

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.



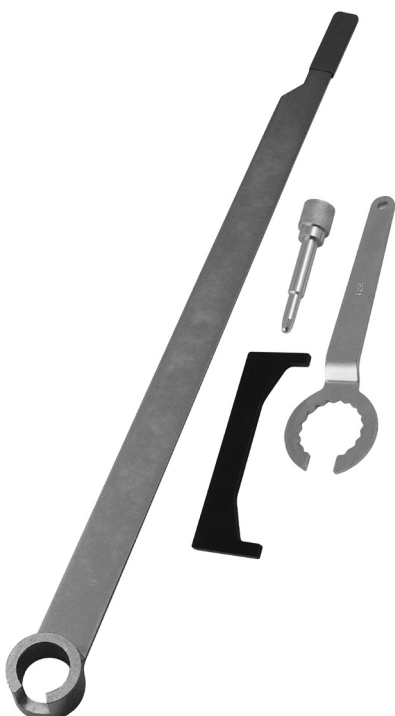
IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP 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.
- DO NOT** attempt to start engine or move vehicle whilst in gear with locking devices fitted.
- Always display warning notification on steering wheel when locking 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 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.

2. CONTENTS & APPLICATIONS

Essential tools suitable for timing belt replacement on VW 2.5 TDi engines. Includes crankshaft pulley holding tool, crankshaft locking pin, camshaft setting plate and timing belt tensioner adjuster.



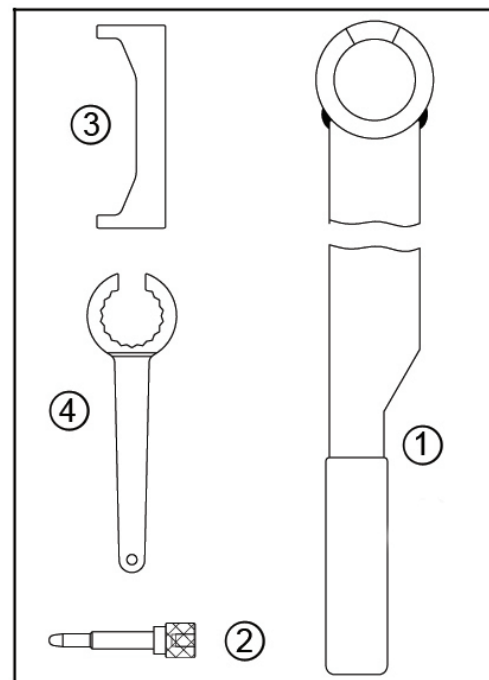
Applications:

VW GROUP 2.5TDi Common Rail Diesel engines (Belt) in:

VOLKSWAGEN:

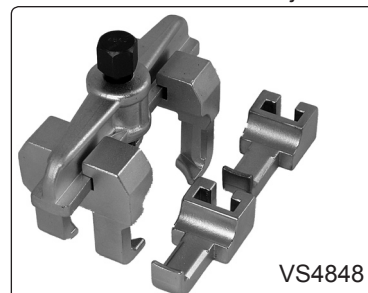
LT
Crafter

BJJ, BJK, BJL and BJM Engines



Kit contents/spares

Item	Part Number	Description
1	VS4438	Crankshaft Pulley Holding Tool
2	VS4919	Crankshaft Locking Pin
3	VS4115A-1	Camshaft Setting Plate
4	VS4435	Tensioner Adjuster



Additional tool required:

- VS4848 Camshaft Sprocket Remover

Optional Tool:

- VS12471 Pulley Holding Tool

3. INSTRUCTIONS

VS4999 Diesel Engine Setting/Locking Kit comprises:

VS4438	Crankshaft Pulley Holding Tool
VS4919	Crankshaft Locking Pin
VS4115A-1	Camshaft Setting Plate
VS4435	Tensioner Adjuster

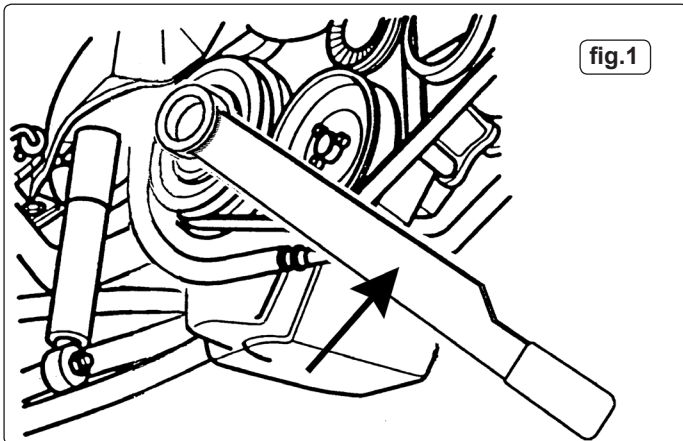
The VAG 2.5TDi 5 cylinder common rail diesel engine first appeared in 2006 in the VW LT van and then subsequently in the VW Crafter van range.

Associated tools

During the timing belt replacement procedure it is necessary to release the camshaft sprocket off its tapered shaft. The Camshaft Setting Plate **MUST NOT** be used to counter-hold the camshaft whilst releasing or tightening the sprocket bolt, and therefore associated tool VS4848 Camshaft Sprocket Remover and VS12471 Pulley Holding tool are also detailed in these instructions.

3.1. Timing belt replacement.

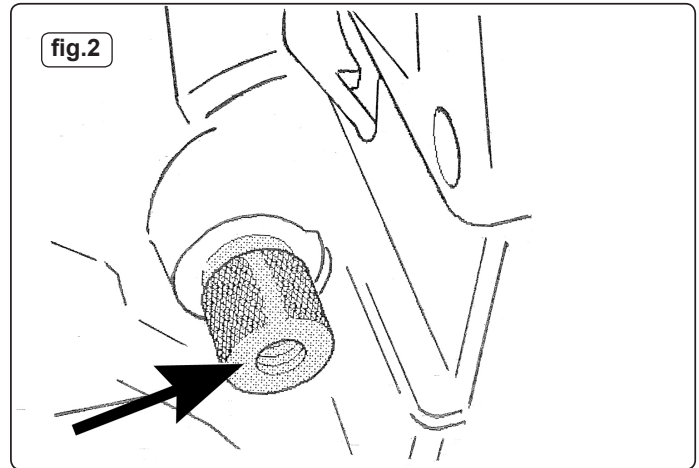
- 3.1.1. It is necessary to remove the auxiliary belt, viscous fan, fan cowling, belt pulley, camshaft cover, upper belt cover, and the guide roller.



VS4438 Crankshaft Pulley Holding Tool is used to counter-hold the crankshaft pulley (vibration damper), whilst releasing and tightening the centre bolt (**fig.1**).

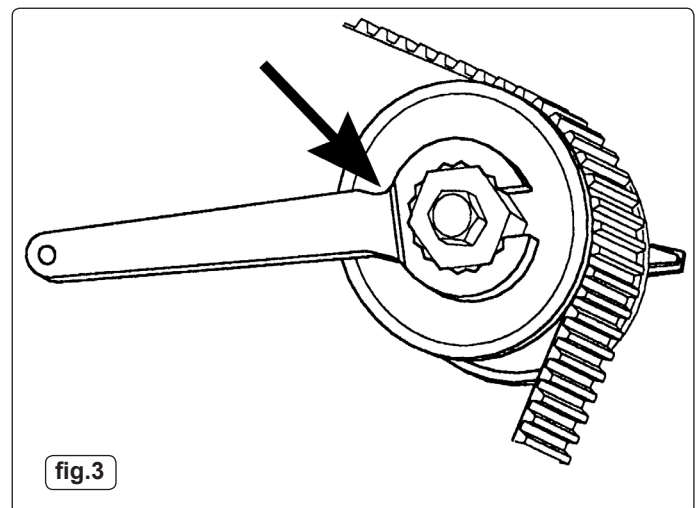
WARNING: The VS4919 Crankshaft Locking Pin MUST NOT be used to counter-hold the crankshaft when releasing / tightening the crankshaft pulley centre bolt – only use VS4438 Crankshaft Pulley Holding Tool.

- 3.1.2. Insert VS4438 Crankshaft Pulley Holding Tool into the crankshaft pulley and loosen the centre bolt, (do not remove at this stage).
- 3.1.3. Loosen the 4 pulley securing bolts.
- 3.1.4. Turn the engine in the normal direction of engine rotation, to TDC No.1 cylinder.
- 3.1.5. Check that the timing mark on the camshaft sprocket aligns with the timing mark on the rear belt cover.



VS4919 Crankshaft Locking Pin

- 3.1.6. Unscrew the sealing plug from the engine block ready for insertion of the VS4919 Crankshaft Locking Pin.
- 3.1.7. Visually check that the bore to locate the Pin into the crankshaft is in line with the pin access hole.
- 3.1.8. Insert VS4919 Crankshaft Locking Pin to retain the crankshaft at TDC No.1 cylinder (**fig.2**). Rock the crankshaft back and forth to ensure it will not rotate and is therefore correctly locked in position.
- 3.1.9. Unscrew and remove the 4 crankshaft pulley securing bolts and the centre bolt.
- 3.1.10. Remove the crankshaft pulley and belt cover.



The VS4435 Tensioner Adjuster is a specialised wrench designed for belt tensioner adjustment.

- 3.1.11. Using VS4435 release the tensioner and relieve tension off the timing belt in order to remove the belt (**fig.3**).

3.2. Installing a new timing belt.

- 3.2.1. Check that the crankshaft is locked in position with VS4919 Locking Pin.

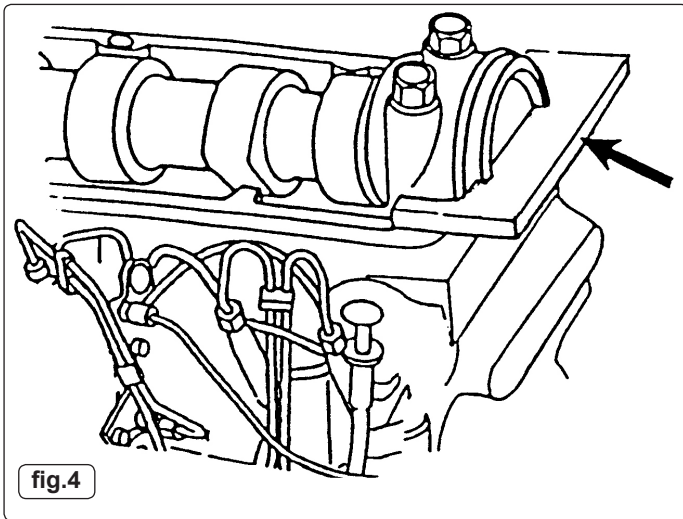


fig.4

VS4115A-1 Camshaft Setting Plate is used to accurately align the datum slot, situated in the rear of the camshaft, with the top face of the cylinder head, in order to position the camshaft in the correct timed position.

When fitting VS4115A-1 Camshaft Setting Plate, feeler gauges of equal thickness must be inserted on both sides of the Plate, between the Plate and the surface of the cylinder head, until all free play has been eliminated.

- 3.2.2. Insert VS4115A-1 Setting Plate into the datum slot. Turn the camshaft so that one side of the Plate touches the surface of the cylinder head (**fig.4**).
- 3.2.3. Using a feeler gauge, measure the gap, which has been created on the opposite side of the head, between Plate and cylinder head.
- 3.2.4. Insert a feeler gauge equal to half of this gap size, between the Plate and the cylinder head on one side of the head.
- 3.2.5. Turn the camshaft until the Plate contacts the inserted feeler gauge. Insert a second feeler gauge, of the same size, between the Plate and the cylinder head, on the opposite side of the head, to level the Plate and eliminate any free play.

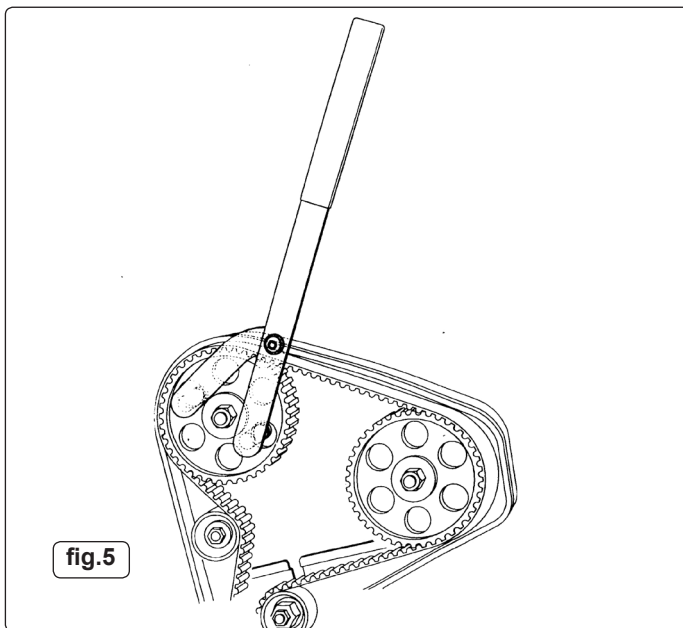


fig.5

VS12471 Pulley Holding Tool – Associated tool – not in Set.

- 3.2.6. It is necessary to release the camshaft sprocket off its tapered shaft, so it can turn freely, during the timing belt tensioning procedure.

NOTE: The securing bolt should be released approximately ½ a turn. It should not be fully removed, as it must retain the sprocket on the shaft.

WARNING: VS4115A-1 Camshaft Setting Plate **MUST NOT** be used to counter-hold the camshaft when releasing / tightening the camshaft sprocket retaining bolt. –use a suitable Pulley Holding Tool such as VS12471 (**fig.5**).

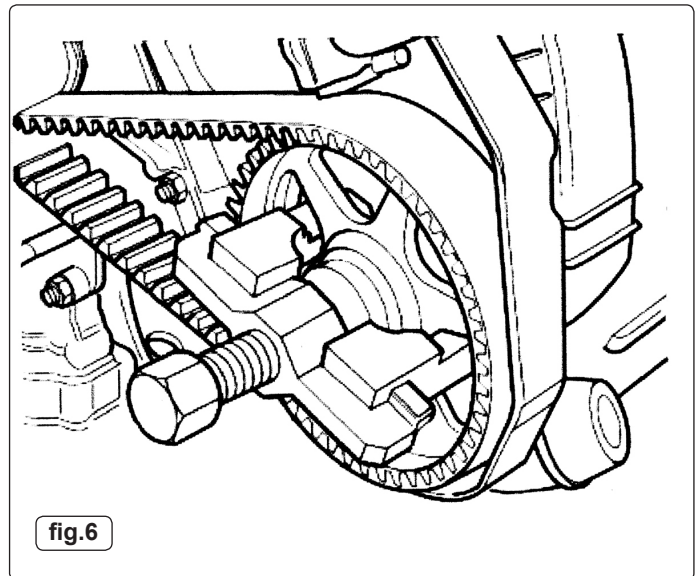


fig.6

VS4848 Camshaft Sprocket Remover – Associated tool – not in Set.

- 3.2.7. Once the sprocket bolt is released and unscrewed approximately ½ a turn, pull the camshaft sprocket off its tapered shaft using VS4848 (**fig.6**).
- 3.2.8. Turn the camshaft sprocket so that the timing mark aligns with the timing mark on the rear belt cover.

3.3. Tensioning the belt.

- 3.3.1. Ensure that the tensioner roller is installed so that the slotted hole fits over the pin, which protrudes from the lower belt cover.
- 3.3.2. Fit the new belt and tighten the tensioner bolt finger tight.

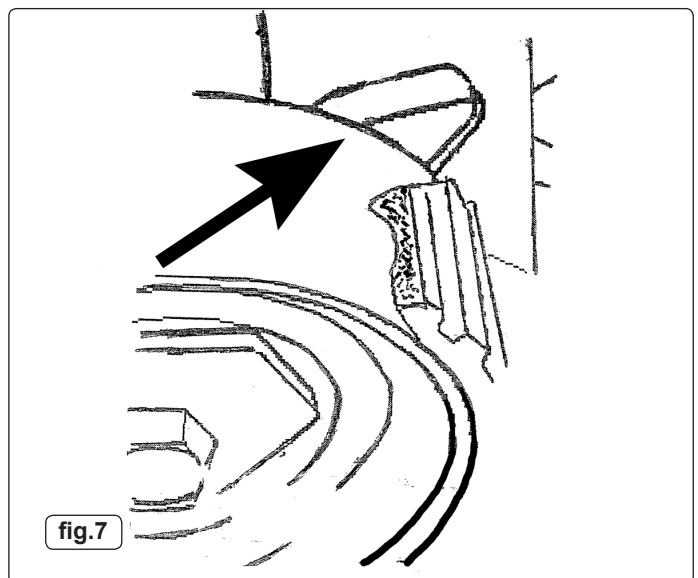


fig.7

- 3.3.3. To tension the timing belt, fit VS4435 Belt Tensioner Adjuster and carefully and slowly turn the tensioner clockwise until the **right-hand edge** of the moveable pointer aligns with the **right-hand edge** of the marker (**fig.7**).

WARNING: The right-hand edge of the moveable pointer **MUST NOT** be allowed to pass the right-hand edge of the marker as damage to the tensioner could occur. If the moveable pointer is turned beyond this position, relieve the tension off the tensioner by turning it completely and fully away from the belt. Then, re-apply tension to the belt by turning the tensioner clockwise until the pointer is in the correct position.

- 3.3.4. Tighten the tensioner bolt to **20Nm**.
- 3.3.5. Using a Sprocket Holding Tool to counter-hold the camshaft sprocket, tighten the sprocket bolt to **100Nm**.
- 3.3.6. Remove the Camshaft Setting Plate and Crankshaft Locking Pin and install the belt cover.
- 3.3.7. Install the crankshaft pulley using a new centre bolt and washer.
IMPORTANT: The centre bolt threads and contact surfaces must be oiled.
- 3.3.8. Using VS4438 Crankshaft Pulley Holding Tool, counter-hold the crankshaft pulley whilst tightening the new bolt to **160Nm. + 180 degrees**.
- 3.3.9. Insert and tighten the 4 securing bolts for the crankshaft pulley to **20Nm. + 90 degrees**.
- 3.3.10. Turn the crankshaft over, by hand, two turns in the direction of normal engine rotation, and return to the TDC No.1 cylinder position.
- 3.3.11. Check the tensioner to ensure that the **right-hand edge** of the moveable pointer aligns with the **right-hand edge** of the marker. If it is not, the tensioning procedure **MUST** be repeated.
- 3.3.12. Insert VS4919 Crankshaft Locking Pin and check that the timing mark on the camshaft sprocket aligns with the timing mark on the belt cover.

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 equipment.

WARRANTY: Guarantee is 12 months from purchase date, proof of which will be required for any claim.

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