



## Test Monitoring Center

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T-12 Information Letter 10-2  
Sequence No. 6  
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*ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.*

TO: Mack Mailing List

SUBJECT: Addition of T-12A Abbreviated Flush-and-Run Test Option to D7422

The Mack Surveillance Panel has approved the addition of Annex A9 which details the incorporation of an abbreviated length test, designated as the T-12A, into test method D7422. These items are effective the date of the information letter.

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Attachment

c: [ftp://ftp.astmtmc.cmu.edu/docs/diesel/mack/procedure\\_and\\_ils/T-12/il10-2.pdf](ftp://ftp.astmtmc.cmu.edu/docs/diesel/mack/procedure_and_ils/T-12/il10-2.pdf)

Distribution: Email

**(Revises D7422-10, as amended by Information Letter 10-01)**

1.1.1 This test method also provides the procedure for running an abbreviated length test, which is commonly referred to as the T-12A. The procedures for the T-12 and T-12A are identical with the exception of the items specifically listed in Annex A9. Additionally, the procedure modifications listed in Annex A9 refer to the corresponding section of the T-12 procedure.

**A9. T-12A ABBREVIATED LENGTH TEST REQUIREMENTS**

**A9.1 Overview**—The purpose of the T-12A is to provide the low temperature viscosity result for used oil. The low temperature result in question is the MRV viscosity after 100 h at Phase I T-12 conditions. This result may be obtained two different ways. First, it may be obtained from an operationally valid standard T-12 test. Second, it may be obtained from a test stand setup that runs only the first 100 h of T-12 conditions. Unlike the standard T-12 test, this form of the T-12A does not require a new engine build with each test. Instead, it is a flush-and-run procedure. With the exception of A9.4, A9.5.2, A9.5.3, and A9.6, no special instructions are necessary to obtain a T-12A result from a standard T-12. The special instructions necessary to obtain a T-12A result from a flush-and-run procedure are contained in the remainder of this annex.

**A9.2 Preparation of Apparatus at Rebuild** (refer to Section 8)—Rebuild each T-12A flush-and-run engine after three calibration periods or 1500 h.

**A9.2.1 Injectors** (refer to 8.4.1)—Check the injector opening pressure at the start of each calibration. Reset the injector opening pressure if it is outside the specification of  $(24000 \pm 2000)$  kPa.

**A9.3 Procedure** (refer to Section 9):

**A9.3.1 Pretest Oil Flush**—The pre-test flush is not performed on a new engine build. For new engine builds, run the break-in sequence according to A9.3.2. For existing engine builds, flush the engine and auxiliary oil system with test oil for 15 min. Drain the oil. Repeat the flush and drain sequence two more times. Use the same set of oil filters for all three flushes. At the completion of the third flush, drain the oil, change the oil filters, and charge the engine and auxiliary oil system with test oil. Proceed with the test according to A9.3.3.

**A9.3.2 Pretest Break-In** (see 9.1.2)—The pre-test break-in is not necessary for every test; it is only necessary for a new engine build. For a new engine build, run a break-in at Phase I conditions for 30 min. To do this, follow the Phase I start-up sequence shown in Table A5.2, and once the start-up sequence is complete, hold the conditions for 30 min. Change all oil filters at the completion of the break-in.

**A9.3.3 Test Cycle** (see 9.4)—Conduct the test by operating for 100 h at Phase I conditions, that are shown in Table 1.

**A9.3.4 Post-Test Oil Flush**—At the completion of the test, drain the oil and change the oil filters. Hot flush the engine and auxiliary oil system with Bulldog Premium Oil for 15 min. Drain the oil. Repeat the flush and drain sequence two more times. Use the same set of oil filters for all three flushes.

A9.4 *Oil Inspection (see 10.3)*—Analyze the 100 h oil sample for MRV viscosity according D6896. As part of the MRV measurement procedure, be sure to prepare the sample in accordance with A4.3 (Annex A4) of Test Method D5967.

A9.5 *Laboratory and Engine Test Stand Calibration/Non-Reference Oil Requirements (Section 11)*:

A9.5.1 *Test Stand/Engine Calibration (refer to 11.5)*—The calibration period for a flush-and-run T-12A is five operationally valid non-reference oil tests or ten months since the completion of the last successful calibration test.

A9.5.1.1 A T-12A flush-and-run stand may be installed in a stand that originally calibrated as a standard T-12 without impacting the standard T-12 calibration status. However, the flush-and-run stand will only be calibrated for the first non-reference oil test. To re-establish calibration, a reference oil test shall be run following the first test on the flush-and-run engine.

A9.5.1.2 A newly rebuilt engine requires a reference oil test to establish test stand calibration. Additionally, a T-12A cannot be run on an engine build that has seen Phase II test conditions.

A9.6 *Test Result (see 11.6)* —The specified test result is MRV viscosity at 100 h. Report the results on the appropriate forms.

A9.6.1 *Non-Reference Oil Test Result Severity Adjustments (see 11.8)*—This test method incorporates the use of an SA for non-reference oil test results. A control chart technique, described in the LTMS, has been selected for identifying when a bias becomes significant for MRV viscosity at 100 h. When calibration test results identify a significant bias, an SA is determined according to LTMS. Report the SA on Form 4 in the space for SA. Add this SA value to non-reference oil test results, and enter the SA adjusted result in the appropriate space.

A9.6.1.1 The SA remains in effect until a new SA is determined from subsequent calibration test results, or the test results indicate the bias is no longer significant. Calculate and apply SA on a laboratory basis.

A9.6.1.2 Be aware that the SA applied to non-reference results is the laboratory SA that is in place at the completion of the 100th hour of the test (that is, for T-12A results that are obtained through a standard length T-12, do not use the SA at EOT of the T-12, instead use the SA that is in place at 100 h).

A9.7 *Precision and Bias (refer to Section 13)*:

A9.7.1 *Precision*—The test precision for MRV Viscosity at 100 h, as of April 19, 2010, is shown in Table A9.1.

A9.7.2 *Bias*—Bias is determined by applying the LTMS control chart technique (see A8.5.3) and when a significant bias is determined, a severity adjustment is permitted for non-reference oil test results.

**TABLE A9.1 Test Precision**

Test Result	Intermediate Precision ( <i>i.p.</i> )	Reproducibility ( <i>R</i> )
MRV viscosity at 100 h (cP)	1550	1550