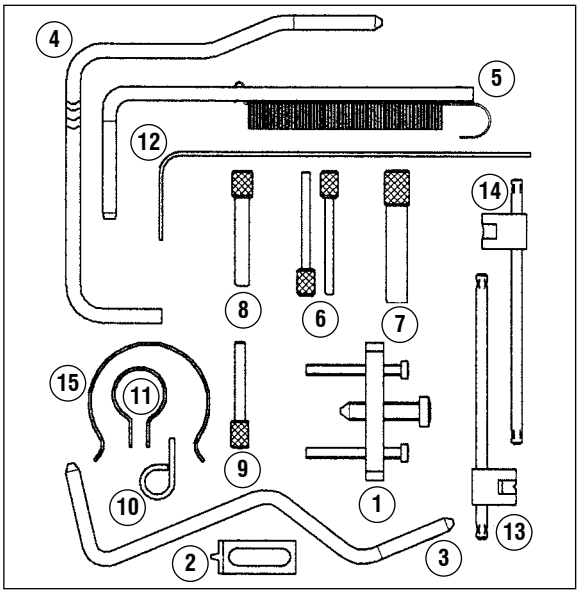
AST4820

Diesel 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:

CITROËN / PEUGEOT DV4, DV6, DW10 & DW12 HDi Diesel engines in

CITROËN

Xsara/Picasso	C2	C3
C4	C5	Xantia
Evasion/Synergie	Berlingo	Dispatch/Jumpy
Relay/Jumper		

PEUGEOT

206	306	307
406/Coupe	607	807
Expert	Partner	Boxer

DV4TD (8HW/8HX/8HZ), DV4TED4 (8HV/8HY), DV6TED4 (9HX/9HY/9HZ) DW10TD (RHY), DW10ATED/L3/L4 (RHS/RHW/RHZ), DW10BTED4/L3 (RHR/RHX), DW10UTD (RHV), DW12ATED (4HW/4HX), DW12UTED (4HY)

FIAT Ulysse, Scudo and Ducato models are also fitted with 2.0 and 2.2HDi engines under JTD reference. The range of timing tools in Kit AST4820 will also be applicable to these engines.

Kit contents/spares

Item	Part Number	Description
1	AST4566	Crankshaft Pulley Remover
2	AST4358	Flywheel Holding Tool
3	AST4360C6	Flywheel Locking Pin
4	AST4360C8	Flywheel Locking Pin
5	AST4565P9	Flywheel Locking Pin
6	AST4735P15	Injection Pump & Crankshaft Locking Pins (2 per kit)
7	AST4735P16	Flywheel Locking Pin
8	AST4735P17	Camshaft Locking Pin
9	AST4360P4	Camshaft Locking Pin
10	AST4360T5	Tensioner Locking Pin
11	AST4821	Crank Gear Positioning Tool
12	AST4820P18	Crank Gear Positioning Tool
13	AST4567	Tensioner Adjuster
14	AST4568	Tensioner Adjuster
15	AST4569	Timing Belt Retaining Clip
--	AST4820-84	Case + Insert

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Applications & Tool Selection Guide

Models (Year) / Engine codes	Application / Tool		
CITROËN			
1.4HDi & 1.6HDi			
Xsara (02-04), **C2** (03-06),	**Crankshaft -**		
C3 (02-06), **C4** (04-06),	Pulley Removal	–	Locking Pin AST4735P16
C5 (04-06)	**Flywheel**	–	Locking Pin AST4735P15
DV4TD, DV4TED4	**Camshaft**	–	Locking Pin AST4735P17
(8HV/8HW/8HX/8HY/8HZ)	**HP Pump**	–	Locking Pin AST4735P15
DV6TED4, DV6ATED4			
(9HX/9HY/9HZ)			
2.0HDi (Adjustable Camshaft Sprocket)			
Xsara/Picasso (99-01), **Xantia** (98-01)	**Crankshaft -**		
C5 (00-01), **Evasion/Synergie** (99-02),	Pulley Removal	–	Remover AST4566
Berlingo (99-01),			Flywheel Holding Tool AST4358
Dispatch/Jumpy (99-06),	**Flywheel**	–	Locking Pin AST4360C6
Relay/Jumper (01-06)		–	Locking Pin AST4360C8
DW10TD, DW10ATED, DW10ATD,			(use C6 or C8 Pin to provide best access position)
DW10ATED4, DW10BTED/L3		–	Locking Pin(Dual Mass) AST4565P9
DW10ATED/L3, DW10UTD	**Camshaft**	–	Locking Pin AST4360P4
(RHS/RHV/RHW/RHX/RHY/RHZ)	**Timing Belt –**		
	Tensioning	–	Adjusters AST4567 or AST4568
	Retention	–	Retaining Clip AST4569
2.0HDi (Adjustable Crankshaft Gear)			
Xsara/Picasso (01-06), **C5** (01-04),	**Crankshaft** –		
Berlingo (01-06),	Pulley Removal	–	Remover AST4566
Dispatch/Jumpy (01-06)		–	Flywheel Holding Tool AST4358
DW10TD, DW10ATED, DW10ATED4	Crank Gear Positioning		
(RHS/RHW/RHY/RHZ)		–	Positioning Tool AST4820P18
	Flywheel	–	Locking Pin AST4360C6
		–	Locking Pin AST4360C8
,			(use C6 or C8 Pin to provide best access position)
		–	Locking Pin(Dual Mass) AST4565P9
	Camshaft	–	Locking Pin AST4360P4
	Timing Belt –		
	Tensioning	–	Adjusters AST4567 or AST4568
	Retention	–	Retaining Clip AST4569
2.0HDi (Adjustable Crankshaft Gear)			
C4 (04-06), **C5** (04-06)	**Crankshaft –**		
DW10BTED4 (RHR)	Reluctor Removal	–	Remover AST4566
	Pulley Removal	–	Flywheel Holding Tool AST4358
	Flywheel	–	Locking Pin (Dual Mass) AST4565P9
	Crank Gear Positioning		
		–	Positioning Tool AST4821
	Camshaft	–	Locking Pin AST4360P4
	Timing Belt	–	Tensioner Locking Pin AST4360T5
2.2HDi			
C5 (00-04)	**Crankshaft –**		
Relay/Jumper (02-06)	Pulley Removal	–	Flywheel Holding Tool AST4358
DW12ATED, DW12UTED	**Flywheel**	–	Locking Pin (Dual Mass) AST4565P9
(4HX/4HY)	**Camshaft**	–	Locking Pin AST4360P4
	Timing Belt –		
	Tensioning	–	Adjusters AST4567 or AST4568
	Retention	–	Retaining Clip AST4569

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PEUGEOT

1.4HDi			
206 (01-06), **307** (01-06)	**Crankshaft -**		
DV4TD (8HX/8HZ)	Pulley Removal	–	Locking Pin AST4735P16
	Flywheel	–	Locking Pin AST4735P15
	Camshaft	–	Locking Pin AST4735P17
	HP Pump	–	Locking Pin AST4735P15
2.0HDi			
206 (99-06), **306** (99-02),	**Crankshaft –**		
307 (01-06), **406** (98-04),	Pulley Removal	–	Remover AST4566
607 (00-06), **806** (99-02),		–	Flywheel Holding Tool AST4358
807 (02-06), **Partner** (99-06),	**Flywheel**	–	Locking Pin AST4360C6
Expert (99-06), **Boxer** (02-06)	**Camshaft**		Locking Pin AST4360P4
DW10TD, DW10ATED,	**Timing Belt –**		
DW10ATED4, DW10ATED4/L4,	Tensioning	–	Adjusters AST4567 or AST4568
DW10UTD	Retention	–	Retaining Clip AST4569
(RHS/RHV/RHW/RHY/RHZ)			
2.2HDi			
406/Coupe (00-04), **607** (00-06),	**Crankshaft –**		
807 (02-06), **Boxer** (02-06)	Pulley Removal	–	Flywheel Holding Tool AST4358
DW12ATED, DW12ATED4/L4	**Flywheel**	–	Locking Pin (Dual Mass) AST4565P9
(4HW/4HX/4HZ)	**Camshaft**	–	Locking Pin AST4360P4
	Timing Belt –		
	Tensioning	–	Adjusters AST4567 or AST4568
	Retention	–	Retaining Clip AST4569

AST4820 Setting/Locking Tool Kit for PSA HDi common rail diesels covers timing belt replacement applications on 1.4, 1.6, 2.0 and 2.2HDi engines – DV4, DV6, DW10 and DW12.

AST4820 Setting/Locking Tool Kit

Comprises:- For 1.4 & 1.6HDi
AST4735P15 HP Pump & Crankshaft Locking Pin (2 per kit)

AST4735P16	**Flywheel Locking Pin**
AST4735P17	**Camshaft Locking Pin**
	For 2.0 & 2.2HDi
AST4566	**Crankshaft Pulley Remover**
AST4358	**Flywheel Holding Tool (Pulley removal)**
AST4360C6	**Flywheel Locking Pin**
AST4360C8	**Flywheel Locking Pin**
AST4565P9	**Flywheel Locking Pin (Dual Mass)**
AST4360P4	**Camshaft Locking Pin**
AST4360T5	**Tensioner Locking Pin**
AST4821	**Crank Gear Positioning Tool**
AST4820P18	**Crank Gear Positioning Tool**
AST4567	**Tensioner Adjuster**
AST4568	**Tensioner Adjuster**
AST4569	**Timing Belt Retaining Clip**

1.4 and 1.6HDi engines use the same Locking Pins to retain engine timing position – see Applications/Tool Section Guide. PSA 1.4 and 1.6 HDi diesel engines are also fitted in Ford models under Duratorq (TDCi) identification.

The original variants of the 2.0HDi engines use an adjustable camshaft sprocket to achieve final timing position during belt fitting/tensioning. In 2001 the use of an adjustable crankshaft gear position was introduced and required additional tools - see Applications/Tool Section Guide

The 2.2HDi engine broadly utilises the same tools as the 2.0HDi.

Engine variants and introduction times vary between Citroën and Peugeot models.

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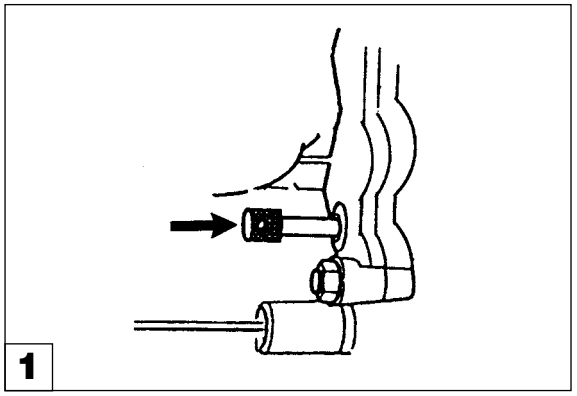
1.4HDi and 1.6HDi engines
- refer to Applications/Tool Selection Guide

Timing belt replacement on these engines requires the use of 4 Locking Pins.

Remove the RH road wheel and inner wing cover. Move the electrical harness away from the belt upper cover and remove auxiliary belt, upper timing belt cover and the blanking plug in the bell housing where Locking Pin AST4735P16 is to be inserted.



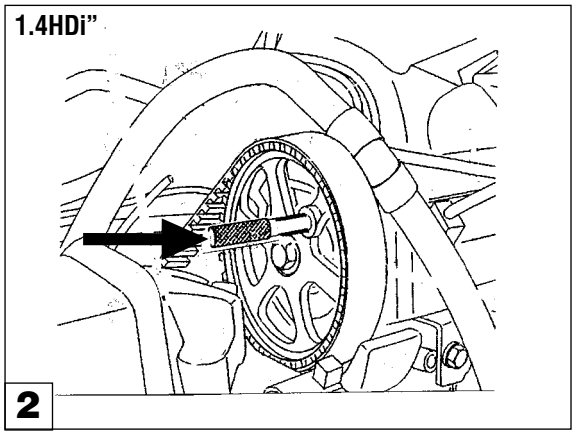
AST4735P16 Flywheel Locking Pin

Rotate the crankshaft until AST4735P16 can be inserted into one of the slots in the flywheel to 'lock' the engine.

Remove the crankshaft pulley, lower timing belt cover, crank position sensor, (check that the magnetic track is not damaged) and belt guide angle bracket.

WARNING Do not touch the magnetic track (sensor ring).

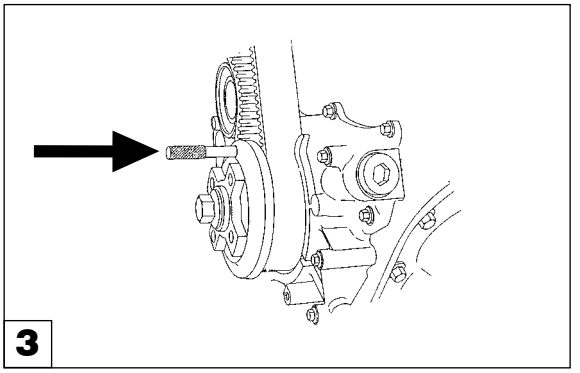
Re-fit the crankshaft pulley bolt (to facilitate engine turning), and remove Locking Pin AST4735P16.



AST4735P17 Camshaft Locking Pin

Turn the engine until the camshaft sprocket timing holes align, and insert Locking Pin AST4735P17.

Check that the crankshaft key is in the 11-0-clock position and insert Locking Pin AST4735P15 to confirm correct crankshaft position.



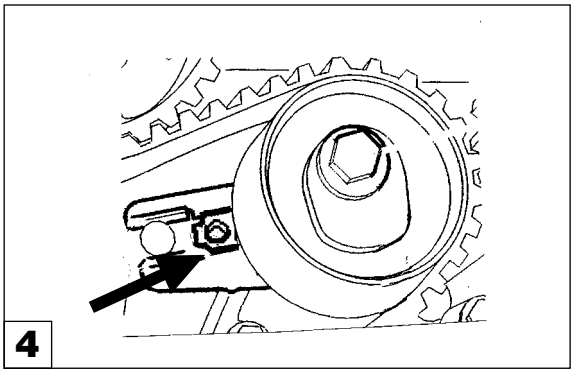
AST4735P15 Crankshaft and HP Pump Sprocket Locking Pins (2 in set)

Check that the crankshaft keyway is in the 11-0-clock position and insert Locking Pin AST4735P15 to confirm correct crankshaft position.

One of the AST4735P15 Locking Pin is used to "lock" the crankshaft and the other one "locks" the HP pump sprocket. Check the HP pump alignment via holes in the pump sprocket. If there is not a corresponding hole in the pump bracket to the hole in the sprocket, then align by positioning the holes in the sprocket vertically.

Support the engine to allow removal of the RH engine mounting/ bracket, release the tensioner and remove the old timing belt.

Ensure the camshaft sprocket and crankshaft are locked in timing position with Pins P17 and P15 respectively. Ensure the HP pump is aligned correctly.



Fit the new timing belt and install the engine mounting/bracket.

Apply tension to the belt by turning the tensioner anti-clockwise until the pointer is positioned between the sides of the window.

Re-fit crank position sensor and belt guide angle bracket.

WARNING Do not touch the magnetic track (sensor ring).

Remove the Locking Pins.

Carefully rotate the crankshaft 10 times clockwise.

Check engine timing by ensuring that the camshaft and crankshaft locking pins can be inserted and that the HP pump sprocket is correctly aligned.

Remove all Locking Pins and check the tensioner pointer is positioned within the window.

Insert Locking Pin P16 into the flywheel and fit the crankshaft pulley using a new centre bolt.

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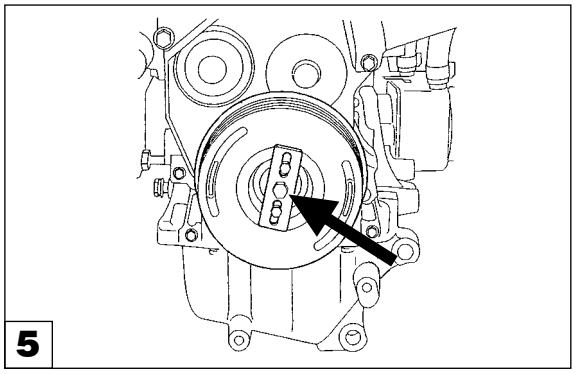
2.0HDi and 2.2HDi engines

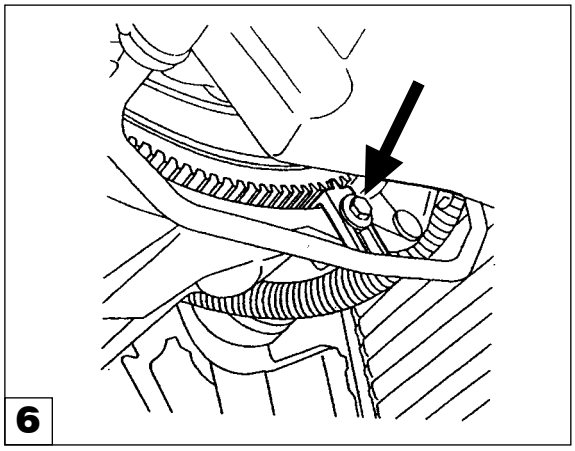
- refer to Applications/Tool Selection Guide

These HDi engines require the use of a specialised remover to extract the crankshaft pulley to allow the timing belt to be removed.

Also, as the flywheel timing hole can be difficult to access, 3 x "Shaped" Flywheel Locking Pins are included in the kit, (including the Locking Pin required for dual mass flywheels). Two tools are provided to cover the adjustable crankshaft gear position, introduced on some variants in 2001, and the kit contains two Tensioner Adjusters, covering the sizes of square drive on the belt tensioner, likely to be encountered on these 2.0 and 2.2HDi diesels.



AST4566 Crank Pulley Remover

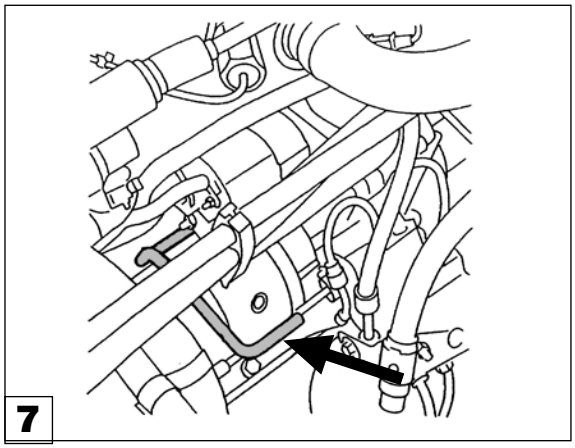


AST4358 Flywheel Holding Tool (Crank Pulley removal)

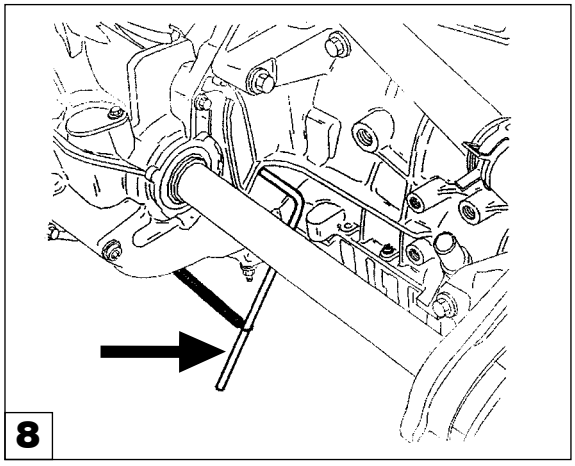
IMPORTANT: Locking Pins must NOT be used to hold the crankshaft whilst releasing or tightening the pulley bolt. Locking Pins are for retention of timing position only.

On most 2.0HDi engines, once the pulley bolt is removed the pulley must be extracted using AST4566 Remover.

Support the engine and remove the right-hand mounting/bracket to enable the timing covers to be removed. On HDi engines it will be necessary to disconnect and seal off the fuel pipes.



AST4360C8



AST4565P9

AST4358 Flywheel Holding Tool (Crank Pulley removal) AST4566 Crankshaft Pulley Remover

In order to remove the timing belt, the crankshaft pulley must be removed. AST4358 Holding Tool is used to 'lock' the flywheel whist releasing the pulley bolt. Once the bolt is released, the tool is removed. Remove the clutch housing bottom plate to give access for the Holding Tool. AST4358 is also fitted when refitting the pulley bolt.

AST4360C6, AST4360C8 and AST4565P9 Flywheel TDC Locking Pins.

Turn the crankshaft to its timed position and 'lock' by inserting the TDC Pin into the flywheel datum hole. Often, the starter motor or other components which are not usually removed, restrict access. The special shape of AST4360C6 and AST4360C8 allows their use around these obstructions. AST4565P9 Locking Pin is used for dual mass flywheel applications and is held in place by attaching its retaining spring to a suitable bolt head.

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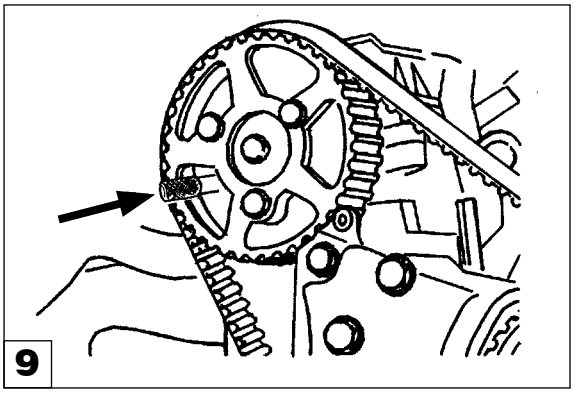
Adjustable Camshaft Sprocket or Adjustable Crankshaft Gear

- refer to Applications/Tool Selection Guide



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AST4360P4 Camshaft Locking Pin

All 2.0HDi and 2.2HDi diesels use the AST4360P4 Camshaft Locking Pin, which is located through slots or a hole in the camshaft sprocket, and into a datum hole in the cylinder head to position the camshaft in 'timed' position.

Adjustable Camshaft Sprocket –

All 2.0 & 2.2HDi engines up to 2001 and certain variants after 2001, have an adjustable camshaft sprocket. Usually the sprocket is fixed to a sprocket carrier by 3 bolts through slotted holes in the sprocket. AST4360P4 Pin locates through a timing hole in the carrier and into a datum hole in the cylinder head to retain camshaft position. Once the Locking Pin is inserted the 3 x bolts can be slackened to finger-tight, prior to the old belt being removed.

Turn the camshaft sprocket fully **clockwise** within the slotted holes. The bolts should be sufficiently tight to offer a slight resistance to the sprocket turning.

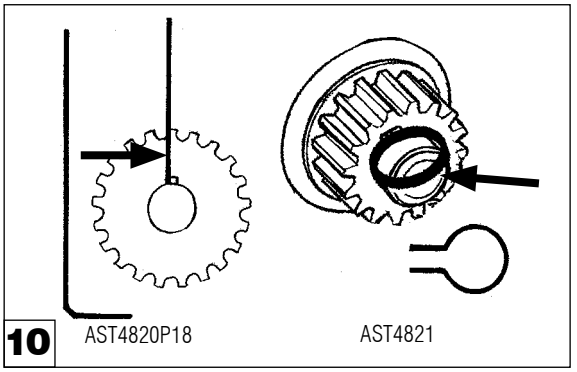
When fitting the new belt, place it on the sprocket teeth and engage it into the teeth by turning the sprocket slightly **anti-clockwise**.

IMPORTANT: Angular movement of the sprocket MUST NOT exceed one tooth space.

Fit the timing belt and tensioned to specification. As the belt is tensioned the camshaft sprocket will turn slightly in the slotted holes but must not reach the ends of the slots.

Tighten the sprocket bolts.

Adjustable crankshaft gear –



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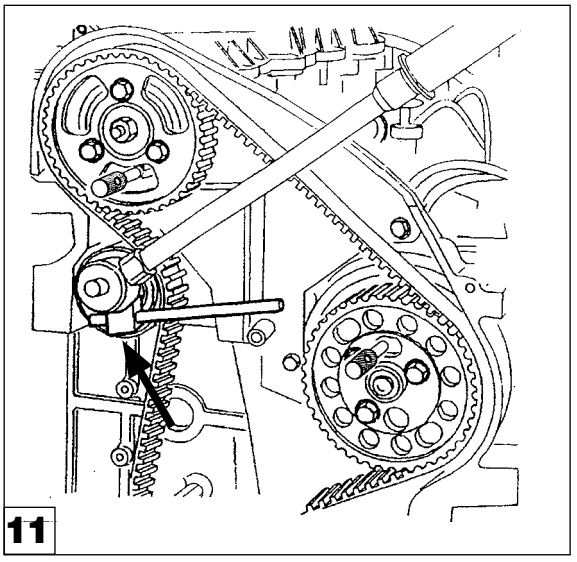
AST4820P18 and AST4821 Crankshaft Gear Positioning Tools

When the flywheel and camshaft locking pins have been inserted and the engine is "locked" in the correct timed position, the belt tensioner can be released and the old belt removed.

At this point, the Crankshaft Gear Positioning Tools are inserted into position, at the crankshaft key.

AST4820P18 Positioning Tool - is inserted at the side of the crankshaft key, prior to the new belt being fitted. The timing belt is fitted and the AST4820P18 is removed. The belt is then tensioned to specification.

AST4821 Positioning Tool – on engines requiring the use of AST4821 Tool the crankshaft gear is centralised on the key by inserting AST4821 in position both sides of the crankshaft key. The timing belt is fitted and the AST4821 is removed. The belt is then tensioned to specification.



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AST4567 and AST4568 Tensioner Adjusters

These Belt Tensioner Adjusters locate in to the square drive in the tensioner so it can be turned to release or apply tension to the timing belt. The two sizes provided will cover the HDi range.

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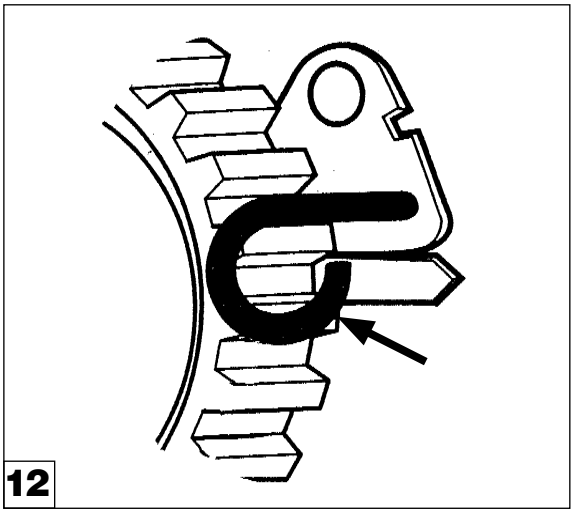

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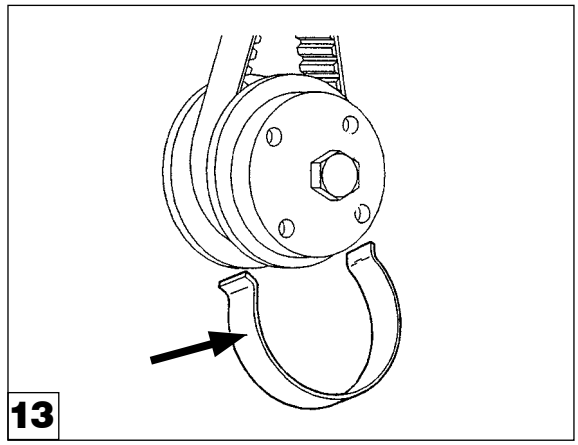
AST4360T5 Tensioner Locking Pin

On DW10BTED4 engines the belt tensioner does not have a square drive insert, it is adjusted using a standard allen key. Belt tension is by ensuring the pointer aligns with a notch in the baseplate. When releasing tension off the old belt the tensioner is “locked” back away from the belt using AST4360T5 Locking Pin.

Fitting New Belt / Tensioning Procedure

Before fitting the new belt ensure the flywheel and camshaft sprocket locking pins are in place and if an adjustable camshaft sprocket is fitted, loosen, to finger tight, the 3 bolts retaining the camshaft sprocket to allow them to be turned fully clockwise to the end of their slotted holes.



13

AST4569 Timing Belt Retaining Clip

Fit the new belt to the crankshaft gear and retain in place with AST4569 Clip. Fit belt in an anti-clockwise direction to the tensioner roller, injection pump sprocket, camshaft sprocket, water pump and tensioner and then remove AST4569 Belt Clip.

Use AST4567 or AST4568 Tensioner Adjuster to apply initial tension to the belt. Attach a suitable Tension Tester and turn the tensioner anti-clockwise to achieve correct belt tension.

IMPORTANT: At this stage the 3 bolts of the adjustable camshaft sprocket

MUST NOT be at the end of their slotted holes. Tighten these bolts to specified torque.

Remove all locking pins and turn the engine over, by hand, a few times in the normal direction of rotation, returning to timing position and re-fitting all locking pins.

IMPORTANT: Never allow the crankshaft to be turned in the reverse direction.

It is good practice to confirm the timing is correct by finally adjusting the engine to timed position and refitting the timing tools to check the timing position.

If it is not possible to locate the Locking Pins then it will be necessary to carry out the timing/tensioning procedure again.

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