

Multicylinder Test Sequences for Evaluating Automotive Engine Oils

Part 3:

Sequence V-D

STP 315H

PART 3



MULTICYLINDER TEST SEQUENCES FOR EVALUATING AUTOMOTIVE ENGINE OILS

Part 3: Sequence V-D

Sponsored by
Section I on Engine Oils
Technical Division B on Automotive Lubricants
ASTM Committee D-2 on Petroleum
Products and Lubricants

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Single Cylinder Engine Tests, Part 1: Caterpillar IG2 Test Method, 1979, soft
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Significance of ASTM Tests for Petroleum Products, STP 7C, 1977, 04-007030-12

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FOREWORD

The test method described in this publication has not been subjected to the ASTM Standardization Procedure. It is not a standard or standard recommended practice of the American Society for Testing and Materials.

The test sequences for evaluating automotive engine oils were prepared to make available a technical language to describe quantitatively the operating conditions for determining the performance of crankcase oils and to describe the oil properties needed for satisfactory performance in modern passenger cars and light trucks.

One of the most important uses of the test sequences is the technical description of various classifications of oils according to performance and type of service (accomplished by cooperative action of committees in SAE, API, and ASTM). Details of the classifications are published in SAE Information Report "Engine Oil Performance and Engine Service Classification — SAE J183," API Publication 1509 "Engine Service Classification and Guide to Crankcase Oil Selection," and ASTM Research Report D-2:1002 "Engine Oil Performance Classifications."

The multi-cylinder test sequences were originally developed in 1956 by Section G-IV, a Special Study Group on Application of Crankcase Oils, under Technical Division B on Lubricating Oils, of ASTM Committee D-2 on Petroleum Products and Lubricants. Intended as the technical language for evaluating and defining oils for API Service MS, they have been known previously as the "G-IV Test Sequences" and as the "MS Test Sequences." Since 1971, the Sequence Tests have been used to define the performance requirements of the jointly developed ASTM, API, and SAE Engine Oil Classification System.

A reorganization of Technical Division B resulted in the assignment of responsibility for the language to Section I on Engine Oils of Technical Division B of Committee D-2. In 1962, Section I recommended that the Sequences be made available as an ASTM Special Technical Publication (STP). From that time until the completion of the eighth revision such STP's were published only in bound copies containing all three test sequences. However, this, the ninth revision, represents a modification to that practice. This printing represents the first time that the Sequence IID, IIID and V-D are being printed in three separate STP's. ASTM STP 315H (Part I) contains the Sequence IID Procedure; ASTM STP 315H (Part 2) contains the Sequence IIID Procedure, and STP 315H (Part 3) contains the Sequence V-D Procedure. Each of these procedures are available in either bound copies or three-hole punched pre-prints for insertion into loose-leaf binders.

Information is included showing the precision data and correlation of the specific test sequence with field and previous test experience as available at the time of this printing. As a continuing activity, the appropriate Surveillance Panel of Section I gathers and periodically reports new correlation and precision data. The current Sequence V-D report is available on request to the Chairman of the Sequence V-D Surveillance Panel.

The Sequence V-D Test Method was developed by the PV-1 Task Force under the Sequence VC Surveillance Panel. STP 315H Part 3 is the first ASTM printing of the Sequence V-D procedure. It, therefore, represents the culmination of an extensive industry co-operative effort via ASTM to provide an up-dated Sequence V test method. The Sequence V-D, based on a 4 cylinder engine of contemporary design, operates on unleaded gasoline and evaluates sludge, varnish and valve train wear characteristics of engine oils in the context of the traditional light duty cycle of the Sequence V test method.

SAE publication 780260 provides information regarding the development of the Sequence V-D procedure from its initial experimental form through various developmental phases to the basic form of the current procedure. More detailed information is recorded in the meeting minutes of the PV-1 Task Force and the Sequence V-D Surveillance Panel.

In accordance with the policy of keeping the test language timely and useful this edition of the Sequence V-D procedure will be up-dated via Information Letters published by the ASTM Test Monitoring Center. Purchasers of STP 315H desiring to receive Information Letters published subsequent to this printing may do so by writing to:

ASTM Test Monitoring Center
4400 Fifth Avenue
Pittsburgh, Pennsylvania 15213
Attention: Mr. D. C. Ludwig

The text of this STP 315H Part 3 was edited by the Franklin Research Center, a Division of The Franklin Institute, Philadelphia, Pennsylvania, and subpanels of the Sequence V-D Surveillance Panel. Photographs provided throughout the Annex are courtesy of Southwest Research Institute, San Antonio, Texas.

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