

Automotive Technology 6th Edition

Chapter 35 – Crankshafts, Balance, Shafts, and Bearings

Lesson Plan



CHAPTER SUMMARY:

1. Camshaft and camshaft construction
 2. Crankshaft oiling holes, engine crankshaft types, and counterweights
 3. Externally and internally balanced engines, primary and secondary engine balance, and balance shafts
 4. Crankshaft service, engine bearings, bearing clearance, and camshaft bearings
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OBJECTIVES:

1. Explain the purpose of crankshaft, crankshaft construction, and crankshaft oiling holes.
 2. Discuss the different engine crankshaft types.
 3. Explain the purpose and function of counterweights.
 4. Explain externally and internally balanced engines, and primary and secondary engine balance.
 5. Explain the purpose of balance shafts.
 6. Discuss crankshaft service. Describe engine bearings and discuss the importance of bearing clearance.
 7. Discuss camshaft bearings.
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. **Task Sheet ASE (A1-B-13) P-3:** Camshaft Bearings
 2. **Task Sheet ASE (A1-C-7) P-1:** Crankshaft Inspection
 3. **Task Sheet ASE (A1-C-8) P-2:** Main and Rod Bearings
 4. **Task Sheet ASE (A1-C-13) P-2:** Auxiliary and Balance Shafts
 5. **Task Sheet ASE (A1-C-1) P-1:** Crankshaft Vibration Damper
 6. Chapter PowerPoint
 7. Chapter Crossword Puzzle and Word Search
 8. Videos: See list at the end of the lesson plan.
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ACTIVITIES:

1. **Task Sheet ASE (A1-B-13) P-3:** Have students complete Camshaft Bearings Task Sheet.
 2. **Task Sheet ASE (A1-C-7) P-1:** Have students complete Crankshaft Inspection Task Sheet.
 3. **Task Sheet ASE (A1-C-8) P-2:** Have students complete Main and Rod Bearings Task Sheet.
 4. **Task Sheet ASE (A1-C-13) P-2:** Have students complete Auxiliary and Balance Shafts Task Sheet.
 5. **Task Sheet ASE (A1-C-1) P-1:** Have students complete Crankshaft Vibration Damper Task Sheet.
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ASSIGNMENTS:

1. Chapter crossword and word search puzzles.
 2. Complete end of chapter 10 question quiz.
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CLASS DISCUSSION:

1. Review and group discussion chapter [Frequently Asked Questions](#) and [Tech Tips](#) sections.
 2. Review and group discussion of the five (5) chapter [Review Questions](#).
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NOTES AND EVALUATION:



Videos: (at <http://www.jameshalderman.com>)

Crankshaft balancing (time 1:37)

Rod bearing install (time 1:52)

Using plastigauge (time 3:49)

Install cam bearings (time 2:24)

End play check (time 4:23)

Plasti gauge (time 10:18)

Thrust bearing (time 6:04)

Radius and fillet (time 2:32)

Camshaft bearing wear inspection (time 0:43)

Engine mount (time 2:39)

Balance shaft replacement part 1 (time 32:27)

Balance shaft replacement part 2 (time 9:45)