



## Test Monitoring Center

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Sequence IX Information Letter 20-1  
Sequence Number 2  
February 17, 2020

***ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.***

TO: Sequence IX Surveillance Panel

SUBJECT: 1. Addition of Oil Analysis Methods  
2. Engine Installation and Removal Calibration Rules Added  
3. Additional Engine Alignment Criteria Added  
4. Test Number Clarification Added

1. Recently, it was noted that several methods for oil analysis were not included in the test method and there were no requirements to conduct oil analyses included in the method. Section 2 has been modified to include Test Methods D445, D3525 and D5185 and Section 12.9 has been added to delineate what analyses are to be conducted on used oil. These changes, approved by electronic ballot are effective January 28, 2020.

During the January 27, 2020 Conference call, the Surveillance Panel agreed to the following items:

2. When an engine is removed from a stand the stand's calibration is terminated. In addition, the installation of an engine in a stand requires the stand to be calibrated under LTMS guidelines. Section 10.4 has been added accordingly.
3. Section 7.6.2 has also been revised to include additional alignment verification criteria to be used when installing engines in a test stand.
4. Section 10.5.1 has been updated to reference the number of Sequence IX tests in the test numbering scheme.

These changes are effective January 27, 2020.

These revised text and or section(s) have been highlighted in red and included in the attached. These revisions modify ASTM Test Method D8291.

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FCSD, Service Product Development, SEO  
Ford Motor Company

Frank M. Farber  
Director  
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Attachment

c: [http://www.astmtmc.cmu.edu/ftp/docs/gas/sequenceix/procedure\\_and\\_ils/il20-1\\_ix.pdf](http://www.astmtmc.cmu.edu/ftp/docs/gas/sequenceix/procedure_and_ils/il20-1_ix.pdf)

Distribution: Email

## Revises D8291-19 as modified by Information Letter 19-1

Add the following test methods to Section 2.0, referenced documents:

D5185 Standard Test Method for Determination of Additive Elements, Wear Metals, and Contaminants in Used Lubricating Oils and Determination of Selected Elements in Base Oils by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

D3525 Standard Test Method for Gasoline Diluent in Used Gasoline Engine Oils by Gas Chromatography

D445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

7.6.2 Mounting the Engine on the Test Stand—Mount the engine on the test stand so that the flywheel friction face is  $0.0^\circ \pm 0.5^\circ$  from vertical and at a  $0.0^\circ \pm 0.5^\circ$  roll angle. Use two motor mounts at the rear of the engine. Quicksilver P/N 66284-A8,17 has been found suitable for this purpose. An example of a rear-mount support is shown in Fig. A6.5. Use a rubber mount at the front of the engine attached to the front-cover mount. Examples of front-mount supports are shown in Fig. A6.4. Ensure that the engine's longitudinal axis is aligned to within  $0.5^\circ$  of the dynamometer axis.

10.4.1 Removal of an engine terminates the stand calibration. Upon re-installation of the engine, re-establish calibration in accordance with LTMS guidelines. Ensure that instrumentation calibration requirements are met when re-establishing calibration status.

10.5.1 *Acceptable Tests*—The test number shall follow the format *AAA-BB-CCCC-DDD* where *AAA* represents the test stand number, *BB* represents the number of Sequence IX tests on the stand, *CCCC* represents the engine number, and *DDD* represents the number of tests on the engine.

12.9 *Oil Analyses*—Analyze the fresh oil and the samples drawn at the completion of each of the four valid iterations as follows. Report the results on Form 17 of the standardized report form set (see Annex A12).

12.9.1 *Metals Concentrations*—Using Test Method D5185, determine the mass fraction of the following eight elements: aluminum, copper, iron, lead, silicon, silver, sodium, and tin. Report the results in mg/kg.

12.9.2 *Fuel Dilution*—Measure by Test Method D3525. Report in %.

12.9.3 *Kinematic Viscosity (KV)*—Measure at  $40^\circ\text{C}$  and  $100^\circ\text{C}$  by Test Method D445. Report in  $\text{mm}^2/\text{s}$ .