

Kamasa-TOOLS®



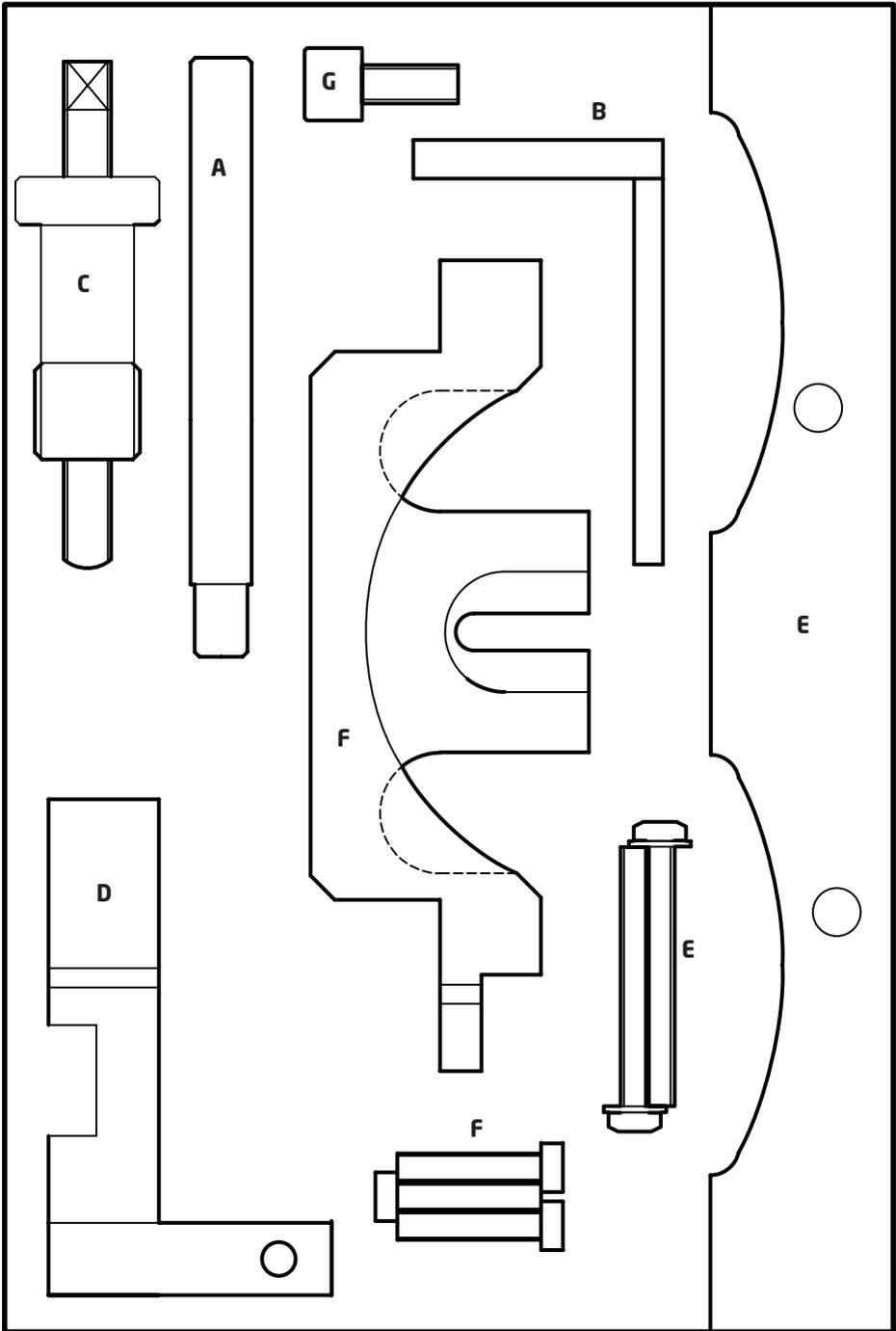
PART NO. K302

Engine Timing Tools

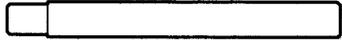
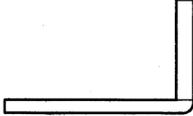
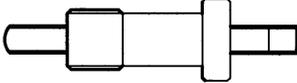
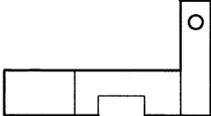
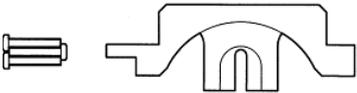
BMW 118i/120i

(E85,E87 & E90) 316i / 318i (E46)

Plan Layout



Component Identification

Part No	OEM Ref	Description	Identification
A 23048-01	11 5 120	Flywheel Timing Pin	 A long, thin cylindrical pin with a slightly wider diameter section at one end.
B 23048-12	11 9 190	Flywheel Timing Pin	 An L-shaped pin with a long horizontal section and a shorter vertical section at one end.
C 23048-14	11 9 340	Timing Chain Pre-Tensioning Tool	 A tool consisting of a central shaft with a cylindrical sleeve in the middle and a threaded section at one end.
D 23048-15	11 9 292	Inlet Camshaft Alignment Tool	 A tool with a long horizontal base, a vertical section at one end, and a small circular hole near the top of the vertical section.
E 23048-16	11 9 350	Sensor Gear Alignment Tool	 A long, thin tool with a central section that has two small circular holes and two small protrusions at the ends.
F 23048-17	11 9 291	Exhaust Camshaft Alignment Tool	 A tool with a complex, curved profile, a central opening, and a threaded section at one end.
G 23048-18	11 9 293	Camshaft Alignment Tool Bolt M8 x 25	 A standard bolt with a hexagonal head and a threaded shaft.

Applications

Manufacturer	Model	Engine Size	Engine Code	Year
BMW	E87	118i, 120i	N46 B20B	04-
	E90	318i, 320i	N46 B18B, N46 B20B	05-
	Z4 (E85)	2.0	N46 B20	04-
	Compact (E46)	316i, 316ti	N42 B18A (N42)	01-06
	Compact (E46)	318i, 318ti	N42 B20A (N42)	01-06

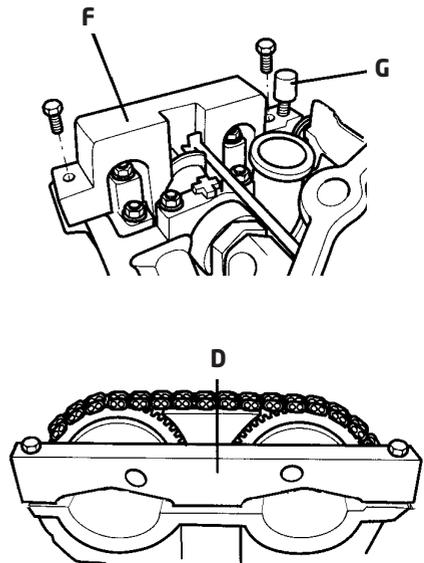
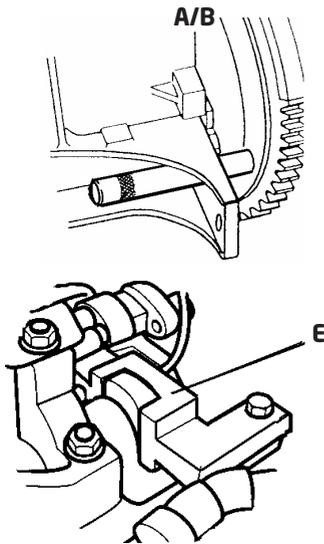
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Engine Timing Tools

This set of tools enables the correct valve timing to be made when servicing the engine. Suitable for use on many popular models as detailed.

Component Applications

1. If fitted: Mark the Crankshaft Sensor position before removal.
2. Turn the engine to Top Dead Centre (TDC) at No.1 cylinder.
3. Remove the blanking plug and insert the correct Flywheel Timing Pin **A** or **B**.
4. Check that the curved shape on the rear of each camshaft points upwards.
5. Install the Inlet Camshaft Alignment Tool **E**, and then the Exhaust Camshaft Alignment Tool **F**.
6. The Valve Timing position is considered correct when the Tool position relative to the cylinder head is either flush, touching or slightly raised on the inlet side only.
7. Maximum gap on Inlet Tool **E** is 0.5 mm and 1.0 mm on Exhaust Tool **F**.
8. The Chain Tensioner plunger is spring loaded, but should be drained of oil and the Plunger compressed twice, slowly if being re-used.
9. Install the Pre-tensioning Tool **C** and tighten the centre screw until light contact with the guide rail is achieved.
10. Replace the bolts on each camshaft adjuster and hand-tighten.
11. Install the Sensor Gear Alignment Tool **D** and secure to the cylinder head.
12. Slacken off the bolt of each camshaft adjuster by half a turn, and pre-load the timing chain with Tensioning Tool **C** to 0.6 Nm.
13. Tighten each camshaft adjuster bolt following the manufacturers' specification.
14. Re-install the tensioner assembly.
15. Remove all tools, and rotate the Crankshaft twice.
16. The valve timing is correct when each of the alignment tools **A** or **B**, **E**, **F** can be re-fitted.



Safety Precautions

- If the engine has been identified as an Interference engine, damage to the engine will occur if the timing belt has been damaged. A compression check of all the cylinders should be taken before the cylinder head (s) are removed.
- Do not turn crankshaft or camshaft when the timing belt has been removed
- To make turning the engine easier, remove the spark plugs
- Observe all tightening torques
- Do not turn the engine using the camshaft or any other sprocket
- Disconnect the battery earth lead (Check Radio code is available)
- Do not use cleaning fluids on belts, sprockets or rollers
- Some toothed timing belts are not interchangeable. Check the replacement belt has the correct tooth profile
- Always mark the belt with the direction of running before removal
- Do not lever or force the belt onto its sprockets
- Check the ignition timing after the belt has been replaced.
- Do not use timing pins to lock the engine when slackening or tightening the crankshaft pulley bolts
- ALWAYS REFER TO A REPUTABLE MANUFACTURERS WORKSHOP MANUAL

Warning - Incorrect or out of phase engine timing can result in damage to the valves. It is always recommended to turn the engine slowly, by hand, and to re-check the camshaft and crankshaft timing positions.



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