

**TM 9-1731C**

**RESTRICTED\***

**WAR DEPARTMENT**

**TECHNICAL MANUAL**



**ORDNANCE MAINTENANCE  
ACCESSORIES FOR TANK ENGINE  
MODEL GAA V-8 (FORD)**

23 AUGUST 1943

*\*Dissemination of restricted matter.—The information contained in restricted documents and the essential characteristics of restricted materiel may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also paragraph 18b, AR 380-5, 28 September 1942.)*



TM 9-1731C

**RESTRICTED\***

TECHNICAL MANUAL }  
TM 9-1731C }

WAR DEPARTMENT  
Washington, 23 August 1943

**ORDNANCE MAINTENANCE**  
**ACCESSORIES FOR TANK ENGINE**  
**MODEL GAA V-8 (FORD)**

Prepared under the direction of the  
Chief of Ordnance  
(with the cooperation of the Ford Motor Company)

*\*Dissemination of restricted matter.—The information contained in restricted documents and the essential characteristics of restricted materiel may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also paragraph 18b, AR 380-5, 28 September 1942.)*

**CONTENTS**

	Paragraphs	Pages
CHAPTER 1. INTRODUCTION .....	1-4	3-9
CHAPTER 2. STARTING SYSTEM.....	5-18	10-21
SECTION I Description and data.....	5-6	10-11
II Starter .....	7-16	12-20
III Fits and tolerances.....	17-18	21
CHAPTER 3. IGNITION SYSTEM .....	19-37	22-47
SECTION I Description and data.....	19-20	22
II Magnetos .....	21-30	23-42
III Magneto governor and magneto drive gears .....	31-32	43-44
IV Spark plugs, spark plug wires, and conduits .....	33-37	45-47

**TM 9-1731C**

**ORDNANCE MAINTENANCE  
ACCESSORIES FOR TANK ENGINE—MODEL GAA V-8 (FORD)**

		Paragraphs	Pages
<b>CHAPTER 4.</b>	<b>FUEL SYSTEM . . . . .</b>	38-74	48-79
SECTION I	Description and data . . . . .	38-39	48-50
II	Carburetors . . . . .	40-47	51-65
III	Fuel pump . . . . .	48-54	66-69
IV	Fuel filter . . . . .	55-61	70-71
V	Throttle governor . . . . .	62-68	72-75
VI	Throttle controls . . . . .	69-74	76-79
<b>CHAPTER 5.</b>	<b>COOLING SYSTEM . . . . .</b>	75-98	80-98
SECTION I	Description and data . . . . .	75-76	80-81
II	Radiator . . . . .	77-82	82-84
III	Fan and shroud assemblies . . . . .	83-89	85-88
IV	Accessory drive gear assembly . . . . .	90-96	89-95
V	Expansion tank and thermostat . . . . .	97-98	96-98
<b>CHAPTER 6.</b>	<b>GENERATING SYSTEM . . . . .</b>	99-126	99-125
SECTION I	Description and data . . . . .	99-100	99-100
II	Generating system quick tests in the vehicle . . . . .	101-104	101-103
III	Generators . . . . .	105-113	104-110
IV	Generator regulator . . . . .	114-126	111-125
<b>CHAPTER 7.</b>	<b>SPECIAL TOOLS . . . . .</b>	127	126
SECTION I	Special tools . . . . .	127	126
<b>REFERENCES . . . . .</b>			127-128
<b>INDEX . . . . .</b>			129

**CHAPTER 1****INTRODUCTION**

	Paragraph
Scope .....	1
Arrangement .....	2
Illustrations .....	3
Maintenance allocation .....	4

**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 Ford Tank Engine Model GAA V-8. Information on the detailed construction of the unit, disassembly and assembly procedure, inspection, maintenance, and repair is contained in two volumes of the 1000-series technical manuals, of which this is the second volume. These instructions are supplementary to those in the field and technical manuals prepared for the using arm. 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 9-731G Gun Motor Carriage M10A1 and TM 9-759 Medium Tank M4A3, also other technical manuals covering materiel using the Ford Tank Engine Model GAA V-8.

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

c. The first volume, TM 9-1731B, contains information on the detailed construction of the complete engine, disassembly and assembly procedure, inspection, and repairs, but does not include maintenance on the accessories other than their removal and installation on the engine.

**2. ARRANGEMENT.**

a. A chapter is provided for each of the engine accessory systems. The various components which make up a complete system are covered in individual sections. Whenever it is pertinent to the system covered in a particular chapter, a Fits and Tolerance Chart is also provided. Chapter 7 contains a list of special tools necessary for disassembling, inspection, repair, and assembly, of the various units of the accessory systems.

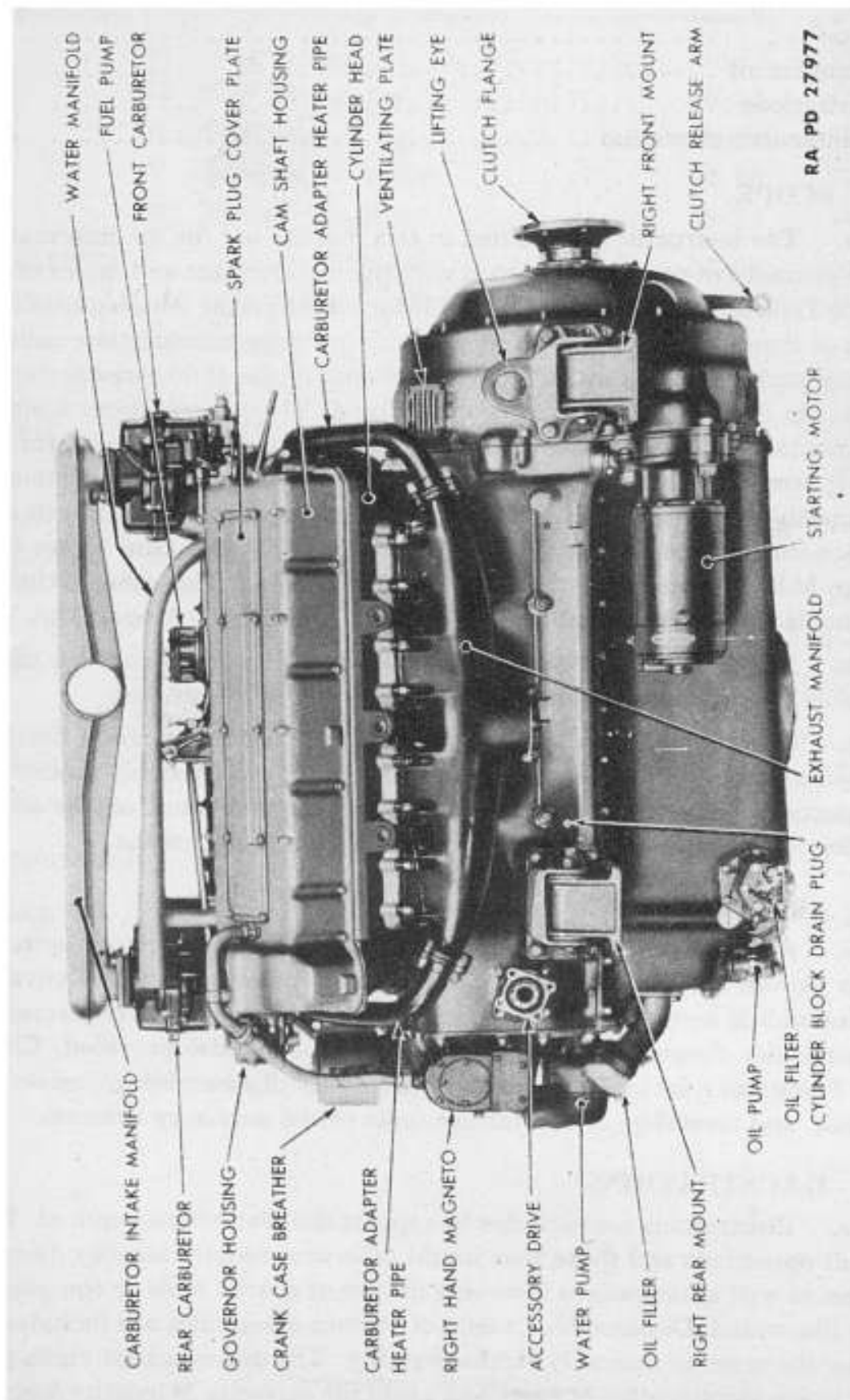
**3. ILLUSTRATIONS.**

a. Illustrations are included to support the text where required. Difficult operations and those that would otherwise require lengthy descriptions, as well as operations involving the use of special tools or equipment, are illustrated. Disassembled views of various assemblies are included to show the order of assembly, or disassembly. The disassembled views permit quick identification of parts, and avoid the necessity of lengthy description.

TM 9-1731C

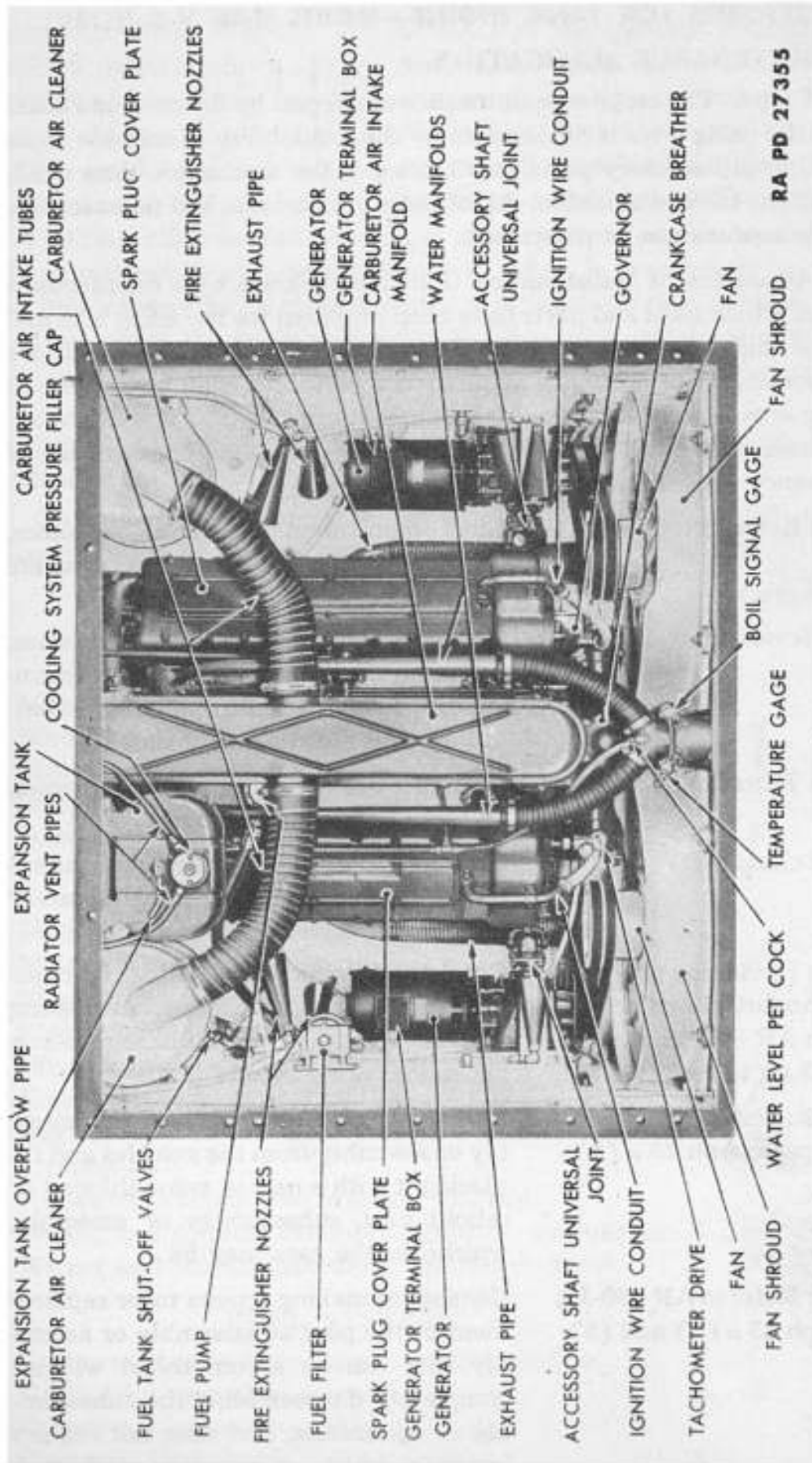
3

# ORDNANCE MAINTENANCE ACCESSORIES FOR TANK ENGINE—MODEL GAA V-8 (FORD)



**Figure 1—Right-hand Side of Engine**

## INTRODUCTION



**Figure 2—Engine Compartment from Above**

TM 9-1731C

4

# **ORDNANCE MAINTENANCE ACCESSORIES FOR TANK ENGINE—MODEL GAA V-8 (FORD)**

## **4. MAINTENANCE ALLOCATION.**

**a. Scope.** The scope of maintenance and repair by the crew and other units of the using arms is determined by the availability of suitable tools, availability of necessary parts, capabilities of the mechanics, time available, and the tactical situation. All of these are variable and no exact system of procedure can be prescribed.

**b. Allocation of Maintenance.** Indicated below are the maintenance duties for which tools and parts have been provided for the using arm and ordnance maintenance personnel. Replacements and repairs which are the responsibility of ordnance maintenance personnel may be performed by using arm personnel when circumstances permit, within the discretion of the commander concerned. Echelons and words as used in this list of maintenance allocations are defined as follows:

<b>SECOND ECHELON:</b>	Line organization regiments, battalions, companies, detachments, and separate companies.
<b>THIRD ECHELON:</b>	Ordnance light maintenance companies, ordnance medium maintenance companies, ordnance divisional maintenance battalions, and post ordnance shops.
<b>FOURTH ECHELON:</b>	Ordnance heavy maintenance companies, and service command shops.
<b>FIFTH ECHELON:</b>	Ordnance base regiments, ordnance bases, arsenals, and manufacturers' plants.
<b>SERVICE</b> (including preventive maintenance): Refer to AR 850-15, paragraph 23 a (1) and (2).	Consists of servicing, cleaning, lubricating, tightening bolts and nuts, and making external adjustments of subassemblies or assemblies and controls.
<b>REPLACE:</b> Refer to AR 850-15, paragraph 23 a (4).	Consists of removing the part, subassembly or assembly from the vehicles and replacing it with a new or reconditioned or rebuilt part, subassembly or assembly, whichever the case may be.
<b>REPAIR:</b> Refer to AR 850-15, paragraph 23 a (3) and (5), in part.	Consists of making repairs to, or replacement of the part, subassembly or assembly that can be accomplished without completely disassembling the subassembly or assemblies, and does not require heavy welding, or riveting, machining, fitting and/or alining or balancing.



## INTRODUCTION

**REBUILD:** Refer to AR 850-15, paragraph 23 a (5) in part, and (6).

Consists of completely reconditioning and replacing in serviceable condition any unserviceable part, subassembly or assembly of the vehicle, including welding, riveting, machining, fitting, alining, balancing, assembling and testing.

**NOTE:** \*The second echelon is authorized to remove and reinstall items marked by an asterisk. However, when it is necessary to replace an item marked by an asterisk with a new or rebuilt part, subassembly or unit assembly, the assembly marked by an asterisk may be removed from the vehicle by the second echelon *only after authority has been obtained from a higher echelon of maintenance.*

**NOTE:** Operations allocated will normally be performed in the echelon indicated by "X."

Operations allocated to the echelons as indicated by "E" may be accomplished by the respective echelons in emergencies only.

	ECHELONS			
	2nd	3rd	4th	5th
<b>STARTING SYSTEM</b>				
Motor assembly, starting—replace . . . . .	X			
Motor assembly, starting—repair . . . . .		X		
Motor assembly, starting—rebuild . . . . .			X	
Solenoids—replace . . . . .	X			
Solenoids—repair . . . . .		X		
<b>IGNITION SYSTEM</b>				
Magneto assemblies—replace . . . . .	X			
Magneto assemblies—repair . . . . .		X		
Magneto assemblies—rebuild . . . . .			X	
Plugs, spark—service and/or replace . . . . .	X			
Plugs, spark (two piece)—repair . . . . .		X		
Regulator, current and voltage—replace . . . . .	X			
Regulator, current and voltage—service and/or repair . . . . .		X		
Regulator, current and voltage—rebuild . . . . .			X	
Wiring and conduit assembly, ignition—replace . . . . .	X			
Wiring and conduit assembly, ignition—repair . . . . .		X		
<b>FUEL SYSTEM</b>				
Carburetor assembly—service and/or replace . . . . .	X			
Carburetor assembly—repair . . . . .		X		
Carburetor assembly—rebuild . . . . .			X	
Cleaners, air—service and/or replace . . . . .	X			
Cleaners, air—repair . . . . .		X		

TM 9-1731C

4

**ORDNANCE MAINTENANCE  
ACCESSORIES FOR TANK ENGINE—MODEL GAA V-8 (FORD)**

	ECHELONS			
	2nd	3rd	4th	5th
<b>FUEL SYSTEM (Cont'd)</b>				
Filter—service and/or replace.....	X			
Filter—repair.....		X		
Lines, valves and fittings—replace.....	X			
Lines, valves and fittings—repair.....		X		
Pump assembly, fuel—service and/or replace.....	X			
Pump assembly, fuel—repair.....	E	X		
Pump assembly, fuel—rebuild.....		E	X	
Pump, priming—replace.....	X			
Pump, priming—repair.....		X		
Pump, priming—rebuild.....			X	
Screen assembly—replace.....	X			
Tanks, fuel—service and/or replace.....	X			
Tanks, fuel—repair.....		X		

**COOLING SYSTEM**

Connections, radiator to engine—replace.....	X			
Fan assembly—replace.....	X			
Fan assembly—repair.....		X		
Fan assembly—rebuild.....			X	
Pump assembly, water—replace.....	X			
Pump assembly, water—repair.....		X		
Pump assembly, water—rebuild.....			X	
Radiator assemblies—replace.....	X			
Radiator assemblies—repair.....		X		
Radiator assemblies—rebuild.....			E	X
System, cooling—service.....	X			
Tank, surge—replace.....	X			
Tank, surge—repair.....		X		
Units, signal sending, oil and water—replace.....	X			

**GENERATING SYSTEM**

Drive assemblies, generator and fan—replace.....	X			
Drive assemblies, generator and fan—repair.....		X		
Drive assemblies, generator and fan—rebuild.....			X	
Generator assembly—replace.....	X			
Generator assembly—repair.....		X		
Generator assembly—rebuild.....			X	
Generator assembly, auxiliary—replace.....	X			
Generator assembly, auxiliary—repair.....		X		
Generator assembly, auxiliary—rebuild.....			E	X