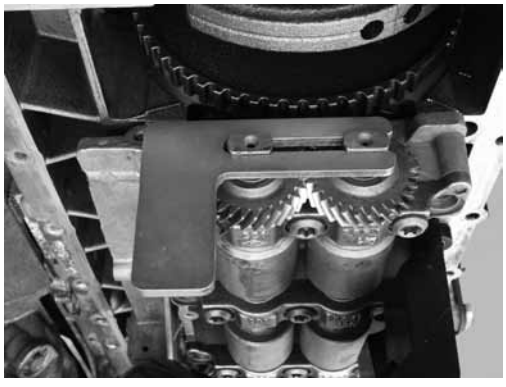
60396300
Timing Chain Service Tool Set

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.

Associated Tool: 60388810

NOTE: Removal and installation of the Timing Chain assembly requires 5045 Set and the use of the appropriate timing tools (not in 5045 Set) from the associated Engine Setting/Locking Tool Kits listed in the application chart on page 2.



Applications:

BMW 1.8, 2.0, 2.5, 3.0 and BMW MINI / Citroën - Peugeot 1.4, 1.6 Petrol engines (Chain) in:

BMW

1 Series (E81/82/87)	3 Series (E46/90/91/92/93)
5 Series (E60/61)	6 Series (E63/64)
7 Series (E65/66)	X3 (E83)
X5 (E70)	Z4 (E85/86)

Engines: N42, N46 - B18/B18A/B20/B20A/B20B
N40, N45, N45T - B16
N51, N52, N52K - B25/B30

BMW MINI

Cooper S (R55/56)	Cooper (R55/56)
One (R56)	

Engines: N12, N14

CITROËN

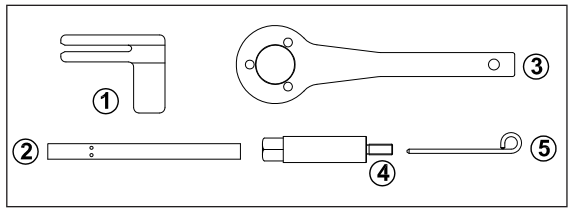
C4	C4 Picasso

PEUGEOT

207	207CC	308
3008	5008	RCZ
Partner Tepee		

Engines: EP3(8FS), EP3C(8F01), EP6(5FW), EP6C(5F01), EP6CDT(5F04), EP6DT(5FX), EP6DT(5FT), EP6DTS(5FY)

Additional Tools Required:
60388810 Handle for use with 5018 Holding Tool



Kit contents/spares

Item	Part Number	Description
1	5016	Balancer Shaft Alignment Tool
2	5017	Balancer Shaft Alignment Tool
3	5018	Crankshaft Gear Holding Tool
4	5019	Crankshaft Gear Holding Tool Support
5	4413	Chain Tensioner Pin
-		Case + insert

60396300 Timing Chain Service Tool Set

Removal and installation of the Timing Chain assembly requires the use of 60396300 Set and the appropriate timing tools from the associated Engine Setting/Locking Tool Kits listed in the application chart.

The service tools in this set are required when replacing the timing chain and other applications which involve the removal of the chain assembly on the models / engines detailed below-:

Set contents

- **5016 Balancer Shaft Alignment Tool**
- **5017 Balancer Shaft Alignment Tool**
- **5018 Crankshaft Gear Holding Tool**
- **5019 Crankshaft Gear Holding Tool Support**
- **4413 Chain Tensioner Pin**

Application Chart

Models	Engines	5016	5017	5018	5019	4413	Associated Setting/ Locking Tool Kits required
BMW 118i E87 120i E87 316i E46 316ti E46 318i E46 318ti E46 318i E90 320i E90 520i E60 Z4. 2.0 E85 X3 2.0i E83	**N42/N46** B18/B18A B20/B20A B20B	●	●	●		●	Kit 60396800
116i E81/87 316i E46/90 316Ci E46 316ti E46	**N40/N45/N45T** B16	●	●	●		●	Kit 60396900
128i E82 130i E81/87 135iS E82 323i E90/91/92/93 325i/xi E90/91/92/93 328i/xi E90/91/92/93 330i/xi E90/91/92/93 335i/xi E90/91/92/93 523i/Li E60/61 525i/Li/xi E60/61 528i/xi E60/61 530i/Li/xi E60/61 535i/xi E60/61 630i E63/64 730i/Li E65/66 X3 2.5/3.0 E83 X5 3.0 E70 Z4 2.5/3.0 E85/86	**N51/N52/N52K** B25/B30			●	●	●	Kit 9431120
BMW MINI R55/R56 Cooper S R55/R56 Cooper R56 One	**N12/N14**			●			Kit 9430700
PSA **Citroën** C4 Picasso C4 **Peugeot** 207 207CC 308 3008 5008 RCZ Partner Tepee	**EP3**(8FS) **EP3C**(8F01) **EP6**(5FW) **EP6C**(5F01) **EP6CDT**(5F04) **EP6DT**(5FX) **EP6DT**(5FT) **EP6DTS**(5FY)			●			Kit 9430700

5016/5017 Balancer Shaft Alignment Tools
5016 and 5017 are used to reposition the balancer shafts after releasing the crankshaft central bolt.

5018/5019 Crankshaft Gear Holding Tool and Support
5018 is used to counter hold the crankshaft when releasing/tightening the central bolt. 5018 is used in conjunction with 60388810 Handle.

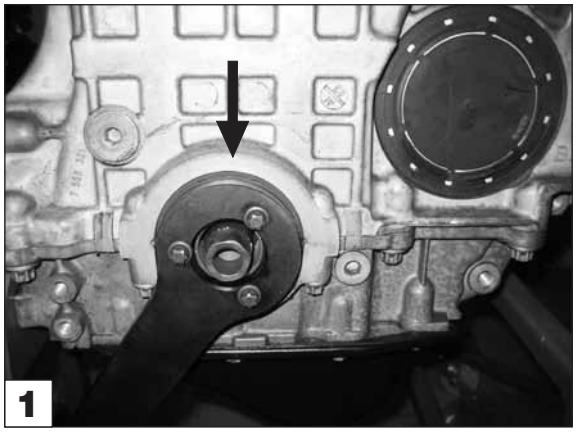
NOTE: On BMW N51 and N52 engines the central bolt requires a torque of 100 Nm +360°. As it is difficult to hold Tool 5018 steady whilst applying such a high torque/angle specification, Support Tool 5019 is provided to assist retention of the 5018 Holding Tool whilst tightening the central bolt.

60396450 Tensioner Pin
60396450 is used for locking the chain tensioner in position when removing the tensioner on the N51 and N52 engines.
It is also used to lock the auxiliary belt tensioner when removing the alternator drive belt on the N40, N42, N45 and N46 engines.

Removal of the Timing Chain - all listed engines
It will be necessary to remove the cylinder head cover, chain tensioner, auxiliary belt tensioner and vibration damper.

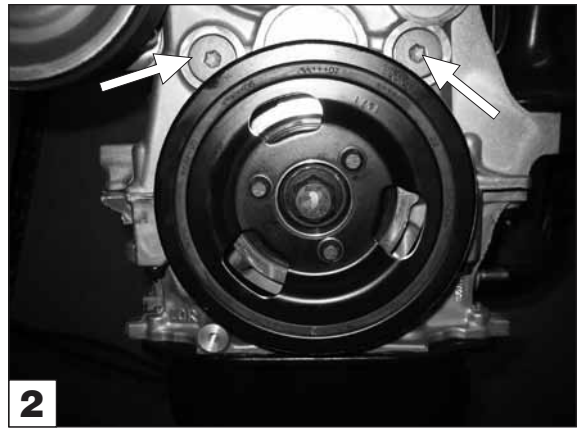
Prior to carrying out work on the timing chain it is necessary to set the engine in its 'timed' position using flywheel and camshaft locking tools from the relevant timing kit. (Refer to the application chart)

WARNING: Do not use the flywheel locking pin to counter hold, whilst releasing the crankshaft central bolt as this may cause damage to the engine, flywheel or timing pin.

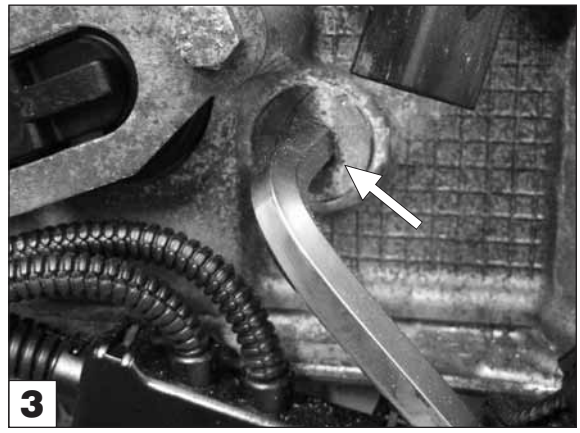


Fit 5018 Crankshaft Gear Holding Tool with 60388810 Handle on the hub of the vibration damper and counter hold whilst releasing the central bolt. Remove the central bolt and 5018 with the hub.

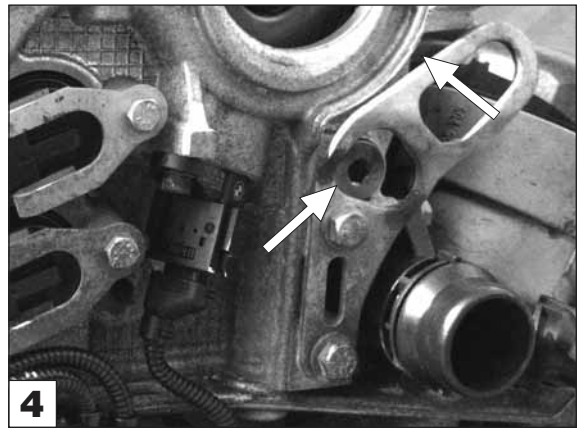
Release of Bearing Pins on Chain Guide Rails

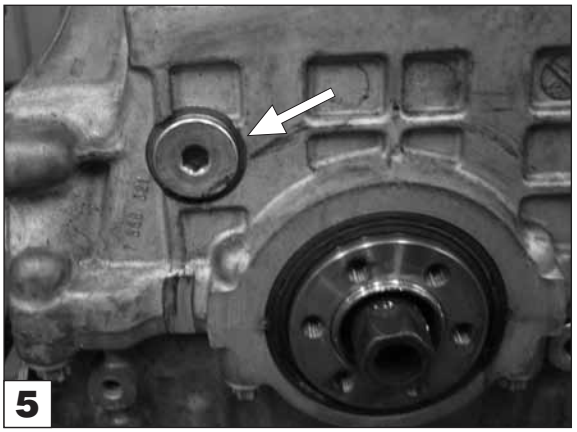


Pic. 2.
N12, N14, EP3/3C, EP6/6C/CDT, EP6DT/DTS
Chain guide rail bearing pin positions.

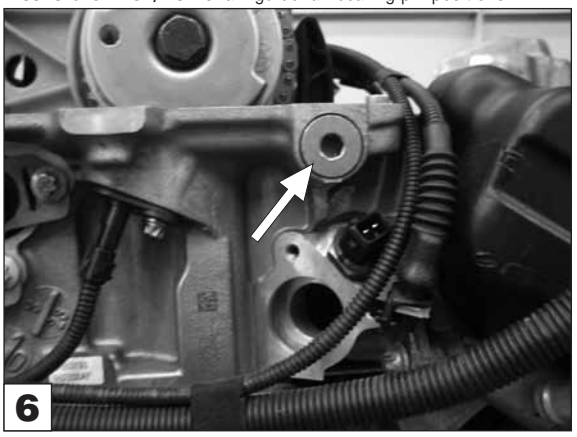


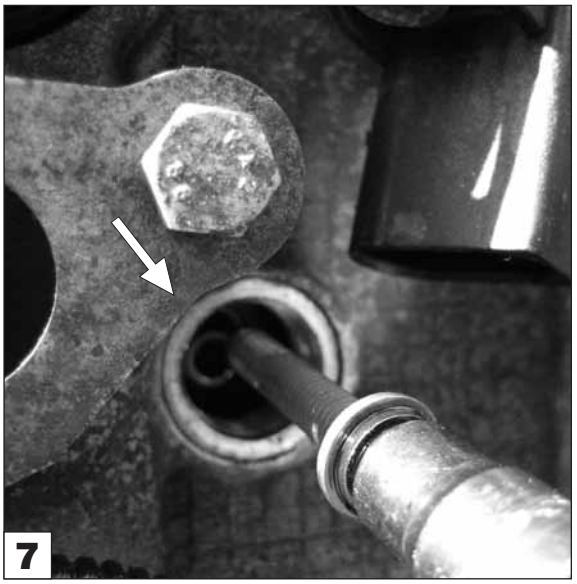
Pics. 3 & 4.
N40/N42/N45/N46
Chain guide rail bearing pin positions.





Pics. 5 & 6. N51/N52 Chain guide rail bearing pin positions.

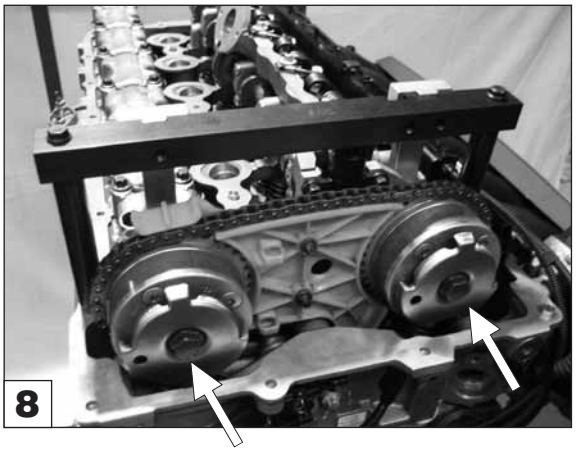




ALL Engines: Open the sealing plugs and release the pins of the chain guide rails.

VANOS Unit(s)/Camshaft sprockets - all engines

NOTE: On some engines VANOS units are fitted on the Inlet camshaft only.

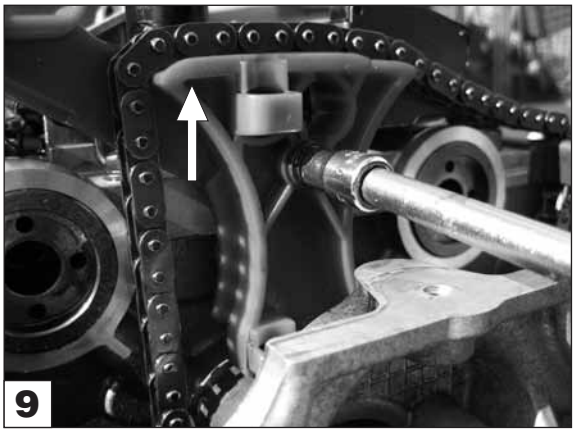


Using a counter hold on the hexagons at the rear of the camshafts, slacken the centre bolts of the VANOS Units/camshaft sprockets. (N52 Engine shown for illustration purposes)

WARNING: These bolts are likely to be tight. It is recommended to counter hold against camshaft rotation at the hexagon at the rear of the camshafts. Do not rely on the Camshaft Setting Assembly to counter hold when releasing these bolts.

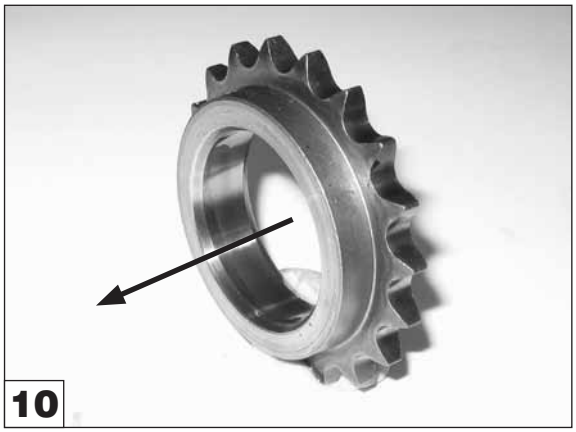
If VANOS units are fitted to both Inlet and Exhaust camshafts, first detach the exhaust VANOS unit followed by the inlet VANOS unit.

Removal of Timing Chain Assembly – all engines



Release screw of chain guide.

Remove the timing chain module with timing chain and camshaft sprocket wheel upwards in the direction of arrow shown on picture 9.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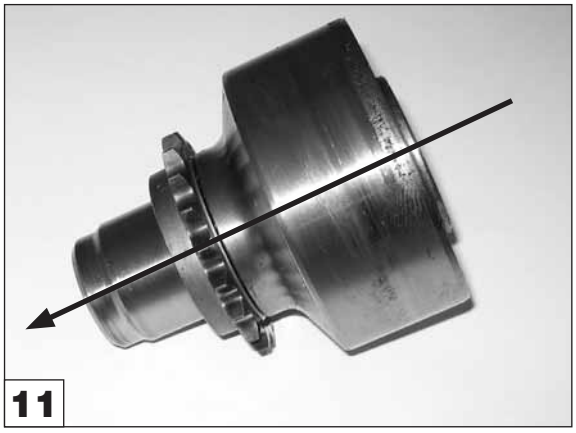
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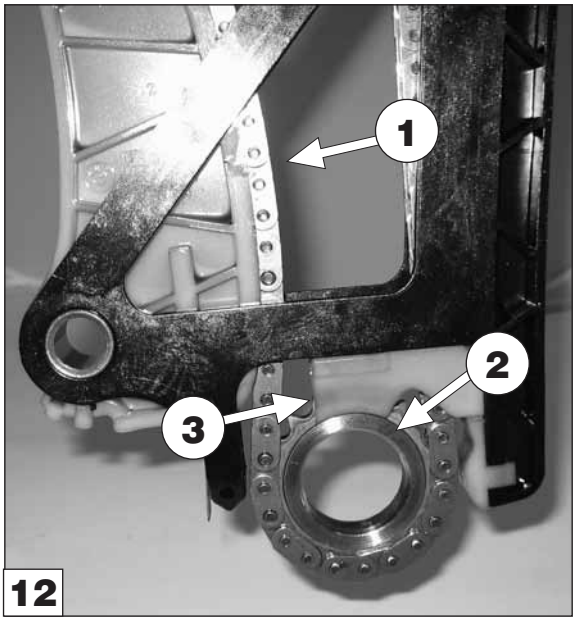
IMPORTANT: Note the installation direction of the crankshaft sprocket wheel in relation to the crankshaft, as incorrect re-assembly will result in engine damage.



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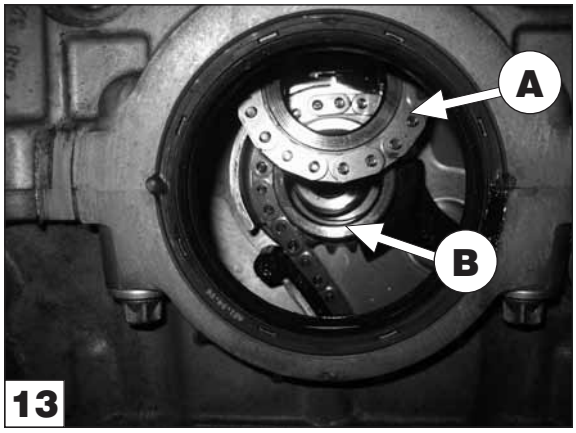
Prior to installing the chain assembly, pull timing chain (1) upwards until the crankshaft sprocket wheel (2) engages in the chain guide rail (3).
The chain (1) and crankshaft sprocket wheel (2) **MUST** be installed as an assembly.
To retain the chain assembly together place a rubber band around the two guide rails.

Insert the timing chain assembly, ensuring that the timing chain is retained in position preventing the chain from becoming jammed.



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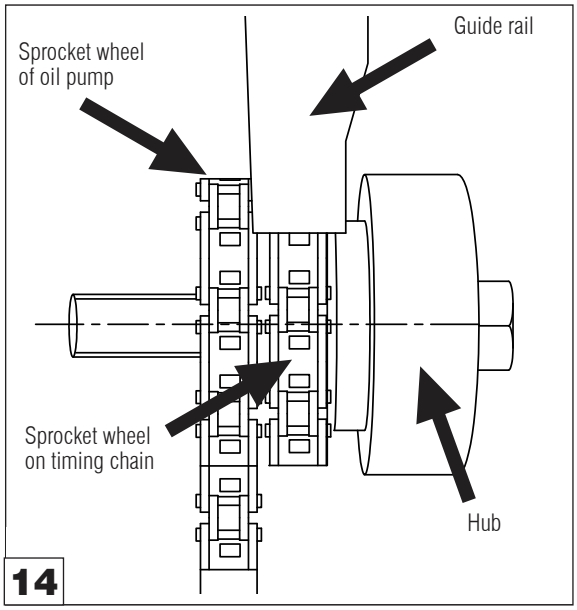
A: Sprocket wheel of timing chain
B: Sprocket wheel of oil pump



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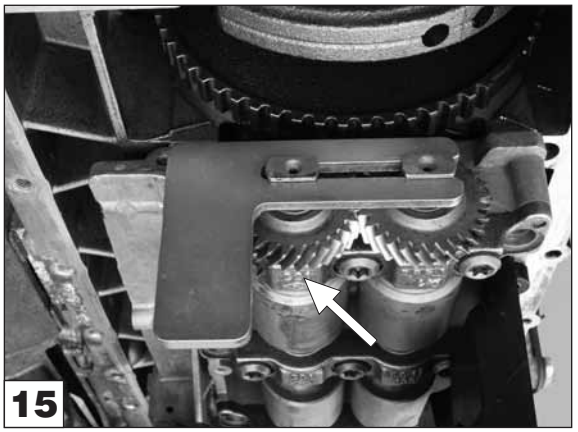
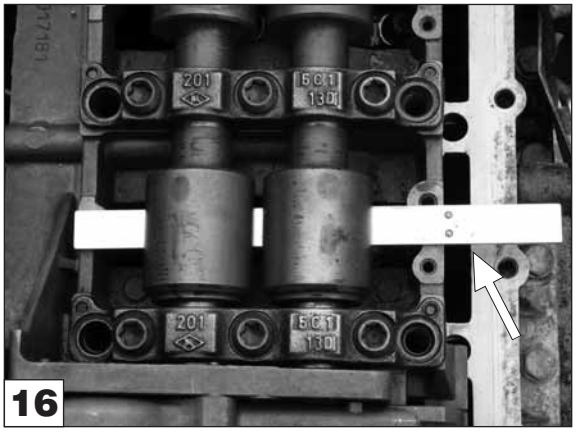
Note the installation positions of each sprocket wheel in relation to the guide rail and the hub. The sprocket wheel for the oil pump is positioned **BEHIND** the sprocket wheel for the timing chain.
Install the timing chain and sprocket wheel assembly, insert the hub and secure to the crankshaft using a **new** central bolt, **do not** tighten down.



Balancer Shafts/Timing Chain Assembly on N40/N42/N45/N46 Engines

After fitment of the new chain and whilst the central bolt is slackened, the balancer shafts can be rotated by hand.
Rotate the balancer shafts until 5016 can be inserted from the INLET side and ensure it locates fully on each shaft. The tool is designed to align the shafts to each other.

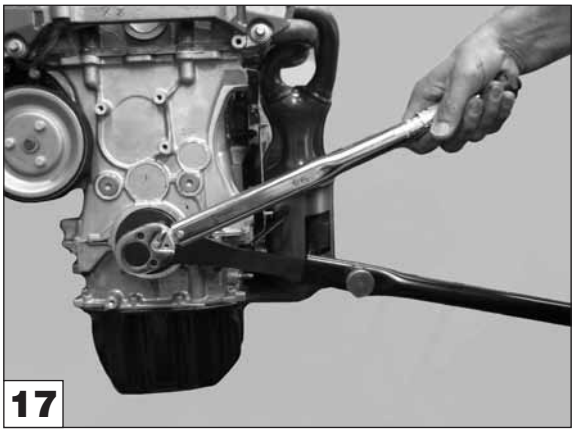


On later versions the balancer shafts are aligned using 5017 Aligner. Slide 5017 under balancing shafts on contact faces as far as pins on 5017 will allow.

Installation – (Tightening the central bolt)

IMPORTANT: Do not re-use the original central bolt.
A **new** crankshaft central bolt must be fitted on all engines.

WARNING: Do not use the flywheel locking pin to counter hold, whilst tightening the crankshaft central bolt as this may cause damage to the engine, flywheel or timing pin.



NOTE: Picture shows an **N12** Engine.

For N12, N14, EP3/3C, EP6/6C/CDT, EP6DT/DTS - When tightening the crankshaft central bolt use 5018 Crankshaft Gear Holding Tool together with 60388810 Handle, to counter hold the crankshaft hub.
Tighten the crankshaft pulley central bolt to 50Nm + 100º, and then complete the engine timing procedure as described in the Product Information for the relevant timing kit.

For N40/N42/N45/N46 - When tightening the crankshaft central bolt use 5018 Crankshaft Gear Holding Tool together with 960388810 Handle, to counter hold the crankshaft hub.
After applying the initial tightening torque of 60Nm, complete the engine timing procedure as described in the Product Information of the relevant timing kit. Remove all of the timing tools and tighten the crankshaft pulley central bolt to its final tightening torque of 300Nm.

For N51/N52 Engines

Remove the auxiliary belt tensioner from the engine and using the available threaded hole, screw in 5019 Crankshaft Gear Holding Tool Support and position 5018 Crankshaft Gear Holding Tool against it. Tighten the crankshaft pulley central bolt to 100Nm +360º, and then complete the engine timing procedure as described in the Product Information of the relevant timing kit.