

Instructions for:

DIESEL ENGINE SETTING/LOCKING KIT TDV6

Model No: **VS4965**

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.



2. INTRODUCTION / APPLICATIONS

Covers all variants of the TDV6 Quad-Cam common rail diesel engine found in Land Rover, Jaguar and PSA (Citroen/Peugeot) vehicles. These engines drive the exhaust camshaft from the crankshaft which in turn are linked by chains to the inlet camshaft. The 'only' kit currently to handle all versions including automatic transmission variants. Includes warning tag.

LAND ROVER, JAGUAR & PSA (Citroen/Peugeot) 2.7 V6 (TDV6) Quad Cam Diesel engines in:

LAND ROVER

Range Rover Sport Discovery 3

JAGUAR

S -Type XJ Series

PSA – Citroen/Peugeot

CITROEN

C6

PEUGEOT

407 / Coupe 607

Engine codes:

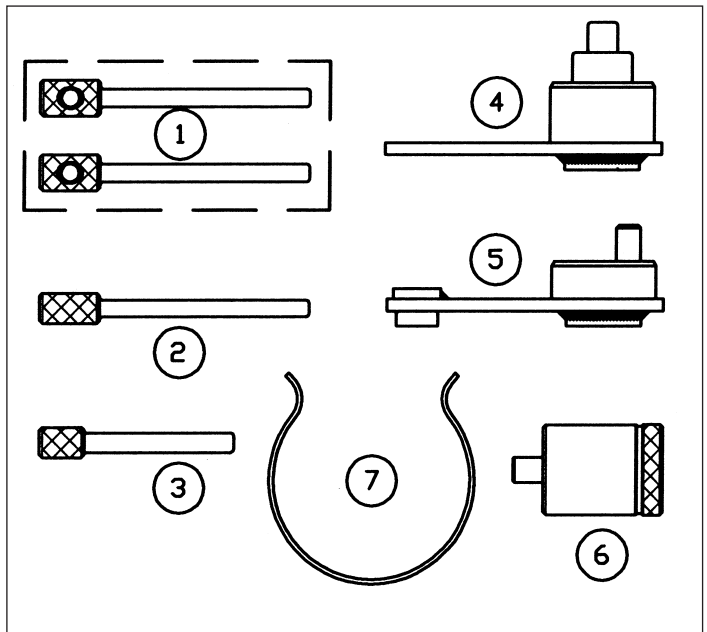
276DT / DT17TED4 (UHZ) (TDV6) engines.

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.

WARNING: The warnings, cautions and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.



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VS4965 V6 Diesel Engine Setting / Locking Tool Kit Comprises:

- VS4965L1** **Camshaft Locking Pins (Pair) - (all applications)**
- VS4965L2** **Camshaft Timing Checking Pin (L – R / Jaguar)**
- VS4965C9** **Coolant Pump Locking Pin (PSA)**
- VS4966** **Flywheel Locking Tool (Automatic Transmission L – R / Jaguar)**
- VS4967** **Flywheel Locking Tool (Manual Transmission L – R / Jaguar)**
- VS4968** **Flywheel Locking Tool (PSA)**
- VS1210/04** **Timing Belt Retaining Clip (all applications)**

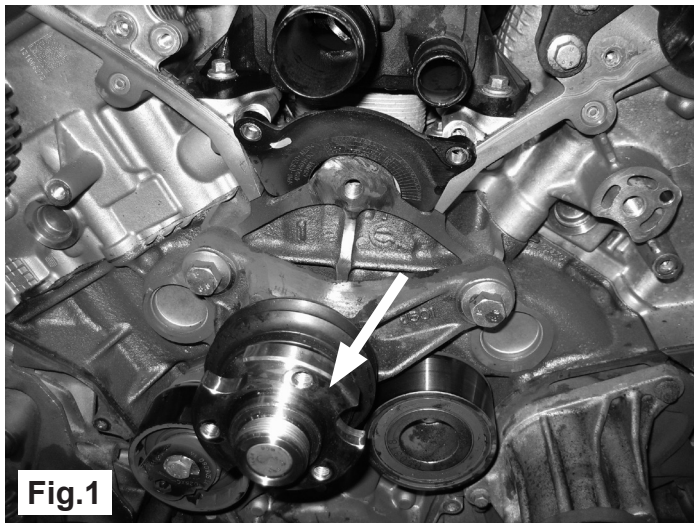
4. INSTRUCTIONS

The TDV6 diesel engines fitted in Land Rover, Jaguar and PSA models are 'Quad Cam', Common Rail diesels with a front timing belt driving the exhaust camshafts from the crankshaft. Chains connect the inlet camshaft to the exhaust camshaft in each bank. A separate belt at the rear of the engine, operates the HP pump from the camshaft (Note: the HP pump does not require timing).

The timing belt replacement procedure is basically the same for all vehicles. However it should be noted that two Flywheel Locking Tools are required for Land Rover and Jaguar (one for Automatic and one for Manual transmissions) and that PSA models also require a different Flywheel Tool from the ones used on L-R and Jaguar.

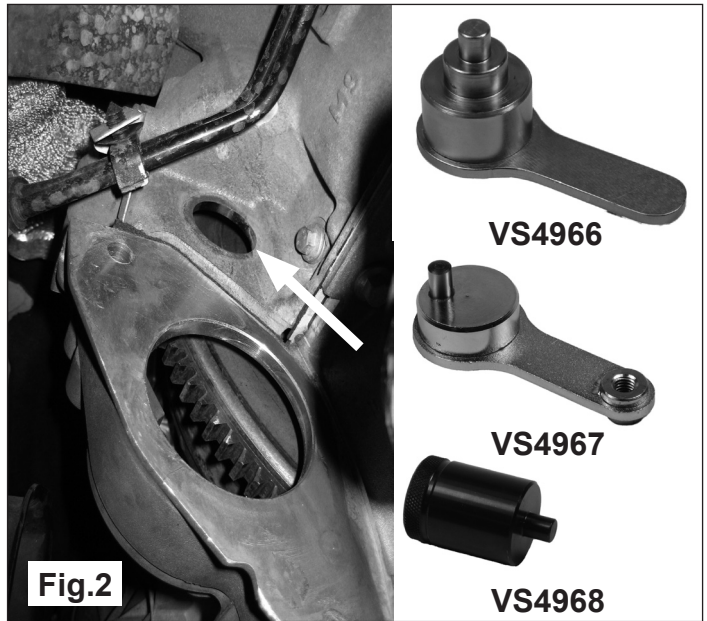
The Camshaft Locking Pins are common to all these applications, but additionally, a Timing Check Pin is used on Land Rover and Jaguar timing procedures.

It will be necessary to remove / dismantle a number of components to gain access to the timing belt area, including the need to drain the coolant, remove intercooler, air filter and engine under-shield. Remove Right-Hand road wheel and splash shield. Support the engine and remove upper Right-Hand engine mounting/support. Remove the viscous fan, crankshaft pulley, auxiliary belt/tensioner, and coolant pump pulley.



NOTE: PSA applications use VS4965C9 Coolant Pump Locking Pin when removing the Pulley. Align one of the three holes in the pulley with the hole in the coolant pump body – insert VS4965C9 Locking Pin to fix position, and remove the pulley. (Fig.1).

Remove timing belt covers and starter motor.



VS4966, VS4967 & VS4968 Flywheel Locking Tools
Remove the timing hole grommet from the engine block to allow for insertion of the appropriate Flywheel Locking Tool. (Fig.2).

- VS4966** – Automatic Transmission – Land Rover / Jaguar
- VS4967** – Manual Transmission – Land Rover / Jaguar
- VS4968** – PSA (Citroen / Peugeot)

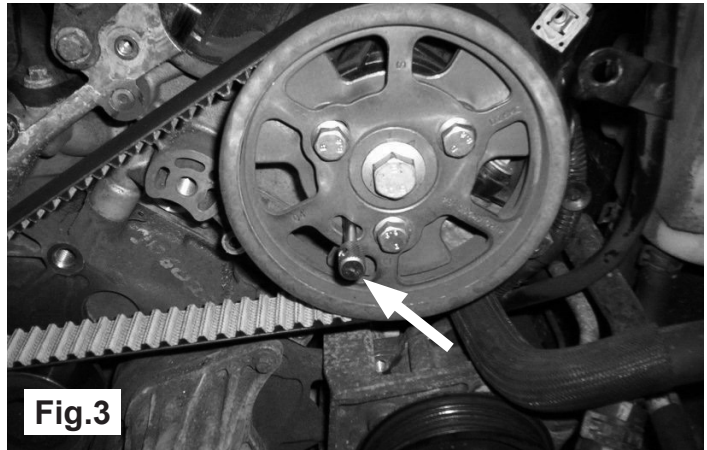
Turn the crankshaft **clockwise** to align the datum hole in the flywheel within the timing hole.

Check that the timing holes in the camshaft sprockets are aligned with the datum holes behind them. If they are not aligned, turn the crankshaft one turn **clockwise**.

Insert the appropriate Flywheel Locking Tool into the timing hole so that the 'pin' of the tool locates into the datum hole in the flywheel in order to 'lock' the flywheel in 'timed' position.

NOTE: VS4967 Flywheel Locking Pin is retained in correct orientation by fixing the Tool to the starter motor bolt position.

4.1 Camshaft timing



4.1.1 VS4965L1 Camshaft Locking Pins (Pair)

Insert the VS4965L1 Locking Pins into the timing holes in the exhaust camshaft sprockets and through into the rear datum holes to 'lock' the camshafts. (Fig. 3 & 4)

WARNING: VS4965L1 Pins MUST NOT be used to counter-hold the sprockets when releasing / tightening the sprocket bolts. Use a suitable Sprocket Holding Tool.

Counter-hold sprockets with a suitable Holding Tool whilst slackening the 3 x bolts on each sprocket.

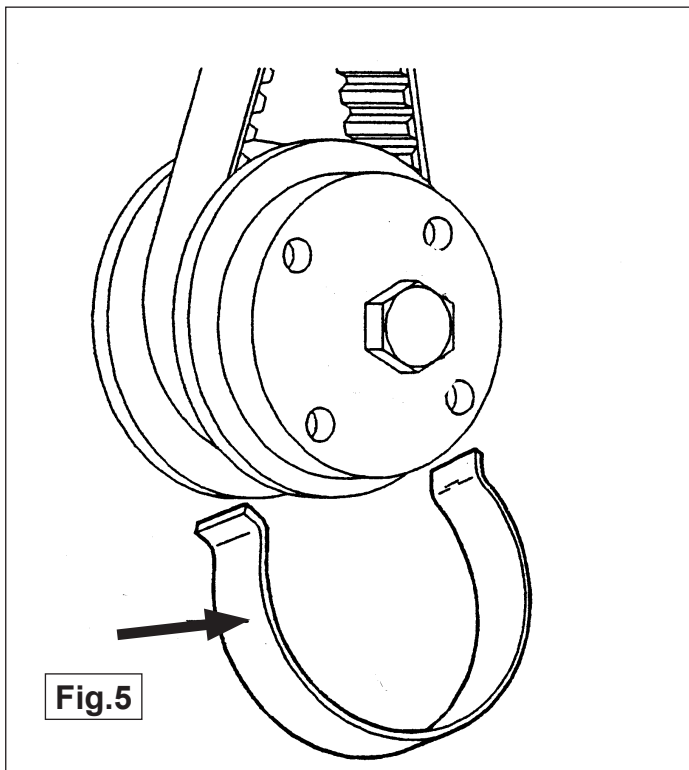
Remove and discard the belt tensioner pulley/bolt and the timing belt.

Check that the idler pulleys and coolant pump rotate freely and check for any oil and coolant leaks.

4.2 New timing Belt Installation

Install a new belt tensioner and bolt **NOTE:** Tighten tensioner bolt finger-tight only at this stage.

Turn both camshaft sprockets **fully clockwise** in their slotted holes.



4.2.1 Fit a new timing belt in the following sequence:

Crankshaft Gear – retain belt in place on the gear using VS1210/04 Belt Retaining Clip.

(Fig. 5).

Idler Pulley

left-Hand Camshaft Sprocket – ensure sprocket remains in the **clockwise** position.

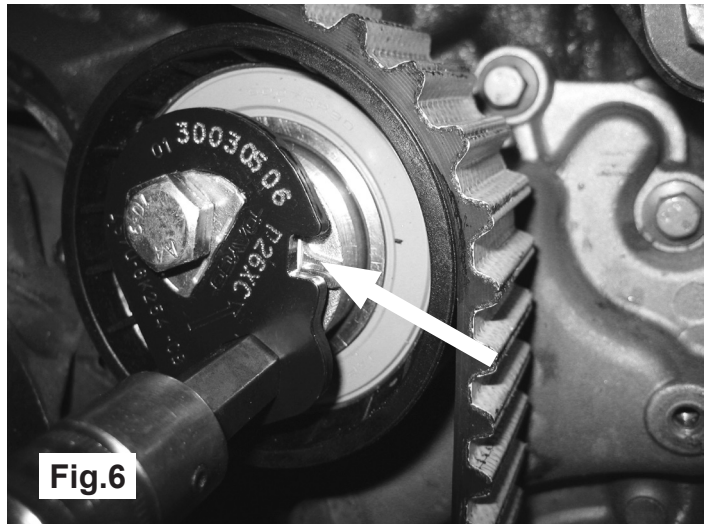
Idler Pulley

Right-Hand Camshaft Sprocket - ensure sprocket remains in the **clockwise** position.

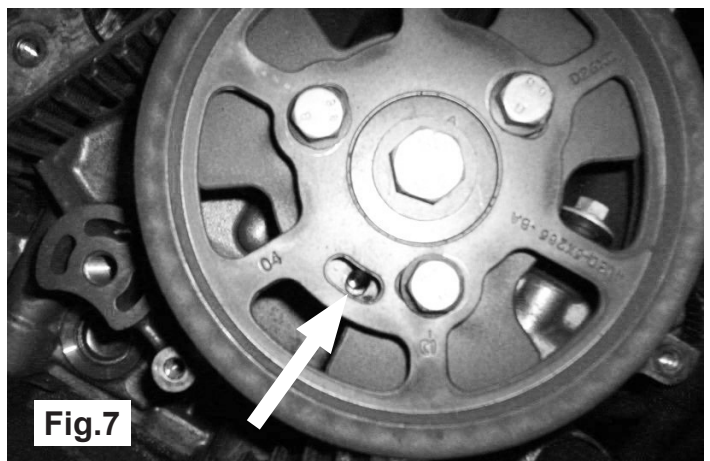
Belt Tensioner.

4.2.2 If necessary, turn the camshaft sprockets slightly **anti-clockwise** to fit belt (no more than one tooth). Ensure the timing belt is taut between sprockets.

Remove VS1210/04 Retaining Clip.



Using an allen key, turn the belt tensioner **anti-clockwise** to a position where the 'window' is aligned with the 'groove'. Tighten the tensioner pulley bolt. (Fig.6).



4.2.3 Unscrew the camshaft sprocket bolts (3 on each sprocket) to visually check that they are not at the end of the slotted holes. (Fig. 7). Counter-hold the camshaft sprockets using a suitable Holding Tool and tighten the sprocket bolts (3 on each sprocket).

4.2.4 Remove the VS4965L1 Camshaft Locking Pins and Flywheel Locking Tool.

4.2.5 Rotate the crankshaft slowly, by hand, 2 complete turns, in normal direction of rotation, and again align the datum hole in the flywheel into the timing hole.

4.2.6 Insert the Flywheel Locking Tool and the Camshaft Locking Pins to confirm that the correct timing of the engine has been established.

IMPORTANT: PSA detail use of the VS4965L1 Locking Pins inserted into the Left-Hand and Right-Hand sprockets in order to check the camshaft timing positions are correct.

4.2.7 Land Rover and Jaguar use one of the VS4965L1 Pins in the Left-Hand Sprocket (when viewed from the sprockets) and the VS4965L2 Timing Check Pin in the Right-Hand sprocket to determine that timing is correct.

If Locking Pins do not fit, repeat the timing belt replacement procedure.

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.