TB 9-1000-247-34

Supersedes Copy dated 27 December 1982

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

STANDARDS FOR OVERSEAS SHIPMENT OF SMALL ARMS, AIRCRAFT ARMAMENT, TOWED HOWITZERS, MORTARS, RECOILESS RIFLES, ROCKET LAUNCHERS, AND ASSOCIATED FIRE CONTROL EQUIPMENT

HEADQUARTERS, DEPARTMENT OF THE ARMY

This copy is a reprint which includes current pages from Change 1.

JULY 1987

WARNING

Before starting an inspection, be sure to clear the weapon. Do not actuate the firing mechanism until the weapon has been cleared. Inspect the bore and chamber to ensure that it is empty and free from obstructions, and check to see that no ammunition is in position to be introduced. Avoid having live ammunition in the vicinity of the work.

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 11 June 1991

STANDARDS FOR OVERSEAS SHIPMENT OF SMALL ARMS, AIRCRAFT ARMAMENT, TOWED HOWITZERS, MORTARS, RECOILLESS RIFLES, ROCKET LAUNCHERS, AND ASSOCIATED FIRE CONTROL EQUIPMENT

TB 9-1000-247-34, 30 July 1987, is changed as follows:

1. Remove old pages and insert new pages as indicated below.

2. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Pages	Insert Pages
iii and iv	iii and iv
3 through 6	3 through 6
9 and 10	9 and 10
None	10.1 (10.2 blank)
11 through 16	11 through 16
None	16.1 (16.2 blank)
23 through 30	23 through 30
35 and 36	35 and 36
None	36.1 (36.2 blank)
37 and 38	37 and 38
None	38.1 and 38.2
A-1 (A-2 blank)	A-1 (A-2 blank)

File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

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TECHNICAL BULLETIN

HEADQUARTERS
DEPARTMENT OF THE ARMY

No. 9-1000-247-34

Washington, DC, 30 July 1987

STANDARDS FOR OVERSEAS SHIPMENT OF SMALL ARMS, AIRCRAFT ARMAMENT, TOWED HOWITZERS, MORTARS, RECOILLESS RIFLES, ROCKET LAUNCHERS, AND ASSOCIATED FIRE CONTROL EQUIPMENT

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you .

Section I. INTRODUCTION

*This bulletin supersedes TB 9-1000-247-34, 27 December 1982.

LIST OF ILLUSTRATIONS

LIST OF TABLES

Section I. INTRODUCTION

1. PURPOSE. This bulletin establishes standards for overseas shipment (preembarkation inspection criteria) of small arms, aircraft armament, towed howitzers, mortars, recoilless rifles, rocket launchers, and associated fire control equipment. These standards are provided to ensure that the user is furnished equipment which will perform its mission without early failure or major maintenance problems.

NOTE

Do not use this bulletin for depot maintenance overhaul or rebuild.

2.

(2) The gaining command concurs in the receipt of the end item for storage until required repair parts become available. The gaining command must also state that capability, facilities, and funds are available to perform the necessary work when parts become available.

(3) Department of the Army approval is obtained on a case-by-case basis.

(4) Required repair parts are requisitioned by the issuing command for delivery to the gaining command.

c. All Department of the Army MWOs applicable to the specific weapon or fire control equipment being considered for shipment overseas must have been applied.

d. Refer to SB 746-1 for pertinent publications relating to equipment processing and marking information.

e. Refer to AMC-P 310-9 for publications containing applicable overhaul standards.

4. SHIPMENT OR ISSUE. a. Organizational Repair Parts, Tools, and Equipment. Weapons must be complete with all items required by applicable Department of the Army publications, including those in the basic issue items list of the appropriate operator's manual.

b. Publications. Operator publications applicable to the equipment log book must accompany the equipment. All log book entries must be complete and up-to-date including those covering any repairs, replacements, or adjustments made to the equipment in complying with this bulletin.

c. Documentation. Prepare DA Form 2408-9 (Equipment Control Record) at time of overseas shipment or issue to another stock record or property book account, in accordance with the provisions of DA PAM 738-750.

d. Preparation. Process weapons for shipment as required by shipping documents and pertinent regulations.

5. DISPOSITION. Disqualified weapons and/or fire control equipment which do not qualify for shipment will either be redistributed within the camp, post, or station, be repaired, or become candidates for overhaul, cannibalization, or other disposition as required by existing regulations.

Section II. SMALL ARMS

6. SCOPE. Standards for equipment destined for overseas shipment of small arms and associated sighting and fire control equipment are contained in paragraph 7 and tables 1 through 14.

7. GENERAL INSPECTION CRITERIA.

WARNING

Before starting an inspection, be sure to clear the weapon. Do not actuate the trigger until the weapon has been cleared. Inspect the bore and chamber to ensure that it is empty and free from obstructions, and check to see that no ammunition is in position to be introduced.

a. Before inspection, the materiel must be thoroughly cleaned of all grease, dirt, or other foreign matter that might interfere with its proper function or the use of gages and tools during inspection.

b. Materiel must be free of burrs, rust, or corrosion, on functional surfaces.

c. Parts must not be cracked, bent, distorted, or damaged and must be free of detrimental wear or looseness.

d. Minor defects in metal components do not normally affect their acceptability. For example, scratches and tool marks are ordinarily of no importance.

e. Inspect finish of metal surface.

(1) General. Satisfactory metal surfaces for weapons range from black to light gray. A worn shiny metal surface is objectionable only when it is capable of reflecting light. No weapon will be rejected unless exterior parts have a shine. All rear sights must have a dull gray or black finish on all surfaces that would cause a glare.

(2) M16 Series Rifles and M231 Firing Port Weapon. Minor loss of finish (shiny spots, nicks, scratches) on exterior surfaces of the barrel and flash suppressor shall not be cause for rejection of these weapons located in hands of troops at training centers. Large shiny surfaces, nicks, scratches, etc., can be restored by the use of solid film lubricant, NSN 9150-01-260-2534. (Refer to TM 9-1005-249-24&P for use.) Weapons (small arms) missing in excess of one-third or more of the exterior finish of their lower receiver, resulting in an unprotected, light-reflecting surface, are considered candidates for overhaul. The only authorized level of maintenance to phosphate finish small arms is Depot.

f. Wooden and plastic components must not be cracked or damaged in such a way as to interfere with their structural strength. Surface cracks, bruises, or dents that do not affect their strength will not be cause for rejection. Inspect wooden and plastic components in accordance with figures 1 through 3. Cracks will be cause for rejection. Criteria for determining which cracks are repairable are in TM 9-1005-301-30.

g. Barrels must be clean and free of corrosion such as that caused by moisture and powder fouling. Standards of serviceability are indicated in (1) through (11).

(1) Pits in the chamber are allowable if they do not cause extraction difficulties.

(2) Pits as wide as a land and 3/8 inch or less in length are allowable for 5.56-mm, caliber .30, and 7.62-mm barrels. Pits not greater than the width of a land and less than 3/8-inch long are permissible for caliber .45, 25mm, and caliber .50 barrels.

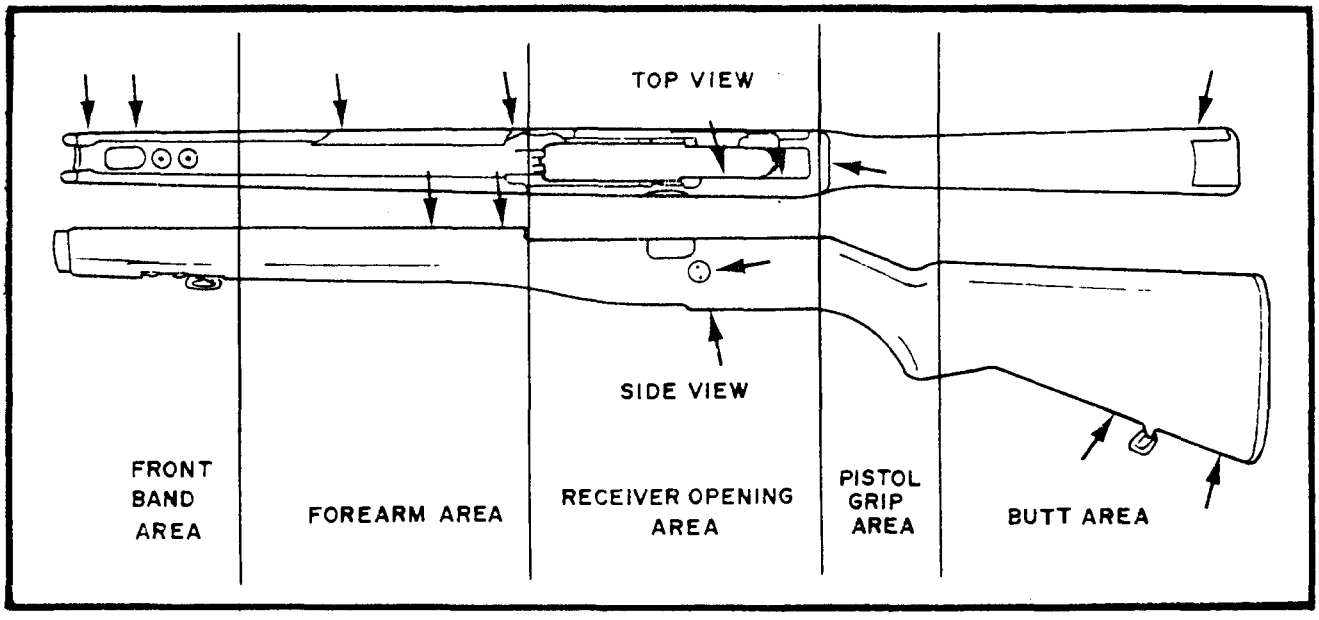


Figure 1. General inspection areas of shoulder stocks (M14 rifles).

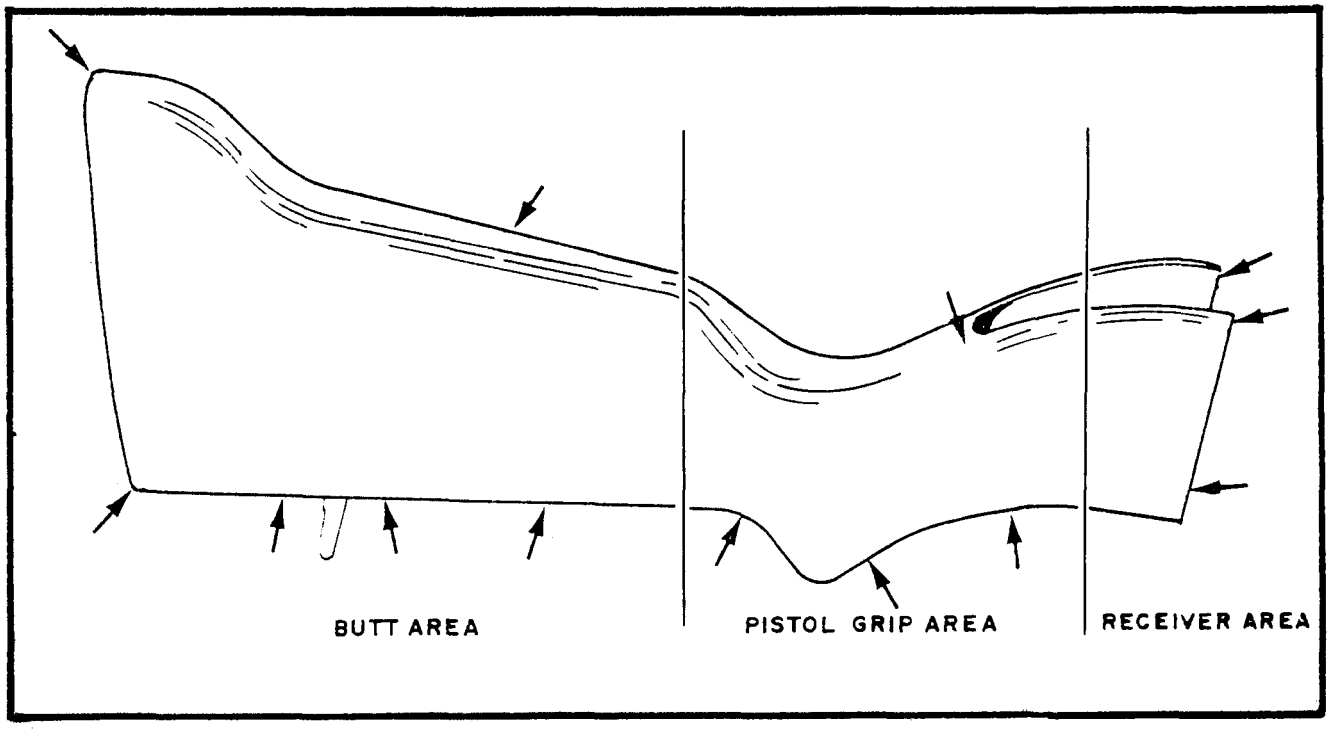


Figure 2. Inspection areas of fiber glass/plastic stocks (M79 grenade launcher).

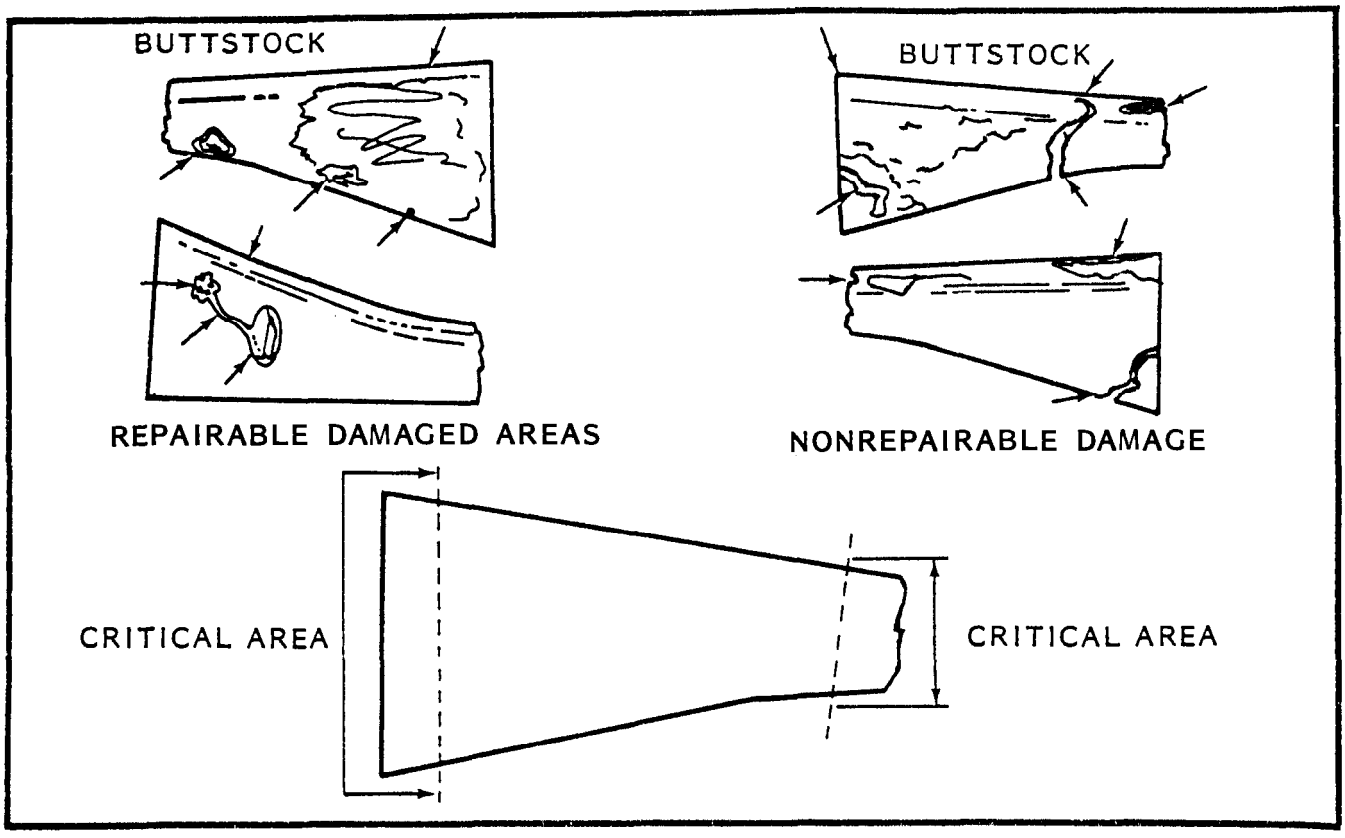


Figure 3. Critical areas of fiber glass/plastic stocks and handguards (M16, M16A1 rifles).

(3) Scattered or uniformly fine pits, or fine pits in a densely pitted area are allowable.

(4) Tool marks are acceptable regardless of length. They will appear as lines running laterally in the grooves, or may run spirally across the top of lands.

(5) Ringed bores or bores ringed sufficiently to bulge the outside surface of the barrel are cause for rejection. However, faint rings or shadowy depressions do not indicate an unserviceable barrel and will not be cause for rejection. Gap in lined barrels will not be classified as a ringed bore (see (10) below).

(6) Lands that appear dark due to coating of gilding metal from projectiles will not be cause for rejection.

(7) Breech bore diameter will be checked on unlined barrels using the appropriate breech bore gage.

(8) Barrel erosion gages are provided for lined barrels. Bore wear will be checked using barrel erosion gage M8 for caliber .30 and 7.62-mm barrels and barrel erosion gage M6A1 for caliber .50 barrels. For detailed instructions in the use of the above gages and for serviceability limits, refer to TM 9-4933-208-34.

(9) Check wear at breech end of 20-mm barrels with barrel wear gage.

(10) Stellite lined barrels can be identified by an 0.010 to 0.020-inch wide gap located inside the barrel at the junction of front face of liner and tube. During visual inspection, indications of liner breakdown appearing as chips, large pits, or cracks will be cause to declare the barrel unserviceable.

(11) Flaking or checking (fine cracks) of chromium plate in barrels or chambers will not be cause for rejection, unless accompanied by pitting to the degree that extraction difficulties are encountered or accuracy is unacceptable.

h. Springs must be free of distortion and broken coils. Springs must have sufficient tension to perform their intended function.

i. Screw heads must be in serviceable condition and threads must not be stripped. Internal threads must not be stripped.

j. The sear, hammer, and/or cocking notches must be in good condition. Chipped engaging corners will be cause for rejection. Slight wear on functional surfaces, including engaging corners, shall be acceptable, providing the minimum trigger pull requirements are met.

k. Chips, flat spots, or bent striker points on firing pins will be cause for rejection.

l. The cartridge engaging surfaces on extractors must not be chipped or deformed.

m. Evidence of any damage to sights will be cause for a sight alignment check. Rear sight bases should have no movement.

n. Rear sight elevating and windage mechanisms must operate with distinct clicks, without binding. Sights must have sufficient tension to retain their setting during firing. Graduations and numerals must be legible. Graduation filler is not required.

o. Safeties must positively position in both the ON and OFF position. When in the ON or safe position, the weapon must not fire when the trigger is squeezed; when in the OFF or fire position, the weapon must fire when the trigger is squeezed.

p. Rollers, slides, and cams must function smoothly. Parts must be free of binding.

q. Painted or rubber covered surfaces must be free of bare spots. Rubber surfaces must not be gummy or retain finger impressions.

r. All locking devices such as latches, jamming handles, magazine latches, or detents must be positive in action and must not become disengaged due to normal handling and firing. Retaining pins and similar devices must not be subject to accidental loss during use or transportation.

s. Welded, brazed, or riveted joints must not show signs of separation or failure.

t. Each weapon must be hand functioned to check for unusual binding, positive cocking action, and general operation. Dummy ammunition may be used to assure positive feeding, chambering, extraction, and ejection action.

u. Web equipment must pass a visual inspection.

(1) Materiel must be complete with required hooks, loops, fastening devices, grommets, ropes, and drawstrings.

(2) Materiel must not be cut, worn, or otherwise damaged so as to adversely reduce strength or protective qualities. Particular attention should be given to areas adjacent to metal components.

(3) Materiel must not be oil soaked or soiled.

(4) Stencils or other markings must be legible.

(5) Metal components must be free of corrosion. Fastening devices must function and hold as intended.

(6) Ropes must not be frayed or noticeably weakened.

v. Leather equipment must pass a visual inspection.

(1) Leather items must be complete with snaps, hooks, pads, etc., and securely attached. Stitching must be complete, and threads must not show signs of rotting.

(2) Leather material must be pliable and free from tears, cuts, and cracks that would reduce its strength or protective qualities.

(3) Metal components must be free of corrosion, but a polished finish is not required.

w. Bayonet-knives must pass a visual inspection.

(1) Bayonet-knife latches must function freely and positively under spring tension and must lock the bayonet-knife securely to its applicable weapon.

(2) Metal surfaces must be free of rust and corrosion.

(3) The blade cutting edges must be free of nicks and turned edges. Broken tips shall be cause for rejection.

(4) Misalignment between blade and handle must not exceed 3/16 inch.

(5) Slight looseness of guard may be disregarded.

(6) Cracked or broken grips will be cause for rejection.

x. Scabbards must pass a visual inspection.

(1) Tips, snaps, and other metal components will be dark in color. Painted surfaces must be free of bare spots.

(2) Scabbard must retain the bayonet-knife when inverted.

(3) Refer to u above for strap assembly (web equipment).

y. For use of gages (tables 7 through 14) refer to appropriate manuals.

z. Check markings for legibility.

aa. Associated fire control equipment.

(1) General.

(a) All fire control materiel used with towed artillery must be examined for outward appearance and inspected for mechanical condition and operation. Where any doubt exists as to the utility of an assembly or of the complete item, that assembly or fire control instrument must be replaced by a serviceable item.

(b) Equipment, when inspected, must approach new equipment standards of operation and appearance. The workmanship and quality of the end product must reflect the highest standards obtainable. To ensure that all items, so far as practicable, possess original appearance, it is desired that items normally painted be repainted if the painted surfaces show signs of damage.

(2) Specific instructions. Perform a detailed inspection of fire control materiel, as outlined in the pertinent equipment serviceability criteria (ESC) technical manual or the inspection chapter of the manual containing the direct support maintenance for the individual piece of fire control. Examine instruments for condition and adjustment of optical elements, functioning of mechanical and electrical components, and general appearance and condition of the entire instrument. Fire control equipment must conform to the following specifications before it is satisfactory for overseas shipment.

(a) Condition of optical element. Lenses, prisms, retitles, and windows must be free from scratches, pits, and chips that will affect optical performance of the instrument. Any breakdown or excessive discoloration of cement between elements of compound lenses will be cause for rejection of the instrument.

(b) Functioning of mechanical and electrical components. Mechanical components must operate smoothly without binding or rough motion. Parts must be free from grit and must be properly lubricated. Backlash must be within the limits specified by the pertinent ESC or technical manual. Electrical components must illuminate properly the scales of reticles as intended. All electrical connections must be tight and conduits free of all breaks or bare spots in the insulation.

(c) General appearance and condition of the instrument.

1. All component parts of the instrument must be present and free from any defects which interfere with the performance of the instrument.

2. Paint must cover all specified surfaces. Repaint if surfaces show signs of damage.

3. All optics must be free from any internal dirt or moisture which will interfere with the efficiency of the instrument. Excessive dirt or moisture indicates a breakdown in sealing and is cause for rejection of the instrument.

4. All scales must be easily read. All numbers and divisions must be clearly defined.

5. Any fire control equipment failing to meet the requirements of the performance test as specified by the pertinent ESC or technical manual is unsatisfactory for overseas shipment.

Table 1. 9-MM Semi-Automatic Pistol M9

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7. Each pistol must be hand functioned to check for unusual binding, positive cocking action, and general operation. Dummy ammunition may be used to be sure of positive chambering, extraction and ejection action.
Trigger pull	Single action . . . Minimum . . . 4.1 Pounds . . . Maximum . . . 6.5 Pounds Double action . . . Minimum . . . 9.6 Pounds . . . Maximum . . . 16.5 Pounds
Springs	Must be free of distortion and broken coils. Springs must have sufficient tension to perform their intended function.
Barrel	Must be clean and free of rust and corrosion. Must not be bulged. Pits in the bore are allowable if they do not exceed the width of a land and 3/8 inch in length. If chipping or flaking are present in the chamber and/or bore area, it is cause for rejection of the barrel. Tool marks are acceptable. They may appear as lines running longitudinally in the grooves or may run spirally across the tops of lands. Lands that appear dark will not be cause for rejection because of coating of guilding metal from projectiles.
Recoil spring	Slight bend in recoil spring will not be cause for rejection. Both ends of the recoil spring will fall freely onto the recoil spring guide.
Ejector	Loose ejector will not be cause for rejection.

Table 1. 9-MM Semi-Automatic Pistol M9 - Continued

Item	Standard
Hammer	The sear and cocking notches must be in good condition. Chipped engaging corners will be cause for rejection. Slight wear on functional surfaces, including engaging corners shall be acceptable, providing the minimum trigger pull requirements are met.
Firing pin	Chips, flat spots, pits or bent striking points on firing pins will be cause for rejection.
Extractor	Cartridge case engaging surfaces must not be chipped or deformed.
Decocking/safety lever	Must position positively in both the safe (down) and fire (up) position. When in safe position, the pistol must not fire when the trigger is squeezed; when in the fire position, the pistol must fire when the trigger is squeezed.

Table 1.1. .45 Caliber Automatic Pistol M1911A1

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Trigger pull	Minimum - 5 pounds. Maximum - 6-1/2 pounds. (Use trigger measuring fixture 7274758.)
Recoil spring plug.	Will not be declared unserviceable when the recoil spring retaining tab becomes damaged or broken. No impairment of personnel safety or functioning of the weapon are realized when table's recoil spring plugs are used.
Recoil spring	Free length of spring must not be less than 6-1/4 inches. A "flat" appearance on either end of the half coil is not required.
Ejector	Cannot be loose.

Table 2. Revolvers (All)

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Barrel	Pits less than 3/8-inch in length are permissible as long as they do not cross one or more lands. Ejector retainer on barrel will function under spring tension (S & W models only).
Receiver	Sideplate retaining screws must be tight. Sideplate must be evenly seated within the receiver recess. Hammer will remain at full cock when pulled fully to the rear, and will fall sharply when trigger is pulled. Cylinder must not show evidence of sideplay when in the closed position and will remain securely in place when pressure is exerted on the reverse side.
Stock, right and left hand	Stocks must be held secure to receiver. Stocks must not exhibit overhang of frame.
Trigger pull	Trigger pull shall be smooth and within the range of 3 to 5 pounds for single action, and not more than 14 pounds for double action.

Table 3. 7.62-MM Rifle, M14 and M14A1, and Rifle Bipod M2

Item	Standard
RIFLE :	
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Breech bore, Preembarkation	Maximum - 0.307 inch. (Use breech bore gage 7274761.)
Headspace	Maximum - 1.6455 inches. (Use head space gage 7274790 and field test bolt 7274799.) NOTE : Disengage operating rod from bolt before checking head space. Exert only light finger pressure on the bolt locking lug when checking head space.
Gas cylinder	Unserviceable if not-go gage 7274755 enters 1/4-inch or more. (Maximum - 0.5009 inch.)

Table 3. 7.62-MM Rifle, M14 and M14A1, and Rifle Bipod M2 - Continued

Item	Standard
Gas piston	Minimum - 0.4968 inch. (Use not-go snap gage 7274757.)
Firing pin hole diameter	Maximum - 0.084 inch. (Use plug gage 7458406.) Unless elongation exceeds one-half original width of firing pin hole, it is not cause for rejection.
Firing pin protrusion	Minimum - 0.044 inch. Maximum - 0.060 inch. (Use firing pin protrusion gage 7274736.)
Flash suppressor	Use alignment tool 7799705. There must be no relative movement of suppressor or suppressor nut as determined by hand test. Setscrew must be engaged in one of the notches on the nut.
Trigger pull	Minimum - 4-l/2 pounds. Maximum - 7-1/2 pounds. (Use trigger measuring fixture 7274758.)
Rear sight	With the 100 meter-graduation line on the elevating pinion opposite index line on the receiver, it must be possible to lower the aperture from 2 to 14 clicks. Tension shall be sufficient to permit smooth operation without binding.
Front sight	Perceptible movement of the front sight is not permitted. Staking and/or prick-punch indentations of the front sight that were applied when rifle was targeted are not cause for rejection. No more than two stake marks are permitted.
Operating rod spring	Spring must have a free length of not less than 14-3/4 inches and must have not less than 102 full coils. A smooth wavy appearance will not be a cause for rejecting an otherwise serviceable spring.
Stocks and handguards	Fiberglass stocks exhibiting vertical, horizontal, or diagonal hairline cracks 1-1/2 inches or less in length in the receiver area will not be cause for rejection. However, rifle stocks will be rejected if hairline cracks cited cross one another, or if two or more cracks extend from a central location. Rifle stocks exhibiting five or more hairline cracks on any one side will be rejected.

Table 3. 7.62-MM Rifle, M14 and M14A1, and Rifle Bipod M2 - Continued

Item	Standard
Butt stock area	Butt plate overhang must not be over 1/32 inch.
Receiver area	Hairline cracks in exterior surfaces are suspects. Flex sides of receiver well to determine depth of cracking. If crack extends into body of stock, or bonded area is separated, stock will be rejected. (Critical areas are: right and left front of receiver well; firing mechanism locking recess; area to immediate rear of bolt recess.) If receiver bridge is cracked, reject receiver.
Pitting on bold face	A pit extending into firing pin hole more than 1/16 inch will be cause for rejection. Pits in all other areas are permissible.
Bolt locking lugs	Inspect each lug for cracks, using Penetrant Kit NSN 6850-00-826-0981. Give particular attention to area where lug meets bolt body. Replace rifle bolts whose lugs exhibit cracks which are in excess of 1/32 inch in length from top to bottom.
BIPOD M2:	
Leg assemblies	Ensure no binding on yoke assembly when in opened and closed positions.
Extension assemblies	Must move between closed and extended positions without binding in any of the five locking positions.
Locking bolt	Ensure thread end upset to avoid accidental disassembly.

Table 4. 5.56-MM Rifle M16, M16A1, M16A2, M231 Firing Port Weapon and Rifle Bipod M3

Item	Standard
RIFLE:	
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.

Table 4. 5.56-MM Rifle M16, M16A1, M16A2, M231 Firing Port Weapon and Rifle Bipod M3 - Continued

Item	Standard
Barrel and barrel extension	Check barrel erosion. Use barrel erosion gage 8448496 for chrome lined barrels. Use barrel erosion gage 7799792 for non-chrome lined barrels. Stripping of lands and grooves shall not be cause for rejection unless so determined by barrel erosion gage. Visually inspect, using chamber reflector tool 8448201. Pits 1/8 inch in length and those pits large enough to extend from the body of the chamber into the shoulder stop area and forcing cone area are cause for rejection. Large pits are defined as those 1/8 inch or more in diameter and approximately 1/64 inch in depth, as determined by visual inspection. Only closed flash suppressors are acceptable. Check barrel for straightness using bore straightness gage 8448202. Gage must pass freely through the bore to be acceptable. Refer to applicable direct support maintenance manual for details. Check non-chrome lined barrels for muzzle erosion using muzzle erosion gage 8448677. Gage must not enter beyond the reject line to be acceptable.
Front sight and gas tube	Inspect gas tube for proper alignment with carrier key. Gas tube must not bind when mating with the key. Evidence of gas leaks around the front sight connection of the gas tube shall be cause for rejection until rifle has been function fired to determine if the loss of gas is sufficient to cause malfunction. If function firing malfunctions occur, repairs are necessary, Inspect front sight for damage. Low light level sights, if installed, must be checked. See instructions in TM 9-1005-249-24&P for inspection and disposal procedures.
Bolt carrier group	Inspect bolt for elongated or oversized firing pin hole using plain cylinder gage 12620101. Firing pin holes which permit the plain cylinder plug gage to fully penetrate at any position on the circumference will be rejected.

Table 4. 5.56-MM Rifle M16, M16A1, M16A2, M231 Firing Port Weapon and Rifle Bipod M3 - Continued

Item	Standard
Bolt carrier group-continued	Bolt face defects of large pits, or a cluster of touching pits, covering an area measuring approximately 1/8 inch across will be cause for rejection. Bolts that contain pits extending into the firing pin hole will not be rejected unless firing pin hole gaging check determines excessive wear. Rings on the bolt face (machine tool marks), grooves, or ridges will not be cause for rejection. Only phosphated bolt carriers are acceptable. Both phosphated and chrome plated bolts are acceptable.
Bolt locking lugs and bolt cam pin hole	Inspect for cracks in the locking lugs and cam pin hole area. Use a black light, if available; otherwise, use a glass of no more than 3X magnification or use inspection penetrant, NSN 6850-00-826-0981. Use instructions contained in kit for application. If cracks are detected, the bolts will be replaced. NOTE: Particular attention must be given to the area where the lugs meet the bolt body and around the side walls of the cam pin hole. Bolt rings must not be broken. Ring gaps must be properly spaced and not in line. Firing pin protrusion must be not less than 0.028 inch or more than 0.036 inch. (Use firing pin protrusion gage 7799735.) Socket head capscrews must be staked. Carrier key must not be dented where end mates with gas tube. Repair or replace damaged carrier keys.
Headspace	Inspect headspace using headspace gage 7799734. Excessive headspace will be cause for rejection.
Trigger pull	Inspect trigger pull using trigger measuring fixture 7274758. Trigger pull must be minimum 5 pounds, maximum 8-1/2 pounds (M16/M16Al); minimum 19 pounds, maximum 25 pounds (M231 Firing Port Weapon); minimum 5½ pounds, maximum 9.5 pounds (M16A2). See applicable direct support technical manual for details.

Table 4. 5.56-MM Rifle M16, M16A1, M16A2, M231 Firing Port Weapon and Rifle Bipod M3 - Continued

Item	Standard
Lower receiver group	Inspect hammer and trigger pin holes using plain cylinder plug gage 12006472. Penetration of the gage in any one or more of the four holes will be cause for rejection. See applicable direct support technical manual for details. Inspect for cracks, corrosion, or mutilation which would affect functioning. Small dents or gouges will not be cause for rejection. Inspect receiver for corrosion in the lobes of the pivot or hinge pin area. Inspect the width between lobes as provided in applicable direct support maintenance manual. Inspect receiver for break through of metal. Inspect receiver and receiver extension for initial loss of protective coating.
Action spring	Free length of spring shall be between 11-3/4 and 13-1/2 inches for M16 series rifles; between 9-5/8 and 10-3/8 inches for M231 outer and middle springs; and between 7-1/8 and 7-5/8 inches for M231 inner spring.
Handguard	Inspect for breaks, separations of material, broken tabs, and cracks. Breaks and separations of material which prevent proper retention or interfere with function of the weapon will be cause for rejection. Cracks up to 1 inch in length which do not interfere with functioning of weapon are allowable. Four tabs missing or two adjacent tabs missing from either handguard will be cause for rejection. Handguards which have four or more heatshield retaining drive screws missing or a heatshield screw which is loose enough to rattle will be discarded. Handguards which have a heatshield which is loose enough to rattle will be replaced.
Stock assembly	Inspect for breaks and separation of material which could prevent proper functioning of weapon.

Table 4. 5.56-MM Rifle M16, M16A1, M16A2, M231 Firing Port Weapon and Rifle Bipod M3 - Continued

Item	Standard
Stock assembly-continued	Under the following conditions, hairline cracks (no chipped away material allowed) originating from the buttplate end of the buttstock are acceptable. a. One hairline crack, not to exceed one inch in length, per side of buttstock. b. Two additional hairline cracks up to .22 inch in length, per side of buttstock. c. A total of three cracks per side of the buttstock, originating from the buttplate end, are allowable. Cracks in the critical area at the front end of the buttstock are not acceptable. Buttstocks with cracks in this area must be replaced.
Bipod	Inspect the Bipod legs. They shall move freely from closed to open position under spring tension. Bipod must hold securely to the rifle.
Rear sight	Shall be capable of being adjusted and the aperture shall be retained in either position with firmness.

Table 5. 40-MM Grenade Launcher M203

Item	Standard
General	Clear launcher of any ammunition and inspect in accordance with paragraph 7.
Handguard and sight assembly	Handguard must not be damaged so as to prevent positive retention to M16 or M16A1 rifle.
Barrel assembly	Origin of rifling must not advance to a point more than 3.9 inches from breech end of barrel. Cartridge locator must function properly under spring tension.
Receiver assembly	Trigger and sear must not have rounded or damaged surfaces.
Trigger pull	5 to 11 pounds.

Table 5. 40-MM Grenade Launcher M203 - Continued

Item	Standard
Firing pin protrusion	Grenade launcher must have the latest configuration firing pin 12002970. Check firing pin protrusion using firing pin protrusion gage 12002976. Minimum - 0.032 inch. Maximum - 0.047 inch.

Table 6. .45 Caliber Submachine Gun M3A1

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7. Inspect to see that the new type housing with a projecting lug on the ejector is present.
Trigger pull	Minimum - 4 pounds. Maximum - 7-1/2 pounds. (Use trigger measuring fixture 7274758.)
Cocking pull	Maximum of 12 pounds, under normal conditions, with at least eight dummy cartridges in magazine. Extractor must fully engage the cartridge, and ejector must throw cartridge from receiver while retracting the bolt.

Table 6. .45 Caliber Submachine Gun M3A1 - Continued

Item	Standard
Magazine catch shield	Guns must be equipped with the magazine catch shield and the new type magazine catch spring which has four coils.
Driving spring	Free length of spring must not be less than 14 inches.

Table 7. Shotguns-Model 1200

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7. NOTE: No definite limits can be established because of the lack of uniformity and interchangeability of parts and assemblies which is due to the large amount of hand fitting done at the time of manufacture. Determination of the degree of serviceability is left to the individuals making the inspection. The information below is given as a guide only. Keep parts and assemblies of individual shotguns together.
Barrels	Barrels will not be loose. Barrels on semi-automatic shotguns must have sufficient clearance to permit them to function freely in the receiver.
Functioning	Check the feeding, loading, extraction, and ejection of shell with the use of dummy rounds. Actions will reciprocate smoothly.
Trigger pull	Minimum - 3-1/2 pounds, Maximum - 8 pounds.
Operating handle	With hammer cocked, the operating handle (forearm) will not retract from the forward position without depressing the disconnector. With hammer uncocked, it will be possible to retract operating handle without depressing the disconnector.

Table 7. Shotguns-Model 1200 - Continued

Item	Standard
Operating handle-continued	The hammer will not release when pulling trigger until the bolt locking lugs are fully seated and locked into the barrel extension. Hand function with 5 empty rounds to ensure that shell stop and cartridge cutoff function properly.

Table 8. 3.5-Inch Rocket Launcher M20A1 and M20A1B1

Item	Standard
General	Clear weapon for any ammunition and inspect in accordance with paragraph 6.
Sight assembly	Reflecting type only.
Firing mechanism group	Use electrical output tester 7142554. Weapon must have an output of at least 15 milliwatt seconds. Refer to figure 4 for testing procedures. Inspect soldered points for electrical contact and strength. NOTE: When the firing mechanism is actuated, a "double click" will be audible. This is not a defect and no attempt at adjustment will be made to eliminate it. The double click is an inherent characteristic of the 3.5-inch rocket launcher firing mechanism.
Barrels	There must be no play between front and rear barrel sections when they are coupled together lengthwise and locked in the three possible positions. Barrel hook, barrel hook eye, and barrel latch strike must not be bent or deformed so as to prevent assembly and proper latching of barrel sections into carrying position.
Contactor latch assembly	Inspect soldered points of electrical connector on contact lead cable.

Table 8. 3.5-Inch Rocket Launcher M20A1 and M20A1B1 - Continued

Item	Standard
Reflecting sight group	Check lens for scratches and cracks. Check indicator and pointer for correct shape and position. Inspect elevation plate for clear and legible graduations and lock for operation.

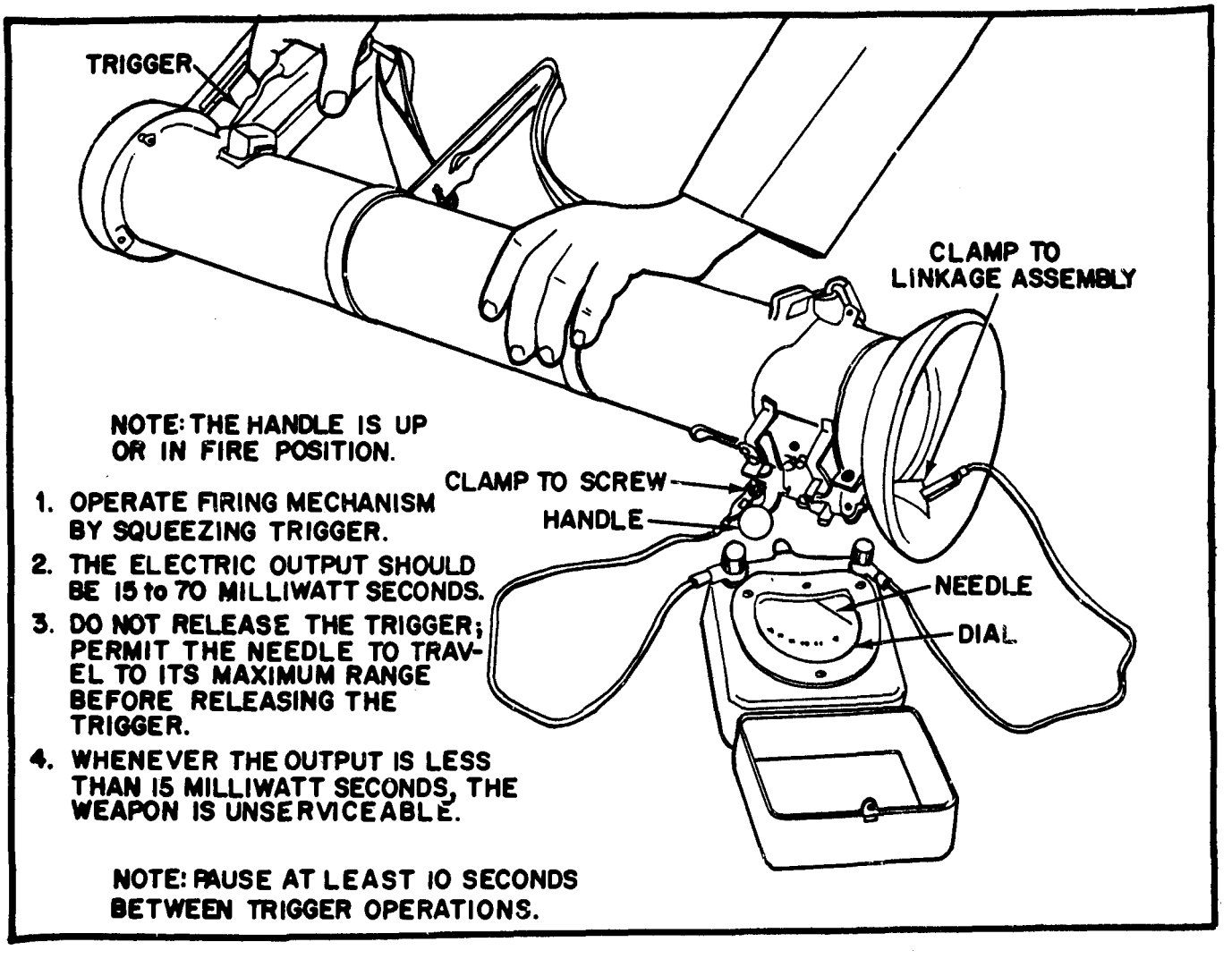


Figure 4. Check electrical functioning of contactor latch assembly and firing mechanism.

Table 9. 7.62-MM Machine Gun M60, M60D, and 7.62-MM Machine Gun Tripod Mount M122

Item	Standard
MACHINE GUN:	
General	Clear weapon of any ammunition and inspect in accordance with paragraph 6.
Barrel assembly with bipod	Inspect barrel for unusual wear and damage to the bore. (Refer to TM 9-4933-208-34.) Check flash suppressor for distorted ribs, cracks, or damage. Check for movement of flash suppressor that would affect the accuracy of the weapon (1/16-inch circular movement is permitted, but no vertical or horizontal movement is allowed). Inspect bipod legs for proper movement and locking in four positions.
Trigger mechanism	Inspect plungers and springs for freedom of movement. Plungers must return to normal position under spring tension when depressed and released.
M60D sear and safety housing	Inspect sear cocking surface; top rear corner must not have a radius of over 3/64 inch.
Forearm assembly	Inspect cover and shell assembly for cracked rear ribs.
Cover assembly	Inspect to ensure prongs of cotter pin are formed around shaft and do not protrude beyond hinge. Inspect cover shield and frame assembly. Inside surface of shield and outside surface of frame assembly shall be flush after riveting.
Buffer assembly	Inspect plunger for freedom of movement. Buffer assembly must not leak hydraulic fluid.
Operating rod assembly	Inspect for protruding rivets or pin. Roller must be assembled with large chamfer toward tube. Inspect operating rod spring-minimum free length is 24 inches.
Breech bolt assembly	Inspect for proper function. Rollers on actuator assembly shall rotate freely. Actuator assembly shall rotate freely on bolt. Firing pin, ejector, and extractor must move freely and return under spring tension.

Table 9. 7.62-MM Machine Gun M60, M60D, and 7.62-MM Machine Gun Tripod Mount M122 - Continued

Item	Standard
Breech bolt assembly-continued	Inspect to ensure ejector face is flush or below bolt face. Inspect plug assembly for adequate swagging. Inspect breech bolt to ensure firing pin hole is not visibly out of round. Inspect firing pin protrusion: Minimum - 0.035 inch. Maximum - 0.043 inch. (Use firing pin protrusion gage 7274754.) Inspect firing pin hole: Maximum - 0.108 inch. (Use plain cylinder plug gage 7458598.)
M60 receiver assembly	Inspect front and rear mounting pins. Pins must be firmly retained, although slight rotational movement and/or looseness is permitted. Front mounting pin must be staked securely at both ends. Inspect for loose rivets. NOTE: The rivets in the receiver are not considered “loose” until one or more of the following exist(s): a. There is interference with functioning the weapon. b. There is possibility of loss of the rivet. c. Looseness in the riveted junction between the receiver and the receiver rails will not exceed 3/32 inch (0.09375) vertical or horizontal. (Refer to TM 9-1005-224-24 for method of inspection.) Number of rounds fired ARE NOT to be used to justify rejection or serviceability of the receiver.
M60D receiver assembly	Make sure gun adapter moves freely and is held in place by spring pin. Inspect magazine bracket assembly for damage and positive spring tension of latches. Inspect quick release pin to make sure that ball bearings work properly, and that wire rope assembly secures quick release pin to rear sight.

Table 9. 7.62-MM Machine Gun M60, M60D, and 7.62-MM Machine Gun Tripod Mount M122 - Continued

Item	Standard
M60D grip and trigger assembly	Inspect sear assembly link and spring for proper adjustment. Number of rounds fired ARE NOT to be used to justify rejection or serviceability of the receiver.
Headspace	Maximum - 1.6415 inch. (Use headspace gage 7274786.)
M60 trigger pull	Minimum - 6 pounds. Maximum - 11.5 pounds. (Use bigger measuring fixture 7274758.)
M60D trigger pull	Minimum - 10 pounds. Maximum - 20 pounds.
TRIPOD MOUNT:	
Traversing and elevating mechanism	Indicators on handwheel and elevating scale plate of the upper elevating screw must coincide at "O" reading. Inspect handwheels to ensure they function freely and with distinct clicks.
Clearance between pintle shoulder and tripod head	Minimum clearance - 0.003 inch.
Pintle assembly and tripod group . . .	Bar will be adjusted so that sleeve and stop on right leg will be 1/4 to 1/2 inch apart before locking. NOTE: Snug nuts on bolt and stake nuts to bolts.

Table 10. .50 Caliber Heavy Barrel Browning Machine Gun M2; .50 Caliber Machine Gun Tripod Mount M3; and .50 Caliber Antiaircraft Machine Gun Mount M63

Item	Standard
MACHINE GUN:	
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Firing pin protrusion	Minimum - 0.073 inch. Maximum - 0.080 inch. (Use gage 7799739.)

Table 10. .50 Caliber Heavy Barrel Browning Machine Gun M2; .50 Caliber Machine Gun Tripod Mount M3; and .50 Caliber Antiaircraft Machine Gun Mount M63 - Continued

Item	Standard
Firing pin hole	Maximum - 0.084 inch. Plug gage (not-go) 7458406 must enter hole all the way for rejection. Elongation of firing pin hole is also cause for rejection.
Breech bore	Inspect unlined barrels with breech bore gage 7319900. Preembarkation: Maximum - 13th graduation, Inspect lined barrels with barrel erosion gage kit M6A1. (Refer to TM 9-4933-208-34.)
Firing pin and extension	Angle will be sharp without a feather edge.
Barrel buffer assembly	Overall length of buffer assembly (rear face of tube to forward inside face of engaging notch) must be between 6.086 and 6.117 inches. (Use oil buffer rod gage 7106326.) Breech lock depressors may have vertical movement which does not exceed 3/32 inch and lateral movement which does not exceed 1/16 inch, measured at the tips. Longitudinal movements shall not exceed .005 inch, Buffer body lock will not be overstaked. Staking or swaging to secure or limit the movement of the breech lock depressors in their recesses in the buffer body is not permitted. Marks derived from previous unauthorized staking or swaging buffer bodies will be acceptable if the function is not affected. Guide will be securely staked and free of damage. Do not put oil in buffer assembly. Oil is used in aircraft type guns only.
Threaded plug (backplate)	Threaded plug can be flush or protrude up to one thread. Must be tight. Headless shoulder pin 5152839 will be in locking notch in buffer tube. Buffer plate should protrude approximately 3/16 inch from front of backplate.
Trigger bar clearance	Minimum - 0.005 inch. (Use thickness gage.)
Breech lock cam adjustment	Minimum - 0.001 inch. (Should float slightly.) Maximum - 0.008 inch. (Use thickness gage.)
Cover latch and notch clearance	Preembarkation . . . . . Maximum - 0.025 inch. (Use thickness gage.)

Table 10. .50 Caliber Heavy Barrel Browning Machine Gun M2; .50 Caliber Machine Gun Tripod Mount M3; and .50 Caliber Antiaircraft Machine Gun Mount M63 - Continued

Item	Standard
Backplane assembly	Should fit firmly on receiver group but freely enough to be removed by hand.
Bolt group and rod assembly	Check clearance of bolt group with sideplate. Recoil plate will be flush with face of bolt assembly. Trigger lever should not drag on bolt group when trigger is depressed. Angle on mating surface that engages firing pin extension will be sharp without a feather edge. Bolt stud for new guns will not be staked. Stud will be staked in three places when replaced. Check for ilooseness using finger pressure; if loose, refer to TM 9-1005-213-25.
Barrel assembly	Reject barrel assembly if barrel is worn enough to affect sharpness of lands. Make sure serrations are well defined so as to retain barrel assembly setting by the locking spring. Barrel cannot be rotated after assembled to receiver.
Rear sight assembly	Make sure only acceptable types of rear sight assemblies are used (fig. 5). New configuration rear sight NSN 1005-01-003-5475, PN 12003047 will be included in the acceptable types. The flat spring for the new sight will not work in the old configuration sights. Observe clicking action of plungers and springs; flat spring 7265577 must hold leaf at 90-degree angle without excessive play in leaf assembly.
Front sight	Pins must be tight. Cover may be loose.
Cover assembly	Inspect clearance between cover latch and top plate (fig. 6).
Receiver assembly	Reject trunnion blocks with cracks. Receiver assembly having a hole broken through the feedway of the trunnion blocks will be corrected by drilling a hole with a 0.198 inch drill, centered in the link stripper slot. Repair of the damaged area shall not extend onto the trunnion block surface, and may be a maximum of 1/4 (0.250) inches in length, within the link stripper slot. Pawl and helical compression spring must not bind trunnion block and must hold cover group open in positions of quarter, half, and fully open.

Table 10. .50 Caliber Heavy Barrel Browning Machine Gun M2; .50 Caliber Machine Gun Tripod Mount M3; and .50 Caliber Antiaircraft Machine Gun Mount M63 - Continued

Item	Standard
Receiver assembly-continued	Inspect top and bottom plates for loose rivets, bends, and other damage. Also, check bottom plate for damage at mounting holes and bolt latch. NOTE: Loose Rivets - There will be no relative movement between assembled parts. Rivets may turn. If the assembled parts have movement, the weapon will be turned in for overhaul and a new weapon drawn from stock. Check breech lock cam for correct clearance; cam should float slightly (fig. 8). Check bolt latch group for clearance at side-plates. Check trigger lever clearance (fig. 9), Trigger lever should not drag on bolt group. Barrel support and shim will fit tightly on trunnion block. Cracks up to 1/4 inch (max) length are permitted at cooling holes. No more than five (5) cracks allowed per support. No more than three (3) cracks allowed in succession in any direction. Original surface imperfections are permitted. Inspect clearance between bolt latch and side-plate (fig. 10). Check for binding/lack of clearance between top plate bracket and trigger lever (fig. 11). Cracked or heavily chipped area in trunnion block - not acceptable (fig. 12). Pitted and slightly chipped trunnion block - acceptable.
Safety wiring	The double twist method of lock wiring shall be used as the common method of lock wiring. The single wire method of safety wiring may be used in a closely spaced, closed geometrical pattern (triangle, square, rectangle, circle, or in places that would make the single method more advisable). After wiring the last unit, the wire shall be twisted to form a pigtail of three to five twists. The excess wire shall be cut off. The pigtail shall be bent in towards the port to prevent it from becoming a snag.

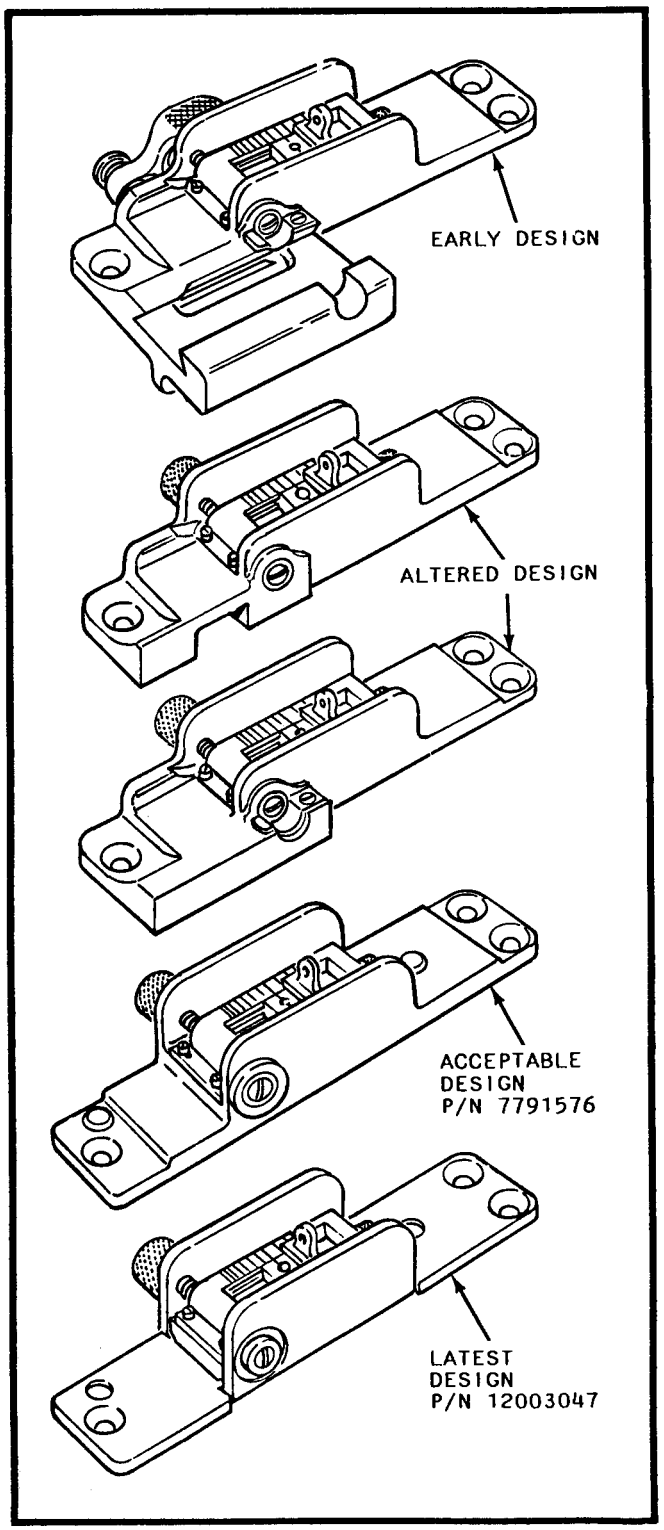


Figure 5. Acceptable types of rear sight assemblies.

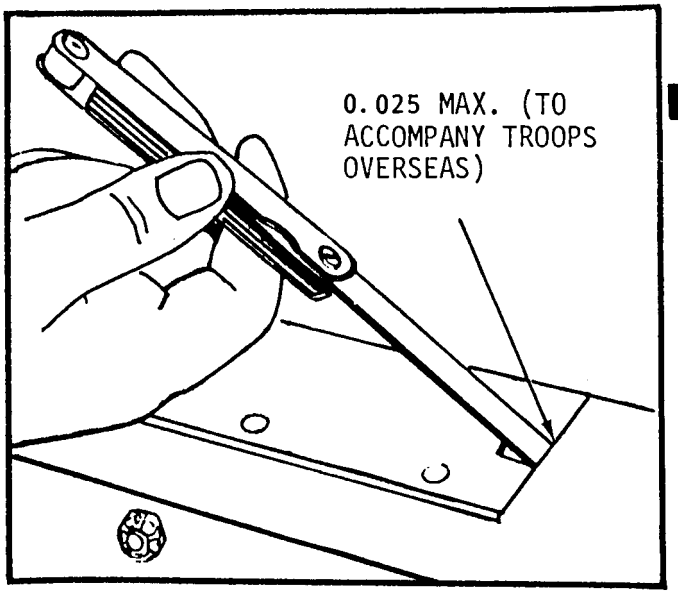


Figure 6. Gaging clearance between cover latch and top plate.

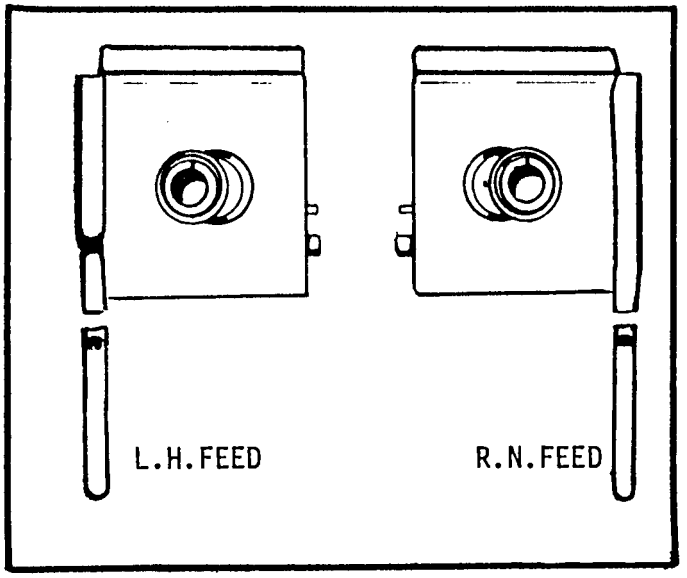


Figure 7. Position of helical compression spring and arm showing left and right hand feed.

Table 10. .50 Caliber Heavy Barrel Browning Machine Gun M2; .50 Caliber Machine Gun Tripod Mount M3; and .50 Caliber Antiaircraft Machine Gun Mount M63 - Continued

Item	Standard
Cotter pins	Install the cotter pin with the head firmly in the slot of the nut with the axis of the eye at right angles to the bolt shank. Bend prongs so that the head and upper prong are firmly seated against the bolt. Prongs should be cut to prevent possible protrusions above height of the bolt .
TRIPOD MOUNT M3:	
General	Inspect all pins, springs, and handwheels for proper functioning.
Traversing bar assembly	Distance between sleeve and collar will not be less than 1/2 inch or more than 3/4 inch before locking traversing bar assembly to right rear leg.
Clearance between pintle shoulder and tripod head	Minimum - 0.003 inch (fig. 13).
Traversing and elevating mechanism assembly	Pointer and designation plate of upper elevating screw must coincide with "O" reading. Dial pointer will be staked to click ring in three places.
Leg and tripod head group	Serrations must be clear when legs are being adjusted and in proper alignment to ensure even spread of legs when clamped. Sleeve bearing will be sufficiently staked at each end of screw slot to upset metal into slot.
ANTIAIRCRAFT MOUNT, M63:	
General	Inspect for proper functioning of controls and latches.
Mount leg, elevator assembly, and base assembly group	Check configuration of bearing assemblies (fig. 14). Determine that base assembly has two grease fittings (one in sleeve and other on outside of housing) and that both function properly.

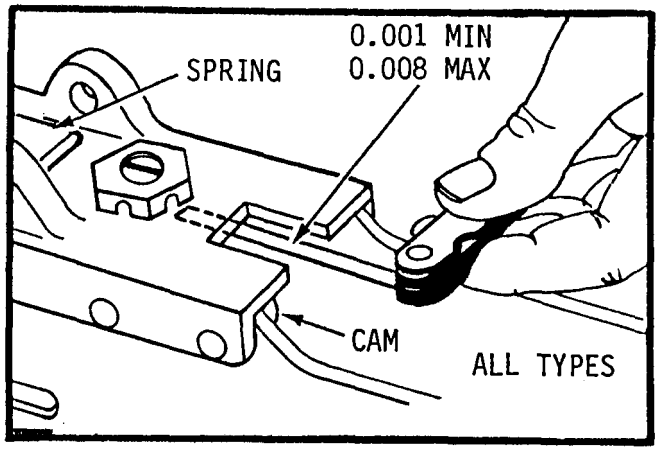


Figure 8. Gaging cam clearance of receiver group.

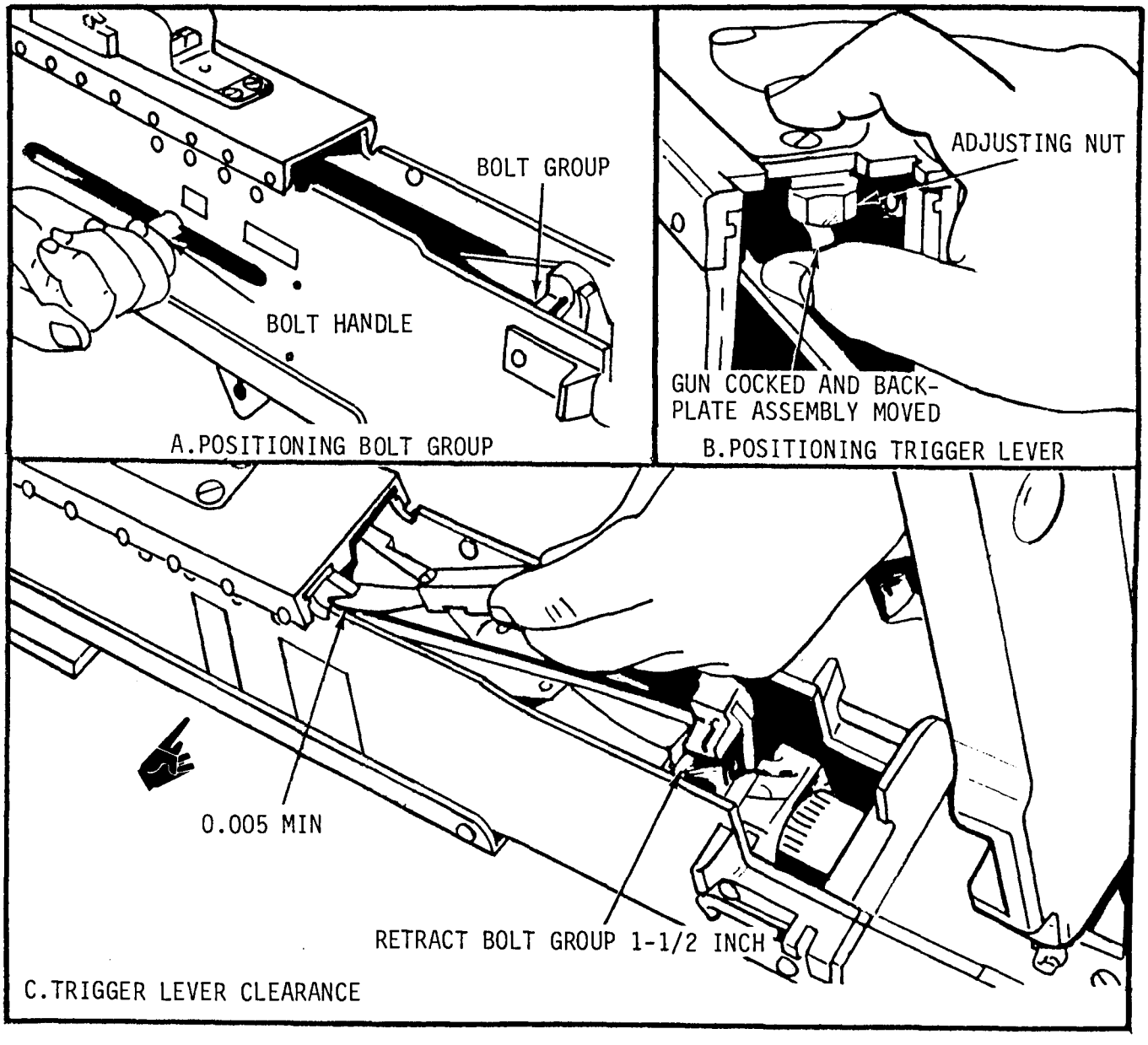


Figure 9. Checking clearance between top of bolt and bottom of trigger lever.

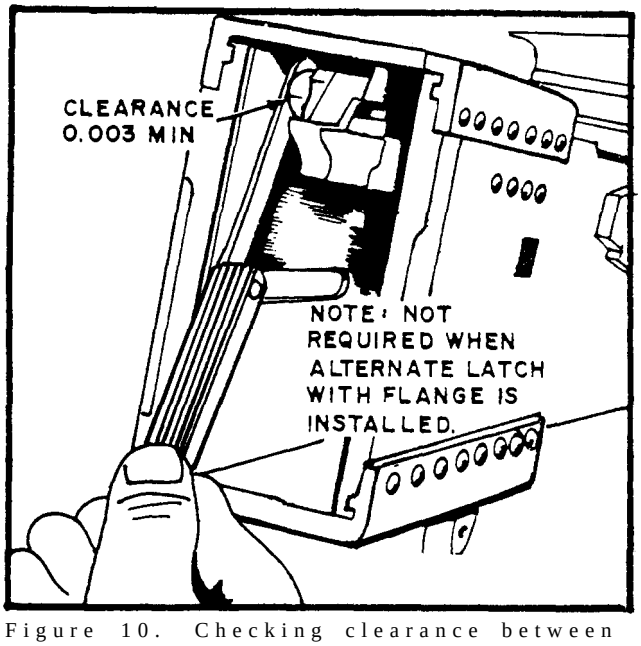


Figure 10. Checking clearance between bolt latch and sideplate.

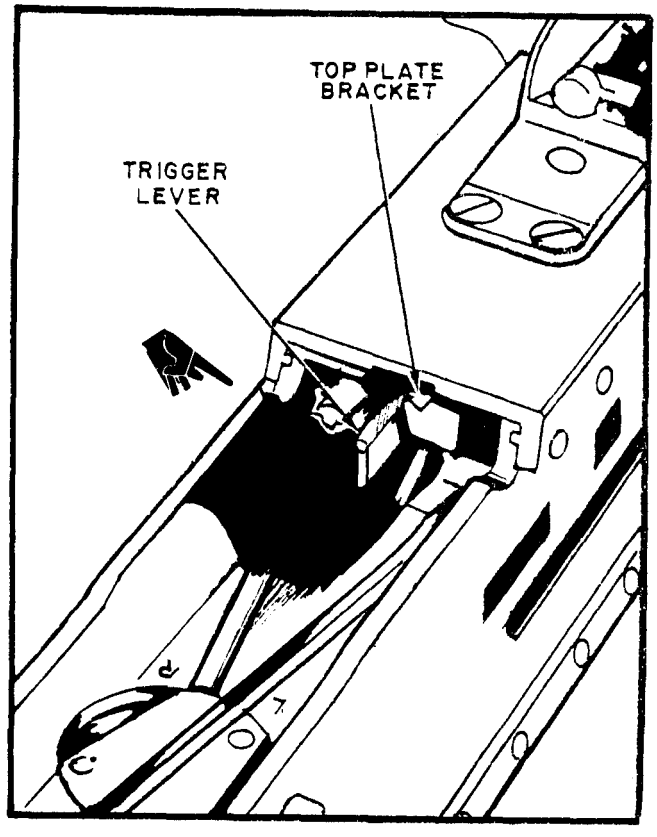


Figure 11. Checking trigger lever clearance.

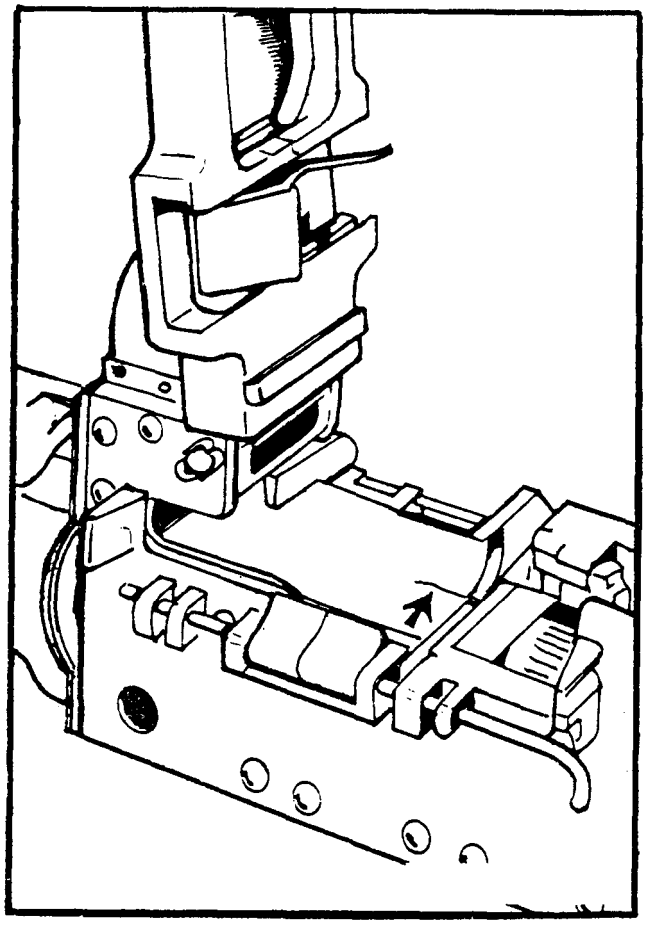


Figure 12. Cracked trunnion block - NOT acceptable.

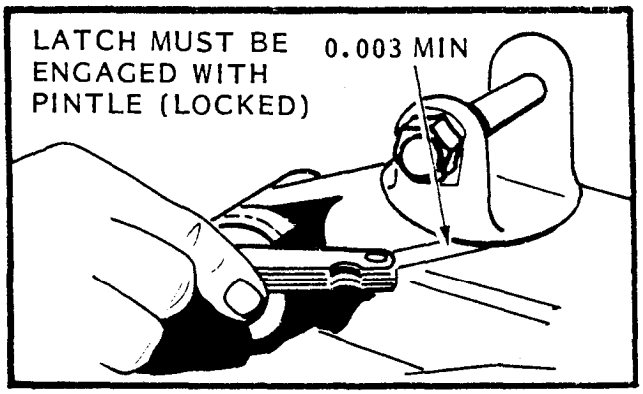


Figure 13. Gaging clearance between pintle shoulder and tripod head.

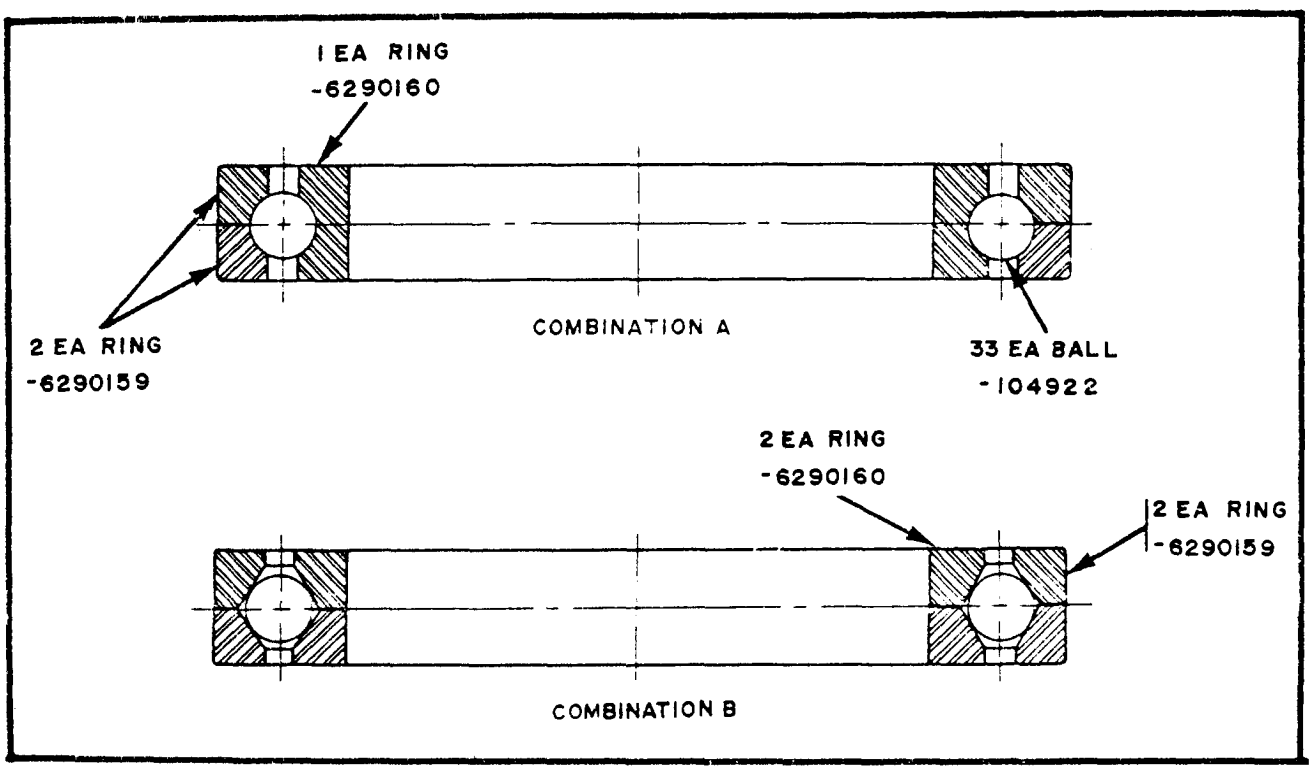


Figure 14. Configuration of bearing assembly for base assembly.

Table 11. .50 Caliber Machine Gun M85

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Barrel	Refer to TM 9-4933-208-34 and TM 9-1005-231-24&P.
Bolt locking space	Preembarkation inspection - maximum 0.027 inch. Check bolt lock spacing as described below: a. With the weapon assembled and bolt locked in the forward position, insert proper leaf of bolt locking space gage between the two bolt locks and barrel extension recesses. b. If gage enters to a depth of less than 1 inch, the spacing is acceptable. c. If gage penetrates to a depth more than 1 inch, the spacing is too great and corrective action must be taken.
Firing pin protrusion	Minimum - 0.022 inch. Maximum - 0.043 inch. With the bolt assembly assembled, check firing pin protrusion as indicated below: a. Install bolt assembly in barrel extension assembly. b. Position bolt assembly forward in battery position. c. Raise barrel extension assembly in upright position, making certain to maintain pressure on rear portion of bolt assembly and hold securely in battery position. NOTE: Make certain to release the interlock of barrel extension so bolt assembly will be positioned fully forward within barrel extension. d. Insert spindle portion of firing pin protrusion gage 7799730 into barrel socket of barrel extension assembly, making sure gage is fully seated.

Table 11. .50 Caliber Machine Gun M85 - Continued

Item	Standard
Firing pin protrusion-continued	NOTE: The flush pin of the gage should be lined up vertically over and in contact with the firing pin. e. Continue to maintain pressure upward on rear of the bolt assembly and at the same time press down firmly on upper surface of gage collet. f. The upper end of the flush pin should be positioned above the lower step just below the upper step of the gate spindle. Position of pin can be determined either visually or by feeling. g. If end of flush pin remains below lower step, the firing pin protrusion is insufficient and could result in failure to fire. If flush pin extends above upper step, firing pin protrusion is excessive and could result in pierced primers.
Solenoid adjustment	Check solenoid plunger for functioning and proper seating of armature, using a 24-volt DC power source. Check solenoid and solenoid plunger for proper adjustment, using feeler gage; minimum - 0.0015 inch, maximum - 0.020 inch. Adjustment of solenoid and gaging of solenoid plunger. a. Disassemble machine gun as shown in figure 15, steps A and B. b. Rotate the solenoid armature clockwise until it reaches the “stop” position. c. With the sear assembly held in the rearmost position, rotate the armature counterclockwise until the solenoid plunger makes contact with the sear lever (fig. 15, step C). d. Rotate the armature clockwise to the nearest assembly position for the disconnector pin. Be sure the armature only rotates and does not move horizontally out of position.

Table 11. .50 Caliber Machine Gun M85 - Continued

Item	Standard
Solenoid adjustment-continued	e. Hold the sear in the forward position and insert the leaf-type feeler gage in slot between the receiver brace and the backplate (fig. 16). Minimum - 0.0015 inch must go. Maximum - 0.020 inch must not go. f. The armature may be rotated clockwise to increase clearance and counterclockwise to reduce clearance, as required, between the solenoid plunger where the actual measurement is applicable. g. Assemble the pin and trigger assembly (fig. 15).
Driving spring	Minimum free length of 17 inches.
Receiver assembly	Check for loose rivets. NOTE: If the 0.005-inch leaf of a feeler gage penetrates to the depth of the rivets at any point in the riveted area, the rivets are classified as loose. Rivets may be tightened by using the guidance found in TM 9-1005-231-24&P. Loose rivets that cannot be tightened due to ocation (inaccessible) or receivers found otherwise unserviceable will be turned in for depot disposition. A receiver brace (bridge) shall be considered as loose when movement is readily apparent by hand contact or prevents proper latching of the cover assembly. Repair (tightening) may be accomplished by impacting both ends of brace with a pin punch of appropriate diameter on a flat smooth supported surface.

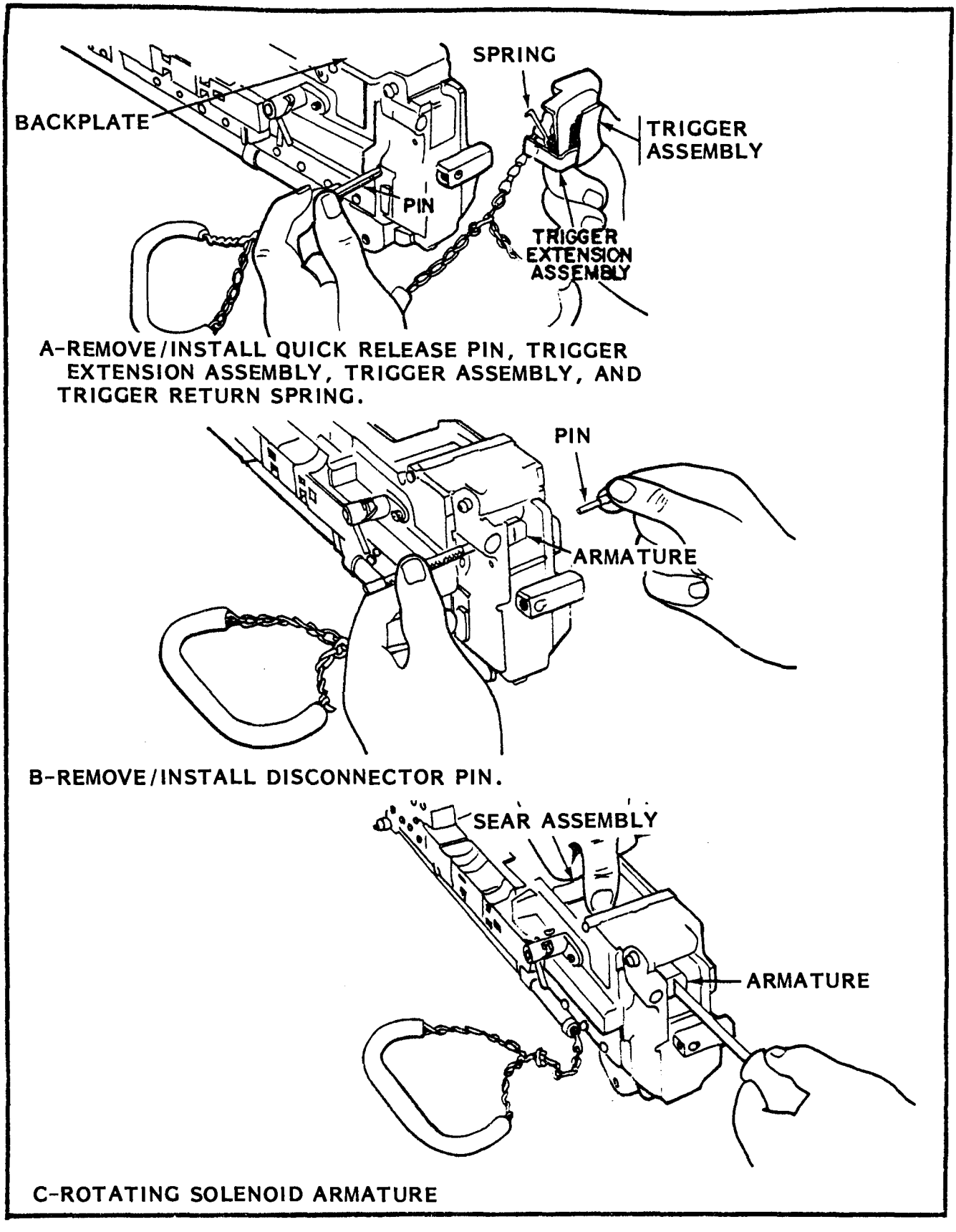


Figure 15. Adjustment of solenoid.

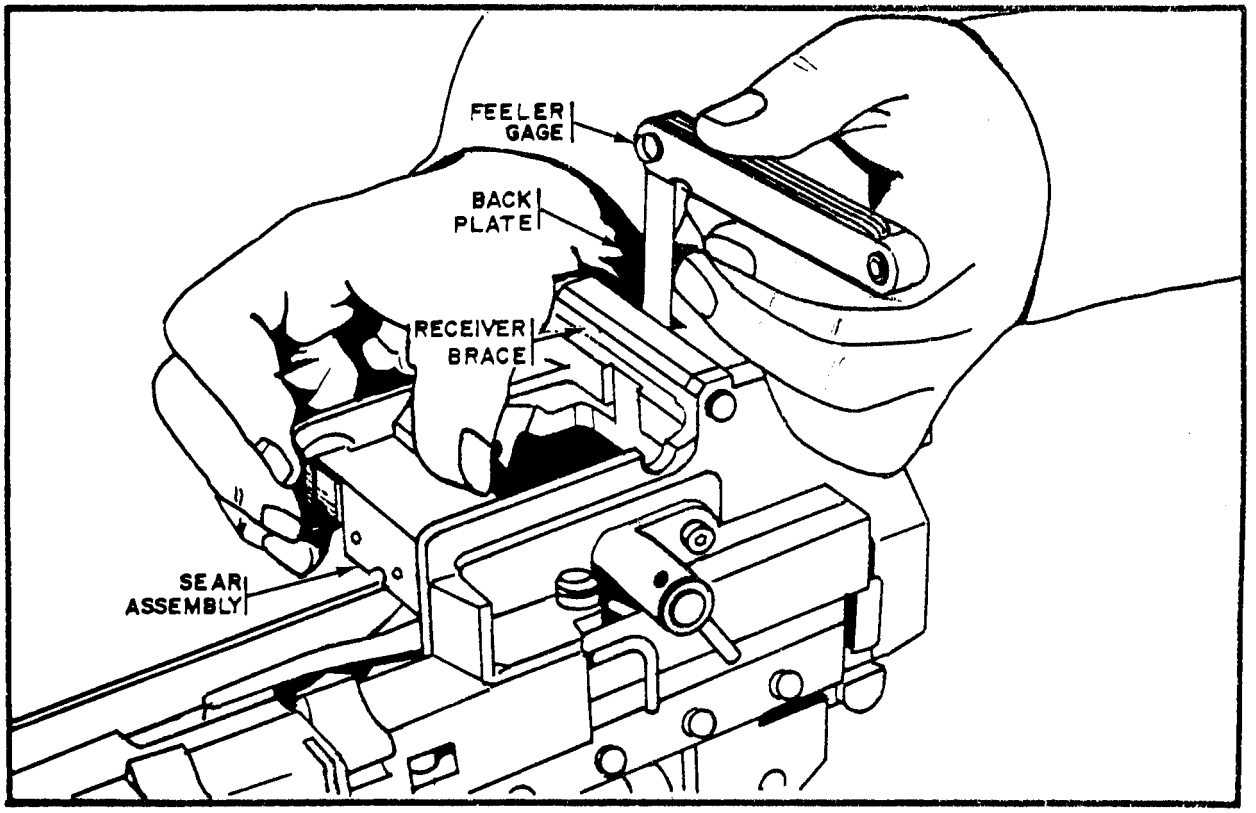


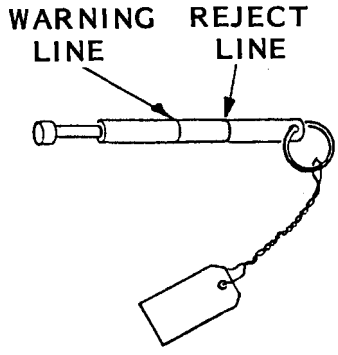
Figure 16. Gaging solenoid plunger,

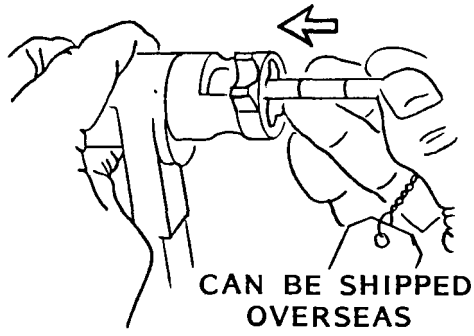
Table 12. 5.56-MM Machine Gun M249

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Bolt	Inspect bolt body for cracks using inspection penetrant, MIL-I-25153, NSN 6850-00-826-0981. Follow application instructions contained in kit. If cracks are detected, replace bolt and check headspace.
Slide	Inspect slide for cracks using inspection penetrant, MIL-I-25153, NSN 6850-00-826-0981. Follow application instructions contained in kit. If cracks are detected, replace slide.

Table 12. 5.56-MM Machine Gun M249 - Continued

Item	Standard
Barrel	Must pass breech bore wear/erosion check ("warning" line/mark visible), using gage 9350096, NSN 5210-01-259-3454. Must pass headspace check, using headspace gage, 9350102, NSN 1005-01-141-3830.
Buttstock/buffer assembly	Inspect buffer plunger for spring tension and oil leaks on face of backplate. If spring tension does not exist or an oil leak is detected, replace backplate and buffer assembly.
Trigger pull	Using trigger pull fixture, NSN 4933-00-647-3696, check for minimum pull of 8.0 lbs (3.63 kg) and maximum pull of 15.5 lbs (7.03 kg).
Firing pin protrusion	Must pass firing pin protrusion test using gage, 9350104, NSN 5220-00-141-4732. Center rod should appear within area indicated. If this condition is not met, replace defective parts.
Barrel locking lever.	Barrel must lock securely in receiver.
Functional test	Must pass function testing using several linked dummy rounds. If machine gun fails functional test, replace defective parts.





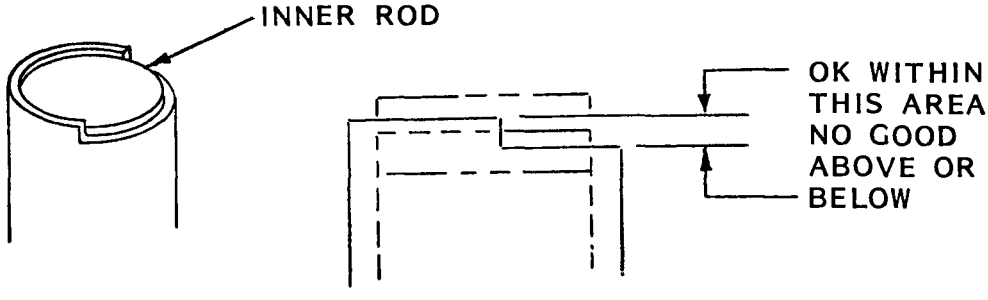


Table 13. 40-MM Grenade Launcher M79

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Barrel	Origin of rifling must not advance to a point more than 3.9 inches from breech end of barrel.
Trigger pull	Minimum - 7.5 pounds. Maximum - 10 pounds.
Firing pin - measure from front base of firing pin retainer	Intrusion - Minimum - 0.000 inch. Maximum - 0.009 inch. Protrusion - Minimum - 0.063 inch. Maximum - 0.077 inch.

Table 14. 7.62-MM Machine Gun M240 and M240C

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Barrel	Must pass barrel erosion gage check (warning mark on muzzle and breech gage 11826276). Must pass headspace check using warning gage, P/N 11826299.

Table 14. 7.62-MM Machine Gun M240 and M240C - Continued

Item	Standard
Barrel release (with barrel mounted in receiver)	Barrel locking latch must lock barrel securely. Barrel locking latch must lock correctly, which is from 2 to 7 clicks.
Buffer assembly	The buffer plug must protrude through the boss of buffer block.
Charger assembly	Must operate smoothly and freely. No binding is permitted.
Cover and cartridge feed system	All rollers and links must operate smoothly and freely. No binding is permitted.
Firing pin protrusion	Must pass firing pin protrusion test (fig. 17).
Trigger pull	Minimum - 6.0 pounds. Maximum - 15.50 pounds. Use trigger measuring fixture (7274758).

Table 14.1. 40-MM Machine Gun, MK19, Mod 3

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Top cover assembly	Raise the top cover. Ensure that the handle is not loose, dry, or binding.
Secondary drive lever assembly	Verify the presence of the retaining ring on the pivot post. If missing, replace the assembly.
Feed slide assembly	Verify that the feed slide assembly slides in the tray without binding. With the bolt in forward position and the feed slide assembly to the left, verify that the cover closes easily. If it does not close, move the feed slide assembly slightly, until the slot in the secondary drive lever aligns with the pivot post on the primary drive lever. The cover will now close.

Table 14.1. 40-MM Machine Gun, MK19, Mod 3 - Continued

Item	Standard
Receiver	Verify the presence of the following components: secondary drive lever, primary drive lever, ogive plunger assembly, alignment guide assembly, and round positioning block. Ensure that they are properly installed. Ensure that the three welded pins in the right hand forward wall of the receiver are present. If missing, evacuate weapon to depot maintenance. Remove the ogive plunger assembly and inspect for broken slotted washer. Remove the alignment guide assembly and inspect for damage to guide, loose pin, or cracked spring. Slide the round positioning block in the key holes to verify that it is tight. Link guide must not be galled. Function check the feed operation using six linked dummy rounds. If galled link guide prevents feeding, evacuate weapon to depot maintenance. If welded crosspins are missing from primary pawl rod or secondary pawl rod, depress the primary pawl while retracting the primary pawl rod until welded crosspin is visible. Repeat for the secondary pawl and rod. If welded crosspins are present, reinstall the rods, ensuring that the crosspins enter the pin holes in the receiver. Ensure rod cannot be removed.
Firing pin	With the top cover open and the bolt forward, inspect for gas corrosion, pits, or worn chrome on firing pin cover. Check the tip of the firing pin for pits or damage. Charge the weapon and place on S (safe). Observe through the receiver whether the firing pin is protruding. If the pin is protruding with the bolt to the rear, the cocking lever or spring is defective. If firing pin will not retract, remove the bolt and backplate assembly. Inspect the cocking lever for breakage or wear (flattened more than 0.100 inch across the tip).

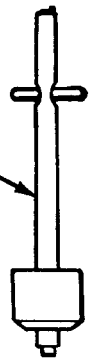
Table 14.2. 25-MM Automatic Gun M242

Item	Standard
General	Clear weapon of any ammunition and inspect in accordance with paragraph 7.
Barrel	Must pass barrel erosion gage 12535035 (.4 inches wear, second scribe mark on gage is criteria for overseas shipment).
Muzzle brake	Total movement vertical must be less than .2 inches.
Recoil mechanism	Check protrusion of recoil piston rod. One or two end holes must be visible.
M242 assembly	Hand cycle 25mm dummies through M242 gun with barrel installed in accordance with TM 9-1005-200-20&P.

USING FIRING PIN PROTRUSION GAGE TO MEASURE FIRING PIN PROTRUSION

WARNING

This test shall not be made with live ammunition.



NOTE

Function check: The bolt and operating rod must go forward freely to firing position when trigger is pulled. (Safety must be in "F" position.)

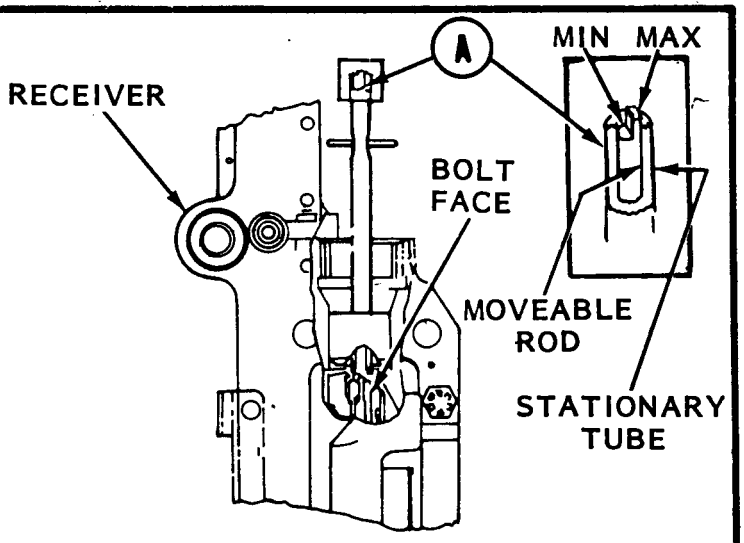
1 Remove the barrel assembly. Be sure bolt and operating rod assembly is forward in firing position.

2 Point receiver body upward with buffer resting on a work surface.

3 Insert firing pin protrusion gage in receiver. Seat the bottom end of the gage firmly against the bolt face.

4 Read gaging specifications at point A.

5 The end of the moveable rod must be flush or above the edge of the stationary tube.



6 The notch in the moveable rod must be flush or below the edge of the stationary tube.

7 Remove gage and install barrel.

Figure 17. Checking firing pin protrusion.

Section III. AIRCRAFT ARMAMENT

8. SCOPE. Standards for equipment destined for overseas shipment of aircraft armament and associated fire control equipment are contained in paragraph 9 and tables 15 through 20.

9. GENERAL INSPECTION CRITERIA.

WARNING

Clear each weapon before starting the inspection. Point the weapon in a safe direction and determine if live rounds are present. Then check bore and chamber for obstructions; i.e., bullet in bore or ruptured cartridge in chamber.

a. Before inspection, the materiel must be thoroughly cleaned of all grease, dirt, or other foreign matter that might interfere with its proper function or obscure the true condition of parts.

b. Refer to paragraph 7 for general inspection procedures for machine guns.

c. Screwheads must be in serviceable condition and threads must not be stripped, Internal threads must not be stripped.

d. Cable assemblies must not have loose or damaged connectors, cut or worn insulation, broken wires, kinks, or sharp bends.

e. Materiel must be free of burrs, particularly those on functional surfaces.

f. Parts must not be cracked, bent, distorted, or damaged and must be free of detrimental wear.

g. Rivets must be tight.

h. Painted surfaces must be free of bare spots.

i. Rollers and slides must function smoothly.

j. Welded or brazed joints must not show signs of separation or failure.

k. Ammunition boxes and chuting must not have dents or bends that would interfere with the passing of ammunition.

l. Check for deformed, weak, or broken springs.

m. All locking devices shall be positive in action and must not become disengaged due to normal operation and firing.

n. Instruction(s), warning(s), and nameplate(s) must be present and secure.

o. Quick-release pins and similar devices must function properly and not be subject to loss during use or transportation.

p. Inspect links for bent or broken tabs and bent segments.

q. Inspect webbing assemblies for raveling, cuts, and missing hook snaps.

r. Hoses and tubes must not have loose fittings or other damage.

s. Inspect closure brushes for missing or loose tufts.

t. Inspect electrical components for proper functioning, physical damage, and missing parts.

u. Inspect for burned out lamps, damaged lamp covers, and switches.

v. Inspect electrical connections for damage or corrosion.

w. Inspect optical parts for cracks, scratches, or other damage.

x. Flexible mounts will be capable of movement through full range of elevation depression and azimuth without binding.

y. Associated fire control equipment used with aircraft armament must conform to requirements in accordance with paragraph 7aa.

Table 15. 40-MM Grenade Launcher Helicopter Armament Subsystem M5

Item	Standard
Grenade launcher barrel	Inspect bore and guide ribs for excessive wear, bulges, and/or cracks. Check log book for number of rounds fired. Only barrels which have fired less than 5,000 rounds are acceptable for overseas shipment. Check for deformed barrel lock recess and elongated mounting hole for the barrel roller shaft.
General	Clear weapon of any ammunition and inspect in accordance with paragraph 9.
Cam tracks	Cam tracks must not be worn or dented to the point of allowing cam rollers to slip from the tracks.
Ammunition booster assembly	Inspect for cracked, broken, or excessively worn sprocket teeth. Operate the loading switch assembly and feed control switch, noting each activates with a positive action. Raise lever assembly and check for binding. Turn sprocket by hand and inspect for binding or excessive play in the gear train.

Table 16. Twin High Rate 7.62-MM Machine Gun -- 2.75-Inch Rocket Launcher Helicopter Armament Subsystem M21

Item	Standard
7.62-MM machine gun M134:	
General	Clear weapon of any ammunition and inspect in accordance with paragraph 9.
Bolt assembly	Trackways must not be nicked, burred, cracked, or galled. Roller must not be worn or damaged.
Bolthead subassembly	Firing pin hole must not be worn or elongated. Extractor lip must not be broken, cracked, or burred. Locking pins must not be worn or burred.
Firing pin spring	Spring must be free of damage with minimum free length of 1.67 inches.
Firing pin	Striker and tang must not be worn, broken or cracked.
Barrel	Inspect for pitting, scoring, excessive wear, and stripping of lands.
Rotor, rotor bearings gun housing, bolts, and safing sector	Manually cycle at least six rounds of M172 dummy ammunition through gun. Moving parts must operate smoothly. Rounds must chamber, extract, and eject without binding or catching, and dummy ammunition must not be dented by the operation.
Timing pin	Engage timing pin. Upon release; pin must retract clear of gun rotor.
Mount assemblies	Check for evidence of leaking hydraulic fluid, damaged hydraulic connectors, damaged mating receptacles, and frayed hoses or cables.

Table 17. High Rate 7.62-MM Machine Gun Helicopter Armament Subsystem M27

Item	Standard
7.62-MM machine gun M134	Refer to table 16.
General	Clear weapon of any ammunition and inspect in accordance with paragraph 9.
Delinking feeder	Must have freedom of movement and electrical connector must not be damaged.
Elevating assembly	Rotate elevating assembly through a complete cycle. There must be no evidence of binding.

Table 18. Helicopter Multiarmament Mount M156

Item	Standard
Rack and support assembly	Inspect in concurrence with paragraph 9a, c, d, e, f, g, h, j, m, n, t, v, and x.

Table 19. 7.62-MM Machine Gun - 40-MM Grenade Launcher Helicopter Armament Subsystem M28A1, M28A2, and M28A3

Item	Standard
Turret	Inspect in compliance with paragraph 9a, c, d, e, f, g, h, i, j, l, m, n, o, p, r, t, u, v, and x.
Ammunition feed system and weapon controllers	Inspect in accordance with paragraph 9a, c, e, f, g, h, i, j, k, l, m, o, p, t, and v.
40-MM grenade launcher M129	Check for conformance with paragraph 9a, c, e, f, i, l, and m. Inspect barrel bore for excessive wear, bulges, and/or cracks.
7.62-MM machine gun M134	Refer to table 16.

Table 20. 20-MM Automatic Gun Helicopter Armament Subsystems M97A1 and M97A2

Item	Standard
Turret	Inspect in compliance with paragraph 9a, c, e, f, g, h, i, j, k, l, m, n, o, t, u, w, x, and y.
Ammunition feed system, Gun control, Turret control and Emergency stow control	Inspect in compliance with paragraph 9a, c, d, e, f, g, h, i, j, k, l, n, o, p, t, and v.
20-MM Automatic Gun M197	Inspect in compliance with paragraph 9a, b.
Recoil adapter, feeder, and drive motors	Check functionally for completeness and smoothness of operation.
Gun firing control and wiring assembly	Check for missing and damaged parts. Poor insulation and functionally check operation.
Armament system control panels	Check in compliance with paragraphs 9a, c, d, f, g, h, n, u, and v.
2.75 inch rocket management subsystem M138	
Display Unit	Inspect in compliance with paragraph 9a, c, e, f, h, n, t, and v.
Operations Unit	Inspect in compliance with paragraph 9a, c, e, f, h, t, and v.
Fire control computer M22	Inspect in compliance with paragraph 9a, c, d, m, n, t, u, v, and y.
Heads-up display sight M76	Inspect in compliance with paragraph 9a, c, d, f, m, n, t, u, v, w, and y.
Fire and flight air-data subsystem M143	Inspect in compliance with paragraph 9a, c, d, e, f, g, i, j, m, n, r, t, u, v, x, and y.
Helmet sight M128 and M136	Inspect in compliance with paragraph 9a, c, d, e, f, g, i, j, n, p, t, u, v, w, x, and y.

NOTE: THE M97 SYSTEMS AND RMS ARE SHIPPED AS A COMPONENT OF THE AH-1S HELICOPTER.

Section IV. TOWED HOWITZER

10. SCOPE. Standards for equipment destined for overseas shipment of towed howitzers and assorted sighting and fire control equipment are described in paragraph 11 and tables 21 through 25.

11. GENERAL INSPECTION CRITERIA.

WARNING

Before starting an inspection, be sure to clear the weapon. Do not actuate the firing mechanism until the weapon has been cleared. Inspect the chamber to ensure that it is empty and check to see that no ammunition is in position to be introduced. Avoid having live ammunition in the vicinity of the work.

Check to see that weapon has been cleared of all corrosive-preventive compound, grease, excessive oil, dirt, or foreign matter which might interfere with proper functioning or conceal the true condition of the parts. Make an overall inspection of the weapon for general appearance, condition, operation, and manual functioning. Use dummy or drill cartridges. Refer to applicable field manuals for responsibilities and fundamental duties of inspecting personnel, the necessary notice and preparations to be made, forms to be listed, and general procedures and methods to be followed by inspectors. Materiel to be inspected includes organizational spare parts and equipment and the stocks of cleaning and preserving materials.

a. Cannon.

(1) Check bore for debris or foreign material, dirt, rust, and deformation of grooves. Observe pitting. Examine for evidence of powder fouling; do not confuse coppering of bore with powder fouling. Check tube for cracks, corrosion, or other damage. Refer to TM 9-1000-202-14 for evaluation of wear and damage in bore. Refer to pertinent table for round life data for a particular weapon.

(2) Examine exterior of breech ring for damage. Inspect interior surfaces for cracks and progressive stress damage. Examine leveling plates for dents, gouges, scratches, and uneven surfaces. Operate breech mechanism with breech operation handle and note whether mechanism works smoothly and freely.

(3) Remove and disassemble breechblock and percussion mechanism (see pertinent technical manual). Carefully examine all exterior surfaces of the breechblock for burrs, scores, and raised or abraded spots. Pay particular attention to sliding surfaces. Check the movement of the extractors and look for burrs, scores, and indication of fracture. Actuate cocking lever and firing plunger and check for sluggish movement or failure to actuate percussion mechanism. Check sear, retractor and bushing, and trigger for burrs and scores. Check helical springs for set, kinks, cracks, or breaks.

b. Recoil Mechanism.

(1) Inspect recoil mechanism for fluid leakage, fluid reserve, proper functioning of fluid index, and correct amount of nitrogen pressure (direct or indirect method).

(2) If recoil mechanism has no record of being exercised in the last 180 days, exercise mechanism in accordance with TB 9-1000-234-35.

(3) Respirator, when adjustable, will move freely to all positions.

(4) If the recoil is of the variable type, it must be checked for proper timing. The weapon must be elevated from minimum to maximum elevation and the variable recoil visually checked to ensure proper movement occurs.

c. Carriage.

(1) Check handwheels of elevating and traversing mechanisms for backlash and ensure they are secured firmly to the shaft. Backlash shall not exceed amount indicated in applicable table. Check force required to elevate and depress and to traverse through entire range. Equilibrators must be capable of being equalized and adjusted so torque shall not exceed amount indicated in applicable table. Check for visible damage.

(2) Check effectiveness of handbrakes and adjust if functioning improperly. Brake drums must be free of cracks and excessive scoring.

(3) Check wheels for looseness on hubs or spindle and for visible damage.

(4) Tires must be inflated in accordance with pertinent technical manual. Tires must be the size, ply, and type specified in pertinent technical manuals for the weapon and will be matched if mounted on dual wheels.

(5) Paint on the weapon must be of the regulation color and luster to comply with camouflage requirements and must cover all specified surfaces thoroughly and efficiently in order to prevent corrosion (see pertinent technical manual).

(6) Lubrication of gun and carriage will conform to existing directives and the appropriate Department of the Army lubrication order.

(7) Open and close trails and check for excessive play or binding at trail hinge pins.

d. Basic Issue Items. The basic issue items (BII) must be examined for serviceability, and unserviceable items must be replaced. If sealed packages are in good condition, it is not normally necessary to open the packages, since the items in the packages were inspected prior to sealing and storage.

e. Associated Fire Control Equipment. Fire control materiel used with towed howitzers must conform to requirements in accordance with paragraph 7aa.

Table 21. 105-MM Towed Light Howitzer M101 and M101A1

Item	Standard
Tube (7238072) for M2A1 cannon	If number of EFC (equivalent full charge) rounds fired exceeds 7,500, replace tube. See log book (DA Form 2408-4) for record of rounds fired.
Tube (7238068) for M2A1 and M2A2 cannon	If number of EFC rounds fired exceeds 7,500, replace tube. Check log book as above.
Elevating mechanism	Backlash - shall not exceed 25 degrees. Torque - shall not exceed 65 in.-lb.
Traversing mechanism	Backlash - shall not exceed 20 degrees. Torque - shall not exceed 52 in.-lb.

Table 22. 105-MM Towed Light Howitzer M102

Item	Standard
Tube for M137 (mod) cannon	For EFC rounds fired, see TM 9-1015-234-10, dated August 1985.
Elevating mechanism	Backlash - shall not exceed 45 degrees. Torque - shall not exceed 75 in.-lb.
Traversing mechanism	Backlash - shall not exceed 30 degrees. Torque - shall not exceed 75 in.- lb.

Table 23. 155-MM Towed Medium Howitzer M114 and M114A1

Item	Standard
Tube for M1A1, M1A2	If number of EFC rounds fired exceeds 7,500, replace tube. See log book for record of rounds fired.
Elevating mechanism	Backlash - shall not exceed 30 degrees. Torque - see pertinent TM.
Traversing mechanism	Backlash - shall not exceed 30 degrees. Torque - see pertinent TM.

Table 24. 20-MM Towed Antiaircraft Artillery Gun M167

Item	Standard
Barrel cluster* for cannon M168	Check bore for condition using barrel erosion gage P/N 167C2209, NSN 4933-01-068-8007.
Traversing	Slew rate Ground Mode - 75 degrees per second, All others - 60 degrees per second.
Elevating	Slew rate - 45 degrees per second. Elevation limits - minus 5 degrees to plus 80 degrees.
Radar set AN/VPS-2	Operational - see pertinent TM.

*Set of six gun barrels.

Table 25. 155-MM Towed Medium Howitzer M198

Item	Standard
Tube	If pullover gage bore measurement exceeds 6.200 inches (15.748 cm) measured 41.75 inches (106.045 cm) from forward of rear face of tube, replace tube. See log book for record of bore measurement. If pullover gage bore measurement exceeds 6.160 inches (15.646 cm) measured 60.00 inches (152.400 cm) from forward of rear face of tube, replace tube. See log book for record of bore measurement.
Elevating mechanism	Backlash shall not exceed 1/12 (4-1/4 inches) turn of handwheel. Torque 180 in.-lbs.
Traversing mechanism	Backlash shall not exceed 1/12 (3-1/8-inches) turn of handwheel. Torque 120 in.-lbs.
Speed shift assembly	Must be capable of raising the howitzer to permit manual rotation 360 degrees. Refer to user technical manual for specific instructions.

Table 25. 155-MM Towed Medium Howitzer M198 - Continued

Item	Standard
Wheel actuator	Must be capable of lowering the carriage to the firing position and raising the carriage to the travel position. Refer to user technical manual for specific instructions.

Section V. MORTARS AND RECOILLESS RIFLES

12. SCOPE. Standards for equipment destined for overseas shipment of mortars, recoilless rifles, and associated fire control equipment are contained in paragraph 13 and tables 26 through 30.

13. GENERAL INSPECTION CRITERIA.

a. Mortar Cannons and Recoilless Rifles.

(1) Cannon tubes and rifle barrels will be inspected in accordance with TM 9-1000-202-14. The bore measurements of mortar cannon tubes will not exceed the bore measurements shown in the applicable tables below. The EFC rounds fired by rifle barrels, as determined from the equipment log book, shall not be in excess of their allowable rounds fired shown on the following applicable table.

(2) Cannon base caps must be gas tight on cannon tubes.

(3) Clamp position marks and aiming lines must be legible.

(4) Firing pins must cause sufficient indentation on ignition cartridges for firing.

(5) Mounting brackets and clamps must be secure and action of firing mechanisms must be positive.

b. Mounts.

(1) All movable elements must perform properly without binding.

(2) Elevating and traversing mechanisms must not have backlash in excess of that shown in the applicable table on page 49.

(3) Handles, chains, and straps must be intact.

(4) Finish must be intact.

c. Basic Issue Items. Basic issue items for mortars and recoilless rifles must conform to requirements in accordance with paragraph 11d.

d. Associated Fire Control Equipment. Fire control materiel used with mortars and recoilless rifles must conform to requirements in accordance with paragraph 7aa.

Table 26. 81-MM Mortar M29 and M29A1

Item	Standard
Cannon tube	Tube bore diameter must not be greater than 3.222 inches.
Elevating mechanism	Backlash must not exceed a 45-degree turn of the handwheel.
Traversing mechanism	Backlash must not exceed a 45-degree turn of the handwheel.

Table 27. 4.2-Inch Mortar and 60-MM Subcaliber Mortar M31

Item	Standard
Cannon tube	Tube bore diameter must not be greater than 4.215 inches between the lands.
Elevating mechanism	Backlash must not exceed a 45-degree turn of handwheel.
Traversing mechanism	Backlash must not exceed a 45-degree turn of handwheel.

Table 28. 60-MM Mortar, LWCM M224

Item	Standard
Cannon tube	Tube bore diameter must not be greater than 2.405 inches.
Elevating mechanism	Backlash must not exceed a 45-degree turn of the handwheel.
Traversing mechanism	Backlash must not exceed a 45-degree turn of the handwheel.

Table 29. 90-MM Recoilless Rifle M67

Item	Standard
Tube	Must not have fired more than 1,000 EFC rounds.

Table 30. 106-MM Recoilless Rifle M40A2 and M40A4

Item	Standard
Rifle barrel	Must not have fired more than 1,500 EFC rounds.
Mount legs	Vertical play must not exceed 5/16 inch.
Tripod legs	Horizontal or vertical play must not exceed 1/8 inch.
Spotting gun barrel assembly	Must not have fired more than 2,500 EFC rounds.
Spotting gun bolt	Must not have fired more than 5,000 rounds.

Section VI. ROCKET LAUNCHERS

14. SCOPE. Standards for equipment destined for overseas shipment of rocket launchers (self-propelled and towed), handling units, heating and tie-down unit, carts, and associated sighting and fire control equipment are contained in paragraph 15 and table 31.

15. GENERAL INSPECTION CRITERIA.

WARNING

Be sure to clear the weapon before starting an inspection. Do not actuate the firing mechanism until the weapon has been cleared. Avoid having live ammunition in the inspection areas.

a. Before inspection, the materiel must be thoroughly cleaned of all corrosion-preventive compound, grease, excessive oil, dirt, or other foreign matter which might interfere with proper functioning or obscure the true condition of the parts to be inspected.

b. Lettering on nameplates, direction plates, and warning plates must be checked for legibility.

c. Painted surfaces on the weapon must be free of bare spots and must be of the regulation color and luster to comply with camouflage requirements.

d. Backlash in components such as sights, elevating, traversing, and cross-leveling mechanisms, covers, plates, bolts, and mounts may be cause for rejection if not within limits specified in applicable technical manual and/or tables.

e. All locking pins, hooks, steps, platforms, clamps, covers, and instruction plates must be present, free from damage, and securely attached to the equipment.

f. All bolts, screws, and nuts must be in place and tight.

g. All gaskets and oil seals must be seated and operate properly; any evidence of lubricant leakage should be noted and corrected at once.

h. All welded or brazed joints must be adequate and intact.

i. The fixed fire extinguisher system must contain the correct amount of extinguishing agent.

j. Materiel must be free of burrs, especially those found on functional surfaces.

k. Parts must not be cracked, bent, distorted, or otherwise damaged and must be free of detrimental wear, rust, and corrosion.

l. Springs must be free of distortion or cracked or broken coils, and must be replaced if they fail to function properly or fail to meet specific requirements as stated in the appropriate TM.

m. Rollers and slides must function smoothly.

n. All locking devices shall be positive in action and must not become disengaged in the course of normal operation. Retaining pins and similar devices must not be subject to accidental loss during use or transportation.

o. Each traversing, cross-leveling, and elevating mechanism must be hand functioned to check for unusual binding and general operation.

p. Leather items must be completely stitched, threads must show no evidence of rotting, and the material must be soft, pliable, and free from tears, cuts, and cracks that would reduce its strength or protective qualities.

q. Hydraulic and air tubings and fittings must not be bent, kinked, or otherwise damaged.

r. All wheel stud nuts must be present and secure.

s. Tires must have at least 50 percent of original, recapped, full capped, or retreaded nonskid tread depth remaining.

t. Brake linings must have at least one-half of the effective new brake lining thickness remaining.

u. All electrical connections must be tight and conduits free of all breaks or bare spots in the insulation.

v. All canvas covers and straps must be free from tears or detrimental wear that would tend to weaken the material.

w. Basic issue items for rocket launchers must conform to requirements in accordance with paragraph 11d.

x. Fire control materiel used with rocket launchers must conform to requirements in accordance with paragraph 7aa.

Table 31. 115-MM Multiple Rocket Launcher M91 (T145)

Item	Standard
General	Clear weapon of ammunition and inspect in accordance with paragraph 15.
Elevating mechanism	Allowable accumulated backlash, without moving the cluster, must not exceed a 35-degree rotation of the handwheel in any position of elevation. With a full load of rockets in the launcher, elevating effort must not exceed a 15-pound handwheel load over its entire range.
Traversing mechanism	Allowable accumulated backlash, without moving the top carriage, must not exceed a 35-degree rotation of the handwheel in any position of traverse. With full load of rockets in the launcher, traversing effort must not exceed a 15-pound handwheel load over its entire range.

APPENDIX
REFERENCES

A-1. SCOPE. This appendix lists all forms, technical bulletins, technical manuals, and miscellaneous publications referenced in this bulletin.

A-2. FORMS.

Equipment Control Record . . . . . DA Form 2408-9
Recommended Changes to Equipment Publications . . . . . DA Form 2028-2
Recommended Changes to Publications and Blank Forms . . . . . DA Form 2028
Weapon Record Data . . . . . DA Form 2408-4

A-3. TECHNICAL BULLETINS.

Exercising of Recoil Mechanisms and Equilibrators . . . . . TM 9-1000-234-35
Standards for Overseas Shipment of Special Purpose Vehicles, Combat, Tactical, Construction and Selected Industrial and Troop Support U.S. Army Tank-Automotive Materiel Readiness Command Managed Items. . . . . TM 9-2300-281-35

A-4. TECHNICAL MANUALS.

Aviation Unit Maintenance Manual For Armament Pod, Aircraft: 7.62-MM Machine Gun, M18A1 (NSN 1005-00-832-7498) (Used on AH-1G Helicopter) . . . . . .TM 9-1005-257-12
DS and GS Maintenance Manual: Kits, Barrel Erosion Gage, M8 and M6A1 . . . . . TM 9-4933-208-34
Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tool Lists (including Depot Maintenance Repair Parts and Special Tools): Rifle: 5.56-MM, M16 (NSN 1005-00-856-6885), M16A1 W/E (1005-00-073-9421) and Bipod, Rifle: M3 w/Carrying Case (1005-00-890-2609) . . . . . TM 9-1005-249-24&P
Direct Support Maintenance Manual: Repair of Wooden, Fiber Glass/Plastic or Plastic Components of Small Arms Weapons . . . . . TM 9-1005-301-30
Evaluation of Cannon Tubes . . . . . TM 9-1000-202-14
Organizational, Direct Support, and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Machine Gun, 7.62-MM M60 W/E (NSN 1005-00-605-7710) and Mount, Tripod, Machine Gun, 7.62-MM, M122 (NSN 1005-00-710-5599) . . . . . TM 9-1005-224-24
Organizational, Direct Support, General Support, and Depot Maintenance Manual (including Repair Parts and Special Tools List) Machine Gun, Cal. .50, M85 (FSN 1005-00-690-2790) . . . . . TM 9-1005-231-24&P
Organizational Maintenance Manual (including Repair Parts and Special Tools List) for Gun, Automatic: 25mm, M242 . . . . . TM 9-1005-200-20&P
The Army Maintenance Management System (TAMMS) . . . . . DA PAM 738-750

A-5. MISCELLANEOUS PUBLICATIONS.

Index of Depot Maintenance Work Requirements . . . . . AMC-P 310-9
Publications for Packaging Army General Supplies . . . . . SB 746-1
Requisitioning, Receipt, and Issue System . . . . . AR 725-50

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters =0.0338 Fluid Ounces
1 Liter ˜1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

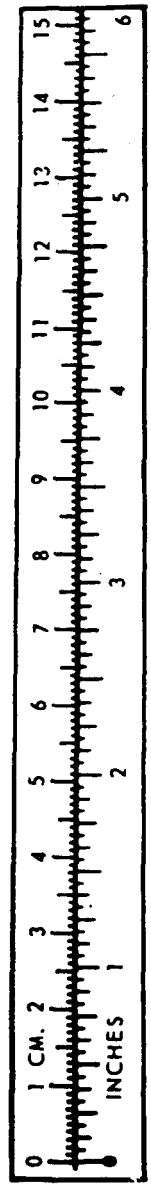
TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivolent to 100° Celsius
90° Fahrenheit is equivolent to 32.2° Celsius
32° Fahrenheit is equivolent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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