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DEMOLITION BOMB

50 LB., MK. I.

SERVICE HANDBOOK

PREPARED IN THE OFFICE OF
THE CHIEF OF ORDNANCE

April, 1920



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The following publication, entitled "Demolition Bomb, 50 lb., Mk. I," is published for the information and guidance of all concerned, superseding such portions of Document No. 724 as refer to this bomb.

[062.1, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

PEYTON C. MARCH,
General, Chief of Staff.

OFFICIAL:

P. C. HARRIS,
The Adjutant General.

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DEMOLITION BOMB, 50 LB., MK. I.

TARGETS.

The fifty-pound bomb is the smallest demolition bomb now used in the service. It is intended for the destruction of small houses and sheds, small railroad stations, munition dumps, road transport, and vulnerable minor fortifications. The bomb is not large enough to effect serious damage except upon a direct hit at a critical point.

TABLE OF CHARACTERISTICS.

DEMOLITION BOMB, 50 LB., MK. I.

<i>Weights:</i>	Pounds.
Total weight (loaded and fused).....	50
Weight of empty casing.....	25
Weight of explosive (density 1.33).....	25
<i>Materials:</i>	
Casing.....	Steel.
Explosive—Explosive charge.....	50-50 or 80-20, amatol, T. N. T., or lyconite.
Booster charge.....	Powdered T. N. T. and tetryl.
Detonator.....	Fulminate of mercury and guncotton.
<i>Dimensions.</i>	
Over-all length (fused).....	Inches. 36.6
Maximum diameter.....	6.1
Maximum width across fins.....	7.6
Side of square containing fins.....	5.4
Thickness—Front casing.....	$\frac{13}{64}$
Rear casing.....	$\frac{1}{8}$
Length of arming wire below loop.....	27.5
<i>Fusing:</i>	
Nose.....	None.
Tail—Bomb fuse.....	Mark I.
Detonator (integral with above).....	Inherent short delay.
<i>Bomb racks, external:</i>	
3 bombs horizontally (suspension lug, Mk. II).....	Mark XVIII.
3 bombs horizontally (15.25-inch straps).....	Mark V.

NOTE—This bomb was formerly called High Capacity Drop Bomb, Mark III.

DESCRIPTION.

The fifty-pound bomb is equipped with the bomb fuse, Mark I, which includes an adapter booster. The bomb is not equipped with suspension lugs, and must be used with the carrying strap or with the attachable suspension lug, Mk. II.

The bomb is shown in detail in the figures below, and the nomenclature of the parts indicates their functions. Together with the Table of characteristics, these will serve to describe the construction of the bomb.

OPERATION.

The bomb, which is carried horizontally, gradually approaches a vertical position, nose down, after release. This permits the movable parts of the bomb fuse to slide forward into the position for impact (since the release pin drops off on withdrawal of the arming wire). The explosive charge is detonated by the booster charge detonation after a short delay inherent in all types of tail fuse. Retardation of the bomb itself by impact is necessary to cause a tail fuse to function.

The Mark I bomb fuse (see fig. 3) operates as follows: Upon withdrawal of the arming wire (2) the spring (49) ejects the release pin (47) and thereby liberates the detonator assembly (40). This slides down in the booster case tube (38) and seats—cushioned by trapped air—within the detonator sleeve (35), with the primer (39) resting on the points (32). Impact of the bomb causes the detonator assembly to prime itself against the points of the firing pin by momentum. The flash of the primer ignites the guncotton (41) and thereby causes the detonation of the fulminate of mercury (43) of the detonator. Since at this time the detonator is opposite the booster charge (34), the latter is detonated, causing the detonation of the explosive charge.

MARKING AND PACKING.

The bomb is painted a dark olive-drab color, with a black band to indicate the position of the center of gravity. Below this band is marked in black letters the manufacturer's name, the designation of the bomb, the bomb number and lot, and the initials of the inspector.

Each bomb is packed in an individual wooden shipping box. The bomb fuse is shipped within the bomb, except that the detonator assembly is packed in a tin container placed in a special compartment of the box.

PREPARATION FOR USE.

STORAGE IN THE FIELD DURING ACTIVE OPERATIONS.

Bombs when received at the flying field are not to be removed from their boxes until shortly before use. The supply on hand should be piled in two or more lots, each one of which should contain a proportion of each type of bomb on hand. No bombs should be stored at less than 200 yards from a hangar, 500 yards from a village, a camp, or a billet, or 1,000 yards from a hospital.

Different sizes and types of bombs should be kept in separate piles in each lot, and lots should be separated by 50 yards or more. The

DEMOLITION BOMB, 50 LB., MK. I.

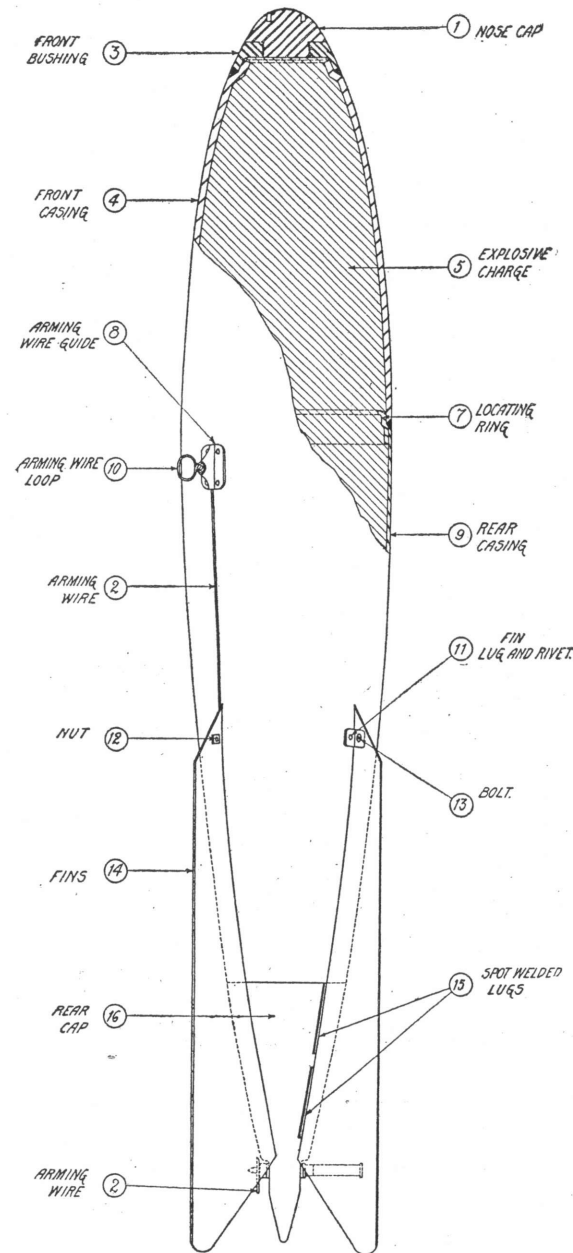


FIG. 1.

SUSPENSION LUG, MK. II.

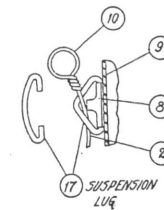
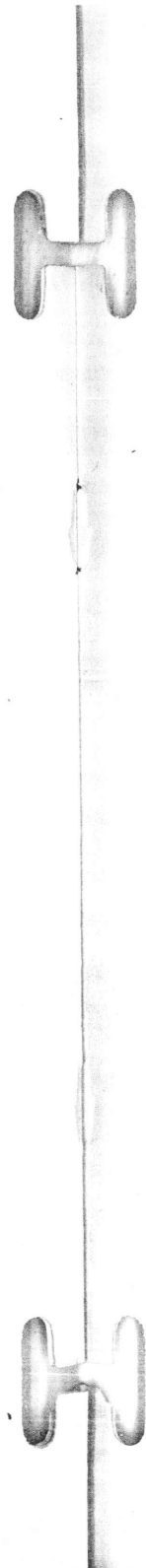


FIG. 2.



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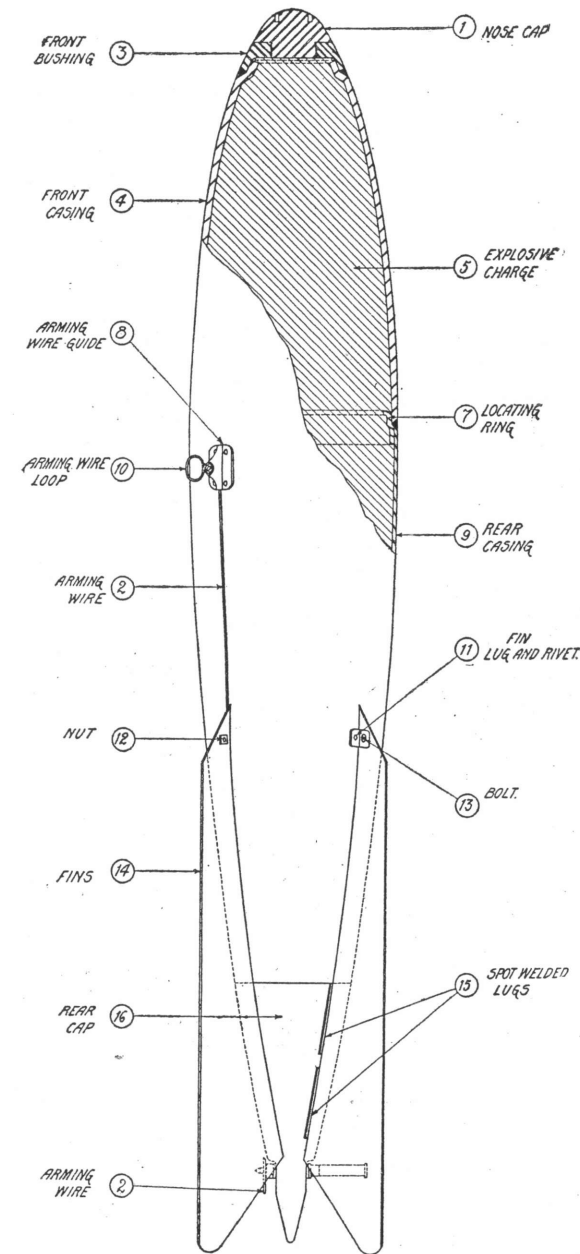


FIG. 1.

SUSPENSION LUG, MK. II.

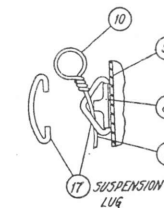


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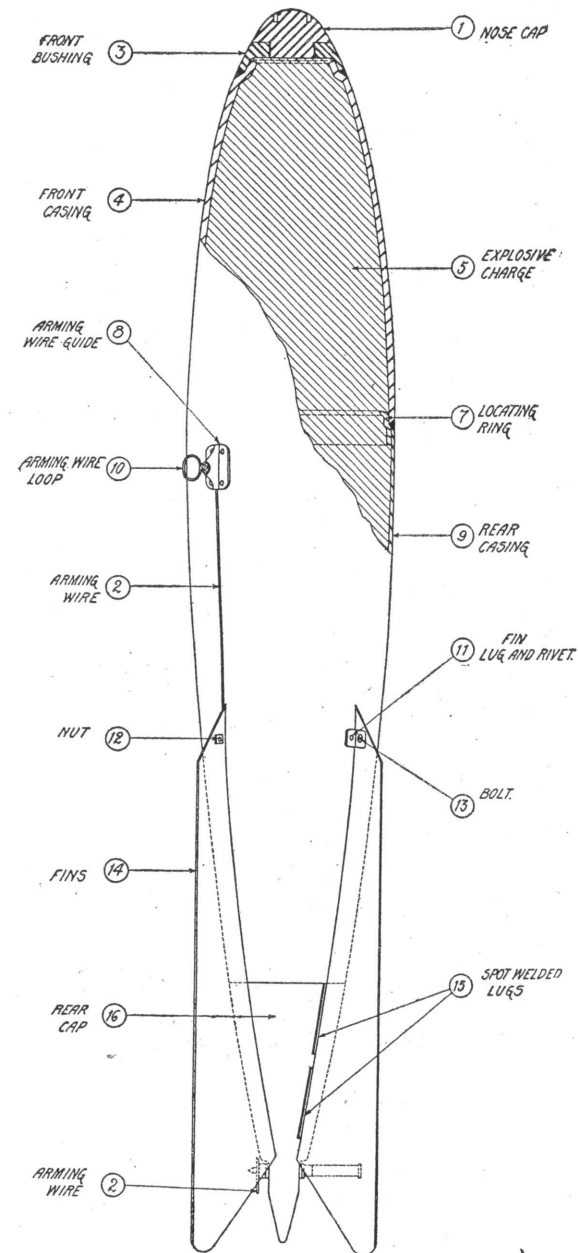


FIG. 1.

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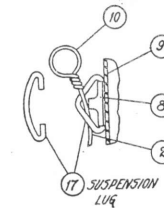


FIG. 2.

boxes of bombs should be piled in pyramids, with the lowest layer at least 4 inches off the ground. Piles should be covered with tarpaulins on light timber frames to protect them from rain and sun.

BOMB FUSE, MK. I.

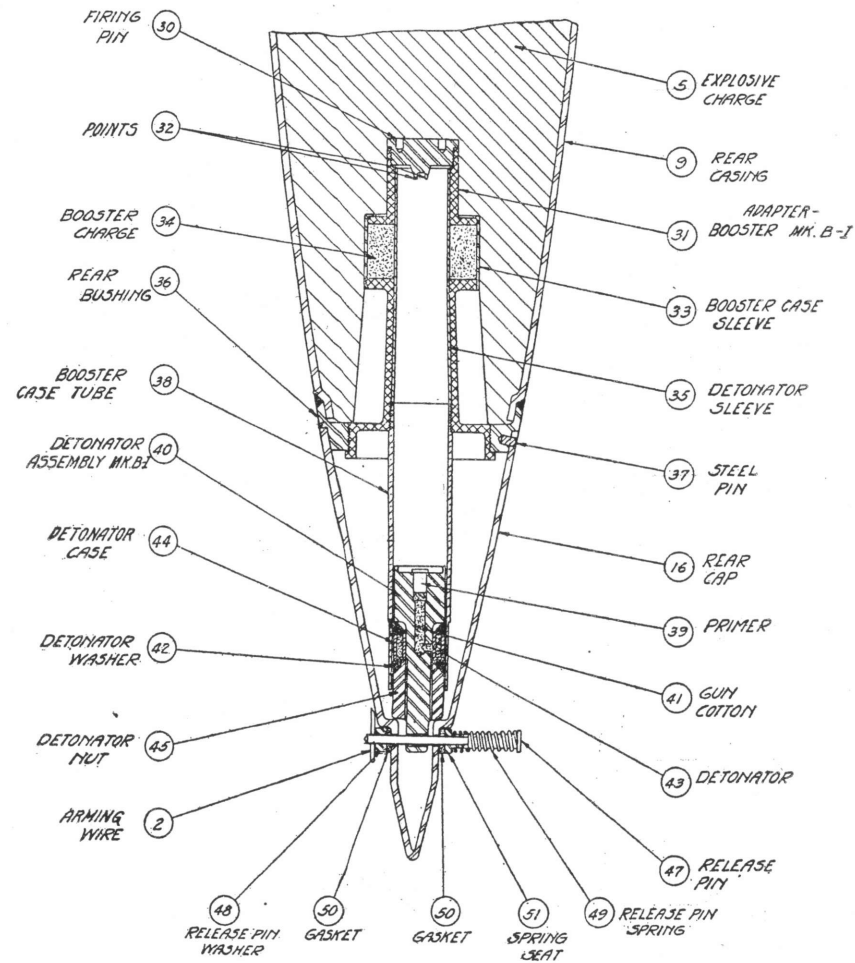


FIG. 3.

Temperature above 100° F. often causes exudation which renders high explosive filling very sensitive and dangerous. Good circulation of air around the boxes is important.

Bombs should never be stored underground or in substantial buildings where the confinement will tend to exaggerate the effects of an explosion.

Fuses, detonators, and primers when removed from boxes or from bombs should be stored with special care against dampness, heat, and shock. A small hut with good ventilation is desirable for this purpose.

Accumulation of empty boxes and the like near the bomb storage should especially be avoided. Incendiary bombs, pyrotechnics, and other inflammable material should be kept completely away from stored bombs or fusing components.

Fused bombs must never be stored. When bombs are not dropped during a flight, the fusing components must be removed as soon as the bombs are taken from the airplane and must be returned to their proper storage areas.

BEFORE LOADING ON BOMB RACK.

The following instructions are to guide the preparing of these bombs for loading onto the bomb racks:

- (1) Remove the rear cap and its assembled fins.
- (2) Test the release pin and free from rust, paint, and any matter that will impede its functioning.
- (3) Remove the arming wire from the hole in the release pin, holding the head of the latter to prevent its ejection and loss.
- (4) Place the arming wire in the arming-wire guide, loop in position and straight end free, except in the case of the Mark V bomb rack. With this type, the arming wires are placed on the rack first and each is fed into the arming wire guide as the bomb is raised.
- (5) Place the detonator assembly in position in the rear cap.
- (6) Replace the release pin, spring, spring seat, and washers so that the former holds the detonator assembly in position. Hold the release pin in place temporarily by a piece of wire through the hole for the arming wire.
- (7) With the bomb horizontal, replace the rear cap, GUIDING the detonator assembly CAREFULLY into its sleeve.
- (8) Holding the release pin, replace the temporary wire by the free end of the arming wire, taking care that the latter is free from sharp bends.
- (9) Place the bomb on the rack in accordance with the instructions laid down in the handbook referring to the type of bomb rack used.

UNLOADING BOMBS FROM BOMB RACK.

Where bombs are not dropped and are returned to the flying field on the airplane, they should be removed, disassembled, and the

components placed in storage. In disassembling, the following instructions should be observed:

(1) Holding the head of the release pin, remove the arming wire from its hole in the pin and replace by a cotter pin or a wire. In any case, the COTTER PIN should be SPREAD or the WIRE BENT to avoid its falling out while handling.

(2) Release the bomb from the rack, supporting and catching it to prevent it from striking the ground. Care should be used to see that the CORRECT BOMB IS SUPPORTED where several bombs are released by the same handle.

(3) Standing the bomb on its nose, remove the rear cap from the body, taking great care that the DETONATOR RECEIVES NO SHOCK in the process.

(4) Holding the release pin, withdraw the cotter pin or wire from the hole in the former. Holding the detonator assembly in one hand, withdraw the release pin until the former is free; remove it and place it GENTLY on a clean board, cloth, or paper.

(5) Replace the release pin and washer and replace the cotter pin or wire in its hole.

(6) Remove the detonator assembly to the detonator storage inclosure. Replace the assembly in its tin and seal the lid with tape. Place the rear cap and the bomb body again in storage.

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