645E3
ENGINE MAINTENANCE MANUAL
(TURBOCHARGED)

3rd Edition

November, 1968

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SERVICE DEPARTMENT

Electro-Motive Division
La Grange, Illinois

GM
MARK OF EXCELLENCE

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REVISION RECORD

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NOTE: When pages of this manual are revised, the page numbers and revision dates will be recorded above. The date will also appear on each revised page. Revision distribution will include the Record page so that an up to date manual may be maintained. Please r e m o v e all pages from the manual which are replaced by revised pages.

FOREWORD

This manual contains description and maintenance information for Model 8, 12, 16, and 20-645E3 diesel engines. It is the intent of this manual, that the information herein contained be considered applicable to all the above model engines, unless otherwise specified. The illustrations used throughout the manual, for the most part, depict the 16-cylinder model as representative of the location and relative shape of various components and accessories.

Each section of the manual contains the Description, Maintenance, and Service Data as applicable to the engine components covered in the specific section.

Service Data, consisting of the specifications regarding clearance and dimensional limits and a list of the service equipment required, is presented at the end of each section. The concentration of this information will facilitate maintaining and servicing the engine. In addition, it will provide an expeditious means of revising the manual when only specifications are changed.

Special tools, referred to in the text and shown in many of the illustrations, are not necessarily supplied with the engine, but are available on order.

To derive maximum service from the engine, it is recommended that personnel have an understanding of the equipment before attempting to perform any maintenance. It is further advised that due consideration be given the manufacturer's recommended maintenance procedure.

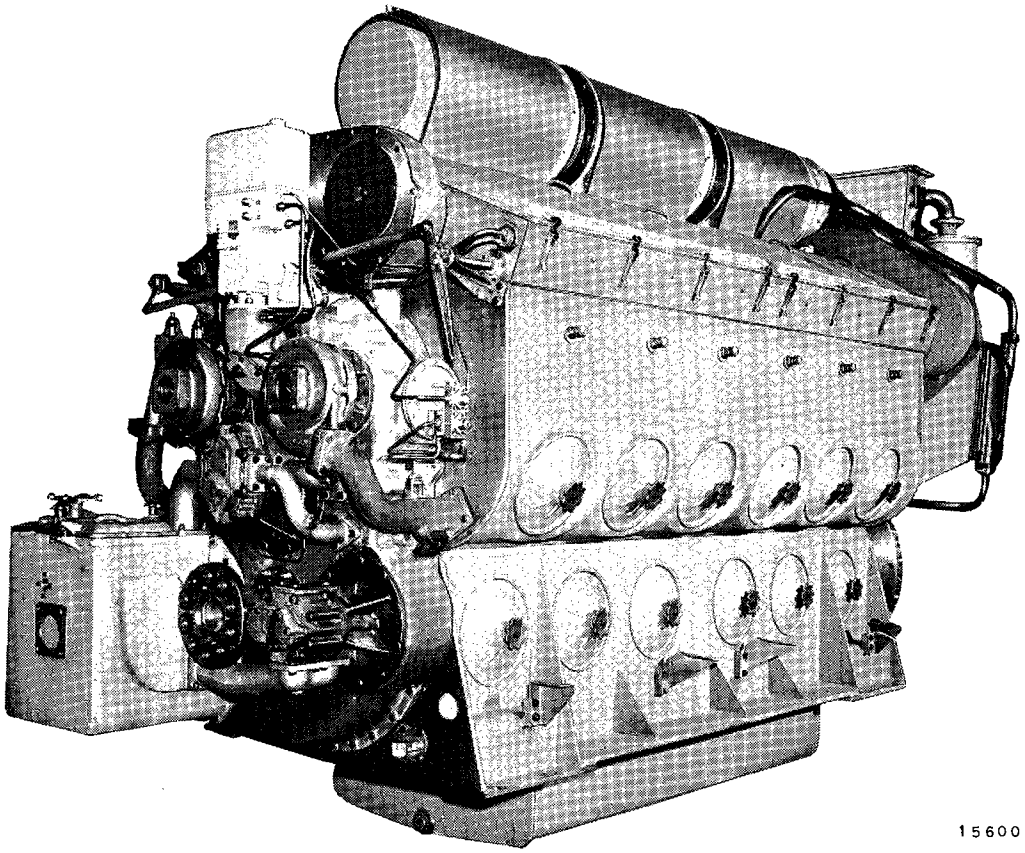
Wear limits are often given as diametric clearance. This means the total clearance on the diameter. Most diametric clearances can be measured by placing a feeler gauge on only one side of the object being checked. Other items may have to be checked by measuring the outside diameter of the bearing in which the shaft turns. A ball micrometer for measuring wall thickness of bearings, and a dial indicator for measuring diametric and longitudinal clearances will be found necessary. For measuring clearances such as piston to cylinder head, or oil pump gears to housing, the use of lead ribbon is recommended. The lead ribbon is inserted between the parts, removed and measured to obtain the clearance.

Radial clearance is specified when the nature of the part is such that diametric clearance cannot be measured. The radial clearance is always one-half of the diametric clearance.

Longitudinal or thrust clearances are listed throughout the manual with all of the clearances removed at one end of the part being measured. Where it is not convenient to take out all of the thrust at one end, the thrust at each end should be measured and added, to give the total longitudinal clearance.

Clearance and dimensional limits used in this manual are defined as follows:

1. New limits are those to which new parts are manufactured. (Drawing tolerances.)
2. Remanufacturing limits are dimensions which should not be exceeded at the time of remanufacture, in order to ensure satisfactory service until the time of the next scheduled overhaul. Unless specified otherwise, the limits given in the manual are remanufacturing limits.



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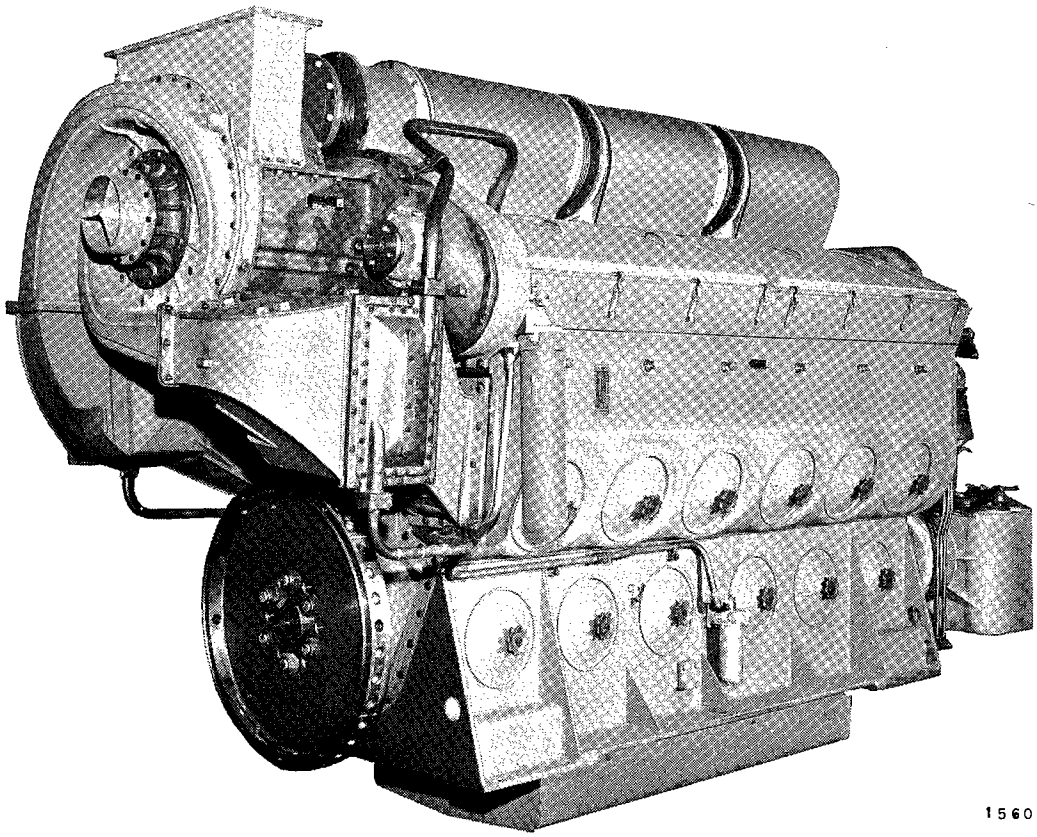
Three-Quarter Left Front View, 12-Cylinder



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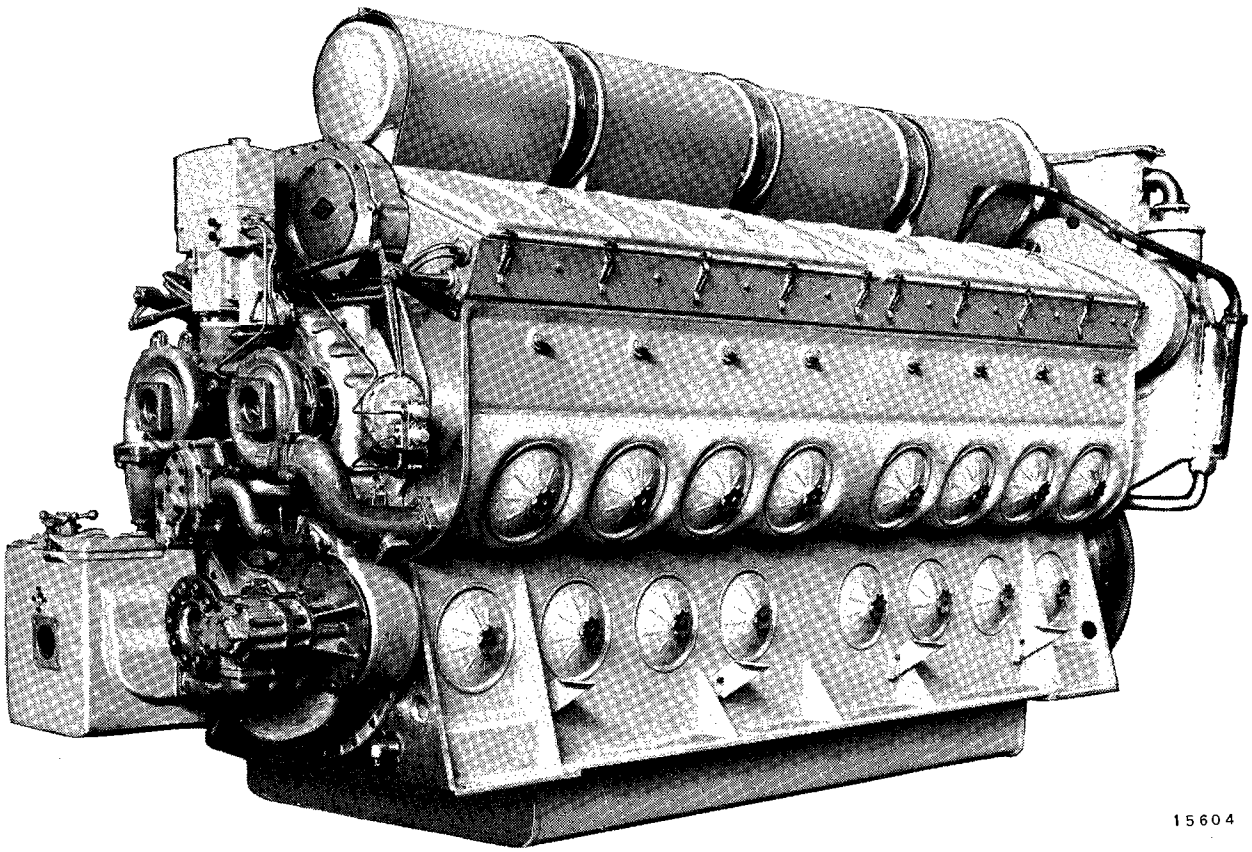
Three-Quarter Right Rear View, 12-Cylinder



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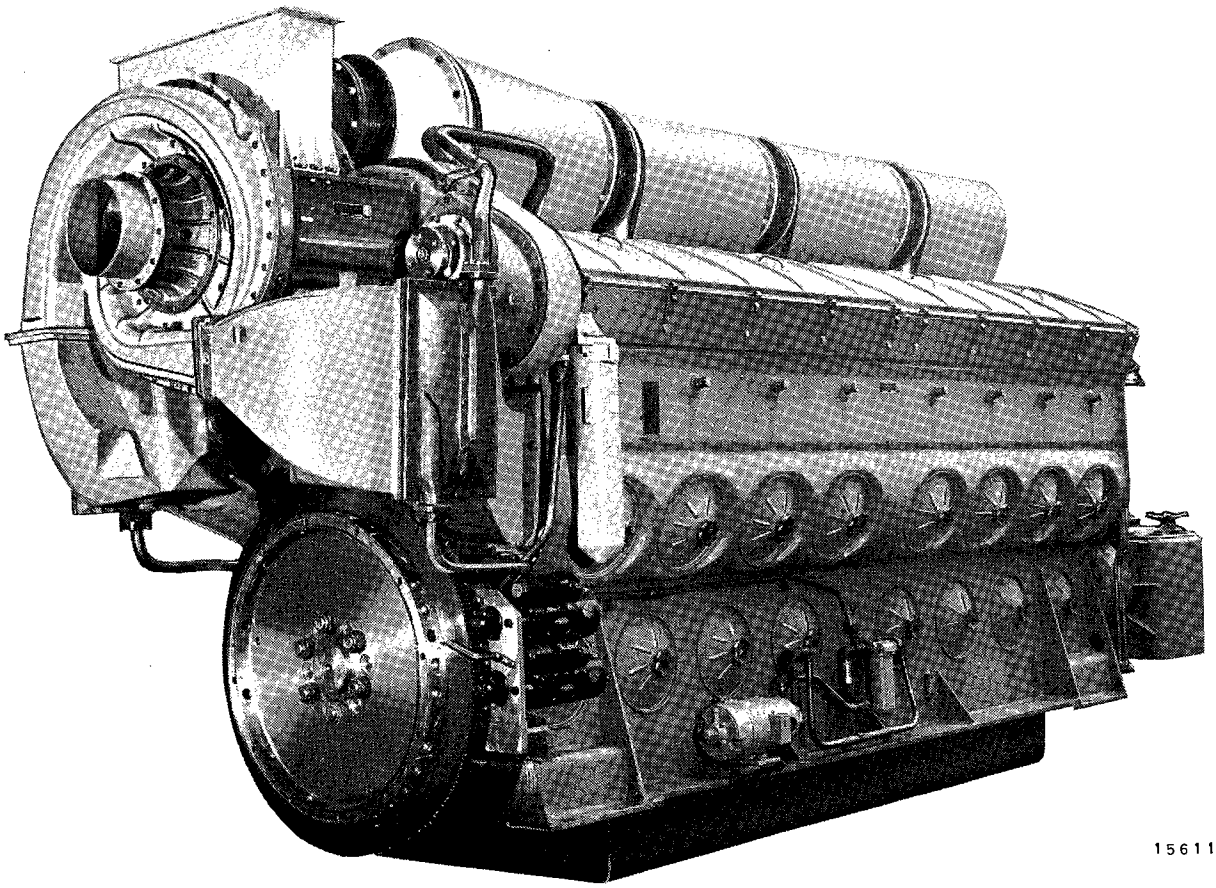
Three-Quarter Left Front View, 16-Cylinder



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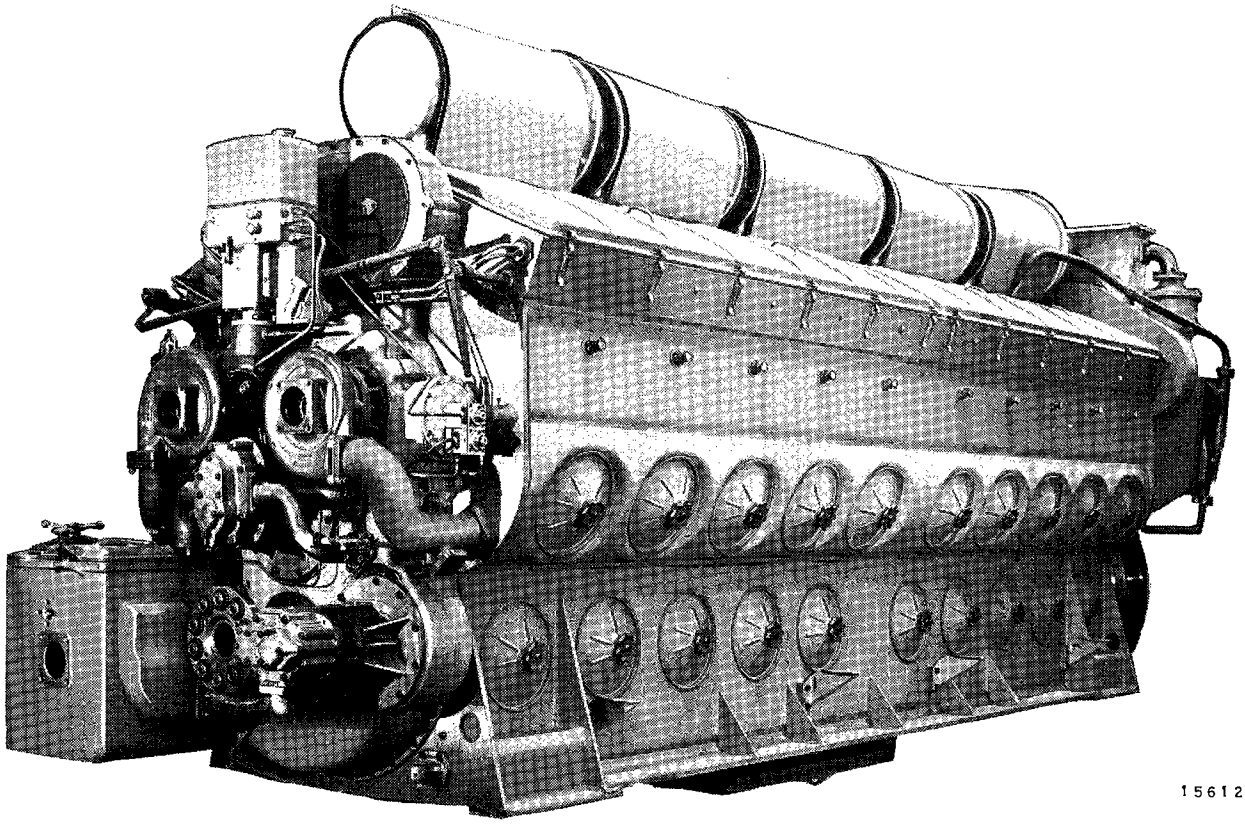
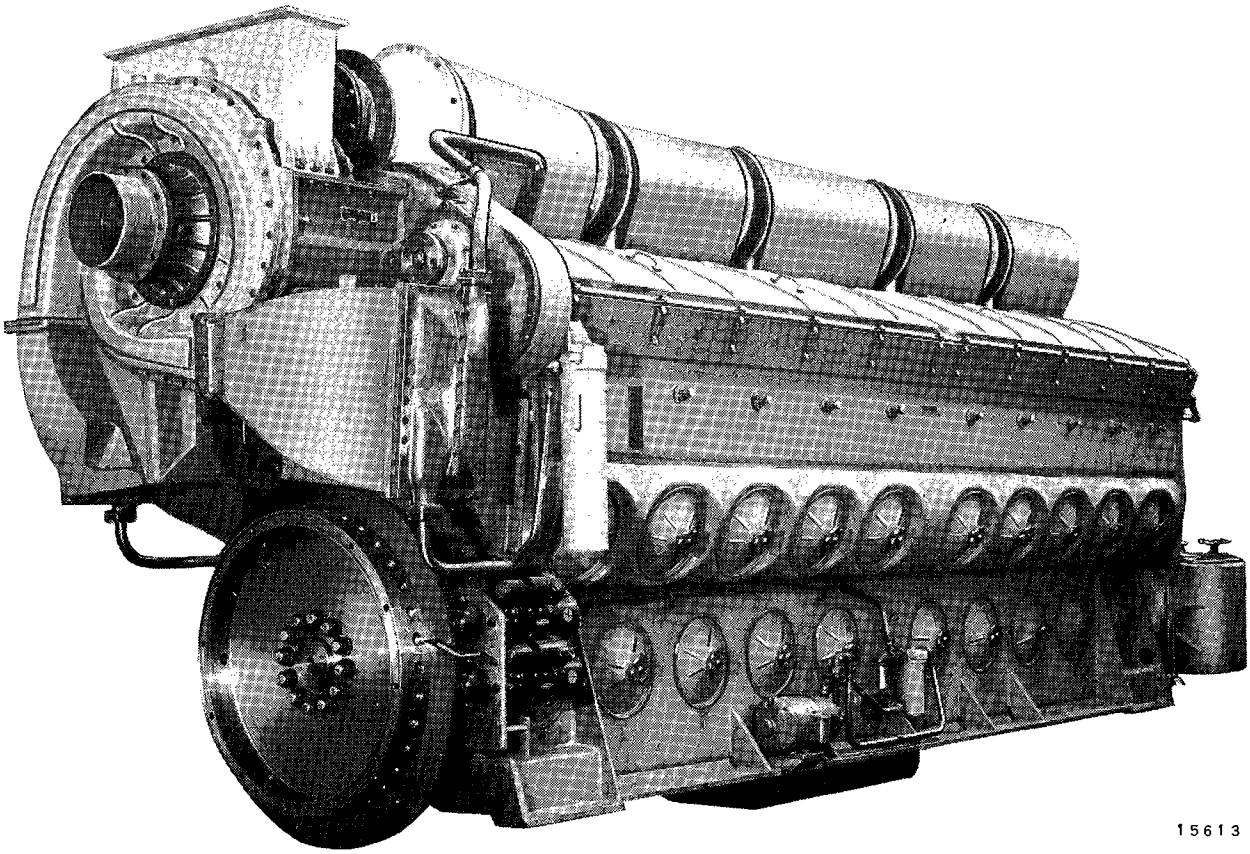
Three-Quarter Right Rear View, 16-Cylinder



15612

Three-Quarter Left Front View, 20-Cylinder



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Three-Quarter Right Rear View, 20-Cylinder

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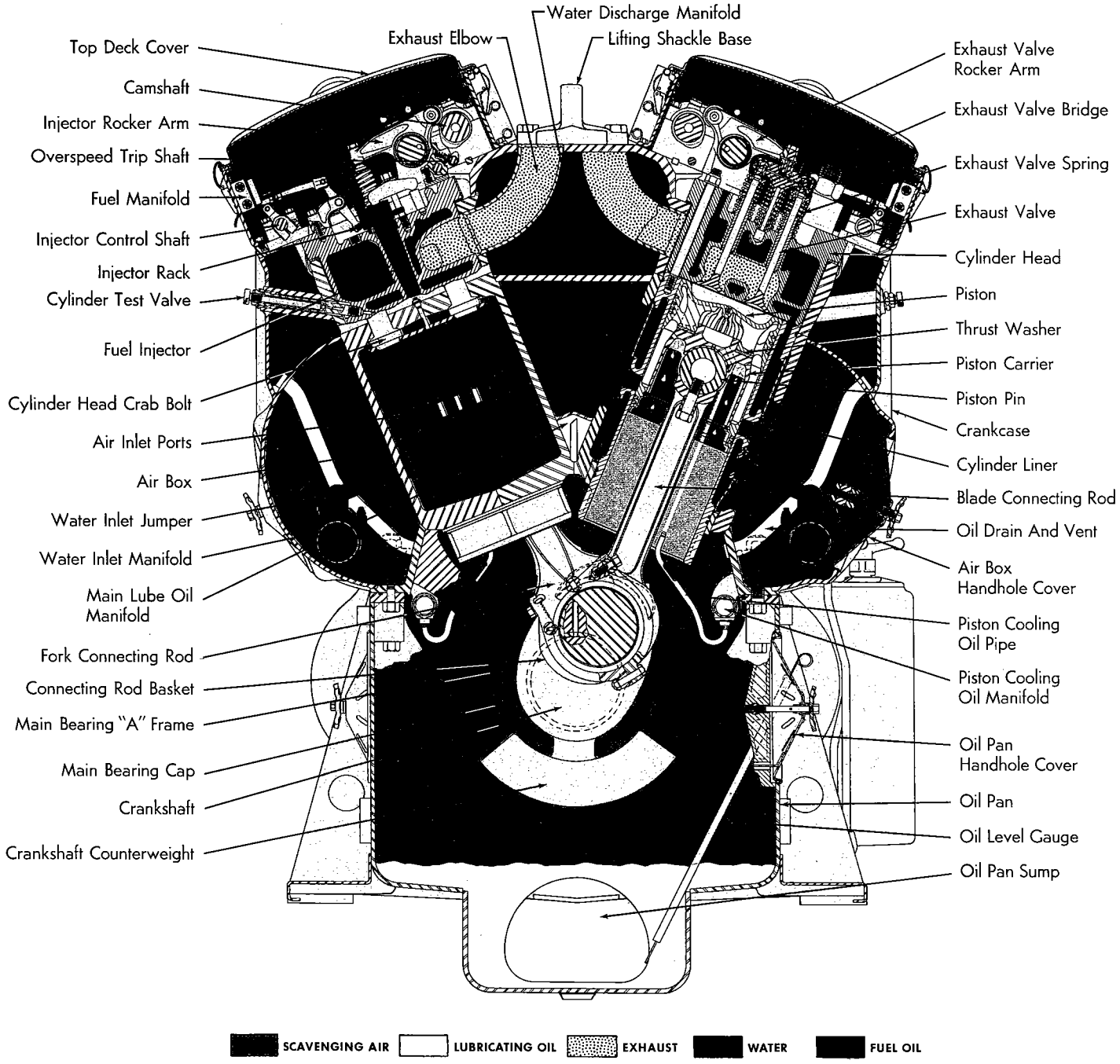

645 SERIES DIESEL ENGINE

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION
LA GRANGE, ILLINOIS, U.S.A.

Litho. U.S.A.

PLATE 13003