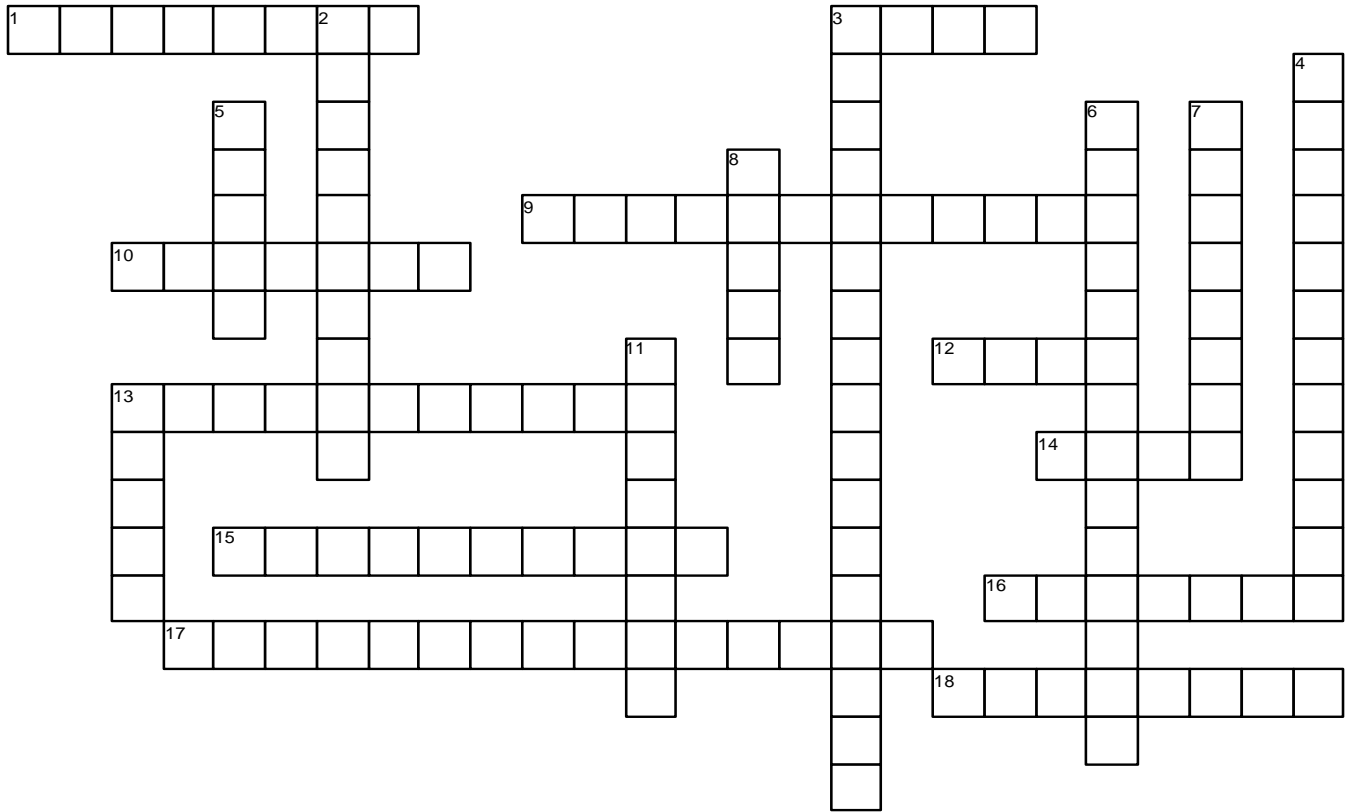


Diesel Engine Lubrication Systems

Chapter 4



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ACROSS

- 1 An _____ package is a number of chemicals that will help each other can be used for oil additive requirements.
- 3 _____ is a European association that rates oil.
- 9 _____ slow the breakdown of the base fluid caused by oxygen (air) and heat.
- 10 A _____ type of positive displacement oil pump uses an inner and an outer rotor. the inner rotor has one fewer tooth than the outer rotor and both rotate.
- 12 _____ is sulfated ash, phosphorous, and sulfur.
- 13 _____ between two moving surfaces results from an oil film that separates the surfaces and supports the load.
- 14 _____ is high temperature/high shear rate viscosity.
- 15 _____ are necessary on diesel engines to keep the temperature of the engine oil controlled.
- 16 the term _____ refers to moving materials.
- 17 _____ of mixing with other oils without causing any problems, such as sludge.
- 18 An _____ gear-type oil pump consists of two spur gears in a close-fit housing—one gear is driven while the other idles.

DOWN

- 2 the _____ components are the last engine parts to receive oil in the lubrication system.
- 3 The _____ Institute is an organization working with the engine manufacturers and oil companies, has established an engine oil performance classification.
- 4 The wedging action of the oil between the shaft and the bearing is called _____ lubrication, and depends on the thickness of the oil.
- 5 the prefix _____ refers to liquids, as in hydraulics.
- 6 _____ is the change in oil viscosity between the cold and hot extremes.
- 7 Prevent acid formation (corrosion) in the form of sludge or varnishes.
- 8 A _____-type oil pump is driven by the crankshaft and uses a special lobe-shape gear meshing with the inside of a lobed rotor.
- 11 An _____/external gear type of oil pump is driven by the crankshaft and operates at engine speed.
- 13 the _____ are the clearances at end points of the lubrication system.