

# Product Information



## AST4960

### Petrol Engine Twin Camshaft & Diesel Engine Setting/Locking Tool Kit



AST4960



Associated Tool AST4924



Associated Tool AST4623

**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:

**RENAULT 1.4, 1.6, 1.8, 2.0 16v.**  
Twin Camshaft Petrol engines and 1.5dCi diesels in

#### RENAULT

Clio Modus Megane/Scenic  
Laguna Kangoo

**K4J, K4M 1.4, 1.6 16v. engines**

Clio Sport Megane/Scenic Laguna  
Espace

**F4P, F4R 1.8, 2.0 16v. engines**

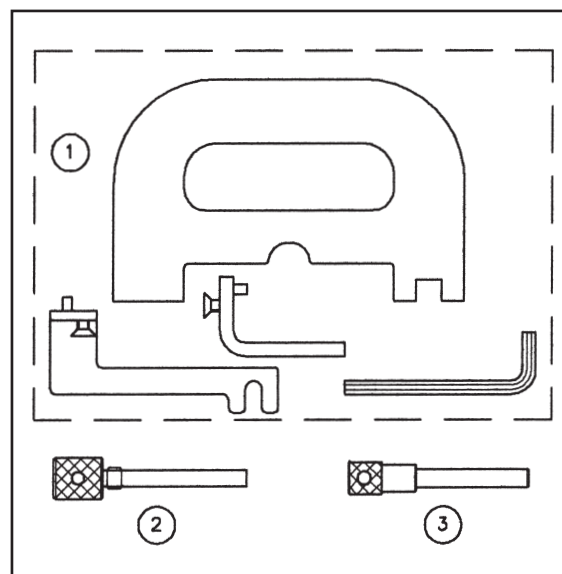
Clio Modus Megane/Scenic  
Kangoo

**K9K 1.5dCi diesel engines**

#### NISSAN

Micra Note Almera  
Kurbistar

**K9K 1.5dCi diesel engines**



### Kit contents/spares

Item	Part Number	Description
1	AST4561A	Camshaft Setting Plate Set c/w Brackets
2	AST4562A	Crankshaft Locking Pin
3	AST4360R1	Crankshaft Locking Pin
--	AST4960-84	Case + Insert

## AST4960 Twin Camshaft Engine Setting/Locking Tool Kit

**Comprises** **AST4561A Camshaft Setting Plate Set c/w Brackets**  
**AST4562A Crankshaft Locking Pin**  
**AST4360R1 Crankshaft Locking Pin**

The AST4960 Twin Cam Engine Setting/Locking Tool Kit covers engine timing and belt replacement applications on the latest range of Renault 1.4, 1.6, 1.8 and 2.0 16 valve petrol engines and 1.5dCi diesel engines.

The AST4561A Camshaft Setting Plate Set is used on both the K4J/K4M and F4P/F4R engines. It includes the two location brackets required to cover the range of K4J/K4M engine variants allowing the Setting Plate to be secured correctly to the engine.

Some K4J/K4M encountered will have a camshaft position sensor and therefore the Location Bracket Ref: AST4563 (included in the Set) will be required to attach the Setting Plate on these engines. The Setting Plate locates into slots at the rear of the camshafts.

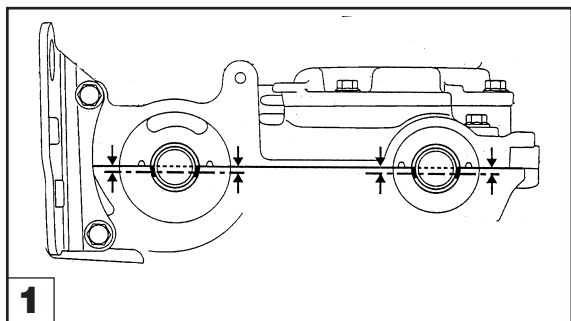
**NOTE:** To use AST4561A Plate Set the sealing plugs at the rear of the camshafts must be removed.

AST4562A Crankshaft Locking Pin is applicable to K4J/K4M petrol engines and K9K diesels, whilst the AST4360R1 Pin covers crankshaft locking on F4P/F4R petrol engines and camshaft timing on 1.5dCi(K9K) engines

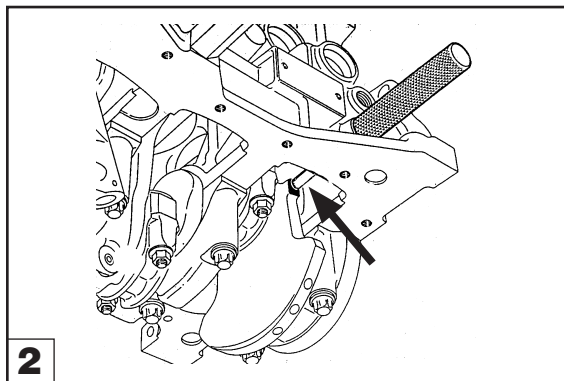
### Engine Setting & Locking - Timing Belt Replacement

It will be necessary to support the engine and remove the right-hand engine mounting.

**On 16v. petrol engines,** remove the sealing plugs from the rear of the camshafts. Turn the engine to its timing position and note that the slots in the end of the camshafts are aligned horizontally.



**NOTE:** The slots should be below the surface line of the cylinder head.

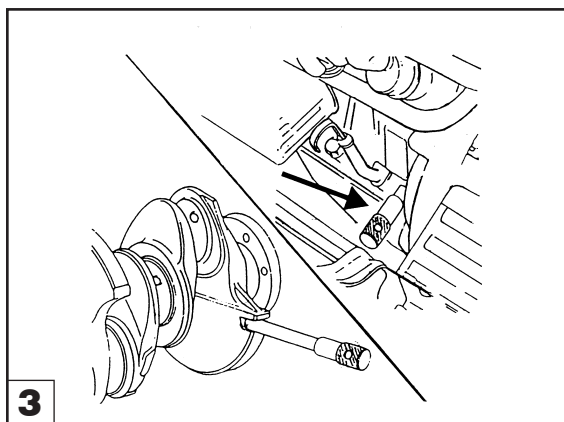


### AST4562A and AST4360R1 Crankshaft Locking Pins

Insert the appropriate Crankshaft Locking Pin.

**AST4562A** is used for 1.4 and 1.6 K4J/K4M and K9K diesel engines. Remove the blanking plug for the crankshaft locking pin from the cylinder block and turn the crankshaft in a clockwise direction so that the camshaft is **just before** its alignment position. This will provide the correct crankshaft position for inserting the AST4562A Crankshaft Locking Pin.

Screw in AST4562A Locking Pin and turn the crankshaft slightly until the "flat" on web of the crankshaft is pressing against the end of the pin.



**AST4360R1** is for the crankshaft on F4P/F4R engines and when inserted it enters into the timing slot in the crankshaft.

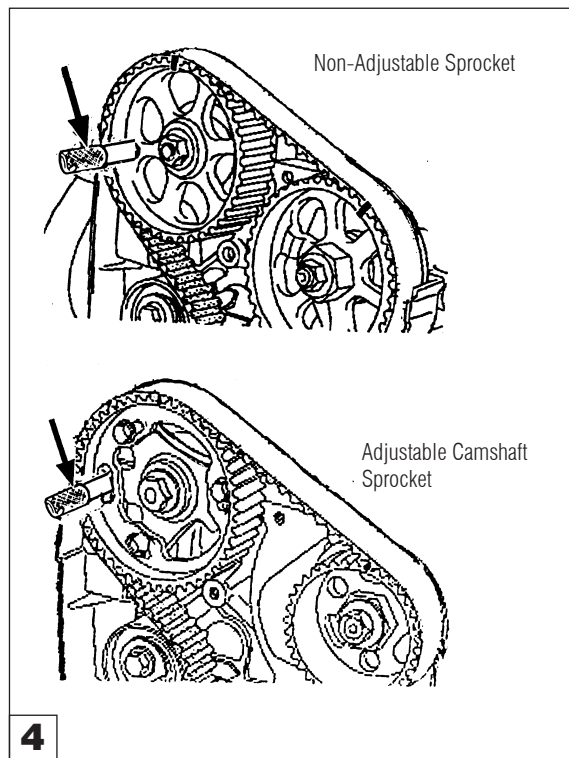
**NOTE:** Ensure the pin is positioned **in the timing slot** and not into a crankshaft web hole.

Lock the flywheel and release the crankshaft pulley bolt and remove the crankshaft pulley.

**IMPORTANT: DO NOT** use Crankshaft Locking Pins to hold crankshaft in position whilst releasing or tightening the pulley bolt. Locking Pins are for retention of timing position only.

**WARNING:** Ensure that the crankshaft gear does not fall off the crankshaft.

## Camshaft – K9K dCi engines



### AST4360R1 Camshaft Locking Pin

Insert AST4360R1 Pin through the timing hole in the camshaft sprocket and into the timing hole in the cylinder head.

**NOTE:** Some 1.5 K9K engine variants have an adjustable camshaft sprocket (identified by 3 x sprocket retaining bolts to a camshaft carrier plate and elongated timing slot in the sprocket.)

Remove the crankshaft pulley, slacken the belt tensioner and remove belt.

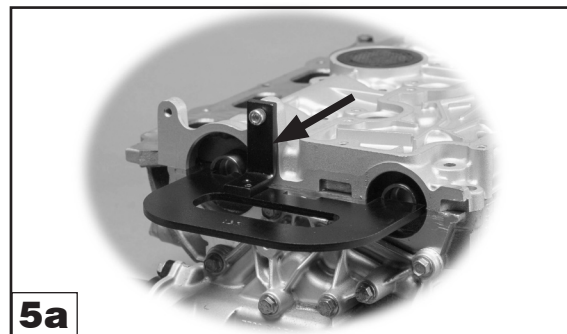
Once a belt has been removed, a new belt and tensioning rollers must be fitted.

Check the positions of timing marks – the camshaft sprocket (positioned by Pin), the crankshaft (keyway vertically upwards) and the fuel pump (approx 1-o-clock position aligned with bolt head directly behind sprocket. ie. one tooth to right of vertical axis).

**NOTE:** If the engine variant has an adjustable camshaft sprocket, remove one bolt and slacken the other two by one turn.

Fit the new timing belt, commencing at the crankshaft gear. Ensure that the marks on the belt are aligned with the timing marks on the camshaft, HP pump and crankshaft sprockets. There should be **19 tooth spaces** between camshaft and HP pump timing marks and **51 tooth spaces** between crankshaft and HP pump marks.

## Camshaft – 16v. Petrol Engines



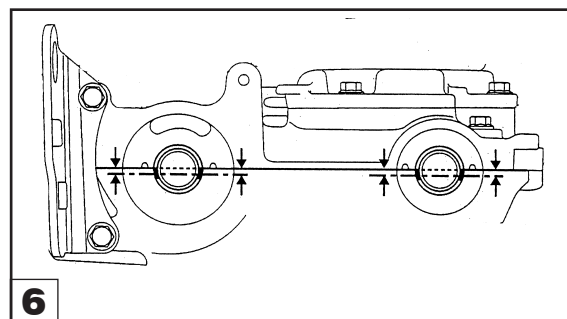
### AST4561A Camshaft Setting Plate

With the crankshaft 'locked' in position, check that the slots in the ends of the camshafts are aligned horizontally

Construct the Camshaft Setting Plate Assembly by using the AST4561 Plate and attaching to it the appropriate Location Bracket – The Right-angled Bracket shown in 5A, or the Extended Bracket – shown in 5B.

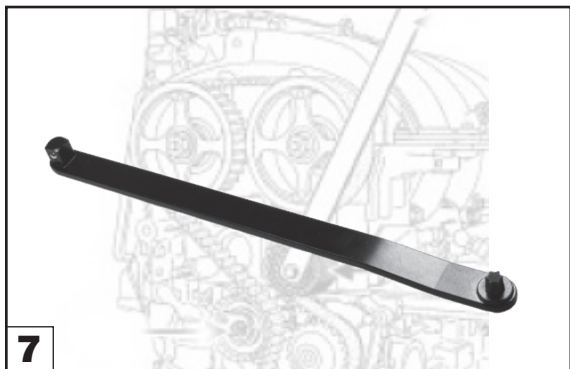
The Extended Bracket (AST4563) will be required when a **camshaft position sensor is fitted on some K4J/K4M engines in Clio III, Scenic II, Laguna II and Modus.**

Fit AST4561A Setting Plate securing it to the engine using the appropriate Location Bracket.



*Slots in end of camshafts align horizontally and are below the surface line of the cylinder head.*

Slacken tensioner and remove the guide roller and timing belt.



### AST4924 Belt Guide Removal Wrench

Associated Tool – not in Kit

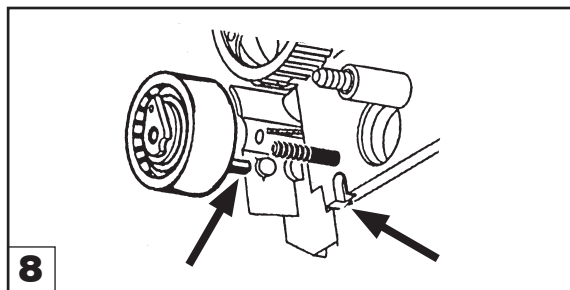
**1.4 / 1.6 16v. K4J/K4M engines in Clio III, Megane/Scenic II, Laguna II, Modus and Kangoo.**

On timing belt replacement on these engines, the belt guide roller must be removed and replaced and it is difficult to access the retaining bolt.

Specialised Wrench AST4924 is designed to provide ease of access to the retaining bolt.

### Installing a new timing belt – 16v. Petrol Engines

With AST4561A fitted and retaining the camshafts in position, and either AST4562A or AST4360R1 Pin 'locking' the crankshaft, fit a new guide roller and tensioner pulley. The pin on the tensioner locates into the slot in the cylinder head.



**IMPORTANT:** It is vital to degrease the bore and contact surface of the crankshaft gear and pulley and end of crankshaft to prevent slip during re-assembly.

The new timing belt is fitted in an **anti-clockwise** direction commencing at the crankshaft. Ensure it is taut on the non-tensioner side.

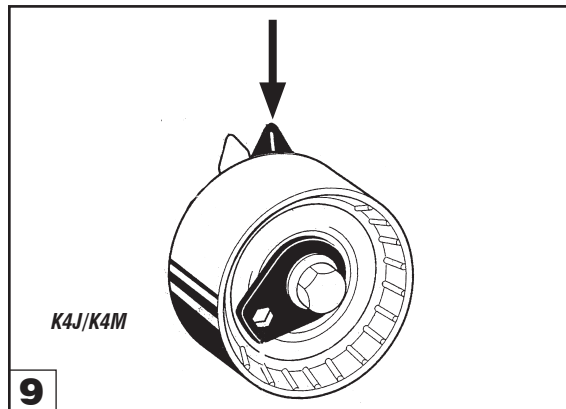
Measure the crankshaft pulley bolt. If longer than 49.1mm. replace with new bolt.

Fit crankshaft pulley - if reusing the original bolt, oil threads. If fitting a new bolt - **DO NOT** lubricate.

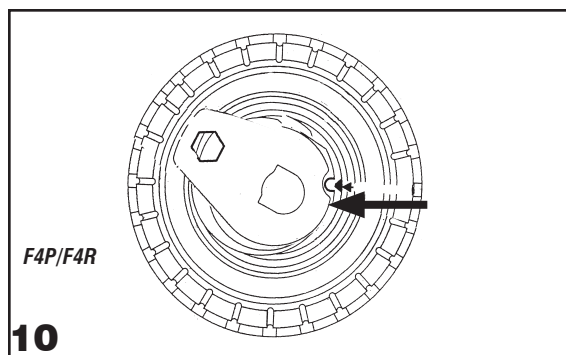
**IMPORTANT:** When installing do not fully tighten crankshaft bolt - leave approx. 2mm. clearance between pulley and bolt head.

### Initial tensioning – 16v. Petrol Engines

Turn tensioner clockwise until...

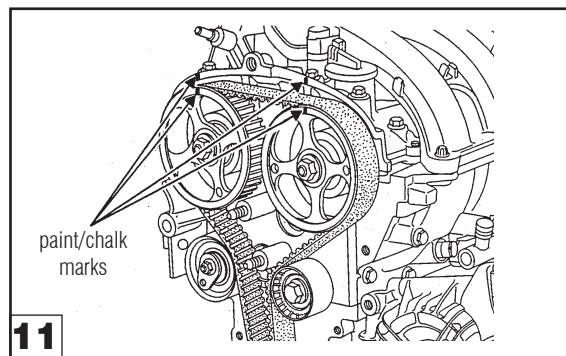


**For K4J/K4M** - moving pointer is at its right-hand stop position (7 to 8 mm, past fixed pointer).



**For F4P/F4R** - tensioner marks align ... and tighten nut.

**NOTE:** The engine is now rotated to equalise belt tension, however it is useful to be able to determine the point at which the engine has returned to **just before** its 'timed' position, to help with insertion of the crankshaft pin. Therefore mark the camshaft sprockets at the 12-0-clock position, with a paint/chalk mark and place a corresponding mark on the cylinder head directly behind them.



Mark camshafts / cylinder head.

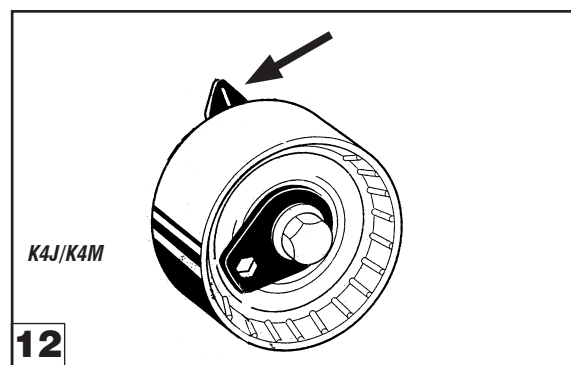
Remove the Camshaft Setting Plate and Crankshaft Locking Pin. Lock the flywheel in position and tighten the crankshaft pulley bolt.

Rotate the engine twice in a **clockwise** direction, returning to a point just before the timing position (use guide marks made earlier on camshaft sprockets).

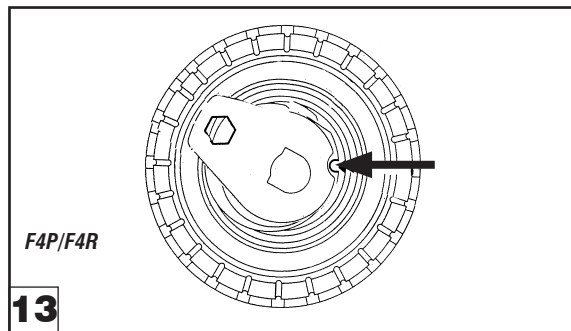
Insert the appropriate Crankshaft Locking Pin, AST4562A or AST4360R1 and carefully rotate the engine further to its 'timed' position ensuring correct location of Locking Pin in the crankshaft, as previously described.

Check that the camshaft slots are aligned horizontally and are below the surface line of the cylinder head, and fit AST4561A Camshaft Setting Plate ensuring it can be easily inserted.

### Final tensioner positions – 16v. Petrol Engines



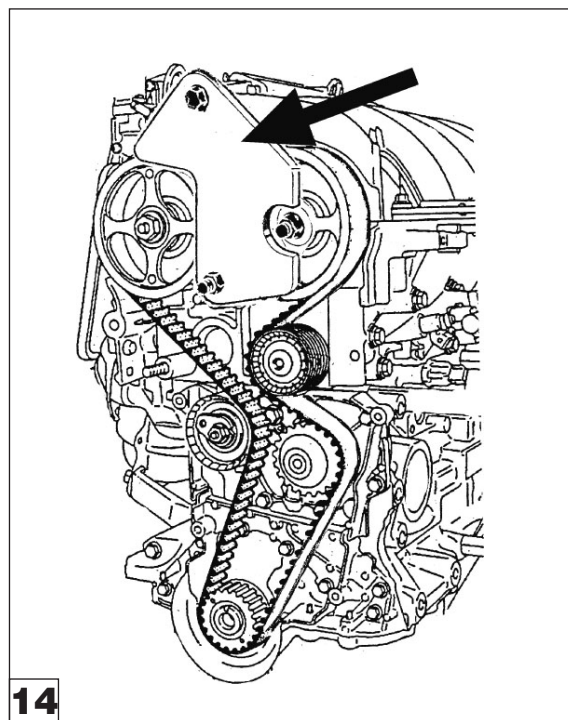
**K4J/K4M** - Turn tensioner **anti-clockwise** until both pointers align.



**F4P/F4R** - Check that the tensioner marks still align. If not - repeat tensioning procedure.

Remove all timing tools.

### Timing Adjustment – 1.4/1.6 K4J/K4M petrol engines.



### AST4623 Camshaft Sprocket Locking Tool Associated Tool – not in Kit

If the correct crankshaft and camshaft timing positions cannot be achieved and the AST4561A Setting Plate Assembly cannot be fixed in place after the AST4562A Crankshaft Locking Pin has been inserted, it may be necessary to release the camshaft sprocket bolts in order to make a timing adjustment.

In order to release and tighten the camshaft sprocket bolts, the camshaft sprockets must be first 'locked' in place with Tool AST4623. This will counter-hold the sprockets whilst the bolts are released/tightened.

Insert AST4562A Crankshaft Locking Pin and fit Sprocket Locking Tool AST4623.

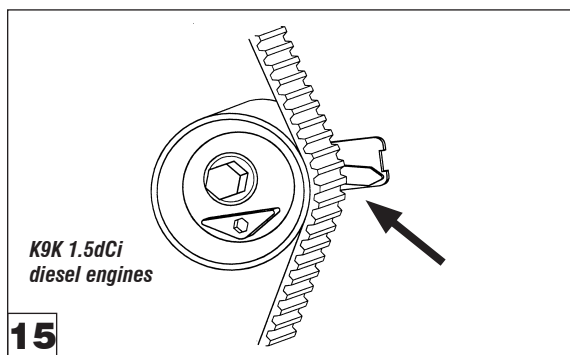
Release the camshaft sprocket bolts and turn the camshafts so that Setting Plate assembly can be easily inserted.

Tighten camshaft sprocket bolts and remove all tools.

Check that the belt tensioner position is correct.



## K9K 1.5 dCi Diesel Engines – Belt Tensioner Positions



Apply initial belt tension by turning the tensioner **anti-clockwise** so the “pointer” is positioned **below** the “notch” – see diagram above.

**NOTE:** If adjustable camshaft sprocket fitted, check that the remaining two sprocket bolts are not at the end of their elongated slots. Re-fit the 3rd bolt and tighten all 3 x sprocket retaining bolts.

Re-fit the crankshaft pulley and remove the AST4562A and AST4360R1 Locking Pins.

Rotate the crankshaft two turns and return to a position where the crankshaft and camshaft locking pins can be inserted to check timing is correct, **then remove the pins**.

For final tensioner position, slaken tensioner bolt (1 turn only) and adjust tensioner **clockwise** until the “pointer” **aligns** with the “notch”.

### More AST Timing Kits for RENAULT

Petrol & Diesel Engine Setting/Locking Tool Kit -  
French Engines – see **AST4360A  
MASTER KIT**

Petrol & Diesel Engine Setting/Locking  
Tool Kit - Renault – see **AST4390**

Petrol Twin Cam Engine Setting/Locking  
Tool Kit N7Q/N7U 2.0 16v./2.5 20v. – see **AST4387**

‘RAM System’ Injection Pump Timing Set – see **AST4389**

V6 Petrol Engine Setting/Locking  
Tool Kit - L7X – see **AST4580**

DCi Diesel Engine Setting/Locking Tool Kit –  
1.5/1.9/2.2/2.5 – see **AST4760B**