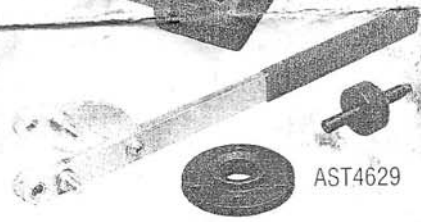
Product Information

AST4630

Diesel & Petrol Engine Setting/Locking Tool Kit

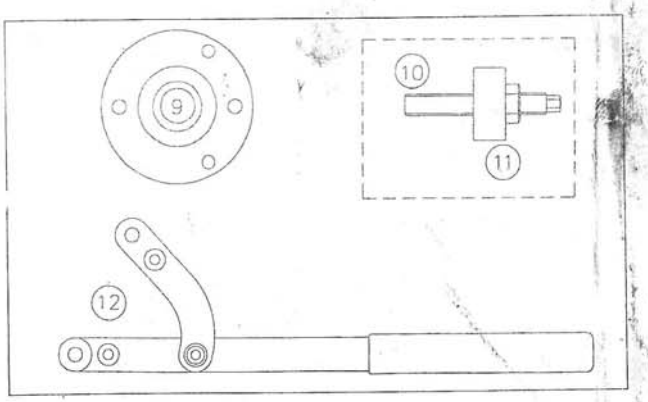
Associated Tool: AST4629
Crankshaft Pulley Remover & Installer Set

AST4630



AST4629

IMPORTANT: Always refer to the vehicle manufacturer's service instructions, or proprietary manual, to establish the current procedures and data. Product Information Sets detail applications and use of the tools with any general instructions provided as a guide only.



AST4629

Applications:

FORD Car & Car-Derived Vans 1.8D/TD/Di Diesels and 1.25 to 2.0 Petrol Twin Cam 16v. (Zetec) engines in

FORD

Fiesta	Escort/Orion	Focus
Puma	Sierra	Mondeo
Cougar	Courier/Kombi	P100

MAZDA
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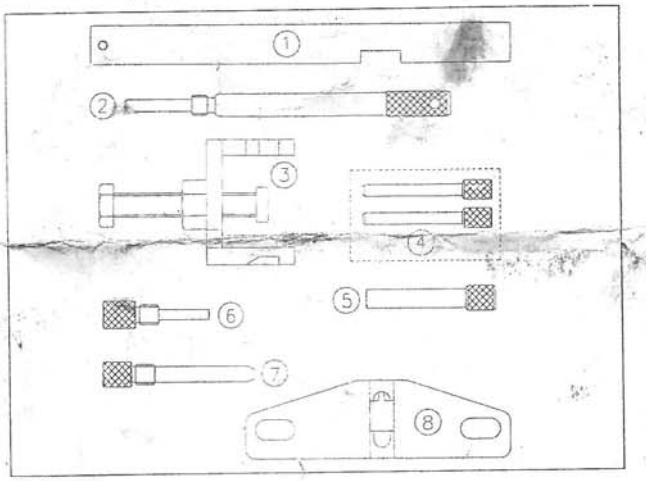
Refer to the Application chart on the following page(s) for specific model information

Additional AST Tools required:
AST4629 Crank Pulley Remover & Installer Set
AST4394 Sprocket Holding Tool



AST4630

Kit contents/spares

Item	Part Number	Description
AST4630 Kit		
1	AST3032/3	Camshaft Setting Plate
2	AST3026	Crank TDC Location Pin
3	AST4408	Cam Sprocket Remover
4	AST3054/6.0	Locking Pins (Pair)
5	AST3054/9.5	Locking Pin
6	AST3032/18	Crank TDC Location Pin
7	AST3032/19	Crank TDC Location Pin
8	AST4407	Flywheel Locking Tool
--	AST4630/84	Case + Insert
AST4629 Set		
9	AST4626	Pulley Removal Plate
	AST4627 Installer - items 10 & 11	
10	AST4627/1	Centre Screw
11	AST4627/2	Force Nut/Bearing Assy
12	AST4628	Holding Tool

AST4630 Application Chart

Models/engines	AST4630 Kit Tools								Associated Tool	Additional
	AST 3026	AST 3054/6.0	AST 3054/9.5	AST 4407	AST 4408	AST 3032/3	AST 3032/18	AST 3032/19	AST4629 Crank Pulley Rem/Inst	AST Tools required AST4394 Spr. Hold
Diesel Engines										
Ford										
Fiesta, Fiesta Van 1.8D (-96) **Escort/Orion, Escort Van** 1.8D/TD (-96) **Courier/Kombi** 1.8D (-99) **Sierra, P100** 1.8TD **Mondeo** 1.8TD (-96)	●	Cam + Pump								
Fiesta, Fiesta Van 1.8D (96-) **Escort** 1.8D/TD (96-) **Courier/Kombi** 1.8D (96-) **Mondeo** 1.8TD (96-)	●	CAV Inj. Pump	Bosch Inj. Pump			●				●
Fiesta 1.8D Turbo (98-) } Di **Focus** 1.8D Turbo (98-) } Endura	●	●		●	●	●				●
NOTE: For **Ford Galaxy** use Kit AST4640 (99-) or Kit AST4333 (-99) and for **Ford Transit** use Set AST4625										
Petrol Twin Cam 16v. engines										
Ford										
Fiesta 1.25/1.4 16v. (95-97)						●	●		Installer only	●
Fiesta 1.25/1.4/1.6 16v. (97-) **Focus** 1.4/1.6 16v. (97-) **Puma** 1.4/1.6/1.7 16v. (97-)						●	●		Fiesta/Puma	
Focus 1.8/2.0 16v. **Mondeo** 1.6/1.8/2.0 16v. (5/98-) **Cougar** 2.0 16v.						●		●		●
Fiesta 1.6i/XR2i/RS1800 **Escort/Orion** 1.6i/1.8i 16v. **Mondeo** 1.6/1.8/2.0 16v. (-4/98)						●				●
Mazda										
121 1.25 16v.						●	●		●	●

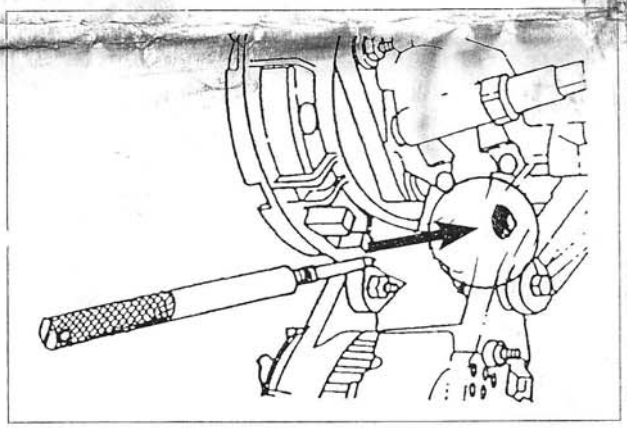
AST4630 Diesel & Petrol Engine Setting/ Locking Tool Kit - Ford cars & car-derived vans
Comprises: AST3032/3 Camshaft Setting Plate
AST3032/18 Crank TDC Location Pin
AST3032/19 Crank TDC Location Pin
AST3026 Crank TDC Location Pin
AST3054/6.0 Cam & Inj. Pump Locking Pins (Pair)
AST3054/9.5 Injection Pump Locking Pin
AST4407 Flywheel Locking Tool
AST4408 Cam Sprocket Remover

AST4630 Setting/Locking Tool Kit covers timing belt replacement applications on Ford 1.8 diesels (including Di Endura) and 1.25, 1.4, 1.6, 1.7, 1.8 & 2.0 petrol twin cam (Zetec) 16v. engines.

Ford DIESEL engines - 1.8D/TD/Di

These Ford 1.8D/TD/Di diesel engines use a common Crankshaft TDC Location Pin (AST3026). **Up to 1996** 1.8 diesels used Locking Pins to retain the timing position of both the camshaft and injection pump. **From 1996** the pin retaining the camshaft was replaced by a Setting Plate (AST3032/3), which locates into a slot in the end of the camshaft.

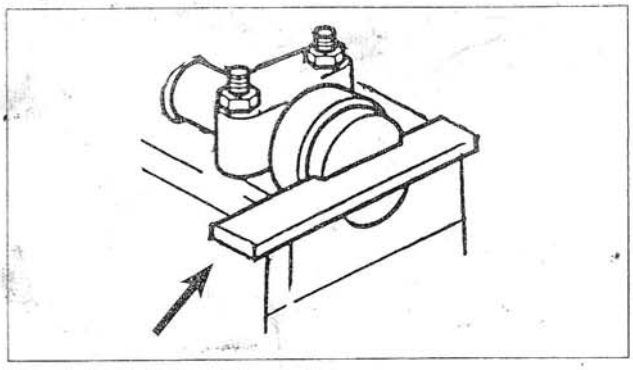
WARNING: These timing tools must NOT be used to counterhold the crank or camshaft for removing/releasing pulleys or sprockets. They are for retention of engine timing position only. Use appropriate Holding Tool.



AST3026 Crankshaft TDC Location Pin

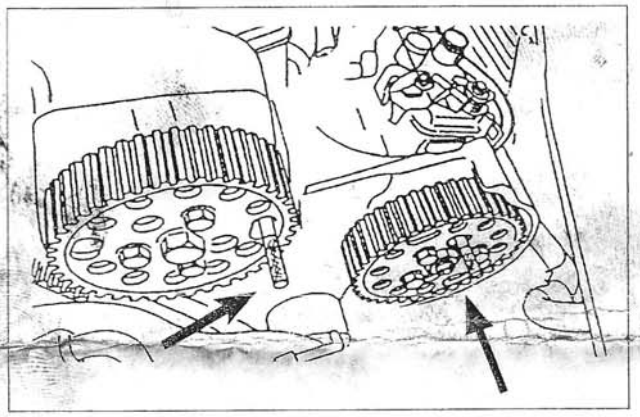
This is designed to screw into the cylinder block and provide a stop for the crank web to be positioned against to set the TDC position.

Turn the engine in normal direction of rotation until the slot in the injection pump sprocket is approx. in the 11-o-clok position. Remove the plug from the cylinder block access hole and screw in AST3026. **Slowly and carefully** turn the crankshaft **clockwise** until the crankshaft web rests on the Locking Pin. No.1 cylinder is now set at TDC on ignition stroke.



AST3032/3 Camshaft Setting Plate

On Ford 1.8 diesel engines, **1996 onwards**, AST3032/3 Setting Plate is used to accurately align an off-centre datum slot in the end of the camshaft with the top face of the camshaft housing, to hold the camshaft in its 'timed' position. A notch is designed into the Setting Plate to accommodate the raised part of the housing.



AST3054/6.0 and AST3054/9.5 Locking Pins

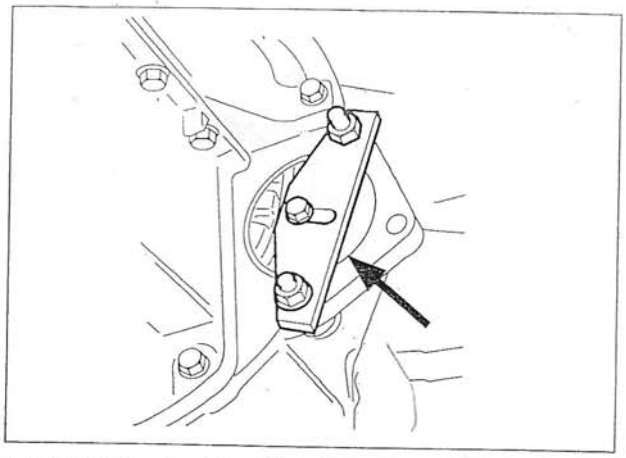
Locking Pins are designed to pass through datum holes in the camshaft or injection pump sprockets into fixed holes on the engine.

On Ford 1.8 diesels **before 1996** the camshaft and injection pump are retained in their 'timed' positions by the use of Locking Pins - see Application Chart.
From 1996 the camshaft is held by Setting Plate AST3032/3 but the injection pump is still retained by a
Locking Pin - AST3054/9.5 for Bosch injection pumps.
AST3054/6.0 for CAV/Rotodiesel pumps.

1.8Di Endura Direct Injection

The Endura 1.8 Direct Injection engine utilises a chain drive from the crankshaft to the injection pump and a tooth drive belt from the injection pump to the camshaft.

IMPORTANT: A new belt MUST be installed if the tension has been released from an existing belt.



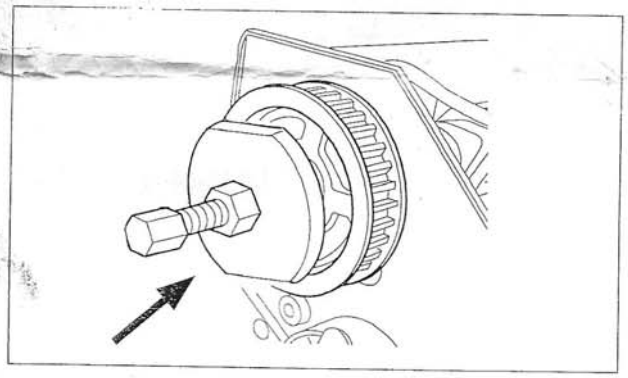
AST4407 Flywheel Locking Tool

For renewal of the camshaft drive belt the crankshaft is located at TDC using the AST3026 Pin as with the 1.8TD, but additionally AST4407 Flywheel Locking Tool is fitted as the crankshaft web **MUST** be 'locked' against the AST3026 Pin.

IMPORTANT: Ensure the engine does not move whilst fitting AST4407, and that it engages the flywheel correctly.

Fit the AST3032/3 Setting Plate into the off-centre slot in the rear of the camshaft, as with the 1.8TD engine.

It will be necessary to support the engine and remove the front engine mounting. The belt tensioner is then slackened and turned **clockwise** away from the belt.

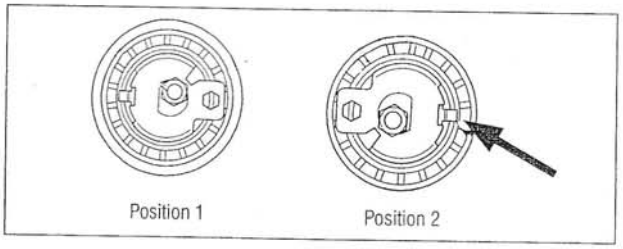


AST4408 Camshaft Sprocket Remover

The camshaft sprocket must be free to turn on its taper.

Using AST4394 Holding Tool the camshaft sprocket bolt is slackened and the sprocket loosened from its taper using AST4408 Remover.

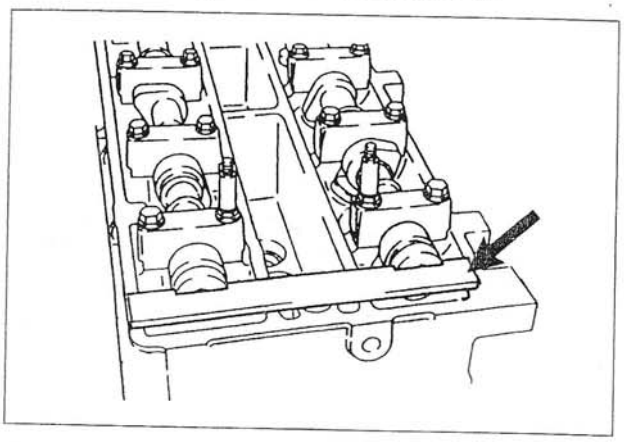
Remove old belt.



When fitting a new belt the automatic tensioner must be in **Position 1.** Fit belt and then turn tensioner **anti-clockwise** until pointer is in **Position 2.**

Counter-hold the camshaft sprocket with AST4394 and tighten the sprocket bolt. Remove all locking tools and rotate the engine six times. Refit crankshaft pin and flywheel locking tool. Check tensioner pointer is in **Position 2** and that the camshaft setting plate can be inserted. The injection pump timing can be checked by locating the crankshaft at TDC using Pin AST3026 and inserting AST3054/6.0 Pin in the injection pump sprocket.

Ford PETROL engines - Twin Camshaft 16v.



AST3032/3 Camshaft Setting Plate

On all Ford 16v. twin cam engines (Zetec), AST3032/3 Setting Plate is used to lock the camshafts in the correct timing position via a slot at the rear of the camshafts.

For timing belt replacement on these applications it is important to ensure that the crankshaft is at TDC (see AST3032/18 and AST3032/19), and that AST3032/3 Setting Plate is in position on the camshafts. The tensioner can then be slackened/compressed and the timing belt removed.

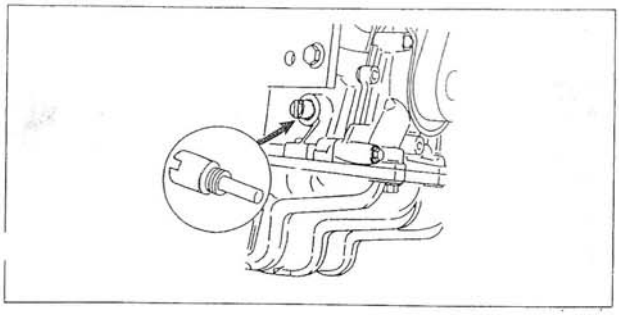
With the setting plate locking the camshafts in position, the cam sprockets can be loosened, using a holding tool to counter-hold the sprocket whilst releasing the centre bolt. Some camshafts provide a hexigon to locate a spanner to counter-hold the camshaft.

Using the appropriate Location Pin ensure the crankshaft is at TDC before fitting new belt in an **anti-clockwise** direction.

The tensioner should be applied following the manufacturer's procedure. Using AST4394 Holding Tool, counter-hold the camshaft sprockets whilst tightening the centre bolt. Remove setting plate and TDC pin.

Rotate the engine a least two revolutions and return to TDC position inserting location pin. Re-check camshaft position by ensuring that AST3032/3 Setting Plate can be easily inserted into its slots. If not, re-check tensioning procedure again.

NOTE: For Fiesta/Escort 1.6i/1.8i and Mondeo 1.6/1.8/2.0 (-98) 16v. engines, only AST3032/3 Cam Setting Plate is used. A crank pin entry point is not provided.



AST3032/18 and AST3032/19 Crank TDC Location Pins

TDC Location Pins are used in conjunction with AST3032/3 Cam Setting Plate to ensure correct timing position is established and maintained during timing belt renewal on the following:

AST3032/18 - Fiesta 1.25/1.4/1.6, Focus 1.4/1.6, Puma 1.4/1.6/1.7 16v.

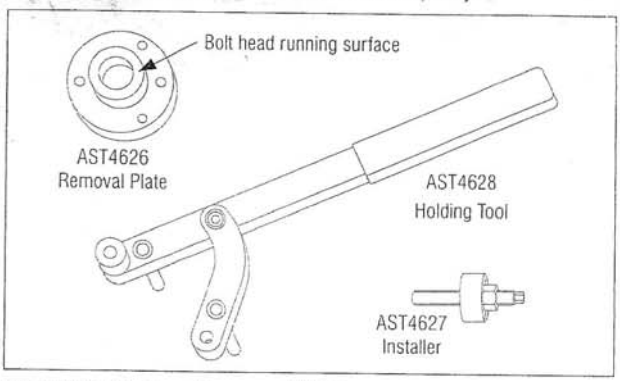
AST3032/19 - Focus 1.8/2.0, Mondeo 1.6/1.8/2.0 (98-), Cougar 2.0 16v.

Remove the engine/crank blanking plug to allow the appropriate Pin to be screwed into position and then **carefully** rotate the crankshaft until the web **rests** against the pin.

AST4629 Crankshaft Pulley Remover & Installer Set - Associated Tool, not in kit

Comprises: AST4626 Pulley Removal Plate
AST4627 Pulley Installer
AST4628 Holding Tool

On the smaller Zetec engines in Fiesta and Puma, specialised tools are required to remove and/or install the crankshaft pulley.

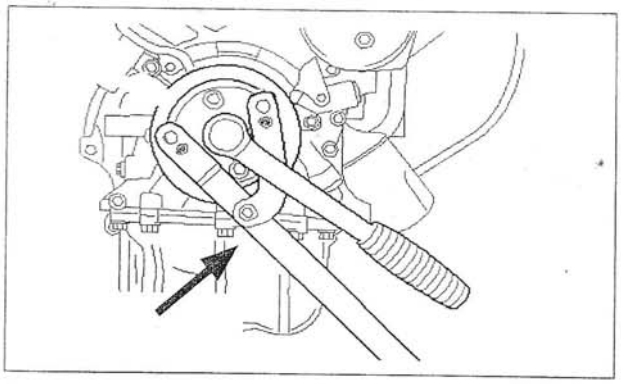


AST4626 Pulley Removal Plate

AST4626 Removal Plate is used in conjunction with AST4628 Holding Tool to remove pulleys on engines (-99).

The Removal Plate is bolted onto the pulley and is subsequently prevented from rotating by Holding Tool AST4628. As the pulley centre bolt is unscrewed it reacts on the Removal Plate to withdraw the pulley off the crankshaft.

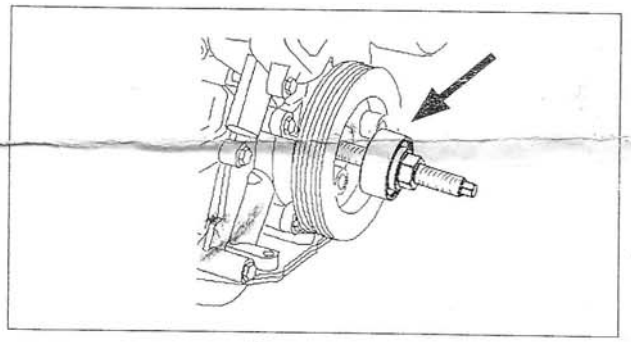
Lubricate the 'bolthead running surface' of AST4626 Removal Plate and bolt it onto the pulley (2 bolts) with the running surface against the domed head of the pulley centre bolt.



AST4628 Holding Tool

Locate the two pegs of AST4628 Holding Tool in to the remaining two holes in the AST4626 Removal Plate and use it to counter-hold the plate and pulley to prevent turning whilst unscrewing the pulley centre bolt. As the bolt is unscrewed it pushes the Removal Plate forward and this in turn extracts the pulley off its shaft.

On later engines AST4628 Holding Tool is used without the removal plate. Use the end holes of the Holding Tool and bolt it directly on to the pulley. Use to counter-hold whilst releasing the pulley bolt.



AST4627 Pulley Installer

Replacing the crankshaft pulley on engines (-99) requires specialised Installer AST4627.

IMPORTANT: A new pulley centre bolt is always required.

The pulley **MUST NOT** be pressed on using the centre bolt as this results in the torque specification for the bolt being achieved before the pulley is fully installed. Use AST4627 Installer to press the pulley fully onto the shaft and then fit the new centre bolt.

Place the pulley on shaft and screw the Installer Centre Screw into the shaft thread. Screw on the Force Nut Assembly and holding the end of the Centre Screw with a socket, turn the Force Nut to install the pulley.

Remove AST4627 and counter-hold the pulley with Holding Tool AST4627 whilst installing a new centre bolt to 40Nm. + 90°.