



# INSTRUCTIONS FOR PETROL ENGINE SETTING/LOCKING TOOL KIT - CITROEN, PEUGEOT 1.8, 2.0, 2.2 - BELT DRIVE

MODEL NO: **VS4825**

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 & 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. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.

## 1. SAFETY



Refer to  
instruction  
manual



Wear eye  
protection

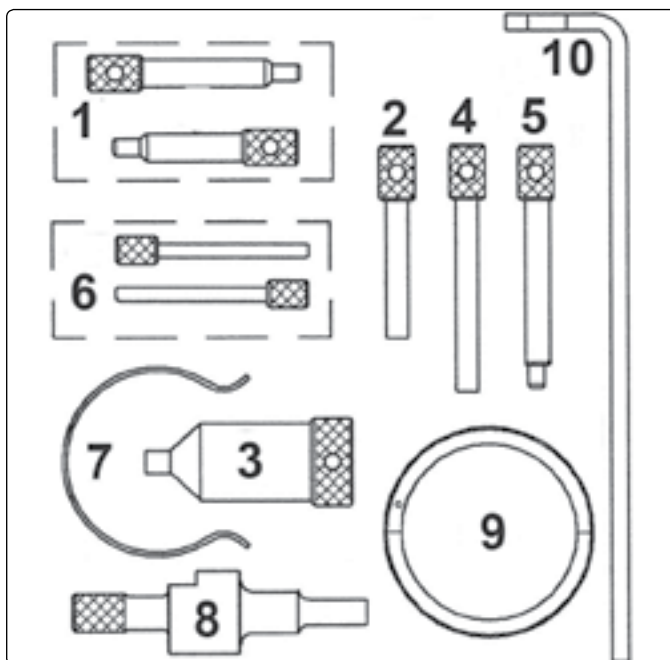
- ❑ **WARNING!** Wear approved eye protection. Wear appropriate Personal Protective Equipment. A full range of Personal Protective Equipment is available from your Sealey dealer.
- ❑ **WARNING!** Ensure that Health & Safety, Local Authority Regulations and general workshop practice Regulations are adhered to when using tools.
- × **DO NOT** use tools if damaged.
- ✓ Maintain tools to ensure that they are in an adequate condition for safe use and optimum performance.
- ✓ Ensure that a vehicle that has been raised by a jack is adequately supported. Use axle stands.
- × **DO NOT** attempt to start or move a vehicle whilst in gear and with timing devices fitted.
- ✓ Wear suitable clothing to avoid snagging. **DO NOT** wear jewellery. Tie back long hair.
- ✓ Account for all tools, parts and components being used. **DO NOT** leave these in or near the engine. Return tools to suitable storage after use.
- ✓ When not in use, store in a safe, dry childproof place.
- ✓ Keep children and unauthorised persons away from the work area.
- ▲ **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 correct procedure and data.
- ❑ **WARNING!** The warnings, cautions and instructions in this manual cannot cover all possible conditions and situations. The Operator / user must apply caution and common sense (good practical sense).
- ✓ When timing an engine, always prevent the engine from being turned over. Use a notice and / or inhibit the engine.
- WARNING!** Incorrect or out of phase camshaft timing can result in contact between the valve head and the piston crown. This will cause damage to the engine.

## 2. INTRODUCTION

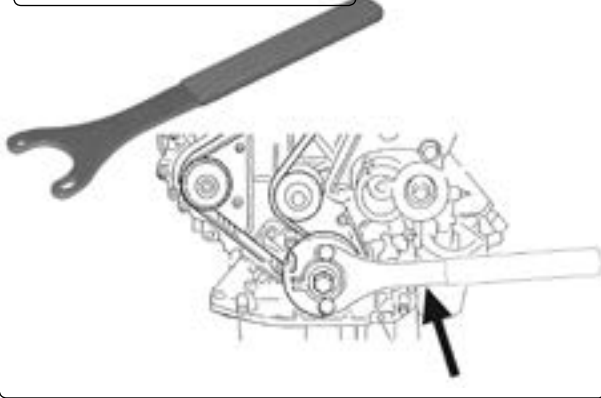
Provides the specialised tools required for timing belt replacement on both the first and second generation of "EW Code" 1.8, 2.0 and 2.2 PSA twin camshaft 16v engines, including HPi versions, fitted to Citroën and Peugeot models. Supplied with warning tag. In addition, Pulley Flange Repositioning Tool VS1212, may be required on certain engines for final timing adjustment via the crankshaft pulley flange.

## 3. CONTENTS

Item	Part no.	Description
1	VS1211/P10	Camshaft locking pins (pair)
2	VS1211/P11	Crankshaft locking pin
3	VS1211/P12	Flywheel holding tool
4	VS1211/P13	Tensioner setting pin
5	VS1211/P14	Camshaft locking pin (HPi)
6	VS4735/P15	Camshaft locking pins (2 in kit)
7	VS1210/04	Belt retaining kit
8	VS4825/P19	Flywheel locking pin
--	VS4826	Set (comprising parts 9 and 10)
9	VS4826/1	Tensioner turning tool
10	VS4826/2	Tensioner locking tool
<b>Associated Tool required</b>		
	VS1212	Crank flange pulley repositioning tool



## Associated Tool VS1212



## 4. APPLICATIONS

### Models:

#### Citroen:

C4 (04-08)

C5 (00-08)

C8 (02-06)

Dispatch (00-07) 307 CC (02-09)

Evasion (00-02) 308 (02-11)

Jumpy (00-07) 406 (96-06)

Synergie (00-02) 406 Coupe (00-06)

Picasso (99-07) 407 (04-11)

Xsara (00-05) 607 (00-08)

806 (00-02)

807 (02-06)

Expert I/II (00-07)

Expert III (07-11)

### Engines:

#### 1.8 16v:

EW7A(6FY)

EW7J4(6FZ)

#### 2.0 16v:

EW10A(RFJ)

EW10ABE4(RFH)

EW10J4(RFN)

EW10J4(RFR)

EW10J4/5(RFN)

EW10J4/L4/5(RFN)

EW10J4R/L5

EW10J4S(RFK)

EW10J4(RFN/RFR)

EW10J4S(RFK)

EW10D-Hpi(RLZ)

#### 2.0 16v Bioflex:

EW10A(RFJ)

#### 2.0Hpi:

EW10D(RLZ)

#### 2.2 16v:

EW12J4(3FY)

EW12J4(3FZ)

EW12J4/L5(3FZ)

EW12J4(3FZ)

## 5. INSTRUCTIONS

The "EW Code" covers a large group of major engines and it is important to identify which variant is being worked on as the engine coding basically remained unchanged between generations of engines.

The most straightforward visual indications which may assist in identifying these engines and, in particular, to ensure the correct timing tool selection, appear to be:

### SECTION 1

- EW Engines having a crankshaft pulley with four retaining bolts (98-06)

**Note:** EW10J4 (RFR) engines have adjustable camshaft sprockets (-00)

### SECTION 2

- EW Engines having a crankshaft pulley with a single centre retaining bolt (02-06)

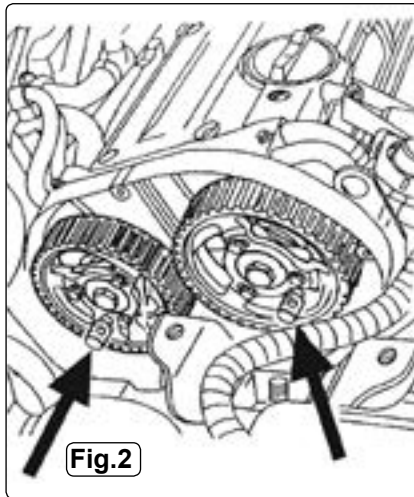
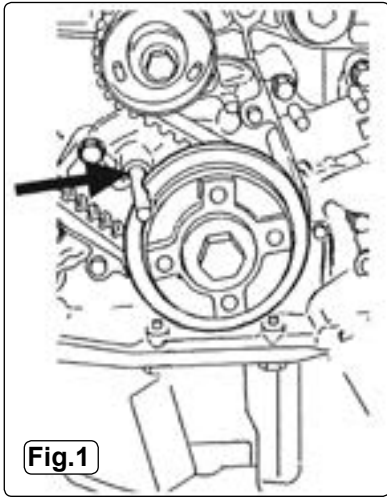
**Note:** EW10J4S (RFK) engines - camshaft sprocket change (04-06)

The most significant tool usage change occurred during 2002 followed by a further change in 2004.

Additionally, with regard to timing tool selection, the specifications to note are VVT (Variable Valve Timing) or HPi (High Pressure Injection) being fitted.

- ❑ **WARNING: Care is required when working on HPi systems - very high fuel pressures.**

Some engines have variable timing on the inlet camshaft sprocket, eg. EW10D (HPi) engines. The timing belt fitting and tensioning procedure for these engines differs from those with the standard camshafts. Some engines have Adjustable Camshaft Sprockets (Code EW10J4 -RFR (-00)).



**5.1. SECTION 1:**

**EW Engines with crankshaft pulley with four retaining bolts.**

EW7J4 (6FZ), EW10J4/L4/L5 (RFN/RFR), EW10D-HPI (RLZ), EW12J4/L5 (3FZ)

**5.1.1. VS1211/P11 Crankshaft Locking Pin and VS1211/P12 Flywheel Holding Tool**

5.1.1.1. Crankshaft timing position is retained by inserting Locking Pin **VS1211/P11** through the crankshaft pulley flange (**Fig.1**).

5.1.1.2. If required, counter-hold the flywheel using **VS1211/P12** Holding Tool and remove the crankshaft pulley to gain access to the pulley flange.

**5.1.2. VS1211/P10 Camshaft Locking Pins (Pair) and VS1211/P14 Camshaft Locking Pin (VVT/HPI Inlet Camshafts)**

*Refer to Application Charts for model usage.*

5.1.2.1. Insert **VS1211/P10** Camshaft Locking Pins (Pair) through the timing holes in the Inlet and Exhaust camshaft sprockets and into the datum holes in the engine, to retain the camshafts in their timed position (**Fig.2**).

**IMPORTANT:** Do not slacken camshaft sprocket bolts.

**NOTE:** Engines with VVT - use Locking Pin **VS1211/P14** in the Inlet camshaft and one of the **VS1211/P10** Pins in the Exhaust camshaft.

5.1.2.2. Slacken the tensioner bolt and also remove the tensioner pulley bracket from the cylinder block rib to allow greater movement of the tensioner.

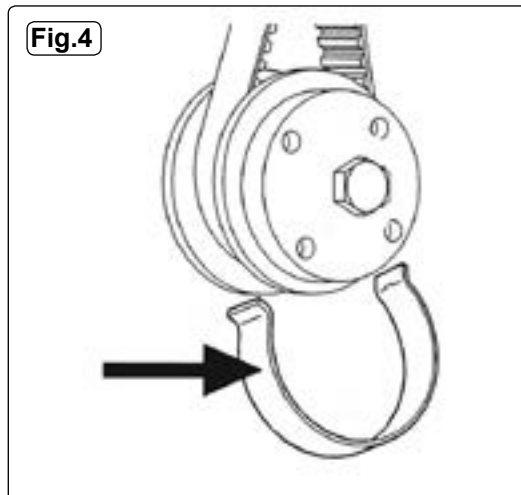
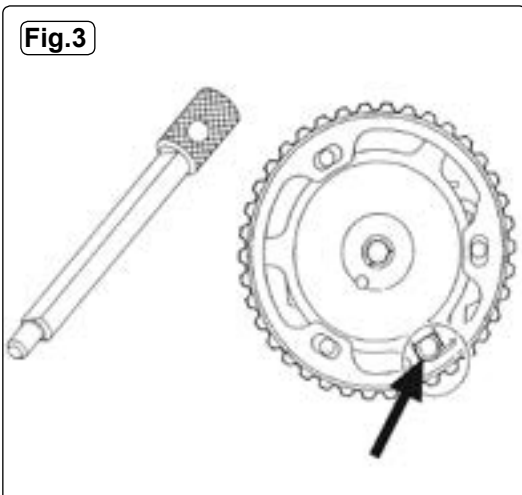
5.1.2.3. Move tensioner away from the timing belt and remove the belt.

**NOTE:** Do not re-fit the belt once it has been removed. A new timing belt must be used.

**5.1.3. VS1211/P14 Inlet Camshaft Locking Pin**

5.1.3.1. Should adjustment to the Inlet Camshaft Dephaser be required, this is made before fitting the timing belt by inserting **VS1211/P14** Pin, putting the rounded part of the pin towards the sprocket teeth. The three screws are slackened and the sprocket turned **anti-clockwise** to rest against the inserted pin. Screws are re-tightened (**Fig.3**).

**IMPORTANT:** This adjustment must be made prior to fitting the belt and **NOT** as a sprocket position adjustment during belt installation.

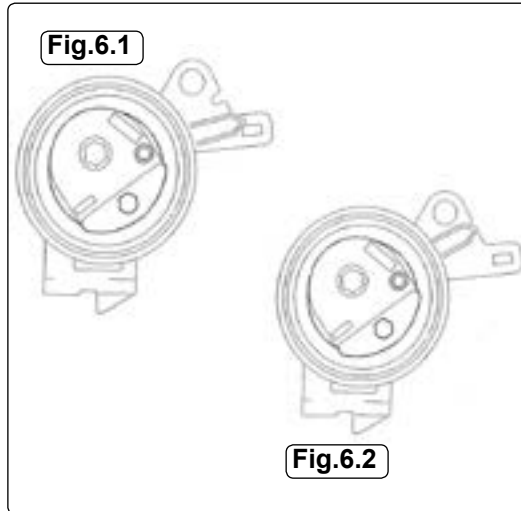
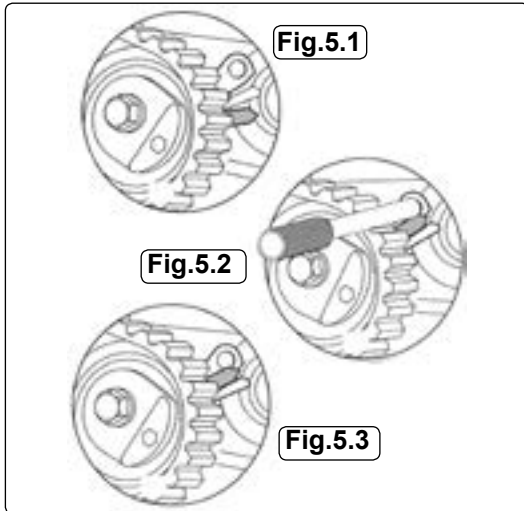


**5.1.4. VS1210/04 Timing Belt Retaining Clip**

5.1.4.1. With the crankshaft and camshaft pins in position, fit the new belt around the crankshaft gear and secure in place with **VS1210/04** Clip (**Fig.4**).

5.1.4.2. The timing belt is fitted in an **anti-clockwise** direction in the following sequence - guide roller, inlet cam sprocket, exhaust cam sprocket, water pump, tensioner.

5.1.4.3. Re-fit the tensioner pulley bracket to the cylinder block rib.



**5.1.5. Tensioning procedure - non VVT Engines**

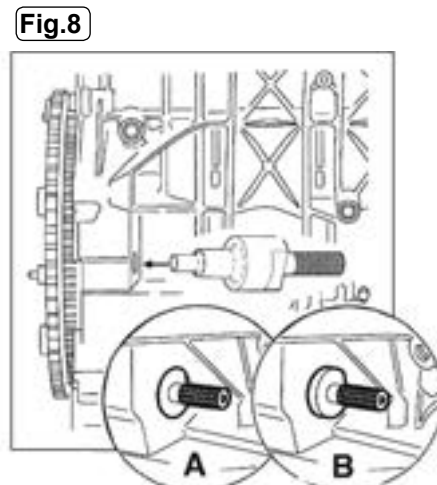
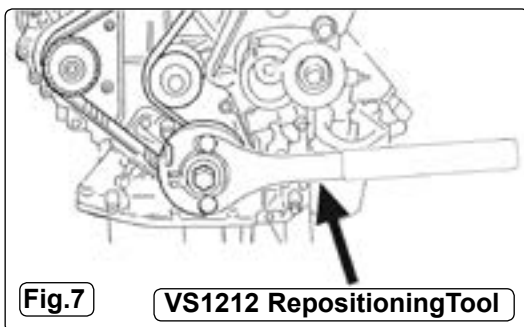
- 5.1.5.1. The engine must be cold.
- 5.1.5.2. Remove timing pins and belt clip.
- 5.1.5.3. Release tensioner nut and turn tensioner anti-clockwise until the belt is tensioned to its maximum. The pointer should be in the position shown (Fig.5.1). Tighten nut.

**5.1.5.4. VS1211/P13 Tensioner Setting Pin (Fig.5.2)**

- 5.1.5.5. Insert VS1211/P13 Setting Pin into the tensioner pulley bracket (Fig.5.2), and slacken tensioner nut. Turn the tensioner clockwise until the pointer touches the Setting Pin, re-tighten nut and remove the pin (Fig.5.3).
- 5.1.5.6. Rotate the crankshaft ten turns, by hand, returning the engine to 'timed' position and check engine timing is correct by inserting crankshaft pin and camshaft locking pins.

**5.1.6. Tensioning procedure - Engine variants with VVT**

- 5.1.6.1. Although the general timing belt replacement and tensioning procedure is similar to the above there are a number of actions which differ on VVT engines and they should be noted.
- 5.1.6.2. The camshaft sprockets are **NOT** released, nor free to turn, during fitting of the new timing belt.
- 5.1.6.3. With the new belt fitted turn the tensioner anti-clockwise to place the pointer in the position shown (Fig.6.1). **IMPORTANT:** The pointer **MUST PASS** the tension position 'notch' by at least 10°.
- 5.1.6.4. Insert Setting Pin **VS1211/P13** and turn the tensioner back **clockwise** so that the pointer just rests against the pin and aligns with the 'notch' (Fig.6.2). Remove the pin.
  - ❑ **WARNING: The pointer MUST NOT move above the 'notch'. If it does, the procedure must be started again.**
- 5.1.6.5. Finally, check that the hex drive of the tensioner is positioned approx 15° **BELOW** the cylinder head gasket level.
- 5.1.6.6. Rotate the crankshaft ten turns, by hand, returning the engine to 'timed' position and insert the Locking Pin in the Inlet camshaft sprocket.
- 5.1.6.7. Check that the tensioner pointer remains aligned with the 'notch'.
- 5.1.6.8. Insert **VS1211/P11** Pin through the crankshaft pulley flange.



**5.1.7. VS1212 Crankshaft Pulley Flange Repositioning Tool - Associated Tool, not in kit**

- 5.1.7.1. If the crankshaft pin cannot be inserted, reposition the pulley flange using associated tool **VS1212**.
- 5.1.7.2. Attach **VS1212** to counter-hold the flange whilst releasing the centre bolt sufficiently to reposition the flange to allow the crankshaft locking pin to be inserted.
- 5.1.7.3. Attach **VS1212** to hold flange whilst tightening centre bolt (Fig.7).

**5.1.8. EW10J4 (RFR) engines with adjustable camshaft sprockets (-00)**

- 5.1.8.1. The same timing tools are required for this engine as detailed in this Section (Section 1).
- 5.1.8.2. The camshaft sprockets are "adjustable", and are identified by three retaining bolts in elongated holes. The sprockets are attached to carrier brackets, not directly to the camshafts. The position of the sprockets on the carriers can therefore be adjusted without

changing the position of the camshafts.

- 5.1.8.3. The belt tensioning procedure is therefore slightly different from above.
- 5.1.8.4. With the crankshaft and camshaft pins in position, fit the new belt around the crankshaft gear and secure in place with **VS1210/04** Clip.
- 5.1.8.5. Slacken the 6 camshaft sprocket bolts and tighten to finger tight only. Turn the sprocket fully clockwise within the elongated holes (the sprocket bolts should be just tight enough to feel a slight resistance to turning the sprocket).
- 5.1.8.6. Fit the belt around the Belt Guide Roller and place on the teeth of the camshaft sprockets. Turn sprockets slightly **anti-clockwise** to engage the belt in the sprocket teeth. Angular movement must not be more than one tooth space.
- 5.1.8.7. Ensure the belt is taut between sprockets and continue to fit the belt in an **anti-clockwise** direction.
- 5.1.8.8. Turn tensioner **anti-clockwise** to max (see Fig.5.1).
  - ▲ **IMPORTANT:** Check bolts of each camshaft sprocket are not at the end of elongated holes. Tighten sprocket bolts.
- 5.1.8.9. Insert **VS1211/P13** Setting Pin into the tensioner pulley bracket (see Fig.5.2) and slacken tensioner nut. Turn the tensioner **clockwise** until the pointer touches the Setting Pin, re-tighten nut and remove the pin (see Fig.5.3).
- 5.1.8.10. Ensure pointer and notch are aligned.
- 5.1.8.11. Rotate the crankshaft ten turns, by hand, returning the engine to 'timed' position and check engine timing is correct by inserting crankshaft pin. Slacken camshaft bolts and insert camshaft locking pins. Ensure sprocket bolts are not at the end of the elongated holes and tighten sprocket bolts.

## 5.2. SECTION 2:

### EW Engines with crankshaft pulleys with a single centre retaining bolt (02-06)

EW7J4 (6FZ), EW10J4/L4/L5 (RFN/RFR), EW10J4S (RFK), EW10D-HPi (RLZ), EW12J4/L5 (3FZ)

#### 5.2.1. VS4825/P19 Flywheel Locking Pin

- 5.2.1.1. Turn the crankshaft to 'timed' position and insert **VS4825/P19** Locking Pin through the 'datum hole' in bell housing and in to the flywheel (Fig.8).

**NOTE:** **VS4825/P19** Locking Pin will not enter as far into the hole on Automatic Transmissions as it does on Manual Transmissions (see Fig.8) - "A" = Manual Transmission / "B" = Automatic Transmission.

#### 5.2.2. VS1211/P10 and VS1211/P14 Camshaft Locking Pins

- 5.2.2.1. Use the same Camshaft Locking Pins as for Section 1 engines - ie. **VS1211/P10** (pair), (or 1 **VS1211/P10** and **VS1211/P14** for VVT/HPi), to 'lock' camshafts (Fig.9).

**EXCEPT EW10J4S (RFK) engines.**

#### 5.2.3. EW10J4S (RFK) engines - camshaft sprocket change (04-06)

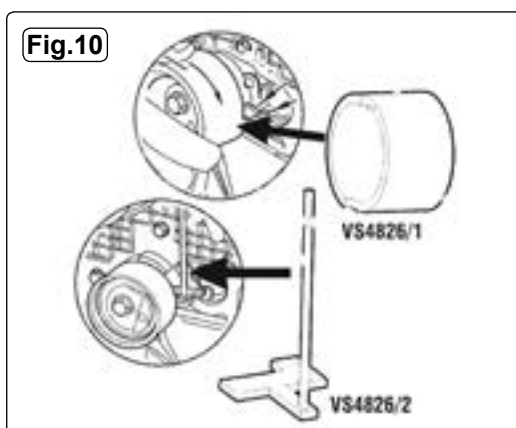
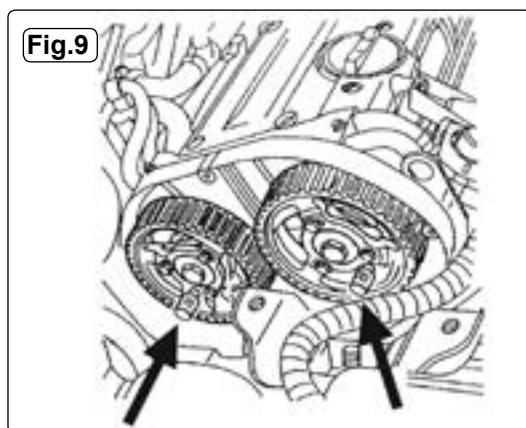
**VS4735/P15** Camshaft Locking Pins (2)

- 5.2.3.1. The procedure and tools detailed in Section 2 apply to EW10J4S engines, except Code RFK. These engines require **VS4735/P15** Locking Pins (2 required), for the camshaft sprockets.

#### 5.2.4. VS4826 Belt Tensioner Tool Set

**Comprises VS4826/1 Tensioner Turning Tool & VS4826/2 Tensioner Locking Tool**

- 5.2.4.1. Slacken tensioner bolt to remove belt. Slide **VS4826/1** Turning Tool over the tensioner roller and locate it onto the tensioner pointer between the 'step' and roll pin on the Turning Tool.
- 5.2.4.2. Turn **VS4826/1** **clockwise** until the 'pointer passes both the 'notch' and the rectangular cut-out on the tensioner back plate (Fig.10).
- 5.2.4.3. Fit **VS4826/2** Locking Tool in to the cut-out in the back plate to 'lock' the pointer in position underneath the plate of the Locking Tool. Remove **VS4826/1** Turning Tool.



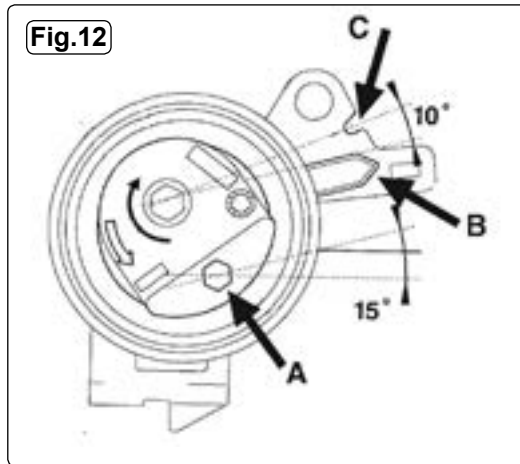
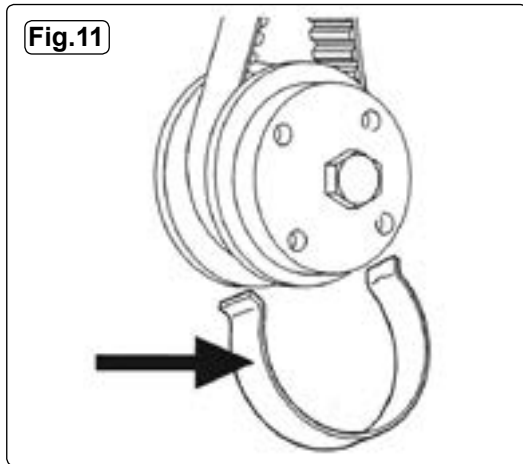
#### 5.2.5. VS1210/04 Timing Belt Retaining Clip

- 5.2.5.1. As with engines in Section 1, fit the new belt around the crankshaft gear and secure in place with **VS1210/04** Belt Clip (Fig.11).
- 5.2.5.2. The timing belt is fitted in an **anti-clockwise** direction - ensure it is taut between sprockets.
- 5.2.5.3. Fit crankshaft pulley and remove Locking Pin from Exhaust camshaft sprocket, **VS1210/04** Belt Clip and **VS4826/2** Tensioner Tool.

#### 5.2.6. Tensioner position (see Fig.12)

- 5.2.6.1. Using an Allen Key, turn tensioner anti-clockwise at Hex. "A" until pointer achieves position "B" - POINTER MUST PASS 'NOTCH' BY AT LEAST 10° - or replace tensioner.
- 5.2.6.2. Turn tensioner clockwise to align the pointer with the 'notch' "C" - DO NOT PASS 'NOTCH' "C"
- 5.2.6.3. Tighten tensioner bolt - **DO NOT** allow tensioner to turn whilst tightening the bolt.
- 5.2.6.4. The Allen Key Hex "A" position - MUST BE 15° BELOW CYLINDER HEAD GASKET LINE - or replace tensioner.
- 5.2.6.5. Remove remaining Timing tools and turn crankshaft ten turns, by hand, clockwise, returning to 'timing' position.
- 5.2.6.6. Check Tensioner Position - Insert Locking Pin into Inlet Camshaft sprocket - check that the tensioner pointer is aligned with the 'notch' - If

pointer passes 'notch' "C" - repeat the tensioning procedure.



**Environmental Protection**

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain off any fluids (if applicable) into approved containers and dispose of the product and the fluids according to local regulations.

**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.



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