TM 9-1275

WAR DEPARTMENT TECHNICAL MANUAL

ORDNANCE MAINTENANCE

U. S. RIFLES, CAL. .30

M1, M1C (SNIPER'S), AND M1D (SNIPER'S)

WAR DEPARTMENT • JUNE 1947

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This manual supersedes TM 9–1275, 6 November 1942, including C 1, 15 May 1943; TB 23–5–6, 5 June 1944; TB ORD 207, 28 September 1944; OFSTB 9–1275–5, 28 June 1943; and so much of TB ORD 272, 26 March 1945, as pertains to matériel covered in this manual

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TM 9–1275, Ordnance Maintenance, U. S. Rifles, Cal. .30, M1, M1C (Sniper's), and M1D (Sniper's), is published for the information and guidance of all concerned.

The information in this manual is correct as of 1 April 1947.

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BY ORDER OF THE SECRETARY OF WAR:

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SECTION I

INTRODUCTION

1. Scope

a. This manual is published for the information and guidance of ordnance maintenance personnel. It contains detailed instructions for inspection, disassembly, assembly, maintenance, and repair of the U. S. rifle, cal. .30, M1 (fig. 1); U. S. rifle, cal. .30, M1C (sniper's) (fig. 2); and the U. S. rifle, cal. .30, M1D (sniper's) (fig. 3). This manual does not contain general assembly or disassembly or information which is intended primarily for the using arms, since such information is available to ordnance maintenance personnel in FM 23–5.

b. Where "repair tolerances," as opposed to tolerances for new manufacture have been set up, such repair tolerances will continue in use. If additional tolerances or variations are desired, submit a specific request to the Chief of Ordnance.

c. Only rifles having the new spline-type gas cylinder are to be rebuilt. The receivers on rifles having the old type gas cylinders are of early manufacture, and cause "eleven o'clock" feed stoppages. They are identified by the top of the front feed rib being cut away instead of coming up to a square corner.

d. Since the M1, M1C, and M1D rifles are basically the same mechanically, as well as in operation and functioning, the disassembly, assembly, inspection, maintenance, and repair are covered generally.

2. Characteristics

The U. S. rifles cal. .30, M1, M1C, and M1D are gas-operated, clip-loaded, air-cooled, semiautomatic shoulder weapons. These rifles may be equipped with gun sling M1907 (leather) or gun sling M1 (webbing). When desired, grenade launcher M7 or M7A1, or bayonet M1 may be used with the rifles.

RIGHT SIDE VIEW

LEFT SIDE VIEW

RA PD 91149

Figure 1. U. S. rifle, cal. .30, M1.

Figure 2. U. S. rifle, cal. .30, M1C (Sniper's) with flash hider and sling.

Figure 3. U. S. rifle, cal. .30, M1D (Sniper's) with flash hider and sling.

3. Difference Between Models

a. The U. S. rifles cal. .30, M1, M1C, and M1D are basically the same. However, rifles of early and present manufacture of the same model may differ somewhat due to change in design of some of the component parts.

b. The U. S. rifle M1C (sniper's) (fig. 2) is the standard U. S. rifle M1 with telescope M81 or M82 mounted on the receiver and a cheek pad laced to the stock. The flash hider M2 is furnished as an accessory with the M1C and M1D models.

c. The U. S. rifle M1D (sniper's) (fig. 3) differs from the U. S. rifle M1C (sniper's) only in the design of the telescope mount and bracket. On the M1C model the telescope is held in a removable mount having a dovetailed slide mating with that of a bracket permanently attached to the receiver and locked in place by means of two locking screws. On the M1D model, the telescope is held in a removable mount which in turn is attached to a fixed base on the barrel of the rifle by means of one screw and dowel pin.

4. Forms and Records

Ordnance inspection forms and records, O. O. F. 7228, O. O. F. 7229, Inspection of Ordnance Material; OFM 202, Inspection Report of U. S. Rifle Cal. .30 M1; and OFM 205, Inspection Ticket for Rifle, U. S. Cal. .30, M1, provide a written record of the status as regards serviceability of ordnance matériel in the hands of troops.

5. Data

a. U. S. Rifle, Cal. .30, M1.

Weight	9.5 lb
Weight with bayonet, M1 and sling, M1907	11.2 lb
Length (over-all) rifle only	43.6 in.
Length (over-all) with bayonet, M1	53.4 in.
Length of barrel	24 in.
Length of rifling	70.8 cal.; 21.30 in.
Rifling:	
Number of grooves	{4-rifles of old mfr. {2-rifles of new mfr.
R.H. twist; 1 turn in	33.3 cal.; 10 in.
Depth of grooves	0.0040 in.
Cross-sectional area of bore	0.0740 sq in.
Type of mechanism	Gas-operated, semiautomatic
Loading device	Clip
Rate of fire	Semiautomatic
Cooling	Air
Sight radius	27.9 in. at 100 yd range

Trigger pull.....7.5 lb max; 5.5 lb min
Normal pressure.....50,000 lb per sq in. (copper)
Ammunition types.....Ball, A.P., tracer
Cartridge, ball type.....Cal. .30, M2
Approximate maximum range for cartridge M2 (standard).....3,450 yd

b. U. S. RIFLES, CAL. .30, M1C (SNIPER'S) AND M1D (SNIPER'S).

Length of rifle without flash hider.....43.60 in.
Length of rifle with flash hider mounted.....46.13 in.
Weight of rifle complete with telescope, flash hider, web sling, and cheek pad, but less web carrying case, M65.....11.81 lb
Weight of telescope, M81 or M82 only, with removable mount assembly (including rubber eyeshield).....1.24 lb
Weight of flash hider.....0.44 lb
Weight of web sling.....0.26 lb
Weight of cheek pad.....0.34 lb
Weight of rifle M1C or M1D without accessories but including permanently mounted bracket.....9.75 lb
Weight of leather sling, M1907.....0.50 lb
Weight of telescope, M81 or M82 only, without removable mount but including rubber eyeshield.....0.84 lb
Weight of web carrying case, M65.....0.28 lb
Trigger pull.....6.5 lb max; 4.5 lb min
Focus for distance.....Universal
Maximum useful range.....800 to 1,000 yd
Zero setting range (telescope).....300 yd
Field of vision at 100 yd.....35 ft
Magnification.....2.50 X
Eye relief (telescope) (approximately).....5 in.
Packing:
Weight of 1 rifle, M1C or M1D complete with all accessories in a V3C corrugated fiberboard box.....15.5 lb
Weight of 5 unit-packed rifles, M1C or M1D in chest (approximately).....104 lb
Over-all dimensions of chest.....13⅞ x 11⅛ x 35½ in.

SECTION II

INSPECTION PRIOR TO DISASSEMBLY

6. General

This section includes specific instructions for inspection of matériel in the hands of troops by ordnance personnel, as well as inspection of matériel undergoing repair in ordnance shops. The inspector must be well versed in maintenance procedure for the matériel, and must have a working knowledge of the tools needed for inspection.

7. Purpose

a. Fundamentally, inspection is for the purpose of determining whether the matériel is serviceable and dependable, or the extent of its serviceability. Serviceability, as interpreted in this section, is the ability of the rifle to perform its intended functions completely.

b. In the event the rifle is found unserviceable, the cause and extent of unserviceability is determined. For weapons in the hands of troops, such deficiencies as are found will be corrected on the spot, if practicable. If the rifle is being rebuilt by an ordnance shop, it is thoroughly and completely inspected, and put into the best possible condition that time, materials, and tactical circumstances allow, and returned to the using arm ready for use.

8. Reports

a. Forward suggested improvements in design, maintenance, safety, and efficiency of operation prompted by chronic failure or malfunction of the weapon, spare parts, accessories, or equipment to the Chief of Ordnance, Field Service, Maintenance Division, Washington 25, D. C., with all available pertinent information necessary to initiate corrective action. Report this information on WD AGO Form 468 (Unsatisfactory Equipment Report). Such suggestions are encouraged so that other organizations may benefit.

b. Report to the responsible officer any pertinent carelessness or negligence in the observance of preventive maintenance procedures and safety precautions. This report should be accompanied by recommendations for correcting the unsatisfactory conditions.

Note. The inspector's aim is not to find fault with the using arm, but to be helpful.

9. Inspection Procedure

a. GENERAL. (1) Each rifle to be inspected is held with the muzzle pointed to the floor, cleared at once, and the chamber inspected for a live round. Be certain that there are no obstructions in the bore or chamber. Do not touch trigger until after rifle has been cleared.

(2) Before inspection the matériel is to be thoroughly cleaned to remove any grease, dirt, or other foreign matter which might interfere with its proper functioning or the use of the gages and tools used in inspection.

(3) Inspection, maintenance, and repair of the rifle is to be thorough and exacting, for the malfunction of one small part may cause malfunction of the rifle.

(4) The rifle is to be visually inspected for general condition, operation, and functioning before disassembling for detailed inspection. In such inspection, dummy cartridges are used.

b. SERVICEABILITY STANDARDS AND SPECIAL REQUIREMENTS FOR OVERSEA SHIPMENT. (1) When performing inspection, the future disposition of the rifle must be considered, as certain serviceability standards have been established (fig. 23) based upon whether the weapons are for using organizations, for oversea shipment, or to be placed in storage for reissue.

(2) In addition to the limits of serviceability which have been established, the following additional special requirements must be adhered to for those rifles which are to accompany troops overseas:

(*a*) All safety devices are to operate satisfactorily.

(*b*) While it is desirable to have a perfect finish on each weapon, no weapon is to be rejected for oversea use unless the exterior parts have a distinct shine.

(*c*) All spare parts and accessories are to be in good condition and on hand.

(*d*) Stocks are to have no cracks or splits. All screws are to fit tightly and their slots are to be in good condition.

(*e*) The front sight must be properly and securely assembled and have no burs or malfunctions. Rear sight adjustment for both windage and elevation must function smoothly and show no excessive wear.

(*f*) The rifle must not have a shiny gas cylinder. Refer to paragraph 22*b* for correction of shiny gas cylinders.

(*g*) The rifle must be equipped with a new type butt plate which includes a trap.

(*h*) The rear sight aperture must have a dull black or gray finish on all surfaces.

(*i*) The rifle must function properly when operated by hand.

(*j*) Check to be certain that all cleaning and preservative equipment authorized by the standard nomenclature list, oiler, thong case, and combination tool are provided with each rifle.

c. INSPECTION. (1) *Bolt.* Place the clip containing eight dummy cartridges in the receiver of the rifle in the normal manner, and allow the bolt to close. Check the operating rod handle to make certain that the bolt is in the fully closed position. Then slowly retract the bolt to note whether the extractor has fully engaged the cartridge and whether the ejector throws the cartridge from the receiver. Retract the bolt fully and repeat the operation until the entire clip of eight cartridges has been fed through the successive cycle of operations. As the last cartridge is ejected, the empty clip should also be thrown firmly upward and away from the receiver. The operating rod handle and bolt should then remain in the retracted position.

(2) *Trigger pull.* The trigger, when pulled, should move to the rear without stopping or gritting. Trigger pull must be greater than 5½ pounds but is not to exceed 7½ pounds for the M1 rifle; and is not to be less than 4½ pounds or more than 6½ pounds for the M1C and M1D rifles. Trigger pull is determined by using the trigger pull weights. (See fig. 15.) With the rifle cocked and with the safety in the forward position, rest the weight on the floor or ground and hook the trigger weight wire onto the trigger so that pressure is applied about ¼ inch from the lower end of the trigger. (See fig. 4.) Make certain the rod contacts the trigger only and does not rub against the trigger guard or stock, and that the rod and the barrel are vertical and parallel; then carefully raise the weight from the floor. In testing the M1 rifle if the 5½-pound weight trips the hammer or the 7½-pound weight fails to trip the hammer, correct the rifle in accordance with instructions contained in paragraph 26*c*. Test the M1C and M1D rifles in a similar manner, using 4½-pound and 6½-pound weights.

(3) *Clip ejector.* Inspect function and spring tension of clip ejector with loaded clip in rifle.

(4) *Rear sight.* Try the rear sight elevation and windage knobs for operation. (See fig. 5.) To verify the setting of the rear sight, set the 100-yard elevating knob graduation opposite the index line on the receiver. With this setting it should be possible to depress the aperture from one to nine clicks. Check the cover for tightness and tension relative to the aperture.

(5) *Gas cylinder group.* Check the parts of the gas cylinder group for dents, burs, etc. Check the front sight for looseness, bent or burred wings, and check the blade for "shine."

Figure 4. Checking trigger pull with weights.

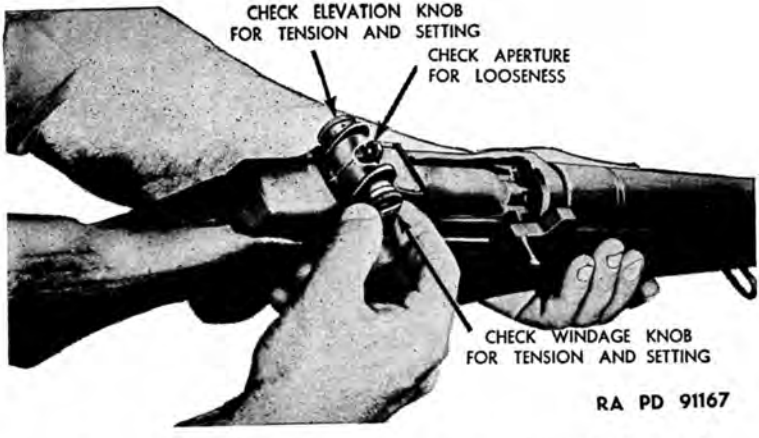


Figure 5. Rear sight (Early Manufacture)—points to be inspected.

(6) *Clip latch.* Check the clip latch for freedom of movement and tension of the spring.

(7) *Barrel and receiver group.* (*a*) The barrel is inspected visually to determine the condition of the bore and the deterioration that has taken place. A gage inspection is then made to determine the amount of wear that has taken place at the origin of the rifling with breech bore gage. (See fig. 6.) The wear in the chamber or in the related parts affecting headspace is checked with headspace gage specified in serviceability chart. (See fig. 23.)

(*b*) Gage inspection offers no problems, as the tolerances are definitely set; however, classification of barrels by visual inspection is a matter of individual skill and judgment and, therefore, offers many problems. Care in interpretation and application of the standards contained herein will aid in arriving at a uniform point of rejection. The point at which a barrel is rejected by visual inspection varies with the disposition to be made of the rifle immediately following inspection, as explained in *b* above.

1. *Limits of serviceability for using organizations.* The serviceability chart (fig. 23) shows the limits for breech bore (fig. 6) and headspace measurements. (See fig. 7.) If the barrel is pitted to the extent that the sharpness of the lands is affected, or if it has a pit or pits in the lands or grooves large enough to permit the passage of gas past the bullet, it is to be scrapped. A pit, the width of a land or groove and ⅜ inch long or longer, indicates this condition. Examine barrel for mechanical damage and examine the chamber for deep pits that would seriously affect extraction.
2. *Special requirements for oversea shipment.* Breech bore (fig. 6) and headspace measurements (fig. 7) are to be within the limits set by the serviceability chart. (See fig. 23.) Examine barrel for pits or mechanical damage. A barrel that is uniformly pitted but with sharp edges on the lands may be considered serviceable. Only those barrels which show excessive wear, developed pits, or which have pits cutting into the lands are unserviceable for oversea shipment.
3. *Weapons placed in storage for reissue.* Limits for breech bore (fig. 6) and headspace measurements are shown in the serviceability chart. (See fig. 23.) A few fine pits are acceptable. However, the general appearance of the bore should approximate that of a new barrel and should appear to have a minimum of 75 percent of its normal life left.

(*c*) The headspace of a rifle is measured as the distance between the shoulder of the chamber and the face of the bolt when the bolt is in a locked position. The minimum headspace measurement is 1.940 inches.

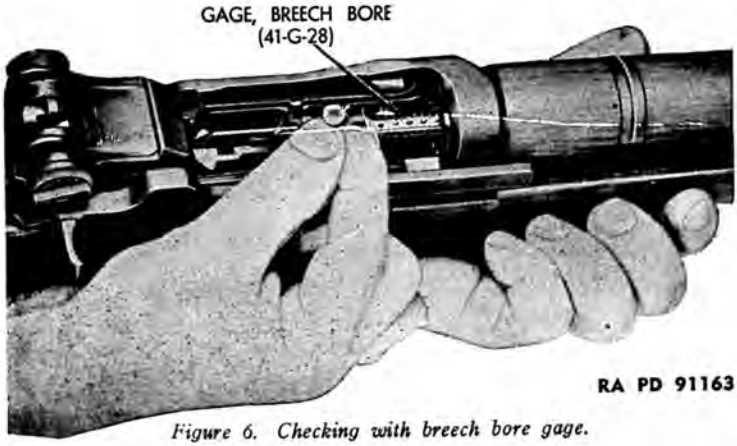


Figure 6. Checking with breech bore gage.

Headspace is important because it affects accuracy and safety. If the weapon has excessive headspace when the round is fired, the thin portion of the case expands and grips the wall of the chamber, while the base of the case moves rearward to fill the room allowed by excessive headspace and pulls the case in two. This is called a ruptured cartridge case and allows gas to enter the receiver, often severely damaging the weapon. To obtain the headspace measurement, the headspace gage is placed on the face of the bolt and so positioned that the ejector enters the clearance cut on the base of the headspace gage. If the bolt will close fully on a 1.940-inch gage and will not close on the maximum gage as specified by the serviceability chart (fig. 23), the headspace is satisfactory.

1. Certain gages of early manufacture do not have a bevel around the head of the gage. Do not use these gages on the rifle as interference will be encountered with the fillet around the face of the bolt and erroneous readings will be obtained. Certain other gages do not have the clearance cut for the ejector. When these gages are used, remove the ejector.
2. The most accurate method of taking headspace is with the operating rod removed, and the reading taken while rotating the bolt lug by hand. If it is found that the headspace of the rifle is over 1.950 inches, check the rifle with a field test bolt. (See fig. 7.) This will determine whether the excessive headspace is caused by a worn bolt or a worn barrel and receiver assembly. If the field test bolt will not close on a 1.950-inch headspace, the bolt is worn and must be replaced; if the field test bolt closes on the 1.950-inch gage, the barrel and receiver assembly is worn and must be replaced.

Figure 7. Checking headspace with field test bolt and headspace gage.

(*d*) With the action open, inspect the receiver for burs or other deformation.

(8) *Bolt group.* Test the bolt for freedom, smoothness of movement, and for locking. Insert bolt in receiver and function with fingers.

(9) *Stock group.* (*a*) Inspect the stock for cracks, scratches, bruises, or mutilations. Check for loose or bent sling swivels, burs, a loose front swivel screw, loose or burred stock ferrule, and for loose or missing butt plate screws. Check the seating of the butt plate, function of the butt plate cap, and the tension of the butt plate plunger spring. Make certain the combination tool, oiler, thong case, and rifle grease container are in the butt-well.

(*b*) Inspect the hand guards for cracks and scoring. Check the ferrule and rear hand guard band for looseness and burs. Check the lower band for looseness, burs, and loose or missing pin. The pin should be staked. Check the spacer in the front hand guard for position and looseness.

SECTION III

TOOLS, GAGES, AND FIXTURES

10. General

a. The tools, gages, and fixtures used in the inspection, disassembly, and repair of the U. S. rifles, cal. .30, M1, M1C (sniper's), and M1D (sniper's) are classified as tools, gages, and fixtures requisitionable for issue; tools, gages, and fixtures nonrequisitionable for issue; and common tools.

(1) Tools, gages, and fixtures authorized for issue, described and illustrated in the following paragraphs, are listed in SNL B–20.

(2) Nonrequisitionable tools, gages, and fixtures are not listed in Standard Nomenclature Lists. If such equipment is desired, it is to be made up locally.

(3) Common tools, screw drivers, drifts, pliers, hammers, stones, etc., which are normally used in maintenance and repair, are standard to maintenance organizations and are listed in appropriate Standard Nomenclature Lists.

b. All field service inspection gages must be returned to Springfield Armory, Springfield, Massachusetts, or Rock Island Arsenal, Rock Island, Illinois, once a year to be checked.

c. This section presents nomenclature, federal stock numbers, and description of the tools, gages, and fixtures. Use of the tools, gages, and fixtures is described in detail in sections V to VII, inclusive.

11. Requisitionable Tools, Gages, and Fixtures

a. GAGES. (1) *Gages for third, fourth, and fifth echelons (fig. 8).* (*a*) *Gage, breech bore (41–G–28).* The breech bore gage is used to determine wear of the bore at the origin of the rifling. This gage has ten graduations, each of which corresponds to 0.001 inch of wear. The tenth graduation or point marked "REJECT" is equivalent to a bore diameter of 0.310 inch, since the zero graduation is 0.300 inch. Use of this gage is described in paragraph 9*c*.

(*b*) *Gage, gas cylinder diameter (41–G–198–425).* This gage is of the plug type. It is relieved on two sides in order to check for out-of-roundness as well as for oversize diameter. The gage checks only the

origin of the cylindrical portion of the gas cylinder, as this portion has been found to be the one that determines whether or not the cylinder allows the weapon to function properly.

(*c*) *Gage, no-go, barrel diameter at gas port* (*41–G–236*). This gage is used to check the diameter of the barrel at the gas port.

(*d*) *Gage, no-go piston* (*41–G–236–85*). This gage is used to check the diameter of gas piston.

(*e*) *Gages, headspace.* The headspace gages are used to check the distance between the shoulder of the chamber and the face of the bolt. Headspace gages are of three sizes namely: 1.940 inches (41–G–200–75), 1.946 inches (41–G–200–100), and 1.950 inches (41–G–200–130) in length, and have been revised to provide a 45° bevel of the heads.

Note. Only headspace gages having beveled heads will be used in the inspection of U.S. rifles cal. .30, M1, M1C (sniper's), and M1D (sniper's).

The gages are also provided with a clearance cut for the ejector, which eliminates the need of removing the ejector to check the headspace. If other gages not having the clearance cut are used, the ejector must be removed before a check of the headspace is made. Use of the headspace gage is described in paragraph 9*c*.

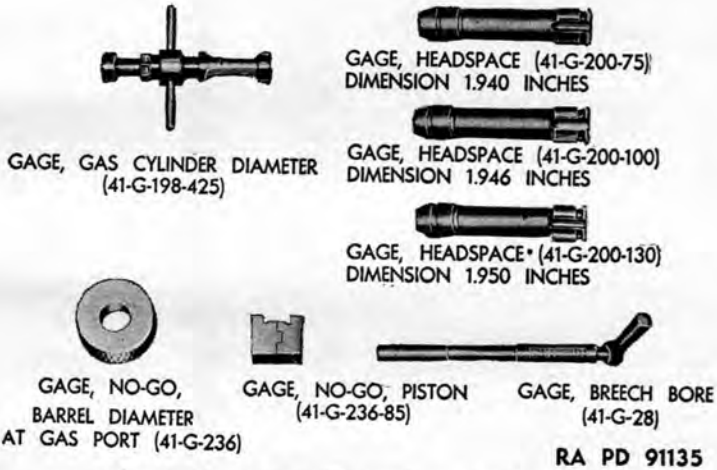


Figure 8. Gages for third, fourth, and fifth echelons.

(2) *Gages for fifth echelon only* (*fig. 9*). (*a*) *Gage, alining, barrel, with pin* (*41–G–13–250*). The barrel with pin alining gage is used to check the alinement of the barrel to the receiver. Paragraph 22*c* gives details on the use of this tool.

(*b*) *Gage, firing pin protrusion* (*41–G–182–350*). The firing pin pro-

trusion gage is used to check the protrusion of the firing pin beyond the face of the bolt.

(*c*) *Gage, spring, operating rod, with 5- and 11-pound weights (41–G–358–300)*. This gage is used for gaging the load and free height of the operating rod spring.

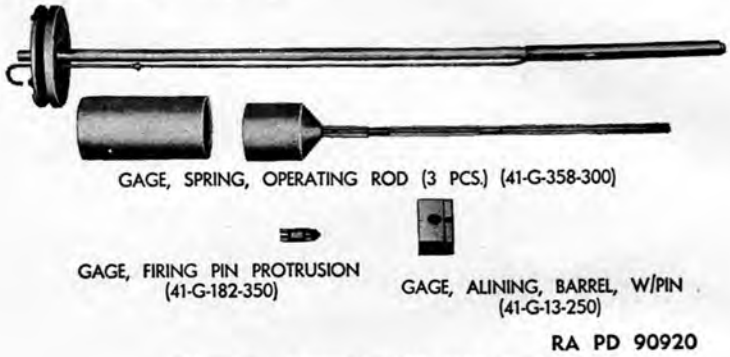


Figure 9. Gages for fifth echelon only.

b. Tools. (1) *Tools for third, fourth, and fifth echelons (fig. 10).* (*a*) *Bolt, field test (41–B–1587)*. The field test bolt is used in conjunction with the headspace gages to determine whether the chamber, bolt, or bolt lug seats in the receiver are worn.

(*b*) *Punch, rear sight pinion (41–P–3788)*. The rear sight pinion punch is 3 inches long and has a diameter of 0.057 inch. It is used to stake the rear sight elevating pinion to prevent loss of the rear sight nut when in service.

(*c*) *Reflector, barrel (41–R–2331)*. The barrel reflector is used to provide a light-reflecting surface for visual inspection of the rifle bore. It is placed in the chamber and, by holding the rifle so that light is properly reflected, the bore, including the chamber, can be examined.

(*d*) *Tool, combination, screw driver, wire brush and bolt, assembly and disassembly (41–T–3086–80)*. This tool, as the name implies, is a combination of tools which may be used to perform the following operations in the rebuilding of the rifle:

1. Remove and replace the gas cylinder lock screw and various other screws, and seat the rear sight base.
2. Extract the cartridge case.
3. Remove pins and assemble the extractor and ejector.
4. Assemble or disassemble the extractor and ejector without removing the bolt from the rifle.
5. Clean the chamber of the barrel.
6. Install the extractor spring and plunger.

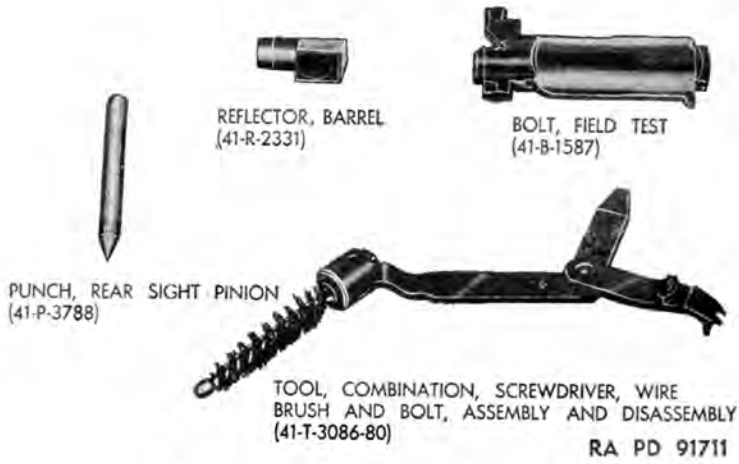


Figure 10. Tools for third, fourth, and fifth echelons.

(2) *Tools for fifth echelon only (figs. 11 and 12).* (*a*) *Reamer, extension (41–E–452) (fig. 11).* The reamer extension group is used as a guide or fixture in reaming the headspace. Refer to paragraph 22*d* for detailed use of this tool. It consists of five parts:

1. *Adapters, reamer (with locking nut) (long and short).* A reamer adapter is assembled to the reamer and locked by the locking nut. The adapter is the connecting piece for the universal-jointed extension unit. Adapters are furnished in two lengths to allow the use of reamers after they have become shortened as a result of repeated sharpening.
2. *Wrench, adapter assembling.* This tool is used to assemble the reamer adapter to the reamer and hold it while the locking nut is being tightened.
3. *Guide.* The guide is used as an alinement piece and as a stop for the reamer. It is secured in the receiver by a thumb screw having a point on the threaded end. Tightening the thumb screw forces the guide back against the locking lugs, which is necessary to insure uniform headspace reaming.
4. *Extension, universal-jointed.* This unit is provided with a tapered square shank to be used with a brace.

(*b*) *Reamer, carbon steel, hand, headspace (41–R–498).* (See fig. 11.) This reamer is used for reaming headspace when rifles are being rebarreled. It is used with headspace reamer extension as described in (*a*) above.

(*c*) *Wrench and fixture, barrel and receiver, disassembly (41–W–*

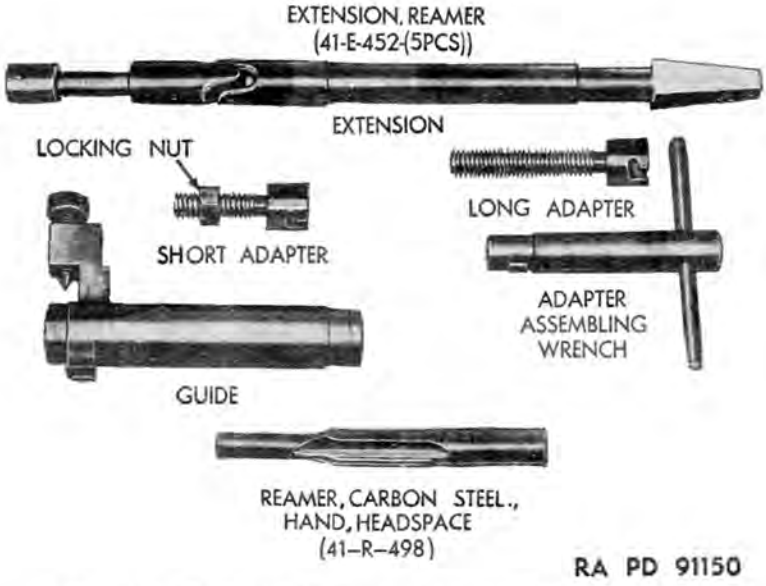


Figure 11. Tools used for reaming headspace—fifth echelon only.

3875). (See fig. 12.) This fixture and wrench are used in disassembling the barrel and receiver assembly. The barrel is passed into the fixture, muzzle end first, and located so that the rib on the barrel stops against a shoulder in the fixture. This fixture holds the barrel firmly while the receiver is turned counterclockwise with the special wrench.

(*d*) *Wrench, windage screw knob (41–W–3852) (fig. 12).* The windage screw knob wrench is an adjustable split socket which can be adjusted to fit tightly on the elevating knob or windage knob. A crank is attached to facilitate rotating the rear sight knobs when disassembling and assembling the rear sight.

(*e*) *Wrench, gas cylinder lock, assembling (41–W–1496–250) (fig. 12).* The gas cylinder lock assembling wrench is used to remove an extremely tight gas cylinder lock and is designed to fit the contours of the gas cylinder lock. This wrench is intended to be used for assembling the lock to the rifle.

c. FIXTURES FOR FIFTH ECHELON ONLY (FIG. 13). (1) *Fixture, assembly, barrel and receiver (41–F–2987–250) (fig. 13).* This fixture is used to draw barrel in correct relation to the receiver in order to prevent binding of the operating mechanism of the rifle and to position barrel properly so front sight will have correct relation with respect to rear sight. It is equipped with clamping facilities to hold the receiver in a fixed position; a pointer and an index, which are attached to splined

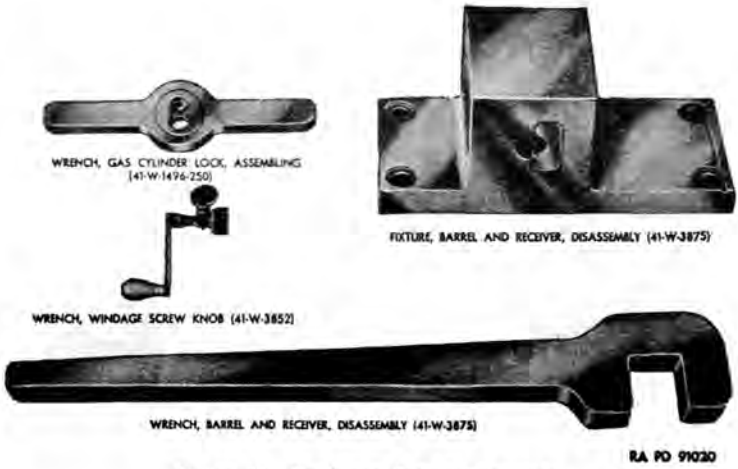


Figure 12. Tools for fifth echelon only.

portion of barrel, are provided to assure correct alinement when draw is made. For detailed use see paragraph 22*c*.

(2) *Fixture, assembling, bolt (41–F–2987–260) (fig. 13).* The bolt assembling fixture is a clamp used to install the extractor in the bolt. It can be held in a vise or permanently fastened to the armorer's bench. The bolt, with its component parts, is clamped in place in the fixture. The fixture is designed so it will aline the cut in the ejector with the extractor hole in the bolt, making it possible to install the extractor.

(3) *Fixture, assembling, ejector, with spindle, Nos. 2, 3, and 4, and bushing Nos. 6, 7, and 8 (41–F–2987–270) (fig. 13).* This fixture is used for assembling the ejector, extractor, and rear sight springs to their respective components.

12. Nonrequisitionable Tools, Gages, and Fixtures

a. Driver, Lower Band (fig. 14). This tool is used to seat the lower band. It is to be made up locally and from hard wood. Cover the ends with leather to provide a surface that will not mar the finish of the ferrule. Figure 14 shows a dimensional drawing from which the tool may be constructed.

b. Weights, Trigger Pull (fig. 15). Four weights of 4½, 5½, 6½, and 7½ pounds respectively are used to check trigger pull. (See fig. 4.) Each of the weights should be provided with a rod which is long enough to clear the stock so that the pressure will be exerted parallel to the axis of the bore and rigid enough to retain an L-hook bend not less than 2¼ inches long when supporting the weight. Figure 15 is a dimensional drawing from which the weights may be constructed.

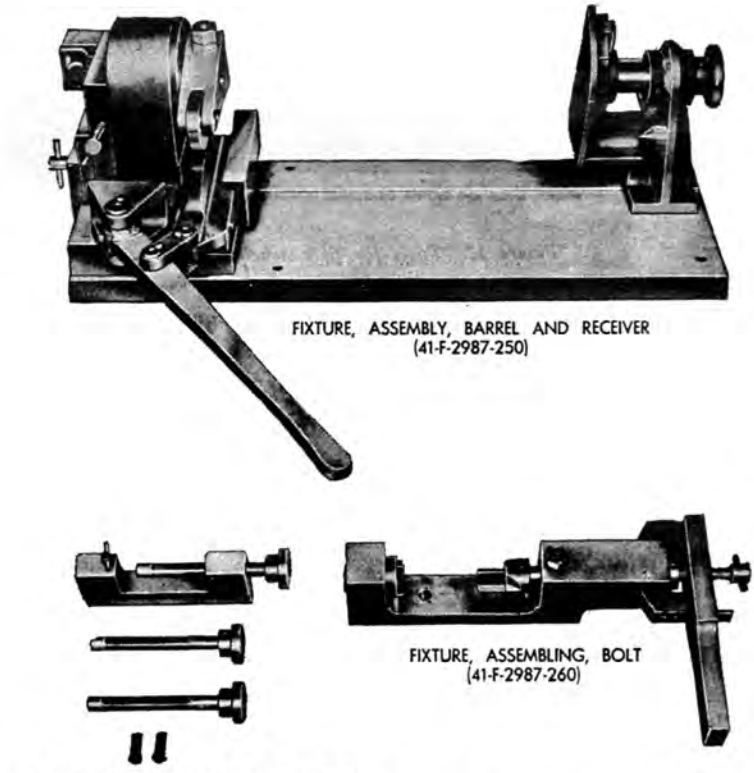
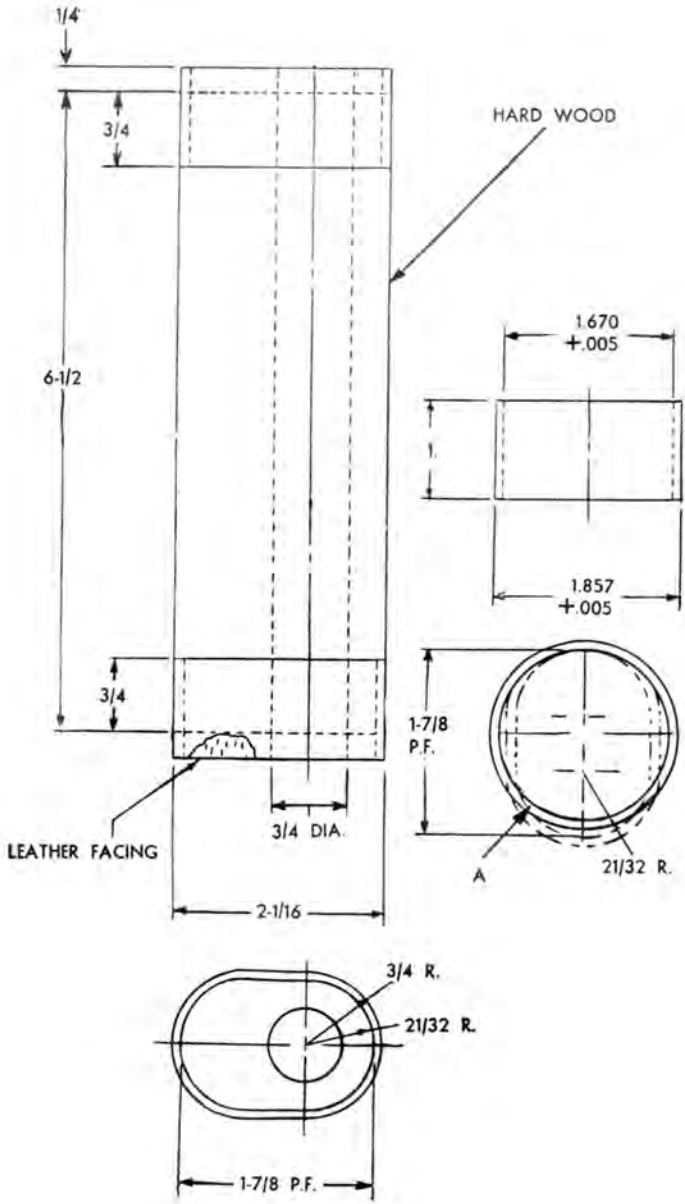


Figure 13. Fixtures for fifth echelon only.



A–MACHINE FROM STEEL TUBING AND FLATTEN AS INDICATED BY PHANTOM LINES.

RA PD 90918

Figure 14. Lower band driver.

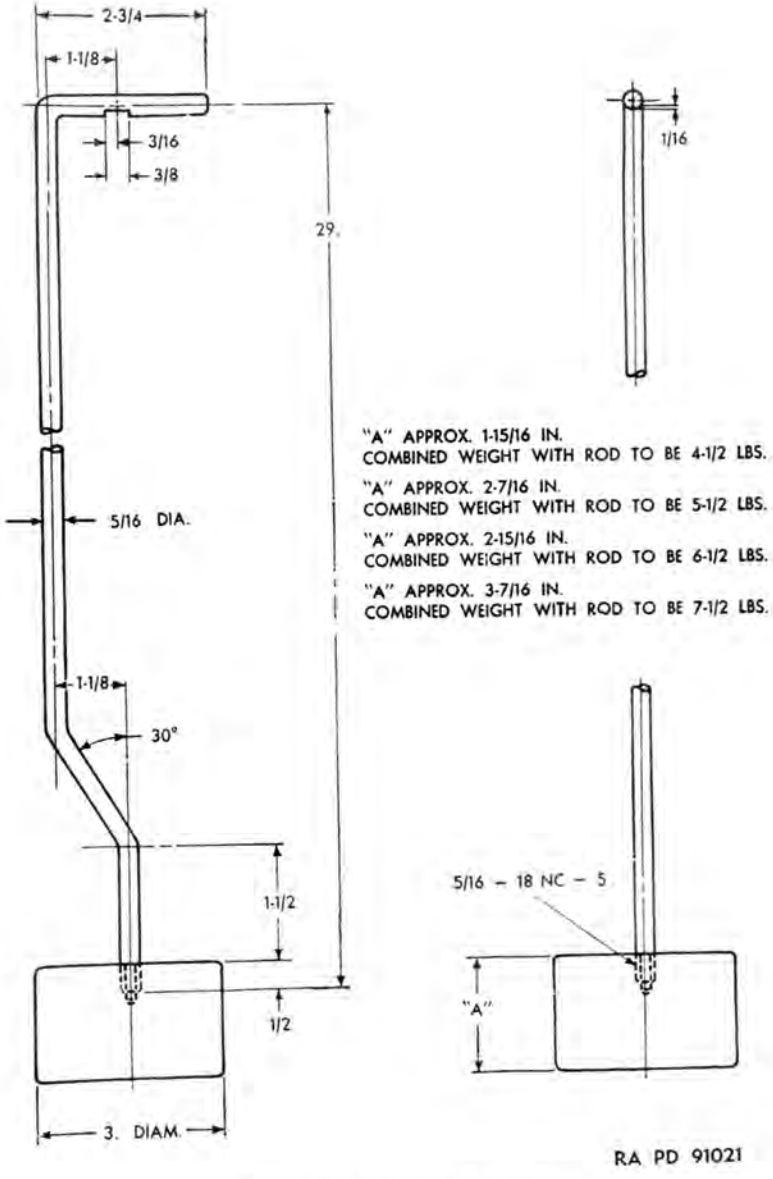


Figure 15. Trigger pull weights.

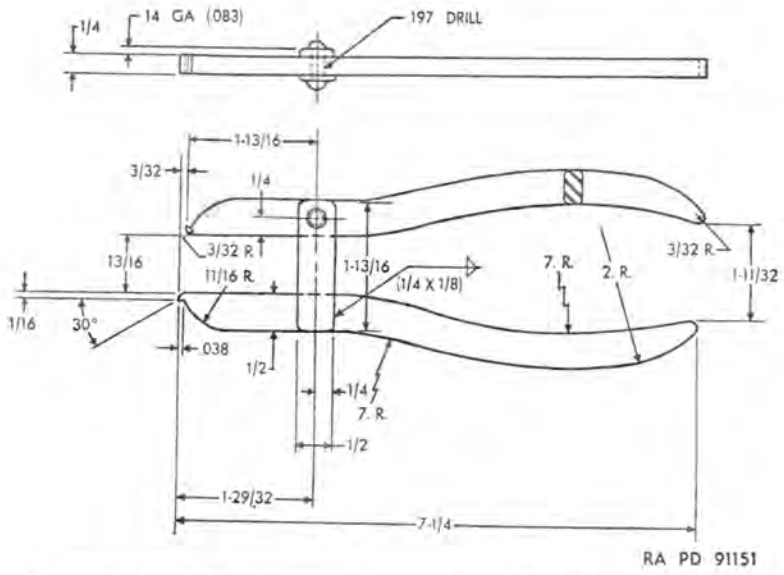


Figure 16. Pliers for assembling and removing band from rear hand guard.

c. PLIERS (FIG. 16). The pliers are used to assemble or remove the band on the rear hand guard.

d. FIXTURE, TRIGGER HOUSING ASSEMBLING (FIG. 17). This fixture is used to seat the trigger pin when assembling the trigger housing group.

e. ROLL, SWAGING (FIG. 18). The swaging roll is a rolling tool used to swage the metal of the barrel to eliminate looseness of barrel in receiver.

f. GAGE, HEIGHT (FIG. 19). The height gage is used to measure the depth of the cut when modifying the operating rod. (See par. 22*a*.)

g. GAGE, DEPTH (FIG. 20). The depth gage is used to measure the fillet cut and is provided with a scribe line to ascertain the starting point of the cut. (See par. 22*a*.)

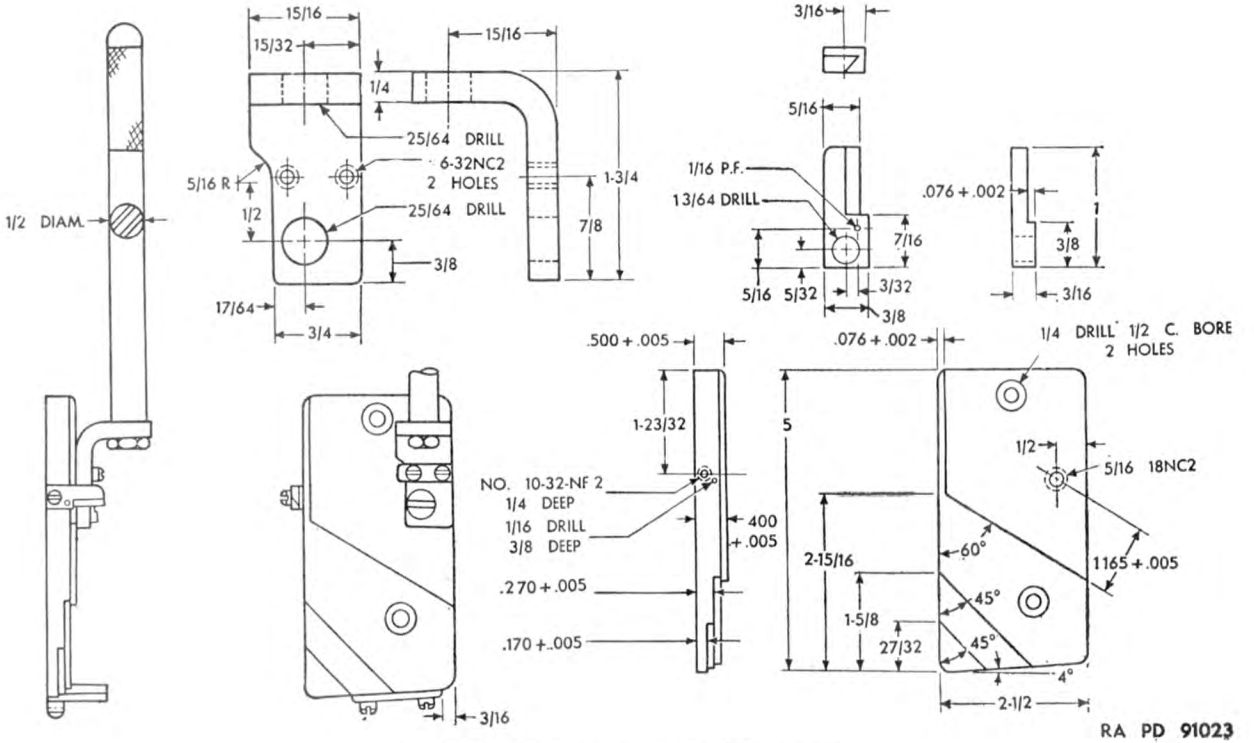


Figure 17. Trigger housing assembling fixture.

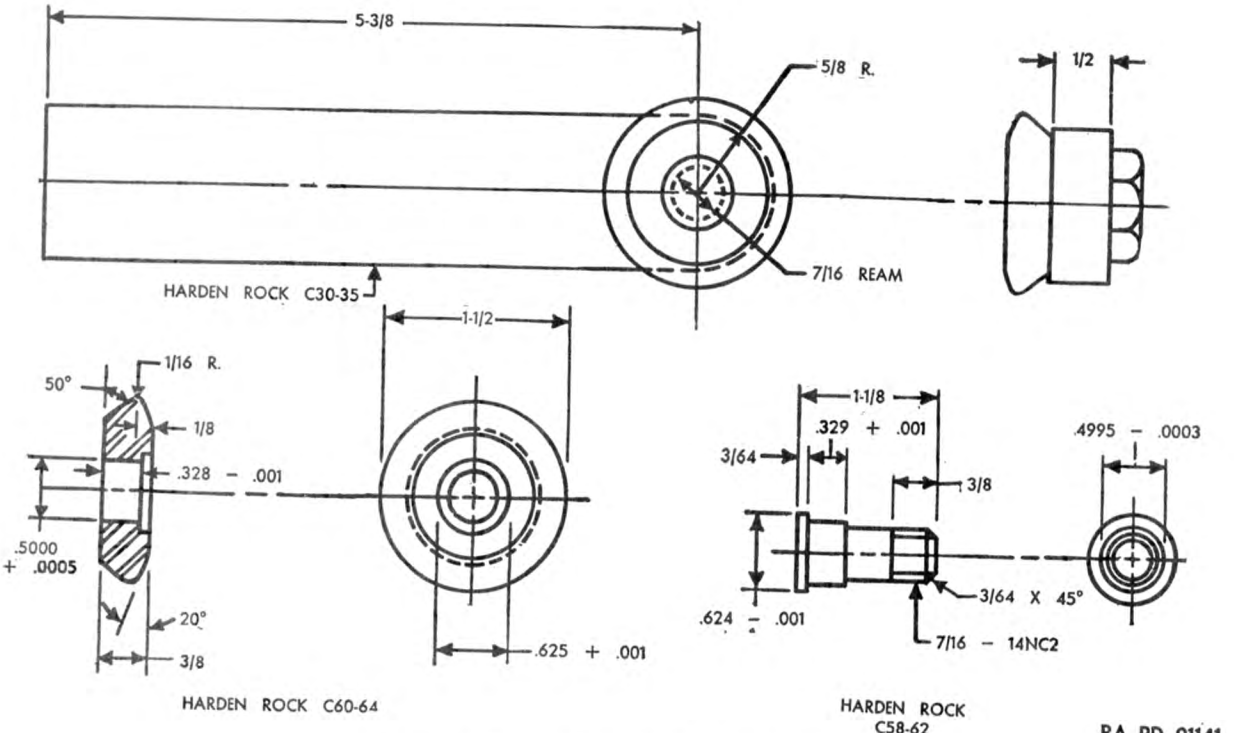


Figure 18. Swaging roll—barrel and receiver assembly.

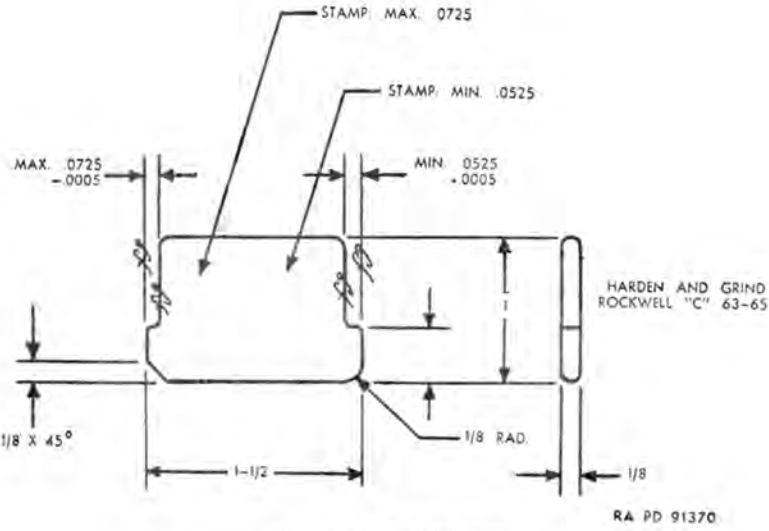


Figure 19. Height gage.

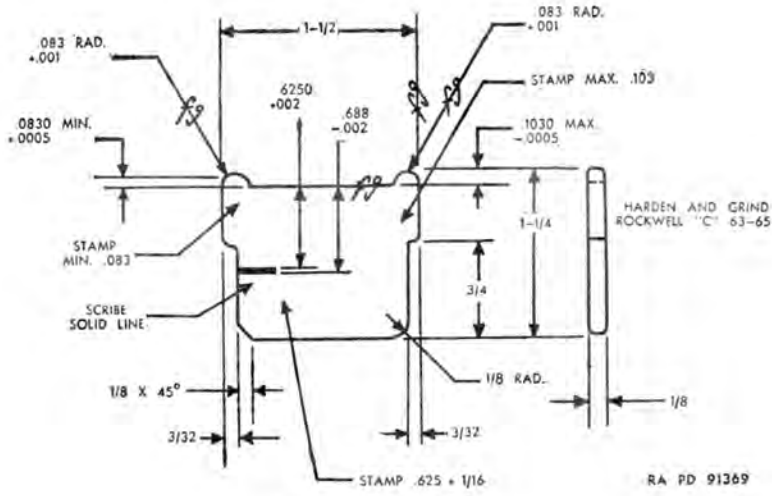


Figure 20. Depth gage.

SECTION IV

GENERAL MAINTENANCE

13. Scope

a. This section contains important general maintenance information which may be applied generally to the group or assemblies covered in the following sections.

b. It includes an allocation of the maintenance responsibilities of the third, fourth, and fifth echelons and an explanation of the methods usually employed by each organization.

c. A serviceability chart (fig. 23), a rebuild flow chart (fig. 22), and an explanation of their use are also included.

d. For convenience and clarity the main groups (fig. 21) of the rifle are covered in separate sections; equipment also is covered separately in section VIII.

14. General Methods

a. Place all parts and assemblies on a clean, flat surface, preferably of wood, to avoid damaging parts. Also keep the parts for each gun together and separated from those of other guns.

Note. Although parts are interchangeable, they work best in their original combination.

b. If production line procedure is used, keep the barrel and receiver, the operating rod, and the bolt together. This can be accomplished by wiring the components to the barrel as they are removed. This reduces to a minimum the time required in fitting bolts and operating rods to the rifle, since in most cases those assembled in the rifle when it is returned for rebuild were fitted by the manufacturer.

c. Replace weak or broken springs and worn, damaged, or broken parts before assembly.

d. When possible, assemble subassemblies before mounting them on the weapon. As a part of all assembly and mounting operations, clean and lubricate all sliding surfaces and threads to assure free movement.

e. Remove all burs with a fine file or by stoning and polishing with crocus cloth. Take care to file or stone evenly and lightly and not to

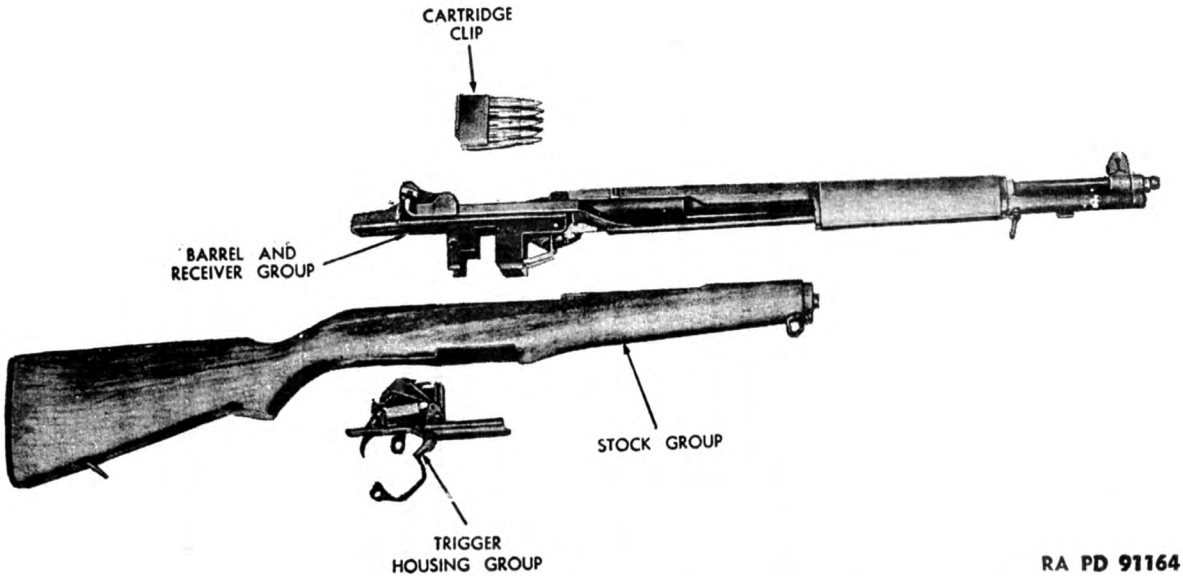


Figure 21. Barrel and receiver group, trigger housing group, stock group, and loaded cartridge clip.

remove any more metal than is necessary so as not to change the tolerance or contour of the surfaces so treated.

f. Remove burs, rough protrusions, or scorings of wood surfaces with a fine, flat file or fine abrasive paper. Always file towards an edge so as not to pick up slivers or chips. Smooth off with fine sandpaper where necessary, and oil with raw linseed oil.

15. Allocation of Maintenance Responsibilities

a. General. Maintenance and repair of the matériel covered in this manual consist primarily of replacement of worn or broken parts. Most of the operations described and illustrated in the following sections, therefore, may be performed by third, fourth, or fifth echelons of maintenance.

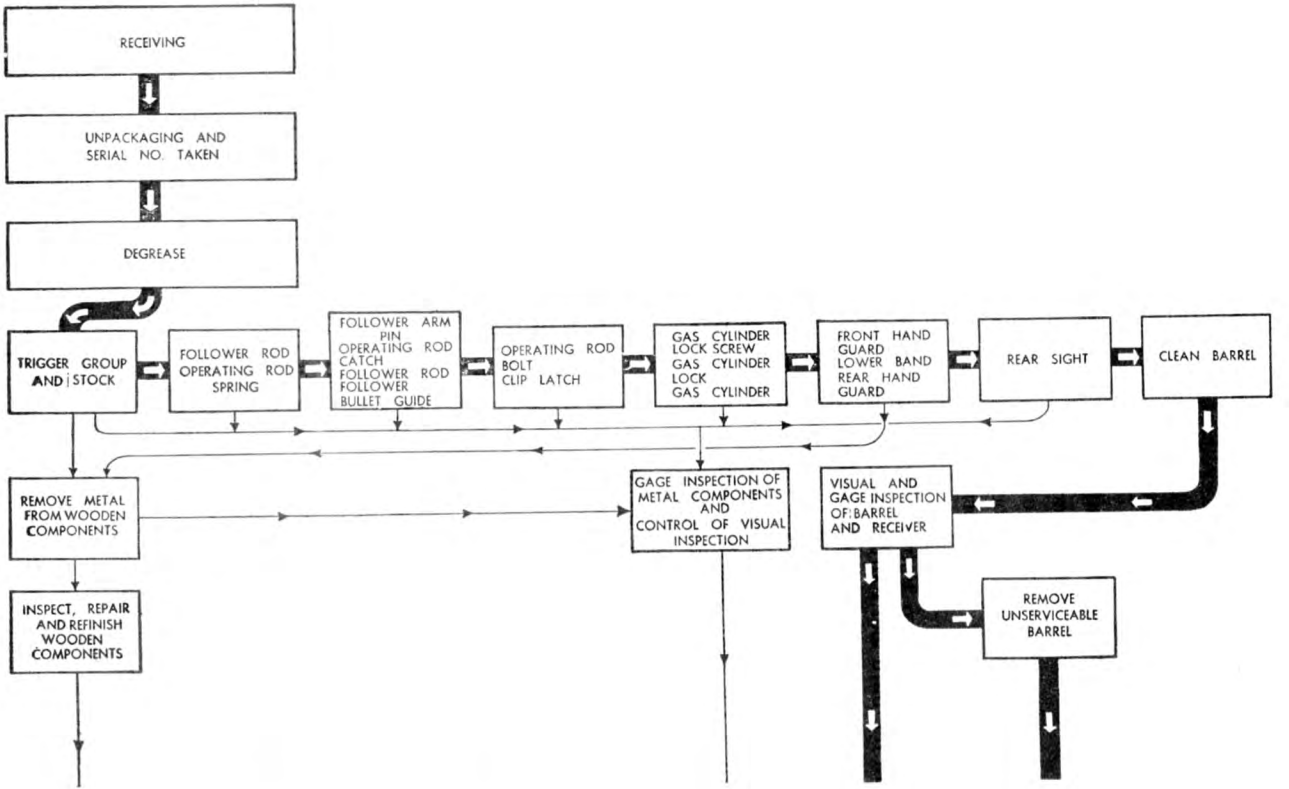
b. Third and Fourth Echelon Maintenance Responsibilities. In the third and fourth echelons, maintenance operations are performed with only the limited tool facilities afforded by repair trucks, semipermanent shops at posts and camps, or an armorer when making a regular inspection. They are of a "first-aid" nature, consisting of replacement of worn or damaged parts or assemblies with serviceable parts or assemblies. Third and fourth echelon personnel normally process matériel for use in the hands of troops and matériel to accompany troops overseas. (See fig. 23.)

c. Fifth Echelon Maintenance Responsibilities. In the fifth echelon establishments, maintenance operations are usually performed by production line methods. They consist of a complete rebuild of parts and assemblies, including rebarreling and patching of stocks, in addition to the operations which may be performed by third and fourth echelon personnel. Fifth echelon base shops process matériel to be placed in a storage for reissue. (See fig. 23.)

16. Rebuild Flow Chart (fig. 22)

a. The rebuild flow chart represents the various steps necessary in rebuild of U. S. rifles, cal. .30, M1, M1C (sniper's), and M1D (sniper's). Fundamentally, rebuild of the rifles is divided into six stages: Degreasing, disassembly, refinishing, assembly, final inspection, and packaging.

b. The disassembly personnel perform visual inspection of all components as they are removed to insure that unserviceable, irreparable components are dropped from the flow of parts as soon as they are removed. The gage inspection section checks the dimensions by the use of field service gages and spot-checks components passed by visual inspection and those rejected by visual inspection, thereby acting as a control over the previous inspectors. The section handling wooden components inspects and determines that the components have not been


RECEIVING
UNPACKAGING AND SERIAL NO. TAKEN
DEGREASE
TRIGGER GROUP AND STOCK
FOLLOWER ROD OPERATING ROD SPRING
FOLLOWER ARM PIN OPERATING ROD CATCH FOLLOWER ROD FOLLOWER BULLET GUIDE
OPERATING ROD BOLT CLIP LATCH
GAS CYLINDER LOCK SCREW GAS CYLINDER LOCK GAS CYLINDER
FRONT HAND GUARD LOWER BAND REAR HAND GUARD
REAR SIGHT
CLEAN BARREL
REMOVE METAL FROM WOODEN COMPONENTS
INSPECT, REPAIR AND REFINISH WOODEN COMPONENTS
GAGE INSPECTION OF METAL COMPONENTS AND CONTROL OF VISUAL INSPECTION
VISUAL AND GAGE INSPECTION OF BARREL AND RECEIVER
REMOVE UNSERVICEABLE BARREL

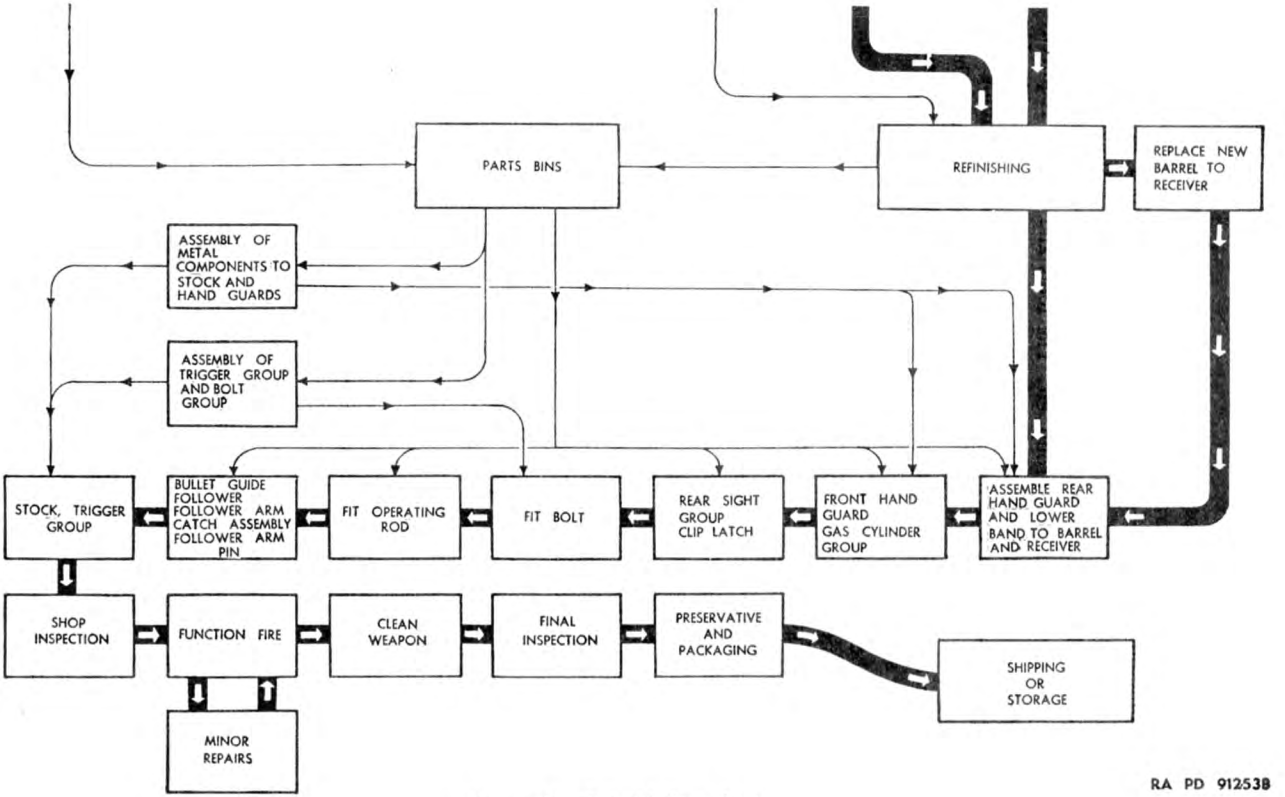


Figure 22. Rebuild flow chart.

damaged to an extent that will affect the structural strength. This section makes any minor repairs necessary and refinishes and reoils the wooden components when necessary.

c. The parts section keeps a record of parts on hand and fills the needs of assembly personnel by transporting required parts from the parts bins to the individual assemblers. Sections have been provided in the flow chart to cover the assembly of certain components and furnish them to the rifle assemblers assembled and ready to use. Examples are stock assembly, trigger group, bolt group, etc. The tools and fixtures required for assembling the rifle have been previously covered in section III. If the shop is of sufficient size to have more than one man performing the same operation, those performing duplicate operations should mark their work, so that it can be identified and corrective action taken if it is found to be below standard.

d. After the rifle has been assembled, it is given a shop inspection, which determines the quality of workmanship, and a brief check of the components affecting its functioning. Shop inspectors must locate and report to the shop officer any incorrect practices being used by shop personnel so that proper standards of rebuild are followed. The weapons are then function fired and any minor repairs which are necessary are performed. The weapon is cleaned after function firing and thereafter on three successive days, using an approved method of cleaning. The cleaning is followed by a detailed inspection to determine positively whether the weapons meet required standards. The rifles are then packaged in accordance with specified instructions.

17. Serviceability Chart (fig. 23)

a. The serviceability chart is a tabulation of the special requirements and serviceability standards for weapons in the hands of troops, to accompany troops overseas, or to be placed in storage for reissue.

b. By referring to the serviceability chart, the inspector may readily determine the serviceability of a weapon in accordance with its future disposition.

18. Care and Cleaning

a. To prevent corrosion, reoil disassembled matériel immediately following cleaning, and again prior to reassembly. Carefully clean corrosion preventives from matériel received from storage (refer to TM 9–850).

b. Instructions for cleaning and lubricating the rifle by the using arm are explained in FM 23–5. General instructions for care, preservation, and lubrication are covered in TB 9–2835–9. Cleaning and lubrication materials are listed in SNL K1 and their use explained in TM 9–850.

SERVICEABILITY CHART—RIFLES, U. S., CAL. .30, M1, M1C, & M1D

ITEM	IN THE HANDS OF TROOPS	TO ACCOMPANY TROOPS OVERSEAS	TO BE PLACED IN STORAGE FOR REISSUE
FINISH	Exposed surfaces should be dull enough to prevent glare.	Intact enough to prevent glare.	Approximate new finish.
STOCK	Not damaged to extent that it will affect strength.	Seasoned checks, small dents and insignificant cracks are acceptable.	Approximate appearance of new stock. Should be sanded and refinished if necessary. Patch work and reinforcing that does not affect strength is acceptable.
HAND GUARDS	Not damaged so as to affect strength. Looseness when assembled to rifle is acceptable.	Seasoned checks and cracks which are not at critical points are acceptable. Looseness when assembled to rifle is acceptable.	Seasoned checks and cracks which have been reinforced by pins are acceptable. Looseness when assembled to rifle is acceptable.
BORE	Pitting less than the width of land or groove and less than 3/8" long is acceptable.	Fine uniform pitting but with sharp lands is acceptable.	A few fine pits but with sharp lands are acceptable.
BREECH BORE	Max. 0.310	Max. 0.306	Max. 0.305 Use gage 41-G-28
BARREL DIA. (OUTSIDE)	Min. 0.5995 Use gage 41-G-236	Min. 0.5995 Use gage 41-G-236	Min. 0.5995 Use gage 41-G-236 RA PD 91207
GAS CYLINDER DIAMETER (INSIDE)	Max. 0.5320 Use gage 41-G-198-425	Max. 0.5320 Use gage 41-G-198-425	Max. 0.5320 Use gage 41-G-198-425
HEADSPACE	Min. 1.940 Max. 1.950 Use gage 41-G-200-130	Min. 1.940 Max. 1.950 Use gage 41-G-200-130	Min. 1.940 Max. 1.946 Use gage 41-G-200-100
PISTON DIAMETER	MIN. 0.525	MIN. 0.525	MIN. 0.525
TRIGGER PULL (RIFLE, M1)	Min. 5 1/2 lb Max. 7 1/2 lb	Min. 5 1/2 lb Max. 7 1/2 lb	Min. 5 1/2 lb Max. 7 1/2 lb
TRIGGER PULL (RIFLES, M1C & M1D)	Min. 4 1/2 lb Max. 6 1/2 lb	Min. 4 1/2 lb Max. 6 1/2 lb	Min. 4 1/2 lb Max. 6 1/2 lb
FIRING PIN PROTRUSION	No check.	No check.	Min. 0.044 Max. 0.059 Use gage 41-G-182-350

RA PD 111364

Figure 23. Serviceability chart.

SECTION V

BARREL AND RECEIVER GROUP

19. Disassembly

a. GENERAL. Remove and disassembl barrel and receiver groups (figs. 24 and 25) as outlined in FM 23–5.

b. REMOVING BARREL FROM RECEIVER (FIG. 26). The barrel should be removed from the receiver only when rebarreling is necessary and then only by fifth echelon organizations. To remove, pass the barrel into fixture, muzzle end first, until rib on barrel stops against shoulder in fixture. Position wrench on receiver as near to the barrel as possible and unscrew the receiver (counterclockwise) from the barrel.

Note. Never place the wrench on the rear of receiver, as this will cause distortion.

c. FOLLOWER AND SLIDE ASSEMBLY. Disassemble follower and follower slide (fig. 24) only when repair or replacement of parts is necessary. If necessary to disassemble, insert the blade of a screw driver under front end of slide (fig. 27), pry upward and forward, unlocking slide from follower.

d. GAS CYLINDER GROUP. (1) *Front sight screw.* Loosen the front sight screw (fig. 25) before attempting to remove the gas cylinders which have been modified, that is, those having a cut extending from the front sight base dovetail downward to the lower splines. Unless the front sight screw is loosened, damage may result to the barrel and gas cylinder. The front sight screw may be so tight that binding action of the gas cylinder on the barrel will make it difficult to remove the gas cylinder by lightly tapping on the bayonet lug (as prescribed in FM 23–5).

(2) *Front sight screw seal.* To remove the front sight screw seal (fig. 25), file off its exposed surface, and with a $\frac{3}{16}$-inch hexagonal socket head set screw wrench, back out the screw. Replace and tighten the screw.

Note. The seal is no longer required and is not to be replaced after it has once been removed.

(3) *Gas cylinder lock.* Gas cylinder locks which are extremely tight fitting may be removed by the use of gas cylinder lock assembling wrench. Fit wrench over contour of gas cylinder lock and unscrew (counterclockwise). (See fig. 28.)

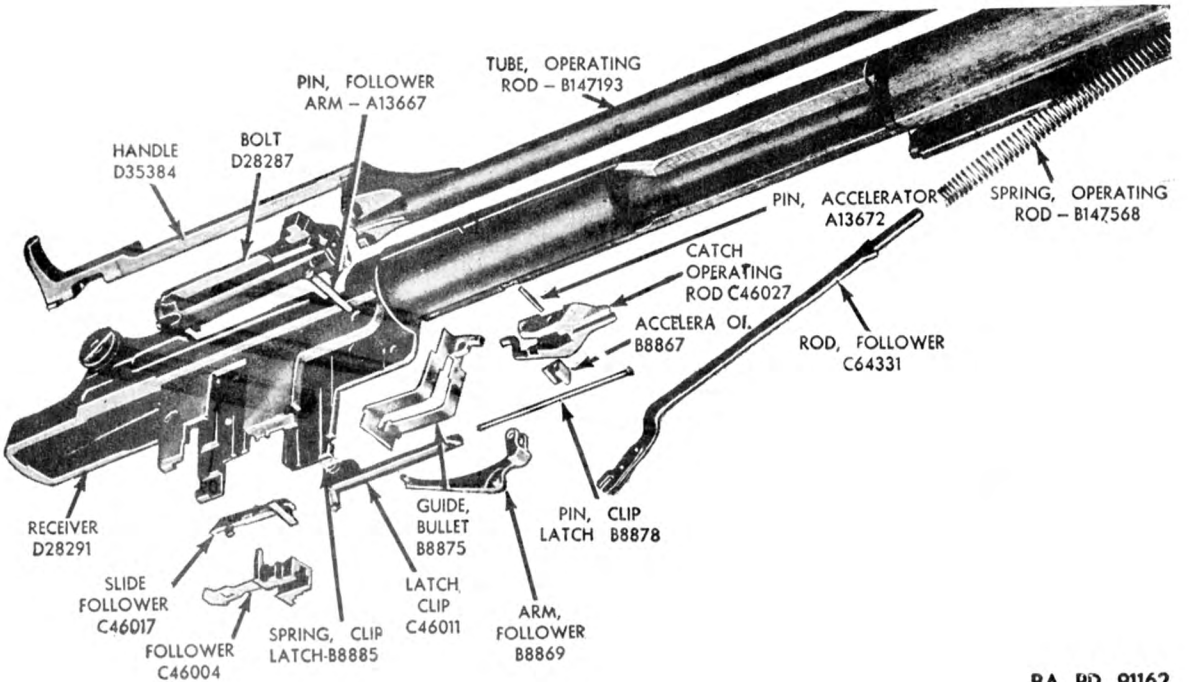


Figure 21. Receiver group—disassembled view.

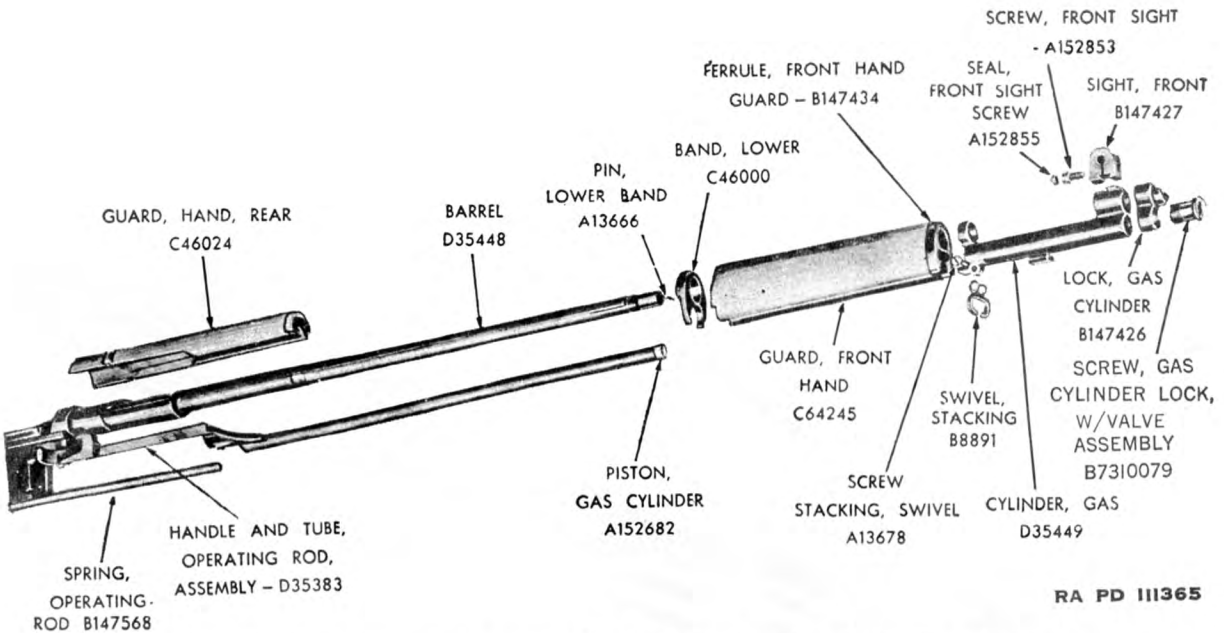


Figure 25 Barrel, with gas cylinder group (spline type), hand guards, and operating rod assembly.

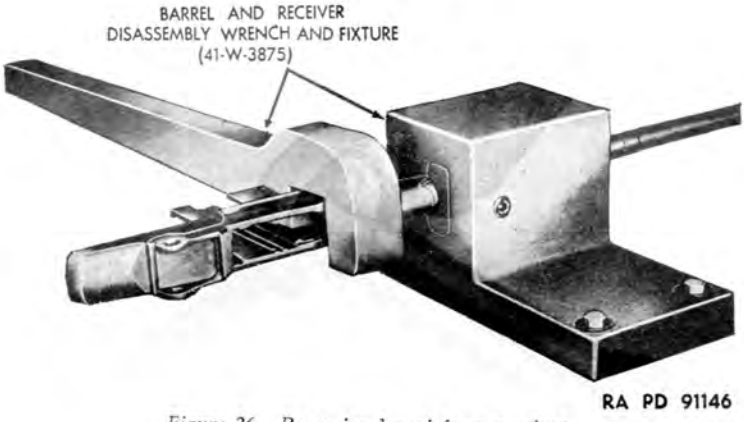


Figure 26. Removing barrel from receiver.

e. Removing and Installing Extractor without Removing Bolt from Rifle (fig. 29). To remove or install the extractor without removing the bolt from the rifle proceed as follows, using bolt, wire brush, and screw driver combination tool:

(1) Retract the bolt and insert the wire brush into the chamber of the barrel until the shoulder of the tool bears against the breech end of the barrel.

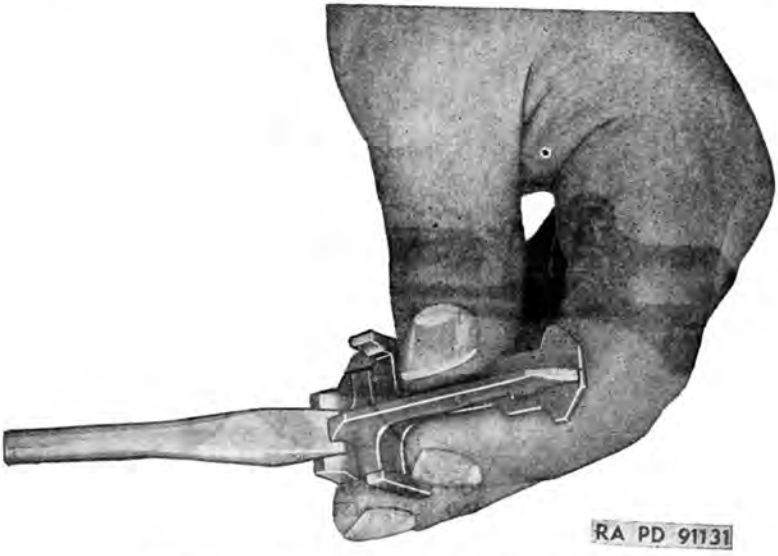


Figure 27. Removing follower slide from follower.

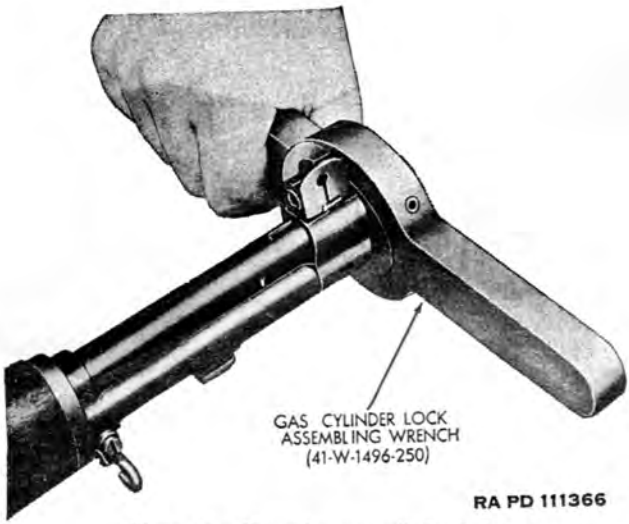


Figure 28. Removing gas cylinder lock.

(2) Allow the bolt to close slowly, turning the tool so that the lug is under the extractor.

(3) Force the operating rod forward, holding the bolt against the tool, and turn the combination tool counterclockwise so that the lug pushes the extractor out of its seat and out of engagement with the ejector.

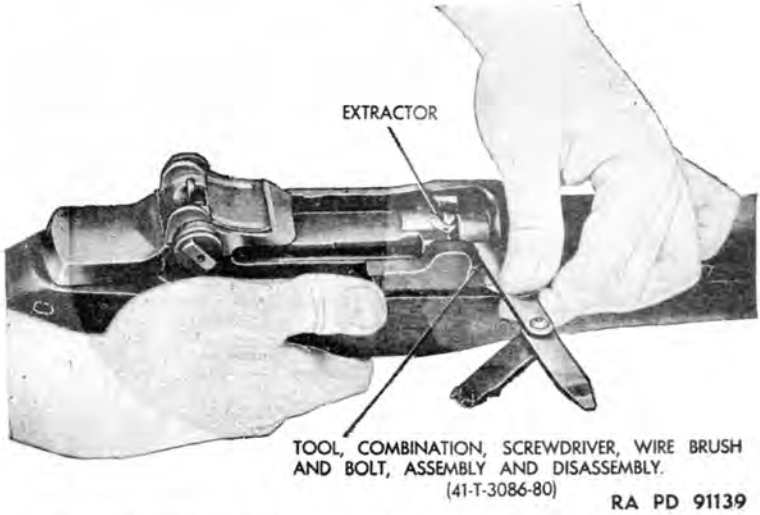


Figure 29. Removing extractor with combination tool (41-T-3086-80).

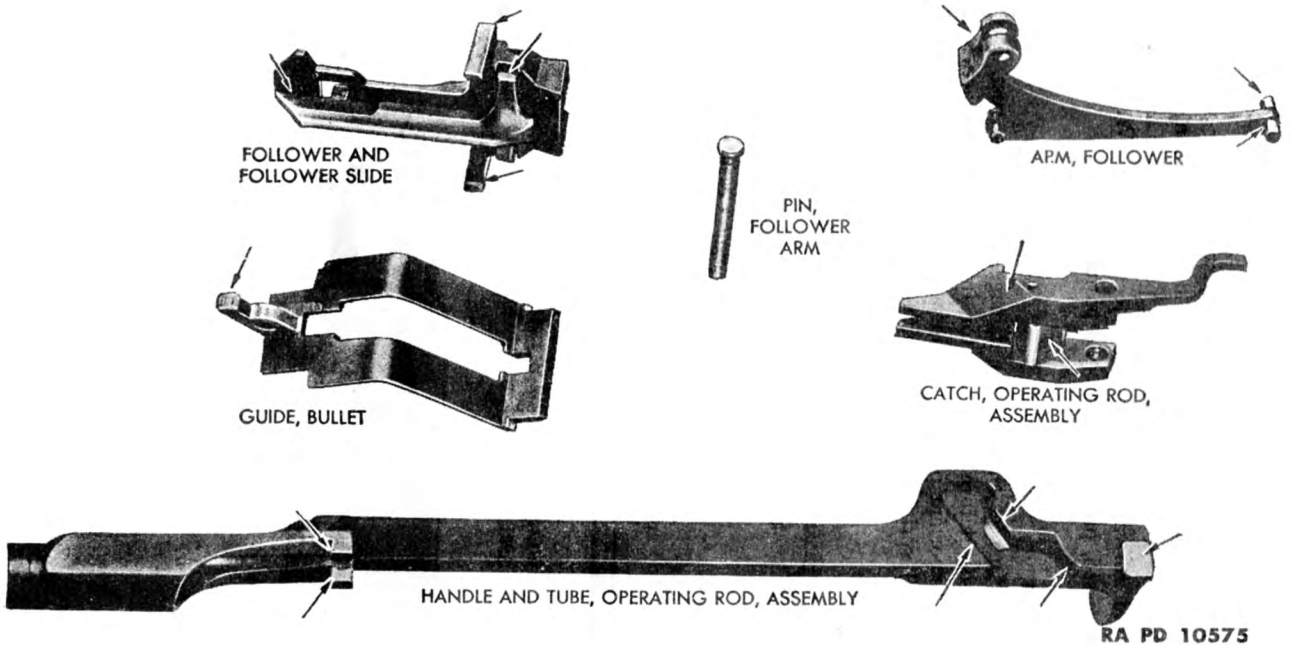


Figure 30. Parts of receiver group—important points to be inspected.

(4) Retract the bolt slowly, thus allowing removal of the extractor spring plunger assembly and cartridge ejector assembly. The firing pin can then be withdrawn from its well.

(5) To install, place ejector and ejector spring, extractor and extractor spring in the bolt. With the brush of the combination tool in the chamber, line up the notches of the firing pin and ejector and force the operating rod forward, compressing ejector spring. While holding spring compressed, press extractor into position.

20. Inspection

a. GENERAL. Inspect all parts for damage, wear, burs, rust, foreign matter in recesses, deformation, and for function and free action with mating parts. Important points to be inspected are shown in figures 30 and 31. Test all springs for set, minimum free length, and fracture.

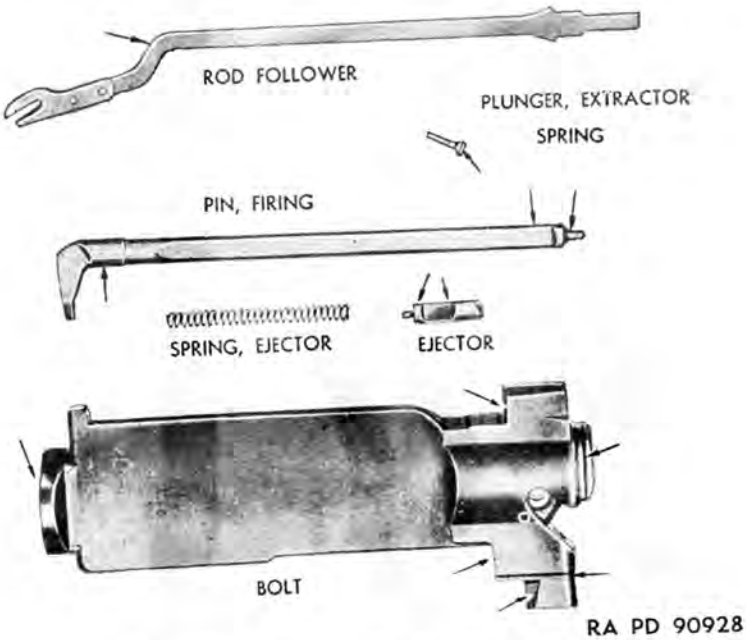


Figure 31. Follower rod and parts of bolt group—important points to be inspected.

b. FOLLOWER ROD. Inspect follower rod (fig. 31) for a pinched or worn fork and for loose rivets. The follower rod should have a long fork; therefore, replace all rods having short forks. (See fig. 32.) This is necessary to prevent the rod from disengaging when grenades are

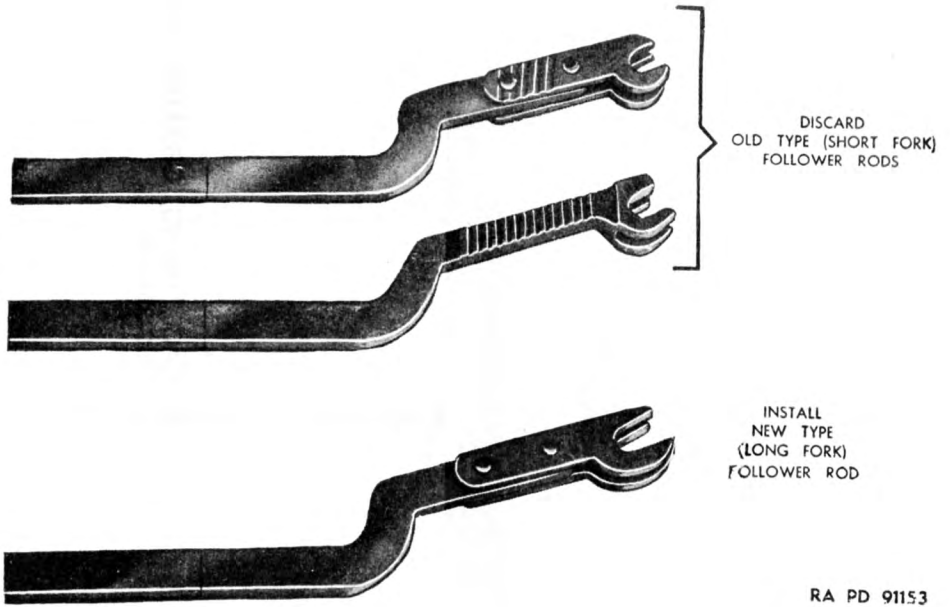


Figure 32. Old and new type follower rods

being launched. Dispose of the old type (short fork) follower rod in accordance with existing regulations for unserviceable equipment.

c. Operating Rod Spring (fig. 24). Inspect the operating rod spring for free length and load in the following manner, using operating rod spring gage:

(1) *Testing free length.* Insert the operating rod spring in tube of gage and raise rod until bottom of stop collar is flush with top surface of gage. (See fig. 33.) Note position of operating rod spring in regard to top face of tube. If spring does not protrude beyond top face of tube,

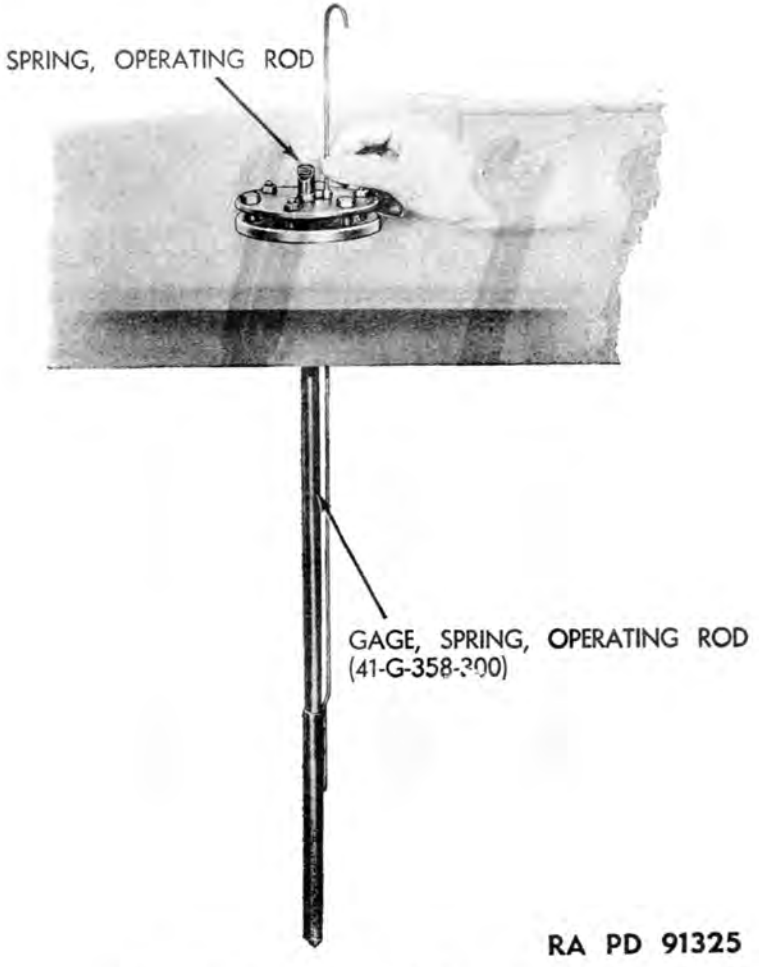


Figure 33. Gaging free length of operating rod spring.

the maximum free length of 20¼ inches is satisfactory and the spring is serviceable in regard to free length. With the spring still in the tube, allow the rod to return to its original position and test for load.

(2) *Testing load.* Insert the stem of the 5-pound weight in tube of gage and allow its weight to compress the spring. It should compress between 16¾ and 17¾ inches which is indicated by the first 1-inch relief notch cut in the stem of the weight. Note position of this notch in regard to top face of tube. If top face of tube falls within the limits of the relief notch (fig. 34), the load at 5 pounds is acceptable. Next position the 11-pound weight on top of the 5-pound weight and allow their combined weight to compress the spring. It should compress between 11¾ and 12¾ inches which is indicated by the second 1-inch long relief notch cut in the stem of the 5-pound weight. Note position of this notch in regard to top face of tube. If top face of tube falls within the limits of the notch (fig. 34) the load at 16 pounds is acceptable.

d. Operating Rod (fig. 30). Inspect for binding between the barrel and receiver group and the operating rod by installing the rod and bolt

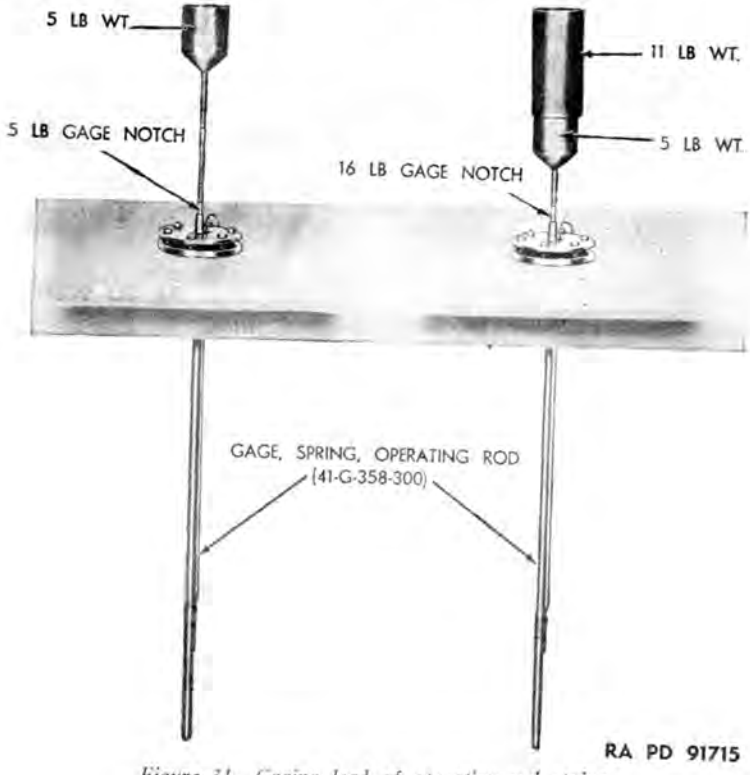


Figure 34. Gaging load of operating rod spring.

in the rifle. As the rifle is tipped up and down, the rod and bolt should be moved from closed to open position and back by their own weight. If there is binding, inspect tube for dents and the handle for deformation, which will cause binding of the under side of the lug on the cut in the receiver. Inspect the piston for scoring and the accumulation of excessive carbon. Inspect the diameter of the piston using no-go piston gage. (See fig. 35.) All no-go piston diameter gages, initially produced are being withdrawn from service for reworking since the dimension of these gages has proven unsatisfactory. Pending the correction of these gages, the piston diameter will be measured with a micrometer and pistons which measure 0.525 inches or more should be considered serviceable. If the piston diameter is below the minimum specified by the service-

Figure 35. Gaging diameter of piston.

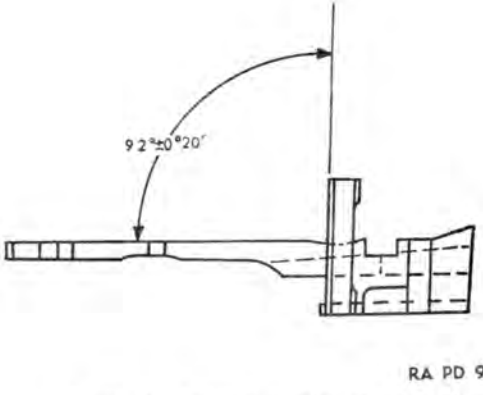


Figure 36. Follower showing correct angle.

ability chart (fig. 23), the operating rod assembly should be disposed of as unserviceable and uneconomically reparable, since an undersized gas piston tends to reduce the power available to operate the weapon.

e. Follower and Follower Slide (fig. 30). Inspect slides on follower for correct angle. An angle of approximately 92° ± 0° 20 minutes must be maintained. (See fig. 36.)

f. Rear Sight Pinion—Early Manufacture. Inspect the pinions visually. Pinions having cracks caused by staking will not be removed from service (fig. 37), provided they do not interfere with functioning.

g. Gas Cylinder Group (fig. 38). Check the inside diameter of gas cylinder with gas cylinder gage. When the threads are cut in the gas cylinder the metal tends to flow and the inside diameter of the threaded section is reduced; therefore, this section must be slightly reamed to allow the gage to be inserted. Use the reamer on one end of the gage to perform this operation. Only the wire edge on top of the threads is removed. Remove all chips after reaming; any chips remaining will cause galling between the gas cylinder and the gas cylinder lock screw, due to the nature of stainless steel. Insert the gage after reaming and if the cylinder is serviceable the index surface of the gage should be level with, or protrude above, the end of the gas cylinder. (See fig. 39.)

Caution: No force must be applied to a gage when a cylinder is being checked. If the gage is forced in the cylinder and rotated it will act as a reamer and will render the gas cylinder unserviceable.

Insert a small rod in the screw driver end of the gas cylinder lock screw and raise the valve from its seat. Inspect for burs and foreign matter. This is an important check as gas allowed to escape through the valve will dissipate the force necessary to drive the operating rod to the rear, thus causing a short recoil malfunction. Inspect function of valve spring to see that it closes the valve tightly in its seat. Replace all gas cylinder lock screws which have burs on the valve face or seat, or where the spring tension is insufficient to seat the valve tightly. All gas cylinder lock screws of early manufacture should be replaced by gas cylinder lock screw with valve assembly.

h. Bolt Assembly (fig. 40). (1) *Bolt.* Test the bolt while it is free for freedom and smoothness of movement, and for locking.

(2) *Firing pin.* Check protrusion of firing pin beyond the face of the bolt using firing pin protrusion gage. (See fig. 41.) In fired position, the nose of the pin should protrude from 0.044 inch minimum to 0.059 inch maximum. Remove all full round firing pins and discard in accordance with existing regulations.

(3) *Extractor.* Test the extractor for grip on the cartridge base, and the extractor spring for tension.

i. Barrel. Inspect the barrel as outlined in section II.

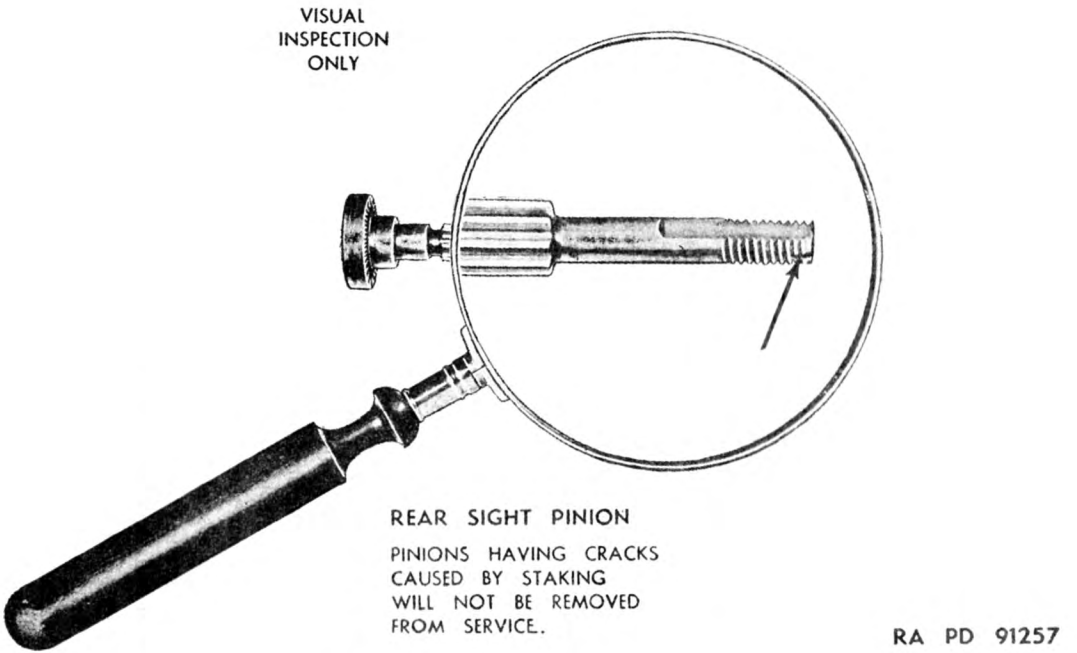


Figure 37. Rear sight pinion—early manufacture.

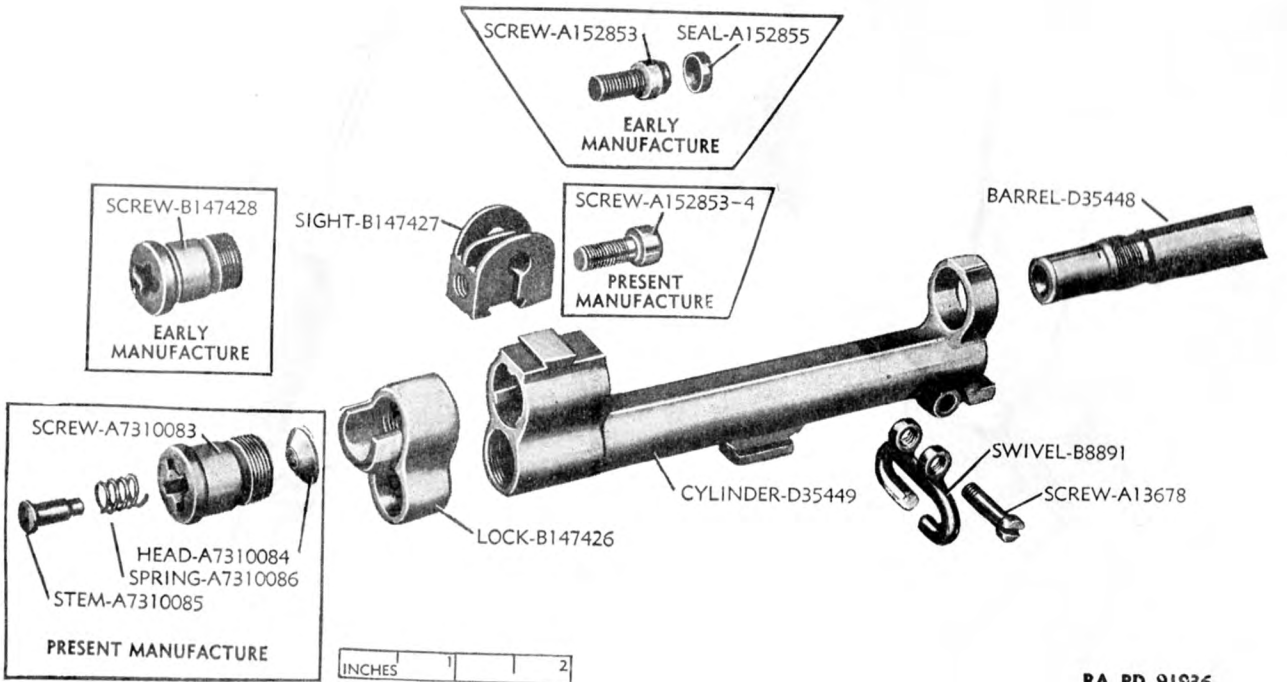


Figure 38. Front sight and gas cylinder group parts.

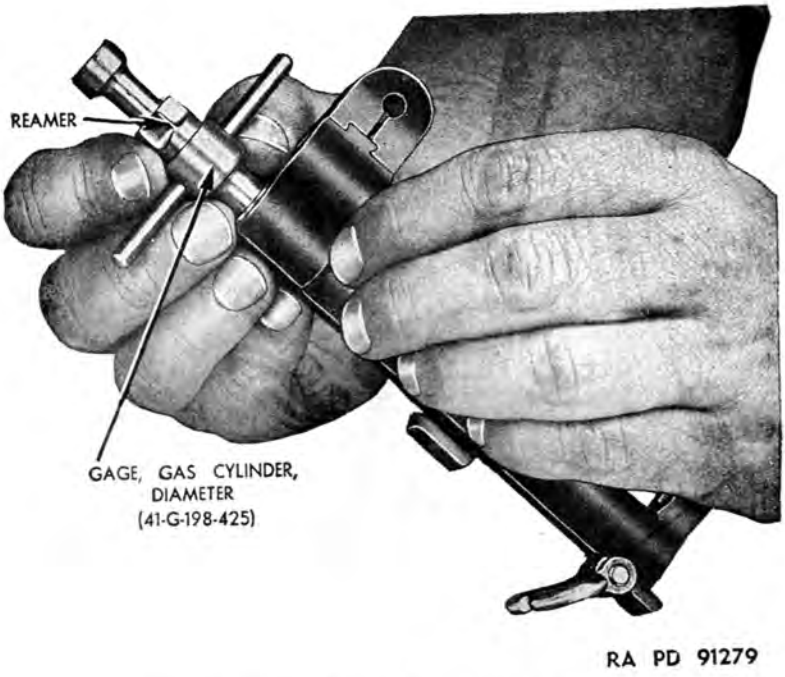


Figure 39. Gaging bore of gas cylinder at gas port.

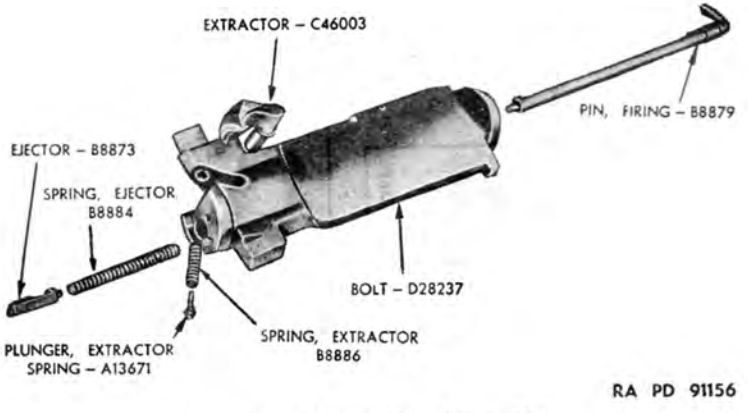


Figure 40. Bolt assembly—disassembled.

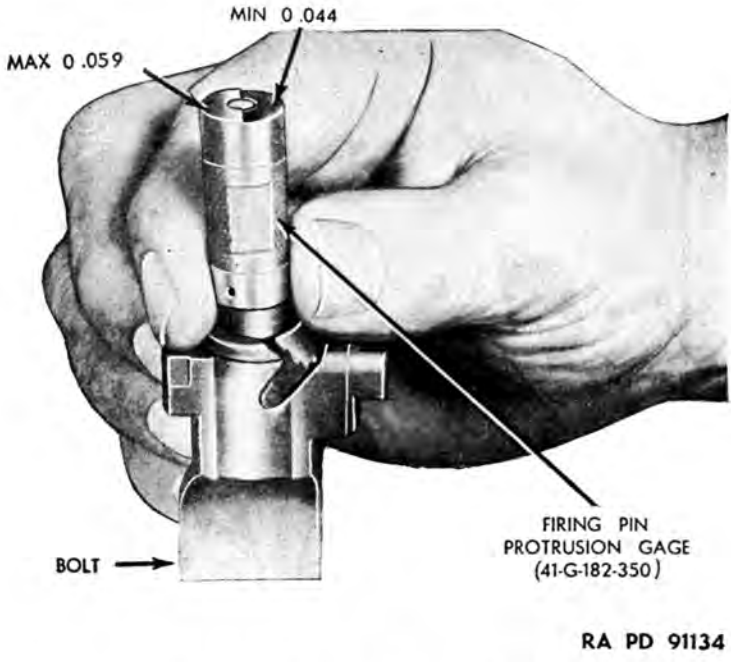


Figure 41. Gaging protrusion of firing pin.

j. Telescope Mount and Bracket (U. S. Rifle, Cal. .30, M1C (Snipfr's) Only) (figs. 42 and 43). Inspect telescope mount bracket for retention on receiver and for burs on male dovetail slides. Inspect slide for function in telescope mount bracket and locking action of slide clamp with locking screws. Check supports for looseness in slide. Inspect screws and screw holes for worn or stripped threads and all recesses for foreign matter.

k. Telescope Mount and Base (U. S. Rifle, Cal. .30, M1D (Sniper's) Only) (fig. 44). Inspect base for looseness on barrel, and for burs. Inspect dowel pin for burs, wear, and for looseness in base. Inspect knob for looseness on screw and for worn knurling. Inspect function of plunger and spring with knob. Check bracket and hinge for clamping action with telescope. Inspect all screws and screw holes for stripped or worn threads.

21. Maintenance and Repair, Third and Fourth Echelons

a. Correcting Angle on Follower. If angle on follower is not within the required limits (fig. 36), bend slides to correct angle by lightly tapping with a brass hammer.

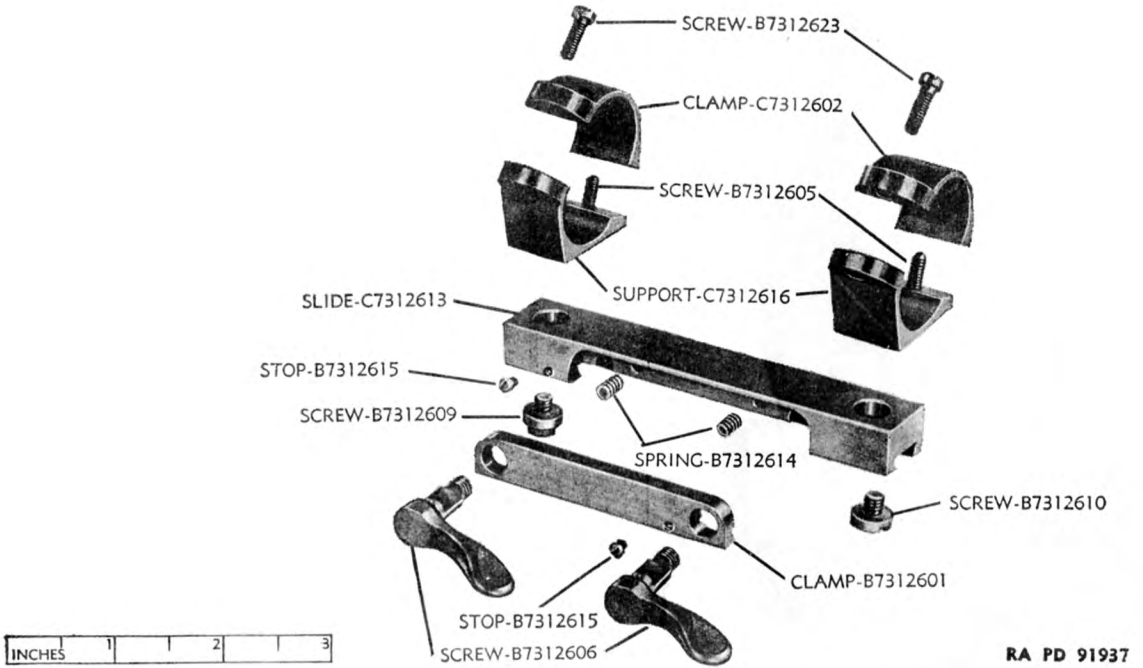


Figure 42. Telescope, mount, assembly—U. S. rifle, cal. .30, M1C (sniper's).

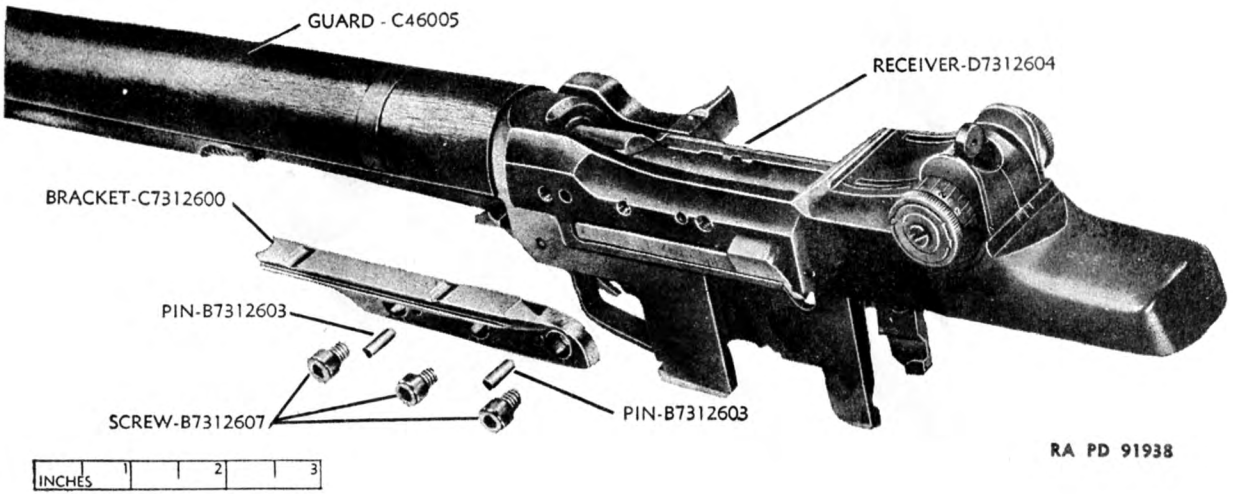


Figure 43. Receiver and bracket, telescope mount, assembly—U. S. rifle, cal. .30, M1C (sniper's).

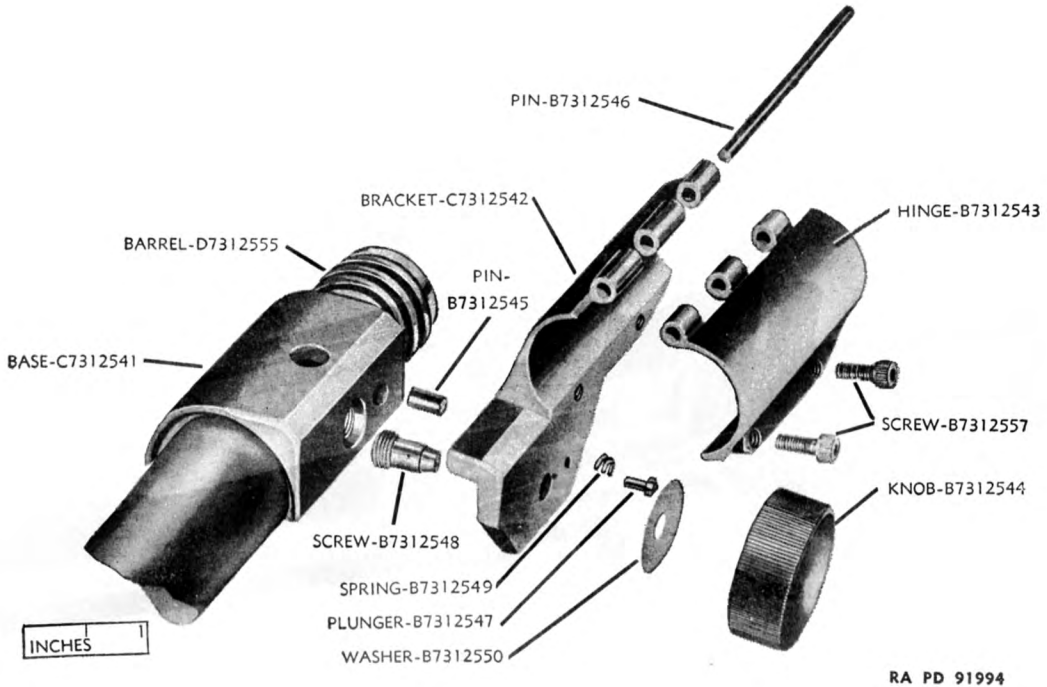


Figure 44. Barrel with fixed base and telescope mount parts—U. S. rifle, cal. .30, M1D (sniper's).

b. Operating Rod. (1) The operating rod tube (fig. 24) is slightly offset to provide clearance at the enlarged portion of the barrel. This offset is *not* to be changed. When the operating rod is assembled to the rifle by the manufacturer, the operating rod is fitted to its respective rifle by bending.

Note. This is an operation requiring considerable training and is not practiced by field organizations. For this reason operating rods should not be exchanged among rifles if it can be avoided.

(2) Remove all rust and accumulated carbon from the tube with a fine abrasive or rifle bore cleaner.

Caution: Exercise extreme care to prevent rounding the edges or reducing the diameter of the piston. Do not use emery or other abrasives on this component because no shine or polish is necessary on the piston.

c. Gas Cylinder. (1) To remove accumulated deposits of carbon from the gas cylinder, remove the lock screw and remove the carbon with the screw driver blade of the combination tool or a similar instrument. The gas cylinder lock may be removed and the screw reinserted in the gas cylinder and threaded in far enough to break loose the carbon. Exercise care not to cross the threads. The gas cylinder port can be cleaned with a straight punch or the drift on the combination tool. The inside of the gas cylinder is to be thoroughly wiped clean and oiled. A few drops of oil placed between the rear gas cylinder lug and the operating rod, with the muzzle tipped down, will be sufficient. Hand operate the rod through a few cycles to distribute the oil properly. Remove any rust on the outside of the cylinder, using rifle bore cleaner or fine abrasive. Remove rust on the barrel at this point in a similar manner.

(2) If the bayonet lug is worn to a loose fit with the ways in the bayonet, the lug may be peened lightly to provide a better fit. Rest the lug on a solid surface when peening.

d. Gas Cylinder Lock. (1) *Excessive thickness.* Difficulty may be experienced in fitting the bayonet to the rifle due to excessive thickness or lack of concentricity of the gas cylinder lock. (See fig. 38.) This is rectified by grinding or filing the portion of the gas cylinder lock that fits inside the bayonet guard.

(2) *Installation.* Position the cylinder on the barrel. (See fig. 38.) Screw gas cylinder lock down as far as possible by hand. Do not force. Unscrew the lock until the screw hole in the lock lines up with the threaded hole in the gas cylinder, permitting assembly of the gas cylinder lock screw. In some cases the lock will have to be unscrewed almost a full turn. Turn screw in several threads with fingers only. Push the gas cylinder lightly toward the muzzle until it rests against the lock and tighten screw.

e. Rear Sight Assembly. (1) *General.* The rear sight assembly of present manufacture (fig. 46) offers no unusual maintenance problems,

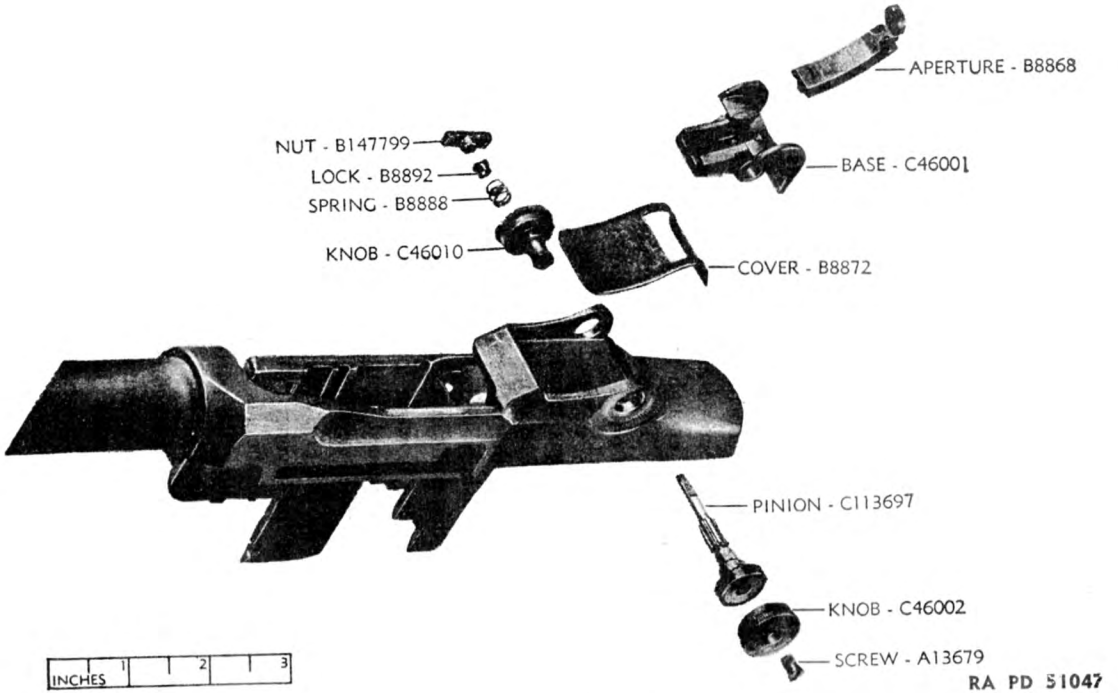


Figure 45. Rear sight assembly—early manufacture.

but differs from sights of early manufacture (fig. 45) in that the elevating pinion and windage knob have been replaced by assemblies. The elevating knob assembly replaces the elevating pinion, elevating knob, and elevating screw. This assembly cannot be disassembled and no attempt is to be made to disassemble it. If refinishing is required, it is to be refinished as a unit. The windage knob assembly will be handled in the same manner. This assembly replaces the windage knob, the rear sight nut, rear sight nut lock, and rear sight nut lock spring. The new assembly is designed to overcome the requirement for loosening and retightening the rear sight nut between sight settings. In the case of this sight, the pinion is not to be staked after assembly.

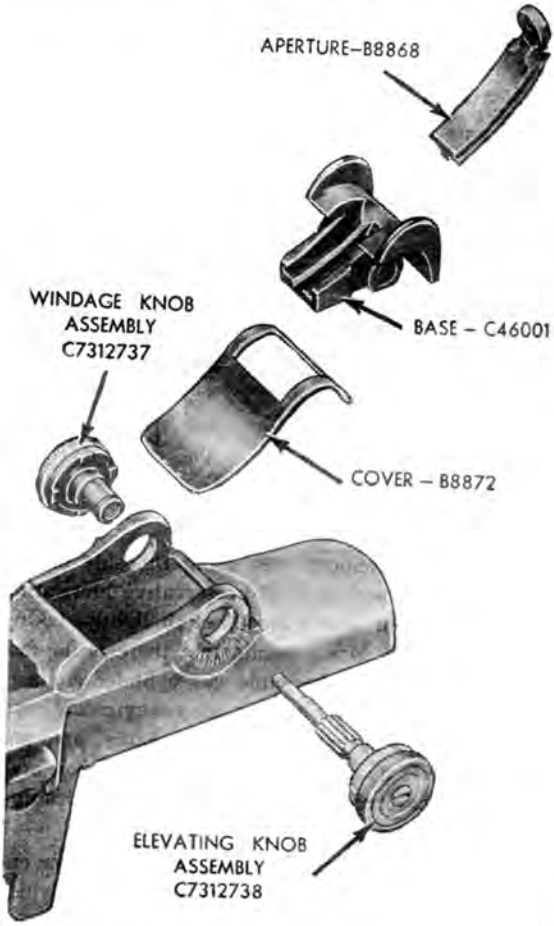


Figure 46. Rear sight assembly—present manufacture.

(2) *Staking rear sight pinion—early manufacture.* When assembly and final adjustments of the rear sight of early manufacture are completed, lightly stake the rear sight pinion as shown in figure 47, to prevent the nut from becoming lost in service. An automatic punch, if available, can be used to better advantage than rear sight pinion punch when performing this operation.

Note. Place a lead bar or piece of hard wood under the elevating knob before staking, so as not to damage rear sight assembly.

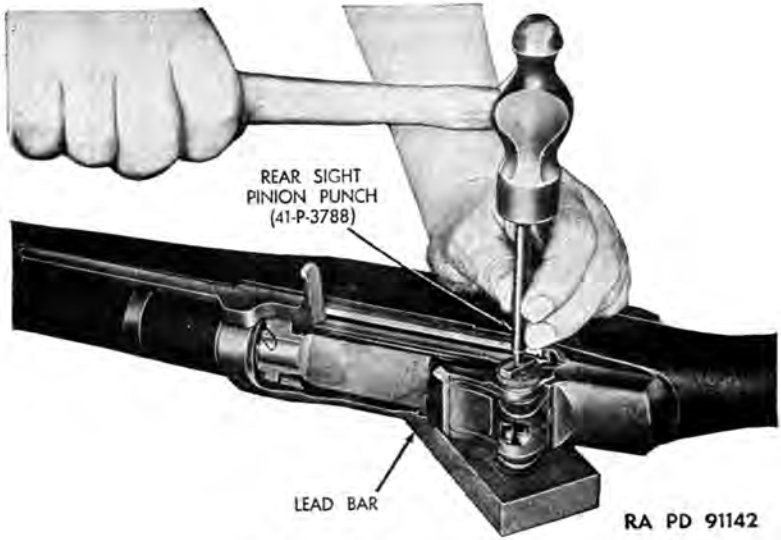


Figure 47. Staking rear sight pinion.

f. Barrel. (1) *Rust on barrel.* Remove rust from the side of the barrel by rubbing with a cloth and wiping with preservative lubricating oil (special). If this is not sufficient, use a crocus cloth lightly, taking care not to produce a shiny surface. Make certain that there is no rust or foreign matter in the gas port and where the gas cylinder contacts barrel. The outside diameter of the barrel at bearing for gas cylinders must not be reduced, since any leakage of gas between the barrel and gas cylinder greatly reduces the power available to operate the weapon and, therefore, promotes short recoil stoppages. Check diameter after cleaning with barrel diameter at gas port gage. (See fig. 48.)

(2) *Carbon in gas port.* The gas port in the rifle barrels is not to be enlarged. It is permissible to remove carbon, corrosion, or fouling, which may have accumulated, by passing a 0.0805-inch drill through the port.

Note. It is not to be drilled larger than 0.0805 inch.

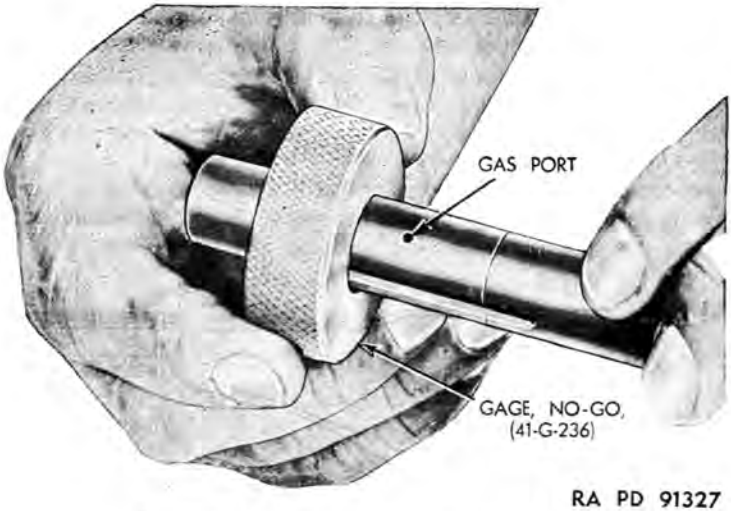


Figure 48. Gaging diameter of barrel at gas port.

If the port is increased in diameter to make one rifle function, and the gas cylinder is replaced at a later date by a cylinder manufactured to the extremes of drawing tolerance, which tends to increase the power of the rifle, a malfunction may occur. The bolt speed will increase, increasing the force with which the bolt strikes the rear of the receiver. The bolt then bounces off the receiver with such speed that the ammunition may not have had time to reach the feeding position, and a feed stoppage occurs. Occasionally the added velocity of the bolt is sufficient to break the receiver, which would be a definite hazard to the firer.

g. Telescope Mount and Bracket (U. S. Rifle, Cal. .30, M1C (Sniper's) Only). A fine-grained, three-cornered sharpening stone or fine, three-cornered file may be used to remove burs from the male and female dovetail slides. Replace screws which are stripped or worn to a loose fit.

22. Maintenance and Repair, Fifth Echelon

a. Operating Rod Modification. (1) The operating rod modification provides a radius at the corner in the operating rod near the operating rod catch notches (fig. 49) to prevent the development of a crack in this section.

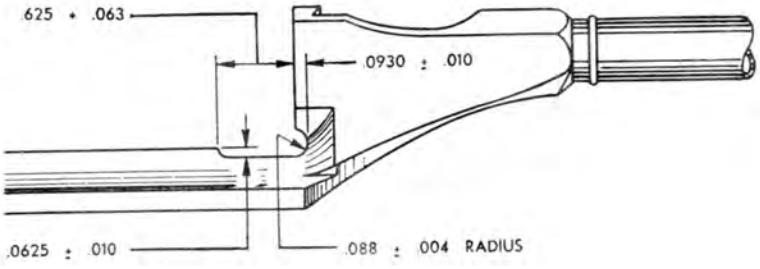
(2) Use a $\frac{3}{16}$-inch end mill of conventional design in performing this modification.

(3) Mount the operating rod on the table of the milling machine with the flat section, on which the drawing number is stamped, perpendicular

to the axis of the cutter. Ascertain starting point of cut with scribe line on improvised depth gage. (See fig. 20.) Start the cut at the rear end and travel forward on rod until the specified radius is produced.

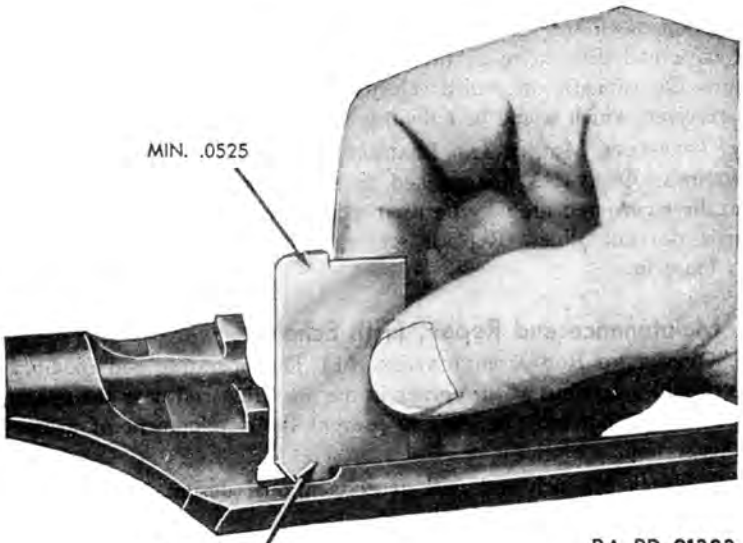
Note. It is essential that the marks of the cutter be lengthwise with the rod rather than perpendicular to it, as any mark running perpendicular will localize stress and form a starting point for fatigue cracks.

Do not use any method of machining that will make scratches or machining marks perpendicular to the rod. Be careful not to remove more material than that specified in drawing. (See fig. 49.)



RA PD 91368

Figure 49. Operating rod modification.



RA PD 91383

Figure 50. Gaging cut with depth gage.

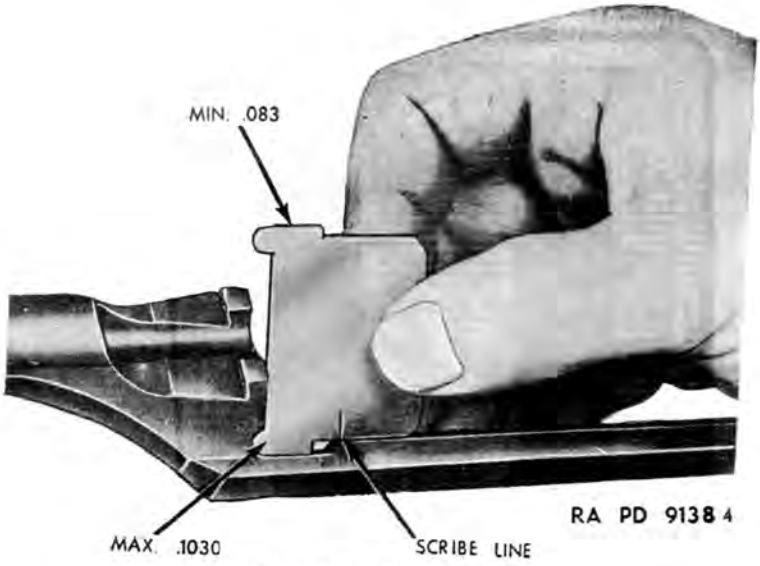


Figure 51. Gaging fillet cut.

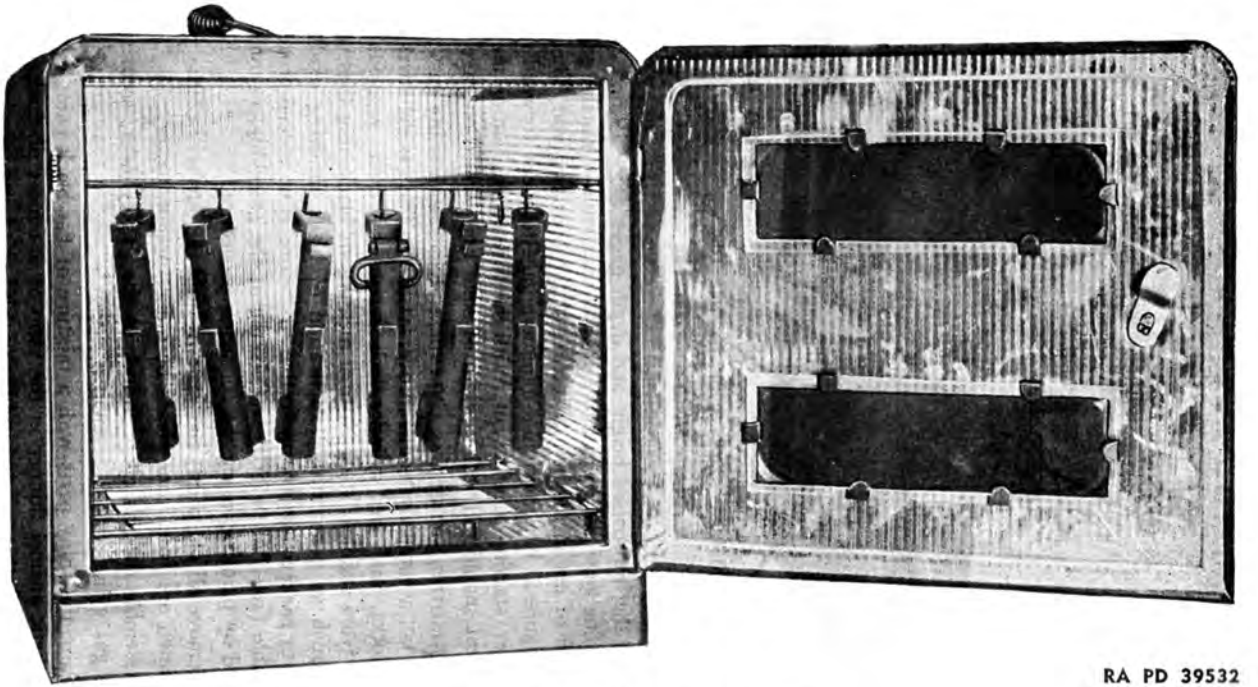
(4) Use the improvised height and depth gages (figs. 19 and 20) to check cut. The gage shown in figure 50 is a maximum-minimum gage to check depth of cut in the handle section of the operating rod. The gage shown in figure 51 is a maximum-minimum gage to check forward travel of the cutter, starting point of cut. With the gage in position on the rod, origin of cut should fall within width of solid line scribed on gage.

b. Refinishing Shiny Gas Cylinders. Rifles with shiny gas cylinders must not accompany troops to oversea bases. The gas cylinders, gas cylinder locks, and gas cylinder lock screws of these weapons are machined from stainless steel. Normal methods of blackening these components, such as penetrating (application of black finishing oxidizing material) or parkerizing, are ineffective; therefore, if no special processes are available (see TM 9–1861), refinishing of the gas cylinders must be performed by painting, using the following procedure:

(1) Remove all old paint, and make certain the surfaces of the parts to be painted are free from grease or other foreign matter.

(2) Assemble the gas cylinder lock to the gas cylinder, securing it with the gas cylinder lock screw.

(3) Paint the shiny parts with a mixture of flat black paint thinned with synthetic enamel thinner in the ratio of 2 ounces of thinner to 1 quart of paint. Both are listed in ORD 3 SNL K–1 and may be requisitioned from Raritan and Benicia Arsenals. The paint may be obtained



RA PD 39532

Figure 52. Gas cylinders suspended in oven.

in quart cans; 1 quart will paint approximately 250 gas cylinders. The thinner may be obtained in ½-pint cans; ½ pint is enough for approximately 1 gallon of paint. Have some additional thinner on hand to clean the paint brushes or spray guns, and for thinning old paint. Be certain that the paint and thinner are mixed thoroughly, then apply with a spray gun or a small, flat paint brush. Take care to prevent paint from running into the bore of the gas cylinder.

(4) Place the painted assembly in an oven (fig. 52), and bake for 1½ hours at a temperature of 300° F. to 350° F. To prevent drying or charring of soft materials, the heat is not to be greater than the maximum temperature prescribed. The baking may be accomplished in any type of improvised oven and in conjunction with any available source of heat capable of producing a relatively low temperature of 300° F. An oven for baking purposes can be improvised from sheet iron; or, if this is impossible, an ordinary domestic-type, kerosene stove oven may be used. The oven may be heated electrically, by gasoline, or by oil, and may be used in conjunction with a field range or portable stove.

Caution: Care must be used to prevent the parts from being subjected to direct or open flame.

(5) When properly applied, the resultant dead-black finish which does not reflect light will be hard, durable, unaffected by the normal heat of the weapon, and highly resistant to abrasion. This method may also be used to blacken other nonfunctioning exterior surfaces, such as folding metallic stocks, butt plates, front sights, sling swivels, and other small parts.

c. Barrel Replacement. (1) *Disassembling.* Separate the unserviceable barrel from the receiver, as described in paragraph 19*b*.

(2) *Assembling.* Without using undue force, screw barrel on receiver by hand until it fits tightly. The receiver should be approximately 15° out of its correct position on barrel to insure a tight fit when final draw is made in the barrel and receiver assembly fixture. Clamp the group in the barrel and receiver assembly fixture with three clamps, tightening the lower clamp first to level receiver. (See fig. 53.) Slide key, located on the indicating arm of the fixture, into the upper gas cylinder spline cut as far as it will go. Pull on the lever, thereby turning the barrel the required distance to bring the indicator to agreement with the qualifying line on the fixture.

Note. Pointer must travel the distance from within lower space cut to qualifying line cut (fig. 53) to insure a tight fit.

Then loosen the locking clamps and remove the assembly from the fixture, using a bar placed through the trigger housing opening in the receiver as a lever to start the assembly from the fixture.

(3) *Checking barrel and receiver assembly fixture.* Check the barrel

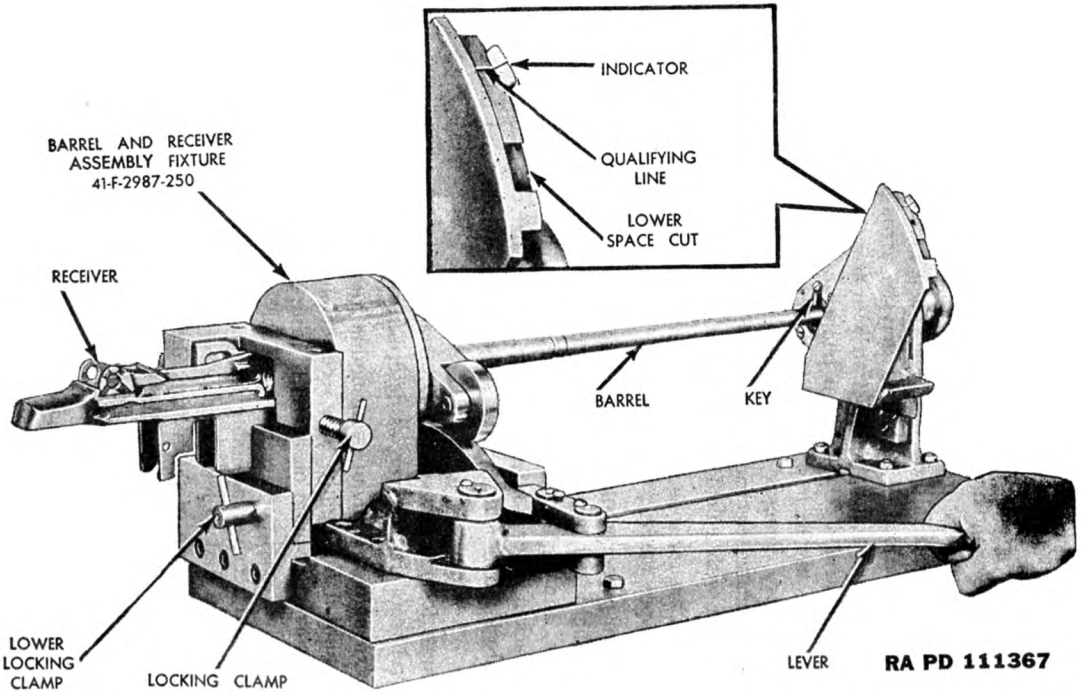


Figure 53. Assembling barrel and receiver.

and receiver assembly fixture (fig. 13) monthly or oftener if necessary to see that barrels are being alined properly. To make a check, use a barrel and receiver that has been assembled in the fixture and slip the barrel alining gage with pin (fig. 9) over the splined portion of the barrel. (See fig. 54.) For this test select a barrel which allows no sideways play of the gage in the spline cut. Insert a ⅜-inch rod through the rear sight pinion holes and suspend the receiver on a pair of parallels or V-blocks just high enough to clear surface of plate. Elevate the muzzle to a level position and block up. Levelness can be found by using the dial indicator on top surface of the gage in the direction of the center line of the barrel. Now using the dial indicator, gage the top surface of the barrel alining gage on the end of the muzzle. If the top surface of the barrel alining gage is parallel to the surface plate, the alinement of the barrel and receiver is correct.

Note. A properly alined barrel should be ±0° 20 minutes (±.0058 per inch on top surface of barrel alining gage) to the horizontal plane of the receiver. (See fig. 55.)

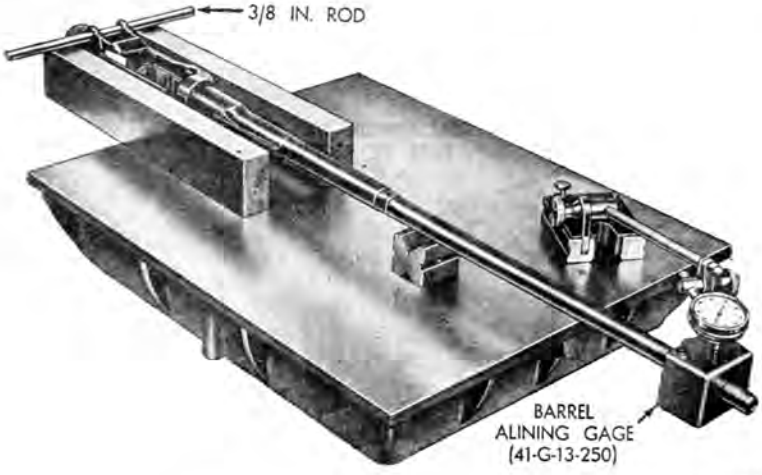


Figure 51. Checking barrel and receiver alinement

(4) *Looseness of barrel in receiver.* If the barrel screws into receiver by hand to within 7° of its assembled position, it is considered to have "light draw." This may be corrected by placing barrel and receiver in assembling fixture and assembling properly. Remove it from the fixture and chuck barrel in a lathe, with the receiver being as close to the chuck as possible. Allow room for the swaging roll. (See fig. 18.) With the roller in tool post, roll the barrel. (See fig. 56.) The edge of the roller

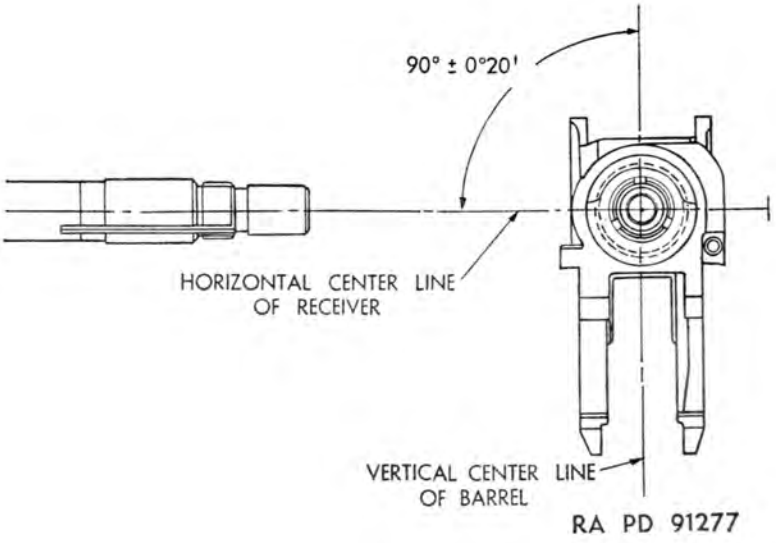


Figure 55. Barrel and receiver assembly.

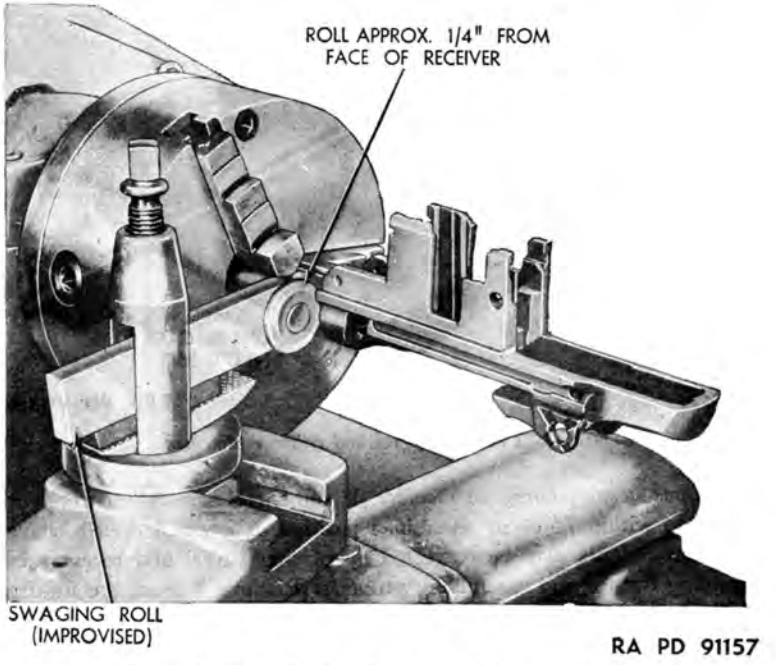


Figure 56. Swaging barrel to insure tight fit on receiver.

should be ¼ inch away from the receiver. Do not loosen the barrel after rolling, as rerolling will be necessary.

d. Headspace Reaming. (1) Wipe the chamber thoroughly with a cotton flannel patch before and after each reaming, and prior to each headspace check during reaming. Screw the short adapter (fig. 11) deeply into the reamer and tighten lock nut. Dip the reamer in lard oil and insert it into the reamer guide. Make certain bolt lug recesses in receiver and bolt lugs on reamer guide are free from dirt and foreign matter. Place the guide and reamer in the receiver (fig. 57) and tighten thumb screw to hold guide in position.

(2) Attach the universal-jointed extension to the reamer and rotate it with a chuck.

Note. If the reamer has been correctly assembled to the adapter it will not cut, but will be held away from the chamber by interference between a shoulder in the guide and the adapter.

Unscrew the adapter from the reamer a little at a time until the reamer begins to cut. Adjusting of the headspace reamer is accomplished by loosening the locking nuts and backing off or advancing the adjusting screw a little at a time, using the field test bolt (fig. 7) and headspace gage named in the serviceability chart (fig. 23) to check for proper adjustment.

(3) When the adapter is correctly adjusted in the reamer, check the tightness of the locking nut. The reamer, once it is adjusted, and if

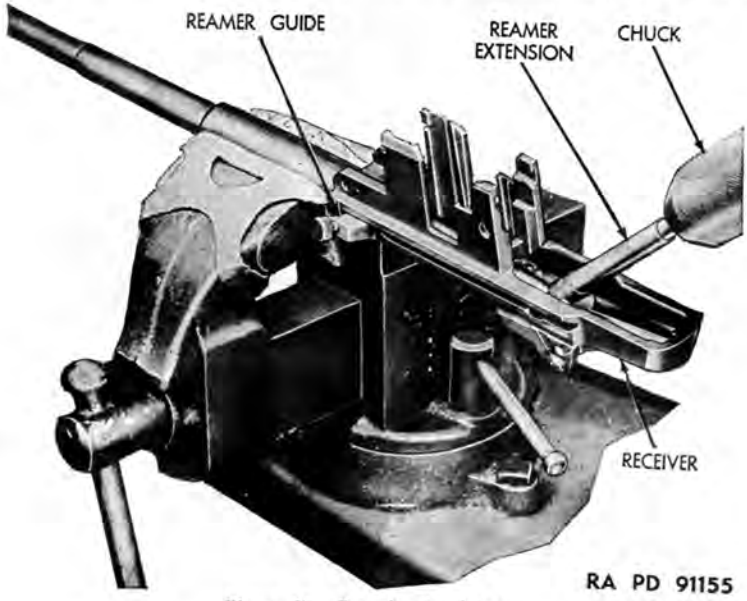


Figure 57. Reaming headspace.

carefully used, will continue to ream to the same dimension until the reamer becomes dull and must be replaced or sharpened.

Note. Any reaming beyond the minimum limit of 1.940 inches reams away a part of the headspace life of the assembly; therefore, make certain all reaming is held to as near the minimum as possible.

Never turn the reamer backward, as such action will chip the lands. Use liberal quantities of lard oil when reaming and wash all chips from the reamer with lard oil each time it is removed from the work. Sharpening stones are furnished for the purpose of keeping the reamers honed properly. Proof fire every rebarreled rifle.

23. Assembly

a. GENERAL. (1) Assemble in accordance with instructions contained in FM 23–5.

(2) Assembly of parts covered in the following paragraphs is performed only by ordnance personnel and therefore not covered in FM 23–5.

(3) Methods used by fifth echelon organizations for assembling parts in mass rebuild are also covered in the following paragraphs.

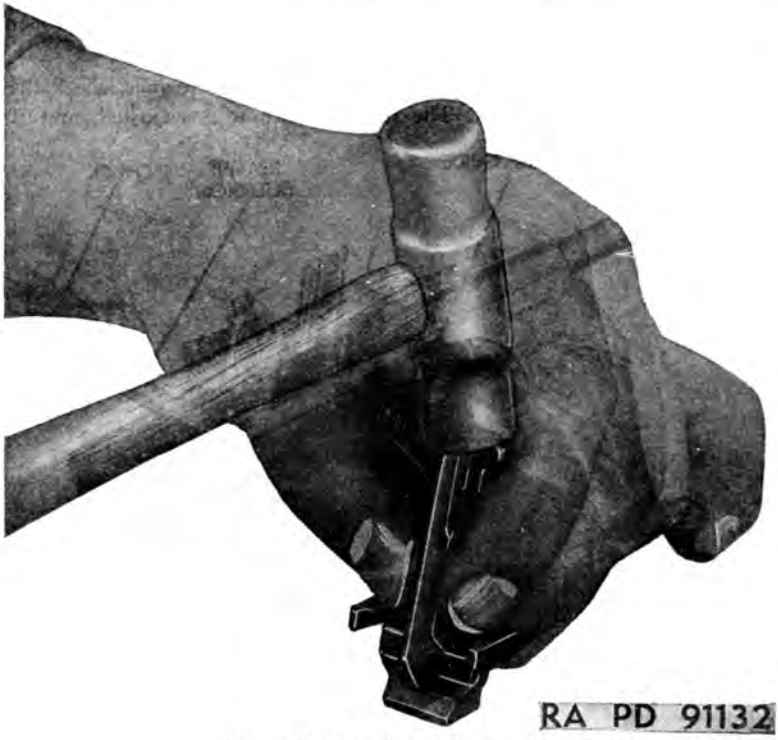


Figure 58. Installing follower slide.

b. Follower and Slide Assembly. To assemble, hook the slide in place in the small end of the follower. Stand the two pieces on end (fig. 58) or mount them at an angle in a vise. With a soft hammer deliver a sharp blow on the rear end of the slide. It will then snap back into position on the follower.

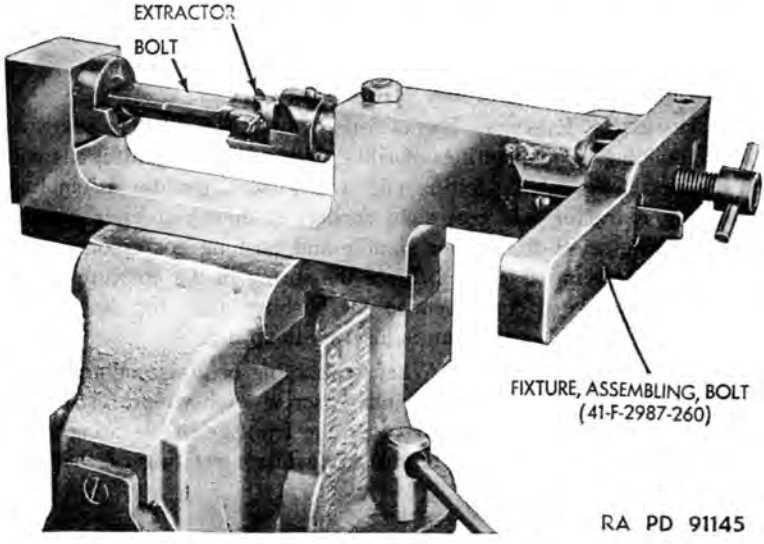


Figure 59. Installing extractor in bolt, using bolt assembling fixture.

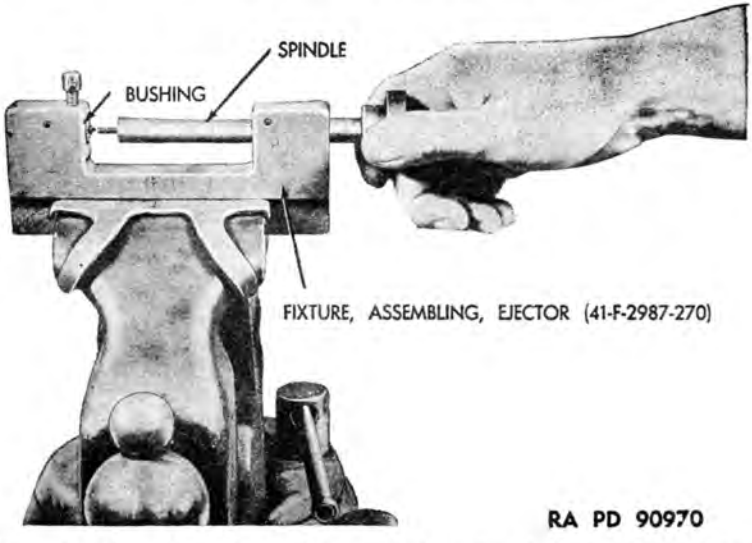


Figure 60. Assembling ejector spring to ejector, using ejector assembling fixture.

c. Assembling Barrel to Receiver. Refer to paragraph 22*c* for assembly of barrel to receiver.

d. Bolt Assembly. The use of the bolt assembling fixture (fig. 13) is the easiest method of installing the extractor (fig. 59) when a large number of bolts are being repaired. Install firing pin, extractor spring, and extractor plunger, also ejector spring and ejector in bolt and clamp bolt in extractor assembling fixture. Start extractor in bolt and tap in place with a soft hammer.

Note. This fixture can also be used to remove the extractor.

e. Assembling Ejector, Extractor, and Rear Sight Springs. When rebuilding large quantities of rifles, fifth echelon organizations will find the ejector assembling fixture (fig. 13) a useful tool for assembling the ejector, extractor, and rear sight springs to their respective components. To use, select the proper spindle and bushing corresponding to the components being assembled. Place the spring in the aperture in the spindle and its related component in the bushing. (See fig. 60.) Press forward on knob until component is inserted in spring.

f. Assembling Rear Sight. When assembling or disassembling large quantities of rear sights, use the windage screw knob wrench. (See fig. 12.) Fit the adjustable split socket over the windage or elevating knob and tighten thumb screw. Use crank to facilitate rotating of the rear sight knobs.

SECTION VI

TRIGGER HOUSING GROUP

24. Disassembly (fig. 61)

Disassemble the trigger housing group in accordance with FM 23–5.

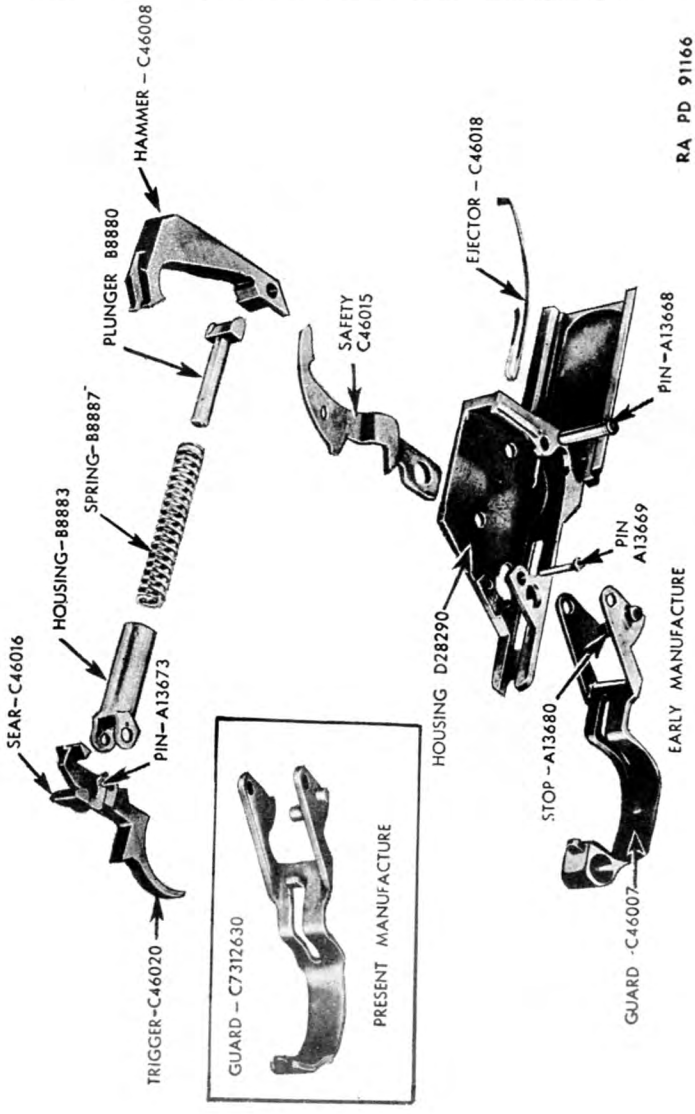


Figure 61. Trigger housing group parts.

25. Inspection

a. GENERAL. Inspect all parts for damage, wear, burs, rust, foreign matter in recesses, deformation, and free action with mating parts. Additional inspection procedure is presented in the following paragraphs.

b. HAMMER. Check the nose of the hammer for wear or chipping. (See fig. 62.) Chips indicate excessive hardness and warrant replacement of hammer. Check sear and trigger notches for wear.

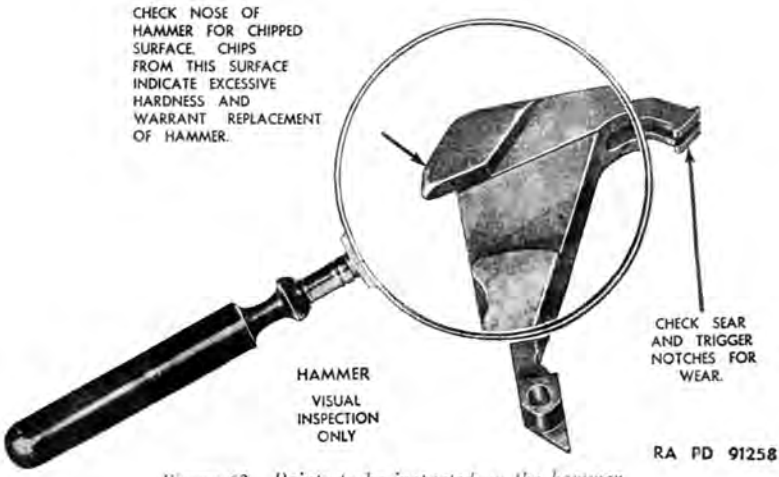


Figure 62. Points to be inspected on the hammer.

Figure 63. Safety—important points to be inspected.

c. SAFETY. The safety is subjected to little wear and therefore fails mainly as a result of breakage. Breaks usually occur at the points indicated in figure 63. Either the type of early manufacture or of present manufacture is satisfactory for use.

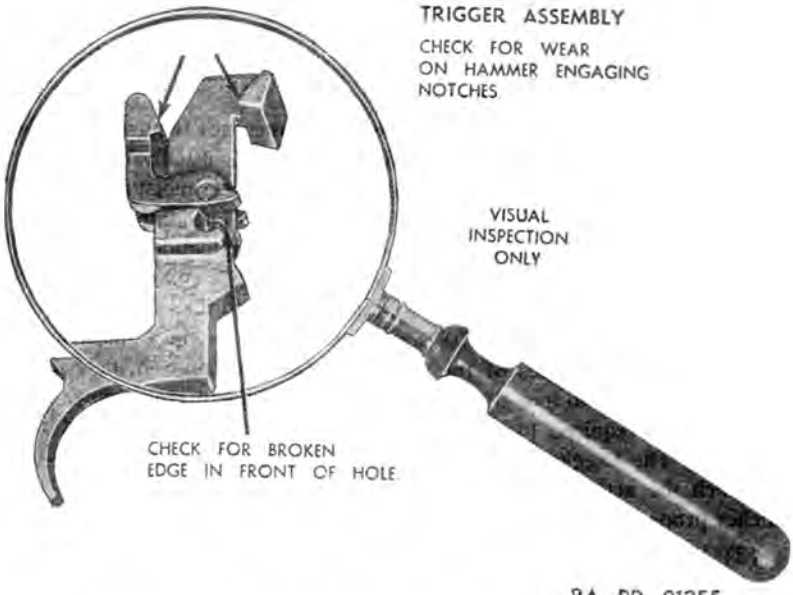


Figure 64. Trigger assembly—important points to be inspected.

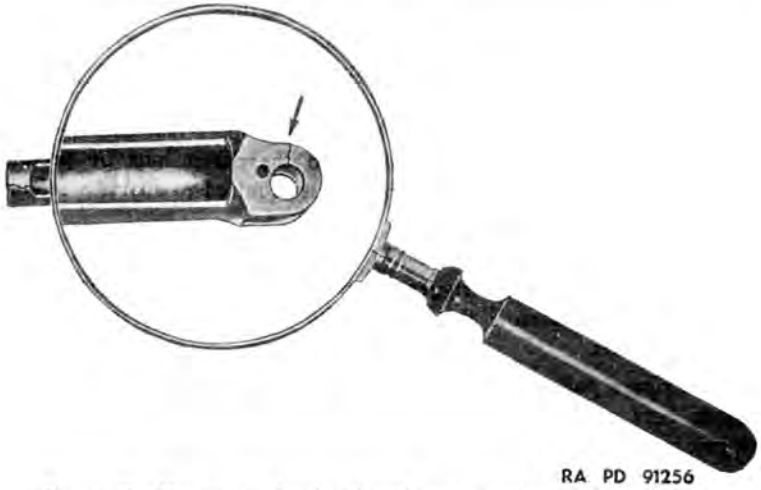


Figure 65. Hammer spring housing—important points to be inspected.

d. TRIGGER ASSEMBLY. Inspect the trigger assembly for wear on hammer-engaging notches indicated in figure 64. Also check for broken edge in front of the hole as indicated.

e. HAMMER SPRING HOUSING. The hammer spring housing usually fails as a result of breakage. Inspect for cracks at the point indicated in figure 65. This is a visual inspection only.

26. Maintenance and Repair

a. TRIGGER GUARD. (1) Excessive force is sometimes required to close the trigger guard on the rifle. (See fig. 61.) This is usually true where the climate is humid, and is the result of an increased moisture content which makes the stock swell. When this condition is encountered, correct by removing very fine shavings of wood from the underside of the stock along the bearing surface of the trigger group with a fine file until the proper fit is obtained. This surface is at a 10° angle to the horizontal. Use extreme care to maintain the 10° angle and to remove the same amount of wood from both sides of the stock. As wood is removed, determine the force required to lock the trigger guard by frequent reassembly. The normal force required to close the trigger guard is reasonable but not excessive. The trigger guard must not be loose as this is the only point at which the action is locked in its bedding. Make certain the guard latches properly.

(2) When the bow in the trigger guard is bent up to interfere with the tip of the trigger, it can be straightened or the tip of the trigger ground off. When the trigger guard locking lugs become worn, peen lightly (fig. 66) to resize them and then dress to shape with a fine file. The trigger guard fork may become sprung in, thus causing binding, or sprung out, thus preventing the hammer pin from extending far enough through for proper bearing. Correct these faults by springing the fork back into correct position.

b. TRIGGER HOUSING. Modify the pads on the upper rear corner of the trigger housings of early manufacture to the dimensions of present manufacture, as shown in figure 67. This is required to enable assembly of current design safeties.

c. CORRECTING TRIGGER PULL. (1) *Trigger pull too light.* This is evidence of worn lugs on the trigger, worn lugs on the hammer, or a weak hammer spring. Examine the components for wear and replace with new components.

(2) *Trigger pull excessive.* This is caused by burs on the lugs of the trigger, burs on the lugs of the hammer that engage the lugs on the trigger, a hammer spring that is too heavy, an obstruction or foreign material in the hammer spring housing that prevents proper seating of the hammer spring, or a bent trigger that rubs against the trigger hous-

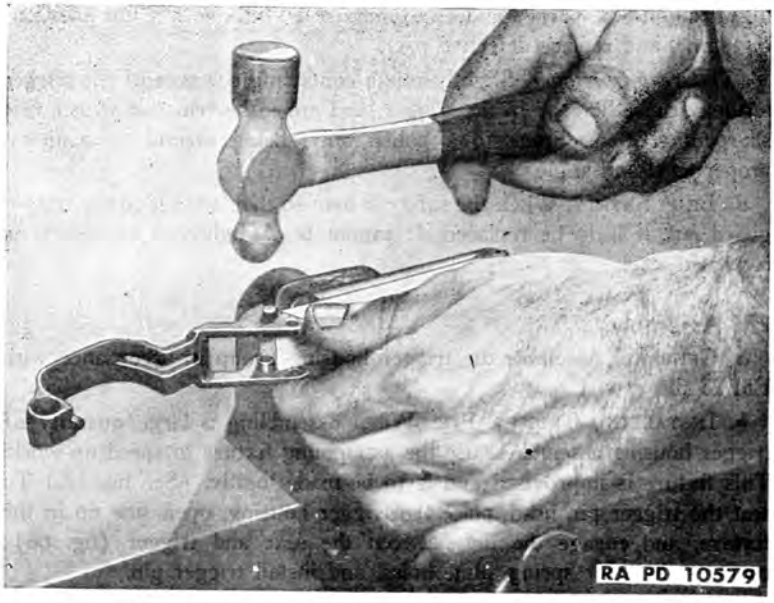


Figure 66. Lightly peening lugs on trigger guard to correct looseness of stock on receiver.

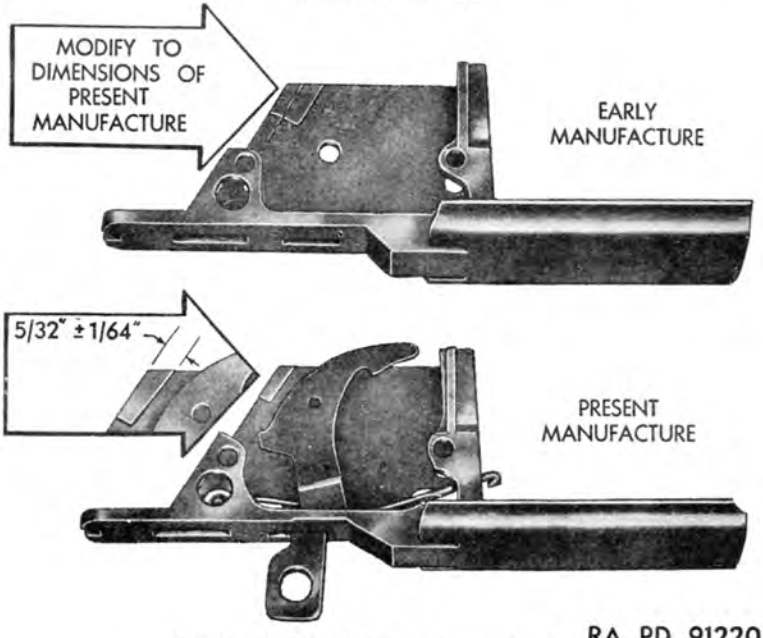


Figure 67. Modification of trigger housing.

ing. Examine the parts for defects, remove all burs with a fine sharpening stone, and replace defective parts.

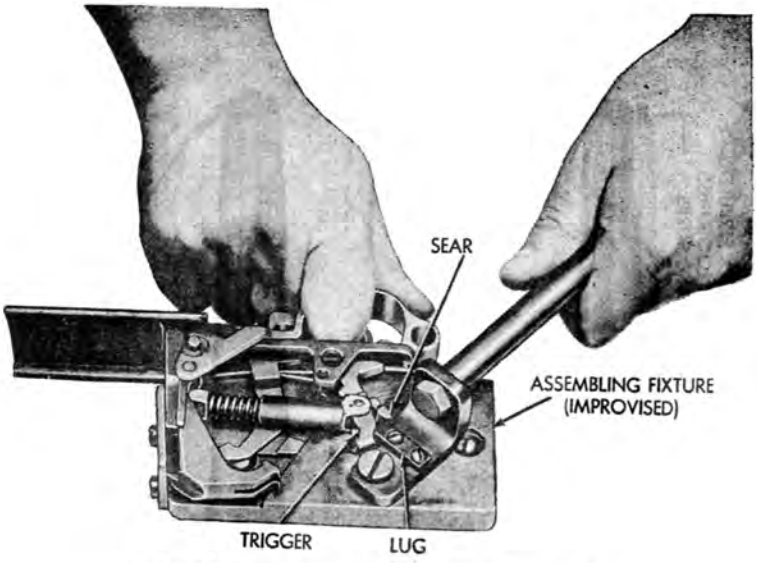
(3) *Creep in trigger.* Slightly rough contacting surfaces of the trigger lug may cause "creep" in the trigger, and are to be removed with a fine sharpening stone. Stone to a polish only, being careful to maintain proper level and angle.

d. BENT SAFETY. When the safety is bent so that it binds in the trigger guard cut, it is to be replaced. It cannot be straightened because it is hardened steel.

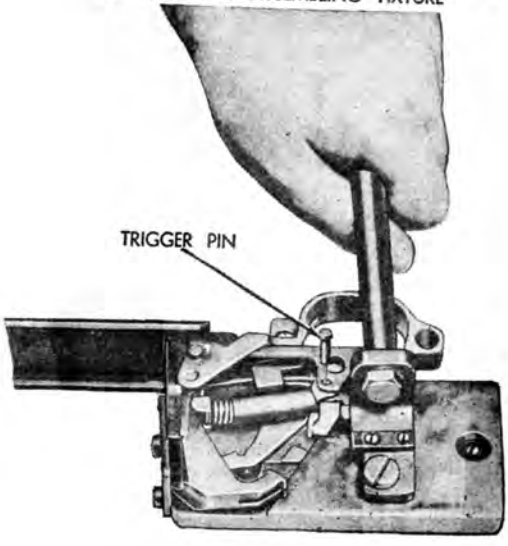
27. Assembly

a. GENERAL. Assemble the trigger housing group in accordance with FM 23–5.

b. INSTALLING TRIGGER PIN. When assembling a large quantity of trigger housing assemblies, use the assembling fixture to speed up work. This fixture is improvised and is to be made locally. (See fig. 17.) To seat the trigger pin head, place the trigger housing, open side up in the fixture, and engage the lug between the sear and trigger (fig. 68); compress hammer spring, aline holes, and install trigger pin.



A – POSITIONING TRIGGER HOUSING ASSEMBLY IN IMPROVISED ASSEMBLING FIXTURE



B – INSTALLING TRIGGER PIN

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Figure 68. Seating trigger pin.

SECTION VII
STOCK AND HAND GUARDS

28. Disassembly

Disassemble the stock and hand guards in accordance with FM 23–5.

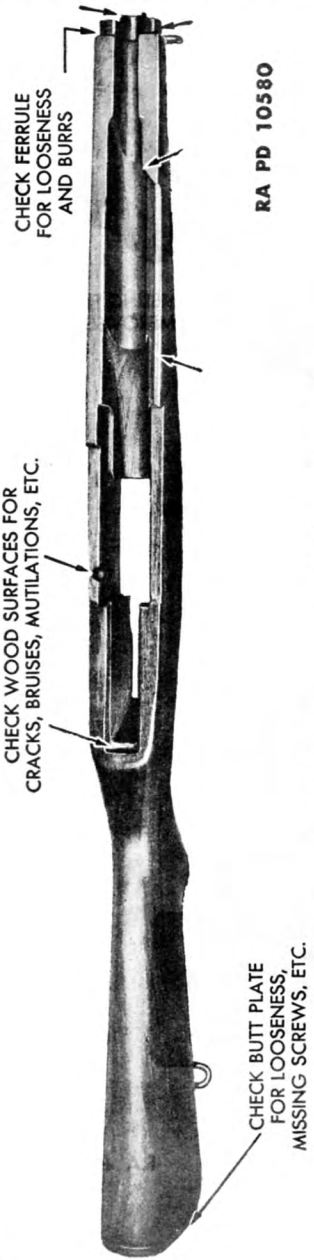

Figure 69. Stock group—points to be inspected—top view.

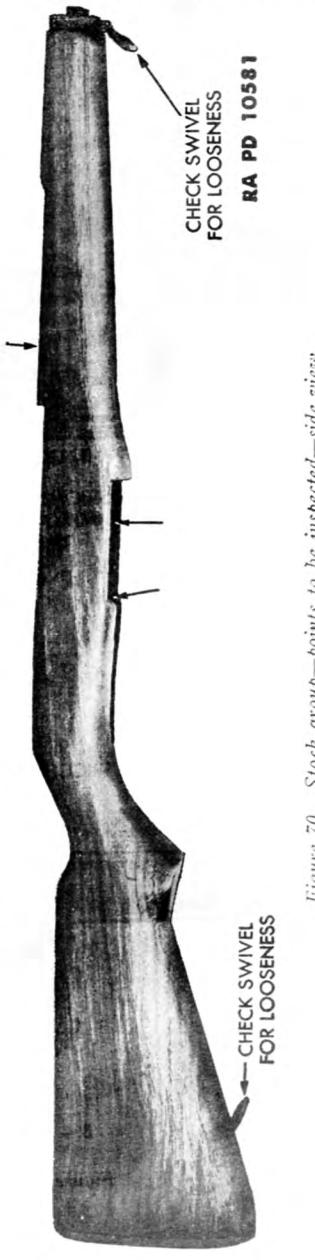

Figure 70. Stock group—points to be inspected—side view.

29. Inspection

a. STOCK. Inspect relief cuts for signs of binding with adjacent assemblies and parts. Important points to be inspected are shown in figures 69 and 70.

b. HAND GUARDS. Inspect the hand guards for defects illustrated in figure 71.

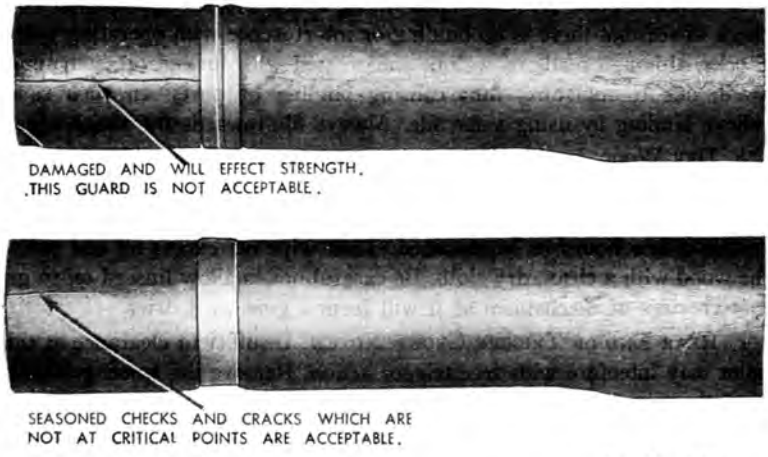

Figure 71. Hand guards—defects.

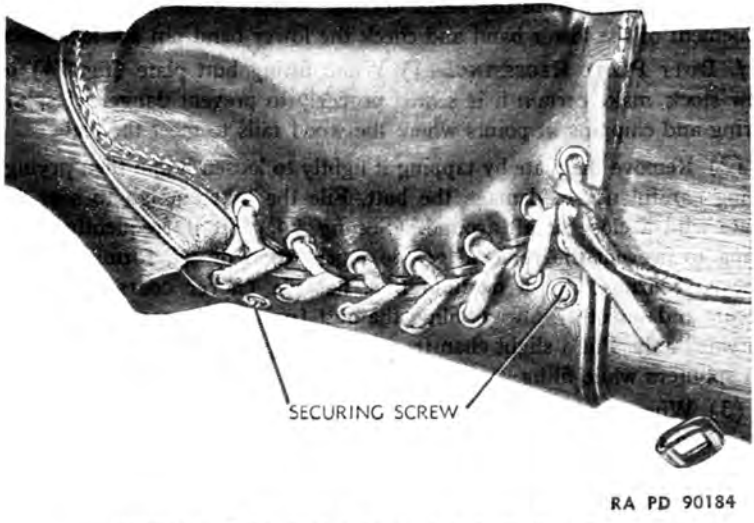

Figure 72. Rifle stock with cheek pad—U. S. rifles, cal. .30, M1C and M1D (sniper's).

c. CHEEK PAD (U. S. RIFLES, CAL. .30, M1C AND M1D (SNIPER'S) (FIG. 72). Inspect for condition of leather, ripped stitches, cuts, and abrasions, and check for missing eyelets and tears between holes. Inspect lacing for wear and tears.

30. Maintenance and Repair, Third and Fourth Echelons

a. FITTING NEW STOCK. When fitting a new stock (figs. 69 and 70), check to see that there is no binding or interference with operating parts. Stocks, although made of walnut and treated with linseed oil, sometimes swell, due to moisture, thus causing binding of parts. In such cases relieve binding by using a flat file. Always file towards the sharp edges.

b. DRY WOOD. In dry climates the wooden parts of the rifle are apt to dry out and shrink. Occasional applications of raw linseed oil will help keep the wood in condition. Apply oil to the wood only, allowing it to remain a few hours to be absorbed. Then wipe off excess oil and polish the wood with a clean, dry cloth. Be careful not to allow linseed oil to get into crevices of mechanism as it will form a gum as it dries.

c. REAR END OF TRIGGER GROUP NOTCH. Insufficient clearance at this point may interfere with free trigger action. Remove the wood gradually until the trigger action is free.

d. OPERATING ROD CUT. Binding at the operating rod cut may seriously interfere with the function of the rifle. Relieve it where necessary.

e. OPERATING ROD BINDING ON STOCK FERRULE. When binding of the operating rod occurs at the lower band, remedy it by removing a small amount of metal from the stock ferrule. Before correcting, check the alinement of the lower band and check the lower band pin for looseness.

f. BUTT PLATE RECESSING. (1) When fitting butt plate (fig. 74) to new stock, make certain it is seated properly to prevent danger of splintering and chipping at points where the wood fails to meet the plate.

(2) Remove the plate by tapping it lightly to loosen it and then prying, being careful not to damage the butt. File the butt enough to seat the plate with a close fit all around. (See fig. 74.) Fit it frequently while filing to prevent the removal of too much wood or the forming of an uneven bearing. Use a medium fine, flat file (never coarse) and file evenly and smoothly, always filing the butt from heel to toe and stroking forward only. Put a slight chamfer on the sharp edges to prevent picking up splinters while filing.

(3) Where wood protrudes beyond the metal of the butt plate, remove the wood until flush with the plate, using a fine, flat file. If necessary to remove wood from the step of a new style butt, use a file with a safe edge.

(4) If the screw is too loose in the stock, bore the hole out with a drill to about twice the major (outside) diameter of the screw. Fashion, from wood, a cylindrical plug to an easy drive fit and coat it with glue.

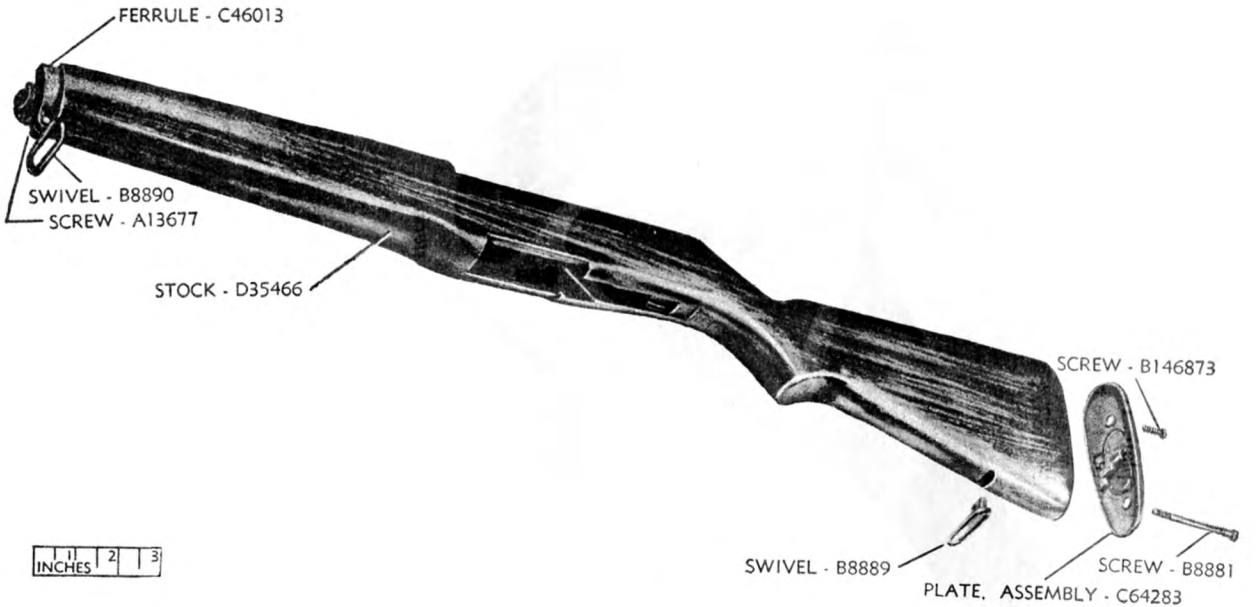

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Figure 73. Stock group parts.

Clean out the hole thoroughly and drive the plug to the bottom. Be certain the plug does not fit too tightly as it will split the stock. When the glue is dry, cut the plug off and file it flush with the face of the butt. Then drill a hole in the plug with a diameter corresponding to the minor (bottom of thread) diameter of the screw, centering it with a punch, and using the butt plate as a template. If the screw crowds the hole too much, remove the screw and ream out the hole slightly.

Figure 74. Fitting butt plate on stock.

31. Maintenance and Repair, Fifth Echelon

a. PATCHING STOCKS. The patching of stocks must be performed by skilled workmen, and is authorized in fifth echelon organizations only. See serviceability chart (fig. 23). Reinforce patches with special screws which are machined from brass. (See fig. 75.) These are nonrequisitionable and are to be made locally. Drill a No. 46 (0.081 inch) hole to receive screw. Install screw, gripping it in the chuck of a hand drill. (See fig. 75.) Cut off screw and file flush so that no rough edges protrude.

b. STOCK FERRULES. The inside of the stock ferrules (fig. 73) are provided with a rib to insure a positive grip on stock. Do not remove ferrules until they have become loose so as to render them unserviceable. Removing a tight ferrule will strip the mating ribs on the stock.

c. HAND GUARDS. It is not necessary to replace a rear or front hand

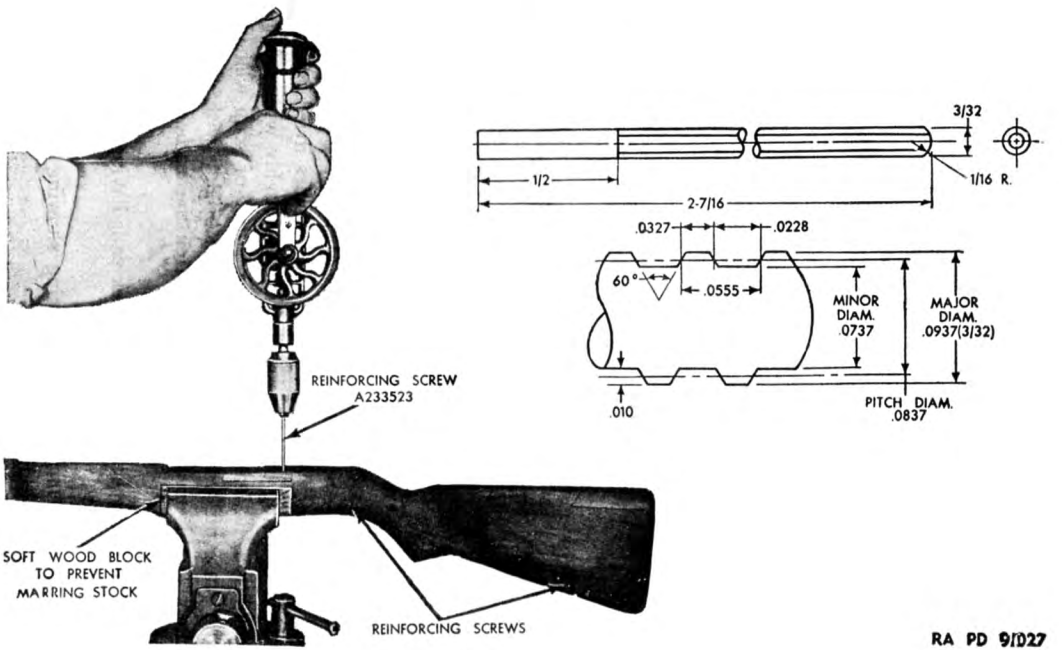

Figure 75. Reinforcing patches on stock.

guard if it is serviceable and holds firmly in position. When replacing a front hand guard, shave the new guard to a tight fit into the ferrule of the lower band. Use improvised tool (fig. 14) to seat the lower band as shown in figure 77. If the rear hand guard is loose, remove and spring the band together slightly (fig. 76), using improvised tool (fig. 16), and refit the guard. Restake a loose band pin, or replace and stake. If a front hand guard spacer is defective, replace hand guard.

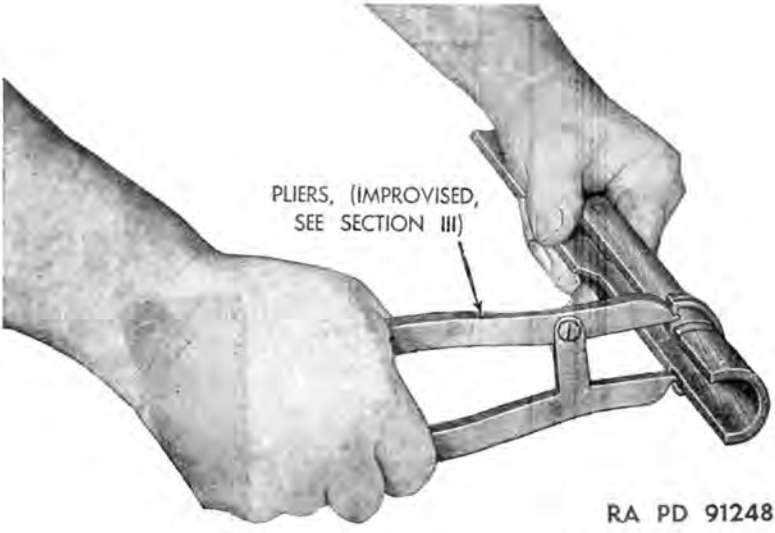

Figure 76. Assembling and removing band.

d. CHEEK PAD (U. S. RIFLES, CAL. .30, M1C AND M1D (SNIPER'S). (1) *Dried-out leather.* When the cheek pad becomes dried-out, as indicated by light cracking or stiffness, clean it thoroughly with saddle soap to help condition the leather. Work a thick lather of soap well into the leather and rinse off with clean water. Polish briskly with a dry, clean wiping cloth. If this treatment does not soften the leather, apply a very light coating of Neat's-foot oil.

(2) *Tears in lacing holes.* Replace cheek pads having tears originating at the lacing holes due to lost eyelets.

(3) *Worn or torn lacing.* Replace lacing showing signs of excessive wear or if tears are indicated.

Figure 77. Seating lower band on barrel, using lower band driver.

SECTION VIII

EQUIPMENT

32. Bayonet, M1 (fig. 78)

a. INSPECTION. (1) *As a unit* (*fig. 78*). Inspect the bayonet as a unit for appearance and general condition, fit, and positive retention on rifle, and looseness of components.

Figure 78. Bayonet, M1 and bayonet scabbard, M7—assembled view.

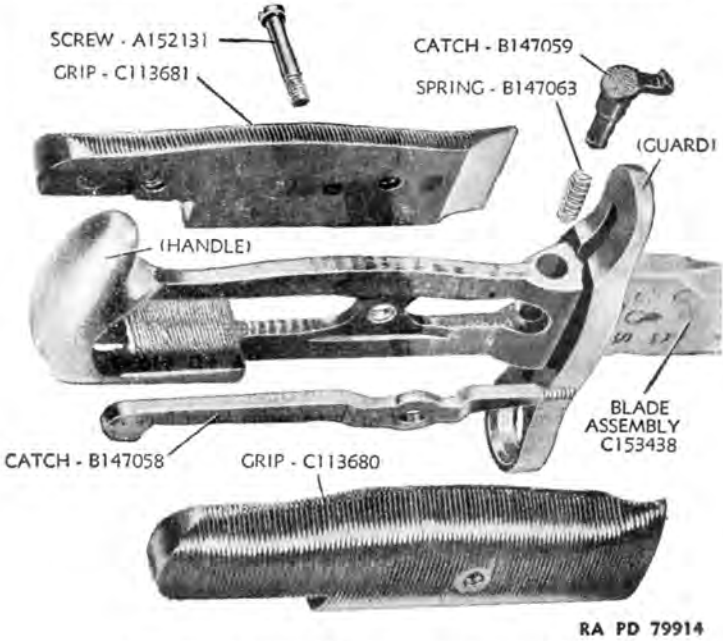

Figure 79. Bayonet, M1—disassembled view of handle.

(2) *Individual parts* (*fig. 79*). Inspect blade for deformation, broken or nicked point, nicked or burred blade edge, unserviceable dullness, and burs. Inspect lug ways in handle for wear, dents, burs, and foreign matter. Examine the scabbard catch well for foreign matter. Check the guard for burs, deformation, deformed or dented barrel band, loose fit on barrel when mounted, looseness on blade, and loose or missing rivets. Inspect the bayonet scabbard catch slot for deformation and burs. Check the catch for functioning, wear of hook, wear in screw hole, free action in slot, deformation, looseness on grip screw, and burs. Check scabbard catch for functioning, free action in well, worn or burred hook, worn knurling, looseness in bayonet catch slot, and for burs. Test spring tension; free length of catch spring (B147063) is 0.475 to 0.030 inch. Inspect the grips for cracks and protrusion over the edge of the blade handle. Examine the grip screw and escutcheons for looseness, wear, projection above grips, and burs.

b. MAINTENANCE AND REPAIR. (1) *Nicks and burs.* Smooth the nicks and burs on metal parts of the bayonet with a fine-grained sharpening stone. Keep the point of the blade serviceably sharp. Dents in edges of blade can often be peened out before smoothing.

(2) *Loose rivet in guard.* Peen rivets or, if necessary, punch out and replace with new rivets and peen; file heads flush with a fine, flat file. Take care not to make a shiny spot on the guard, which may reflect light.

(3) *Worn lug ways.* When lug ways are worn enough to make the bayonet fit loosely on the rifle, peen the ways sufficiently to make a secure fit. Peen lightly and fit the bayonet to the lug frequently during the process.

(4) *Cracked grips.* If grips are cracked or escutcheon loose, replace the grips.

(5) *Bayonet catch.* The bayonet catch (fig. 79) should operate freely and with good spring action. Test it to be certain that the bayonet is positively held on the rifle and in the scabbard.

(6) *Repointing.* Bayonets that have had their points broken off are being repointed and made serviceable by ordnance repair shops. The following is the preferred method of grinding and the minimum length to which blade of the bayonet may be repointed and still be serviceable for issue:

(*a*) In order to avoid drawing the temper, blades of bayonets, bayonet-knives, or trench-knives which require repointing will be ground only on a water-cooled stone. Make no attempt to reheat-treat the blades after the repointing operation. Where required, refinish shiny blades by penetrating, parkerizing, or parco-lubriting.

(*b*) After final grinding and finishing operations, the bayonet blade, measured from the front of the guard along the blade to the point, will be not less than 8⅜ inches

33. Bayonet Scabbard, M7 (fig. 78)

a. INSPECTION. (1) *As a unit.* Inspect the scabbard as a unit for appearance, general condition, fit and retention of bayonet, ease of bayonet withdrawal, and looseness of components.

(2) *Individual parts.* Check the body for cuts, deep abrasions, or splitting. Examine the top of the mouthpiece for wear, burs, or looseness in the body. The hook is not to be deformed, worn, or burred. Insert the bayonet in the scabbard and be certain that either latch hook on the mouthpiece will engage positively with scabbard catch on bayonet.

b. MAINTENANCE AND REPAIR. (1) *Nicks and burs.* Remove nicks and burs on top of mouthpiece with a smooth file. Use a flat file with a safe edge for flat surfaces and rat-tailed file for inside curved surfaces.

(2) *Top plate loose in body.* If the top plate becomes loose it may be tightened by springing the lugs of the metal top into the notches provided in the body of the scabbard.

(3) *Hook on mouthpiece.* If either hook on mouthpiece will not positively engage the scabbard catch on the bayonet, it may be fitted by filing the forward face of the hook slightly. Be certain to file level. Do not file scabbard catch unless burred or worn unevenly.

GUN SLING, M1907

GUN SLING, M1

RA PD 22004

Figure 80. Gun slings, M1907 and M1.

34. Gun Sling, M1907 (fig. 80)

a. INSPECTION. (1) *As a unit.* Inspect gun sling, M1907 as a unit for appearance, general condition, flexibility, and functioning of hooks, loops, and keepers.

(2) *Individual parts.* Inspect straps for condition of leather, weakness, ripped stitches, cuts, and abrasions. Examine hook holes for wear and breaks between holes. Inspect for tears at rivets, and wear and cracking at loops. Leather straps should not crack when bent around a 1-inch bar. Check the hooks for deformation, pinching, and burs, the rivets for

looseness, and the loops for deformation and burs. Examine sliding metal keepers for looseness on straps and for pinching.

Note. If sliding keepers are of leather, check for ripped stitches.

b. MAINTENANCE AND REPAIR. (1) *Dried-out leather.* When the straps become dried-out, as indicated by light cracking or stiffness, clean them thoroughly with saddle soap to help condition the leather. Work a thick lather of soap well into the leather and rinse off with clean water. Polish briskly with a dry, clean wiping cloth. If this treatment does not soften the leather, apply a very light coating of Neat's-foot oil.

(2) *Scratches and gouges.* When straps become rough from leather "picked up" by scratches, cuts, or gouges, smooth them by paring lightly with a sharp, flat blade.

(3) *Bent sliding loops and hooks.* When (metal) sliding loops or hooks become spread or pinched, they should be corrected. Loops may be spread by placing a piece of flat metal between loop and strap and using a light-weight hammer.

(4) *Worn holes in straps.* When holes in straps become worn or leather is torn between the holes, replace the strap. Punching new holes will weaken strap.

35. Gun Sling, M1 (fig. 80)

a. INSPECTION. (1) *As a unit.* Inspect the gun sling as a unit for appearance, general condition, functioning of keeper buckle, and security of hook when assembled to rifle.

(2) *Individual parts.* Examine the body (webbing) for cuts, chafing, or weak spots, and indications of rotting. Inspect the clip on the end for cracks or insecurity. Check hook for cracks or spreading; it should snap onto butt (sling) swivel of rifle and be firmly retained. Inspect loop and buckle for deformation, burs, and cracks. Check keeper assembly for dents, cracks, and positive retention of body when locked.

b. MAINTENANCE AND REPAIR. As this sling is made of webbing, repair is not usually practical; therefore, if badly damaged, replace it as a unit.

36. Flash Hider, M2 (fig. 81)

a. INSPECTION. (1) *As a unit.* Inspect the flash hider as a unit for appearance, general condition, and fit and retention on rifle. Flash hider should fit snugly on end of barrel and lock positively in position.

(2) *Individual parts.* Inspect slot in bracket for burs and wear, latch for deformation, looseness on bracket hinge pins, and worn locking lugs. Inspect cone for deformation and looseness on bracket.

b. MAINTENANCE AND REPAIR. When the latch fails to lock on bracket, this condition may be due either to worn locking lugs or the latch being

sprung out, thus preventing the locking lugs from functioning. Both conditions may be corrected by positioning the latch in a vise so that the jaws clamp at the locking lugs and then tightening the vise until the latch is sprung in sufficiently to give a positive locking action on the bracket.

Figure 81. Accessories for U. S. rifles, cal. .30, M1C and M1D (sniper's).

37. Grenade Launchers, M7 and M7A1 (figs. 82 and 83)

a. INSPECTION. (1) *As a unit.* Inspect grenade launchers as a unit for appearance, general condition, and fit and retention on rifle. Launcher should fit snugly on end of barrel and lock positively in position. Inspect protrusion of spring beyond outside diameter of sleeve. It should protrude .007 to .011 inch. If the spring is deformed so that it protrudes more than .011 inch or worn to a point where it protrudes less than .007 inch, replace.

(2) *Individual parts (grenade launcher, M7).* Inspect sleeve for burs, deformation, foreign matter inside tube, and looseness on bracket. Inspect stud for wear and burs. Inspect latch for deformation, wear on locking lugs, and for looseness on bracket hinge lugs.

(3) *Individual parts (grenade launcher, M7A1).* Inspect individual parts as outlined in (2) above with the following additions: Inspect plunger for burs and for function in slot in body. Inspect spring for function, fracture, and set. Free length of spring (B7313331) is approxi-

mately 1.400 inches. Inspect spring aperture in body for burs and foreign matter.

b. MAINTENANCE AND REPAIR. (1) *Latch fails to lock on bracket.* Refer to paragraph 36*b* for correction.

(2) Remove burs with a fine-grained sharpening stone or fine, flat file. Remove rust or foreign matter from inside of sleeve with rifle bore cleaner and bore brush.

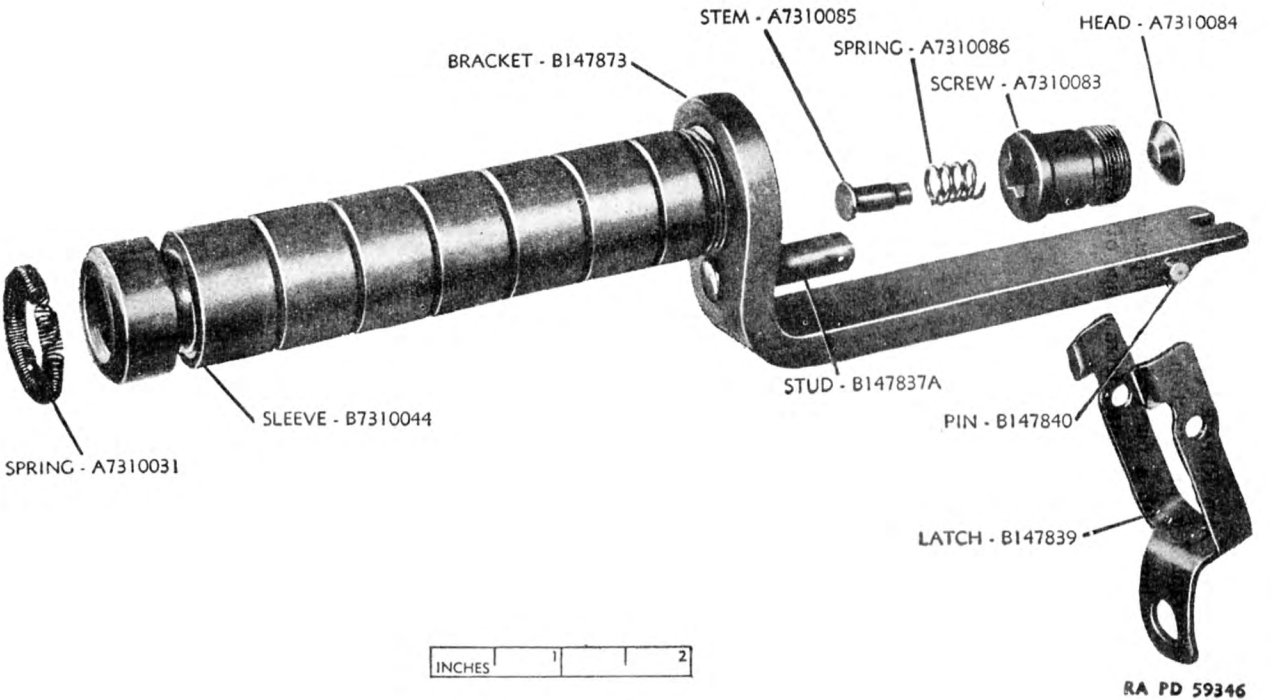

Figure 82. Grenade launcher, M7.

Figure 83. Grenade launcher, M7A1.

SECTION IX

FUNCTION FIRING AND FINAL INSPECTION

38. Function Firing

Following complete rebuild, each weapon is function fired using three full clips of standard service ball ammunition. Guns which fail to meet the function firing test are corrected by such component replacement or repair as required. These guns are again subjected to a function firing test which must be met for acceptance of the rifle. The clips should be replaced occasionally as worn clips will not give a true functioning test. After function firing the weapons must be thoroughly cleaned in the prescribed manner to prevent corrosion.

39. Final Inspection

a. GENERAL. Weapons turned in for repair may be assumed to have defects caused by use or neglect. When they were accepted as new weapons, the parts composing them were dimensionally correct and made of the proper material. Consequently, the inspection of these weapons after repair will differ from the inspection procedure used in the manufacturing plant, in that attention will be directed to wearing surfaces, parts that might crack or break due to high stress or fatigue, and evidences of corrosion. These defects do not evidence themselves by uniform reduction in a given dimension but show up as a chipped edge, a partially worn surface, or an eccentric hole. A gage used in manufacturing is merely a means of comparing an unknown dimension with a known one to judge whether a piece comes within tolerances. After this piece is worn through use, the change in dimension is more easily detected in many cases by comparing with adjacent surfaces; the piece in itself becomes a gage. Visual inspection, therefore, is far more applicable in these cases and gaging is limited to those dimensions that are critical or that may be more advantageously measured than compared. Inspection of noncritical parts (parts that do not cause malfunctions) will be limited to appearance and the presence of cracks or flaws. The dimensions placed on these parts (and gaging used during manufacturing) were for the sole purpose

of insuring interchangeability. Even if the dimensions of such parts are worn considerably below drawing tolerances, functioning and interchangeability will not be adversely affected and the parts are consequently acceptable.

b. VISUAL INSPECTION. As indicated in *a* above, visual inspection is primarily a comparison of a worn or chipped surface with the adjacent surface or the corresponding portion of a new part. Unserviceability is a matter of personal judgment and cannot be put down in definite measurements. Over-all appearance shall approximate that of a new weapon. All exposed metal surfaces are to have a dull, rust-resistant finish with no burs, deep scratches, or tool marks. Barrels must be straight, clean, free of rust and powder fouling, and free of bulges and rings. Fine pitting is allowable. Rifles must be complete with no missing parts. All applicable modifications must be applied. The serial number must be legible. All metal parts must be free of rust. Inspect visually for the following:

(1) General appearance, smoothness of operation, function of clip, latch, and follower. Test with clip of dummy cartridges.
(2) Try cap of butt plate.
(3) Inspect stock and hand guards for cracks or mutilation.
(4) Be certain swivels and screws are staked properly.
(5) Inspect gas cylinder and lock for burs.
(6) Inspect front sight for looseness and bent or burred wings.
(7) Inspect rear sight for following:
(*a*) Binding of windage.
(*b*) Elevation, looseness, and sharpness of clicks.
(8) Inspect trigger housing group for the following:
(*a*) Bent trigger guard.
(*b*) Burs on lugs that lock trigger group to receiver.
(*c*) Worn locking notch on trigger guard.
(*d*) Tension of clip ejector.
(*e*) Function of safety, trigger, sear, and hammer.

c. FUNCTION AND INSPECTION WITH GAGES. (1) Operate by hand to ascertain that final adjustments have been made to assure proper operation.

(2) Check trigger pull. Refer to serviceability chart (fig. 23).

(3) When inspecting the bolt, gage the firing pin protrusion. The minimum should be 0.044 inch and the maximum should be 0.0590 inch. Note shape and condition of firing pin point.

(4) Check for headspace. Refer to serviceability chart (fig. 23).

(5) Inspect bore and chamber.

(6) Assemble and function test with dummy cartridges.

d. MARKING. If passed, stamp with name of appropriate arsenal and inspector's initials.

SECTION X

MALFUNCTIONS AND CORRECTIONS

40. Scope

The malfunctions and corrections contained herein are supplementary to those contained in using arm manual FM 23–5. Although the same malfunction may appear in both the using arm manual and in this manual, the possible causes and corrective actions contained herein are in addition to those covered in the using arm manual. Therefore, when malfunctions are being corrected by ordnance personnel reference to FM 23–5 will be necessary.

41. Clip Inserts with Difficulty

If difficulty is encountered in inserting a loaded clip in the receiver of a rifle which has previously been loaded without apparent difficulty, it may be assumed to be caused by a deformed clip which should be discarded. However, if continued trouble is encountered in inserting loaded clips, it may be caused by one or more of the following reasons:

a. Point of Clip Ejector Too Long. If the offset point of the clip ejector is too long, it may scrape against the side of the magazine aperture in the stock, thereby making it difficult to depress the clip ejector. Disassemble the barrel and receiver group and trigger housing group from the stock, then reassemble the two groups together without the stock. Note the position of the offset point of the clip ejector in regard to the outside face of the magazine of the receiver. If it protrudes beyond this face, the point of the clip ejector is too long. Remove the clip ejector from the trigger housing group in accordance with FM 23–5 and grind the offset point until sufficient clearance is obtained.

b. Burs in Magazines. With the trigger housing group removed from the receiver and the bolt retracted, examine the magazine for burs. Burs in the follower and slideways will prevent the follower and slide from functioning, thereby making it difficult to insert a loaded clip. Remove burs with a fine-grained sharpening stone.

c. Interference Between Bullet Guide and Follower Arm. Remove the barrel and receiver group from the stock and retract the bolt. With the right hand holding against the operating handle so that the bolt does not release, depress and release the follower and slide several

times with the left hand and observe if interference is encountered between the bullet guide and follower arm. This interference is often caused by the opening in the bullet guide being "squeezed in" thereby causing the follower arm or follower rod to drag on the bullet guide. Remove the bullet guide from the receiver in accordance with FM 23–5 and with a suitable wedge spread the opening until suitable clearance is obtained between the bullet guide and follower arm.

42. Short Recoil

Short recoil stoppages, often confused with feed stoppages, occur in rifles which are underpowdered; therefore, do not drive the operating rod completely to the rear. When a weapon is underpowered, and thus subject to short recoil stoppages, it will usually close on an empty chamber or fail to eject the fired case, closing with the spent case in the chamber. This is the type of malfunction which occurs most frequently in the rifles. In analyzing this type of stoppage, the possible causes listed below should be carefully checked.

a. Undersized Piston. Refer to paragraph 20*d*.

b. Oversized Gas Cylinder. Refer to paragraph 20*g*.

c. Undersized Barrel at Splined Section. Refer to paragraph 21*f*.

d. Carbon or Foreign Matter in Gas Port of Barrel. Refer to paragraph 21*f*.

e. Carbon in Gas Cylinder. Refer to paragraph 21*c*.

f. Operating Rod Binding. Refer to paragraphs 20*d* and 30.

g. Valve Leak in Gas Cylinder Lock Screw. Refer to paragraph 20*g*.

h. Defective Operating Rod Spring. Refer to paragraph 20*c*.

i. Bolt Binding. With the follower rod and operating rod removed from the rifle, operate the bolt back and forth several times by hand and note where it is binding. The rear lug on the bolt dragging on the receiver and heavy or burred locking lugs are the two most common causes of a binding bolt. Remove the bolt from the receiver in accordance with FM 23–5 and with a fine, flat file or fine-grained sharpening stone remove just enough metal so that when the rifle is tipped up and down, the operating rod and bolt, with the follower rod and operating rod spring removed, will move from closed to open position and back by their own weight.

j. Burs, Foreign Matter, and Improper Lubrication. Refer to section IV.

k. Rusty or Ringed Chamber. Clean the rifle barrel in accordance with instructions contained in FM 23–5 and examine it as outlined in paragraph 9*c* of this manual. If barrel is unserviceable, refer to paragraph 22*c* for instructions on replacement.

43. Bolt Fails to Close Tightly After Fire

This condition may be due to one or more of the following causes:

a. Extractor Does Not Open Enough to Pass Over Rim of Cartridge. The most common cause of the extractor failing to open sufficiently to pass over the rim of the cartridge is chips or foreign matter lodged between the heel of the extractor and the locking lug on the bolt which houses the extractor spring plunger. Remove the extractor, extractor spring plunger assembly, and the cartridge ejector assembly in accordance with paragraph 19*e*. Clean all parts thoroughly. Check the extractor and extractor spring plunger for free action in their apertures in the bolt, as binding of these parts will prevent the extractor from opening.

b. Operating Rod Binding. Refer to paragraphs 20*d* and 30.

c. Weak or Broken Operating Rod Spring. Refer to paragraph 20*c*.

d. Rough or Dirty Chamber. Refer to paragraph 42 above.

e. Insufficient Headspace. Refer to paragraphs 9*c* and 22*d*.

44. Failure to Feed

Feed failures, as in the case of short recoil stoppages, may cause the weapon to close on an empty chamber. This may be caused by excessive bolt speed when the bolt moves so rapidly on the forward stroke that the ammunition does not have time to obtain its proper feeding position. This condition is often caused by unauthorized modification of the weapon, such as increasing the gas port diameter. (See par. 21*f*.) It also may be caused by any of the following reasons:

a. Insufficient Rearward Travel for Bolt to Pick up Next Round, Due to Insufficient Recoil. Refer to paragraph 42.

b. Long Ejector. If the ejector is too long and protrudes beyond the rim on the front of the bolt, the cartridge will be prevented from rising to its proper position in front of the bolt. Remove the ejector from the bolt in accordance with paragraph 19*e* and grind or file sufficient metal from the ejector so that it lies below the rim on the front of the bolt.

c. Worn or Improperly Formed Follower. A worn or improperly formed follower may cock or bind in its slideways in the receiver and thus prevent it from forcing the cartridge upward to its proper position in front of the bolt. Remove the follower and slide assembly and check angle of the follower as outlined in paragraph 21*a*. Replace a badly worn follower.

45. Bolt Fails to Release when Clip is Latched

This condition may be due to the following causes:

a. Insufficient Radii or Burs on Catch and Operating Rod Hooks. Insufficient radii or burs on the hooks of the operating rod and

operating rod catch may prevent them from "riding over" each other, thus preventing the bolt from releasing when the clip is inserted and latched. This condition may be remedied by lightly stoning the edges of the hooks with a fine-grained sharpening stone. Extreme care must be exercised when stoning so that the radii are not enlarged excessively as this will cause the bolt to release before the clip is latched. (See par. 46.)

b. BULLET GUIDE LOW AT ACCELERATOR BEARING POINT. If the bullet guide is worn sufficiently at the accelerator bearing point (fig. 30), the follower arm acting upon the accelerator will fail to cam up the operating rod catch sufficiently for it to clear the operating rod hook and the bolt will not go forward when the clip has been inserted and latched. Replace bullet guide to correct this condition.

46. Bolt Releases Before Clip is Latched

The reverse of the causes of the bolt failing to release when the clip is inserted, listed in paragraph 45 above, may cause this condition. In addition it may be due to a defective clip latch or clip latch spring. If the radii on the hooks of the operating rod or operating rod catch are excessive and causing the bolt to go forward before the clip is latched, replace the parts. A bullet guide that is high at the accelerator bearing point should be removed from the rifle and stoned at this point until the accelerator will not cam up the operating rod catch sufficiently to release the operating rod until the clip is fully inserted and latched. Hand function the clip latch to see that it is not binding in the receiver and that the clip latch spring has sufficient tension to rotate the clip latch on its hinge pin. If there is binding, examine for burs and remove by stoning or filing. If binding is due to deformation or improper dimensions, replace the clip latch. Replace a weak or broken spring.

47. Bolt Fails to Stay in Rearmost Position After Firing the Last Round. Clip Held Inside of Gun, Jammed on the Way Out by the Bolt.

This condition may be caused by insufficient power to drive the mechanism rearward far enough for the operating rod to engage the catch (par. 42), a binding clip latch (par. 46), or the following: With the bolt fully retracted and latched and the follower at its uppermost position, examine the clip locking lug at the rear end of the clip latch to see if it clears the receiver. If it does not clear the receiver, the arm of the operating rod catch is either broken off or deformed to the extent that it does not rotate the clip latch sufficiently for the locking lug to clear the receiver and release the clip. Replace a broken or deformed operating rod catch.

48. Failure to Eject Cartridge Case

This may be caused by a short recoil (par. 42) or one of the following reasons:

a. Weak or Missing Ejector Spring. Remove the ejector spring from the bolt as described in paragraph 19*e* and replace.

b. Ejector Binding. Remove the cartridge ejector from the bolt as described in paragraph 19*e*. Examine for burs on ejector. Also check for burs and foreign matter in ejector aperture in bolt.

49. Failure to Eject Cartridge Clip

This condition may be due to one or more of the following causes:

a. Clip Ejector Weak or Broken. Remove the clip ejector from the trigger housing group in accordance with FM 23–5 and replace.

b. Distorted Clip.

c. Deformed or Broken Operating Rod Catch. Refer to paragraph 47.

50. Failure of Bolt to Open After Fire

This is probably due to one of the following reasons:

a. Plugged Gas Port. A plugged gas port in either or both the barrel and gas cylinder will prevent the expanding gas from passing through these ports to drive the operating rod and bolt to the rear. Refer to paragraph 21*c* and *f* for corrective action.

b. Loose Gas Cylinder. If the gas cylinder is sufficiently loose on the barrel of the rifle, enough of the expanding gas will escape around the barrel so that the gas acting on the piston through the gas ports will be insufficient to drive the operating rod and bolt to the rear. Check the diameter of the barrel at the gas port. (See par. 21*f*). If barrel is undersize, replace. If the barrel is of correct size, replace gas cylinder.

c. Gas Cylinder Lock Screw Valve Open. Refer to paragraph 20*g*.

51. Failure to Fire

The possible causes of failure to fire listed below are in addition to those listed in FM 23–5:

a. Weak or Broken Hammer Spring. A weak hammer spring may fail to drive the hammer forward against the firing pin with sufficient force to fire the cartridge. This is indicated by a light indent in the primer. Remove the spring from the trigger housing group as outlined in FM 23–5, and replace.

b. Lower Tang on Hammer Strikes Stud on Trigger Guard. The rear tang on the hammer striking the stud on the trigger housing will cushion the blow of the hammer against the firing pin or possibly even prevent it from going forward far enough to strike the firing pin. Remove the trigger housing group from the rifle, cock and release the hammer. Note if the rear tang on the hammer is striking the stud on the

trigger housing. If the hammer does strike the stud, disassemble the trigger housing group as outlined in FM 23–5 and grind the tang on the hammer sufficiently to clear the stud when the hammer is in its forward position.

APPENDIX

REFERENCES

1. Publication Indexes

Consult the following publication indexes frequently for latest changes or revisions of references given in this appendix and for new publications relating to matériel covered in this manual.

a. Ordnance Supply Catalog Index.....WD Cat. ORD 2
b. Ordnance major items and combinations, and pertinent publications .....SB 9–1
c. List and index of War Department publications .....FM 21–6
d. List of War Department films, film strips and recognition film slides .....FM 21–7
e. Military training aids .....FM 21–8

2. War Department Supply Catalogs

a. CLEANING AND PRESERVING.

Items of cleaning, preserving and lubricating materials; recoil fluids, special oils and miscellaneous related items.....WD Supply Catalog ORD 3 SNL K–1
Items of soldering, brazing and welding material, gases and related items .....WD Supply Catalog ORD 3 SNL K–2

b. GUN MATÉRIEL.

Ammunition, rifle, carbine, and automatic gun.....WD Supply Catalog ORD 11 SNL T–1
Bayonets and Bayonet-Knife .....WD Supply Catalog ORD SNL B–8*
Rifle, U. S., cal. .30 M1, M1C, M1D (Sniper's) .....WD Supply Catalog ORD SNL B–21*

c. REPAIR.

Tools, maintenance, for repair of small and hand arms, and pyrotechnic projectors .....WD Supply Catalog ORD 6 SNL B–20

Truck, 2½-ton, 6 x 6, small arms repair, M7A1 and M7A2 ..... WD Supply Catalog ORD SNL G-138*

* See WD Supply Catalog, ORD 2, Index for list of published pamphlets of the Ordnance Supply Catalog.

3. Explanatory Publications

a. Chemical Attack and Decontamination.

Decontamination ..... TM 3-220
Defense Against Chemical Attack ..... FM 21-40
Military Chemistry and Chemical Agents ..... TM 3-215
Maintenance and Care of Hand Tools ..... TM 9-867

b. Gun Matériel.

Ammunition, General ..... TM 9-1900
Small Arms Ammunition ..... TM 9-1990
Qualifications in Arms and Ammunition Training Allowances ..... AR 775-10
U. S. Rifle, Caliber .30, M1 ..... FM 23-5

c. Inspection, Maintenance, and Lubrication.

Black Finishing Equipment for Ferrous Metals ..... TM 9-1861
Cleaning, Preserving, Sealing, Lubricating and Related Materials Issued for Ordnance Matériel ..... TM 9-850
Inspection of Ordnance Matériel ..... TM 9-1100
Small Arms: General Instructions for Care, Preservation, and Lubrication ..... TB 9-2835-9

d. Storage and Shipment.

Ordnance Storage and Shipment Chart—Group B ..... SB 9-OSSC-B
Instruction Guide, Ordnance Packaging and Shipping (Posts, Camps, and Stations) ..... TM 9-2854

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