

TM 9-1803A

WAR DEPARTMENT TECHNICAL MANUAL

ORDNANCE MAINTENANCE

Engine and Engine Accessories

For ¼-Ton 4 x 4 Truck

(Willys-Overland Model MB and Ford Model GPW)

WAR DEPARTMENT



24 FEBRUARY 1944

WAR DEPARTMENT TECHNICAL MANUAL

TM 9-1803A

ORDNANCE MAINTENANCE

Engine and Engine
Accessories

For $\frac{1}{4}$ -Ton 4x4 Truck

(Willys-Overland Model MB and Ford Model GPW)



WAR DEPARTMENT
Washington 25, D. C., 24 February 1944

TM 9-1803A, Ordnance Maintenance: Engine and Engine Accessories for ¼-ton 4 x 4 Truck (Willys-Overland model MB and Ford model GPW), is published for the information and guidance of all concerned.

[A.G. 300.7 (9 Oct 43)
O.O.M. 461/Rar. Ars. (2-25-44)]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION: R 9 (4); Bn 9 (2); C 9 (5).

(For explanation of symbols, see FM 21-6.)

CONTENTS

	Paragraphs	Pages
CHAPTER 1. INTRODUCTION	1- 2	4- 7
CHAPTER 2. ENGINE	3-24	8-64
SECTION I. Description and data.....	3- 4	8
II. Engine removal from vehicle	5	8-14
III. Disassembly of engine into sub- assemblies	6- 7	14-21
IV. Disassembly, cleaning, inspection, repair, and assembly of sub- assemblies	8-17	21-43
V. Assembly of engine	18-19	43-57
VI. Installation of engine	20-21	57-61
VII. Fits and tolerances	22-24	62-64
CHAPTER 3. CLUTCH ASSEMBLY	25-28	65-71
REFERENCES		72-74
INDEX		75-77

★ For supersession of Quartermaster Corps 10-series Technical Manuals, see paragraph 1 j.

TM 9-1803A**1****ORDNANCE MAINTENANCE — ENGINE AND ENGINE ACCESSORIES FOR ¼-TON
4x4 TRUCK (WILLYS-OVERLAND MODEL MB AND FORD MODEL GPW)****CHAPTER 1****INTRODUCTION**

	Paragraph
Scope	1
MWO and major unit assembly replacement record	2

1. SCOPE.

a. The instructions contained in this manual are for the information and guidance of personnel charged with the maintenance and repair of the 4-cylinder engine used in the Willys MB and Ford GPW ¼-ton 4 x 4 Trucks. These instructions are supplementary to field and technical manuals prepared for the using arms. This manual does not contain information which is intended primarily for the using arms, since such information is available to ordnance maintenance personnel in 100-series TM's or FM's.

b. This manual contains a description of, and procedure for inspection, removal, disassembly, repair, and rebuilding of the engine.

c. TM 9-803 contains information and guidance for the using arms and first and second echelons.

d. TM 9-1803B contains information for removal, inspection, repair, rebuild, assembly, and installation of the power train and chassis.

e. TM 9-1825B contains information for the maintenance of the Auto-Lite electrical equipment used on this vehicle.

f. TM 9-1826A contains information for the maintenance of the Carter carburetor used on this vehicle.

g. TM 9-1827C contains information for the maintenance of the Wagner hydraulic brake system used on this vehicle.

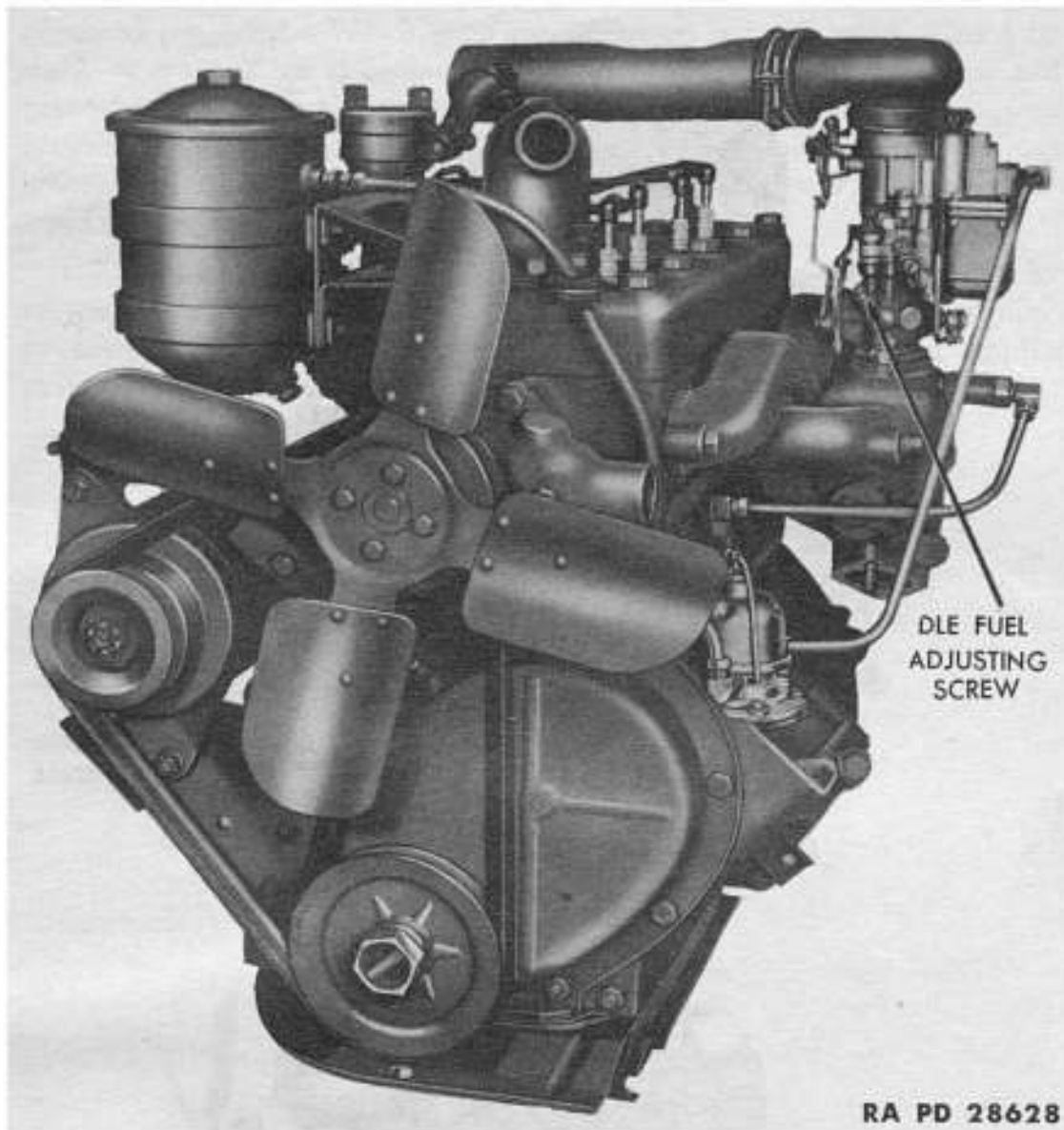
h. TM 9-1828A contains information for the maintenance of the A. C. fuel pump used on this vehicle.

i. TM 9-1829A contains information for the maintenance of the speedometer used on this vehicle.

j. This manual includes engine ordnance maintenance instructions from the following Quartermaster Corps 10-series technical manuals. Together with TM 9-803 and TM 9-1803B, this manual supersedes them:

- (1) TM 10-1103, 20 August 1941.
- (2) TM 10-1207, 20 August 1941.
- (3) TM 10-1349, 3 January 1942.
- (4) TM 10-1513, Change 1, 15 January 1943.

INTRODUCTION



RA PD 28628

Figure 1 – Front View of Engine

2. MWO AND MAJOR UNIT ASSEMBLY REPLACEMENT RECORD.

a. Description. Every vehicle is supplied with a copy of AGO Form No. 478 which provides a means of keeping a record of each MWO (FSMWO) completed or major unit assembly replaced. This form includes spaces for the vehicle name and U.S.A. registration number, instructions for use, and information pertinent to the work accomplished. It is very important that the form be used as directed, and that it remain with the vehicle until the vehicle is removed from service.

b. Instructions for Use. Personnel performing modifications or major unit assembly replacements, must record clearly on the form a

TM 9-1803A
2

**ORDNANCE MAINTENANCE — ENGINE AND ENGINE ACCESSORIES FOR 1/4-TON
4x4 TRUCK (WILLYS-OVERLAND MODEL MB AND FORD MODEL GPW)**

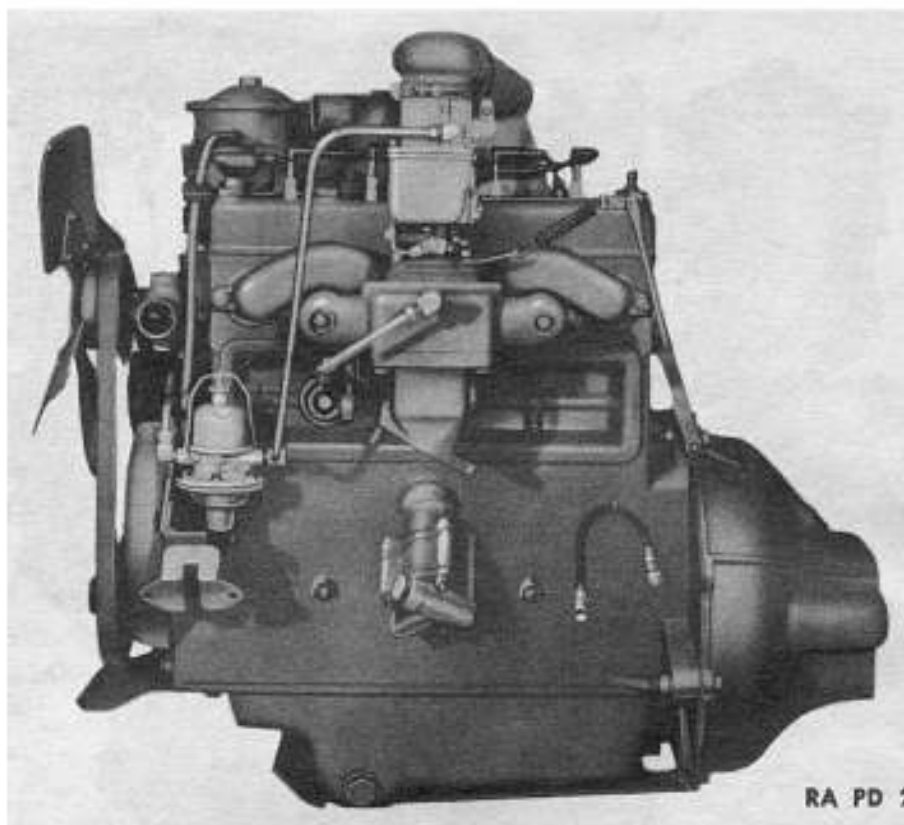


Figure 2 — Left Side View of Engine

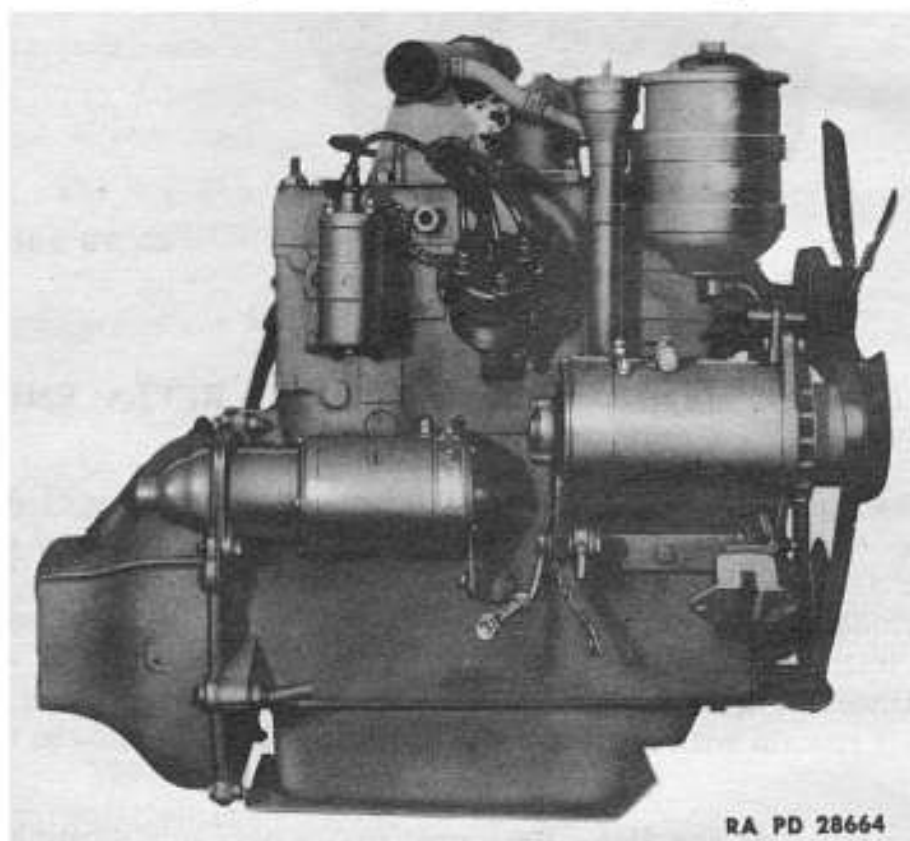


Figure 3 — Right Side View of Engine

INTRODUCTION

description of the work completed, and must initial the form in the columns provided. When each modification is completed, record the date, hours and/or mileage, and MWO number. When major unit assemblies, such as engines, transmissions, transfer cases, are replaced, record the date, hours and/or mileage, and nomenclature of the unit assembly. Minor repairs and minor parts and accessory replacements need not be recorded.

c. Early Modifications. Upon receipt by a third or fourth echelon repair facility of a vehicle for modification or repair, maintenance personnel will record the MWO numbers of modifications applied prior to the date of AGO Form No. 478.

TM 9-1803A
3-5

**ORDNANCE MAINTENANCE — ENGINE AND ENGINE ACCESSORIES FOR ¼-TON
 4x4 TRUCK (WILLYS-OVERLAND MODEL MB AND FORD MODEL GPW)**

CHAPTER 2
ENGINE

Section I

DESCRIPTION AND DATA

	Paragraph
Description	3
Data	4

3. DESCRIPTION.

a. The engine used in the ¼-ton 4 x 4 Truck is the 4-cylinder, L-head, gasoline-type (figs. 1, 2, and 3), equipped with a counter-balanced crankshaft. The camshaft is operated off the crankshaft through a timing chain (fig. 40). The oil pump and distributor operate off the camshaft.

4. DATA.

Type	L-head
Numbers of cylinders	4
Bore and stroke	3.125 x 4.375 in.
Piston displacement	134.2 cu in.
Compression ratio	6.48 to 1
Max. brake horsepower	54 at 4,000
Compression (lb per sq in. at 185 rpm)	111
SAE horsepower	15.63
Maximum torque	105 ft-lb at 2,000 rpm
Firing order	1-3-4-2

Section II

ENGINE REMOVAL FROM VEHICLE

	Paragraph
Removal from vehicle	5

5. REMOVAL FROM VEHICLE.

a. **General.** Unhook the two hood clamps, raise the hood, and lay it against the windshield. Drain the coolant from the radiator and the engine by opening the radiator drain cock and the drain cock