DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL

MAINTENANCE MANUAL

FLARE, AIRCRAFT: PARACHUTE

Mk24, ALL MODS

This is a reinstatement of a 1969 manual and includes new Warnings and Cautions. Initial distribution is being made.

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1972

WARNING

Parachute aircraft flares Mk24, all models, are restricted to combat emergency use only for internal hand launch from r6tary and fixed wing air craft. Restriction does not apply to external carriage and release.

TECHNICAL MANUAL

No. 9-1370-202-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *20 December 1972*

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL

FLARE, AIRCRAFT: PARACHUTE, Mk24, ALL MODS

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

1-1. Scope

These instructions provide operator and organizational maintenance for Flare Mk24. This flare provides lighting for battlefield illumination, target marking and reconnaissance. Flares are launched internally from fixed-wing and rotary-wing aircraft.

1-2. Forms, Records and Reports

a. General. Commanding Officers of units receiving this ammunition are responsible for preparation of records and reports. For reporting purposes, ammunition is identified by lot numbers, standard nomenclature, etc.

b. Field Reports of Accidents. Accidents involving injury to personnel or damage to materiel are reported on DA Form 285 or DA Form 1051, in accordance with instructions in AR 385-40.

c. Malfunction Reports.

(1) Definition of a malfunction. A malfunction is a failure of the flare to perform as expected when armed or launched. For reporting purposes, malfunctions do not include accidents and fires resulting from negligence, malpractice and the like. However, malfunctions do include abnormal or premature functioning's which occur during normal handling, maintenance, storage, transportation, and tactical deployment.

(2) Malfunctions involving standard issue items. The procedure in AR 75-1 will be followed in reporting malfunctions which occur during the following:

(a) Training and combat missions.

(b) Tests (including comparison, safety, climatic, reliability, etc.) conducted subsequent to the acceptance test.

d. *Report of Damaged or Improper Shipment*. Damaged or improper shipments will be reported immediately to the forward supply unit (FSU), ammunition supply point (ASP) or depot from which the flares were issued.

e. Fire Reports. As prescribed by AR 385-12, DA Form 5-2 will be used to report fires or explosions followed by fire. DA Form 5-2 will be submitted in addition to the accident reports required by AR 385-40.

f. Reporting of Equipment Publication Improvements. Reporting of errors, omissions, and recommendations. for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commanding Officer, Picatinny Arsenal, ATTN: SMUPA-DC5, Dover, N.J. 07801.

CHAPTER 2

SAFETY CARE AND HANDLING

2-1. Precautions

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. Dispose of Flares Mk24 that have been exposed to moisture.

d. Avoid exposing flares to extreme (high or low) temperatures.

e. Do not touch, move or otherwise handle duds-their fuzes may be armed. Have authorized personnel only destroy duds in place.

2-2. Safety

WARNING

Unauthorized alteration of flares is prohibited.

Except as otherwise indicated in this manual, the flares are safe to handle and use.

2-3. Care

Flares are packed to withstand conditions ordinarily encountered in the field. Although the packing containers provide adequate protection for shipment and storage, observe the following:

a. Keep 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 wet or dirty flares at once and remove any corrosion.

d. Do not open container until flare is to be used.

NOTE

Flares removed from containers, particularly in damp climates, may corrode, becoming unserviceable.

2-4. Handling

a. Flares are to be handled by trained experienced personnel only. Do not subject flares to excessively rough treatment.

b. Protect flares from hard knocks or blows.

CAUTION

Flare cases dent easily and may result in nonejection or faulty ejection of the candle.

CHAPTER 3

OPERATING INSTRUCTION

3-1. General

This chapter covers the physical characteristics, functioning and operation of Aircraft Parachute Flare Mk24, Mods 1, 2, 2A, 3, and 4. Flares Mk24 are designed to provide illumination in the two-million candlepower range for an average of 21/2 to 3 minutes. Flares may be externally launched from wing racks on fixed-wing aircraft or hand launched by means of a static line from the interior of fixed-wing or rotary-wing aircraft. A 40-foot safety lanyard, assembled to the flare, is used in conjunction with the static line procedure.

WARNING

Parachute aircraft flares Mk24, all models, are restricted to combat emergency use only for internal hand launch from rotary and fixed wing aircraft. Restriction does not apply to external cartridge release.

3-2. Description

Flares Mk24 (figs. 3-1 3-4) are aluminum encased, parachute-supported pyrotechnic devices. The major components common to all models, and the significant variations between models are described below.

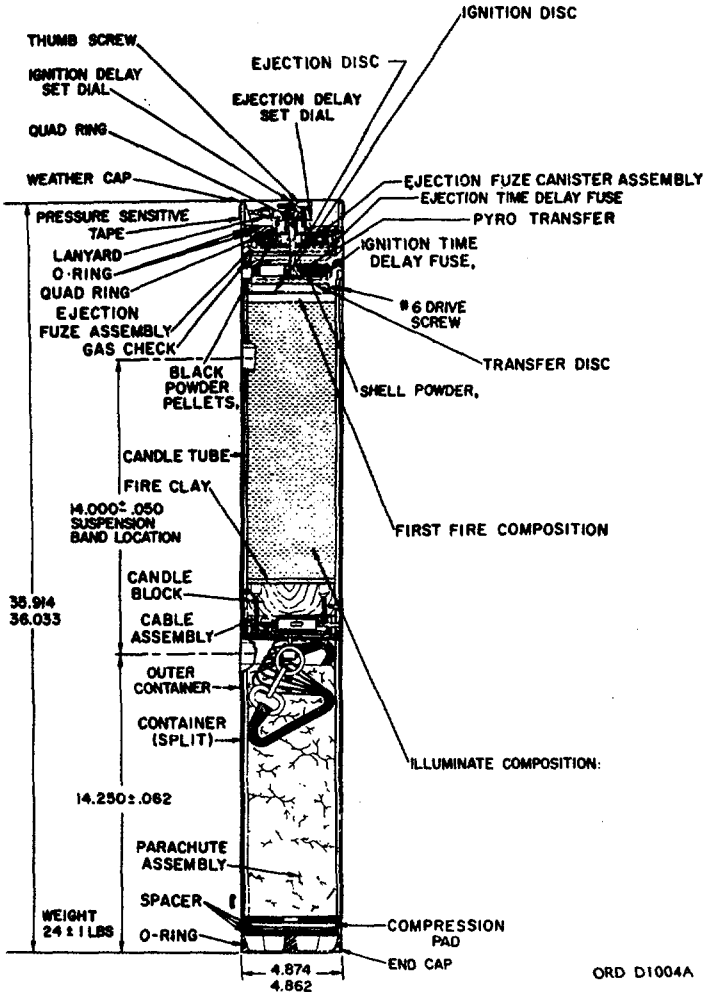

Figure 3-1. Aircraft parachute flare Mk24, mod 1.

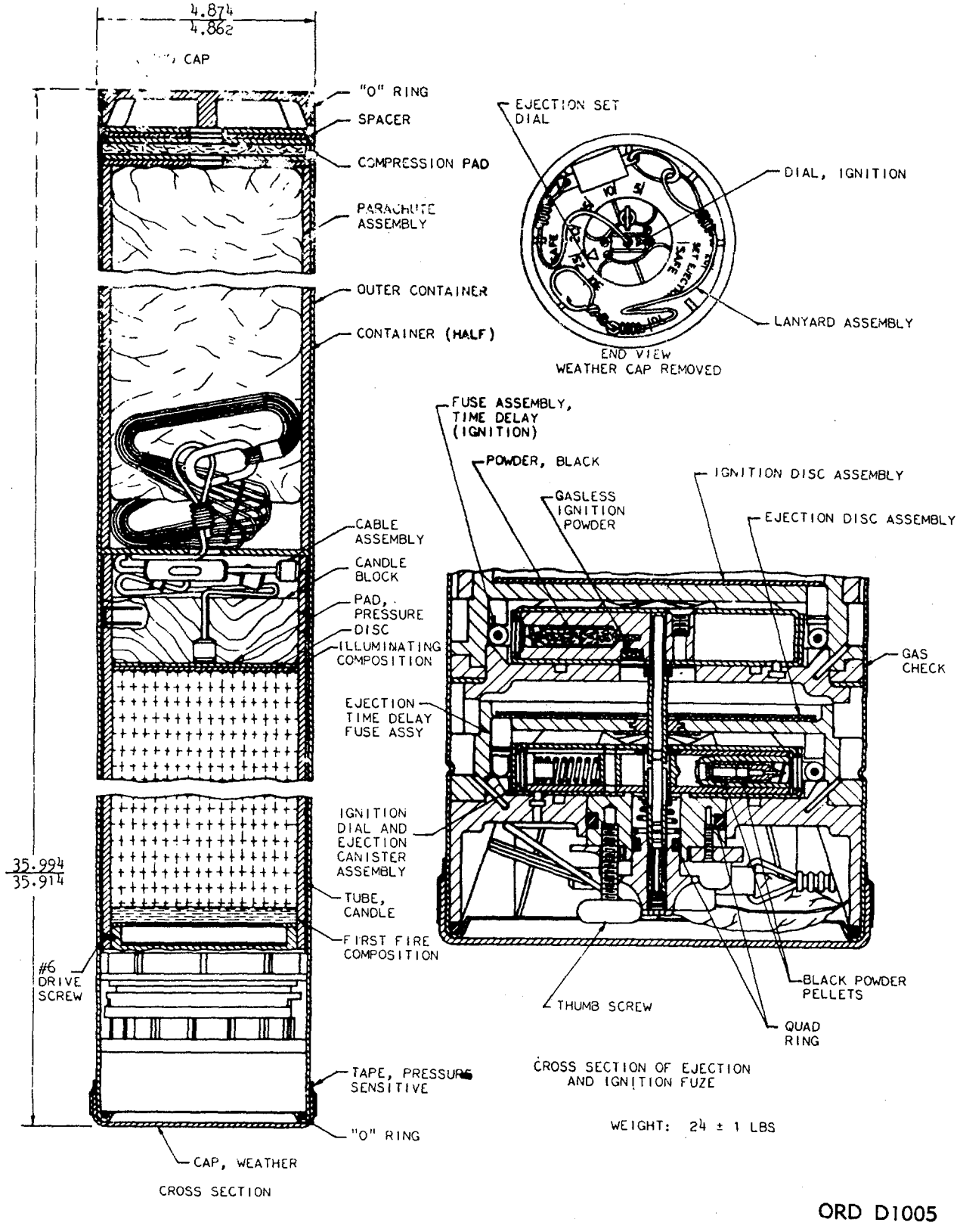

Figure 3-2. Aircraft parachute flare Mk24, mod 2.

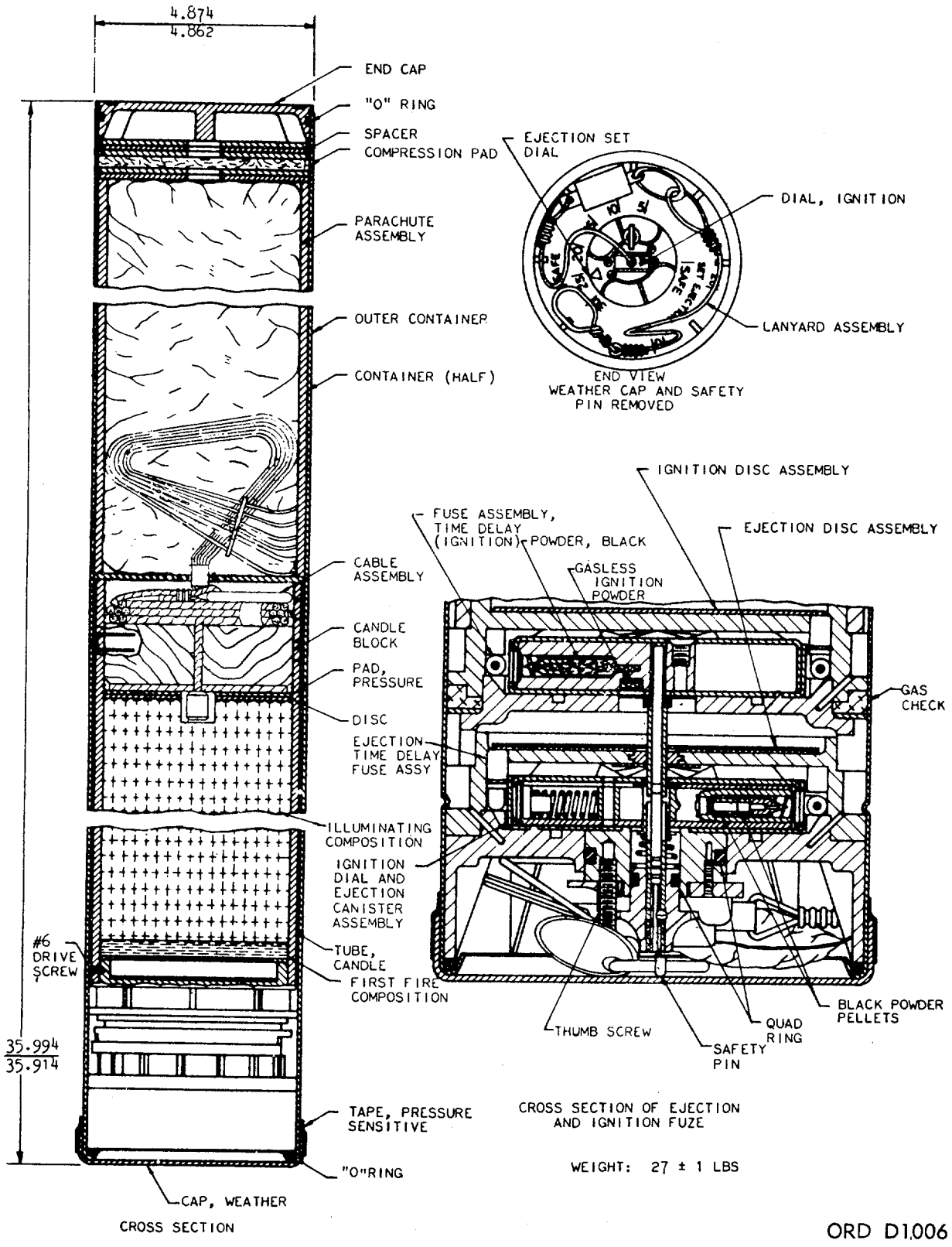

Figure 3-3. Aircraft parachute flare Mk24, mod 3.

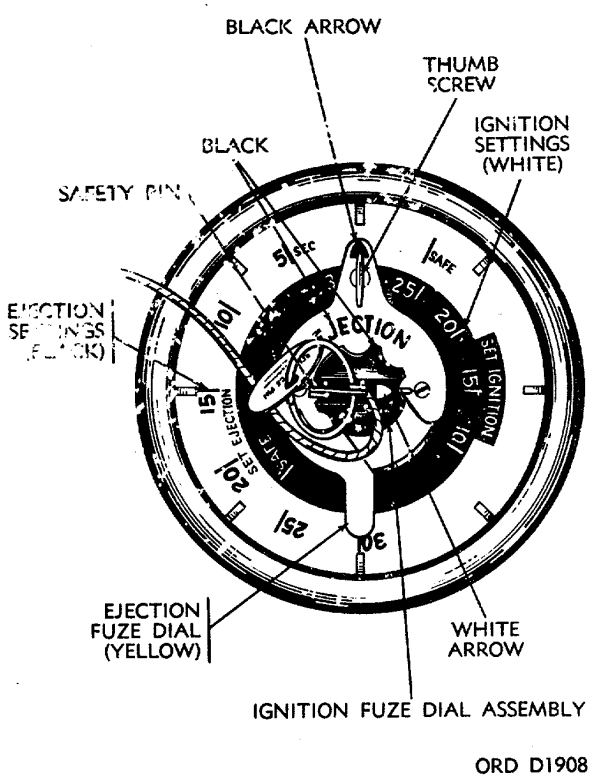

Figure 3-4. Aircraft parachute flare Mh24, mod 4.

a. *An outer case*, consisting of a one-piece aluminum tube, houses the complete flare and fuze assembly. In Mod 1, the case is approximately 11/2 inches shorter than the flare and the plastic fuze extends beyond the end of the outer case. In all other models, the fuze is contained within the case.

b. A plastic *weather cap*, which protects the fuze area during shipment and storage, is taped over the fuzed end of the outer case.

c. A *desiccant bag*, which protects the fuze assemblies from moisture during storage, is located under the weather cap.

d. A *lanyard assembly*, coiled under the weather cap, consists of two flexible, stainless steel cables. The cables, respectively 7 and 27 inches long, are joined by a disconnect.

e. An *ejection fuze assembly,* which controls candle and parachute ejection from the outer case, is located directly below the fuze dials. It consists of an ejection plunger and housing assembly, a delay fuse, and an ejection composition assembly.

(1) On Mods 1, 2, 2A and all lots of Mod 3 produced prior to March, 1966, the ejection fuze setting dial is yellow, with a red arrow which points to the outer ring of black figures on the fuze dial.

(2) On all lots of Mod 3 produced after March, 1966, the ejection fuze setting dial is yellow, with a black arrow which points to the outer ring of black figures on the fuze dial.

(3) On Mod 4, the ejection fuze setting dial is stamped out of flat metal and is painted yellow, with a black arrow which points to the outer ring of black figures on the fuze dial. This dial is shaped more like a pointer than the ejection fuze setting dials on Mods 1, 2, 2A and 3.

(4) On Mods 1, 2, 2A, and all lots of Mod 3 produced prior to March, 1966, a thumbscrew, which locks the ejection and ignition dials during shipment and storage, passes through the ejection and ignition fuze setting dials. Mod 4 contains a thumbscrew which passes through the yellow ejection fuze setting dial.

(5) Certain portions of the ejection fuze dial on Mods 1, 2 and 2A are raised and can be gripped by the fingers for fuze setting.

f. An *ignition fuze assembly*, which controls candle ignition, is located directly below the ejection fuze. It consists of an ignition plunger and housing assembly, a delay fuse, and an ignition composition assembly.

(1) In Mods 1 and 2, ignition fuze settings range from 5 to 30 seconds in 5-second intervals.

In all other models, the range is 10 to 30 seconds in 5-second intervals.

(2) On Mods 1, 2, 2A and all lots of Mod 3 produced prior to March, 1966, the ignition fuze setting dial is gray (or black), with a white arrow which points to the inner ring of white figures on the fuze dial.

(3) On all lots of Mod 3 produced after March, 1966, and on Mod 4, the ignition fuze setting dial points to an inner ring of white figures on a black background on the fuze dial.

(4) In Mods 1 and 2, there is no safety pin on the fuze setting dials. However, in Mods 1, 2, 2A and all lots of Mod 3 produced prior to March, 1966, a thumbscrew, which locks the dials during shipment and storage, passes through the fuze setting dials. On Mods 2A and 3, a safety cotter pin inserted through the ignition dial stem prevents the lanyard from being accidentally pulled and igniting

the flare. In Mod 4, a spring-steel safety pin is inserted through the bottom of the dial.

g. A *candle assembly*, consisting of a Kraft paper tube filled with illuminant composition, is located below the ignition fuze assembly. Mods 1, 2 and 2A contain 13.2 pounds of illuminant; Mods 3 and 4 contain 16.2 pounds.

h. A *parachute assembly,* consisting of a parachute in a split cardboard container, is located directly beneath the candle assembly.

i. A *cable assembly* connects the parachute assembly with the candle assembly.

j. A *compression pad*, located between the parachute and the end cap, assures that all the assemblies are firmly held in place.

k. An aluminum *end cap* seals the base end of the flare.

3-3. Tabulated Data

Except as otherwise indicated, data tabulated below apply to all models of Flare Mk24.

Diameter (max)	87 in.
Length (max)	36 in.
Weight:	
Mods 1, 2 and 2A	24.lb.
Mods 3 and 4	27.lb
Candlepower (avg)	2 million
Burning time (avg):	
Mods 1, 2 and 2A	150 sec.
Mods 3 and 4	180 sec.
Ejection delay (min-max)	5-30 sec.
Ignition delay (min-max):	
Mods 1, 2 and 2A	5--30 sec.
Mods 3 and 4	10-30 sec.
Rate of descent	7.5 fps
Parachute diameter	16 ft

CAUTION

Do not use 5-second ignition delay setting on Mods 1, 2 and .2A-it may result in abnormally high dud rate.

3-4. Packing and Marking

a. Packing. Flares of recent manufacture are packed two each in a molded plastic box secured by tape. Flares of earlier manufacture are packed 2 flares and 4 suspension bands each in a wooden box secured by metal straps. Each flare is a sealed unit.

b. Marking Flares bear the following markings:

(1) Nomenclature and model designation.
(2) Federal Stock Number.
(3) Lot number.
(4) Loading date.
(5) Loading facility.
(6) Location of support bands.
(7) Fuze end of the flare pointed out by an arrow.
(8) Setting and safing instructions on label on the flare body.

WARNING

Follow procedure outlined in paragraph 3-8, below. Setting and safing instructions on flare are incomplete.

3-5. Functioning

WARNING

The flare's outer container falls free after ejection, creating a missile hazard. Use of flares over inhabited friendly territory is not recommended.

a. When the flare is launched from the aircraft, it falls free for a distance equal to the length of the lanyard. When the pull of the flare on the lanyard reaches 12 pounds, the lanyard raises a sleeve. This permits a spring-loaded striker to hit the percussion primer, which initiates the ejection fuze. When the force reaches 55 to 75 pounds, the flare will disconnect from the static line. Flare launched from wing racks leave the 27-inch lanyard connected to the aircraft as debris. Flares launched from the interior of aircraft are retrofitted with self-contained safety lanyards and leave no debris.

b. Burning time of the ejection fuze is determined by the dial setting. At the end of the preset delay, the ejection delay fuse ignites the ejection disk. Gases from the burning disk forcibly eject the parachute assembly, the candle and the ignition fuze assembly.

c. Upon ejection, the parachute opens and suspends the candle and ignition fuze assembly. The ignition time delay fuse, ignited by the ejection disk, burns for the time preset on the dial. At the end of the preset delay, the ignition fuze ignites the candle and separates from the assembly.

3-6. Materials and Accessories Required

The following separately issued items are used with Flare Mk24: (appendix B) .

a. Tape, Pressure Sensitive Adhesive. This two inch adhesive tape is used in the arming procedure. Although green tape is most commonly issued, the color doesn't matter.

b. Disks, Cardboard. Cardboard disks, -1.2 inches in diameter with a V4-inch center hole, are used to prevent the lanyard from becoming fouled in the fuze dials. A 2-inch slit extends from the

perimeter to the center hole. If disks are not available through regular supply channels, they may be hand-fabricated to the above specifications from 1/16to 1/8-inch cardboard. (Cardboard spacers in packing boxes are suitable for this purpose).

c. Lanyard, Safety Assembly.

NOTE
Do not remove cable, supplied in ready to-use condition, from sealed polyethylene bag.

The safety lanyard consists of 40 feet of flexible steel cable. The cable is arranged in four-inch loops, spot fused between two polyethylene sheets. The fused cable is folded and sealed in a polyethylene bag. Both ends of the cable protrude from the same end of the bag. A disconnect is swaged to one end of the cable; a loop fastener, to the other end.

d. XM164 Static Line, Flare. The static line consists of eight parallel steel-wire cables in a molded plastic sleeve. The ends of the wire are swaged to fittings which accept swivel-jointed snaphooks. The flat contour of the static line affords a low profile to prevent accidental tripping and the plastic coating prevents abrasion to the aircraft transom.

e. Bands, Suspension. The aluminum suspension bands are approximately one-inch wide. An eye at the top of each band fits into the bomb rack release mechanism. Bolts and nuts on the bottom of the bands are used to fit the bands snugly around flares.

f. Wrench, Fuze. The fuze wrench is not available through regular supply channels. However, it is simple in design. As shown in figure 3-5, it can be easily manufactured in the field.

3.7 Fuze Setting Tables

a. In addition to the data tabulated in tables 3-1 and 3-2, the following information must be considered in determining fuze settings:

(1) After launch and before parachute opening, the flare falls approximately 300 feet during the first 5 seconds; 700 feet during the next 5 seconds, and approximately 1,000 feet for each 5 seconds thereafter.

(2) After the parachute opens, the average rate of descent is 7.5 fps.

(3) Mods 1, 2 and 2A will burn for approximately 1,125 feet of fall before burnout; Mods 3 and 4, 1,250 feet.

b. Tables 3-1 and 3-2, below, provide data for determining launch altitude and fuze settings. Drift corrections, based on local wind conditions, are not covered in the tables and must be computed for specific landing sites. Minimal flight altitudes are based on burnout at approximately 350 feet above ground level. Paragraphs (1) through (3), below, indicate typical use of tables:

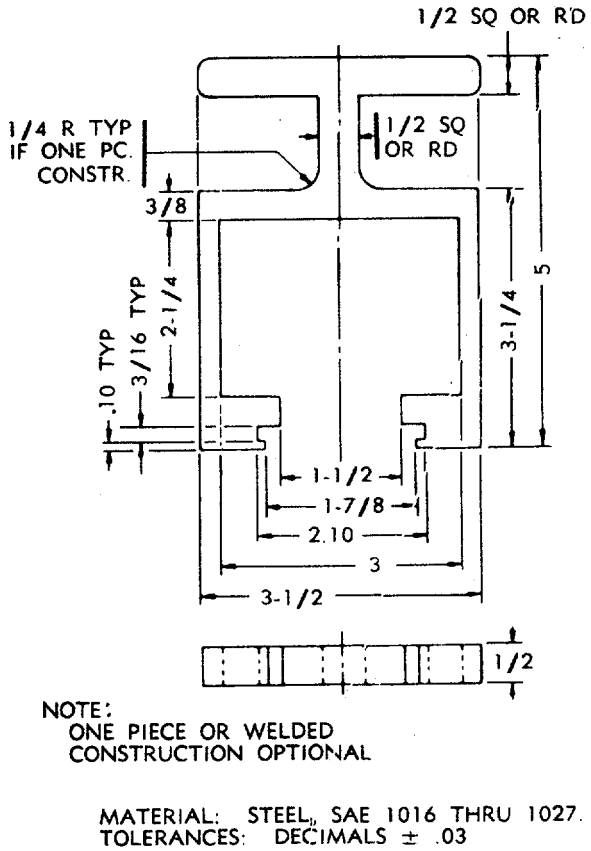

Figure 3-5. Fuze wrench.

Table 3-1. Launch Altitude for Burnout Approximately 350 Feet Above Ground (10-Second Ignition Fuze Setting)

	Ejection fuze setting (seconds)					
	5	10	15	20	25	30
Launch altitude (Mods 1, 2&2A)	1900	2600	3600	4600	5600	660(
Launch altitude (Mods 3 and 4)	2100	2800	3800	4800	5800	680(

NOTE
Each 5-second increase on the ignition fuze dial adds 75 feet to above readings.

Table 3-2. Distance of Fall for Fuze Settings Prior to Flare Ignition (feet)

Ejection fuze settings (seconds)	Ignition fuze settings (seconds)				
	10	15	20	25	30
5	425	500	575	650	725
10	1150	1225	1300	1375	1450
15	2050	2125	2200	2275	2350
20	3050	3125	3200	3275	3350
25	4050	4125	4200	4275	4350
30	5050	5125	5200	5275	5350

NOTE
Height values are calculated on mean delay time of fuze settings.

(1) When height of desired flare ignition and launch altitude are known, determine fuze setting as follows:

(a) Subtract height of desired flare ignition from launch altitude.

(b) Using this number, read ejection fuze setting and ignition fuze setting.

(2) When fuzes on flare have been preset and altitude of desired flare ignition is known, determine launch altitude as follows:

(a) Find ejection fuze setting and ignition fuze setting on table. Read distance of fall at intersection of fuze setting columns.

(b) Add distance of fall to desired ignition altitude to determine launch altitude.

(3) When fuzes on flare have been preset and aircraft's altitude is known, determine altitude of flare ignition as follows:

(a) Obtain distance of fall as in (2)(a), above.

(b) Subtract distance of fall from launch altitude to obtain ignition altitude.

3-8. Operation under Usual Conditions

This paragraph covers preparation of flares for launch, stowage on aircraft, and launching techniques for both fixed-wing and rotary-wing aircraft.

a. Precautions.

(1) Assure that lanyard does not foul. Pull of only 12 pounds on lanyard will fire ejection delay plunger with ejection fuze set on SAFE. This makes flare nonfunctional.

(2) If ejection fuze is not set on SAFE, pull on lanyard will eject contents and propel flare case away. This creates a missile hazard. If ignition fuze is not set on SAFE, fire hazard is created.

(3) Distinct metallic click, followed by hissing and odor similar to rotten eggs, indicates fuze has been activated. In such case, have personnel clear arming area for at least five minutes, or until flare has burned out completely.

NOTE
Setting fuze between 5-second intervals will result in duds.

(4) Do not permit tape to overlap weather cap.

(5) Do not route static line through suspension bands or lugs.

(6) Require crewmen engaged in manual launch operations to wear harness and be secured to aircraft by safety line.

(7) During normal operation fully extended safety lanyard will automatically disconnect from static line. If this does not occur, immediately disconnect safety lanyard from the aircraft and let it fall away.

(8) Do not use bent or damaged cotter/safety pins.

(9) Firing temperature limits are ±160°Fand 65° F.

CAUTION
Have flares armed and installed by trained, experienced personnel only.

b. Preparation for Use. To obtain maximum usable illumination, fuzes should be set to assure burnout before flare impacts. Unless they are entirely burned out and cool on landing, flares are also likely to ignite combustible materials. Safe launch heights are dependent on burning time, fuze settings, rate of descent, and drift of flare. Fuze settings can be determined from data in tables 3-1 and 3-2.

(1) Preparation arming trough and area.

(a) The arming trough (fig. 3-6) is designed to hold the flare in a horizontal position during arming procedures. In case of accidental functioning, the trough accomplishes the following:

(1) Prevents backward movement of flare.

(2) Propels candle and parachute assembly forward into specific, programmed burnout area.

(3) Retains flare case in place.

(b) The trough can be easily constructed in the field as follows:

1. Build trough (dimensions to accommodate complete cased flare) from wood or metal in either V-shaped or rectangular design.

2. Attach stop plate to end of arming trough which will hold fuzed end of flare.

NOTE

Stop plate should be sufficiently strong and so positioned as to prevent movement of flare, if accidental functioning occurs. The stop plate must not interfere with access to the fuze cavity.

3. Leave opposite end of trough open.

4. Place sandbags under and on top of trough (fig. 3-6) to secure it in place.

5. Drive stakes into ground against stop plate.

(2) Arming procedure for external launch from fixed-wing aircraft.

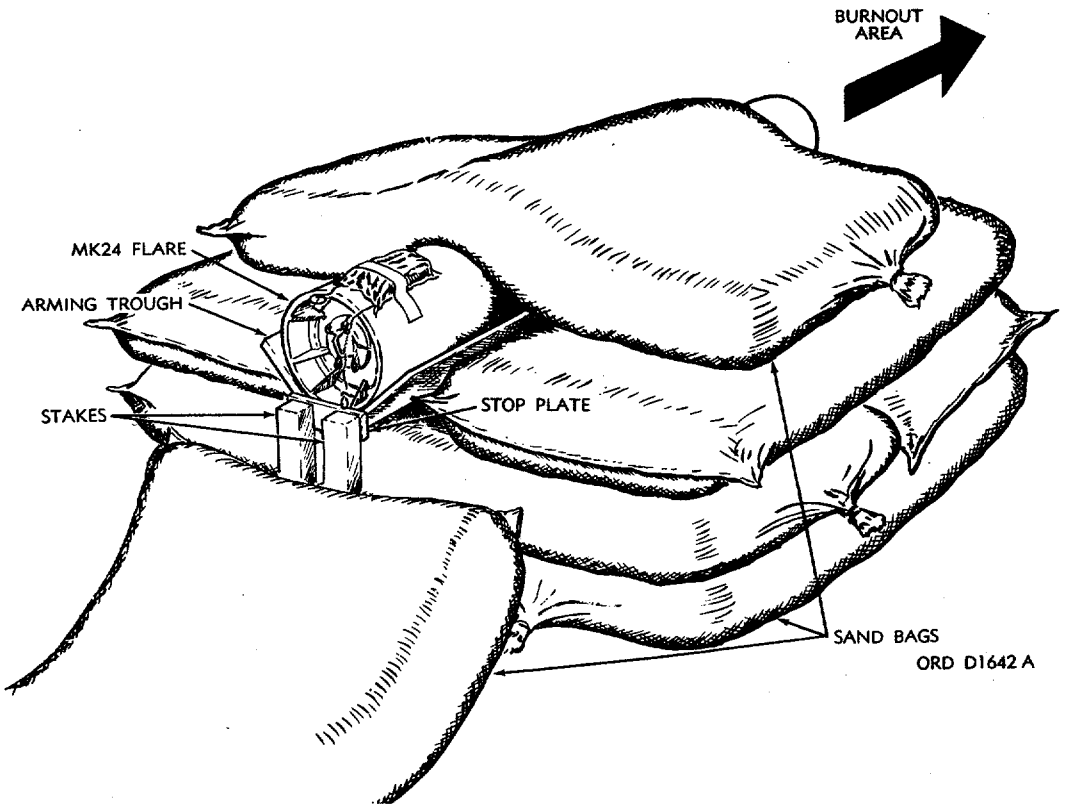

Figure 3-6. Flare in arming trough, staked and sandbagged.

WARNING

Be sure lanyard does not foul. Pull of only 12 pounds on lanyard will fire ejection delay plunger with ejection fuze set on SAFE. This will make flare nonfunctional. If ejection fuze is not set on SAFE, pull on lanyard will cause ejection of contents and propel flare case away, creating missile hazard. If ignition fuze is not set on SAFE, fire hazard is created.

NOTE

The safety lanyard shown in figures 3-6 and 3-8 is not used in arming procedure for external launch from fixed-wing aircraft.

(a) Remove weather cap and desiccant bag. Set weather cap aside for reuse. Retain desiccant bag in dry, sealed container in case flare is not expended.

(b) Assure that ejection and ignition fuzes are set on SAFE.

(c) Position flare in arming trough as indicated in figure 3-6.

(d) Extend 27-inch lanyard over edge of flare and tape in position (fig. 3-7) on flare case.

(e) Set ejection fuze on Mods 1, 2, 2A and 3 as follows:

WARNING

Hissing sound may be heard when fuze dial is depressed first time. This releases gas pressure trapped in flare and presents no hazard. A distinct metallic click, however, followed by hissing and odor similar to rotten eggs indicates fuze has been activated. In such case, have personnel clear area for at least five minutes, or until flare has burned out completely.

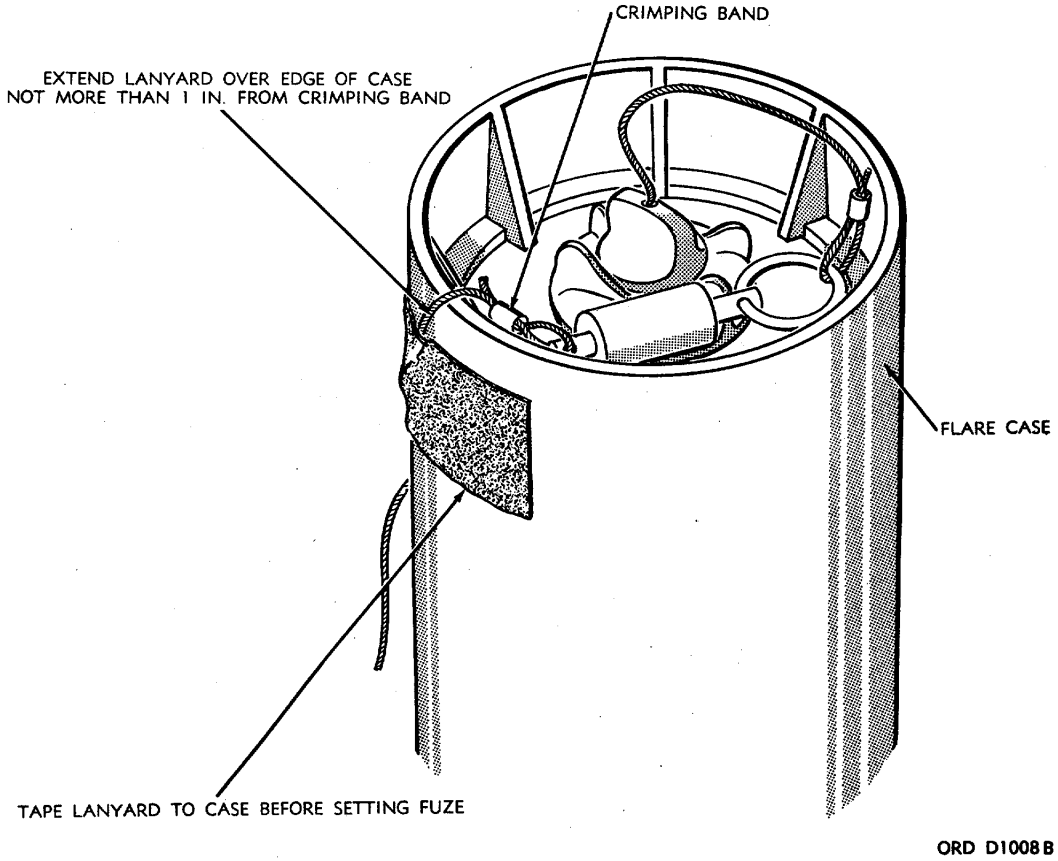

Figure 3-7. Lanyard taped to outer case.

1. Remove thumbscrews from fuze setting dial, using pliers, if necessary. (Retain thumbscrew for reuse, if flare is not expended.).

2. Place fuze wrench between raised grips on yellow fuze setting dial (fig. 3-8); depress dial, turn clockwise to desired setting, and release. (Setting may vary from 5 to 30 seconds, but in 5 second increments only.)

3. Assure that dial is locked in set position by attempting to move dial without depressing it. Take care not to pull lanyard by fouling it with fuze wrench during operation.

4. Assure that dial has returned to uppermost position by placing screwdriver under dial and prying up gently.

(f) Set ejection fuze on Mod 4 as follows:

1. Loosen thumbscrew in larger, outer dial by backing off counterclockwise two turns.

2. Turn dial to desired setting. It is not necessary to depress dial.

3. Tighten thumbscrew by turning clockwise.

(g) On all Mods, set ignition fuze as follows:

WARNING

Do not use 5-second setting on Mods 1 and 2 as there is a dud problem at this setting. Setting fuze between 5-second intervals will also result in duds.

1. Manually depress small dial with white arrow, turning clockwise to desired setting; then release. (Fuze setting may vary from 10 to 30 seconds, but in 5-second intervals, only. Operator will be able to feel when dial locks in 5-second detent.)

2. Assure that fuze setting dial has returned to uppermost position by placing screwdriver under dial and prying up gently.

3. If fuze cannot be set or if dial does not lock in position, set flare aside for disposal in accordance with TM 9-1300-206 and AR 385-63.

(h) Remove safety pin from ignition fuze dial on Mods 2A, 3 and 4. (Mods 1 and 2 do not have safety pins.) Retain serviceable safety pin for reuse, if flare is not expended. Discard bent or damaged safety pins.

(i) Position cardboard disk on lanyard

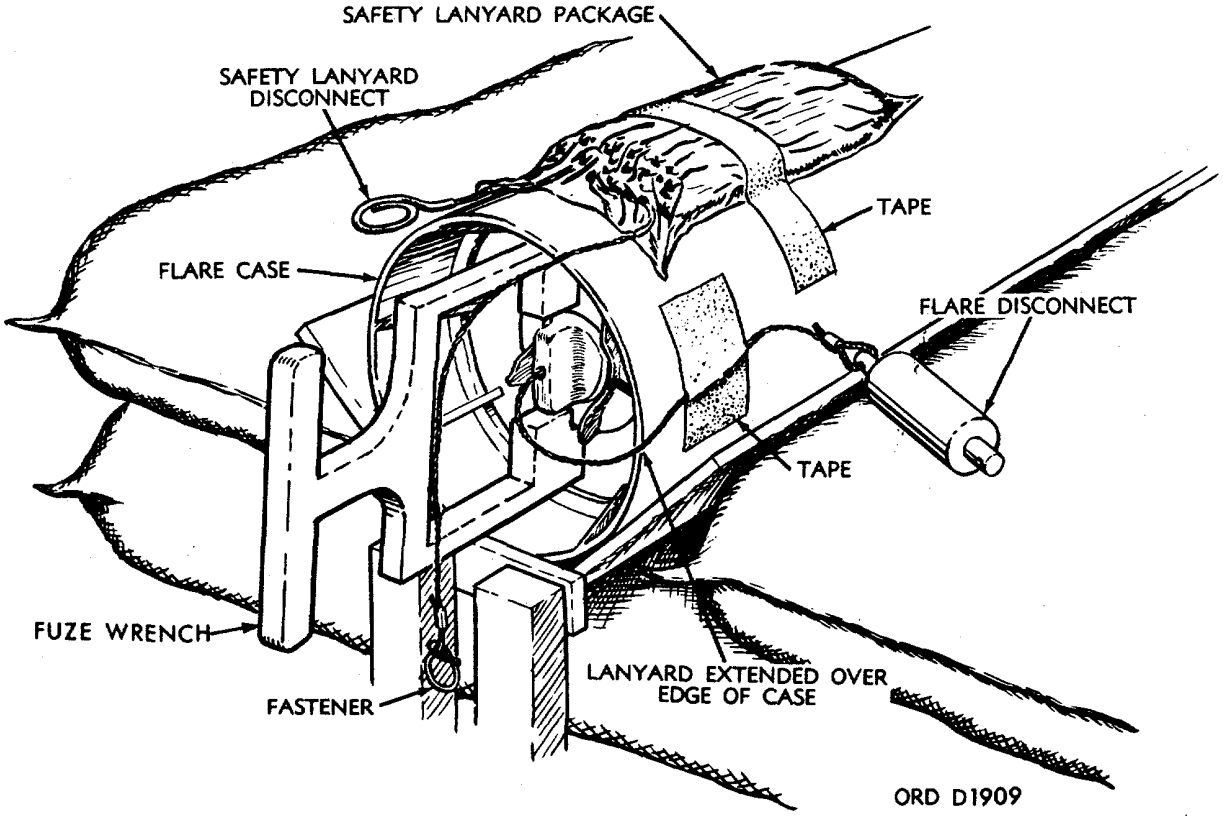

Figure 3-8. Fuze wrench in position.

between ignition fuze setting dial and lanyard disconnect (fig. 3-9).

(j) Slide cardboard disk down lanyard until it rests on ignition fuze setting dial. Position disconnect in fuze cavity on top of cardboard disk (A, fig. 3-10).

(k) Carefully remove flare from arming trough.

(l) Replace weather cap (B, fig. 3-10). Wind lanyard around flare approximately 1'/2 inches down from top of fuze (C, fig. 3-10). Lanyard will encircle flare case approximately 11/2 times.

CAUTION

Do not permit tape to overlap weather cap.

(m) Hold lanyard in place while securing it with 2-inch tape (A and B, fig. 3-11). Assure that tape does not cover swivel loop. (This step requires two people.).

(n) Secure weather cap and swivel loop with tape (C, fig. 3-11). Fold over approximately one-half inch of tape on free end to form pull tab. Take care to place pull tab on lanyard side of swivel loop.

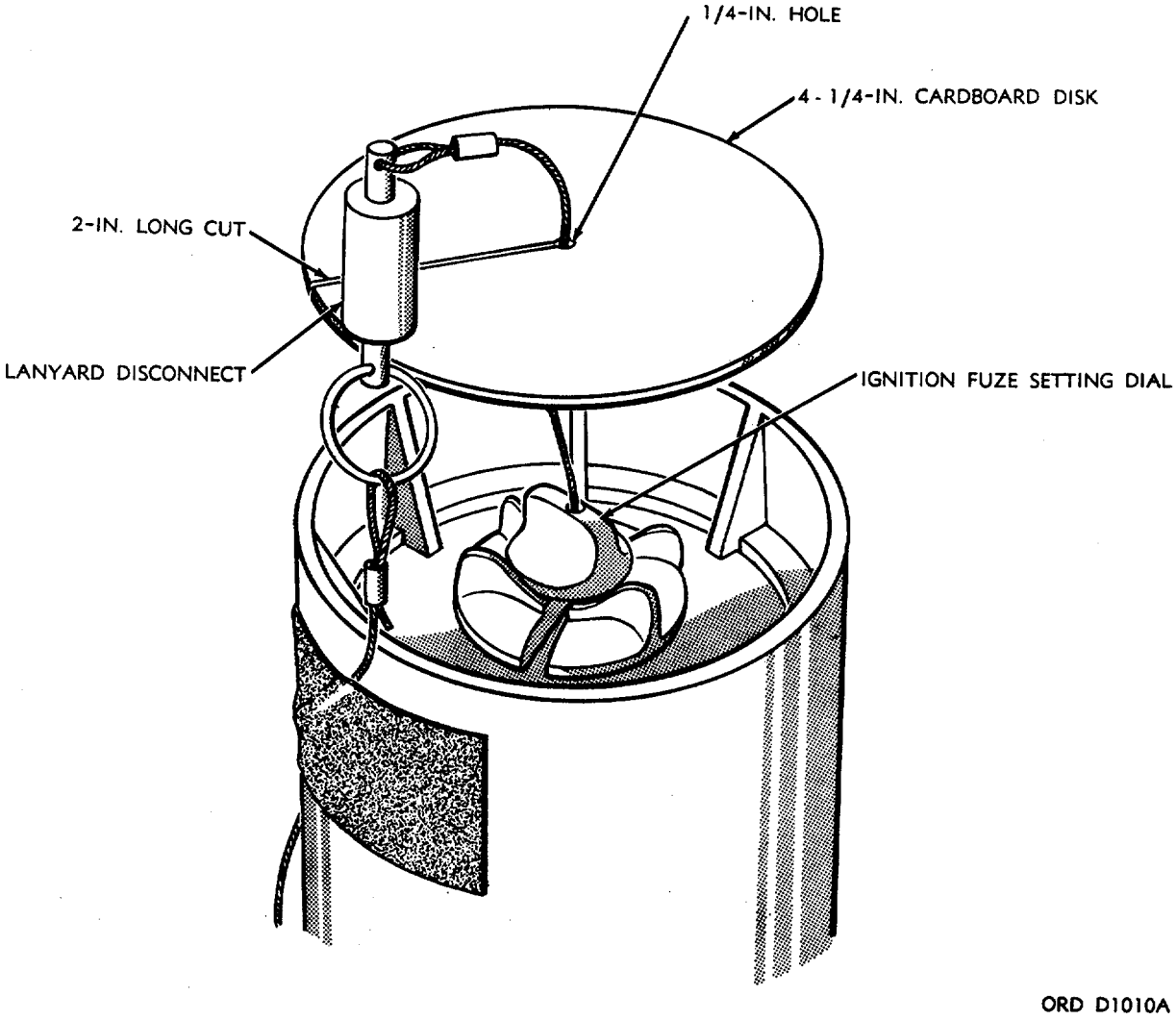

Figure 3-9. Placement of disk.

(o) Using grease pencil, mark ejection and ignition fuze settings on body of each flare.

(p) Install suspension bands at positions indicated on flare case. Flare is now armed and ready for installation on external wing racks of fixed-wing aircraft.

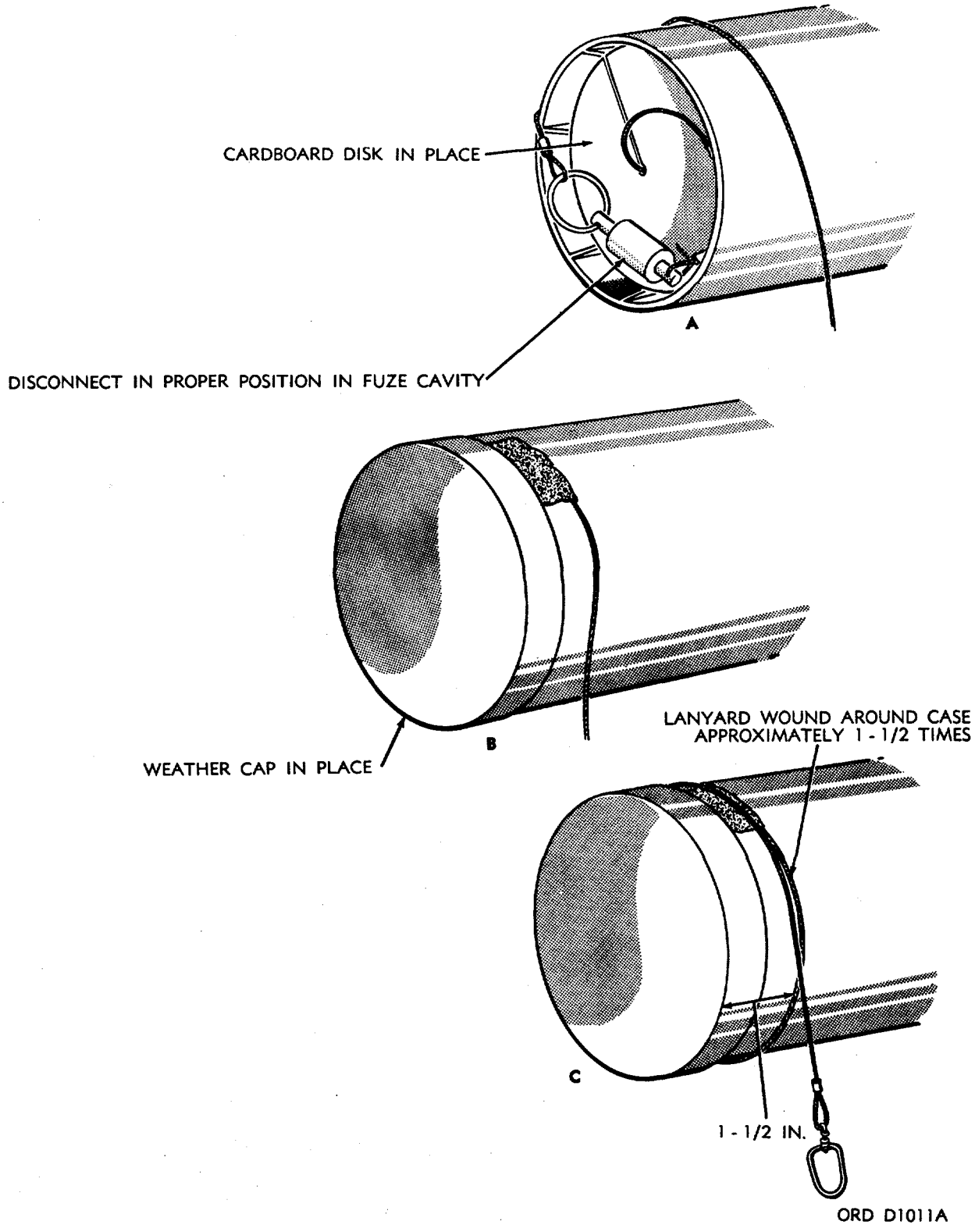

Figure 3-10. Positioning of lanyard.

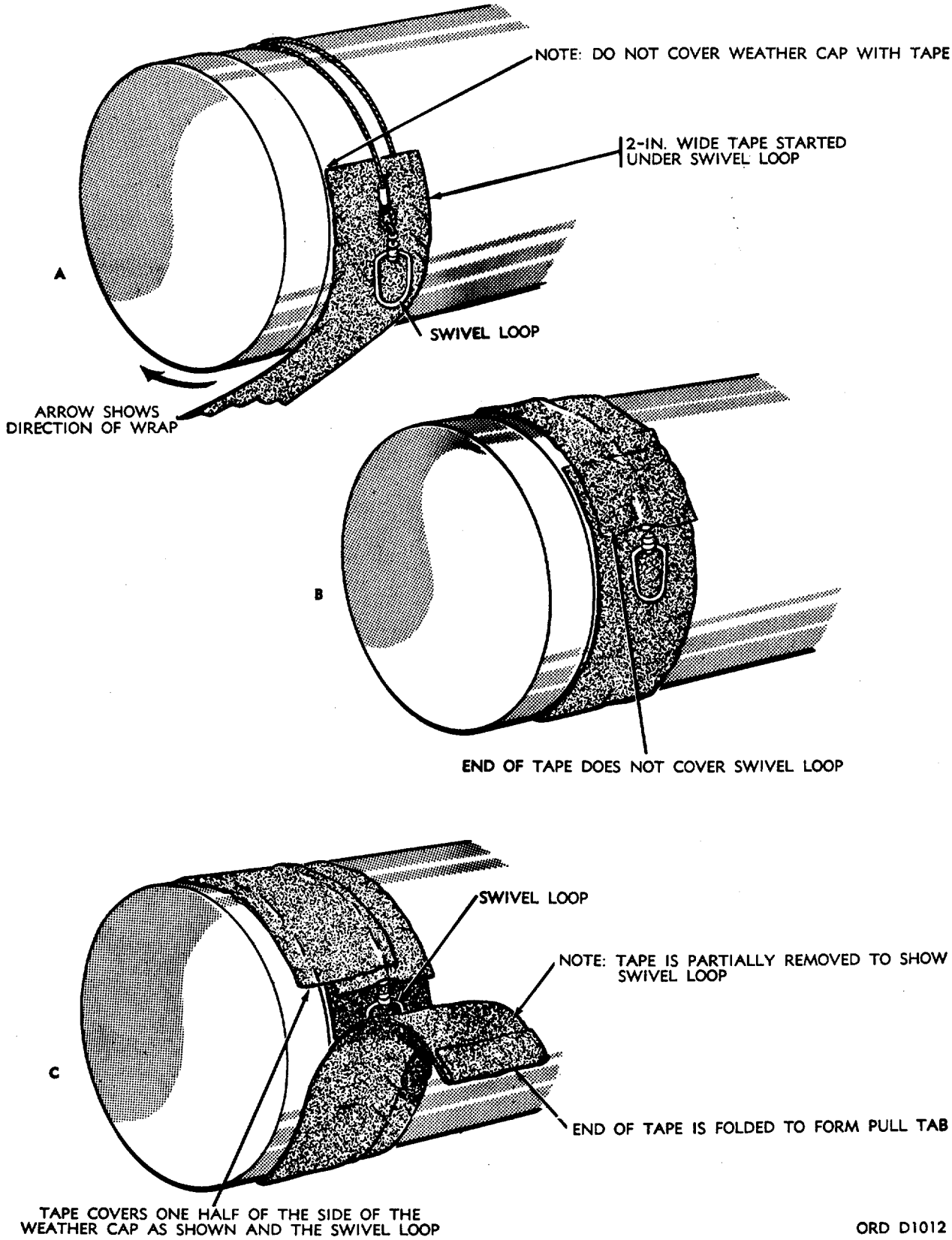

Figure 3-11. Taping procedure.

(3) *Arming procedure for internal hand launch from fixed-wing or rotary-wing aircraft.*

WARNING

Assure that lanyard does not foul. Pull of 12 pounds on lanyard will fire ejection delay plunger with ejection fuze set on SAFE. This will make the flare nonfunctional.

If ejection fuze is not set on SAFE, a pull on lanyard will cause ejection of contents and propel flare case away, creating missile hazard.

If ignition fuze is not set on SAFE, fire hazard is created.

(a) Tape safety lanyard package to outer case with 10-inch length of 2-inch tape (fig. 3-12). Assure that end of safety lanyard with loop fastener and disconnect points toward fuze end of flare.

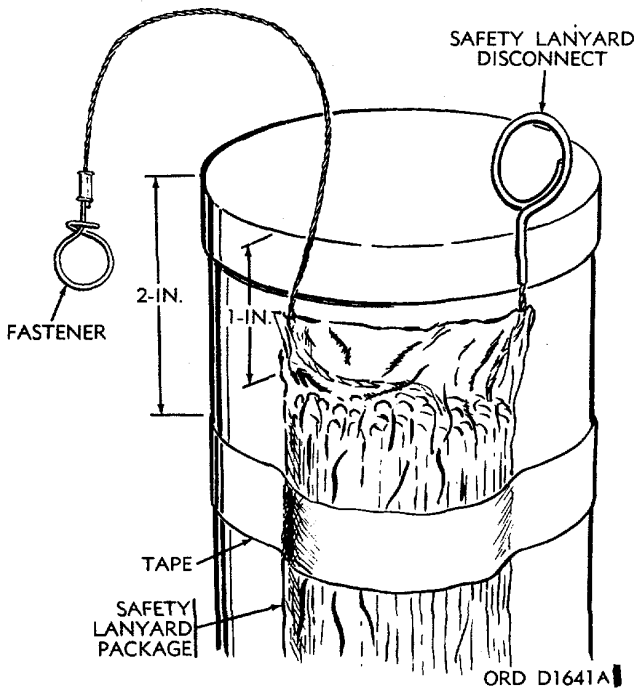

Figure 3-12. Attachment of safety lanyard to flare case.

(b) Remove weather cap and desiccant bag. Set weather cap aside for later use. Retain desiccant bag, in dry, sealed container, for reuse if flare is not expended.

(c) Assure that ejection and ignition fuzes are set on SAFE.

(d) Position flare in arming trough (fig. 3-13), so that, if inadvertently functioned, candle will be propelled away from operator into programmed burnout area.

(e) Extend 7-inch lanyard over edge of flare and tape between disconnect and flare edge (fig. 3-13).

(f) Remove key ring (with 27-inch lanyard attached) from flare disconnect (fig. 3-14). Retain key ring and lanyard. Be careful not to exert pull on lanyard during removal.

(g) Remove tape holding 7-inch lanyard to case and discard.

(h) Set ejection fuze on Mods 1, 2, 2A and 3 as follows:

WARNING

Setting fuze between 5-second intervals will result in duds. Hissing sound may be heard when depressing fuze dial for first time. This release of gas pressure trapped in flare presents no hazard. However, distinct metallic click followed by hissing and smell similar to rotten eggs, indicates fuze has been activated. Have personnel clear arming area for at least 5 minutes or until flare has burned out completely.

WARNING

Do not use 5-second setting on Mods 1 and 2 as there is a dud problem at this setting.

1. Remove thumbscrew (using pliers, if necessary) from fuze setting dials. Retain thumbscrew for reuse if flare is not expended.

2. Place fuze wrench between raised finger grips on ejection fuze setting (yellow) dial (fig. 3-8), depress dial, turn clockwise to desired setting, and release. Setting may vary from 5 to 30 seconds but in 5-second intervals only, as marked on dial.

3. Assure that dial is locked in set position by attempting to move dial without depressing it. Take care not to exert pull on lanyard by fouling it with fuze wrench during operation.

4. Assure that dial has returned to uppermost position by placing screwdriver under dial and prying up gently.

(i) Set ejection fuze on Mod 4 as follows:

1. Loosen thumbscrew in larger, outer dial by backing off counterclockwise two turns.

2. Turn dial to desired setting. (It is not necessary to depress dial.)

3. Tighten thumbscrew by turning clockwise.

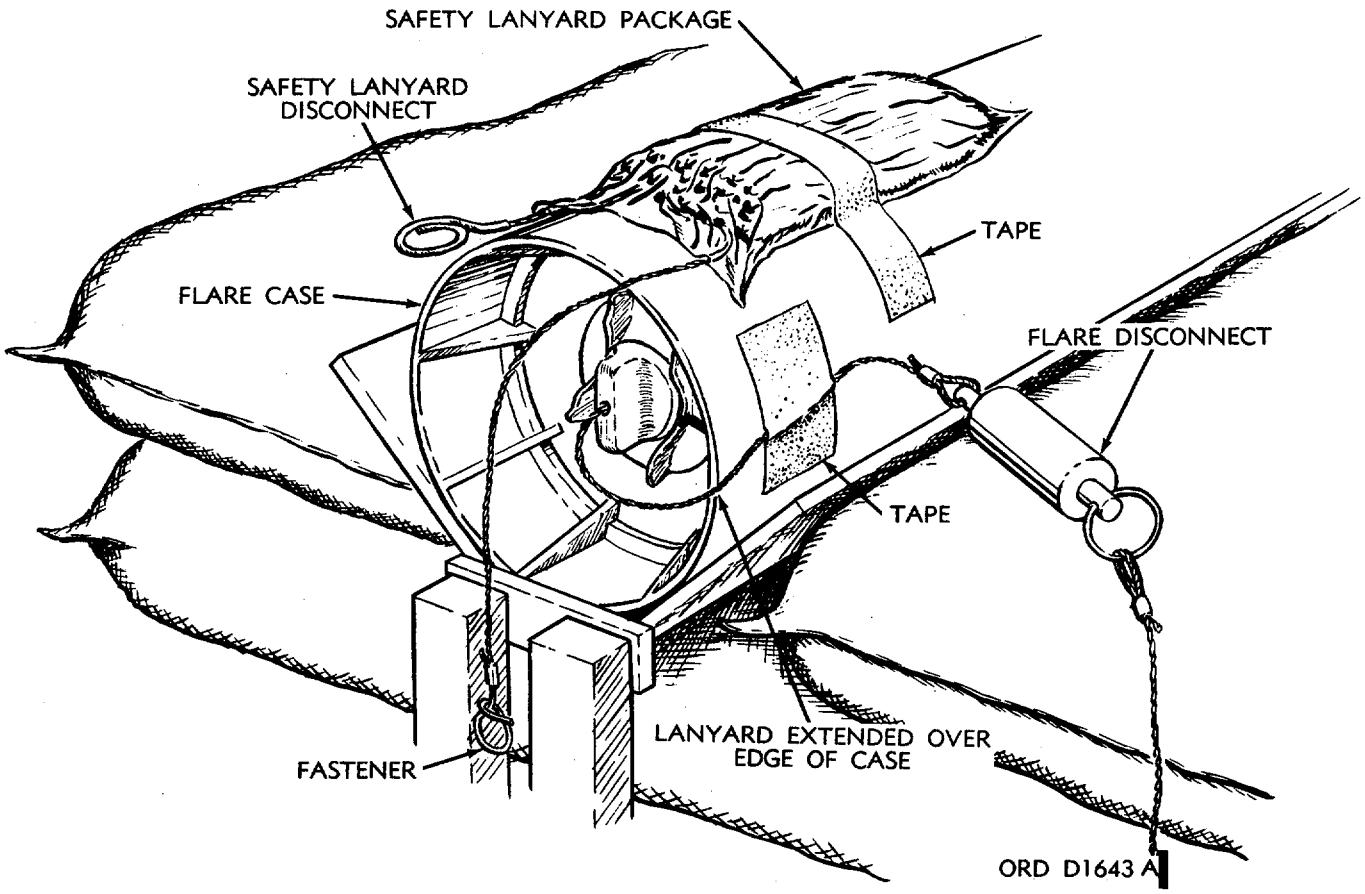

Figure 3-13. Positioning of flare in arming trough.

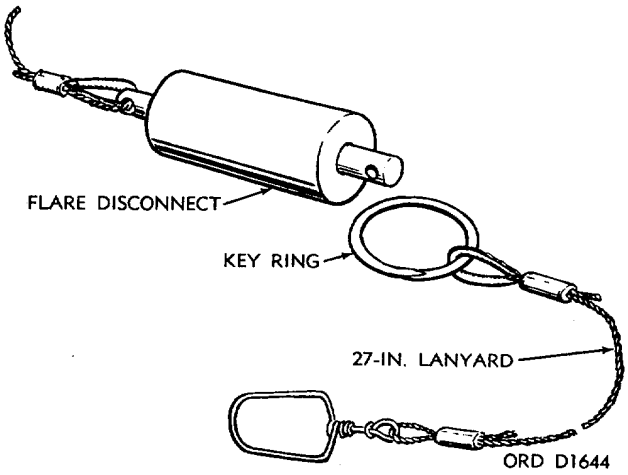

Figure 3-14. Removal of 27-inch lanyard and key ring.

(j) On all Mods, set ignition fuze as follows:

1. Manually depress small dial with white arrow, turn clockwise to desired setting and release. (Fuze setting may vary from 10-30 seconds, but in 5-second intervals, only. Operator will be able to feel when dial locks in 5-second detents.

2. Assure that fuze setting dial has returned to uppermost position by placing screwdriver under dial and prying up gently.

3. If fuze cannot be set or if dial does not lock in position, set flare aside for disposal in accordance with TM 9-1300-206 and AR 385-63.

(k) Attach loop fastener on safety lanyard to loop end of 7-inch lanyard, bypassing flare disconnect. Cover fastener, flare disconnect, and loop end of 7-inch lanyard with 8-inch length of 2-inch tape, assuring that all protruding edges are covered (fig. 3-15).

(l) Remove safety pin from ignition fuze dial on Mods 2A, 3 and 4. (Mods 1 and 2 do not have safety pin.) Retain safety pin for use in event flare is not expended and must be disarmed and returned to storage.

(m) Position cardboard disk on lanyard between ignition fuze setting dial and taped connection (fig. 3-16).

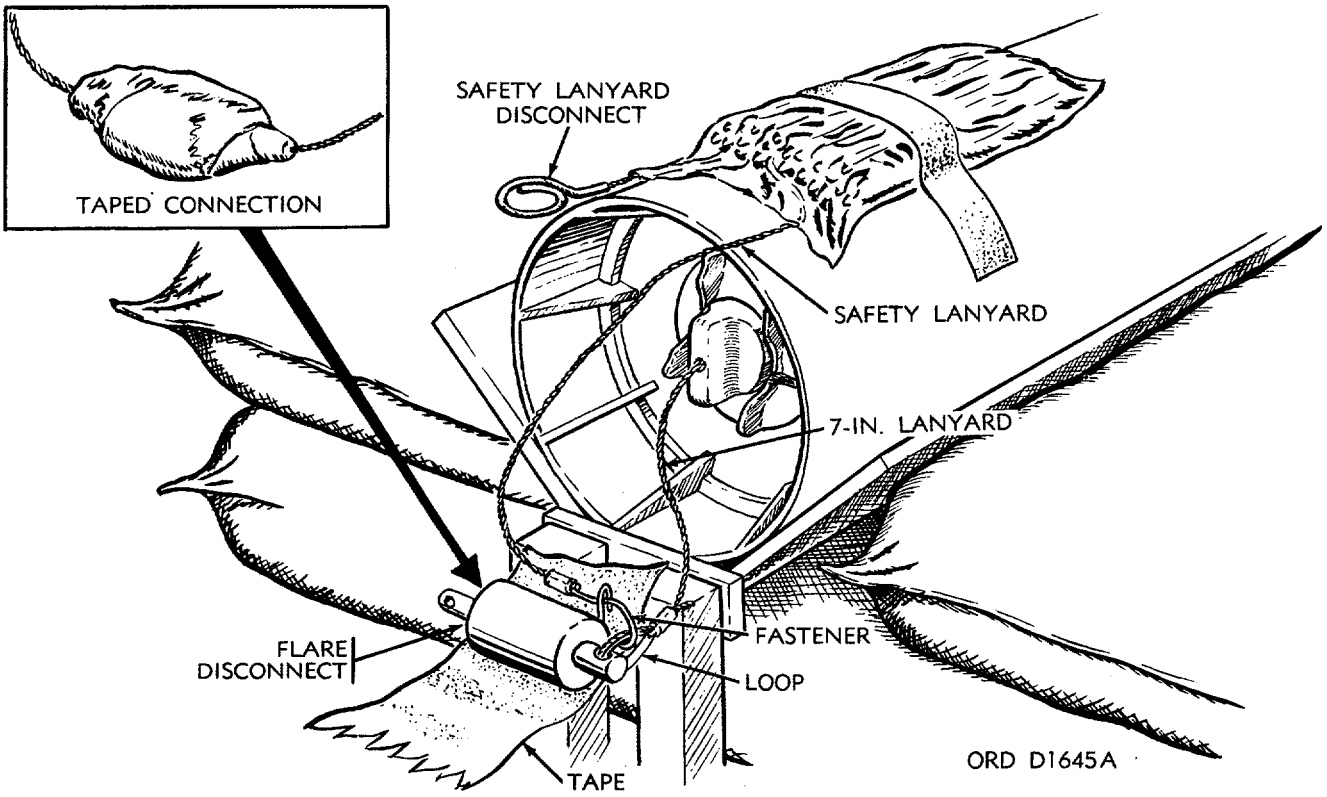

Figure 3-15. Connecting and taping of safety and seven-inch lanyards.

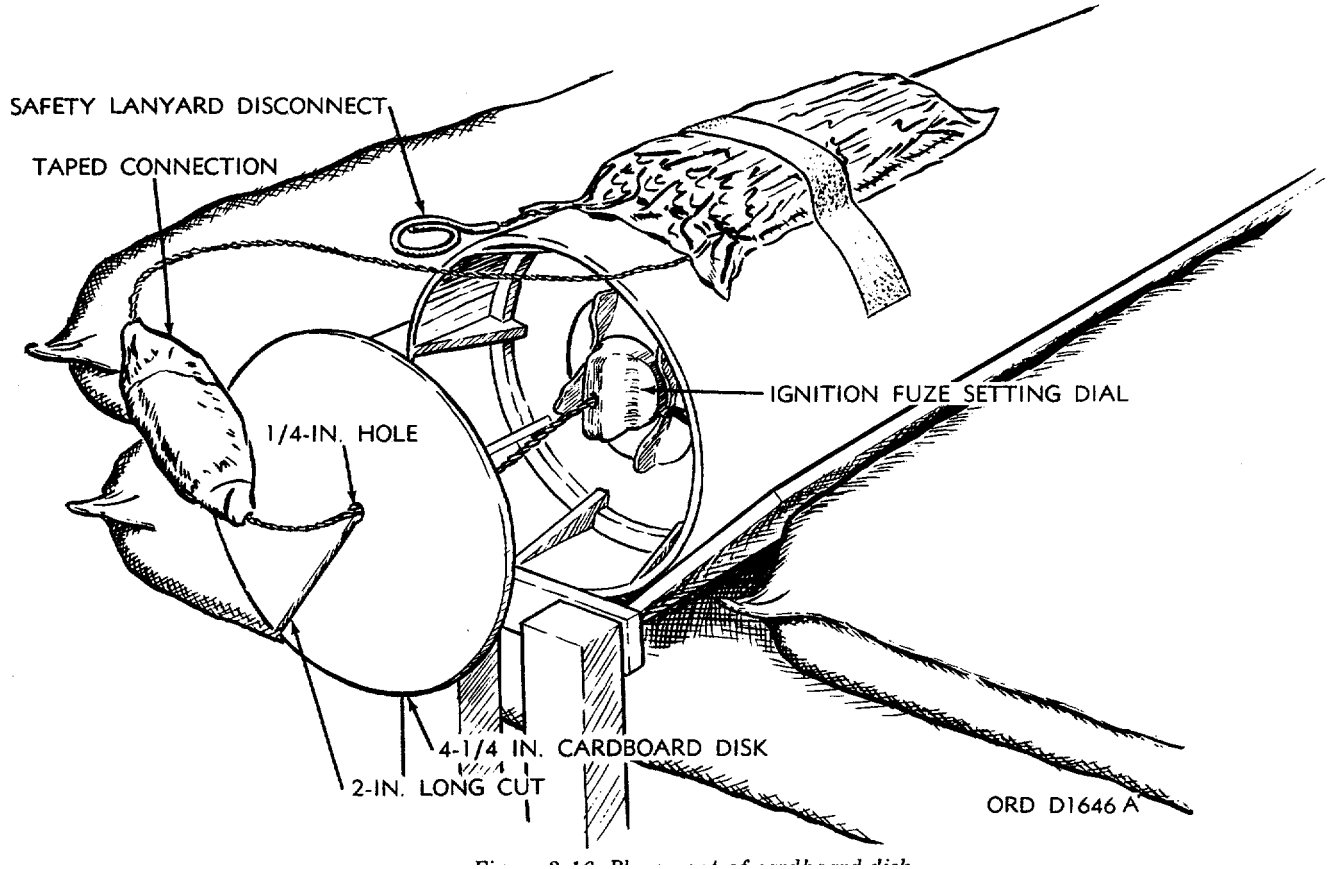

Figure 3-16.Placement of cardboard disc.

(n) Slide cardboard disk down lanyard until it rests on ignition dial. Position taped, connected lanyards so that all excess cable is contained within fuze cavity on top of cardboard disk. Replace weather cap.

(o) Tape safety lanyard disconnect to lip of weather cap (fig. 3-17) to prevent snagging during handling.

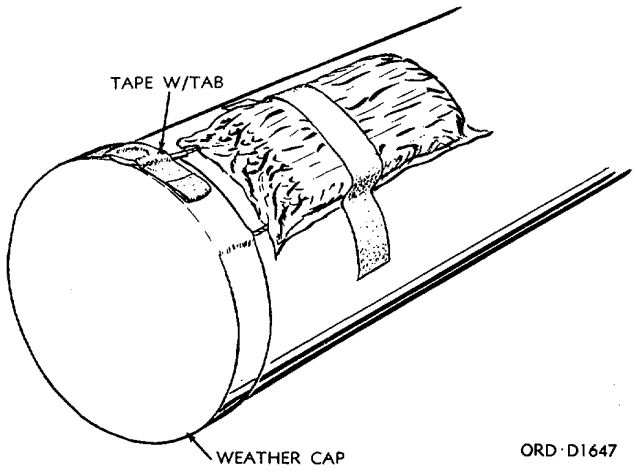

Figure 3-17. Safety lanyard disconnect taped to weather cap.

(p) Further to secure weather cap and protect lanyard, tape opposite side of cap to flare body with 8-inch length of tape, folding end on top of cap to form pull tab.

(q) Using grease pencil, mark ejection and ignition fuze settings on body of each flare.

(r) Carefully remove flare from arming trough.

NOTE

Flare is now armed and ready for loading in interior of fixed-wing or rotary-wing aircraft.

(4) External launch procedure from fixed wing aircraft with 14-inch wing racks.

CAUTION

Do not route static line through suspension bands or lugs.

(a) Install flare in wing racks, fuze end forward, as specified in current instructions for rack being used.

(b) Remove and discard tape securing weather cap and swivel loop.

(c) Rig static line between wing rack hook-on and swivel loop.

NOTE

Static line should be rigged between sway braces to minimize whipping.

(5) External launch procedure from aircraft with practice multiple bomb racks (PMBR) A/A37B-3 and A/A37B-4.

CAUTION

Do not route static line through lug for attachment to arming clip.

(a) Assure that sway braces holding PMBR's have been tightened.

(b) Attach flares to PMBR's, fuze end forward, as specified in current instructions for PMBR being used.

(c) Install and rig aft flares before loading forward stations.

NOTE

Proper installation will assure minimum clearance between forward and aft stations.

(d) Remove and discard tape covering swivel loop.

(e) Rig static line between PMBR arming clip and .swivel loop. Flares are now ready for launch, either singly or in pairs.

(6) Internal launch from fixed-wing or rotary-wing aircraft.

WARNING

Require crewmen engaged in manual launch operations to wear harness and be secured to aircraft by safety line.

During normal operation, fully extended safety lanyard will automatically disconnect from static line. If this does not occur, immediately disconnect safety lanyard from aircraft and allow it to fall away.

(a) Place flares in aircraft and secure to prevent movement during flight.

(b) Attach static line to cargo tie-down near launch door.

(c) Remove tapes securing weather cap and safety lanyard disconnect and stick tapes to side of flare case.

(d) Attach free end of static line to safety lanyard disconnect.

(e) Launch flare (with fuze end inboard) out and away from aircraft (fig. 3-18) with sufficient force to overcome slipstream.

NOTE

The safety lanyard pays out its full

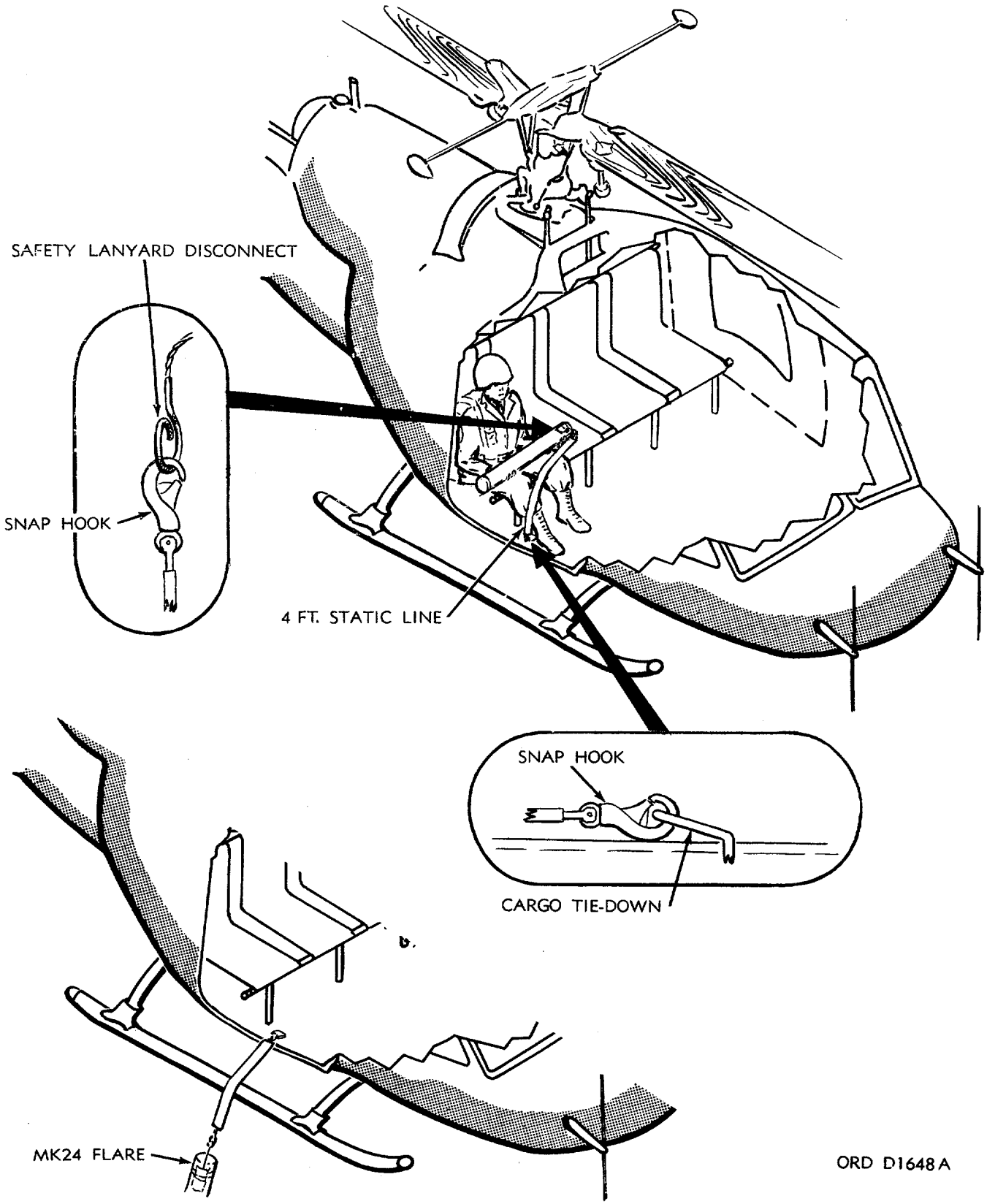

Figure 3-18. Launching of flare.

length automatically before firing the fuze mechanism. Immediately after firing, the safety lanyard disconnects and goes down with the flare, leaving no debris on board the aircraft.

Individual self-payout lanyards provide a safe separation distance between aircraft and flare at time of fuze actuation. This prevents aircraft damage in the event of instantaneous ejection of the candle and parachute assembly.

c. Prepared for use but not launched. Flares not expended during mission are to be returned to unarmed condition before storage.

(1) Disarming of flares prepared for external launch.

(a) Remove flares from wing racks and secure weather cap and swivel loop with tape, as indicated in figure 3-10. Fold over approximately l/2-inch of tape on free end to form pull tab. Take care to place pull tab on lanyard side of swivel loop.

(b) Transport flares to point near revetted handling area.

(c) Remove and discard tape securing weather cap and swivel loop.

(d) Holding weather cap in place, carefully remove tape holding lanyard coiled around flare body.

(e) Remove weather cap and set aside for later use.

(f) Place one flare at a time in arming trough as shown in figure 3-12.

(g) Remove tape securing 27-inch lanyard near top of fuze.

(h) Carefully extend lanyard and remove cardboard disk. Return cardboard disk for future missions.

(i) Replace safety cotter pin on Mods 2A and 3, and safety pin on Mod 4. Do not use bent or damaged safety/cotter pins.

(j) On all Mods, manually depress ignition fuze and setting dial; turn counterclockwise to SAFE position and release.

(k) To safe ejection fuze, proceed as follows:

1. In Mods 1, 2, 2A and 3, depress ejection fuze setting dial with fuze wrench; turn counterclockwise to SAFE position, release and replace thumbscrew.

2. In Mod 4, loosen thumbscrew and turn ejection dial to SAFE position. Tighten thumbscrew.

(l) Carefully remove flare from arming trough.

(m) Coil lanyard and place in cavity of ejection fuze assembly.

(n) Hold lanyard in place while replacing desiccant bag (if originally present) and weather cap. (This step requires two operators.) (o) Secure weather cap with tape.

(p) Remove or block out fuze setting marked on flare case with grease pencil.

(q) Remove suspension bands and replace in packing box.

(r) Examine flares for damage. Dispose of damaged flares in accordance with TM 9-1300-206 and AR 385-63.

(s) Repack serviceable flares and store for reuse in accordance with instructions in (3) below.

(2) Disarming of flares prepared for internal launch.

(a) Remove flares from interior of aircraft and transport to point near special handling area.

(b) Remove tapes securing weather cap and safety lanyard disconnect, taking care not to pull out safety lanyard. Attach tapes to flare case for later use. Remove cap.

(c) Place flare in arming trough as shown in figure 3-12.

(d) Carefully remove cardboard disk and retain for future use.

(e) Replace safety cotter pin in Mods 2A and 3 and safety pin in Mod 4. Do not use bent or damaged cotter/safety pins.

(f) On all Mods, manually depress ignition fuze setting dial. Turn counterclockwise to SAFE position and release.

(g) To safe ejection fuze, proceed as follows:

1. In Mods 1, 2, 2A and 3, depress ejection fuze setting dial with fuze wrench. Turn dial counterclockwise to SAFE position and release dial. Replace thumbscrew.

2. In Mod 4, loosen thumbscrew and turn ejection fuze dial to SAFE position. Tighten thumbscrew.

(h) Carefully remove flare from arming trough.

(i) Replace lanyard and desiccant bag (if originally present) in fuze cavity. (This requires two operators.)

(j) Replace weather cap. Secure cap to flare body and safety lanyard disconnect to lip of cap with tapes removed in (b) above.

(k) Remove or block out fuze setting marked on flare case with grease pencil.

(l) Examine flares for damage. Dispose of damaged flares in accordance with TM 9-1300-206 and AR 385-63.

(m) Repack serviceable flares and store for reuse in accordance with (3) below.

(3) Storage for reuse. Before other stocks are opened store serviceable flares for immediate reuse as follows:

(a) Do not attempt to replace flares in original containers.

(b) Stack unpacked flares on dunnage and cover with tarpaulin or otherwise provide protection pending reuse. (See chapter 5 for storage suggestions.)

(4) Return to as-shipped condition. To return serviceable stocks to as-shipped condition, follow disarming procedure in (1) (a) through (g) above. Then, proceed as follows:

(a) Remove tape covering fastener and flare disconnect.

(b) Using key ring, reattach 27-inch lanyard to flare disconnect.

(c) Remove safety lanyard package and return to original shipping container.

(d) Remove flare from trough.

(e) Continue with procedures in (1) (o) through (q) above.

(f) Replace flare in original shipping container and tape or strap closed in accordance with packing procedure in chapter 4. Use repacked flares first in subsequent launchings.

3-9. Operation under Unusual Conditions

Operation of this flare under unusual conditions is the same as under normal conditions. However, during operation in an Arctic environment, taping will be performed in a warm structure.

CHAPTER 4
MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

4-1. Precautions
Flares will be handled by trained, experienced personnel only. Flares are capable of withstanding normal handling but, like other pyrotechnic items, should not be subjected to excessively rough treatment.

4-2. Inspection
a. Inspect shipping containers for the following:

(1) Signs of excessive damage or rough handling.

(2) Signs of excessive moisture.

b. Return excessively damaged containers to depot without unpacking.

c. Set aside excessively moist containers for thorough inspection of contents after unpacking.

4-3. Unpacking and Packing
a. Unpacking.

WARNING Wear protective eye shields and gloves during this procedure (see TM 9-1300-206).

(1) To open wooden containers, cut metal straps and pry lid from box.

(2) To open plastic containers, cut tape along seams, being careful not to damage container. Do not use tools or attempt to pry lid open. Lid should lift off easily.

(3) Remove flare and set container aside for reuse.

b. Packing.

(1) Replace flare in container.

(2) Secure lid of wooden container by nailing. Replace lid of plastic container and tape along seam.

(3) Mark container to indicate that contents will be issued prior to materiel not previously unpacked.

Section II. MAINTENANCE

4-4. General
The following procedures will be performed subsequent to unpacking. They provide operator and organizational instructions for maintenance of Flare, Aircraft: Parachute, Mk24, all mods.

4-5. Precautions
a. Assure that lanyard does not foul. Pull of only 12 pounds will fire ejection delay plunger with ejection fuze set on SAFE, making flare nonfunctional.

b. If ejection fuze is not set on SAFE, pulling lanyard will eject contents and propel flare case away, creating missile hazard. If ignition fuze is not set on SAFE, fire hazard is created.

c. A distinct metallic click, followed by hissing and odor similar to rotten eggs indicates fuze has been activated. In' such case, have personnel clear arming area for at least 5 minutes or until flare has burned out completely.

4-6. Procedures
a. Inspect flares as follows:

WARNING

Mods 1 and 2 do not have safety pins and a pull of only 12 pounds on the lanyard can initiate the flare.

(1) Check for leakage of powder around end cap. If powder is found, contact EOD personnel to dispose of flare.

(2) Remove weather cap carefully and inspect for droplets of moisture in dial area, obvious

moist desiccant bag, rusted swaging sleeves, key ring, etc. Replace weather cap on unserviceable flares and repack for return to depot or ASP. Continue inspection of serviceable flares.

(3) With weather cap removed, inspect dial area for loose or missing thumbscrew. If loose, assure that setting dials are on SAFE and tighten thumbscrew. If missing, replace with thumbscrew obtained from previous mission.

(4) Inspect Mods 2A, 3 and 4 for presence of safety pin. If pin is missing, install safety pin obtained from previous mission.

(5) Inspect outer case for dents, cracks, corrosion and other damage or conditions which would render flare unserviceable. Repack unserviceable flares and return to depot or ASP.

(6) On completion of inspection, repack serviceable flares for local storage. Assure that weather cap has been taped in place before repacking.

b. Inspect auxiliary equipment as follows:

(1) Check suspension bands for rust or damage which would preclude normal assembly of flare.

(2) Check safety lanyards for moisture, rusting of swaging sleeve and disconnect, torn plastic bag, and damage which would preclude normal use.

(3) Check static lines for fraying, damage or other conditions which would render item unserviceable.

(4) On completion of inspection, dispose of unserviceable auxiliary items locally.

(5) Replace serviceable items in either original or locally available containers and mark to indicate contents.

CHAPTER 5

SHIPMENT AND STORAGE

Section I. SHIPMENT

5-1. Precautions

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

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

c. Do not roll, drop or subject flares to high shock loads.

d. Return as unserviceable flares subjected to severe handling, that are damaged or suspected of being damaged.

5-2. Instructions

a. Block and brace flares transported in trucks, jeeps, and other tactical vehicles. Block and brace adequately to withstand sudden stops and starts, and off-road operations.

b. Load flares in attitude which prevents rolling.

c. If packing is broken or damaged, and flares are 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.

5-3. Data

Department of Transportation (DOT) or Interstate Commerce Commission (ICC) shipping designation	Special fireworks
DOT shipping class	A
Federal Stock Number (FSN) and Department of Defense Identification Code (DODIC)	1370-886-8449(L379) 1370-892-4239(L379) 1370-045-9621(L379) 1370-868-9879(L379) 1370-797-8837(L379) 1370-918-7052(L407)
Gross weight	73.lb
Cubical displacement of shipping container	1.86 cu ft
Descriptive nomenclature of packed item	Flare, Aircraft: Parachute, Mk24 All Mods

Section II. STORAGE

5-4. Precautions

Flares and other pyrotechnic devices may be adversely affected by moisture and extremes in temperatures. Consequently, they should be stored in dry, well ventilated places.

a. When it is necessary to store flares in the open, select storage site away from power lines and electric cables.

b. Do not locate flares adjacent to reservoirs, water mains or sewer lines.

c. Select level, well drained sites free of readily ignitable and flammable materials.

d. Do not store under trees or adjacent to towers or other structures which attract lightning.

5-5. Data

a. Data covering storage of flares appear below:

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

NOTE

In unventilated containers, enclosures, shelters, freight cars, closed vehicles, and

similar structures, temperatures considerably higher than the outside ambient 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 four hours.

Table 5-1. Quantity Distance Requirements

Quantity		Unbarricaded Distance (feet)		
Pounds (over)	Pounds (not over)	Inhabited building distance	Public highway &public railway distances	Magazine and intraline
100	1000	75	75	50
1000	5000	115	115	75
5000	10000	150	150	100
10000	20000	190	190	125
20000	30000	215	215	145

5-6. Procedures

a. Use heavy, well supported dunnage, fabricated locally from logs, ammunition boxes, etc., to keep bottom tier off ground.

b. Allow at least 6 inch space beneath pile for air circulation.

c. Dig suitable trenches to prevent water from flowing under pile. Arrange containers so that air can circulate through stack.

d. Use hardstand of bituminous material or gravel and sand in preference to excessive dunnage.

e. Cover stacks with nonflammable or fire-resistant materials (e.g., tarpaulin). Maintain overhead air space of approximately 18 inches between cover and flares. Raise cover at least 6 inches from pile on ends and sides to permit circulation of air.

APPENDIX A

REFERENCES

Department of the Army Information Security Program	AR 380-5
Fire Report	AR 385-12
Accident Reporting and Records	AR 385-40
Regulations for Firing Ammunition for Training, Target Practice, and Combat	AR 385-63
Malfunctions Involving Ammunition and Explosives	AR 75-1
Fire Report	DA Form 5-2
Accident Report	DA Form 285
Record of Injury	DA Form 1051
Recommended Changes to Publications	DA Form 2028
Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders	DA Pam 310-4
Care, Handling, Preservation and Destruction of Ammunition	TM 9-1300-206
Military Pyrotechnics	TM 9-1370-200
The Army Maintenance Management System (TAMMS) .	TM 38-750

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APPENDIX B

SEPARATELY ISSUED ITEMS LIST

(1) SMR code	(2) Federal stock number	(3) Description Reference No. & Mfr. code	Usable on code	(4) Unit of measure	(5) Quantity incorporated in unit
		The following items are used with Flares Mk24, all mods,			
GSA (75)	8135-269-8090	Tape, Pressure Sensitive Adhesive, PPP-T-60, 81348		Ro	60 yds
BA	1370-962-1798	XM164 Static Line, Flare, 10535856,19200		Ea	1
BA	1370-937-7806	Lanyard, Safety Assembly, FC14425, 19200		Ea	1
	1370-570-7641	Bands, Suspension			
GSA (75)	7510-240-1526	Pencil, China-Marking, SS-P-196, 81348		Pkg	6
Locally fabri-cated		Disk, Cardboard			
Locally fabri-cated		Wrench, Fuze			

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