

01-122 Reconditioning of threaded bores for cylinder head bolts

Special tools

Drilling jig for threaded bores
for cylinder head bolts in
crankcase



117 589 02 23 00

Tap with guide shaft



117 589 00 70 00

Conventional tools

Heli-Coil tap M 10
Item No. 0140 0100104

Heli-Coil threaded insert M 10
Standard item No. 0130 0100025
(part No. 000 997 58 15)

e.g. Böllhoff & Co., D-4800 Bielefeld 14

Heli-Coil hand installer M 10
Item No. 0150 0410000-1

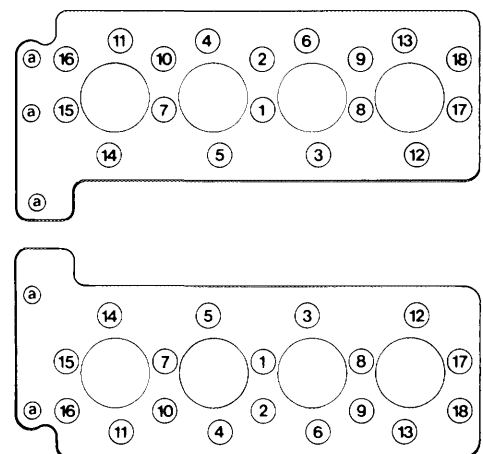
Note

If damaged threads are discovered during removal or installation of the cylinder head, Heli-Coil threaded inserts part No. 000 997 58 15 must be installed for all cylinder head bolts of the cylinder bank concerned. The threaded inserts have a length (screwed in) which corresponds to **2.5 times** the diameter of the cylinder head bolts (14 threads).

For threads with difficult access, use an angular drilling machine with a chuck for drills with 10 mm diameter to avoid that the engine has to be removed.

Caution!

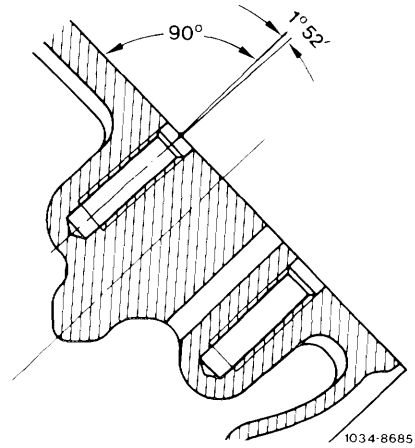
The threaded holes 15, 7, 1, 8 and 17 for the cylinder head bolts M 10 x 165 on the camshaft bearings are drilled at an angle in the crankcase.



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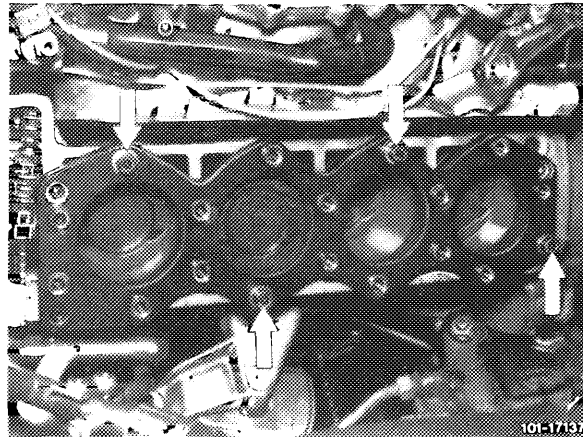
These threaded holes are not vertical to the crankcase mating surface, but at an inclination of $1^{\circ} 52'$ to the engine outside.

In order to prevent pressure points on the cylinder running surfaces due to the relatively long Heli-Coil inserts, the respective core holes must be drilled vertically or at $1^{\circ} 52'$ inclination **using the drilling jig**.



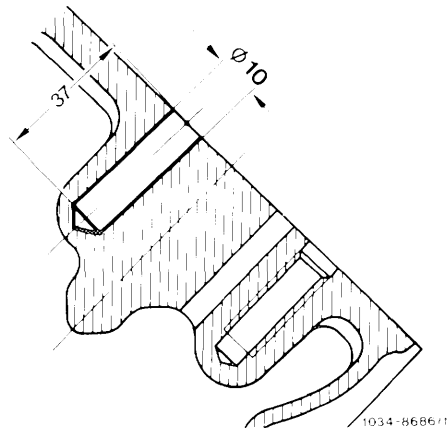
Reconditioning

- 1 Bolt drilling jig onto the cylinder bank concerned.
- 2 Cover cylinder bores, coolant openings and chain case (minute aluminum-silicon chips damage the cylinder running surface and the piston).

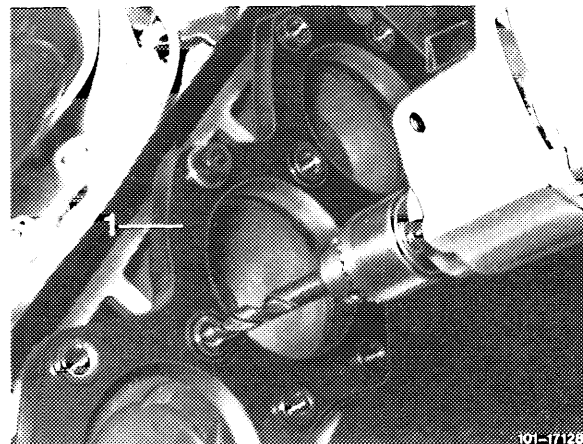


- 3 Using an HSS spiral drill 10 mm dia., drill core hole approx. 37 mm deep while lubricating with honing oil.

Core hole diameter should be a minimum of 10 mm and a maximum of 10.3 mm.



- 4 Remove drilling jig and blow out chips.

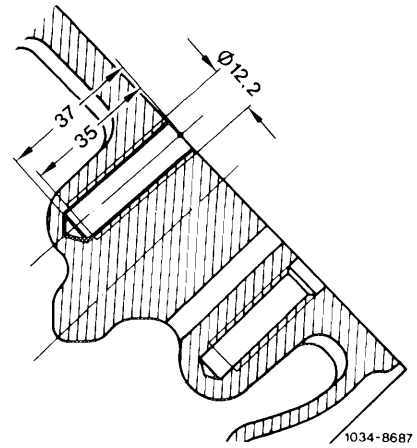


5 Precut the Heli-Coil installation thread as deep as possible using the tap with guide shaft section. To do so, lubricate the tap with honing oil.

6 Carefully blow out chips.

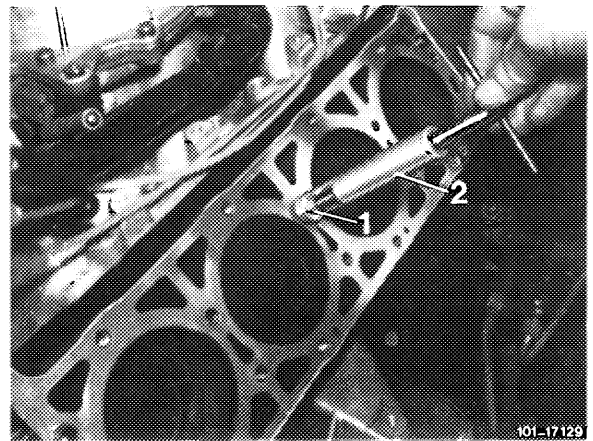
7 Cut Heli-Coil installation thread using Heli-Coil tap M 10 (outside diameter 12.0 mm), item No. 0140 0100104, approx. 35 mm deep, while lubricating the tap with honing oil.

8 Carefully blow out chips.



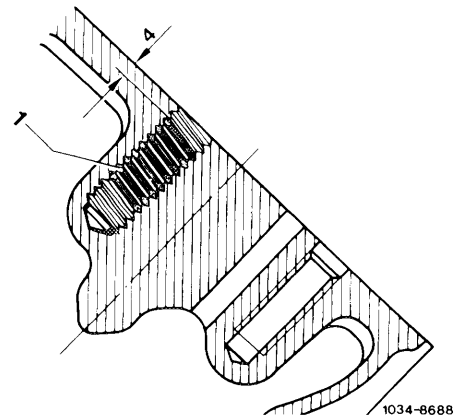
9 Screw in oil-coated Heli-Coil threaded insert (1), part No. 000 997 58 15, (Heli-Coil standard item No. 01 30 0100025), using hand installer M 10 (2), item No. 0150 0410000-1.

To do so, screw Heli-Coil insert (1) with the driving end to the front into the hand installer (2) until the first winding projects 3/4. Align the hand installer over the tapped hole and screw in the Helicoil insert (1) without pressure by turning the spindle.



Caution!

The uppermost thread must be positioned approx. 4 mm below the crankcase mating surface.



10 Screw a cylinder head bolt into the inserted thread and check for misalignment and easy operation.

The screw-in depth should be approx. 29 mm.

Note: The driving end of the Heli-Coil threaded insert is not removed as is usual, but remains on the threaded insert.