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| Station | | Task | |
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| Running 1503 | | | |
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# Oil Pressure Testing

## TASK OBJECTIVE

At the completion of this task the technician will be able to properly perform an oil pressure test on a 4-TEC 1503 engine. Upon doing so the technician will be able to determine the condition of the engine oil pump, and engine plain bearings. Also the technician will be able to demonstrate how to properly check the oil level on the engine.

**INTRODUCCTION**

The life blood of the engine is the lubrication system. If the lubrication system is not operating properly the engine will soon fail. The primary purpose of the lubrication system is to reduce friction so to minimize wear, loss of power and engine performance. It also helps to cool and clean the internal engine parts. The oil is distributed throughout the engine starting at the pump sent through galleries to the crankshaft, camshaft bearings and other internal components. The bearings like this one do not touch the other journal surface when the engine is running. All the components ride on a film of pressurized oil from the pump. The primary function of motor oil is to provide lubrication between moving metal parts in the engine. The friction caused by these parts when they move together creates high levels of heat that cause damage unless a lubricant is introduced to the mechanism. A lubricant will smooth the surfaces and enable the parts to move freely against one another with reduced friction and, consequently, reduced wear and heat.

What would you do if a person came in with a complaint about the oil light being on or maybe with a knocking or tapping noise? Well the first thing you do is check the oil level, and then you do an oil pressure test. To obtain accurate oil pressure readings the following steps must be taken. First, you locate the oil pressure tap. In many cases the oil pressure sending unit is removed and its position is utilized. Then install the oil pressure gauge. After that you start the engine and record the reading. Next, allow the engine to reach its normal operating temperature. Then record the reading again. Finally compare that reading to the specification listed in the shop manual.

###### **Causes of Low Oil Pressure:**

Low oil pressure could be caused any of the following: A worn oil pump, the camshaft or crankshaft could have excessive bearing clearance. There could be a broken or weak oil pressure regulator spring. The pressure regulator could be stuck open. You may have a clogged oil pickup screen, or possibly an air leak into the oil pump inlet. Finally you could have excessively diluted oil. Take an oil sample before you disassemble the engine.

In case you have high oil pressure it could be caused by either of the following, the pressure relief valve stuck closed, or the pressure relief valve spring tension could be too high.

**PROCEDURES**

Refer to the Shop Manual for the correct oil pressure testing procedure and specifications.

**For the purposes of this training we ask that the engine is not run over 5000 rpm since we are in a controlled environment.**

Follow the steps and answer the questions below:

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| 1. Where is oil pressure gauge that is marked "A" installed on the engine? | | | | | |
| 1. What is the oil pressure specification at idle cold? –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. What is the oil pressure specification at idle? @ 80°C (176° F) –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. What is the oil pressure specification? @4000-7500 RPM –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. Where is oil pressure gauge that is marked "B" installed on the engine? | | | | | |
| 1. What is the oil pressure specification at idle cold? –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. What is the oil pressure specification at idle? @ 80°C (176° F) –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. What is the oil pressure specification? @4000-7500 RPM –\_\_\_\_\_\_\_\_\_   **Do not run the engine!** | | | | | |
| 1. Start the engine and observe the oil pressure – **Remember no more than 5000 rpm!**   Record gauge marked "A" values – @Idle\_\_\_\_\_\_\_\_\_ @4000 to 5000RPM\_\_\_\_\_\_\_\_\_ | | | | | |
| 1. Is the oil pressure within the specifications? | YES |  | NO |  |  |
| 1. Start the engine and observe the oil pressure - **Remember no more than 5000 rpm!**   Record gauge marked "B" values here – @Idle\_\_\_\_\_\_\_\_\_ @4000 to 5000RPM\_\_\_\_\_\_\_\_\_ | | | | | |
| 1. Is the oil pressure within the specifications? | YES |  | NO |  |  |

**QUESTIONS**

1. What are the steps to avoid the engine from going into limp home mode?

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2. Explain why the oil pressure is the same at gauge location A and gauge location B?

Which engines have a different pressure between location A and B? Why?

What is controlling the cylinder head oil pressure on the 2006 and up engines?

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3. At what pressure does the oil pressure switch work? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What thread sealant is used when installing the oil pressure switch?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. List six causes of low oil pressure.

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2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Instructor sign off-- Go \_\_\_\_\_\_\_\_\_\_**