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| Static 1503 & 903 | | | |
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## Camshaft Timing Procedures 1503 engine

## TASK OBJECTIVE

At the completion of this task the technician will be able to properly lock the engine crankshaft and camshaft. The technician will also be able to perform the cam timing procedure in the correct sequence.

**INTRODUCCTION**

Camshaft timing is obviously crucial to proper engine performance. Proper camshaft timing ensures that the intake and exhaust valves are opened and closed at precisely the right time. If the camshaft timing is incorrect, the valves may open and close too soon or too late. This will result in poor engine performance, (if the engine is able to start at all). If valve timing is seriously out of synchronization with the rotation of the crankshaft, the valves may open when the piston is approaching TDC, and the piston will collide with the valves. This will result in bent valves, which will no longer seat or seal properly. Serious piston damage can also result. In either case, once the valves are bent, the engine will no longer run.

# Camshaft Timing

# Refer to the copy of the shop manual

# Procedures

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| --- | --- | --- | --- | --- |
| 1. Lock the crankshaft into TDC using the crankshaft locking tool. (p/n 529 035 821) | | | | |
| 1. Remove timing chain tensioner and chain guide. | | | | |
| 1. Loosen the allen screws securing the cam timing gear and be prepared to support the timing chain upon cam gear removal. | | | | |
| 1. Inspect gear for wear and damage to teeth. | | | | |
| 1. Is gear ok? | | | | |
| YES |  | NO |  |  |
| 1. Install cam gear locking tool (p/n 529 035 839) | | | | |
| 1. Is the installation correct? | | | | |
| YES |  | NO |  |  |
| 11. Remove the crankshaft and camshaft locking tools. | | | | |
| 12. Rotate the engine and verify the timing marks. | | | | |
| 13. Are they correct after completing 2 crankshaft revolutions? | | | | |
| YES |  | NO |  |  |

### Questions

1. What have you learned from this task?

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2. What would happen if this procedure was not done correctly?

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3. Correctly list in order the steps to a typical timing chain installation procedure. (Fill in the box in the correct order.)

1. Torque cam gear bolts.
2. Install chain guide shoe.
3. Install chain on cam gear
4. Install cam gear bolts
5. Lock crankshaft.
6. Lock camshaft.
7. Install chain tensioner.
8. Align cam gear marks.

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4. Which direction do the numbers on the cam gear face?

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### Instructor sign off-- Go \_\_\_\_\_\_\_\_\_