



INSTRUCTIONS FOR:

DIESEL ENGINE TIMING OVERHAUL KIT - ALFA ROMEO, FIAT, FORD, LANCIA, SUZUKI, VAUXHALL/OPEL 1.3D 16v.

MODEL No: **VS5080**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions and maintained properly, 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.



Refer to instruction manual



Wear eye protection

1. SAFETY

- 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 a good, clean condition for the 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, **DO NOT** 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. APPLICATIONS & CONTENTS

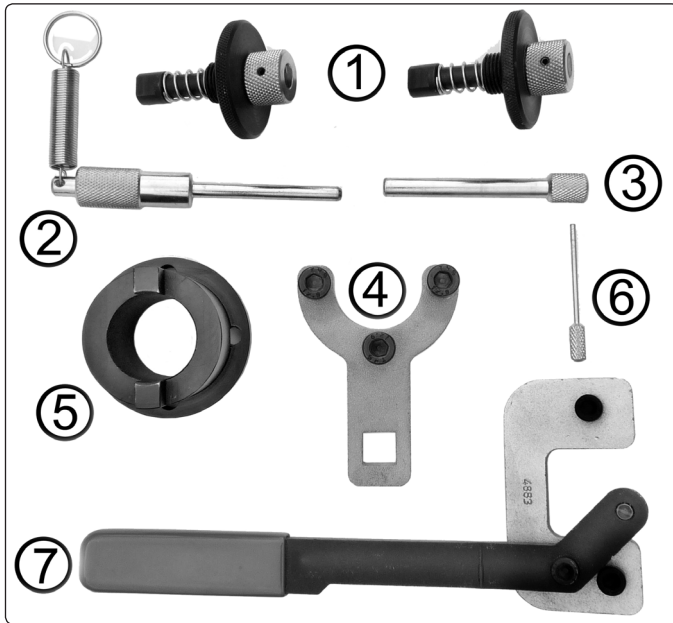
1.3 16v. Diesel Engines fitted to:

Alfa Romeo:	MiTo (08-12)	Citroen:	Nemo (10-15)
Fiat:	500 (07-15), Panda (03-11), Punto (03-11), Punto Evo (09-12), Idea (04-11), Linea (07-11), Grande Punto (05-11) Doblo/Doblo Cargo (04-10), Fiorino (08-11) Qubo (08-11) Strada Pickup (06-13)		
Ford:	Ka (09-14)	Lancia:	Ypsilon (03-11), Musa (04-11)
Peugot:	Bipper (10-15)	Suzuki:	Swift (06-10), Ignis (03-09), Wagon R+ (03-08), Splash (08-11)
Vauxhall/Opel (CDTi):	Agila (03-08), Agila-B (08-10), Combo-C (03-12), Corsa-C (03-07), Corsa-D (06-12), Tigra-B (04-10), Meriva-A (04-10), Meriva-B (10-11), Astra-H (04-11), Astra-J (09-12), Tigra-B (04-10)		

Engine Codes:

Alfa Romeo:	199A3.000, 199B1.000	Citroen:	FHZ(F13DTE5)
Fiat:	169A1.000, 169A5.000, 188A8.000, 188A9.000, 199A2.000, 199A3.000, 199A9.000, 199B1.000, 199B2.000, 223A9.000, 263A2.000, 263A2.000		
Ford:	169A1.000(FD4)	Lancia:	188A9.000, 199A2.000, 199A3.000, 199B1.000, 843A2.000
Peugeot:	FHZ(F13DTE5)	Suzuki:	D13A, Z13DT, Z13DTJ
Vauxhall/Opel:	A13DTC, A13DTE, A13DTR, D13A, LDV/A13DTC, LSF/A13DTE, Y13DTH, Z13DT, Z13DTH, Z13DTI, Z13DTJ, Z13DTR		

Item	Part No.	Description	Alfa/Fiat/Lancia	Ford	Suzuki	Vauxhall/Opel	Citroen	Peugeot
1	VS4771	Camshaft Setting Tools (Pair)	1.871.00.900	303-1472	09917-68610	EN-46781	104-A	0198-J
2	VS4772	Flywheel Locking Pin	-	-	09916-98610	EN-46785	-	-
3	VS4881	Flywheel Locking Pin	-	-	09912-38300	-	-	-
4	VS5081	Crankshaft Pulley Flange Holding Tool	1.871.000.200 & 1.860.831.000	-	09912-46310	KM-662-C	-	-
5	VS5082	Camshaft Holding Tool (use with VS5081)	1.871.008.600	303-1475	09917-68221	-	-	-
6	VS132/04	Tensioner Locking Pin	-	-	-	-	-	-
7	VS4883	Timing Chain Tensioner Tool	1.870.900.400	303-1469	-	KM-955	-	-



3. INSTRUCTIONS

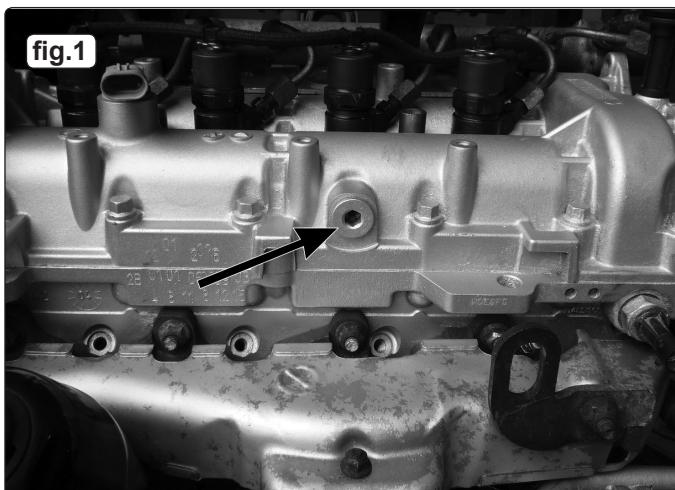
Engine Introduction.

The range of Fiat 1.3 16v. diesel engines, used by a number of vehicle manufacturers, are all twin camshaft, common rail diesels. The chain drive connects the crankshaft to the exhaust camshaft, which is in turn connected by gears to the inlet camshaft.

Built into the design and construction of these engines are a number of features to minimise the level of disassembly required during repair work. These features are particularly relevant to maintaining the engine timing during removal of the cylinder head/camshafts. With the use of the special tools in this kit, the cylinder head/camshafts can be removed, without removing the front-end timing cover, sprockets, and timing chain.

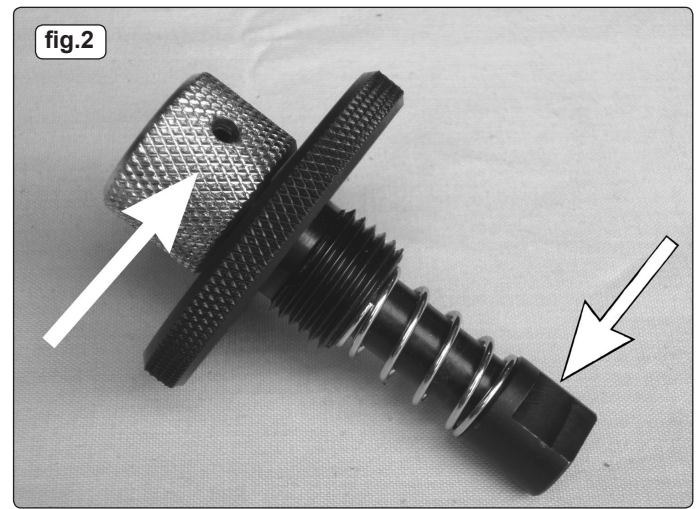
3.1. Engine Timing Check.

- 3.1.1. Correct engine timing position is established using **VS4771 camshaft setting tools** and either **VS4772** or **VS4881 flywheel locking pin**.

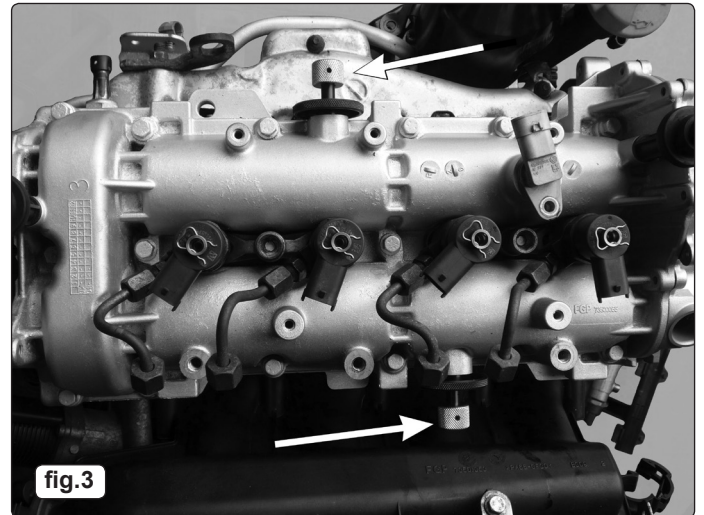


NOTE: To access the blanking plugs in the camshaft housing (fig.1), which are removed in order to insert **VS4771 camshaft setting tools**, it is necessary to detach the fuel rail and engine management wiring harness and disconnect the glow plug, injector and sensor multiplugs.

3.2. VS4771 Camshaft Setting Tools (Pair).

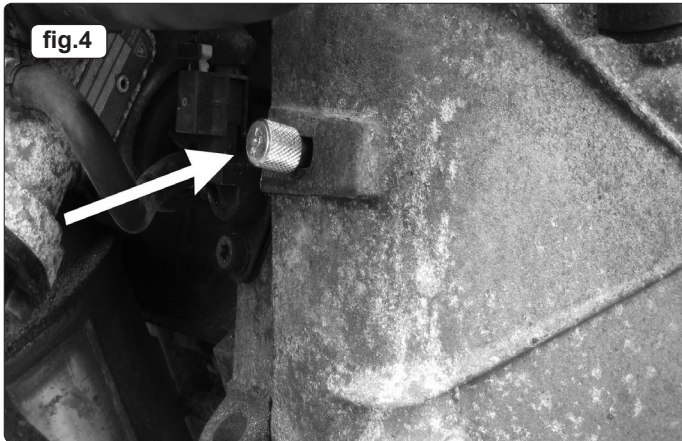


- 3.2.1. **VS4771 camshaft setting tools** have spring loaded spindles on the end of which are 'flats' which engage the 'timing position slots' in the camshafts. These 'flats' are aligned to a roll pin to aid position during fitting (fig.2).



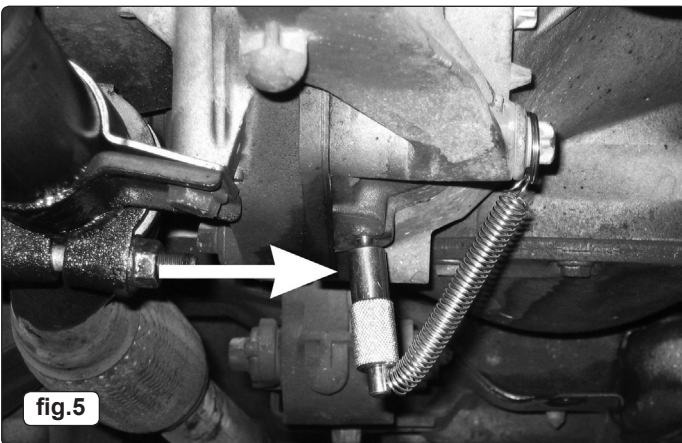
- 3.2.2. Remove the blanking plugs from the camshaft housing (fig.1) and screw in the **VS4771 camshaft setting tools**.
- 3.2.3. Using the roll pin in the spindle knob as a guide, ensure that the flats on the ends of the spindles are horizontal. Slowly turn the engine in its normal direction of rotation. **IMPORTANT:** Ensure that the location 'flats' on the spindle remain horizontal when rotating the camshafts. When the ends of the spindles engage the slots in the camshaft, an audible 'click' will be heard, as the springs activate the spindles (fig.3).
- 3.2.4. The timing kit contains two different Flywheel Locking Pins. Select the appropriate pin for the vehicle manufacturer.

3.3. **VS4881 Flywheel Locking Pin (Alfa Romeo, Fiat, Ford, Lancia).**



3.3.1. For Alfa Romeo, Fiat, Ford and Lancia applications, the crankshaft timing position is established by locating **VS4881 locking pin** into the flywheel via a datum hole in the gearbox housing (fig.4).

3.4. **VS4772 Flywheel Locking Pin (Opel, Vauxhall, Suzuki).**

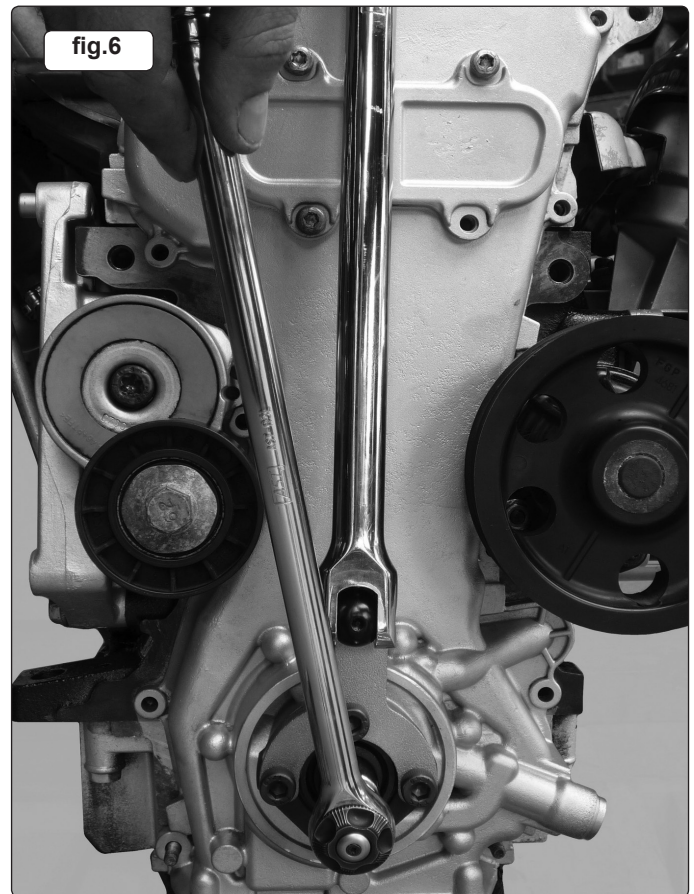


3.4.1. For Opel, Vauxhall and Suzuki applications, the crankshaft timing position is established by locating **VS4772 locking pin** into the flywheel via a datum hole in the gearbox housing. On some gearboxes the datum hole for **VS4772 locking pin** is located at the bottom, as shown in fig.5. However, some variants have a datum hole positioned at the front side of the gearbox. **VS4772 locking pin** incorporates a spring clip which can be attached to a nearby bolt to retain the pin in the datum hole.

3.5. **Engine Timing Adjustment.**

3.5.1. The crankshaft sprocket and camshaft sprocket/gears are clamped in place using bolts. Releasing one of these bolts will enable the sprocket/gears to move independently of the camshafts/crank shaft, allowing timing to be adjusted in the relevant area.

3.6. **VS5081 Crankshaft Pulley Flange Holding Tool.**

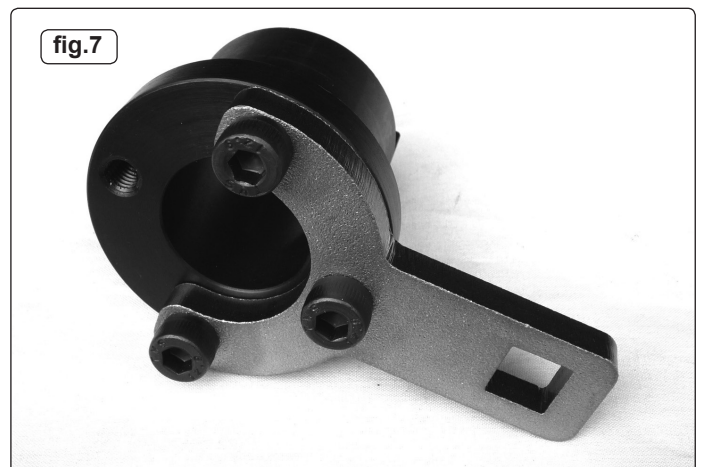


WARNING: The crankshaft central bolt has a LEFT-HAND THREAD with a high torque loading.

3.6.1. Remove the four bolts retaining the crankshaft pulley to reveal the pulley flange.

3.6.2. Attach **VS5081 holding tool** to the pulley flange with the three bolts provided. Using a power bar, counter hold the flange, whilst releasing the centre bolt (fig.6).

3.7. **VS5082 Camshaft Holding Tool – used in conjunction with VS5081 Crankshaft Pulley Flange Holding Tool.**



3.7.1. Attach **VS5081 holding tool** to **VS5082 camshaft holding tool** using the three bolts provided (fig.7).

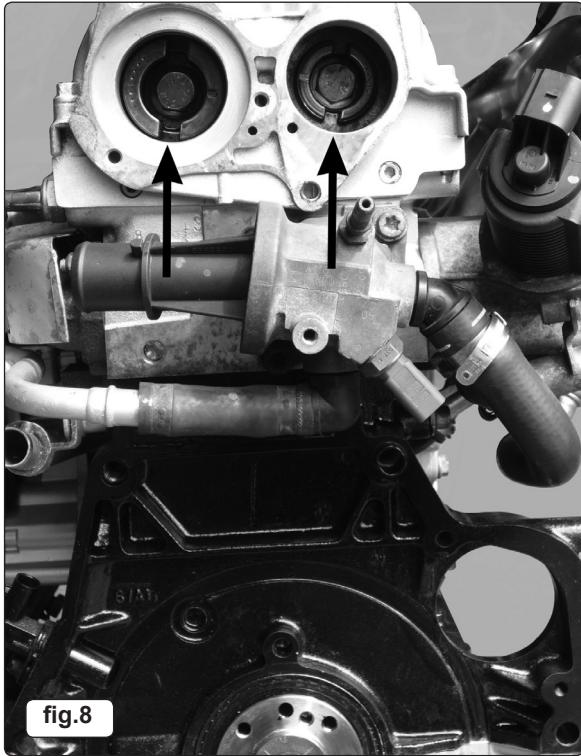


fig.8

- 3.7.2. **VS5082 camshaft holding tool** locates into the camshaft at the rear of the engine (gearbox end). This requires the removal of the vacuum pump and the high pressure fuel pump (fig.8).

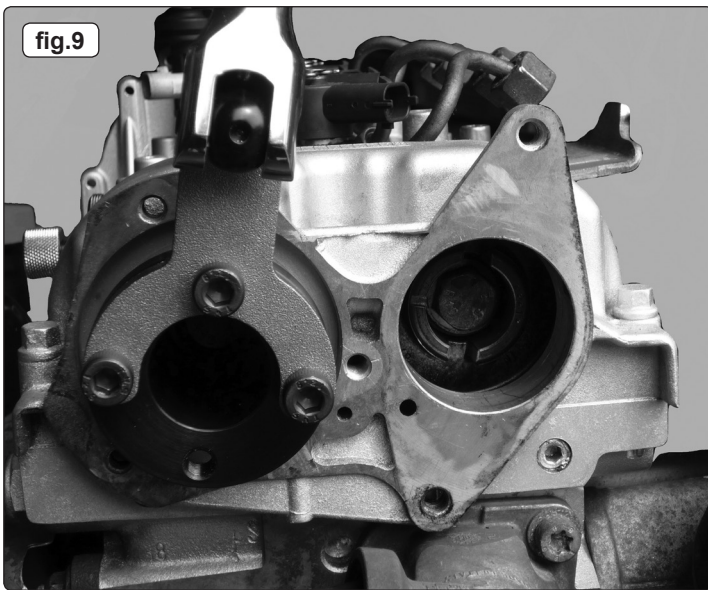


fig.9

- 3.7.3. Fit the assembled tools into the appropriate camshaft. Using a power bar, counter hold the camshaft whilst releasing the central bolt as required (fig.9).
- 3.8. Releasing the timing chain from the camshaft.**
- 3.8.1. The design of the engine allows service work on the cylinder head, camshafts, gaskets etc., to be carried out without removing the turbo, oil sump, front-end timing cover and timing chain assembly.
- 3.8.2. With the engine 'locked' in its timed position, the cam shaft sprocket central bolt is removed. The camshaft sprocket and timing chain can now be separated from the camshaft, allowing removal of the camshafts/ cylinder head etc. for service work.

IMPORTANT: The engine **MUST BE** supported correctly, as it is necessary to remove the engine mounting on the timing chain side to give access to the service hatches in the front cover.

3.9. Service hatches.

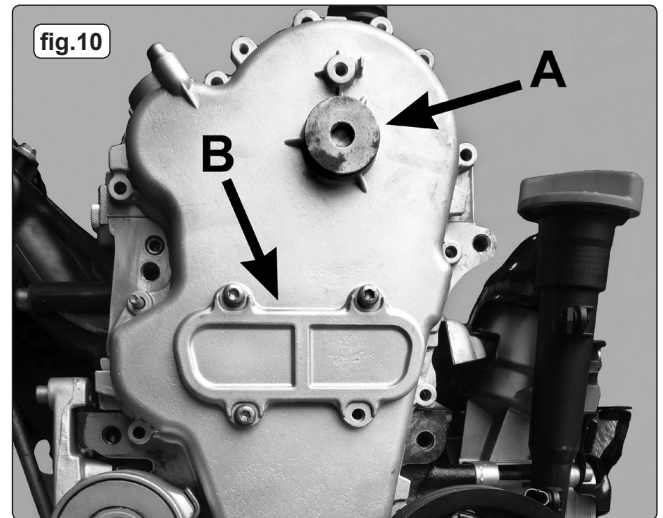


fig.10

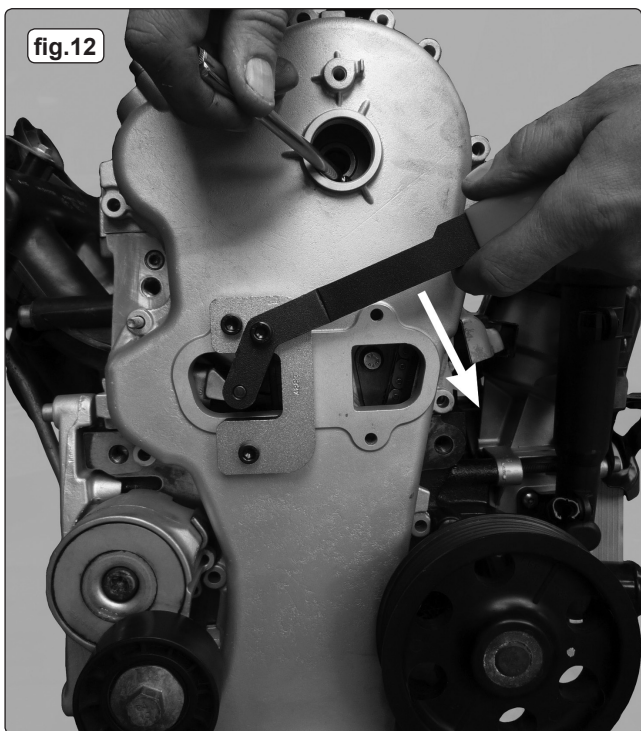
- 3.9.1. To provide for cylinder head/camshaft removal without disturbing the front-end timing cover, access to the exhaust camshaft sprocket retaining bolt and the timing chain tensioner is provided via service hatches A and B in the front timing cover (fig.10).
- 3.9.2. Unscrew and remove the sprocket service plug 'A'.
- 3.9.3. Counter hold the exhaust camshaft using an assembly of **VS5081** and **VS5082 holding tools** (gearbox end - see section 3.6 - Engine Timing Adjustment) and remove the exhaust camshaft sprocket retaining bolt (timing chain end).
- 3.9.4. Unscrew the bolts retaining the service hatch cover 'B', and remove the cover complete with gasket.

3.10. VS4883 Timing Chain Tensioner Tool.



fig.11

- 3.10.1. The **VS4883 tensioner tool** is used to retract the timing chain tensioner plunger - via action on the chain guide rail.
- 3.10.2. Fit the **VS4883 tensioner tool** onto the **RIGHT-HAND SIDE** of the **LEFT-HAND** window of the service hatch, securing it in place with the two bolts provided, screwing them into the holes for the hatch cover. Ensure that the pin on the end of the lever reacts on the chain guide rail close to the tensioner plunger (fig.11).



- 3.10.3. Carefully operate the handle of **VS4883 tensioner tool** in the direction shown, removing tension from the chain. Do not apply excessive force, as this could cause damage to the plastic chain guide.
- 3.10.4. With the assistance of a magnet, remove the camshaft sprocket and chain from the end of the camshaft. The contoured shape of the front cover will retain the sprocket and chain in a location approximate to the end of the camshaft (fig.12).
- 3.10.5. The camshafts, cylinder head etc., can now be removed for service work.

3.11. Refitting the timing chain to the camshaft **VS132/04 Tensioner Retaining Pin.**

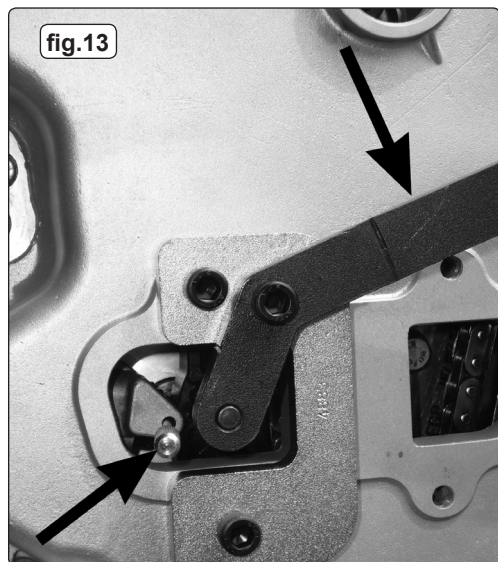
- 3.11.1. Operate the handle of **VS4883 tensioner tool** in the direction shown (fig.13), compressing the tensioner plunger. Retain the plunger in place using **VS132/04 pin.**

WARNING: If the tensioner plunger will not compress easily, it may be necessary to allow the plunger to extend fully outwards first. Then re-apply leverage to the tensioner plunger retaining it in place using **VS132/04 pin.**

NOTE: During initial removal of the camshaft sprocket, the chain links may have kinked at the crankshaft gear, preventing the camshaft sprocket from lifting onto the end of the camshaft. As the crankshaft gear is free to turn it is possible to simply rotate the chain (through the service hatch) to straighten out the chain links as the sprocket is fitted onto the camshaft.

- 3.11.2. Refit the camshaft sprocket and chain to the end of the camshaft and screw in the securing bolt to finger-tight. Remove **VS132/04 pin** and release the lever, allowing the plunger to extend outwards and apply tension to the chain. Check the plunger is in contact with the chain guide rail.
- 3.11.3. Using **VS5081 holding tool** with **VS5082 camshaft holding tool**, counter hold the camshaft and tighten the camshaft sprocket retaining bolt to the specified torque.
- 3.11.4. Refit service hatch plug and cover. Refit timing side engine mounting bracket.
- 3.11.5. Tighten the crankshaft pulley flange central bolt to the specified torque using **VS5081 crankshaft holding tool** to counter hold.

NOTE: The central bolt has a **LEFT-HAND THREAD.**



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 dispose of it 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 equipment.

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



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