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 DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CLUSTER, BOMB, INCAPACITATING BZ, 750-LB., M43

Refs: 385-49, AR 700-58; TM3-250, TM 9-1903, TM 9-1980

Headquarters, Department of the Army, Washington 25, D.C.

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	Paragraph	Page
SECTION I. INTRODUCTION		
Scope	1	2
Use	2	2
Reports	3	2
II. DESCRIPTION AND DATA		
M43 incapacitating BZ bomb cluster	4	2
Identification	5	5
Tabulated data	6	5
III. SERVICE UPON RECEIPT OF COMPONENTS		
General	7	5
M30 cluster adapter	8	6
M14 tail fin assembly	9	6
M152A1 tail fuzes	10	6
M23 arming wire	11	6
IV. ASSEMBLY OF M43 INCAPACITATING BZ CLUSTER		
General	12	6
M30 cluster adapter	13	6
M14 tail fin assembly	14	6
V. PREPARATION FOR USE		
Mounting bomb cluster on aircraft	15	7
Installing M152A1 fuzes	16	7
Installing M23 arming wire	17	7
VI. SHIPMENT AND STORAGE		
Shipment	18	7
Storage	19	8
VII. EVACUATION, DESTRUCTION, OR DISPOSAL TO PREVENT ENEMY USE		
General	20	8
Priorities	21	9
Evacuation	22	9
Destruction	23	9
Disposal	24	9

SECTION I

INTRODUCTION

1. **Scope.** This bulletin contains a description of the M43 750-lb. incapacitating BZ bomb cluster and information on the use, assembly, shipment and storage, and destruction to prevent enemy use of the bomb cluster.

2. **Use.** The M43 incapacitating BZ bomb cluster is intended to be used with Army airplanes or Air Force airplanes at subsonic speed traveling to deliver M138 incapacitating BZ bombs on selected targets.

3. **Reports.** The submission of properly executed reports is the responsibility of the unit using the equipment.

a. *Damaged or Improper Shipment.* Damaged or improper shipments will be reported on DD Form 6 in accordance with AR 700-58.

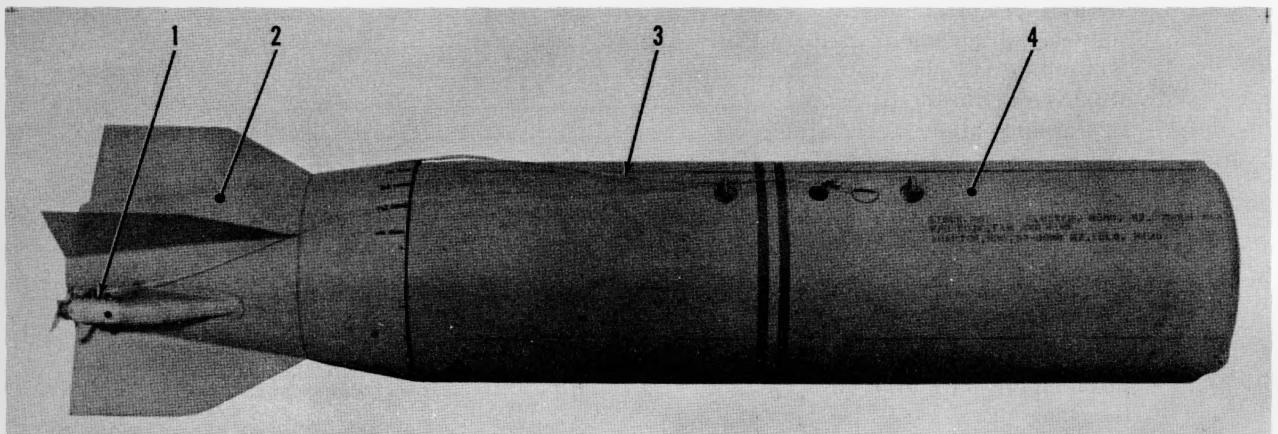
b. *Report of Accidents.* Accidents involving injury to personnel or damage to materiel will be reported in accordance with AR 385-40.

SECTION II

DESCRIPTION AND DATA

4. **M43 Incapacitating BZ Bomb Cluster.** The M43 incapacitating BZ bomb cluster (fig. 1) consists of an M30 cluster adapter (4), clus-

tered with M138 incapacitating BZ bombs, an M14 tail fin assembly (2), two M152A1 tail fuzes (1), and an M23 arming wire (3).



- 1 M152A1 tail fuze
- 2 M14 tail fin

- 3 M23 arming wire
- 4 M30 cluster adapter

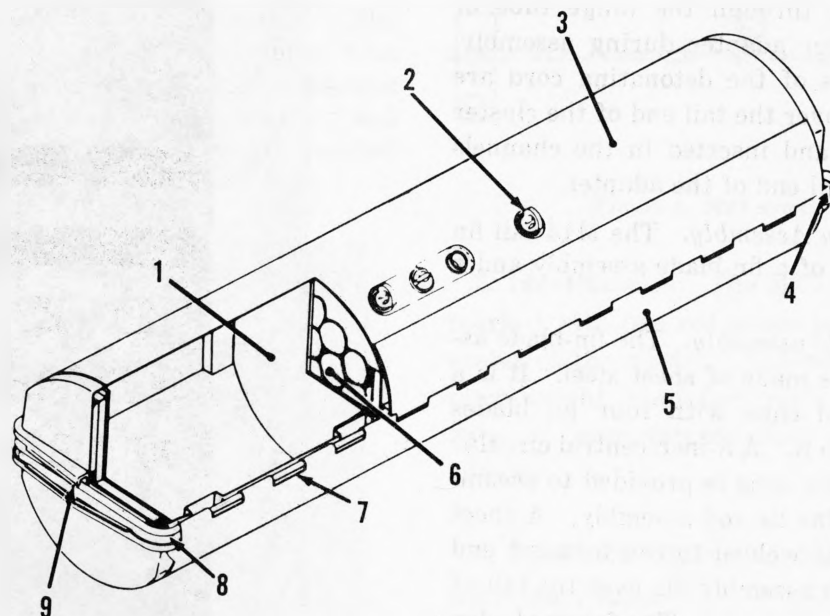
Figure 1. M43 750-lb. incapacitating BZ bomb cluster.

a. *M30 Cluster Adapter.* The M30 cluster adapter (fig. 2) consists of an upper casing (3) and lower casing (5). The upper casing assembly is a half cylinder with hinges (7) welded to the longitudinal edges and channels

(9) welded to the nose and tail ends. The channels are used as guards for hinge tubes (8) which are used to pin the upper and lower casings together during the assembly of the cluster. Two hooks (4) at the tail end of the upper

casing are used for mounting the tie rod assembly (par. 14). Four threaded holes (2) in the center of the upper casing assembly are provided for suspension lugs and electric fittings. The lower casing assembly is similar to the upper except that the lower has no holes or hooks. During the clustering procedure, the upper and lower casing assemblies are mated and sealed

with an internal gasket. During assembly (pars. 12-14), two suspension lugs are screwed into the two outer threaded holes in the upper casing assembly. The clustered bombs are separated by spacers (1) during the assembly of the cluster. Nineteen M138 incapacitating BZ bombs (6) are clustered in each of three longitudinal compartments inside the casing (fig. 3).



- 1 Spacer
- 2 Threaded hole
- 3 Upper casing

- 4 Hook
- 5 Lower casing
- 6 M138 bombs

- 7 Hinge
- 8 Hinge tube
- 9 Channel

Figure 2. M30 cluster adapter, cutaway view.

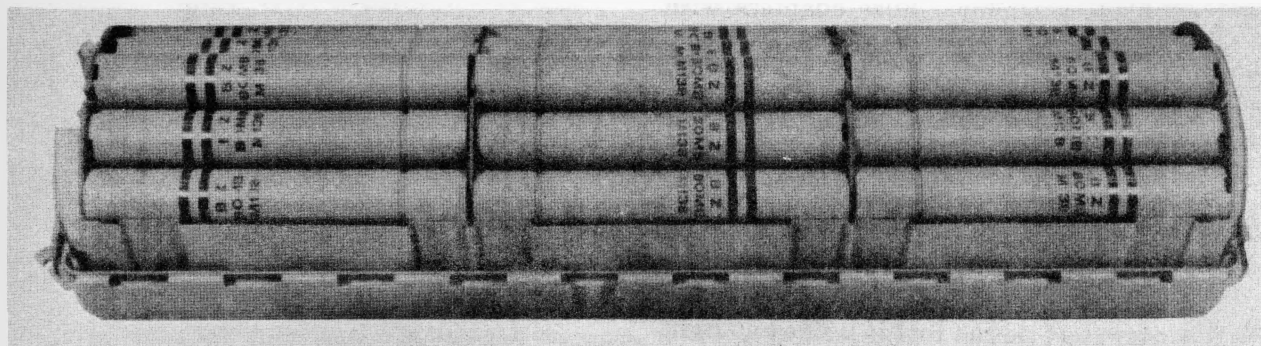


Figure 3. M30 cluster adapter, upper casing removed.

- (1) M138 10-lb. incapacitating BZ bomb. The M138 10-lb. incapacitating BZ bomb (fig. 4) is a thermal generation munition consisting of four canisters nested in a tubular steel bomb casing, which has been crimped to hold the

canisters in place. The canisters containing the BZ agent are aligned within the casing. Each bomb is fuze with an M150A2-type bomb fuze, which is screwed into one end of the bomb. The M150A2 bomb fuze is an allways im-

compact fuze of the direct-arming pin type. The arming pin is depressed and the safety wire is withdrawn during the assembly. The arming pin is held in the depressed position by the spacers within the adapter.

- (2) *Burster.* The burster consists of 22 feet of detonating cord which is threaded through the hinge tube of the cluster adapter during assembly. The ends of the detonating cord are crossed over the tail end of the cluster adapter and inserted in the channels on the tail end of the adapter.

b. *M14 Tail Fin Assembly.* The M14 tail fin assembly consists of a fin-blade assembly and a tie rod assembly.

- (1) *Fin-blade assembly.* The fin-blade assembly is made of sheet steel. It is a truncated cone with four fin blades welded to it. A 3-inch central circular hole in the cone is provided to accommodate the tie rod assembly. A sheet steel cone welded to the forward end of the fin assembly fits over the tail of the cluster adapter. The forward edge of this cone has six numbered stripes painted on it for use during the assembly of the tail fin to the adapter. Two fuze holders are welded to the fin-blade assembly. Fuze adapters with guide tubes are installed in each fuze holder.
- (2) *Tie rod assembly.* The tie rod is made of steel tubing, 18 inches long and 3 inches in diameter, with threads at one end and two tubular steel legs welded at a 45° angle approximately 2 inches from the other end. A tubular steel tie rod foot is welded at right angles to each leg of the tie rod assembly. The tie rod feet are used to engage the hooks at the tail end of the cluster adapter. The threaded end of the tie rod has a locking ring screwed on it; this ring is used when the tail fin assembly is fastened to the cluster adapter.

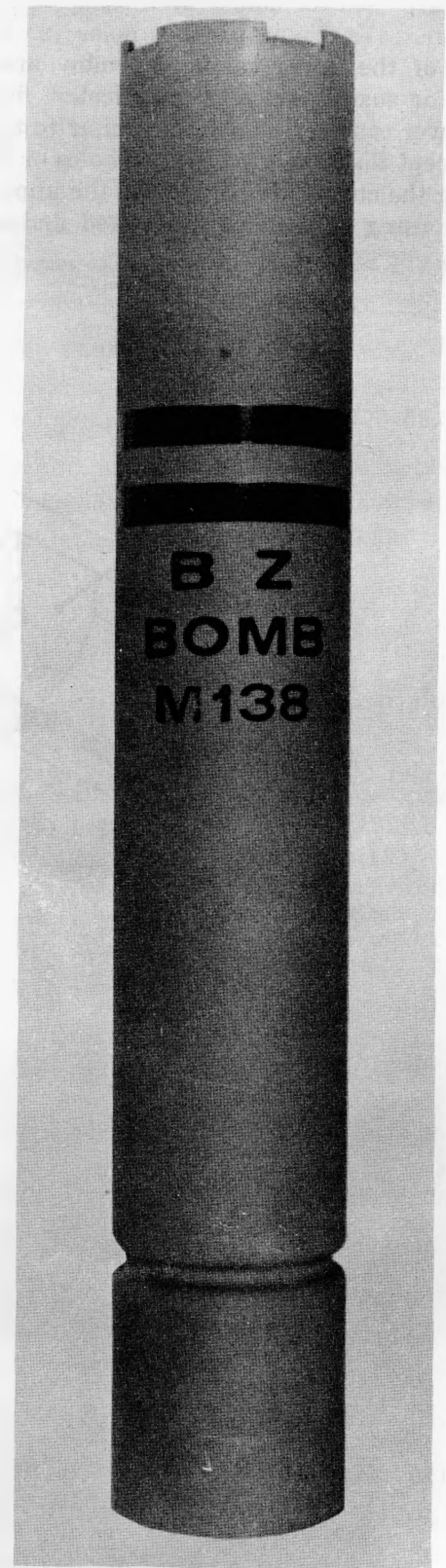


Figure 4. M138 10-lb. incapacitating BZ bomb.

Note. An E12R2 tail fin assembly may be issued instead of the M14 tail fin assembly. Both assemblies are identical except that the central circular hole in the fin-blade assembly of the E12R2 is about 1 inch in diameter and the tie rod assembly is made of steel bar stock fitted at the threaded end with a lock-washer and nut rather than a locking ring.

c. M152A1 Tail Fuze. Two M152A1 mechanical time tail fuzes (fig. 5) are used with the M43 incapacitating BZ bomb cluster. The M152A1 fuze is a combination mechanical time and impact fuze. It is a delayed-arming-type fuze (TM 9-1980) with both an arming pin and arming vane. The arming vanes are painted red to indicate that the fuze is a tail fuze.

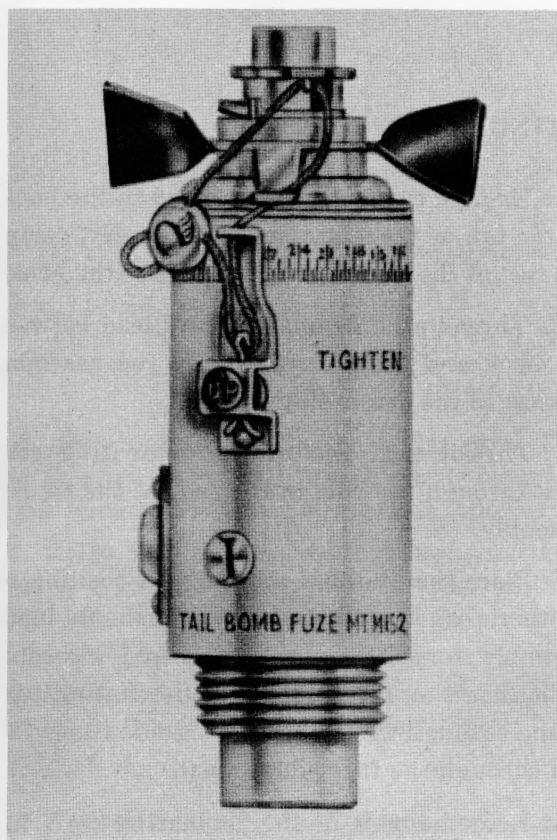


Figure 5. M152A1 tail fuze.

d. M23 Arming Wire. The M23 arming wire (fig. 6) is a type-B two-branch single-swivel loop brass wire. The branches of equal length are fitted with clips.

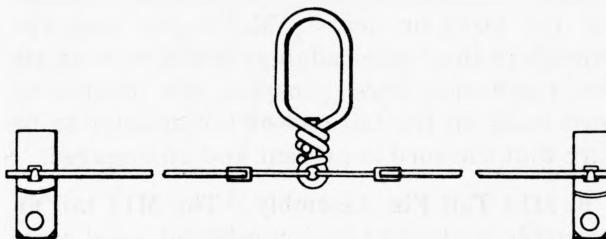


Figure 6. M23 arming wire.

5. Identification. The M30 cluster adapter is marked with two red bands painted around the center of the cluster. The nomenclature, shipping weight, manufacturer's lot number, and date of manufacture are stenciled on the adapter.

6. Tabulated Data. *a. M43 Incapacitating BZ Bomb Cluster.*

Length -----89 in.
Diameter -----16 $\frac{3}{4}$ in.
Weight -----800 lb.

b. M30 Cluster Adapter.

Marking -----2 red bands
Length -----65 $\frac{3}{4}$ in.
Diameter -----16 $\frac{3}{4}$ in.
Weight (uncrated) -----755 lb.
Weight (crated) -----900 lb.

c. M14 Tail Fin Assembly.

Length -----25 $\frac{3}{4}$ in.
Width (between fins) -----17 in.
Weight (uncrated) -----40 lb.
Weight (crated) -----65 $\frac{1}{2}$ lb.

SECTION III

SERVICE UPON RECEIPT OF COMPONENTS

7. General. The components comprising the M43 incapacitating BZ bomb cluster must be inspected for serviceability prior to assembly. Handling equipment, ground mats, and loading

dollies will be required for the inspection of the M30 cluster adapter. All components found to be unserviceable must be replaced. *No local repairs are authorized.*

8. **M30 Cluster Adapter.** The M30 cluster adapter is shipped in an M4 shipping guard (par. 18a). Remove the shipping guard by carefully cutting the steel strapping and removing the guard stringers and end caps. Place the adapter on a ground mat and inspect the adapter for tears or dents. Make sure that the threads in the cluster adapter will accommodate the suspension lugs. Inspect the detonating cord leads on the tail end of the adapter to be sure that the cord is present and undamaged.

9. **M14 Tail Fin Assembly.** The M14 tail fin assembly is shipped in a wirebound wood crate (par. 18b). Cut the wires and remove the tail

fin assembly from its crate. Inspect the assembly to be sure that the fin blades and fuze adapters are securely welded to the tie rod tube. Inspect the tie rod assembly and locking ring for serviceability.

10. **M152A1 Tail Fuzes.** Inspect each tail fuze in accordance with instructions provided in the shipping container and in TM 9-1903.

11. **M23 Arming Wire.** Inspect the arming wire and make sure that there are no sharp bends or cuts in the wire. Make sure that the clips are present.

SECTION IV

ASSEMBLY OF M43 INCAPACITATING BZ CLUSTER

12. **General.** Assembly consists of mating the M14 tail fin assembly to the M30 cluster adapter. The exact alinement of the indexing mark on the tail fin assembly with the numbered stripe on the adapter (par. 13g) is mandatory during the mating procedure to insure that the cluster will clear the wings of the aircraft.

13. **M30 Cluster Adapter.** Place the M30 cluster adapter on a cradle or loading dolly and screw the two suspension lugs furnished with the adapter into the two outer threaded holes in the upper casing of the adapter. Tighten the suspension lugs so that the eyes of the lugs are at right angles to the longitudinal axis of the adapter.

14. **M14 Tail Fin Assembly.** To mate the tail fin assembly to the M30 cluster adapter—

a. Unscrew the locking ring (3, fig. 7) and separate the tie rod assembly (2) from the fin-blade assembly (5).

b. Withdraw the detonating cord (burster) leads from the channels on tail end of the cluster adapter.

Caution: Be careful that the detonating cord is not damaged or kinked during the assembly of the tail fin to the cluster adapter.

c. Engage the feet of the tie rod in the hooks on the tail of the adapter. If necessary, spring the feet of the tie rod apart to engage the hooks.

d. Thread each detonating cord lead between the hook and the foot of the tie rod assembly nearest to the detonating cord.

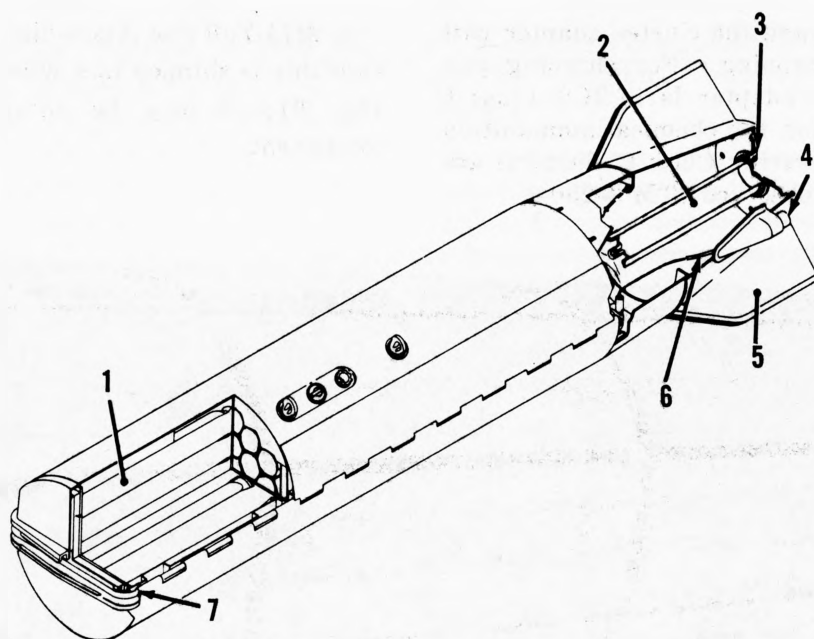
e. Thread each end of the detonating cord back through the hole in the foot of the tie rod assembly.

f. Place the fin-blade assembly in position on the tie rod and simultaneously slide the fin-blade assembly forward onto the tie rod assembly while inserting the ends of the detonating cord in and through their respective guide tubes (6) and through the fuze adapters (4).

g. Hold the ends of the detonating cord and rotate the fin-blade assembly until the desired number stripe is alined with the indexing mark on the adapter.

h. Screw the locking ring onto the tie rod assembly and tighten the locking ring.

i. Thread the ends of the detonating cord back through the holes in the bottom of the fuze adapters to keep the cord from being pulled out.



- 1 Bombs
- 2 Tie rod assembly
- 3 Locking ring

7 Hinge tube

- 4 Fuze adapter
- 5 Fin-blade assembly
- 6 Guide tube

Figure 7. M43 750-lb. incapacitating BZ bomb cluster, cutaway view.

SECTION V

PREPARATION FOR USE

15. Mounting Bomb Cluster on Aircraft. The M43 incapacitating BZ bomb cluster is mounted on the wing racks of the aircraft as follows:

a. Raise the cluster less arming wire and fuzes to a position below the wing rack so that the suspension lugs are alined with the shackles on the rack.

b. Raise the cluster until the suspension lugs engage the shackles simultaneously.

c. Lock the shackles.

16. Installing the M152A1 Fuzes. a. Set the time mechanism of both fuzes to the desired time intervals.

b. Install the fuzes in the fuze adapters and tighten them by hand.

17. Installing M23 Arming Wire. a. Thread the two branches of the arming wire through the rear suspension lug and attach the swivel loop to the fixture on the wing rack.

b. Insert the ends of the branches of the arming wire through the outer eyelets in the arming wire guide and the vane tab on the fuze and secure the ends of the arming wire with the arming wire clips.

c. Remove the striker stops, safety cotter pins, and the sealing wires from the arming wire guides and vane tabs on the fuzes.

SECTION VI

SHIPMENT AND STORAGE

18. Shipment. The several components of the M43 incapacitating BZ bomb cluster are shipped separately.

a. *M30 Cluster Adapter.* The M30 cluster is shipped in an M4 shipping guard (fig. 8) constructed of eight wood ribs and two wood end

caps strapped around the cluster adapter with 1¼-inch steel strapping. For shipping purposes, the cluster adapter is in ICC Class C hazard classification for chemical ammunition. All regulations covering Class C chemical ammunition must be observed (TM 3-250).

b. M14 Tail Fin Assembly. The M14 tail fin assembly is shipped in a wirebound wood crate (fig. 9); it may be shipped as an inert component.

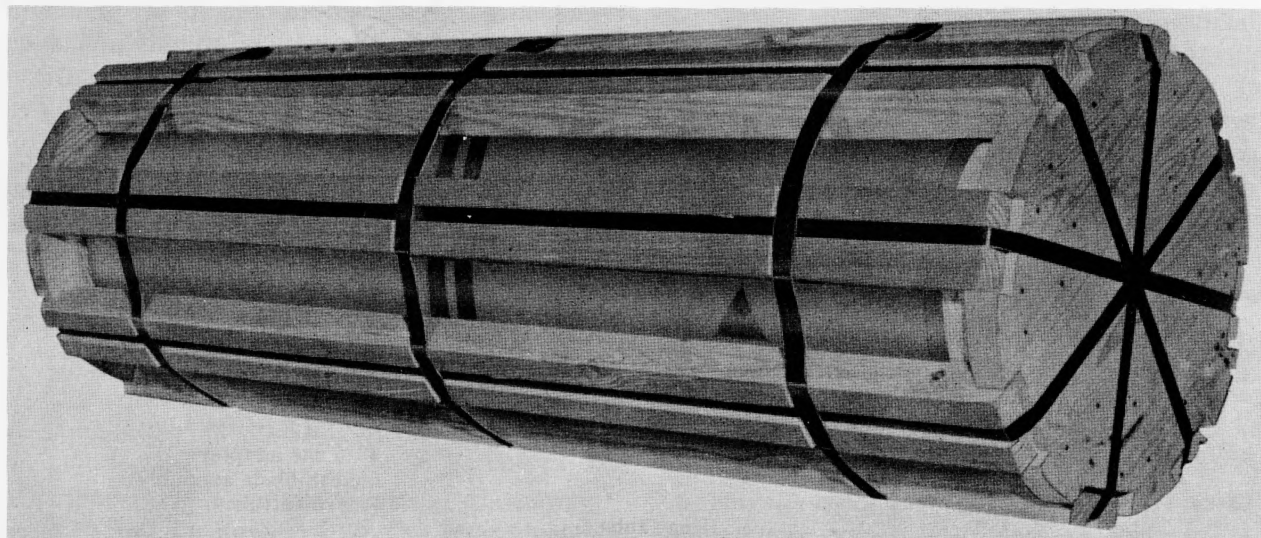


Figure 8. M30 cluster adapter in M4 shipping guard.

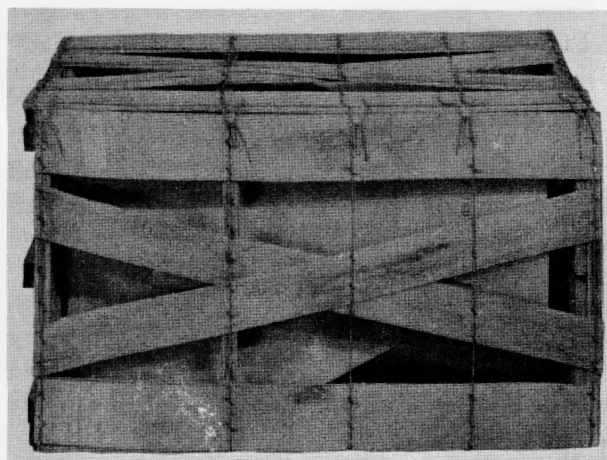


Figure 9. M14 tail fin assembly in shipping crate.

c. M152A1 Fuze. The M152A1 fuzes are shipped, 15 per wood shipping container, in accordance with instructions contained in TM 9-1980.

19. Storage. The components of the M43 incapacitating BZ bomb cluster may be stored separately or together.

a. The M39 cluster adapter is in Storage Group B and must be stored in accordance with instructions contained in TM 3-250.

b. The inert components of the M43 incapacitating BZ bomb cluster, the M14 tail fin assembly, and the M23 arming wire assembly may be stored in any covered storage area.

c. The M152A1 fuzes used with the M43 incapacitating BZ bomb cluster must be stored in accordance with the instructions contained in TM 9-1903.

SECTION VII

EVACUATION, DESTRUCTION, OR DISPOSAL TO PREVENT ENEMY USE

20. General. Bomb clusters containing incapacitating BZ agent which are in danger of being captured by the enemy will be evacuated,

disposed of, or destroyed. The authority to dispose of, evacuate, or destroy, must be obtained from the responsible commander.

21. Priorities. It is desirable to keep the components of M43 incapacitating BZ bomb intact; however, when the situation makes it impossible to do so, the components of the complete round will be evacuated, destroyed, or disposed of in the following priority:

- a. M30 cluster adapter.
- b. M152A1 tail fuzes.
- c. M14 tail fin assembly.
- d. M23 arming wire.

22. Evacuation. Evacuation is preferable to destruction or other methods of disposal. Chemical units will evacuate the M30 cluster adapter.

Fuzes and inert components of a complete round will be evacuated through normal supply channels.

23. Destruction. Destruction of the M30 cluster adapter will be performed by Chemical units and may be accomplished by explosives or by burning. In either case, clouds of incapacitating BZ agent will be generated. For this reason, destruction should be used only when specifically authorized by the responsible commander.

24. Disposal. Disposal by burying in pits similar to sanitary fills or submersion in deep water may be used when authorized by higher authority.

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NG: State AG (3); TOE Units 7-2, 17-2 (1).

USAR: Units—same as active Army except allowance is one copy for each unit.

For explanation of abbreviations used, see AR 320-50.

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