

SHOTGUNS, ALL TYPES

Section I

INTRODUCTION

	Paragraph
Scope	1
Arrangement of manual	2
General	3

1. SCOPE.

a. This technical manual is intended to serve temporarily (pending the publication of a more complete revision) to give information and guidance to personnel of the using arms charged with the operation, maintenance and minor repair of this materiel.

b. This manual contains in brief the available information necessary for the identification, operation, care, and cleaning of the shotguns listed below. In addition is included the disassembly and assembly of the guns for the purpose of cleaning and lubrication, and available information on ammunition.

Shotguns covered in this bulletin are as follows:

Winchester Repeater, 12-Gage, M97	Remington Repeater, 12-Gage, M10
Winchester Repeater, 12-Gage, M12	Remington Repeater, 12-Gage, M31
Stevens Repeater, 12-Gage, M620A	Remington Auto-loading, 12- Gage, M11
Stevens Repeater, 12-Gage, M520	Remington Auto-loading, 12- Gage, Sportsman
Stevens Repeater, 12-Gage, M620	Savage, Auto-loading, 12-Gage, M720
Ithaca Repeater, 12-Gage, M37	

c. Disassembly, assembly, and such repairs as may be handled by using arm personnel will be undertaken only under the supervision of an officer or the chief mechanic.

d. 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 in order that trained personnel with suitable tools and equipment may be provided, or proper instructions issued.

2. ARRANGEMENT OF MANUAL.

a. The shotguns covered in this manual are of various makes, models, and types. In some cases different models of the same make differ widely

INTRODUCTION

in design, in others the differences are principally in detail of design. Each make of gun herein is treated separately and where there is extreme variation in model, the model is treated as a separate gun. Where slight variations occur in different models of the same make, they are grouped and the differences explained as they occur.

b. Instructions for disassembly and assembly, and special care and maintenance are covered in the section pertaining to the gun and in section XI; while cleaning, lubrication, and general maintenance, which are more or less common to all the guns, are covered in section II, covering the Winchester M97 gun, and can be applied in general to the other guns as indicated.

c. A general description of the gun for identification, together with such identification marks as may be found upon the gun, are given at the beginning of the section pertaining to the gun in question.

3. GENERAL.

a. The repeating shotguns covered in this manual are of two general types, the slide action, sometimes termed pump action, and the auto-loading or semiautomatic. The autoloading gun is often called an automatic, which is incorrect as the trigger must be pulled for each shot.

b. As already explained, different models of the same make of gun may vary in design in whole or in part. Also guns of the same make and model but of different grades may vary slightly in design. In addition some guns of the same make, model, and grade but of various dates of manufacture may have slight variations in design. Such variations are dealt with as far as possible herein. Other variations which may appear must be dealt with as such.

c. Due to absence of standard ordnance nomenclature for the guns covered in this technical manual, with the exception of the Ithaca M37, the parts and assemblies are given the nomenclature supplied by the manufacturer and appearing in their parts lists. Therefore parts and assemblies of, for example, a Winchester gun, may be referred to by a different name than similar parts of a Remington gun. For example, the slide handle, operating handle, and fore end refer to similar parts on different makes of guns. The Ithaca Gun M37 has been given standard nomenclature by the Ordnance Department and this nomenclature is used herein, and will differ in some respects from that appearing in the manufacturer's parts list.

d. The word "shell" is standard nomenclature for the shotgun cartridge. The word "shell" has therefore been used throughout this technical manual and substituted for the word "cartridge" appearing in the manufacturer's parts lists. Therefore when identifying parts referred to herein, this fact should be borne in mind.

SHOTGUNS, ALL TYPES

e. The word "choke" refers to the boring of the barrel, which varies in degree from full cylinder to full choke. In this technical manual three degrees of boring only are referred to, full cylinder (usually referred to as cylinder), improved cylinder, and full choke. The bore of the shotgun barrel has two diameters, the chamber diameter, and the true bore diameter. The chamber diameter is greater than the true bore diameter, and these two diameters are joined by a tapered section usually termed the forcing cone. In a full cylinder gun the true bore diameter extends from the forward end of the forcing cone to the end of the muzzle. Choking is usually accomplished by boring the barrel so that the diameter of the bore near the muzzle end is slightly less than that of the true bore. Diameter of true bore of a 12-gage shotgun is 0.729 inch. The degree of choke in a barrel is measured by the dispersion of the pellets contained in the shot charge at a given distance from the muzzle. This dispersion is measured in the percentage of the number of shot pellets contained in the charge, which will be contained within a 30-inch circle at 40 yards distance from the muzzle. For a cylinder barrel, this will be 40 percent, for an improved cylinder barrel, 50 percent, and for a full choke barrel, 75 percent.

f. The term "hammerless" as applied to the guns in this manual refers to the type of firing mechanism. The Winchester Gun M97 is termed a hammer gun due to the fact that the hammer is visible and operative outside the receiver. The other guns covered in this manual are termed hammerless as the hammers are wholly enclosed within the receiver and are thus not manually operative.

g. The nomenclature of the slide handle, by which the slide action guns in this technical manual are operated, differs for each gun. In the Winchester gun it is called the action slide handle while in the Remington gun it is called the fore end, and in the Ithaca the slide handle, etc. This assembly, however, is basically the same for all the guns, and is composed of three main parts: the slide handle tube which slides on the magazine tube and on which the wooden slide handle is assembled, and the slide handle bar which extends from the rear of the tube into the receiver and connects the handle with the slide or operating mechanism. The tube and bar are integral, welded, or riveted together, according to the make of gun.

h. The term "clockwise" and "counterclockwise" is used in connection with the turning of screwed-in parts to denote the direction of turn. The diameter of the part is considered as the face of a clock and the turn when clockwise is in the direction the hands of the clock would normally travel. Counterclockwise is the opposite.

i. The term "take-down" applies to guns so constructed that the barrel, or barrel magazine and action slide handle group can easily be removed

INTRODUCTION

from the receiver without the use of tools. This construction facilitates cleaning and transportation. The term "solid frame," as used in this manual, refers to guns which either through basic design or the assembly of the bayonet attachment to the barrel are not easily taken down without tools. In the case of the Winchester M97 solid-frame design gun of early manufacture, the barrel and magazine are screwed directly into the receiver and are not to be removed except for repair. In the later design of this gun (par. 4 c) the barrel and magazine are of the take-down type but are locked into the receiver at manufacture and should not be removed. In these Winchester guns, however, it is necessary to remove the bayonet attachment and magazine in order to remove the slide handle, which must be removed in order to remove the groups from the receiver for cleaning when necessary. Therefore, the removal and replacement of these parts is explained. The Winchester M12 (solid-frame gun) when issued, will be assembled similarly to the Winchester M97 (solid-frame gun of later manufacture) (par. 12 b). The other guns covered in this manual are basically of the take-down design, but when the bayonet attachment is assembled to the riot type of these guns, the barrel cannot be removed unless the bayonet attachment is first removed. Therefore, these guns, with bayonet attachment assembled, are considered as solid-frame guns. In the case of solid-frame guns as explained above, the bore should be cleaned from the muzzle end without removing bayonet attachment or barrel, unless it is necessary to remove the groups from the receiver for periodic cleaning or when the gun is exposed to extreme conditions as explained in this manual.

j. Disassembly and assembly, as treated in this technical manual, comprise the removal and replacement of only such groups of parts as are necessary to a thorough cleaning of the gun. Should further disassembly be necessary for adjustment or repair, the gun should be turned over to ordnance personnel. A group is a number of parts which either function together or are intimately related to each other and should, therefore, be considered together. A group may be composed of one assembly of two or more parts or sub-assemblies, or a number of assemblies and parts. For example, the barrel, magazine, and action slide group is composed of the barrel assembly, the magazine assembly and the action slide assembly. In removing the groups or parts from the gun, it is often necessary to remove other groups or parts first, in order to be able to remove the group or part desired. In most instances the groups or parts must be removed and replaced in the order and manner prescribed herein.

k. Modern shotguns may be roughly divided into five general classes: single-barrel, double-barrel, manually operated repeaters, autoloading repeaters, and multi-barrel.

SHOTGUNS, ALL TYPES

(1) Single barrel guns have a single barrel only and are thus capable of firing but one shot without reloading. Such guns may be of the hammer or hammerless (usually) design and are manually operated.

(2) Double-barrel guns have two barrels, mounted either side-by-side or one under the other. In the latter case they are termed "over-and-under," or "over-under" guns. The side-by-side design, usually termed "double-barrel," may be hammer or hammerless (usually) guns, while the "over-under" design is usually hammerless. Both designs are manually operated and are capable of firing two shots without reloading.

(3) Repeating guns have a single barrel with a tubular magazine below it, and are capable of firing from 3 to 6 shots without reloading. Such guns are manually operated by means of a sliding action which loads, cocks, and clears the gun when operated. The slide action guns covered in this manual are of this design.

(4) Autoloading repeaters have a single barrel with a tubular magazine below it and are capable of firing from 3 to 5 shots without reloading. Such guns must be loaded manually for the first shot. When the gun is fired, the recoil operates the mechanism to clear, cock, and load the gun from the magazine. The only operation necessary for the operator to perform after the initial loading and cocking is to pull the trigger. The autoloading guns covered in this manual are of this design.

(5) Multi-barrel guns have three or more barrels. Usually they have two shotgun barrels mounted side by side with a rifle barrel below them. Such guns are usually of the hammerless design and are manually operated.

1. Shotguns produced by various manufacturers, are usually referred to as of a specific model and grade. The model refers to the basic mechanical design of the gun; the grade, to the superficial design such as engraving, special stock, ribbed barrel, or modifications of design. Grades are referred to herein only when there is a variation in mechanical design. The various grades of a specific model may come in different gages, length of barrels, or degrees of choke in barrel boring. A sporting skeet gun, however, is usually furnished with a 26-inch barrel and a sporting trap gun with a 30- or 32-inch barrel. Guns used for game shooting may come with any length barrel or degree of choke. Such guns usually have a plain barrel without a rib. In this technical manual, however, due to the fact that guns of various grades are being issued, guns are classed as three types, riot, sporting skeet, and sporting trap, according to length of barrel and degree of choke only. Such guns may be of any grade. Therefore any gun with a 20-inch cylinder barrel is classed as a riot gun; any gun with a 26-inch, improved cylinder barrel as a sporting skeet gun, and any gun with a 30-inch, full choke barrel as a sporting trap gun. Riot guns are specified to be furnished with bayonets, hand guards and sling swivels,

INTRODUCTION

but some have been procured without these accessories, in the interests of expediency. These are termed "substitute riot guns." Sporting guns as referred to herein are used principally for trapshooting.

NOTE: The Migratory Game Act provides that not more than three shells shall be contained in a repeating or autoloading shotgun, and that the magazines shall therefore be limited to a capacity of two shells. To comply with this act, a hardwood plug is furnished for insertion in the end of the magazine to reduce its capacity to two shells.

m. The shotgun shell or cartridge is cylindrical in shape and may be composed entirely of brass, or a paper casing seated in a brass or steel base. The primer is seated in the base of the shell, which contains the powder charge and shot pellets, separated and held in position by cylindrical wads of felt and cardboard. The primer, when struck by the firing pin, detonates and produces a spark which ignites the powder. The expansion of the gas generated by the burning powder furnishes the force for propelling the shot charge from the gun. For description of the shell refer to section XIII.

n. In addition to field inspection as prescribed for each gun, the barrel should be inspected, and the trigger pull tested as follows:

(1) **INSPECTION OF BARREL.** The barrel should be inspected for looseness in receiver, rust, pits, leading, cracks, and bulges.

(a) If barrel is loose (shakes) in receiver, the gun should be turned over to ordnance personnel for correction.

(b) Rust and leading may be removed if not too bad (par. 11 d). If barrel is badly rusted or pitted, the gun should be turned over to ordnance personnel.

(c) If cracks or bulges are evident, the gun should be turned over to ordnance personnel. A bulge is usually indicated by a shadowy depression or dark ring in the bore, and may often be noticed through a bulge or raised ring on the barrel surface.

(2) **TRIGGER PULL.**

(a) Trigger pull should in general range between 5 pounds (minimum) and 8 pounds (maximum) for the guns covered in this bulletin. Trigger pull can be tested with the regulation trigger pull test weight hook and weights used for rifles and carried in the small arms repair truck, or hook and weights improvised as in (b) below.

(b) The inspector, in testing trigger pull of shotguns, should have two weights, one of 5 pounds and one of 8 pounds. Each of the weights should be provided with a wire so that the pressure will be applied $\frac{1}{4}$ inch from the lower end of the trigger and exerted parallel with the axis of the bore. The wire should be stiff enough to retain an L-hook bend,

SHOTGUNS, ALL TYPES

not less than 2¼ inches long, in the free end, and long enough to allow the weight to swing clear of the butt end of the stock when testing.

(c) To test the trigger pull, note that the gun is fully unloaded, action locked, hammer fully cocked, and the safety set to the fire position thus allowing the trigger to be retracted. Have the weight resting on the floor or ground, and insert hook of trigger weight wire (or test hook) through the trigger guard bow to bear on the trigger, so that the pressure will be applied ¼ inch from the lower end of the trigger. Care should be taken during the test to see that the wire contacts the trigger only and does not rub against the trigger guard bow or stock, and that wire and axis of bore are parallel and perpendicular. Then with the barrel of the gun held vertically, raise the weight from the floor as gently as possible. If the 5-pound weight pulls the trigger, or the 8-pound weight fails to pull the trigger, the gun should be turned over to ordnance personnel.

o. The illustrations in this technical manual pertaining to the operation of the gun are for explanatory purposes only. The current regulations or manual of arms, on the manner in which the gun should be held while operating, should be followed.

p. The word "breech" refers to the section of the gun just to the rear of the barrel chamber, where the gun is loaded. The word "muzzle" refers to the extreme forward end of the barrel.

q. Safety Precautions.

(1) Every shotgun should be considered to be fully loaded and cocked until it has been personally examined by the operator and proved to be otherwise. Memory should never be trusted as to a gun's condition in this respect.

(2) A shotgun should never be pointed at anyone at whom it is not intended to shoot, nor in a direction where accidental discharge may do harm.

(3) A shotgun should always be fully unloaded if it is to be left where someone else may handle it.

(4) A shotgun should always be pointed up to a safe spot when pulling the trigger after examination.

(5) If a shotgun is to be carried cocked, with a shell in the chamber, the trigger should be blocked by sliding the safety to the safe position. In the case of the Winchester Gun M97, the hammer should be placed at half-cock.

(6) Under no circumstances should pressure be applied to the trigger while the gun is being operated, until the breech bolt (or like part) is positively locked, and the slide (or like part) blocked.

(7) Under no circumstances should the hammer of the Winchester Gun M97 be let completely down with a shell in the chamber.

INTRODUCTION

(8) A shotgun should never be fired with any grease, cleaning patch, dust, dirt, mud, snow, or other obstruction in the bore. To do so may burst the barrel or blow the bolt.

(9) Ammunition should never be greased or oiled. This will affect the ammunition, and creates a hazardous pressure on the bolt.

(10) Chamber and bore should be wiped dry of oil or grease before firing for the reason given in (8) and (9) above.

(11) Ammunition should be clean and dry; all live and dummy ammunition should be carefully examined; all defective, swollen, or badly bruised shells turned in.

(12) Ammunition should not be exposed to the direct rays of the sun for any length of time. This increases chamber pressure and affects the charge (par. 92).

(13) The bore should always be inspected before loading the gun.

(14) A gun presumed to be fully unloaded should never be handed to anyone until again inspected.

(15) Shotgun shells smaller than 12-gage should never be carried. A smaller shell, if accidentally loaded, will enter the bore and burst the barrel when the gun is fired.

CAUTION: The proper functioning of the bolt and/or slide locking mechanisms of the guns covered in this manual is of the utmost importance to the proper operation and functioning of the gun, and the safety of the operator. If a bolt fails to lock properly, or a slide lock (or similar part) fails to function to prevent premature unlocking of the bolt, the breech is apt to blow open when the gun is fired with possible injury to the operator. Extreme care should be observed to see that such parts and those which operate and function them are in good repair and adjustment at all times. Care should be observed by operators to see that the breech mechanism is securely locked and blocked as directed in the field inspection for the gun in question when operating the guns.