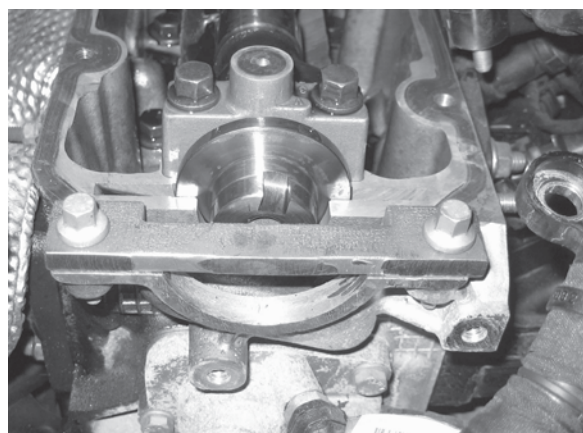


AST4950 Petrol Engine Setting/Locking Tool Kit



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.



Applications:

FIAT 1.2 & 1.4 8v. Petrol engines in

FIAT

New 500
Linea

Idea
Doblo

Grande Punto
Panda*

1.2 8v. – 169A4.000, 199A4.000

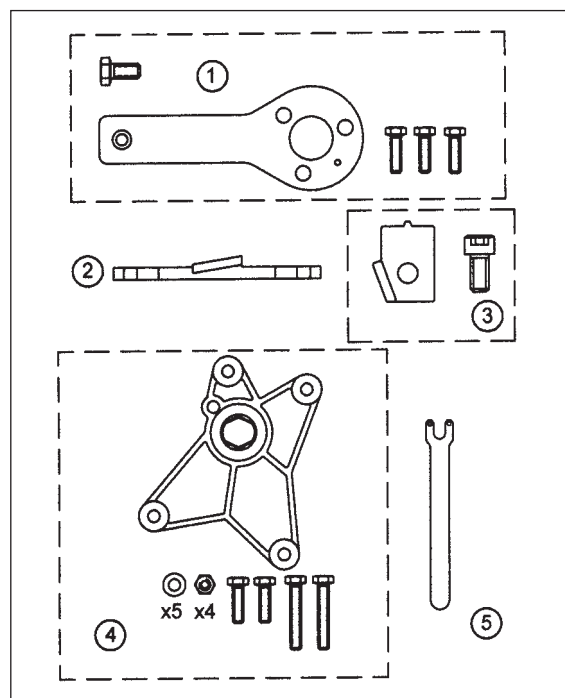
1.4 8v. – 350A1.000

*1.2 8v. (EVO2 only) – 188A4.000

FORD

Ka

1.2 8v. – 169A4.000



Kit contents/spares

Item	Part Number	Description
1	AST4951	Crankshaft Locking Tool
2	AST4952	Camshaft Setting Plate
3	AST4953	Camshaft Sprocket Locking Tool
4	AST4954	Camshaft Cover Alignment Fixture
5	AST4513	Belt Tensioner Adjuster
--	AST4950-84	Case + Insert



The AST4950 Setting/Locking Tool Kit covers timing belt replacement applications on Fiat 1.2 and 1.4 8v. petrol engines detailed under engine codes 169A4.000 (1.2), 199A4.000 (1.2) and 350A1.000 (1.4).

In addition the Kit is also applicable to the 1.2 8v. engine code 188A4.000 (EVO2 variant only).

Identification of the 1.2 EVO2 engines (Fiat Panda)

There are a number of variants of the 1.2 engine with code 188A4.000, including the EVO2 version. The EVO2 must not be confused with the early 188A4.000 engines which have a different timing tool requirement than AST4950 kit, and a different service procedure than that detailed below.

WARNING: The 188A4.000 engine must be correctly identified as an EVO2 variant to use the timing tools in Kit AST4950.

The original 188A4.000 engines have a square rubber press-fit oil filler plug. **EVO2 engines have a plastic round oil filler plug** and also a **camshaft cover which is fixed to the cylinder head by 8 bolts**. The original 188A4.000 camshaft cover only has 4 bolts.

AST4950 Petrol Engine Setting/Locking Tool Kit

Comprises: AST4951 Crankshaft Locking Tool
AST4952 Camshaft Setting Plate
AST4953 Camshaft Sprocket Locking Tool
AST4954 Camshaft Cover Alignment Fixture
AST4513 Belt Tensioner Adjuster

Timing Belt replacement

The 1.2 8v. engines are single camshaft engines and use Timing Tools AST4951, AST4952 and AST4513 from the AST4950 Kit.

The 1.4 8v. engine has VVT (variable valve timing), and in addition to the 3 tools above, this engine uses AST4953 and AST4954, from the AST4950 Kit.

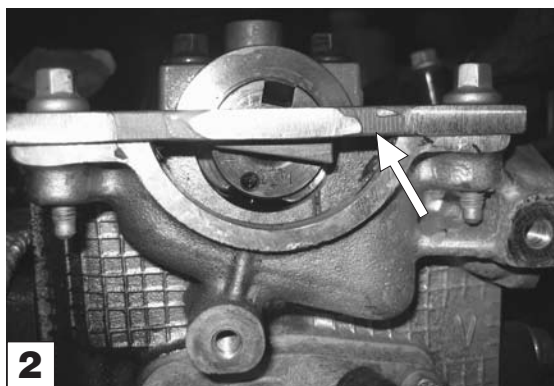
The initial preparation and dis-mantling of components in order to gain access to the timing belt, are basically the same for all these engines.

It will be necessary to remove the air filter assembly, engine timing sensor and right-hand road wheel / wheel arch panel.

The engine will require support as the engine mounting must be removed (timing side).

Disconnect spark plug leads and coil electrical connections/support cover.

Remove the camshaft cover and gasket.



1.2 8v. 169A4.000, 199A4.000 and EVO2 only 188A4.000

Rotate the crankshaft to engine timing position and check the camshaft timing is correct by temporarily inserting AST4952 Setting Plate in to the "slot" at the rear of the camshaft, ensuring the camshaft position is not 180 degrees out.

IMPORTANT: Remove the AST4952 Camshaft Setting Plate.

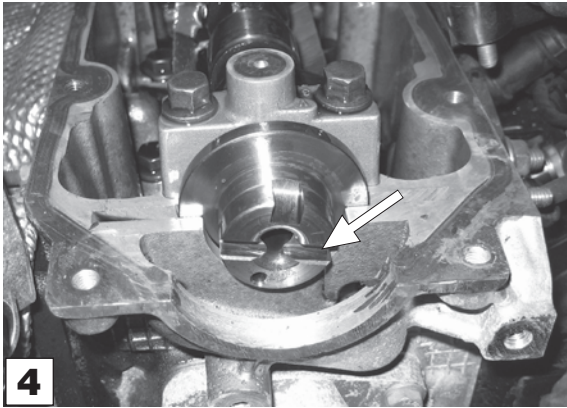
Slacken the timing belt tensioner nut to release tension off the belt and remove the old belt.

Counter-hold the camshaft sprocket with a suitable Sprocket Holding Tool, such as AST4844, and slacken the camshaft sprocket bolt. Leave the bolt finger-tight allowing the sprocket to turn on the camshaft, but not tilt.

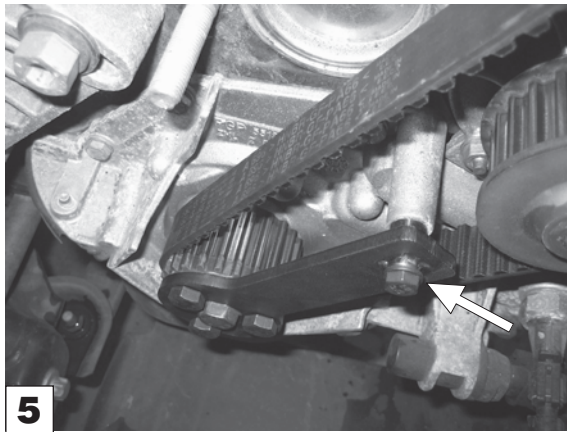


AST4952 Camshaft Setting Plate

Fit AST4952 Camshaft Setting Plate in position at the rear of the camshaft and secure in place with two bolts.



NOTE: The Setting Plate locates in to a “timing slot” in the rear of the camshaft.



AST4951 Crankshaft Locking Tool

Ensure that the crankshaft is in timed position and fit the timing new belt.

Fit AST4951 Crankshaft Locking Tool on to the crankshaft gear. Secure Locking Tool to the crankshaft gear using the 3 bolts provided in the Kit, and secure the Tool to the engine, as shown in Fig. 5.

AST4513 Belt Tensioner Adjuster



The AST4513 Tensioner Adjuster locates in to the two holes in the tensioner roller.

Using AST4513 Adjuster, turn the tensioner to its maximum tensioned position, and tighten the tensioner nut.

Replace the camshaft sprocket bolt with a new bolt

WARNING: When tightening the camshaft sprocket bolt, counter-hold the camshaft sprocket with a suitable Sprocket Holding Tool. Do not use the timing tools to counter-hold as damage to tools and engine will result.

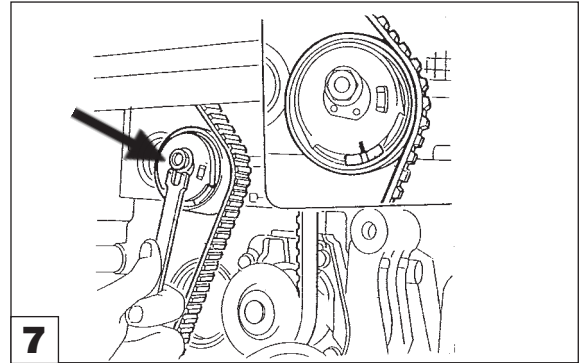
Using a Sprocket Holding Tool to counter-hold the sprocket, tighten the bolt to specified torque.

Engine Codes: 169A4.000 / 199A4.000 63-77Nm.

188A4.000 EV02 only 108-132Nm.

Remove the AST4951 Crankshaft Locking Tool and AST4952 Camshaft Setting Plate.

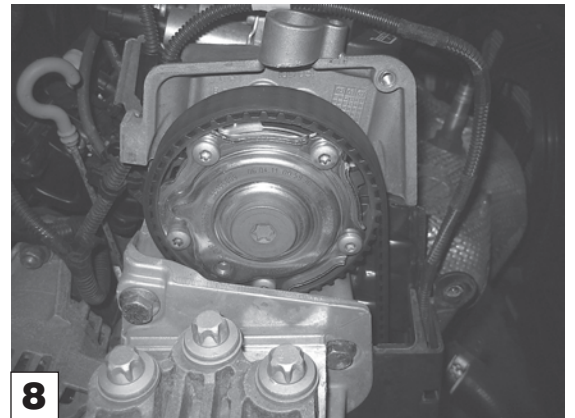
Turn the engine two revolutions, returning to timed position.



Fit AST4513 Tensioner Adjuster to the tensioner and maintain its position whilst slackening the tensioner nut. Allow the automatic tensioner to achieve a position **where the front fork is aligned with the rear fork**. Tighten tensioner nut to specified torque – 25Nm.

Check that the engine timing is correct by fitting AST4951 Crankshaft Locking Tool and AST4952 Camshaft Setting Plate to the engine.

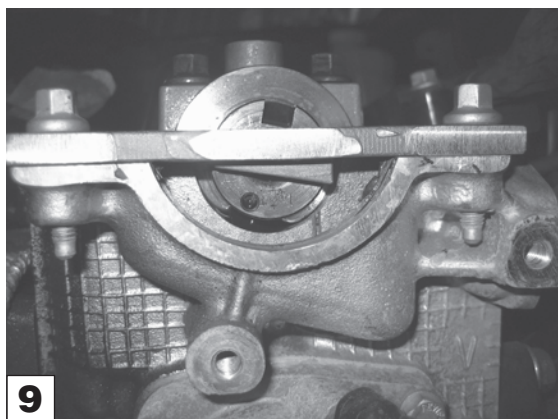
Remove all Tools.



1.4 8v engine 350A1.000 with VVT (variable valve timing)

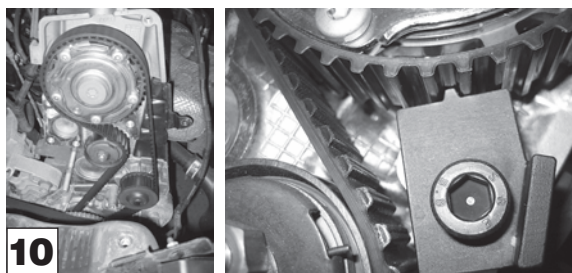
NOTE: When a timing belt is replaced, the following “self-learning” procedure should be carried out – Start the engine, without depressing the accelerator, and with the engine temperature at, or more than, 20 degrees C, allow the engine to idle for 10 seconds.

The initial preparation and dis-mantling of components in order to gain access to the timing belt, is basically the same as 1.2 8v. engines procedure detailed earlier.



Rotate the crankshaft to engine timing position and check the camshaft timing is correct by temporarily inserting AST4952 Setting Plate in to the "slot" at the rear of the camshaft, ensuring the camshaft position is not 180 degrees out.

IMPORTANT: Remove the AST4952 Camshaft Setting Plate.



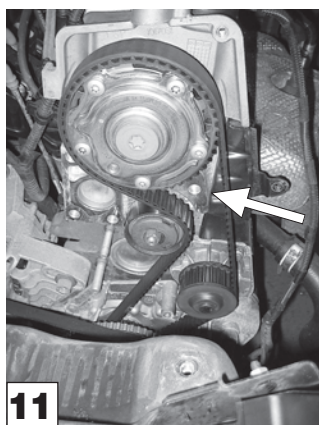
AST4953 Camshaft Sprocket Locking Tool

AST4953 Locking Tool is bolted to the engine and locates in to the teeth of the camshaft sprocket in order to "lock" the sprocket when releasing and tightening the camshaft sprocket bolt.

Remove the exhaust manifold heat shield.

Fit AST4953 Locking Tool to the engine, as shown in Fig 10., and firmly secure in place using the bolt provided in the AST4950 Kit.

Slacken the timing belt tensioner nut to release tension off the belt and remove the old belt.



Undo the camshaft sprocket bolt cover and remove it.

NOTE: Be prepared for oil to leak out.

Slacken the camshaft sprocket bolt. Leave finger-tight allowing the sprocket to turn on the camshaft, but not tilt.

IMPORTANT: Remove AST4953 Sprocket Locking Tool

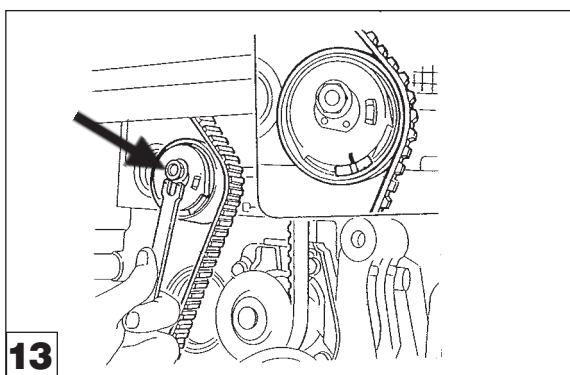
Fit AST4952 Camshaft Setting Plate in position at the rear of the camshaft and secure in place with two bolts.

NOTE: The Setting Plate locates in to a "timing slot" in the rear of the camshaft.

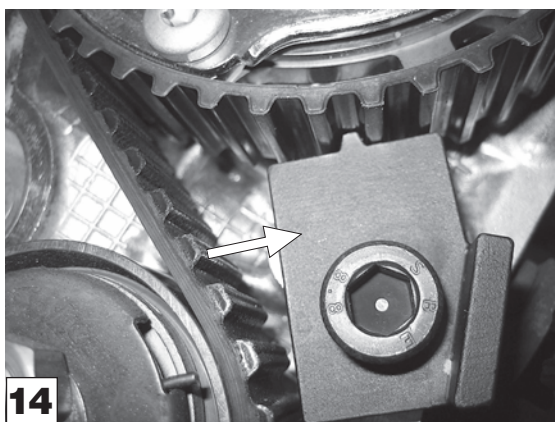


Ensure that the crankshaft is in timed position and fit the new belt.

Fit AST4951 Crankshaft Locking Tool on to the crankshaft gear. Secure Locking Tool to the crankshaft gear using the 3 bolts provided in the Kit, and secure the Tool to the engine, as shown in Fig 12.



Tension the timing belt by turning the tensioner **anti-clockwise**, with Adjuster AST4513 and **apply maximum tension**. Tighten the tensioner nut.



Fit AST4953 Camshaft Sprocket Locking Tool to the engine, fitting the Tool into the teeth of the camshaft sprocket, and secure with the bolt supplied in the Kit. Tighten the bolt firmly.

Remove the old camshaft sprocket bolt and screw in a new bolt. Tighten to specified torque – 18-22Nm. + 55 degrees.

Replace the sprocket bolt cover and tighten – 25-30Nm.

IMPORTANT: Remove the Camshaft Setting Plate, Crankshaft Locking Tool and Camshaft Sprocket Locking Tool.

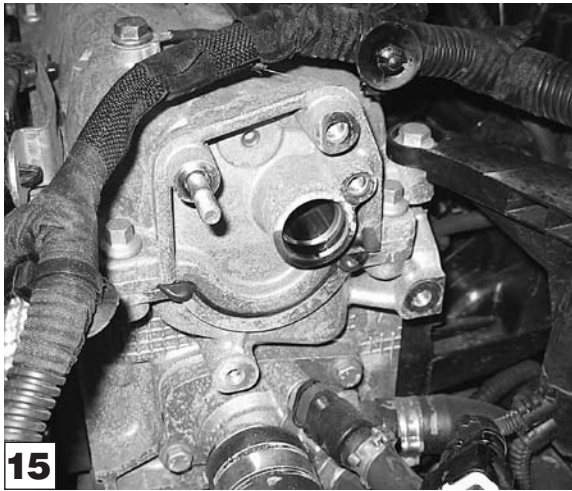
Turn the engine two revolutions and return the engine to timed position.

Fit AST4513 Tensioner Adjuster to the tensioner and maintain its position whilst slackening the tensioner nut. Allow the automatic tensioner to achieve a position where the front fork is aligned with the rear fork. Tighten tensioner nut to specified torque – 25-30Nm.

Check that the engine timing is correct by fitting AST4951 Crankshaft Locking Tool and AST4952 Camshaft Setting Plate to the engine.

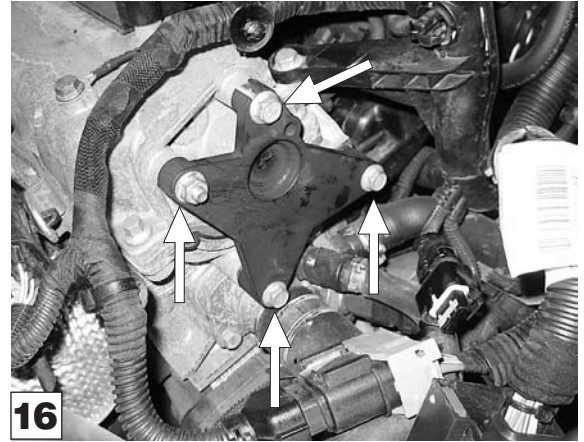
Remove all Tools.

Camshaft Cover Alignment



AST4954 Camshaft Cover Alignment Fixture

On the 1.4 8v. engine, with VVT, the camshaft cover must be re-fitted using AST4954 Cover Alignment Fixture to ensure that the cover is correctly aligned to the cylinder head, in order that the camshaft timing sensor can be positioned correctly when re-installed.



To achieve correct alignment of the cover and cylinder head, the AST4954 Fixture is secured in place at 4 locations (2 on the cylinder head and 2 on the camshaft cover).



It is essential that the camshaft sensor entry hole is positioned correctly relative to the camshaft. Therefore alignment of the camshaft cover must be accurately achieved using AST4954 Fixture.

