

SEALEY

TIMING TOOL KIT - FOR FORD, MAZDA, VOLVO 1.5, 1.6, 2.0 - BELT/CHAIN DRIVE

MODEL NO: **VSE6160.V2**

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



Refer to instruction manual



Wear eye protection

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.

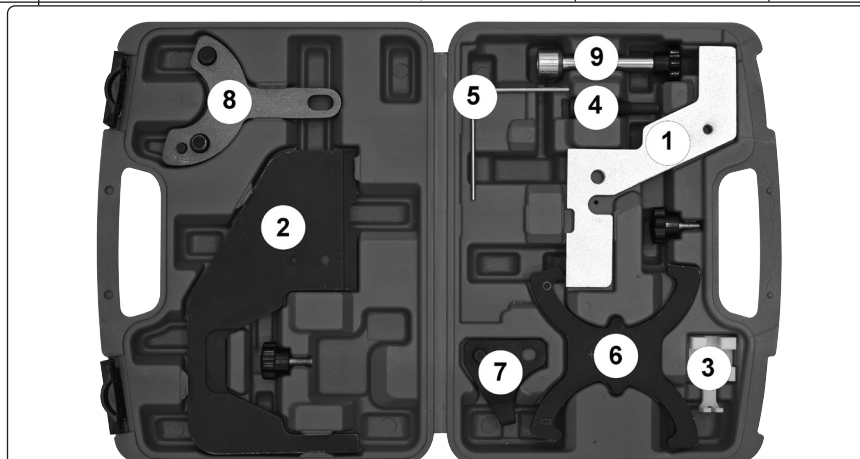
- WARNING!** Wear approved eye protection. Wear appropriate Personal Protective Equipment. A full range of Personal Protective Equipment is available from your Sealey stockist.
- WARNING!** Ensure that Health & Safety, Local Authority Regulations and general workshop practice Regulations are adhered to when using tools.
- WARNING!** Incorrect or out of phase camshaft timing can result in contact between the valve head and the piston crown causing damage to engine.
- 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).
- × **DO NOT** use tools if damaged.
- × **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.
- ✓ Ensure that a vehicle that has been raised by a jack is adequately supported. Use axle stands.
- ✓ When timing an engine, always prevent the engine from being turned over. Use a notice and / or inhibit the engine.
- ✓ Keep children and unauthorised persons away from the work area.
- ✓ Maintain tools to ensure that they are in an adequate condition for safe use and optimum performance.
- ✓ 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.

2. INTRODUCTION

Comprehensive kit covers engines which are fitted to a large range of Ford, Volvo and some Mazda vehicles. Contains time-saving tooling to correctly align the timing covers on Ford and Volvo engines, and a crankshaft pulley holder for Mazda engines. Supplied in storage case with instructions and warning tag.

3. CONTENTS

Contents			OEM Number		
Item	Part Number	Description	Ford	Volvo	Mazda
1	VSE6160-01-V2	Camshaft Alignment Plate >5-11	303-1565		
2	VSE6160-02-V2	Camshaft Alignment Plate >5-11	303-1504	999-7405	303-1061
3	VSE6160-03-V2	Crank Sensor Alignment Tool	303-1521	999-7416	
4	VSE5042A.10-V2	Crankshaft Timing Pin	303-748	999-7406	303-507
5	VSE6160-04-V2	Tensioner Pin (Ø2mm)	303-1054		
6	VSE5042-11-V2	Camshaft Sprocket Alignment Plate	303-1097	999-7429	
7	VSE5850 -V2	Crankshaft Pulley Alignment Plate	303-1550	999-7431/999-7415	
8	VSE6160-05-V2	Crankshaft Pulley Alignment Plate			205-072
9	VSE6160-06-V2	Crankshaft Pulley Alignment Tool		999-7415	



4. APPLICATIONS

Ford Models:

B-Max (13-18)
C-Max (03-18)
Connect (13-16)
Courier (12-16)
EcoSport (13-19)
Fiesta (13-17)
Focus (04-18)
Galaxy (10-18)
Grand C-Max (07-18)
Grand Tourneo Connect (13-17)
Kuga (13-15),
S-Max (10-18)
Tourneo Connect (13-15)
Transit Connect (13-16)
Mondeo (14-20)

Volvo Models:

S80 (09-15)
V40 (09-15)
V40 Cross Country (10-14)
XC60 (09-14)
S80 (09-15)
V60 (10-16)
V70 (09-16)
S60 (11-16)

Mazda Models

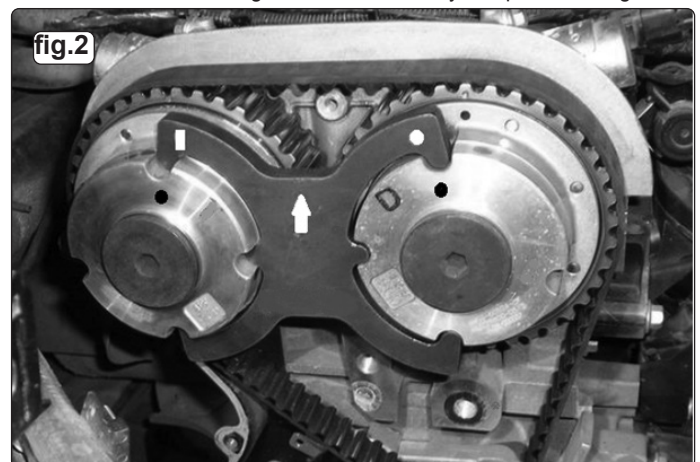
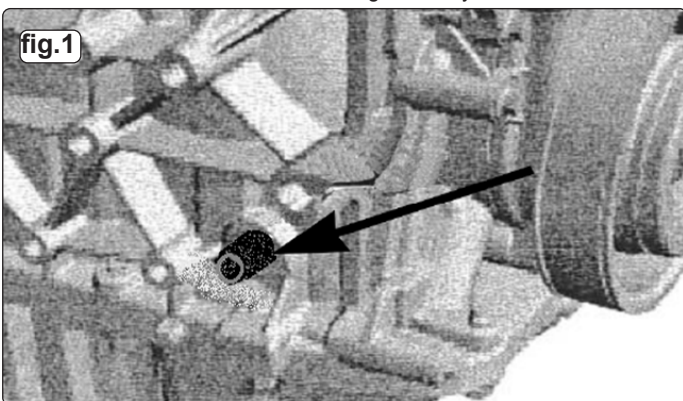
Mazda 3 (9-14)
Mazda 5 (CW) (10-15)
Mazda 6 (GH) (10-13)

Engines: Engines: Engines:

1.5 eco-Boost:	1.6:	2.0:
UNCA	HXDA	MGDA
UNCB	HXDB	R9CB
UNCC	HXJA	R9CD
UNCD	HXJB	R9CF
UNCE	IQDA	R9CH
UNCF	IQDB	R9CI
UNCI	IQDC	R9DA
UNCJ	IQJA	R9DB
UNCK	IQJC	R9DC
UNCM	JQDA	TNBA
UNCN	JQDB	TNBB
	JQGA	TNCC
	IQJE	TNCD
	JQMA	TNCF
	JQMB	TNWA
	JTDA	TNWB
	JTDB	TPBA
	JTJA	TPWA
	JTJB	MZR 2.0 (LF)
	JTJC	LF(MZRDISI
	JTMA	B4204T6
	JTWA	B4204T7
	JTWB	
	MUDA	
	MUDD	
	PNDA	
	PNDG	
	RVJA	
	SIDA	
	U5JA	
	XTDA	
	XTDB	
	B4164T	
	B4164T2	
	B4164T3	

5. INSTRUCTIONS

- 5.1. The tools within this kit are necessary to correctly set the engine camshaft timing when replacing the timing chain or timing belt on Volvo 1.6 T4 and 2.0 T5 engines, Ford 2.0 Vi-VCT and EcoBoost engines. These instructions cover the process for setting the camshafts and crankshaft positions when removal of the cylinder head, camshafts or timing chain or timing belt has taken place. On engines with variable valve timing it may assist reassembly to mark the various components before dismantling.
- 5.2. For further information please refer to the relevant manufacturer's documentation and follow the instructions shown in a reputable workshop manual.
- 5.3. **DISMANTLING PROCESS FOR BELT DRIVEN CAMSHAFTS**
- Note:**
- The crankshaft pulley is not located with a woodruff key.
 - Some applications do not have an adjuster on the auxiliary belt; (Stretch type belt) therefore a special tool such as the Sealey VS787 Stretch Belt Removal/Installation Tool will be required to remove/refit the auxiliary belt.
 - The Crankshaft Pulley Bolt cannot be re-used and must be renewed.
- 5.3.1. Turn the engine to just before TDC on number one cylinder, remove the blank plug from the cylinder block and insert the Crankshaft Timing Pin VSE5042A.10. Turn the engine slowly in the direction of rotation until the Crankshaft Timing Pin locates correctly into place, see fig.1.



- 5.3.2. Fit the Camshaft Sprocket Alignment Plate VSE5042.11 and ensure that the timing marks on the camshaft sprockets align with the timing marks on the outer edges of the tool as shown in fig.2.
- 5.3.3. Apply pressure to the timing belt to push in the timing belt tensioner and insert a suitable locking pin. The timing belt can now be removed.

5.4. REASSEMBLY FOR BELT DRIVEN CAMSHAFTS

- 5.4.1. The tensioner idler pulley should be renewed, tighten the fixing bolt up to 24 Nm.
- 5.4.2. Fit the timing belt starting at the exhaust camshaft sprocket and follow in a clockwise direction ensuring that the belt is taught between the sprockets.
- 5.4.3. Remove the timing belt tensioner locking pin.
- 5.4.4. Refit timing belt cover and crankshaft pulley with a new securing bolt. Ensure the pulley is aligned using the Crankshaft Pulley Alignment Bracket VSE5850, and tighten the crankshaft pulley securing bolt to 100 Nm + 90 degrees.
- 5.4.5. Remove all tooling, rotate engine two turns in the direction of rotation and recheck the timing using the same tooling. If correct remove all tooling, refit cylinder block bung and tighten to 20 Nm. Reassemble components/ancillaries in the reverse order of removal.

5.5. DISMANTLING PROCESS FOR CHAIN DRIVEN CAMSHAFTS

Note: DO NOT turn crankshaft of camshaft with the timing chain removed, engine damage could occur.

- 5.5.1. Mark position of crankshaft position sensor before removal.
- 5.5.2. Turn the engine to just before TDC on number one cylinder, remove the blank plug from the cylinder block and insert the Crankshaft Timing Pin VSE5042A.10
- 5.5.3. Turn the engine slowly in the direction of rotation until Crankshaft Timing Pin locates correctly into place.
- 5.5.4. Dependent upon model year, Install the suitable camshaft alignment tool VSE6160-1, or VSE6160-2.
- 5.5.5. Remove crankshaft pulley and timing chain cover.
- 5.5.6. Release the ratchet on the timing chain tensioner, retract the timing chain tensioner and lock it in the retracted position using a suitable locking pin.
- 5.5.7. The timing chain, timing chain tensioner and guide can now be removed.

5.6. REASSEMBLY FOR CHAIN DRIVEN CAMSHAFTS

- 5.6.1. Fit the timing chain, and timing chain guide.
- 5.6.2. Fit the timing chain tensioner and remove the locking pin.
- 5.6.3. Fit the timing chain cover and temporarily fit the crankshaft pulley securing bolt.
- 5.6.4. Slowly turn the crankshaft in a clockwise direction until it contacts the crankshaft timing pin.
- 5.6.5. Remove the crankshaft pulley securing bolt, refit the crankshaft pulley, ensuring a new pulley securing bolt is used, **DO NOT** torque up the pulley securing bolt at this stage.
- 5.6.6. Fit the crankshaft pulley alignment tool (VSE6160-3) (pic 5) and ensure the crankshaft pulley is correctly aligned.
- 5.6.7. Once the crankshaft pulley is correctly aligned the securing bolt can be tightened to 100 Nm + 90 degrees.
- 5.6.8. Fit the crankshaft position sensor bracket but only tighten the securing bolts finger tight, make sure the securing bolts are in the central range of the slots.
- 5.6.9. The Crankshaft Position Sensor Alignment Tool VSE6160-4 has to align with the 20th tooth, as counted in a clockwise direction from the gap in the teeth on the front pulley. This tool is designed to not only align the sensor in the correct position but to also set the air gap to the pulley at the correct distance.
- 5.6.10. Fit the crankshaft position sensor alignment tool (VSE6160-4) (pic 6) once the sensor is correctly aligned tighten the securing bolts to 6 Nm.
- 5.6.11. Remove all tooling.
- 5.6.12. Turn the crankshaft in the direction of rotation one turn + 270 degrees.
- 5.6.13. Turn the crankshaft slowly until it locates with the timing pin, ensure the camshaft position tool can be fitted correctly. If the tooling cannot be fitted correctly the timing procedure will need to be repeated, if correct, remove all tooling and reassemble components/ancillaries in the reverse order of removal.



ENVIRONMENT 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 any fluids (if applicable) into approved containers and dispose of the product and 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. Please note that other versions of this product are available. If you require documentation for alternative versions, please email or call our technical team on technical@sealey.co.uk or 01284 757505.

Important: No Liability is accepted for incorrect use of this product.

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

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