, turn the engine over at least two revolutions, in the normal direction of rotation, and return to a position where the camshaft lobes of the inlet and exhaust camshafts on the first cylinder, face each other.
4. Check engine timing position by fitting Flywheel Locking Pin and Camshaft Setting Plate Assembly.

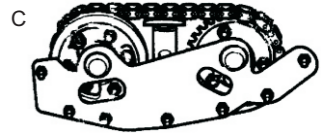
NOTE: The Camshaft Setting Plate Assembly must rest fully on the surface of the cylinder head for engine timing position to be correct.



INSTRUCTIONS

5. The VANOS unit can now be removed.

NOTE that the screws behind the sealing caps are left hand threaded.



6. Follow the manufacturers' procedures through to completing the removal of the sprockets and chain.
7. The following tools are required when re-installing the sprockets and chain.
8. Timing Chain pre-tensioning tool (A) is fitted after attaching the exhaust camshaft sprocket and chain.
9. Install secondary tensioner.
10. Align the camshaft sprockets with the secondary chain in the correct position using the Camshaft Sprocket Alignment Tool (D).
11. Checking that the tooth gaps on inlet side align with each other.
12. Check that the sensor gear is correctly aligned with the cylinder head.
13. Pull out the toothed shaft on the exhaust side as far as possible.
14. Install and release the secondary tensioner pin (B).
15. The camshaft timing is set using tool (C).
16. The screws and nuts are tightened in two stages as specified.
17. Install the timing chain tensioner.
18. Remove all of the alignment tools and rotate the crankshaft two revolutions.
19. Check the engine is at Top Dead Centre (TDC) on No.1 cylinder.
20. Install the VANOS unit using the left hand threaded fasteners.