VS1402

PETROL ENGINE TWIN CAM SETTING/LOCKING TOOL KIT FOR FIAT 1.6 16v.

1. INTRODUCTION & APPLICATION

1.1. Introduction

VS1402 Kit includes Camshaft Setting Plates, which locate at the rear of the camshafts to 'lock' them in their 'timed' positions, and special tensioner adjustment and flywheel retention tools.

Note: TDC position on Fiat Twin Cam engines is established using VS1404 TDC Positioning Tool, an associated tool, not included in the kit. VS1404 requires a suitable Dial Test Indicator, such as AK9634M.

1.2. Applications

Fiat 1.6 16v. Twin Cam engines in Brava/Bravo (95-), Marea/Marea Weekend (96-), Multipla (99-), Palio (97-).

2. 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 the valve head and the piston crown causing damage to the engine.

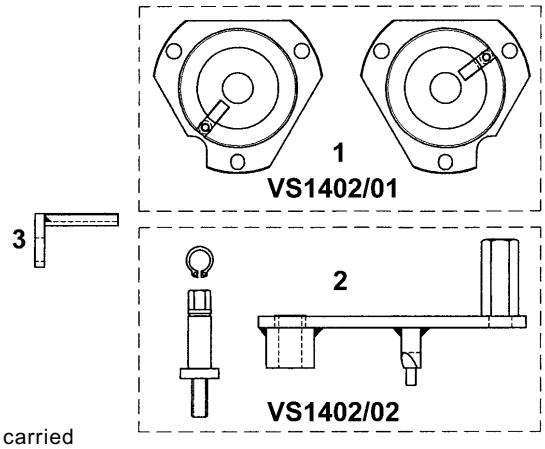
IMPORTANT: *These instructions are provided as a guide only. Always refer to the vehicle manufacturer's service instructions, or a proprietary manual, to establish the current procedure and data.*

3. CONTENTS & ASSOCIATED TOOLS

3.1. Contents

1. VS1402/01 Cam Setting Plate Set (2 Plates)
2. VS1402/02 Tensioner Adjuster
3. VS1402/03 Flywheel Holding Tool (Crank Pulley removal)

-- VS1402/84 Case + Insert



3.2. Associated Essential Tool

TDC Positioning Tool (use with AK9634M DTI) VS1404

4. INSTRUCTIONS

General Guide - Setting & Locking FIAT TWIN CAM engines

Timing belt replacement on 1.6/1.8 16v. and 2.0 20v. Fiat twin camshaft engines is carried out with the crankshaft at TDC, established by using VS1404 TDC Position Tool, to determine the piston position in No.1 cylinder, and then by checking that all timing marks align.

Note: To avoid kit contents duplication, VS1404 TDC Position Tool is not included in individual kits but is available as an Associated Tool. It is used on all Fiat 1.6, 1.8 and 2.0 multi-valve engines.

On the 1.6 16v. engine each camshaft is retained in its 'timed' position by Setting Plates positioned at the rear of the camshafts. Once crank and camshaft timing positions are 'locked', the tensioner is slackened and the old belt removed. Both camshaft sprockets are released and free to turn on the camshafts.

Marks on the new belt are aligned to marks on the sprockets/pulley and fitted in the order given for each engine. Initially the timing belt tension is adjusted to maximum, using the Tensioner Adjuster.

The camshaft sprocket bolts are then tightened and all setting/locking tools removed.

The engine is rotated by hand and VS1404 TDC Position Tool refitted to ensure return to TDC.

The tensioner is adjusted to operating position and the engine rotated again and returned to TDC. All timing marks must align. It is good practice to confirm that the timing is correct by adjusting to TDC and refitting crank and camshaft tools to check the timing position.

Important! DO NOT use Camshaft Setting Plates to hold camshafts in position whilst releasing or tightening the sprocket bolts. Plates are for retention of timing position only. Use Sprocket Holding Tool VS169 (fig.7) to counter-hold sprockets, taking care not to damage any position sensors located behind the sprockets. VS169 is an associated tool, not included in kit.

4.1. VS1402/01 Camshaft Setting Plate Set

These Setting Plates retain the camshafts in their timed positions by fixing at the rear of each camshaft. VS1402/01 Set comprises two similar but different Setting Plates. These plates are marked 'Inlet' and 'Exhaust' and must only be used on the corresponding camshaft.

Important! VS1402/01 Setting Plates are NOT interchangeable - they must only be fitted to the appropriate camshaft marked on the plate.

Remove covers at the rear of camshafts. Slide Plates over studs and locate onto each camshaft ensuring the key on the Plate fits into the slot in the camshaft (fig. 1). Secure in place with cover nuts.

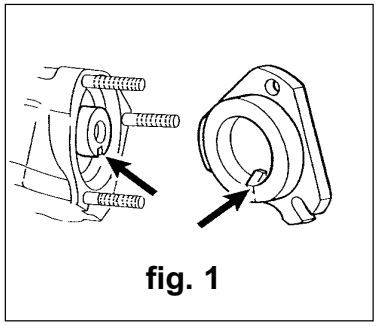


fig. 1

Important! To ensure that the correct Plate is fitted to the appropriate camshaft and the correct camshaft position has been achieved, the 'notch' on the side of the Plate MUST align to the blanking plug on the camshaft housing (fig. 2).

1.6 16v. new belt is fitted in the following order - Crank, Oil Pump, Guide, Cam (Inlet), Cam (Exh), Tensioner.

4.2. VS1402/02 Tensioner Adjuster

Remove bolt from front casing, above/left of tensioner and attach VS1402/02 (fig. 3).
When fitting new belt, use a spanner to lever VS1402/02 to initially adjust tensioner to maximum position - moving pointer to the end of its travel. After tightening camshaft sprocket bolts, turning engine by hand two revolutions, returning to TDC, and ensuring that all timing marks align, adjust the final position of the tensioner so its pointer is in line with the reference point (fig. 4).

4.3. VS1402/03 Flywheel Holding Tool

VS1402/03 Holding Tool (fig. 5) is included in the kit as it is necessary to remove the crankshaft pulley in order to remove and replace the timing belt. The engine must be 'locked' in a secure and safe position when releasing and tightening the pulley bolt. VS1402/03 'locks' into the teeth of the flywheel to counter-hold the crankshaft, only whilst releasing/tightening the bolt.

4.4. VS1404 TDC Position Tool (Associated Tool, not in kit)

The correct engine/crank TDC position is established using VS1404 Tool together with a suitable DTI, such as AK9634M Dial Gauge.
VS1404 Tool determines when the piston of No.1 cylinder is at its highest point. **Note: This must be when it is on its ignition stroke.**
Remove the spark plugs. Install the DTI into VS1404 and secure with the thumbscrew.
Screw VS1404 fully into the spark plug hole of No.1 cylinder, taking care not to overtighten (fig. 6). By turning the crankshaft, in the normal direction of engine rotation, the piston will raise the indicator pin of VS1404 and in turn move the needle of the DTI.
TDC is achieved when the DTI needle reaches its highest reading and starts to move in the reverse direction.
Check that all timing marks align.

fig. 2

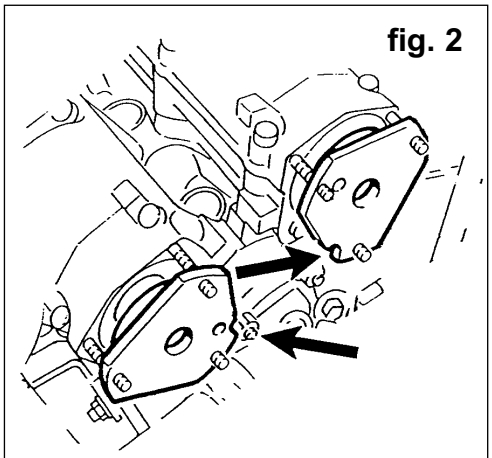


fig. 3

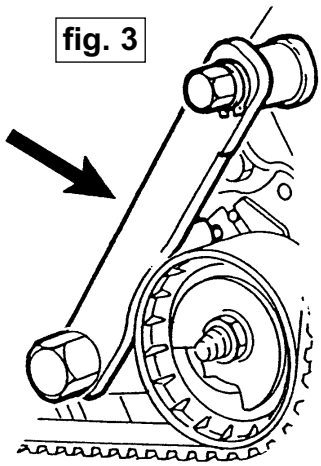


fig. 4

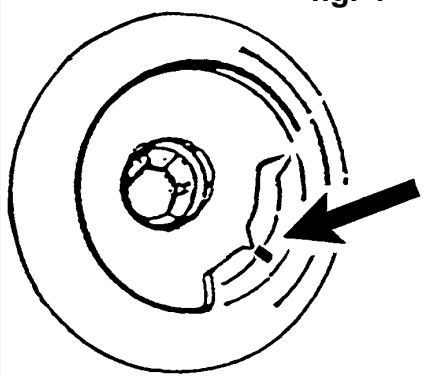


fig. 5

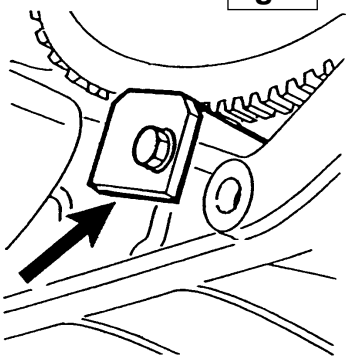


fig. 6

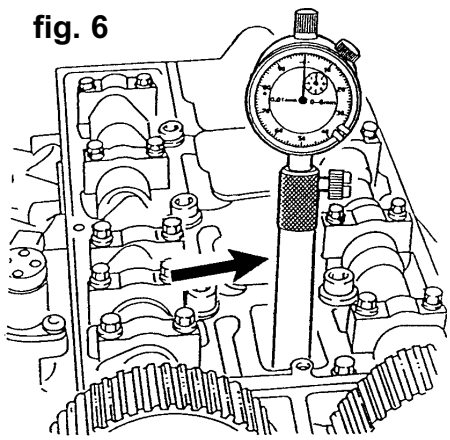
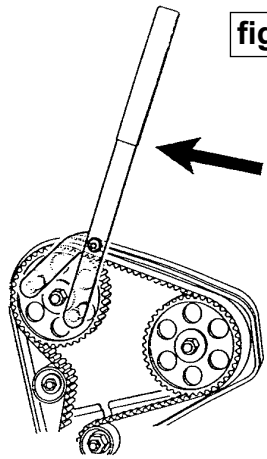


fig. 7



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