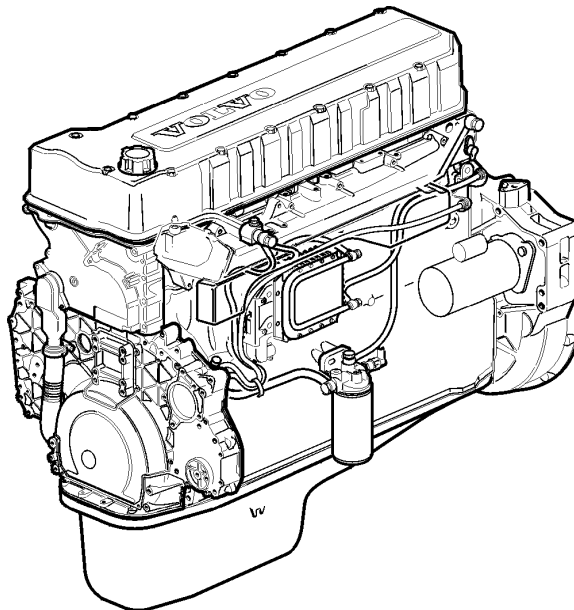


This TSI Service Bulletin replaces TSI Service Bulletin 214-012, "Valve Seat Replacement, D12, D12A, D12B, D12C" (11.2001), publication no. PV776-TSP161561.

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Valve Seat
D12, D12A, D12B, D12C

Valve Seat Replacement



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Fig. 1: Volvo D12C Engine

This information covers procedures for servicing valve seats on Volvo D12, D12A, D12B, and D12C engines.

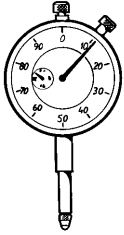
Contents

- ["Special Tools" page 2](#)
- ["Valve Seat, Replacement \(One\)" page 3](#)
- ["Valve Seat, Grind \(One\)" page 6](#)

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.



998 9876

9989876
Dial Indicator



9992479
Gauge Block

Service Procedures

2149-03-05-01

Valve Seat, Replacement (One)

You must read and understand the precautions and guidelines in Service Information, group 2, "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.

 **CAUTION**

Observe the greatest possible cleanliness when working on the cylinder head. Dirt particles in the fuel and oil channels can cause the unit injectors to malfunction, and can cause the VEB (if equipped) to fail or cause engine damage.

Measuring Valve Clearance

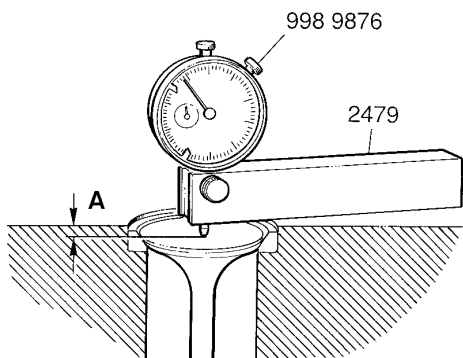


Fig. 2: Measuring wear of the valve seats

1
Use dial indicator 9989876 and gauge block 9992479 to measure distance **A** with a new valve.

9989876, 9992479

2
Replace valve seats when distance **A** is no longer within specifications:

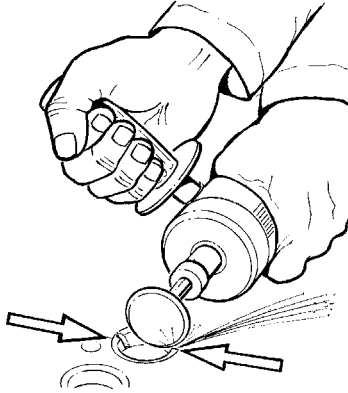
D12, D12A, D12B:	Intake: 0.9 - 1.4 mm (0.035 – 0.055 in.) Exhaust: 1.2 - 1.7 mm (0.047 – 0.067 in.)
D12C:	Intake: 0.9 - 1.4 mm (0.035 – 0.055 in.) Maximum Wear Tolerance: 1.5 mm (0.059 in.) Exhaust: 1.2 - 1.7 mm (0.047 – 0.067 in.) Maximum Wear Tolerance: 1.8 mm (0.071 in.)

Removing the Old Valve Seat

1

Grind two diametrical notches in the seat.

Note: Be careful to avoid damaging the cylinder head.

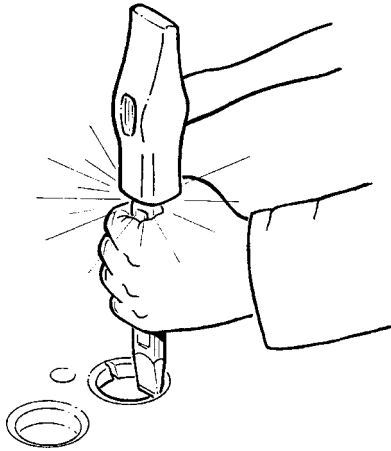


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2

Crack the valve seat with a chisel

Note: Be careful to avoid damaging the cylinder head.



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Installing the New Valve Seat

1

Thoroughly clean the valve seat location and check the cylinder head for cracks.

2

Measure the diameter of the valve seat location. Check whether a standard size seat or an oversize seat is required. If necessary, machine the valve seat location.

3



WARNING

Be careful when handling dry ice and parts cooled with dry ice. Severe frost injury to skin may occur.

Cool the valve seat in dry ice (carbon dioxide snow) to a temperature of -60 to -70 °C (-76 to -94 °F). If necessary, heat the cylinder head by hosing it with hot water (or some other suitable manner). Using a drift, press in the valve seat.

4

Machine the seat to the specified angle and width; see "Valve Seat, Grind (One)" page 6.

2149-05-05-01 Valve Seat, Grind (One)

1
Before grinding, check the valve guides and replace them if the wear exceeds specified limits.

2
Grind the valve seat just until shape is correct and good contact surface for the valve is achieved.

3

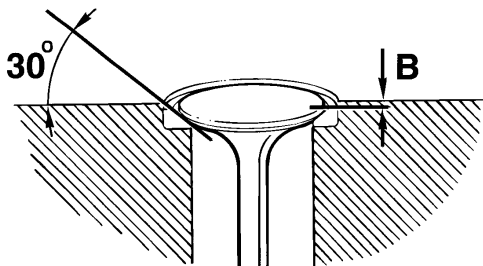


Fig. 3: Intake valve seat angle

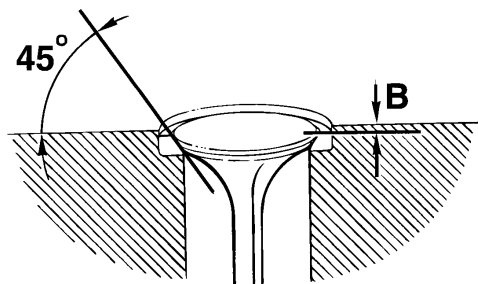


Fig. 4: Exhaust valve seat angle

Dimension **B** shows the amount of wear or grinding allowed on the valve seat. The distances are measured with a new valve. Specifications and wear tolerances are as follows:

- **Valve Seat Angle**

Intake valve — 29.5°

Exhaust valve — 44.5°

- **Angle in Cylinder Head**

Intake valve — 30°

Exhaust valve — 45°

- **Valve Disc Edge**

Intake valve — 1.8 mm (0.070 in.).

Exhaust valve — 1.6 mm (0.060 in.).

Note: For other specifications, refer to Specifications, Group 20.

4
Smear the seat contact surface with a light coating of marking ink. Check the angle using a valve seat gauge. Verify full 360° contact of the valve and seat face.