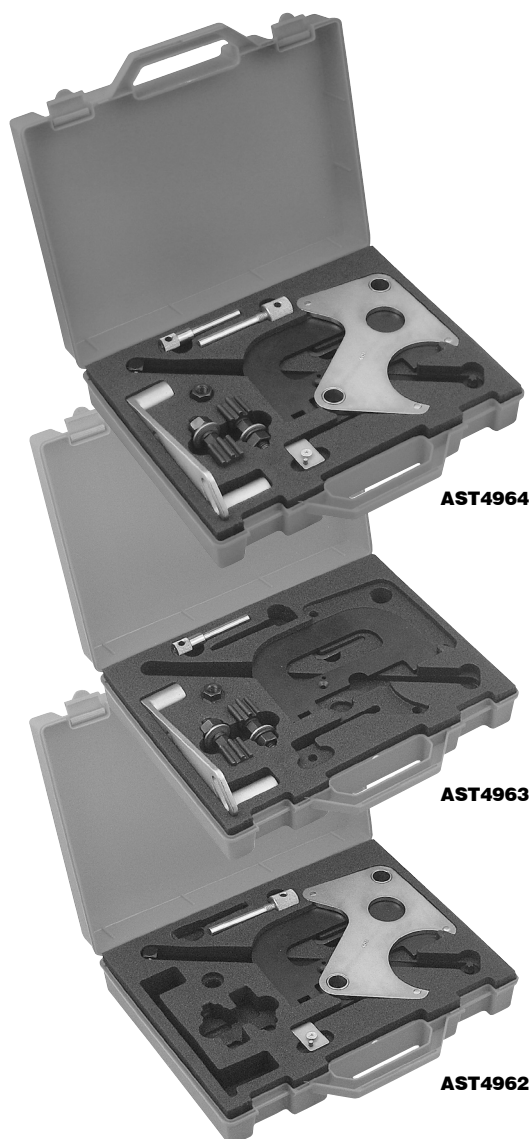


AST4964

AST4963

AST4962

Petrol Engine Twin Camshaft Setting/Locking Tool Kits



AST4964

AST4963

AST4962

Applications:

**RENAULT 1.4, 1.6, 1.8, 2.0 16v. Twin
Camshaft Petrol engines in:**

Clio	Modus	Megane/Scenic
Laguna	Kangoo	

K4J / K4M 1.4 & 1.6 16v. engines

Clio	Megane/Scenic	Laguna
Espace	Trafic	

F4P / F4R(t) 1.8 & 2.0 16v. engines

NOTE: Kit AST4964 also covers 1.5dCi (K9K) diesel engine timing belt replacement on RENAULT and NISSAN models.

See details below for Kit application coverage

K4J/K4M/F4P/F4R Twin Camshaft Petrol Engines

TIMING BELT REPLACEMENT PROCEDURE CHANGES AND ADDITIONAL TIMING TOOLS REQUIREMENTS.

When these engines were originally introduced in 1999, the timing tools required for belt replacement involved a Camshaft Setting Plate (AST4561) and Crankshaft Locking Pins (AST4562 or AST4360R1).

However, as the engines developed with additional camshaft sensors, variable valve timing etc., revised service procedures and additional timing tools were introduced, particularly in relation to timing belt replacement, which now involves releasing the camshaft sprockets and changing to a fixed crankshaft gear when fitting a new timing belt.

Therefore the original basic timing tools no longer cover the procedures for all the engine variants across the years, and therefore the full timing tool requirements have now been incorporated into these kits to cover timing belt replacement for all or a selection of these engines 1.4 to 2.0 16v.

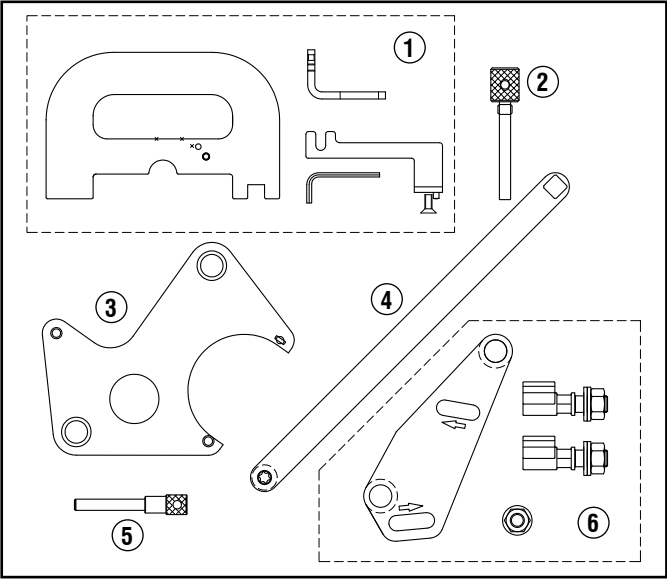
NOTE: All kits use an identical case and insert layout, where space is provided to accept the additional tools to **UPGRADE** AST4963 and AST4962 Kits to the **FULL AST4964** Kit as and when required – see below.

AST4964 is the FULL KIT incorporating the timing tools required for all **K4J/K4M/F4P/F4R 1.4, 1.6, 1.8, 2.0(t) 16v petrol engines**, and also covers **K9K 1.5dCi diesel engines**.

AST4963 Kit contains the timing tools for timing belt replacement on **F4P / F4R(t) 1.8 & 2.0 16v. petrol engines**.

AST4962 Kit contains the timing tools for timing belt replacement on **K4J / K4M 1.4 & 1.6 16v. petrol engines**.

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.



Parts Identification / Spares

Item	Part Number	Description
AST4964 FULL KIT		
1	AST4561A	Camshaft Setting Plate c/w Brackets (including AST4563 Bracket)
2	AST4562A	Crankshaft Locking Pin – 1.4 & 1.6 16v.
3	AST4623	Camshaft Sprocket Holding Tool - 1.4 & 1.6 16v.
4	AST4924	Belt Guide Wrench - 1.4 & 1.6 16v
5	AST4360R1	Crankshaft Locking Pin – 1.8 & 2.0 16v.
6	AST4923	Camshaft Sprocket Holding Tool - 1.8 & 2.0 16v
-	AST4964-84	Case + Insert

Kit contents

	Kit Tools					
	AST4561A CAMSHAFT PLATE	AST4562A CRANK PIN	AST4623 SPROCKET HOLD	AST4924 BELT GUIDE WRENCH	AST4360R1 CRANK PIN	AST4923 SPROCKET HOLD
AST4964 - FULL KIT 1.4, 1.6 (K4J/K4M) & 1.8, 2.0 (F4P/F4R) 16v.petrol engines + 1.5dCi (K9K) diesels.	●	●	●	●	●	●
AST4963 1.8 & 2.0 (F4P/F4R) 16v. petrol engines.	●				●	●
AST4962 1.4 & 1.6 (K4J/K4M) 16v. petrol engine	●	●	●	●		

RENAULT TIMING TOOL USE - K4J/K4M/F4P/F4R ENGINES (1) = Scenic (2) = Kangoo

Engine Type	Engine Code	AST4561A Cam Plate Bracket	AST4563 Revised	AST4562A Crank Pin Hold	AST4623 Sprocket Wrench	AST4924 Guide	AST4360R1 Crank Pin Hold	AST4923 Sprocket
K4J - 1.4 16v.	710	●		●				
	711	●		●				
	712	●		●				
	713	●		●				
	714	●		●				
	715	●		●				
	730	●		●		●		
	732	●		●		●		
	740	●		●		●		
	750	●		●				
	770	●	●	●		●		
	780	●	●	●		●		
K4M - 1.6 16v.	700	●		●				
	701	●		●				
	704	●		●				
	706	●		●				
	708	●		●	(2)	(2)		
	709	●		●				
	710	●		●				
	711	●		●				
	712	●		●				
	714	●		●				
	716	●	●	●	●	●		
	718	●		●				
	720	●		●				
	724	●		●				
	730	●		●	●	●		
	732	●		●	(2)	(2)		
	734	●		●				
	740	●		●				
	742	●		●				
	743	●		●				
	744	●		●				
	745	●		●				
	746	●		●				
	748	●		●				
	750	●		●	●	●		
	752	●		●	●	●		
	753	●		●	●	●		
	760	●	●	●	(1)	●		
	761	●	●	●	(1)	●		
	764	●		●		●		
	766	●	●	●	●	●		
	782	●	●	●	●	●		
	790	●	●	●		●		
	791	●	●	●		●		
	794	●	●	●		●		
	800	●	●	●	●	●		
	801	●	●	●	●	●		
	802	●	●	●		●		
	804	●	●	●		●		
	812	●	●	●	(1)	●		
	813	●	●	●	(1)	●		

RENAULT TIMING TOOL USE - K4J/K4M/F4P/F4R ENGINES - continued (1) = Scenic (2) = Kangoo

Engine Type	Engine Code	AST4561A Cam Plate Bracket	AST4563 Revised	AST4562A Crank Pin Hold	AST4623 Sprocket Wrench	AST4924 Guide	AST4360R1 Crank Pin Hold	AST4923 Sprocket
F4P - 1.8 16v.	720	●					●	(1)
	722	●					●	(1)
	760	●					●	●
	770	●					●	
	771	●					●	
	772	●					●	
	773	●					●	
	774	●					●	
	775	●					●	
F4R - 2.0 16v.	700	●					●	●
	701	●					●	●
	712	●					●	●
	713	●					●	●
	714	●					●	●
	715	●					●	●
	720(t)	●					●	●
	722(t)	●					●	●
	730	●					●	●
	732	●					●	●
	740	●					●	●
	741	●					●	●
	744	●					●	●
	746	●					●	●
	770	●					●	●
	771	●					●	●
	776(t)	●					●	●
	780	●					●	●
	784(t)	●					●	●
	786(t)	●					●	●
	787(t)	●					●	●
	790	●					●	●
	791	●					●	●
	792	●					●	●
	794(t)	●					●	●
	795(t)	●					●	●
	796(t)	●					●	●
	797(t)	●					●	●
	820(t)	●					●	●
(1) = Scenic		(2) = Kangoo						

Timing Belt Replacement
K4J & K4M 1.4 / 1.6 16v Petrol Engines

The AST4561A Camshaft Setting Plate Set is used on **ALL** the K4J/K4M (1.4/1.6 16v.) and the F4P/F4R (1.8/2.0 16v.) engines. It includes the two location brackets required to cover the complete range of K4J/K4M engine variants'. These location brackets allow 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 Kits AST4964 and AST4962, will be required to attach the Setting Plate to 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.

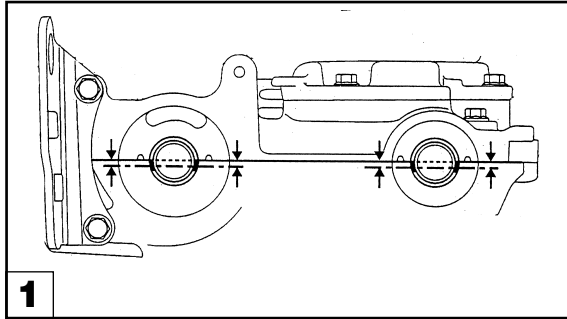
AST4562A Crankshaft Locking Pin is applicable to ALL K4J/K4M petrol engines. (It is also used on Renault 1.5dCi K9K diesels).

AST4924 Wrench is required on certain engines when replacing the timing belt guide – see Application Chart.

AST4623 Camshaft Sprocket Holding Tool is used on certain K4J/K4M engines which require the camshaft sprockets to be released and free to turn during the belt replacement procedure – see Application Chart.

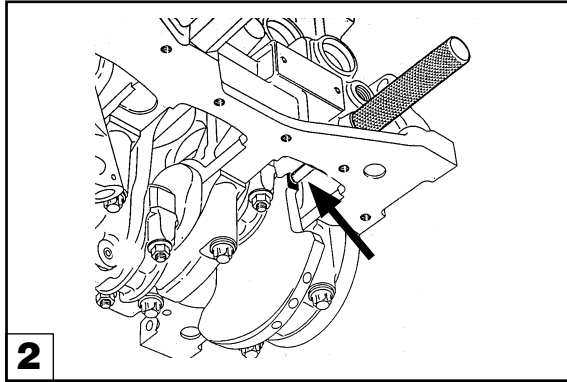
AST4623 Holding Tool is required for ALL K4J/K4M engines when timing adjustment is necessary.

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



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.



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.

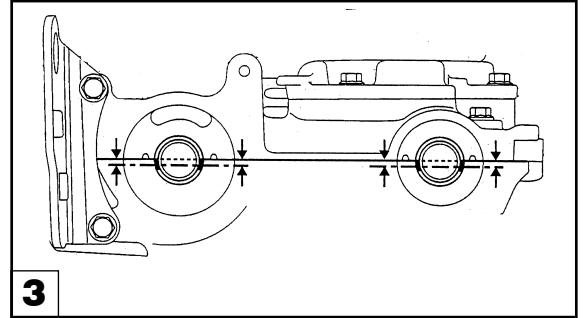
Lock the flywheel and release the crankshaft pulley bolt and remove the crankshaft pulley.

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.

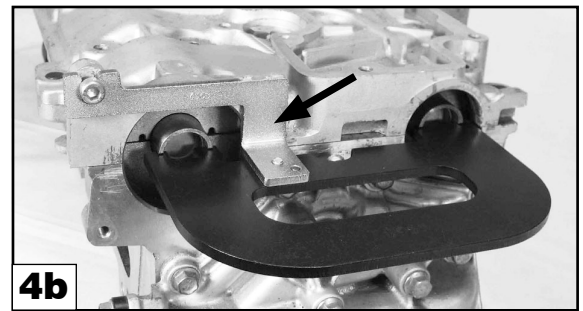
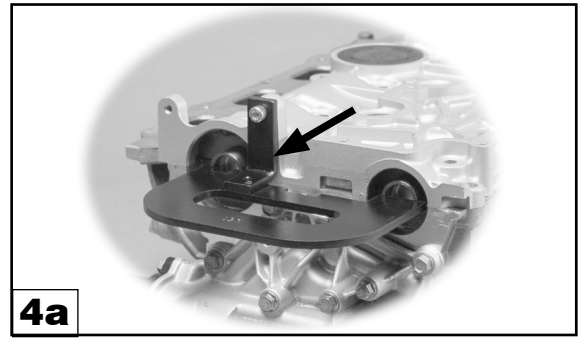
WARNING: Ensure that the crankshaft gear does not fall off the crankshaft.

AST4561A Camshaft Setting Plate

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



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

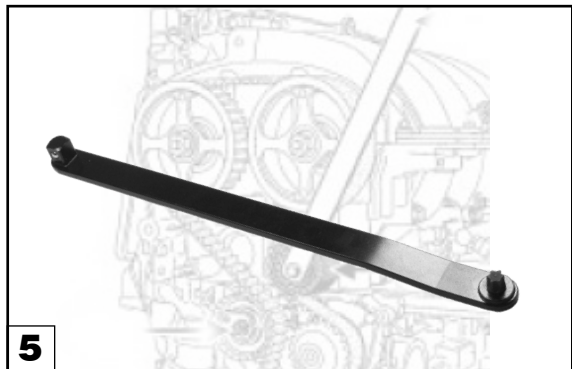


Construct the Camshaft Setting Plate Assembly by using the AST4561 Plate and attaching to it the appropriate Location Bracket – The Right-angled Bracket shown in **4A**, or the Extended Bracket – shown in **4B**.

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** – see Application Chart for engine codes

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

Slacken tensioner and remove it together with guide roller and timing belt.

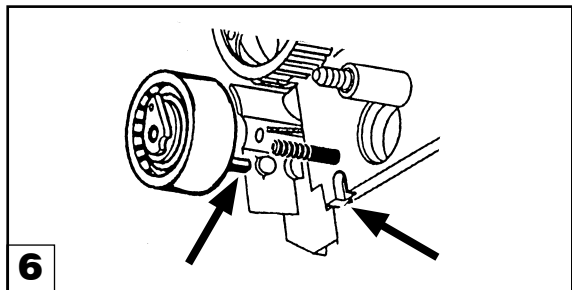


AST4924 Belt Guide Removal Wrench

During timing belt replacement 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

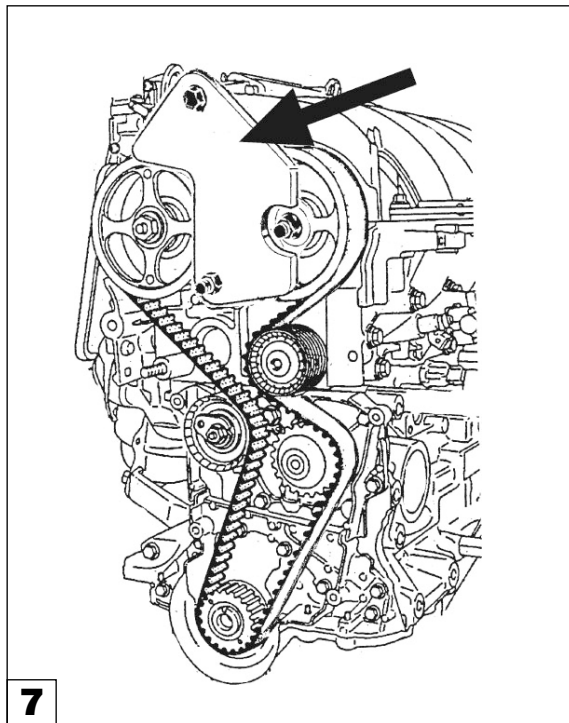
With AST4561A fitted and retaining the camshafts in position, and AST4562A Pin 'locking' the crankshaft, fit a new guide roller and tensioner pulley.



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.



AST4623 Camshaft Sprocket Holding Tool

AST4623 Holding Tool must be used on later 1.6 16v (K4M) engines in **Clio III, Scenic II, Laguna II and Kangoo** –

See Application Chart for engine codes.

On these engines the timing belt replacement procedure requires the camshaft sprockets to be able to turn (but not tilt) during installation of the new belt.

AST4623 Holding Tool is required to retain the camshaft sprockets in position whilst installing the belt and tightening the sprocket bolts.

IMPORTANT: Remove the crankshaft gear and camshaft sprockets in order to degrease the bore and contact surface of the crankshaft gear / sprockets and end of crankshaft and camshafts to prevent slip during re-assembly.

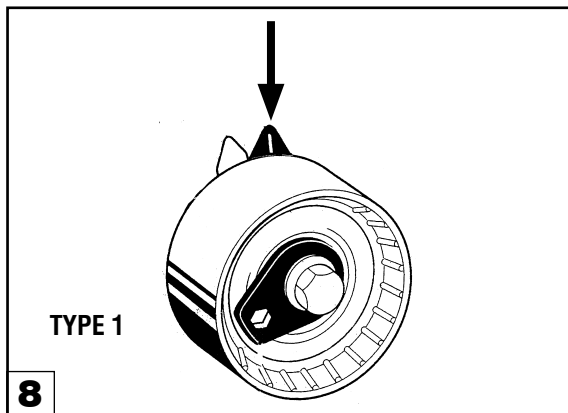
Re-fit gear and sprockets with crankshaft gear keyway and camshaft sprockets RENAULT logo in the 12-o'clock position.

Tighten camshaft sprocket nuts finger tight, in order that sprockets can turn but not tilt.

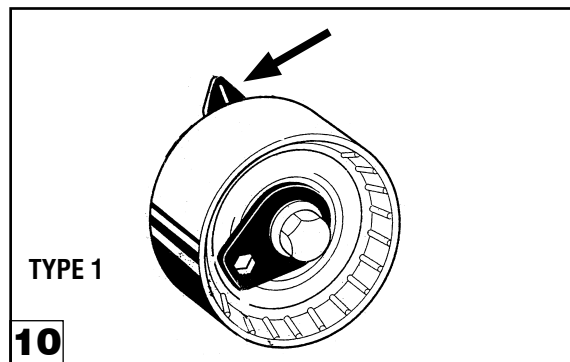
Fit the timing belt on to the camshaft sprockets and install and secure AST4623 Holding Tool in place on the engine. Continue to fit the belt to tensioner, crankshaft and water pump. Install new guide roller and tighten using AST4924 Wrench.

Set the Belt Tensioner to the initial tensioning position

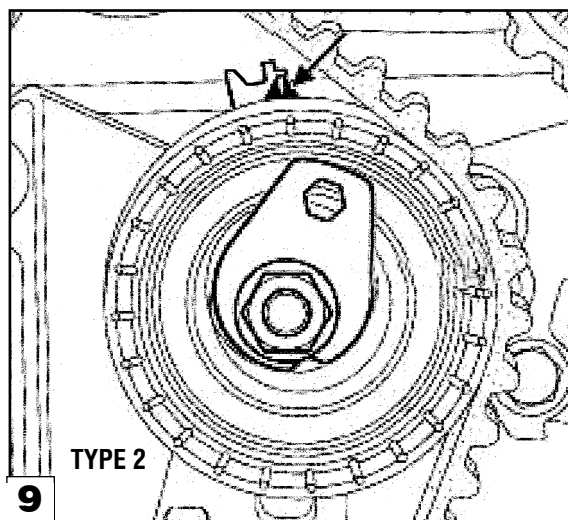
Two types of Belt Tensioner can be encountered.



Type 1 – Turn clockwise until moveable pointer is at its right-hand “stop” (approx 7-8 mm past fixed pointer).



Type 1 – Turn anti-clockwise until pointer aligned.

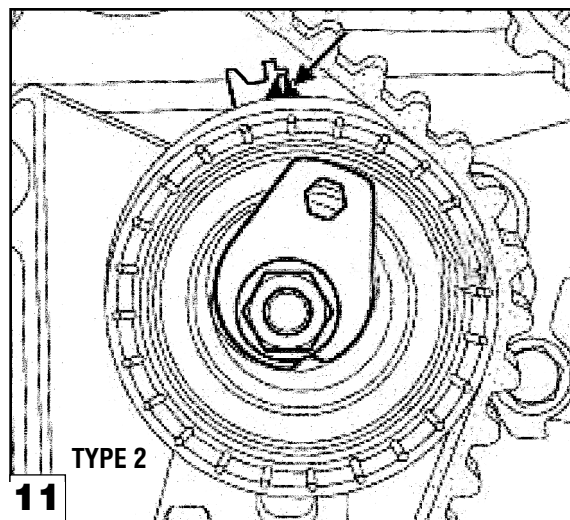


Type 2 – Turn clockwise until moveable pointer is aligned with notch. Remove AST4623 Holding Tool and AST4562A Crankshaft Locking Pin. Fit the crankshaft pulley with a new bolt.

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

Turn exhaust camshaft sprocket 6 turns clockwise.

Set the Belt Tensioner to **final** tensioning position



Type 2 – Turn until pointer is aligned with notch.

Re-fit AST4623 Holding Tool and secure to engine.

Lock flywheel with large screwdriver and tighten crankshaft pulley bolt.

Tighten camshaft sprockets nuts.

Remove all tools and turn the crankshaft two revolutions and return to engine timing position.

Insert the appropriate Crankshaft Locking Pin AST4562A 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.

Check that the tensioner is in correct **final** tensioning position, as detailed earlier.

NOTE: Additionally, AST4623 Holding Tool is also used on all K4J/K4M engines if timing adjustment is necessary because 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. In this case, it will 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.

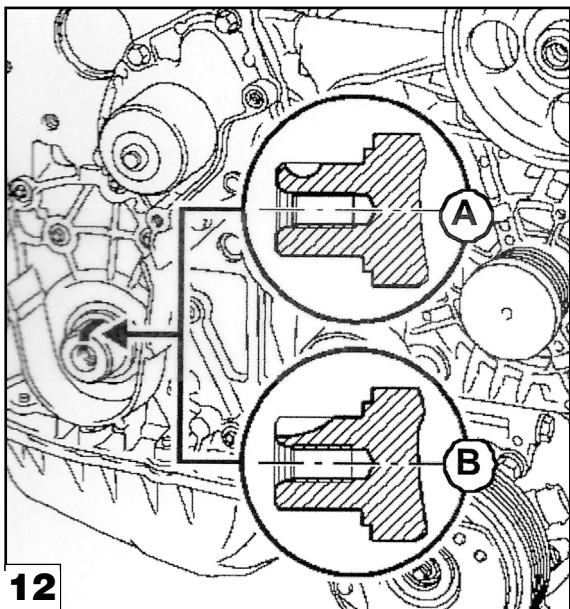
Timing Belt Replacement F4P & F4R 1.8 / 2.0 16v. Petrol Engines

These RENAULT F4P and F4R 1.8 / 2.0 16v. twin camshaft engines use the same Camshaft Setting Plate AST4561A as the 1.4 and 1.6 16v engines. However they require the use of a different Crankshaft Locking Pin AST4360R1

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

AST4923 Camshaft Sprocket Holding Tool is now also required. Changes to timing belt replacement procedures involving the removal of the camshaft sprockets require AST4923 for counter-holding the camshaft sprockets whilst releasing and tightening the sprocket bolt/nut.



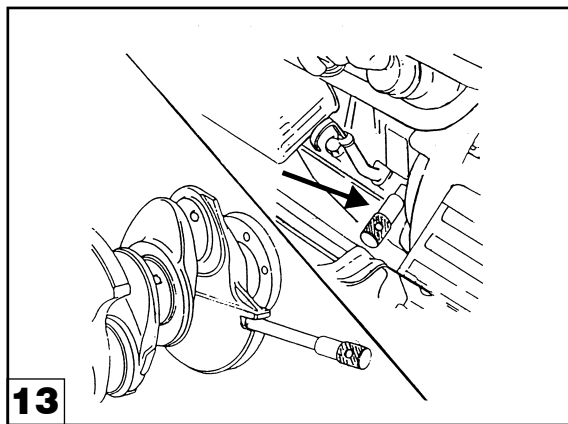
WARNING: These engines in Clio II, Megane I/II, Scenic I/II, Laguna I/II, Espace JEO/JKO and Trafic II – see Application Guide for engine codes, have two types of crankshaft fitted. – As camshaft sprockets are now released during belt

replacement for “Crankshaft Type B” the crankshaft gear MUST BE examined and replaced if it is NOT fitted with an integral key.

The procedure for timing belt replacement on these F4P / F4R RENAULT engines follows the same basic procedure as explained for the 1.4 / 1.6 (K4J/K4M) engines.

NOTE: When the engine is fitted with VVT, the camshaft sprocket positions should be marked (paint or chalk), prior to removal to assist installation when being installed.

Always check that the INLET camshaft VVT Unit is “locked” – If not, replace the Unit.



AST4360R1 Crankshaft Locking Pin

AST4360R1 Locking Pin 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.

Turn the engine to align the slots at the rear of the camshafts and check that the Crankshaft Locking Pin can be inserted correctly.

Remove the Locking Pin, lock the flywheel and release the crankshaft pulley bolt and remove the crankshaft pulley.

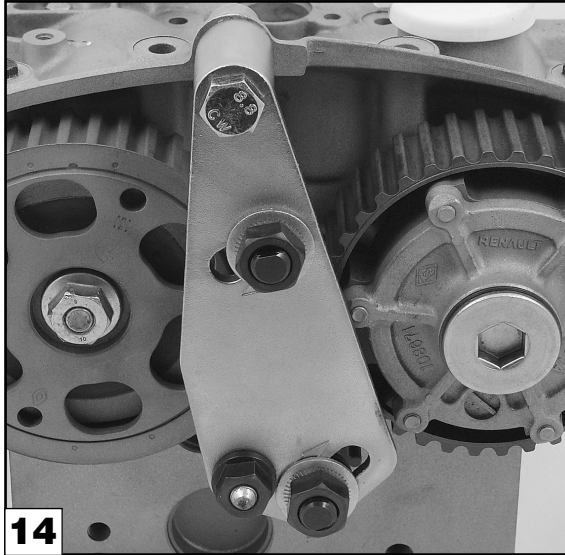
Install the AST4360R1 Crankshaft Locking Pin and AST4561A Camshaft Setting Plate.

Slacken the tensioner and remove it, together with the guide roller and old timing belt.

IMPORTANT: Remove the crankshaft gear and examine the crankshaft – If “Type B” replace the gear if it does NOT have an integral key.

Degrease the bore and contact surface of the crankshaft gear to prevent slip during re-assembly.

Ensure the crankshaft keyway is located centrally between the lugs on the engine front housing.



AST4923 Camshaft Sprocket Holding Tool

For crankshaft gear with integral key, the camshaft sprockets are released.

Secure AST4923 to the engine, using original engine bolt and the Lock Nut.

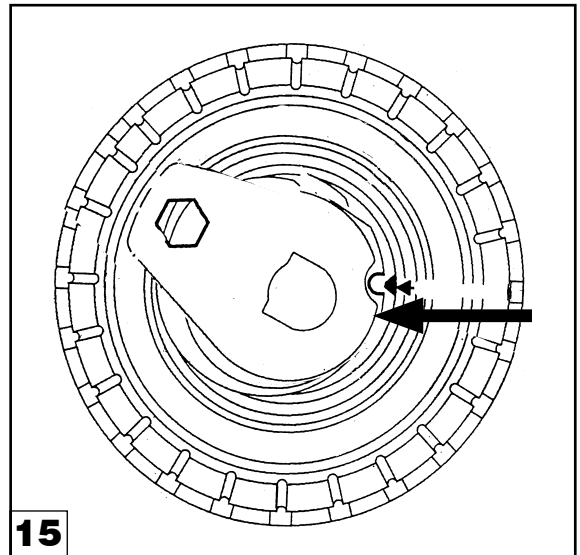
"Lock" the camshaft sprockets by locating the Gear Arms of AST4923 into the teeth of the sprockets. Tighten the nuts of the Gear Arms to 80Nm.

Release and remove the camshaft sprocket retaining nuts and remove AST4932 Camshaft Sprocket Holding Tool, and the camshaft sprockets.

Degrease the sprockets and the camshaft ends.

Install the sprockets and using the original nuts - tighten to 15Nm.

Re-Fit the crankshaft gear and a new timing belt. Fit a new tensioner and guide roller.



Turn the tensioner **clockwise** until marks align. Temporarily tighten the tensioner nut – 7Nm.

Re-fit AST4923 Camshaft Sprocket Holding Tool and secure it to the engine as before, locating the Gear Arms into the teeth of camshaft sprockets. Tighten the nuts of the AST4923 Gear Arms to 80Nm.

Tighten the camshaft sprocket nuts to 30Nm.

NOTE: Mark the position of the sprockets with paint / chalk to assist alignment on installation.

Remove the AST4923 Holding Tool, Camshaft Setting Plate and Crankshaft Locking Pin.

Turn the engine over 2 times and return to the timed position.

Insert AST4360R1 Crankshaft Locking Pin and AST4561A Camshaft Setting Plate.

Check that the tensioner marks are aligned. Tighten tensioner nut to 28Nm.

Re-fit the AST4923 Camshaft Sprocket Holding Tool and secure to the engine as before, locating the Gear Arms into the teeth of camshaft sprockets. Tighten the nuts of the AST4923 Gear Arms to 80Nm.

Release and remove the old sprocket nuts and replace with new nuts.

Tighten to : - **Non-VVT** – Inlet + Exhaust Sprocket
– 30Nm. + 86 degrees + 6 degrees .

- **VVT Inlet Sprocket:-100Nm.**

- **VVT Blanking Plug – 25Nm.**

Remove all tools, turn the engine over twice, returning to timed position.

Again, check that the tensioner marks are aligned.

Lock the flywheel using a large screwdriver and tighten the new crankshaft pulley bolt.



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AUTO SERVICE TOOLS

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