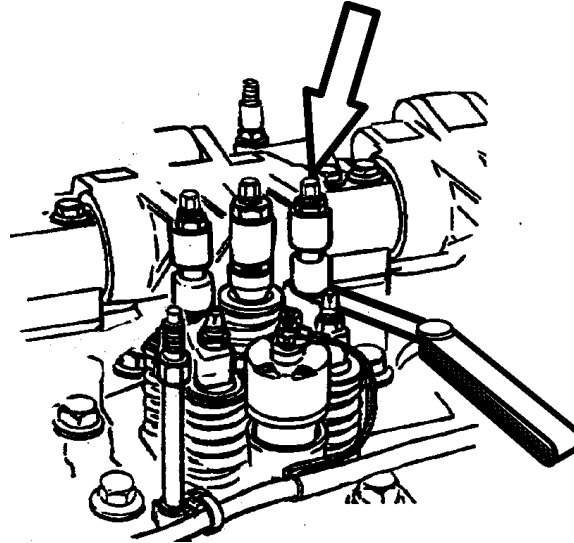


This TSI Service Bulletin replaces TSI Service Bulletin 214-013, "Valves, D12C" (11.2001), publication no. PV776-TSP160587.

Date	Group	No.	Supp.	Page
7.2004	214	020		1(9)

Valve and Injector Adjustment with EPG D12, D12A, D12B, D12C

Valve and Injector Adjustment with EPG



W2003805

This information covers procedures for adjusting valves and injectors on VOLVO D12, D12A, D12B, and D12C engines.

Contents

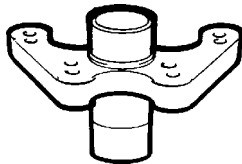
- ["Special Tools" page 2](#)
- ["Valves and Unit Injectors, Adjustment" page 3](#)

Note: Information is subject to change without notice. Illustrations are used for reference only and may differ slightly from the actual vehicle being serviced. However, key components addressed in this information are represented as accurately as possible.

Tools

Special Tools

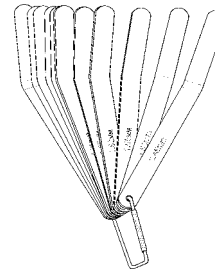
The following special tools are used to replace or repair components. The tools can be ordered from Volvo. Please use the specified part number when ordering.



C0000220

9996956

Cranking tool



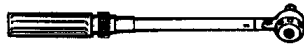
W0000416

J41610

Feeler Gauge Set

Other Special Equipment

Like special tools, the following items can be ordered directly from Volvo. Please refer to the specific tool number when ordering.



C2001260

1159794

Torque Wrench

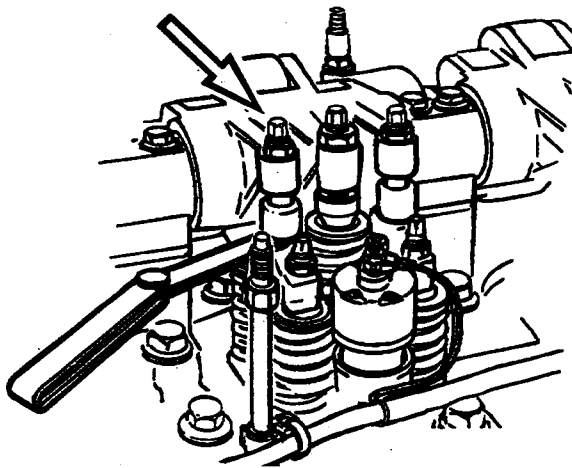
Service Procedures

2140-05-03-01

Valves and Unit Injectors, Adjustment

(Valve cover removed.)

You must read and understand the precautions and guidelines in Service Information, group 20, "General Safety Practices" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.



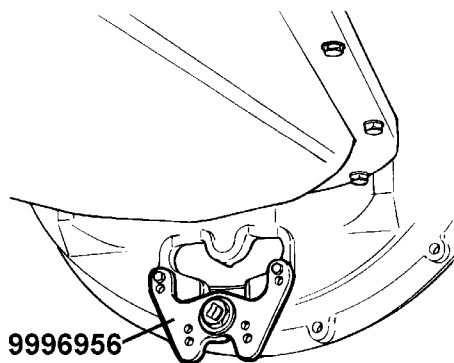
T2008968

Note: Variant abbreviations are used to identify an engine equipped with the following components:

EPG Exhaust Pressure Governor

Special tools: 9996956, J41610

Other special equipment: 1159794



C2000183

1
Remove the flywheel inspection cover located under the engine flywheel housing. Install engine turning tool 9996956.

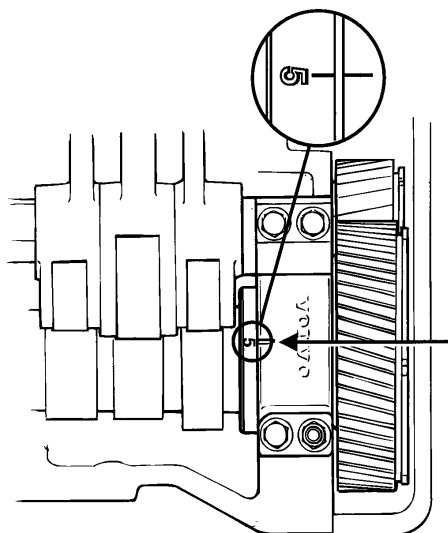
9996956

2
Turn the engine to the camshaft marking to adjust the corresponding valve (for example, no. 5, as shown in illustration), as indicated below:

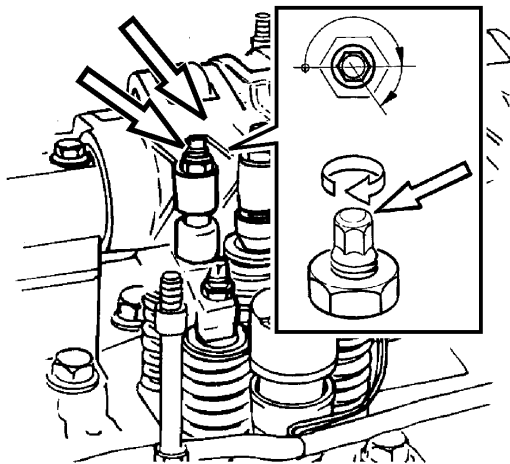
- Marking 1 – 6: Apply to adjustment of valve bridge intake valves, exhaust valves, and unit injector.

Example:

Adjustments for no. 5 intake clearances, no. 5 injector preload, and no. 5 exhaust valve clearances would be made in this engine position.



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Valve and Unit injector, adjustment

3

Loosen lock nut and back off adjusting screw until it no longer makes contact with the injector socket.

Note: Adjust injector before adjusting intake and exhaust valves.

Valve and Injector Settings

Cam Position	Injector	Intake	Exhaust
1	X	X	X
5	X	X	X
3	X	X	X
6	X	X	X
2	X	X	X
4	X	X	X

4

Adjust the unit injector's adjusting screw to zero clearance.

5

Tighten the adjusting screw 4 flats or 240°.

6

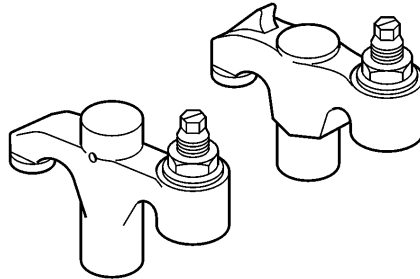
Torque-tighten the adjusting screw lock nut to 52 ± 4 Nm (38 ± 3 ft-lb).

Note: Mark the rocker arm and injector rocker when each valve has been adjusted.

52 ± 4 Nm
(38 ± 3 ft-lb)

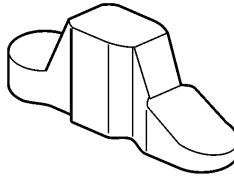
Intake and Exhaust Valve Bridge Adjustment

7



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Valve bridge with guide



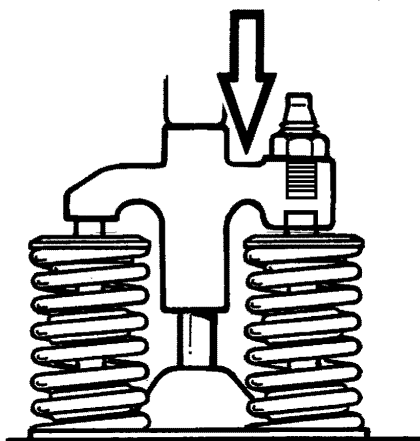
W2004467

Valve bridge without guide

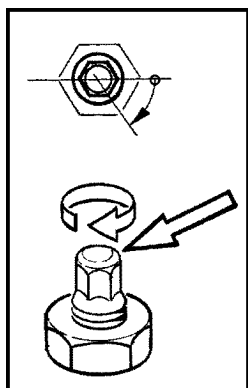
Note: A valve bridge design (without guide pin) is used in D12 engines. These may be installed in combination with the current valve bridge design with guide pin. The procedure for adjusting valves remains the same, except that the valve bridge without guide pin does not need adjusting. Valve clearances are also unchanged. For intake valves, the valve bridge without guide pin may be installed facing either direction. A valve bridge with guide pin must always be installed as a replacement component.

Intake and Exhaust Valve Bridge Adjustment

8



W2004433



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CAUTION

The valve bridge must be adjusted prior to the valve clearance adjustment that is related to it. Failure to do this can result in breakage or damage to the valve bridge guide.

Note: The valve bridge adjustment can only be made when there is clearance between the valve bridge and the rockerarm.

Adjust the valve bridge clearance:

- Loosen the adjusting screw lock nut.
- Loosen adjusting screw until it no longer contacts valve stem.
- Press valve bridge downward toward the valve stem.
- Tighten adjusting screw until it makes contact, then turn an additional 1 flat or 60°.
- Hold adjusting screw in place and torque-tighten nut to 38 ± 3 Nm (28 ± 2 ft-lb).

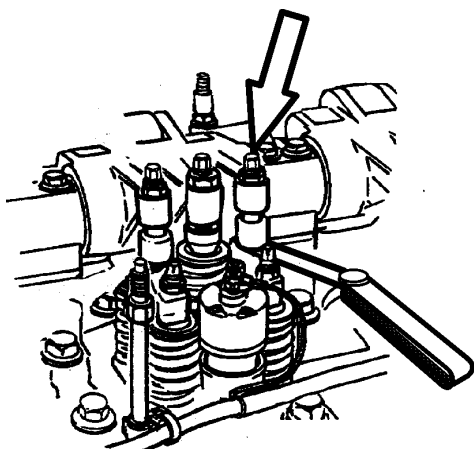
38 ± 3 Nm
(28 ± 2 ft-lb)

9

Recheck valve clearance after nut is torque-tightened.

10

Rotate the engine to the next cylinder mark on the camshaft. Adjust unit injector, valve bridges, intake and exhaust valves on that cylinder.



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11

With engine cold (140°F or less), adjust the valve clearance for exhaust to 0.5 mm (0.020 in.). Hold adjusting screw in place and torque-tighten lock nut to 38 ± 3 Nm (28 ± 2 ft-lb).

Note: Mark each valve rocker lever as you adjust it to know which valves have already been adjusted.

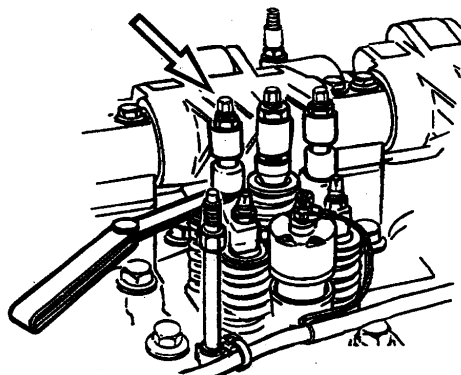
Intake Valves, adjustment

12

With engine cold (140°F or less), adjust valve clearance to 0.2 mm (0.008 in.). Hold adjusting screw in place and torque-tighten lock nut to 38 ± 3 Nm (28 ± 2 ft-lb).

Note: Mark each valve rocker lever as you adjust it to know which valves have already been adjusted.

38 ± 3 Nm
(28 ± 2 ft-lb)



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13

Use steps **3 - 13** to adjust the injectors and valves.

Valve Clearance, Cold Engine Setting Valve

Inlet	0.2 mm (0.008 in.)
Exhaust	0.5 mm (0.020 in.)

Valve Clearance, Cold Engine Check Valve

Inlet	0.15 – 0.25 mm (0.006 – 0.010 in.)
Exhaust	0.45 – 0.55 mm (0.018 – 0.22 in.)

Valve and Injector Settings

Cam Position	Injector	Intake	Exhaust
1	X	X	X
5	X	X	X
3	X	X	X
6	X	X	X
2	X	X	X
4	X	X	X