



INSTRUCTIONS FOR: **BMW**
DIESEL 2.0 / 3.0 TIMING KIT
 MODEL NO: **VS4555**

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.

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.
- 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 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.



2. INTRODUCTION & APPLICATIONS

2.1 Introduction

VS4555 Kit includes Camshaft Setting and Flywheel Locking Tools to cover the latest range of BMW 2.0 and 3.0 common rail diesel engines found in BMW and other vehicle makers' models.

2.2 Applications

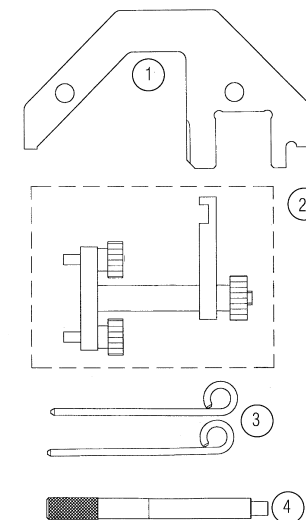
BMW 2.0 M47 and 3.0 M57 Diesel engine fitted in:

- BMW**
 318d / 320d (20 4D 1) and 330d (30 6D 1) E46 - 3 Series
 525d (25 6D 1) and 530d (30 6D 1) E39 - 5 Series
 730d (30 6D 1) E38 - 7 Series
 X5 3.0d (30 6D 1) E53

- | | |
|-------------------|----------------------|
| LAND ROVER | ROVER |
| Freelander Td | 75 2.0 (M47R engine) |
| Range Rover TD6 | |

3. CONTENTS/PARTS LIST

- | | | |
|----|-----------|-------------------------------------|
| 1 | VS4551 | Camshaft Setting Plate |
| 2 | VS4552 | Camshaft Plate Locking Tool |
| 3 | VS4413 | Tensioner Retaining Pins Set (pair) |
| 4 | VS118/02 | Crank TDC Location Pin |
| -- | VS4555.84 | Case + Insert |



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.



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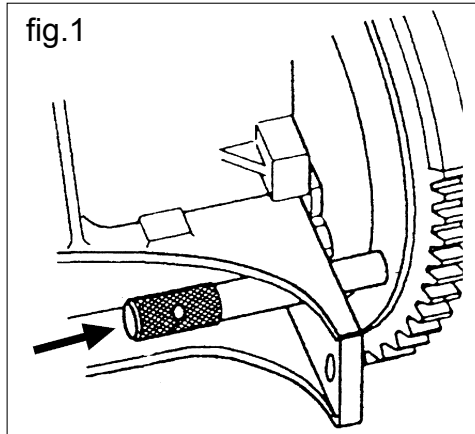
4. INSTRUCTIONS

4.1

The VS4551 Setting Plate and VS118/02 TDC Location Pin are used to 'check' the timing position of the camshafts and TDC position of the crankshaft on these 2.0 and 3.0 Twin Camshaft, direct injection/common rail diesel engines.

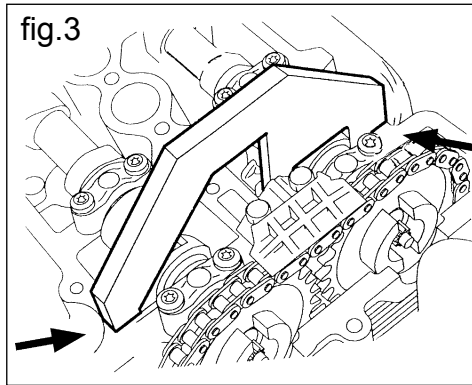
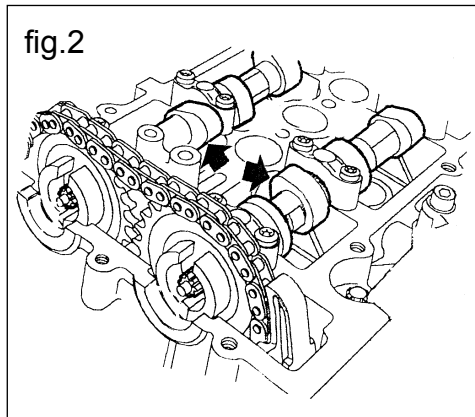
In addition to these two specialised tools the kit includes VS4552 Cam Plate Locking Tool which is employed when 'adjusting' the camshaft timing and VS4413 Tensioner Retaining Pins used to 'lock' the tensioner when removing the camshafts, timing chains or sprockets.

VS4551 Camshaft Setting Plate & VS4552 Camshaft Plate Locking Tool



4.2 Checking Timing

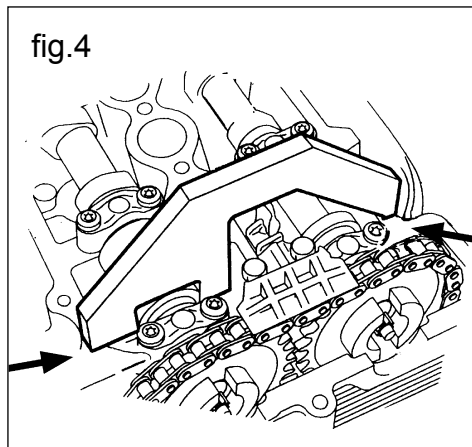
With the crankshaft 'locked' at TDC with Pin VS118/02 - Fig.1, the front camshaft lobes will be positioned as shown in Fig.2.



The accuracy of both of the camshaft timing positions is confirmed by fitting VS4551 Setting Plate to first the inlet, and then the exhaust camshafts, in turn.

The Setting Plate is located on the inlet camshaft as shown and for the inlet camshaft to be timed correctly the Setting Plate must fully contact both sides of the camshaft cover gasket face as shown in Fig.3. Remove the Setting Plate, reverse its position and fit onto the exhaust camshaft. Again, checking that the Setting Plate is making contact with both sides of the gasket face Fig.4.

If the camshaft Setting Plate does not fully contact the camshaft cover gasket face on either the inlet or exhaust camshafts, timing adjustment will be required.



4.3 Timing Adjustment

Camshaft timing adjustment is achieved by releasing the cam sprocket screws and adjusting the position of the camshafts using VS4551 Camshaft Setting Plate and VS4552 Cam Plate Locking Tool.

To gain access to the camshaft sprockets it will probably be necessary to release the engine mounting bracket to the Hydramount and raise the engine.

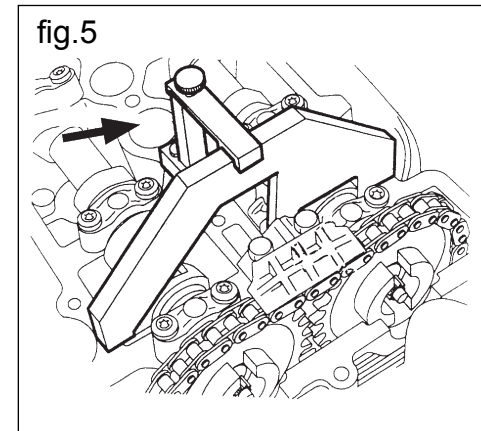
With the crankshaft positioned at TDC and with Pin VS118/02 in place, counter-hold each camshaft in turn, with a spanner, at the hexagon provided on the camshafts, whilst releasing the sprocket screws.

Discard old screws and fit new ones to retain sprockets loosely on the camshafts.

IMPORTANT: When adjusting cam timing the camshaft sprockets should be free to rotate but should not be able to tilt.

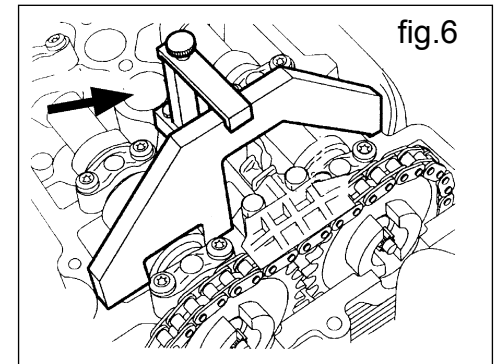
Fit the VS4552 Cam Plate Locking Tool by securing its base to the engine, but with its top clamping arm remaining loose.

Carefully align the inlet camshaft to allow VS4551 Setting Plate to be fitted, ensuring the Plate rests fully on both sides of the gasket surface. Clamp the Setting Plate in place by fixing with the top clamping arm of VS4552, and secure the arm tightly- Fig.5.



Counter-hold the inlet camshaft with a spanner at the hexagon provided, and using a suitable angle torque gauge, tighten the sprocket screw to 20Nm. + a further 35°.

Release the top clamping arm of VS4552, reverse VS4551 Setting Plate and position onto the exhaust camshaft ensuring the Plate rests fully on both sides of gasket surface. Clamp firmly in place with VS4552 - Fig.6.



Counter-hold the exhaust camshaft with spanner and repeat the procedure as employed on the inlet camshaft.

Remove Holding Tool, Setting Plate and Crank TDC Pin and turn the crankshaft two revolutions, in direction of normal engine rotation, and return to TDC position at No1 cylinder.

Insert VS118/02 TDC Pin and check both camshaft positions using VS4551 Plate as per 'Checking Timing' instructions.

VS4413 Tensioner Retaining Pins Set - Fig. 7

For removal of camshafts, sprockets, timing chains the chain tensioner MUST BE 'locked back' releasing tension off the timing chain.

With the engine 'locked' at TDC with Crankshaft Location Pin VS118/02, remove the chain tensioner access plug from the timing cover and slowly turn the exhaust camshaft clockwise to fully compress the chain tensioner, and lock with one of the VS4413 Retaining Pins.

WARNING: If the camshaft sprockets are removed without first locking the hydraulic chain tensioner, its piston will eject. Considerable force will then be required to compress it back in place.

VS4555 Kit contains VS4413 Tensioner Retaining Pins Set (Pair) as two pins are required if the chain tensioner is required to be completely removed from the engine.

