



# Standard Test Method for Measuring Wear Properties of Fluid Lubricants (Falex Pin and Vee Block Method)<sup>1</sup>

This standard is issued under the fixed designation D2670; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 1. Scope

1.1 This test method covers a procedure for making a preliminary evaluation of the wear properties of fluid lubricants by means of the Falex Pin and Vee Block Lubricant Test Machine.

NOTE 1—Certain fluid lubricants may require different test parameters depending upon their performance characteristics.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

**B16/B16M** Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *actual gauge load, n*—the value obtained from the gauge while running the test and before any corrections are made.

3.1.1.1 *Discussion*—The gauge reading is irrespective of the particular gauge used, and corrections are made by comparison to a standard reference.

3.1.2 *direct load, n*—the load that is applied linearly, bisecting the angle of the vee block corrected to either the 800 lbf or 3000 lbf gauge reference.

3.1.2.1 *Discussion*—This load is equivalent to the true load times the  $\cos 42^\circ$ .

3.1.3 *true load, n*—the sum of the applied forces normal to the tangents of contact between the faces of one vee block and the journal pin corrected to the 4500 lbf gauge reference line.

3.1.4 *wear teeth, n*—a measurement of wear, which in this test, is based on the number of ratchet wheel teeth advanced during the test while maintaining load.

3.1.4.1 *Discussion*—The number of teeth is directly related to the total wear (inches).

## 4. Summary of Test Method

4.1 The test consists of running a rotating steel journal against two stationary steel V-blocks immersed in the lubricant sample. Load is applied to the V-blocks and maintained by a ratchet mechanism. Wear is determined and recorded as the number of teeth of the ratchet mechanism advanced to maintain load constant during the prescribed testing time.

## 5. Significance and Use

5.1 This test method may be used to determine wear obtained with fluid lubricants under the prescribed test conditions. The user of this test method should determine to his or her own satisfaction whether results of this test procedure correlate with field performance or other bench test machines. If the test conditions are changed, wear values may change and relative ratings of fluids may be different.

## 6. Apparatus

6.1 *Falex Pin and Vee Block Lubricant Test Machine*,<sup>3</sup> illustrated in Figs. 1-3.

<sup>1</sup> This test method is under the jurisdiction of Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.L0.11 on Tribological Properties of Industrial Fluids and Lubricates.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The Falex Pin and Vee Block Test Machine available from Falex Corp., 1020 Airpark Dr., Sugar Grove, IL 60554 has been found satisfactory for this purpose. A new model of this machine has been available since 1983. Certain operating procedures are different for this new model. Consult the instruction manual of machine for this information.