

Instructions for:

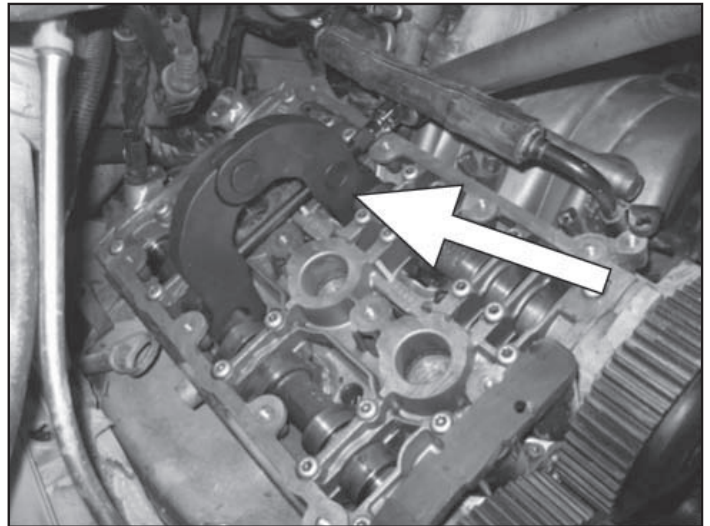
**PETROL ENGINE TIMING KIT - AUDI 3.0 V6**

Model No: **VS4940**

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. APPLICATIONS

VAG 3.0 V6 Quad Cam Petrol engines in  
**AUDI**

A4 Cabrio A6 A8

**Engine codes:**

ASN, AVK, BBJ engines

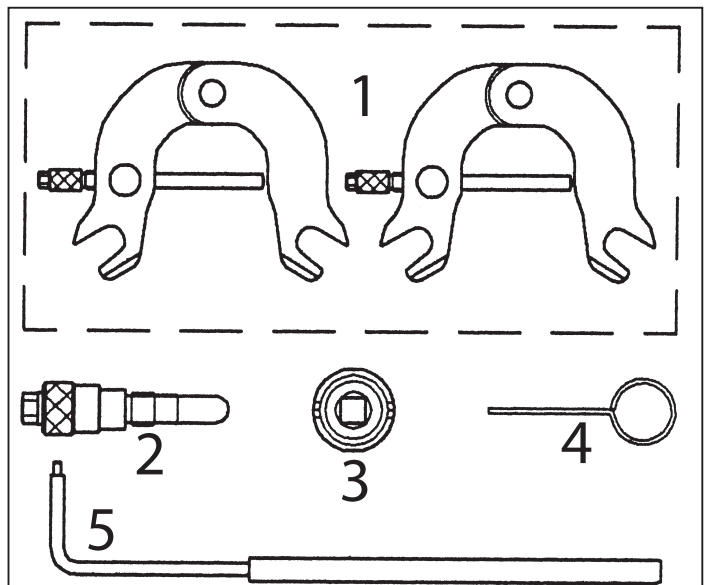
## 1. SAFETY INSTRUCTIONS

- 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.

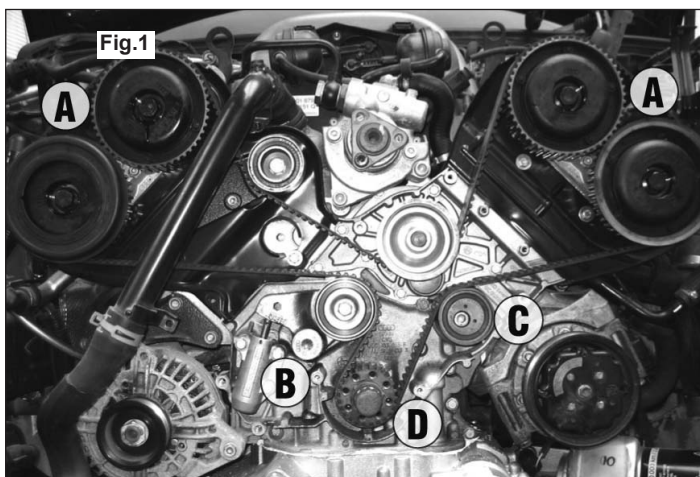
**WARNING:** The warnings, cautions and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

## 3. CONTENTS



- 1 . . . . . VS4941 . . . . . Camshaft Setting Plate Set (Pair)
- 2 . . . . . VS4942 . . . . . Crankshaft Locking Pin
- 3 . . . . . VS4943 . . . . . Camshaft Sprocket Adjusting Tool
- 4 . . . . . VS4593/1E . . . . . Tensioner Locking Pin (Automatic Tensioner)
- 5 . . . . . VS1245/02 . . . . . Tensioner Adjuster (Adjustable Tensioner pulley)
- . . . . . VS4940/84 . . . . . Case + Insert

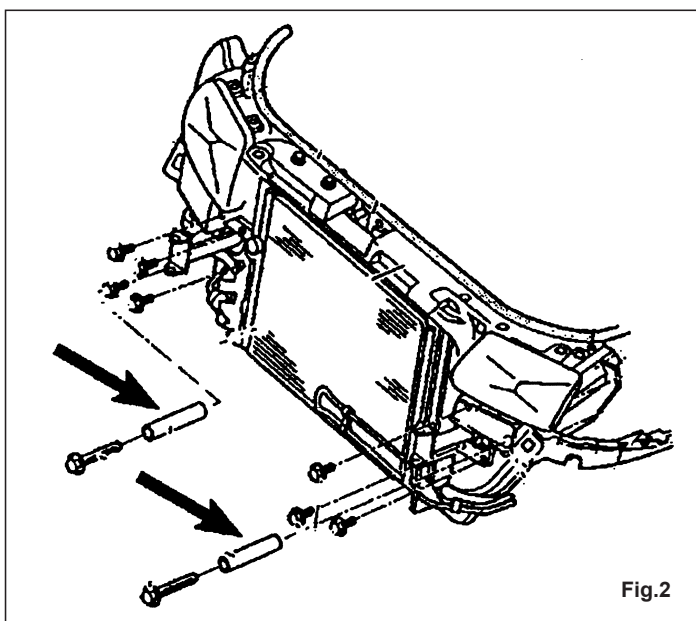
## 4. INSTRUCTIONS



The VAG 3.0 V6 petrol engines are 'Quad Cam' engines with the timing belt directly driving all four camshafts from the crankshaft (Fig.1).

- A – Camshafts (with variable valve timing)
- B – Automatic Tensioner Unit
- C – Adjustable Tensioner (Pulley)
- D – Crankshaft

4.1 It will be necessary to fit VS124/02 Front Panel Support Guides (from VS4741 Set), and to slide the front panel forward to provide access to the engine, for timing belt replacement applications.



**VS4741 Front Panel Support Guide Set**  
Associated Tool – not included in VS4940 Kit

To fit Support Guides, raise and support the front of the vehicle and disconnect the auxiliary heater pipe. Remove the undershield, air filter cover, air intake pipe and left-hand engine cover. (Fig.2)

Remove the front bumper and front panel bolts. Fit VS124/02 Support Guides (from VS4741 Set) to both sides of the vehicle, and slide the front panel forward.

**NOTE:** Remember to re-fit the upper bolts to hold the front panel steady.

4.1.1 Remove the front engine cover, release tension off the auxiliary belt and remove the auxiliary belt.

Remove the auxiliary belt tensioner, PAS pump pulley, crankshaft pulley and thrust washer

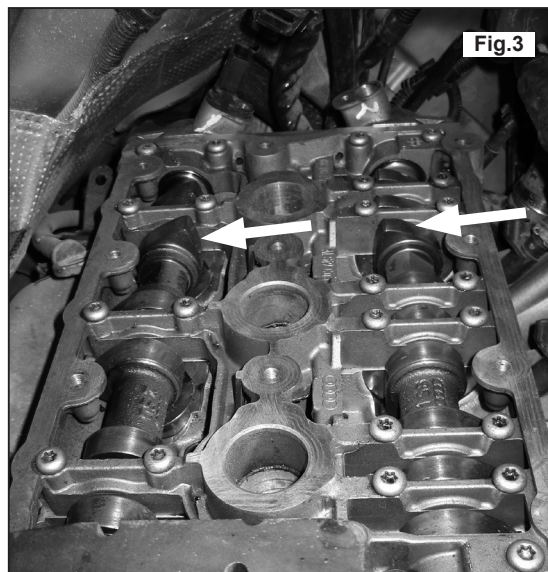
**NOTE:** The thrust washer is only fitted when crankshaft gear ref 06C 105 063 is fitted.

Remove timing belt covers and rear engine cover panel.

Unbolt the coolant expansion tank and move to one side, without disconnecting the hoses.

Remove the air filter housing and hoses. Pull the oil dipstick tube upwards out of the sump, pivot forward and remove.

Pull out ignition coils and remove the air hose from right-hand cylinder head, detach rear crankcase breather hose. Remove cylinder head covers.

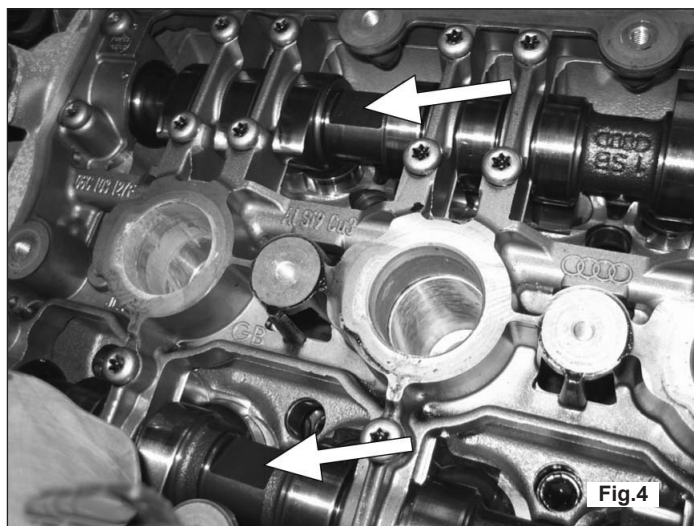


4.1.2 Turn the crankshaft **clockwise**, using the centre bolt of the crankshaft, so that the lobes of the inlet and exhaust camshafts for No. 3 cylinder are **angled upwards**, (Left-hand bank, when looking from the camshaft sprockets). (Fig.3)

**WARNING:** The engine must only be turned over using the crankshaft centre bolt and only in normal direction of engine rotation.

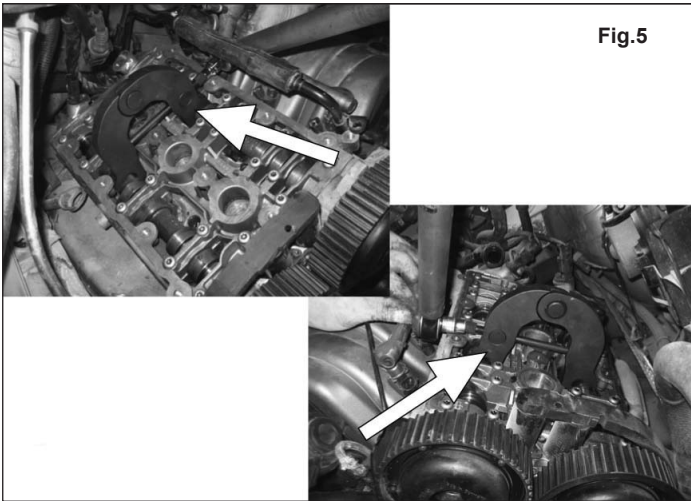
### 4.2 Camshaft Setting Plates locations

VS4941 Camshaft Setting Plates are fitted on to 'flats' in the camshafts located at cylinders No.3 and No.4. (Fig.4)



### VS4941 Camshaft Setting Plate Set (Pair)

VS4941 Camshaft Setting Plates 'set' the position of the camshafts by locating onto 'flats' in the camshafts. They are then expanded by means of a centre adjusting screw to firmly 'lock' the camshafts.



Fit one of the VS4941 Camshaft Setting Plates to the camshafts at **No. 3 cylinder** position on the left-hand bank (when looking from the camshaft sprockets), and the other Setting Plate onto the camshafts at **No. 4 cylinder** position, right-hand bank (when looking from the camshaft sprockets) (Fig.5).

**NOTE:** Subsequent removal of the Plates is assisted by applying a little grease to the inside of the cut-outs in the Plates that fit on to the 'flats' of the camshafts.

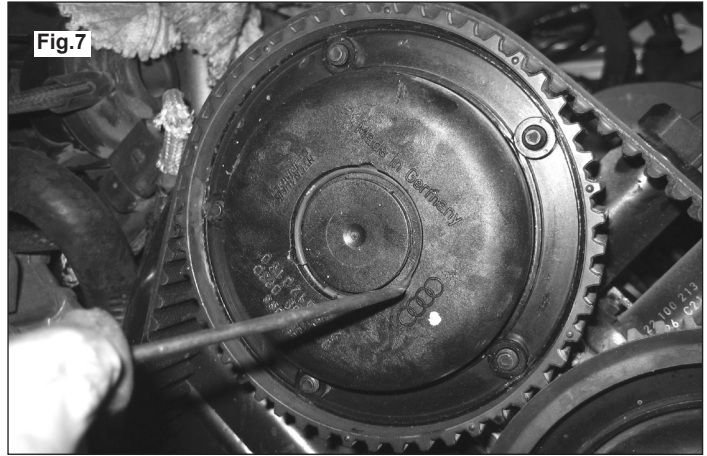
Expand the Setting Plates, by tightening the adjustment screws to a maximum of 10Nm. in order to fully engage the camshafts. Rock the crankshaft back and forth and ensure there is no play/movement of the camshafts.



### 4.2.1 VS4942 Crankshaft Locking Pin

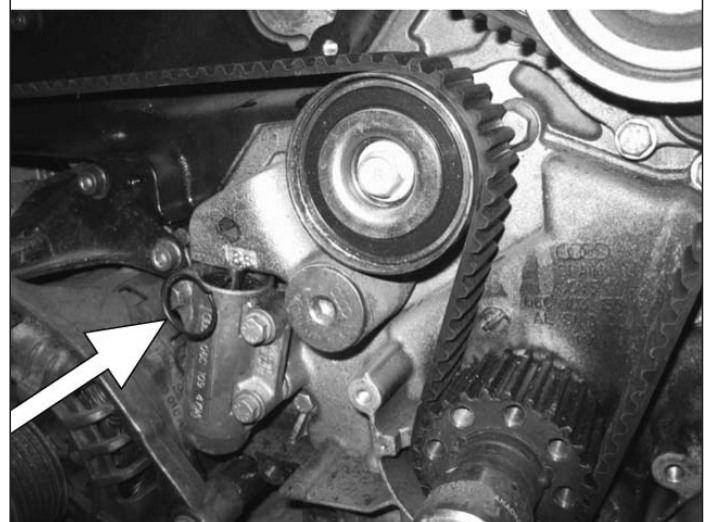
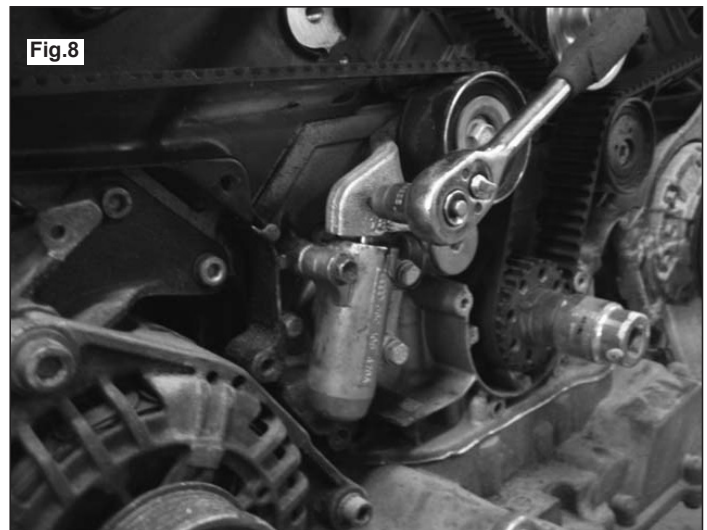
If a coolant run-on pump is fitted, unplug the connector. Remove the blanking plug from the engine block and screw in VS4942 Crankshaft Locking Pin to 'lock' the crankshaft. Rock the crankshaft to assist entry of the Pin as it is inserted. (Fig.6)

**NOTE:** The Pin does not enter fully up to the step before the knurling. A small gap will remain visible.



**4.2.2** Prise off the circlips and blanking plugs of all four camshaft sprockets, and slacken each camshaft sprocket bolt, leaving the bolt in place. (Fig.7).

**NOTE:** Ensure you have a shop rag available to catch oil spillage when removing blanking plugs.



### 4.2.3 VS4593/1E Tensioner Locking Pin (Automatic Tensioner)

Using an 8mm. hexagon socket bit in the hexagon of the tensioner lever arm, turn in an **anti-clockwise** direction, to depress the plunger, until the holes in the tensioner plunger and body align, and insert Pin VS4593/1E (Fig.8).

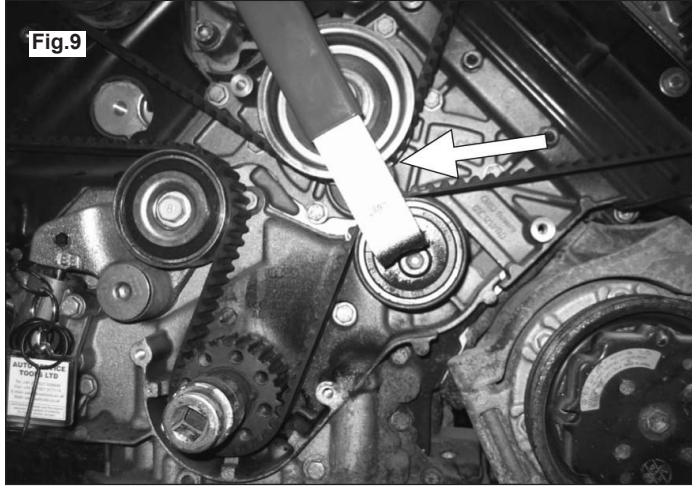
**NOTE:** The automatic tensioner is oil dampened and can only be depressed slowly. Slacken the nut on the Adjustable Tensioner pulley, and remove the old timing belt.

#### 4.3 Installing a new belt.

Check that the Camshaft Setting Plates and Crankshaft Locking Pin are fitted.

**IMPORTANT:** Ensure that the camshaft sprockets are 'free to turn' on the camshafts, but do not tilt.  
Fit the new belt in a **clockwise** direction, starting at the crankshaft gear.

**WARNING:** To achieve accurate valve timing, the edges of the belt **MUST** align with the edges of the sprockets.

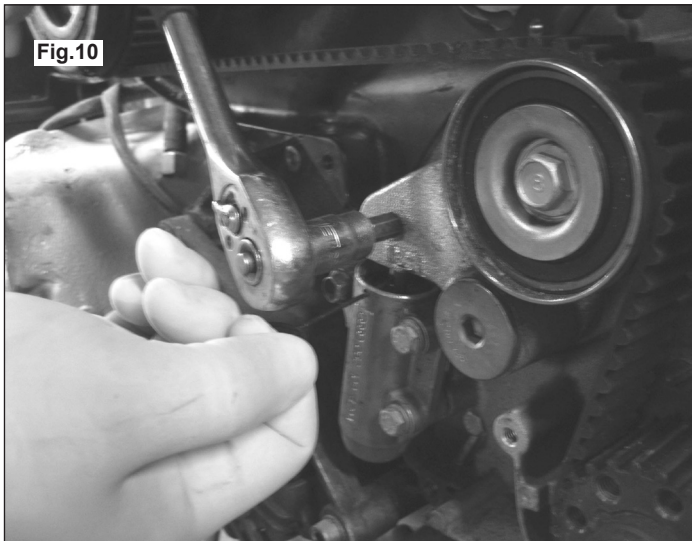


##### 4.3.1 VS1245/02 Tensioner Adjuster (Adjustable Tensioner pulley)

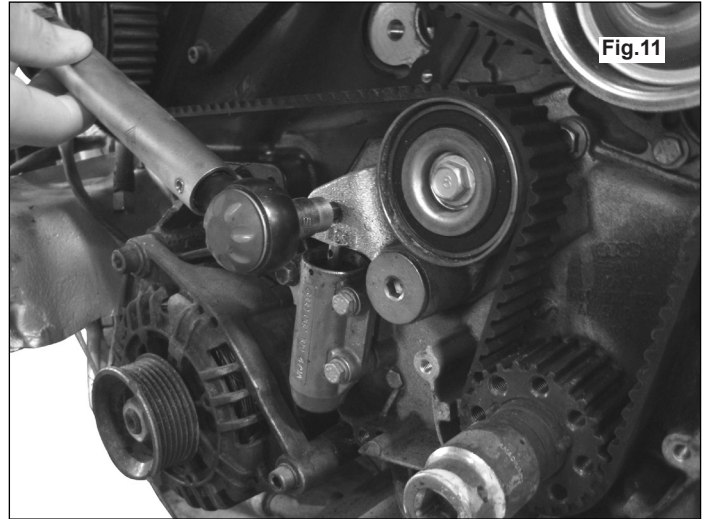
**IMPORTANT:** Fit the VS1245/02 Adjuster into the two holes in the Adjustable Tensioner pulley and turn **clockwise** until the handle of the VS1245/02 is positioned **EXACTLY** over the centre axis of the coolant pump pulley – see (Fig.9)

Counter-hold the tensioner pulley using VS1245/02 whilst tightening the pulley nut to 45Nm.

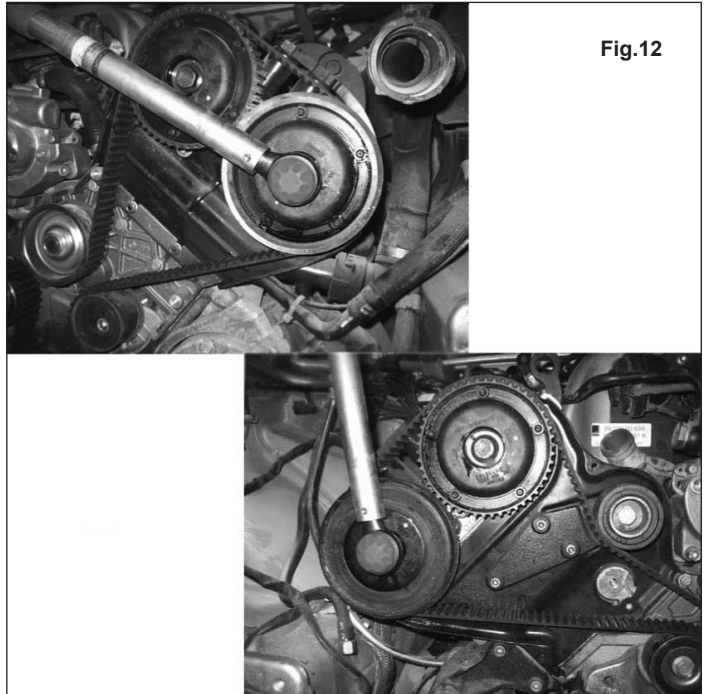
Fit a torque wrench and socket bit into the hexagon of the Automatic Tensioner lever arm and apply a **clockwise** torque of 45Nm. to pre-tension the belt



Apply pressure to the lever arm in an **anti-clockwise** direction until VS4593/1E Locking Pin can be removed. Remove the Pin to release the tensioner plunger. (Fig.10)



Fit torque wrench and 8mm hexagon socket bit to tensioner lever arm and apply 25Nm. torque in a **clockwise** direction. (Fig.11)



##### 4.4 VS4943 Camshaft Sprocket Adjusting Tool

Fit VS4943 Adjusting Tool to the sprocket of camshaft No.4.  
Fit a torque wrench in to the square drive of VS4943 and turn clockwise, applying a torque of 10Nm.  
Then fit VS4943 and torque wrench to the sprocket of Camshaft No. 1 and again turn **clockwise**, applying a torque of 10Nm. (Fig.12)  
Tighten the bolt of each camshaft to 100Nm. and re-fit the blanking plugs and circlips.

Remove the VS4941 Camshaft Setting Plates (you may find it necessary to gently 'tap' these off the camshafts), and VS4942 Crankshaft Locking Pin.

**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.