

**TECHNICAL MANUAL**

**OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

**FLARE, AIRCRAFT: PARACHUTE, WHITE,**

**MK 45 MOD 0**

**(FSN 1370-088-5658-L473);**

**FLARE, AIRCRAFT: PARACHUTE, MK 45 MOD 0**

**WITH ADAPTER FOR DISPENSER XM19**

**(FSN 1370-461-1526-L424);**

**AND DISPENSER, FLARE: XM19**

**(FSN 1370-179-6011-L106)**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**JULY 1974**

**WARNING**

Prior to takeoff, assure that seal on nitrogen cylinder of dispenser is not broken (i, e., valve pin is not protruding). If nitrogen gas has been expended, dispenser assembly cannot be jettisoned (see fig. 1-7 and para 2-4b).

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**(Including Repair Parts and Special Tools List)**  
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**ADAPTER FOR DISPENSER XM19 (FSN 1370-461-1526-L424),**  
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\*This manual supersedes TM 9-1370-201-12, 8 July 1969, including all changes.

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## CHAPTER 1

## INTRODUCTION

## Section I. GENERAL

**1-1. Scope**

This manual provides the user with operating instructions and organizational maintenance procedures for parachute aircraft flare Mk 45 Mod 0 (DODIC L473), parachute aircraft flare Mk 45 Mod 0 with adapter (DODIC L424), and flare dispenser XM19.

**1-2. Forms, Records and Reports**

*a. Forms.* 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.

*b. Field Report of Accidents.* Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR 385-40.

*c. Report of Damaged or Improper Shipment.* Materiel received in damaged or otherwise unsatisfactory condition because of deficiencies in preservation, packaging, marking, loading, storage, or handling will be reported on DD Form 6 (Report of Packaging and Handling Deficiencies) in accordance with AR 700-58. Reports of improper shipment or damage caused by transportation discrepancies will be reported on SF 361 in accordance with AR 55-38.

*d. Malfunctions Involving Explosives.*

(1) Ammunition malfunction reports from Army activities will be reported as prescribed in AR 75-1.

(2) A malfunction is the failure of a pyrotechnic item to function in accordance with the expected performance when fired, or when explosive components function during a nonfunctional test. A critical malfunction is one which may cause a hazard in the circumstances described above. Malfunctions do

not include accidents and incidents resulting from negligence, malpractice, or implication in other situations such as vehicle accidents or fires. However, malfunctions do include abnormal or premature function of pyrotechnic items during normal handling, maintenance, storage, transportation, and tactical deployment.

(3) If a malfunction involving this material occurs, firing of the affected lot will be halted immediately. The commanding officer or senior individual in charge of the unit will immediately contact the officer under whose supervision the ammunition for the unit involved is maintained or issued and will report all available facts concerning the malfunction.

**1-3. Recommendation for Maintenance Publications Improvements**

You can help to improve this manual by calling attention to errors and by recommending improvements. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to Commander, Picatinny Arsenal, ATTN: SARPA-AD-M-F, Dover, NJ 07801. A reply will be furnished direct to you.

**1-4. Destruction of Ammunition to Prevent Enemy Use**

Destruction of pyrotechnics when subject to capture or abandonment will be undertaken by the user only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army commander. (Refer to TM 750-244-5-1.)

**Section II. DESCRIPTION AND DATA**

**1-5. Flare, Aircraft: Parachute, White, Mk 45 Mod 0 and Flare, Aircraft: Parachute, Mk 45 Mod 0 with Adapter for Dispenser XM19**

a. *General.* The flares covered by this manual are pyrotechnic devices which provide illumination in the two-million candlepower range for a period of approximately 3 1/2 minutes. The flares are launched from helicopters. Flare identification and method of launching is shown in table 1-1.

b. *Description.*

(1) Parachute aircraft flare MK 45 Mod 0 and Mk 45 Mod 0 with adapter (fig. 1-1) are identical except for minor variations. The basic design consists of a candle assembly, a parachute assembly, and a suspension/ignition assembly in an aluminum case, to which is assembled

**Table 1-1. Identification and Method of Launching Flares**

Nomenclature	DODIC	Method of launch
FLARE, AIRCRAFT: parachute, white Mk 45 Mod 0.	L473	Launched by hand only,
FLARE, AIRCRAFT: parachute, Mk 45 Mod 0 with adapter for dispenser XM19.	L424	Launched by flare dispenser XM19 or by hand.

an ejection fuze assembly. The characteristics of the flares are shown in table 1-2.

(2) The fuze assembly, which controls candle and parachute ejection, extends 2 1/4 inches beyond the case. The fuze consists of an internal disconnect, a striker and plunger assembly, a 2second (nominal) fixed delay element, a time delay fuse, an ejection charge, and a fuze setting mechanism. The fuze setting mechanism consists of a yellow ejection dial indicator, with 15 different setting points marked in black on the face of the fuze. The setting points range from 500 to 14,000 feet. (A decal on the case gives fuze setting and safting information.) Raised projections at SAFE and at each setting point facilitate setting the fuze in total darkness. A spring-loaded detent holds the ejection dial indicator at the selected setting.

(3) The parachute assembly consists of a drogue chute, a main parachute, and a deployment bag in a split cardboard container.

(4) The suspension/ignition assembly connects the parachute and candle assemblies. A firing pin, a primer, and an ignition pellet constitute the ignition assembly. The suspension assembly consists of a cable extending from the

main parachute to an explosive bolt at the candle end.

(5) The 18-pound candle assembly consists of a paper tube containing a magnesium candle and a detonator.

(6) A plastic shipping cap covers the fuze end of the assembled flare and protects the fuze area during shipment and storage.

(7) Minor variations in the fuze components of the flares are as follows:

(a) Flare Mk 45 Mod 0 (fig. 1-2) has a stainless steel lanyard assembly with a double coil at one end and a swivel eye at the other end, coiled under the plastic shipping cap. A swivel snaphook is attached to a loop in the lanyard about 4 1/2 inches from the double coil. A black plastic lanyard retainer is attached to the lanyard adjacent to the swivel snaphook. A two-pronged safety clip holds the toggle in place in an aluminum housing in the center of the fuze. A yellow tag, attached to the prongs of the safety clip by a split key ring, warns the user not to remove the safety clip.

(b) Flare Mk 45 Mod 0 with adapter does not use a lanyard assembly and toggle with the fuze. Instead, a pull cable assembly is used (fig. 1-3).

c. *Functioning.*

**WARNING**

**Since the outer case falls free after ejection, creating a missile hazard, use of flares over inhabited friendly territory is not recommended.**

**Table 1-2. Characteristics of Mk 45 Flares**

Diameter (max).....	4.87 in.
Length (max).....	36.0 in.
Weight .....	28 lb
Candlepower (avg).....	2 million
Burning time (avg) .....	210 sec
Minimum delay (fuze set at 500 ft) .....	3.0 sec
Rate of descent.....	7.5 fps

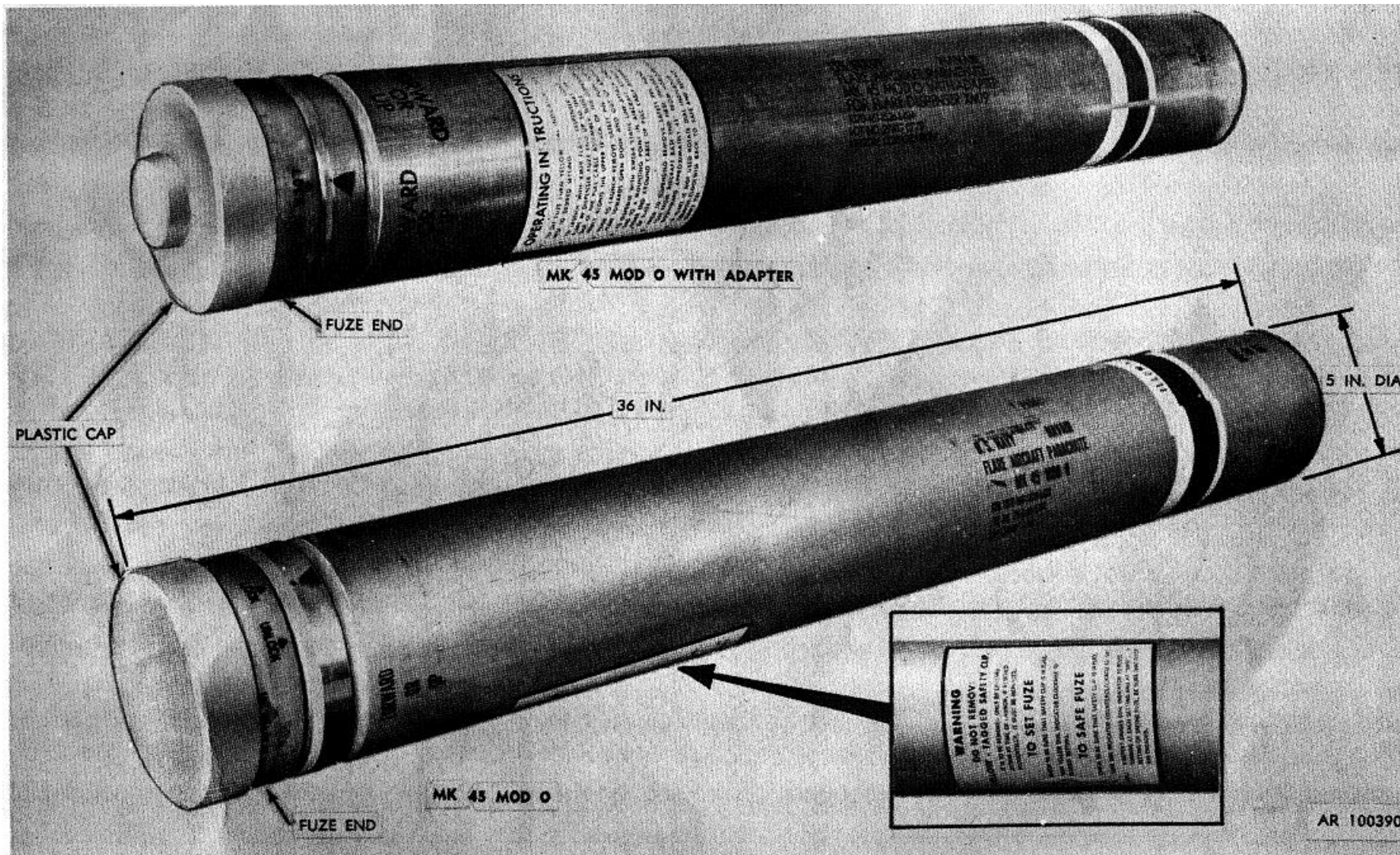


Figure 1-1. Parachute aircraft flares Mk 45 Mod 0 and Mk 45 Mod 0 with adapter.

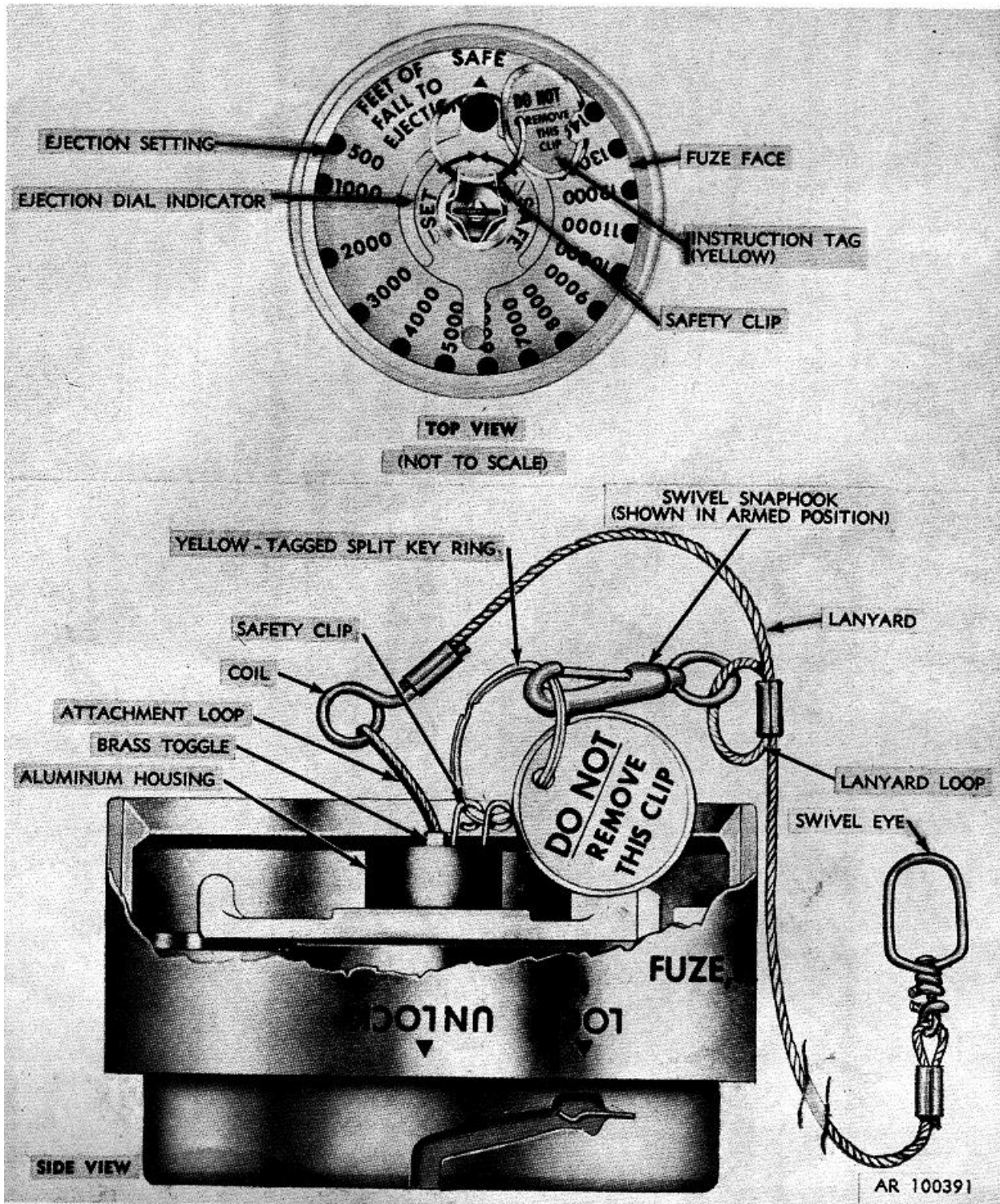


Figure 1-2. Fuze for parachute aircraft flare Mk 45 Mod 0



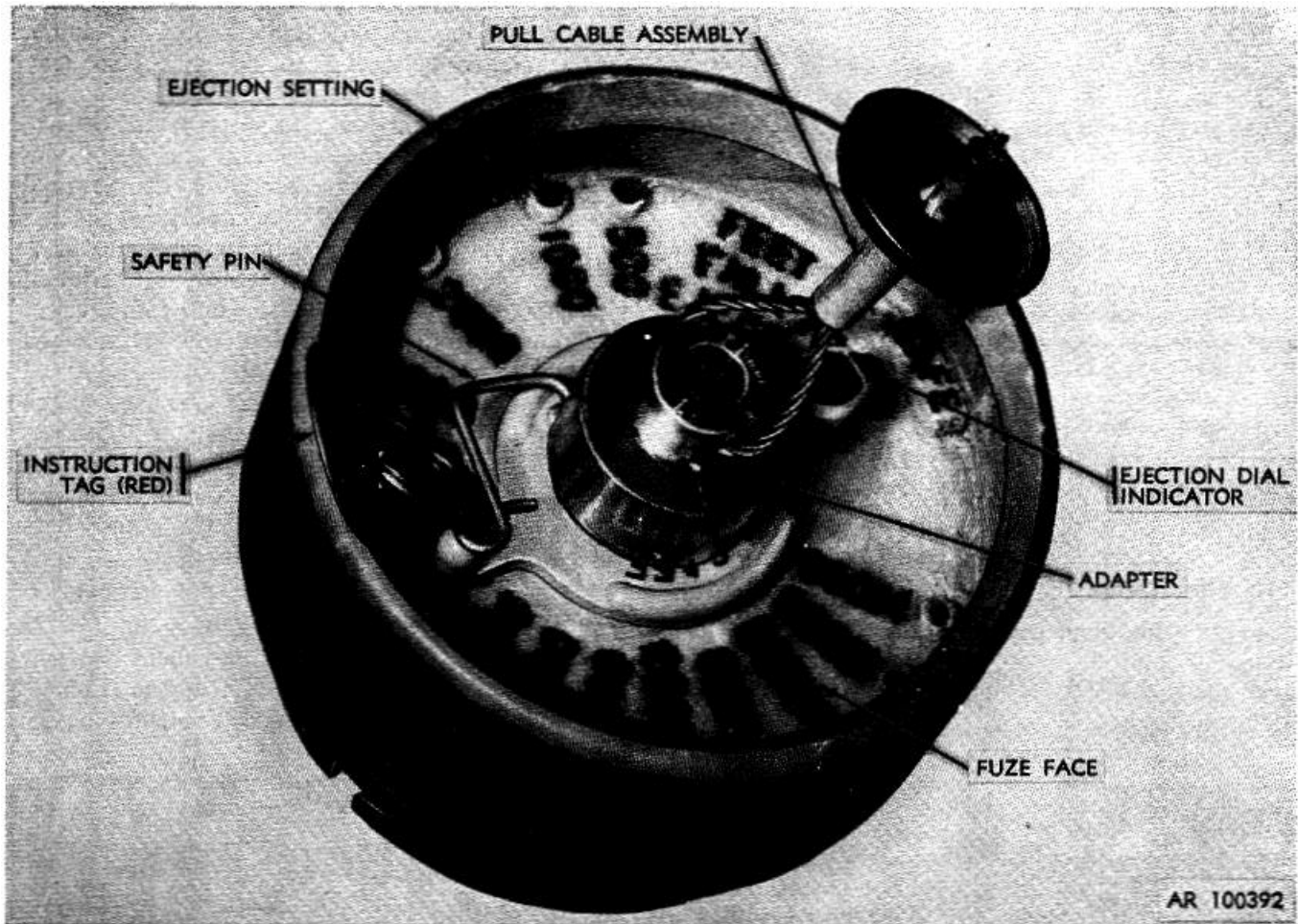


Figure 1-3. Fuze for parachute aircraft flare Mk 45 Mod 0 with adapter.

(1) When the flare is launched, the internal disconnect is pulled from the fuze, allowing the spring-loaded striker to initiate the primer in the base of the plunger. The primer ignites the 2-second delay element and drives the plunger into the fuse cord. The delay element ignites black powder in the plunger. The burning powder ignites the fuse cord, which ignites the ejection charge, exerting sufficient pressure against the gas check to blow off the end cap and eject the parachute and candle assemblies.

(2) The drogue chute deploys and separates the main parachute from its deployment bag. When the main parachute opens, it exerts a pull on the cables of the suspension/ignition system. The shorter of the cables pulls a release pin from the igniter assembly. This cocks and releases the firing pin so that it strikes the primer in the suspension/ignition assembly. The

primer initiates the ignition pellet which ignites the magnesium candle.

(3) Near the end of its burning time, the heat of the candle initiates the explosive bolt, which fragments. This releases many of the shroud lines, collapsing the parachute and allowing the burned-out flare to fall rapidly to the ground.

#### 1-6. Dispenser, Flare: XM19

*a. General.* The flare dispenser XM19 is intended to facilitate the launching of parachute aircraft flares from helicopters. It is installed inside the helicopter, serves as a storage rack, and is equipped with a gas-operated mechanism which, in time of emergency, permits jettison of the dispenser assembly, including flare load, from the helicopter. The flare dispenser XM19 is restricted to use with the parachute aircraft flare

Mk 45 Mod 0 with adapter. The characteristics of the dispenser are shown in table 1-3.

**Table 1-3. Characteristics of Flare Dispenser XM19**

Length:

Overall, with snout retracted .....81 in.  
 Overall, with snout extended..... 118 in.

Width ..... 16 in.  
 Height .....46 in.

Weight:

Dispenser.....230 lb  
 Jettison assembly ..... 80 lb  
 Dispenser assembly..... 150 lb  
 Full flare load (24 flares) .....672 lb  
 Dispenser (with 24 flares).....902 lb

Pneumatic System:

Nitrogen cylinder (filled) ..... 2,500 psi  
 Weight of nitrogen .....0.2 lb

Piston:

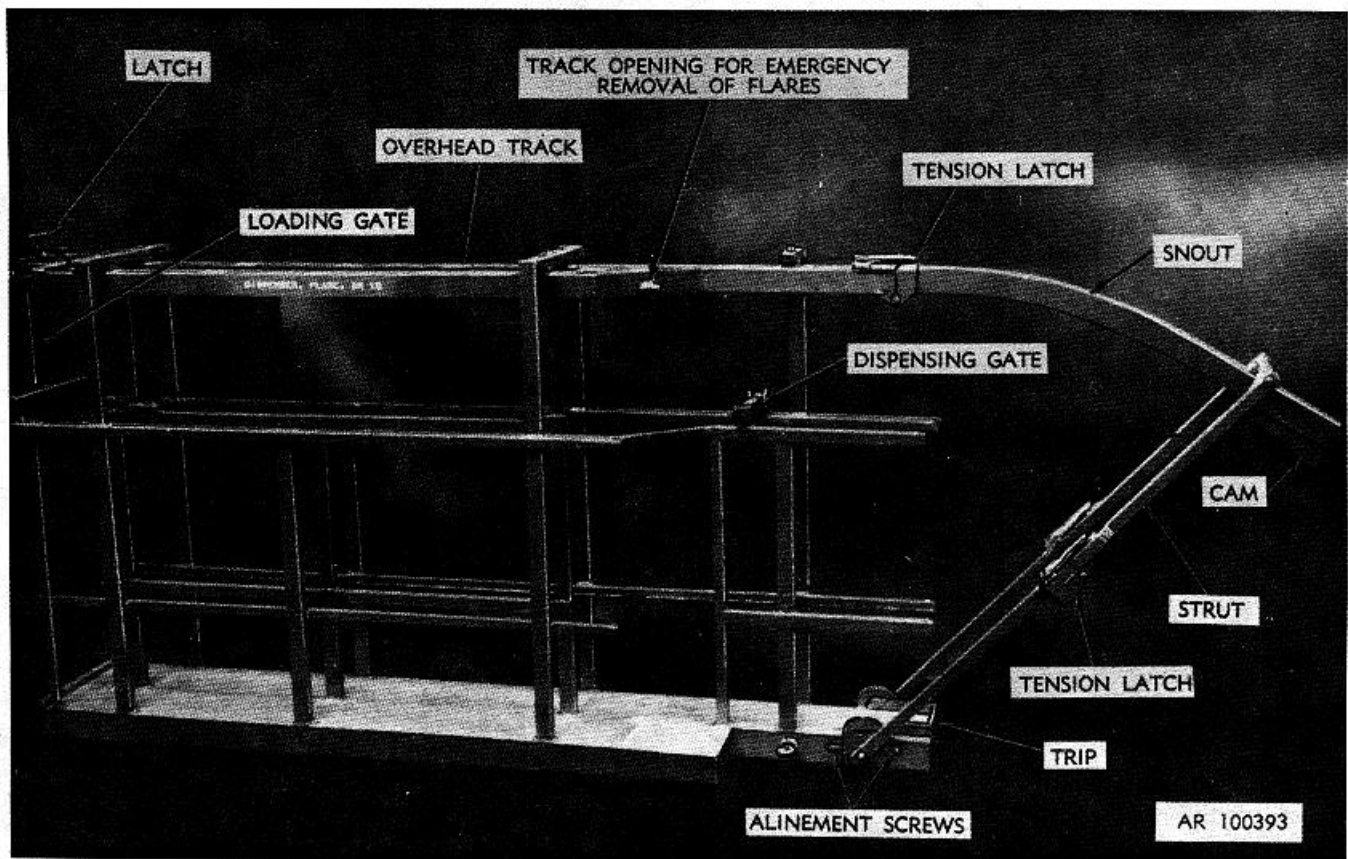
Length ..... 6 feet  
 Diameter.....1 in.

*b. Description.*

(1) The dispenser consists of a dispenser assembly and a jettison assembly, including a test set for XM19, a firing panel, a cable, and tiedown hardware.

(2) The dispenser assembly (fig. 1-4) is designed to accommodate 24 flares in an upright position. It has an extendable snout for launching, a channel-shaped stainless steel base tray, and an overhead track for holding and guiding the flares. The extruded aluminum frame consists of side supports with loading and dispensing gates. The overhead track, which conforms to the channel pattern of the base tray, consists of two parallel guides. The guides are spaced so that the flare pull cable assembly can slide in between, while the disk in the pull cable assembly rides on top of the guides. The snout, which is at the dispensing end of the overhead track, is extended when dispensing flares and is retracted during storage, shipment, and flight (fig. 1-5). The removable loading gate at the other end of the overhead track is held in place by a latch. The dispensing gate is a bar located at the intersection of the overhead track.

(3) The jettison assembly (figs. 1-6 and 17) includes a track plate with rails on either side. The dispenser assembly rides on rollers which fit into the rails. Mounting points are located on the track plate to match the tiedown fittings on the



**Figure 1-4. Dispenser assembly of flare dispenser XM19.**



**Figure 1-5. Dispenser assembly of flare dispenser XM19- snout retracted.**

floor of helicopters (UH-1B, UH-1C, UH-1D, and UH-1H). A cylinder containing nitrogen gas under pressure of 2,500 psi supplies the power for jettison. A safety valve is used to prevent inadvertent jettison action. Two interlocks secure the dispenser assembly to the track plate. A piston, with the forward end painted red, provides jettison action. A hole in the piston tube permits inspection for the piston.

(4) The firing panel (fig. 1-8) consists of a hand-operated firing device which is mounted on the instrument panel. A safety switch precludes accidental jettison of the dispenser. A bail provides a positive mechanical lock to prevent inadvertent depression of the firing device handle. A cable is provided to connect the firing panel to the nitrogen cylinder.

(5) Test set for XM19 is needed for electrical continuity testing.

(6) Snap-on fittings and nuts are used to attach the track plate to the helicopter floor.

*c. Functioning.*

(1) *Using Flare Dispenser XM19 to Launch Parachute Aircraft Flare Mk 45 Mod 0 with Adapter.* When the dispenser is loaded with flares (fig. 1-9), the pull cable assembly is held by the overhead track, while the full weight of the flare rests on the base tray. To launch the flare, the body of the flare is pushed along the base tray toward the extended snout, while the pull cable assembly slides along the overhead track. The flare is tripped at the end of the base tray, and the pull cable assembly slides down the snout until it simultaneously pulls the flare away from the trip and the pull cable assembly engages the cam. The weight of the flare against the cam separates the pull cable assembly from the flare, arming the flare.

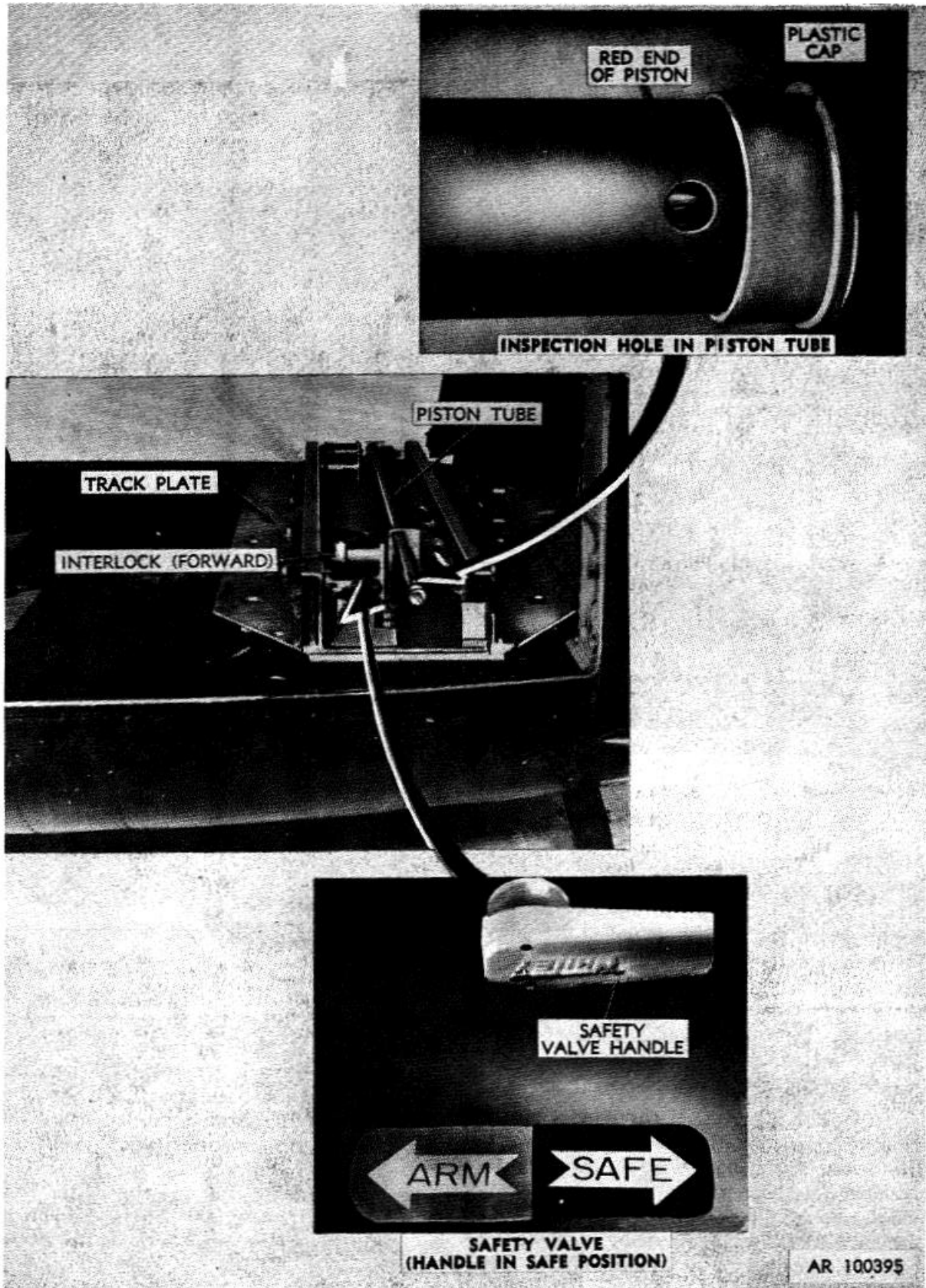


Figure 1-6. Jettison assembly of flare dispenser XM19- view from right side of helicopter.

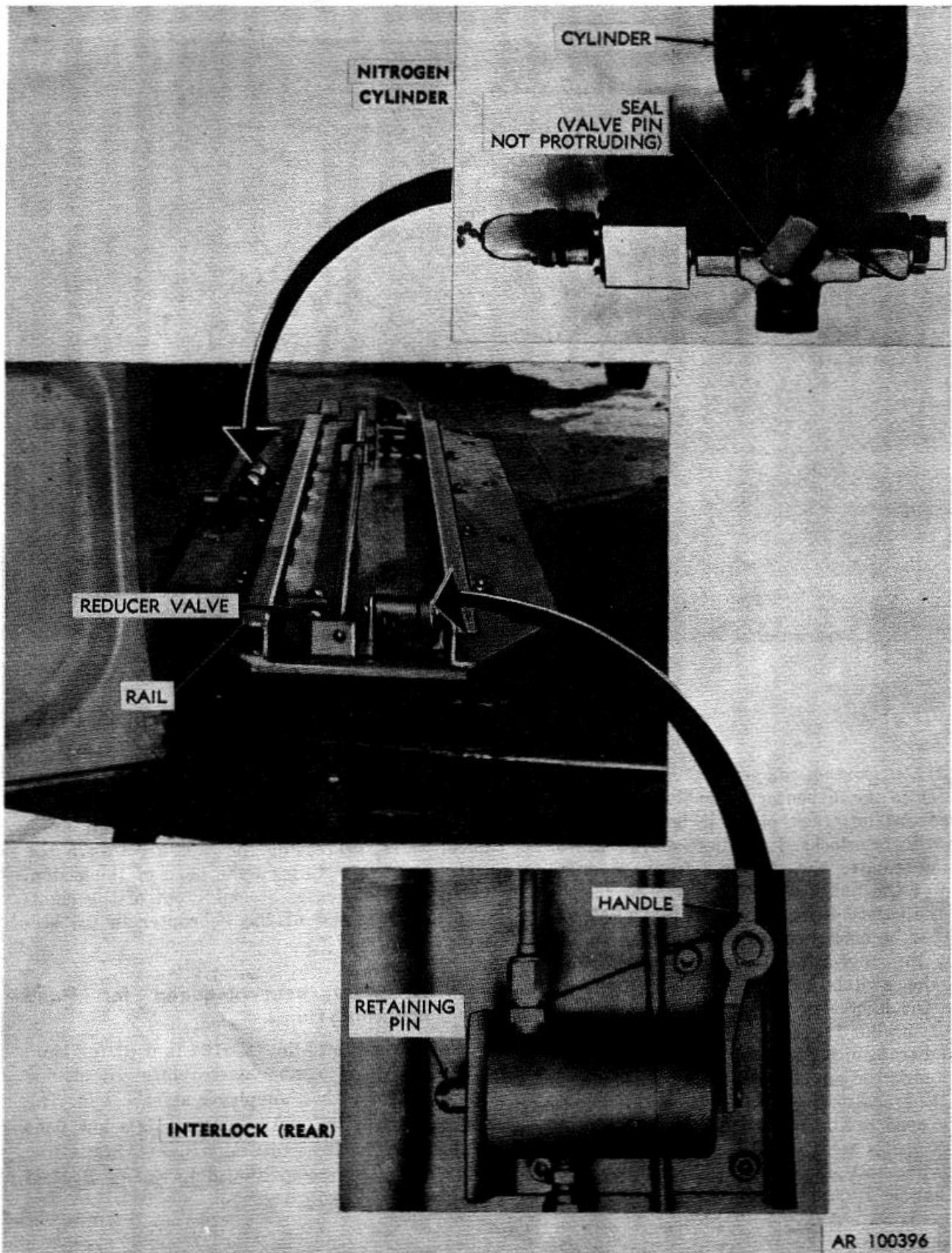


Figure 1-7. Jettison assembly of flare dispenser XM19- view from left side of helicopter.

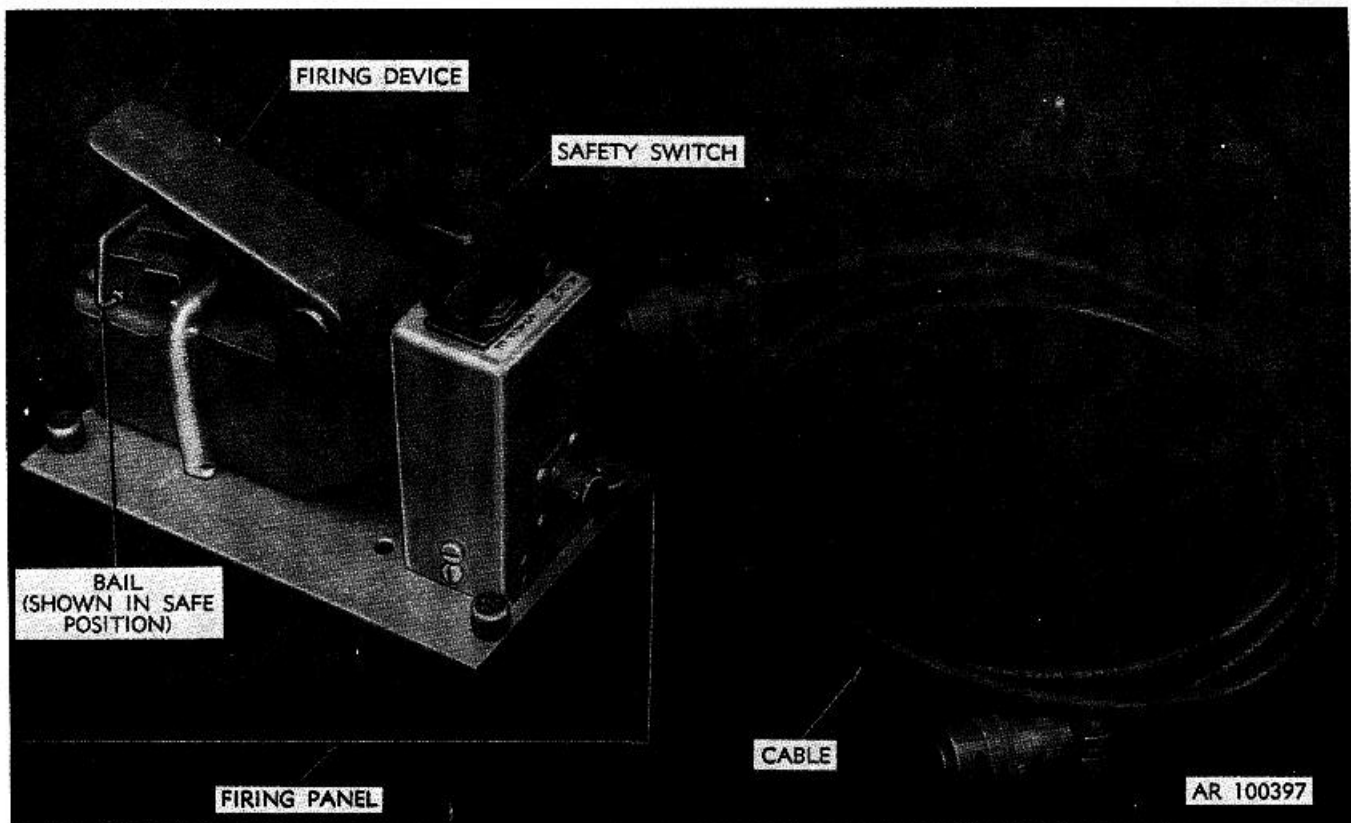


Figure 1-8. Firing panel and cable of flare dispenser XM19.

(2) Jettisoning dispenser assembly and flares. Once the dispenser assembly has been positioned on the track plate, it is manually secured with interlocks. Immediately after takeoff, the pilot rotates the bail out from under the handle of the firing device and a crew member turns the safety valve handle to the ARM position. If it becomes necessary to jettison the dispenser, the pilot lifts the safety switch cover, turns the switch to the ARM position, and strikes the handle of the firing device with the palm of his hand. An electrical signal is generated and transmitted through a circuit to a squib connected to the top of the nitrogen bottle mounted on the track plate. Upon initiation of the electrically fired squib, nitrogen gas under pressure of 2,500 psi is released. The gas passes through steel tubing to the safety valve. With the safety valve handle rotated to the ARM position, the gas is diverted to the interlocks on the underside of the dispenser assembly,

unlocking it from the track plate. The gas passes through a reducer valve, decreasing the pressure to 475 psi. This pressure, acting on the head of the piston, propels the dispenser assembly out of the rightside door opening of the helicopter in 0.8 seconds.

#### 1-7. Accessory Item Required for Hand Launching Flares

Flare drop static line XM164 is used for hand launching. It is a steel wire reinforced molded plastic strap with a snaphook at each end. The flat contour of the static line affords a low floor profile to prevent accidental tripping. Static line XM164 may be requisitioned by using Federal Stock Number 1370-962-1798.

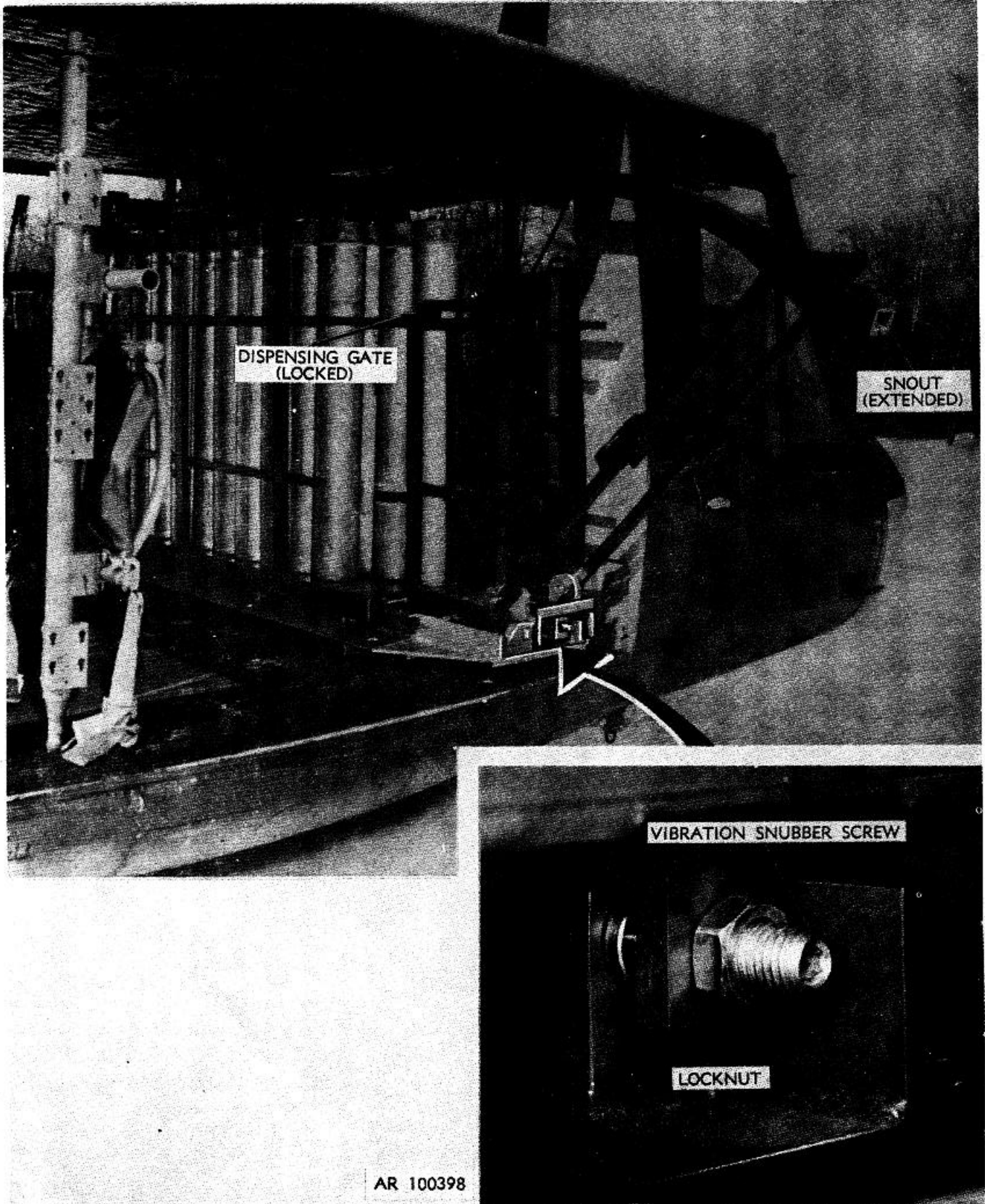


Figure 1-9. Flare dispenser XM19- installed in helicopter and loaded with flares.

### Section III. SAFETY, CARE, AND HANDLING

#### 1-8. Safety

##### **WARNING**

##### **Alteration of flares is prohibited.**

- a. Handle flares with utmost care at all times.
- b. Do not drop, drag, throw, tumble or otherwise strike boxes containing flares.
- c. Exercise care if flares show evidence of moisture inside the flare container. Contact authorized disposal personnel for disposal of flares that have been exposed to moisture. Moisture may cause a dud or generation of hydrogen if it penetrates the flare.
- d. Avoid exposing flares to extreme temperatures, such as below -65° F. or above +160°F.
- e. Consider flares with damaged fuzes hazardous. Contact authorized disposal personnel immediately for disposal.
- f. Do not touch, move, or otherwise handle duds; their fuzes may be armed. Contact authorized disposal personnel for disposal.
- g. Flares should not be left in helicopter indefinitely. When flares are left in a helicopter temporarily or removed from a helicopter, check fuzes to assure that ejection dial indicators are set on SAFE. For Mk 45 Mod 0, assure that swivel snaphook is not engaged with the split key ring, and that safety clip is

properly seated. For Mk 45 Mod 0 with adapter, assure that safety pin is in place.

#### 1-9. Care and Handling

##### **CAUTION**

**The flare is easily dented, which may result in non-ejection or faulty ejection of the candle.**

Flares are packed to withstand conditions ordinarily encountered in the field. Although the polystyrene containers (fig. 1-10) provide adequate protection for shipment and storage, observe the following:

- a. Keep polystyrene containers from becoming broken or damaged.
- b. Repair or replace broken containers immediately and re-mark those bearing illegible markings.
- c. Protect flares against such foreign matter as mud, sand, moisture, frost, snow, ice, dirt, oil, and grease. Wipe off any foreign matter at once.
- d. Do not open containers until flares are to be used.



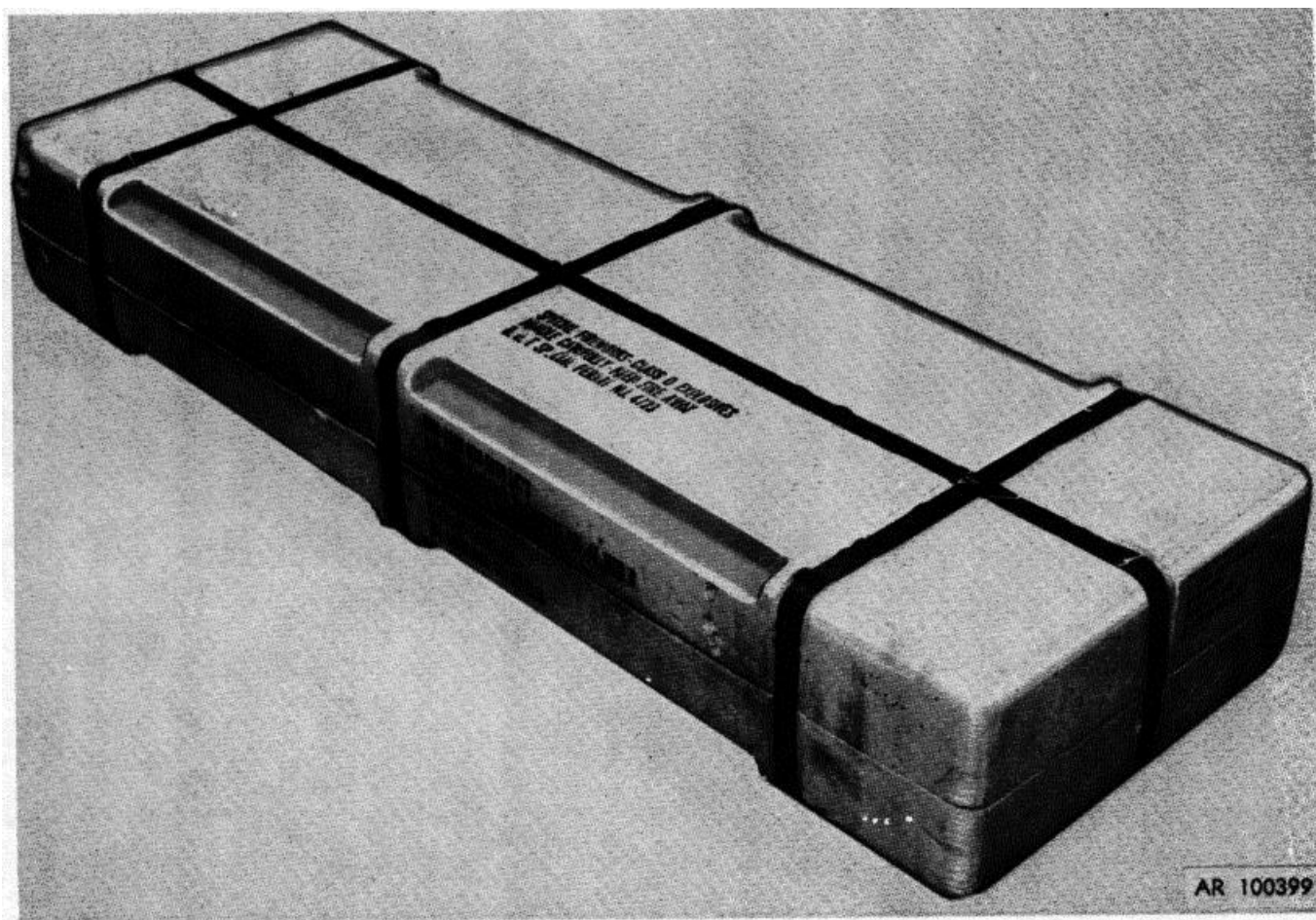


Figure 1-10. Container for flares.

## CHAPTER 2

### OPERATING INSTRUCTIONS

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#### Section I. OPERATION UNDER USUAL CONDITIONS

##### 2-1. General Precautions-Mk 45 Mod 0 and Mk 45 Mod 0 with Adapter

###### WARNING

**Inadvertent flare function during handling could cause serious injury to personnel and damage to equipment.**

a. Do not use flares with cracked, dented, or deformed cases.

b. Removal of fuzes under any circumstances is prohibited. Have flares containing damaged fuzes removed by authorized disposal personnel.

c. Observe firing temperature limits of +145° F. and -65° F.

d. Avoid unseating safety clip/pin. If safety clip/pin becomes unseated, or is inadvertently removed, replace it in aluminum housing before proceeding. If clip/pin is missing and if replacement is unavailable, do not pull lanyard or pull cable assembly; turn flare over to authorized disposal personnel. A pull on lanyard of 30 pounds or a pull on pull cable of 200 pounds can cause fuze to function. If fuze is set at any delay setting, such pull will cause case and candle to separate violently after the delay; if set on SAFE, fuze will become permanently inoperable.

e. If flare is accidentally ejected on ground, wind force of 35 knots will cause drogue chute to remove deployment bag and release main parachute. Attempt to keep parachute from opening. Cut shroud lines and dispose of candle tube.

f. If parachute opens accidentally, deflate by collapsing parachute. Do *not* hold candle tube. The parachute could drag *unrestrained* candle tube without causing ignition, provided pull on candle does not exceed 60 pounds, which may actuate candle.

##### 2-2. Mk 45 Mod 0

###### a. Preparation for Use.

(1) Remove tape from container, lift top half, and remove flares.

(2) Remove plastic cap (A, fig. 2-1) from fuze end of flare.

###### WARNING

**If safety clip is unseated or missing, do not pull lanyard.**

(3) Assure that safety clip is in place and ejection dial indicator is set on SAFE.

(4) Visually inspect flare for damage. Contact authorized disposal personnel for disposal of damaged flares.

###### NOTE

**If flare is shipped with lanyard attached, simply uncoil lanyard, and proceed to step (7) below. If lanyard is not attached, perform steps (5) and (6) before continuing with step (7).**

(5) Remove and uncoil lanyard. Remove lanyard retainer and retain for replacement if flare is not expended.

(6) Connect coil on end of lanyard to attachment loop and toggle in fuze (B, fig. 2-1).

###### WARNING

**For launch from aircraft operating below 70 knots indicated airspeed (KIAS), a minimum fuze setting of 1,000 feet shall be used.**

(7) Using forefinger of right hand and thumb of left hand, set ejection dial indicators (C, fig. 2-1) by turning clockwise to desired setting (table 2-1). A spring-loaded detent holds ejection dial indicator at each setting and aids in setting fuze in darkness since engagement of the detent can easily be felt.



Figure 2-1. Attaching lanyard and setting fuze.

Table 2-1. Approximate Aircraft Altitudes (Thousands of Feet) for Ejection at 2,500 Feet Above Target Area

Fuze settings	Ground elevation of target area—thousands of feet above sea level							
	0	1.0	2.0	3.0	4.0	5.0	6.0	7.0
500	3.0	4.0	4.9	6.0	7.1	8.1	9.1	10.1
1,000	3.4	4.5	5.5	6.5	7.6	8.6	9.7	10.7
2,000	4.5	5.6	6.7	7.7	8.8	10.0	11.0	12.2
3,000	5.6	6.7	7.8	9.0	10.1	11.3	12.5	13.6
4,000	6.5	7.7	8.9	10.0	11.3	12.5	13.8	15.1
5,000	7.4	8.6	9.9	11.1	12.4	13.6	15.0	16.4
6,000	8.2	9.5	10.8	12.1	13.5	14.8	16.2	17.5
7,000	9.1	10.4	11.8	13.1	14.5	15.9	17.4	19.0
8,000	10.0	11.4	12.8	14.3	15.6	17.1	18.8	20.4
9,000	10.9	12.4	13.8	15.3	16.8	18.4	20.1	
10,000	11.8	13.3	14.9	16.4	18.1	19.8		
11,000	12.9	14.4	16.0	17.7	19.4			
12,000	13.9	15.5	17.3	19.0				
13,000	15.0	16.7	18.5	20.5				
14,000	16.2	18.0	20.0					

Use of the table: Find the column for the elevation of the target area above sea level. In this column, find the line for the altitude of the aircraft above sea level. On this line, find the fuze setting in the left hand column.

*Example:*

1. Elevation of target area 4,000 feet, desired aircraft altitude 10,000 feet-set fuze for 3,000 feet.
2. Elevation of target area 1,000 feet, desired aircraft altitude 15,500 feet-set fuze for 12,000 feet.

(8) Extend lanyard over edge of fuze and secure with a 15 1/2-inch strip of tape to outside of fuze case, leaving lanyard loop and swivel snaphook just above edge of fuze (D, fig. 2-1), in line with yellow-tagged key ring on safety clip.

(9) Replace plastic cap, holding lanyard inside cap (A, fig. 2-2).

(10) Coil remainder of lanyard around outer container (B, fig. 2-2) and secure swivel eye to case with type (C, fig. 2-2).

(11) Using grease pencil, mark ejection fuze setting on case.



Figure 2-2. Replacing plastic cap and securing lanyard to case.

**NOTE**

Flare is now ready for loading in interior of helicopter.

b. *Operation.*

**WARNING**

Crewmen engaged in hand launch operations will wear harness and be secured to aircraft by safety line.

**WARNING**

Do not connect snaphook to yellow-tagged key ring until just before launching flare.

(1) For emergency use, stow spare static lines XM164 on board the helicopter.

(2) Secure flares adequately to prevent movement during flight.

(3) Attach static line XM164 to cargo tiedown near door.

(4) Launch flares as follows:

(a) Remove tape securing lanyard to case and uncoil lanyard. Stick tape to side of case.

(b) Attach free end of static line XM164 to swivel eye of lanyard (A, fig. 23).

**WARNING**

Exercise extreme caution to avoid pulling safety clip during next step. If safety clip is pulled, toss flare from helicopter immediately.

(c) Remove plastic cap. Attach swivel snaphook to yellow-tagged key ring (B, fig. 23), holding ring firmly and pressing down on ring with snaphook.

**CAUTION**

Flares which hit skid of helicopter may fail to function.

(d) Throw flare from helicopter (fig. 24), base end first, assuring that flare clears helicopter.

**WARNING**

If flare does not separate from static line XM164, do not attempt to pull flare back into helicopter. Detach static line from tiedown ring and let both items fall away.

(e) Retrieve static line and discard lanyard. Retain static line for future use.

c. Prepared for Use but Not Launched. Flares which were prepared for use but not launched

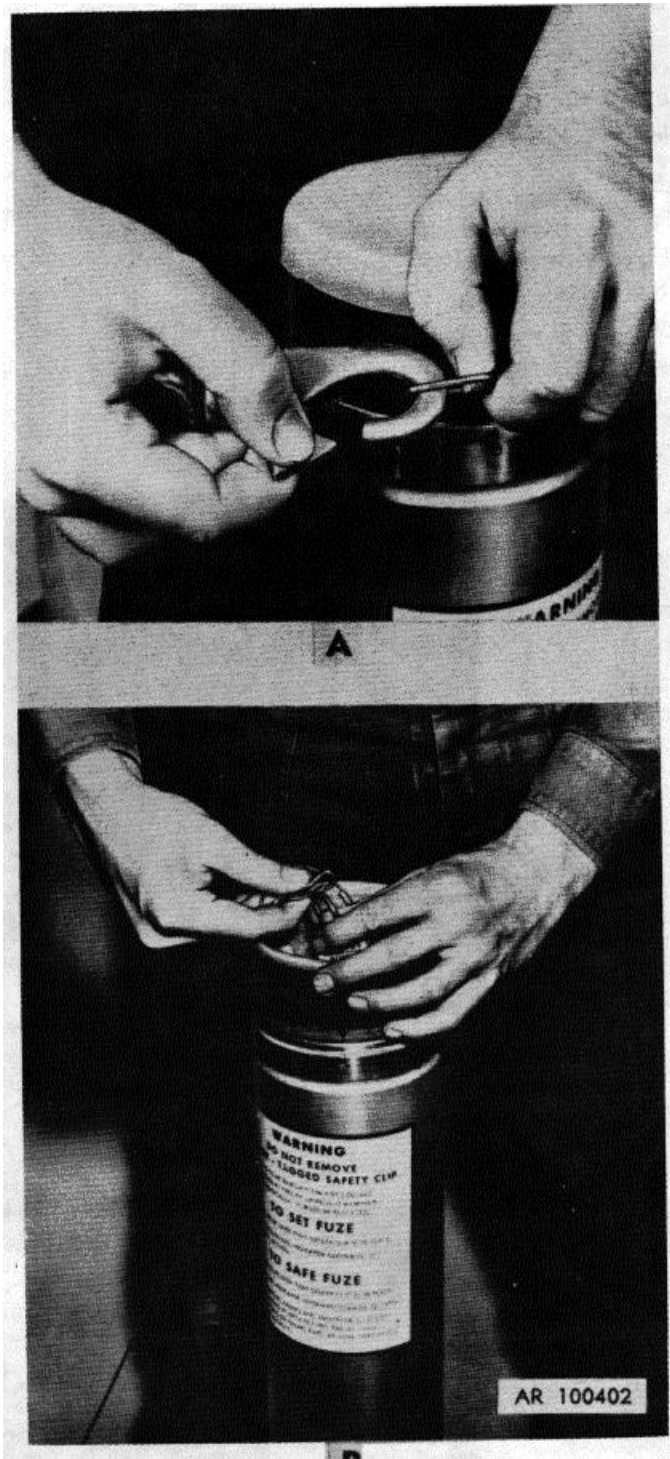


Figure 2-3. Preparing fuze for launch.

will be returned to their original condition as follows:

- (1) Remove plastic cap.
- (2) Assure that safety clip is present in each

flare.

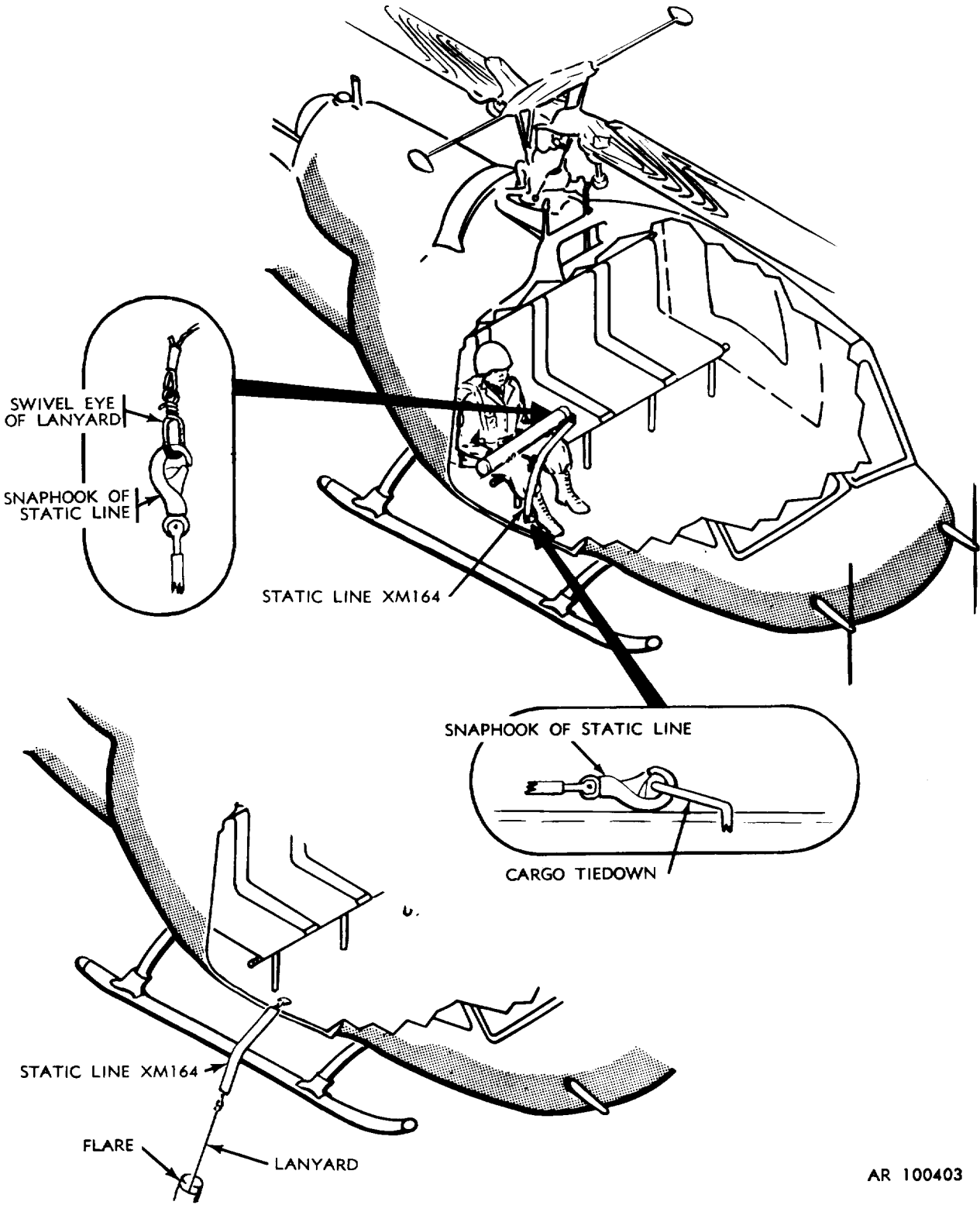


Figure 2-4. Toasting flare from helicopter.

AR 100403

(3) If flare has been hooked up for launch, assure that lanyard swivel snaphook is disconnected from safety clip key ring.

(4) Turn ejection dial indicator counterclockwise to SAFE position.

(5) Examine flare for damage. Contact authorized disposal personnel for disposal of damaged flares.

(6) Remove tape securing lanyard to case and uncoil lanyard.

(7) Remove tape securing lanyard to fuze.

(8) Install lanyard retainer and recoil lanyard inside of fuze well; replace plastic cap.

(9) Remove or block out fuze setting marked on outer case with grease pencil.

(10) Repack serviceable flares in containers. Replace tape on containers. Use repacked flares first in subsequent launchings.

### 2-3. Flare Dispenser XM19

#### a. Installation of Jettison Assembly.

(1) Assure that nitrogen cylinder has not been fired inadvertently. Assure that seal is not broken and valve pin is not protruding (fig. 17).

**NOTE**

**If seal is broken and valve pin protrudes, nitrogen cylinder must be replaced.**

(2) Mount track plate on helicopter floor with safety valve end facing right side of helicopter as follows:

(a) Mate snap-on fittings to tiedown points indicated in figures 2-5 and 2-6.

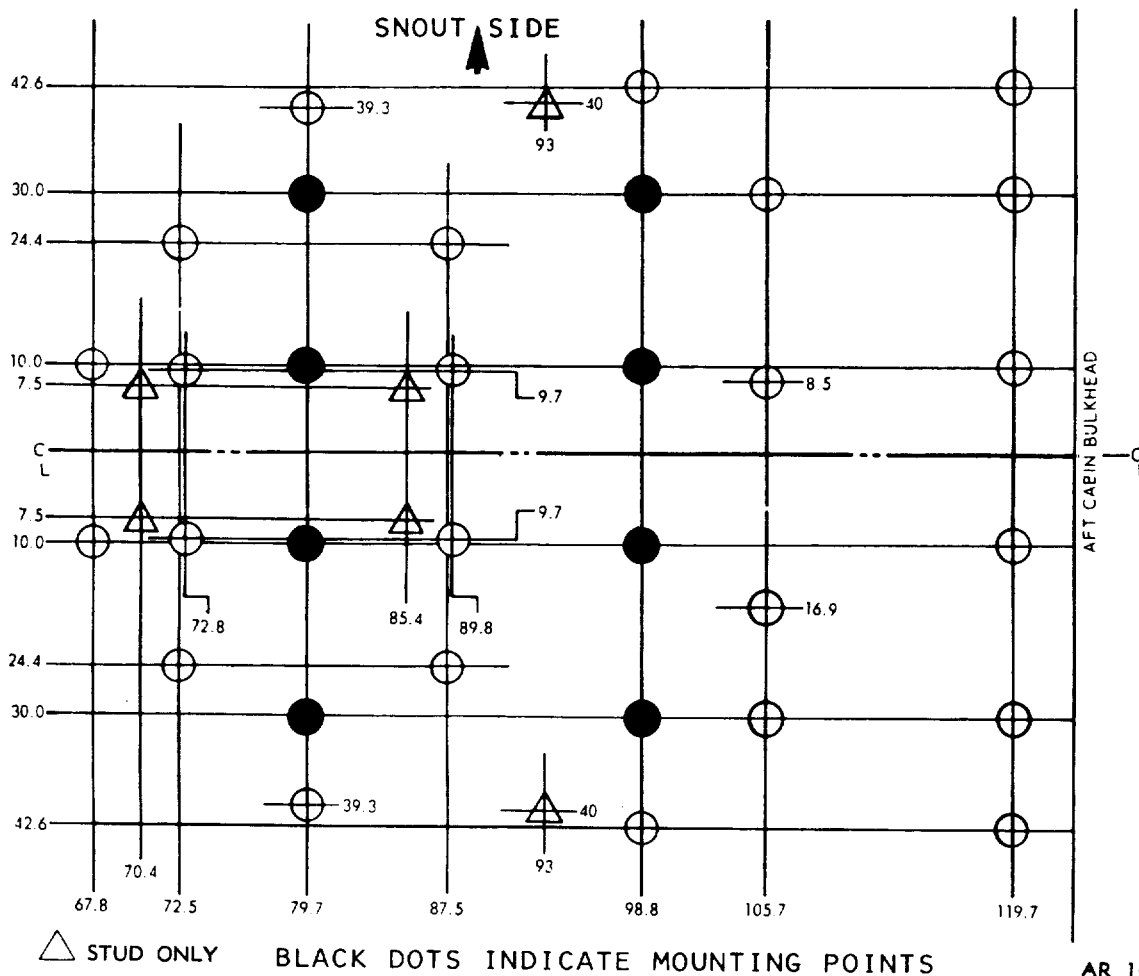
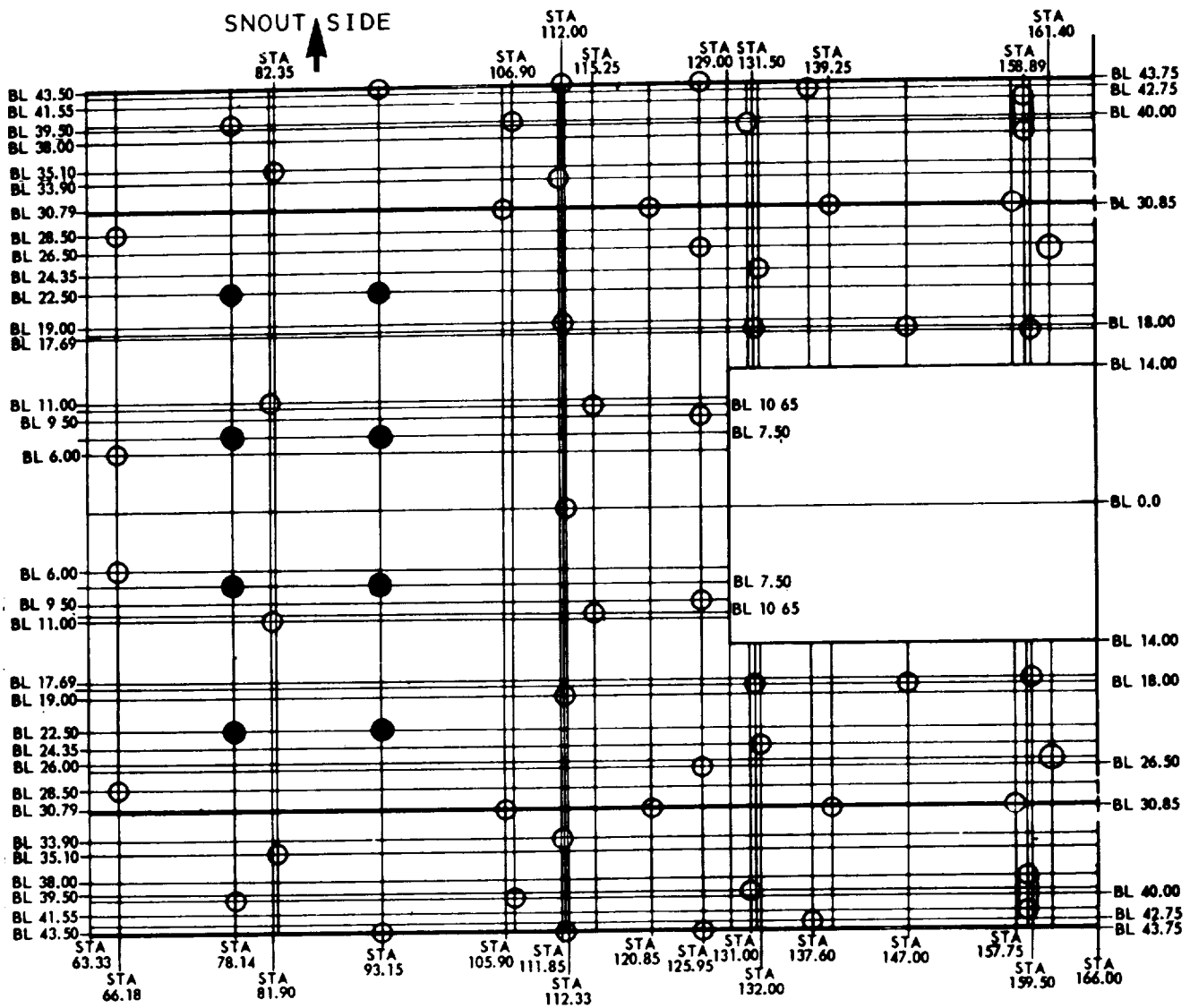


Figure 2-5. Diagram showing mounting points for securing truck plate to floor of helicopter models UH-1B and UH-1C.



BLACK DOTS INDICATE MOUNTING POINTS

AR 100405

Figure 2-6. Diagram showing mounting points for securing truck plate to floor of helicopter models UH-1D and UH-1H.

(b) Position track plate so that mounting holes and snap-on fittings are aligned.

(c) Bolt track plate firmly in place with hexagon nuts.

(3) Assure that piston is in proper position by looking into inspection hole (fig. 1-6). (Red end of piston should be visible.)

(4) Mount firing panel on instrument panel in most convenient position for pilot use by locking snap-screws of firing panel.

(5) Attach cable to firing panel and electrical connector on nitrogen cylinder (fig. 2-7).

**WARNING**

Prior to testing, assure that safety valve handle is in **SAFE** position (fig. 1-6).

(6) Assure that safety valve handle is in **SAFE** position.

b. Performing Electrical Continuity Test Using Test Set for XM19.

(1) Disconnect cable from firing panel and insert test set between firing panel and cable (fig. 2-8).

(2) Rotate bail out from under handle of



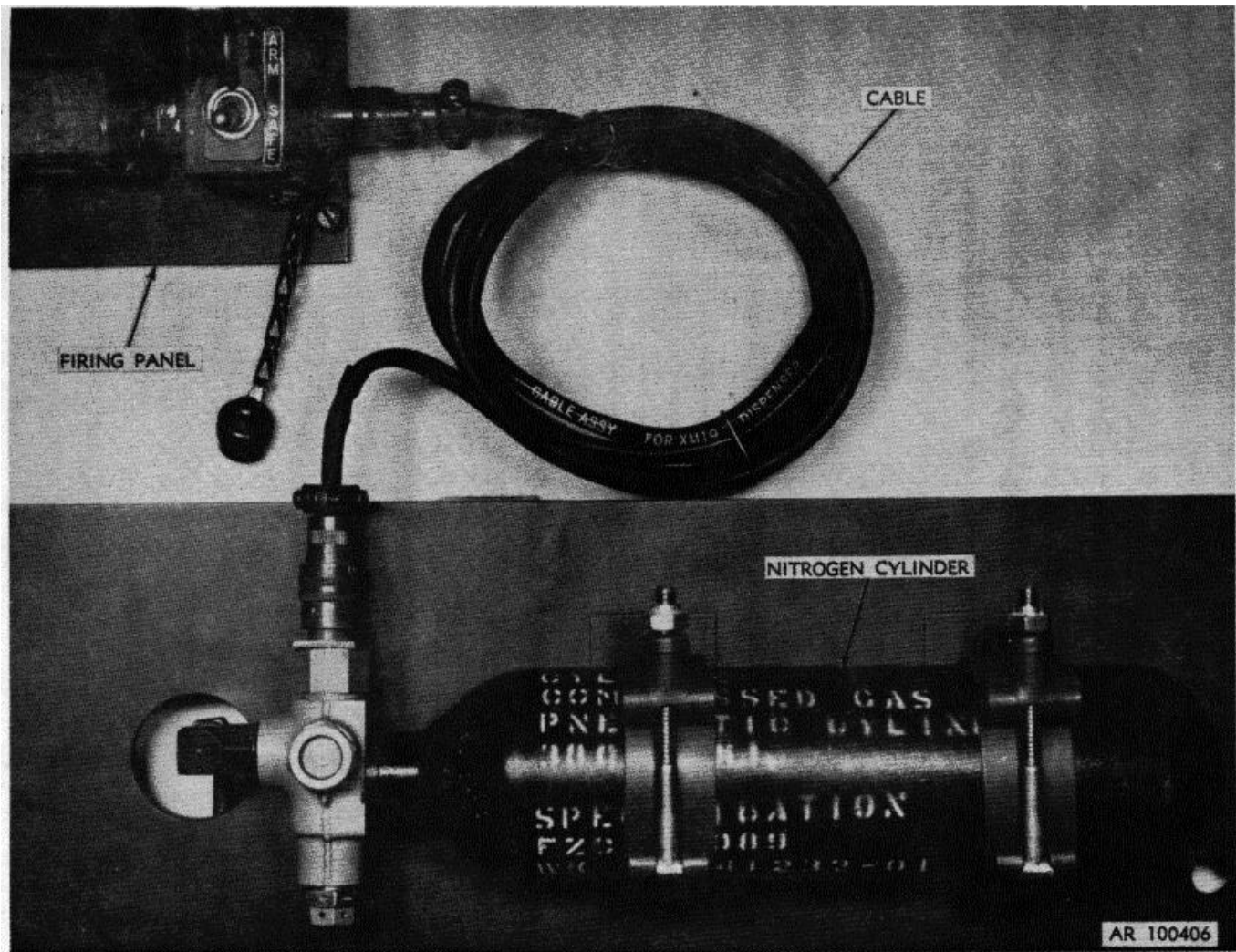


Figure 2-7. Cable connected to firing panel and nitrogen cylinder

firing device and turn safety switch to ARM position. Depress handle of firing device by exerting firm, quick pressure, and observe flashing of lamp through test set window. Flashing of lamp indicates that total electrical circuitry is functioning. If lamp does not flash, a component or the test set is defective.

**NOTE**

**Window of test set should be held near eye when checking firing panel. It improves ability of operator to see lamp flashing even in bright sunlight.**

(3) After completion of test, place safety switch in SAFE position, close cover, and rotate bail back to locked position under handle of firing device.

(4) Remove test set and reconnect cable to firing panel.

*c. Installation of Dispenser Assembly.*

(1) Assure that the two interlocks of the jettison assembly are unlocked (figs. 1-6 and 17).

(2) Check rollers on underside of dispenser assembly to make sure that they rotate freely.

(3) Roll unloaded dispenser assembly onto track plate. Snout (retracted) must be at rightside opening of helicopter.

(4) Roll dispenser assembly back to mechanical stop.

(5) Verify that vibration snubber screw (fig. 1-9) is fully extended to counterclockwise position.

(6) Manually engage retaining pins by moving interlock handles towards rail.

(7) Turn vibration snubber screw clockwise

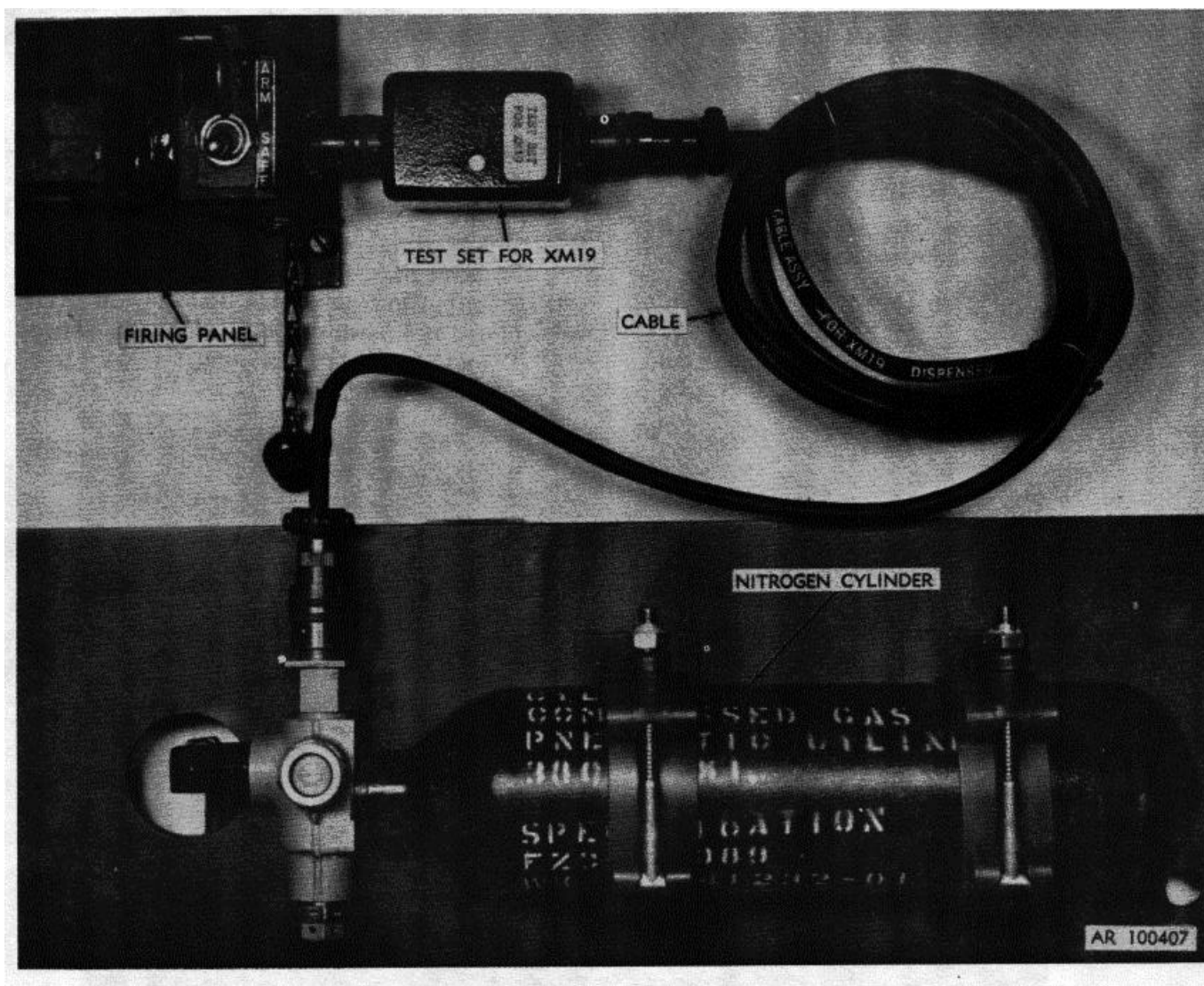


Figure 2-8. Continuity test setup for flare dispenser XM19.

fingertight in order to remove all lateral backlash movement of dispenser assembly, and secure screw with its locking nut.

(8) Unfold snout so that it extends through right-side opening and secure by locking strut and snout tension latches. To properly secure latches, it may be necessary to again align screws at bottom of struts.

*d. Preparation for Use.* Prior to every mission, perform following inspections or tests.

- (1) Perform electrical continuity test described in paragraph 2-3b.
- (2) Assure that seal on nitrogen cylinder is unbroken.
- (3) Assure that bail is under firing device handle.

(4) Assure that safety switch is in SAFE position with cover down.

(5) Assure that safety valve handle is in SAFE position.

#### 2-4. Mk 45 Mod 0 With Adapter

- a. Preparation for Use.

#### NOTE

**Only flare Mk 45 Mod 0 with adapter can be launched from flare dispenser XM19.**

- (1) Remove tape from container, lift top half, and remove flares.
- (2) Remove plastic cap from fuze end of flare.

(3) Assure that safety pin is in place and that ejection dial indicator is set on SAFE.

(4) Visually inspect flare for damage. Contact authorized disposal personnel for disposal of damaged flares.

**WARNING**

**For launch from aircraft operating below 70 knots indicated airspeed (KIAS), a minimum fuze setting of 1,000 feet shall be used.**

(5) Using forefinger of right hand and thumb of left hand, set ejection dial indicator (fig. 2-3) by turning clockwise to desired setting (table 2-1). A spring-loaded detent holds the ejector dial indicator at each setting and aids in setting fuze in darkness, since engagement of the detent can easily be felt.

(6) Remove loading gate of dispenser assembly by releasing latch and lifting gate off support pins.

(7) Load flare (fig. 2-9) into dispenser assembly by putting pull cable assembly in overhead track and pushing flare along base tray until it is against dispensing gate.

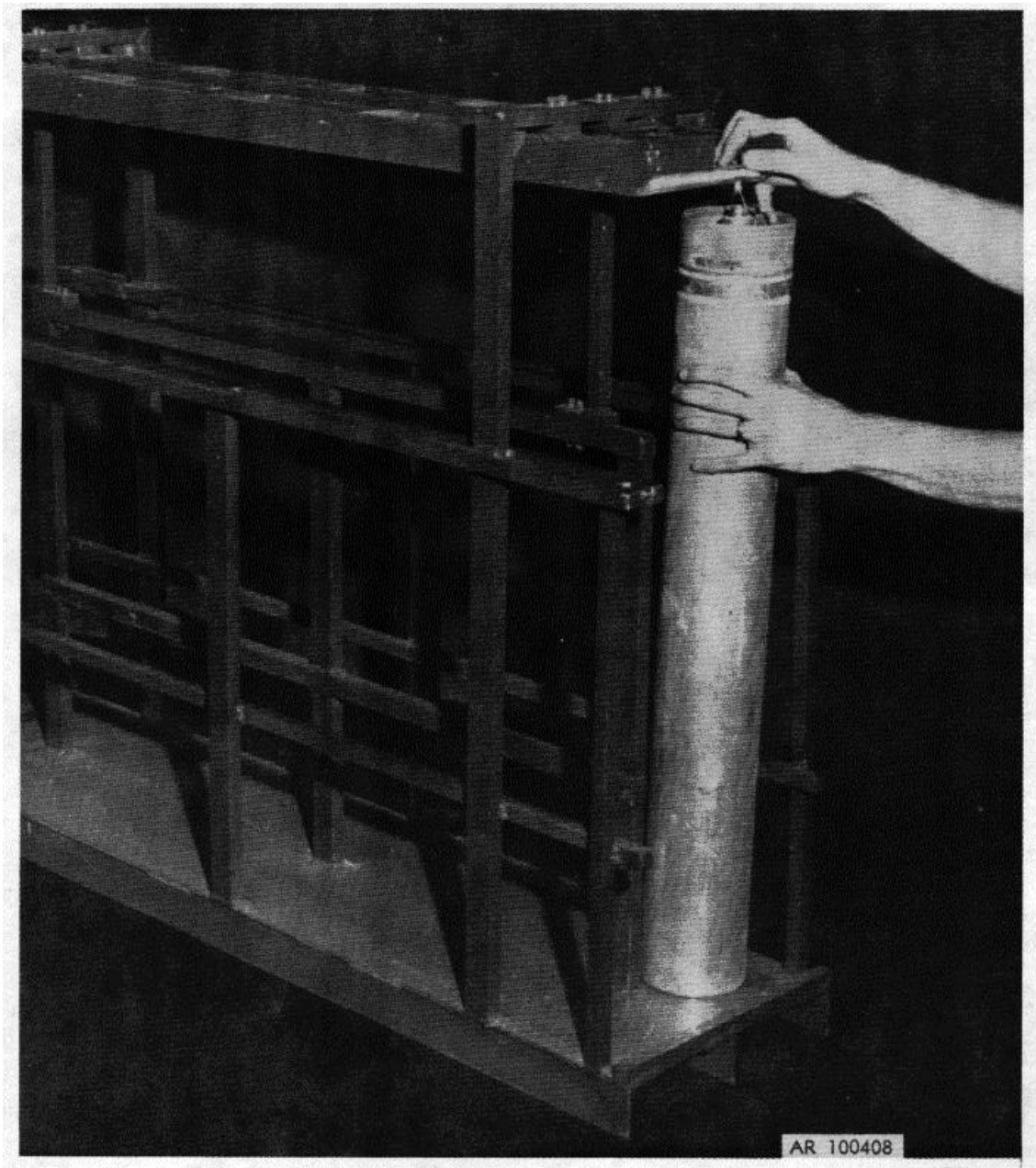


Figure 2-9. Loading flare on dispenser assembly.

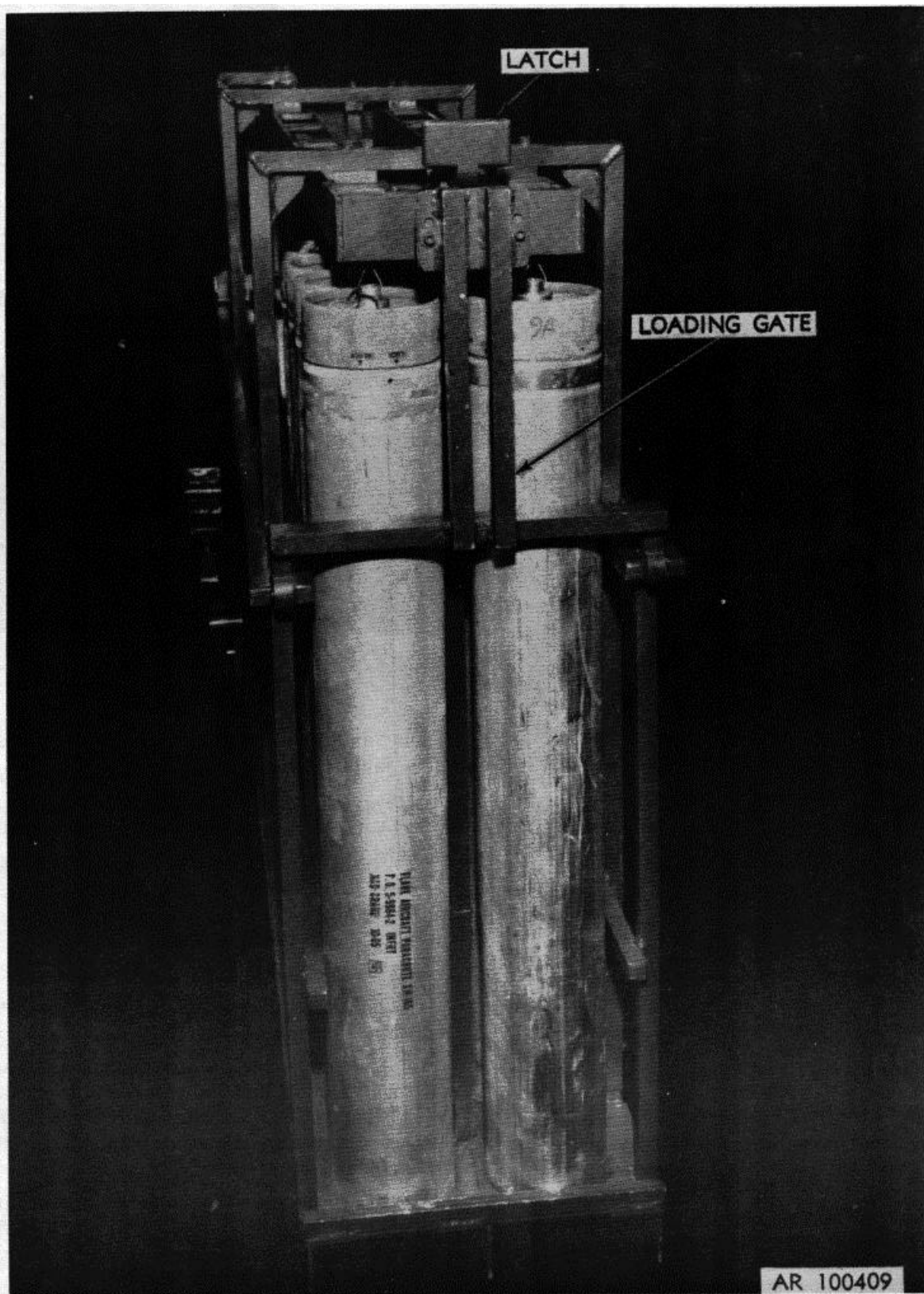


Figure 2-10. Loading gate installed (after loading of flares).

(8) When dispenser assembly has been loaded to capacity (24 flares), replace loading gate by setting gate on support pins and closing latch (fig. 2-10).

(9) Stow spare static lines XM164 on board helicopter for possible use if dispenser becomes inoperable during mission.

*b. Operations.*

**WARNING**

Prior to takeoff, assure that seal on nitrogen cylinder of dispenser is not broken (i.e., valve pin is not protruding). If nitrogen gas has been expended, dispenser assembly cannot be jettisoned.

**WARNING**

Crewmen engaged in launch operations will wear harness and be secured to helicopter by safety line.

(1) Immediately after takeoff, prepare for possibility of jettisoning dispenser assembly by rotating bail out from under handle of firing device and turning safety valve handle to ARM position.

**WARNING**

Dispense flares singly to prevent jamming in snout and possible functioning in helicopter.

**NOTE**

When not dispensing flares, close dispensing gate to prevent loss of flares in flight.

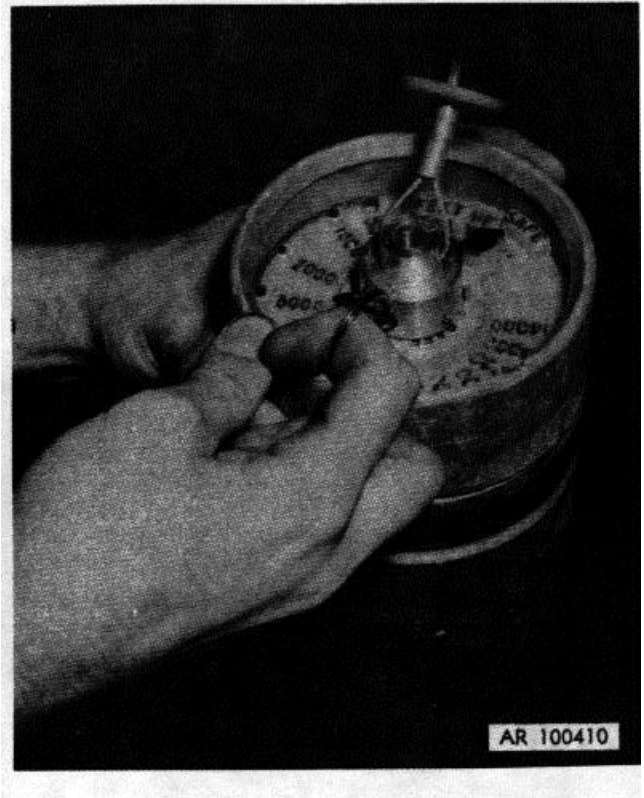
(2) Launch flares as follows:

- (a) Remove safety pin from fuze (fig. 2-11) and retain for reinsertion if flare is not launched.
- (b) Unlock dispensing gate.
- (c) Move flare into position by pushing along base tray until it reaches dispensing gate.
- (d) Push fuze end of flare in direction of cam (fig. 2-12) so that upon release, pull cable slides down snout and base of flare is pulled free of the trip.

**NOTE**

If safety pin has been left in inadvertently, the base of flare will pass the trip, but will hang from end of snout without dropping. Flare can be released by kicking flare near base end in a direction away from helicopter.

(3) Just before landing, rotate bail back



**Figure 2-11. Removing safety pin.**

under handle of firing device and turn safety valve handle to SAFE position.

*c. Prepared for Use but Not Launched.*

(1) Lock dispensing gate to retain flares not used on mission.

(2) Just before landing, rotate bail back under handle of firing device and turn safety valve handle to SAFE position.

(3) After landing, remove loading gate.

(4) Assure that a safety pin is present in each flare (fig. 2-13).

(5) Remove flares from dispenser assembly and turn ejection dial indicator counterclockwise to SAFE position. Examine flares for damage. Contact authorized disposal personnel for disposal of damaged flares.

(6) Repack serviceable flares in containers. Replace tape on containers. Use repacked flares first in subsequent launchings.

(7) Replace loading gate.

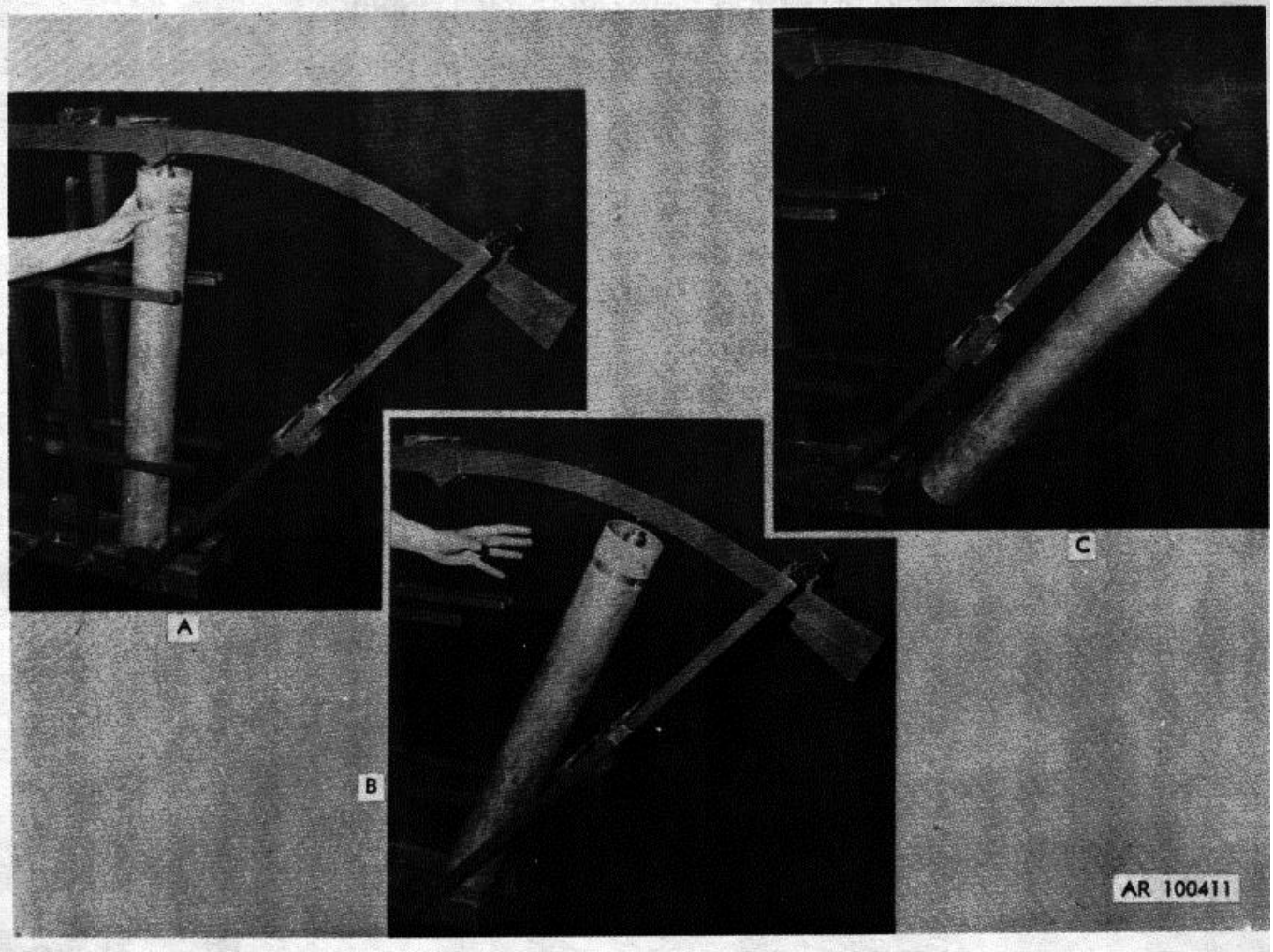


Figure 2-12. Launching sequences.

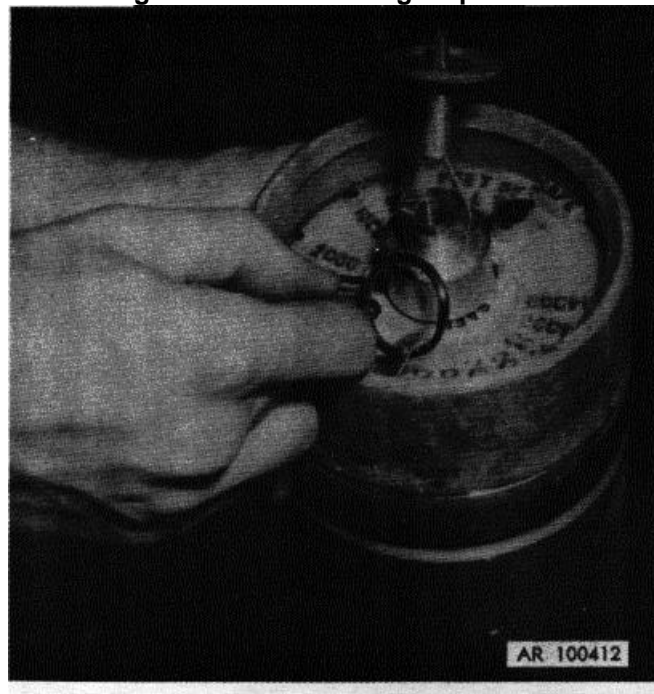


Figure 2-13. Reinstalling safety pin.

## Section II. OPERATION UNDER UNUSUAL CONDITIONS

### 2-5. General-Mk 45 Mod 0 and Mk 45 Mod 0 with Adapter

Operation of flare under unusual conditions is the same as under normal conditions, with the following exception: During operation in Arctic environments, preparation procedures must be accomplished in warm structure to facilitate fuze setting and taping procedures. At extremely cold temperatures, the ejection dial indicator may become frozen in place, making setting difficult.

### 2-6. Mk 45 Mod 0 with Adapter

#### a. Procedure for Removing Flares When Dispenser Becomes Inoperable In Flight.

(1) Disengage pull cable assembly disk from overhead track of dispenser assembly (fig. 2-14).

(2) Assure that a safety pin is present in each flare (fig. 2-13). Tilt top of flare rearward and remove flare through emergency release opening (fig. 2-15).

#### b. Launching When Dispenser is Inoperable or Unavailable.

(1) Attach static line XM164 to cargo tiedown near door.

(2) Attach free end of static line to flare pull cable assembly (fig. 2-16).

(3) Remove safety pin from fuze and retain for reinsertion if flare is not launched.

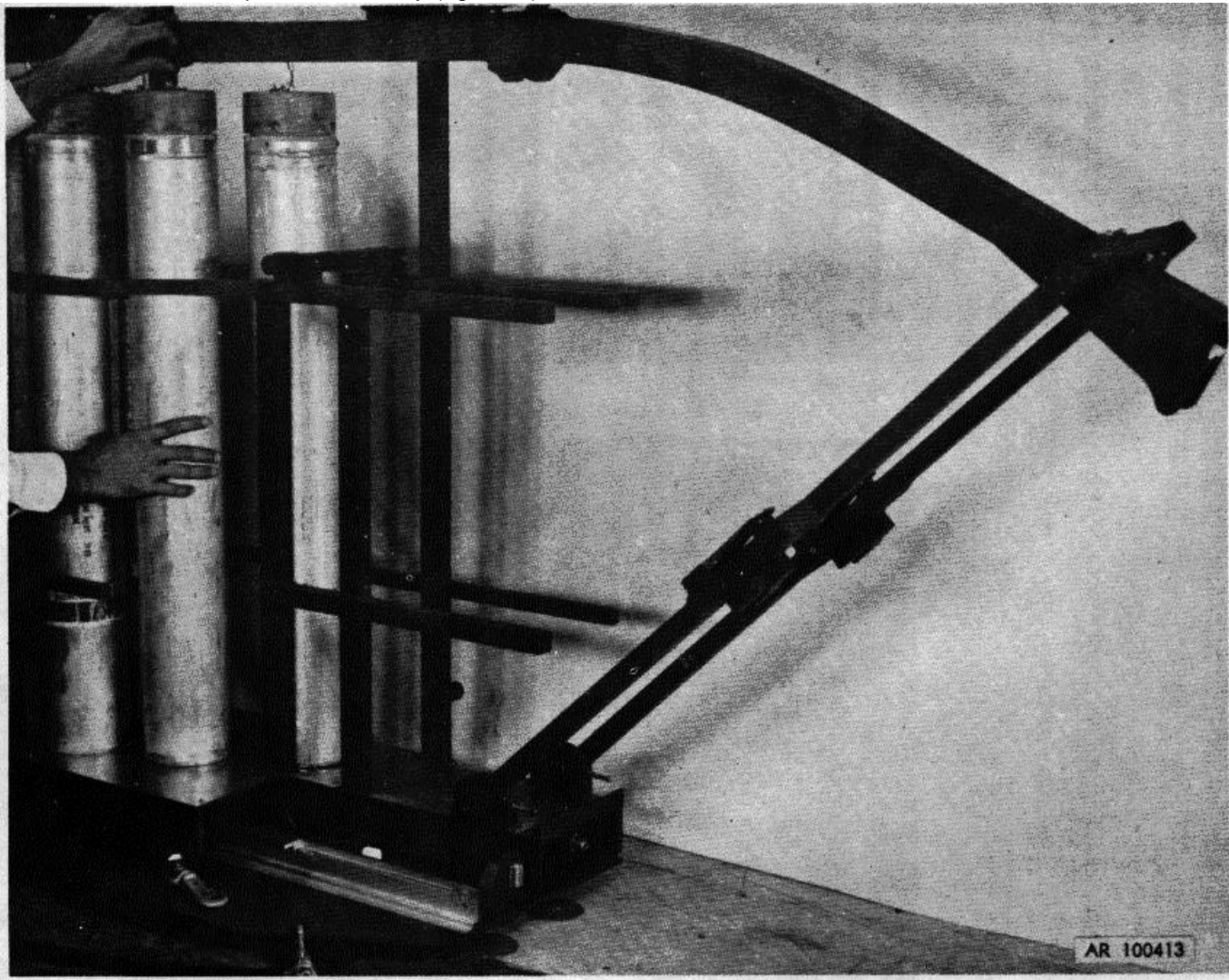


Figure 2-14. Disengaging pull cable assembly from dispenser assembly.

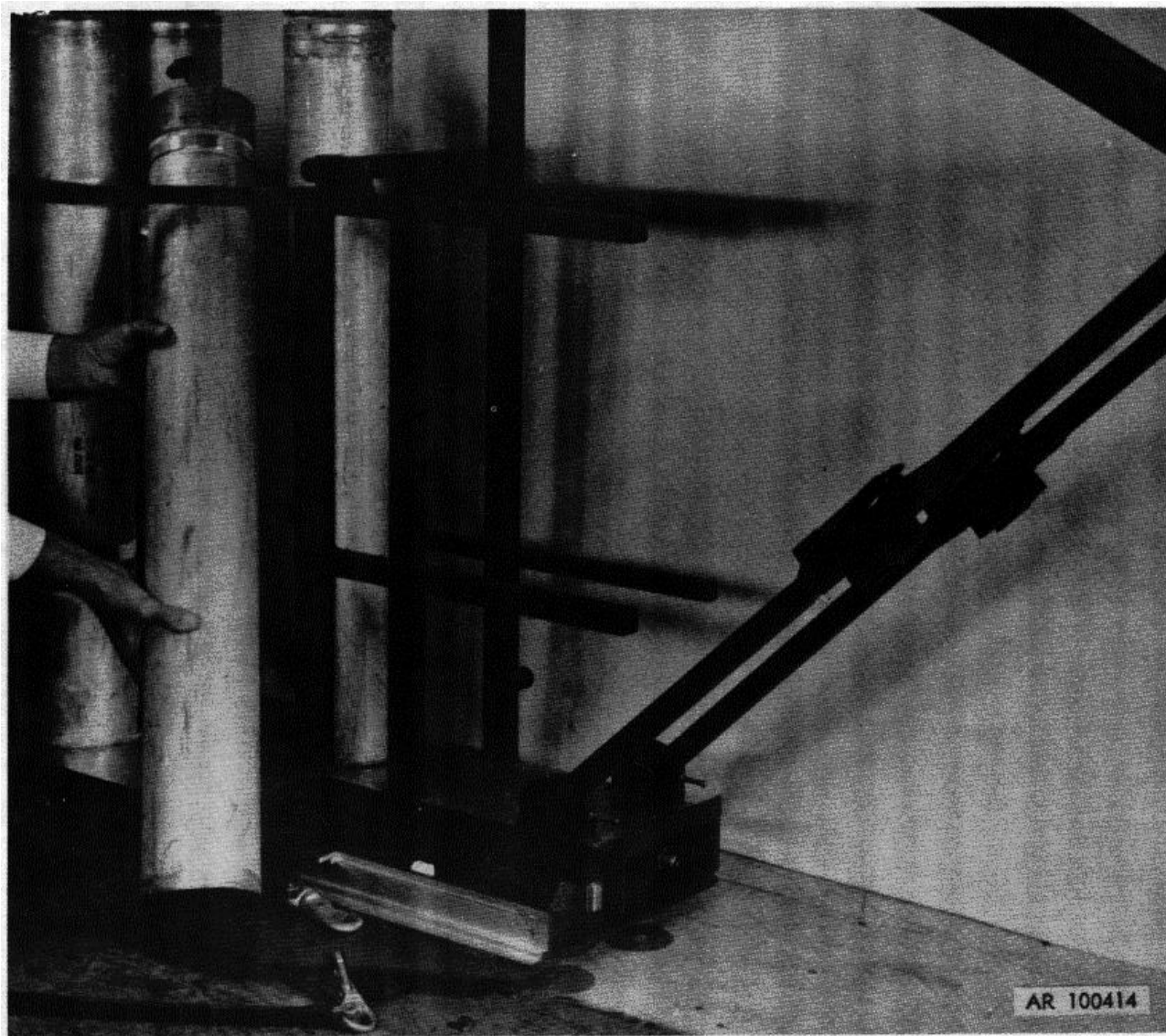


Figure 2-15. Removing flare from dispenser assembly

(4) Throw flare from helicopter (fig. 2-17), base end first, assuring that flare clears helicopter.

**WARNING**

If flare does not separate from static line XM164, do not attempt to pull flare back into helicopter. Detach static line XM164 from tiedown ring and let static line and flare fall away.

(5) After flare has fallen away from aircraft, retrieve static line and retain pull cable assembly for disposal after landing. Stow static line XM164 in helicopter as soon as last flare is launched.

*c. Jettisoning Dispenser Assembly With Flares Due to Emergency in Flight.*

**NOTE**

During flight, bail must be out from under handle of firing device, and safety valve handle must be in ARM position.

To jettison dispenser assembly, pilot must lift safety switch cover on firing panel, place safety switch in ARM position, and press firing device handle. The dispenser assembly, with flares, is automatically ejected from helicopter.





**Figure 2-16. Attaching static line XM164 to pull cable assembly**

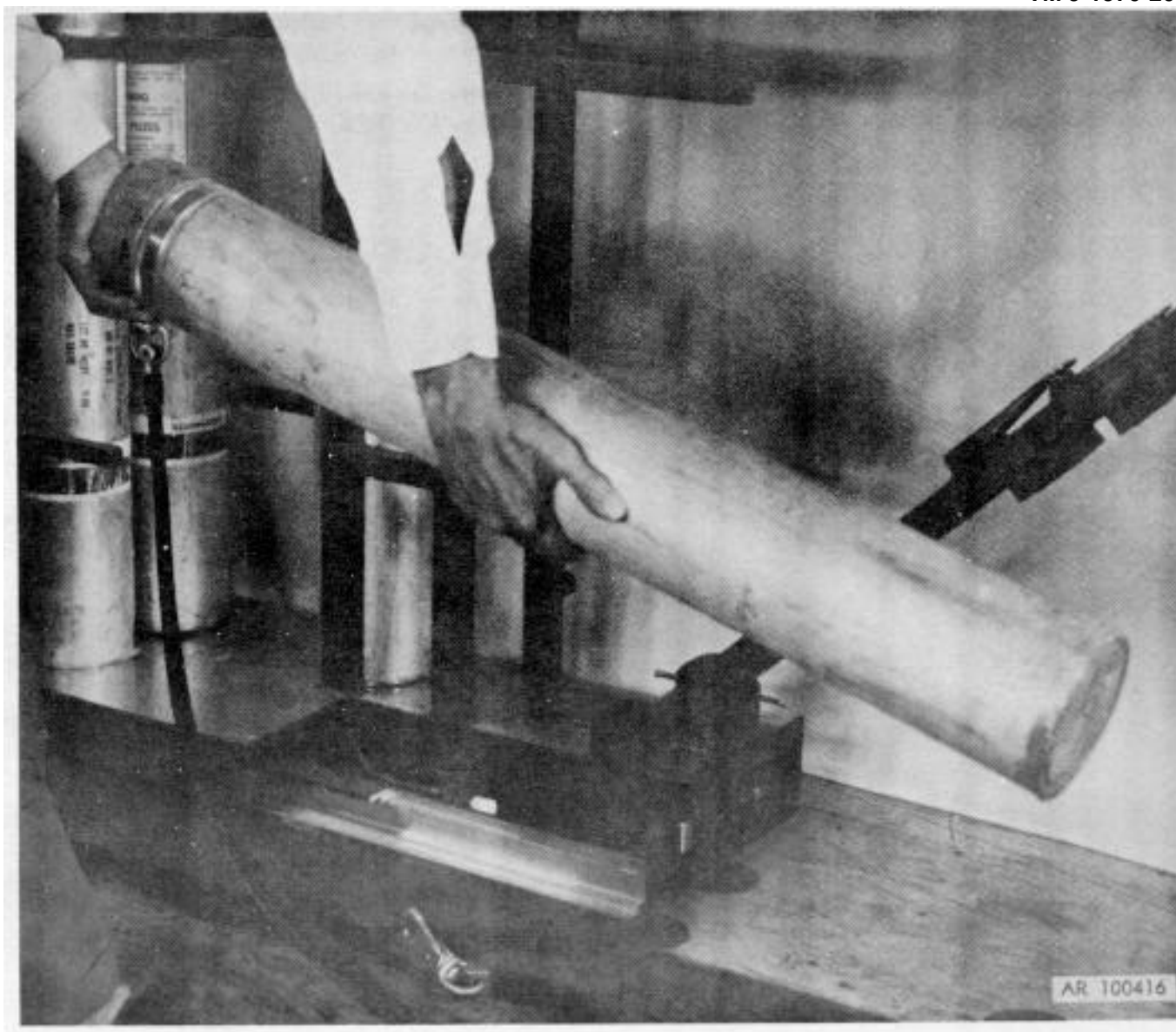


Figure 2-17. Launching flare by hand.

### Section III. REMOVAL OF FLARE DISPENSER XM19 FROM HELICOPTER

#### 2-7. Removal of Dispenser

##### **WARNING**

**Prior to attempting any removal procedures, assure that safety valve handle is in SAFE position, that bail is under handle of firing device, and that safety switch is in SAFE position with cover down.**

a. Assure that safety valve handle is in SAFE position, that bail is under handle of firing device, and that safety switch is in SAFE position with cover down.

b. Detach cable from firing panel and nitrogen cylinder.

c. Unlock snap-screws holding firing panel to instrument panel. Remove firing panel.

d. Retract snout.

e. Loosen locking nut and turn vibration snubber screw counterclockwise to fully extended position.

f. Manually move interlock handle away from rail to disengage interlocks from dispenser assembly.

- g.* Roll dispenser assembly off track plate.
- h.* Remove hexagon nuts from snap-on fittings.
- i.* Remove track plate from helicopter floor.
- j.* Remove snap-on fittings.

**2-8 Removal of Jettison Assembly If Dispenser Assembly Has Been Jettisoned**

If dispenser assembly has been jettisoned, perform steps b, c, e, h, i, and j of paragraph 2-7.

## CHAPTER 3

## ORGANIZATIONAL MAINTENANCE

## Section I. SERVICE UPON RECEIPT OF MATERIAL

## 3-1. Shipping Container for Flare

**NOTE**

**The shipping container is nonhydroscopic unless pierced, cracked, or badly dented. Moisture on exterior surfaces does not indicate moisture contamination of flare.**

a. Inspect container for damage as follows:

- (1) Cracked container.
- (2) Tape missing or torn.
- (3) Pieces of container missing, exposing flare.
- (4) Badly dented container.

b. If a condition listed in a above is observed, unpack and inspect flares (para 3-2).

## 3-2. Flares

a. Open container by cutting tape along seam, taking care not to damage container.

b. Lift off top.

c. Remove flares from container.

d. If barrier bag is torn or pierced, or if shipping container is badly dented so as to cause possible damage to flare, open barrier bag and inspect flare (e below).

e. If flare shows evidence of moisture, dents, or bulges that could render the flare inoperable, contact authorized disposal personnel for disposition.

f. Repackage serviceable flares, using salvaged packing materials. Touch up markings as needed. Give repackaged flares priority of issue.

## 3-3. Shipping Crate for Dispenser

Inspect shipping crate. Open damaged crate, if it appears that contents could be unserviceable. Inspect dispenser (para 3-4).

## 3-4. Flare Dispenser XM19

a. *Dispenser Assembly.*

(1) Inspect dispenser assembly for damage that renders it unserviceable.

(2) If dispenser assembly is serviceable, set aside for repacking.

(3) If dispenser assembly is unserviceable, set aside for disposition.

b. *Jettison Assembly.*

(1) Inspect track plate for damage that renders it unserviceable, such as broken seal on nitrogen cylinder, bent rails, etc.

(a) If track plate is serviceable, set aside for repacking.

(b) If track plate is unserviceable, set aside for disposition after removing any serviceable nitrogen cylinder (with attached parts) for possible future use.

(2) Inspect firing panel, cable, and test set for visible damage.

(a) If there is no visible damage, set items aside for repacking.

(b) If there is visible damage, perform electrical continuity test in accordance with paragraph 2-3b.

1. If electrical continuity test reveals no defective items, set items aside for repacking.

2. If electrical continuity test reveals defective items, set items aside for disposition.

## Section II. ORGANIZATIONAL MAINTENANCE

### 3-5. Flares

Except for touchup of markings (para 3-6), the only maintenance to be performed on flares is contained in paragraph 3-1 and 3-2.

### 3-6. Touchup Markings on Flares

Flares bear the information shown below. Those markings indicated by asterisk are essential. If any of the essential markings are missing, notify authorized disposal personnel.

- a. Nomenclature and model designation.\*
- b. Federal Stock Number.
- c. Lot number.\*
- d. DODIC number.
- e. Loading date.\*
- f. Manufacturer's name or symbol.
- g. Loading facility.
- h. The words FORWARD OR UP and DOWN OR AFT indicate the forward and aft positions on the flare.\*

i. Fuze setting and safing instructions on label on the case.

j. A brown and white band around the lower end of the flare with the word ILLUMINATING printed on it twice.

k. The words THIS END DOWN OR AFT WHEN LAUNCHED located on the flare end cap.\*

### 3-7. Touchup Markings on Flare Containers and Dispenser Crates

a. The following information must be legible on each container:

- (1) Nomenclature.
- (2) Federal stock number (including DODIC).
- (3) Lot number.
- (4) Date of manufacture.
- (5) Quantity.

b. If even *part* of the original markings are obliterated, apply new markings adjacent to original markings, using a waterproof ink marker or a chinamarker pencil.

CHAPTER 4

SHIPMENT AND STORAGE

Section I. SHIPMENT

4-1. Flares

a. Precautions.

(1) Handle flares carefully. Improper handling can degrade item so that it will not accomplish its mission.

(2) Assure that flares being transported will not be damaged, contaminated, or otherwise degraded so that they become dangerous or their usefulness impaired.

(3) Do not roll, drop, or subject flares to high-shock loads.

(4) Return as unserviceable flares subjected to severe handling that are damaged or suspected of being damaged.

b. Instructions.

(1) In transporting flares, block and brace adequately to withstand sudden stops, starts, and off-road operations.

(2) Load flares in attitude which prevents rolling.

(3) If packing is broken or damaged, and flares still serviceable, restore or replace packing by using packing material from expended ammunition. Assure that all markings (i.e., lot identification, nomenclature, FSN, etc.) are transferred to reworked packing.

c. Palletizing for Retrograde Shipment.

(1) This instruction is applicable if the flares do not have a vent hole. An end cap may be propelled from an unvented flare due to generation of hydrogen gas.

(2) In order to prevent an end cap from leaving area of the pallet, block its path with plywood. Obtain 1 piece of plywood for each pallet, 85-1/2 inches long, 26 inch wide, and 3/4 inch thick. Position one piece of plywood on one end of the stack of flare containers and place the other piece of plywood over the opposite end of the stack of flare containers. Fasten the plywood to the stack with two strapping bands. Pass each band under the pallet, up the sides of the plywood, and across the top of the stack.

d. Data.

Department of Transportation (DOT or ICC shipping designation) .....	Special fireworks
DOT shipping class .....	A
Federal Stock Number (FSN) and Department of Defense Identification Code (DODIC):	
Mk 45 Mod 0.....	1370-088-5658
.....	(L473)
Mk 45 Mod 0 with adapter .....	1370-461-1526
	(L424)
Gross weight (including 2 flares) .....	60 lb
Cubical displacement of shipping container .....	1.89 cu ft
Descriptive nomenclature of packed item (L473) .....	Flare, Aircraft: Parachute, White, Mk 45 Mod 0
(L424) .....	Flare, Aircraft: Parachute, Mk 45 Mod 0 with Adapter Dispenser XM19

4-2. Flare Dispenser XM19-Data

Department of Transportation (DOT) shipping designation .....	Bomb Rack, Airplane
DOT shipping class .....	N/A
Federal Stock Number (FSN) and Department of Defense Identification Code (DODIC) .....	1370--179-6011 (L106)
Gross weight.....	362.0 lb
Cubical displacement of shipping containers....	57.3 cu ft
Descriptive nomenclature of packed items.....	Dispenser, Flare: XM19

**Section II. STORAGE**

**4-3. Flares**

*a. Precautions.*

(1) Flares may be adversely affected by moisture and extremes in temperature. Consequently, they should be stored in dry, well ventilated places.

(2) When it is necessary to store flares in the open, select storage site free of power lines and electric cables.

(3) Do not locate flares adjacent to reservoirs, water mains, or sewer lines.

(4) Select level, well drained sites free of readily ignitable and flammable materials.

(5) Do not store under trees or adjacent to towers or other structures which attract lightning.

(6) Provide nonflammable or fire-resistant overhead covers (such as tarpaulin) for all flares. Maintain overhead air space of approximately 18 inches between cover and flares. Keep cover at least 6 inches from pile on ends and at sides, to permit circulation of air.

*b. Data.*

Quantity-distance class .....	2
Storage compatibility group.....	N
Storage temperature limits:	
Lower limit .....	-65° F. for not more than 3 days +160° F. for not more than 4 hours per day

**NOTE**

**In unventilated containers, inclosures, shelters, freight cars, closed vehicles, and similar structures,**

temperatures considerably higher than those outside may be encountered. Temperatures of approximately +160° F. may be developed within such structures exposed to an outside air temperature of +125° F. plus the full impact of solar radiation for a period of 4 hours.

*c. Quantity-Distance Requirements.* Quantity distance requirements are shown in table 4-1.

Table 4-1. Quantity-Distance Requirements

Quantity		Unbarricaded distance (feet)		
		Inhabited building distance	Public highway & public railway distances	Magazine and intraline distance
Pounds (over)	Pounds (not over)			
100	1,000	75	75	50
1,000	5,000	115	115	75
5,000	10,000	150	150	100
10,000	20,000	190	190	125
20,000	30,000	215	215	145

**NOTE**

**In addition to the distance established in the table, maintain a distance of 400 feet between stored flares and flammable fuels, and a minimum distance of 800 feet between stored flares and massed (stored) vehicles.**

**4-4. Flare Dispenser XM19-Data**

Quantity distance class .....	1
Storage compatibility group.....	BEN

## APPENDIX A REFERENCES

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### A-1. Publication Indexes

The following publication indexes should be consulted frequently for the latest changes or revisions of references given in this appendix and for new publications relating to the material 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 Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.....	DA Pam 3104
Index of Supply Catalogs and Supply Manuals (excluding types 7, 8, and 9).....	DA Pam 310-6

### A-2. Technical Manuals

Ammunition and Explosives Standards .....	TM 9-1300-206
Destruction of Conventional Ammunition and Improved Conventional Munitions to Prevent Enemy Use (Excluding Toxic and Incapacitating Chemical Agents for Combat Unit).....	TM 750-244-5-1
The Army Maintenance Management. System (TAMMS) .....	TM 38-750

### A-3. Army Regulations

Accident Reporting and Records .....	AR 385-40
Malfunctions Involving Ammunition and Explosives .....	AR 75-1
Regulations for Firing Ammunition for Training, Target Practice, and combat .....	AR 385-63
Report of Packaging and Handling Deficiencies .....	AR 700-58
Reporting of Transportation Discrepancies in Shipments .....	AR 55-38

### A-4. Forms

Accident Report .....	DA Form 285
Ammunition Condition Report .....	DA Form 2415
Discrepancy in Shipment Report .....	SF 361
Recommended Changes to Publications and Blank Forms .....	DA Form 2028
Report of Packaging and Handling Deficiencies .....	DD Form 6



APPENDIX B

EXPENDABLE ITEMS

Section I. INTRODUCTION

**B-1. Scope**

This appendix lists items which are required for organizational maintenance.

*b. Description, Column 2.* Indicates the item name and brief description.

*c. Military Specification, Column 3.* Indicates military specification assigned to the item.

**B-2. Explanation of Columns**

*a. Federal Stock Numbers, Column 1.* Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

*d. Unit of Issue.* Indicates the unit of issue of each item.

Section II. EXPENDABLE SUPPLIES

<i>(1)</i> <i>Federal stock No.</i>	<i>(2)</i> <i>Description</i>	<i>(3)</i> <i>Military specification</i>	<i>(4)</i> <i>Unit of issue</i>
8135-269-8090 1370-962-1798 7510-240-1526	TAPE, PRESSURE SENSITIVE ADHESIVE: 2 in. wide STATIC LINE, DROP, FLARE: XM164 PENCIL: china marking	PPP-T-60 - SS-P-196	roll (60 yds) each dozen (12 pencils)

**NOTE**  
Expendable supplies should be requisitioned

through normal supply channels to comply with maintenance requirements.

## APPENDIX C

## MAINTENANCE ALLOCATION CHART

## Section I. INTRODUCTION

## C-1. General

a. The Maintenance Allocation Chart designates responsibility for the performance of maintenance functions.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated.

c. A maintenance function assigned a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

## C-2. Definitions of Maintenance Functions

The implementation of maintenance tasks will be consistent with the assigned maintenance in accordance with the following definitions.

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. *Test.* To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition.

(1) *Unpack.* To remove item from packing box for service or when required for the performance of other maintenance operations.

(2) *Repack.* To return item to packing box after service and other maintenance operations.

(3) *Clean.* To rid the item of contamination.

(4) *Touch up.* To spot paint scratched or blistered surfaces.

(5) *Mark.* To restore obliterated identification.

d. *Install.* To emplace, seat, or fix into position an item in a manner to allow the proper functioning of the equipment.

e. *Adjust.* To maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

f. *Renovate.* To restore item to serviceable condition.

(1) *Paint.* To repaint the entire item.

(2) *Repair.* To restore serviceability to an item by correcting specific damage, fault, malfunction, or failure through the application of maintenance services or other maintenance actions.

(3) *Replace.* To substitute a serviceable component in a manner to allow the proper functioning of equipment.

## C-3. Explanation of Format

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

b. *Column 2, Functional Group.* Column 2 lists the next higher assembly group and the item names of components, assemblies, and subassemblies within the group for which maintenance is authorized.

c. *Column 3, Maintenance Function.* Column 3 lists the 12 maintenance functions defined in paragraph C-2 above. Each maintenance function required for an item is specified by the symbol

among those listed in d below which indicates the level responsible for the required maintenance.

d. Use of Symbols. The following symbols are used to prescribe work function responsibility:

- C..... Operator/Crew.
- O..... Organization.
- F..... Direct Support.

- H..... General Support.
- D..... Depot.

e. Column 4, Tools and Equipment. This column specifies, by code, those tools and test equipment required to perform the designated function.

f. Column 5, Remarks. Self-explanatory.

**Section II. MAINTENANCE ALLOCATION CHART  
FOR  
FLARE, AIRCRAFT: PARACHUTE, WHITE, MK45 MOD 0;  
FLARE, AIRCRAFT: PARACHUTE, MK 45 MOD 0 WITH ADAPTER  
FOR DISPENSER XM19; DISPENSER, FLARE: XM19; AND  
STATIC LINE, DROP, FLARE: XM164**

(1) G R O U P  N U M B E R	(2) Functional group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks	
		I N S P E C T	T E S T	S E R V I C E					I N S T A L L	A D J U S T	R E N O V A T E				
				U N P A C K	R E P A C K	C L E A N	T O U C H U P	M A R K			P A I N T	R E P A I R			R E P L A C E
0101	01 GROUP-FLARES Flare, Aircraft: Parachute, White, Mk 45	O		O	O	O	O		O	O					
0102	Flare, Aircraft: Parachute Mk 45, Mod 0 with Adapter for Dispenser XM19	O		O	O	O	O		O	O					
0103	Packing Material	O				O	O						O		
0201	02 GROUP-DISPENSER, FLARE: XM19 Dispenser Assembly	O		O	O	O	O		O	O					
0202	Loading Gate	O				O									
0203	Dispensing Gate	O				O									
0204	Tension Latches	O								O					
0205	Rollers	O				O									
0206	Jettison Assembly	O	O	O	O	O	O		O	O					
0207	Track Plate	O				O			O	O					
0208	Nitrogen Cylinder	O							O				O		
0209	Safety Valve	O	O			O									
0210	Interlocks	O													
0211	Piston	O													
0213	Firing Panel	O	O	O	O				O				O		
0214	Cable	O	O	O	O				O				O		
0215	Test set for XM19	O							O				O		
0301	03 GROUP-STATIC LINE, DROP, FLARE: XM164 Static Line, Drop, Flare: XM164	O							O						

**APPENDIX D**  
**ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND**  
**SPECIAL TOOLS LIST**

**Section I. INTRODUCTION**

**D-1. Scope**

This appendix lists repair parts that are required for the performance of organizational maintenance on flares and dispensers.

**D-2. Explanation of Columns**

The following provides an explanation of columns found in section II:

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item number.* Indicates the number used to identify each item called out in the illustration.

b. *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 code is entered in the first and second positions of the SMR code as follows:

<i>Code</i>	<i>Explanation</i>
XB.....	Item not stocked and the indicated maintenance category requiring such items will attempt to obtain these through cannibalization or salvage. If the item is not available through cannibalization, it may be requisitioned from the next higher maintenance level.

(2) *Maintenance code.* Maintenance code consists of two parts-USE code (third position) and REPAIR code (fourth position). USE indicates the lowest maintenance level authorized to remove, replace, and use the listed item. REPAIR code indicates whether the item is to be repaired, and identifies the lowest maintenance level authorized to repair the listed item. Maintenance codes are:

<i>Code</i>	<i>Explanation</i>
Use	
0 .....	Support item is removed, replaced, used at the organizational level.
<i>Repair</i>	
Z .....	Nonreparable. No repair is authorized.

(3) *Recoverability code.* Recoverability code (fifth position) indicates the disposition action on an unserviceable item. Recoverability code is:

<i>Code</i>	<i>Explanation</i>
Z .....	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.

c. *Federal Stock Number.* Indicates the Federal stock number assigned to the item.

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

e. *Federal Supply Code for Manufacturer (FSCM).* The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. *Description.* Indicates the Federal item name and, if required, a minimum description to identify the item.

g. *Unit of Measure (U/M).* Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function.

h. *Quantity Incorporated in Unit.* Indicates the quantity of the item used with or on the equipment.

(1) ILLUSTRATION		(2) SMR CODE	(3) FEDERAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
1-10		XBOZZ		Nav Aer Dwg No. 2816268		GROUP 01-FLARES 0103-PACKING MATERIAL Container, Top*	ea	1
1-10		XBOZZ		Nav Aer Dwg No. 2816269		Container, Bottom*	ea	1
1-7				9247440		GROUP 02-DISPENSER, FLARE: XM19 0208-NITROGEN CYLINDER Nitrogen Cylinder**	ea	1
1-8		XBOZZ		9249360		0213-FIRING PANEL Firing Panel	ea	1
1-8		XBOZZ		9251397		0214-CABLE Cable	ea	1
2-8		XBOZZ		9255382		0216--TEST SET FOR XM19 Test set for XM19	ea	1

\*One each of the parts is required for packaging two flares.

\*\*Available by sending an expended nitrogen cylinder to Picatinny Arsenal. Dover. NJ. ATTN: SMUPA-AD-M-A. Not available from field stock

By Order of the Secretary of the Army:

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IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.			
BE EXACT PIN-POINT WHERE IT IS			
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER		SIGN HERE	

## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 decagram = 10 grams = .35 ounce  
 1 hectogram = 10 decagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

### Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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