TM 9-731A

WAR DEPARTMENT TECHNICAL MANUAL

MEDIUM TANKS

M4 and M4A1

RESTRICTED

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.)

WAR DEPARTMENT *23 DECEMBER 1943*

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TM 9-731A, Medium Tanks M4 and M4A1, is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

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

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

MEDIUM TANKS
M4 and M4A1

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PART ONE—VEHICLE OPERATING INSTRUCTIONS

PART TWO—VEHICLE MAINTENANCE INSTRUCTIONS

MEDIUM TANKS M4 AND M4A1

PART THREE—ARMAMENT

PART ONE—VEHICLE OPERATING INSTRUCTIONS

Section I

INTRODUCTION

1. SCOPE.

a. This technical manual is published for the information and guidance of the using arm personnel charged with the operation and maintenance of this materiel.

b. In all cases where the nature of the repair, modification, or adjustment is beyond the scope or facilities of the unit, the responsible ordnance service should be informed so that trained personnel with suitable tools and equipment may be provided, or proper instructions issued.

2. CONTENTS AND ARRANGEMENT.

a. In addition to a description of Medium Tanks M4 and M4A1, this manual contains technical information required for the identification, use, and care of the materiel. The manual is divided into three parts. Part One, section I through section IX, contains vehicle operating instructions. Part Two, section X through section XXXII, contains vehicle maintenance instructions. Part Three, section XXXIII through section XXXV, contains information pertaining to operation and care of the armament. A list of references and an index follow Part Three.

3. DIFFERENCES BETWEEN MODELS.

a. M4 and M4A1 medium tanks are identical, except for the method of manufacturing the hulls. M4 tanks have welded hulls; M4A1 tanks have cast upper hulls; both have cast turrets. The function, operation, and maintenance of either tank is identical, and no differentiation between them is made in this manual.

b. Both M4 and M4A1 medium tanks of late manufacture differ in some respects from vehicles of early manufacture due to engineering changes and other modifications. In those cases where these modifications affect operation or maintenance, alternate procedures are provided in this manual.

The most important modifications are:

Early Models	Late Models
Auxiliary generator as shown in figure 22	Auxiliary generator as shown in figure 21
Batteries secured by hold-down bolts	Batteries secured by hold-down clamps

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Early Models	Late Models
Brakes—single-anchor type	Brakes—double-anchor type
Clock on instrument panel	Clock removed
Clutch pedal without foot guard	Clutch pedal foot guard installed
Compass mounted to right of instrument panel	Compass mounted to hull over transmission
Dilution valve solenoid-operated	Dilution tank hand-operated
Dome light solid-mounted	Dome light spring-mounted
Engine hour-meter	Engine hour-meter removed
Final drive made in three pieces	Final drive made in one piece
Fire signal warning light	Fire signal warning light removed
Front engine breather	Front engine breather removed
Fuel cut-off solenoid-operated	Fuel cut-off of degasser type
Fuel filter with screw-type cleaner accessible only in engine compartment	Fuel filter with push-pull type cleaner accessible in fighting compartment
Fuel pump of Romac type with Autopulse auxiliary pump	Fuel pump of AC type—Autopulse auxiliary pump removed
Fuel shut-off valves—four in hull, two on rear deck	Fuel shut-off valves—four in hull, none on rear deck
Generator mounted on and driven by engine	Generator mounted in hull and belt-driven from propeller shaft
Generator regulator located near floor of fighting compartment	Generator mounted to hull floor at rear of generator
Headlights removable and stored in hull	Headlights fixed in position on front of hull
Idler wheels with spokes	Idler wheels of disk type
Instrument panel as shown in figure 11	Instrument panel as shown in figure 10
Oil filter cartridge turned manually	Oil filter cartridge engine driven
Oil pressure gage actuated by pressure through ¼-inch copper tube	Oil pressure gage operated by electrical sending unit
Parking brake on transmission	Parking brake on steering levers
Periscopes without guards	Periscopes with guards
Primer pump located on instrument panel	Primer pump bracket-mounted to hull
Sand shields not installed	Sand shields installed
Siren button foot-operated	Siren button hand-operated
Steering brake linkage systems of three different types for single anchor brakes	Steering brake linkage systems of two different types for double anchor brakes
Tachometer driven by engine	Tachometer driven by transmission

INTRODUCTION

Early Models	Late Models
Transmission oil temperature gage installed	Transmission oil temperature gage removed
Traveling lock for 75-mm gun not installed	Traveling lock for 75-mm gun installed on front hull
Traversing mechanisms of both hydraulic and electric types	Traversing mechanism of hydraulic type only
Valve adjustment locked with clamping screw on rocker arm	Valve adjustment locked with lock nut on push rod
Voltmeter on instrument panel	Voltmeter removed

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Section II

DESCRIPTION AND TABULATED DATA

4. DESCRIPTION.

a. General (figs. 1, 2, 3, 4, 5, and 6). Access to the tank is provided through the two doors over the fighting compartment and through the revolving hatch in the turret. For use in an emergency, an escape door is provided in the tank floor, directly back of the assistant driver. When hatch and all doors are closed, indirect vision is provided for each member of the crew by means of periscopes. The tank is equipped with radio for intertank communication, and with a telephone system for communication between the tank commander and members of the crew.

b. Tank Crew. The tank crew consists of five men. The driver sits on the left side of the tank to the left of the transmission, and the assistant driver's position is on the right side of the tank to the right of the transmission. The tank commander is stationed directly under the turret hatch. The 75-mm gunner's station is to the right of the gun, just ahead of the tank commander. The loader's station is to the left of the 75-mm gun.

c. Engine. The tank is powered by a model R975C-1, 9-cylinder, radial, gasoline aircraft type engine of approximately 400 horsepower, mounted in the rear of the tank. Access to the engine is provided through a hinged top door, two doors at the rear of the engine compartment and an inspection plate located beneath the engine.

d. Tank Serial Number. Each tank carries a serial number located on a plate attached to the lower left hull plate.

5. DATA.

a. General.

Weight without machine guns, stowage, fuel and crew but with track T48	approximately 62,500 lb
Weight fully equipped (with track T48)	approximately 67,700 lb
Ground pressure	12.9 psi
Over-all width	8 ft 9 in.
Over-all height	10 ft 4 in.
Over-all length	20 ft 4 in.
Ground clearance	17 in.
Tread (center to center of tracks)	83 in.

b. Engine.

Rated horsepower	400 at 2,400 rpm
Number of cylinders	9