TM 9-1225

WAR DEPARTMENT

TECHNICAL MANUAL

ORDNANCE MAINTENANCE
BROWNING MACHINE GUN CAL. .50, ALL TYPES

APRIL 15, 1943

FOR ORDNANCE PERSONNEL ONLY

TECHNICAL MANUAL
No. 9-1225

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BROWNING MACHINE GUN CAL. .50, ALL TYPES

Prepared under the direction of the
Chief of Ordnance

(with the cooperation of the Frigidaire Division of General Motors Corporation)

CONTENTS

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ORDNANCE MAINTENANCE—BROWNING MACHINE GUN, CAL. .50, ALL TYPES

Section I

INTRODUCTION

1. PURPOSE.

a. This manual is published for the information and guidance of ordnance maintenance personnel.

2. SCOPE.

a. Contained herein are detailed and illustrated instructions regarding description, functional operation, inspection, disassembly, maintenance, repair, and assembly of the following Browning machine guns:

(1) Cal. .50, M2, aircraft, basic.
(2) Cal. .50, M2, aircraft, basic, with retracting slide.
(3) Cal. .50, M2, aircraft, basic, with operating slide.
(4) Cal. .50, M2, water-cooled, flexible.
(5) Cal. .50, M2, heavy barreled, fixed.
(6) Cal. .50, M2, heavy barreled, flexible.
(7) Cal. .50, M1921, aircraft, fixed.
(8) Cal. .50, M1921, aircraft, flexible.
(9) Cal. .50, M1921A1, water-cooled.

b. These instructions are supplementary to information given in the field and technical manuals prepared for the using arms. The text consists of a single set of instructions which deals with all listed guns simultaneously, with exceptions for certain models being noted where necessary.

Section II

GENERAL DESCRIPTION

3. GENERAL DESCRIPTION OF THE GUNS.

a. The Browning Machine Gun, cal. .50, M2, aircraft, basic, is an air-cooled, recoil-operated, alternate feed gun which may be mounted on either a rigid, turret, or a hand-operated mount. It is adaptable for any type of installation in an aircraft by the addition of the proper parts and accessories. The gun may be fired by a mechanical or electrical accessory or by a manual trigger and trigger bar.

(1) The basic gun shown in figure 1 is equipped with a trigger bar, trigger bar pin assembly, bolt latch bracket, and a basic back plate with horizontal buffer assembly. It is installed in the wings, fuselage, or in the nose of the airplane. The Army Air Forces will supply the mechanism to retract the recoiling portion of the gun if required in turrets, and also will supply solenoids to fire the gun.

(2) In some installations, as in a turret of the airplane, the basic gun with retracting slide will be used, as shown in figure 2. In this case, the means of firing the gun may be by hand through the mechanism which is part of the adapter or by means of a solenoid attached to the receiver.

(3) The basic gun may be equipped with an operating slide group assembly, as shown in figure 3, for rigid installation forward of the pilot's cockpit with the breech end of the gun extending into the cockpit. The operating slide connects with the bolt by means of the bolt stud, and provides the means of retracting the breech mechanism by hand for loading and unloading the gun. The bolt also can be drawn back to its extreme rearward position and retained there by engaging the slot provided in the lower surface of the operating slide bar with the operating slide rear guide. If the gun is firing through the propeller, it must be fired by means of a synchronized mechanical trigger motor attached to the gun receiver, and this will be supplied by the Army Air Forces.

(4) Under unusual circumstances, the basic gun may be equipped with a retracting slide group assembly and a spade grip back plate assembly having a hand trigger. This is actually a flexible gun as listed in previous standard nomenclature lists. The retracting slide connects with the bolt by means of the bolt stud, and provides the means of retracting the recoiling parts by hand for loading and unloading the gun. The retracting slide grip remains stationary and in a forward position while the gun is

firing. The gun thus equipped is installed in the fuselage of the airplane on a rigid mounting, and the gun is fired by operating the hand trigger.

(5) The preceding paragraphs describe specific applications for the basic gun; however, other installations of the basic gun are made by various combinations of these gun parts.

(6) The check lists appearing beneath figures 1 to 10, inclusive, designate assemblies and parts which should be assembled to, or supplied with, the gun in question, when issued. When such guns are received, care should be taken to see that such assemblies and parts are included.

b. The Browning Machine Gun, cal. .50, M2, water-cooled, flexible type, is a recoil-operated, water-cooled, alternate feed gun. The cooling system for the gun consists of a water jacket surrounding the barrel, and a water chest with pump for supplying and circulating water through the water jacket. This gun is used extensively against aircraft, and this method of cooling permits long bursts without overheating the barrel.

(1) The water-cooled, flexible, M2 Gun, shown in figure 4, is equipped with a retracting slide group assembly and a flexible back plate having a trigger and trigger safety, but the spade grips are omitted. The gun is installed in antiaircraft mounts and the spade grips are removed for needed clearance. A picture of this same gun with a spade grip back plate assembly for use in those mounts where this equipment is needed is shown in figure 5. The rear sights and rear sight bases have been removed from water-cooled flexible guns.

c. The Browning Machine Gun, cal. .50, M2, heavy barrel, fixed and flexible types, are air-cooled, recoil-operated, alternate feed guns. The main difference between this type of gun and other types of cal. .50, M2 Guns is the heavy barrel, the barrel support, and the oil buffer assembly. The barrel of this type of gun must be unscrewed and removed through the front of the gun before the oil buffer group and barrel extension can be removed from the gun. The heavy barrel does not recoil with as much force as the lighter barrels; therefore, it has been the practice in the past to omit the oil buffer piston valve assembly. This allowed the oil to pass more freely through the openings in the oil buffer piston rod head and offered less resistance to the recoil of the barrel. Present manufacture is omitting the oil buffer gland packing, packing gland ring, packing gland spring, relief valve, relief valve spring, relief valve screw, tube filler screws, and oil in addition to the oil buffer piston valve assembly. These heavy barrel guns are installed in mounts of several different types, in combat vehicles and tanks, or are used as ground guns mounted on the Machine Gun Tripod Mount, cal. .50, M3.

(1) The heavy barrel, fixed, M2 Gun, shown in figure 6, is equipped with a side plate trigger, basic back plate, with horizontal buffer assembly

(vertical buffer assembly may be used), and retracting slide group assembly for fixed installations in tanks.

(2) The heavy barrel, flexible, M2 Gun, as shown in figure 7, is equipped with a spade grip back plate assembly and retracting slide group assembly for flexible mounting in combat vehicles and tanks, or on the M3 Tripod Mount.

d. The Browning Machine Gun, cal. .50, M1921, aircraft, fixed and flexible types, are recoil-operated, air-cooled, single feed guns which feed from the left-hand side only.

(1) The aircraft, fixed, M1921 Gun, shown in figure 8, is equipped with a back plate with vertical buffer assembly (horizontal buffer assembly may be used), and an operating slide group assembly. The gun was originally designed solely for use as a fixed, synchronized gun.

(2) The aircraft, flexible, M1921 Gun, shown in figure 9, is equipped with a spade grip back plate assembly and a retracting slide group assembly. This gun was installed on a flexible mount in the aircraft.

e. The Browning Machine Guns, cal. .50, M1921 and M1921A1, water-cooled, are recoil-operated, water-cooled, single feed guns which feed from the left-hand side only. The M1921 Gun was originally designed for use with Antiaircraft Machine Gun Tripod Mount, cal. .50, M1. A large number of these guns are still in use in the Navy; however, all such weapons in the hands of the Army have been modified to the M1921A1 type.

(1) The water-cooled M1921A1 type gun, shown in figure 10, is equipped with a spade grip back plate assembly and a retracting slide group assembly. It will be noted that the retracting slide is mounted at the top center of the side plate rather than lower rear corner as on other guns. This gun is used in the Antiaircraft Tripod Mount, cal. .50, M1.

4. GENERAL DATA AND CHARACTERISTICS.

a. All types of Browning Machine Guns, cal. .50, M2 are alterable as follows:

(1) Ammunition can be fed from left or right side by repositioning of the parts in the belt feed group, the feedway, and the bolt.

(2) Operating and retracting slides can be changed from right to left side of receiver by repositioning and changing the necessary parts. The cover latch lever may be changed from right to left side of receiver by changing the necessary parts.

(3) All barrels for the cal. .50 guns have 8 lands, and the rifling has a right-hand twist which makes one turn in 15 inches. The aircraft, basic type gun is equipped with a 36-inch barrel which weighs 10 pounds. The water-cooled gun is equipped with a 45-inch barrel which weighs 15.2 pounds. The heavy barrel gun is equipped with a 45-inch barrel which

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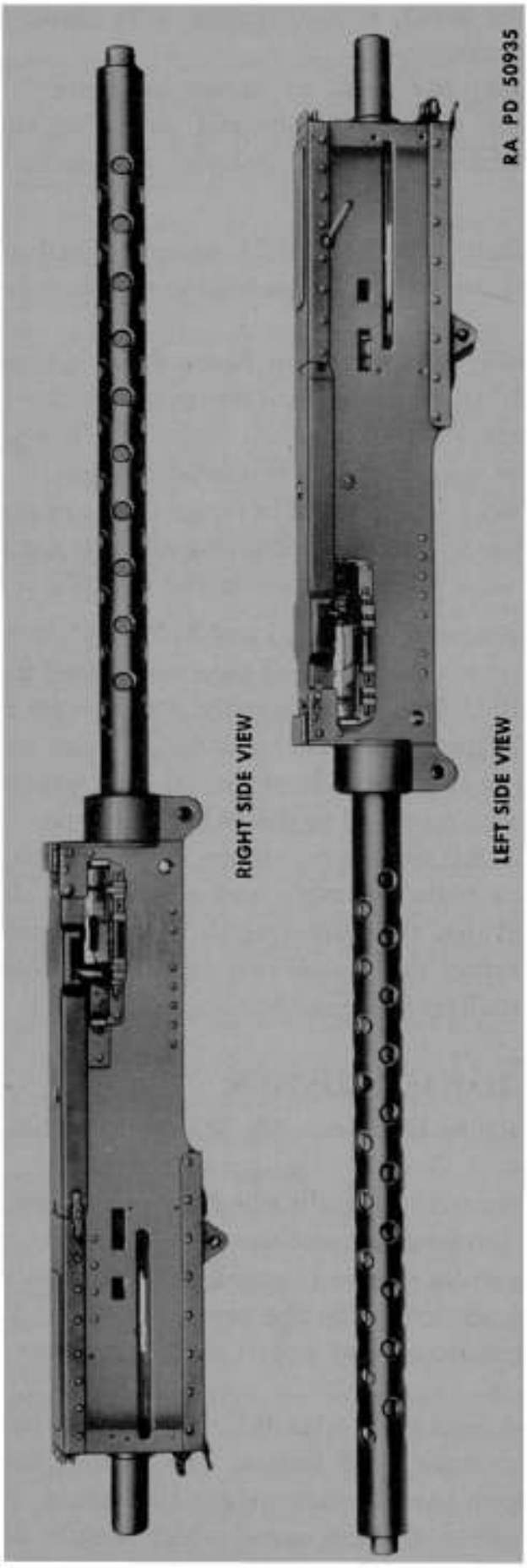

Figure 1—Browning Machine Gun, Cal. .50, M2, Aircraft, Basic

SPECIFICATIONS

Weight of gun	—	61 lb	Weight of barrel	—	10 lb
Length of gun	—	56¼ in.	Length of barrel	—	36 in.

CHECK LIST

Trigger bar
Trigger bar pin assembly
Front cartridge stop
Rear cartridge stop
R.H. rear cartridge stop assembly
Link stripper
Bolt latch bracket
Back plate with horizontal buffer assembly
Bolt stud
Bolt handle assembly

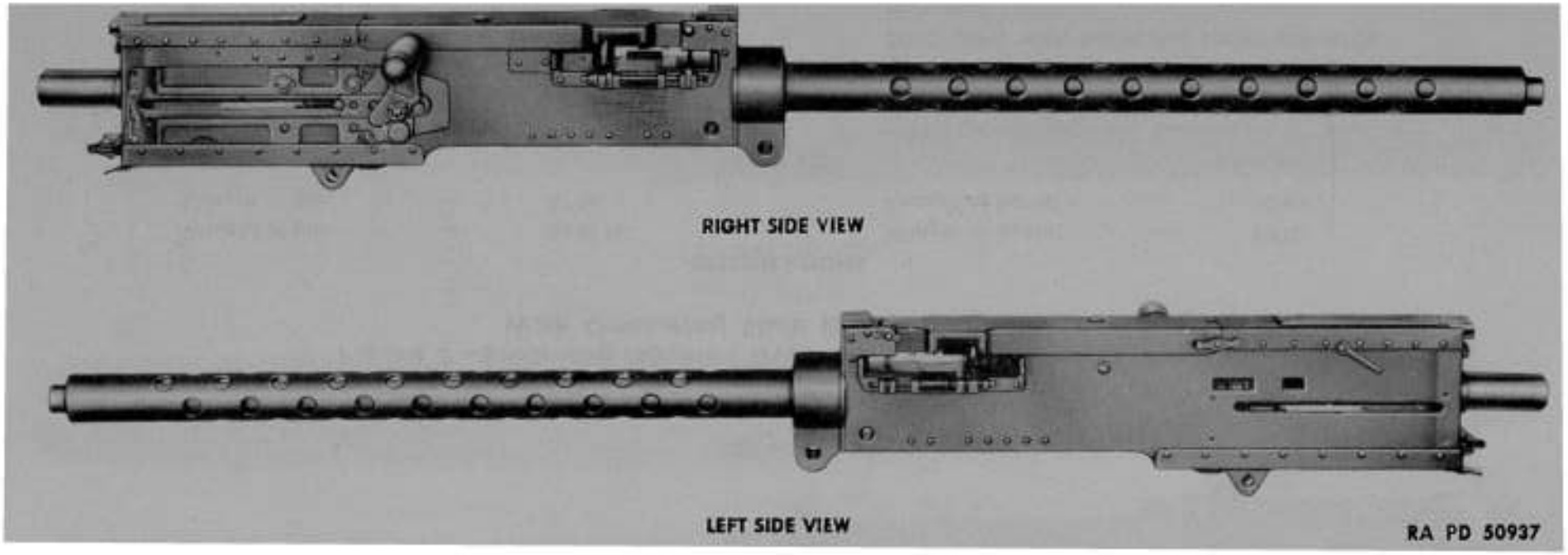

Figure 2—Browning Machine Gun, Cal. .50, M2, Aircraft, Basic, With Retracting Slide Group Assembly

SPECIFICATIONS

Weight of gun	—	64 lb	Weight of barrel	—	10 lb
Length of gun	—	56¼ in.	Length of barrel	—	36 in.

CHECK LIST

Retracting slide group assembly
Trigger bar
Trigger bar pin assembly
Front cartridge stop
Rear cartridge stop
R.H. rear cartridge stop assembly
Link stripper
Bolt latch bracket
Back plate with horizontal buffer assembly
Bolt stud

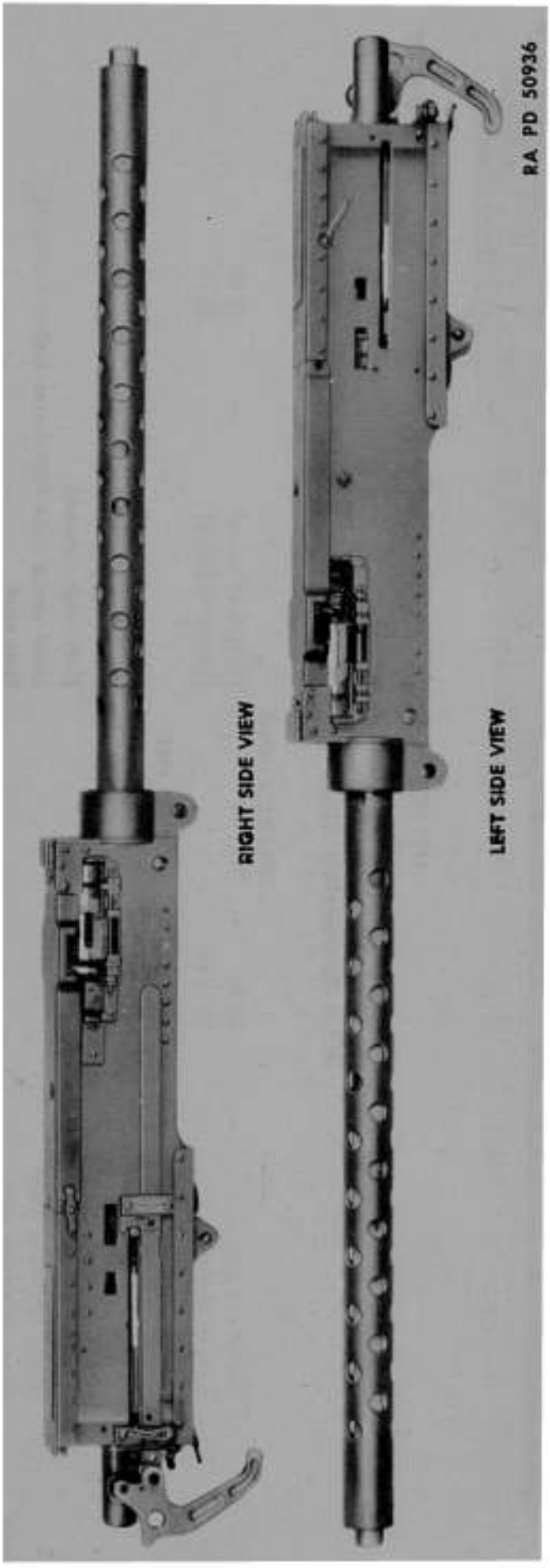

Figure 3—Browning Machine Gun, Cal. .50, M2, Aircraft, Basic, With Operating Slide Group Assembly

SPECIFICATIONS

Weight of gun	—	62½ lb	Weight of barrel	—	10 lb
Length of gun	—	57 in.	Length of barrel	—	36 in.

CHECK LIST

Operating slide assembly
Trigger bar
Trigger bar pin assembly
Front cartridge stop
Rear cartridge stop
R.H. rear cartridge stop assembly
Link stripper
Bolt latch bracket
Back plate with horizontal buffer assembly
Bolt stud