TM 9-1010-207-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

Aviation Unit

MAINTENANCE MANUAL

FOR

ARMAMENT SUBSYSTEM, HELICOPTER, 40 MILLIMETER GRENADE LAUNCHER: M5 (1010-00-738-5811)

(USED ON UH-1B OR UH-1C HELICOPTERS)

This copy is a reprint which includes current pages from Changes 1 through 3.

HEADQUARTERS, DEPARTMENT OF THE ARMY

WARNING

WEAPONS AND AMMUNITION

The procedures in this technical manual involve the use of an armament subsystem M5 and live ammunition. All standard safety precautions governing the handling of weapons and live ammunition must be observed. Weapons shall be pointed in a direction which offers the least exposure to personnel or property in the event of accidental firing. Do not walk in front of the weapon. Safe the weapon before servicing. Failure to perform certain steps in the procedures can cause potentially dangerous situations. These steps are pointed out in the text and must be followed. Observe all warnings within the text.

TM 9-1010-207-12
C 3

CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *10 December 1975*

Aviation Unit Maintenance Manual
ARMAMENT SUBSYSTEM, HELICOPTER
40 MILLIMETER GRENADE LAUNCHER: M5
(1010-00-738-5811)
(USED ON UH-1B OR UH-1C HELICOPTERS)

TM 9-1010-207-12, 5 March 1973, is changed as follows:

The title is changed as shown above.

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove page	*Insert page*
None	a/(b (blank))

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

By Order of the Secretary of the Army:

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The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-31, (qty rqr block No. 441) Operator maintenance requirements for 40-MM Grenade Launcher, M5.

MAINTENANCE CONCEPT

To implement the 3-level maintenance concept, the following changes will be made to this manual, as applicable:

a. Substitute the words Aviation Unit maintenance for Crew/Operator and Organizational maintenance (first level of maintenance). Also, wherever the symbol for Crew/Operator maintenance (C) is used, change to the symbol for Aviation Unit maintenance (O).

b. Substitute the words Aviation Intermediate maintenance for Direct Support and General Support maintenance (second level of maintenance). Also, wherever the symbol for General Support maintenance (H) is used, change to the symbol for Aviation Intermediate maintenance (F).

c. The Depot level of maintenance remains the same (third level of maintenance).

d. Under the new three level maintenance concept, the maintenance codes are as follows: Aviation Unit Maintenance (O), Aviation Intermediate Maintenance (F), and Depot Maintenance (D).

Technical Manual
No. 9-1010-207-12

*TM 9-1010-207-12

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington, D. C., *5 March 1973*

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL
ARMAMENT SUBSYSTEM, HELICOPTER, 40 MILLIMETER GRENADE LAUNCHER: M5 (1010-00-738-5811) (USED ON UH-1B OR UH-1C HELICOPTERS)

* This manual supersedes TM 9-1010-207-12, 28 January 1965, including C1, 13 December 1968, and C2, 1 April 1970.

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS—Continued

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

a. This manual contains instructions for the information and guidance of personnel responsible for the operation and organizational maintenance of helicopter armament subsystem M5 (fig. 1-1). The information contained in this manual is within the scope of supplies and maintenance equipment normally available to using organizations.

WE 60530

Figure 1-1. 40 Millimeter grenade launcher helicopter armament subsystem M5 installed on UH-1B helicopter—right front view.

b. The prescribed maintenance responsibilities at operator / crew and organizational maintenance levels are reflected in this manual (appendix C). Where the nature of repair, modification, or adjustment is beyond the scope of the operator / crew or organizational maintenance, notify direct support maintenance. For allocation of repair parts and special tools, refer to TM 9-1010-207-20P.

c. The terms "left" and "right" as used in this manual are based on standing at the back of the helicopter and facing forward.

1-2. Forms and Records.

Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750, the Army Maintenance Management System (TAMMS).

1-3. Equipment Serviceability Criteria.

The equipment serviceability criteria (ESC) for armament subsystem M5 is included in TM 9-1010-207-ESC.

1-4. Recommending Improvements.

You can help to improve this manual by recommending improvements. Mail your comments direct to the Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-MAP, Rock Island, Illinois 61201, using DA Form 2028, Recommended Changes to Publications. A reply will be sent direct to you.

Section II. DESCRIPTION AND DATA

1-5. Description.

a. *General.* The 40 millimeter grenade launcher helicopter armament subsystem M5, part number 8426677, is an electrically powered, remote controlled subsystem designed for application to the UH-1B or UH-1C helicopters and uses the helicopter's electrical power. It is capable of launching antipersonnel type grenades from a grenade launcher installed in a turret assembly attached to three hard points outside the helicopter electronic equipment compartment. Total ammunition capacity is 325 rounds. The two major components of armament subsystem M5 are the grenade launcher M75, part number 7791710, and the grenade launcher mount, part number 11014999. The main components shown in figure 1-2, with the exception of the 40 millimeter grenade launcher M75, make up the grenade launcher mount.

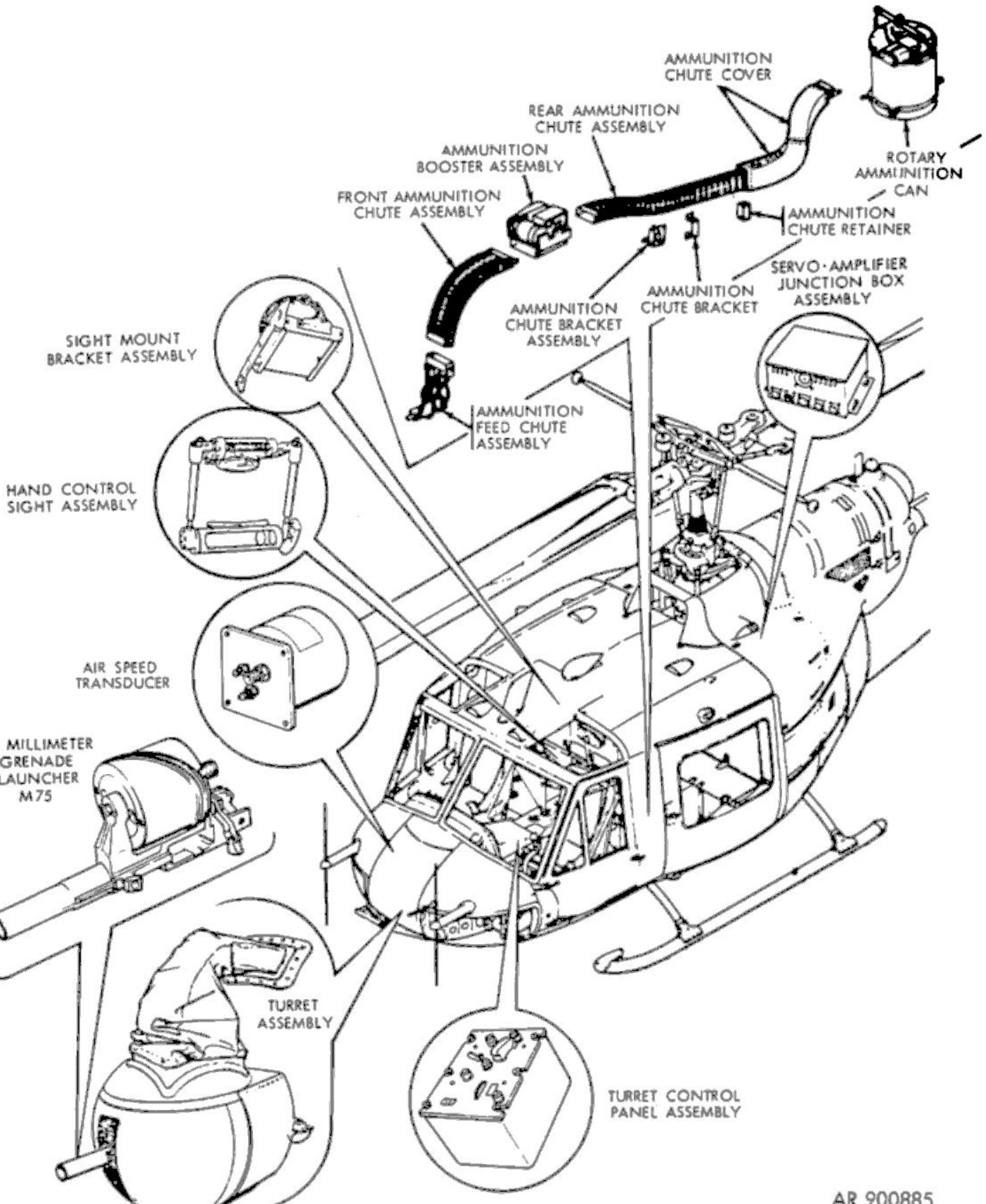


Figure 1-2. Components of armament subsystem M5 located on UH-1B helicopter - left front view.

b. 40 Millimeter Grenade Launcher M75. The 40 millimeter grenade launcher M75 (fig. 1-3) is an air-cooled, externally powered, rapid-firing weapon capable of launching anti-personnel fragmentation type projectiles. It is percussion fired and metallic link belt fed. The grenade launcher is composed of a reciprocating barrel, rotating cam and cover assembly, feed arm assembly, drive spindle assembly, hammer assembly, and receiver assembly. The torque is applied to the drive spindle assembly, the cam and cover assembly rotates in a clockwise direction. As the cam and cover assembly rotates, the roller of the feed arm assembly follows a path in the rear face of the cam and cover assembly. The feed arm assembly turns on its pivot pin to secure a 40 millimeter cartridge and push it into place in the receiver assembly. The grenade launcher barrel roller follows the raised track on the cam and cover assembly, moving the barrel back over the cartridge, and separating the cartridge link from the link of the next cartridge. The barrel movement also pushes the cocking rod to the rear, cocking the hammer assembly. When the barrel is at its rear limit of travel, a barrel lock is cammed down to hold the barrel in position. Downward movement of the barrel lock pushes the sear release extension to the rear. The sear release extension actuates the hammer assembly and the hammer strikes the firing pin, firing the cartridge. After the projectile has left the barrel, the barrel lock is retracted and the barrel is cammed forward. Feeding of the next cartridge pushes the spent cartridge case out of the receiver and into the ejector chute assembly of the turret assembly.

c. Grenade Launcher Mount (fig. 1-2).

(1) Turret assembly. The turret assembly mounts on three hard points outside the electronic equipment compartment on the nose of the helicopter and contains the components which mount, position, and fire the grenade launcher M75. Main components of the turret assembly are the turret support assembly, gimbal assembly, saddle assembly, elevation and azimuth powered trunnion assemblies, launcher drive assembly, and recoil components. Internal components of the turret assembly are protected by top and forward enclosure assemblies which are easily removed to provide access to the grenade launcher and turret assembly components. The forward enclosure assembly has a rectangular opening for the grenade launcher barrel. Closure brushes, mounted in the rectangular opening prevent entry of dirt and foreign matter. An external boot assembly attaches to the top enclosure and the helicopter to protect the front ammunition chute assembly and the electric cable assembly which connects turret assembly components with the remainder of the subsystem. The grenade launcher is mounted in the saddle assembly, which rotates on the horizontal axis to provide grenade launcher elevation and depression. The saddle assembly, in turn, is mounted in the gimbal assembly, which rotates on the vertical axis to provide grenade launcher left and right azimuth. Elevation and azimuth movements of the grenade launcher are made by the elevation and azimuth powered trunnion assemblies. Each powered trunnion assembly contains a direct current drive motor which is powered by its respective servo-amplifier. The rotational travel of each powered trunnion assembly is limited by fixed mechanical stops and by adjustable limit switch actuators. The launcher drive motor is mounted on the saddle assembly. A launcher drive assembly transmits mechanical power to the grenade launcher through a belt and universal joint. An ejector chute assembly on the saddle assembly and an ejection hopper on the gimbal assembly form a continuous chute for ejecting spent cartridge cases and misfired cartridges from the turret assembly.

(2) Chute assemblies

There are two flexible chutes and one non-flexible chute used on the subsystem. The flexible front ammunition chute assembly consists of 26 links and two fittings; the flexible rear ammunition chute assembly consists of 100 links and two end fittings. One non-flexible ammunition feed chute assembly connects the front ammunition chute assembly to the weapon.

(3) Ammunition booster assembly. The ammunition booster assembly is mounted on a shelf inside the electronic equipment compartment of the helicopter. It assists the grenade launcher M75 in pulling linked cartridges from the rotary ammunition can and through the front and rear chute assemblies. The direct current booster motor, which powers the ammunition booster assembly, is energized simultaneously with the grenade launcher firing circuit. The booster motor can also be turned on independently for loading or unloading ammunition by pressing the loading switch mounted on the left front corner of the ammunition booster assembly. An arm mounted on the sprocket shaft supports a lever which rides on the case portion of the linked cartridges as they flow through the ammunition booster assembly. When ammunition demand is low, the lever is raised by the linked cartridges and actuates the feed control switch to reduce the speed and torque of the booster motor. When ammunition

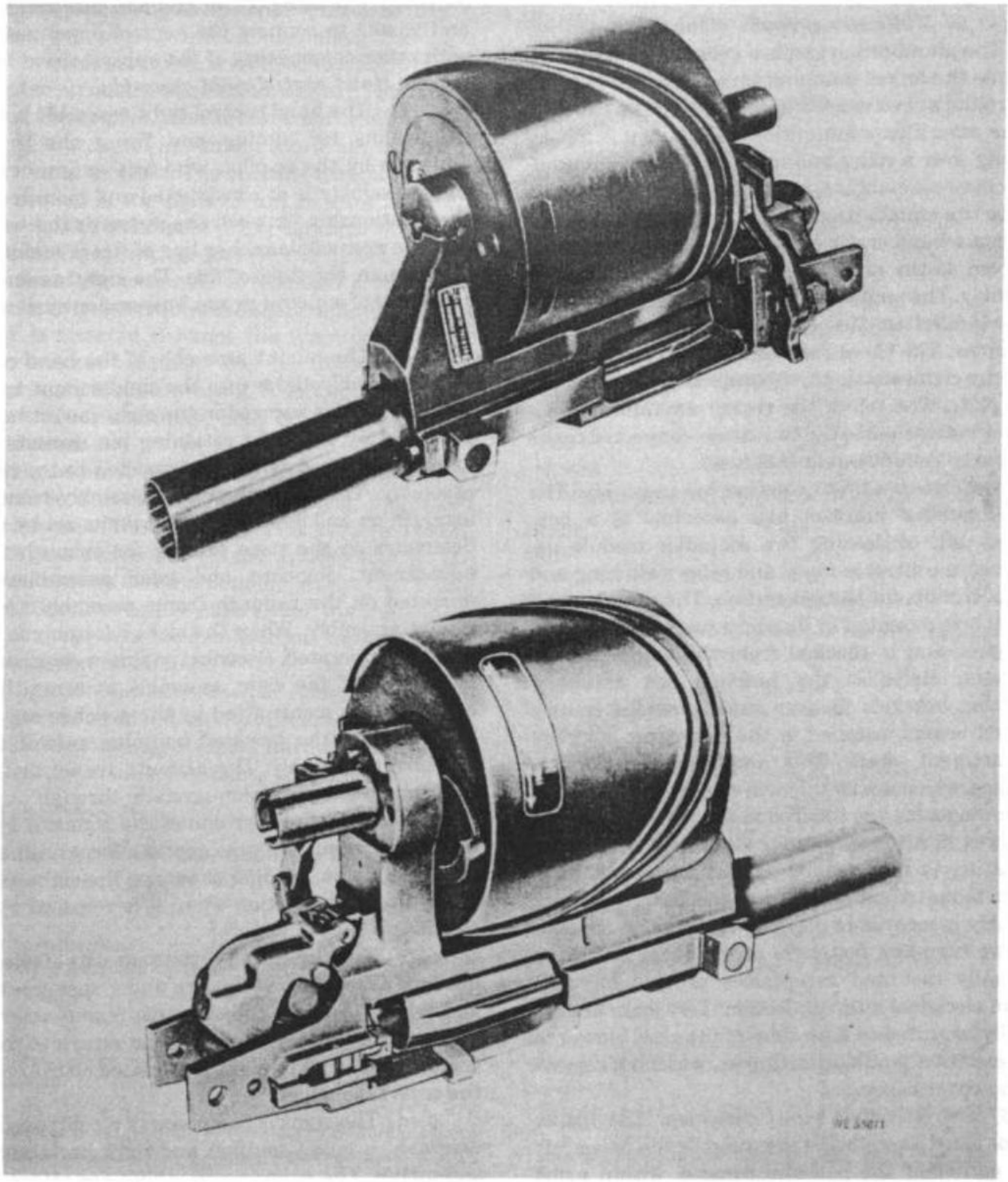


Figure 1-3. 40 Millimeter grenade launcher M75 – left front and right rear views.

demand is high, the lever is at its low position and deactuates the switch. The booster motor than produces high torque at full speed. When the loading switch is pressed, the booster motor runs at reduced speed.

(4) 40 Millimeter grenade rotary ammunition can. The ammunition can is a cylindrical can which permits the linked ammunition to be folded in a spiral around a revolving core assembly within the body of the can. The ammunition exists at the top by passing over a roller and into the flexible ammunition chute assembly. A protective cover permits access to the ammunition can for loading. To assist in loading, a hand crank on top permits the core to be revolved as the ammunition is folded into the can assembly. The ammunition can is mounted on a base plate located in the cargo compartment of the helicopter. The three clevises attached to the lower band are connected to three connecting points on the base plate. The top of the rotary ammunition can hanger is attached to the two straps connected to the rear cargo compartment bulkhead.

(5) Servo-amplifier junction box assembly. The servo-amplifier junction box assembly is a box-shaped unit containing two amplifier module assemblies, a control module, and relay switching and control circuits for the subsystem. The junction box assembly is mounted in the right rear section of the helicopter and is reached from the baggage compartment. Holes in the junction box assembly mounting brackets fit over studs provided on two channel beams installed in the helicopter baggage compartment area. The amplifier module assemblies, which are identical in construction and are interchangeable are secured in the junction box assembly by a module retainer assembly. Cooling air circulation is supplied by an exhaust type axial blower mounted on one side of the box. The cover assembly is secured in place by two tabs on one end and two turn-lock fasteners at the other end. Five externally mounted receptacles provide for subsystem electrical interconnection. Test jacks are externally mounted on both sides of the axial blower to allow electrical troubleshooting tests without removing the cover assembly.

(6) Turret control panel assembly. The turret control panel assembly is mounted in the lower left hand corner of the pedestal console, within arms reach of the co-pilot and pilot. The control panel assembly contains the switches which apply operating power to the subsystem, two indicator lights, a magnetic counter showing rounds of ammunition remaining, and a grenade launcher stow position elevation control. Internal components of the control panel assembly include the control panel relay, the manual elevation transmitter synchro assembly (part of the grenade launcher stow position elevation control), a portion of the components and circuitry for positive braking of the grenade launcher motor, and wiring to connect the control panel assembly with other components of the subsystem.

(7) Hand control sight assembly.

(a) The hand control sight assembly provides the means for aiming and firing the grenade launcher by the co-pilot, who acts as gunner. The sight assembly is so constructed and mounted that the relationship between the gunner's line of sight and the grenade launcher line of fire is maintained throughout the field of fire. The sight assembly is composed of a mount group, suspension system, and sight.

(b) The mount assembly of the hand control sight assembly slides into the sight mount bracket assembly and is secured in the sight mount bracket assembly by the sight retaining pin assembly. An azimuth frame assembly is attached to the mount assembly. The azimuth frame assembly rotates in azimuth on ball bearings within limits set by stops. Setscrews on the stops provide for azimuth travel adjustment. Synchro and gear assemblies are mounted on the azimuth frame assembly and the mount assembly. When the sight assembly is energized and operated, electrical impluses generated by movement of the sight assembly in azimuth and elevation are transmitted by the synchro and gear assemblies to the powered trunnion assemblies in the turret assembly. The azimuth frame assembly supports the suspension system through a tube mounted along the rear end of the frame. A spring mounted around the tube exerts a force on the suspension system, tending to return the sight assembly to the stow position when it is released by the co-pilot.

(c) The suspension system consists of telescoping tube assemblies which are under spring tension and which pivot on the azimuth frame assembly. When extended, the tubes tend to return to the retracted position. The sight is mounted on the ends of the tube assemblies.

(d) The sight is composed of a controller grip assembly, a guide, and left and right hand support assemblies. The support assemblies are attached to the guide and the controller grip assembly. The left hand support assembly contains the reticle housing assembly, the lamp for reticle illumination, and the elevation transmitter synchro assembly. The right hand support assembly provides a bearing surface for the shaft which connects the guide with the con-

troller grip assembly. The guide, which contains the glass reflector and spherical mirror housing assembly, is mounted between the support assemblies. The controller grip assembly is a pistol grip shaped housing which contains the mount assembly control switch and the grenade launcher trigger switch.

(8) Sight mount bracket assembly. The sight mount bracket assembly is secured to a plate on the helicopter structure above and slightly behind the head of the co-pilot. The bracket assembly is composed of a channel assembly, a bracket assembly, and a connector plate. The channel assembly which is the portion of the sight mount bracket assembly secured to the helicopter plate, contains machined ways which mate with grooves in the sight assembly. When the sight assembly is installed in the sight mount bracket assembly, the sight retaining pin assembly is inserted through the front of the sight mount bracket assembly and the sight assembly. Two spring-loaded stow hooks, mounted on the ends of the bracket assembly, hold the sight assembly when stowed.

(9) Airspeed transducer. The transducer is mounted on a shelf inside the electronic equipment compartment of the helicopter. It is connected to the aircraft pneumatic pitot-static system and to the electrical system of the armament subsystem. Using the pitot-static pressure differential, the transducer feeds airspeed data to the electronic components of the armament subsystem.

(10) Additional components. Additional components are the ammunition chute brackets, retainers, covers, and attaching common hardware necessary to install the main components of the mount.

1-6. Tabulated Data.

a. 40 Millimeter Grenade Launcher M75.

Weight	27 lb
Height	9 in.
Width	8 in.
Length (barrel retracted)	18 in.
Length (barrel extended)	22.5 in.
Barrel length	13.7 in.
Percussion	mechanical
Rate of fire	225-230 rounds per minute
Ammunition capacity (subsystem)	302 rounds
Safety:	
Mechanical	barrel stops in forward position
Electrical	Control panel switch

b. Grenade launcher mount.

(1) *Turret assembly.*

Diameter	22 in.
Weight (without grenade launcher)	98 lb (approx)
Elevation powered trunnion drive motor	28 VDC, 7.5 amp
Azimuth powered trunnion drive motor	28 VDC, 7.5 amp
Launcher drive motor	28 VDC, 35 amp
Azimuth travel (maximum)	60 degrees, left, 60 degrees right
Elevation travel (maximum)	+15 degrees — 35 degrees

(2) *Ammunition chute assemblies.*

Front ammunition chute assembly (flexible):	
Length	37.25 in.
Height	2.75 in.
Width	6.38 in.
Links	26
Weight	2.50 lbs
Rear ammunition chute assembly (flexible):	
Length	143.20 in.
Height	2.75 in.
Width	6.38 in.
Links	100
Weight	9.60 lbs
Ammunition feed chute assembly:	
Length	11.50 in.
Height	3.13 in.
Width	6.50 in.
Weight	3.50 lbs

(3) *Ammunition booster assembly.*

Length	9.62 in.
Height	5.50 in.
Width	8 in.
Weight	9.5 lb (approx)

(4) *40 Millimeter grenade rotary ammunition can.*

Height	33.00 in.
Diameter	17.00 in.
Weight:	
Empty	35.00 lbs
Full	200.00 lbs
Capacity (ammunition)	220 rds

(5) *Servo-amplifier junction box assembly.*

Length	10.9 in.
Height	5.1 in.
Width	10.25 in.
Weight	12 lb

(6) *Turret control panel assembly.*

Length	5.75 in.
Height	7.12 in.
Width	6.25 in.
Weight	4.75 lb (approx)
Power input:	
Synchro and mag amplifier	115 VAC, single phase, 400 cycle
Bias and stow transformer	26 VAC, single phase, 400 cycle

(7) *Hand control sight assembly.*

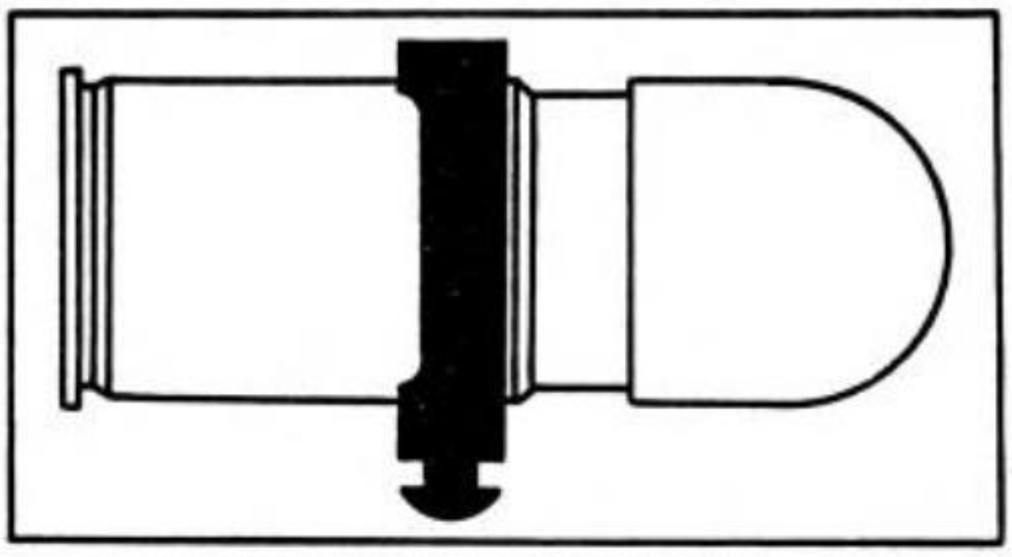
Length	15.72 in.
Height:	
Stowed	20.31 in.
Extended	28.1 in.
Weight	11.46 lb (approx)

(8) *Sight Mount bracket assembly.*

Length .....14.13 in.
Height .....3 in.
Width .....7 in.
Weight .....2.54 lb (approx)

1-7. Name, Instruction, and Identification Plates.

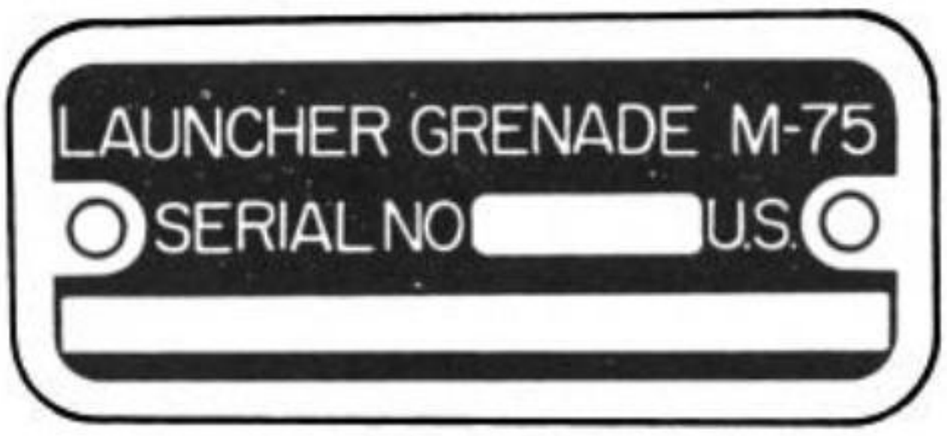
Name, instruction, and identification plates for armament subsystem M5 are listed in table 1-1 and shown in figure 1-4.



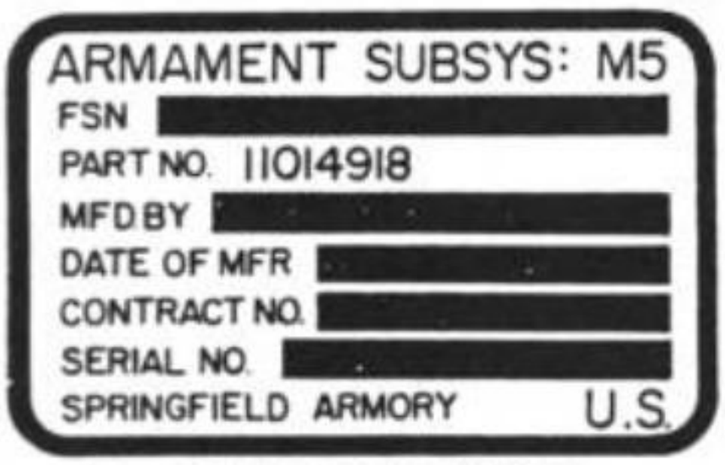
AMMUNITION LOADING INSTRUCTION PLATE

AMMUNITION FEED CHUTE
INSTRUCTION PLATE

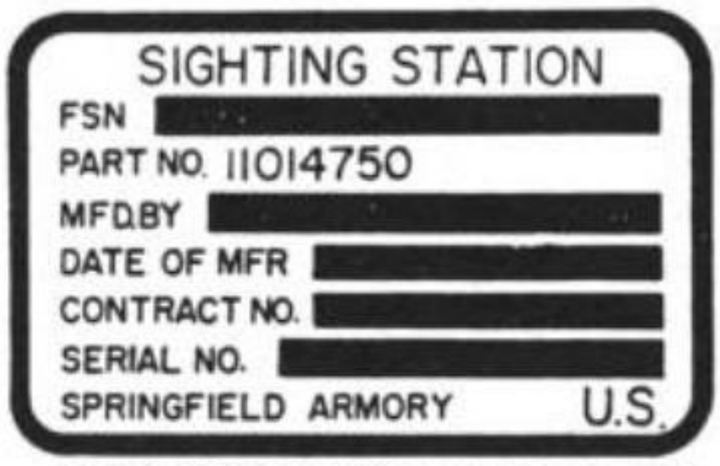
CAM ROTATION CAUTION INSTRUCTION PLATE



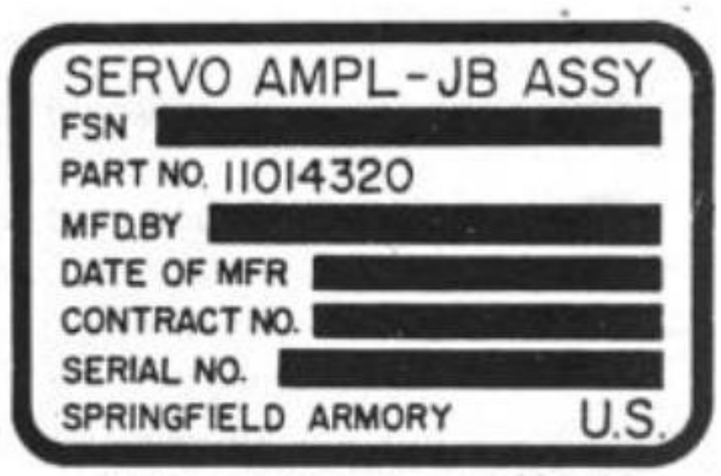
LAUNCHER IDENTIFICATION PLATE



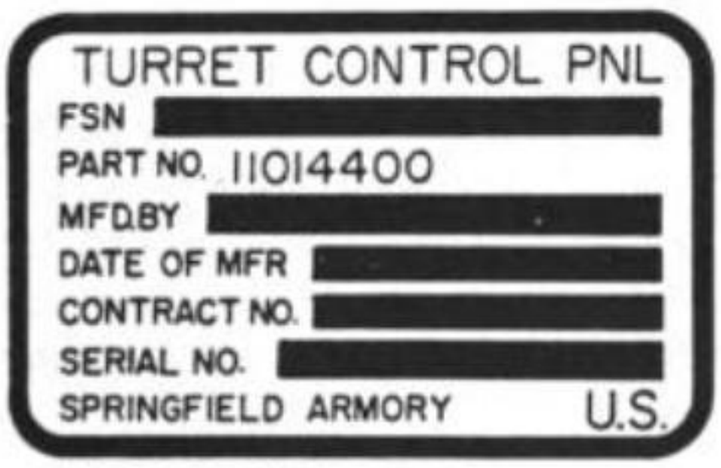
ARMAMENT SUBSYSTEM
IDENTIFICATION PLATE



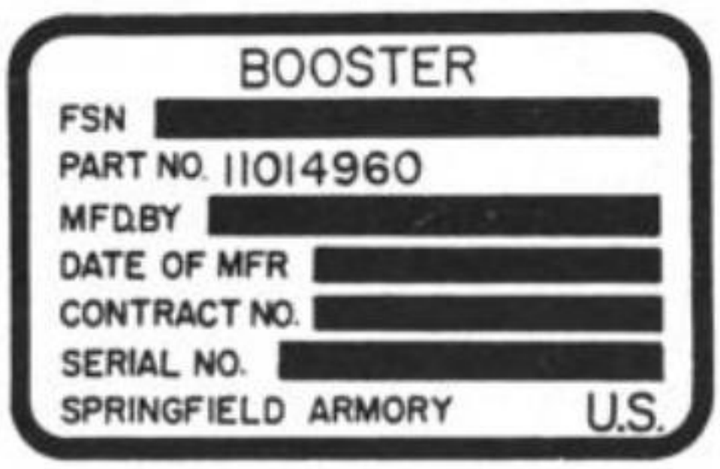
HAND CONTROL SIGHT ASSEMBLY
IDENTIFICATION PLATE



SERVO-AMPLIFIER JUNCTION
BOX ASSEMBLY
IDENTIFICATION PLATE



TURRET CONTROL PANEL ASSEMBLY
IDENTIFICATION PLATE



AMMUNITION BOOSTER ASSEMBLY
IDENTIFICATION PLATE

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Figure 1-4. Subsystem name, instruction, and identification plates.

Table 1-1. Name, Instructions, and Identification Plates

Ammunition loading instruction plate.	On top of rotary ammunition can.
Ammunition feed chute instruction plate.	On right side of ammunition feed chute assembly.
Cam rotation caution instruction plate.	On outer periphery of cam and cover assembly.
Launcher identification plate.	On left front side of grenade launcher receiver assembly.
Armament subsystem identification plate.	On upper left rear surface of turret assembly.
Sight assembly identification plate.	On under side of mount portion of hand control sight assembly.
Servo-amplifier junction box assembly identification plate.	On back side of servo-amplifier junction box assembly.
Turret control panel identification plate.	On upper rear surface of control panel bracket assembly.
Ammunition booster assembly identification plate.	On sprocket cover of booster assembly.

CHAPTER 2
GROUND CREW OPERATIONAL INSTRUCTIONS

Section I. SERVICES UPON RECEIPT OF MATERIAL

2-1. General.

a. Upon receipt of an armament subsystem M5, inspect all assemblies, subassemblies, and accessories to be sure they are properly assembled, secure, clean, correctly adjusted, and lubricated. Check to make sure that all tools and equipment, as listed in table 3-1 and on the packing list contained in the packing box, are present and in good condition.

b. Make a record of any missing parts and of any malfunctions. Correct any deficiencies as quickly as possible.

c. Pay special attention to the small parts, as they are the more likely to become lost and may seriously affect the proper functioning of the material.

2-2. Inspecting, Servicing, Installation and Setting-up Instructions.

a. Parts of the armament subsystem M5 which may be coated with rust-preventive compound should be thoroughly cleaned with waste wiping cloths or a brush saturated with solvent cleaning compound (SD) or mineral spirits paint thinner (TPM). After the rust-preventive compound has been completely removed, the subsystem should be lubricated in accordance with LO 9-1010-207-12. Check the materiel to see that all prescribed modifications have been performed; a list of current modification work orders is published in DA Pamphlet 310-4. After thorough visual inspection, any serious deficiencies are to be reported on appropriate forms in accordance with TM 38-750. Refer to paragraph 2-4 for installation instructions. All reusable containers should be retained.

b. Check general condition and appearance of materiel. Note that the materiel is painted in accordance with TM 9-213. Note any gloss on finish or any unnecessary bright metal that would affect camouflage value. Inspect hinges, latches, clamps, pins, and other moving parts for proper lubrication and evidence of rust.

c. Inspect the armament subsystem as follows:

(1) *40 Millimeter grenade launcher M75 (fig 3-3).*

(a) Inspect for loose or missing parts.

(b) Turn the cam and cover assembly by hand until the grenade launcher has completed one cycle. Note that the feed arm assembly moves freely and that the barrel is firmly locked in the rear position before the hammer assembly is actuated. Observe that the hammer assembly functions are positive.

(2) *Turret assembly.*

(a) Inspect the turret mounting quick release pin assemblies (30, fig 3-9) for proper operation and see that lanyards are secured to the turret assembly. Inspect the pin assembly of the strut and pin assembly (27, fig 3-9) for proper operation.

(b) Remove the top and forward enclosure assemblies (figs 2-9 and 2-10) and see that all connectors of the electric cable assembly are securely fastened.

(c) Install the launcher retaining pin assembly (fig 2-13) and note that the pin assembly requires a definite effort to remove from the saddle assembly.

(d) See that the sliding block tracks in the saddle assembly (fig 2-13) are clean and free of burs.

(e) Inspect the drive assembly universal joint (fig 2-13) for freedom of movement.

(f) Install the top and forward enclosure assemblies (figs 2-9 and 2-10).

(3) *Chute assemblies (fig. 1-2).*

(a) Check links of front and rear ammunition chute assemblies for damage and for proper connection between links; check for positive operation of the latches on the entrance and exit end fittings.

(b) Inspect the ammunition feed chute assembly for distortion or other defects that could affect the free flow of ammunition.

(4) *Ammunition booster assembly.* Turn the sprockets of the ammunition booster assembly (fig 2-5) and inspect for freedom of rotation of the shaft, gears, and booster motor.

(5) *40 Millimeter grenade rotary ammunition can (fig. 2-3).*

(a) Check fasteners on cover for damage.

(b) Check zipper on cover for proper action.

(c) Inspect roller in top of can for freedom or rotation.

(d) Check core assembly within the can assembly for smoothness and freedom of rotation.

(6) *Servo-amplifier junction box assembly (fig 3-19).*

(a) Note that the box assembly slide latches move without binding.

(b) Remove the top cover assembly (1, fig 3-19) and inspect internal components for secure mount-

ing and for loose or unconnected wiring.

(7) *Turret control panel assembly (fig 2-16).*

(a) Inspect the main power switch and the grenade launcher power toggle switch for proper action.

(b) Move the selector dial of the grenade launcher stow position elevation control throughout the range of elevation. Note that the selector dial rotates easily and the indicator dial shows readings of from plus 15 degrees to minus 35 degrees of elevation.

(c) Check for loose or unconnected internal wiring.

(8) *Hand control sight assembly (fig 2-17).*

(a) See that the mount assembly control switch, the launcher trigger switch, and the reticle image toggle switch operate properly.

(b) Check the image intensity control knob for easy rotation.

(c) Check the controller grip assembly for freedom of rotation.

(d) Inspect the glass reflector, in the center of the sight tube, for cracks or scratches.

(9) *Sight mount bracket assembly (fig. 2-17).*

(a) Examine the machined ways in the bracket assembly for burs.

(b) See that the sight retaining pin assembly requires a definite effort to remove the bracket assembly.

(c) Note that the torsion helical springs on the sight stow hooks exert a definite force to keep the hooks in the closed position.

Section II. INSTALLATION AND REMOVAL OF ARMAMENT SUBSYSTEM M5

2-3. General.

a. Instructions in this section cover installation of the components of armament subsystem M5. Removal is in reverse sequence of installation unless otherwise indicated.

CAUTION

Do not operate turret assembly without grenade launcher installed.

b. The ammunition booster assembly is mounted with the screws and nuts supplied with the item. The sight mount bracket assembly and the front ammunition chute retainer are mounted with the screws supplied. The rear ammunition chute retainer is mounted with existing screws from the helicopter map case.

WARNING

Make sure armament subsystem M5 circuit breakers, aircraft battery, and external power sources are disconnected before connecting or disconnecting any armament subsystem M5 electrical connector.

2-4. Installation/Removal Instructions.

a. Turret Control Panel Assembly.

(1) Remove the blank panel from the lower corner of the helicopter pedestal console.

(2) Hold the turret control panel assembly over the opening in the pedestal console and connect the helicopter wiring electrical connectors to the mating receptacles on the turret control panel assembly.

(3) Place the turret control panel assembly in the pedestal console and secure with the sic turn lock fasteners on the panel face (fig 2-1).

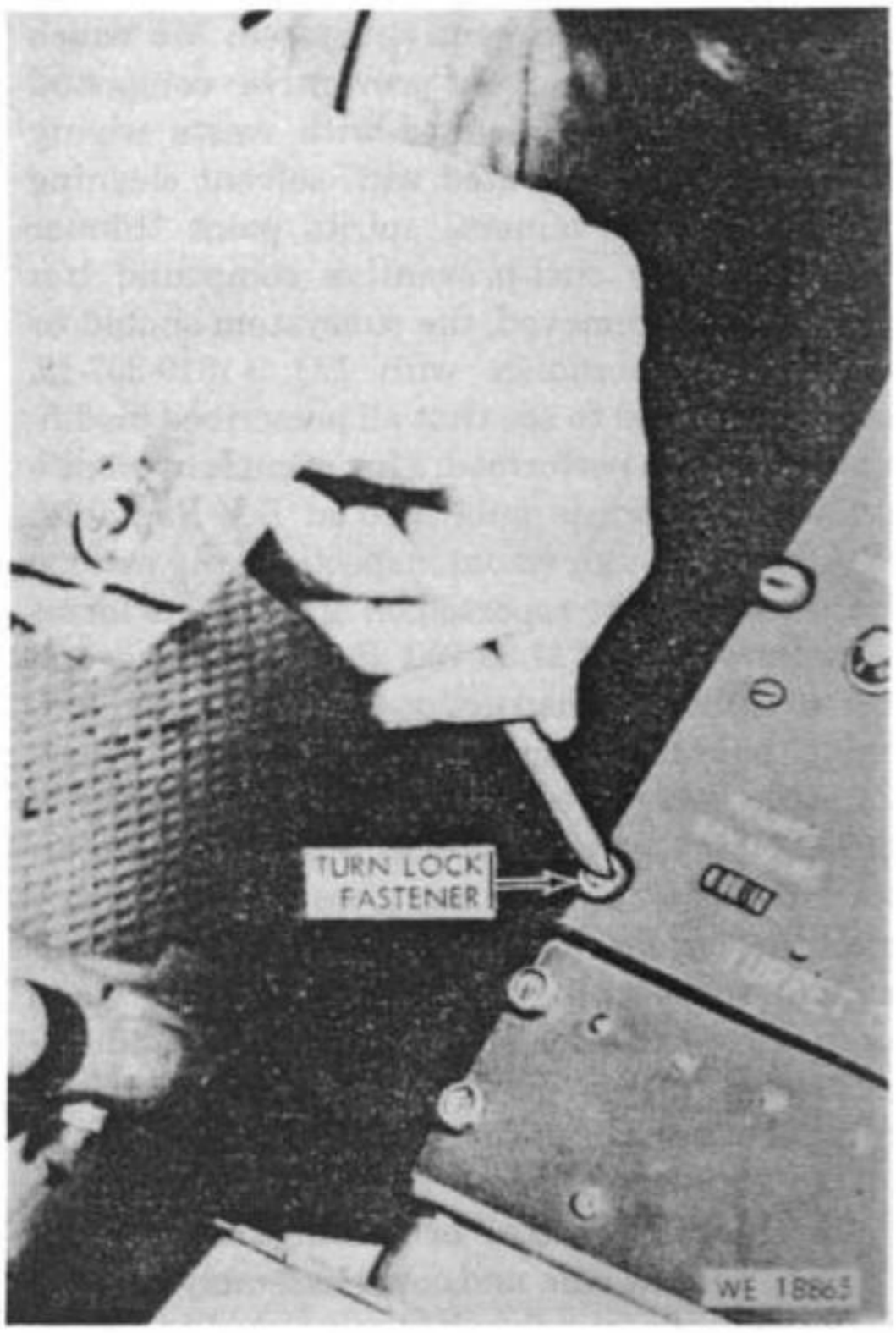

Figure 2-1. Installation/removal of turret control panel assembly.

b. Sight Mount Bracket Assembly. Position sight mount bracket assembly, with receptacle to the left, on mounting bracket located below left window in roof of helicopter. Aline mounting holes and secure with three screws provided.

c. Hand Control Sight Assembly (fig. 2-2).

(1) Pull the sight retaining pin assembly from the sight mount bracket assembly until the sight assembly will clear the pin assembly.

(2) Slide the sight assembly into the ways of the sight mount bracket assembly with the electrical connector to the left. Gently push the sight assembly to the left until the electrical connector is fully seated in its mating receptacle on the bracket assembly.

(3) Push the sight retaining pin assembly through the bracket assembly and the sight assembly.

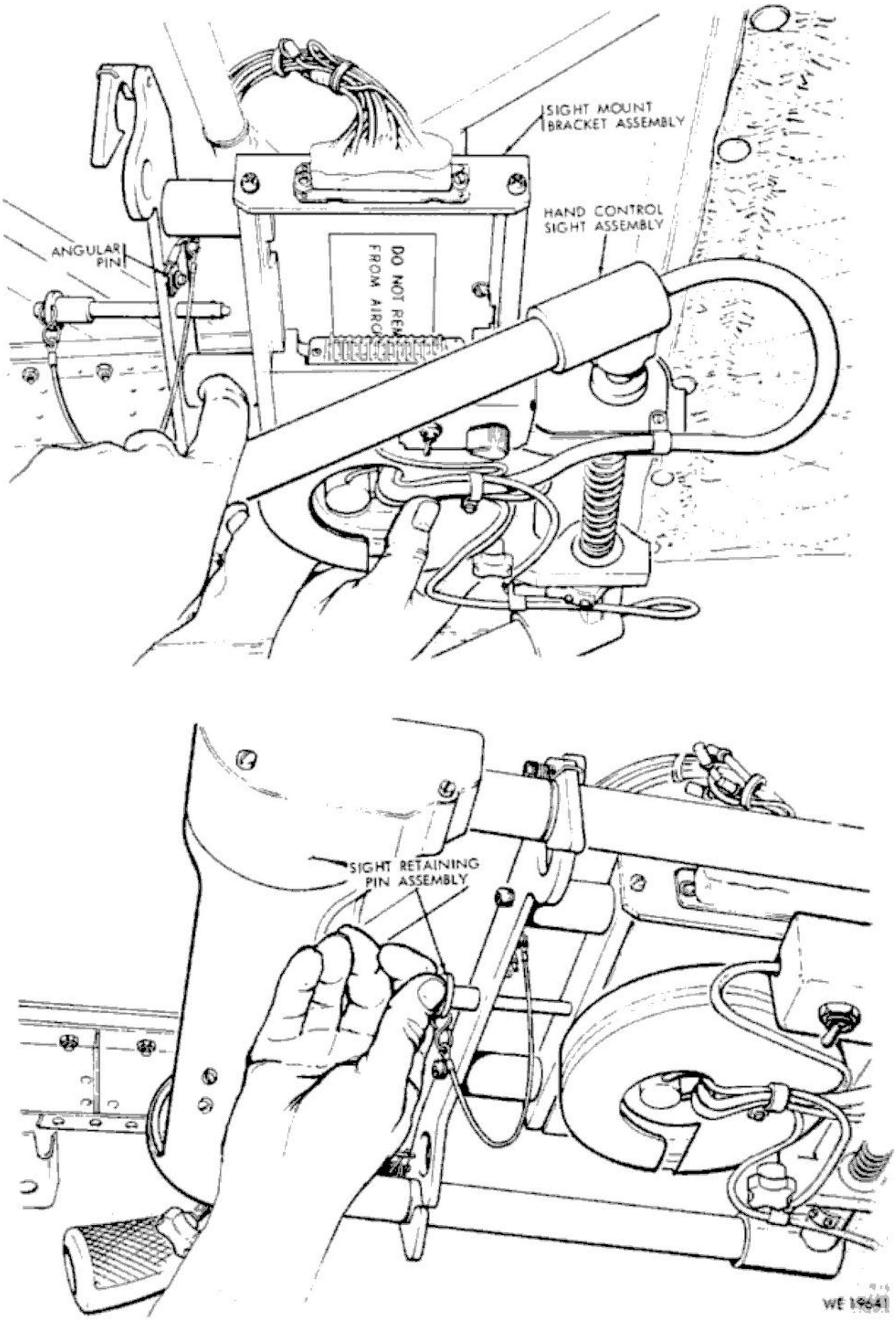

Figure 2-2. Installation / removal of hand control sight assembly.

d. Deleted

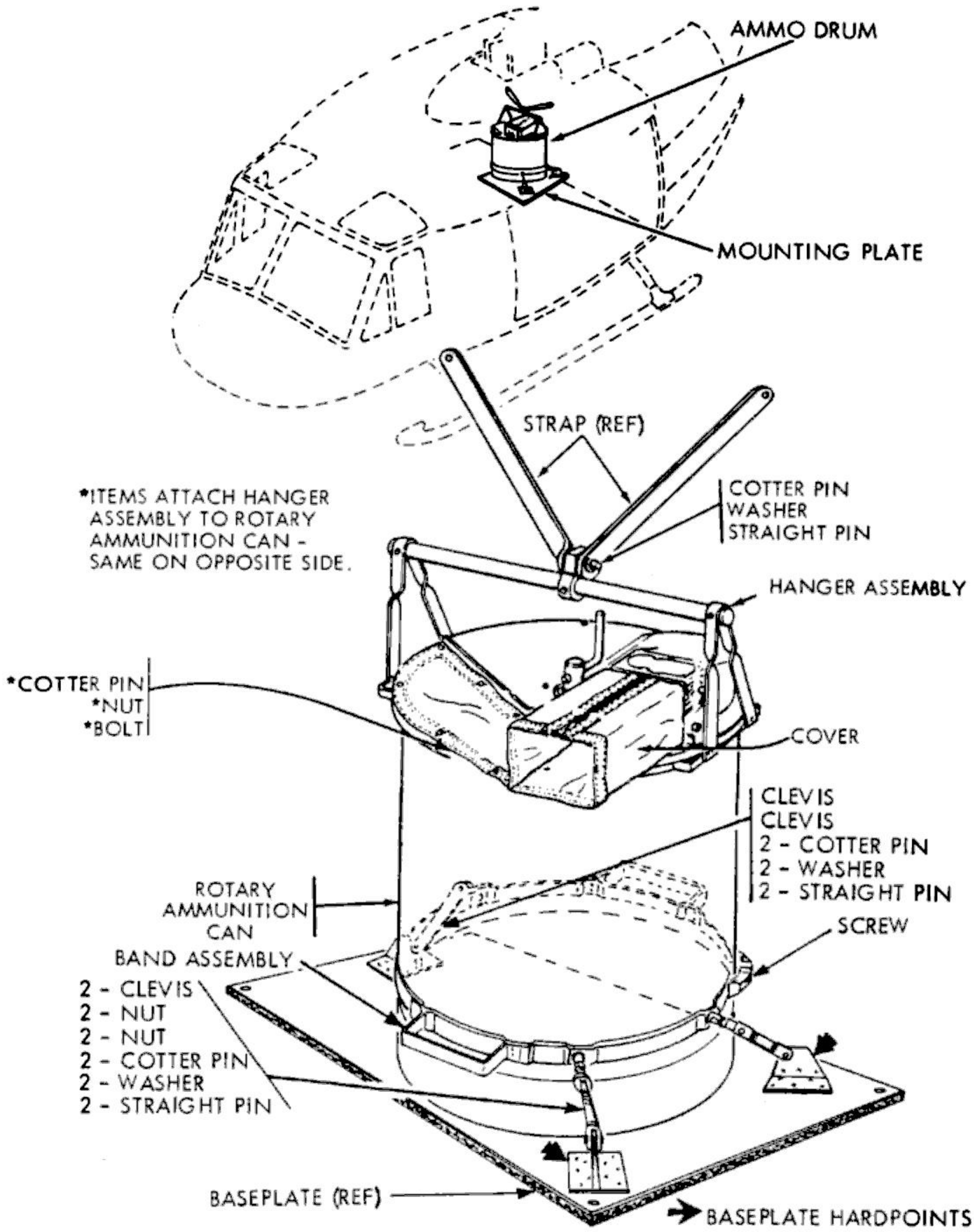

Figure 2-3. Installation/removal of 40 millimeter grenade rotary ammunition can.

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e. 40 Millimeter Grenade Rotary Ammunition Can Loosen retaining screw on the ammunition can lower band assembly. Place rotary ammunition can on base plate and align clevis rods with the connection points of base plate. Tighten screw in lower band assembly. Attach clevis rods to base plate connecting points with attaching hardware. Adjust clevis rods to secure ammunition can to base plate. The top hanger of the ammunition can is secured to the two straps attached to the after bulkhead of the cargo compartment.

f. Ammunition Booster Assembly

(1) Open the electronic equipment compartment door of the helicopter (fig 2-4).

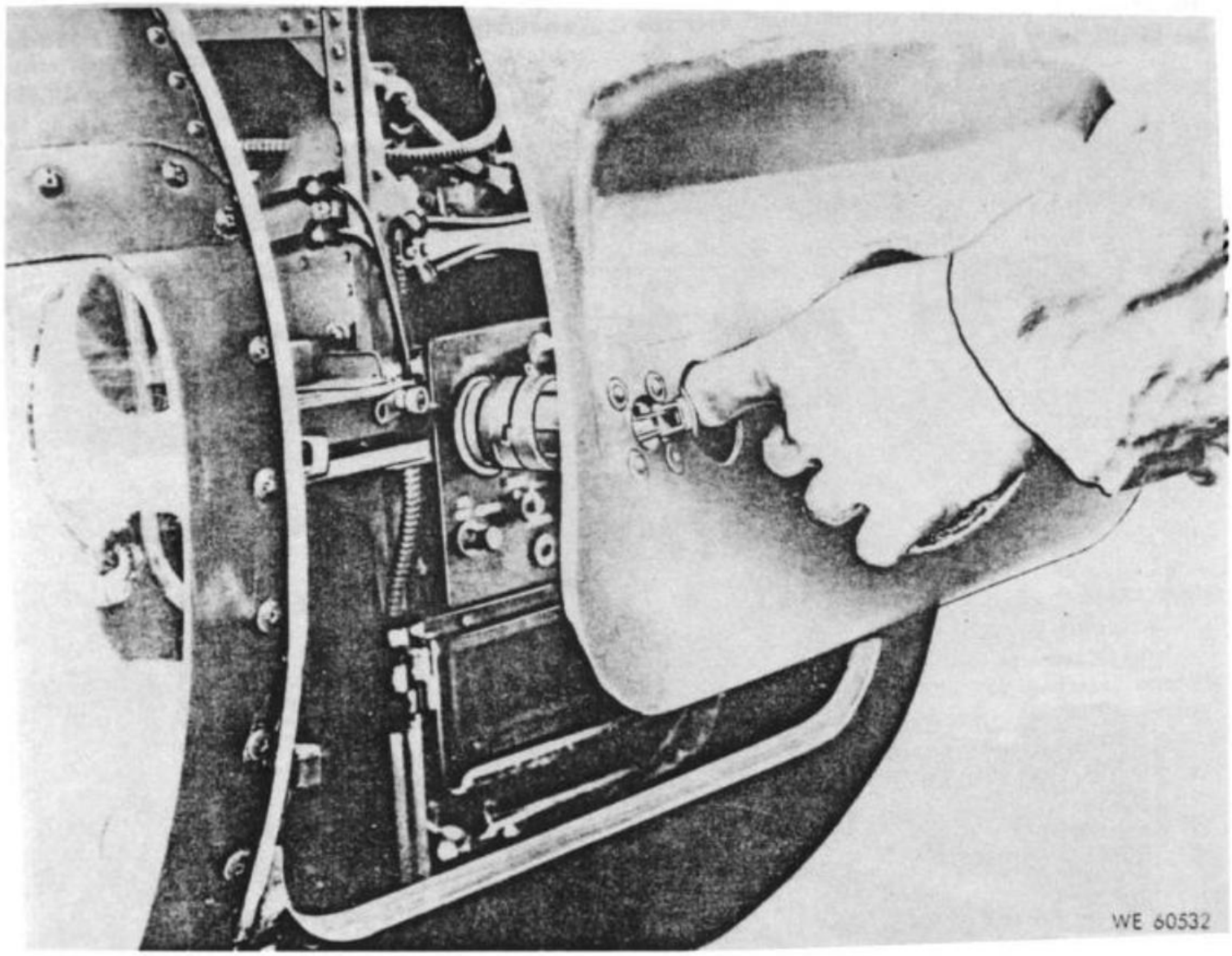


Figure 2-4. Opening / closing electronic equipment compartment door.

(2) Position the ammunition booster assembly in the electronic equipment compartment over the holes in the shelf in the upper right corner of the opening as shown in figure 2-5. Secure the booster assembly to the shelf with the four screws and four nuts supplied with the booster assembly.

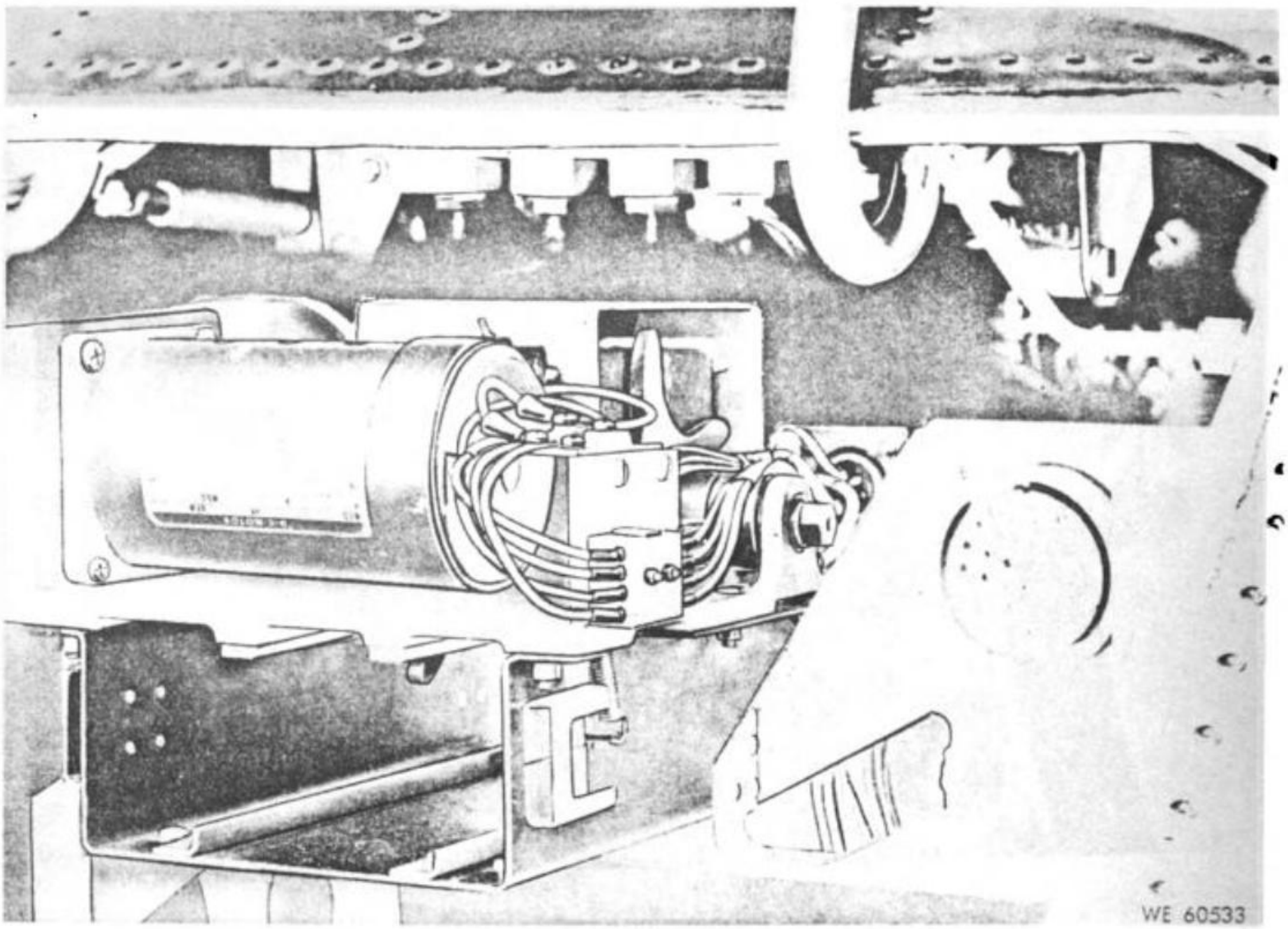


Figure 2-5. Ammunition booster assembly installed in helicopter.

(3) Connect the helicopter wiring electrical connector to the booster assembly.

g. Airspeed Transducer.

(1) Locate the bracket assembly attached to the radio rack shelf, located in the right center area of the electronic equipment compartment opening.

(2) Position the airspeed transducer on the bracket assembly so that the static and pitot ports and the cable assembly connector J1 protrude outboard through the holes provided in the bracket assembly (refer to figure 2-6).

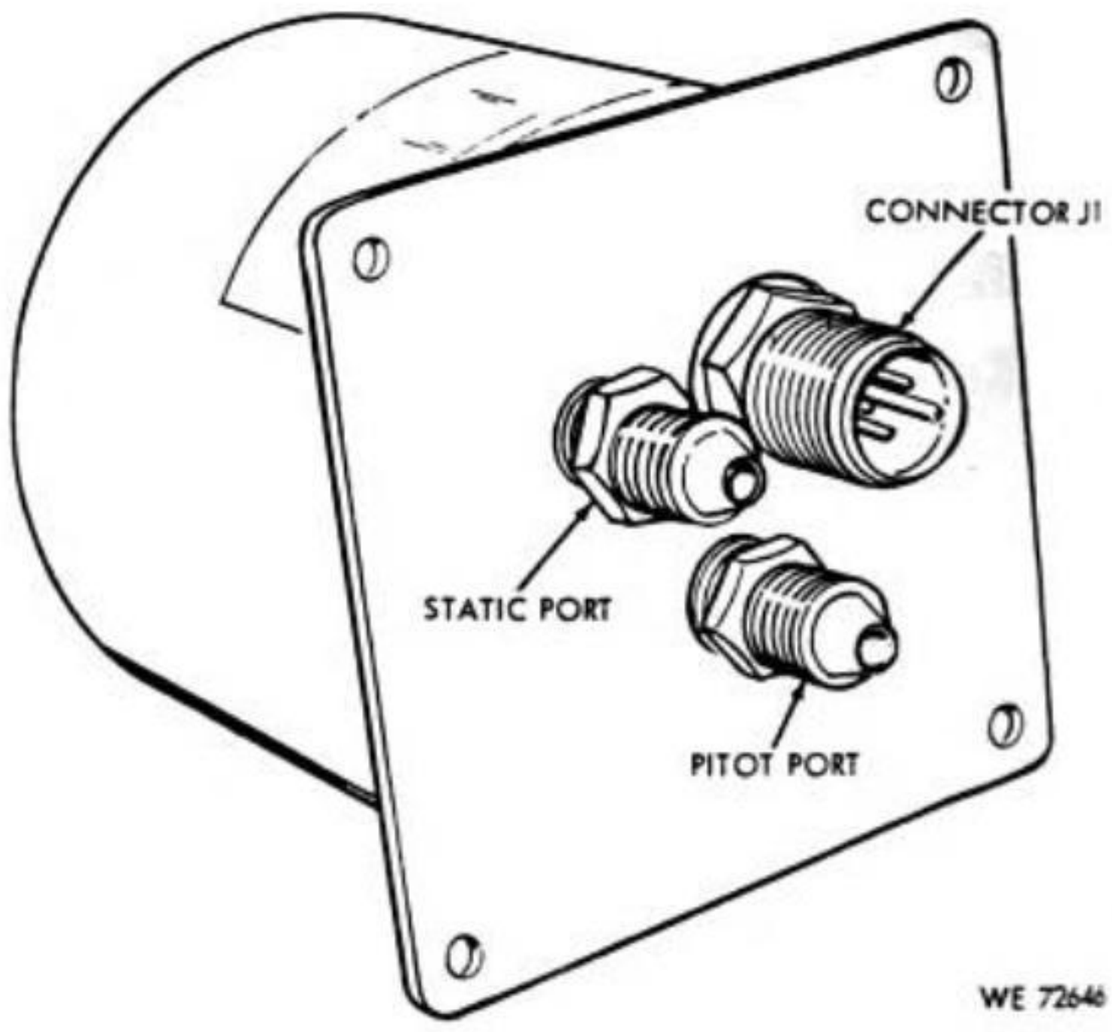


Figure 2-6. View showing static and pitot ports and connector J1 on airspeed transducer.

(3) Secure the transducer to the bracket assembly with the four screws, four washers, and four nuts supplied with the transducer.

(4) Connect the static hose assembly (component of aircraft) to static port on the transducer; connect the pitot hose assembly (component of aircraft) to pitot port on the transducer; connect the cable assembly (component of aircraft) to connector J1 on airspeed transducer.

(5) Close the electronic equipment compartment door (fig. 2-4).

h. Rear Ammunition Chute Assembly.

(1) Remove the two screws, two washers, and two nuts that secure the free edges of the ammunition chute assembly (fig. 2-7).

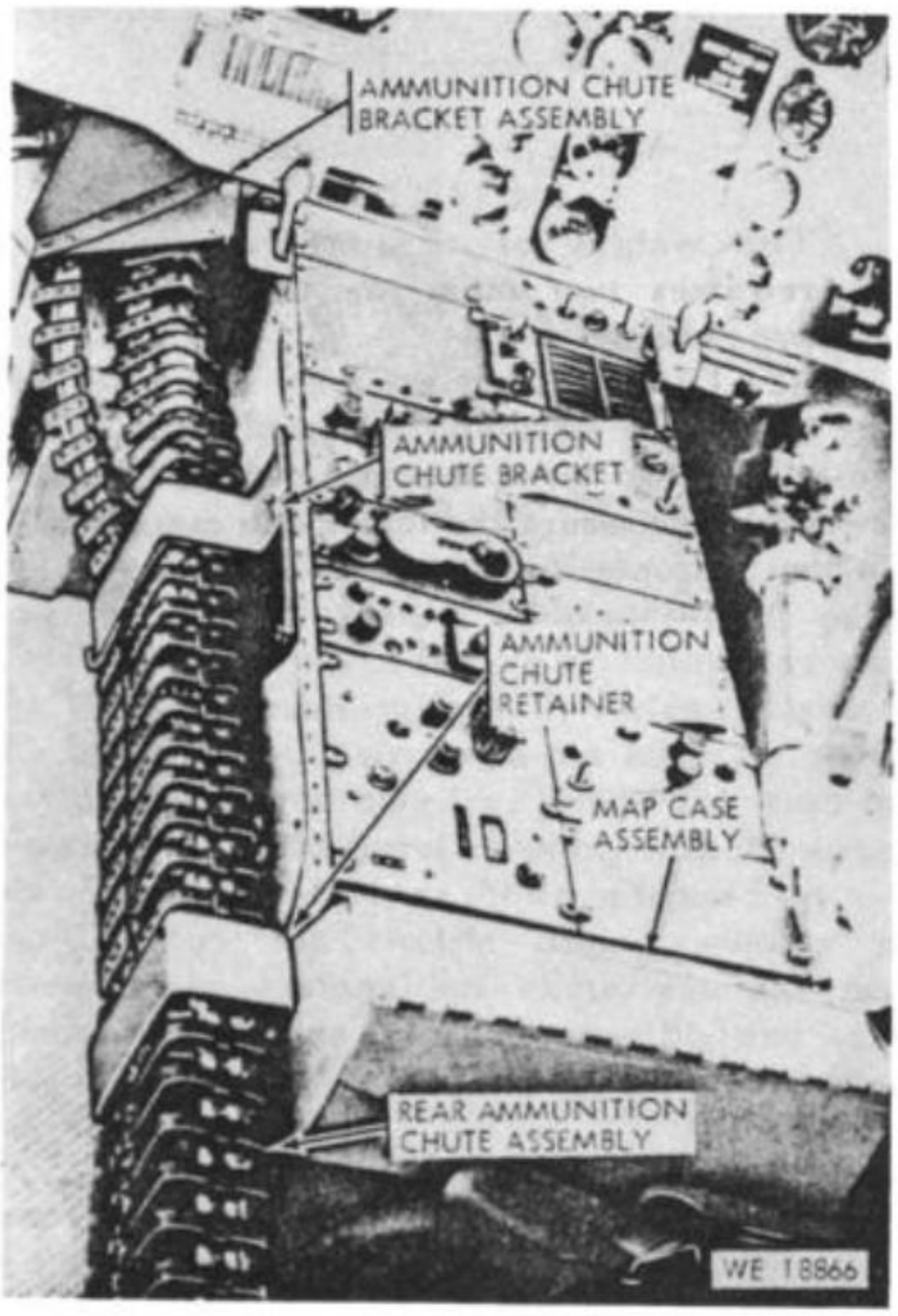


Figure 2-7. Rear ammunition chute assembly installed on left side of pedestal console.

(2) Spread the bracket assembly and slide it over the exit end fitting of the rear ammunition chute assembly. Install the two screws, two washers, and two nuts removed in (1), but do not tighten at this time.

(3) Work the exit end fitting of the chute assembly through the opening below and to the front of the instrument panel and above the cabin heating duct.

CAUTION

Use care while installing the chute assembly to avoid damaging the wiring behind the instrument panel.

(4) Position the bracket assembly at its mounting points below the edge of the instrument panel and secure to the instrument panel with the three screws and three nuts supplied.

(5) Slide retainer onto ammunition chute assembly and toward the pedestal console over the entrance end fitting of the chute assembly. Position retainer at its approximate location along the chute assembly, opposite mounting point in the pedestal console.

(6) Open the electronic equipment compartment door, attach the exit end fitting of the chute assembly to the ammunition booster assembly, and close the door.

(7) Pull to the rear on the chute assembly until it is taut, and tighten the two screws installed in paragraph (2).

(8) Twist and extend the portion of the chute assembly to the rear of the bracket assembly, and position the ammunition chute bracket against the pedestal console. Secure to the pedestal console with the two screws provided.

(9) Secure the ammunition chute retainer to the pedestal console using the existing screws available in the map case attached to the rear of the pedestal console.

(10) Attach the entrance end fitting of the chute assembly to the ammunition transition chute in the aft bulkhead of the cabin.

i. Front Ammunition Chute Assembly. Attach the entrance end fitting of the front ammunition chute assembly to the ammunition booster assembly (fig. 2-8).

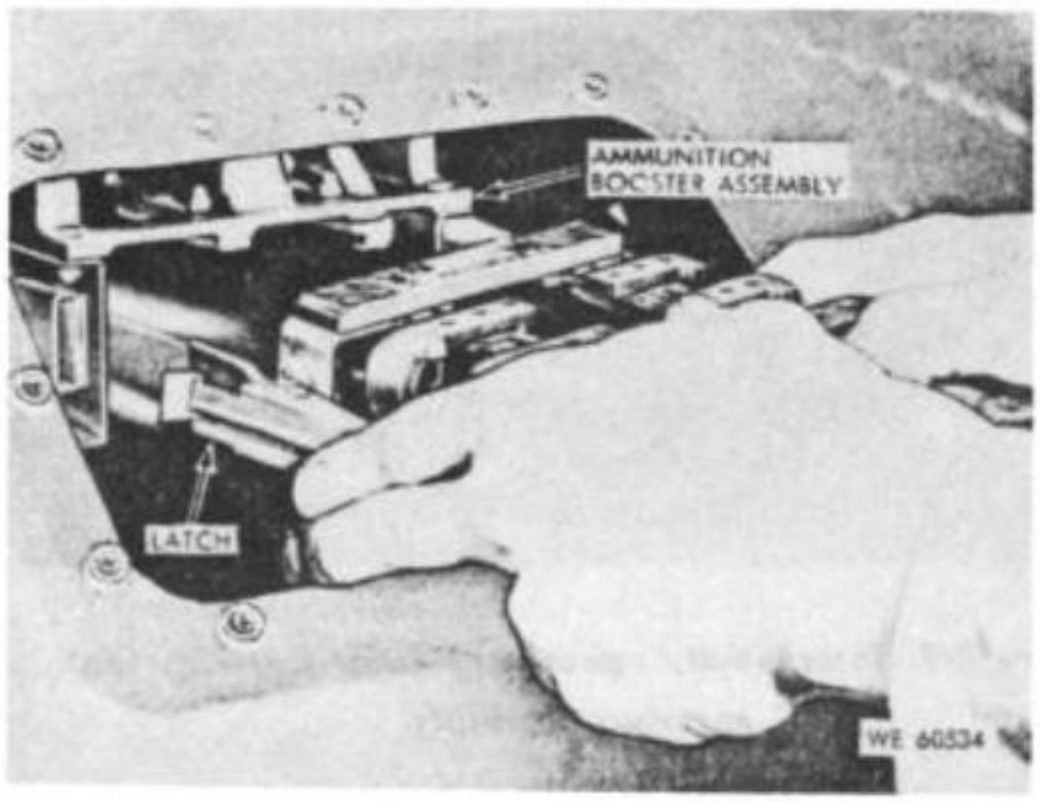


Figure 2-8. Installation / removal of front ammunition chute assembly.

j. Ammunition Feed Chute Assembly. The ammunition feed chute assembly will be installed after the turret assembly has been installed.

k. Servo-Amplifier Junction Box Assembly (fig. 1-2).

(1) Open the aft cargo compartment door on the right rear side of the helicopter and unhook the cargo net from the left side of the compartment.

(2) Position the junction box assembly so that the external connectors face toward the inside of the helicopter; install the junction box assembly on the captive studs on the channel beams in the compartment.

(3) Engage the slide latches on the base of the junction box assembly with the machined grooves in the studs.

(4) Connect the helicopter wiring electrical connectors to the electrical receptacles on the junction box assembly.

(5) Hook up the cargo net to the left side of the compartment and close the aft cargo compartment door.

l. Turret Assembly and 40 Millimeter Grenade Launcher M75.

(1) Remove the top and forward enclosure assemblies from the turret assembly (figs. 2-9 and 2-10).

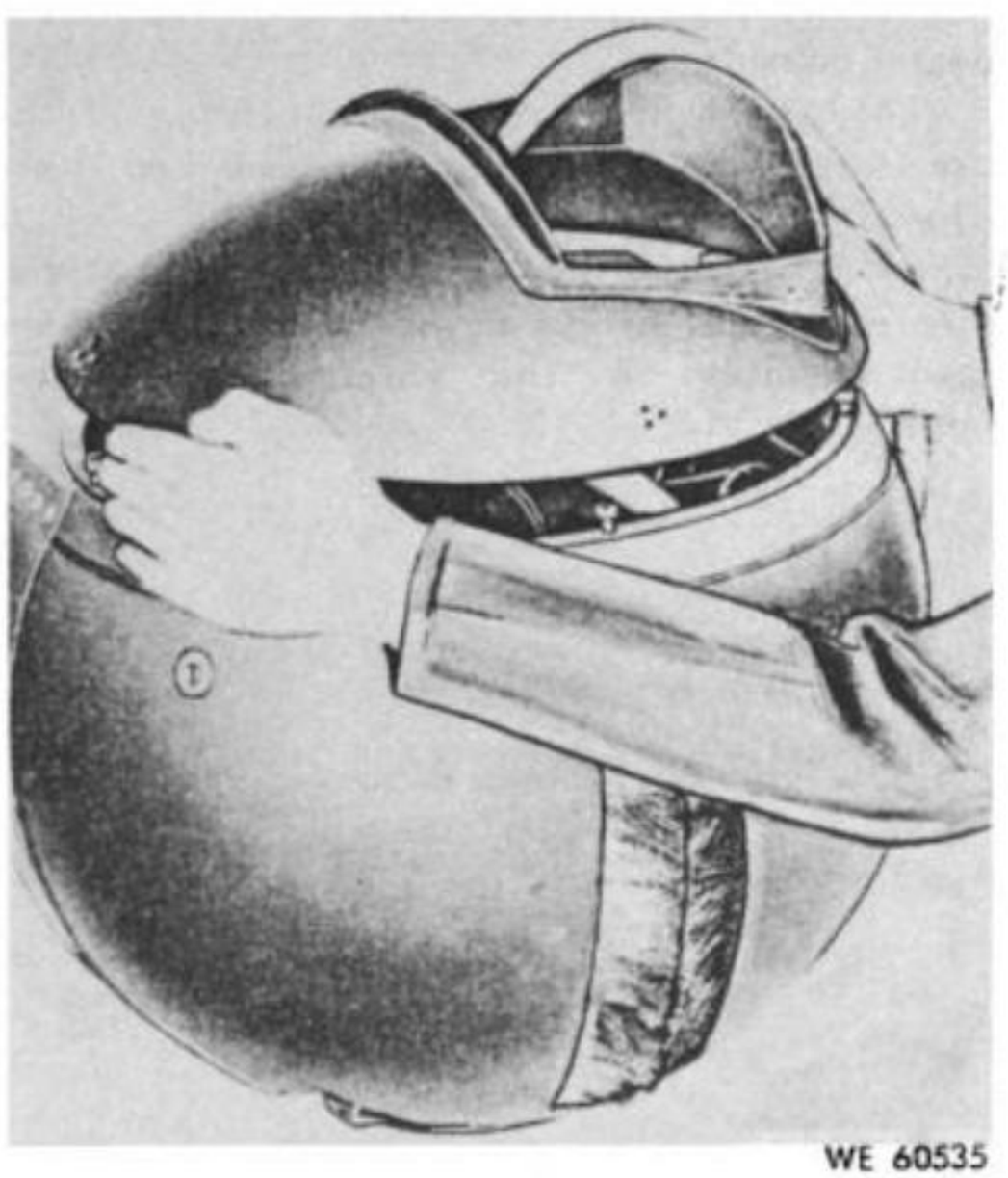


Figure 2-9. Installation / removal of turret assembly top enclosure assembly.

Figure 2-10. Installation / removal of turret assembly forward enclosure assembly.

CAUTION

The weight of the turret assembly requires two men for the following procedure.

(2) Lift the turret assembly into position at the nose of the helicopter as shown in figure 2-11. Install the two turret mounting quick release pin assemblies to secure the turret side mounting lugs to the helicopter hard points.

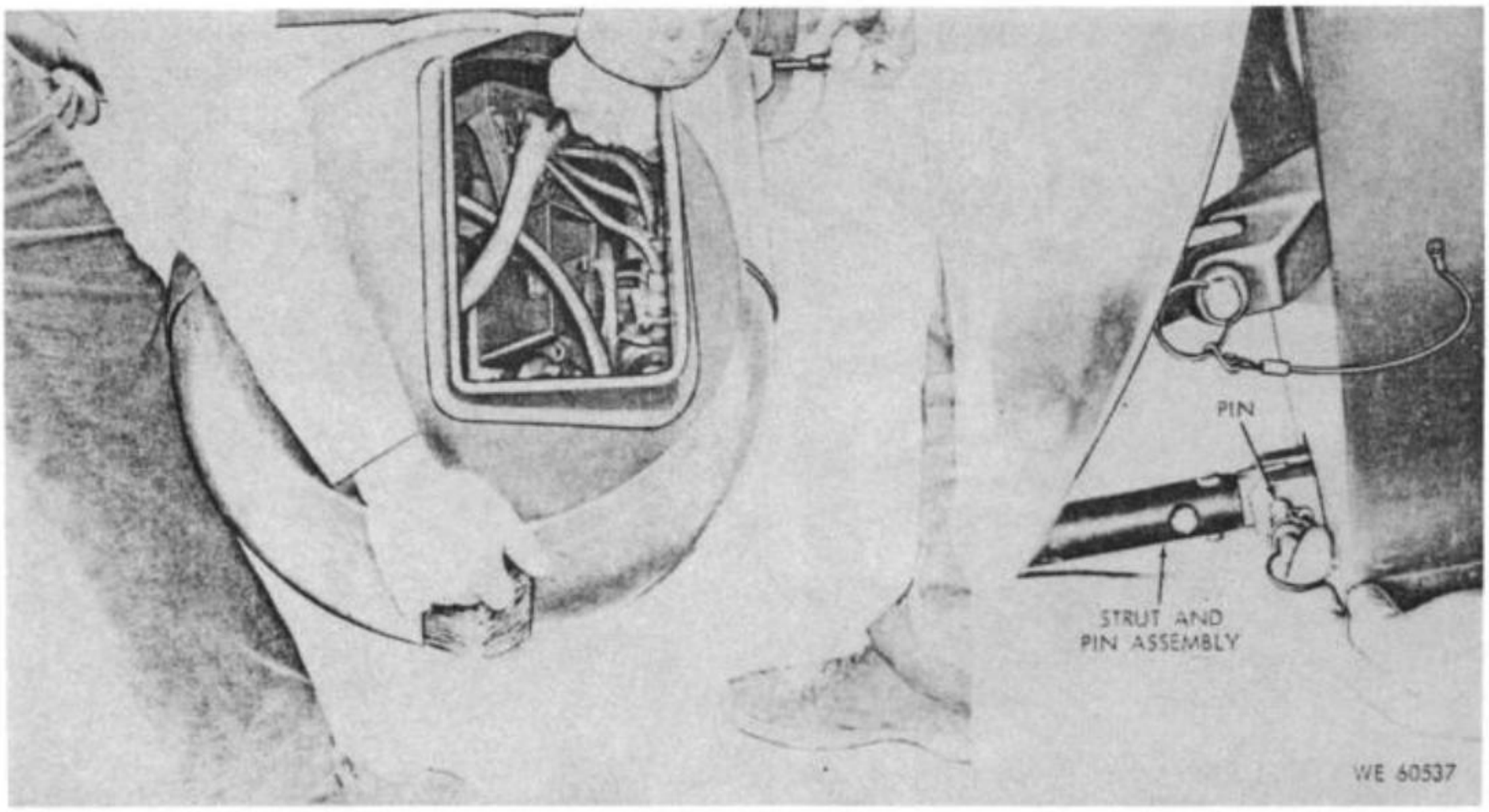


Figure 2-11. Installation / removal of turret assembly.

(3) Carefully lower the turret assembly until the turret bottom mounting lug rests against the helicopter.

(4) Install the split end of the strut and pin assembly on the mating helicopter hard point, secure with one pin of the pin assembly, and raise the turret assembly sufficiently for installation of the free end of the strut and pin assembly on the turret bottom mounting lug. Secure the strut and pin assembly to the turret assembly with the second pin of the pin assembly as shown in figure 2-11.

(5) Run the electric cable assembly up through the ammunition chute external boot assembly and slide the boot assembly and cable assembly up over the front ammunition chute assembly.

(6) Remove the entrance end fitting of the front ammunition chute assembly from the ammunition booster assembly (fig. 2-8). Connect the electric cable assembly to the receptacle in the electronic equipment compartment of the helicopter, as shown in figure 2-12, and connect the entrance end fitting of the front ammunition chute assembly to the ammunition booster assembly (fig. 2-8).

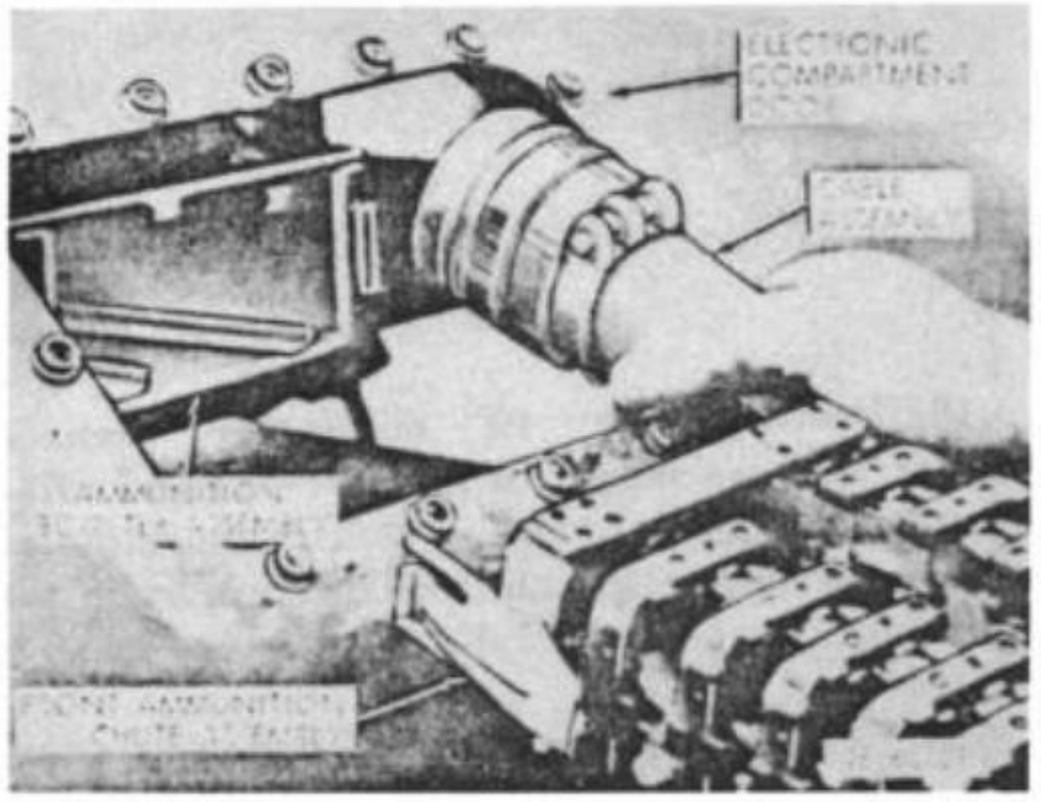
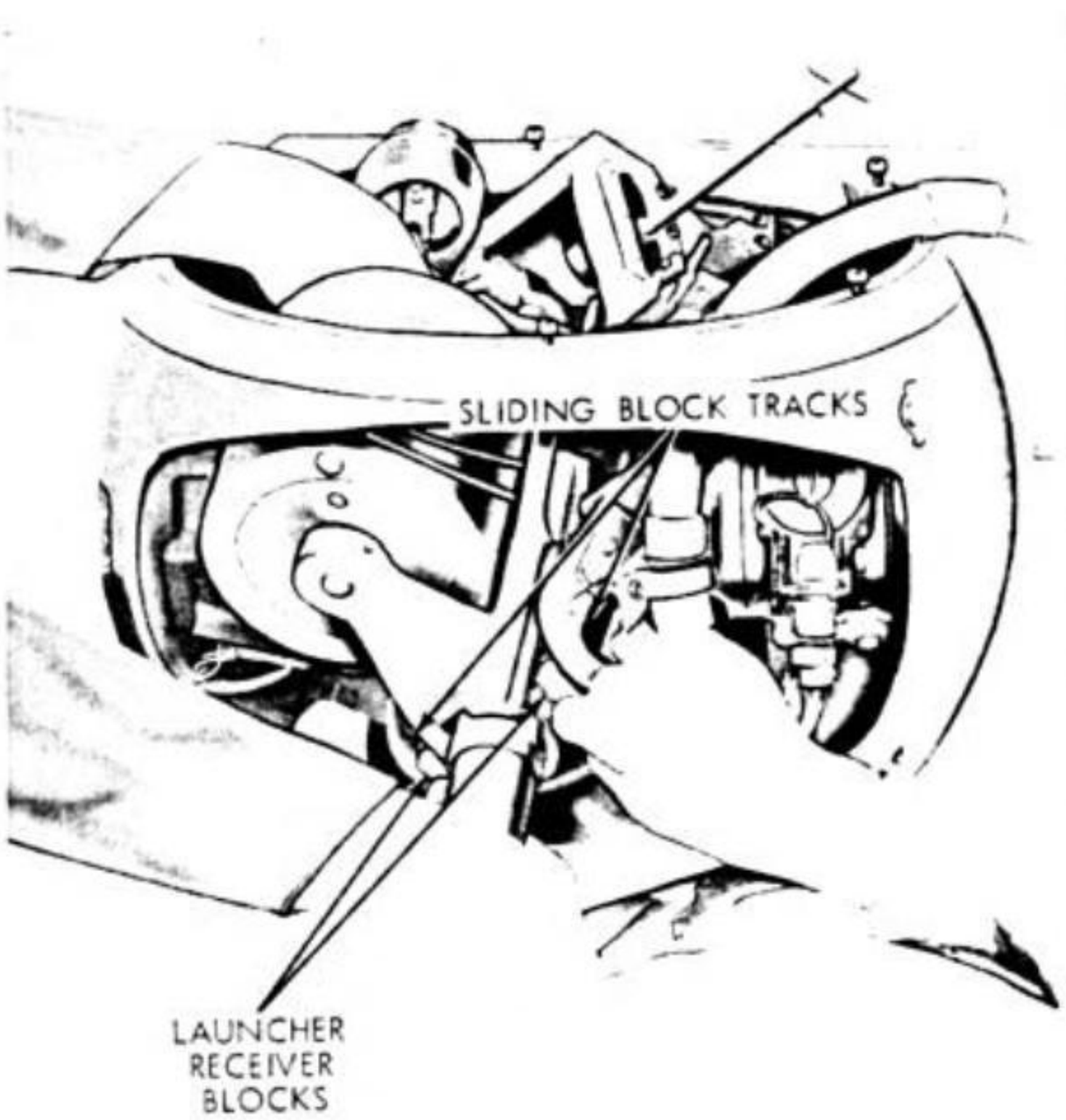
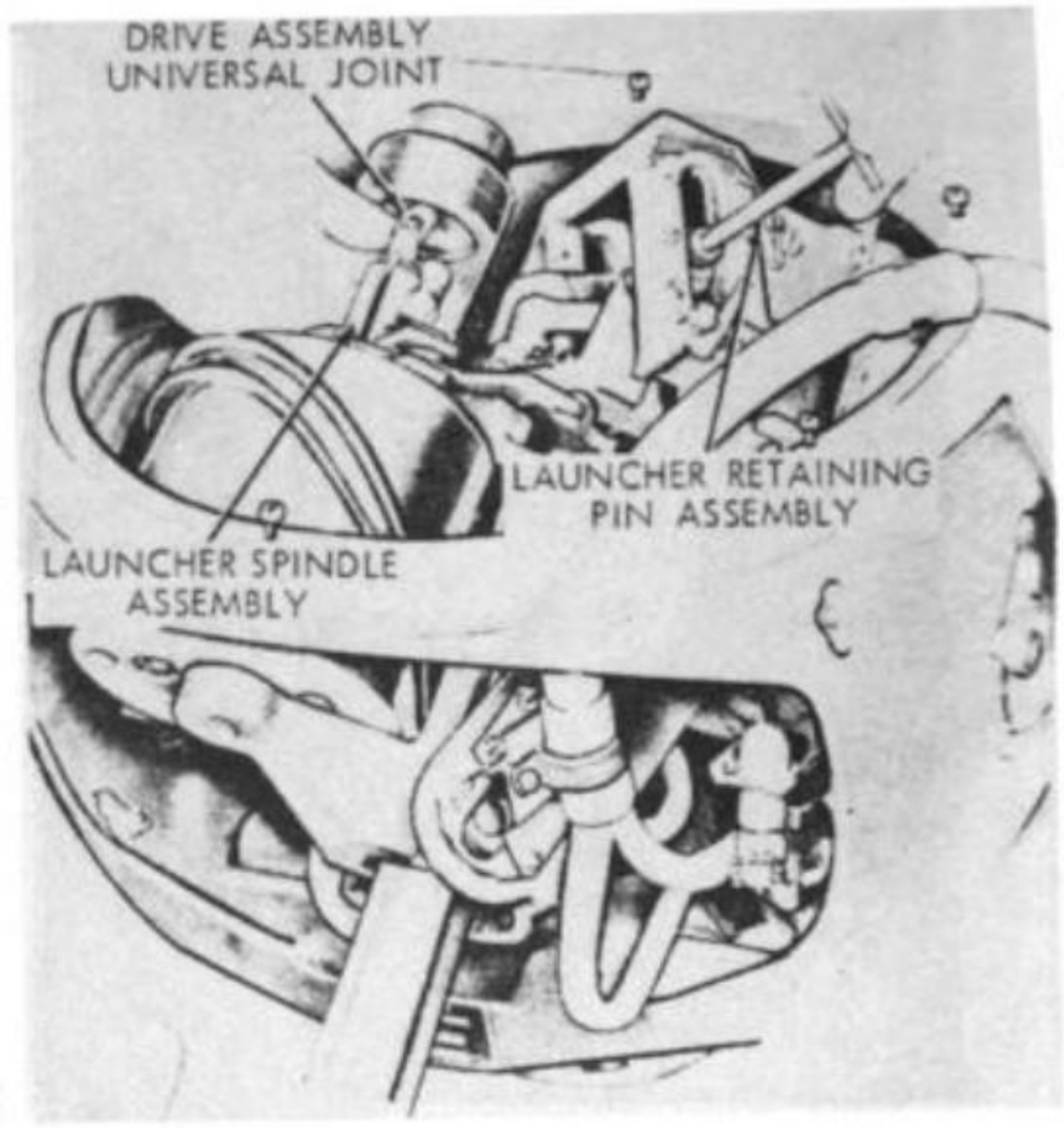


Figure 2-12. Installation / removal of electric cable assembly.

(7) Push the turret saddle assembly to the completely depressed position and remove the launcher retaining pin assembly (fig. 2-13) from the saddle assembly.



Alining launcher receiver blocks with sliding block tracks.



Alining launcher spindle assembly with drive assembly universal joint and installing or removing launcher retaining pin assembly.

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Figure 2-13. Installation / removal of 40 millimeter grenade launcher M75.

(8) Position the 40 millimeter grenade launcher M75 as shown in figure 2-13, and aline the launcher receiver blocks so that the spring pins in the blocks are vertical and will be trapped by the sliding block tracks when the grenade launcher is installed.

(9) Install the grenade launcher in the saddle assembly, alining the launcher spindle assembly with the drive assembly universal joint as shown in figure 2-13. Install the launcher retaining pin assembly which secures the grenade launcher in the saddle assembly.

(10) Install the ammunition feed chute assembly as shown in figure 2-14.

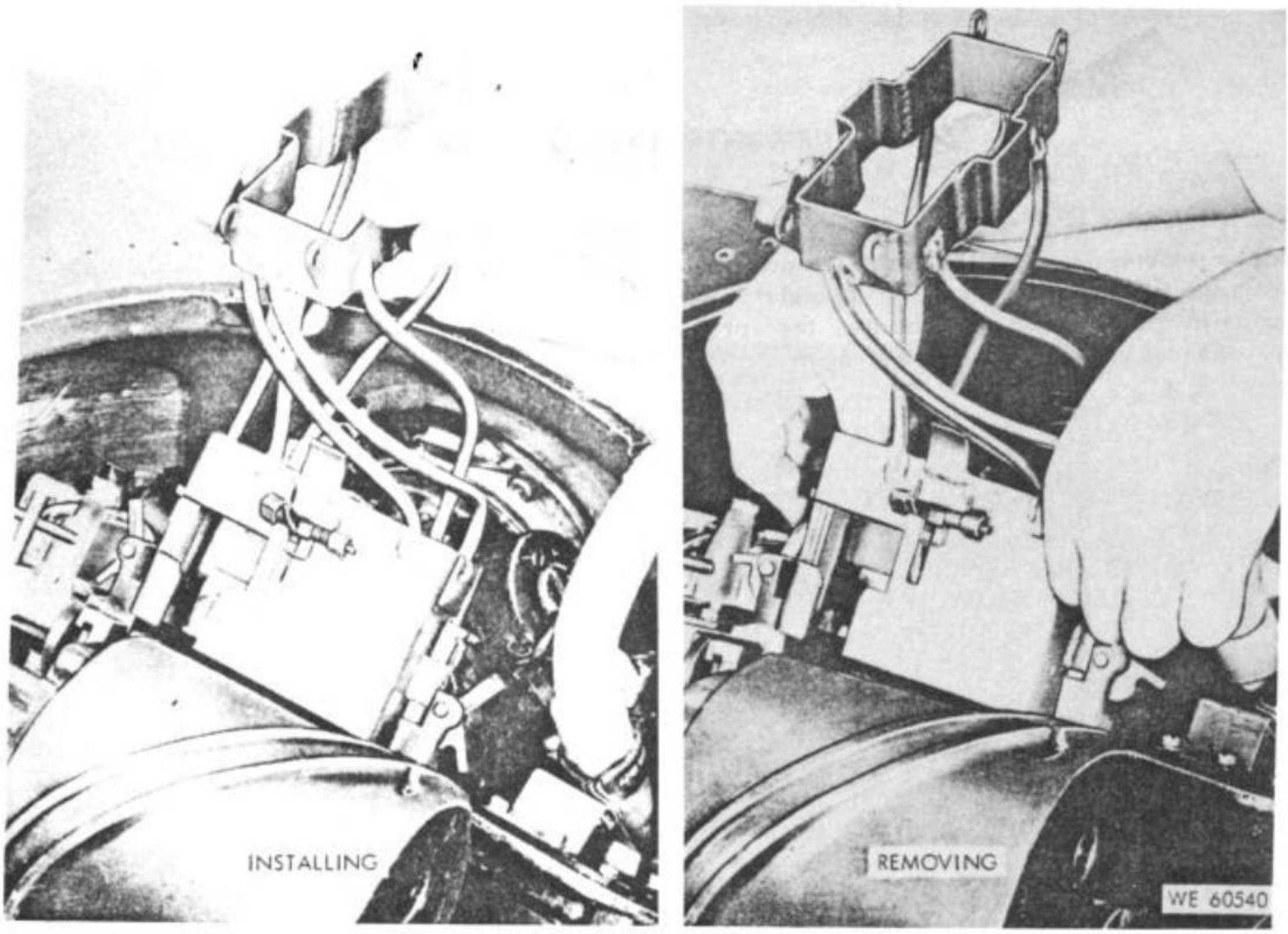


Figure 2-14. Installation / removal of ammunition feed chute assembly.

(11) Install the electric cable assembly in the clamp assembly on the ammunition feed chute assembly and install the exit end fitting of the front ammunition chute assembly to the ammunition feed chute assembly.

(12) Install the ammunition chute external boot assembly to the helicopter electronic equipment compartment door as shown in figure 2-15.

Figure 2-15. Installation / removal of ammunition chute external boot assembly.

(13) Install the top and forward enclosure assemblies on the turret assembly (fig. 2-9 and 2-10).

Section III. CONTROLS AND INSTRUMENTS

2-5. General.

This section describes the various controls and instruments and provides the operator / crew sufficient information to insure the proper operation of armament subsystem M5.

2-6. Controls and Instruments.

a. Turret Control Panel Assembly (fig. 2-16).

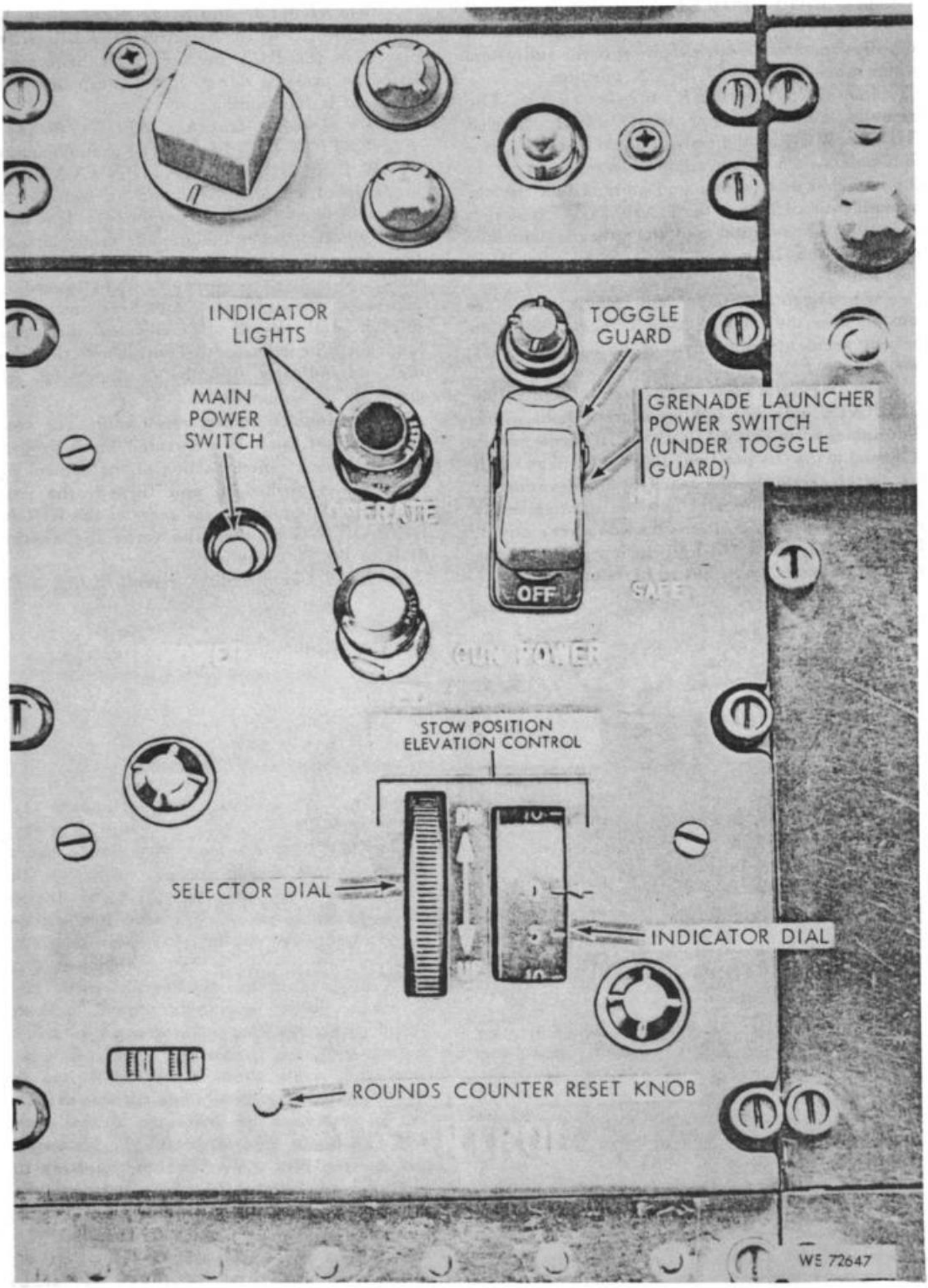


Figure 2-16. Turret control panel assembly—controls.

(1) *MAIN POWER switch.* The MAIN POWER switch is three-pole toggle switch which supplies operating electrical power to the subsystem when moved from OFF to ON position.

(1) *GUN POWER toggle switch.* The grenade launcher power toggle switch, labeled GUN POWER on the control panel assembly, is a four-pole switch which applies electrical power to the launcher drive motor and ammunition booster assembly circuits when the MAIN POWER switch is in the ON position and the grenade launcher power switch is moved from SAFE to HOT position.

(3) *Toggle guard.* A red toggle guard is located over the GUN POWER toggle switch to prevent accidental movement of the switch to HOT position.

(4) *OPERATE indicator light.* The OPERATE indicator light is a green light which illuminates when the MAIN POWER toggle switch is turned to the ON position. The light will go out if the turret assembly has reached an elevation or azimuth limit or if the error between sight assembly and turret assembly positions exceeds a set amount. The light may be tested by pressing down. If the lamp illuminates, the light is functioning.

(5) *ARMED indicator light.* This light illuminates red when the GUN POWER switch is placed in the HOT position. The light may be tested by pressing down. If the lamp illuminates, the light is functioning.

(6) *Grenade launcher STOW POSITION ELEVATION CONTROL.* The grenade launcher STOW POSITION ELEVATION CONTROL is made up of a selector dial and an indicator dial, plus associated electrical components. It is used to select elevation when the grenade launcher is to be fired from the pilot's or co-pilot's cyclic control stick. Moving the selector dial toward DN depresses the grenade launcher; moving the selector dial toward UP elevates the grenade launcher. The indicator dial moves with the selector dial and indicates elevation or depression in increments of 5 degrees.

(7) *Rounds counter reset knob.* The rounds counter reset knob is a serrated knob projecting from the lower center portion of the control panel face. When pushed in and turned, the rounds counter reset knob engages gears of the ROUNDS REMAINING counter and turns the numbered dials to the point desired.

b. Hand Control Sight Assembly (fig. 2-17).

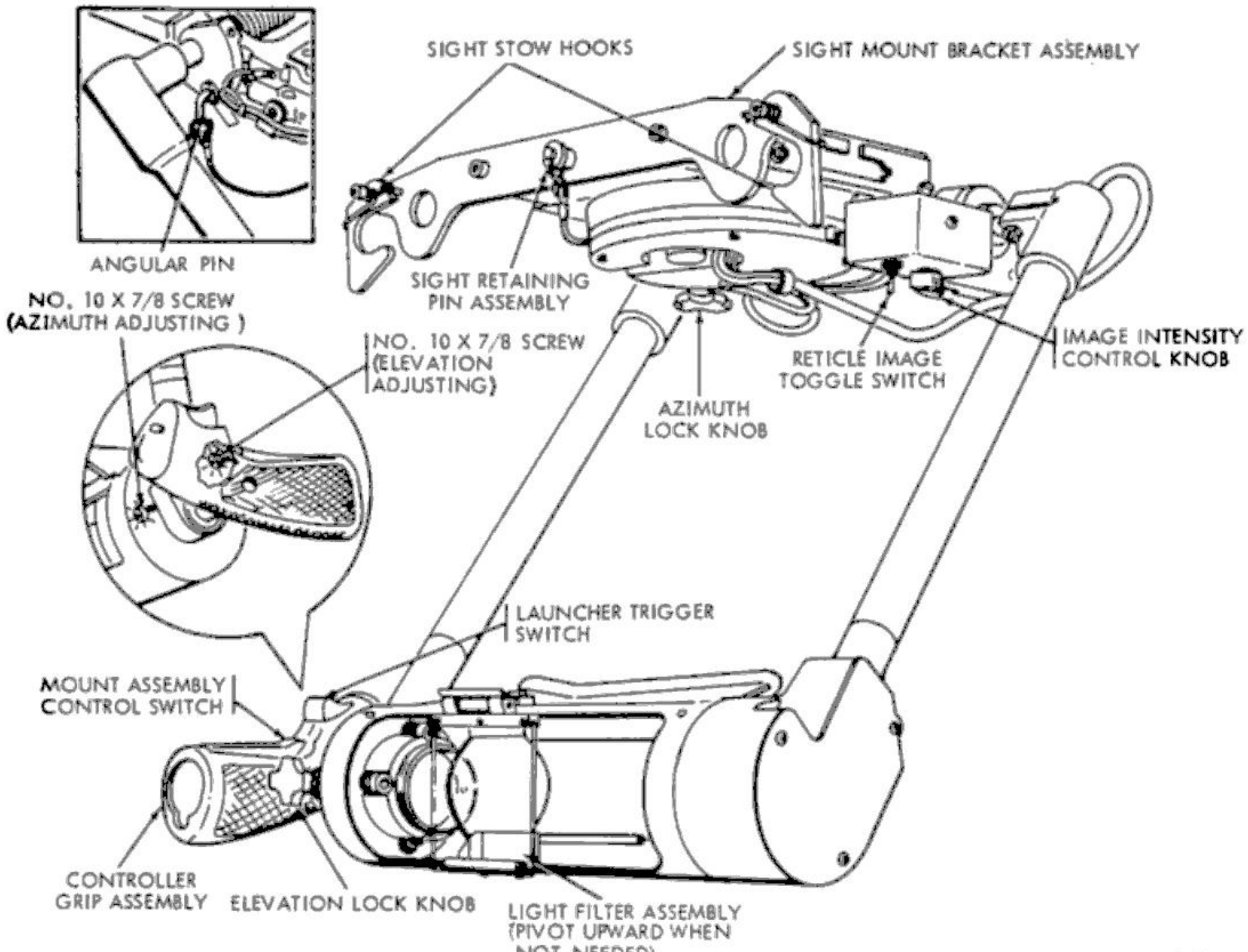


Figure 2-17. Hand control sight assembly and sight mount bracket assembly—controls.

(1) *Controller grip assembly.* The controller grip assembly is a pistol grip shaped device on the right side of the sight assembly guide. When the mount assembly control switch is depressed, movement of the grip assembly in elevation transmits electrical signals to the turret assembly and the turret assembly follows the movement of the grip assembly.

(2) *Mount assembly control switch.* This switch is a double break-type switch which is contained in the controller grip assembly. When depressed and held, the mount assembly control switch activates circuits which move the turret assembly in azimuth and elevation, according to the electrical signals generated by movement of the sight assembly in azimuth and elevation. The mount assembly control switch also permits the grenade launcher to be fired from the launcher trigger switch on the controller grip assembly.

(3) *Launcher trigger switch.* The launcher trigger switch is a double break-type switch contained in the controller grip assembly. When depressed and held, the launcher trigger switch closes the launcher drive motor circuits and ammunition booster assembly circuits.

(4) *Elevation lock knob.* The elevation lock knob is a threaded shaft with a handle which can be turned to lock the sight assembly guide in one position. The elevation lock knob is used during initial installation of the sight mount bracket assembly and the sight assembly.

(5) *Azimuth lock knob.* The azimuth lock knob is a threaded shaft with a handle, located in one side of the azimuth frame assembly at the upper right side of the sight assembly. Turning the knob locks the azimuth frame assembly in one position. The knob is used during initial installation of the sight mount bracket assembly and the sight assembly.

(6) *Reticle image toggle switch.* The reticle image toggle switch is a three-pole switch in a bracket attached to the azimuth frame assembly at the upper left side of the sight assembly. Moving the switch toggle to either side of the center position

lights the reticle lamp, which illuminates the sight reticle.

(7) *Image intensity control knob.* The image intensity control knob is a knob attached to a variable resistor in the bracket with the reticle image toggle switch. When the switch is turned on, movement of the control knob brightens or dims the intensity of the reticle image.

NOTE

The subsystem circuits have been designed to provide a flashing reticle image when the turret assembly has reached an elevation or azimuth limit or when the error between the sight assembly and turret assembly positions exceeds a set amount. A flashing reticle image indicates that the grenade launcher cannot be fired.

c. Sight Mount Bracket Assembly (fig. 2-17).

(1) *Sight stow hooks.* Two sight stow hooks are provided, one at each end of the sight mount bracket assembly. The hooks are spring-loaded to be retained in the closed position. When the sight assembly is pushed into contact with the stow hooks, the hooks are cammed outward until the sight assembly reaches its final stow position. The stow hooks then pivot inward and secure the stowed sight assembly.

(2) *Sight retaining pin assembly.* The sight retaining pin assembly is a quick-release type pin on a lanyard, secured to the left side of the sight mount bracket assembly. In use, the sight retaining pin assembly is passed through holes in the sight mount bracket assembly and the sight assembly to hold the sight assembly securely in place.

(3) *Angular pin.* The angular pin is a solid metal pin with a right angle carried in a clamp on the rear side of the sight mount bracket assembly. The pin is used during initial installation of the sight mount bracket assembly and the sight assembly.

d. Ammunition Booster Assembly (fig. 2-18).

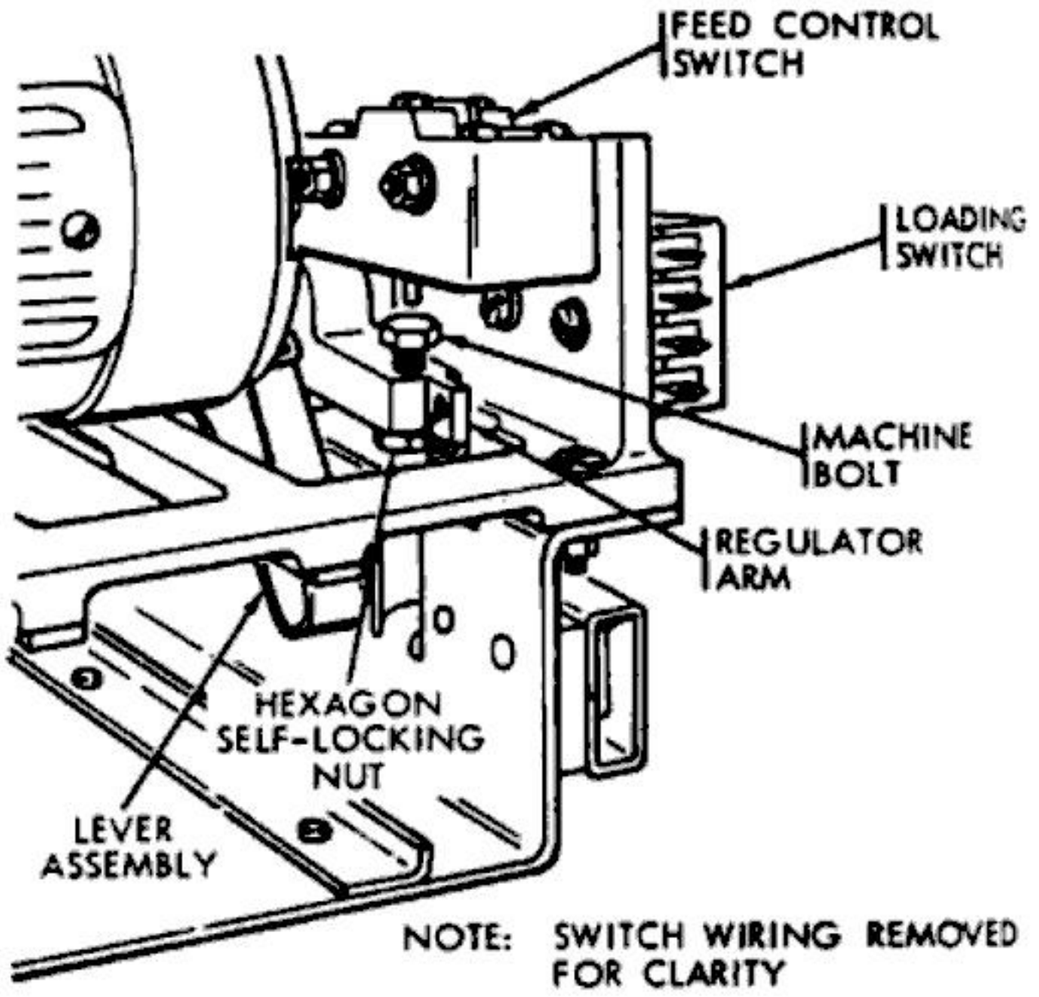


Figure 2-18. Ammunition booster assembly—controls.

(1) *Loading switch.* The loading switch is a double-break push type switch located on the left front side of the ammunition booster assembly. This switch is used to energize the booster assembly independently of the grenade launcher firing circuits for checkout of the booster assembly. The loading switch can be used without having the MAIN POWER switch on the control panel assembly in the ON position. When the GUN POWER switch on the control panel assembly is moved from SAFE to HOT position, operating power is removed from the loading switch as a safety measure.

(2) *Feed control switch.* The feed control switch is a double-break type switch located on the

left front side of the ammunition booster assembly. This switch provides an automatic means of controlling the speed of the direct current booster motor, thus controlling the ammunition flow rate. When ammunition demand is low, the linked cartridges bunch up and the arm carrying the machine bolt rides up on the cartridges. The machine bolt contacts a pin in the bottom of the switch, actuating the switch to reduce motor speed. When ammunition demand is high, the linked cartridges are properly spaced and the machine bolt on the arm no longer contacts the switch pin, deactuating the switch. The machine bolt can be adjusted to the proper height for contacting the switch pin.

Section IV. OPERATIONAL CHECKS

WARNING

Do not attempt to perform operational checks with high explosive or practice ammunition loaded in the ammunition feed chute assembly or grenade launcher; checks will be made without ammunition or with dummy ammunition. If live ammunition is present, unload in accordance with paragraphs 2-11 and 2-12.

2-7. Before and After Operation.

Perform the before and after operation checks as outlined in table 3-2.

CAUTION

Before dry cycling the launcher, remove the firing pin and firing pin spring.

2-8. Personnel Requirements.

Two men are required to perform the required electrical circuit checks contained in table 3-2, one operating the armament subsystem from the helicopter cockpit and the second observing subsystem responses from outside the helicopter.

Section V. BORESIGHTING

2-9. General.

WARNING

Do not perform the following boresighting procedures with high explosive or practice ammunition loaded in the ammunition feed chute assembly or grenade launcher. If high explosive or practice ammunition is present, unload in accordance with paragraphs 2-11 and 2-12.

a. Two men are required to boresight the armament subsystem M5 installed on the helicopter.

b. Boresight the subsystem when it is initially installed on the helicopter. Thereafter, the subsystem should be boresighted as necessary to assure accuracy in firing.

c. The boresighting target used with the sub system is shown in figure 2-19. Fabricate the target locally.

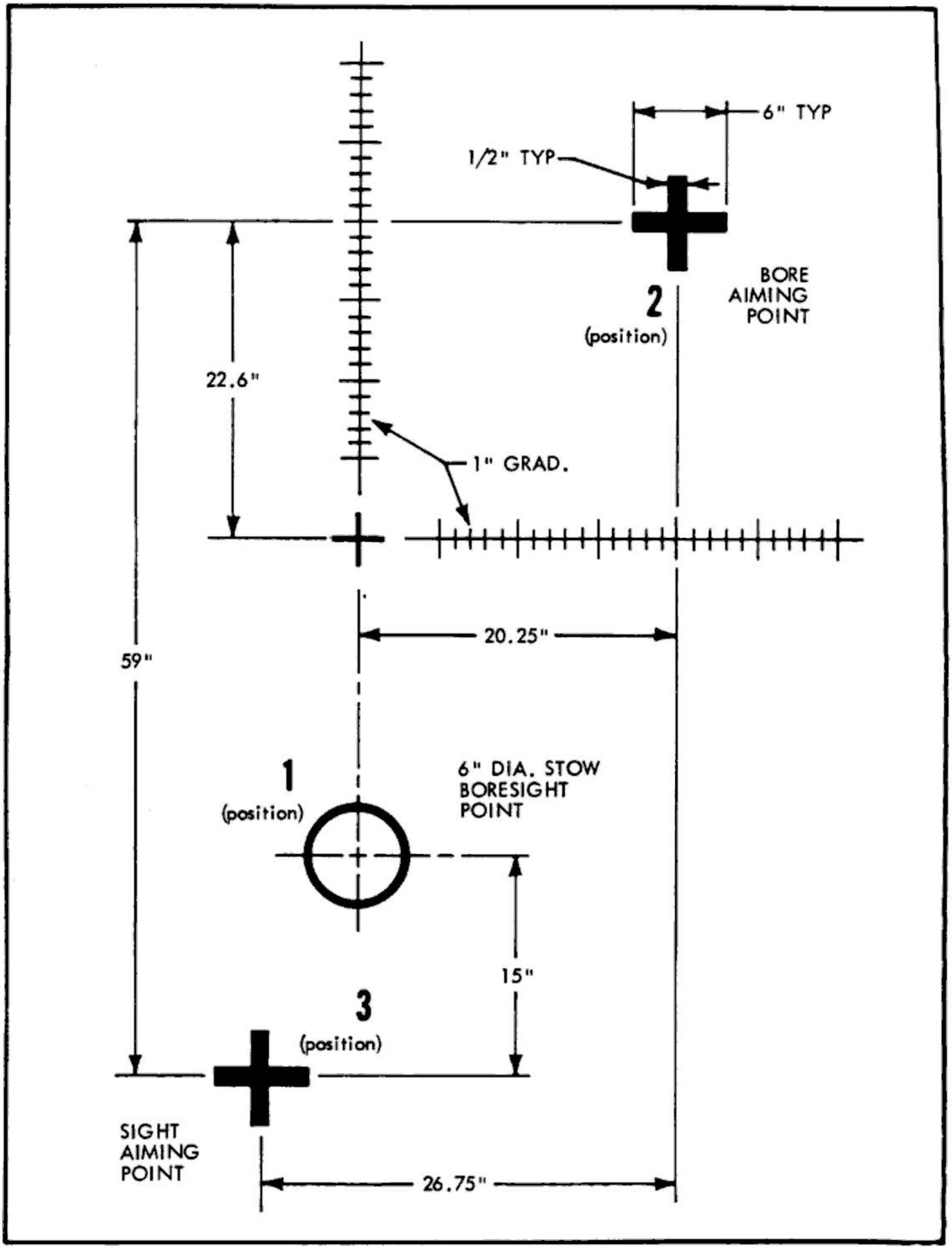


Figure 2-19. Dimension drawing of boresighting target.

NOTE

When fabricating the target, do not copy dimensions or the words "bore aiming point", sight aiming point." or "stow boresight point."

2-10. Boresighting.

CAUTION

Do not attempt to boresight a subsystem when the grenade launcher is still hot from firing. Allow the launcher barrel to cool before proceeding.

a. Locate the helicopter on level ground with approximately 100 feet of level ground in front of the turret assembly.

b. Remove the top and forward enclosure assemblies from the turret assembly (figs. 2-9 and 2-10).

c. Inspect the grenade launcher and ammunition feed chute assembly for the presence of high explosive or practice ammunition. If either type is found, unload in accordance with paragraphs 2-11 and 2-12.

d. Manually rotate the cam and cover assembly of the grenade launcher until the launcher barrel is in its rearmost position.

e. One operator should sit in the co-pilot's seat in the helicopter. Turn the selector dial of the stow position elevation control on the turret control panel assembly so that the indicator dial is at zero (0) (fig. 2-16).

CAUTION

See that the GUN POWER switch on the panel assembly is on SAFE, with the toggle guard in the lowered position.

f. Make certain that the following circuit breakers and switches in the aircraft are positioned as indicated below:

(1) *AC breaker panel.*

(a) M5 ARM (two circuit breakers)—pulled out.

(b) 28V TRANS—pushed in.

(2) *DC breaker panel.*

(a) INVTR CONT-MAIN and SPARE—pushed in.

(b) MAIN INVTR-PWR—pushed in.

(c) VOLT METER-NON-ESS-BUSS—pushed in.

(d) M5 GUN and BOOSTER MOTOR—pulled out.

(e) M5 AZ—pulled out.

(f) M5 EL—pulled out.

(3) *Overhead console.*

(a) INVTR switch to MAIN ON.

(b) PHASE selector switch to AB.

(4) *Turret control panel assembly.* MAIN POWER toggle switch is ON.

g. The OPERATE indicator light should now illuminate.

h. Insert the 40 millimeter boresight adapter of the 40 millimeter boresight kit into the muzzle of the grenade launcher barrel until the adapter flange is up against the end of the barrel.

i. Insert the 40 millimeter boresight telescope firmly in the adapter with the viewing piece in a vertical position.

j. On the centerline of the helicopter, position the boresight target 1,000 inches from the front of the grenade launcher barrel. Following the directions of the man at the elbow telescope, move the target until position 1 coincides with the cross lines of the elbow telescope.

k. In the helicopter, release the hand control sight assembly from the stowed position and swing it downward until it can be locked in position with the angular pin (fig. 2-17) attached to the end of the lanyard of the sight retaining pin assembly. Turn on the reticle image toggle switch and depress the mount assembly control switch (fig. 2-17).

l. Move the sight assembly, as directed by the man looking through elbow telescope at the turret assembly, until the cross hairs on the telescope in the grenade launcher coincide with position 2 on the target. Lock sight assembly in this position by tightening the azimuth and elevation locking knobs.

m. Turn azimuth and elevation adjusting screws in hub of sight assembly (fig. 2-17), either clockwise or counterclockwise, until the vertical centerline and the 800 meter line on the reticle pattern of the sight assembly coincide with position 3 on the target. If reticle pattern cannot be alined on position 3 of the boresight target, proceed as follows:

(1) Adjust the azimuth and elevation screws (fig. 2-17) until both are at the approximate center position of the adjustment limit of travel.

NOTE

This adjustment positions the mirror at right angles to the light beam.

(2) Loosen azimuth and elevation locking knobs and move sight assembly until 800 meter line on reticle is alined with the horizontal line of position 3 of boresight target. Lock sight assembly in this position by tightening azimuth and elevation locking knobs.

(3) Scribe lines on synchro and gear assembly (elevation) and sight frame as shown in figure 2-20.

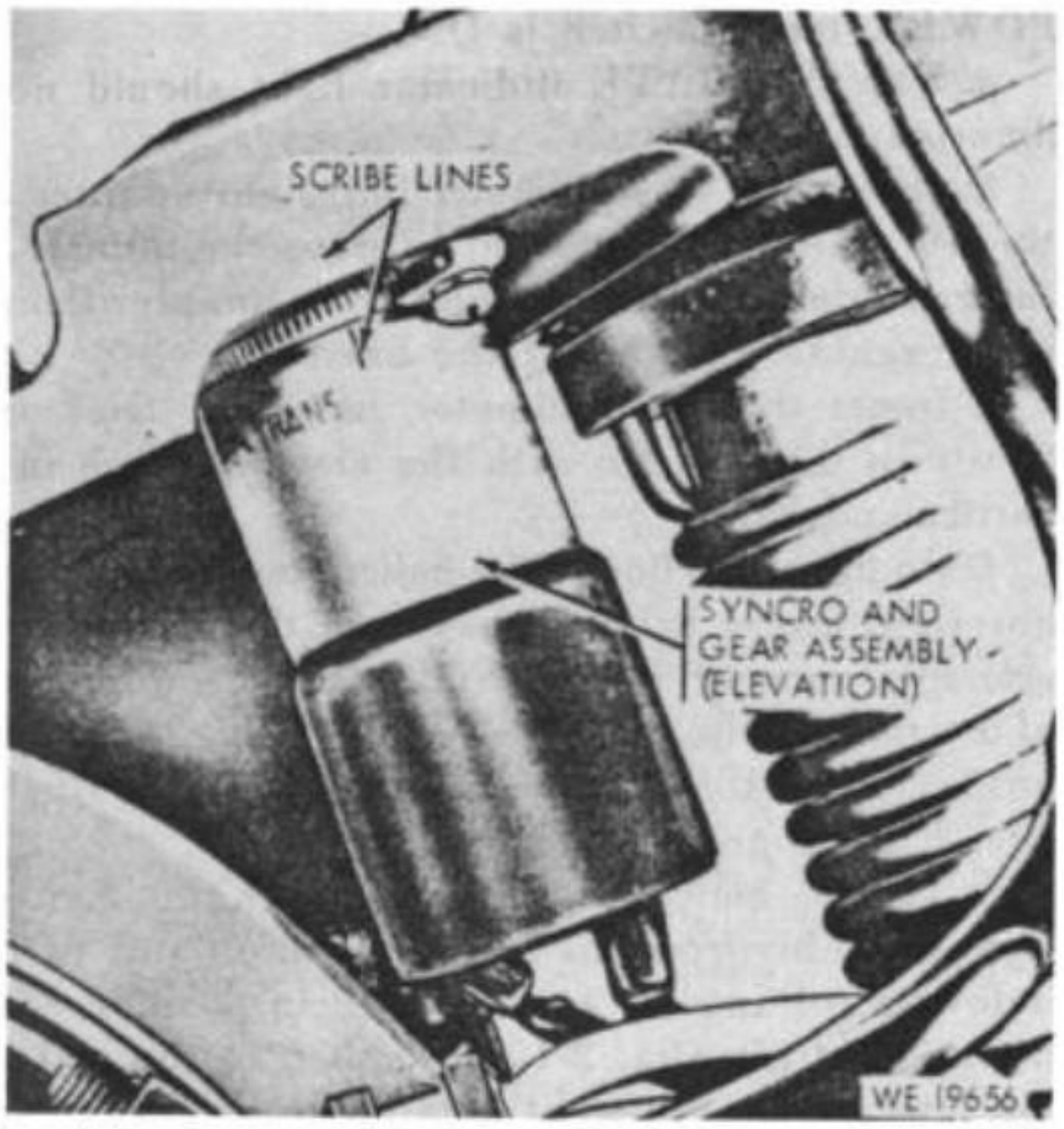


Figure 2-20. Scribe lines on synchro and gear assembly (elevation) and sight frame.

(4) Loosen clamps on synchro and gear assembly (elevation) (fig. 2-21), and rotate synchro very slightly until horizontal lines of both gun boresight reticle and position 2 coincide. Tighten synchro clamps.

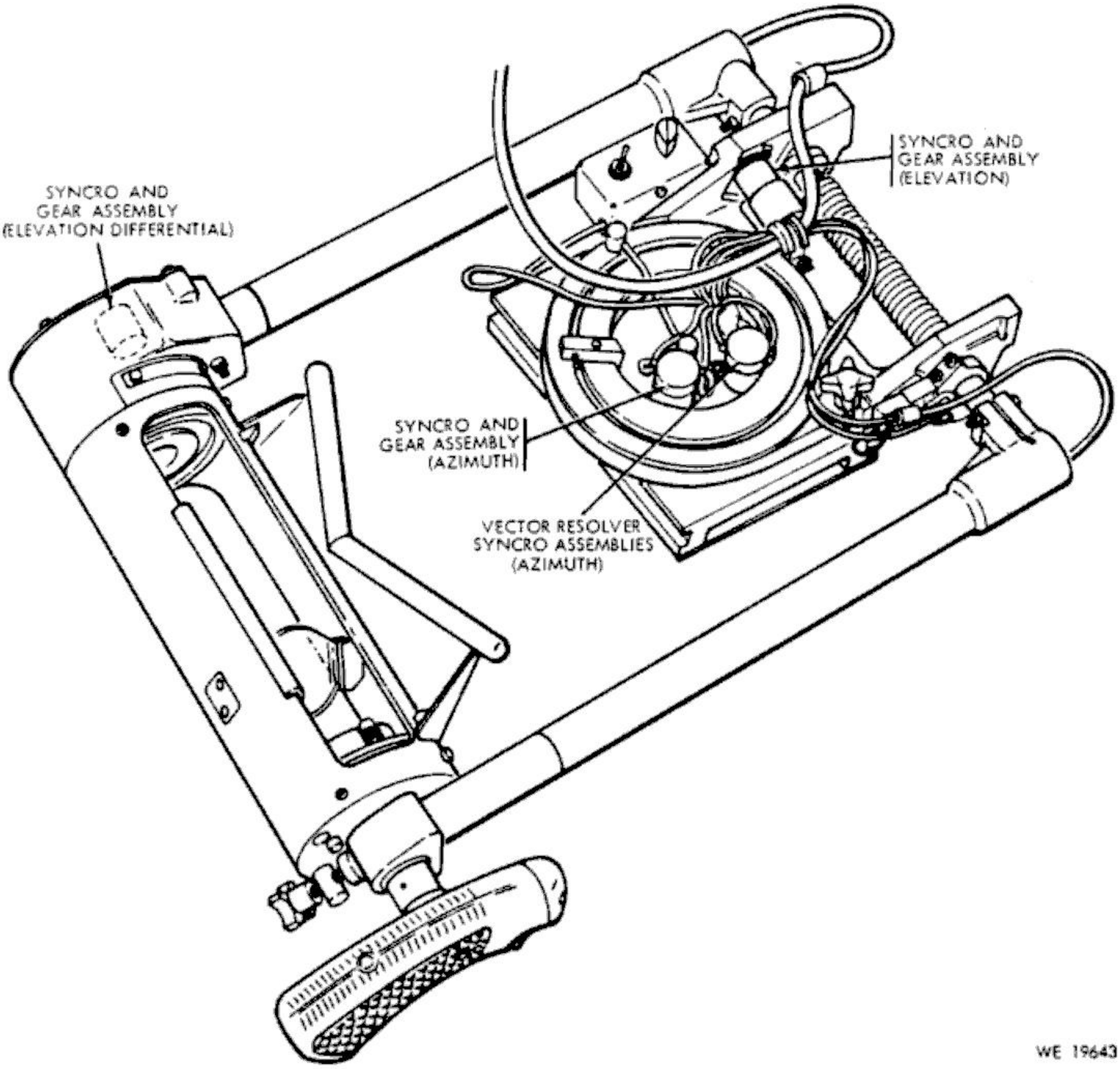


Figure 2-21. Location of synchros in sight assembly.

(5) Check alinements obtained in paragraphs (2) and (4).

n. Repeat instructions in paragraphs *l* and *m*.

o. Withdraw angular pin used to lock sight assembly in position as instructed in paragraph *k*. Stow angular pin in clamp attached to sight mount bracket assembly (fig 2-17).

p. Return sight assembly to stowed position.

q. Turn off the reticle image toggle switch and push the sight assembly up to the bracket assembly until the stow hooks grasp the suspension system.

r. Turn off the switches and pull out/push in the circuit breakers listed in paragraph *f*.

s. Remove the boresight telescope and boresight adapter from the grenade launcher barrel and store the boresighting target.

NOTE

If the subsystem is to be loaded with ammunition at this time, follow procedures contained in paragraphs 2-11 and 2-12.

t. Install the top and forward enclosure assemblies (figs 2-9 and 2-10).

Section VI. OPERATIONAL SERVICES

2-11. Preparation for Loading.

Before ammunition is loaded in the armament subsystem, check to make certain the following conditions exist:

a. The two M5 ARM circuit breakers on the AC circuit breaker panel are pulled OUT.

b. The following circuit breakers on the DC circuit breaker panel are pulled OUT.

(1) M5 GUN & BOOSTER MOTOR.

(2) M5 AZ.

(3) M5 ELEV

c. The MAIN POWER switch on the turret control panel assembly is OFF and the GUN POWER switch is on SAFE with the toggle guard in the down position.

2-12. Loading Ammunition.

WARNING

Observe ammunition handling safety precautions outlined in paragraph 4-6.

a. (Deleted)

b. Remove cover assembly from rotary ammunition can assembly.

c. Disconnect rear ammunition chute assembly from rotary ammunition can.

d. Obtain a full complement of ammunition (302 cartridges).

e. Using hand linker-delinker (fig 2-22), remove link assembly from the plug and link assembly. Attach the link assembly to the coupling end of one unit of ammunition (unit consists of 50 linked cartridges).

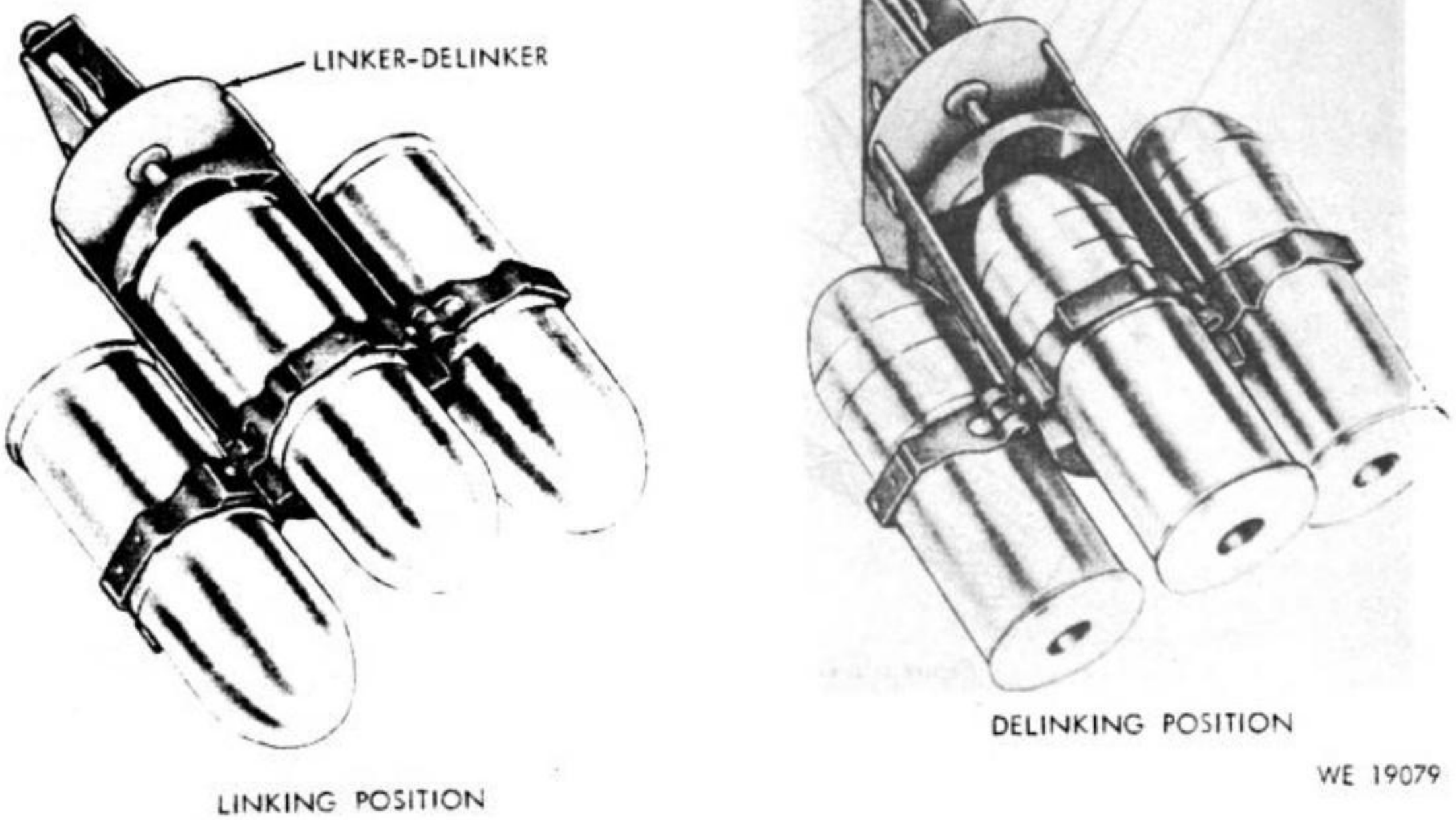


Figure 2-22. Use of hand linker-delinker.

f. Position plug and link assembly as shown on top of rotary ammunition can and insert plug into rotary ammunition can. Feed ammunition into can, rotating hand crank on top of core assembly counterclockwise to seat plug behind retainer on lowest portion of the core assembly.

g. Continue turning crank counterclockwise and feeding ammunition into can until approximately six rounds remain of the unit of ammunition. Using hand linker-delinker, link another unit of the first, continue turning crank and feeding ammunition, repeating this procedure until four units are linked together and ammunition can is loaded.

h. Remove top enclosure assembly from turret assembly and slide enclosure assembly upward on front ammunition chute assembly.

i. Disconnect the ammunition feed chute assembly from the saddle assembly of the turret assembly.

j. Insert the adapter end of the ammunition loader handling tool into the ammunition feed chute assembly and work it backward through the chuting until the adapter end of the tool emerges from the entrance end fitting of the rear ammunition chute assembly.

k. Using the hand linker-delinker, link together two more full units of ammunition plus 20 additional linked cartridges. Connect the adapter of the ammunition loader handling tool to the end link on the cartridge that will be the first to enter the entrance end fitting of the rear ammunition chute assembly. Make sure that the cartridges are oriented as shown on the ammunition loading instruction plate on top of the ammunition can. Pull the linked ammunition forward through the chuting with the ammunition loader handling tool until only six cartridges protrude from the end of the rear ammunition chute assembly.

l. Using the hand linker-delinker, link together the cartridges protruding from the rear ammunition chute assembly with those in the rotary ammunition can.

m. Continue to pull the linked cartridges forward through the chuting until the first linked cartridge reaches the position shown on the ammunition feed chute assembly instruction plate.

CAUTION

Do not allow the first linked cartridge to enter the grenade launcher receiver assembly.

n. Connect ammunition feed chute assembly to saddle assembly and install top enclosure assembly on turret assembly.

o. Attach rear ammunition chute assembly to the ammunition can; install cover assembly on rotary ammunition can assembly.

p. On the turret control panel assembly, push in on the rounds counter reset knob (fig 2-16) and turn so that the ROUNDS REMAINING counter reads 302 or to number of rounds actually loaded if less than a complete complement is to be used.

2-13. Preparation for Unloading.

WARNING

Do not stand in front of the grenade launcher. Determine that no unfired cartridge is present in the grenade launcher receiver assembly. Insure that the grenade launcher is not nearing completion of the firing cycle with live rounds present in the firing chamber.

Before any attempt is made to unload unfired linked cartridges, check to make certain the following conditions exist:

a. The MAIN POWER switch on the turret control panel assembly is in the OFF position and the GUN POWER switch is in SAFE position, with the toggle guard in the down position.

b. The following circuit breakers on the DC circuit breaker panel are pulled out:

(1) M5 GUN & BOOSTER MOTOR.

(2) M5 AZ.

(3) M5 ELEV.

c. The two M5 ARM circuit breakers on the AC circuit breaker panel are pulled out.

2-14. Unloading Ammunition.

WARNING

Do not drop unfired cartridges. Do not allow cartridge primers to strike any object. Observe all ammunition handling safety precautions outlined in paragraph 4-6. If an unexploded grenade is lodged in the grenade launcher barrel, it should be removed by ordnance disposal personnel. Removal should be accomplished without damaging or destroying the barrel, if possible.

a. Make certain the procedures in paragraph 2-11 have been accomplished before proceeding.

b. Release top enclosure assembly from turret assembly and slide enclosure assembly upward.

WARNING

Before clearing or unloading the 40 millimeter ammunition feed system, verify that the grenade launcher is in a safe position (barrel fully extended). Improper rotation of the launcher cam will fire the weapon if rounds are present in the breech mechanism or feed chute. Insure that all personnel and property are clear.

c. Check the position of the grenade launcher barrel. If the barrel is forward, perform (1) below. If the barrel is to the rear, perform (2) below.

(1) Inspect the grenade launcher receiver assembly to determine whether the cartridge has been fired. If so, push the spent case out of the receiver assembly by hand.

(a) If an unfired cartridge in the receiver is linked, block the firing pin striker. Carefully rotate cam and cover assembly in direction of arrow on caution instruction plate just enough to uncouple the link.

WARNING

Catch the unfired cartridge as it drops from the ejection hopper.

(b) Rotate the cam and cover assembly in the reverse direction until the cartridge can be pushed from the receiver assembly by hand.

(c) If the cartridge in the receiver assembly has been stripped from its link, push out of the receiver assembly and catch as in WARNING.

(2) If barrel is to the rear with cartridge delinked, rotate cam and cover assembly in the reverse direction to determine if the cartridge has been fired.

Remove the spend case or unfired cartridge, as applicable.

(3) If the complete complement of cartridges has been fired, the launcher barrel may come to rest over the plug and link assembly. Proceed as in (2) and push the plug and link assembly out of the receiver assembly by hand.

d. Remove the exit end fitting of the front ammunition chute assembly from the ammunition feed chute assembly.

e. Depress the feed chute pawl and remove the linked cartridges from the feed chute assembly.

f. Withdraw the remaining linked cartridges from the free end of the front ammunition chute assembly.

g. Store all unfired linked cartridges in accordance with paragraph 5-3.

h. Connect front ammunition chute assembly to the ammunition feed chute assembly.

i. Lower top enclosure assembly and secure it to the turret assembly.

CHAPTER 3

OPERATOR / CREW AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

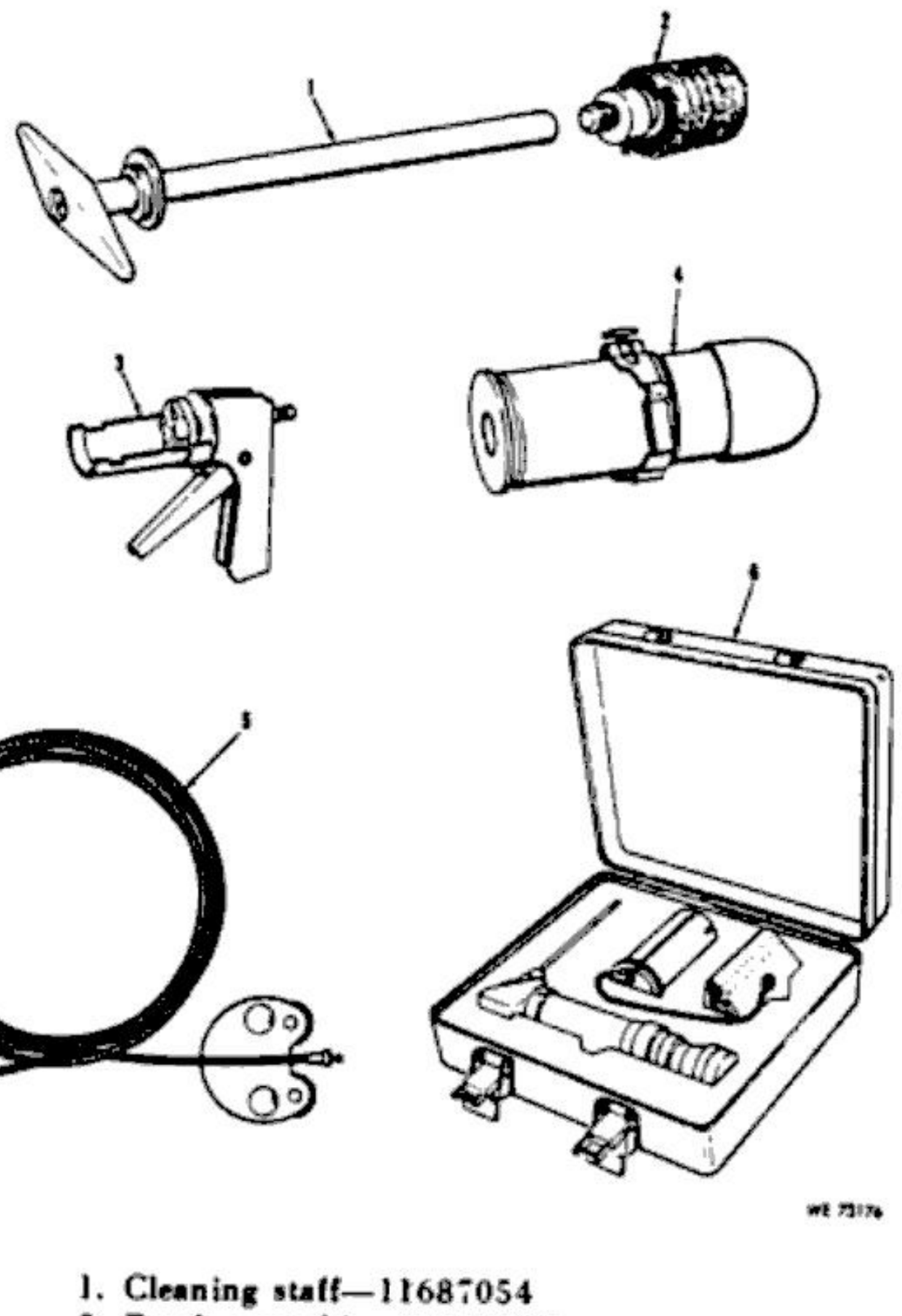
Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

3-1. Repair Parts.

Repair parts for armament subsystem M5 are listed in TM 9-1010-207-20P.

3-2. Special Tools and Equipment.

Special tools, test and support equipment for armament subsystem M5 are authorized in TM 9-1010-207-20P, listed in table 3-1 and shown in figure 3-1.



1. Cleaning staff—11687054
2. Brush assembly—11010305
3. Linker-delinker—7791850
4. Plug and link assembly—8448076
5. Handling tool—11014211
6. Boresighting kit—11010402

Figure 3-1. Special tools, test and support equipment.

Table 3-1. Special Tools, Test and Support Equipment

Item	FSN or Reference No.	Reference		Use
		Fig. No.	Para. No.	
Kit, boresighting, 40 millimeter	4933-496-8671	3-1	2-10	To boresight armament subsystem M5.
Linker-Delinker, 40 millimeter, hand	4925-867-1123	3-1	2-12	To link / delink 40 millimeter cartridges.
Handling tool, ammunition loader	4933-757-9973	3-1	2-12	To pull linked 40 millimeter cartridges through chuting to feed chute assembly.
Plug and link assembly	4933-487-4102	3-1	2-12 and 2-13	To aid in loading / unloading 40 millimeter cartridges.
Brush assembly, 40 millimeter	1010-759-2804	3-1	3-13	To clean bore 40 millimeter grenade launcher barrel.
Staff, cleaning	1010-832-9153	3-1	3-13	To clean bore of 40 millimeter grenade launcher barrel.

Section II. LUBRICATION INSTRUCTIONS

Lubrication instructions are contained in LO 9-1010-207-12.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-3. General.

Preventive maintenance is the systematic care, inspection, and service of equipment to maintain it in serviceable condition. It also serves to detect faults and failures before extensive and time consuming repairs or replacements become necessary.

3-4. Responsibility.

Preventive maintenance is a responsibility of both the operator / crew and organizational maintenance and is further defined by unit policies. To insure maintenance being accomplished when due, a record of the number of rounds cycled through armament subsystem M5 must be maintained.

3-5. Recording Repairs.

Repairs accomplished will be in accordance with procedures and instructions prescribed in the appropriate sections of this technical manual. The equipment record system provides for recording repairs required and accomplished on the armament subsystem. This will include, but is not limited to, adjusting, cleaning, replacing, and straightening. Deficiencies and shortcomings will be corrected in so far as possible by the aircraft armament repairman. Report deficiencies in accordance with TM 38-750.

3-6. General Procedures for All Services and Inspections.

a. The aircraft armament repairman must be so thoroughly trained in the following general procedures that he will apply them automatically at all times in the performance of his duties.

(1) Inspection for "good condition" is usually an external visual inspection to determine whether the unit is damaged beyond safe or serviceable limits. Good condition is explained further as meaning: not bent or twisted, not chafed or burred, not broken or cracked, not bare or frayed, not dented or collapsed, not torn or cut, not deteriorated.

(2) Inspection of a unit to see that it is "correctly assembled" or stowed is usually a visual inspection to see if the unit is in its normal position in the equipment and if all parts are present and in their correct relative position.

(3) Inspection of a unit to determine if it is "secure" is usually an external visual inspection or a check by hand, with wrench, etc., for looseness. Such an inspection must include any brackets, lock washers, lock nuts, locking wires, or cotter pins, as well as any connecting tubes, hoses, or wires.

(4) By "excessively worn" is meant worn beyond serviceable limits or to a point likely to result in failure if the unit is not replaced before the next scheduled inspection. Excessive wear of mating parts of linkage connections is usually evidenced by too much play (lash or lost motion). It includes illegibility as applied to marking, data and caution plates, and printed matter.

(5) Where the instruction "tighten" appears in the procedure, it means tighten with an appropriate tool, even if the item appears to be secure.

(6) Such expressions as "adjust if necessary" of "replace if necessary" are not used in the specific procedures. It is understood that whenever inspection reveals the need of adjustment, repairs, or replacement, the necessary action will be taken.

b. In addition to the general procedures outlined in *a*, the organizational maintenance services are defined by, and restricted to, the following general procedures unless approval has been given by the supporting organization.

(1) *Clean.* Clean the unit as outlined in paragraph *c* to remove old lubricant, dirt, and other foreign material.

(2) *Special lubrication.* This applies either to lubrication operations that do not appear in the lubrication order, or to items that do appear but which should be performed in connection with the maintenance operations.

(3) *Service.* This usually consists of performing special operations, such as replenishing pneumatic charger bottles with nitrogen gas.

(4) *Tighten.* All tightening operations should be performed with sufficient torque (force applied to wrench) to tighten the unit according to good mechanical practice. Use a torque-indicating wrench where specified. Do not overtighten, as this may strip threads or cause distortion. Tightening will always be understood to include the correct installation of lock washers, lock nuts, locking wire, or cotter pins, to secure the tightened nut.

(5) *Modification work order application.* The aircraft armament repairman will enter on DA Form 2408-5 all required modification work orders (MWO) applicable to the equipment upon receipt of the official MWO, regardless of the echelon responsible for applying the modifications.

c. General cleaning instructions are outlined in paragraphs (1) through (4) below. Any special cleaning instructions required for specific mechanisms or parts are contained in the pertinent section of this technical manual.

(1) Use dry-cleaning solvent or mineral spirits paint thinner to clean or wash grease or oil from all metal parts, except those exposed to powder fouling during firing. This solvent will not readily dissolve the corrosive salts from powder and primer compositions.

(2) Use solvent cleaning compound (RBC) to clean all armament sybsystem parts which have been exposed to powder fouling during firing.

NOTE

Solvent cleaning compound is not a lubricant. Parts which require lubrication will be wiped dry and lubricated.

(3) After the parts are cleaned, rinse and dry them thoroughly. Apply a light grade of oil to all polished metal surfaces (other than optical instruments) to prevent rusting.

(4) When authorized to install new parts, remove any preservative materials, such as rust-preventive compound or protective grease. Parts requiring lubrication should be lubricated as prescribed in LO 9-1010-207-12.

d. General precautions in cleaning are as follows:

(1) Dry cleaning solvent and mineral spirits paint thinner are flammable and should not be used near an open flame. Fire extinguishers should be provided when these materials are used. Use dry cleaning solvent or mineral spirits paint thinner only in well-ventilated areas.

(2) These cleaners evaporate quickly and have a drying effect on the skin. If used without gloves, they may cause cracks in the skin, mild irritation, or inflammation.

(3) Avoid getting petroleum products, such as dry cleaning solvent, mineral spirits paint thinner, engine fuels, or lubricants on rubber parts, as they will deteriorate the rubber.

(4) Do not use diesel fuel, oil, gasoline, or benzene to clean parts.

e. Metal name, caution, and instruction plates rust very rapidly. If rusty, they should be thoroughly cleaned and coated with lacquer. Refer to TM 9-213.

3-7. Basic Preventive Maintenance.

The general preventive maintenance procedures outlined in *a* through *e* below will be observed in addition to those referred to in table 3-2. Special maintenance of specific components, when necessary, is covered in the sections pertaining to the components.

a. Rust, dirt, grit, gummed oil, and water cause rapid deterioration of internal mechanisms and outer unpainted surfaces. Particular care should be taken to keep all bearing surfaces clean and properly lubricated. Remove all traces of rust from unpainted bearing surfaces with crocus cloth, which is the coarsest abrasive to be used by the aircraft armament repairman for this purpose.

b. Loose parts will be tightened and broken parts replaced or repaired.

c. At least every six months, check to be sure that all modifications (MWO's) have been applied. For a list of current MWO's see DA Pamphlet 310-4. No alteration or modification will be made except as authorized by modification work order.

d. Check equipment for completeness. Replace missing items and turn in all damaged items for repair. Use only tools that are provided and see that they are serviceable. After use, tools must be thoroughly cleaned, coated with a film of oil, and stowed in their proper chests or tool rolls.

e. Should a shell burst near the armament subsystem, make certain before the next mission that the subsystem has not been damaged. Serious damage will be reported to the direct support unit.

3-8. Specific Procedures.

Specific preventive maintenance checks and services to be performed on armament subsystem M5 are listed in table 3-2. Checks and services are numbered in sequence in the interval and sequence number columns in table 3-2.

WARNING

Perform unloading procedures (paras 2-11 and 2-12) prior to performing the preventive maintenance checks and services.

Table 3-2. Organizational Preventive Maintenance Checks and Services

INTERVAL	TIME REQUIRED
LEGEND: B — BEFORE OPERATION	1.8 M/H
A — AFTER OPERATION OR 250 ROUNDS	3.8 M/H
W — WEEKLY OR 1250 ROUNDS	6.1M/H
M — MONTHLY OR 5000 ROUNDS	4.8 M/H
Q — QUARTERLY OR 1000 ROUNDS	1.0 M/H

Interval and sequence no.					Item to be inspected procedure	Work time (M/H)
B	A	W	M	Q		
					TURRET ASSEMBLY	
	1				Inspect structural components and enclosure assemblies for dents, bulges, or other damage which would interfere with free movement in elevation and/or azimuth. Inspect turret mounting pin assemblies for damage and proper installation.	0.3
					LAUNCHER RETAINING PIN ASSEMBLY	
	2				Remove top enclosure assembly and inspect for damage and proper installation. Install top enclosure assembly (fig. 2-9).	0.5
					GRENADE LAUNCHER BARREL	
1					Inspect for foreign objects and wipe dry.	0.1
					AMMUNITION BOOSTER ASSEMBLY	
	3				Remove ammunition chute external boot assembly and make certain that electrical connections and front and rear ammunition chute assemblies are properly mounted and secure (fig 2-15).	0.3
					FRONT AMMUNITION CHUTE ASSEMBLY	
	4				Inspect for damage which would restrict the free flow of linked cartridges to the grenade launcher. Install the external boot assembly.	0.3
					SERVO-AMPLIFIER JUNCTION BOX ASSEMBLY	
					Open the aft cargo compartment door on the right rear side of helicopter and note that all electrical connectors are properly installed and secure.	0.1
					AMMUNITION CAN AND COVER ASSEMBLY	
	5				Make certain that all components are present, properly mounted, and in serviceable condition.	0.4
					REAR AMMUNITION CHUTE ASSEMBLY	
	6				Inspect for damage that would restrict the free flow of linked cartridges from the ammunition box and cover assembly to the ammunition booster assembly.	0.1
					TURRET CONTROL PANEL ASSEMBLY	
	7				See that the panel assembly is securely mounted and that all components are present and in good condition.	0.1
					HAND CONTROL SIGHT ASSEMBLY	
	8				Unlatch stow hooks and check sight assembly for freedom of movement in azimuth and elevation, proper assembly, broken glass reflector, and other damage.	0.1
	9				With sight assembly in operating position, check to make sure that reticle image flashes. Turn on reticle image toggle switch and note that reticle image brightens. Rotate reticle image intensity control and note that reticle image changes in intensity.	0.1
	10				Operate sight assembly and check to see that turret assembly follow sline of sight. Stow sight assembly.	0.2
					SIGHT MOUNT BRACKET ASSEMBLY	
3					Inspect for secure mounting and for broken or missing parts.	0.1

Table 3-2. Organizational Preventive Maintenance Checks and Services

INTERVAL	TIME REQUIRED
LEGEND: B — BEFORE OPERATION	1.8 M/H
A — AFTER OPERATION OR 250 ROUNDS	3.8 M/H
W — WEEKLY OR 1250 ROUNDS	6.1M/H
M — MONTHLY OR 5000 ROUNDS	4.8 M/H
Q — QUARTERLY OR 1000 ROUNDS	1.0 M/H

Interval and sequence no.					Item to be inspected procedure	Work time (M/H)
B	A	W	M	Q		
					ELECTRICAL CIRCUITS	
4					Push in the two M5 ARM and the 28V TRANS circuit breakers on the AC panel; the INVTR CONT-MAIN & SPARE, SPARE INVTR-PWR, VOLT METER-NON-ESS-BUS, XM139 GUN & BOOSTER MOTOR, M5 AZ and M5 ELEV breakers on DC breaker panel; and on the overhead console, turn INVTR switch to SPARE ON and PHASE selector to AB. On turret control panel assembly, set MAIN POWER toggle switch to ON position.	0.2
5					Release sight assembly from sight stow hooks and turn on reticle image toggle switch. Note that the reticle image flashes.	0.1
6					Move elevation control dial on turret control panel assembly through its full travel and s and observe that turret assembly follows dial movement in both directions.	0.1
7					On sight assembly, depress action control switch and move sight assembly to drive turret assembly to left and right azimuth and up and down elevation limits. Note that reticle image flashes at each limit.	0.1
8					Release action switch and note that turret assembly returns promptly to zero azimuth.	0.1
9					Move GUN POWER toggle switch on control panel assembly to HOT position and depress action switch and launcher trigger switch. Observe that the grenade launcher and ammunition booster assembly cycle.	0.1
10					Release trigger switch, drive turret assembly to an aziumth limit, and depress trigger switch. Note that grenade launcher and ammunition booster assembly do not cycle. Release trigger switch.	0.1
11					Depress action switch and then the launcher firingswitch on pilot's cyclic control stick. Observe that grenade launcher and ammunition booster assembly do not cycle. Release both switches.	0.1
12					Perform sequence step 11 above using co-pilot's cyclic control stick.	0.1
13					Release action switch and depress launcher firing switch on pilot's cyclic control stick. Note that the grenade launcher and ammunition booster assembly cycle. Release both switches.	0.1
14					Perform sequence step 13 above using co-pilot's cyclic control stick.	0.1
15					On the sight assembly, depress the launcher trigger switch but not the action switch. Note that the grenade launcher and ammunition booster assembly do not cycle.	0.1
	11				Move GUN POWER toggle switch to SAFE and MAIN POWER toggle switch to OFF position. Stow sight assembly and turn off reticle image toggle switch.	0.1
16					Pull out circuit breakers and reset switches listed in sequence step 4 in B interval column above.	0.2
					SUBSYSTEM CLEANING AND LUBRICATION	
	12				Clean and lubricate components of the armament subsystem in accordance with the lubrication order (LO 9-1010-207-12).	1.3

Table 3-2. Organizational Preventwe Maintenance Checks and Services—Continued

	INTERVAL	TIME REQUIRED
LEGEND	B—BEFORE OPERATION	1.8 M / H
	A—AFTER OPERATION OR 250 ROUNDS	3.8 M / H
	W—WEEKLY OR 1250 ROUNDS	6.1 M / H
	M—MONTHLY OR 5000 ROUNDS	4.8 M / H
	Q—QUARTERLY OR 10000 ROUNDS	1.0 M / H

Interval and sequence no.					Item to be inspected procedure	Work time (M / H)
B	A	W	M	Q		
					TURRET ASSEMBLY	
		1			Manually rotate turret assembly through entire range of azimuth and elevation travel. Check for unusual noises, binding, missing and broken parts and for structural damage which restricts free movement of the turret assembly.	0.2
					TURRET MOUNTING BLOCKS	
		2			Check brackets for cracks, secure attachment to turret main support, and other visible damage.	0.1
					ELECTRICAL CABLE ASSEMBLY	
		3			Remove top and forward enclosure assemblies from turret assembly (figs. 2-9 and 2-10). Examine cable assembly for broken or damaged connectors, cracked or broken insulation, and kinks or sharp bends.	0.5
					LAUNCHER DRIVE ASSEMBLY	
		4			Manually turn the universal joint of the drive assembly and check for binding, slippage, and broken belt. Note that there are no broken or missing parts.	0.2
					AMMUNITION FEED CHUTE ASSEMBLY	
		5			Detach exit end fitting of front ammunition chute assembly from ammunition feed chute assembly. Insert six linked plug and link assemblies in the feed chute assembly and determine that no bends or burs in the feed chute assembly obstruct passage of the plug and link assemblies.	0.2
					GRENADE LAUNCHER	
		6			Manually turn cam and cover assembly through one complete cycle of operation. Check for free rotation of cam and cover until hammer cocking stage of cycle is reached. Note the resistance to rotation ceases after grenade launcher fires. Note that barrel lock holds barrel in the locked position. Disassemble the grenade launcher (fig. 3-3).	0.6
					GRENADE LAUNCHER BARREL	
		7			Check for stripped lands, gouges, and cracks in bore. Inspect barrel ribs for galling. Note that barrel roller and pin turn freely and are not damaged.	0.2
					CAM AND COVER ASSEMBLY	
		8			Note that caution instruction plate is present. Check cam groove surfaces for galled areas and remove all nicks and burs. Examine for noisy or inoperative gears or bearings.	0.3
					FEED ARM ASSEMBLY.	
		9			Inspect for cracked or chipped feed pawl, broken or weak pawl spring, and bent or damaged arm.	0.1
					DRIVE SPINDLE ASSEMBLY	
		10			Examine spindle assembly for wear, binding, or other damage, especially to the bearing.	
					RECEIVER ASSEMBLY	
		11			Inspect for nicks, gouges, burs, cracks, and missing or broken parts. Make certain launcher receiver blocks turn freely. Note that firing pin protrudes and check for weak or broken firing pin spring. Adjust cartridge positioner if loose or unable to hold cartridge. Assemble and install grenade launcher.	0.7

Table 3-2. Organizational Preventive Maintenance Checks and Services—Continued

INTERVAL	*TIME REQUIRED*
LEGEND: B—BEFORE OPERATION	1.8 M / H
A—AFTER OPERATION OR 250 ROUNDS	3.8 M / H
W—WEEKLY OR 1250 ROUNDS	6.1 M / H
M—MONTHLY OR 5000 ROUNDS	4.8 M / H
Q—QUARTERLY OR 10000 ROUNDS	1.0 M / H

Interval and sequence no.					Item to be inspected procedure	Work time (M H)
B	A	W	M	Q		
		12			**AMMUNITION BOOSTER ASSEMBLY** Remove ammunition chute external boot assembly from electronic equipment compartment door. Remove entrance end fitting of front ammunition chute assembly from ammunition booster assembly. Inspect ammunition booster assembly for loose connections. Turn sprockets to check for free rotation of gears and drive motor. Note that electrical insulation is not frayed or broken.	0.3
		13			**FRONT AMMUNITION CHUTE ASSEMBLY** Examine links and end fittings for bent or broken parts and improper assembly. Install front ammunition chute assembly on ammunition booster assembly and install the ammunition chute external boot assembly on the electronic equipment compartment door.	0.2
		14			**SERVO-AMPLIFIER JUNCTION BOX ASSEMBLY** Check for visible external damage and securely installed electrical connectors. Remove cover assembly and inspect components for corrosion, secure mounting, and loose wiring. Install cover assembly.	0.2
		15			**40 MILLIMETER GRENADE ROTARY AMMUNITION CAN** Inspect for dents, bulges, or other damage which would restrict the free flow of linked cartridges to the ammunition booster assembly. Remove cover assembly and inspect for foreign material and free rotation of the core assembly.	0.2
		16			**REAR AMMUNITION CHUTE ASSEMBLY** Examine links and fittings for bent or broken parts and improper assembly.	0.1
		17			**TURRET CONTROL PANEL ASSEMBLY** Remove control panel assembly from pedestal console. Make certain that electrical connections to control panel assembly are tight and that no wiring is loose. Install control panel assembly in console. Note that switches, indicator dial, selector dial, and ROUNDS REMAINING counter are operational.	0.4
		18			**HAND CONTROL SIGHT ASSEMBLY** Inspect mount assembly control switch and launcher trigger switch for external damage. Unlatch the sight assembly from stow hooks and inspect for bent of loose components as the sight assembly is moved in elevation and azimuth. Examine the electrical wiring and connectors for secure mounting and undamaged insulation.	0.2
		19			**SUBSYSTEM CLEANING AND LUBRICATION** Clean and lubricate components of the armament subsystem in accordance with the lubrication order (LO 9-1010-207-12).	1.3
			1		**AMMUNITION CHUTE EXTERNAL BOOT ASSEMBLY** Remove top enclosure assembly and inspect boot assembly for cuts, rips, and tears. Replace boot assembly, if required.	0.4
			2		**FORWARD ENCLOSURE ASSEMBLY** Remove forward enclosure assembly. Note that the enclosure is not cracked or broken; observe that all panel fastener assemblies are present and serviceable. Inspect the closure brushes for secure attachment. Replace parts, if required.	0.3
			3		**ELECTRICAL CABLE ASSEMBLY** Check cable assembly for bent or missing pins in connectors, cuts or rips in insulation, and broken or missing leads. Replace cable assembly, if required.	0.5

Table 3-2. Organizational Preventive Maintenance Checks and Services—Continued

INTERVAL	*TIME REQUIRED*
LEGEND: B—BEFORE OPERATION	1.8 M / H
A—AFTER OPERATION OR 250 ROUNDS	3.8 M / H
W—WEEKLY OR 1250 ROUNDS	6.1 M / H
M—MONTHLY OR 5000 ROUNDS	4.8 M / H
Q—QUARTERLY OR 10000 ROUNDS	1.0 M / H

Interval and sequence no.					Item to be inspected procedure	Work time (M / H)
B	A	W	M	Q		
			4		**EJECTOR CHUTE ASSEMBLY** Manually rotate the turret assembly in elevation and azimuth and observe that doors on the chute assembly operate to form a continuous path for spent cartridge cases. Note that the chute assembly is securely fastened to saddle assembly. Replace chute assembly, if required.	0.3
			5		**EJECTION HOPPER** Inspect ejection hopper for wear and secure attachment to saddle assembly. Replace hopper, if required.	0.1
			6		**LAUNCHER RETAINING PIN ASSEMBLY** Remove launcher retaining pin assembly. Note that removal requires a definite effort. Inspect the pin assembly for cracks and bends. Replace pin assembly, if required.	0.2
			7		**RECOIL GROUP PARTS AND ASSOCIATED ITEMS** Remove grenade launcher assembly to provide access to the recoil group area.	0.2
			8		**LEFT AND RIGHT HAND RECOIL LINKS** Inspect for excessive wear, cracks, and bends. If replacement is necessary, notify direct support maintenance.	0.2
			9		**LAUNCHER RETAINING PIN SLEEVE BUSHINGS** Inspect for elongation of holes, burs, and cracks. If replacement is required, notify direct support maintenance.	0.1
			10		**RECOIL ADAPTER SHAFTS** Inspect the shaft which secures the left and right hand recoil links to the saddle, the shaft which secures the recoil adapter assemblies to the links, and the shafts which secure the recoil adapter connectors to the adapter assemblies. If any shaft is excessively worn, bent, or cracked, notify direct support maintenance.	0.1
			11		**SLIDING BLOCK TRACKS** Inspect the four sliding block tracks for dents, cracks, and bends. If replacement is required, notify direct support maintenance.	0.1
			12		**SLIDING BLOCKS** Examine the sliding blocks in the rear tracks for burs, cracks and excessive wear. If replacement is necessary, notify direct support maintenance.	0.1
			13		**MAGNETIC TRANSDUCER** Examine transducer on saddle assembly (beside right hand recoil link) for secure attachment, cracks, or evidence of battering. If replacement is required, notify direct support maintenance.	0.1
			14		**GRENADE LAUNCHER** Disassemble grenade launcher (fig. 3-3).	0.2
			15		**FEED ARM ASSEMBLY** Inspect feed arm assembly for excessively worn, chipped, or cracked feed pawl, weak pawl spring, or bent arm. Replace parts, if required.	0.1
			16		**RECEIVER ASSEMBLY** Disassemble receiver assembly (fig. 3-7).	0.2

Table 3-2. Organizational Preventive Maintenance Checks and Services—Continued

LEGEND:	INTERVAL	TIME REQUIRED
	B—BEFORE OPERATION	1.8 M / H
	A—AFTER OPERATION OR 250 ROUNDS	3.8 M / H
	W—WEEKLY OR 1250 ROUNDS	6.1 M / H
	M—MONTHLY OR 5000 ROUNDS	4.8 M / H
	Q—QUARTERLY OR 10000 ROUNDS	1.0 M / H

Interval and sequence no.						Item to be inspected procedure	Work time (M / H)
I	A	W	M	Q			
						BREECH INSERT	
			17			Inspect breech insert for cracks or burs around the firing pin hole. Replace insert, if necessary.	0.1
						FIRING PIN	
			18			Inspect firing pin for eroded or broken tip. Replace, if necessary.	0.1
						FIRING PIN SPRING	
			19			Inspect firing pin spring for weak action. Replace, if required.	0.1
						CARTRIDGE POSITIONER SPRING	
			20			Inspect cartridge positioner spring for cracks or weak action. Replace spring if necessary.	0.1
						RECEIVER BLOCKS	
			21			Examine receiver blocks for galling, burs, or excessive wear. Replace if required. Assemble the receiver assembly.	0.3
						HAMMER ASSEMBLY	
			22			Disassemble the hammer assembly (fig. 3-4).	0.1
						SEAR RELEASE	
			23			Inspect sear release for wear, cracks, and bends. Replace, if necessary.	0.1
						OUTER COMPRESSION HELICAL SPRING	
			24			Inspect the outer compression helical spring for weak action and cracks. Replace, if required. Assemble the hammer assembly; assemble the grenade launcher.	0.1
						FRONT AMMUNITION CHUTE ASSEMBLY	
						Inspect links and end fittings for bent or broken tabs. Replace links or end fittings, if required.	0.1
						AMMUNITION BOOSTER ASSEMBLY	
			26			Inspect the lever assembly for wear, broken or cut plastic, and elongated hole. If replacement is necessary, notify direct support maintenance.	0.2
						REAR AMMUNITION CHUTE ASSEMBLY	
			27			Inspect links and end fittings for bent or broken tabs. Replace links or end fittings, as necessary.	0.1
						TURRET CONTROL PANEL ASSEMBLY	
			28			Inspect the five panel illuminating incandescent lamps and the stow position elevation control incandescent lamp. Replace, if required.	0.1
						HAND CONTROL SIGHT ASSEMBLY	
			29			Inspect the left hand support assembly lamp. Replace, if required.	0.1
						GRENADE LAUNCHER	
				1		Disassemble the grenade launcher (fig. 3-3).	0.3
						GRENADE LAUNCHER BARREL	
				2		Replace barrel.	0.1
						BARREL ROLLER	
				3		Replace barrel roller.	0.1

Table 3-2. Organizational Preventive Maintenance Checks and Services

INTERVAL
LEGEND: B — BEFORE OPERATION
A — AFTER OPERATION OR 250 ROUNDS
W — WEEKLY OR 1250 ROUNDS
M — MONTHLY OR 5000 ROUNDS
Q — QUARTERLY OR 1000 ROUNDS

TIME REQUIRED
1.8 M/H
3.8 M/H
6.1M/H
4.8 M/H
1.0 M/H

Interval and sequence no.					Item to be inspected procedure	Work time (M/H)
B	A	W	M	Q		
				4	**BARREL ROLLER PIN** Replace barrel roller pin.	0.1
				5	**CARTRIDGE POSITIONER** Replace cartridge positioner. Assemble grenade launcher.	0.4

Section IV. TROUBLESHOOTING

3-9. Scope.

This section contains troubleshooting information and tests for locating and correcting some of the troubles which may develop in the armament subsystem M5. Troubleshooting is a systematic isolation of defective components by means of an analysis of the trouble symptoms, testing to determine the defective component, and applying the remedies. Each malfunction given for an individual unit or system is followed by the probable causes of the trouble and suggested procedures to be followed.

3-10. Troubleshooting.

a. Table 3-3 is intended as a guide in troubleshooting. This table does not cover all the possible malfunctions that may occur. Only the more common malfunctions are listed. The tests and corrective actions are governed by the scope of the organizational level of maintenance.

b. Troubleshooting of the subsystem electrical components and circuits is performed by taking readings with a multimeter from the test jacks on the servo-amplifier junction box assembly and performing other resistance and continuity checks as required. Table 3-4 lists the origin, meter indication, and procedures to be performed when the initial troubleshooting check at a particular test jack provides an abnormal reading.

c. Table 3-5 lists electrical connectors and their colors for the cable assembly of the turret assembly. Table 3-6 lists wire numbers of the cable assembly and indicates terminal pin designations for each wire in the cable assembly. Tables 3-5 and 3-6 are to be used in making continuity checks of the cable assembly.

d. Checking electrical continuity of helicopter wiring will require two operators in most cases. One operator is needed to ground each pin of an electrical connector in sequence to the helicopter structure while the second operator is needed to read the ohmmeter between the corresponding pin at the other end of the cable and the helicopter structure.

NOTE

While making continuity checks through the subsystem circuits, manually hold down or tie down the action switch on the sight assembly, except when directed otherwise by table 3-4.

e. When voltage readings are takend from electrical connectors or when resistance measurements are made, the operators should exercise care to prevent damage to electrical connector pins.

f. Figure 3-2 is an electrical schematic of the armament subsystem and is included as an aid in electrical troubleshooting.

NOTE

For malfunctions encountered but not listed in the troubleshooting tables, or if corrective action does not remedy malfunctions, notify direct support maintenance.

Table 3-3. Troubleshooting (Mechanical)

Item No.	Malfunction	Probable Cause	Corrective Action
		40 MILLIMETER GRENADE LAUNCHER M75	
1	Launcher will not cycle.	*a.* No electric power supplied to drive motor.	Check subsystem fuses and electrical connectors. See that all circuit breakers for subsystem are pushed IN. If no result, perform checks listed in table 3-4.
		b. Defective launcher drive motor.	Notify direct support maintenance.
		c. Broken belt in the launcher drive assembly.	Notify direct support maintenance.
		d. Stripped gears in cam and cover assembly.	Replace cam and cover assembly (para 3-13).
2	Launcher cycles but does not fire.	*a.* Dirt or foreign matter accumulated in hammer assembly or around firing pin.	Clean and lubricate (para 3-13).
		b. Cartridges defective.	Replace with serviceable ammunition.
		c. Hammer assembly inoperative.	Repair or replace (para 3-13).
		d. Firing pin broken or eroded.	Replace (para 3-13).
		e. Firing pin spring weak or broken.	Replace (para 3-13).
		f. Cocking rod jammed.	Remove cocking rod (para 3-12) and remove burs from cocking rod hole in receiver assembly. Lubricate (LO 9-1010-207-12).
3	Launcher fails to feed in cartridges.	*a.* Worn or broken feed pawl.	Replace (para 3-13).
		b. Feed pawl spring weak or broken.	Replace (para 3-13).
		c. Firing pin not retracting.	Clean firing pin and firing pin hole in breech insert. Replace firing pin spring if weak or broken (para 3-13). Lubricate (LO 9-1010-207-12).
		d. Cartridge not properly positioned.	Tighten link stop screws (21, fig. 3-7). Replace worn link stop (para 3-13).
		e. Cartridge defective.	Replace.
		f. Improper linking or broken link.	Remove cartridge and link; relink or replace link.
		g. Breech face or barrel chamber dirty or powder fouled.	Clean barrel and breech face.
		h. Bent ammunition feed chute assembly.	Replace feed chute assembly (para 3-17).
		i. Ammunition feed chute assembly does not aline with grenade launcher receiver assembly.	Notify direct support maintenance.
4	Barrel will not unlock.	Fired cartridge has bulged base.	Press in on muzzle of barrel and apply force to cam and cover assembly to complete its rotation.
5	Barrel will not lock.	*a.* Broken or missing barrel lock pin or roller	Replace (para 3-13).
		b. Missing barrel lock.	Replace (para 3-13).
		c. Defective hammer assembly.	Replace (para 3-13).
6	Ammunition feeds but barrel does not cycle.	*a.* Broken or missing barrel roller or pin.	Replace (para 3-13).
		b. Barrel roller out of groove on cam and cover assembly.	Assemble properly (para 3-12).

Table 3-3. Troubleshooting (Mechanical)—Continued

Item No.	Malfunction	Probable Cause	Corrective Action
	GRENADE LAUNCHER MOUNT		
7	OPERATE indicator light does not illuminate when MAIN POWER switch on turret control panel assembly is moved to ON position.	*a.* One or more subsystem AC or DC circuit breakers not pushed in.	Push in all AC and DC circuit breakers.
		b. Burned out lamp in indicator light.	Press OPERATE indicator light to test lamp.
		c. Turret assembly is at an elevation or azimuth limit.	Use sight assembly or stow position elevation control on turret control panel assembly to move turret assembly away from azimuth or elevation limit.
		d. Defective control module in servo-amplifier junction box assembly.	Check proper operation of azimuth and elevation prowered trunnion assemblies in turret assembly by operating sight assembly to drive turret assembly. If turret assembly operates properly, replace control module in junction box assembly.
		e. Helicopter electrical system not supplying 115 VAC power to turret control panel assembly.	Remove turret control panel assembly from pedestal console and check for 115 VAC 400 cps power at pin A of helicopter wiring connector J-1. If no power, notify helicopter crew chief.
8	Turret assembly runs to an azimuth limit when turret control panel assembly and sight assembly switches are on.	Defective azimuth amplifier module in junction box assembly.	Perform checks listed for test jacks TP6 and TP7 in table 3-4.
9	Turret assembly runs to an elevation limit when turret control panel assembly and sight assembly switches are on.	Defective elevation amplifier module in junction box assembly.	Perform checks listed for test jacks TP15 and TP17 in table 3-4.
10	Turret assembly will not follow sight assembly in azimuth.	Defective components in azimuth circuits.	Perform checks listed for test jacks TP6 and TP7 in table 3-4.
11	Turret assembly will not follow sight assembly in elevation.	Defective components in elevation circuits.	Perform checks listed for test jacks TP15 and TP16 in table 3-4.
12	Turret assembly oscillates in azimuth.	Defective components in azimuth circuits.	Perform checks listed for test jacks TP8 and TP9 in table 3-4. Replace azimuth amplifier module in junction box assembly.
13	Turret assembly oscillates in elevation.	Defective components in elevation circuits.	Perform checks listed for test jacks TP17 and TP18 in table 3-4. Replace elevation amplifier module in junction box assembly.
14	Sight reticle image does not flash when turret assembly is at an azimuth or elevation limit, when turret assembly position is more than 35 mils in error with position of sight assembly, or when sight assembly is in operating position but action switch is not closed.	*a.* Defective control module in junction box assembly.	Replace (para 3-17).
		b. Defective miniature relay K1 in junction box assembly.	Replace (para 3-17).
15	Reticle does not illuminate when sight assembly is placed in operating position.	*a.* Defective lamp.	Replace lamp (para 3-17).
		b. Defective cable.	Replace sight assembly (para 3-17).
		c. Open variable resistor (image intensity control).	Replace sight assembly (para 3-17)
16	Reticle image does not brighten when reticle image toggle switch is placed in ON position.	*a.* Defective lamp.	Replace lamp (para 3-17).
		b. Defective switch.	Replace sight assembly (para 3-17).
		c. Defective cable.	Replace sight assembly (para 3-17).
		d. Open variable resistor.	Replace sight assembly (para 3-17).
17	Intensity of reticle image does not change as image intensity control is turned from maximum to minimum.	*a.* Defective lamp.	Replace lamp (para 3-17).
		b. Defective variable resistor (image intensity control).	Replace sight assembly (para 3-17).

Table 3-3. Troubleshooting (Mechanical)—Continued

Item No.	Malfunction	Probable Cause	Corrective Action
		GRENADE LAUNCHER MOUNT—Continued	
18	Suitable intensity of reticle image cannot be obtained without a ghost image.	Dirt or condensation inside sight assembly.	Replace sight assembly (para 3-17).
19	Reticle and target not clearly visible at same time; or, reticle or target moves in relation to the other.	Parallax.	Replace sight assembly (para 3-17).
20	Turret assembly does not follow movement of grip assembly when action switch is depressed.	Defective component in hand control sight assembly or defective component in other part of subsystem M5.	Perform electrical troubleshooting procedures in table 3-4. If these procedures reveal a malfunction in sight assembly, replace sight assembly (para 3-17).
21	Grenade launcher does not fire when launcher trigger switch is depressed and held.	Defective component in grip assembly or defective component in other parts of subsystem M5.	Perform electrical troubleshooting procedures in table 3-4. If these procedures reveal a malfunction in sight assembly, replace sight assembly (para 3-17).
22	Sight mount bracket assembly does not securely hold sight assembly in locked position.	Defective torsion helical spring or broken stow hook(s).	Replace defective components (para 3-17).
23	Launcher drive motor does not apply braking force properly to grenade launcher.	*a.* Defective control module in junction box assembly.	Replace (para 3-17).
		b. Defective relay in control panel assembly.	Replace control panel assembly (para 3-17).
		c. Defective launcher drive motor.	Notify direct support maintenance.
24	Ammunition not being fed to grenade launcher M75.	*a.* Ammunition feed chute assembly does not aline with grenade launcher receiver assembly.	Inspect feed chute assembly for proper alinement.
		b. Damaged or bent chute assembly (ies).	Repair or replace (para 3-17).
		c. Defective or inoperative booster assembly.	Inspect and replace any bent or damaged links (para 3-17).
		d. Ammunition chute brackets not tight or improperly positioned.	Notify direct support maintenance.
		e. Links not properly assembled.	Tighten or aline brackets.
		f. Malfunctioning rotary ammunition can.	Replace, if necessary (para 3-17).
			Remove cartridge and link; relink.
			Inspect rotary ammunition can for cracked or broken welds and for dents or bulges. Replace, if necessary (para 3-17).
			Check ammunition can top for cracked or broken welds, dents, or bulges. Replace, if necessary (para 3-17).
			Check roller for wear; if worn to smaller diameter or damaged, replace (para 3-17).
			Inspect core assembly for damage. If defective, notify direct support maintenance.
			Check bearings for freedom of function and for dirt or grime. If defective, notify direct support maintenance.
			Inspect collar assembly for damage. If defective, notify direct support maintenance.
			Inspect for broken and/or loose band assembly or hangar assembly. Replace, if necessary (para 3-17).

Table 3-4. Troubleshooting (Electrical)

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP1-1	Bias output.		TP1 and ground	−9 ± 3 VDC	Perform step TP2-1.	Replace control module. If problem is not corrected, perform step TP1-2.
TP1-2	26 VAC input to junction box assembly.	Remove helicopter connector P2 from junction box assembly. Install after check.	Ground and pin E, P2.	26 VAC	Replace servo-amplifier junction box assembly.	Perform step TP1-3.
TP1-3	26 VAC output from control panel assembly.	Remove helicopter connector P4 from control panel assembly. Install after check.	Ground and pin E, J4.	26 VAC	Request helicopter crew chief to repair helicopter electric cable 204-075-448-3.	Perform step TP1-4.
TP1-4	26 VAC input to control panel assembly.	Remove helicopter connector P1 from control panel assembly. Install after check.	Ground and pin D, P1.	26 VAC	Replace control panel assembly.	Request helicopter crew chief to check and repair helicopter wiring, circuit breakers, and inverters.
TP2-1	Bias output		TP2 and ground.	+37 ± 3 VDC	Perform step TP3-1.	Replace control module in junction box assembly. If problem is not corrected, perform step TP2-2.
TP2-2	Junction box assembly supply voltages.	Remove helicopter connector P2 from junction box assembly. Install after check.	Ground and P2, pin: A C E	 28 VDC 28 VDC 26 VAC	If all three readings are normal, perform step TP2-3.	If pin A reading is abnormal, perform step TP2-4. If pin C reading is abnormal, perform step TP2-6. If pin E reading is abnormal, perform step TP1-2.
TP2-3	Junction box assembly voltages.	Remove helicopter connector P4 from junction box assembly. Install after check.	Ground and J4, pin: A D F N	 28 VDC 28 VDC 28 VDC 28 VDC	If all four readings are normal, replace junction box assembly.	If any of the four readings is abnormal, replace subminiature relay K4 in junction box assembly.
TP2-4	Control panel assembly 28 VDC supply.	Remove helicopter connector P4 from control panel assembly. Install after check.	Ground to J4, pin A.	28 VDC	Request helicopter crew chief to repair helicopter wiring between control panel assembly P4 and junction box assembly P2.	Perform step TP2-5.
TP2-5	Control panel assembly 28 VDC supply.	Remove helicopter connector P1 from control panel assembly. Install after check.	Ground to J1, pin H.	28 VDC	Replace control panel assembly.	Request helicopter crew chief to check continuity in helicopter wiring and circuit breakers.
TP2-6	Control panel assembly voltages.	Remove helicopter connector P4 from control panel assembly. Install after check.	Ground to J4, pin H.	28 VDC	Request helicopter crew chief to repair helicopter wiring between control panel, assembly P4 and junction box assembly P2.	Perform step TP2-7.

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure: Meter reading normal	Procedure: Meter reading abnormal
TP2-7	Control panel assembly voltages.	Remove helicopter connector P1 from control panel assembly. Install after check.	Ground to J1, pin E.	28 VDC	Replace control panel assembly.	Request helicopter crew chief to check continuity in helicopter wiring and circuit breakers.
TP3-1	Pre-amp input	Energize sight assembly, turn 30 degrees right or left of center.	TP3 and ground.	20 ± 4 VAC	Perform step TP4-1.	Perform step TP3-2.
TP3-2	Pre-amp input	Release sight assembly. Manually turn turret assembly to near an azimuth limit.	TP3 and ground.	20 ± 4 VAC	Perform step TP3-3.	
TP3-3	Through helicopter wiring and sight assembly.	Remove helicopter connector P1 from junction box assembly.	P1 pins: F-G F-W E-b	 7 ohms (approx) 7 ohms (approx). 500 ohms (approx)	If all three readings are normal, replace junction box assembly.	Perform step TP3-4.
TP3-4	Azimuth transmitter in sight assembly.	Remove sight assembly from sight mount bracket assembly.	P1 pins: F-H F-W H-W E-b	 7 ohms (approx) 7 ohms (approx) 7 ohms (approx) 500 ohms (approx)	If all four readings are correct, perform step TP3-5.	Perform step TP3-6.
TP3-5	Helicopter wiring continuity.	Remove helicopter connector P1 from sight assembly and helicopter connector P1 from junction box assembly. Install both after check.	Sight assembly J1 to junction box assembly P1: *J1 P1* E — E F — F H — G W — W b — b	Continuity		Request helicopter crew chief to repair helicopter wiring.
TP3-6	115 VAC supply to junction box assembly.	Remove helicopter connector P2 from junction box assembly. Install after check.	Ground and P2, pin N.	115 VAC	Perform step TP3-7.	Request helicopter crew chief to repair helicopter wiring.
TP3-7	Turret assembly voltages.	Remove helicopter connector P5 from junction box assembly. Install after check, unless step TP3-8 is to be performed.	P5 pins: F—W G—W	 12 VAC (approx) 12 VAC (approx)	Perform step TP3-8.	

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure: Meter reading normal	Procedure: Meter reading abnormal
TP3-8	Turret assembly resistance and helicopter wiring.	Remove helicopter connector P5 from junction box assembly. Install P5 after check.	P5 pins: F—G F—W G—W E—U	 7 ohms (approx) 7 ohms (approx) 7 ohms (approx) 500 ohms (approx)	If all four readings are normal, replace junction box assembly.	Perform step TP3-9.
TP3-9	Turret assembly resistances.	Remove electric cable connector P9 from connector in helicopter electronic equipment compartment. Install after check, unless step TP3-10 is to be performed.	P9 pins: A—C C—H A—H O—K	 7 ohms (approx) 7 ohms (approx) 7 ohms (approx) 500 ohms (approx)	If all four readings are normal, perform step TP3-10.	
TP3-10	Helicopter wiring continuity check.	Remove helicopter connector P5 from junction box assembly and electric cable connector P9 from helicopter electronic equipment compartment. Install both connectors after check.	*P5 J9* E — O U — K F — A G — C W—H	Continuity	If all wiring shows continuity, perform step TP3-11.	Request helicopter crew chief to repair helicopter wiring.
TP3-11	Control panel assembly input voltage.	Remove helicopter connector P4 from control panel assembly. Install after check.	Ground to J4, pin N.	115 VAC	Request helicopter crew chief to repair helicopter wiring between P4 at control panel assembly and P2 at junction box assembly.	Perform step TP3-12.
TP3-12	Control panel input voltage.	Remove helicopter connector P1 from control panel assembly. Install after check.	Ground and P1, pin A.	115 VAC	Replace control panel assembly.	Request helicopter crew chief to check helicopter wiring, circuit breakers, and inverters.
TP4-1	Magnetron amplifier output.	Energizer sight assembly, turn 30 degrees right of center.	TP4 and ground.	28 ± 2 VDC	Perfrom step TP5-1.	Perform step TP3-1. If correct readings are obtained, the 26 VAC supply is incorrect.
		Turn sight assembly 30 degrees left of center.	TP4 and ground.	25 ± 1 VDC		Perform step TP2-1. If correct readings are obtained, replace the azimuth amplifier module and repeat step TP4-1. If reading is still not correct, replace junction box assembly.

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP5-1	Magnetron amplifier output.	Energize sight assembly, turn 30 degrees left of center.	TP5 and ground.	28 ± 2 VDC	Perform step TP6-1.	Perform step TP3-1. If correct readings are obtained, the 26 VAC supply is incorrect.
		Turn sight assembly 30 degrees right of center.	TP5 and ground.	25 ± 1 VDC		Perform step TP2-1. If correct readings are obtained, replace the azimuth amplifier module and repeat step TP4-1. If reading is still not correct, replace junction box assembly.
TP6-1	Power preamplifier output.	Energize sight assembly, turn 30 degrees right of center.	TP6 and ground.	6 ± 3 VDC	Perform step TP7-1.	Perfrom step TP-1 and step TP2-1. If correct readings are obtained, replace azimuth amplifier module and repeat step TP6-1. If incorrect readings are obtained, replace junction box assembly.
		Turn sight assembly 30 degrees left of center.	TP6 and ground.	37 ± 3 VDC		
TP7-1	Power preamplifier output.	Energize sight assembly, turn 30 degrees right of center.	TP7 and ground.	37 ± 3 VDC	Perform step TP8-1.	Perform steps TP-1, TP2-1, and TP4-1. If correct readings are obtained from each step, replace the azimuth amplifier module and repeat step TP7-1. If incorrect reading is still obtained, replace junction box assembly.
		Turn sight assembly 30 degrees left of center.	TP7 and ground.	6 ± 3 VDC		
TP8-1	Tachometer feedback.	Connect helicopter connector P4 to junction box assembly connector J4. Energize sight assembly and turn from 30 degrees right of center to 30 degrees left of center. Remove P4 after check.	TP8 and TP9.	70 ± 10 VDC	Perform step TP9-1.	Perform steps TP6-1 and TP7-1. If correct readings are obtained, inspect turret assembly for abnormal drag when turning in azimuth. If azimuth drag is not abnormal, perform step TP8-2.
TP8-2	Resistance values.	Remove helicopter connector P5 from junction box assembly.	P5 pins: A-R	43 ohms (approx)	Replace junction box assembly.	Perform step TP8-3.
TP8-3	Turret assembly resistances.	Remove electric cable assembly connector P9 from helicopter connector in electronic equipment compartment. Install after check, unless TP8-4 is to be performed.	P9 pins: P-I	43 ohms (approx)	Perform step TP8-4.	See that connector P12 is fastened securely to tachometer. If so, replace turret assembly.

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP8-4	Helicopter wiring continuity.	Remove helicopter connector P4 from junction box assembly. Install P4 and P9 after check.	*P4 P9* A—P R—L	Continuity		Request helicopter crew chief repair helicopter wiring as required.
TP9-1	Tachometer feedback.	Connect helicopter connector P4 to junction box assembly J4. Energize sight assembly and turn from 30 degrees left of center to 30 degrees right of center. Remove P4 after check.	TP9 and TP8.	70 ± 10 VDC	Perform step TP10-1.	Perform steps TP6-1 and TP7-1. If correct readings are obtained, inspect turret assembly for abnormal drag when turning in azimuth. If azimuth drag is not abnormal, perform step TP8-2.
TP10-1.	Bias output.		TP10 and ground.	—9 ± 3 VDC	Perform step TP11-1.	Perform step TP1-1.
TP11-1	Bias output.		TP11 and ground.	+37 ± 3 VDC	Perform step TP12-1.	Perform step TP2-1.
TP12-1	Pre-amplifier input.	Energize sight assembly, move 30 degrees up or down from horizontal. Stow sight assembly after check.	TP12 and ground.	20 ± 4 VDC	Perform step TP13-1.	Perform step TP12-2.
TP12-2	Pre-amplifier input.	Sight assembly control switch must be released. Move selector dial of stow position elevation control from —35 degrees to +15 degrees elevation. Return to zero elevation.	TP12 and ground.	20 VAC maximum at —35 degrees through a minimum of approximately 100 millivolts to 15 VAC at +15 degrees.	Perform step TP12-3.	Perform step TP12-12.
TP12-3	115 VAC	Remove helicopter connector P1 from junction box assembly. Install P1 unless TP12-4 is to be performed.	Ground and P1. pin c.	115 VAC	Perform step TP12-4.	Perform step TP12-8.
TP12-4	Resistance values.	Remove helicopter connector P1 from junction box assembly.	P1 pins: B-C B-T C-T b-c Z-P	 32 ohms (approx) 32 ohms (approx) 32 ohms (approx) 500 ohms (approx) 0 ohms	Perform step TP12-5.	If any one of the five readings is abnormal, replace the sight assembly.
		Close mount assembly control switch. Install P1 unless TP12-4 is to be performed.				

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure: Meter reading normal	Procedure: Meter reading abnormal
TP12-5	Continuity.	Put a jumper wire across pins P and Z of junction box assembly J1. Remove helicopter connector P3 from junction box assembly. After check, remove jumper wire; install P1 and P3.	*J1 J3* B — F C — G	 Continuity Continuity	If both checks indicate continuity replace sight assembly.	Replace miniature relay K1 (action relay) and perform step TP12-1. If meter reading is still abnormal, replace junction box assembly.
TP12-6	Resistance in sight assembly.	Remove sight assembly from sight mount bracket assembly.	Sight assembly connector pins: B-C B-T C-T b-c	 32 ohms (approx) 32 ohms (approx) 32 ohms (approx) 500 ohms (approx)	If all readings are normal, perform step TP12-7.	If any reading is abnormal, replace sight assembly.
		Close sight assembly control switch.	Z—N	0 ohms		
TP12-7	Continuity of helicopter wiring.	With Sight assembly removed from sight mount bracket assembly, remove helicopter connector P1 from junction box assembly. After check, replace P1 unless TP12-8 is to be performed.	Sight Box *J1 P1* B—B C—C T—T c— c b— b P—P Z—Z	Continuity		Request helicopter crew chief repair helicopter wiring.
TP12-8	115 VAC	Remove helicopter connector P1 from junction box assembly.	Ground and pin F J1 of junction box assembly.	115 VAC	Replace junction box assembly.	Perform step TP12-9.
TP12-9	115 VAC supply to junction box assembly.	Remove helicopter P2 from junction box assembly. Install after check.	Ground to P2, pin N.	115 VAC	Replace junction box assembly.	Perform step TP12-10.
TP12-10	115 VAC supply to control panel assembly.	Remove helicopter connector P4 from control panel assembly. Install after check.	Ground to J4, pin N.	115 VAC	Request helicopter crew chief repair helicopter wiring between control panel assembly and junction box assembly.	Perform step TP12-11.
TP12-11	115 VAC supply to control panel assembly.	Remove helicopter connector P1 from control panel assembly. Install after check.	Ground to P1, pin A.	115 VAC	Replace control panel assembly.	Request helicopter crew chief check helicopter wiring, circuit breakers, and inverter.

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP12-12	AC voltage	With sight assembly in place and stowed, set stow position elevation control on control panel assembly to zero elevation. Remove helicopter connector P3 from junction box assembly. Install P3 unless TP12-13 is to be performed.	Ground and pin F, J3. Ground and pin G, J3.	12 VAC 12 VAC	Perform step TP12-13.	Perform step TP12-17.
TP12-13	Resistances of elevation control transmitter through helicopter wiring.	With sight assembly in place and stowed, set stow position elevation control on control panel assembly to zero elevation. Remove helicopter connector P3 from junction box assembly. Install P3 after check.	P3 pins: F-G F-W G-W E-U	 7 ohms (approx) 7 ohms (approx) 7 ohms (approx) 500 ohms (approx)	If all four readings are normal, replace junction box assembly.	Perform step TP12-14.
TP12-14	Resistance in turret assembly circuits elevation control transformer.	Remove electric cable connector P9 from connector in helicopter electronic equipment compartment. Install check, unless TP12-15 is to be performed.	P9 pins: E-B E-J B-J N-T	 7 ohms (approx) 7 ohms (approx) 7 ohms (approx) 500 ohms (approx)	If all four readings are normal, perform TP12-15.	Perform step TP12-16.
TP12-15	Helicopter wiring continuity.	Remove helicopter connector P3 from junction box assembly.	*P3 J9* E — T U — N F — E G — B W — J	Continuity		Request helicopter crew chief repair helicopter wiring.
TP12-16	Cable assembly P11 connection.	Check P11 on electric cable assembly for secure connection to elevation powered trunnion assembly in turret assembly.			If P11 is secure, replace turret assembly.	If P11 is not secure, tighten connection and perform TP12-15 again.
TP12-17	12 VAC power supply.	Remove helicopter connector P2 from junction box assembly. Install P2 after check.	Ground and pin F, P2. Ground and pin G, P2.	12 VAC 12 VAC	If both readings are normal, replace junction box assembly.	Perform step TP12-18.

Table 3-4. Troubleshooting (Electrical) – Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP12-18	12 VAC power supply.	Remove helicopter connector P4 from control panel assembly. Install P4 unless TP12-19 is to be performed.	J4 pins: F-W G-W	 12 VAC (approx) 12 VAC (approx)	Perform step TP12-19.	Perform step TP12-20.
TP12-19	Helicopter wiring continuity.	Remove helicopter connector P2 from junction box assembly. Install P2 to junction box assembly and P4 to control panel assembly after check.	P2 P4 F – F G – G W – W	Continuity		Request helicopter crew chief repair helicopter wiring.
TP12-20	115 VAC power supply.	Remove helicopter connector P1 from control panel assembly.	Ground and pin A, P1.	115 VAC	Replace control panel assembly.	Request helicopter crew chief check helicopter wiring, circuit breakers, and inverter.
TP13-1	Magnetron amplifier output.	Energize sight assembly and move 30 degrees up from horizontal.	TP13 and ground.	25 + 1 VDC		Perform TP12-1. If reading is normal, check 26 VAC input by performing TP1-2.
		Move sight assembly 30 degrees down from horizontal.	TP13 and ground.	28 + 2 VDC		If 26 VAC input is normal, replace elevation servo-amplifier module assembly in junction box assembly. Again perform action of this check. If reading is still abnormal, replace junction box assembly.
TP14-1	Magnetron amplifier output.	Energize sight assembly and move 30 degrees up from horizontal.	TP14 and ground	28 + 2 VDC		Perform TP12-1. If reading is normal, check 26 VAC input by performing TP1-2.
		Move sight assembly 30 degrees down from horizontal.	TP14 and ground.	25 + 1 VDC		If 26 VAC input is normal replace elevation servo-amplifier module assembly in junction box assembly. Again perform action of this check. If reading is still abnormal, replace junction box assembly.

Table 3-4. Troubleshooting (Electrical) – Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP15-1	Power preamplifier output.	Energize sight assembly and move 30 degrees up from horizontal. Move sight assembly 30 degrees down from horizontal.	TP15 and ground. TP15 and ground.	37 + 3 VDC 6 + 3 VDC		Perform steps TP10-1, TP11-1, TP12-1, TP13-1, and TP14-1, following indicated procedures if readings are abnormal. If all readings are normal, replace elevation servo-amplifier module assembly in junction box assembly. Again perform action of this check. If reading is still abnormal, replace junction box assembly.
TP16-1	Power preamplifier output.	Energize sight assembly and move 30 degrees down from horizontal. Move sight assembly 30 degrees up from horizontal.	TP16 and ground. TP16 and ground.	37 + 3 VDC 6 + 3 VDC		Perform steps TP10-1, TP11-1, TP12-1, TP13-1, TP14-1, and TP15-1, following indicated procedures if readings are abnormal. If all readings are normal, replace elevation servo-amplifier module assembly in junction box assembly. Again perform action of this check. If reading is still abnormal, replace junction box assembly.
TP17-1	Tachometer feedback.	Connect helicopter connector P4 to J4 on junction box. assembly. Energize sight assembly and move from 30 degrees below horizontal to 30 degrees above horizontal.	TP17 to TP18.	70 + 10 VDC		Perform steps TP15-1 and TP16-1. If reading is normal, perform step TP17-2.
TP17-2	Mechanical drag in turret assembly elevation components.	Manually turn turret assembly through entire elevation range, feeling for abnormal drag.			If drag is abnormal, replace turret assembly.	If drag is not abnormal, perform step TP17-3.
TP17-3	Elevation tachometer circuit resistance.	Remove helicopter connector P3 from junction box assembly. Install after check.	P3 pins: A-R	42 ohms (approx)	Perform step TP17-4.	Perform step TP17-5.

Table 3-4. Troubleshooting (Electrical) - Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP17-4	Elevation tachometer output.	Remove helicopter connector P4 from junction box assembly. Set meter on 2.5 VDC scale and manually raise turret assembly from extreme depression to extreme elevation.	P3 pins: A-R	Meter should read upscale with voltage proportional to the rate of turret assembly elevation	Replace junction box assembly.	Replace turret assembly.
TP17-5	Elevation tachometer circuit resistance.	Remove electric cable connector P9 from connector in helicopter electronic equipment compartment. Install after check.	P9 pins: M-S	42 ohms (approx)	Perform step TP17-6.	Replace turret assembly.

Table 3-4. Troubleshooting (Electrical)—Continued

Test jack and step	Function being checked	Action required for check	Check between	Normal meter reading	Procedure	
					Meter reading normal	Meter reading abnormal
TP17-6	Helicopter wiring continuity.	Remove helicopter connector P3 from junction box assembly. Install after check.	*P3 J9* A— S R—M	Continuity		Request helicopter crew chief repair helicopter wiring.
TP18-1	Tachometer feedback.	Connect helicopter connector P4 to junction box assembly. Energize sight assembly and move from 30 degrees above horizontal to 30 degrees below horizontal. Disconnect P4.	TP18 to TP17.	70 ± 10 VDC		Perform steps TP15-1 and TP16-1. If readings are normal, perform step TP17-2.

Table 3-5. Electric Cable Assembly Connector Identification

Connector	Connector body color
P9	None
P10	Orange
P11	Blue
P12	White
P13	None
P15	Green
P16	Red
P17	Purple
P18	Yellow

Table 3-6. Electric Cable Assembly Wires and Connector Pins

From connector and pin		Wire number	To connector and pin	
P10	A	A5A22	P9	Z
P10	B	A6A22	P9	b
P10	C	A7A22	P9	a
P10	D	A8A22	P9	g
P11	A	A9A22	P9	E
P11	B	A10A22N	P9	J
P11	C	A11A22	P9	T
P11	E	A12A22N	P9	N
P11	F	A13A22	P9	B
P12	A	A14A22	P9	M
P12	B	A15A22	P9	S
P13	B	A16A16N	P9	x
P13	C	A17A16	P9	v
P13	D	A18A16	P9	y
P14	A	A19A22	P9	m
P14	B	A20A22	P9	Y
P15	B	A22A16N	P9	t
P15	C	A23A16	P9	w
P15	D	A24A16	P9	u
P16	A	A25A22	P9	A
P16	B	A26A22N	P9	H
P16	C	A27A22	P9	O
P16	E	A28A22N	P9	K
P16	F	A29A22	P9	C
P17	A	A30A22	P9	L
P17	B	A31A22	P9	P
P18	A	A32A22	P9	I
P18	B	A33A22	P9	R
P18	C	A34A22	P9	D
P18	D	A35A22	P9	f
Terminal E1		A1A16	P9	s
Terminal E1		A1B16	P9	z
Terminal E2		A2A16	P9	U
Terminal E2		A2B16	P9	F
Terminal E3		A3A16	P9	G
Terminal E3		A3B16	P9	λ
Terminal E4		A4A16	P9	p
Terminal E4		A4B16	P9	c

Section V. MAINTENANCE OF 40 MILLIMETER GRENADE LAUNCHER M75

3-11. General.

a. Refer to paragraph 2-4 for installation / removal of 40 millimeter grenade launcher M75.

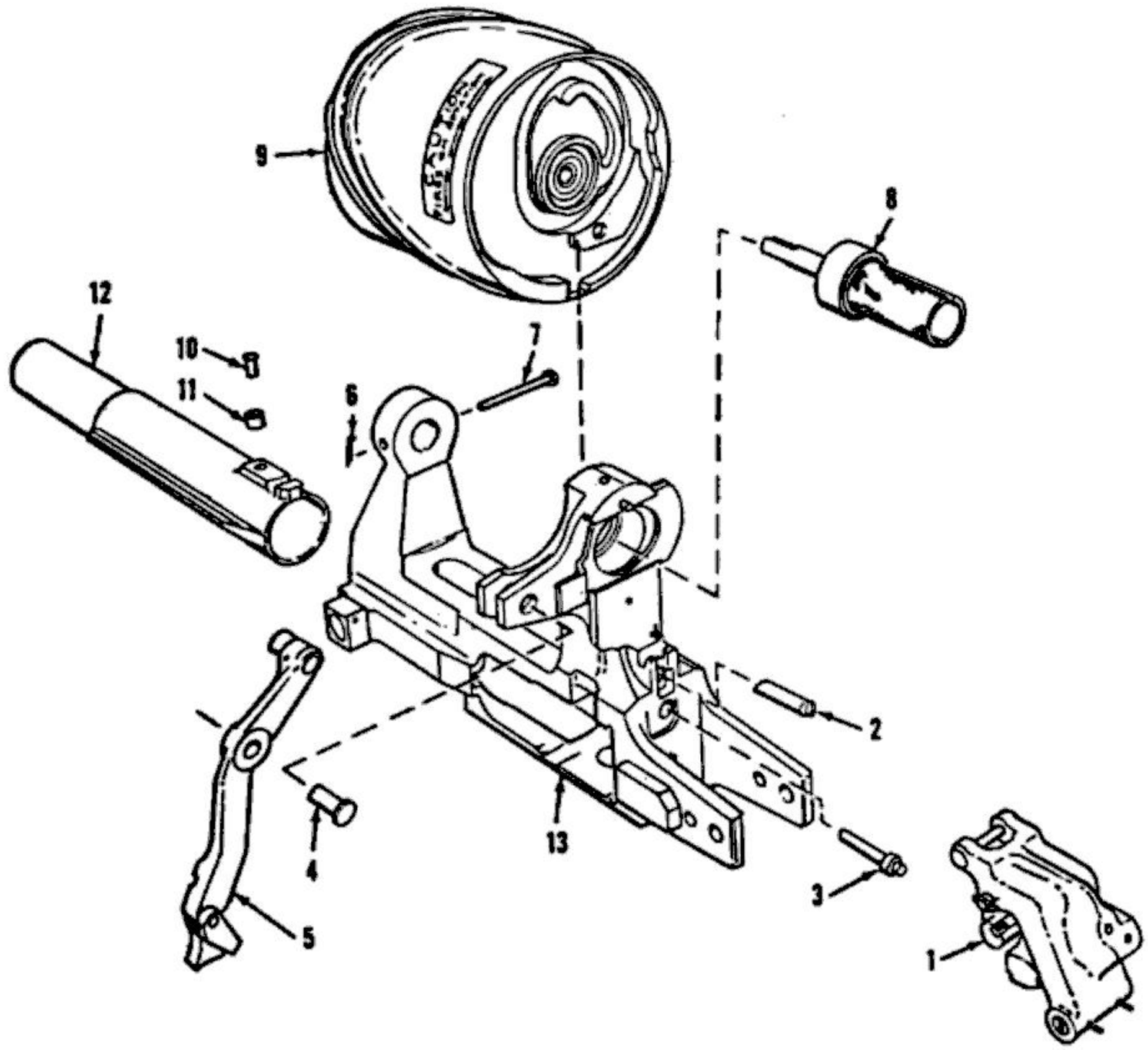
b. The order of disassembly is in accordance with illustration item number sequence of the referenced illustration.

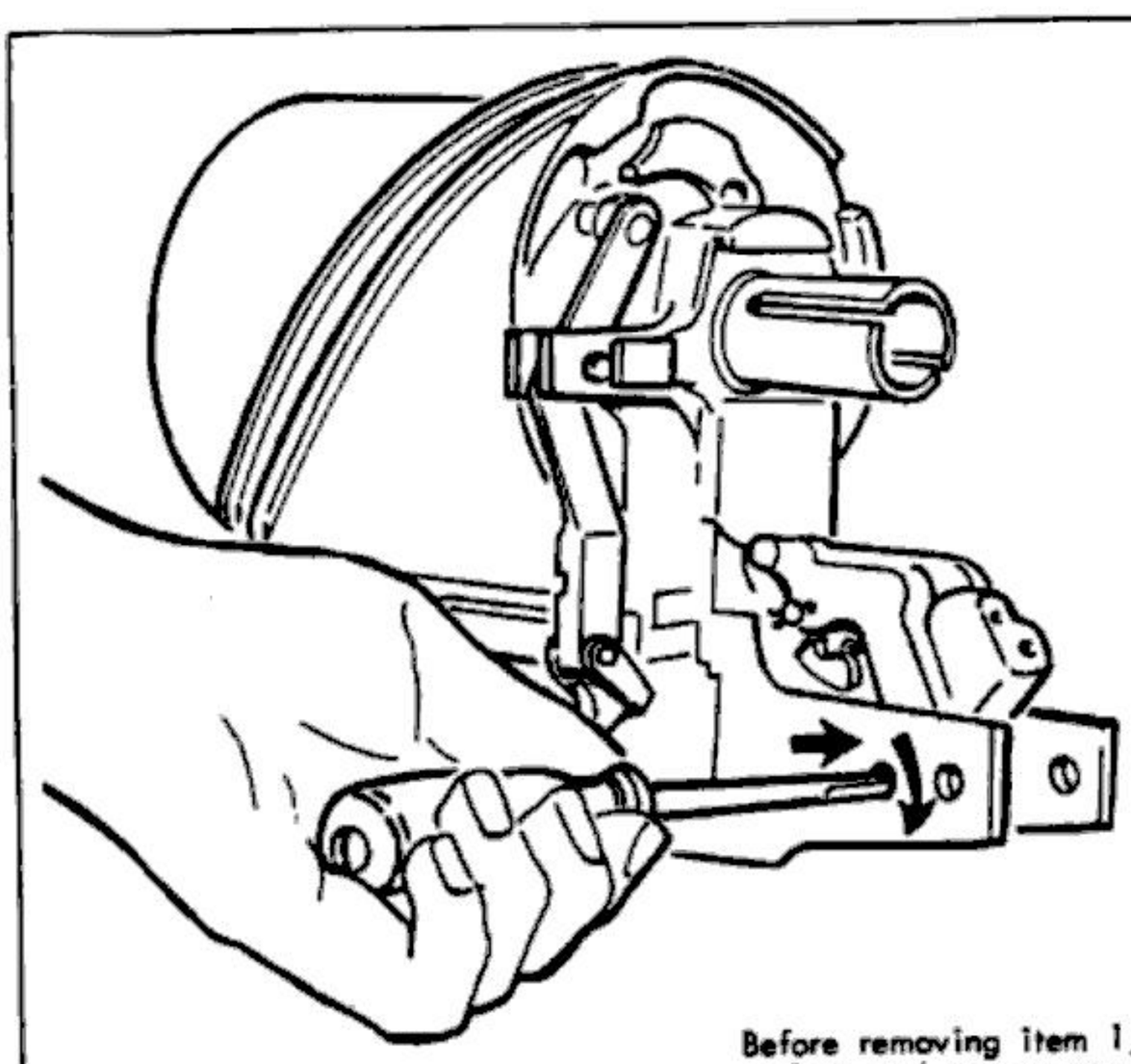
c. Assembly is in reverse order of disassembly sequence, unless otherwise indicated.

d. General cleaning instructions are contained in LO 9-1010-207-12. Specific cleaning instructions, if any, are noted at point of disassembly of the pertinent component.

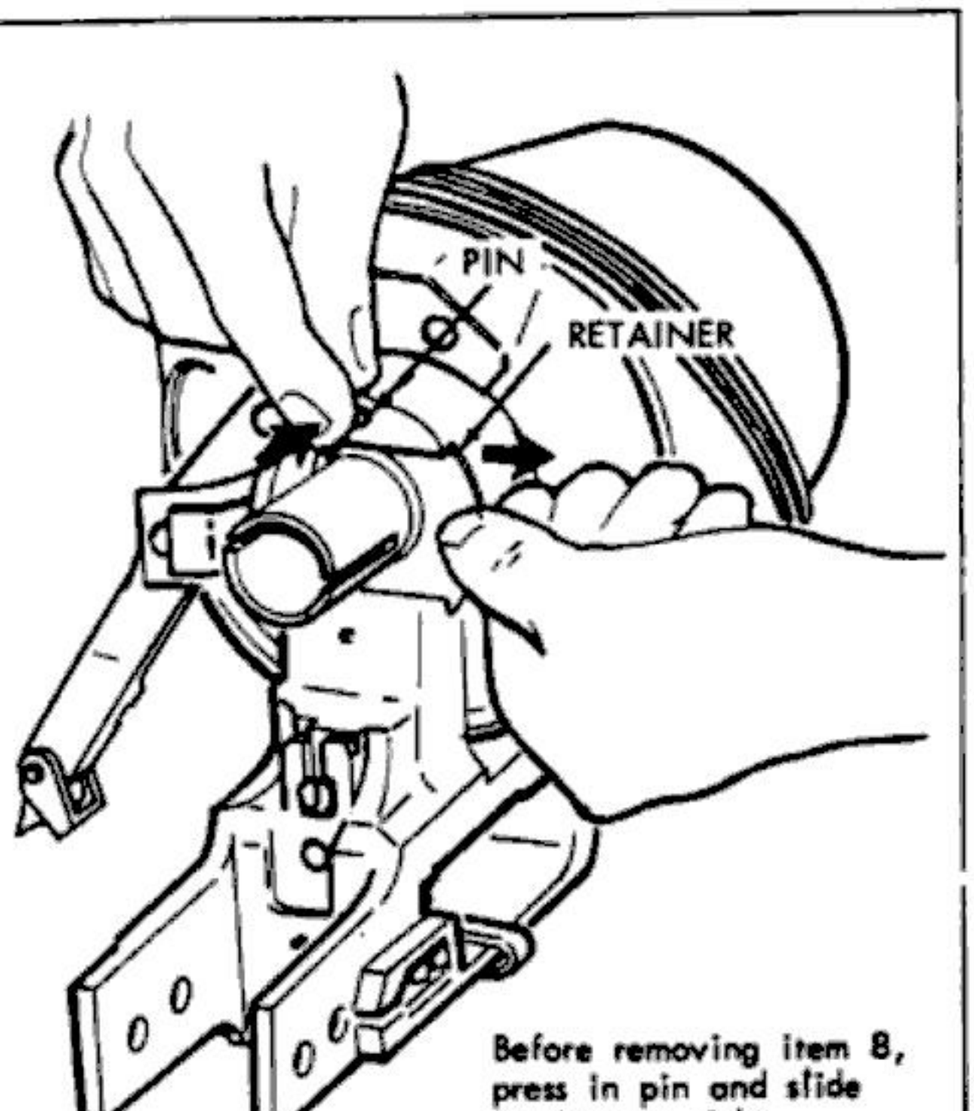
3-12. Disassembly.

a. Grenade Launcher M75. Refer to figure 3-3 and disassemble grenade launcher M75.





Before removing item 1, push in and turn to rear.



Before removing item 8, press in pin and slide retainer to right.

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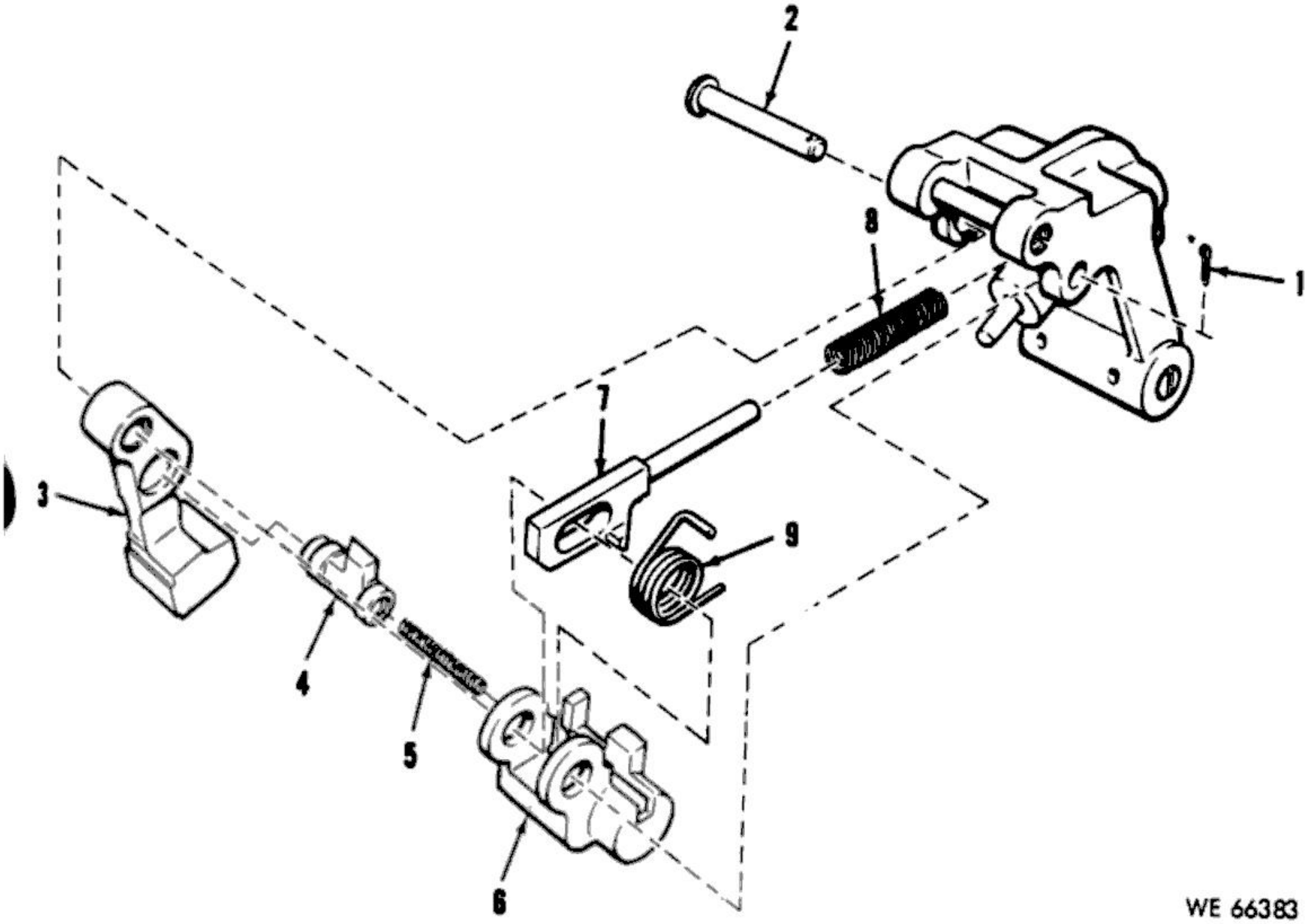
Figure 3-3. 40 Millimeter grenade launcher M75—partially exploded view.

KEY to fig. 3-3:

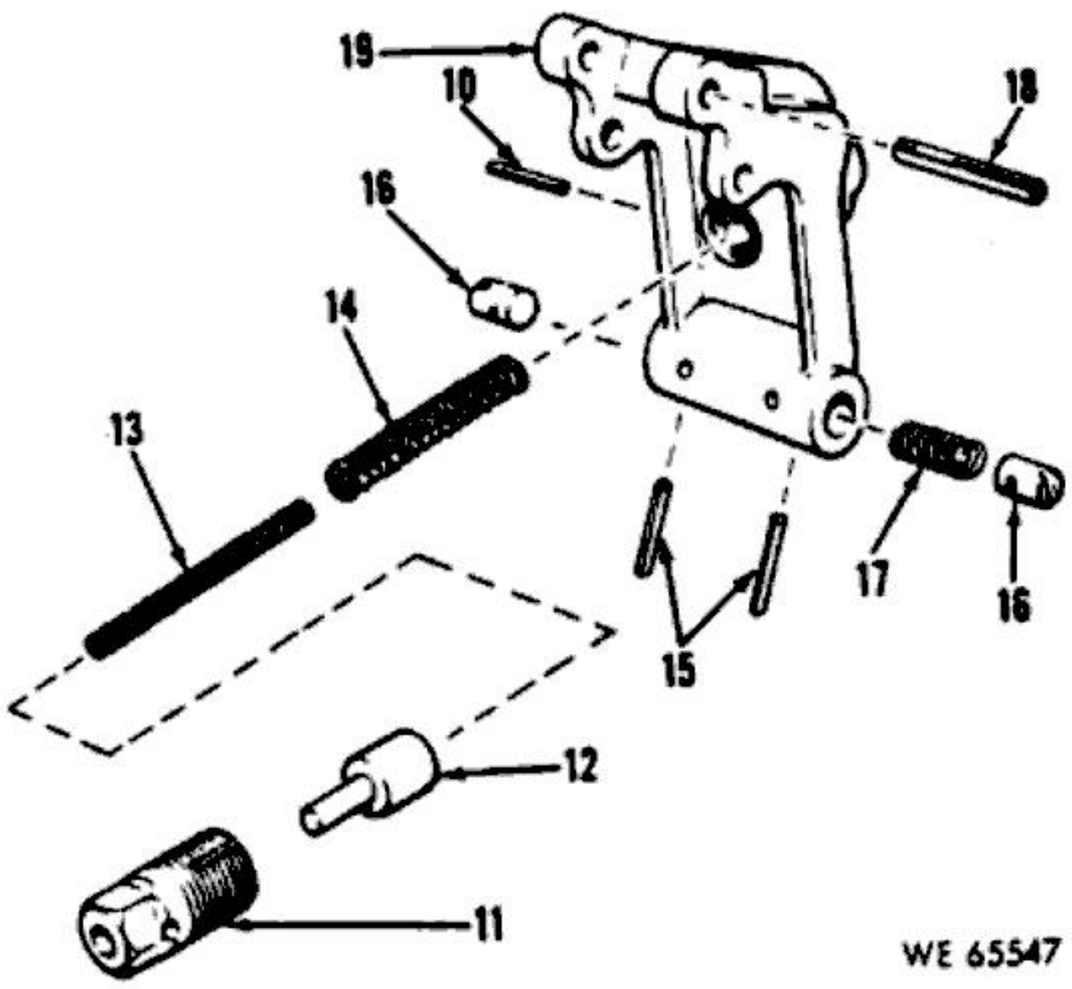
1. Hammer assembly—11010514
2. Sear release extension—7791746
3. Cocking rod—7791789
4. Feed arm pivot pin—7791769
5. Feed arm assembly—7791834
6. 1 / 16 x 1 / 2 Cotter pin—MS24665-151
7. Headed straight pin—11686376
8. Drive spindle assembly—7791825
9. Cam and cover assembly—7791731
10. Barrel roller pin—7791791
11. Barrel roller—7791790
12. Grenade launcher barrel—11686600
13. Receiver assembly—7791771

b. Hammer Assembly. Refer to figure 3-4 and disassemble the hammer assembly.



1. 1 / 16 x 1 / 2 Cotter pin—MS24665—151
2. Hammer pivot pin—7791798
3. Firing hammer—11010515
4. Sear—7791804
5. Compression helical spring—MS24585-27
6. Sear block—7791796
7. Sear release—7791800
8. Compression helical spring—7791807
9. Torsion helical spring—7791805

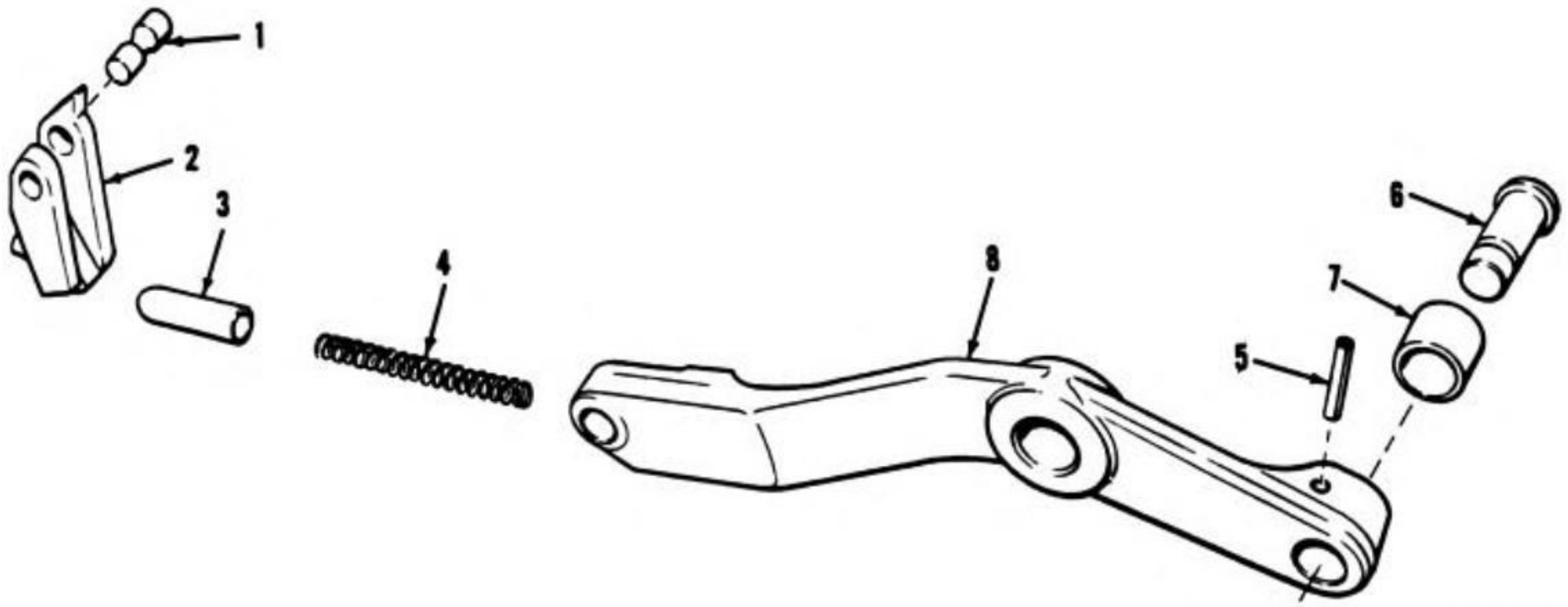
Figure 3-4. Hammer assembly—partially exploded view (sheet 1 of 2).



10. Spring pin—MS16562-130
11. Hammer plunger retainer—11010517
12. Hammer spring plunger—7791799
13. Compression helical spring—7791839
14. Compression helical spring—7791808
15. Spring pin—MS16562-122
16. Detent plunger—7791802
17. Compression helical spring—7791809
18. Spring pin—MS16562-146
19. Hammer housing—11010516

Figure 3-4. Hammer assembly—partially exploded view (sheet 2 of 2).

c. Feed Arm Assembly. Refer to figure 3-5 and disassemble the feed arm assembly.



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KEY to fig. 3-5:
1. Feed arm pawl pin—7791724
2. Feed pawl—7791819
3. Feed pawl plunger—7791726
4. Compression helical spring—7791729
5. Pin spring—MS16562-119
6. Feed arm roller pin—7791728
7. Feed arm roller—7791727
8. Feed arm—7791832

Figure 3-5. Feed arm assembly—exploded view.

d. Cam and Cover Assembly. Refer to figure 3-6; remove instruction plate (1) from cam and cover assembly.

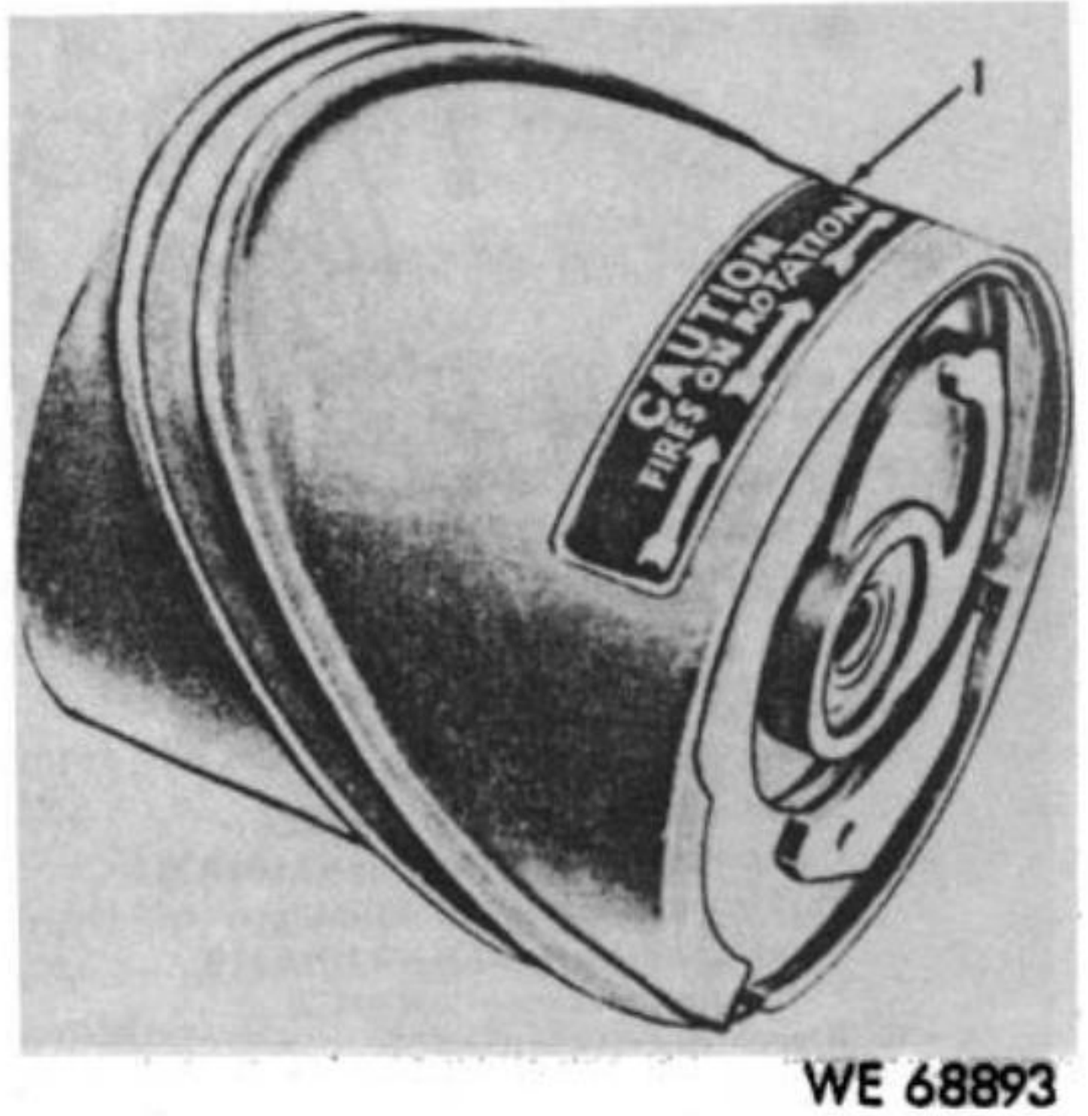

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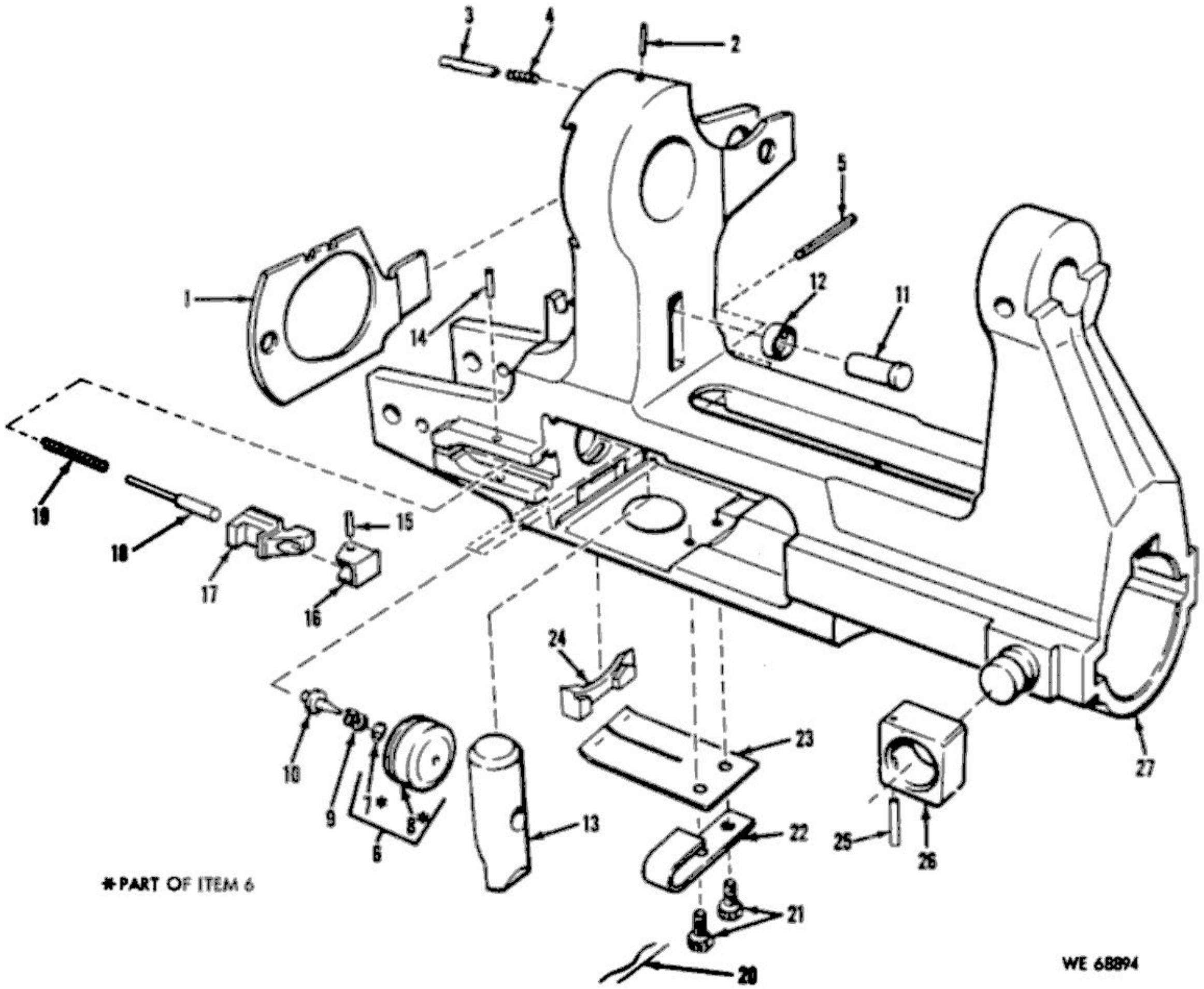
Figure 3-6. Cam and cover assembly.

e. Receiver Assembly. Refer to figure 3-7 and disassemble the receiver assembly.



KEY to fig. 3-7:

1. Spindle assembly retainer—7791833
2. Spring pin—MS16562-119
3. Spindle retainer pin—11010524
4. Compression helical spring—11010525
5. Spring pin—MS16562—146
6. Breech insert assembly—11010479
7. Firing pin cushion—11010478
8. Breech insert—11010477
9. Compression helical spring—7791787
10. Firing pin—11010480
11. Barrel lock pin—7791774
12. Barrel lock roller—7791785
13. Barrel lock—11010533
14. Spring pin—MS16562—122
15. Spring pin—MS16562—117
16. Cartridge stop pawl—7791836
17. Cartridge stop—7791837
18. Cartridge stop plunger—7791835
19. Compression helical spring—7791846
20. Corrosion resisting steel wire—MS20995C41
21. Link stop screw—7791822
22. Link stop—7791820
23. Cartridge positioner spring—7791773
24. Cartridge positioner—7791818
25. Spring pin—MS16562-123
26. Receiver block—7791775
27. Receiver—7791815

Figure 3-7. Receiver assembly—partially exploded view.

3-13. Cleaning, Inspection, and Repair.

a. Cleaning.

(1) Clean burned powder residue from grenade launcher barrel, breech insert, firing pin, and receiver with solvent cleaning compound (CR); use 40 millimeter brush assembly and 40 millimeter cleaning staff (fig. 3-1) to clean barrel.

(2) Clean remaining parts with dry cleaning solvent (SD) or mineral spirits paint thinner (TPM).

(3) Lubricate grenade launcher parts in accordance with LO 9-1010-207-12.

CAUTION

Do not immerse cam and cover assembly or spindle assembly in cleaning solvent.

b. Inspection.

(1) Inspect the bore and guide ribs of the grenade launcher barrel for excessive wear and cracks. Check for a deformed barrel lock recess and elongated mounting hole in the barrel roller shaft. Examine barrel roller and shaft for cracks, burs, and excessive wear.

(2) Check the feed arm assembly for worn or broken parts and for a weak or deformed plunger spring. Examine all parts for burs and obstructions to proper operation.

(3) Inspect the hammer assembly for weak, deformed, or broken springs. Note that the hammer is not worn or cracked and that the sear and sear release are not worn, cracked, or broken.

(4) Inspect the cam and cover assembly for presence and security of the instruction plate. See that the cam tracks are not worn to the point of allowing cam rollers to slip from the tracks. Examine the cam and cover assembly for cracks.

(5) Inspect the receiver assembly for cracked, excessively worn, bent, or broken parts. See that all springs are not weak or deformed and that the firing pin is not eroded or broken. Observe that the receiver sliding blocks are not scored or galled. Examine the cartridge positioner for excessive wear and inspect the barrel lock for cracks, breaks, and a worn locking lip.

(6) Inspect the drive spindle assembly for cracks, breaks, and secure attachment of the bearing on the spindle.

c. Repair.

(1) If the cam and cover assembly is unserviceable, replace.

(2) If the receiver (27, fig. 3-7) is unserviceable, replace the grenade launcher.

(3) Replace other unserviceable parts, when necessary, as authorized in TM 9-1010-207-20P.

Section VI. MAINTENANCE OF GRENADE LAUNCHER MOUNT

3-14. General.

a. Refer to paragraph 2-4 for installation / removal of grenade launcher mount components.

b. The order of disassembly is in accordance with illustration item number sequence of the referenced illustration.

c. Assembly is in reverse order of disassembly sequence, unless otherwise indicated.

d. General cleaning instructions are contained in LO 9-1010-207-12. Specific cleaning instructions, if any, are noted at point of disassembly of the pertinent component.

3-15. Tests and Adjustments.

a. General. Tests and / or adjustments to be performed by organizational maintenance personnel is limited to positioning of the machine bolt on the ammunition booster assembly for proper actuation of the feed control switch (fig. 2-18).

b. Procedure.

(1) Remove the ammunition chute external boot assembly (fig. 2-15), front ammunition chute assembly (fig. 2-8), and electric cable assembly (fig. 2-12) to obtain access to the ammunition booster assembly.

(2) Obtain three plug and link assemblies (fig. 2-22).

(3) Lift the lever assembly (fig. 2-18) and insert the plug and link assemblies into the ammunition booster assembly from the front. Manually turn the booster sprockets until the center plug and link assembly is under the shaft which supports the lever assembly (fig. 2-18).

(4) Loosen the hexagon self-locking nut which secures the machine bolt in the regulator arm (fig. 2-18).

(5) Push the end plug and link assemblies toward the center plug and link assembly, so that the lever assembly rides on the end plug and link assemblies. Hold in this position.

(6) Turn the machine bolt down into the regulator arm until the bolt head just clears the plunger of the feed control switch (fig. 2-18).

(7) Turn the machine bolt up out of the regulator arm until the switch plunger actuates the feed control switch with a click. Turn the machine bolt another half-turn in the same direction.

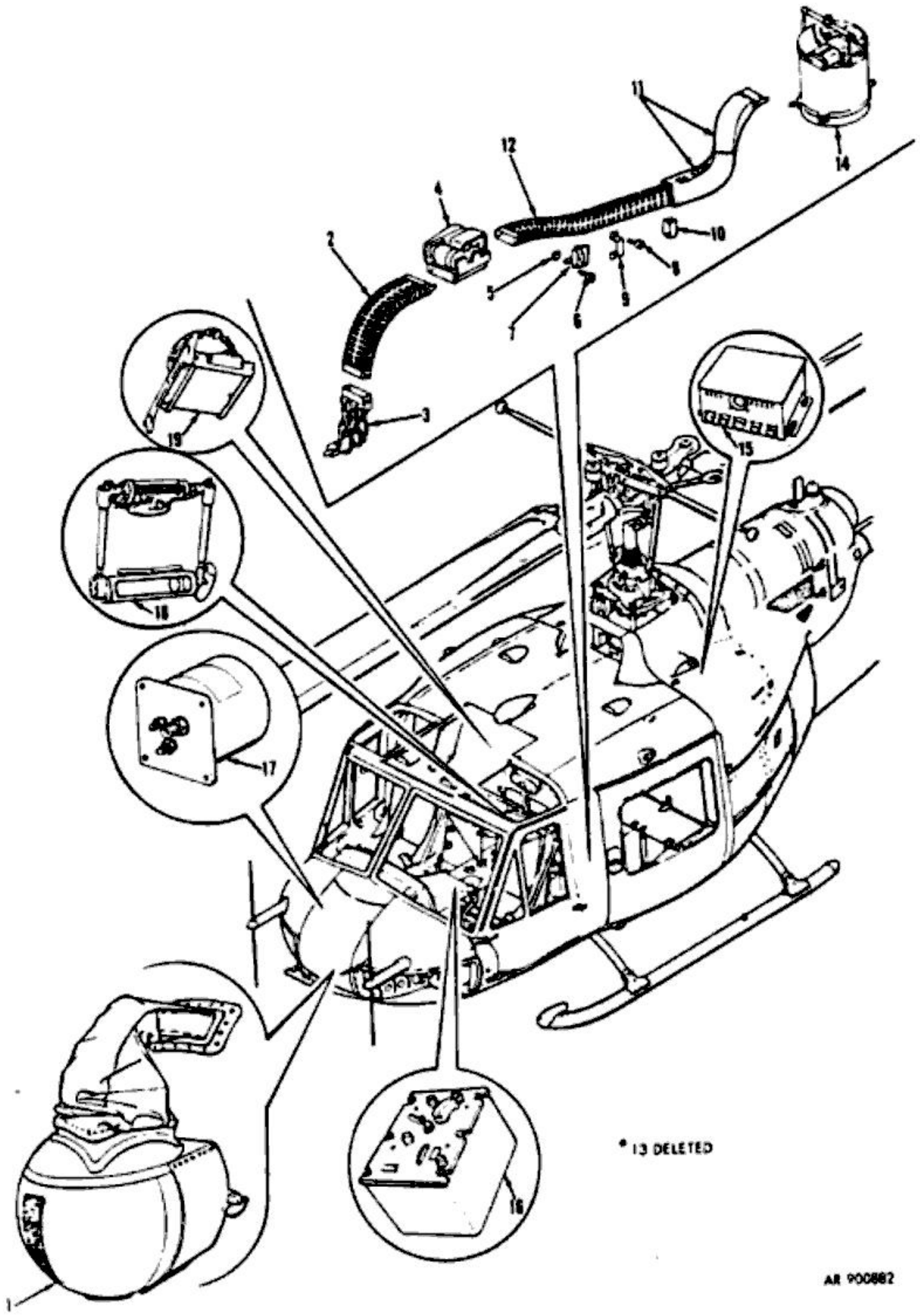
(8) Tighten the hexagon self-locking nut on the machine bolt, making sure that the position of the machine bolt is not changed.

(9) Remove the plug and link assemblies from the ammunition booster assembly.

(10) Install the electric cable assembly (fig. 2-12), front ammunition chute assembly (fig. 2-8), and ammunition chute external boot assembly (fig. 2-15).

3-16. Disassembly.

a. Grenade Launcher Mount. Refer to figure 3-8 and disassemble the grenade launcher mount.



* 13 DELETED

Legend for fig 3-8:

1. Turret assembly — 11014650
2. Front ammunition chute assembly — 11014890-1
3. Ammunition feed chute assembly — 7791747
4. Ammunition booster assembly — 11014907
5. Self-locking nut — MS21042-3
6. Machine screw — MS35207-262
7. Ammunition chute bracket assembly — 11014932
8. Machine screw — MS35207-261
9. Ammunition chute bracket — 11014908
10. Ammunition chute retainer — 11014916
11. Ammunition chute cover — 11014903
12. Rear ammunition chute assembly — 11014890-3
14. Rotary ammunition can — 11698202
15. Servo-amplifier junction box assembly — 11697877
16. Turret control panel assembly — 11697899
17. Airspeed transducer — 111697895
18. Hand control sight assembly — 11010256
19. Sight mount bracket assembly — 11014660

Figure 3-8. Grenade launcher mount - exploded view.

b. Turret Assembly. Refer to figure 3-9 and disassemble turret assembly.

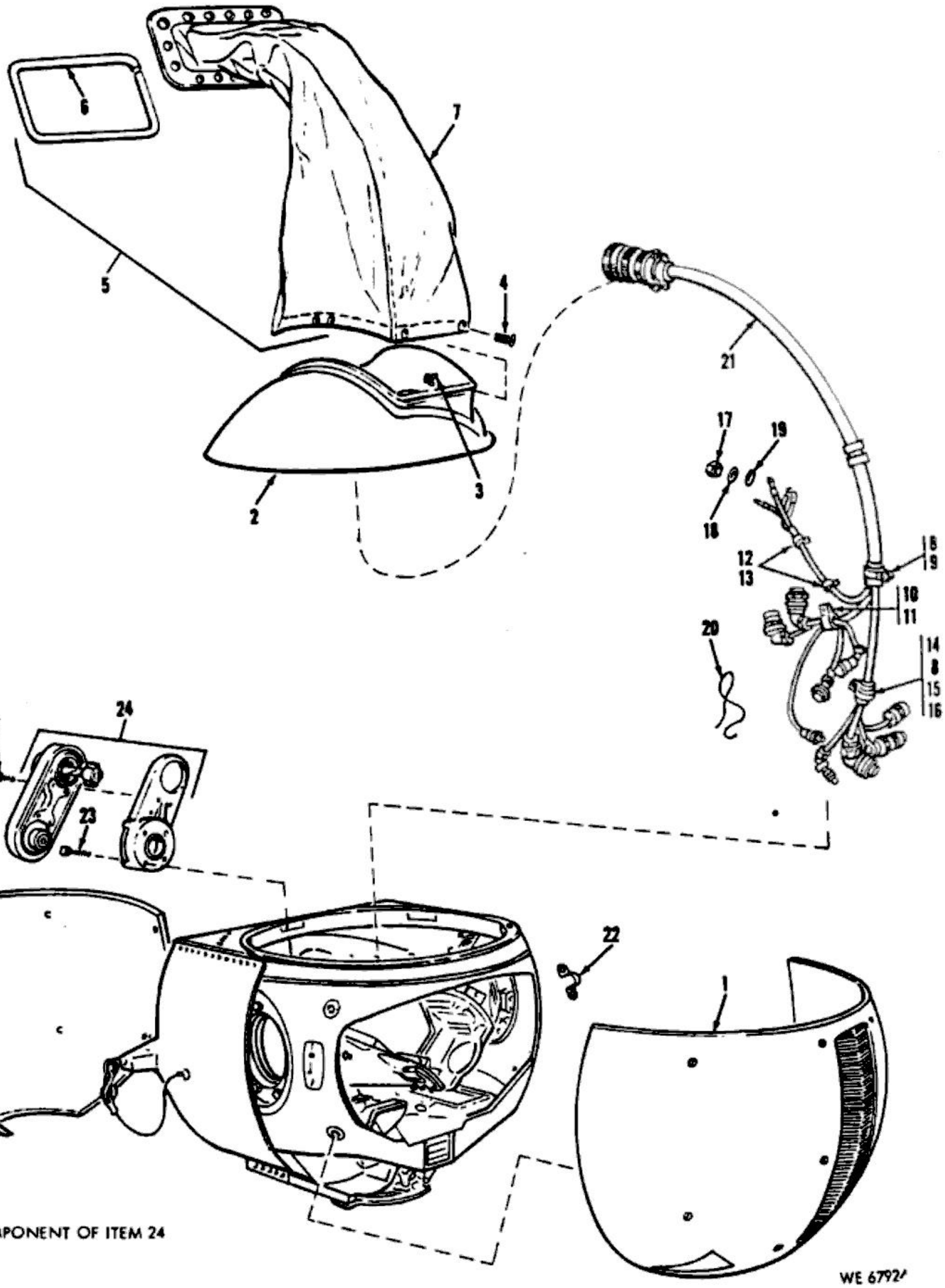


Figure 3-9. Turret assembly –partially exploded view (sheet 1 of 3).

KEY to fig. 3-9 (sheet 1 of 3):

1. Forward enclosure assembly—11014544
2. Top enclosure assembly—11014537
3. Self-locking nut—MS21042-08
4. No. 8 x ½ machine screw—AN525-832R8
5. Boot assembly—11014484
6. Ammunition chute external boot strip—11014479
7. Boot—11014483
8. Machine screw—MS51958-63
9. Loop clamp—MS9024-19
10. Machine bolt—AN102911
11. Loop clamp—11014895
12. Machine screw—MS51958-60
13. Loop clamp—MS9024-06
14. Self-locking nut—MS21042-3
15. Loop clamp—MS9024-13
16. Cable clamp bracket—11014656
17. Hexagon plain nut—MS35650-304
18. Lock washer—MS35338-138
19. Flat washer—MS15795-808
20. Corrosion resisting steel wire—MS20995C20
21. Special purpose electrical cable assembly—11014520
22. Cable clamp bracket assembly—11014405
23. Self-locking screw—MS21262-64
24. Launcher drive assembly—11010109
25. Machine screw—AN507-1032-6
26. Rear enclosure—11014545

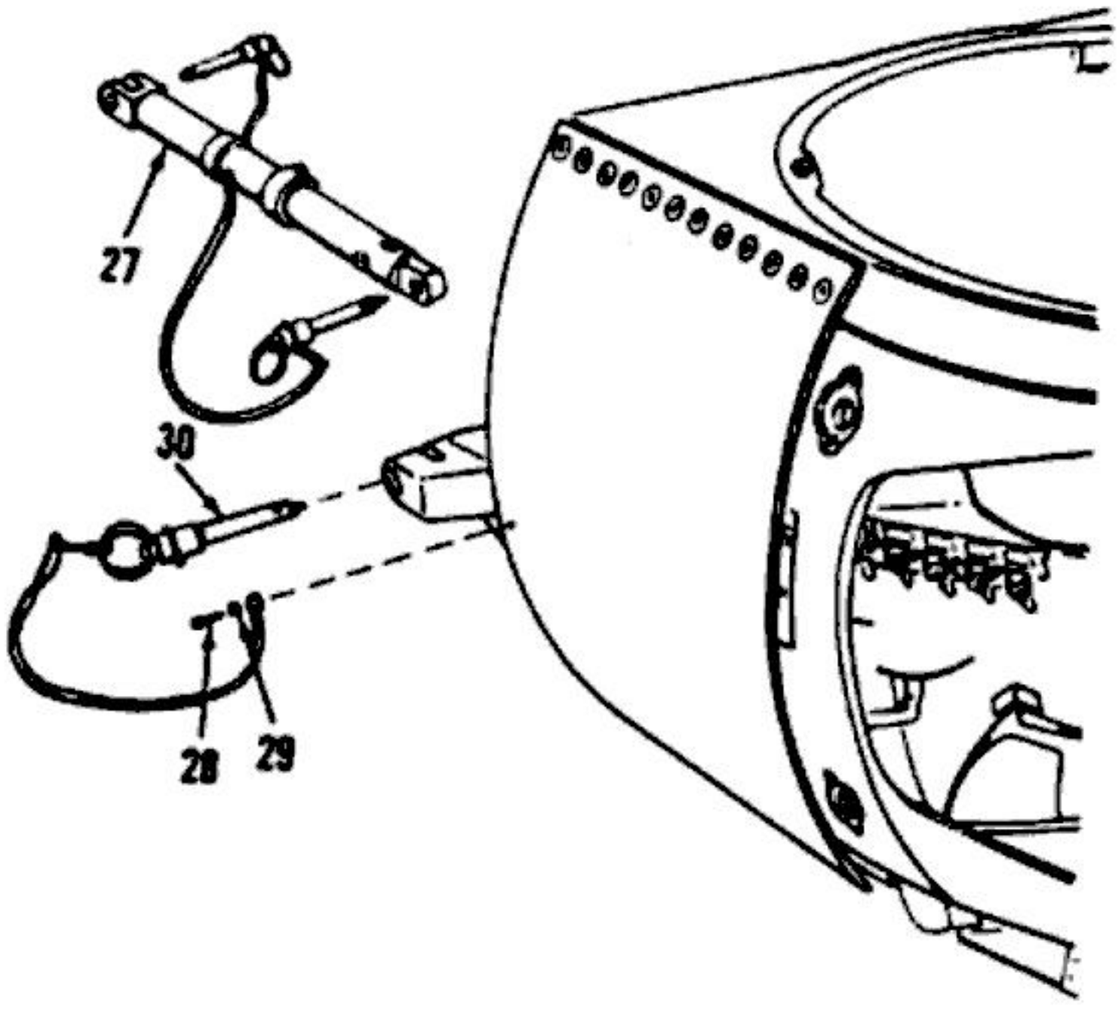


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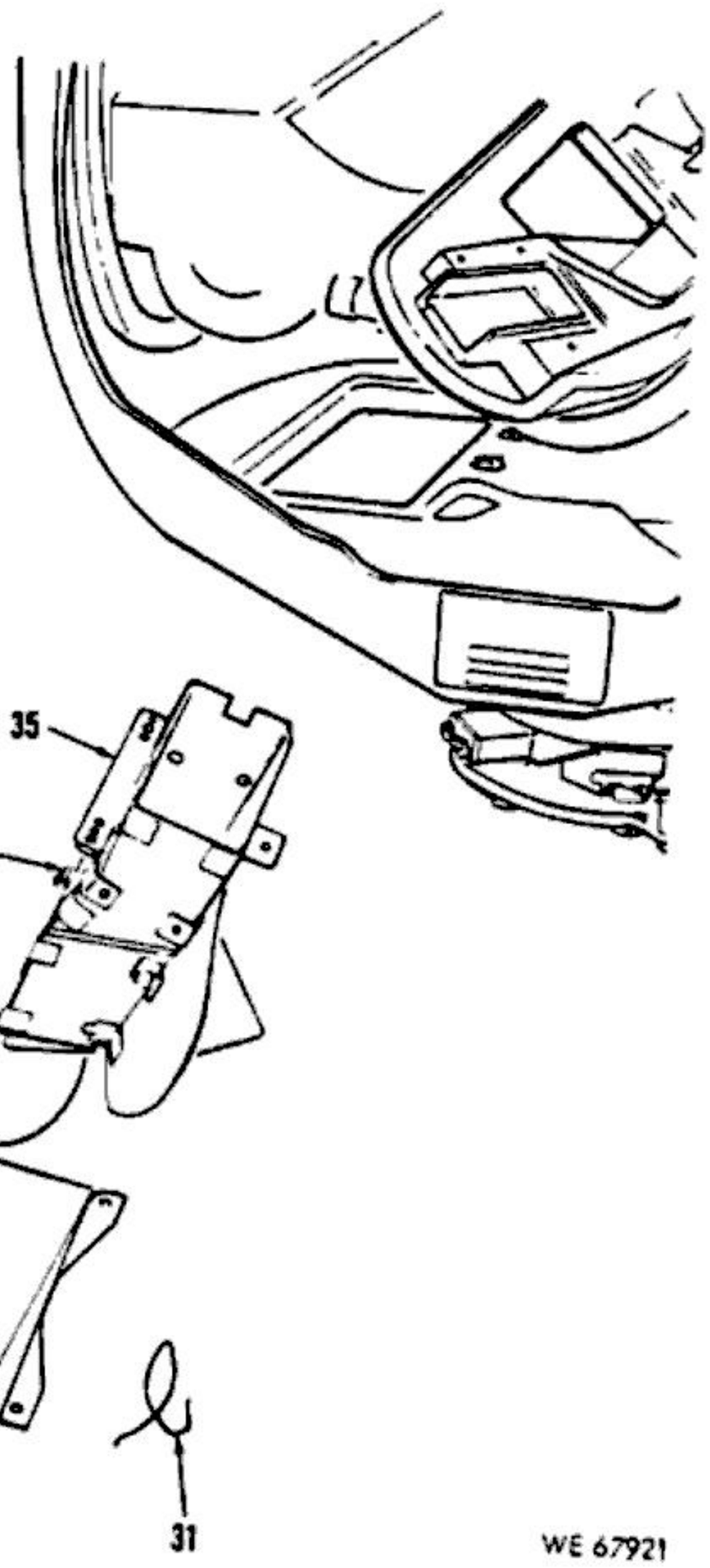
Figure 3-9. Turret assembly—partially exploded view (sheet 2 of 3).

27. Strut and pin assembly—11014475
28. Socket head cap screw—MS24677-2
29. Lock washer—MS35338-40
30. Quick release pin assembly—11014878



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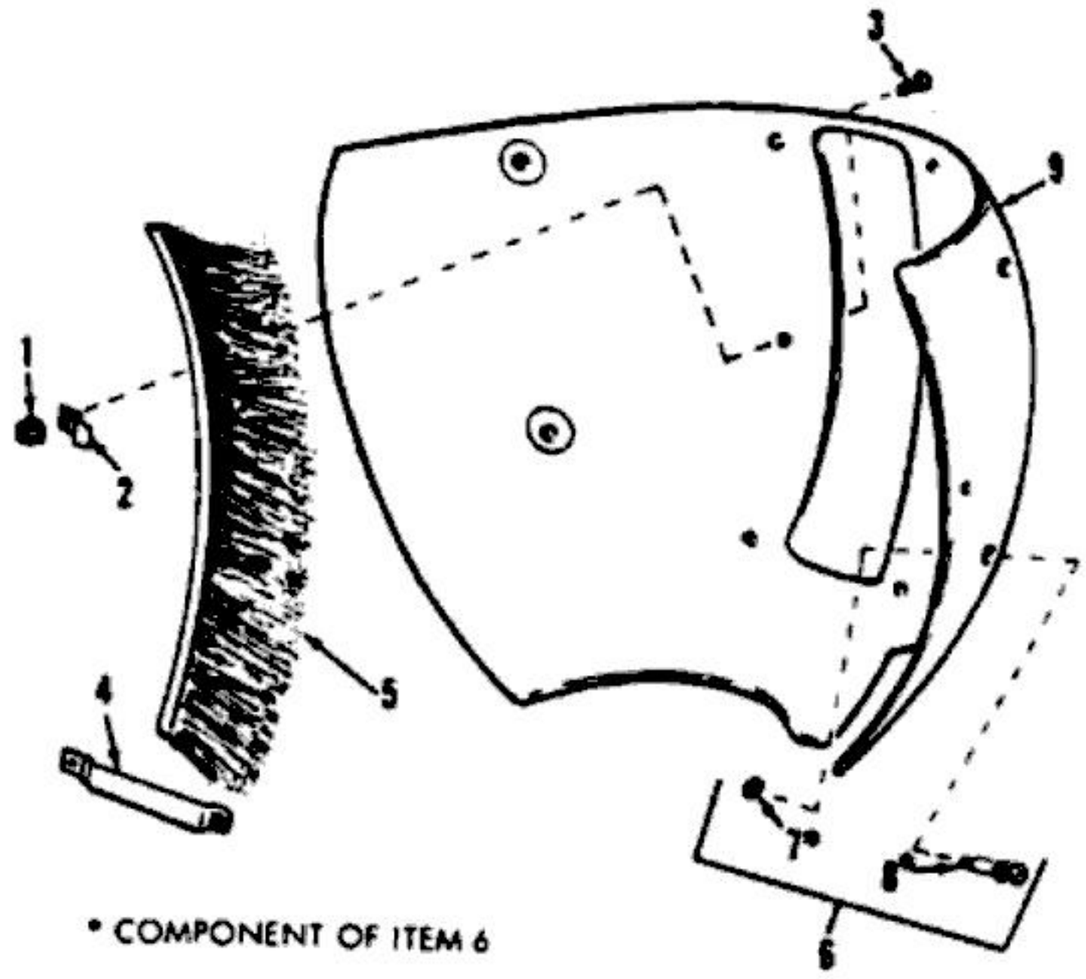
31. Corrosion resisting steel wire—MS20995C32
32. Socket head cap screw—MS24678-10
33. Ejection hopper—11014527
34. Socket head cap screw—MS24678—12
35. Ejector chute assembly—11014424

Figure 3-9. Turret assembly—partially exploded view (sheet 3 of 3).

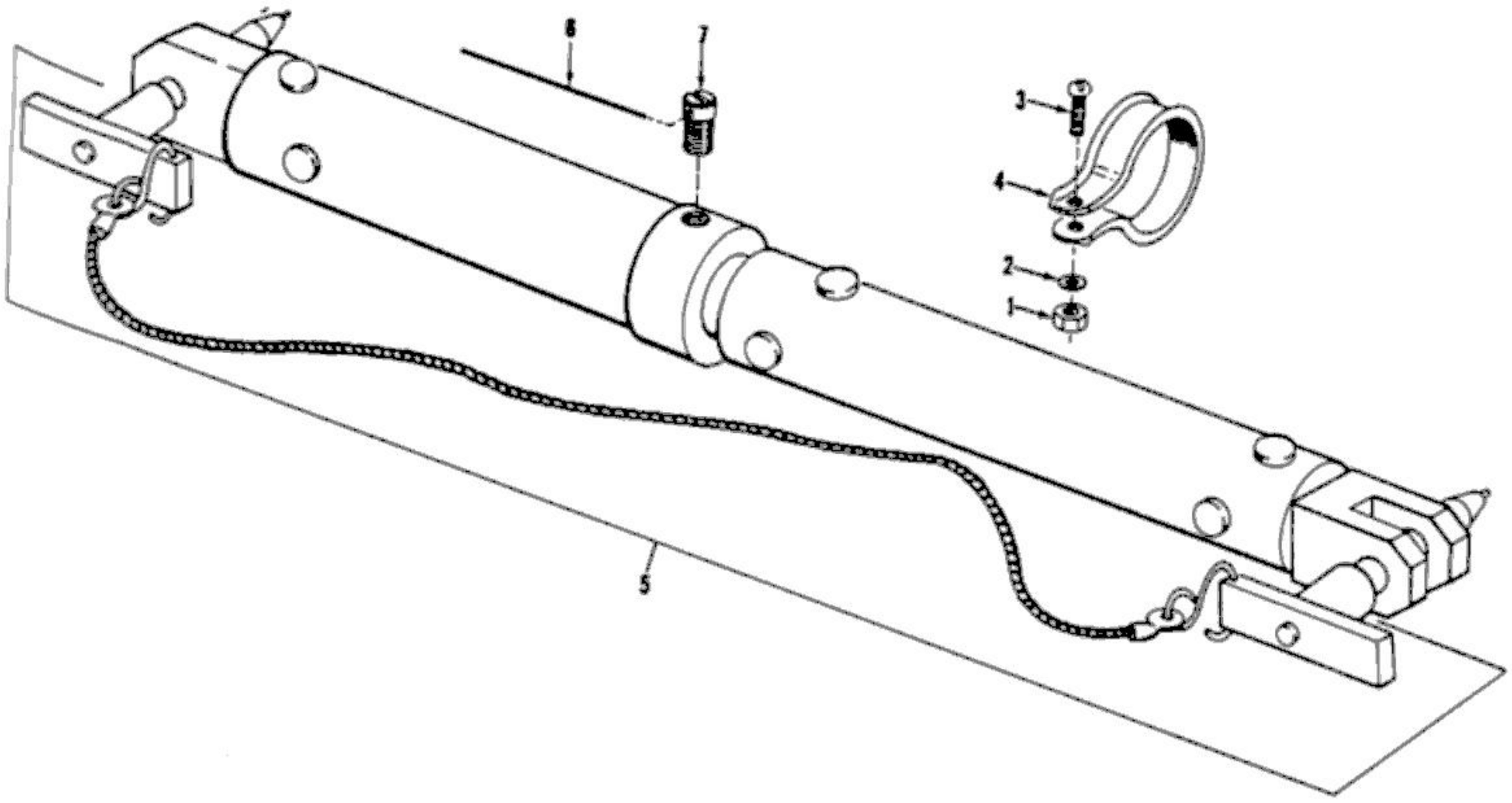
c. *Forward Enclosure Assembly.* Refer to figure 3-10 and disassemble the forward enclosure assembly.



1. Hexagon self-locking nut—MS21042-3
2. Closure brush clamp—11014540
3. Machine screw—AN507-1032-6
4. Brush end retainer—11014541
5. Closure brush—11698153
6. Panel fastener assembly—11014539
7. Retaining washer
8. Grommet, snap ring, and stud
9. Forward enclosure—11014543

Figure 3-10. Forward enclosure assembly—exploded view.

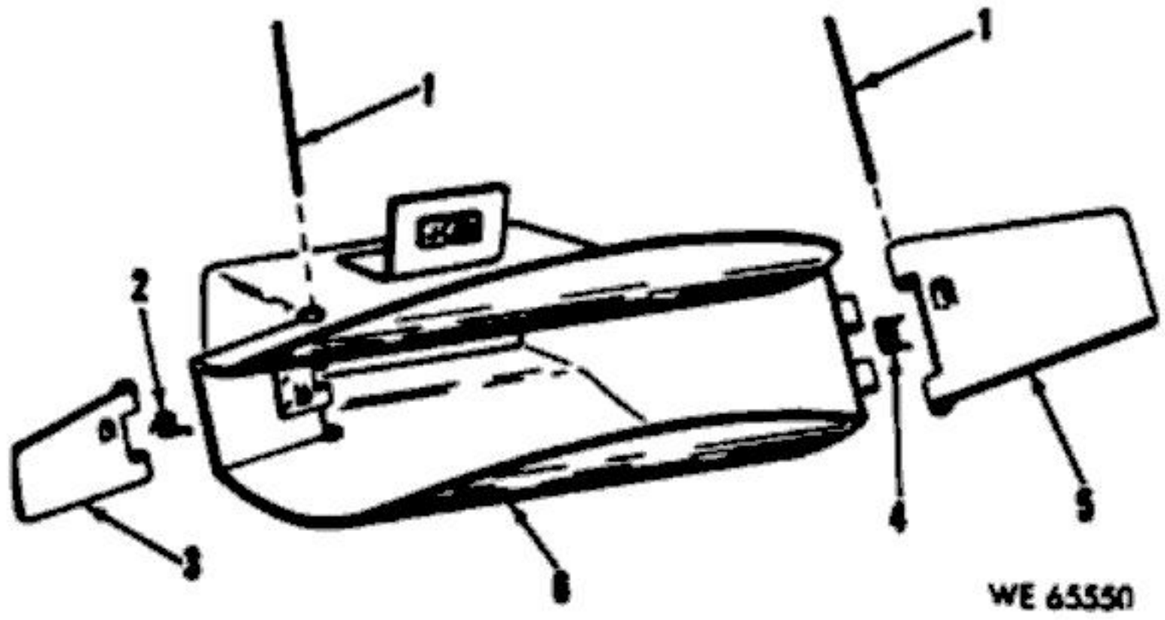
d. Strut and Pin Assembly. Refer to figure 3-11 and disassemble strut and pin assembly.



1. Self-locking nut—MS21042-08
2. Flat washer—MS15795-807
3. Machine screw—MS51957-45
4. Loop clamp—MS9024-15
5. Pin assembly—11014869
6. Corrosion resisting steel wire—MS20995C32
7. Machine screw—AN115805

Figure 3-11. Strut and pin assembly—partially exploded view.

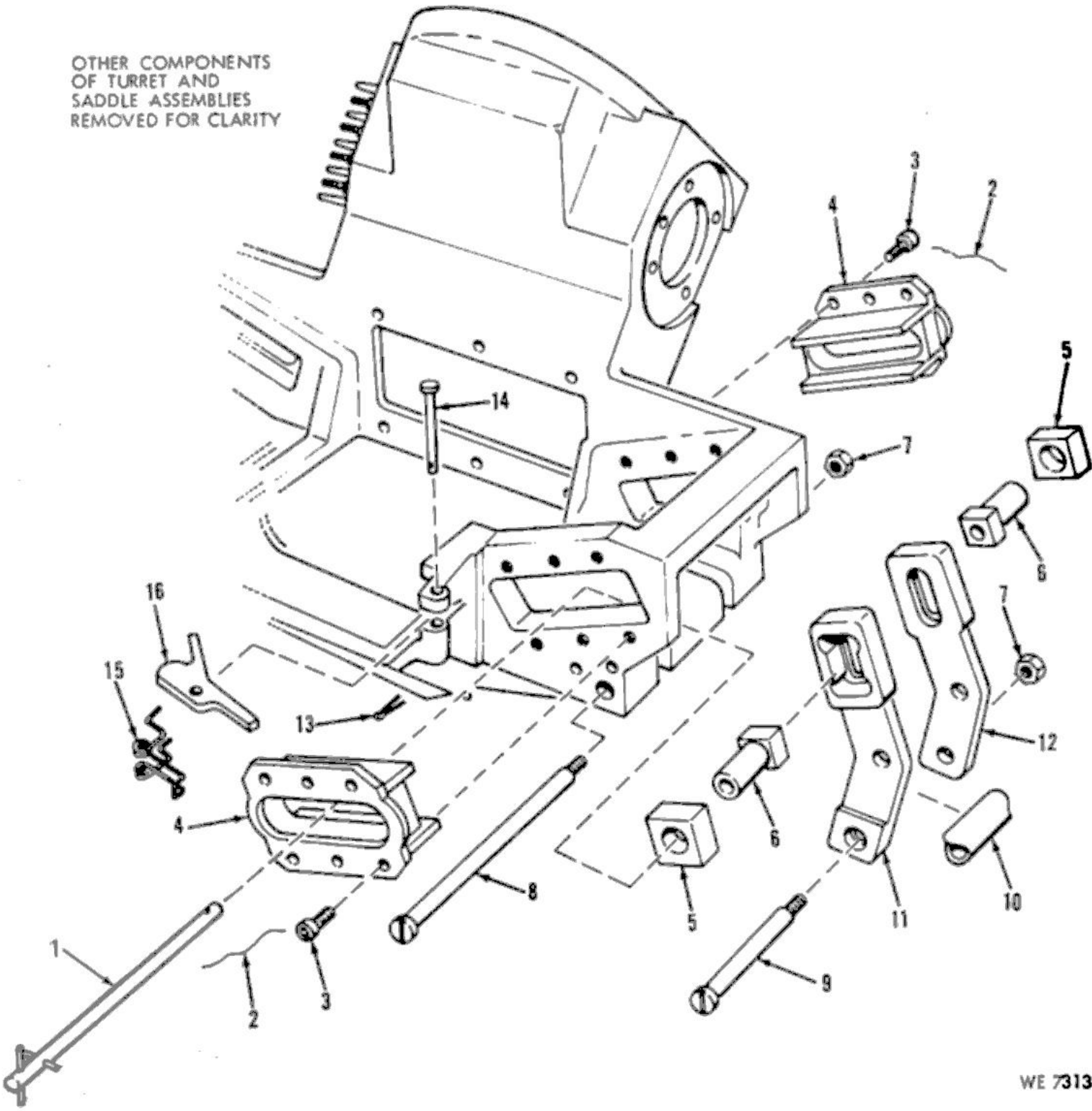
e. Ejector Chute Assembly. Refer to figure 3-12 and disassemble the ejector chute assembly.



1. Headless straight pin—1422-556956
2. Torsion helical spring—11014433
3. Forward ejector chute door—11014429
4. Torsion helical spring—11014434
5. Rear ejector chute door—11014430

Figure 3-12. Ejector chute assembly—partially exploded view.

f. Saddle Assembly. Refer to figure 3-13 and disassemble saddle assembly.



1. Pin assembly—11014490
2. Corrosion resisting steel wire—MS20995C32
3. Socket head cap screw—MS24678-10
4. Sliding block track—11014641
5. Sliding block—11014640
6. Sleeve bushing—11014639
7. Extended washer nut—MS21042-4
8. Shouldered screw—11014638-4
9. Shouldered screw—11014638-2
10. Sleeve spacer—11014637
11. Left hand recoil link—11014642
12. Right hand recoil link—11014643
13. Cotter pin—MS24665-86
14. Headed straight pin—MS20392-1C55
15. Torsion helical spring—11014634
16. Feed tray latch—11014635

Figure 3-13. Saddle assembly—partially exploded view.

g. Front and Rear Ammunition Chute Assemblies. Disassembly of either the front or the rear ammunition chute assembly is a repeated process of link removal. Remove each link as follows:

(1) Compress the links together and insert a 1 / 16-inch diameter punch into one of the holes in the link to be removed, where the link is attached to the preceding link (fig. 3-14).

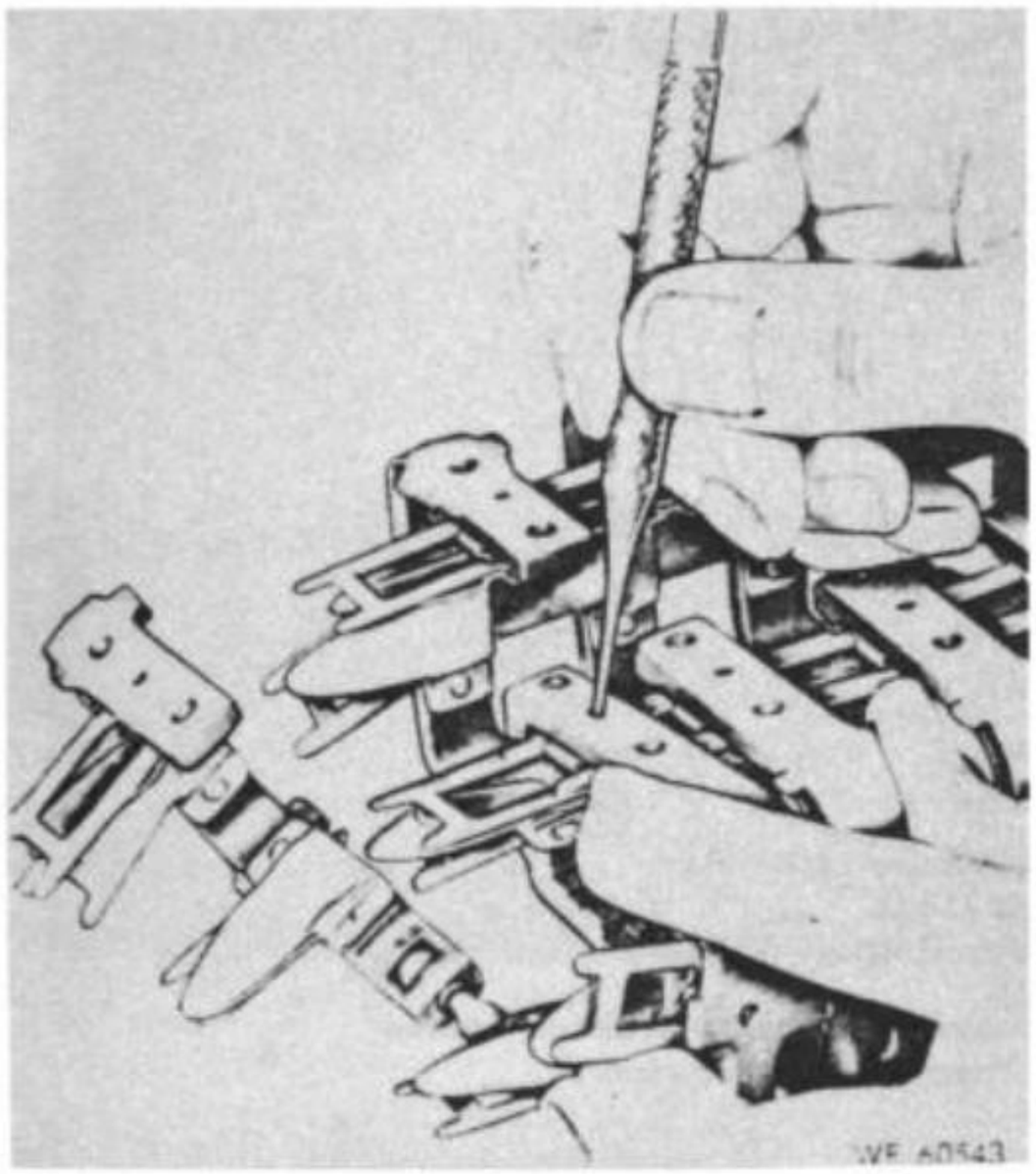
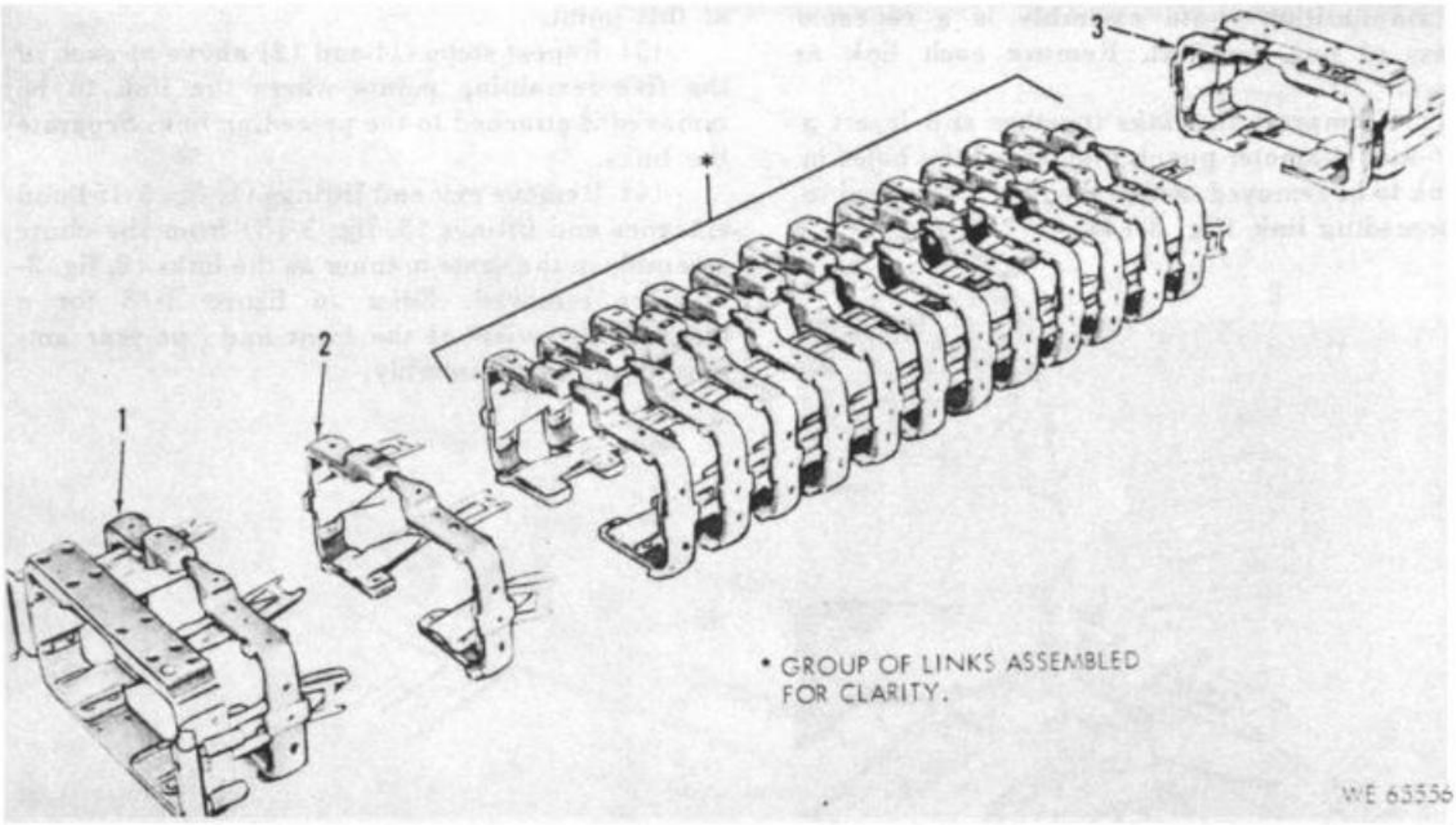


Figure 3-14. Assembly / disassembly of link on front or rear ammunition chute assembly.

(2) Press downward on the front top metal tab of the preceding link until the tabs begin to separate at this point.

(3) Repeat steps (1) and (2) above at each of the five remaining points where the link to be removed is attached to the preceding link. Separate the links.

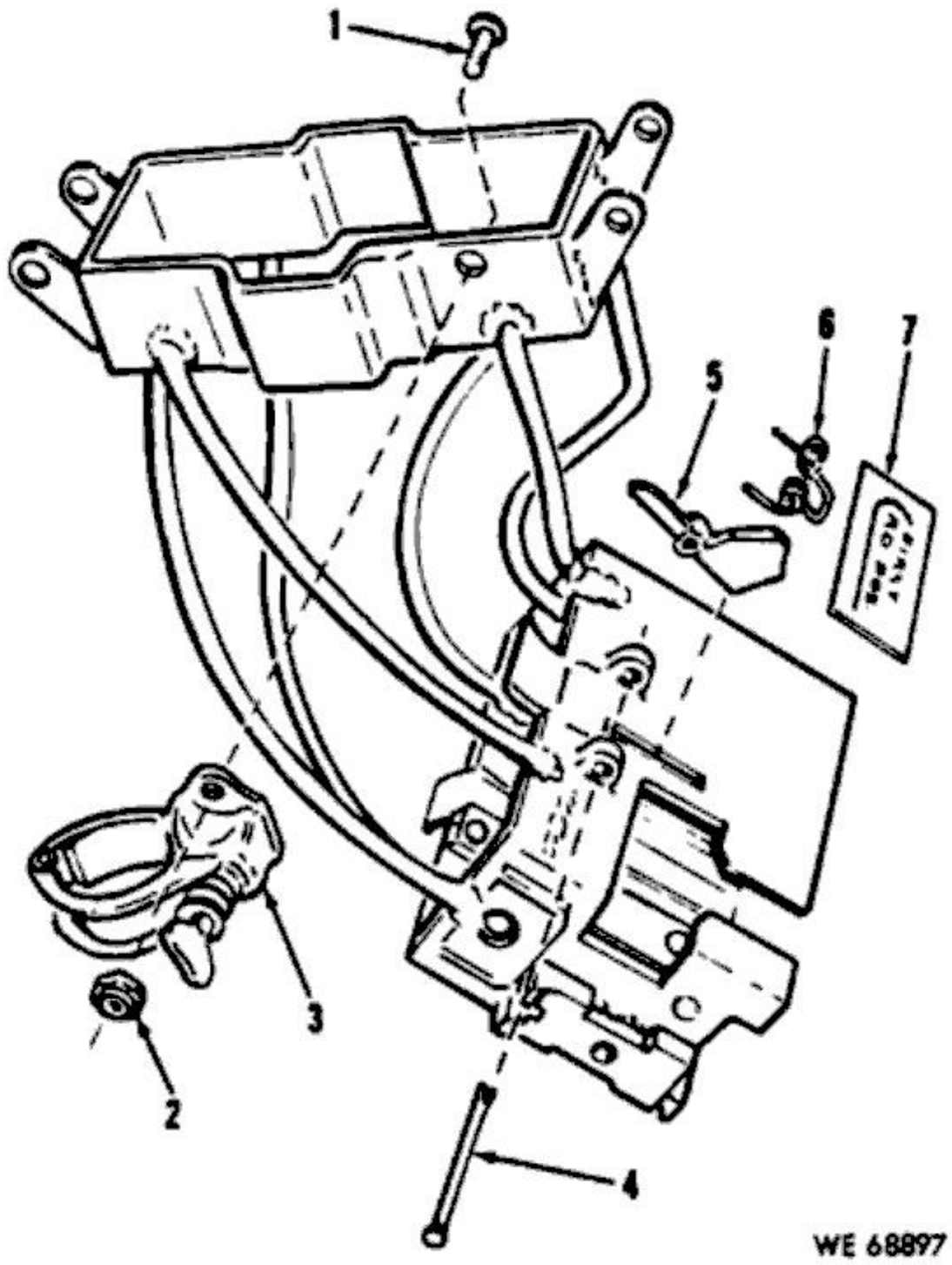
(4) Remove exit end fittings (1, fig. 3-15) and entrance end fittings (3, fig. 3-15) from the chute assembly in the same manner as the links (2, fig. 3-15) are removed. Refer to figure 3-15 for a disassembled view of the front and / or rear ammunition chute assembly.



1. Flexible chute exit end fitting—11014884
2. Flexible chute link—11014882
3. Flexible chute entrance end fitting—1104883

Figure 3-15. Front ammunition chute assembly (26 links) or rear ammunition chute assembly (100 links)—partially exploded view.

h. Ammunition Feed Chute Assembly. Refer to figure 3-16 and disassemble the ammunition feed chute assembly.

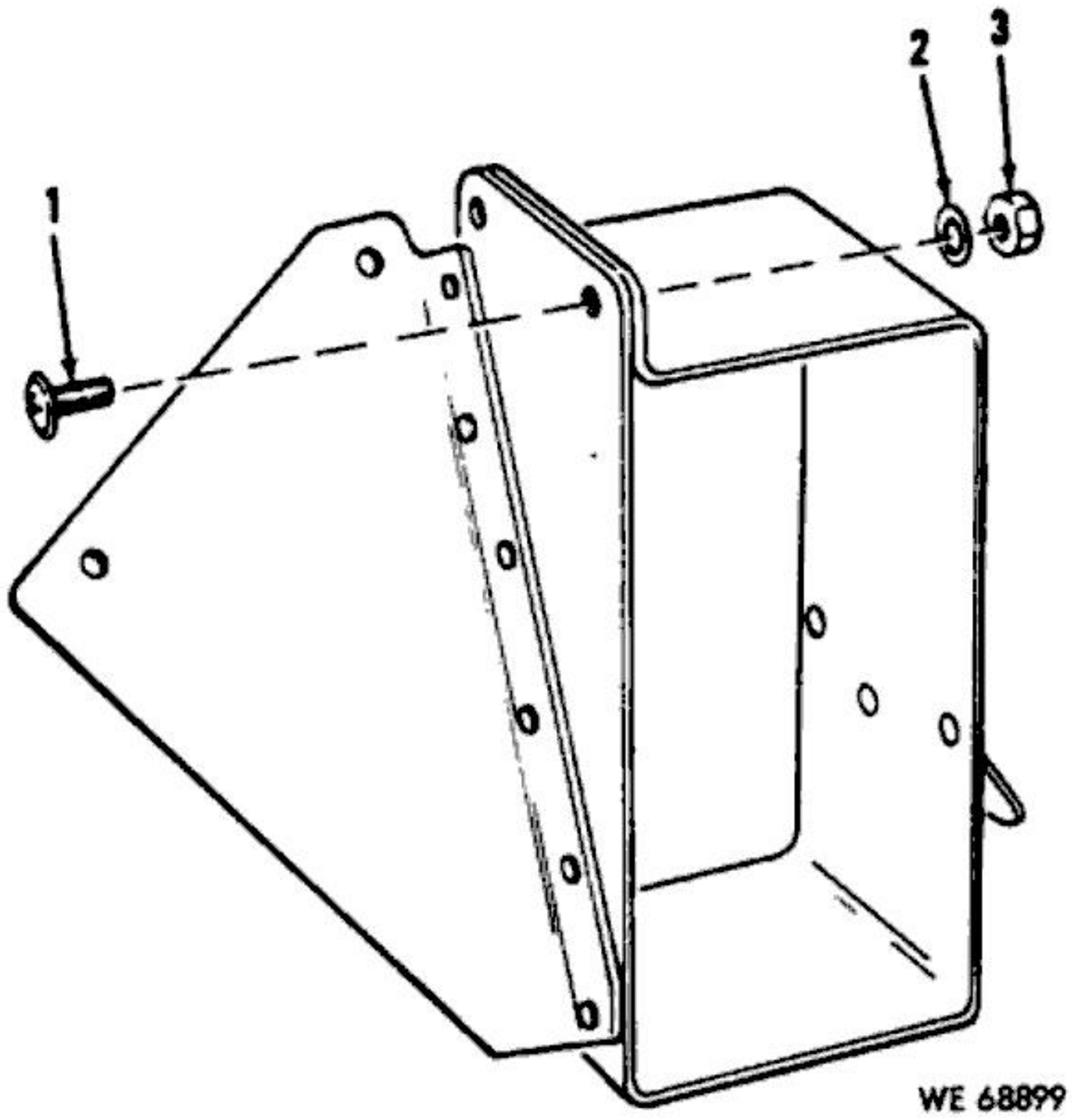


1. Machine screw—MS35207-261
2. Hexagon extended washer self-locking nut—MS21042-3
3. Loop assembly clamp—11014906
4. Holding pawl pin—7791756
5. Holding pawl—7791755
6. Torsion helical spring—7791759
7. Instruction plate—11014570

Figure 3-16. Ammunition feed chute assembly—partially exploded view.

i. Ammunition Chute Bracket Assembly. Refer to figure 3-17 and disassemble the ammunition chute bracket assembly.

j. 40 Millimeter Grenade Rotary Ammunition Can. Refer to figure 3-18 and disassemble the 40 millimeter grenade rotary ammunition can.

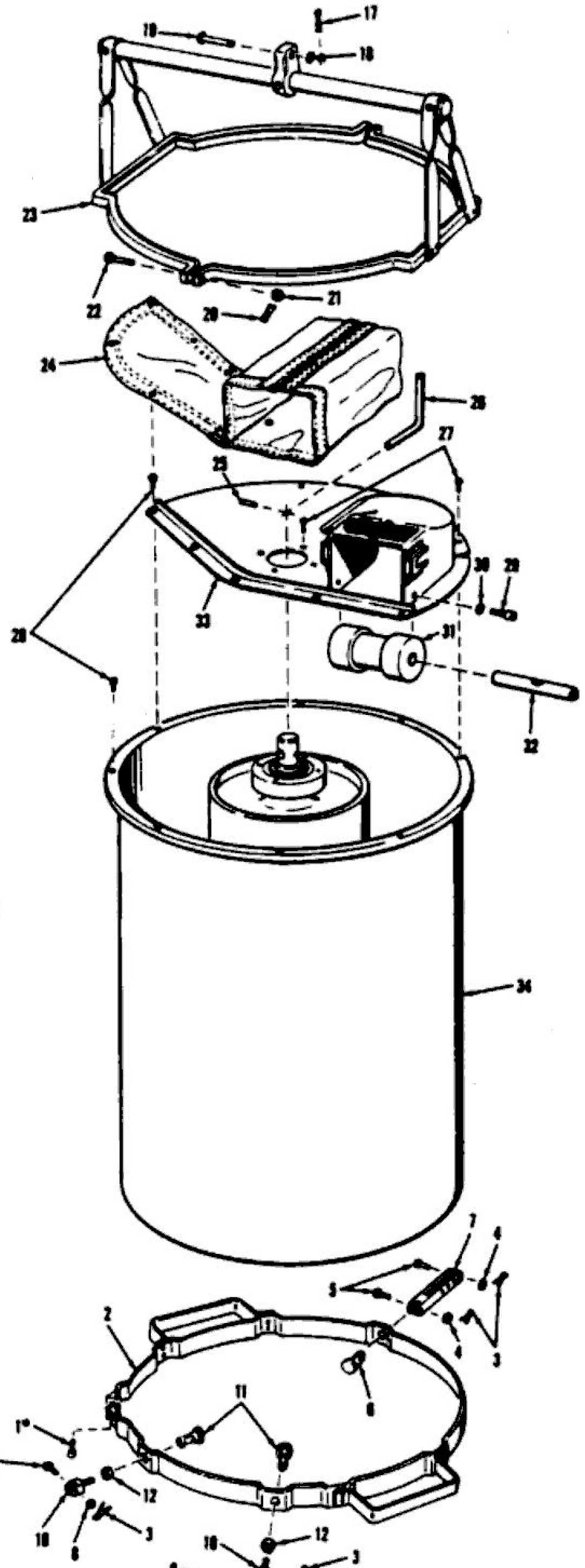


1. Machine screw—MS35207-263
2. Flat washer—MS27183-8
3. Hexagon extended washer slef-locking nut—MS21042-3

Figure 3-17. Ammunition chute bracket assembly-- exploded view.

Legend for fig 3-18

1. Socket head cap screw — MS24678-24
2. Band assembly — 11698187
3. Cotter pin — MS24665-151
4. Flat washer — MS27183-10
5. Headed straight pin — MS20392-3C17
6. Shouldered clevis — 11697183
7. Rod end clevis — 11698168
8. Flat washer — MS27183-8
9. Headed straight pin — MS 20392-2C19
10. Rod end clevis — 11698174
11. Sleeve nut — 11698181
12. Extended washer nut — MS 21042-4
17. Cotter pin — MS24665-302
18. Flat washer — MS27183-18
19. Headed straight pin — MS20392-7C59
20. Cotter pin — MS24665-153
21. Hexagon slotted nut — MS35692-5
22. Drilled shank hexagon head machine bolt — AN102021
23. Hanger assembly — 11698200
24. Ammunition can protective cover 11698169
25. Spring pin — MS39086-44
26. Hand crank — 11698201
27. Machine screw — MS35207-261
28. Snap fastener stud — MS27980-17C
29. Self-locking screw — MS21262-30
30. Flat washer — AN960-416
31. Ammunition roller — 11014963
32. Roller shaft — 11014964
33. Ammunition can top — 11698194
34. Ammunition can

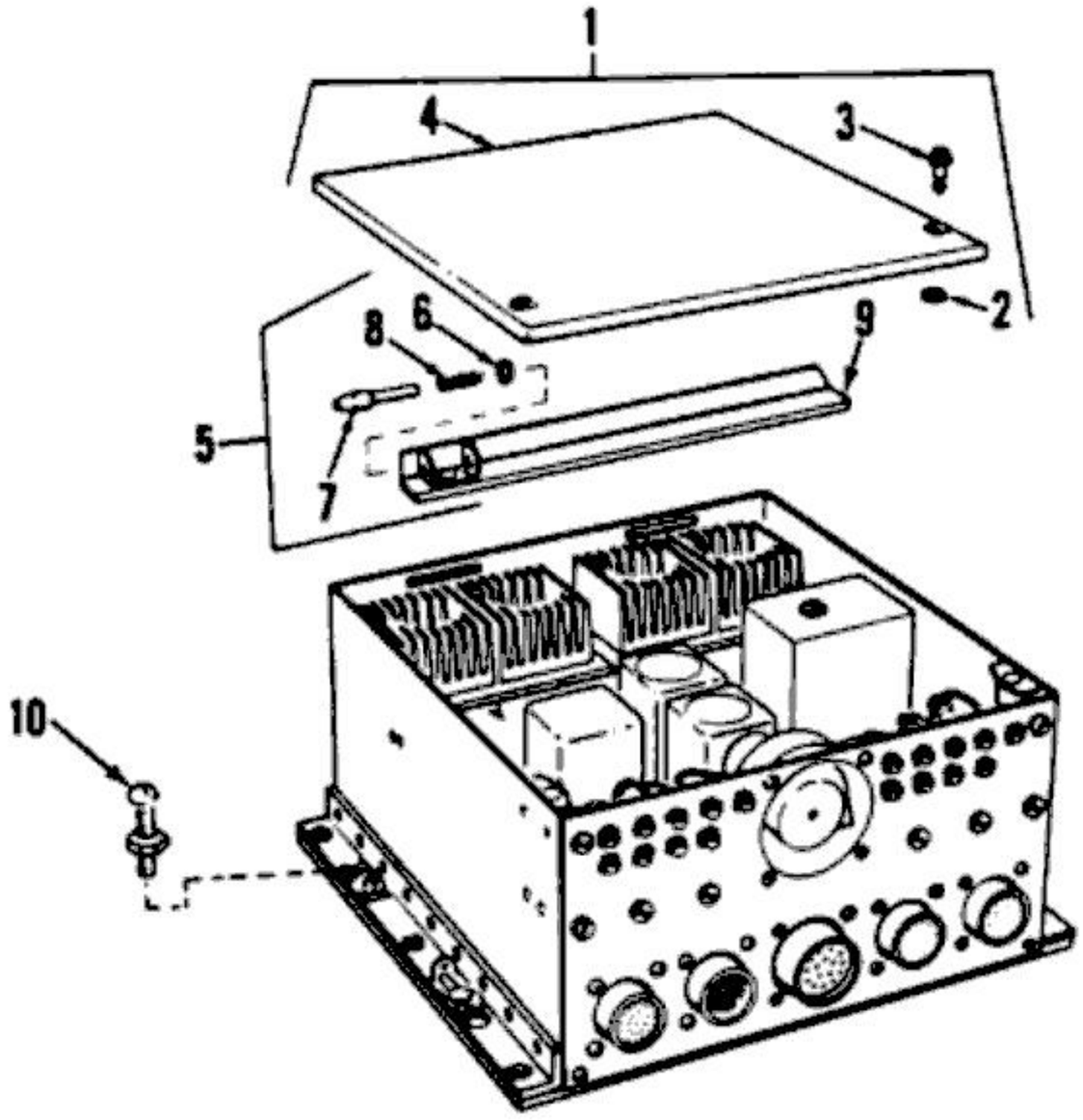


* COMPONENT OF ITEM 2

* 13, 14 15 & 16 DELETED

Figure 3-18. 40 Millimeter grenade rotary ammunition can – partially exploded view.

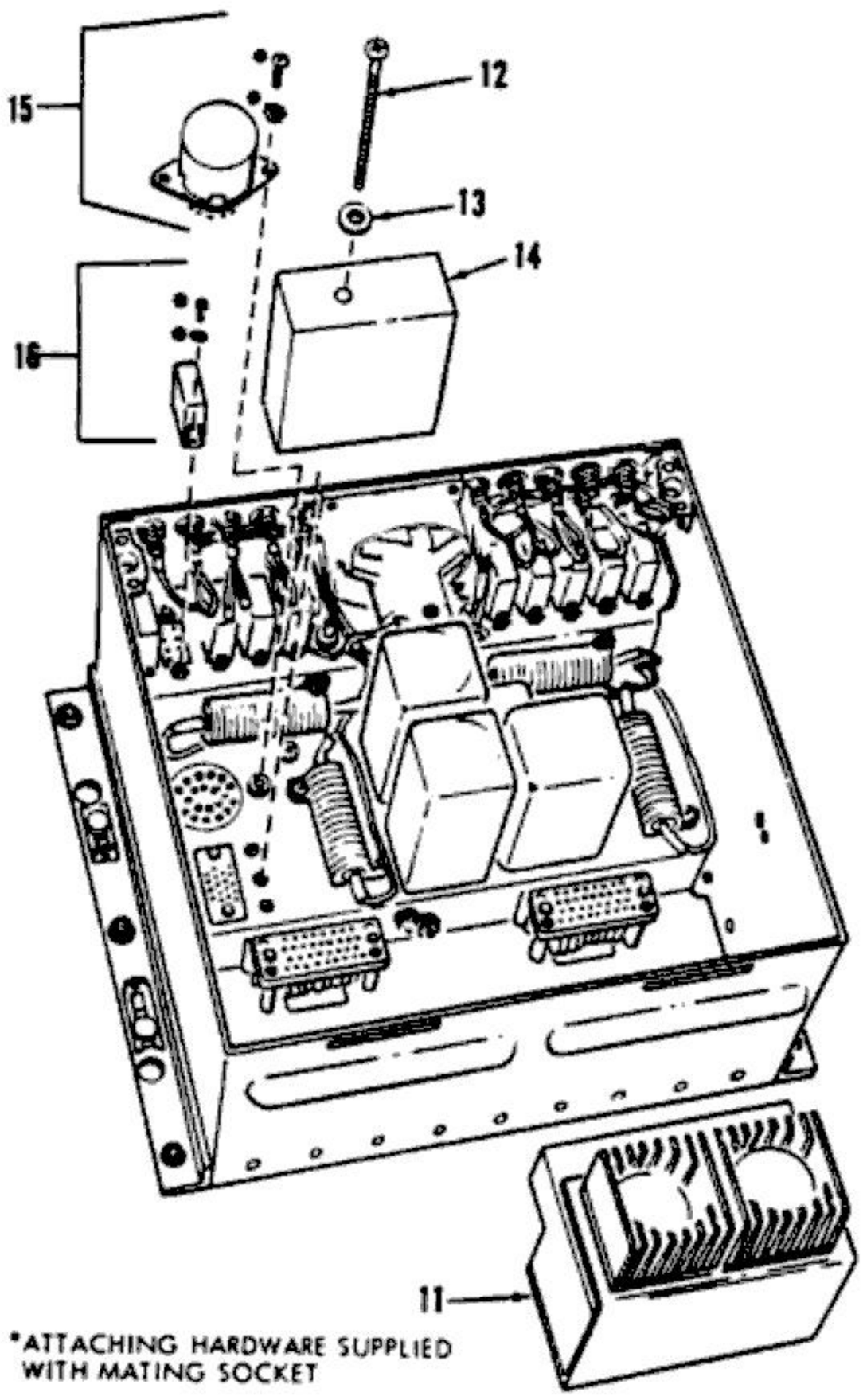
k. Servo-Amplifier Junction Box Assembly. Refer to figure 3-19 and disassemble the servoamplifier junction box assembly.



Legend for fig 3-19

1. Cover assembly — 11014308
2. Top cover assembly washer — 11014538
3. Stud fastener — 11014311
4. Top cover — 11014307
5. Module retainer assembly — 11014303
6. Retaining ring — MS16624 — 1018
7. Detent plunger — 11014273
8. Compression helical spring — MS25685 — 177
9. Angle retainer — 11014302
10. Stud and spacer assembly — 5910966

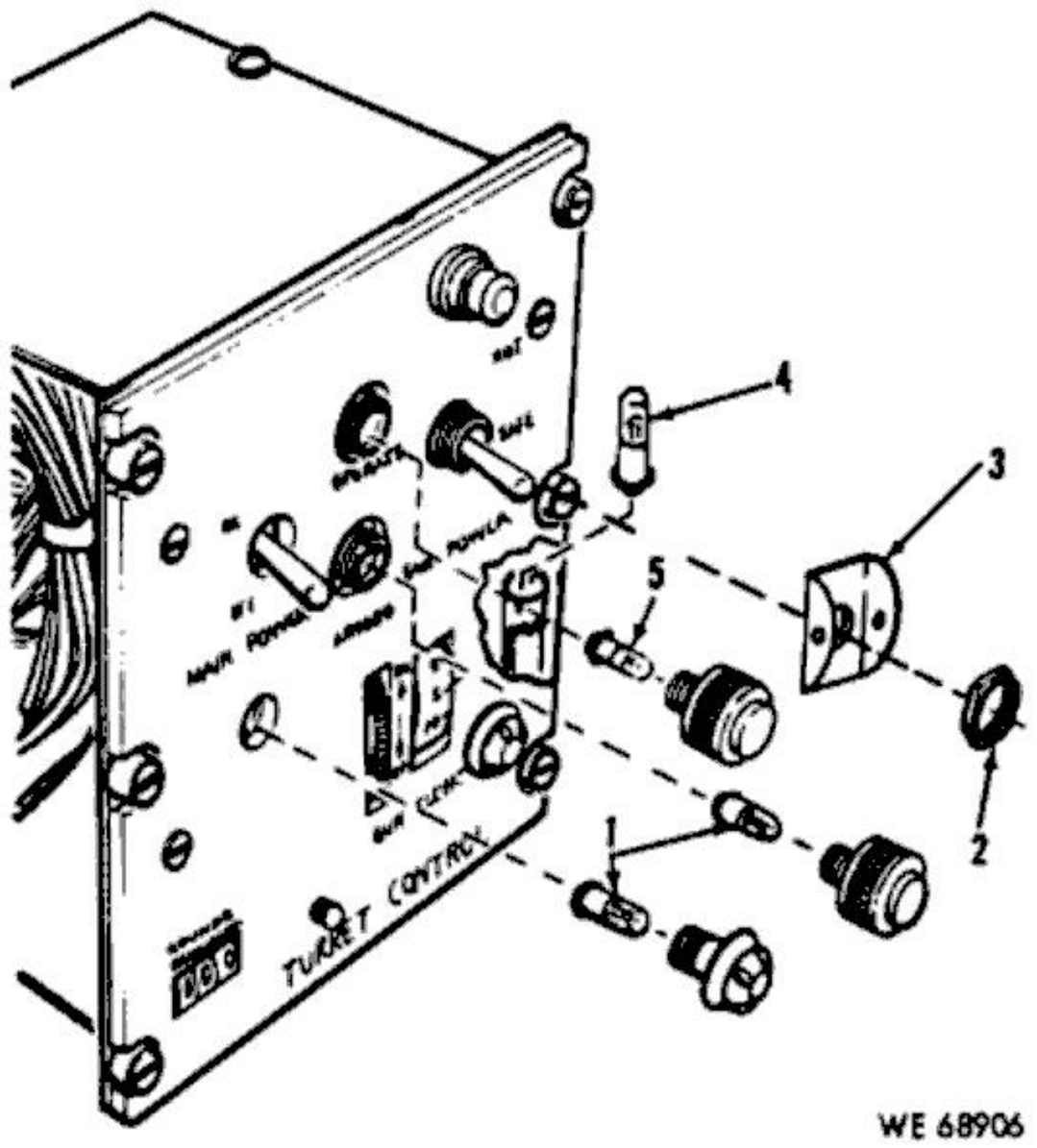
Figure 3-19. Servo-amplifier junction box assembly – partially exploded view (sheet 1 of 2).



11. Amplifier module assembly—11014270
12. Machine screw—11014276
13. Flat washer—AN960-8L
14. Control module assembly—11697873
15. Miniature relay—11014912
16. Subminiature relay—11014911

Figure 3-19. Servo-amplifier junction box assembly—partially exploded view (sheet 2 of 2).

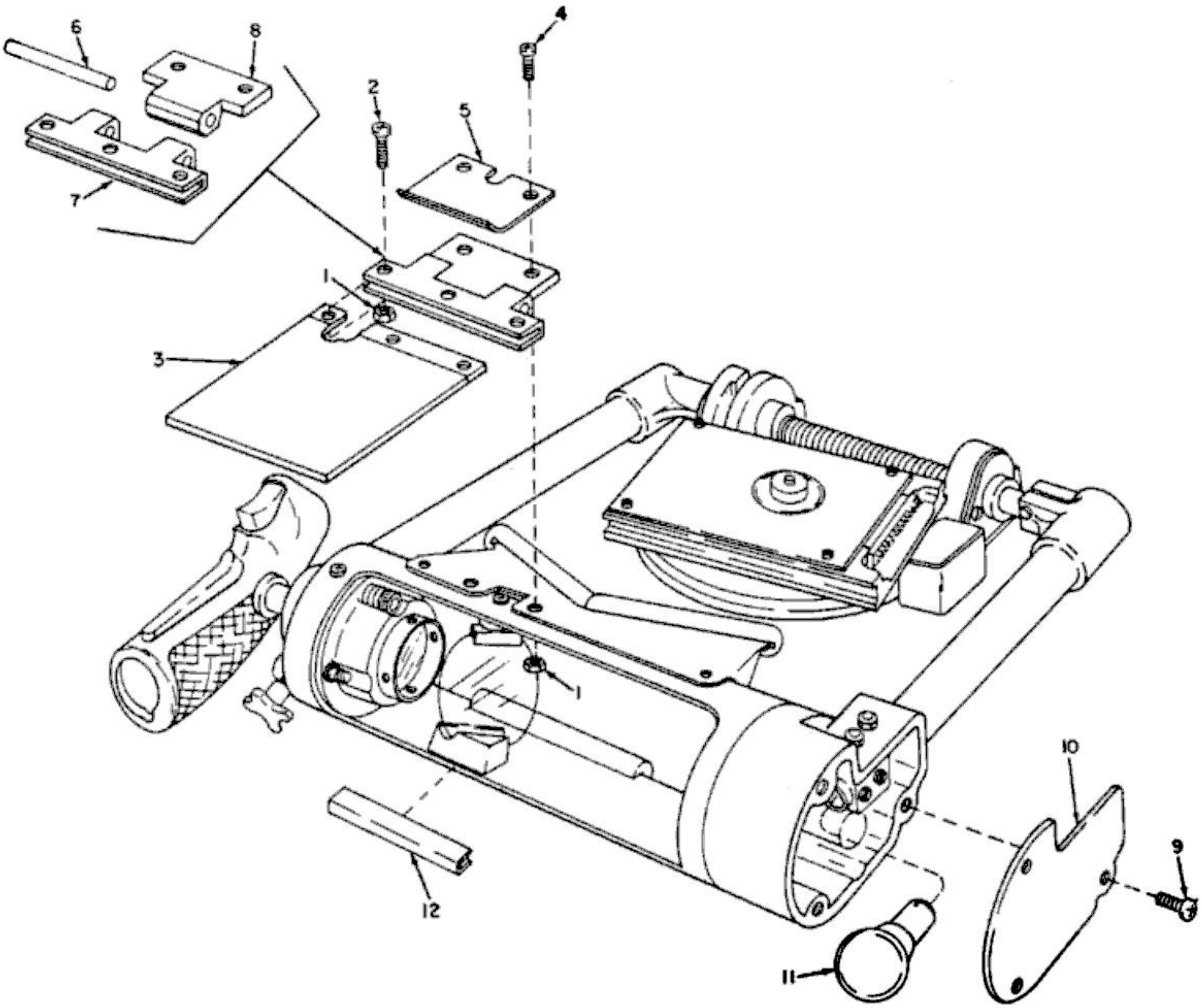
l. Turret Control Panel Assembly. Refer to figure 3-20 and disassemble the turret control panel assembly.



1. Incandescent lamp—MS25237-327
2. Hexagon plain nut—MS25082-21
3. Toggle switch guard—MS24417-1
4. Incandescent lamp—MS25231R313

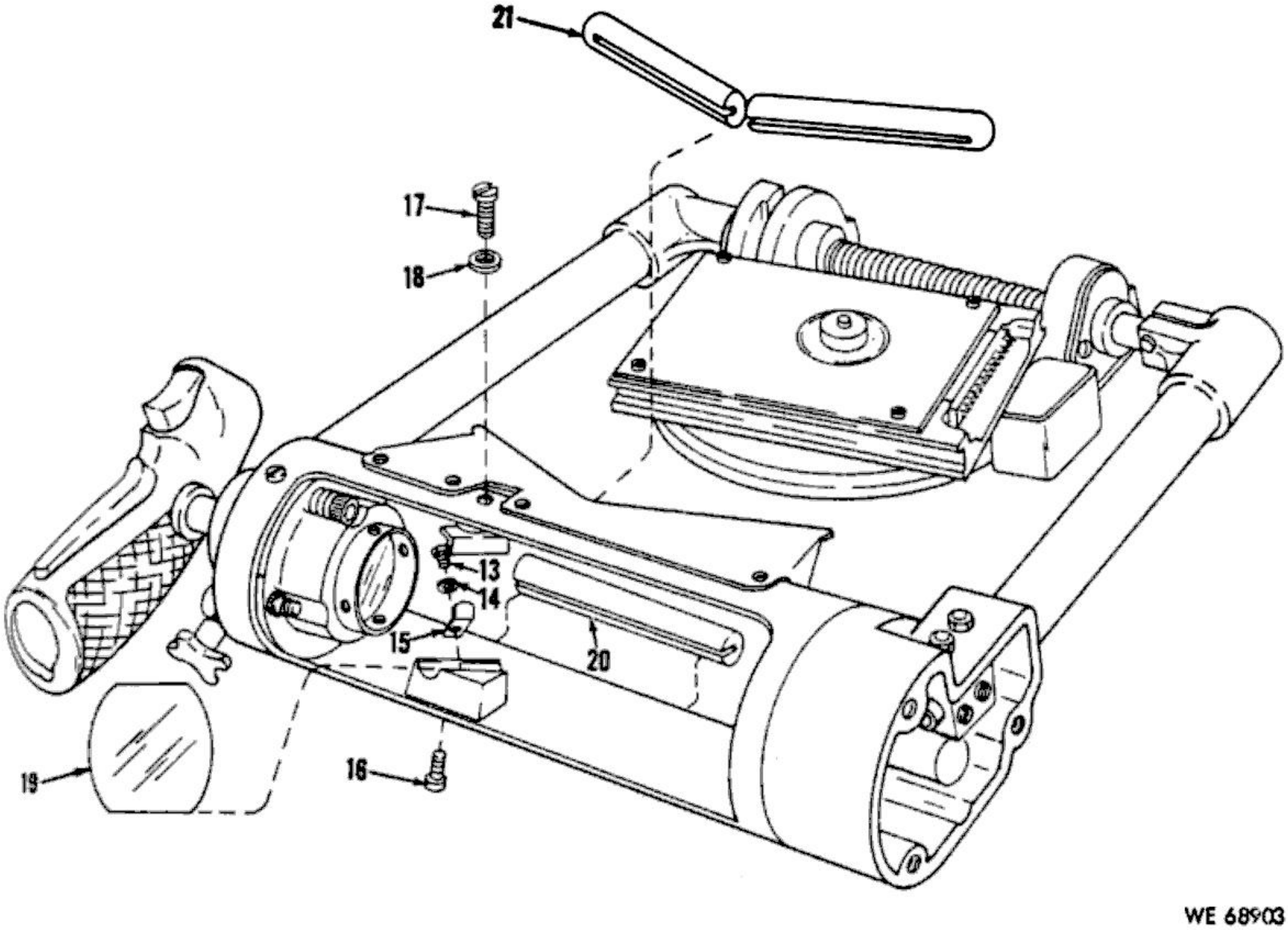
Figure 3-20. Turret control panel assembly—par..., exploded view.

m. Hand Control Sight Assembly. Refer to figure 3-21 and disassemble the hand control sight assembly.



1. Extended washer nut—MS21042-04
2. Machine screw—MS51957-16
3. Light plastic filter—11014242
4. Machine screw—MS51957-18
5. Flat spring—11014243
6. Spring pin—MS171572
7. Light filter hinge—11014240
8. Light filter bracket—11014241
9. Machine screw—MS51957-42
10. Lamp cover—11014237
11. Support assembly lamp—11014681
12. Rubber strip—11014865

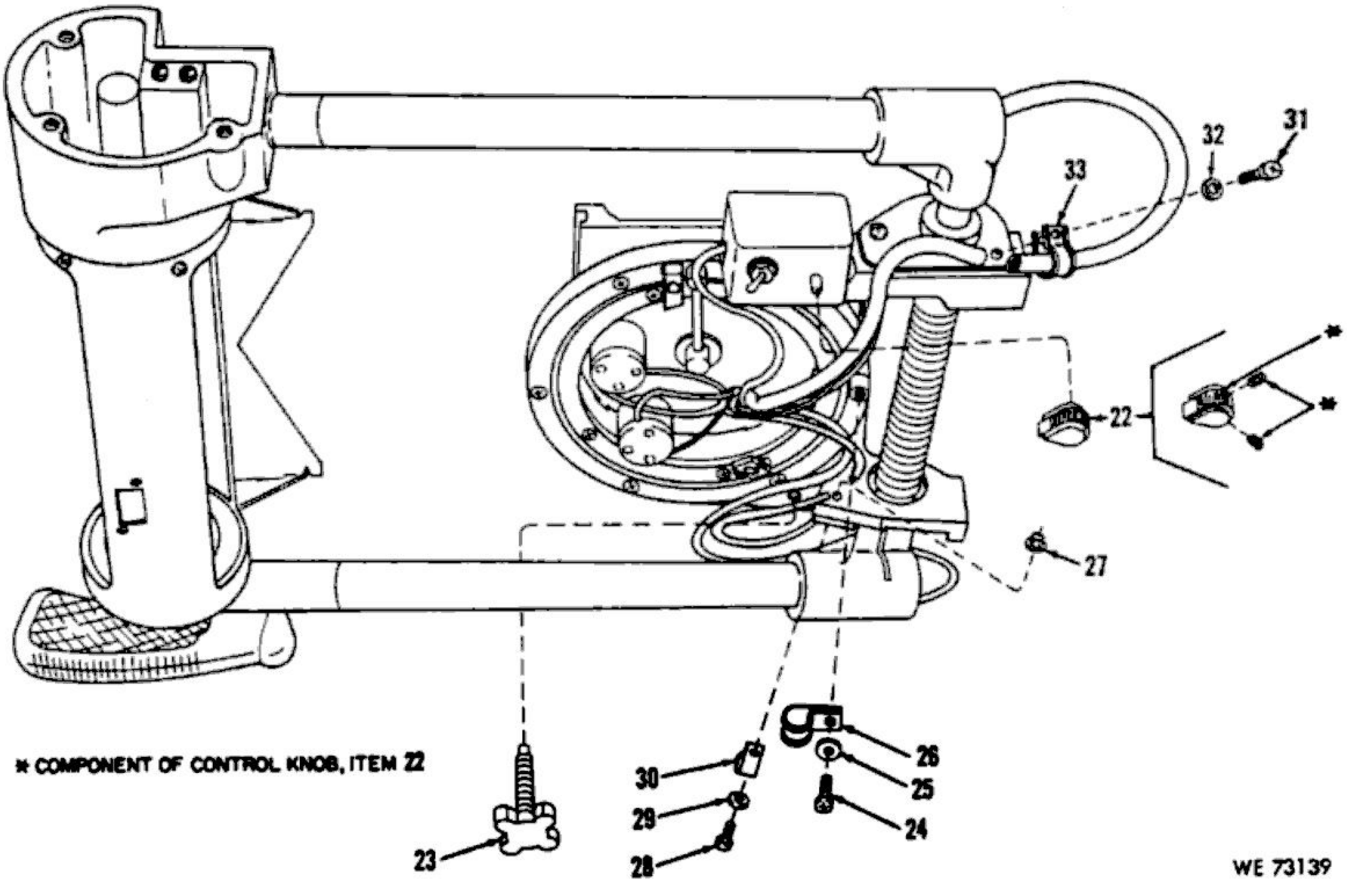
Figure 3-21. Hand control sight assembly—partially exploded view (sheet 1 of 3).



WE 68903

13. Machine screw—MS51958-13
14. Flat washer—MS9321-04
15. Plate assembly 11014693
16. Machine screw—MS51957-26
17. Machine screw—MS51957-27
18. Flat washer—MS9321-06
19. Glass reflector—11014694
20. Rubber strip—11014668
21. Rubber guard—11014695

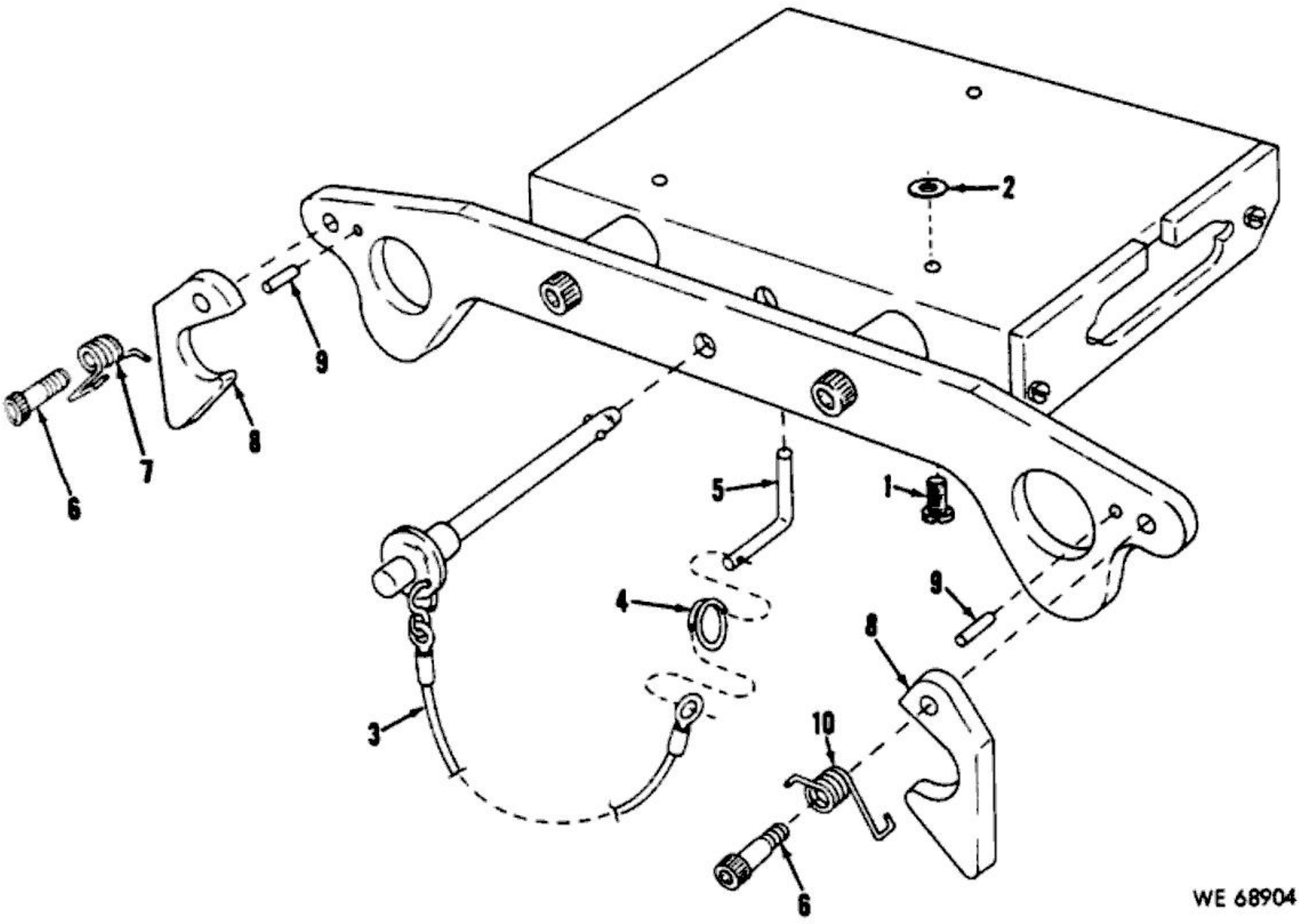
Figure 3-21. Hand control sight assembly—partially exploded view (sheet 2 of 3).



22. Control knob—MS91528-OK1B
23. Swivel shoe knob—11014786
24. Machine screw—MS51957-49
25. Flat washer—MS15795-805
26. Loop clamp—MS21919G8
27. Extended washer nut—MS21042-04
28. Machine screw—MS35206-222
29. Flat washer—MS9321-04
30. Loop clamp—MS25281R3
31. Machine screw—MS51957-45
32. Flat washer—MS9321-08
33. Loop clamp—MS35281R6

Figure 3-21. Hand control sight assembly—partially exploded view (sheet 3 of 3).

n. Sight Mount Bracket Assembly. Refer to figure 3-22 and disassemble the sight mount bracket assembly.



Legend for fig 3-22

1. Machine screw — MS35207-264
2. Laminated shim — 11014894
3. Quick release pin — 11014732
4. Wire ring — 11014784
5. Angular pin — 11014771
6. Shouldered screw — MS51975-3
7. Torsion helical spring — 11014755
8. Stow hook — 11014752
9. Spring pin — MS9047-106
10. Torsion helical spring — 11014754

Figure 3-22. Sight mount bracket assembly – partially exploded view.

3-17. Cleaning, Inspection, and Repair.

a. Cleaning. For general cleaning procedures and precautions to be taken when cleaning parts/components of the subsystem, refer to paragraphs 3-11*c* and 3-11*d*.

(1) Clean any burned powder residue from saddle assembly with solvent cleaning compound (CR) and wipe dry. Clean remaining parts of turret assembly, except for electrical cable assembly and other electrical or rubber covered parts, with dry cleaning solvent (SD) or mineral spirits paint thinner (TPM). Lubricate in accordance with LO 9-1010-207-12.

(2) Clean parts of the chute assemblies, booster assembly, and rotary ammunition can with dry cleaning solvent (SD) or mineral spirits paint thinner (TPM), dry thoroughly, and lubricate in accordance with LO 9-1010-207-12. Do not allow solvent or paint thinner to come in contact with electrical or rubber components of the booster assembly.

(3) Clean external surfaces of the servo-amplifier junction box assembly with dry cleaning solvent (SD). Carefully brush out dirt, dust, and foreign matter from the interior of the junction box assembly.

(4) Clean external surfaces of the turret control panel assembly with a cloth moistened with dry cleaning solvent (SD), taking care to avoid contact with rubber and electrical parts. Carefully brush out any dust and foreign matter from the interior of the control panel assembly.

(5) Clean external surfaces of the hand control sight assembly with a cloth moistened with dry cleaning solvent (SD), taking care to avoid contact with rubber, electrical, and optical parts.

(6) Under no circumstances shall polishing liquids, pastes, or abrasives be used for polishing optical parts of the sight assembly. Use only lens tissue paper, which is especially intended for cleaning optical glass. Use of cleaning cloths is not permitted. To remove dust, brush the part lightly with a clean artist's camel hair brush. Rap the brush against a hard object to dislodge dust particles clinging to the brush; repeat brushing until all dust is removed.

(7) Exercise particular care to keep optical parts of the sight assembly free of oil and grease. Do not touch the reflector, mirror, or reticle with the bare fingers. To remove oil or grease, apply alcohol with lens tissue paper and wipe gently with clean lens tissue paper. If alcohol is not available and the temperature is above freezing, breathe heavily on the glass and wipe with clean lens tissue paper. Repeat until clean.

(8) Never apply alcohol directly to optical surfaces in the sight assembly, as any excess may dissolve the sealing compound; always use lens tissue paper moistened with alcohol. When temperatures are below freezing and alcohol is not available, use only lens tissue paper (do not breathe on glass) and wipe optical surface gently to void scratching or removing the coating of the optic.

(9) When the temperature of optical parts of the sight assembly is lower than that of the surrounding air, moisture may collect on the optical surfaces. This moisture, when not excessive, can be removed by placing the sight assembly in a warm place. Do not apply heat directly from strongly concentrated sources, as it may cause unequal expansion of the parts and result in inaccurate functioning and damage to optical parts.

(10) Clean external surfaces of the sight mount bracket assembly with a cloth moistened with dry cleaning solvent (SD), taking care to avoid contact with rubber and electrical parts.

b. Inspection.

(1) Inspect the cable assembly (21, fig. 3-9) for loose or damaged connectors, cut or worn insulation, and kinks or sharp bends.

(2) Check the two quick release pin assemblies (30, fig. 3-9) for bends, cracks, and positive action of the quick release buttons.

(3) Inspect the ejection hopper (33, fig. 3-9) for excessive wear and cracked welds.

(4) Check the pin assembly (5, fig. 3-11) of the strut and pin assembly for damage and for positive action of the quick release button on each pin.

(5) Inspect the forward enclosure assembly (1, fig. 3-9) for cracks, dents, or other damage.

(6) Inspect the closure brush (5, fig. 3-10) for missing or loose tufts.

(7) Check the pin assembly of saddle assembly (1, fig. 3-11) for distortion and missing or loose pins.

(8) Inspect the feed tray latch (20, fig 3-13) for worn or damaged surfaces.

(9) Inspect the helical torsion springs of ejector chute assembly (2 and 4, fig 3-12) for distortion or broken ends.

(10) Examine the boot strip (6, fig 3-9) for deterioration, splits, and for secure attachment to the ammunition chute external boot assembly.

(11) Inspect the ammunition chute external boot (7, fig 3-9) for cuts, rips, or tears.

(12) Inspect links and end fitting of chute assemblies (fig 3-15) for bent or broken tabs and bent segments or other damage that could affect the free flow of ammunition.

(13) Check chute bracket assembly (fig 3-17) for dents and loose rivets.

(14) Inspect feed chute assembly (fig 3-16) for distortion, broken welds, or other damage which could affect the free flow of ammunition.

(15) Inspect the rotary ammunition can (fig 3-18) for cracked or broken welds and for dents or bulges which could restrict the free flow of ammunition from the ammunition can to the chute assemblies.

(16) Check the ammunition can top (33, fig 3-18) for cracked or broken welds or other damage.

(17) Inspect the ammunition booster assembly (fig 2-18) for cracked, broken, or worn sprocket teeth. Operate the loading switch assembly and feed control switch (fig 2-18) and observe that each switch actuates with a positive action. Raise the lever assembly (fig 2-18) and check for binding. Inspect for loose or missing electrical connectors and wiring in the booster assembly. Turn the sprockets by hand and inspect for binding or excessive play in the gear train.

(18) Inspect the top cover (4, fig 3-19) and outer surfaces of servo-amplifier junction box assembly for dents which indicate possible physical damage to internal electronic components. Check stud fasteners (3, fig 3-19) in top cover assembly; determine that they are held securely by the washers. Also note that the springs in the stud fasteners exert a positive pressure when compressed.

(19) Inspect the toggle switch guard (3, fig 3-20) for cracks, broken portions, and positive positioning when closed.

(20) Inspect the outer surfaces of the control panel assembly (fig 3-20) for dents or other damage indicating possible damage to internal electronic components. Manipulate the rounds counter and both toggle switches to determine that they operate properly.

(21) Inspect the glass reflector of sight assembly (19, fig 3-21) for cracks and scratches; check the nylon shoe on the end of the azimuth lock knob (23, fig 3-21) for solid positioning on the knob shaft. Inspect other components for damage.

(22) Operate the sight assembly controls (fig 2-17) and check for proper operation; check for positive action of the switches.

(23) Inspect the machined ways in the sight mount bracket assembly (fig 3-22) for burs, gouges, or cracks.

(24) Inspect the torsion helical springs (7 and 10, fig 3-22) for broken ends and weak action.

(25) Check the sight retaining pin assembly (3, fig 3-22) for distortion and for positive action of the quick release button.

c. Repair. Replace parts of the grenade launcher mount, when necessary, as authorized in TM 9-1010-207-20P.

Section VII. 40 MILLIMETER BORESIGHTING KIT

3-18. Disassembly.

Refer to figure 3-23 for a view of components of the 40 millimeter boresighting kit.

3-19. Cleaning, Inspection, and Repair.

a. Cleaning. Wipe metal surfaces of telescope boresight and expansion adapter (1 and 5, fig 3-23) with a clean, soft cloth to remove dirt and grime. Clean optical surfaces of telescope boresight (1, fig 3-23) by wiping gently with lens tissue paper moistened with alcohol. Additional instructions and precautions to be observed that are applicable to optical surfaces of the hand control sight assembly are also applicable to optical surfaces of the telescope boresight (refer to para 3-17*a*).

b. Inspection. Inspect telescope boresight (1, fig 3-23) for damage and for scratched or broken optics; check expansion adapter (5, fig 3-23) for distortion or other defects; examine case (6, fig 3-23) for dents, broken hinges, or deteriorated condition.

c. Repair. Replace components of the 40 millimeter boresighting kit as authorized in TM 9-1010-207-20P.

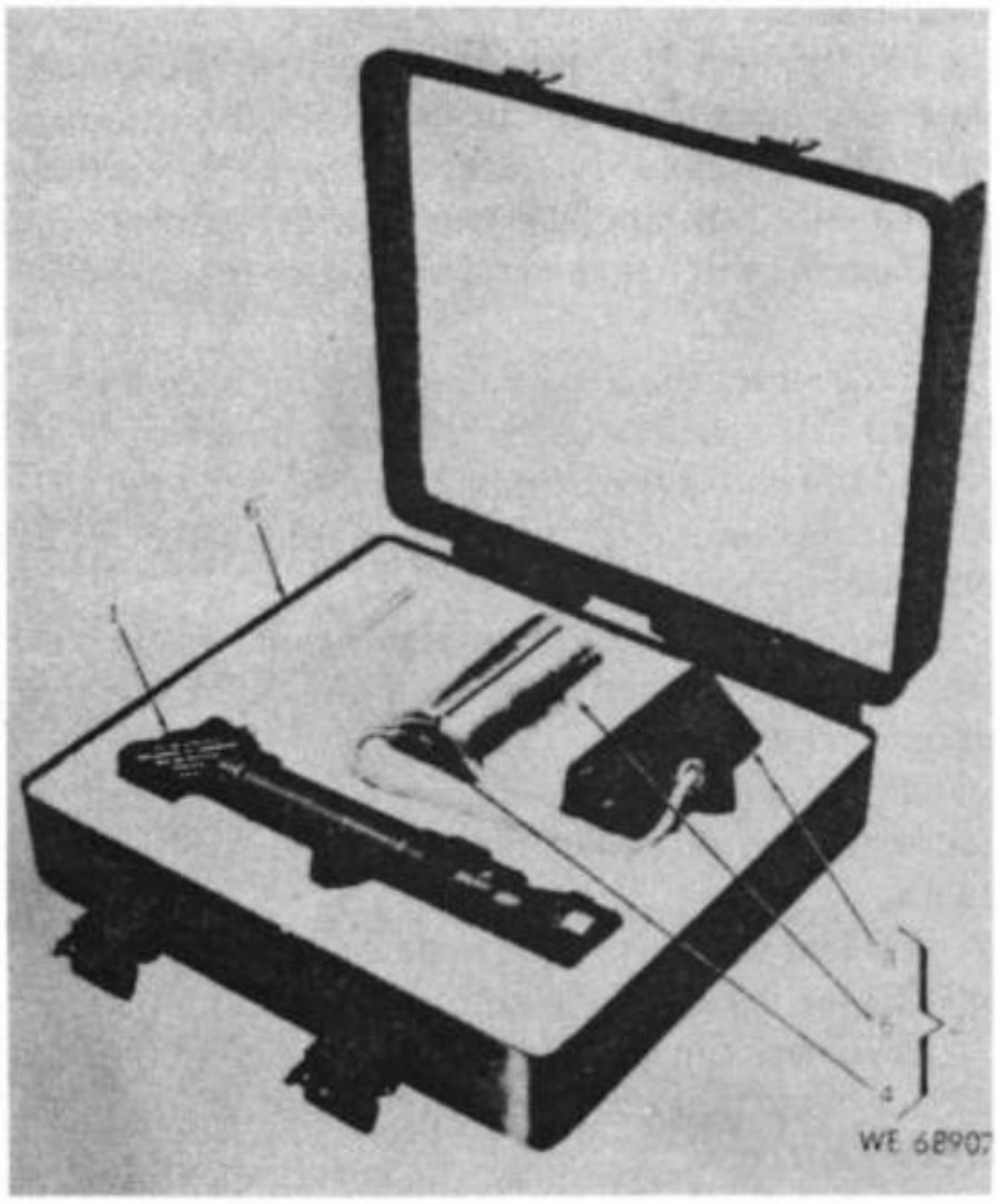


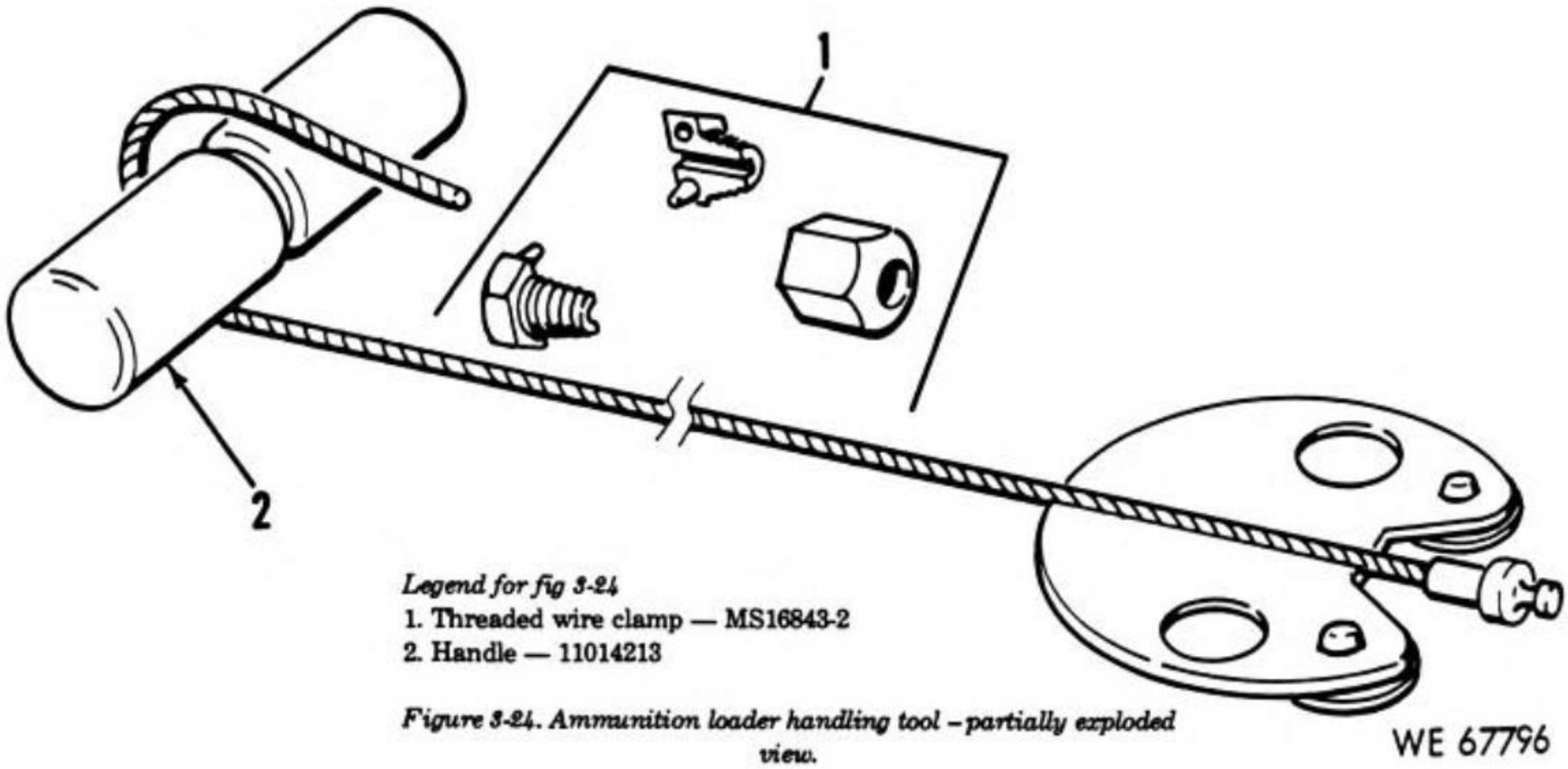
Figure 3-23. 40 Millimeter boresighting kit.

Legend for fig 3-23
1. Telescope boresight — 7799773
2. Adapter and streamer assembly — 11686402
3. Boresight streamer assembly — 5910791
4. Eye bolt — 9985730
5. Expansion adapter — 11010401
6. Boresight kit case — 11010404

Section VIII. AMMUNITION LOADER HANDLING TOOL

3-20. Disassembly

Refer to figure 3-24 and disassemble the ammunition loader handling tool.



Legend for fig 3-24
1. Threaded wire clamp — MS16843-2
2. Handle — 11014213

Figure 3-24. Ammunition loader handling tool – partially exploded view.

3-21. Cleaning, Inspection, and Repair.

a. Cleaning. Clean the metal parts of the handling tool with dry cleaning solvent (SD) or mineral spirits paint thinner (TPM). Allow to dry.

b. Inspection. Inspect wire clamp (1, fig 3-24) for wear or other damage; check handle (2, fig 3-24) for splits or cracks; inspect cable for kinks, breaks, or fraying; inspect adapter and plate for distortion or other defects.

c. Repair. Replace parts of the handling tool as authorized in TM 9-1010-207-20P.

CHAPTER 4

AMMUNITION

Section I. DESCRIPTION AND DATA

4-1. Description.

a. General. The cartridges described in this section are designed for use with armament subsystem M5 and to be fired from the 40 millimeter grenade launcher M75.

b. Cartridges.

(1) The high explosive 40 millimeter cartridge M384 (fig. 4-1) is an anti-personnel, fixed-ammunition-type cartridge. The projectile ogive and cartridge case are aluminum; the projectile is steel. The cartridge is fuzed with the point detonating fuze M533. The overall length of the complete cartridge is 4.415 inches.

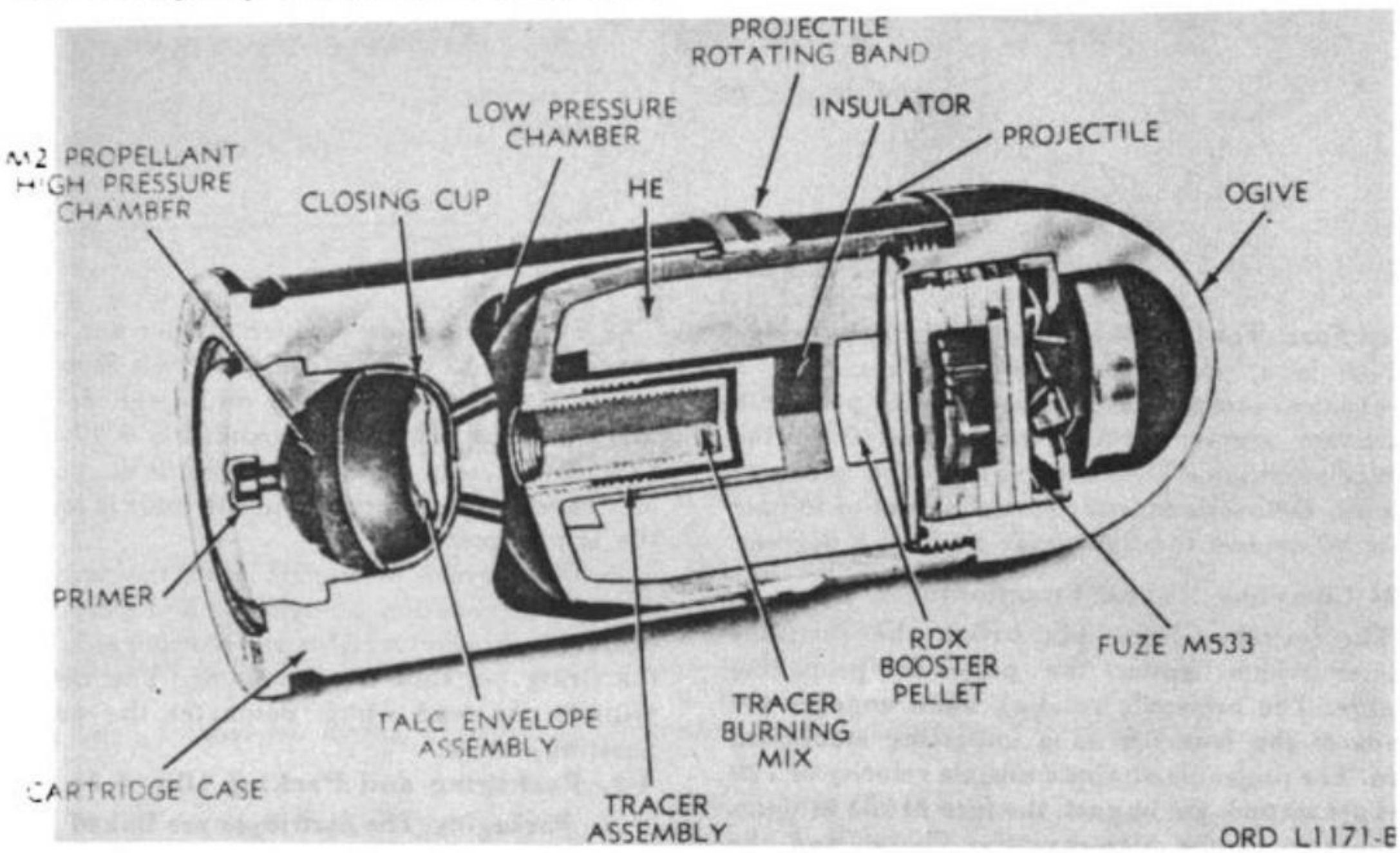


Figure 4-1. High explosive 40 millimeter M384—cutaway view.

WARNING

Practice 40 millimeter cartridge M385 is not a dummy round and should be used to function fire the grenade launcher in an authorized firing area only. Plug and link assembly (fig. C-1) is authorized for shop function test of the grenade launcher.

(2) The practice 40 millimeter cartridge M385 (fig. 4-2) consists of a solid aluminum projectile and the cartridge case. The aluminum projectile is to be used for troop practice and to insure correct functioning of the grenade launcher M75.

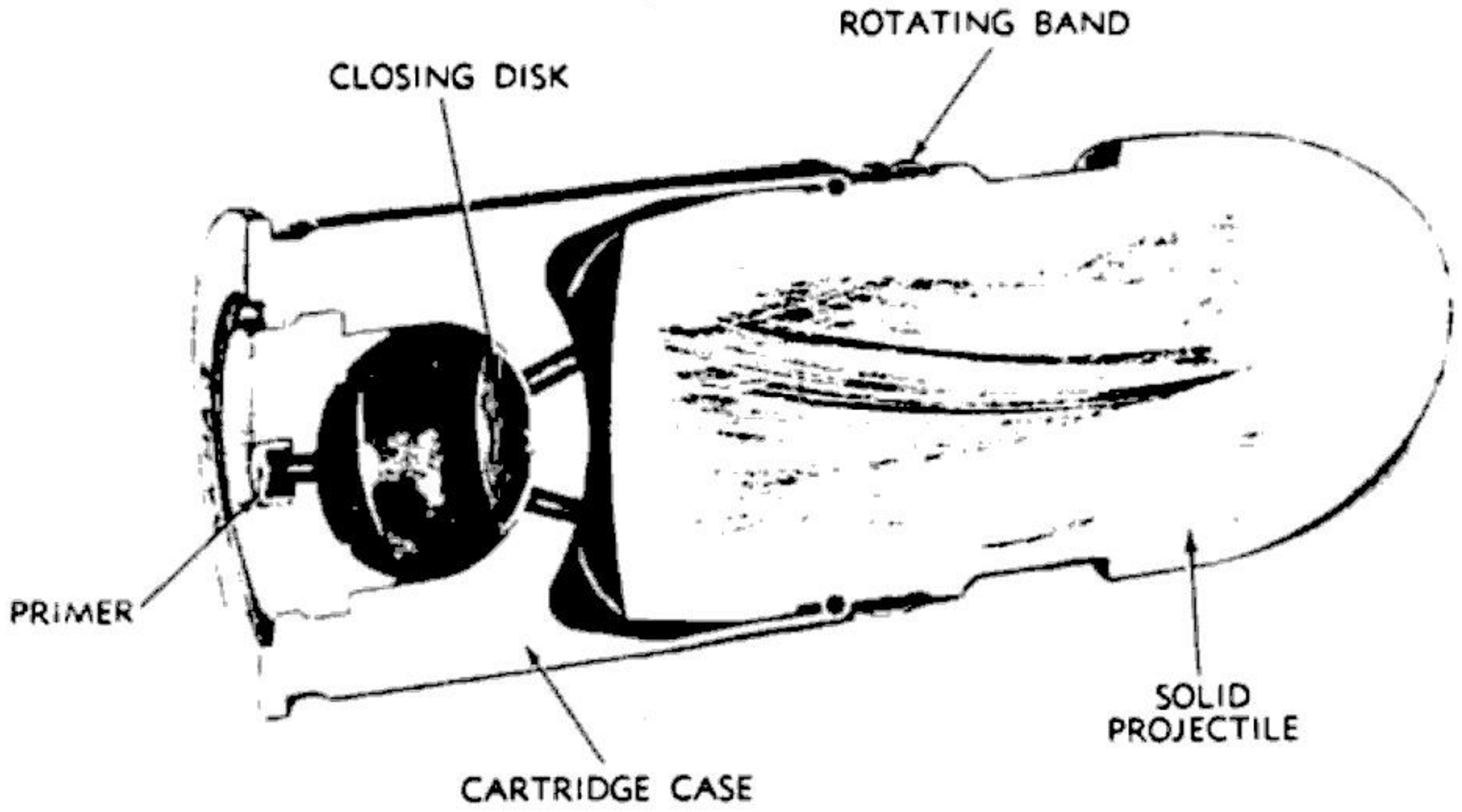


Figure 4-2. Practice 40 millimeter cartridge M385—cutaway view.

c. Fuze. The fuze M533 used with the cartridge M384 is a point-detonating-type fuze with a mechanical escapement arming delay to provide a minimum arming distance of 60 feet from the launcher muzzle. The fuze functions on graze or impact. Detonations will occur at angles of impact from 90 degrees to a low graze angle of 5 degrees.

4-2. Complete Round Functioning.

The launcher firing pin strikes the cartridge primer which ignites the projectile propelling charge. The projectile rotating band engages the lands of the launcher tube imparting stabilizing spin. The projectile attains a muzzle velocity of 790 feet per second. On impact, the fuze M533 initiates detonation of the high-explosive charge and the projectile fragmatizes. The cartridge M385 is similar to the cartridge M384 except the projectile is a solid aluminum slug, has no fuze, and does not detonate.

4-3. Fuze Functioning.

a. The rotor is kept out of line by the fuze setback pin and centrifugal lock. Setback force, induced by firing the cartridge, pulls the fuze setback pin out of the fuze rotor. However, at this point the rotor is prevented from moving by the centrifugal lock which engages the star wheel of the timing mechanism. When the projectile has attained sufficient spin, a centrifugal lock released the mechanical timing mechanism and arming begins. The rotor springs start rotation of the rotor which is then sustained by centrifugal force. An escapement assembly, which engages the rotor gear, delays the arming of the fuze for approximately 0.07 to 0.16 seconds. At this time, the projectile is 18 to 36 meters from the launcher and the rotor is locked in the armed position.

b. Upon graze or impact with the target, the sudden deceleration of velocity and / or rotation causes the bracket weights to pivot inward, forcing the firing pin into the detonator. The detonator initiates the lead which detonates the projectile bursting charge.

4-4. Packaging and Packing (fig. 4-3).

a. Packaging. The cartridges are linked into 50 round units with the link assembly M16 or M16A1. One linked unit is subsequently placed into a cardboard box snaked into five layers with chipboard filler between each layer. Additional fillers are added on the top and sides of the box to insure a tight pack, and the box flaps are secured with adhesive. A tear strip is provided so that the box may be opened easily. A marking label (para 4-5) is attached, the box corners are blunted, and the box is placed in a moisture-proof bag to seal out moisture.

b. Packing. The package described in paragraph *a* is then placed in a wood wirebound box. The box is secured by fastening the wire loops. The box is marked as described in paragraph 4-5.

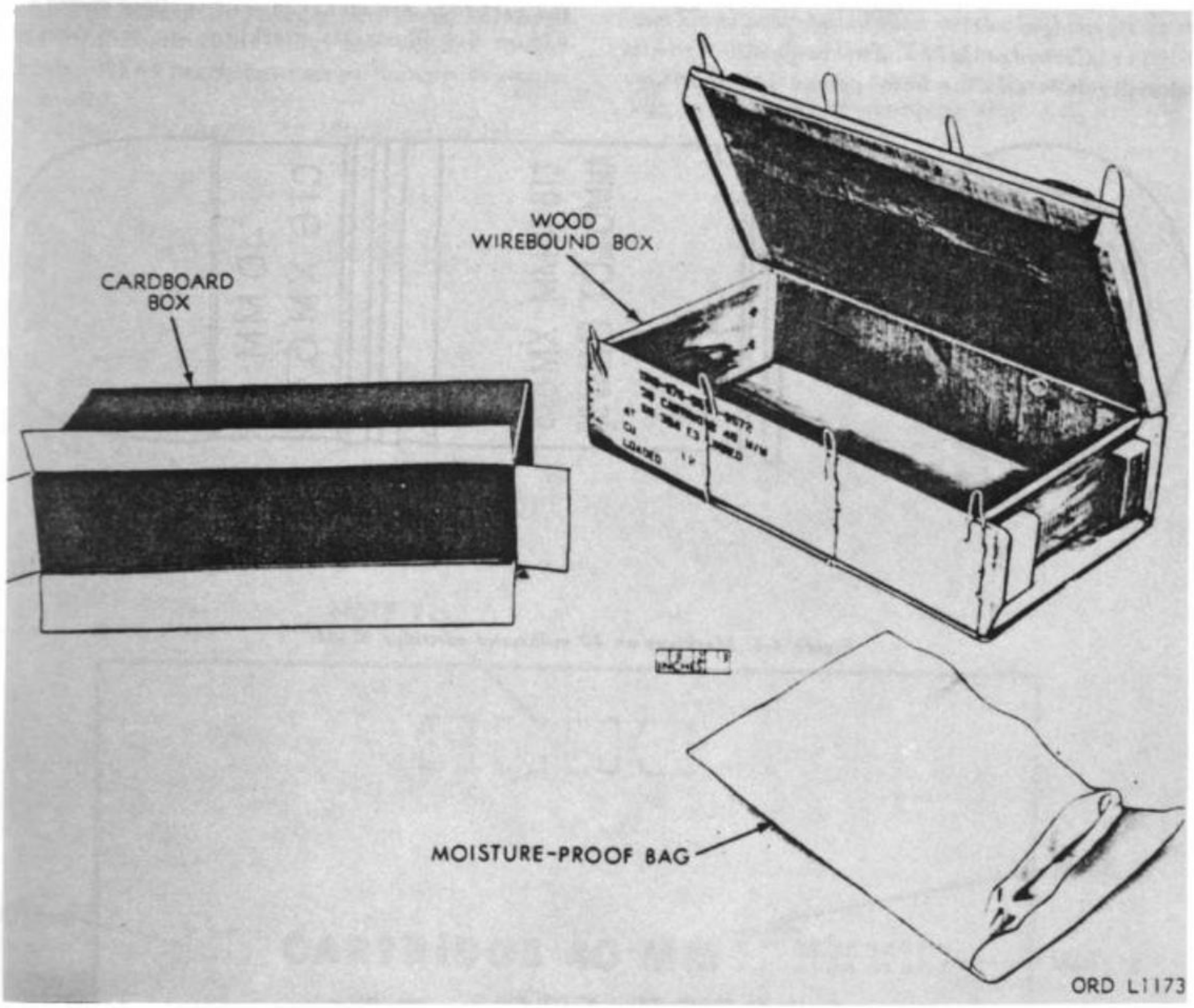


Figure 4-3. Packaging and packing materials for 40 millimeter cartridges M384 or M385.

4-5. Painting and Marking.

a. Cartridges.

(1) *Cartridge M384.* The projectile ogive is colored yellow and the body green. The cartridge case is anodized green. Identification markings on the cartridge are stenciled with yellow stencil ink. Figure 4-4 illustrates markings on the cartridge.

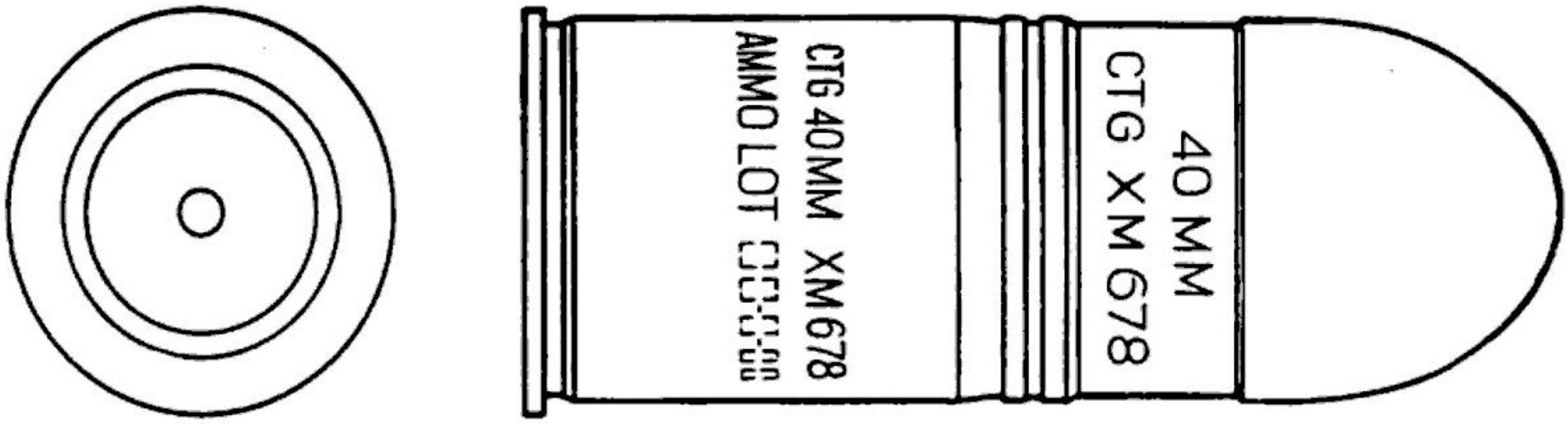


Figure 4-4. Markings on 40 millimeter cartridge M384.

(2) *Cartridge M385.* The aluminum projectile is anodized blue with an anodized green cartridge case. Identification markings are similar to the cartridge M384 markings except that white stencil ink is used.

b. Interior Packages. An identification label is attached to the cardboard box. Alternatively, markings may be applied to the box by printing, stamping, or stenciling. The same markings applied to the box are also applied to the moisture-proof bag by printing or stamping (fig. 4-5).

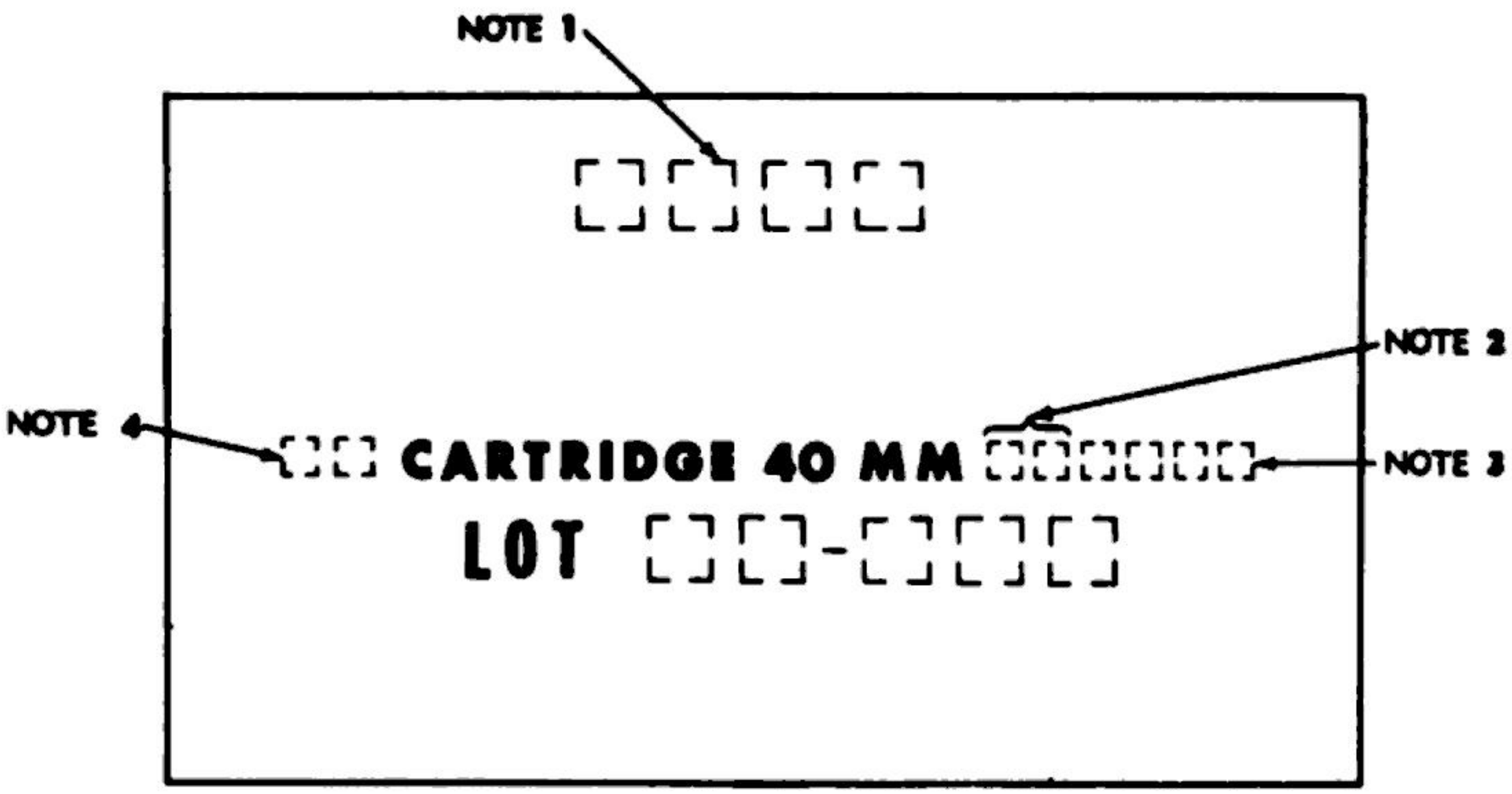


Figure 4-5. Markings on moisture—proof bag.

c. Exterior Packing. The wood wirebound box is not painted but is marked with black stencil ink as illustrated in figure 4-6.

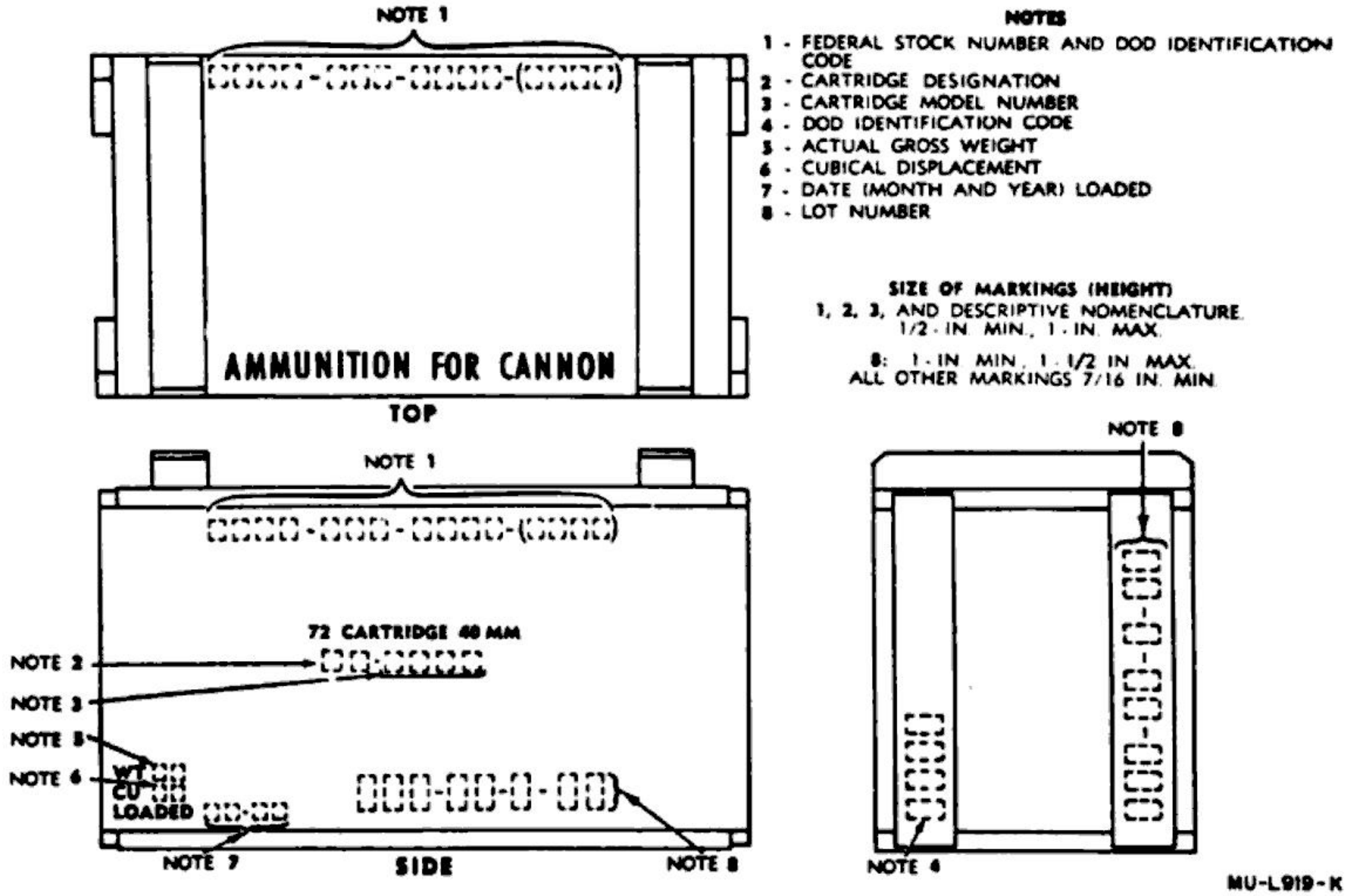


Figure 4-6. Markings on wood wirebound box.

d. Tabulated Data.

Packaging:

Length	23-¾ in.
Width	13 in.
Height	6-13 / 16 in.
Cube	1.2 cu ft
Weight	53 lb
No. per unit	50 rounds

	M384	*M385*
Quantity-distance class	7	1
Storage compatibility group	E	B. E. N
DOT shipping class	A	C

DOT designation	Ammunition for cannon with explosive projectile	Practice ammunition
Nomenclature	CARTRIDGE: 40-MM: HE, M384 w / M16 LINK	CARTRIDGE: 40-MM: Practice, M385 w / M16 LINK
Federal Stock No.	1310-976-0908	1310-994-7441
DODIC	B572	B576
Nomenclature	CARTRIDGE: 40-MM: HE, M384 w / M16A1 LINK	CARTRIDGE: 40-MM: Practice, M385 w / M16A1 LINK
Federal Stock No.	1310-143-8863	1310-180-9359
DODIC	B470	B480

Section II. HANDLING AND MAINTENANCE

4-6. General.

a. Initial Receipt of Materiel. When cartridges M384 and/or M385 are first received by the using organization, it is the responsibility of the officer in charge to determine whether the items have been properly prepared for service by the supplying organization and to be sure they are in condition to perform their assigned mission. This does not relieve the using organization of the basic responsibility of insuring that all materiel issued is ready for use and capable of functioning properly.

b. Inspection Criteria.

(1) The ammunition issued to the using organization will be inspected for the following conditions:

(a) Proper ammunition and model designation.

(b) Serviceability of outer packing; check for the following:

1. Presence of rust, mold, or mildew.
2. Rotted or broken wooden boxes.
3. Any other nonstandard condition which affects the package so that it cannot afford protection to its contents.

(c) Serviceability of inner package.

1. The outer packing (wood box) will not be opened for inspection of its contents unless it is damaged to such an extent that the inner package may be affected. If it is suspected that the inner package has been damaged, the wood box will be opened and the barrier material inspected to insure that the contents are in serviceable condition. If the barrier bag is torn, punctured, rotted or improperly sealed, follow step 2.

2. Open moisture-proof bag and inspect for presence of mildew, rot, mold, moisture or any other condition which may affect the ammunition within the cardboard box. If the complete package is in good condition, all defects will be repaired and the ammunition repacked. If the package is defective and damage to the contents is suspected, open the cardboard box and inspect the ammunition as instructed in paragraph *(d)*:

(d) Inspect for serviceability of ammunition as follows:

1. Check markings for legibility and completeness.
2. Inspect ogive and cartridge case to make sure that they are firmly seated on the projectile.
3. Check to make sure cartridge case has no cracks.
4. Inspect cartridges for rust or corrosion.
5. Check for presence of mold or mildew.
6. Inspect cartridge case for dents.
7. Check for presence of moisture.
8. Check to make sure that there are no inverted links or inverted rounds within links.

NOTE

Upon issue to the using organization, the ammunition will be inspected as instructed in paragraph *(d)*.

c. Ammunition damaged to the extent that improper functioning may occur will be segregated and destroyed. Destruction will be done by authorized personnel only. All other ammunition will be repacked and returned to storage when not needed for immediate use.

4-7. Safety Precautions.

Normal safety precautions prescribed for the handling of high-explosive ammunition apply to cartridge M384.

WARNING

Unexploded cartridges M384 fired from grenade launchers will NOT BE HANDLED OR MOVED UNDER ANY CIRCUMSTANCES. They will be destroyed by explosive ordnance personnel or other qualified personnel only. Troops moving into an area that has been subjected to the firing of cartridges M384 must be warned that all unexploded projectiles are extremely dangerous and must not be touched or disturbed in any manner.

4-8. Unpacking Procedure.

a. Release the wire binding and open the wooden box.

b. Remove the inner pack and open the moisture-proof bag by cutting along the seal line.

NOTE

These bags are constructed so that they may be resealed two times after the original sealing. If it is anticipated that the bag may be reused, it should be opened with care.

c. Remove the fiber box from the bag, open the cardboard box by pulling on the tear strip, and remove the linked cartridges.

4-9. Maintenance.

a. Cartridges M384 and M385 will be afforded the same degree and type of maintenance prescribed for similar rounds.

b. Damaged packing boxes will be repaired or replaced. Appropriate markings will be placed on the repaired or new boxes.

c. The cartridges should be protected from sand,

mud, moisture, frost, snow, ice, grease, and other foreign matter. Cartridges that become wet or dirty should be wiped off immediately. Light corrosion on the cartidges should be wiped off with a clean, dry cloth. The cartridges will not be polished to improve their appearance.

CHAPTER 5

ADMINISTRATIVE STORAGE

Refer to TM 740-90-1 for instructions on administrative storage of equipment.

APPENDIX A
REFERENCES

A-1. Publication Indexes.

Consult each new issue of the following for the latest changes or revisions to the publications listed in this appendix or for new publications on the subsystem covered in this manual.

Index of Administrative Publications ..... DA Pam 310-1
Index of Blank Forms ..... DA Pam 310-2
Index of Doctrinal, Training and Organizational Publications ..... DA Pam 310-3
Index of Supply Catalogs and Supply Manuals ..... DA Pam 310-6
Index of Technical Manuals, Technical Bulletins, Supply Manuals
(Types 7, 8 and 9), Supply Bulletins and Lubrication Orders ..... DA Pam 310-4
US Army Equipment Index of Modification Work Orders ..... DA Pam 310-7

A-2. Forms.

In addition to the forms required by the Army Maintenance Management System (TM 38-750), the following forms pertain to this manual:

Materiel Inspection Tag ..... DA Form 9-1
Recommended Changes to Publications ..... DA Form 2028
Report of Packaging and Handling Deficiencies ..... DD Form 6
Request for Issue or Turn-in ..... DA Form 2765
Requirements for Army Aviation and Army Avionic
Configuration Publications ..... DA Form 12-31
Requisition for Publications and Blank Forms ..... DA Form 17

A-3. Other publications.

The following publications contain information pertinent to this materiel and associated equipment.

a. Ammunition.

Ammunition and Explosives ..... SC 1305/30-IL
Ammunition, General ..... TM 9-1300-200
Ammunition Service in the Theatre of Operations ..... FM 9-6
Care, Handling, Preservation, and Destruction of Ammunition ..... TM 9-1300-206
Regulations for Firing Ammunition for Training, Target
Practice and Combat ..... AR 385-63

b. Camouflage.

Camouflage ..... FM 5-20

c. Decontamination.

Chemical, Biological and Radiological (CBR) Decontamination ..... TM 3-220
Chemical, Biological, Radiological and Nuclear Defense ..... FM 21-40

d. Destruction to Prevent Enemy Use.

Explosives and Demolitions ..... FM 5-25
Procedures for Destruction to Prevent Enemy Use ..... TM 750-244-7

e. General.

Accident Reporting and Records ..... AR 385-40
Army Maintenance Management System (TAMMS) ..... TM 38-750
Basic Cold Weather Manual ..... FM 31-70

f. Maintenance and Repair.

Organizational Maintenance Repair Parts and Special Tools List,
Armament Subsystem, Helicopter, 40 Millimeter Grenade Launcher: M5 ..... TM 9-1010-207-20P
Lubrication Order, Armament Subsystem, Helicopter, 40 Millimeter
Grenade Launcher: M5 ..... LO 9-1010-207-12
Maintenance Assistance and Instruction Team (MAIT) Program ..... AR 750-51
Equipment Serviceability Criteria, Armament Subsystem, Helicopter,
40 Milimeter Grenade Launcher: M75 ..... TM 9-1010-207-ESC

g. Operations.

Operation and Maintenance of Ordnance Materiel in Cold Weather (0° to -65) ..... TM 9-207

h. Shipment and Storage.

Administrative Storage Equipment ..... TM 740-90-1
Preservation, Packaging and Packing of Military Supplies and Equipment ..... TM 38-230
Procedures for Rapid Deployment, Redeployment and Retrograde for Aircraft Armament ..... TM 750-209
Standards for Overseas Shipment or Domestic Issue of Small Arms,
Aircraft Armament, Towed Howitzers, Mortars, Recoilless Rifles,
Rocket Launchers and Associated Fire Control Equipment ..... TB 9-1000-247-34
Storage and Materiels Handling ..... TM 743-200-1
Storage Serviceability Standard for USAWECOM Materiel:
Aircraft Armament Subsystems ..... SB 740-95-101

APPENDIX B

BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

B-1. Scope.

This appendix lists basic issue items and items troop installed or authorized required by the crew / operator for operation and required for the performance of organizational maintenance of armament subsystem M5.

B-2. General.

This Basis Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List—Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with, the end item.

b. Items Troop Installed or Authorized List—Section III. A list, in alphabetical sequence of items which, at the discretion of the unit commander, may accompany the end item but are not subject to be turned in with the end item.

B-3. Explanation of Columns.

The following provides an explanation of columns found in the tabular listings.

a. Source, Maintenance, and Recoverability Codes (SMR).

(1) *Source Code.* Source codes are assigned to support items to indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code Format as follows:

Code	*Explanation*
PA	Item procured and stocked for anticipated or known usage.
PB	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply system.
PC	Item procured and stocked and which otherwise would be coded PA except that it is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replenishment.
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which because of probable discontinuance or shutdown of production facilities would prove uneconomical to reproduce at a later time.
KD	An item of depot overhaul / repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance.
KD	Item included in both a depot overhaul / repair kit and a maintenance kit.
MO	Item to be manufactured or fabricated at organizational level.
MF	Item to be manufactured or fabricated at the direct support maintenance level.
MH	Item to be manufactured or fabricated at the general support maintenance level.
MD	Item to be manufactured or fabricated at the depot maintenance level.
AO	Item to assembled at organizational level.
AF	Item to be assembled at direct support maintenance level.
AH	Item to be assembled at general support maintenance level.
AD	Item to be assembled at depot maintenance level.
XA	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XC	Installation drawings, diagram instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD	A low mortality support item that is not stocked. When required, items will be requested and provided through normal supply channels. (Item does not meet the criteria for a stocked or insurance type item or the criteria for any other source code.)

NOTE

Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded XA and aircraft support items as restricted by AR 700-42.

(2) *Maintenance Code.* Maintenance codes

are assigned to indicate the levels of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code Format as follows:

USE (THIRD POSITION): The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

Code	*Application / Explanation*
C	Crew or operator maintenance performed within organizational maintenance.
O	Support item is removed, replaced, used at the organizational level.
F	Support item is removed, replaced, used at the direct support level.
H	Support item is removed, replaced, used at the general support level.
D	Support items that are removed, replaced, used at Depot, Mobil Depot, Specialized Repair Activity only.

NOTE

Codes "I" and "F" will be considered the same by direct support units.

REPAIR (FOURTH POSITION): The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions.) This position will contain one of the following maintenance codes:

Code	*Application / Explanation*
O	The lowest maintenance level capable of complete repair of the support item is the organizational level.
F	The lowest maintenance level capable of complete repair of the support item is the direct support level.
H	The lowest maintenance level capable of complete repair of the support item is the general support level.
D	The lowest level capable of complete repair of the support item is the depot level, performed by aircraft armament Depot, Mobil Depot or Specialized Repair Activity.
L	Repair restricted to designated Specialized Repair Activity.
Z	Non-repairable. No repair is authorized.
B	No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc. at the user level. No parts or special tools are procured for the maintenance of this item.

(3) *Recoverability Code.* Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the Uniform SMR Code Format as follows:

Code	*Explanation*
Z	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
O	Reparable item. When uneconomically repairable, condemn and dispose at organizational level.
F	Reparable item. When uneconomically repairable, condemn and dispose at the direct support level.
H	Reparable item. When uneconomically repairable, condemn and dispose at the general support level.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.
L	Reparable item. Repair, condemnation and disposal not authorized below depot / Specialized Repair Activity level.
A	Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical meterial or hazardous material). Refer to appropriate manuals / directives for specific instructions.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc.

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U / M). Indicates the standard or basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished with Equipment (Basic Issue Items Only). Indicates the quantity of the basic issue item furnished with the equipment.

h. Quantity Authorized (Items Troop Installed or Authorized Only). Indicates the quantity of the item authorized to be used with the equipment.

B-4. Special Information.

a. Action change codes indicated in the left hand margin of Sections II and III denote the following:

N—Indicates an added item.
C—Indicates a change in data.
R—Indicates a change in FSN only.

b. The following publications pertain to armament subsystem M5 and its components:

LO9-1010-207-12—	Lubrication Order.
TM 9-1010-207-20P—	Organizational Maintenance Repair Parts and Special Tools List.
TM 9-1010-207-34—	Direct Support and General Support Maintenance Manual.
TM 9-1010-217-34P—	Direct Support and General Support Maintenance Repair Parts and Special Tools List.
TM 9-4933-205-14—	Operator, Organizational, Direct, and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists)

Section II. BASIC ISSUE ITEMS LIST

Not applicable.

Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

	(1) Federal stock number	(2) Part number	(3) FSCM	(4) Description	(5) U / M	(6) Qty Auth
C	1010-759-2804	11010305	19205	BRUSH ASSEMBLY, 40 MILLIMETER	EA	1
C	4933-737-9973	11014211	19205	HANDLING TOOL, AMMUNITION LOADER	EA	1
C	4925-867-1123	7791850	19205	LINKER-DELINKER, 40 MILLIMETER, HAND	EA	1
C	4933-487-4102	8448076	19205	PLUG AND LINK ASSEMBLY, 40 MILLIMETER	EA	1
C	1010-832-9153	11687054	19205	STAFF, CLEANING	EA	1

APPENDIX C

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

C-1. General.

The maintenance allocation chart identifies, for each component and assembly of armament subsystem M5, the maintenance operations that must be performed, and assigns each of those operations to the lowest level of maintenance authorized to perform the complete task, or any part of the task, in terms of the availability of time, tools, test and support equipment, skills, and employment of the subsystem.

C-2. Maintenance Functions.

Maintenance functions are limited to and defined as follows:

Operation	*Definition*
Inspect	To determine the serviceability of an item by comparing its physical, mechanical and / or electrical characteristics with established standards through examination.
Test	To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.
Service	Operations required periodically to keep an item in proper operating condition, i.e., to clean, preserve, drain, paint, or replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.
Adjust	To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
Aline	To adjust specified variable elements of an item to bring about optimum or desired performance.
Calibrate	To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
Install	The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
Replace	The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.
Repair	Restore to a serviceable condition by replacing unserviceable parts with serviceable parts or by other actions required, including welding, grinding, riveting, straightening, and / or facing, using available tools, equipment, and skills.
Overhaul	That maintenance effort (service / action) necessary to restore an item to a completely serviceable / operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
Rebuild	Consists of those services / actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours / miles, etc.) considered in classifying Army equipment / components.
Symbols	The assignment of each item's maintenance operation to the lowest level of maintenance is recorded in the appropriate column by the maintenance level symbol: "C" for operator / crew; "O" for organizational; "F" for direct support; "H" for general support; and "D" for depot maintenance.

C-3. Explanation of Format.

a. Column 1 - Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2 - Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3 - Maintenance Function. Reference paragraph C-2.

d. Use of Symbols. Reference paragraph C-2.

e. Work Measurement Time. The active repair time required to perform the maintenance function shall be included directly below the symbol identifying the category of maintenance. The manpower figures shall be developed under conditions (real or simulated) corresponding to those that are considered normal for TOE units operating in the field. The skill levels used to obtain the measurement times shall approximate those found in typical TOE units. Active repair time is the average aggregate time required to restore an item (subassembly, assembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, fault isolation / diagnostic time, and quality assurance / quality control time in addition to the time required to perform specific maintenance functions identified for the tasks authorized in the maintenance allocation chart. This time may be the established time standard developed through maintenance engineering analysis, or can be derived from the calculation of a statistically weighted time estimate, incorporating the optimistic (a), most likely (m), and pessimistic (b) estimate for the work to be accomplished, using the formula:

$$t = \frac{a + 4m + b}{6}$$

This time will be expressed in man-hours and carried to one decimal place (tenths of hours).

f. Column 4 - Tools and Equipment. This column shall be used to specify, by code, those tools and test equipment required to perform the designated function (reference table C-1).

g. Column 5 - Remarks. Self-explanatory.

Section II. MAINTENANCE ALLOCATION CHART FOR HELICOPTER ARMAMENT SUBSYSTEM M35

(1) Group no.	(2) Assembly Group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
1	Armament Subsystem, Helicopter, 40 Millimeter Grenade Launcher: M5	O 0.5	O 0.4	O 0.5	F 1.0	O 0.5		O 8.0		O 1.6	D 140.0		1-E, 2-C, 4-B.	
2	Launcher, Grenade, 40 Millimeter: M75	O 0.5		O 1.5				O 0.2	O 0.3	O 0.6	D 12.0			
3	Hammer Assembly	O 0.1		O 0.1				O 0.1	O 0.1	O 0.1				
4	Feed Arm Assembly	O 0.1		O 0.1				O 0.1	O 0.1	O 0.1				
5	Spindle Assembly, Drive	O 0.1		O 0.1				O 0.1	O 0.1	F 0.1				
6	Cam and Cover Assembly	O 0.1		O 0.2				O 0.1	O 0.2	O 0.5				
7	Receiver Assembly	O 0.2		O 0.2						O 0.5				
8	Mount, Grenade Launcher													
9	Turret Assembly	O 0.2	O 0.3	O 0.8	F 0.1			O 0.3		O 0.4	D 32.0		5-B, D.	
10	Boot Assembly	O 0.1		O 0.1				O 0.1	O 0.3	O 0.1				
11	Enclosure Assembly, Forward	O 0.2						O 0.1	O 0.2	O 0.5				
12	Drive Assembly	O 0.1		O 0.3				O 0.3	O 0.6	F 0.7				
13	Motor Assembly	O 0.1	O 0.1					O 0.1	F 0.2	F 0.5	D 1.5			
14	Strut and Pin Assembly	O 0.1						O 0.1	O 0.2	O 0.2				
15	Chut Assembly, Ejector	O 0.1		O 0.1				O 0.1	O 0.1	O 0.1				
16	Saddle Assembly	O 0.1		O 0.4				F 1.3	F 3.0	F 0.3	D 6.0			
17	Powered Trunnion Assembly, Azimuth	O 0.1		F 0.2	F 0.2	F 0.2		F 0.3	F 0.7	F 1.0	D 10.0		3-E.	
18	Powered Trunnion Assembly, Elevation	O 0.1		F 0.2	F 0.2	F 0.2		F 0.3	F 0.7	F 1.0	D 10.0		3-E.	
19	Support Assembly	O 0.1		F 0.1				F 8.0	F 12.0	F 2.0	D 10.0			
20	Gimbal Assembly	O 0.1		F 0.3				F 1.0	F 2.0	F 1.5	D 3.0			
21	Chute Assembly(s), Ammunition	O 0.1		O 0.2				O 0.2	O 0.3	O 0.2				
22	Booster Assembly	O 0.1	O 0.5	F 0.1	O 0.2			O 0.2	O 0.3	F 0.5	D 4.0	4-B.		
23	Chute Bracket Assembly, Ammunition	O 0.1		O 0.1				O 0.1	O 0.1	O 0.1				
24	Ammunition Can, Rotary	O 0.3	O 0.1	O 0.1				O 0.2	O 0.2	O 0.4	F 2.0			
25	Servo-Amplifier Junction Box Assembly	O 0.1	O 0.5		F 0.4			O 0.2	O 0.3	F 0.5	D 3.0		4-B.	
26	Panel Assembly, Turret Control	O 0.1	F 0.5	O 0.5				O 0.2	O 0.3	O 0.5	D 3.0		4-B.	
27	Control Detent Assembly	O 0.1	F 0.1			F 0.5		F 0.3	F 0.3	F 0.8				

Section II. MAINTENANCE ALLOCATION CHART FOR HELICOPTER ARMAMENT SUBSYSTEM M35 — Continued

(1) Group no.	(2) Assembly Group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A	B	C	D	E	F	G	H	I	J	K		
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
28	Wiring Harness, Branched	O 0.2						F 2.5	F 0.2	F 0.2				
29	Transducer, Airspeed	O 0.1	O 0.2					O 0.2	O 0.3				4-B.	
30	Sight Assembly, Hand Control	O 0.1	F 0.5	O 0.1		F 0.5		O 0.2	O 0.4	O 1.5	D 20.0		1-E; 4-B; 6-B, E; 7-E; 8-J; 9-J; 10-B; 11-B; 12-J; 13-A, E; 14-G; 15-J; 17-J; 18-J; 19-J; 20-J; 21-J; 22-J	
31	Bracket Assembly, Sight Mount	O 0.1		O 0.1				O 0.2	O 0.3	O 0.3			8-J; 16-J, K; 20-J; 21-J; 22-J	

Table C-1. Tool and Test Equipment Requirements

Tool or test equipment reference code	Maintenance category	Nomeclature	FSN or part no.	Tool number
1-E	O	Kit, Boresighting, 40 Millimeter	4933-496-8671	
2-C	O	Handling Tool, Ammunition Loader	4933-757-9973	
3-E	F	Alinement Tool, Synchro	4933-757-9972	
4-B	F	Console, Test Set	4933-867-1124	
5-B, D	F	Mounting Stand, Turret	4933-867-1126	
6-B, E	F	Mounting Stand, Sight	4933-867-1127	
7-E	O	Adapater, Boresight	4933-867-6603	
8-J	H	Test Fixture, Azimuth	4931-769-1596	
9-J	F	Collimator, Telescope	4931-554-9108	
10-B	F	Level, Precision	5210-241-3609	
11-B	F	Gauge, Surface	5210-221-1842	
12-J	F	Holder, Telescope Collimator	4931-612-1110	
13-A, E	F	Plumb Bob	5210-224-8794	
14-G	H	Bar, Parallel	5220-242-7514	
15-J	F	Plate, Surface	4931-879-6405	
16-J, K	H	Fixture Adapter, Final Test	11738271	
17-J	H	Fixture Adapter, Final Test (Optical Alignment)	11738273	
18-J	H	Power Supply DS, 28V	6130-408-9969	
19-J	H	Wrench, Spanner	11738271-10	
20-J	H	Wrench, Torque (0-150 in. lbs)	5120-230-6380	
21-J	H	Adapter, Torque	11738271-11	
22-J	H	Mirror	5181003	

INDEX

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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To be distributed in accordance with DA Form 12-31 (qty rqr block 140) organizational maintenance requirements for 40-MM Grenade Launcher M5.

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