

Kamasa-TOOLS®

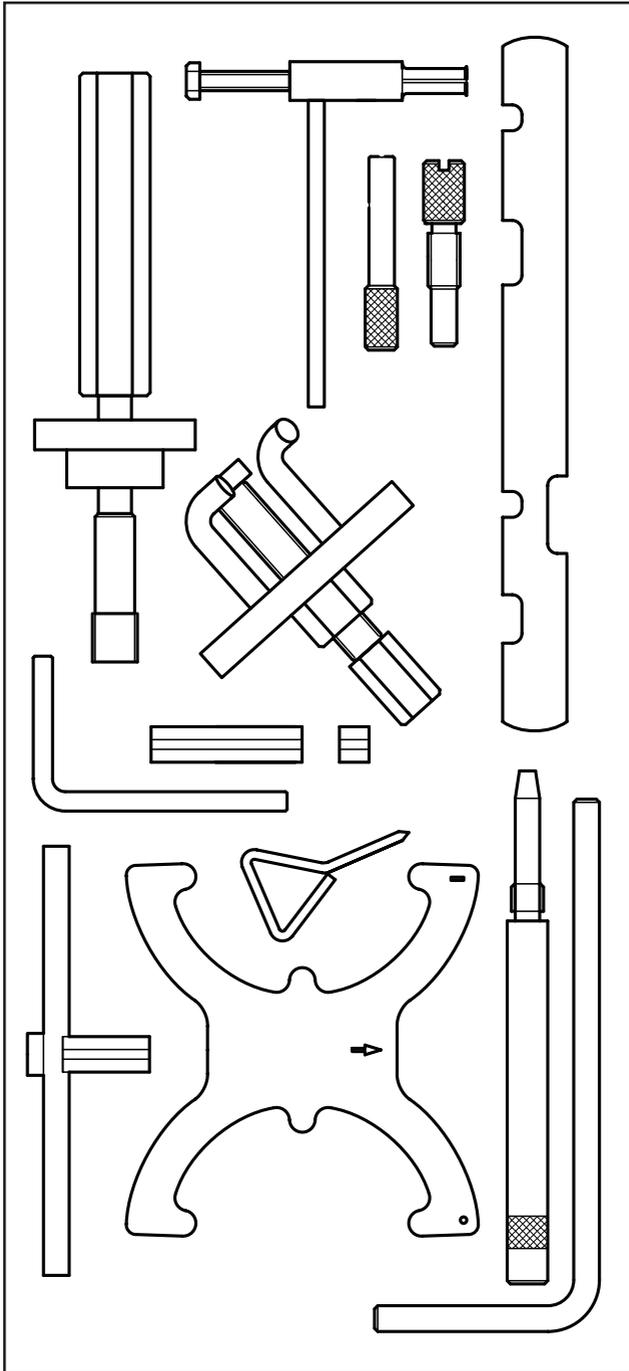


PART NO. K305

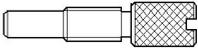
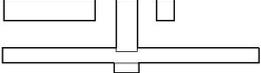
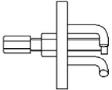
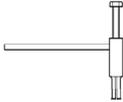
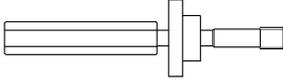
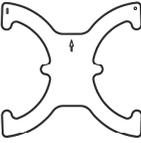
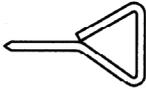
Engine Timing Tools

Ford 1.6 Ti-VCT | 1.8 TDi/TDCi | 2.0 TDCi

Plan Layout



Component Identification

Part No	OEM Ref	Description	Identification
A 23054-05	303-748	Crankshaft Timing Pin	
B 23054-01	21-162B 303-367 303-376B	Camshaft Alignment Plate	
C 23060-S	21-104 303-193	Crankshaft TDC Alignment Pin	
D 23060-02	6 mm. drill bit	Camshaft Alignment Pin 6mm.	
E 23060-10	21-168 303-393	Flywheel Locking Tool.	
F 23060-15	303-735	Camshaft Sprocket Timing Pin.	
G 23060-16	21-229 303-651	Camshaft Sprocket Puller	
H 23060-17	23-067 303-095	Fuel Sprocket Remover	
I 23060-18	21-230 303-652	Chain Cover Alignment Tool	
J 23060-19	303-1059	Flywheel Timing Pin	
K 23060-21	303-1097	Camshaft Sprocket Locking Tool	
L 23161-94	303-1054	Tensioner Pulley Locking Pin	

Applications

Manufacturer	Model	Engine Codes	Year
Ford Petrol	Focus 1,6 Ti-VCT	HXDA	03-08
	Focus C-MAX 1,6 Ti-VCT	HXDA	03-08
Ford Diesel Chain Driven	Fiesta 1,8D Turbo	C9DC, RTN, RTP, RTQ	00-02
	Focus 1,8 TDDi/TDCi	BHDA/B, C9DC, C9DA/B, FFDA, F9DA/B, KKDA	98-05
	Focus CMAX 1,8 TDCi	KKDA	03-07
	Tourneo Connect 1,8 TDDi, TDCi	BHPA, HCPA, HCPB	02-07
	Transit Connect 1,8 TDDi, TDCi	BHPA, HCPA, HCPB	02-07
Ford Diesel Belt Driven	Focus/Transit Connect/ Tourneo Connect 1,8 TDDi/TDCi	C9DC, F9DA/B, FFDA, C9DA/B, BHDA/B, BHPA, HCPA, HCPB, P7PA, P9PA, R2PA, R3PA, RWPA	03-08
	Focus 2,0 TDCi	G6DA, G6DB, G6DC	03-08
	Focus C-MAX 2,0 TDCi	G6DA, G6DB, G6DC	03-08
	Mondeo 2,0 TDCi	AZBA, QXBA	07-08
	S-MAX, Galaxy 2,0 TDCi	AZWA, QXWA, QXWB	06-08

Engine Timing Setting/Locking Tool Set

This set of tools enables the correct valve timing to be made when servicing the 1,6 Ti-VCT petrol and 1,8 TDDi / TDCi and 2,0 TDCi diesel engines. Special tools required for both belt and chain driven engines are included in this set.

Suitable for use on many popular models as per detailed list below:-

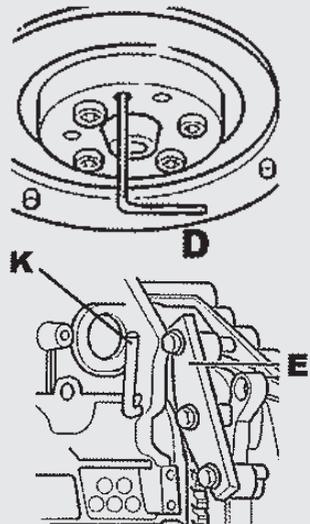
Fiesta, Focus, Mondeo, S-Max, C-Max, Transit Connect and Tourneo Connect.

Component Application

Instruction for 2.0 TDCi models.

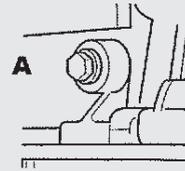
Follow the manufacturer's procedures to prepare the vehicle engine leading up to turning the crankshaft to TDC on cylinder No1 NB: this is closest to the flywheel.

The position of the Camshaft Sprocket should be at 4 o'clock and to permit the fitting of Camshaft Sprocket Timing Pin **D**. Insert Flywheel Timing Pin **K** and Flywheel Locking Tool **E**. Remove the crankshaft pulley, crankshaft position sensor multi-plug and sensor, reductor and tensioner pulley. The timing belt can now be removed.



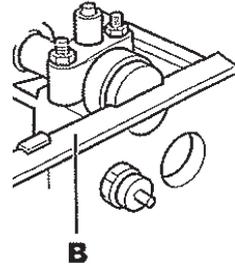
Component Application

The Crankshaft is correctly positioned by slowly turning clockwise to the position just before Top Dead Centre (TDC) on cylinder No.1 and the camshaft groove aligns with the edge of the cylinder head.

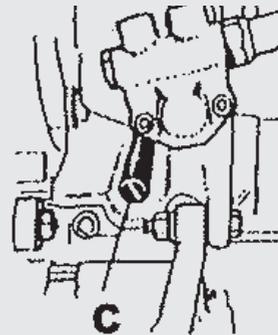


The Camshaft Alignment Plate **B** is used during both belt removal and installation. This tool can only be fitted when the camshaft is correctly orientated.

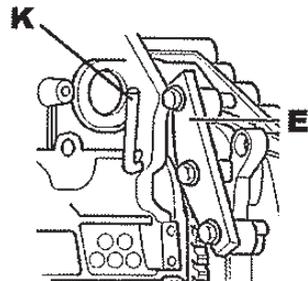
Replace the blanking plug from the engine with tool **C** and slowly rotate the engine clockwise until it stops against the timing pin.



Fit the Flywheel Locking Tool **E** with the correct length of tooth block fitted, into the starter motor mounting position. Check that the Crankshaft is still in contact with tool **C**. Use a suitable Sprocket Holding Tool (23106 Optional) and loosen the Sprocket from the taper using tool **G** so that it can turn freely but without tilting. Remove the timing belt. Check that tools **C**, **B**, **E** are still correctly fitted. Check that the automatic tensioner pulley is correctly positioned to permit the new Timing Belt to be installed. The Tensioner should then be correctly set. Remove all timing tools before slowly rotating the engine to check that the correct timing positions have been maintained. Refit tools **C**, **B** to check this.



The engine should be cold when installing a new timing belt. Check that each of the tools **E**, **F**, **K** is correctly fitted. Fit the new timing belt in the correct direction of rotation. Fit the tensioner and apply anti-clockwise rotation to achieve the correct tension to the belt by aligning the pointer and notch on the base plate. Re assemble the engine parts in the reverse order of dismantling, and remove all tools. Slowly turn the engine in the correct order of rotation to check that the valve timing is correct

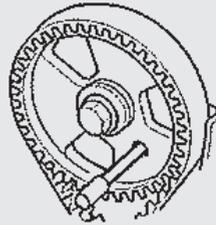


Drive Chain service.

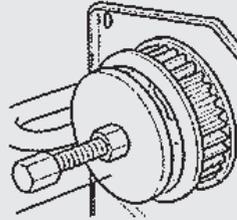
Removal and installation of the Timing Chain follows removal of the Timing Belt as detailed above.

The Crankshaft is correctly positioned by replacing the blanking plug from the engine with tool **A** and slowly rotate the engine clockwise until it stops against the timing pin. Lock the Injection Pump Sprocket using the 6 mm. Setting Pin **C**. Fit the Flywheel Locking Tool **E**, with the correct length of tooth block fitted, into the starter motor mounting position. Check that the Crankshaft is still in contact with tool **A**.

Use a suitable Sprocket Holding Tool (23106 Optional) and loosen the Sprocket holding bolt. Check that tools **A** and **B** can still be correctly fitted. Use the Alignment Tool **I** when replacing the Cover and apply sealant to the fuel pump outer sprocket bolt holes. A new pulley bolt should be used on common rail engines.



F



G

General Instruction for 1,6 Ti-VCT models.

Remove the blanking plug from cylinder block, turn the crankshaft until just before TDC on cylinder Nr. 1 and fit Crankshaft Timing Pin **A**. Turn the crankshaft slowly until it stops against the pin.

With the camshaft sprocket timing marks at 12 o'clock, fit the Camshaft Sprocket Locking Tool **J** ensuring that it is correctly orientated. The exhaust camshaft sprocket (left) has a rectangular mark, **□** and the inlet camshaft sprocket (right) has a circular mark. **○**

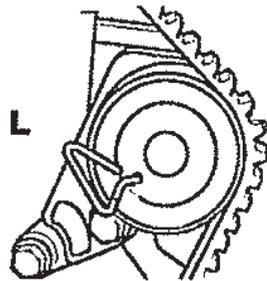
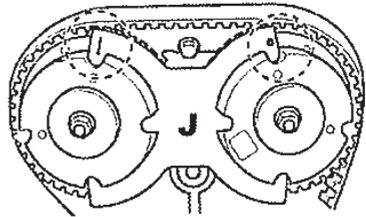
The Flywheel should then be locked using tool **E**. Remove the crankshaft pulley and lower cover.

Depress the tensioner pulley by pulling on the belt and lock in position with Pin **L**. The timing belt can now be removed. When installing a new timing belt note that the Crankshaft Sprocket is not keyed to the Crankshaft.

Check that the Camshaft Sprocket Tool **J** is correctly fitted and the timing marks are aligned.

Check that the Crankshaft Timing Pin **A** is fitted correctly to achieve TDC on cylinder Nr.1.

Check that the Flywheel Locking Tool **E** is fitted. Fit the new timing belt in a clockwise direction having starting at the exhaust camshaft sprocket and is taut between the two sprockets. Remove the tensioner locking pin **L**. Reconnect the parts in the reverse order of dismantling, using the manufacturers torque tightening specifications. When complete, remove all tools.



Safety Precautions

- If the engine has been identified as an Interference engine, damage to the engine will occur if the timing belt has been damaged. A compression check of all the cylinders should be taken before the cylinder head (s) are removed.
 - Do not turn crankshaft or camshaft when the timing belt has been removed
 - To make turning the engine easier, remove the spark plugs
 - Observe all tightening torques
 - Do not turn the engine using the camshaft or any other sprocket
 - Disconnect the battery earth lead (Check Radio code is available)
 - Do not use cleaning fluids on belts, sprockets or rollers
 - Some toothed timing belts are not interchangeable. Check the replacement belt has the correct tooth profile
 - Always mark the belt with the direction of running before removal
 - Do not lever or force the belt onto its sprockets
 - Check the ignition timing after the belt has been replaced.
 - Do not use timing pins to lock the engine when slackening or tightening the crankshaft pulley bolts
 - ALWAYS REFER TO A REPUTABLE MANUFACTURERS WORKSHOP MANUAL
- Warning - Incorrect or out of phase engine timing can result in damage to the valves. It is always recommended to turn the engine slowly, by hand, and to re-check the camshaft and crankshaft timing positions**



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