

# Fourth Pacific Area Meeting Papers

*Symposium on*

## LUBRICANTS FOR AUTOMOTIVE EQUIPMENT



Published by the  
AMERICAN SOCIETY FOR TESTING AND MATERIALS  
1916 Race St., Philadelphia 3, Pa.

*ASTM Special Technical Publication No. 334*

# SYMPOSIUM ON LUBRICANTS FOR AUTOMOTIVE EQUIPMENT

---

Presented at the  
FOURTH PACIFIC AREA NATIONAL MEETING  
AMERICAN SOCIETY FOR TESTING AND MATERIALS  
Los Angeles, Calif., Oct. 1-3, 1962



Reg. U. S. Pat. Off.

---

*ASTM Special Technical Publication No. 334*

---

Price \$8.75; to Members \$6.15

Published by the  
AMERICAN SOCIETY FOR TESTING AND MATERIALS  
1916 Race St., Philadelphia 3, Pa.

---

© BY AMERICAN SOCIETY FOR TESTING AND MATERIALS 1963  
Library of Congress Catalog Card Number: 63-15792

---

Printed in Baltimore, Md.  
August, 1963

## FOREWORD

---

The technical papers and discussions in this Symposium on Lubricants for Automotive Equipment were presented during the Fourth Pacific Area National Meeting of the American Society for Testing and Materials on Oct. 1 and 2, 1962, in Los Angeles, Calif.

The papers on engine oils are primarily concerned with the five engine test sequences for evaluating oils for API Service MS, published in 1962 as *ASTM STP 315*. Further testing which resulted from the conclusions and suggestions contained in these papers has been incorporated in a revised version, now available as *ASTM STP 315A*.

This Symposium was sponsored by Technical Committee B on Automotive Lubricants, ASTM Committee D-2 on Petroleum Products and Lubricants.

Arrangements for the Symposium were made by Errol J. Gay, Consulting Engineer, chairman of the Program Committee.

Mr. T. H. Risk, Ford Motor Co., chairman of Technical Committee B, was the presiding officer at all four sessions, with the individuals who organized the several sessions (see Introduction) serving as technical chairmen, with the exception that Mr. George Malone served in Mr. Stucker's stead.

---

NOTE.—The Society is not responsible, as a body, for the statements  
and opinions advanced in this publication.

---

# CONTENTS

---

	PAGE
Introduction—Errol J. Gay .....	1
<b>I. Engine Oils</b>	
The 1962 Status of Test Sequences I, II, and III—P. A. Bennett and R. H. Kabel. .	5
Discussion .....	22
Test Sequence IV for API Service MS Oils—E. W. Beckman and W. K. Fales. ....	23
Improvements in the Engine-Operating Sequence V Tests for MS Oils in Stop-and-Go Service—R. I. Potter .....	36
Discussion of Papers on Full-Scale Tests for Engine Oils .....	52
Single-Cylinder Test Techniques for Engine Oils—Part One: CRC L-38 Test Work—C. A. Hall and E. A. Martin .....	59
Discussion .....	72
Single-Cylinder Test Techniques for Engine Oils—Part Two: Development of CRC L-43 Test Technique—E. J. McLaughlin .....	74
Discussion .....	83
Where Do We Go from Here in Motor Oil Testing?—L. A. McReynolds .....	85
Discussion .....	88
Some Technical Aspects of the Motor Oils Market in France and in Europe—J. Thiery .....	89
<b>II. Chassis Lubricants</b>	
A New Look in Chassis Lubricants—J. B. Stucker, H. A. Toulmin, and E. J. Herbenar .....	101
Discussion .....	105
<b>III. Automatic Transmission Fluids</b>	
Automatic Transmission Fluid—A Dynamic Material Keeping Pace with Ever-Changing Requirements—A. K. Watt and R. J. Duckworth .....	115
Discussion .....	127
Coordinating Research Council Research Techniques for Automatic Transmission Fluids—S. T. Calish .....	129
Factory-Service Automatic Transmission in Fluid Requirements—S. R. Sprague and R. L. Woodruff .....	142
Discussion .....	160
Effect of Lubricant on Automatic Transmission Clutch Plate Durability—E. D. Davison .....	162
Discussion .....	188
<b>IV. Gear Oils</b>	
The Performance of MIL-L-2105B Gear Oils in Military Equipment—R. E. Streets and C. F. Schwarz .....	191
Why High Performance Gear Lubricants at Service Stations?—H. J. Grance .....	199
General Motors Rear Axle Lubricant Recommendations—N. A. Hunstad .....	202
Test Criteria for Ford Passenger Car Rear Axle Lubricants—R. F. Gasvoda .....	209
Axle and Transmission Lubricants: The European Viewpoint—Alfred Towle .....	216
Discussion of Papers on Gear Oils .....	238
Summary of the Symposium on Automotive Lubricants—C. C. Moore .....	245

THIS PUBLICATION is one of many issued by the American Society for Testing and Materials in connection with its work of promoting knowledge of the properties of materials and developing standard specifications and tests for materials. Much of the data result from the voluntary contributions of many of the country's leading technical authorities from industry, scientific agencies, and government.

Over the years the Society has published many technical symposiums, reports, and special books. These may consist of a series of technical papers, reports by the ASTM technical committees, or compilations of data developed in special Society groups with many organizations cooperating. A list of ASTM publications and information on the work of the Society will be furnished on request.



