

***Light Vehicle Diesel Engines (Halderman/Ward)***

**Chapter 3 Diesel Cylinder Heads and Valve Trains**

1) The camshaft makes \_\_\_\_\_ for every revolution of the crankshaft.

- A) One-quarter revolution
- B) One-half revolution
- C) One revolution
- D) Two revolutions

Answer: B

Diff: 1 Page Ref: 31

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

2) A DOHC V-6 diesel engine has how many camshafts?

- A) One
- B) Two
- C) Four
- D) Six

Answer: C

Diff: 1 Page Ref: 31

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

3) The camshaft is driven by \_\_\_\_\_.

- A) Timing gears
- B) Timing chains
- C) Timing belts
- D) Any of the above

Answer: D

Diff: 1 Page Ref: 31

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

4) Many diesel engines use hollow stem exhaust valves that are partially filled with \_\_\_\_\_.

- A) Steel shot
- B) Sodium
- C) Carbon
- D) Ethylene glycol

Answer: B

Diff: 1 Page Ref: 28

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

5) Aluminum cylinder heads use \_\_\_\_\_.

- A) Valve seat inserts
- B) Integral valve seats
- C) Valve guide inserts
- D) Both A and C

Answer: D

Diff: 1 Page Ref: 36

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

6) \_\_\_\_\_ are used in many diesel engines to span two valves from one pushrod.

- A) Pedestals
- B) Bridges
- C) Rocker arms
- D) Pushrods

Answer: B

Diff: 1 Page Ref: 33

Chapter Quiz: Yes

Objective: 3-3 Discuss the purpose and function of rocker arms and bridges.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

7) Valve springs are checked for \_\_\_\_\_.

- A) Free height (or length) without being compressed
- B) Pressure with valve closed
- C) Pressure with valve open
- D) Any of the above

Answer: D

Diff: 1 Page Ref: 30

Chapter Quiz: Yes

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

8) The cylinder head should be removed by first loosening all of the head bolts \_\_\_\_\_.

- A) In the reverse order of the tightening sequence
- B) Loosening the longer bolts first, then the shorter bolts
- C) In the same order as used in the tightening sequence
- D) In any order

Answer: A

Diff: 1 Page Ref: 35

Chapter Quiz: Yes

Objective: 3-5 Describe how to disassemble a cylinder head.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

9) The gasket surface of a cylinder head, as measured with a precision straightedge, should have a maximum variation of \_\_\_\_\_.

- A) 0.002 inch in any 6 inch length, or 0.004 inch overall
- B) 0.001 inch in any 6 inch length, or 0.004 inch overall
- C) 0.020 inch in any 10 inch length, or 0.02 inch overall
- D) 0.004 inch in any 10 inch length, or 0.008 inch overall

Answer: A

Diff: 1 Page Ref: 36

Chapter Quiz: Yes

Objective: 3-5 Describe how to disassemble a cylinder head.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

10) Typical valve stem-to-guide clearance is \_\_\_\_\_.

- A) 0.030 to 0.045 inch (0.8 to 1 mm)
- B) 0.015 to 0.020 inch ( 0.4 to 0.5 mm)
- C) 0.005 to 0.010 inch (0.13 to 0,25 mm)
- D) 0.001 to 0.004 inch (0.025 to 0.100 mm)

Answer: D

Diff: 1 Page Ref: 36

Chapter Quiz: Yes

Objective: 3-6 Discuss valve-stem-to-guide clearance.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

11) Late model diesel cylinder heads usually have \_\_\_\_\_ valves per cylinder.

- A) Two
- B) Three
- C) Four
- D) Five

Answer: C

Diff: 1 Page Ref: 26

Chapter Quiz: No

Objective: 3-1 Explain the design and construction of cylinder heads.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

12) Technician A says that the valves are opened by springs. Technician B says that the valves are opened and closed by the camshaft. Which technician is correct?

- A) Technician A only
- B) Technician B only
- C) Both technicians A and B
- D) Neither technician A nor B

Answer: D

Diff: 1 Page Ref: 27

Chapter Quiz: No

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

13) Valve keepers secure the \_\_\_\_\_ to the stem of the valve.

- A) Valve spring
- B) Valve seal
- C) Spring retainer
- D) Spring seat

Answer: C

Diff: 1 Page Ref: 27

Chapter Quiz: No

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

14) Aluminum cylinder heads have \_\_\_\_\_ -type valve seats.

- A) Aluminum
- B) Induction
- C) Integral
- D) Insert

Answer: D

Diff: 1 Page Ref: 29

Chapter Quiz: No

Objective: 3-1 Explain the design and construction of cylinder heads.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

15) How is the cylinder head cooled?

- A) By air passing over the head fins
- B) Using coolant circulated inside the combustion chamber
- C) With coolant circulating around passages in the cylinder head
- D) By an auxillary pump

Answer: C

Diff: 1 Page Ref: 30

Chapter Quiz: No

Objective: 3-1 Explain the design and construction of cylinder heads.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

16) Which of these is NOT a typical location for a camshaft?

- A) Below the crankshaft
- B) In the engine block
- C) In the cylinder head
- D) In the block (OHV engines only)

Answer: A

Diff: 1 Page Ref: 31

Chapter Quiz: No

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

17) An engine has rocker arms with a ratio of 1.5:1. If the pushrod moves up 0.35 inches, how far will the valve be opened?

- A) 0.60 inch
- B) 0.525 inch
- C) 0.15 inch
- D) 1.5 inch

Answer: B

Diff: 2 Page Ref: 33

Chapter Quiz: No

Objective: 3-3 Discuss the purpose and function of rocker arms and bridges.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

18) Diesel engines may use \_\_\_\_\_ or \_\_\_\_\_ valve lifters.

- A) Oval; square
- B) Hydraulic; solid
- C) Retainer; roller
- D) Tappet; mushroom

Answer: B

Diff: 1 Page Ref: 34

Chapter Quiz: No

Objective: 3-4 Discuss the purpose, function, and operation of hydraulic valve lifters.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

19) Roller lifters are used to reduce \_\_\_\_\_ in the diesel engine.

- A) Cost
- B) Weight
- C) Friction
- D) Volume

Answer: C

Diff: 1 Page Ref: 34

Chapter Quiz: No

Objective: 3-4 Discuss the purpose, function, and operation of hydraulic valve lifters.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

20) Camshaft removal is being discussed. Technician A says that the pushrods must be removed before removing the camshaft. Technician B says that the valve lifters must also be removed. Which technician is correct?

- A) Technician A only
- B) Technician B only
- C) Both technicians A and B
- D) Neither technician A nor B

Answer: C

Diff: 2 Page Ref: 35

Chapter Quiz: No

Objective: 3-5 Describe how to disassemble a cylinder head.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

21) The camshaft is located \_\_\_\_\_ in a Cummins in-line six cylinder diesel engine.

- A) In the engine block
- B) Under the crankshaft
- C) In the cylinder head
- D) Under the valve cover

Answer: A

Diff: 1 Page Ref: 31

Chapter Quiz: No

Objective: 3-2 Discuss camshaft design and valve train component operation.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).

22) Removal of a Cummins diesel cylinder head requires that a(an) \_\_\_\_\_ be used during removal.

- A) Hammer and drive unit
- B) Torque bar
- C) Engine hoist
- D) Pry bar

Answer: C

Diff: 1 Page Ref: 35

Chapter Quiz: No

Objective: 3-5 Describe how to disassemble a cylinder head.

ASE: A9B Prepare for the Light Vehicle Diesel Engine (A9) ASE certification test content area "B" (Cylinder Head and Valve train Diagnosis and Repair).