

TM 9-1731B

WAR DEPARTMENT TECHNICAL MANUAL

ORDNANCE MAINTENANCE

FORD TANK ENGINES

(MODELS GAA, GAF,
AND GAN)

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.
No person is entitled solely by virtue of his grade or position
to knowledge or possession of classified matter. Such matter
is entrusted only to those individuals whose official duties
require such knowledge or possession. (See also paragraph
23b, AR 380-5, 15 March 1944.)

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This TM supersedes TM 9-1731B, dated 15 Jul 43; OFSTB 1731B-1, dated 24 Nov 43; WDTB 9-1731B-2, dated 6 Jan 44; and WDTB 9-1731B-3, dated 18 Mar 44. This TM, together with TM 9-1825B, dated 20 Jan 44; TM 9-1826B, dated 1 Apr 44; and TM 9-1828A, dated 9 Mar 45, supersedes TM 9-1731C, dated 23 Aug 43. This TM supersedes portions of WDTB ORD 215, dated 30 Oct 44, and WDTB ORD 288, dated 12 Apr 45, which apply to the materiel covered by this TM; however, those TB's remain in force until incorporated in all other TM's or specifically rescinded.

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4 JUNE 1945

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WAR DEPARTMENT
Washington 25, D. C., 4 June 1945

TM 9-1731B, Ordnance Maintenance: Ford Tank Engines (Models GAA, GAF, and GAN), is published for the information and guidance of all concerned.

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Chief of Staff.

OFFICIAL:

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

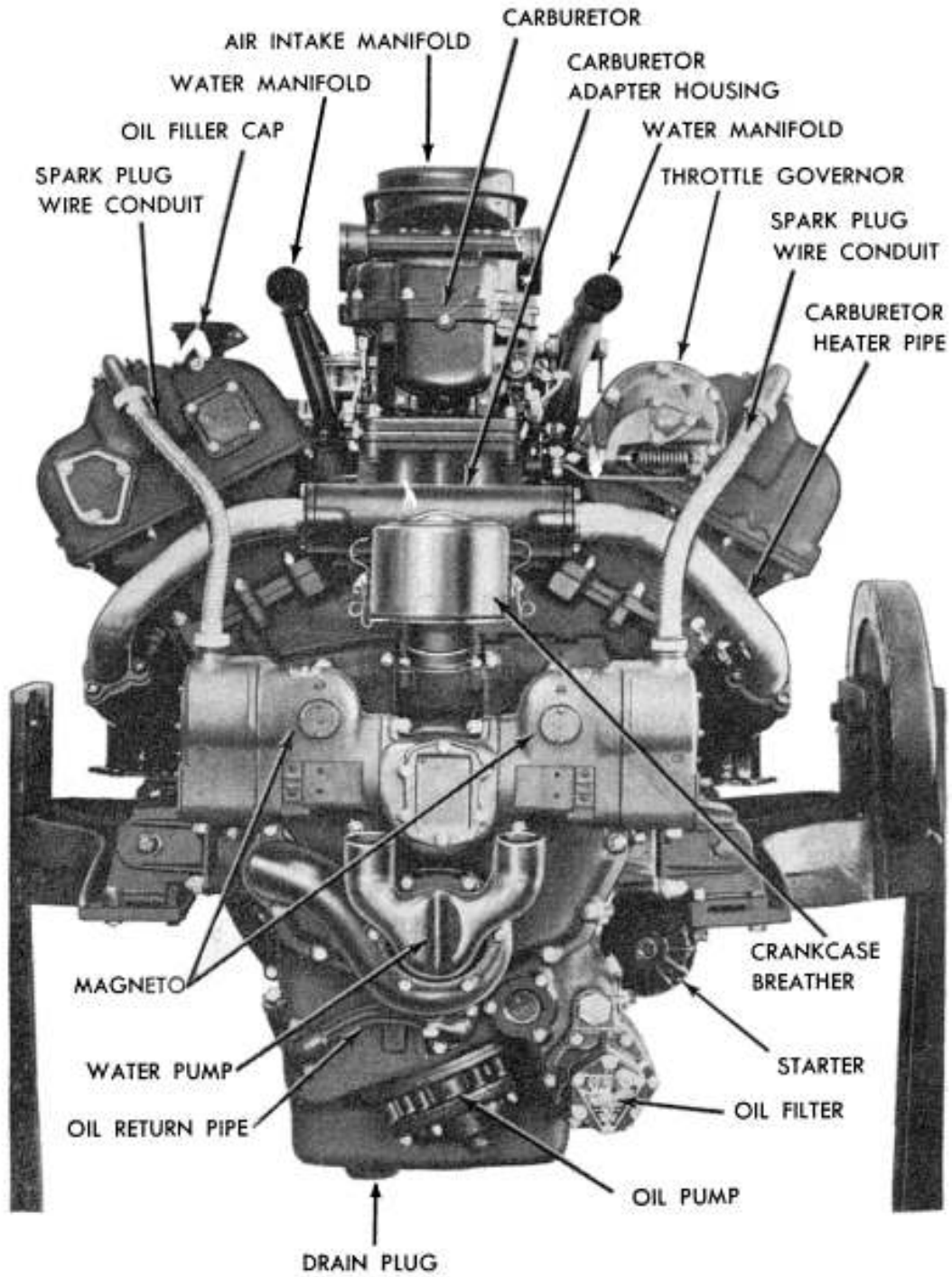
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RA PD 329615

Figure 1 – GAA Engine – Rear View

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CHAPTER 1 – INTRODUCTION**1. SCOPE.**

a. These instructions are published for the information and guidance of personnel charged with the maintenance and repair of the Ford tank engines, models GAA, GAN, and GAF. 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 removal, disassembly, inspection, repair, and assembly of the Ford tank engines, models GAA, GAN, and GAF.

c. TM 9-1826B contains information for the maintenance of the Stromberg carburetor used on these engines.

d. TM 9-1828A contains information for the maintenance of the A-C fuel pump used on these engines.

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

f. TM 9-1734A contains information for the maintenance of the General Electric governor used on vehicles using the GAN engine.

2. RECORDS.

a. Forms and records applicable for use in performing prescribed operations are listed below with a brief explanation of each:

(1) **WAR DEPARTMENT LUBRICATION ORDER.** War Department Lubrication Orders prescribe lubrication maintenance for vehicles using this engine. A lubrication order is issued with each vehicle and is to be carried with it at all times. Instructions on the order are binding on all echelons of maintenance and there shall be no deviations.

(2) **W.D., A.G.O. FORM No. 462, PREVENTIVE MAINTENANCE SERVICE AND TECHNICAL INSPECTION WORK SHEET FOR FULL-TRACK AND TANK-LIKE WHEELED VEHICLES.** This form will be used for all 50-hour (500-mile) or 100-hour (1,000-mile) services and for technical inspections of these vehicles.

(3) **W.D., A.G.O. FORM NO. 468, UNSATISFACTORY EQUIPMENT REPORT.** This form will be used for reporting manufacturing, design, or operational defects in materiel with a view to improving and correcting such defects, and for use in recommending modifications on materiel. This form will not be used for reporting failures, isolated materiel defects, or malfunctions of materiel resulting from fair wear and tear or accidental damage; nor for the replacement, repair, or the issue of parts and equipment. It does not replace currently authorized operational or performance records.

(4) **W.D., A.G.O. FORM NO. 478, MWO AND MAJOR UNIT ASSEMBLY REPLACEMENT RECORD.** This form, carried with vehicle, will be used by all personnel completing a modification or major unit assembly (engine, transmission, transfer case, tracks, etc.) replacement to record clearly the description of work completed, date, vehicle hours and/or mileage, and MWO number or nomenclature of unit assembly. Personnel performing the operation will initial in the column provided. Minor repairs, parts, and accessory replacements will not be recorded.

(5) **W.D., A.G.O. FORM NO. 10-144 (TALLY SHEET, INCOMING).** This form may be used to record all incoming materials or supplies pending negotiation of a final voucher. It may also be used in exchanging vehicles, parts, or tools, or in lieu of shipping ticket.

(6) **W.D., A.G.O. FORM NO. 10-145 (TALLY SHEET, OUTGOING).** This form may be used to record all outgoing materials or supplies pending negotiation of the final voucher. It may also be used in exchanging vehicles, parts, or tools, or in lieu of shipping ticket.

(7) **W.D., A.G.O. FORM NO. 9-71 (LOCATOR AND INVENTORY CONTROL CARD).** This form may be used as a bin tag, locator card, or inventory control card in maintaining spare parts stocks. This form is for tactical units only.

(8) **W.D., A.G.O. FORM NO. 9-76 (REQUEST FOR JOB ORDER).** This form may be used by any officer or authorized person requiring production, repair, alteration, inspection, or any other type of work from another organization, department, or echelon. Not required for second or third echelon repairs.

(9) **W.D., A.G.O. FORM NO. 9-77 (JOB ORDER REGISTER).** This form will be prepared, when job orders are used, in single copy only, by service echelons to furnish a chronological order and record of job order numbers and related information.

(10) **W.D., A.G.O. FORM NO. 9-78 (JOB ORDER).** This form, properly executed, may be used as an authority for work. No work of any nature will be performed in a service echelon shop keeping a cost accounting-type record system without a properly authenticated job order.

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(11) **W.D., A.G.O. FORM NO. 9-79 (PARTS REQUISITION).** This form will be used as an interdepartmental shop requisition to request parts where job orders are required.

(12) **W.D., A.G.O. FORM NO. 9-80 (JOB ORDER FILE).** This folder may be used to hold under one cover all shop papers and records incident to a particular job order or to a particular vehicle.

(13) **W.D., A.G.O. FORM NO. 9-81 (EXCHANGE PART OR UNIT IDENTIFICATION TAG).** This tag, properly executed, may be used when exchanging unserviceable items for like serviceable assemblies, subassemblies, parts, vehicles, and tools.

CHAPTER 2 — ENGINE**Section I****DESCRIPTION AND DATA****3. DESCRIPTION.**

a. **General.** The Ford tank engines, Models GAA, GAN, and GAF, are so similar in appearance and construction that all information, data, and illustrations in this manual will be considered as applying to all three engines, except where specifically designated as applying to the one particular engine. In most installations these engines are installed with the flywheel toward the front of the vehicle, and throughout this manual the flywheel end of the engine is referred to as the front. The terms "right" or "left" refer to the side of the engine as viewed from the rear. Direction of rotation is determined by looking from the rear toward the front of the engine. The cylinders are numbered 1, 2, 3, 4, on the right and left blocks. No. 1 cylinder is the rear cylinder on each block.

b. **Type of Engines.** The Models GAA, GAN, and GAF, V-8 Ford tank engines are the 60-degree, 4-cycle type. The cylinders and crankcase are cast in block and consist of an aluminum casting with hard steel, dry-type sleeves in each cylinder bore. Four overhead camshafts are used; one exhaust and one intake for each bank of cylinders. Two exhaust and two intake valves are used in each cylinder. Figure 7 shows the valve arrangement, and figure 9 shows the camshafts and accessory drives. Two 4-cylinder magnetos provide the ignition. These are mounted one at each end of a cross shaft at the rear of the engine and are driven by spiral gears (fig. 9). The engine is water-cooled with the water jackets extended the full length of the cylinders (fig. 8). The water pump is driven by the accessory drive gear assembly at the rear of the engine. Throughout this manual more detailed description of parts and units appear in the particular section devoted to the specific part or unit.

c. **Differences Among Models.**

(1) GAA engines (figs. 1 and 2) have two Model NA-Y5G Stromberg carburetors, a mechanical governor, a conventional-type flywheel, and a double-disk clutch. The oil pan on the engines, prior to engine No. 2000, also is different in that it does not contain the scavenger pump feature, and the oil pressure and oil relief valve are located inside of the pan and are not accessible for adjustment or removal from the exterior of the pan.

(2) GAN engines (figs. 3 and 4) have two Model HD-5 or HH-5 Stromberg carburetors, a hydraulic electric governor, and a special flywheel which acts as a driving plate for the propulsion generator.