



**HURLIMANN XM 115 DCR
Tractor Service Repair
Manual (Serial No.
zkdl360200th10001 and up)**



Valve clearance adjustment (with the exhaust gas recirculation module absent or removed) (L3)

Commercially available tools:

- Rotation angle gauge: 8190
- Insertion tool with collet opening, wrench width 13: 8196
- Screwdriver insert for slot head screws: 8191
- Screwdriver insert for hexagonal pins (4 mm): 8194

Special tools:

- Rotation device: 100320
- 15 mm socket wrench insert: 103050

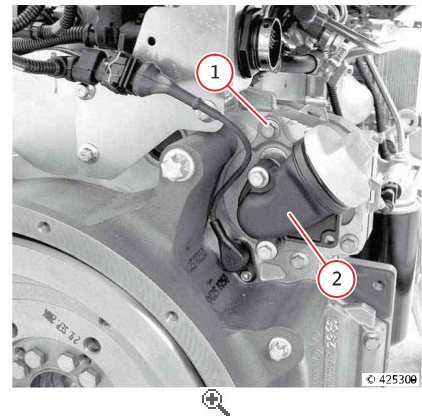


Note

Before adjusting the valve clearances, allow the engine to cool down for at least 30 minutes. Engine oil temperature < 80 °C. After adjusting the valve clearances, it is necessary to adjust the clearances of the EGR control pistons. On engines without exhaust gas recirculation modules, the adjustment screw has a slotted head rather than a hex socket head.

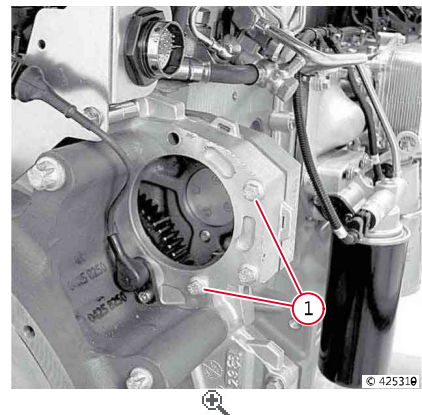
Removal

- Remove screw (1).
- Remove cover (2).



1.

- Remove screws (1).



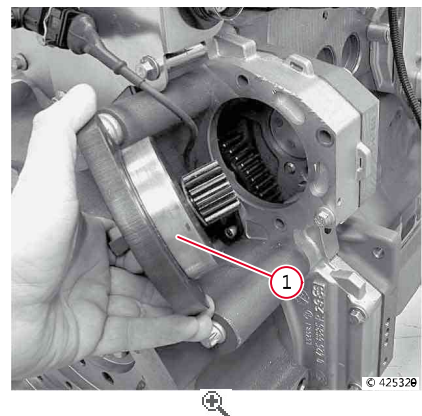
2.

- Insert rotation device (1).

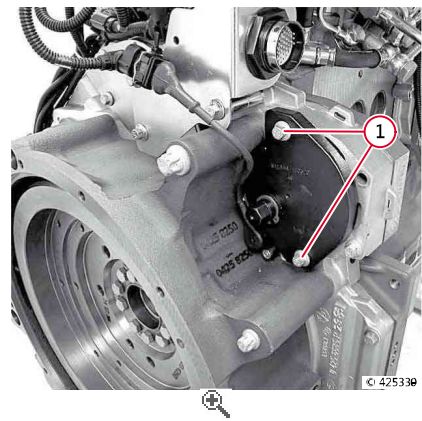


Note

The toothed wheel of the rotation device must mesh with the teeth of the camshaft gear.



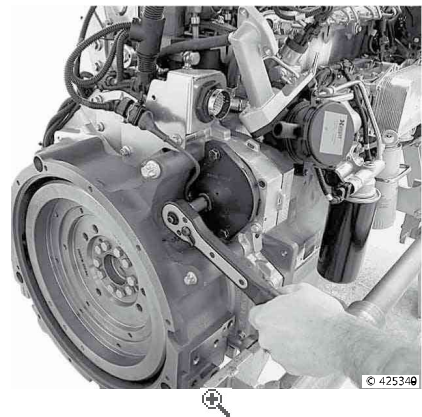
3.
 - o Tighten (1) the screws.



4.

Bring the engine to valve overlap position

- o Using the rotation device, turn the crankshaft to obtain valve overlap on cylinder No. 1.
See para. Test and adjustment data (L3)

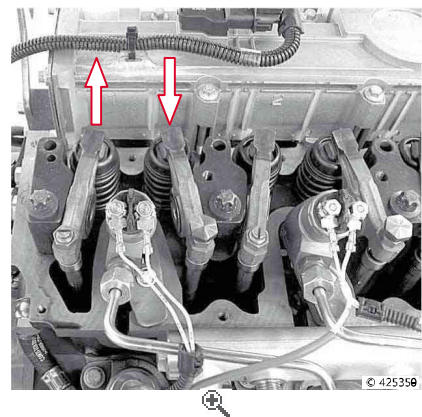


1.



Note

Valve overlap means that: the intake valve starts to open while the exhaust valve closes.



2.



Note

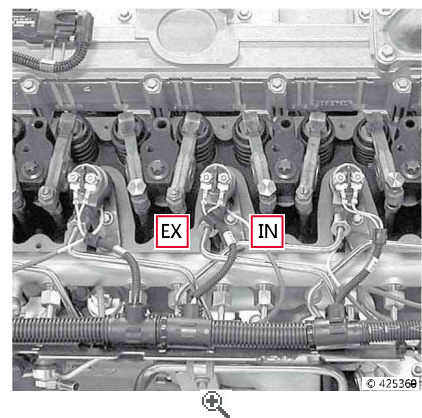
Positions of the intake and exhaust valves: IN = intake valve, EX = exhaust valve

See para. Test and adjustment data (L3)



WARNING

The adjustment screws are of different types: slot head, hexagonal and hex socket head screws.



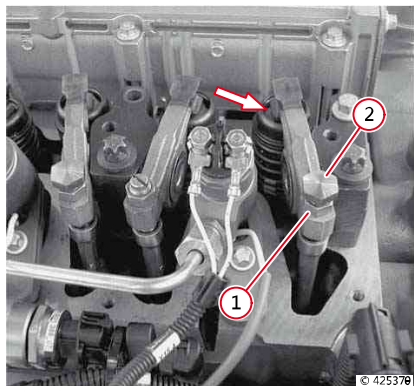
3.

Adjustment of the intake valve clearance

- o Loosen locknut (1).
- o Turn adjustment screw (2) to take up the clearance.

**Note**

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance. On engines without exhaust gas recirculation modules, the adjustment screw has a slotted head rather than a hex socket head.

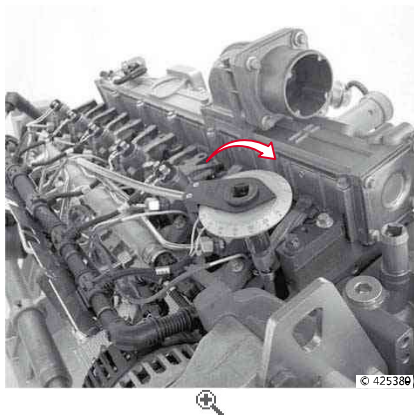


1.

- Locate the rotation angle gauge with the socket wrench insert on the adjustment screw.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".

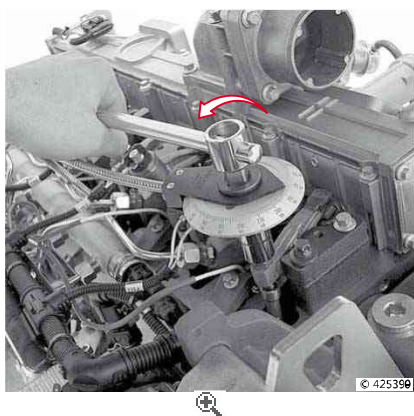
**Note**

Do not move the adjustment screw.



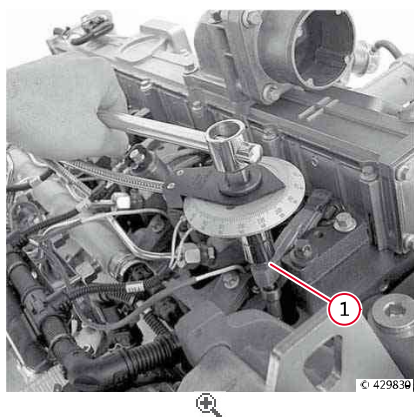
2.

- Turn the adjustment wrench 75° in the direction of the arrow. See para. Test and adjustment data (L3)



3.

- Hold the adjustment screw in this position.
- Tighten the check nut (1) using the open-ended wrench. See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine
- Remove the rotation angle gauge.



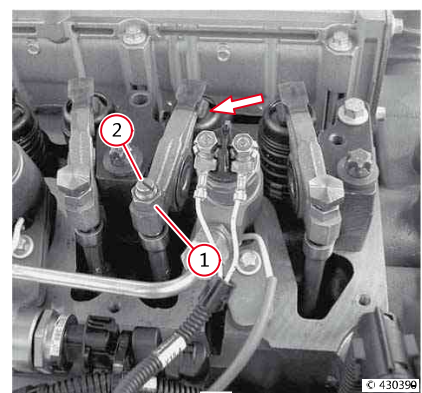
4.

Adjustment of the exhaust valve clearance

- Loosen locknut (1).
- Turn adjustment screw (2) to take up the clearance.

**Note**

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance.



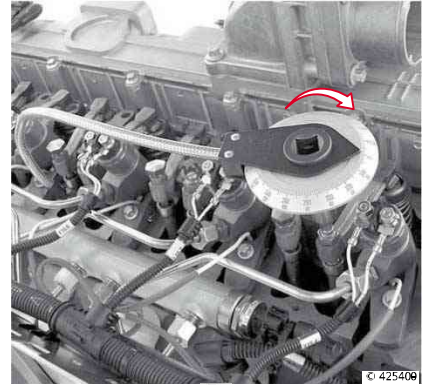
1.

- Place the rotation angle gauge with the slot head screwdriver insert on the adjustment screw.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".



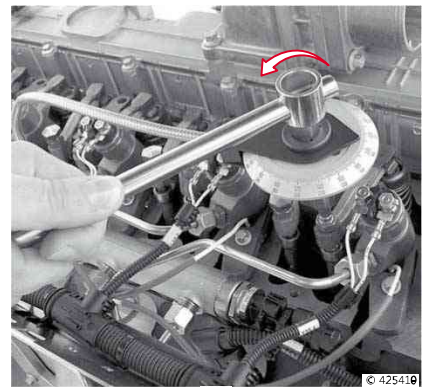
Note

Do not move the adjustment screw.



2.

- Turn the adjustment wrench 120° in the direction of the arrow. See para. Test and adjustment data (L3)



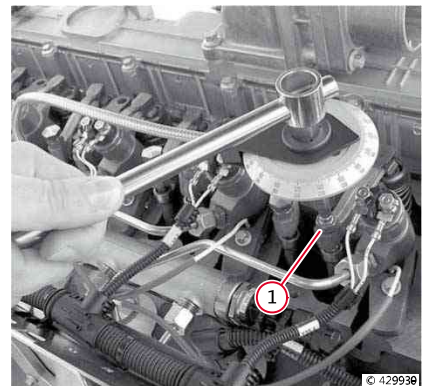
3.

- Hold the adjustment screw in this position.
- Tighten the check nut (1) using the open-ended wrench. See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine
- Remove the rotation angle gauge.



Note

Adjust all the other valves in according to the valve adjustment diagram T01 63.



4.

Adjustment of the EGR control piston clearance

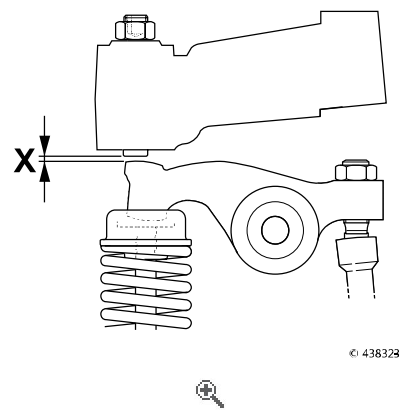
- Fit the EGR module. See para. Fitting and removing the exhaust gas recovery module (L3)



Note

After adjusting the valve clearances it is necessary to adjust the EGR control piston clearances. The valve

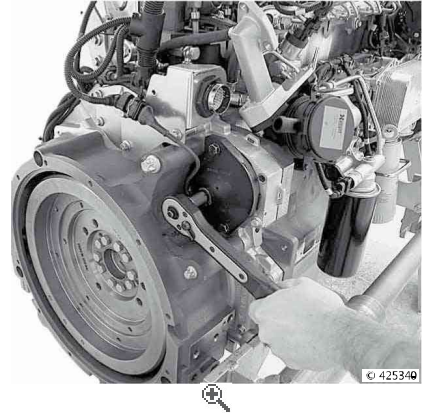
clearance adjustment procedure is indicated in the T01 63 valve adjustment diagram.



1.

Bring the engine to valve overlap position

- Using the rotation device, turn the crankshaft to obtain valve overlap on cylinder No. 1.
See para. Test and adjustment data (L3).

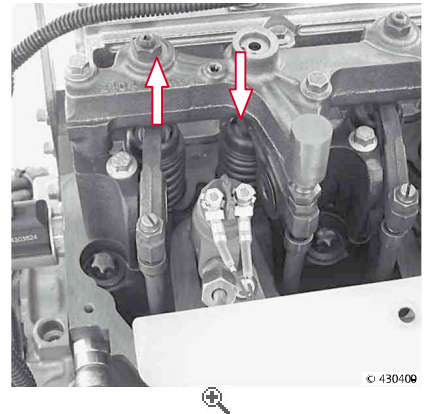


1.



Note

Valve overlap means that: the intake valve starts to open while the exhaust valve closes.

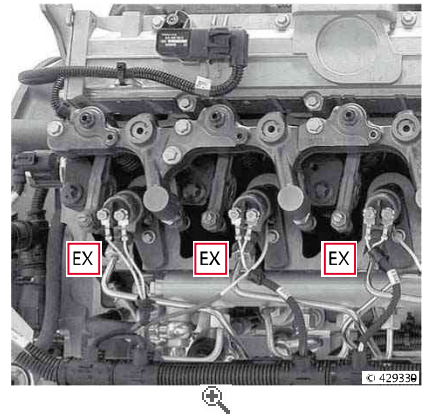


2.



Note

Arrangement of the exhaust valves: EX = exhaust valve.



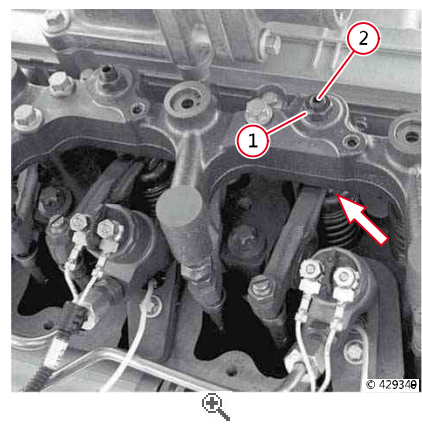
3.

- Loosen locknut (1).
- Turn adjustment screw (2) to take up the clearance.



Note

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance.



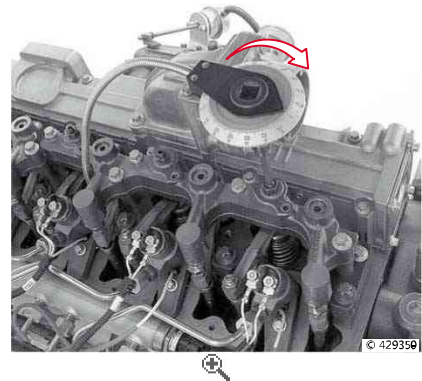
4.

- Locate the rotation angle gauge with the hex socket wrench insert on the adjustment screw.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".
- Turn the rotation angle gauge in the direction of the arrow to "0".



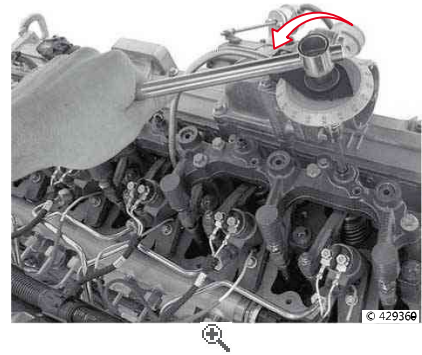
Note

Do not move the adjustment screw.



5.

- Turn the adjustment screw by 144° in the direction of the arrow. See para. Test and adjustment data (L3)



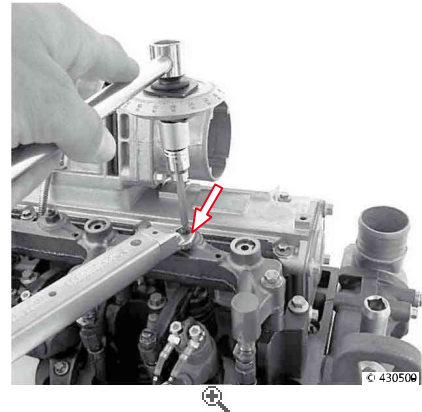
6.

- Hold the adjustment screw in this position.
- Tighten the locknut (arrowed) using the open-ended wrench. See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine
- Remove the rotation angle gauge.



Note

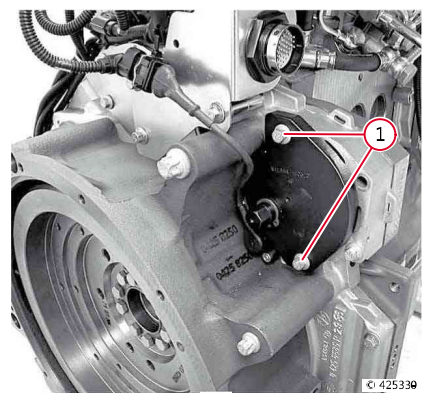
Adjust all the other cursors according to the valve adjustment diagram T01 63.



7.

Installation

- Remove screws (1).
- Remove the rotation device.



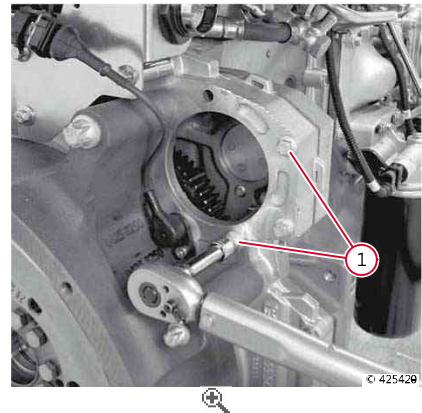
1.

- Tighten (1) the screws.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



Note

Use M8 x 45 mm screws.



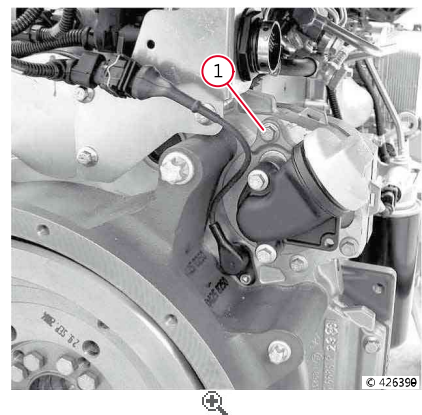
2.

- Clean the mating surfaces of the cover plate and the gearbox cover.
- Tighten the new O-ring (arrow) on the closing cover.
- Lightly lubricate the O-ring.



3.

- Push the cover firmly into place.
- Tighten screw (1).
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



4.



Valve clearance adjustment (with the exhaust gas recirculation module installed) (L3)

Commercially available tools:

- Rotation angle gauge: 8190
- Insertion tool with collet opening, wrench width 13: 8196
- Crow's foot wrench, 15 mm: 8199
- Screwdriver insert for slot head screws: 8191
- Screwdriver insert for hexagonal pins (4 mm): 8194

Special tools:

- Rotation device: 100320

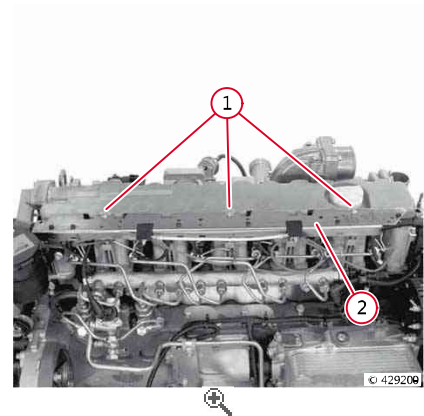


Note

Before adjusting the valve clearances, allow the engine to cool down for at least 30 minutes. Engine oil temperature < 80 °C. After adjusting the valve clearances, it is necessary to adjust the clearances of the EGR control pistons.

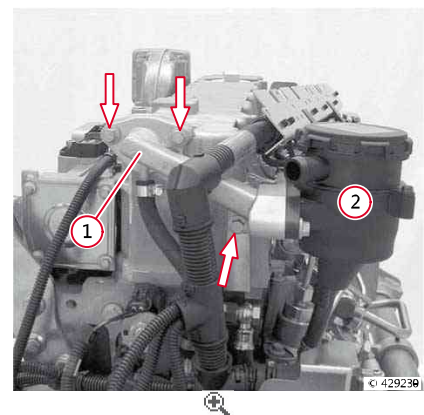
Removal

- Remove screws (1).
- Remove cover (2)



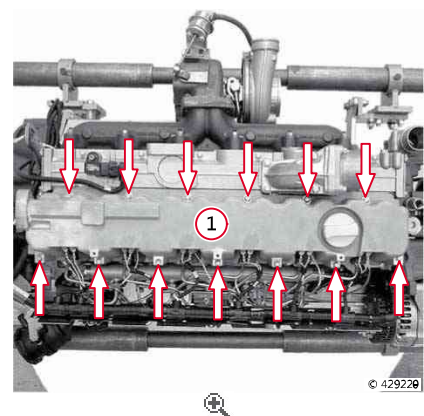
1.

- Unscrew the screws (arrowed).
- Remove and suspend to the side the bleeder channel (1) with the crankcase bleed screw (2).



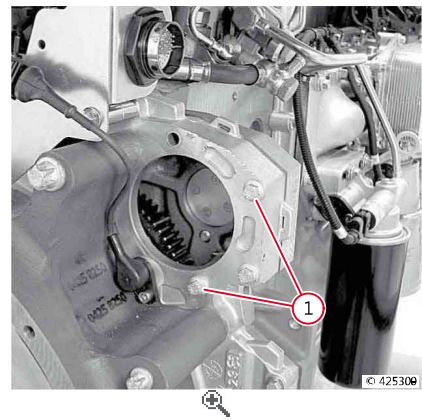
2.

- Unscrew the screws (arrowed).
- Disassemble the cylinder head case (1).
- Remove the gasket.



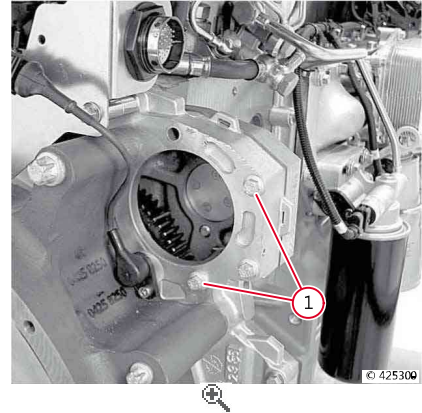
3.

- o Remove screw (1).
- o Remove cover (2).



4.

- o Remove screws (1).



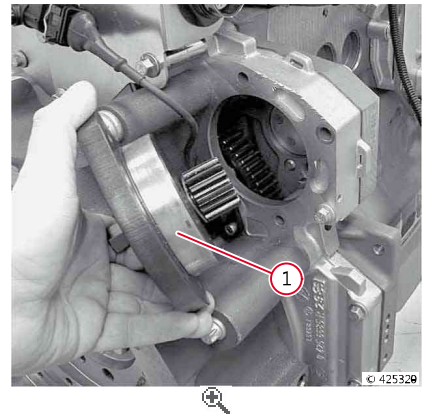
5.

- o Insert rotation device (1).



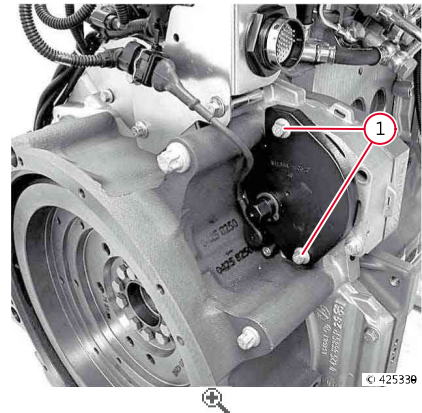
Note

The toothed wheel of the rotation device must mesh with the teeth of the camshaft gear.



6.

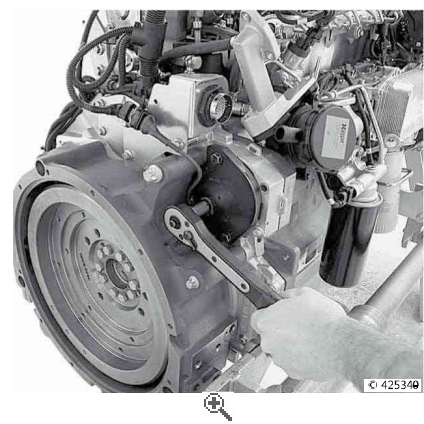
- o Tighten (1) the screws.



7.

Bring the engine to valve overlap position

- o Using the rotation device, turn the crankshaft to obtain valve overlap on cylinder No. 1.
See para. Test and adjustment data (L3).

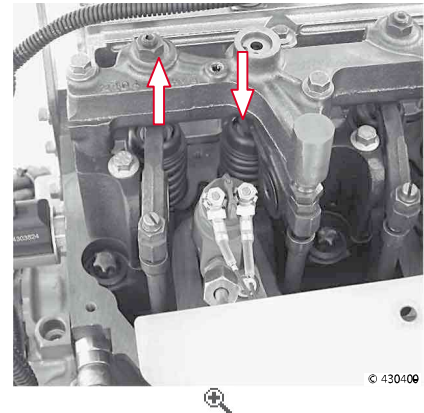


1.

Note

Valve overlap means that: the intake valves start to open while the exhaust valves close. Observe the valve clearance adjustment diagram.

See para. [Test and adjustment data \(L3\)](#)



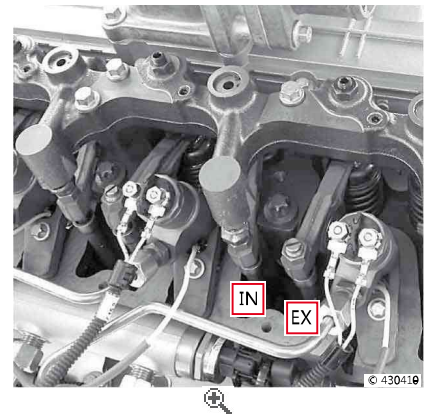
2.

Note

Positions of the intake and exhaust valves: IN = intake valve, EX = exhaust valve

WARNING

The adjustment screws are of different types: slot head, hexagonal and hex socket head screws.



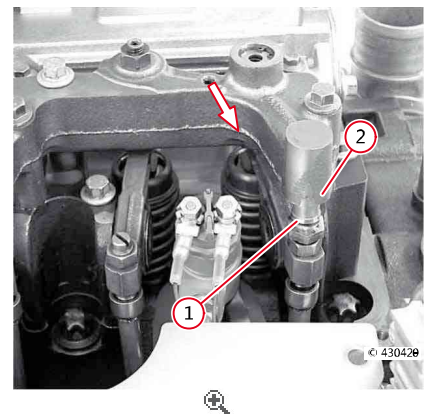
3.

Adjustment of the intake valve clearance

- Loosen locknut (1).
- Turn adjustment screw (2) to take up the clearance.

Note

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance.



1.

- Locate the rotation angle gauge on the adjustment screw with the crows foot wrench.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".

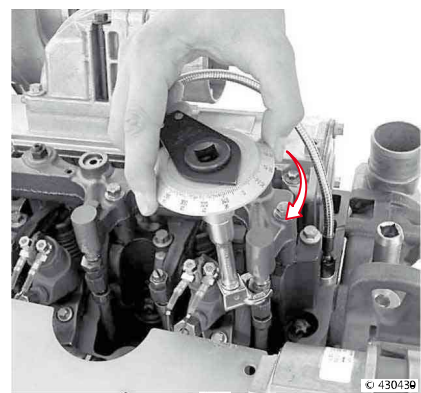
Note

Do not move the adjustment screw.



2.

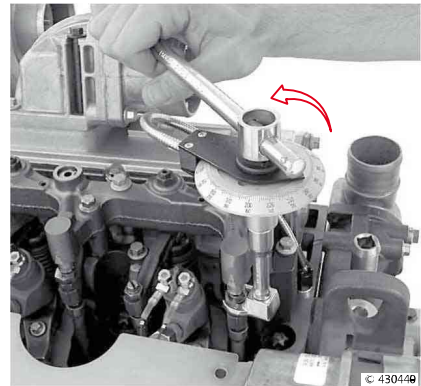
- Turn the adjustment wrench 75° in the direction of the arrow.
See para. Test and adjustment data (L3)



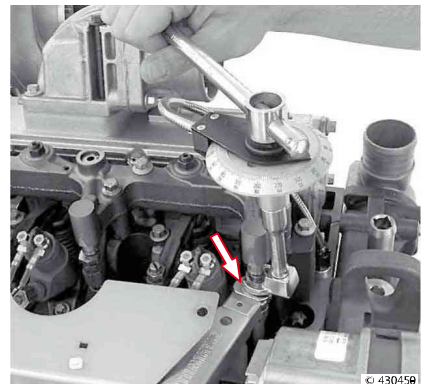
© 430439

3.

- Hold the adjustment screw in this position.
- Tighten the locknut (arrowed) using the open-ended wrench.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine
- Remove the rotation angle gauge.



© 430440



© 430450

4.

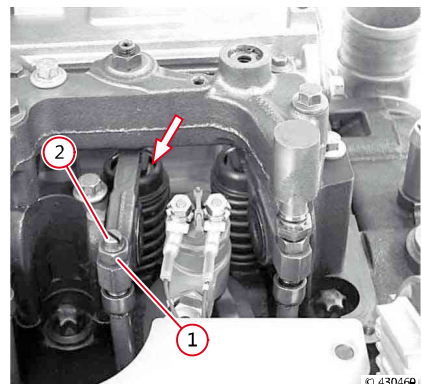
Adjustment of the exhaust valve clearance

- Loosen locknut (1).
- Turn adjustment screw (2) to take up the clearance.



Note

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance.



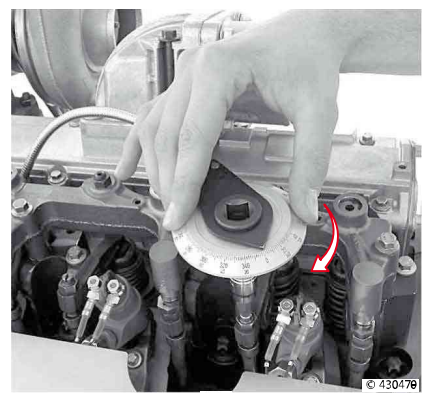
© 430460

1.

- Place the rotation angle gauge with the slot head screwdriver insert on the adjustment screw.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".

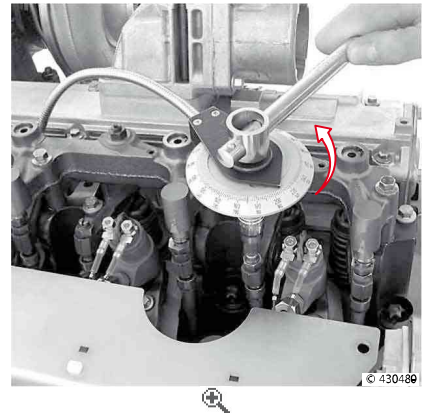
Note

Do not move the adjustment screw.



2.

- Turn the adjustment wrench 120° in the direction of the arrow.
See para. Test and adjustment data (L3)



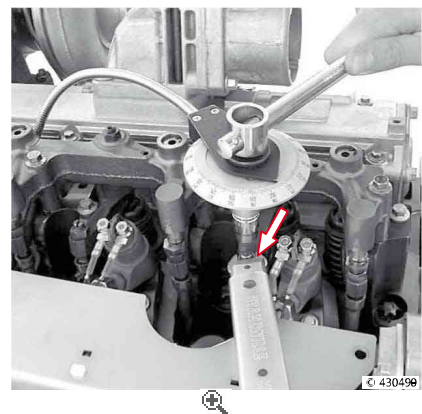
3.

- Hold the adjustment screw in this position.
- Tighten the locknut (arrowed) using the open-ended wrench.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine
- Remove the rotation angle gauge.



Note

Adjust all the other valves in according to the valve adjustment diagram T01 63.



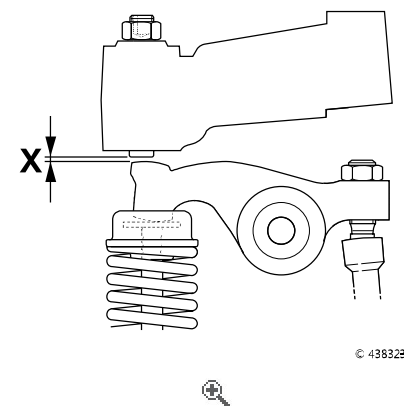
4.

Adjustment of the EGR control piston clearance



Note

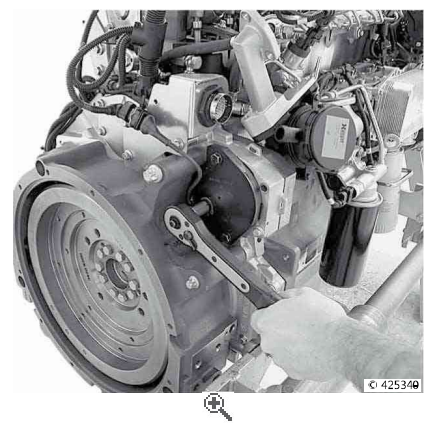
After adjusting the valve clearances it is necessary to adjust the EGR control piston clearances. The cursor clearance adjustment sequence is shown in the valve adjustment diagram T01 63.




1.

Bring the engine to valve overlap position

- Using the rotation device, turn the crankshaft to obtain valve overlap on cylinder No. 1.
See para. Test and adjustment data (L3)

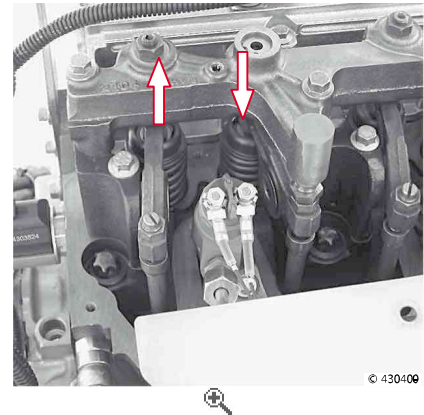


1.




Note

Valve overlap means that: the intake valves start opening while the exhaust valves are closing. Observe the valve clearance adjustment diagram.

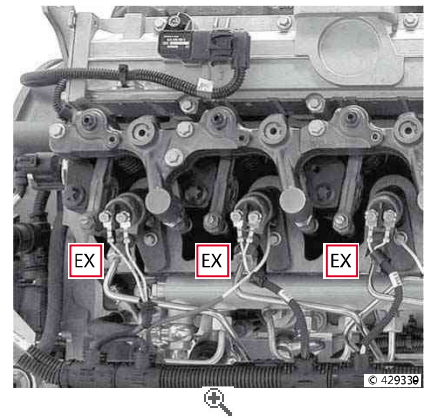


2.




Note

Arrangement of the exhaust valves: EX = exhaust valve



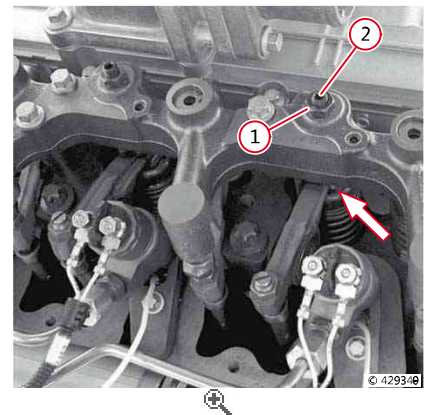
3.

- Loosen locknut (1).
- Turn adjustment screw (2) to take up the clearance.




Note

The rocker arm should rest on the thrust washer of the collet (arrowed) with no clearance.



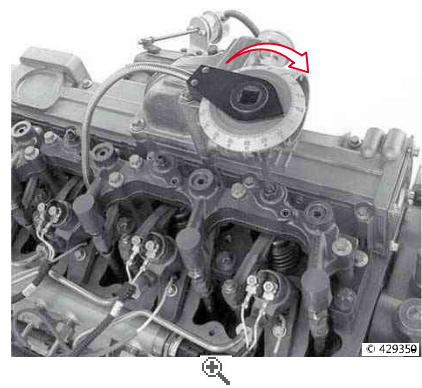
4.

- Locate the rotation angle gauge with the hex socket wrench insert on the adjustment screw.
- Fix the magnet of the rotation angle gauge to the cylinder head.
- Turn the rotation angle gauge in the direction of the arrow to "0".



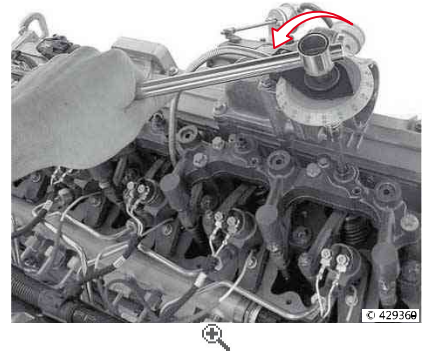
Note

Do not move the adjustment screw.



5.

- Turn the adjustment screw through 144° in the direction of the arrow.
See para. [Test and adjustment data \(L3\)](#)



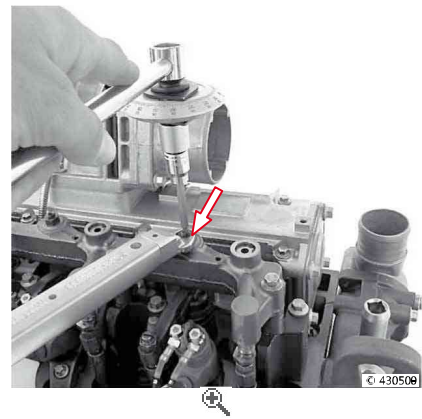
6.

- Hold the adjustment screw in this position.
- Tighten the locknut (arrowed) using the open-ended wrench.
See para. [Tightening requirements TCD 2012 L04/L06 2V DCR engine](#)
- Remove the rotation angle gauge.



Note

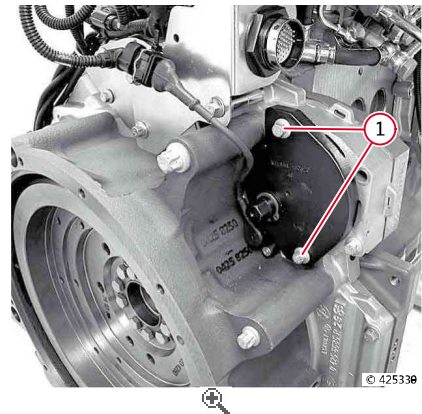
Adjust all the other cursors according to the valve adjustment diagram T01 63.



7.

Installation

- Remove screws (1).
- Remove the rotation device.



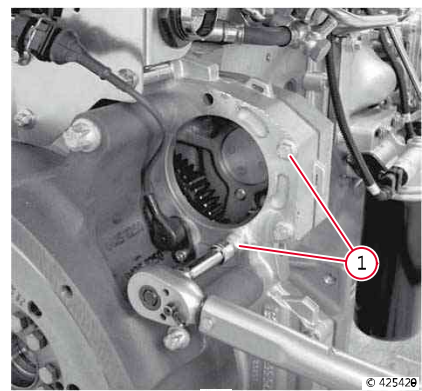
1.

- Tighten (1) the screws.
See para. [Tightening requirements TCD 2012 L04/L06 2V DCR engine](#)



Note

Use M8 x 45 mm screws.



© 425420

2.

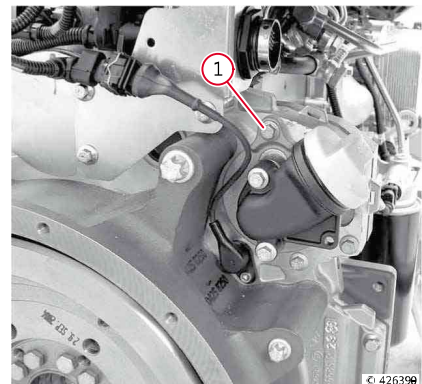
- Clean the mating surfaces of the cover plate and the gearbox cover.
- Tighten the new O-ring (arrow) on the closing cover.
- Lightly lubricate the O-ring.



© 425430

3.

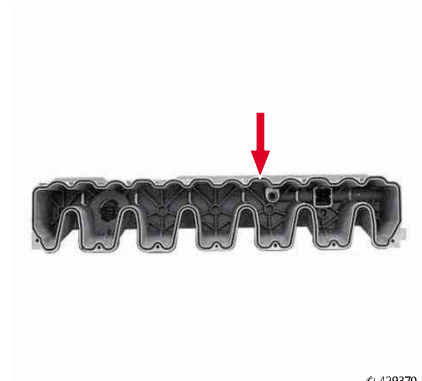
- Push the cover firmly into place.
 - Tighten the screws (arrowed).
- See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



© 426390

4.

- Clean the mating surfaces.
- Fit a new gasket (arrowed).



© 429370

5.

- Fit the cylinder head cover.
 - Tighten the screws in alternate sequence.
- See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



WARNING

Do not connect cable (1).

**Thank you very much for
your reading. Please Click
Here. Then Get COMPLETE
MANUAL. NO WAITING**

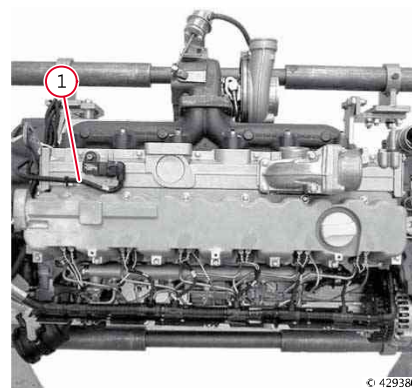


NOTE:

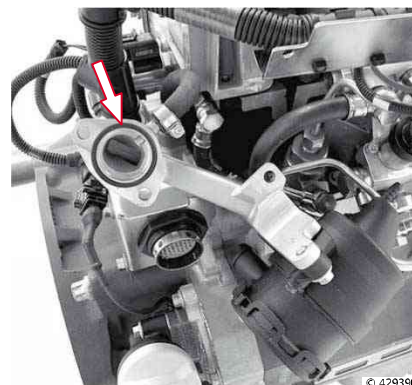
**If there is no response to
click on the link above,
please download the PDF
document first and then
click on it.**

6.

- Clean the mating surfaces.
- Fit a new gasket (arrowed).



© 429389



© 429399

7.

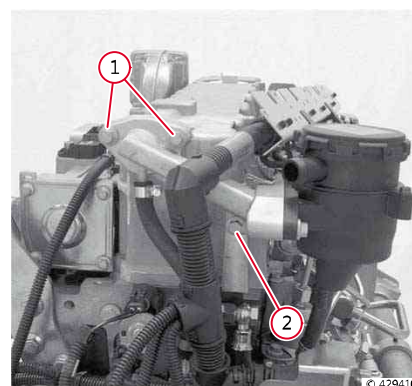
- Position the bleeder channel with the crankcase bleed screw.
- Fit the screws.



Note

Note that the screws are of different lengths M8 x 25 mm (1), M8 x 20 mm (2)

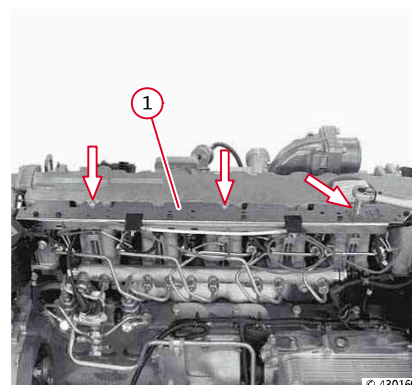
- Tighten the screws.



© 429419

8.

- Fit cover plate (2).
 - Tighten the screws (arrowed).
- See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



© 430169

9.



Disassembly and assembly of the rocker and support (L3)

Commercially available tools:

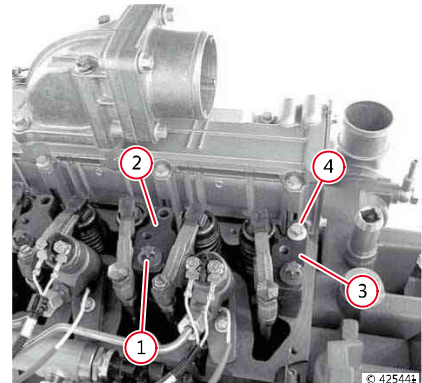
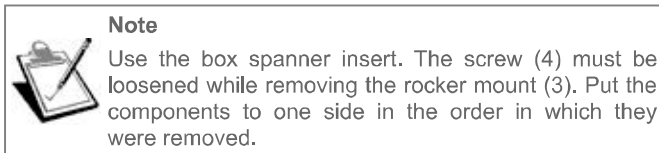
- Box spanner insert: 8113

Special tools:

- Rotation device: 100320

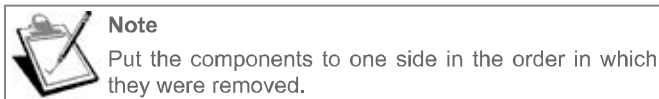
Removal of the rocker arms and pedestals

- Remove the EGR module.
See para. Fitting and removing the exhaust gas recovery module (L3)
- Remove screw (1).
- Remove the rocker with the rocker mount (2).

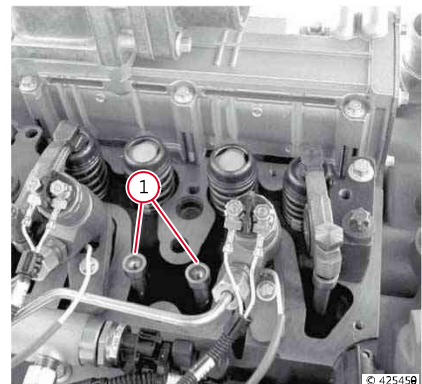


1.

- Withdraw pushrods (1).



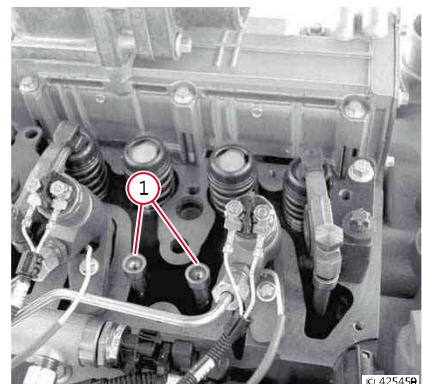
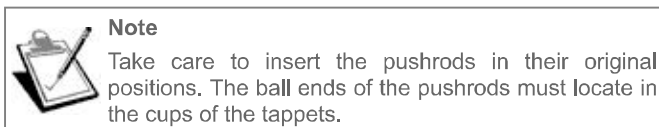
- Carry out a visual inspection of the components.



2.

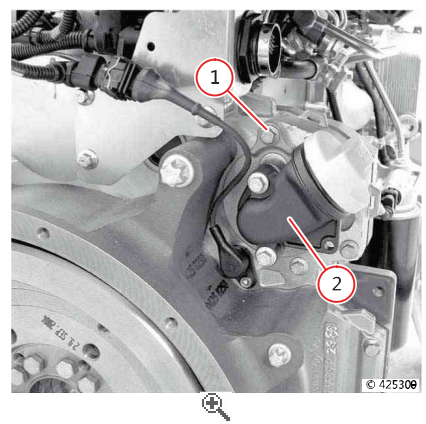
Refitting the rocker arms and pedestals

- Insert pushrods (1).

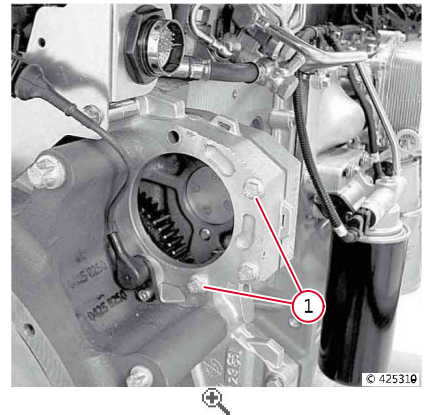


1.


- Remove screws (1).
- Remove cover (2).



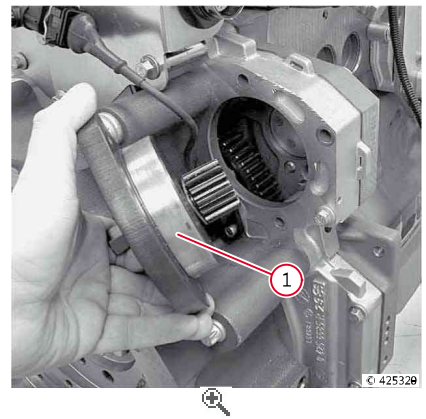
2.
 - Remove screws (1).



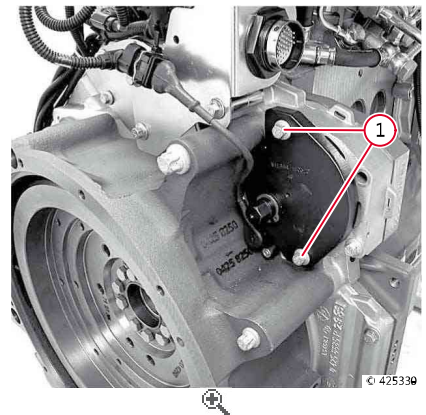
3.
 - Insert rotation device (1).




Note
The toothed wheel of the rotation device must mesh with the teeth of the camshaft gear.



4.
 - Tighten (1) the screws.



5.



Note
Make sure the pin is present (arrow).