

Instructions for:

**PETROL ENGINE TWIN CAMSHAFT
SETTING/LOCKING TOOL SET - VAG 1.4/1.6 FSI
(CHAIN)**

Model No: **VS4845**

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.



IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.

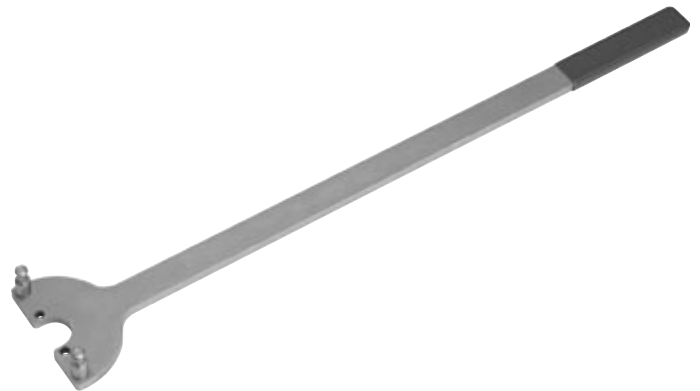
1. SAFETY INSTRUCTIONS

- 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.
- Wear approved eye protection. A full range of personal safety equipment is available from your Sealey dealer.
- Wear suitable clothing to avoid snagging. Do not wear jewellery and tie back long hair.
- Account for all tools, locking bolts, pins and parts being used and do not leave them in or near the engine.
- WARNING!** Incorrect or out of phase camshaft timing can result in contact between valve head and piston crown causing damage to the engine.

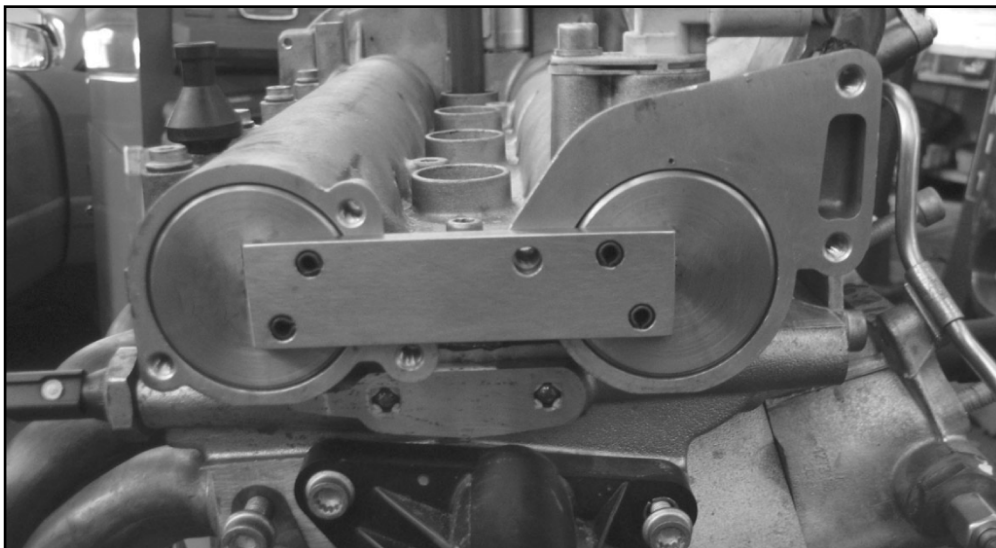
IMPORTANT: These instructions are provided as a guide only. Always refer to the vehicle manufacturer's service instructions, or a proprietary manual, to establish the current procedure and data.



VS4845



Associated Tool VS12470



2. INTRODUCTION & APPLICATIONS

2.1 Introduction

These VW 1.4 & 1.6 Twin Camshaft petrol engines are direct injection with FSI (Fuel Stratified Injection), and are CHAIN DRIVE. Fuel is injected directly into the combustion chamber and a common rail system is used with operating pressures at 40-110 bar. Codes BAG and BLF have variable camshaft timing on the inlet camshaft.

2.2 Applications

VW GROUP 1.4 and 1.6 FSI Petrol engines (CHAIN DRIVE) in:

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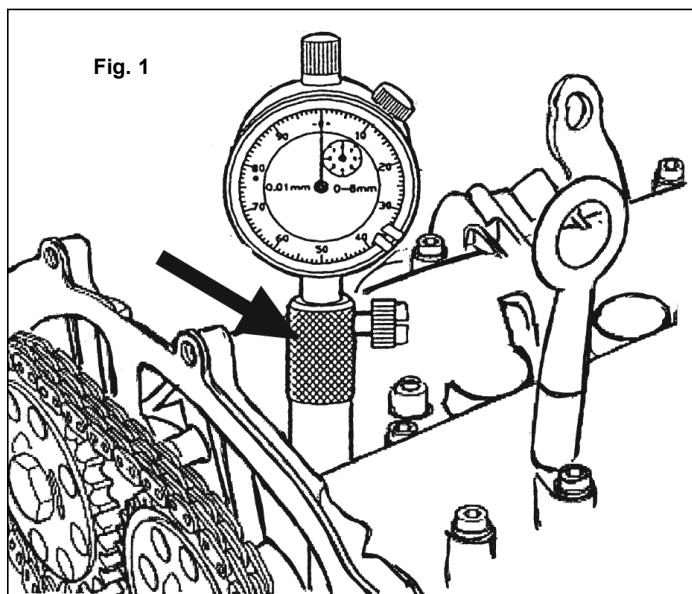
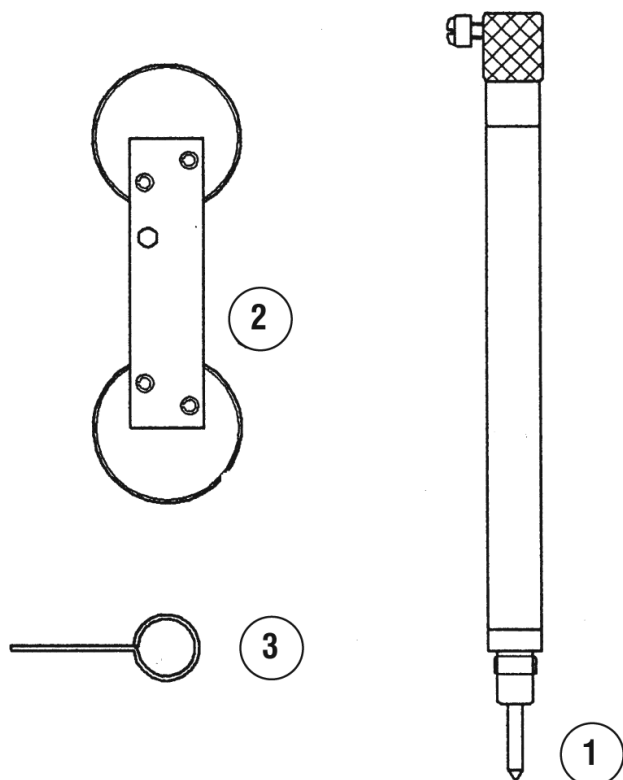
SKODA

Octavia.

VOLKSWAGEN

Polo, Golf, Golf Plus, Touran.

AXU, BAG and BLF FSI engines.



VS1404 TDC Positioning Tool

(use with AK9634M or equivalent Dial Test Indicator - not included in set).

Correct engine/crankshaft TDC position is established using VS1404 Tool together with a suitable DTI (Dial Gauge) such as AK9634M.

NOTE: A standard good quality DTI will suffice for this application as the DTI is not being used directly for measurement, it is only to indicate that the piston has achieved TDC position, (DTI needle achieves its highest reading and starts to move in the reverse direction).

Remove the spark plug from No.1 cylinder.

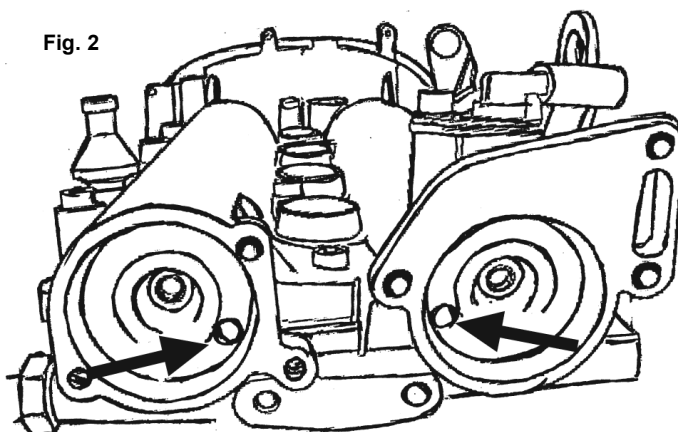
Install the DTI in to VS1404 Tool and secure with the thumbscrew.

Screw VS1404 fully in to the spark plug hole of No.1 cylinder (Fig. 1)

Turn the crankshaft in the normal direction of engine rotation so that the piston reacts on the indicator pin of VS1404 and in turn moves the needle of the DTI.

TDC is achieved when the needle reaches its highest reading and starts to move in the reverse direction.

Fig. 2



3. CONTENTS & ASSOCIATED TOOLS

3.1 Set Contents

1	VS1404	TDC Position Tool (use with DTI)
2	VS4846	Camshaft Setting Plate
3	VS4593/1E	Tensioner Locking Pin
-	VS4845/84	Case + Insert

3.2 Associated Tools

VS12470 Crankshaft Pulley Holding Tool (front timing cover must be removed if access to camshaft sprockets is required for "Timing Adjustment" procedure.)

AK9634M Dial Test indicator - DTI (for use with VS1404)

4. INSTRUCTIONS

VS4845 FSI Engine Setting/Locking Tool Set

Comprises: VS1404 TDC Positioning Tool (use with AK9634M DTI)

VS4846 Camshaft Setting Plate

VS4593/1E Chain Tensioner Locking Pin

Associated Tool - VS12470 Crankshaft Pulley Holding Tool

If Timing Adjustment procedure required - access to camshaft sprockets requires removal of chain cover. Crankshaft Pulley must be removed to remove this cover and VS12470 will be required to counter-hold pulley for removal and installation of centre bolt.

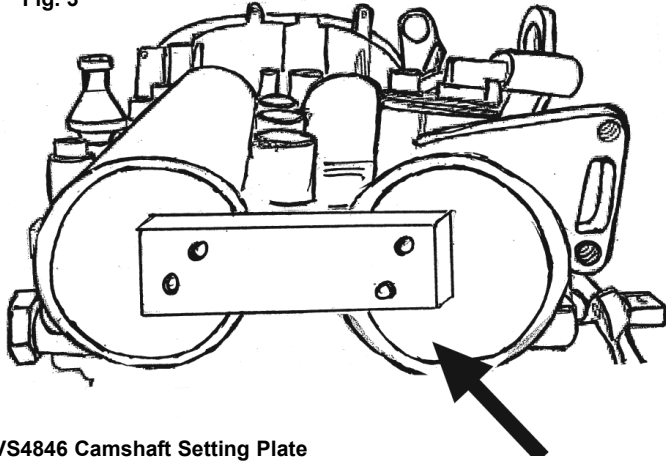
4.1 Checking valve timing

Remove the air cleaner housing, exhaust gas recirculation valve and remove the cover plate at the rear of the camshafts.

IMPORTANT: Check that the holes in the rear of the camshafts are positioned as shown in Fig. 2. If not, turn the crankshaft one more turn (360°) and establish TDC No.1 cylinder position, using VS1404 and the DTI.

WARNING: Whilst establishing TDC on these engines the crankshaft **MUST NOT** be turned more than 0.01mm. passed TDC position. If this occurs, turn the crankshaft backwards (against direction of rotation), approx. 45° and then forward again, in the direction of rotation, to TDC No.1 cylinder position.

Fig. 3



VS4846 Camshaft Setting Plate

Insert VS4846 Setting Plate in to the recesses and the two holes in the rear of the camshafts (Fig. 3).

NOTE: "TOP" marked on the centre bridge of the Setting Plate, must be at the top.

If VS4846 Setting Plate cannot be installed, the engine timing is incorrect and must be adjusted.

4.2 Adjusting valve timing

Remove the crankshaft pulley (using VS12470 Holding Tool) and chain cover and re-fit the crankshaft pulley, tightening the pulley bolt.

Position the engine at TDC No.1 cylinder using VS1404 Tool and DTI ensuring the piston is at top of compression stroke, as described earlier in "Checking valve timing".

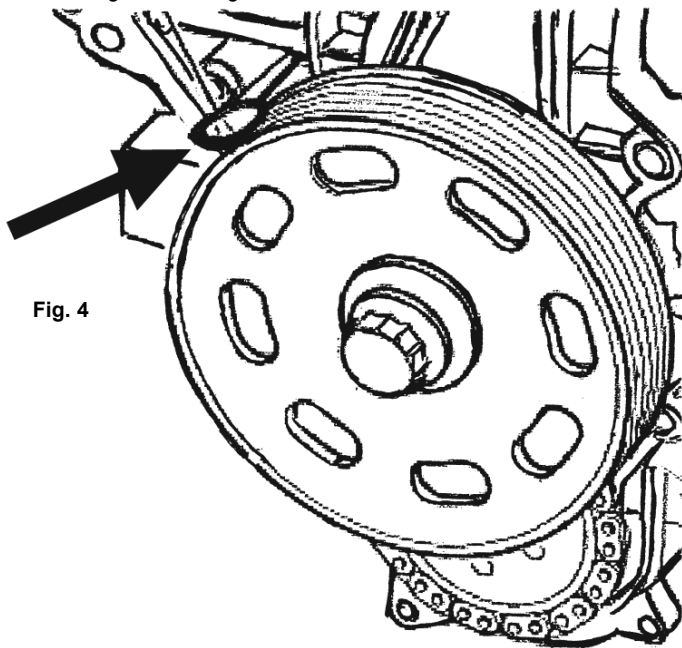


Fig. 4

Turn the crankshaft against direction of engine rotation by 45° and push the chain guide rail against the chain tensioner piston and insert VS4593/1E Pin to 'lock' the piston (Fig. 4).

IMPORTANT: Mark the timing chain with direction of rotation.

Counter-hold the sprockets using a suitable Sprocket Holding Tool, and remove the camshaft sprocket bolts and the Inlet camshaft sprocket together with the timing chain.

WARNING: On codes BAG & BLF, the Camshaft Timing Adjuster (inlet camshaft sprocket) has a LEFT-HAND THREAD.

Install the Inlet camshaft sprocket and replace the sprocket bolts with new ones. Counter-hold the sprockets using a suitable Sprocket Holding Tool and tighten bolts to:

- 50Nm. Inlet and Exhaust - code AXU
- 40Nm. Inlet / 50Nm. Exhaust - codes BAG & BLF.

Turn the camshafts until the VS4846 Setting Plate can be inserted in to the recesses and the two holes in the rear of the camshafts.

NOTE: "TOP" marked on the centre bridge of the Plate, must be at the top.

Secure VS4846 Plate in place with a M6 bolt, finger-tight only.

Counter-hold the sprockets using a suitable Sprocket Holding Tool, and slacken the camshaft sprocket bolts. **DO NOT** use Setting Plate as a counter-hold tool.

Remove a camshaft sprocket and **install the timing chain and sprocket**. Tighten sprocket bolts finger-tight only so that the camshaft sprockets can still turn freely on the camshafts.

Tension the timing chain by removing the VS4593/1E Pin from the tensioner.

Turn the crankshaft in direction of engine rotation and using VS1404 and DTI, establish TDC at No.1 cylinder.

WARNING: Whilst establishing TDC on these engines the crankshaft MUST NOT be turned more than 0.01mm. beyond TDC position. If this occurs, turn the crankshaft backwards (against direction of rotation), approx. 45° and then forward again, in the direction of rotation, to TDC No.1 cylinder position.

Counter-hold the sprockets using a suitable Sprocket Holding Tool, and tighten the camshaft sprocket bolts to:

- 50Nm. Inlet and Exhaust - code AXU.
- 40Nm. Inlet / 50Nm. Exhaust - codes BAG & BLF.

WARNING When tightening bolts the crankshaft **MUST NOT** be allowed to turn and the timing chain should remain tensioned on both sides.

Remove VS4846 Camshaft Setting Plate and turn the engine over by hand two times, returning the TDC No1. cylinder position, established by using VS1404 and DTI.

Check the VS4846 can be inserted correctly at the rear of the camshafts. If it cannot be inserted, repeat the "Timing Adjustment" procedure.

Counter-hold the sprockets using a suitable Sprocket Holding Tool, and tighten camshaft sprocket bolts a further 90° ensuring that the sprockets do not turn on the camshafts.

NOTE: When installing the rear camshaft cover, new seals will be required.

NOTE: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.
IMPORTANT: No liability is accepted for incorrect use of this product. **WARRANTY:** Guarantee is 12 months from purchase date, proof of which will be required for any claim.
INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.

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