

VEHICLE MAKES AND MODELS.

FORD:

Fiesta 1.25,1.4 (95-) Escort/Orion 1.6, 1.8i 16v (92-). Mondeo 1.6, 1.8, 2.0 16v (93-).
 Fiesta 1.8-XR2i/Rs 1800 16V.

HONDA:

Civic 1.6 VTi Accord (90-)/Prelude 2.0 16v (-90). Accord/Prelude 2.3i (93-), Prelude 2.2. V-Tec Sohc Appl: Accord 1.8, 2.0, 2.2, (-93), 2.0i (93-), Shuttle 2.2i.

LAND ROVER: Discovery MPi 2.0 16V (93-), 20T4 engine.

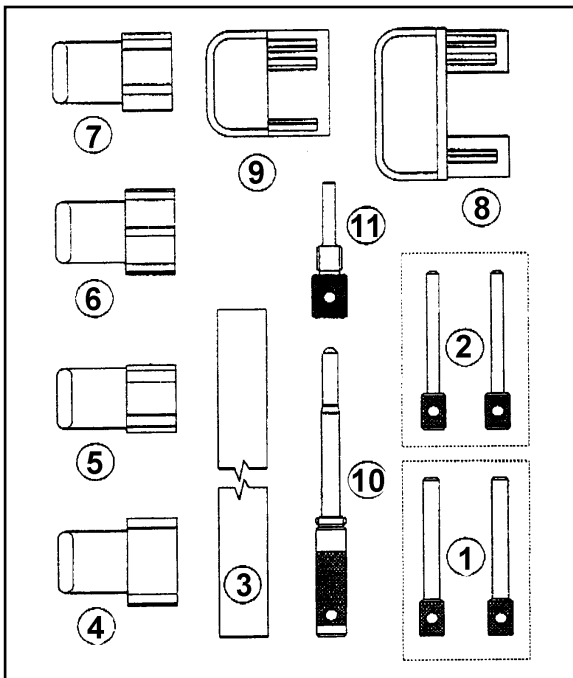
MAZDA: 121.1.25.

ROVER:

Metro GTa/GTi 16V K16 (-95), 214, 414 K16 (89-). 216,416, GTi 16v (-95) D16A9 engine. 216,416 K16 (95-), MGF 1.8 MPi/VVC (95-). 220 M16 (-92), 220/Turbo T16 (92-), 420 M16 (-92), 420 T16 (92-), 320/Turbo M16 (-91) 820/Turbo T16 Vitesse Turbo (91-). 620 Ti (94-),623 (93-). SOHC application 820 8V (M8). SOHC Application 618/620 (93-).

VAUXHALL/OPEL:

Astra 2.0 16V Cavalier 2.0 16V Calibra 2.0 16V, early engines (-92) with large cam sprockets. Astra 1.8/2.0 16V, Cavalier 2.0 16V, Calibra 2.0 16V/Omega-B 1.4/1.6 16V, Tigra 1.4/1.6 16V, Astra-F 1.6 16V, Vectra 1.6 16V (94-). Vectra 1.8/2.0 16V (95-). Omega 2.0, Sintra 2.2., Frontera 2.2. Astra 2.0.



| STANDARD PARTS LIST | | |
|---------------------|----------|------------------------------------|
| Item | Part No | Description |
| 1 | VS170/1 | CAMSHAFT LOCKING PINS 6.8MM (PAIR) |
| 2 | VS170/2 | CAMSHAFT LOCKING PINS 5MM (PAIR) |
| 3 | VS170/3 | CAMSHAFT SETTING/LOCKING PLATE |
| 4 | VS170/4 | CAMSHAFT LOCKING TOOL (LIGHT GREY) |
| 5 | VS170/5 | CAMSHAFT LOCKING TOOL (ORANGE) |
| 6 | VS170/6 | CAMSHAFT LOCKING TOOL (BLACK) |
| 7 | VS170/8 | CAMSHAFT LOCKING TOOL (BROWN) |
| 10 | VS170/10 | BALANCER SHAFT LOCKING PIN |
| 8 | VS170/12 | CAMSHAFT LOCKING TOOL (YELLOW) |
| 9 | VS170/17 | CAMSHAFT LOCKING TOOL (BLUE) |
| 11 | VS170/18 | CRANKSHAFT TDC LOCATION PIN |

1. INTRODUCTION

The VS171 twin cam setting/locking tool kit has been designed for use on multi-valve engines (twin cam) to lock the camshafts, which are under pressure from compressed valve springs, from rotating out of their timing positions when the timing belt is removed. If the camshafts are allowed to move from their timing position possible damage to the inlet and exhaust valves may occur due to contact with the piston crown. By locking the camshafts in position it will allow easier replacement of the drive belt and reduce the risk of incorrect valve timing from taking place. The kit includes camshaft locking pins which can also cover specific crankshaft/flywheel locking applications.

2. SAFETY INSTRUCTIONS

- WARNING!** Ensure all health and safety, local authority, and general workshop practice regulations are strictly adhered to when using tools.
- DO NOT use tools if damaged.
- Maintain the tool in good and clean condition for best and safest performance.
- If required ensure the vehicle to be worked on is adequately supported with axle stands, ramps and chocks.
- 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 and parts being used and do not leave them near the engine.

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

3. APPLICATIONS

| | | |
|---------------------------------|---|-------------------------------|
| FORD: | Fiesta 1.25,1.4 (95-) | VS171/3 |
| | Escort/Orion 1.6, 1.8i 16v (92-). | VS171/18 |
| | Mondeo 1.6, 1.8, 2.0 16v (93-). Fiesta 1.8-XR2i/Rs 1800 16V. | VS171/3 |
| HONDA: | Civic 1.6 VTi Accord (90-)/Prelude 2.0 16v (-90). | VS171/2 |
| | Accord/Prelude 2.3i (93-), Prelude 2.2. V-Tec | VS171/10 |
| | SOHC Appl: Accord 1.8, 2.0, 2.2, (-93), 2.0i (93-), Shuttle 2.2i. | VS171/10 |
| LAND ROVER: | Discovery MPi 2.0 16V (93-), 20T4 engine. | VS171/1 & VS171/5 |
| MAZDA: | 121.1.25. | VS171/3 & VS171/18 |
| ROVER: | Metro GTa/GTi 16V K16 (-95), 214, 414 K16 (89-). | VS171/6 |
| | 216,416, GTi 16v (-95) D16A9 engine, | VS171/2 |
| | 216,416 K16 (95-), MGF 1.8 MPi/VVC (95-). | VS171/6 |
| | 220 M16 (-92), 220/Turbo T16 (92-), 420 M16 (-92), | VS171/5 & VS171/1 |
| | 420 T16 (92-), 320/Turbo M16 (-91) 820/Turbo T16 Vitesse Turbo (91-). | |
| | 620 Ti (94-), | VS171/1 & VS171/5 |
| | 623 (93-). | VS171/10 |
| SOHC application 820 8V (M8). | VS171/1 & VS171/6.6 (Optional) | |
| SOHC Application 618/620 (93-). | VS171/10 | |
| VAUXHALL/OPEL: | Astra 2.0 16V Cavalier 2.0 16V Calibra 2.0 16V, | VS171/8 |
| | Early engines (-92) with large cam sprockets. | VS171/8 |
| | Astra 1.8/2.0 16V, Cavalier 2.0 16V, Calibra 2.0 16V/Turbo. | VS171/4 |
| | Omega-B 1.4/1.6 16V, Later engines (93-), with small cam sprockets. | VS171/4 |
| | Corsa-B 1.4/1.6V, Tigra 1.4/1.6 16V, Astra-F 1.6 16V, Vectra 1.6 16V (94-). | VS171/17 |
| | Vectra 1.8/2.0 16V (95-). Omega 2.0, Sintra 2.2., Frontera 2.2. Astra 2.0. | VS171/12 |

VS171/11 Can be required according to sprockets fitted (-92). Optional not in kit.

4. OPERATING INSTRUCTIONS

Ensure safety instructions and the manufacturer's service instruction are adhered to. These instructions are provided as a guide only.

For timing belt removal, renewal and refitting, it is often necessary to lock the engine to its stated timing position marks. Vehicle manufacturers use various methods to achieve this important retention of engine timing position during this application.

3.1. VS171/1 & VS171/2 CAMSHAFT LOCKING PINS - Multi application use, see chart.

When called for in the vehicle manufacturers instructions, the twin camshafts are locked in position, with the timing marks aligned to those on the casing/cover by the use of two locking pins. This method of locking is achieved by inserting the correct pins, of a specific diameter, for each camshaft. These are usually located through assigned holes in the camshaft housing thus engaging and locking the camshafts in position (fig 1).

Locking pins can also be used to lock the crankshaft in its timing position. When the vehicle manufacturer calls for this action, the crankshaft is locked in place by inserting the correct diameter locking pin through a hole in the gearbox mounting back plate to engage a corresponding hole in the flywheel (fig 2).

3.2. VS171/3 CAMSHAFT SETTING/LOCKING PLATE - Ford, Mazda.

On particular Ford and Mazda twin cam engines (see applications), VS171/3 setting plate is used to lock both camshafts in their correct positions via a slot at the rear of the camshafts (fig 3 over page).

On these applications it is important to ensure that the crankshaft timing marks are aligned, and that the VA171/3 setting plate is in position on the camshafts. The tensioner can then be slackened and vibration damper and timing belt removed. With the setting plate locking the camshafts in position the sprockets can be loosened using a flange holding wrench. DO NOT USE THE SETTING PLATE TO COUNTER THE UNDOING OF THE SPROCKET BOLT. A HOLDING WRENCH MUST BE USED.

Providing the crankshaft timing marks are aligned, a new belt can be fitted in an anti-clockwise direction.

The tensioner should now contact the belt by spring action only and again using a flange holding wrench the camshaft sprockets are re-tightened (67-72Nm). Remove the setting/locking plate, refit damper and tighten tensioner. Rotate the engine two revolutions and and re-check that all timing marks align. Re-check camshaft position by ensuring that the setting/locking plate can be easily inserted in its slot. If not, re-check the tensioning procedure again.

fig 1

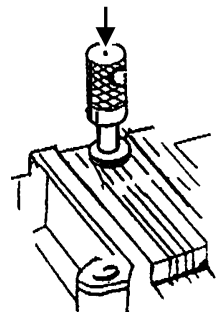


fig 2

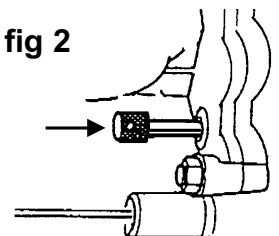
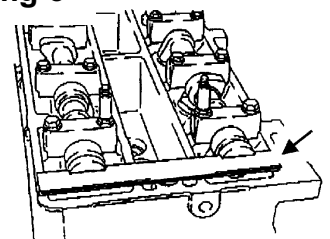


fig 3



VS171/18 CRANKSHAFT TDC LOCATION PIN - Ford and Mazda.

The VS171/18 crankshaft TDC location pin is used on specific Ford/Mazda twin cam engines, in conjunction with the VS171/3 camshaft setting and locking plate to ensure correct TDC position. Remove the engine blanking plug to allow VS171/18 to be screwed into position and then carefully rotate the crankshaft until the web rests against the pin (fig 4).

Insert the VS171/3 camshaft setting/locking plate to also ensure that correct positioning of the camshaft is maintained during belt renewal.

VS171/4, VS171/5, VS171/6, VS171/8, VS171/12 and VS171/17 CAMSHAFT LOCKING TOOLS - Multi application use.

These precision formed tools are colour-coded for model use identification. They are used on any applications and are inserted between the two camshaft sprockets, locating firmly into the gear teeth of the sprockets. This locks the sprockets in position and prevents them from rotating out of their timed position when the timing belt is removed (fig 5).

It is essential to ensure the camshaft timing marks align before inserting a locking tool. The camshaft locking tool then holds the sprockets in their timing position.

NOTE: Vehicle manufacturers put cam timing marks in various positions according to the engine model. For example, marks can be at the top of the sprockets aligned to the belt cover (3A), or aligned with upper edge of the cylinder head (3B). It is important to clearly establish the position of these marks.

It may also be necessary to have the crankshaft "locked" in its timing position at this stage.

When installing a new timing belt, it is usual to start at the crankshaft and once the belt is fitted and lightly tensioned the locking tools are removed and the crankshaft turned two revolutions by hand. All timing marks must re-align exactly when returning to the timed position. The locking tools are re-inserted to finalise tensioning and then removed prior to a further two crankshaft revolutions and a re-checking to ensure all timing marks align correctly.

NOTE: It is equally important to carefully check each vehicle manufacturer's advice on belt tensioner position as this may differ between new and used belts.

VS171/10 BALANCER SHAFT LOCKING PIN - Honda and Rover.

Certain Honda and Rover engines have balancer shafts connected to the crankshaft pulley by a balancer shaft belt. During removal and refitting of the timing belt the balancer shaft belt is removed. It is therefore necessary to refit this belt after renewal and refitting of the timing belt. Once the new timing belt is fitted correctly, and the crankshaft, flywheel and camshaft timing marks correctly aligned, the tensioner arm should be locked.

The balancer shaft plug is removed in order to insert VS171/10 balancer shaft locking pin. The rear balancer shaft sprocket is turned until the pin locks into the hole in the shaft.

The timing marks of the front balancer shaft are aligned and crankshaft removed.

Fit belt, loosen tension, and remove the locking pin. Refit the plug to 30Nm.

The crankshaft pulley is installed and rotated in full turn anti-clockwise before unlocking and tightening the tensioner.

Re-tighten crankshaft pulley to manufacturer's specified torque.

fig 4

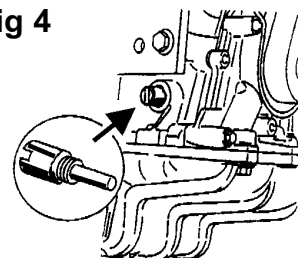
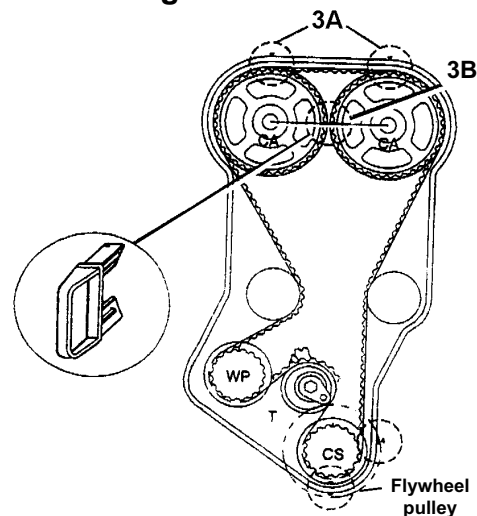


fig 5



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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