645E3

TURBOCHARGED ENGINE MAINTENANCE MANUAL

8th Edition

August 1983

ELECTRO-MOTIVE

• • • • A Service Department Publication • • • •

Electro-Motive Division Of General Motors La Grange, Illinois 60525

INDEX

FOREWORD

This manual contains maintenance information for the 8, 12, 16, and 20 cylinder Model 645E3 diesel engines. The material describes the basic engine and common extra equipment. However, the coverage of any particular system or component does not imply that the equipment is part of any specific order.

The illustrations generally depict the 16-cylinder model as representative of the location, size, and relative shape of various components and accessories.

Units of measurement appearing in this manual are shown in metric units and U.S. standard units. A conversion table is provided to convert U.S. standard to metric units.

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

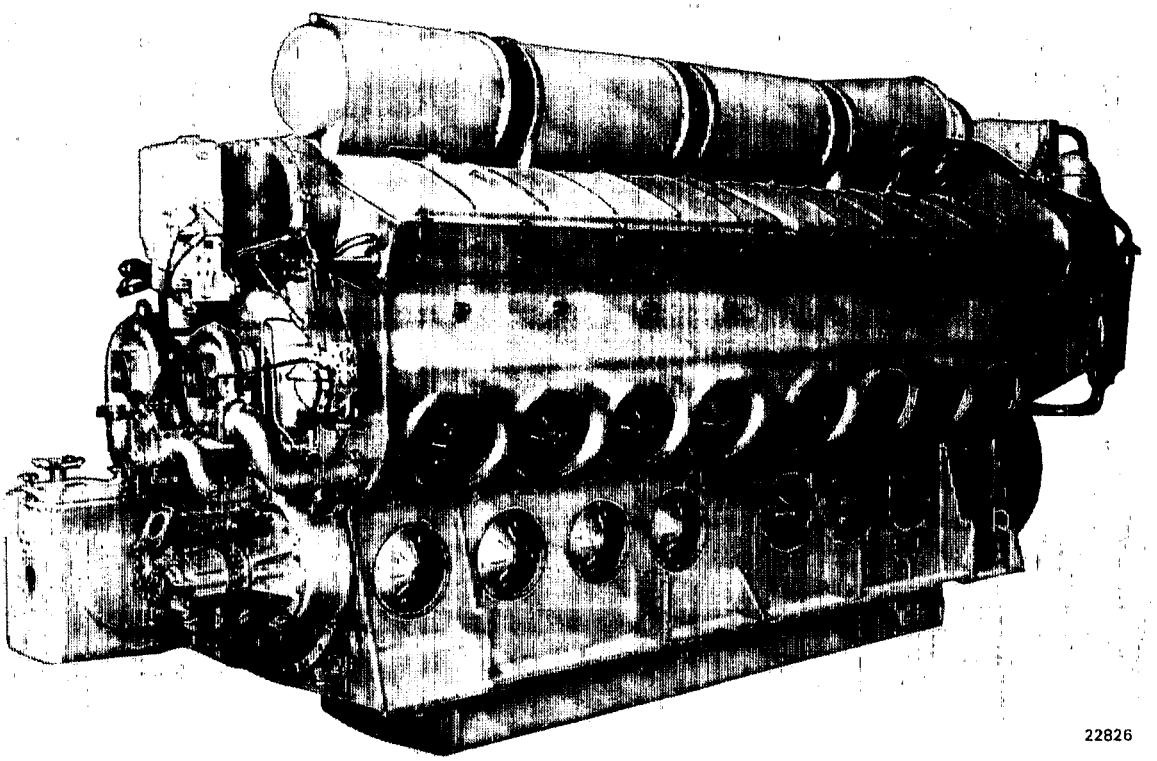
File numbers contained in this manual represent detailed drawings for the construction of fabricated tooling. These drawings are available from Electro-Motive Service Department.

References, specifications, and a list of service equipment are presented as Service Data at the end of most sections.

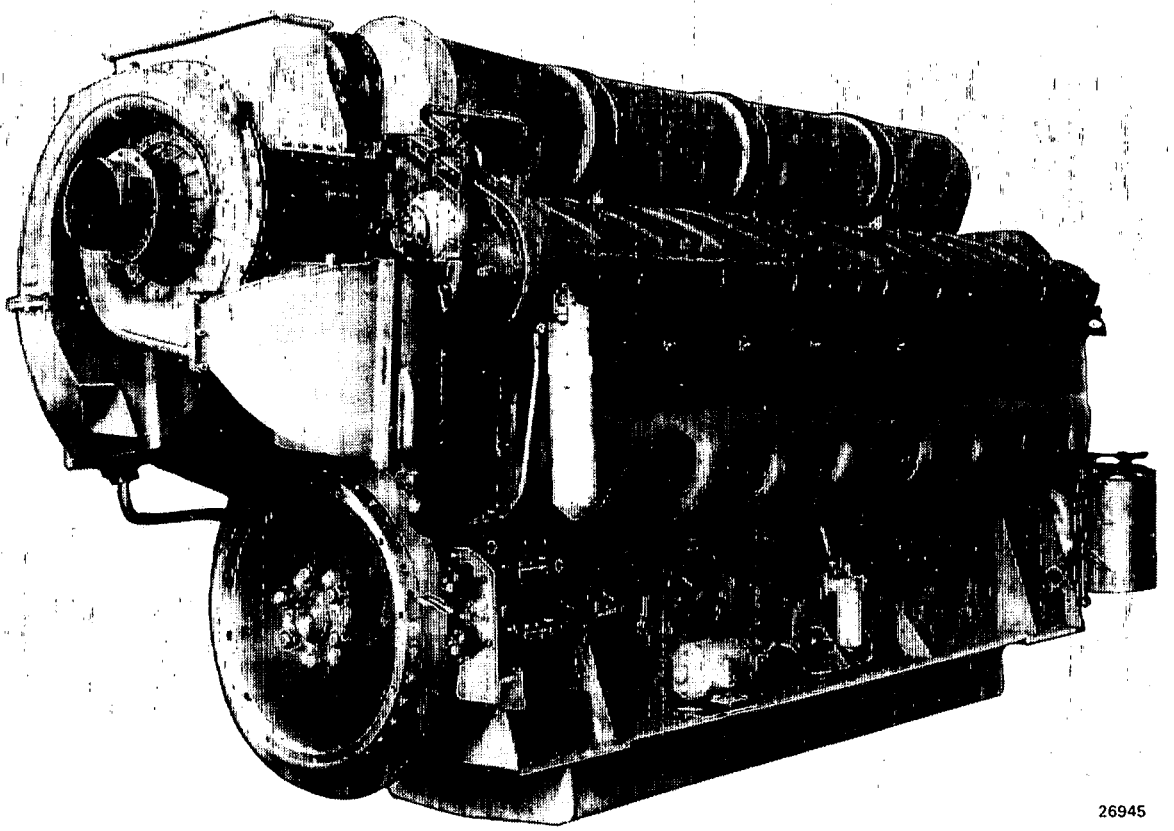
Clearance and dimensional limits listed in Service Data are defined as follows:

1. New limits are those to which new parts are manufactured. (Drawing tolerances.)

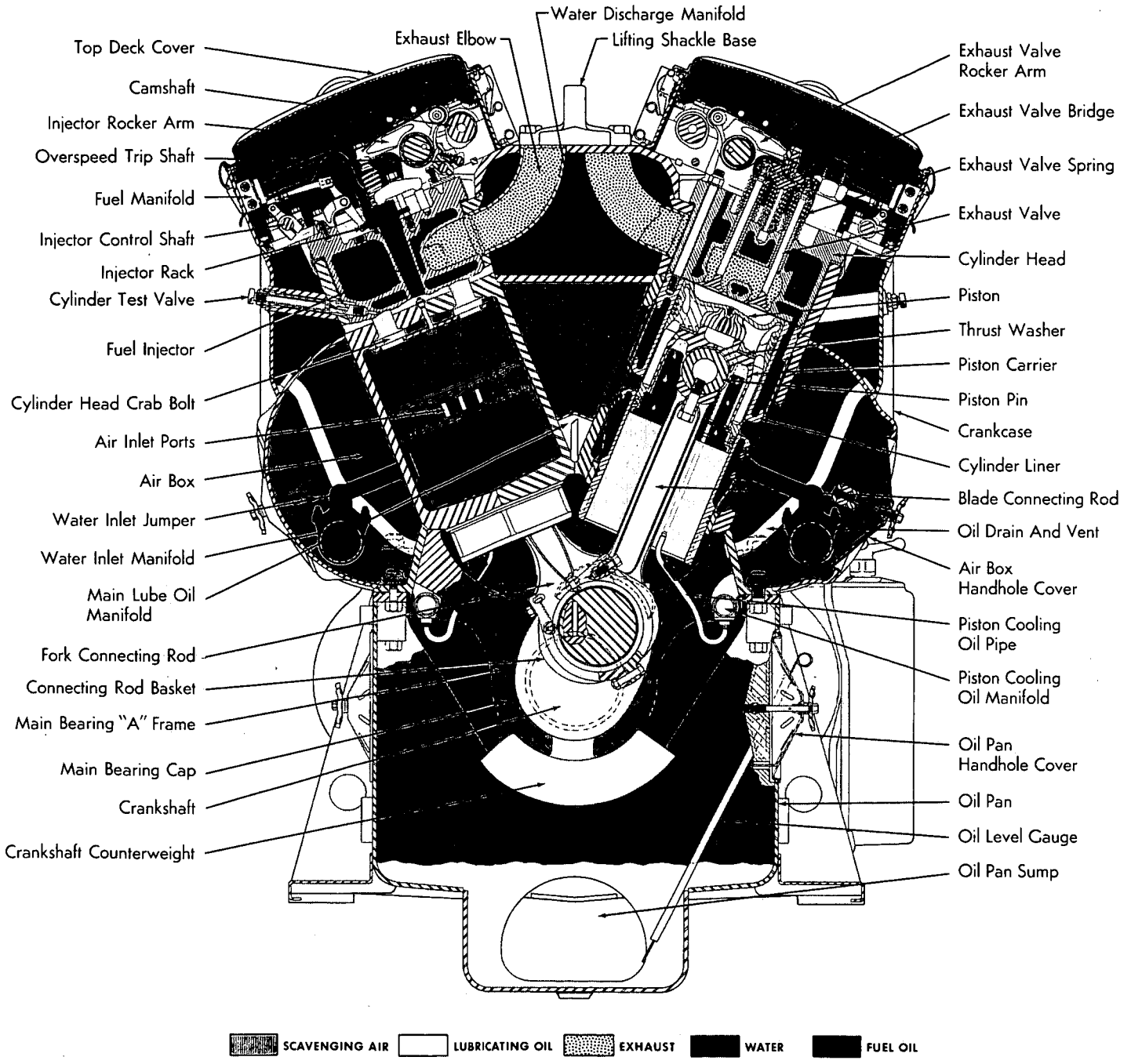
2. Minimum, maximum, and tolerance measurements are provided as service limits. At time of rebuild or any time unscheduled maintenance is performed, the service limits should *not* be exceeded. Engine components within these limits may be reused with the assurance that they will perform satisfactorily until the next scheduled overhaul.



Three-Quarter Left Front View, 16-Cylinder



Three-Quarter Right Rear View, 16-Cylinder



645 SERIES DIESEL ENGINE

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

Litho. U.S.A.

PLATE 13003

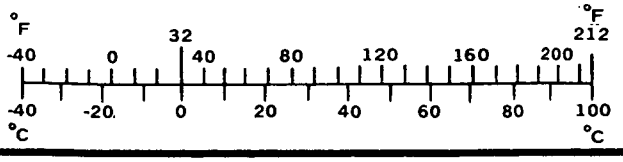
ELECTRO-MOTIVE

METRIC CONVERSION

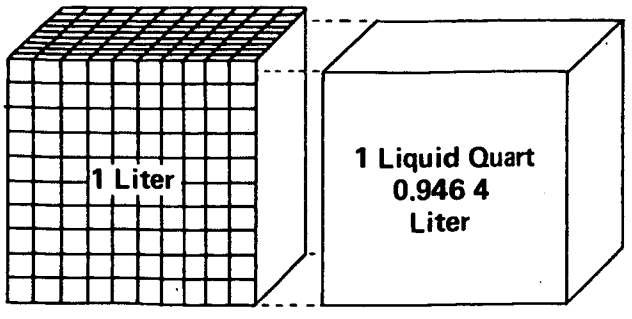
TABLE OF FREQUENTLY USED UNITS

Multiply	by	to get equivalent number of:
LENGTH		
Microinch	.025 4	micron (μ)
Inch	25.4	millimeters (mm)
Foot	0.304 8	meters (m)
Yard	0.914 4	meters
Mile	1.609	kilometers (km)
AREA		
$Inch^2$	645.2	$millimeters^2$ (mm^2)
	6.45	$centimeters^2$ (cm^2)
$Foot^2$	0.092 9	$meters^2$ (m^2)
$Yard^2$	0.836 1	$meters^2$
VOLUME		
Ounce	29.574	$centimeter^3$ (cm^3)
$Inch^3$	16 387.	mm^3
	16.387	cm^3
	0.016 4	liters
Ft^3	0.028 3	$meter^3$ (m^3)
Quart	0.946 4	liters
Gallon	3.785 4	liters
$Yard^3$	0.764 6	$meters^3$ (m^3)
MASS		
Ounce	28.350	grams (g)
Pound	0.453 6	kilograms (kg)
Ton	907.18	kilogram
Ton	0.907	tonne (t)
FORCE		
Kilogram	9.807	newtons (N)
Ounce	0.278	newtons
Pound	4.448	newtons
TEMPERATURE		

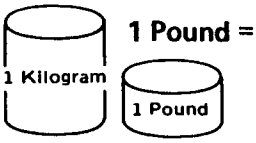
Degree Fahrenheit $(t° F-32)\div 1.8$ = degree Celsius (C)



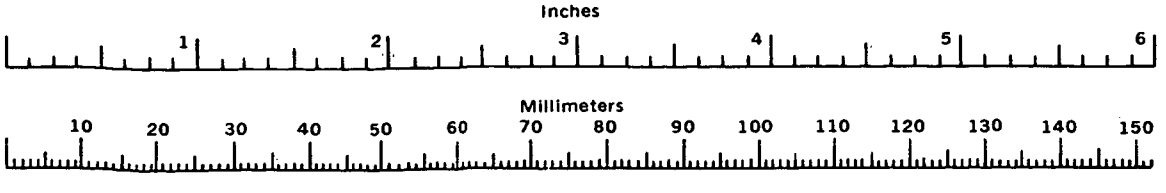
Multiply	by	to get equivalent number of:
ACCELERATION		
$Foot/sec^2$	0.304 8	$meter/sec^2$ (m/s^2)
$Inch/sec^2$	0.025 4	$meter/sec^2$
TORQUE		
Ounce-force-inch	0.007 06	newton-meter
	0.069 2	kilogram-meter
Pound-inch	0.112 98	newton-meters (N·m)
	0.011 52	kilogram-meters
Pound-foot	1.355 8	newton-meters
	0.138 25	kilogram-meters
POWER		
Horsepower	0.746	kilowatts (kW)
PRESSURE OR STRESS		
Inches of water	0.249 1	kilopascals (kPa)
Pounds/sq. in.	6.895	kilopascals
ENERGY OR WORK		
BTU	1 055.	joules (J)
Foot-pound	1.355 8	joules
Kilowatt-hour	3 600 000 or $3.6x10^6$	joules (J = one W·s)
LIGHT		
Footcandle	10.764	$lumens/meter^2$ (lm/m^2)
FUEL PERFORMANCE		
Miles/gal	0.425 1	kilometers/liter (km/l)
Gal/mile	2.352 7	liters/kilometer (l/km)
VELOCITY		
Miles/hour	1.609 3	kilometers/hr. (km/h)



The comparative dimensions of an inch and a millimeter, a liter and a quart, and a kilogram and a pound are shown.



1 Pound = 0.453 6 kg



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