

9.5.4 Cylinder head cover – Removal and installation

Preconditions

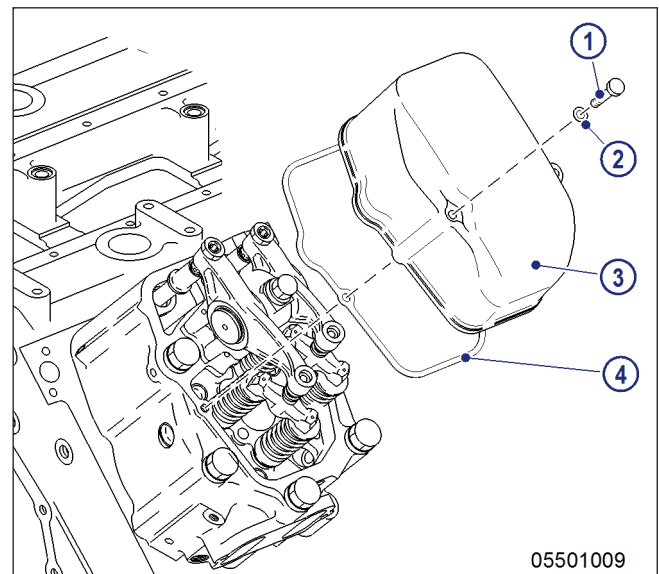
- ☑ Engine is stopped and starting disabled.

Special tools, Material, Spare parts

Designation / Use	Part No.	Qty.
Gasket	(→ Spare Parts Catalog)	

Removing cylinder head cover

1. Clean very dirty cylinder head covers (3) prior to removal.
2. Undo screws (1) and remove with washers (2).
3. Remove cylinder head cover (3) with gasket (4) from cylinder head.
4. Remove other cylinder head covers in the same way.



Installing cylinder head cover

1. Clean mating faces.
2. Check gasket (4) for damage, replace if necessary.
3. Place gasket (4) and cylinder head cover (3) onto cylinder head.
4. Install cylinder head cover (3) with screws (1) and washers (2).
5. Install other cylinder head covers in the same way.

9 Task Description

9.1 Engine

9.1.1 Engine - Barring manually

Preconditions

- Engine is stopped and starting disabled.

Special tools, Material, Spare parts

Designation / Use	Part No.	Qty.
Barring tool	F6555766	1
Adapter	F6558528	1
Ratchet with extension	F30006212	1

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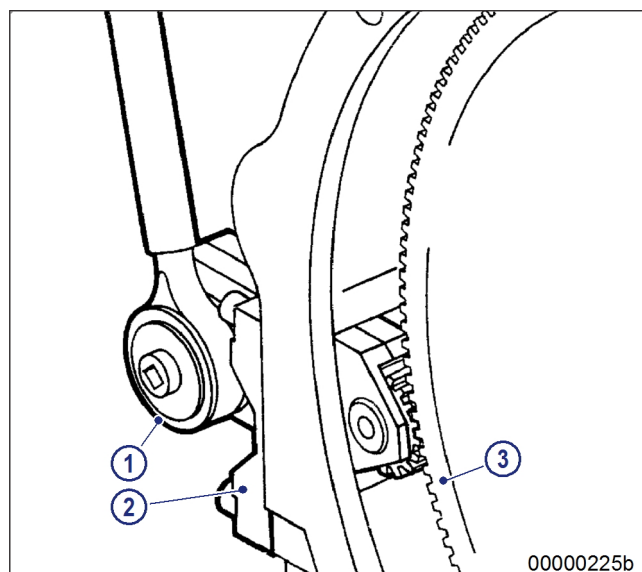
Rotating/moving engine parts.

Risk of crushing, danger of body parts being caught up or drawn in!

- Ensure that all personnel is clear of the danger zone before cranking the engine on the starter.

Barring engine manually (lateral installation)

1. Remove guard plate.
2. Engage barring tool (2) in ring gear (3) and install on flywheel housing.
3. Set ratchet (1) onto barring tool (2).
4. Rotate crankshaft in engine direction of rotation. Apart from the normal compression resistance, there should be no resistance.
5. Remove barring tool in reverse order.



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9.5.3 Valve clearance – Check and adjustment

Preconditions

- Engine is stopped and starting disabled.
- Engine coolant temperature is max. 40 °C.
- Valves are closed.

Special tools, Material, Spare parts

Designation / Use	Part No.	Qty.
Feeler gage	Y20098771	1
Torque wrench, 60–320 Nm	F30452768	1
Socket box wrench	F30039526	1
Engine oil		

Preparatory steps

1. Remove cylinder head cover (→ Page 111).
2. Install barring tool (→ Page 92).
3. Use barring tool to turn crankshaft in direction of rotation until marking OT-A1 (1) and pointer (2) are aligned.

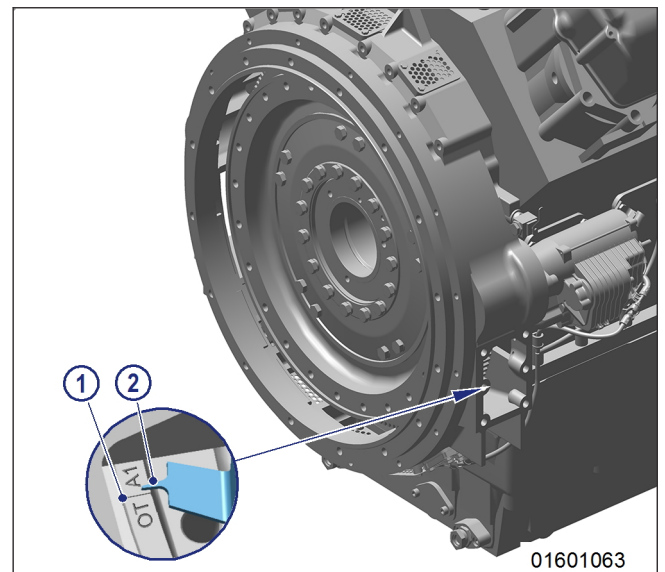


Diagram for 8V engines – two crankshaft positions

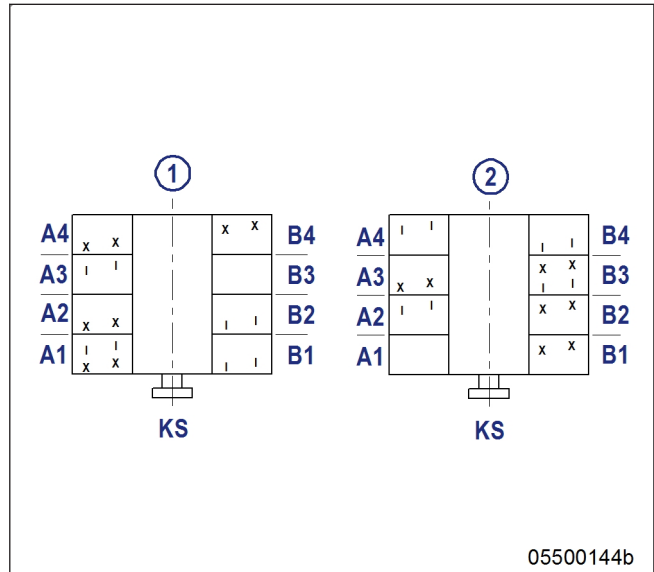


Diagram for 12V engines – two crankshaft positions

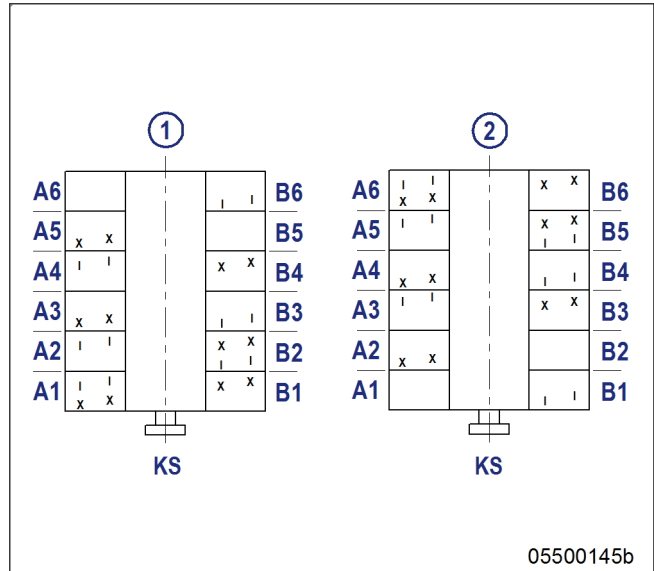
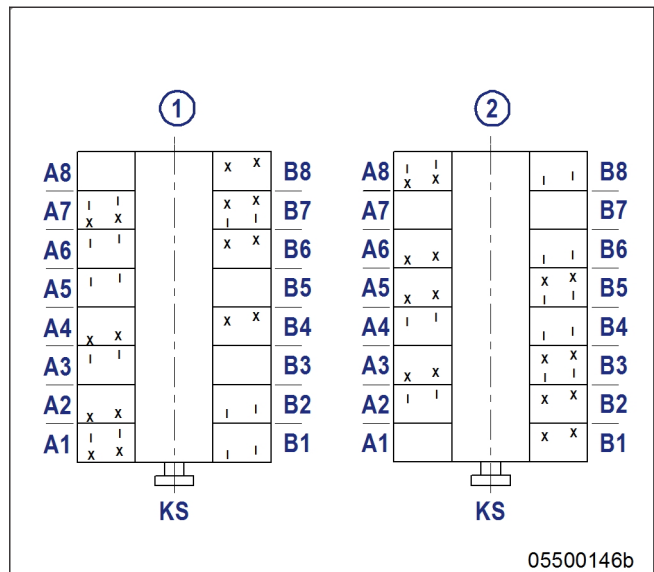
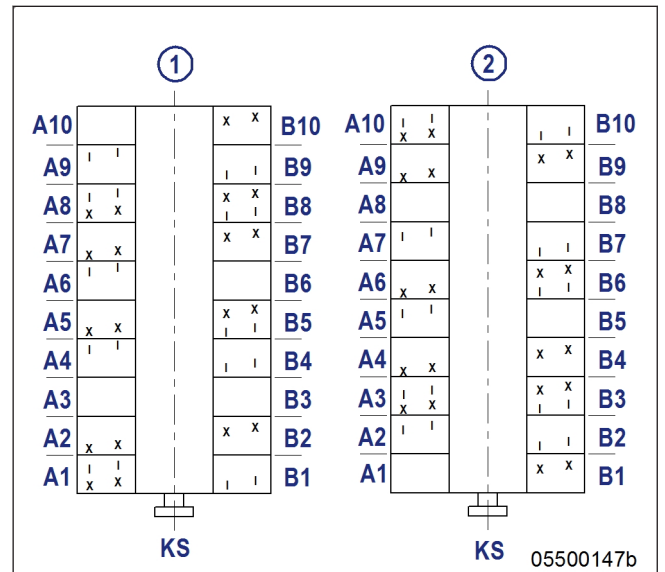


Diagram for 16V engines – two crankshaft positions



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Diagram for 20V engines – two crankshaft positions

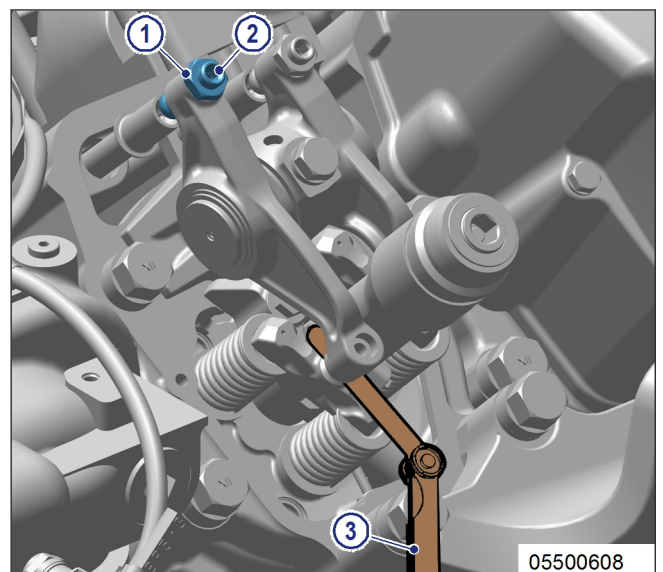


Checking valve clearance at two crankshaft positions

- Check TDC position of piston in cylinder A1:
 - If rocker arms on cylinder A1 are unloaded, the piston is in firing TDC.
 - If rocker arms on cylinder A1 are loaded, the piston is in overlap TDC.
- Check valve clearance with cold engine:
 - Inlet (long rocker arm) = 0.2 mm \pm 0.05 mm
 - Exhaust (short rocker arm) = 0.5 mm \pm 0.05 mm
- Check all valve clearances in two crankshaft positions (firing TDC and overlap TDC of cylinder A1) as per diagram:
 - Cylinder A1 is in firing TDC
 - Cylinder A1 is in overlap TDC
 - Inlet valve
 - Exhaust valve
- Use feeler gage to determine the distance between valve bridge and rocker arm.
- If the deviation from the specified value exceeds \pm 0.05 mm, adjust valve clearance.

Adjusting valve clearance

- Release locknut (1).
- Insert feeler gage (3) between valve bridge and rocker arm.
- Use Allen key to set adjusting screw (2) so that the specified valve clearance is established.
- Feeler gage (3) must just pass through the gap.



- Tighten locknut (1) to specified torque using a torque wrench, holding the adjusting screw (2) to prevent it from turning.

Name	Size	Type	Lubricant	Value/Standard
Nut	M16 x 1.5	Tightening torque	(Engine oil)	90 Nm +9 Nm man- ual tightening

- Replace or rectify adjusting screws and/or locknuts which do not move freely.
- Check valve clearance.

Final steps

- Remove barring tool (→ Page 92).
- Install cylinder head cover (→ Page 111).