

**RESTRICTED**

**ORDNANCE PAMPHLET 878**

**[SECOND REVISION]**

**GENERAL DATA ON  
NAVY, AN-STANDARD, ARMY,  
AND BRITISH BOMBS**



**21 SEPTEMBER 1944**

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Article 76, United States Navy Regulations, 1920.*

NAVY DEPARTMENT  
BUREAU OF ORDNANCE  
WASHINGTON 25, D. C.

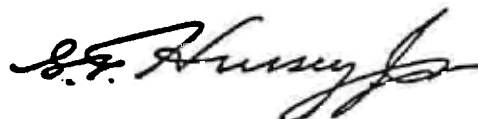
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ORDNANCE PAMPHLET 878 (SECOND REVISION)

GENERAL DATA ON NAVY, AN-STANDARD, ARMY, AND BRITISH  
BOMBS

1. Ordnance Pamphlet 878 (Second Revision) is for the use of all aviation ordnance personnel, particularly those concerned with bombs and associated equipment.
2. The data contained in this publication are a comprehensive listing of the most frequently required information concerning bombs and related equipment. For more complete detailed information regarding specific items, reference should be made to applicable Ordnance Pamphlets, Ordnance Circular Letters, Ordnance Technical Instructions, and Ordnance Handling Instructions.
3. This pamphlet supersedes Ordnance Pamphlet 878 (First Revision), which should be destroyed.
4. Reports of errors or omissions should be made to the Chief of the Bureau of Ordnance, Navy Department, Washington 25, D. C.
5. This publication is RESTRICTED and should be handled in accordance with Article 76, U. S. Navy Regulations, 1920.



G. F. HUSSEY, JR.  
Rear Admiral, U. S. Navy,  
Chief of the Bureau of Ordnance.

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# SECTION 1

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RACKS AND SHACKLES

## DATA—RACKS AND SHACKLES

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# BOMB DATA

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The purpose of this list is to indicate the type racks and/or shackles used in Navy airplanes and the maximum bomb load the airplane is capable of carrying. For complete information as to the Mod rack or shackle installed in Navy airplanes, consult current Aviation Ordnance Allowance Lists.

Class	Models
FIGHTER VF(M)	F7F-1N F7F-2N F7F-3N
FIGHTER VF	F3A-1 FG-1 F4U-1
VF	F4F-4 FM-1
VF	
VF	F4U-1D FG-1D F4U-4 F4U-1C
SCOUT BOMBER VSB	SB2C-1
VSB	SB2C-1A
VSB	SB2C-1C SB2C-3 SB2C-3E SB2C-4 SBF-1 SBF-3 SBW-1 SBW-3
VSB	SBD-4
VSB	SBD-5 SBD-5A SBD-6
OBSERVATION SCOUT VO/VB	OS2N-1 OS2U-2 OS2U-3
VO/VB	SC-1
VO/VB	SOC-1 SOC-2 SOC-3 SOC-3A SON-1
TORPEDO BOMBER VTB	TBF-1 TBF-1C TBF-1D TBM-1 TBM-1C TBM-1D
VTB	TBM-3

# RACK AND SHACKLE INSTALLATIONS O P 878

Racks	Location	Maximum Bomb Load
2—Mk 51 Racks 1—Mk 51 Rack	R & L wing Fuselage	2—1,000 lb. (GP); 3—500 lb. (GP); 1—Torpedo; 1—2,000 lb. (GP); 1—2,000 lb. Mine; 1—1,600 lb. (AP)
1—Mk 51 Rack	Fuselage	1—1,600 lb. (AP)
2—Mk 41 Racks	R & L wing	2—100 lb. (GP)
2—Mk 51 Racks 2—Mk 4 Shackles	R & L wing Fuselage	1—2,000 lb. (GP); 1—Torpedo; 1— 2,000 lb. Mine; 1—1,600 lb. (AP); 2—1,000 lb. (GP)
1—Mk 51 Rack 2—Mk 4 Shackles	L wing Fuselage	1—1,600 lb. (AP); 1—2,000 lb. (GP); 1—Torpedo; 1—2,000 lb. Mine
2—AN-B10 or 2—Mk 8 Shackles	R & L wing	2—1,000 lb. (GP); 2—1,000 lb. Mines; 2—1,000 lb. (AP)
2—Mk 50 Racks 3—Mk 51 Racks	R & L wing Fuselage	2—1,000 lb. (AP); 1—1,600 lb. (AP); 1—1,000 lb. (GP); 2—500 lb. (GP); 1—1,000 lb. Mine; 4—350 lb. (DB)
2—Mk 51 Racks 3—Mk 51 Racks	R & W wing Fuselage	4—500 lb. (GP); 2—1,000 lb. (AP); 1—1,600 lb. (AP); 1—1,000 lb. (GP); 1—1,000 lb. Mine
2—Mk 50 or 51 Racks 3—Mk 51 Racks 1—Mk 4 Shackle	R & L wing Fuselage Fuselage	1—Torpedo, 4—350 lb. (DB); 2— 1,000 lb. (AP); 1—1,000 lb. Mine; 1—1,600 lb. (AP)
2—Mk 50 Racks 1—Mk 51 Racks	R & L wing Fuselage	3—350 lb. (DB); 1—1,600 lb. (AP); 1—1,000 lb. Mine; 1—1,000 lb. (GP)
2—Mk 50 or Mk 51 Racks 1—Mk 51 Rack	R & L wing Fuselage	1—500 lb. (GP); 1—1,600 lb. (AP); 1—1,000 lb. (GP); 3—350 lb. (DB); 1—1,000 lb. Mine
2—Mk 50 Racks	R & L wing	2—350 lb. (DB)
2—Mk 51 Racks 2—Mk 51 Racks	R & L wing Center float	2—350 lb. (DB)
2—Mk 41 Racks	R & L wing	2—350 lb. (DB)
12—Mk 4 Shackles	Fuselage	4—500 lb. (GP); 1—2,000 lb. (GP); 1—2,000 lb. Mine; 2—1,000 lb. (GP); 1—Torpedo; 12—100 lb. (GP); 4—350 lb. (DB)
2 Mk 51 Racks 12—Mk 4 Shackles	R & L wing Fuselage	6—500 lb. (GP); 1—2,000 lb. (GP); 1—2,000 lb. Mine; 1—Torpedo; 14—100 lb. (GP); 6—350 lb. (DB); 2—1,000 lb. (AP)

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# BOMB DATA

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Class	Models
PATROL BOMBER VPB(HS)	PB2Y-3
VPB(MS)	PBM-3C PBM-3S PBM-3D PBM-5
VPB(MS)	PBN-1
VPB(MS)	PBY-5 PBY-5A PBY-6A
VPB(HL)	PB4Y-1* PB4Y-2
	PBJ-1C** PBJ-1D** PBJ-1H PBJ-1J
VPB(ML)	PV-1
VPB(ML)	PV-2 PV-2D
UTILITY VJ	
VJ(M)	JRF-4 JRF-5

## NOTE

\* Some PB4Y-1 airplanes were equipped with 40 Shackles AN-B10 or B7, in order to increase the 100 lb. bomb load.

\*\*PBJ-1C and PBJ-1D airplanes were equipped with 20 shackles B7 and one Shackle D6, to increase the 100 lb. bomb load.

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# RACK AND SHACKLE INSTALLATIONS O P 878

Racks	Location	Maximum Bomb Load
12—Mk 3 Shackles	8 In wings 4 Under Nacelles	12—500 lb. (GP); 12—1,000 lb. (GP); 12—1,600 lb. (AP); 12—700 lb. (DB); 12—1,000 lb. Mines; 2—2,000 lb. Mines; 2—Torpedoes
16—Mk 5 Shackles	12 In Nacelles 4 In wings	12—100 lb. (GP); 8—1,000 lb. (GP); 8—1,000 lb. (SAP); 8—1,600 lb. (AP); 8—350 lb. (DB); 8—1,000 lb. Mines; 2—Torpedoes; 2—2,000 lb. Mines
8—Mk 35 Racks or 4—Mk 35 Racks and 4—Mk 42 Racks	R & L wings	8—35lb. (DB); 4 1,000lb. (GP); 4—1,000 lb. Mines; 8—500 lb. (GP); 12—100 lb. (GP); 2—Torpedoes; 2— 1,600 lb. (AP)
8—Mk 51 Racks 4—Mk 42 Racks and 4—Mk 51 Racks	R & L wings	16—100 lb. (GP); 8—500 lb. (GP); 8—1,600 lb. (AP); 8—1,000 lb. Mines; 2—2,000 lb. Mines; 2—Torpedoes; 8—1,000 lb. (GP); 8—1,000 lb. (SAP)
20—B-7 Shackles and 4 D-6 Shackles	Bomb bay	20—100 lb. (GP); 12—500 lb. (GP); 8—1,000 lb. (SAP); 12—1,000 lb. (AP); 8—1,600 lb. (AP); 4—2,000 lb. (GP); 12—350 lb. (DB); 8—1,000 lb. Mines; 4—2,000 lb. Mines
12—B-7 Shackles and 1—D-6 Shackle	Bomb bay	1—2,000 lb. (GP); 2—1,600 lb. (AP); 3—1,000 lb. (GP); 6—500 lb. (GP); 12—100 lb. (GP); 8—250 lb. (GP); 1—Torpedo; 3—1,000 lb. Mines
6—Mk 3 Shackles, 1—D-6 Shackles and 2 D820 Shackles	Bomb bay Wings	8—500 lb. (GP); 2—1,600 lb. (AP); 1—2,000 lb. (GP); 2—1,000 lb. Mines; 1—2,000 lb. Mine; 1—Torpedo; 6— 350 lb. (DB)
6—Mk 5 Shackles 2—D-820 Shackles	Bomb bay Wings	8—500 lb. (GP); 2—1,600 lb. (AP); 1—2,000 lb. (GP); 2—1,000 lb. Mines; 1—2,000 lb. Mine; 1—Torpedo; 6— 350 lb. (DB)
2—Mk 50 Racks	Wings	2—325 lb. (DB)
2—Mk 41 or 2—Mk 50 Racks	Wings	2—325 lb. (DB)

# BOMB DATA

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## U. S. NAVY BOMB RACKS

Mark No.	No. of Hooks	Drawing No.	Capacity	Type of Operation	Hoist Bracket	Voltage	Status
<b>Group A</b>							
Mk 35 Mod 4	2	272614	1,600 lb. (a)	1, 3	Left	Note (b)	Obsolete
Mk 35 Mod 5	2	272614	1,600 lb. (a)	1, 3	Right	Note (b)	Obsolete
Mk 35 Mod 6	2	267622	1,600 lb. (a)	1, 3	Center	Note (b)	Obsolete
Mk 51 Mod 6	2	328758	1,600 lb.	1, 2, 5, 7	Note (d)	12	Obsolete
Mk 51 Mod 7	2	328758	1,600 lb.	1, 2, 5, 7	Note (d)	24	Obsolete
Mk 51 Mod 8	2	328758	1,600 lb.	1, 2, 5, 7	Note (d)	12	Service (g)
Mk 51 Mod 9	2	328758	1,600 lb.	1, 2, 5, 7	Note (d)	24	Service (g)
<b>Group B</b>							
Mk 41 Mod 2	1	273163	325 lb. (c)	1, 3	None	—	Obsolete
Mk 50	1	328404	500 lb.	1, 2, 5, 7	None	12	Obsolete
Mk 50 Mod 1	1	328404	500 lb.	1, 2, 5, 7	None	24	Obsolete
Mk 50 Mod 2	1	328743	500 lb.	1, 2, 5, 7	None	12	Obsolete
Mk 50 Mod 3	1	328743	500 lb.	1, 2, 5, 7	None	24	Obsolete
Mk 50 Mod 4	1	328743	500 lb.	1, 2, 5, 7	None	12	Service (h)
Mk 50 Mod 5	1	328743	500 lb.	1, 2, 5, 7	None	24	Service (h)
<b>Group C</b>							
Mk 42	6	178403	3—100 lb.		None	12 or 24	Obsolete
<b>Group D</b>							
<b>Other Racks</b>							
Mk 43 Mod 1A or Mod 2	—	182990	5—3 lb.		None		Obsolete
Mk 46	—	328403	1—13 lb.		None	12 or 24	Obsolete
Mk 46 Mod 1	—	329798	1—13 lb.		None	12 or 24	Service
Mk 47 or Mk 47 Mod 1	—	388352	8—3 lb.		None	12 or 24	Obsolete Service

### NOTES (Applicable to pages 10-11)

- (a) Designed to carry a 1,000-pound bomb. The safety factor is reduced slightly when carrying a 1,600-pound bomb.
- (b) Release can be electrically controlled by mounting one Solenoid Mk 17 Mod 3 (24-volt) or Mk 17 Mod 4 (12-volt) on the top of the rack.
- (c) Designed to carry a 100-pound bomb. The safety factor is reduced when a 325-pound bomb is carried unless the rack has been reinforced in accordance with BuOrd Dwg. 387622. Stock No. 3-R-502 has been assigned to this reinforcement.
- (d) By changing the location of the hoisting bracket, it is possible to hoist from the right side or left side, or through the center.
- (e) Shackles Mk 6, Mk 7 and Mods, and AN-B9 are single-hook shackles designed primarily for British use. All other shackles have two suspension hooks.
- (f) Suspension hooks on these shackles are spaced 30 in. apart.
- (g) Bomb Racks Mk 51 Mods 8 and 9 are interim modifications of Mods 6 and 7, respectively, pending further improvements in design.
- (h) Bomb Racks Mk 50 Mods 4 and 5 are reworked and improved Bomb Racks Mk 50 Mods 2 and 3, respectively.

# U. S. NAVY RACKS AND SHACKLES

## U. S. NAVY SHACKLES

Mark No.	B. O. Outline Drawing No.	Capacity	Type of Operation	Voltage	Location in Bomb Bay	Status
<b>Group A</b>						
Mk 3	328778	1,600 lb.	1, 2, 5	24	Left Side	Obsolescent
Mk 3 Mod 1	328778	1,600 lb.	1, 2, 5	24	Right Side	Obsolescent
Mk 3 Mod 2	329437	1,600 lb.	1, 2, 5	24	Left Side	Service
Mk 3 Mod 3	329437	1,600 lb.	1, 2, 5	24	Right Side	Service
Mk 4	300647	1,600 lb.	1, 2, 7	24	Left Side	Obsolescent
Mk 4 Mod 1	300647	1,600 lb.	1, 2, 7	24	Right Side	Obsolescent
Mk 4 Mod 2	329503	1,600 lb.	1, 2, 7	24	Left Side	Service
Mk 4 Mod 3	329503	1,600 lb.	1, 2, 7	24	Right Side	Service
Mk 5 Mod 1	328400	1,600 lb.	8	—	R or L Side	Obsolescent
Mk 5 Mod 2	329157	1,600 lb.	8	—	R or L Side	Service
B-7	*33D5226	1,600 lb. (a)	8	—	R or L Side	Obsolescent
AN-B-10	*43D10157	1,600 lb.	8	—	R or L Side	Service
Mk 8 Mod 0	437786	1,600 lb.	1, 9, 10	28	R or L Side	Service
D-820-Mod 1		1,600 lb.	1, 2, 4	24	R & L Wing	Service
<b>Group E</b>						
Mk 6 Mod 2 (e)	394784	1,000 lb.	1, 2, 9	24	Left Side	Service
Mk 6 Mod 3 (e)	394784	1,000 lb.	1, 2, 9	24	Left Side	Service
Mk 7 (e)	375798	1,000 lb.	1, 2	24	Left Side	Service
Mk 7 Mod 1 (e)	375798	1,000 lb.	1, 2	24	Right Side	Service
AN-B-9 (e)	*42D7307	1,600 lb. (a)	8	—	R or L Side	Service
<b>Group F</b>						
D-6 (f)	*41E4555	2,000 lb.	1, 3, 8	—	Center	Service
D-7 (f)	*42E7219	4,000 lb.	1, 3, 8	—	Center	Service

\*A. A. F. Drawing No.

## OPERATION NOTES

Type of operation as specified on Rack and Shackle Charts:

- |  |   |
|--|---|
| 1—Manual release                                     | 8—Arming and release electrically controlled by Release Mechanisms Type N-2, A-2 (improved), or AN-A-2A |
| 2—Electric release                                   | 9—Electric selective arming by two Bomb Arming Controls Type AN-A-2                                     |
| 3—Manual arming                                      | 10—Release by Bomb Shackle Release Mk 1 Mod 0   |
| 4—Electric arming                                    |   |
| 5—Electric selective arming                          |   |
| 6—Manual salvo release                               |   |
| 7—Manual selective arming and manual unarmed release |   |

## SECTION 2

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### DATA—BOMBS—ALL SERVICES

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## BOMB BODY SHAPES

Navy 100-pound bomb Mk 1 Mod 3 and all British S.P. and A.P. bombs have "tear drop" or streamlined-shaped bodies, as shown in Figures A and B.



Figure A.—Navy 100-lb. G. P. Bomb Mk 1 Mod 3



Figure B.—British G. P. Bomb with Long Tail Unit

All Navy, Army, and AN-Standard bombs, and British Medium and High Capacity bombs, with the exception of those noted above, and except the small incendiaries, have a cylindrical body with an ogival nose as shown in Figures C and D. Armor-Piercing and Semi-Armor-Piercing bombs have no fuze in the nose, but are otherwise similar. Armor-Piercing bombs have a pointed nose and a body shape somewhat similar to that of a large-caliber projectile. Depth bombs are generally larger in diameter for their weight than other bombs, but have the same general cylindrical shape.

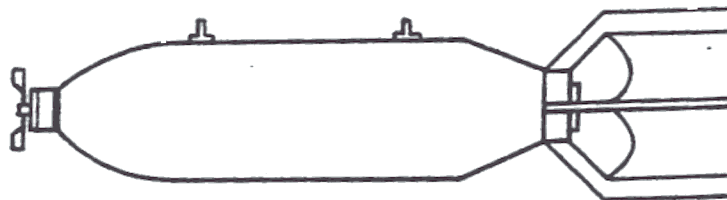


Figure C.—AN-Standard G. P. Bomb

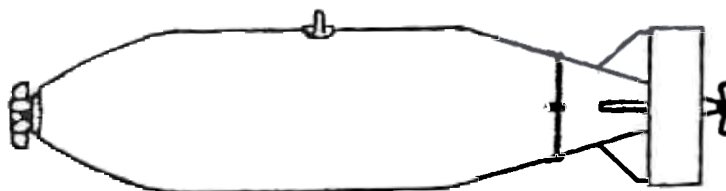


Figure D.—British Medium Capacity Bomb with Short Tail

The small incendiaries are hexagonal in shape and have an enclosed tail.

# BOMB IDENTIFICATION

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## BOMB TAIL SHAPES

All Navy, Army, and AN-Standard bombs, except depth bombs and the 500-pound and 1,000-pound Navy practice bombs, have box-shaped fin tails as shown in figure E. The fins do not extend beyond any part of a square circumscribing the cylindrical body.

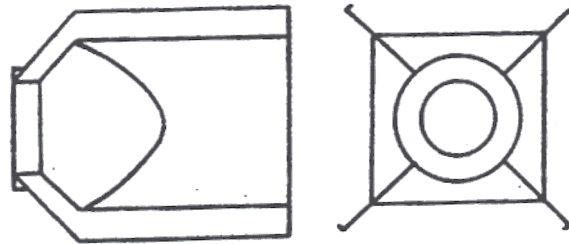


Figure E

Depth bombs, 500-pound and 1,000-pound Navy practice bombs, and all British bombs have cylindrical tails. The fins are located inside a cylinder, as shown in Figures F and G.

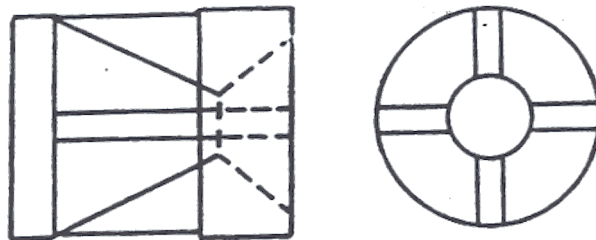


Figure F.—Tail Unit of Navy Depth Bomb, also 500- and 1,000-lb. Practice Bombs

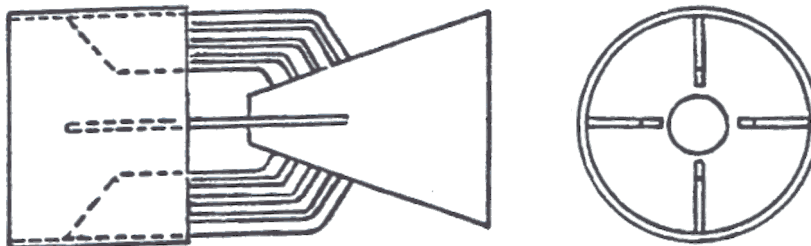


Figure G.—British Long Tail Unit

The small hexagonal incendiary bombs have an enclosed tail.

# BOMB DATA

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Color and Area of Painting	Banding	Location and Number	Denotes
<b>U. S. Navy</b> Black, all over Gray (lusterless) all over. Note (a). Olive Drab now used Yellow Spot Red Spot	No system of painted bands used by the Navy for identification at the present time.	Circular between lugs Circular between lugs	Practice bombs Service bombs  Service bomb High explosive bomb Incendiary bomb
<b>AN-Standard</b> Olive Drab (lusterless) all over	Yellow, 1" Yellow, wide Yellow, ¼" broken Blue, two bands 3"  Black, two bands 3"	Nose Tail of body Body at c. g. Body, either side of yellow c. g. band Body, either side of yellow c. g. band	High explosive bomb High explosive bomb Location of c. g. Practice bomb  Drill or inert loaded bomb
<b>U. S. Army</b> Olive Drab, all over Gray, all over Blue, all over Black, all over			High explosive bomb Chemical or incend. bomb Practice bomb Inert or drill bomb
<b>Army Chemical Bombs</b> Gray, all over, or  Olive Drab, all over	Green  Green  Red Red Yellow Purple	One around body  Two around body  One around body Two around body One around body One around body	Nonpersistent casualty-producing gas Persistent casualty-producing gas Nonpersistent harassing gas Persistent harassing gas Smoke filled Incendiary
<b>British</b> Service bombs are dark green, except incendiary bombs, which are red. The earlier marks were yellow. This procedure was changed in order to make the bombs less perceptible from the air.	Light Green Dull Red White  White	Around body Around nose Around nose above red band Around nose both sides of red band	High explosive filled Filled bomb S.A.P. bomb  A.P. bomb

(a) Prior to OCL V-95 May 5, 1942, service bombs were painted yellow all over.

# BOMB IDENTIFICATION

## Stencilling and Stamping

Navy bombs and AN-Standard bombs manufactured by the Navy are stencilled on the body to show the weight, type, Mark and Mod number, manufacturer, year of manufacture, contract number, lot number and inspector's initials. A typical example would be as follows:

325-lb. Aircraft Depth Bomb  
Mk 17 Mod 1  
Jones Mfg. Co. 1942  
No. 98634, Lot 4  
G. H. B.

The filling, as water or wet sand, is stencilled on practice bombs. The same first two lines, as shown above, but with the body manufacturer's initials, lot number, and date are stamped into the rear conical surface of the bomb body.

AN-Standard bombs manufactured by the Army are stencilled at various locations on the bodies. A typical example would be as follows:

Type:	S. A. P.
Weight class:	500 lb.
Mk and Mod:	AN-M58A1
Filling:	AM 50/50*
Lot Number:	Lot No. 67354
Kind:	Explosive
Gov't Property:	U. S. Bomb
Loading Plant or Company:	CDCO
Month and Year of loading:	4-42
Inspector Stamp:	
Some shipping data are also included	

The following is also stencilled on the bomb.  
Bomb Complete Requires 1-Body, Bomb, Loaded 1-Crate or box containing Fin Assembly and All Components.  
The rear conical surface of the bomb body has the following stamped into the metal; Use Size, Mark No., Maker's initials, Lot number and Date. Example: G. P. 500 lb. AN-M64 C3CO Lot 5 4/42

Army bombs are stencilled somewhat similarly to Navy bombs. The following data are shown: weight, type, Mark and Mod number, lot number type of filler, initials of loading plant, and date loaded. Unloaded bombs have the word "Empty" stencilled on the body, which is painted out when the bomb is loaded. A typical example would be as follows:

Demo.  
500 lb. M43  
AM 50/50  
Lot No. 595  
F 4-42

All British bombs are stencilled on the body, and the following items are shown: Type of bomb; weight class; Mark number; type of filling, such as Baratol, Amatol, or TNT (called Trytol), with composition of the filling shown by a fraction in the case of Baratol or Amatol; company or station, filling the bomb; date of filling; and lot number. A typical example would be as follows:

G. P. 250 lb. IV  
Bar. 10/90  
R 25/2/42

\*"AM 50/50" denotes 50 percent Ammonium Nitrate—50 percent TNT filling.

**U. S. NAVY BOMBS****DEMOLITION BOMBS**

Navy demolition bombs weighing 100, 500, and 1,000 pounds have been issued to the service. Future procurement of demolition bombs by the Navy has been abandoned in lieu of obtaining general-purpose bombs designated as Army-Navy (AN) Standard. However, large stocks of several Marks and Mods of Navy demolition bombs are on hand and will be distributed until the supply is depleted.

The 100-pound Bomb Mk 1 Mod 3 is the old "teardrop" Army-type bomb and is now obsolete. It has been replaced by the series Mark 4, which is in general use today. Bombs Mk 4 Mods 1, 2, and 4 differ from the original Bomb Mk 4 only in minor details. These bombs are fuzed at the nose only, have provisions for both single and double suspension, and can be equipped with trunnions by means of a band.

The 500- and 1,000-pound series are very similar except for size. The 500- and 1,000-pound Light-Case Demolition Bombs Mk 9 are obsolete. The 500-pound Bombs Mk 12 and Mk 12 Mod 1 and the 1,000-pound Bombs Mk 13 and Mk 13 Mod 1 have received wide distribution. They are characterized by welded-on trunnions and two hoisting lugs welded to the body approximately 90° from the suspension lugs and just below the trunnions. The 500-pound Bomb Mk 12 Mod 2 and 1,000-pound Bomb Mk 13 Mod 2 differ from the previous Mods in that the trunnions are provided by means of a band and the double cable hoisting lugs are omitted. A limited number of 1,000-pound Bombs Mk 36 have been manufactured and distributed (See NAVORD OTI AV6-43).

All 1,000-pound Navy demolition bombs and the 500-pound Bomb Mk 12 Mod 2 are equipped with a hoisting lug situated between the suspension lugs. All 500- and 1,000-pound Navy demolition bombs have provisions for both nose and tail fuzes and may be suspended from either double-hook racks or shackles or by means of slings utilizing the guide key provided (welded to the case).

# U. S. NAVY BOMBS

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## DEPTH BOMBS

Aircraft depth bombs of the 325-pound, 350-pound, and 650-pound weight classes have been issued to the service. These bombs are characterized by a light case, a relatively large explosive filler, and a diameter somewhat greater than other type bombs of approximately the same weight. They are described more fully in O P 1280.

All 325-pound and 350-pound depth bombs, except the Depth Bomb Mk 17 Mod 1, now carry the AN-Standard designations and will be discussed under that heading. The Bomb Mk 17 Mod 1, production model of the Bomb Mk 17, is a round-nose, TNT-filled bomb equipped to receive an impact nose fuze and an athwartships hydrostatic fuze. Trunnions are provided for by means of a band. The impact nose fuze allows the bomb to be used as a blast or demolition bomb. Use of a nose fuze incorporating a delay is not recommended, as the light case may break up before the fuze functions.

\*Two 650-pound depth bombs, the Depth Bombs Mk 37 and Mk 38, and a 700-pound Depth Bomb Mk 49 have been issued. The Depth Bomb Mk 37 is a round-nosed depth bomb. The Depth Bomb Mk 38 is slightly shorter than the Depth Bomb Mk 37 and has an integral flat nose. When the Depth Bomb Mk 38 is filled with Torpex, it is designated as the 700-pound Depth Bomb Mk 49. All are equipped to receive a nose impact fuze, an athwartships hydrostatic fuze, and a tail hydrostatic fuze. Screw-on trunnions are also provided. The same precautions, relative to fuzing, noted in connection with the 325-pound depth bombs, must be observed.

It has been found that a tendency to ricochet occurs when a round-nose bomb enters the water at angles of between 15° to 20° and that a ricochet is almost certain if the angle is less than 15°. Antiricochet flat-nose attachments are provided for depth bombs which do not have an integral flat nose. The attachment for the 325-pound class is shown on BuOrd Dwg. 329802 and for the 650-pound class on Dwg. 329801. After the attachment is secured to the bomb, the intervening space is filled with a semifluid mixture of plaster or cement. The approximate total weight increase for the 325-pound class is 44 pounds; for the 650-pound class it is 72 pounds.

\*The 650- and 700-pound depth bombs have been restricted from use in A/S warfare.

**U. S. NAVY BOMBS, Continued****ARMOR-PIERCING BOMBS**

The 1,600 pound Armor-Piercing Bomb Mk 1 has been issued to the service. It has also undergone modifications and standardization and is now designated Bomb AN-Mk 1. The A. P. Bomb Mk 1 is supplied with several different types of bands, two for suspension, one with a guide key and a hoisting lug on each side (double-cable hoisting), and a combination trunnion and hoisting band (single-cable hoisting). This bomb is capable of piercing the heaviest armored decks from about 12,000 feet in horizontal bombing, or moderate decks in dive bombing from about 2,500 feet.

**FRAGMENTATION BOMBS**

The only Navy fragmentation bomb that is likely to be encountered is the 30-pound Bomb Mk 5 Mod 3. It is obsolete, being supplanted by the 20-pound Fragmentation Bomb AN-M41A1 and the 23-pound Fragmentation Bomb AN-M40A1.

**CHEMICAL BOMBS**

In the future all chemical bombs will be procured from the Army. The obsolete 100-pound Chemical or Incendiary Bomb Mk 28 may be encountered. It is similar to the Army Chemical Bomb M47, except for the addition of a filler cap on the rear of the light sheet metal body. In contrast to most chemical bombs, the 100-pound Chemical Bomb Mk 42 presents a relatively heavy type of construction. The body is a modified 100-pound general purpose bomb body weighing approximately twice as much as the body of the Bomb Mk 28. Both bombs are prone to leak and should be carefully inspected at frequent intervals after filling.

**GUIDE KEY NOTES**

A guide key is welded on the 500-pound Demolition Bombs Mk 9, Mk 12, and Mk 12 Mod 1; on the 1,000-pound Demolition Bombs Mk 9, Mk 13, Mk 13 Mod 1, Mk 13 Mod 2, and Mk 38; and on a band for the 1,600-pound A. P. Bomb Mk 1. This key is for the purpose of providing fore-and-aft restraint for the bomb when suspended by slings in the torpedo position in TB type airplanes.

# AN-STANDARD BOMBS

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## DESIGNATION

These bombs are all designated by the symbol "AN" and have been adopted as standard for use by the U. S. Navy, the U. S. Army, and the British. As the current Navy and Army bombs are expended in service, they will be replaced with AN-Standard bombs.

Care must be taken in using the designated nomenclature for these bombs. The letters "AN" must be included whenever an AN-Standard bomb is referred to, as omission of the letters may designate a different bomb. In addition, the type (G. P., A. P., Frag., etc.) and the weight class (1,000-pound, 500-pound, etc.) should be included—for example, 500-pound G. P. Bomb AN-M43.

Most of the AN-Standard bombs are modifications of Navy or Army bombs, with slight changes in the fuzing or lugs and with the addition of a fitting for British single suspension.

## GENERAL PURPOSE BOMBS

The AN-Standard general purpose bombs are of Army origin and range in weight from 100 to 4,000 pounds. The AN-Standard fuzes used with these bombs allow a much wider choice of fuze settings than do the Navy fuzes. For information relative to flight preparation see NAVORD OCL A6-43.

## DEPTH BOMBS

Six AN-Standard depth bombs are now available. In the 325-pound weight class they are the Depth Bombs AN-Mk 17 Mod 2, AN-Mk 41, and AN-Mk 53 Mod 1. In the 350-pound weight class they are the Depth Bombs AN-Mk 44, AN-Mk 47, and AN-Mk 54 Mod 1.

## ARMOR-PIERCING BOMBS

The 500-pound Semi-Armor-Piercing Bombs AN-M58, AN-M58A1 and AN-M58A2 and the 1,000-pound bombs AN-M59A1 were developed by the Army to provide a bomb of somewhat greater penetrative ability than general purpose or demolition bombs of comparable weight.

Two armor-piercing bombs, of Navy origin, carry the "AN" designation. They are the 1,000-pound A. P. Bomb AN-Mk 33 and the 1,600-pound A. P. Bomb AN-Mk 1.

For complete data on description and instructions for use of armor-piercing and semi-armor-piercing bombs, see O P 1019.

Modification numbers (Mods 1, 2, and 3) are used in this case to represent three different manufacturers, rather than changes in design. Both bombs are equipped with screw-on type suspension lugs, hoisting lugs, trunnions, and guide keys. A complete description of armor-piercing and semi-armor-piercing bombs, and instructions for their flight preparation, may be found in O P 1019.

## U. S. ARMY BOMBS

U. S. Army bombs are similar to Navy bombs in that the suspension lugs on all bombs under 2,000 pounds are spaced 14.0 inches apart. Army bombs of 2,000 pounds or greater weight have lugs spaced 30.0 inches apart and are suspended either by slings or from shackles having 30.0-inch spacing between hooks. Trunnions and hoisting lugs are provided by means of bands. No provisions are made for British single suspension or guide keys.

### DESIGNATION

Army bombs are designated by "M" numbers with any modification shown by A1 or A2, etc., as M47A2, the second change in the Bomb M47.

The Army has a series of armor-piercing bombs which were converted from artillery projectiles by attaching a tail. They are suspended from racks or shackles by bands supplied with the bomb.

As previously mentioned, all Army bombs will be replaced by AN-Standard bombs when the present stocks are expended.

## BRITISH BOMBS

### DESIGNATION AND CLASSIFICATION

British bombs are designated by weights and Mark numbers, the Mark number being shown in Roman numerals; e.g., 250-pound Bomb Mk IV, etc. In comparison, U. S. Navy bombs are designated by Mark numbers and Modification numbers (where applicable); e.g., Bomb Mk 1 Mod 2, etc.

*Minor* changes in the Marks of British bombs are indicated by various symbols; the latter may consist of small letters, capital letters, or asterisks; for example, Mk II c, Mk 1 A, or Mk 1\*.

# **BRITISH BOMBS**

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In addition to the previously noted means of designating British bombs, a method of classifying them as to purpose is also employed. Thus, there is a series of antisubmarine bombs designated by the letters A.S.; a series of general purpose medium capacity and high capacity bombs designated by the letters G.P.; a series of semi-armor-piercing bombs designated by the letters S.A.P.; and an armor-piercing bomb designated by the letters A.P. Therefore, to name a British bomb completely, the use, weight class, and Mark number must be known, as, for example, the 500-pound G.P. Bomb Mk III.

## **40-POUND GENERAL PURPOSE BOMBS**

The 40-pound G.P. bomb is intended for general bombardment, but is usually used as a fragmentation bomb and may or may not have a parachute instead of a tail assembly. 40-pound G.P. Bombs Mk I and Mk II usually have no suspension lug and are carried in the 250-pound small bomb container. The 40-pound G.P. Bomb Mk I is filled with Amatol 80/20, and the 40-pound G.P. Bomb Mk II with TNT. The 40-pound G.P. Bomb Mk III, Amatol filled, is similar in dimensions and construction to the 40-pound G.P. Bombs Mk I and Mk II, but is fitted with a suspension lug and can be carried on the light series bomb carrier.

## **250- AND 500-POUND GENERAL PURPOSE BOMBS**

The 250- and 500-pound G.P. Bombs Mk I, Mk II, Mk III, and Mk V are all very similar in construction and are characterized by a long central exploder tube and a tail secured to the body by means of a tail socket. The 500-pound G.P. Bomb Mk IV differs from the previous Marks in that it is fitted with exploder containers (fuze cavities) instead of a central tube, and has a clip-on-type tail.

## **1,000-POUND GENERAL PURPOSE BOMBS**

The 1,000-pound G.P. series consists of four Marks. Bombs Mk I and Mk II are fuzed at both the nose and tail; Bombs Mk III and Mk IV are fuzed at the tail only.

## **1,900-POUND GENERAL PURPOSE BOMBS**

The 1,900-pound G. P. Bombs Mk I and Mk II are fuzed both at the nose and at the tail and are designed for general bombardment purposes.

## **4,000-POUND GENERAL PURPOSE BOMBS**

The 4,000-pound G.P. Bombs Mk I and Mk II are fuzed in the nose and tail. The 4,000-pound G.P. Bomb Mk I has two side fuze cavities near the tails, which are generally not used. The bombs are designed for general bombardment purposes.

## MEDIUM CAPACITY BOMBS (M.C.)

There are four bombs of the M.C. series currently being used: the 250-, 500-, 1,000-, and 4,000-pound bombs. This series was designed to replace the G.P. series, which have a charge/weight ratio of approximately 30% and consequently do not furnish as great a blast effect as might be desired for general bombardment purposes. The M.C. series is similar in appearance to U.S. general purpose bombs characterized by parallel sides, thinner body walls, ogival nose, slight base taper, and a charge weight ratio of approximately 50%. They are fuzed with a tail pistol and/or a nose pistol, generally employing an instantaneous or slight-delay detonator.

## HIGH CAPACITY BOMBS (H.C.)

Four sizes of high capacity bombs have been designed and are in service at present: the 2,000-, 4,000-, 8,000-, and 12,000-pound bombs. The 2,000- and 4,000-pound bombs are composed of single-unit bodies with cylindrical, drum-like tail units. The tail units are enclosed cylinders of the same diameter as the body and are bolted to the after section of the bomb body. The 4,000-pound bomb has one body section; the 8,000-pound has two; and the 12,000-pound has three. The multi-sectioned bombs are transported as separate sections and are bolted together prior to loading in the aircraft. Early Marks of these bombs had side fuze pockets near the rear of the body for special targets, but these were seldom used. The later marks of the 2,000- and 4,000-pound bombs, and all the 8,000- and 12,000-pound bombs, have dome-shaped noses and employ three nose pistols. These bombs are characterized by parallel sides and have a charge/weight ratio of between 70% and 80%.

## ARMOR-PIERCING BOMBS

The 2,000-pound A.P. Bombs Mk I, Mk II, Mk III, and Mk IV are solid-nosed bombs fuzed at the tail only. The A.P. Bomb Mk II is similar to the A.P. Bomb Mk I, but has a different type tail. The A.P. Bomb Mk IV is the only service bomb; the other three are obsolescent. The A.P. Bomb Mk IV differs from the earlier Marks in that action is initiated by a pistol/detonator combination in the tail rather than a tail fuze.

# BRITISH BOMBS

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## SEMI-ARMOR-PIERCING BOMBS

The 250- and 500-pound S.A.P. Bombs Mk II to Mk V have been issued and are employed for attacking resistant targets such as lightly armored ships and reinforced concrete structures. The S.A.P. Bomb Mk V differs from the earlier Marks in that action is initiated by a pistol-detonator combination in the tail, rather than by a tail fuze. Clip-on-type tails are supplied with the S.A.P. Bombs Mk IV and Mk V, and with modified versions of the S.A.P. Bombs Mk II and Mk III. The modified versions are designated S.A.P. Bombs Mk II C and Mk III C.

## ANTISUBMARINE BOMBS

The 100-pound, 250-pound, and 500-pound A.S. bombs are light-case bombs. The Mark IV series differs from the earlier Marks in that: (a) it is fuzed by a pistol-detonator combination at the tail instead of a fuze in the nose, (b) the bomb body has a tail adapter to receive the clip-on tail, and (c) the bomb body is fitted with a nose plug designed to improve the underwater trajectory. The A.S. Bombs Mk I, Mk II, and Mk III can be fitted with a ballistic cap at the nose to improve underwater trajectory. These Marks of A.S. bombs are obsolescent and have been superseded by a 600-pound A.S. Bomb Mk I, which is fitted with a hydrostatic fuze and has spoilers on the nose and strengthened tail attachments.

## SUSPENSION

Most British bombs have only one suspension lug, located directly over or slightly aft of the center of gravity. Therefore these bombs can be suspended only from single-hook racks and shackles. To further interchangeability of U.S. and British equipment, arrangements have been made to provide two additional suspension lugs on the bomb body, spaced 14.0 inches apart, on the current production of most British bombs. At present, Naval aircraft with internal bomb bays can carry British bombs by means of the Army Single-Hook Shackle B-9, provided that the release mechanism in the bomb bay is suitable for the operation of this shackle. Most British bombs under 300 pounds can be suspended from Navy single-hook racks by simply using the British lug. British bombs with two suspension lugs for American aircraft will be given higher Mark numbers.

## TERMINOLOGY—Bombs and Charts

### BALLISTIC COEFFICIENTS

The ballistic coefficient of a bomb may be defined as the value which, when used to enter standard bomb ballistic tables, yields results (time, range, etc.) in agreement with those obtained from actual drops of the bomb. Hence, given the ballistic coefficient, it is possible by means of the ballistic tables to predict the flight characteristics of the bomb for any altitude and speed of release. For some bombs it has been found more exact to use different values of ballistic coefficient for range, time, and trail; and furthermore these coefficients sometimes vary with altitude of release. However, for the purposes of this pamphlet, it has been deemed sufficient to give a single value for each bomb, since any variations in coefficient, and errors arising therefrom, are usually not large. Ballistic coefficients (where C is variable) are for time at 10,000 feet release altitude and are adjusted (to the nearest tenth) to the weight given herein. Most C's are rounded to the nearest tenth, since greater accuracy is not justified.

The formula for ballistic coefficient is

$$C = \frac{W}{id^2}$$

where

C = ballistic coefficient

W = weight of bomb in pounds

d = maximum diameter of bomb in inches

i = coefficient of form

Accurate values of i are derived only from calibration data obtained from actual drops of bombs. For rough approximations, however, the value of i giving the correct C for a similar bomb should be used, or, lacking any other information, a value of unity will give fairly satisfactory results.

The ballistic coefficients of bombs of identical size and shape but of different weights may be considered to vary directly as the weight. For example, assume the C of a depth bomb loaded with TNT to 635 lbs. is 0.86. Then this same bomb filled with Torpex to a weight of 690 lbs. will have a ballistic coefficient of 0.94, determined as follows:

$$C(\text{Torpex}) = .86 \times \frac{690}{635} = .94$$

If the ballistic coefficient of a bomb is known, a reasonably accurate bombing table may be computed by employing the data contained in O P 1160, Bomb Ballistic Data for Horizontal, Dive, and Glide Bombing (Superseding O.D. 3612).

# TERMINOLOGY—Bombs and Charts

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## TOTAL WEIGHT

Total weight of each bomb, equipped with the required fuzes and bands, ready for dropping, is shown.

## DRAWING NUMBER

Outline drawing numbers are shown wherever possible, otherwise the General Arrangement drawing number is substituted. British SIS (Standard Installation Sheet) drawing numbers are shown.

## TOTAL LENGTH

Total length of bombs, as shown, is the over-all dimension including fuzes and tail, ready for dropping.

## FUZE MARK

Fuze Mark numbers and modifications are generally shown. For the use of any modification of the given fuze, Section 4 should be consulted.

## STATUS

The status of bombs is designated by one of the following:

Service —Under current procurement.

Obsolescent —Becoming obsolete; no future procurement contemplated; however, large stocks may be on hand at present.

Obsolete —Present stock almost exhausted and will not be replenished.

## **EXPLOSIVE CHARGE**

The weight of the explosive charge in British bombs varies with the type of explosive used. The maximum weight is generally shown.

## **BANDS**

Bands not having a Mark number are designated by a code letter. This is simply for convenience in listing the bands in Section 5 and should not be confused with official Mark numbers.

## **GENERAL PURPOSE BOMBS**

General Purpose Bombs, as shown in the tables, were formerly called Demolition Bombs.

# GENERAL PURPOSE BOMBS

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## NOTES (Applicable to G. P. Data Charts, pages 30-35)

- (a) Trunnion bands are not provided for these bombs; however, Band C may be used. See Section 5, pages 88-90.
- (b) British general purpose bombs have a charge weight ratio of 1:3.3 indicating approximately 30 percent by weight explosive filler. U. S. AN-standard general purpose bombs contain approximately 50 percent explosive. Two series of lighter case British bombs, similar to U. S. general purpose bombs, have been developed. They are termed the M. C. (Medium Capacity) and H. C. (High Capacity) bombs and have approximately 50 percent and 75 percent explosive filler, respectively.
- (c) Only the Mark numbers of the most commonly used G. P. bombs are listed in the tables. For further information, see British Bombs, Section 2, pages 22-25.
- (d) There are short-tail versions of the 500-lb. G. P. Bomb Mk IV and the 1,000-lb. G. P. Bomb Mk III measuring 53.3 in. and 72.7 in. respectively in over-all length.
- (e) Tail Detonators Mk 43 and Mk 52 are instantaneous. Delay detonators which may be used in these bombs are listed in Section 5, pages 84-87.
- (f) This lug is positioned fore and aft and therefore not suitable for U. S. racks or shackles.
- (g) 1,000-pound G. P. Bombs Mk III and IV are tuzed at the tail only.
- (h) This bomb will be replaced by the A1 modification, which incorporates a staked-in adapter booster and tail closing plate.
- (i) Based on TNT.

Service  Weight Class (lbs.)	Navy		
	100		
Mark and Mod No.	Mk 1 Mod 3	Mk 4 Mk 4 Mod 1	Mk 4 Mod 2 Mk 4 Mod 4
Weight, Total (lbs.)	116	120	105
Explosive Charge (lbs.)	65	55	54
Ballistic Coefficient	1.6	1.2	1.1
Drawing Number	227494	227509 264691	328241 328242
Diameter (in.)	7.9	8.0	8.0
Length, Total (in.)	49.8	39.8	39.6
Fuze—Nose	AN—Mk 219	AN—Mk 219	AN—Mk 219
Fuze—Tail	None	None	None
Fuze—(Alternate)	None	None	None
Suspension—Double	Lugs	Lugs	Lugs
Suspension—Single	Band A-1	Lug	Lug
Hoisting—Double Cable	None	None	None
Hoisting—Single Cable	None	None	None
Trunnions	Band C	Note (a)	Note (a)
Guide Key	None	None	None
Rack Group (Section 1)	Group A, B, C, E	Group A, B, C, E	Group A, B, C, E
Status	Obsolete	Service Obsolescent	Service Obsolescent

For explanatory notes, see p. 29.

General Purpose Bomb Data Charts continued, p. 32 and 33.

# GENERAL PURPOSE BOMB DATA

Navy						
500			1,000			
Mk 9 Light Case	Mk 12 Mk 12 Mod 1	Mk 12 Mod 2	Mk 9 Light Case	Mk 13 Mk 13 Mod 1	Mk 13 Mod 2	Mk 36
491	500	504	994	1,000	1,005	1,012
330	252	256	740	537	511	558
2.2	2.2	2.2	2.9	3.4	3.4	3.5
227491	227492 264692	294257	227488	227489 264693	294256	330134
15.0	14.0	14.0	19.0	17.7	17.7	18.7
66.1	63.6	63.6	84.2	76.7	76.7	71.2
Mk 221	Mk 221	Mk 221	Mk 221	Mk 221	Mk 221	Mk 221
Mk 223	Mk 223	Mk 223	Mk 223	Mk 223	Mk 223	Mk 223
AN-Mk 219	AN-Mk 219	AN-Mk 219	AN-Mk 219	AN-Mk 219	AN-Mk 219	AN-Mk 219
Lugs	Lugs	Lugs	Lugs	Lugs	Lugs	Lugs
None	None	None	None	None	None	None
Band Mk 8	Lugs	Band Mk 8	Band Mk 8	Lugs	Band Mk 8	Band Mk 8
Band I	Band J	Lug	Lug	Lug	Lug	Lug
Welded On	Welded On	Band D	Welded On	Welded On	Band E	Band F
Yes	Yes	None	Yes	Yes	Yes	Yes
Group A	Group A	Group A	Group A	Group A	Group A	Group A
Obsolete	Obsolete	Obsolescent Service	Obsolete	Obsolescent	Obsolescent Service	Obsolescent Service

RESTRICTED

Service  Weight Class (lbs.)	An-Standard G.P. Bombs			
	100	250	500	
Mark and Mod No.	AN-M30 (h)	AN-M57 (h)	AN-M43	AN-M64 (h)
Weight, Total (lbs.)	110 (i)	262 (i)	495 (i)	517 (i)
Explosive Charge (lbs.) TNT	56	129	237	267
Ballistic Coefficient	1.2	1.7	2.5	2.5
Drawing Number	307172	309380	328686	341695
Diameter (in.)	8.2	10.9	14.2	14.2
Length, Total (in.)	38.5	47.8	59.2	59.2
Fuze—Nose	AN-M103A1	AN-M103A1	AN-M103A1	AN-M103A1
Fuze—Tail	AN-M100A2	AN-M100A2	AN-M101A2	AN-M101A2
Fuze—(Alternate)	AN-M100A1	AN-M100A1	AN-M101A1	AN-Mk 230 Mod 4
Suspension—Double	Lugs	Lugs	Lugs	Lugs
Suspension—Single	Lug	Lug	Lug	Lug
Hoisting—Double Cable	None	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	None	Band Mk 8	Band Mk 8	Band Mk 8
Trunnions	Band M1	None	Band M1A1	Band M1A1
Guide Key	None	None	None	None
Rack Group (Section 1)	Group A, B, C, E	Group A, B, E	Group A, E and Mk 50	Group A, E and Mk 50
Status	Service	Service	Service	Service

For explanatory notes, see p. 29.  
General Purpose Bomb Data Charts continued, p. 34 and 35.

# GENERAL PURPOSE BOMB DATA

An-Standard G.P. Bombs				
1,000	1,000	2,000		4,000
AN-M44	AN-M65 (h)	AN-M34	AN-M66 (h)	AN-M56 (h)
994.7 (i)	1025 (i)	1943 (i)	2048 (i)	4238 (i)
558	558	1117	1096	3350
3.4	3.4	3.7	3.7	2.4
328687	341696	276315	341697	307939
18.8	18.8	23.3	23.3	34.25
€9.5	€9.5	92.8	92.8	117.25
AN-M103A1	AN-M103A1	AN-M103A1	AN-M103A1	AN-M103A1
AN-M102A2	AN-M102A2	AN-M102A2	AN-M102A2	AN-M102A2
AN-M102A1	AN-Mk 230 Mod 4	AN-M102A2	AN-Mk 230 Mod 4	AN-M102A1
Lugs	Lugs	Lugs 30"	Lugs 30"	Lugs 30"
Lug	Lug	Lug	Lug	None
Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band AN-M8
Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	None
Band M2A1	Band M2A1	Band AN-M7	Band AN-M7	Band AN-M5
None	None	None	None	None
Group A, E	Group A, E	None	None	None
Service	Service	Service	Service	Service

RESTRICTED

Service Weight Class (lbs.)	Army						
	100	300	500	600	1,000	1,100	2,000
Mark and Mod No.	M30	M31	M43	M32	M44	M33	M34
Weight, Total (lbs.)	107	274	508	613	966	1,128	1,987
Explosive Charge (lbs.)	54	137	262	336	538	618	1,077
Ballistic Coefficient	1.2	1.5	2.5	2.9	3.4	4.7	3.7
Drawing Number	82-0-12	82-0-13	82-0-27	82-0-14	82-0-28	82-0-15	82-0-16
Diameter (in.)	3.2	10.9	14.2	15.2	18.8	19.8	23.3
Length, Total (in.)	38.5	51.0	59.2	61.9	69.5	71.1	92.8
Fuze—Nose	M103	M103	M103	M103	M103	M103	M103
Fuze—Tail	M106	M106	M106	M106	M106	M106	M106
Fuze (Alternate)	M100	M100	M101	M102	M102	M102	M102
Suspension—Double	Lugs	Lugs	Lugs	Lugs	Lugs	Lugs	Lugs 30"
Suspension—Single	Band M1	None	None	None	None	None	None
Hoisting—Double Cable	None	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	None	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8
Trunnions	Band M1	None	Band M1	Band M5	Band M2	None	None
Guide Key	None	None	None	None	None	None	None
Rack Group (Section 1)	Group A, B, C, E	Group A, B, E	Group A, E, Mk 50	Group A, E	Group A, E	Group A, E	None
Status	Obsolescent	Obsolete	Obsolescent	Obsolete	Obsolescent	Obsolete	Obsolescent

For explanatory notes, see p. 29.

# GENERAL PURPOSE BOMB DATA

Service Weight Class (lbs.)	British Note (b)					
	40	250	500	1,000	1,900	4,000
Mark No. Note (c)	Mk III	Mk IV	Mk IV	Mk II (g)	Mk II	Mk II
Weight, Total (lbs.)	35.1	230	470	1,083	1,785	3,587
Explosive Charge (lbs.)	6.7	67	143	357	470	1,070
Ballistic Coefficient	1.6	3.0	3.6	5.0 MkI/AI	6.5 MkI/AI	
Drawing Number		388734	388740	388745	388746	
Diameter (in.)	5.05	10.2	12.9	16.2	18.7	24.5
Length, Total (in.) Note (d)	27.3	55.7	70.6	86.5	101.0	106.5
Fuze—Nose	873					
Pistol—Nose with Parachute	No. 29, 34, 38, 45 No. 33	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44
Pistol—Tail	None	No. 28, 30, 37	No. 28, 30, 37	No. 28, 30, 37	No. 28, 30, 37	No. 28, 30, 37
Detonators—Nose	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52
Detonators—Tail Note (e)	None	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52
Suspension— Double	None	None	None	None	None	None
Suspension—Single	Lug Note (f)	Lug	Lug	Lug	Lug	Lug
Hoisting—Double Cable	None	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	
Hoisting—Single Cable	None	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	
Rack Group (Section 1)	None	Group B, E	Group E	Group E	None	None
Status	Service	Service	Service	Service	Service	Service

SERVICE	BRITISH			
	Medium Capacity			
Type				
Weight Class (lbs.)	250	500	1,000	4,000
Mark No. Note (a)	Mk I	Mks III, IV (g)	Mk I	Mk I
Weight, Total (lbs.) Note (f)	225 (approx.)	499	1021	3,764
Explosive Charge (lbs.)	100 (approx.)	210	475	2,166
Ballistic Coefficient				
Drawing Number				
Diameter (in.)	10	12.9	17.5	30
Length, Total (in.)	55.5	57.9 (e)	72.6	110.2
Pistol—Nose Note (b)	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44
Pistol—Tail	No. 28 or 30	No. 28 or 30	No. 28 or 30	No. 28 or 30
Detonators—Nose	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52
Detonators—Tail Note (c)	No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52
Suspension—Double	None (d)	None (d)	Lugs	Lugs
Suspension—Single	Lug	Lug	Lug	Lug
Status	Service	Service	Service	Service

### NOTES (Applicable to the above chart)

- (a) The Mark Numbers listed here are the ones most commonly used.
- (b) The medium capacity bombs employ only one of the three pistols listed; the high capacity bombs employ three nose pistols.
- (c) Detonators Mk 43 and Mk 52 are instantaneous. Delay detonators which may be used with these tail pistols are listed in Section 5, pages 84-87.
- (d) Double lugs or suspension bands with lugs may be used for suspension on U. S. aircraft.
- (e) With long-type tail, length is 70.6 in.
- (f) These weights are given for bombs filled with Amatol 60/40, except for the 8,000- and 12,000-lb. H. C. bombs, the weights of which are given with Amatex 9 filling.

# BRITISH M. C. AND H. C. BOMBS

BRITISH			
High Capacity			
2,000	4,000	8,000	12,000
Mk III	Mk IV (h)	Mk II	Mk I
1,723	3,930	7,860	11,935
1,230	2,960	5,361	8,040
18.5	30	38	38
130.1	109.7	133.6	193
No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44	No. 27, 42, 44
None	None	None	None
No. 43 or 52	No. 43 or 52	No. 43 or 52	No. 43 or 52
None	None	None	None
None (d)	None (d)	None (d)	Lugs
Lug	Lug	Lug	None
Service	Service	Service	Service

(g) The 500-lb. M. C. Bomb Mk IV has a body approximately five inches shorter than the 500-lb. M. C. Bomb Mk III and will normally be issued with a short tail.

The 500-lb. M. C. Bomb Mk V was manufactured in small quantities and is now obsolescent.

The 500-lb. M. C. Bombs Mk VI, Mk VII, Mk VIII, and Mk IX are similar to the 500-lb. M. C. Bombs Mk II, Mk III, Mk IV, and Mk V respectively, but are fitted with two lugs for suspension in American aircraft.

(h) The 4,000-lb. H. C. Bomb Mk V is similar to the 4,000-lb. H. C. Bomb Mk IV, but has two lugs for suspension in American aircraft.

# BOMB DATA

IN

IN

Service  Weight Class (lbs.)	Navy	AN	
	1,600	1,000	1,600
Mark and Mod No.	Mk 1	AN-Mk 33	AN-Mk 1
Weight, Total (lbs.)	1,613 (b)	1,012	1,593
Explosive Charge (lbs.)	228	144	215
Ballistic Coefficient	4.35	5.3	6.2
Drawing Number	300210	301092	328838
Diameter (in.)	14.0	12.0	14.0
Length, Total (in.)	83.5	73.0	83.5
Fuze—Tail	AN-Mk 228	AN-Mk 228	AN-Mk 228
Fuze—Tail (Alternate)	None	None	None
Suspension—Double	Band B	Lugs	Lugs
Suspension—Single	Band B	Lug	Lug
Hoisting—Double Cable	Band J (c)	Band Mk 8	Band Mk 6
Hoisting—Single Cable	Band Mk 8	Lug	Lug
Trunnions (f)	Band H	Screwed	Screwed
Guide Key	Band K	Screwed	Screwed
Rack Group (Section 1)	Group A, E	Group A, E	Group A, E
Status	Service	Service	Service

Wei  
Ma  
Wei  
Wei  
Wei  
Fue  
Ball  
Dra  
Dia:  
Len:  
Fuz  
Fuz  
Ban  
Su  
Su  
Rack  
Stat

NOT

## NOTES

- (a) The M62A1 and M62A2 versions of this bomb contain only minor changes.
- (b) This weight includes the suspension bands.
- (c) Band Mk 6 or Mk 8 can be used. See Section 5.

(a)  
(b)  
(c)



# ARMOR-PIERCING BOMB DATA

Army (e)					British
600	800	900	1,000	1,400	2,000
M62 (a)	M61	M60	M52 (d)	M63	Mk III, IV
634	853	889	1,078	1,412	1,934
34	32.7	43.3	58	35	156
3.1	3.4		4.3	3.8	10.9 (Mk I)
82-0-78	82-0-78	82-0-77	82-0-58	82-0-72	
10.4	12.4	12.2	12.3	14.3	13.5
62.1	58.7	61.7	70.9	69.1	11.3
M102	M102	M102	M102	M102	No. 37 (Mk III only)
AN-M102A2	AN-M102A2	AN-M102A2	AN-M102A2	AN-M102A2	Mk IV; Tail Pistol No. 30
Army Bands	Army Bands	Army Bands	Army Bands	Army Bands	Sling
Army Bands	Army Bands	Army Bands	Army Bands	Army Bands	None
Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8
Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Lug
Band M3	Band M3A1	Band M3A1	Band M3A1	Band M1A1	None
None	None	None	None	Band I	None
Group A, E	Group A, E	Group A, E	Group A, E	Group A, E	None
Service	Service	Service	Service	Service	Service

- (d) The A. P. Bomb M52A1 is only slightly different from the A. P. Bomb M52.
- (e) These bombs - M52, M60, M61, M62, and M63 - are converted from artillery shells supplied with suspension bands.
- (f) These trunnion bands have a single hoisting lug at top center.

## SEMI-ARMOR-PIERCING BOMBS

Service Weight Class (lbs.)	AN			British (b)	
	500		1,000	250	500
Mark and Mod No.	AN-M58	AN-M58A1 (a) (e)	AN-M59 (f)	Mk V	Mk V
Weight, Total (lbs.)	480	502	990	245	490
Explosive Charge (lbs.)	154.0	144.5	303.3	40.5	89
Ballistic Coefficient	2.8	2.09	4.4	3.0 (Mk II & Mk III)	5.2 (Mk II & Mk III)
Drawing Number	309339	309339	309328	388736	388742
Diameter (in.)	11.8	11.8	15.1	9.2	11.5
Length, Total (in.)	57.8	57.8	70.4	49.5	62.0
Fuze—Tail	AN-M101A2	AN-M101A2	AN-M102A2	Pistol No. 28 or 30 with Detonator No. 35, 44, 47, 48, 50, or 51	
Fuze—Tail (Alternate)	AN-M101A1	AN-M101A1	AN-M102A1	Mk II, III, or IV—used Tail Fuze No. 30.	
Suspension—Double	Lugs	Lugs	Lugs	None	None
Suspension—Single	Lug	Lug	Lug	Lug	Lug
Hoisting—Double Cable	Band Mk 8	Band Mk 8	Band Mk 8	Note (c)	Band Mk 8
Hoisting—Single Cable	Band Mk 8	Band Mk 8	Band Mk 8	Note (c)	Band Mk 8
Trunnions (d)	Band M4	Band M4	Band M5	None	Band M4
Guide Key	None	None	None	None	None
Rack Group (Section 1)	Group A, E & Mk. 50	Group A, E & Mk. 50	Group A, E	Group B, E	Group E, Mk. 50
Status	Service	Service	Service	Service	Service

### NOTES

- (a) To increase penetration of the AN-M58, 9.5 pounds of Amatol were removed and replaced by 31.5 pounds of steel.
- (b) Mk I, II and IV are obsolete. Quantities of Mk III are stocked.
- (c) No specific band available. Refer to notes on bomb hoisting, Section 5.
- (d) Bands M4 and M5 have a single hoisting lug at top center. Later issues have two additional hoisting lugs, one directly behind each trunnion pin for use in double cable hoisting.
- (e) The S. A. P. Bomb AN-M58A1 will be replaced by the S. A. P. Bomb AN-M58A2, which will incorporate a staked-in adapter booster and tail closing plate.
- (f) This bomb will be replaced by the A1 modification, which incorporates a staked-in adapter booster and tail closing plate.

# DEPTH BOMB DATA

Service  Weight Class (lbs.)	Navy			
	325	650		700
Mark and Mod No.	Mk 17 Mod 1	Mk 37	Mk 38	Mk 49
Shape of Nose Note (a)	Round	Round	Flat	Flat
Loading	TNT	TNT	TNT	Torpex
Weight, Total (lbs.)	325	659	635	690
Explosive Charge (lbs.)	224	464	425	472
Ballistic Coefficient	1.09	2.2	0.86	0.94
Drawing Number	294379	328963	330881	330881
Diameter (in.)	15.0	17.7	17.7	17.7
Length, Total (in.)	55.5	68.1	61.1	61.1
Fuze—Nose Note (b)	AN-Mk 219	AN-Mk 219	AN-Mk 219	AN-Mk 219
Fuze—Midship	AN-Mk 224	AN-Mk 224(c)	AN-Mk 234(c)	AN-Mk 234(c)
Fuze—Tail	None	Mk 229	Mk 229	Mk 229
Suspension—Double	Lugs	Lugs	Lugs	Lugs
Suspension—Single	Lug	Lug	None	None
Hoisting—Double Cable	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	Lug	Lug	Lug	Lug
Trunnions	Band G	Screwed	Screwed	Screwed
Rack Group (Section 1)	Group A, B, E	Group A, E	Group A	Group A
Status	Obsolescent	Obsolescent	Service	Service

## NOTES

(a) Flat-nose attachments are provided for depth bombs which do not have an integral flat nose. The attachment for the 325-pound class (Mk 17 Mod 1, AN-Mk 17 Mod 2 and AN-Mk 44) is shown on Dwg. 329802; for the 650-pound class (Mk 37) on Dwg. 329801. The corresponding assemblies are shown on Sketches No. 119873 and No. 119727. After the attachment is secured to the bomb, the intervening space is filled with a semi-fluid mixture of plaster, plaster of paris, cement, or some similar quick-hardening mixture.

The approximate total weight increase for the 325-pound class is 44 pounds; for the 650-pound class is 72 pounds.

- (b) The fuze shown is specified for use with this bomb; however any of three fuses may be used. They are the AN-Mk 219 (instant) Mk 221 (0.01 sec. delay) or AN-M-103A1 (instant or 0.01 sec. delay).
- (c) An extender is supplied with each bomb to permit installation of the Hydrostatic Fuze AN-Mk 224 or AN-Mk 234 in the longer athwartship tube.

## DEPTH BOMB DATA—Continued

Service	AN					
	325			350		
Weight Class (lbs.)						
Mark and Mod. No.	AN-Mk 17 Mod 2	AN-Mk 41	AN-Mk 53 Mod 1	AN-Mk 44	AN-Mk 47	AN-Mk 54 Mod 1
Shape of Nose Note (a)	Round	Flat	Flat	Round	Flat	Flat
Loading	TNT	TNT	TNT	Torpex	Torpex	Torpex
Weight, Total (lbs.)	325	347	329	350	355	354
Explosive Charge (lbs.)	224	227	225	249	252	250
Ballistic Coefficient	1.09	0.65	—	1.18	0.72	—
Drawing Number	327950	329670	394181	327950	329670	394181
Diameter (in.)	15.0	15.0	13.5	15.0	15.0	13.5
Length, Total (in.)	55.5	53.1	52.5	55.5	53.1	52.5
Fuze—Nose Note (b)	AN-Mk 219	AN-M103A1	AN-M103A1	AN-Mk 219	AN-M103A1	AN-M103A1
Fuze—Midship	AN-Mk 224	AN-Mk 224		AN-Mk 224	AN-Mk 224	
Fuze—Tail	None	None	AN-Mk 230	None	None	AN-Mk 230 Mod 4
Suspension—Double	Lugs	Lugs	Lugs	Lugs	Lugs	Lugs
Suspension—Single	Lug	Lug	Lug	Lug	Lug	Lug
Hoisting—Double Cable	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	Lug	Lug	Lug	Lug	Lug	Lug
Trunnions	Band G	Band G	Screwed	Band G	Band G	Screwed
Rack Group (Section 1)	Group A, B, E	Group A, B, E	Group A, E	Group A, B, E	Group A, B, E	Group A, E
Status	Service	Service	Service	Service	Service	Service

### NOTES

(a) Flat-nose attachments are provided for depth bombs which do not have an integral flat nose. The attachment for the 325-pound class (Mk 17 Mod 1, AN-Mk 17 Mod 2, and AN-Mk 44) is shown on Dwg. 329802; for the 350-pound class (Mk 37) on Dwg. 329501. The corresponding assemblies are shown on Sketches No. 119673 and No. 119727. After the attachment is secured to the bomb, the intervening space is filled with a semi-fluid mixture of plaster, plaster of paris, cement, or some similar quick-hardening mixture.

The approximate total weight increase for the 325-pound class is 72 pounds.

- (b) The fuze shown is specified for use with this bomb; however, any of three fuzes may be used. They are the AN-Mk 219 (instant), Mk 221 (0.01 sec. delay), or AN-M103A1 (instant or 0.01 sec. delay).
- (c) An extender is supplied with each bomb to permit installation of the Hydrostatic Fuze AN-Mk 224 or AN-Mk 234 in the longer athwartship tube.

# BRITISH Antisubmarine Bomb Data

Service Weight Class (lbs.)	British			
	100	250	500	600
Mark No.	Mk IV (a)	Mk IV (a)	Mk IV (a)	Mk I (d)
Weight, Total lbs.	98	243	490	545
Explosive Charge (lbs.)	44	134	282	436
Ballistic Coefficient	0.9 (Mk III)	1.1 (Mk II)	1.3 (Mk III)	
Drawing Number	388732	388735	388741	
Diameter (in.)	8.1	11.4	14.3	17.5
Length (in.)	42	57.7	72.5	56.5
Pistol—Tail (b)	No. 30	No. 30	No. 30	Hydrostatic Fuse No. 662
Detonators—Tail (c)	No. 39 Mk II	No. 39 Mk II	No. 39 Mk II	
Suspension—Double	None	None	None	Note (e)
Suspension—Single	Lug	Lug	Lug	Lug
Hoisting—Double Cable	None	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	None	Band Mk 8	Band Mk 8	Note (e)
Rack Group (Section 1)	Group B, C, E	Group B, E	Group E, Mk. 50	Group E
Status	Service	Service	Service	Service

## NOTES

(a) The 100-pound, 250-pound, and 500-pound A. S. Bombs Mk IV are thin-walled bombs intended for use against submarines. They are designed to give a maximum blast effect on or under water, and differ from the earlier Marks of A. S. bombs principally in that (a) they are fused by a pistol detonator combination at the tail, instead of by a fuze in the nose, (b) the bomb body has a tail adapter to receive a clip-on tail, (c) the bomb body is fitted with a blunt nose plug and is designed to have an improved underwater trajectory.

(b) See Section 4 for further information on British pistols.

(c) See Section 5 for further information on British detonators.

(d) A round-nose cap is attached to the concave nose of the bomb body for streamlining. On entry into the water, both the nose cap and the snap-on tail break off, leaving an unstable shaped bomb. The concave shape of the nose is said to prevent ricochets at heights down to 50 feet and speeds up to 175 knots.

(e) Double-suspension lugs are provided. They are screwed to the bomb body.

Service  Weight Class (lbs.)	Navy	AN		
	30	20	Parachute 23	260
Mark and Mod No.	Mk 5 Mod 3	AN-M41 AN-M41A1	AN-M40 AN-M40A1(b)	AN-M81
Weight, Total (lbs.)	33.4	19.8	24.7	261.5
Explosive Charge (lbs.)	4.5	2.7	2.7	TNT
Ballistic Coefficient	1.5			2.1
Drawing Number	275158	307165	309908	419913
Diameter (in.)	4.2	3.6	4.4	8.125
Fuze—Nose	AN-Mk 219	AN-M110A1	AN-M104	AN-M103A1(g)
Length, Total (in.)	25.4	21.8	29.5 (c)	43.7
Suspension (a)	Lug	Lug	Lug	Lugs
Rack Group (Section 1)	Group D	Group D	Group D	Group B, E
Cluster	None	AN-M1A1 or AN-M1A2	AN-M4 or AN-M4A1	None
Detonator	In Fuze	In Fuze	In Fuze	In Fuze
Status	Obsolete	Service	Service	Service

## NOTES

- (a) These bombs are equipped with a single-suspension lug parallel to the longitudinal axis of the bomb and therefore can be suspended only from racks with athwartship hooks. Navy planes can carry these bombs unclustered only on the Bomb Rack Mk 48. At the present all fragmentation bombs under 100 lbs. being procured for distribution to the naval service are in clusters. Several of the bombs have a lug for vertical suspension; however, this type of suspension is not suitable for Navy airplanes.
- (b) Fragmentation Bombs AN-M40 are always clustered. A slightly modified version, the Bomb M72, is adapted for vertical suspension and can be carried in vertical cellular racks by several types of Army airplanes. Procurement of the Bomb M72 for issue to the Naval service is not contemplated.
- (c) Include length of the parachute container.
- (d) Detonator Mk II is preferable.

# FRAGMENTATION BOMBS

Army		British	
4	30	90	20
M83	M5	M82	Mk III (e)
4	29.7	86.6	17.6
.47	4.5	Comp. B	3.3
	0.9	1.0	1.4
82-0-103	82-0-19	420240	
3	4.2	6.06	3.9
Note (h)	Mk XIV	AN-M103A1	Note (f)
3	25.5	28.0	21.8
Cluster	Lug	Lug	Lug
—	Group D	Group A, B, C, E	—
M28 (100-lb.) M29 (500-lb.)	M3	M27	Note (e)
In Fuze	Mk II B or C (d)	In Fuze	No. 36, 43
Service	Obsolete	Service	Service

- (e) Mks I and II are no longer being manufactured; however, they may be encountered in the field. Both are similar in dimensions and construction to the Mk III. There is a parachute version of this series using pistol No. 33 Mk I, in place of pistol No. 34 Mk I or No. 38 Mk I. Another version of this bomb, with a shorter parachute attachment, for carrying in the 500-pound Cluster Projectile No. 17 Mk II only, uses the Nose Fuze No. 873.
- (f) Nose pistol No. 29, 34, or No. 45, with the appropriate detonator, constitutes the fuze.
- (g) Tail Fuze AN-M100A2.
- (h) This bomb is fuzed either with the Fuze M129, M130, or M131. The fuze is integral with the bomb. For more detailed information see NAVORD OCL, AV 14-44.
- (i) The Clusters AN-M1A2 and AN-M4A1 contain the modified frag. bombs which are to be fuzed in the field.

## INCENDIARY BOMBS—Small Clusters

Service	AN			British	
	2	4	4	6	4
Weight, Total (lbs.)					
Mark No.	AN-M52	AN-M50A2 (b) (d)	AN-M54(b)	AN-M69	Mks I-V (b)
Filling	Thermate	Thermate	Thermate	Oil	Thermate
Fuel Weight (lbs.) (a)	1.36	1.81	1.5	2.8	2.0
Case Material	Magnesium	Magnesium	Steel	Steel	Magnesium
Drawing Number	341724	307949	307955	370920	
Length, Total (in.)	14.2	21.7	21.4	19.5	21.5
Cluster Used (Section 3) 100 lb.	M10	AN-M6	AN-M8	AN-M12	Note (c)
500 lb.	M11	AN-M7	AN-M9	AN-M13	
Status	Service	Service	Obsolete	Service	Service

### NOTES

- (a) The total fuel weight is the weight of the filling plus the weight of case, if combustible.
- (b) Each of these bombs has a modification with a burster charge and is designated AN-M50XA2, AN-M54X and Mks IE—VE.
- (c) Incendiary Bomb Case Mk I contains 20 Bombs Mk I. Case Mk II holds 20 Bombs Mk II, Mk III, Mk IV, or Mk V. Cases Mk III and Mk IV hold 30 Bombs Mk II, Mk III, Mk IV, or Mk V.
- (d) The Incendiary Bomb AN-M50TA2 is identical to the AN-M50A2, except that the case is constructed from a different metal and the smoke from the incendiary fuel is toxic.
- (e) The Chemical Warfare Service has developed a 10-lb. incendiary bomb that is similar to the Incendiary Bomb AN-M69 and will be designated as the Incendiary Bomb M74. Detailed information on this bomb will be available in the near future.

# INCENDIARY BOMBS

## INCENDIARY BOMBS—Large Size

Service	Navy			AN		British		
	100	100	500	25	30	250		
Mark and Mod No.	Mk 28	AN-M47A2(a)	AN-M76	Mk I (d)	Mk III (f)	Mk II		
Weight Empty (lbs.)	23	29	250.0	17	17	125		
Weight Fuel (lbs.)	42-45	45-48	180.0	8	8	68		
Weight Loaded (lbs.)	65-68	70-72	475.0	25	25	193		
Fuel	Various (b)	Various b.	P.T. 1	Note (e)	Rubber/ Benzol	Paraffin/ Rags		
Ballistic Coefficient	0.6 (c)	0.7 (c)	2.3					
Drawing Number	300350	B 14-5-247	420019		2203			
Diameter (in.)	8.0	8.0	14.2	5.0	5.0	12.0		
Length (in.)	47.9	48.4	59.2	32.6	32.6	64.5		
Fuze—Nose Fuze—Tail	M108	AN-M126 or AN-M126A1	AN-M103A1 AN-M101A2	Integral (Tail fuze)	No. 346	No. 36		
Burster (i)	M7	AN-M12 or AN-M13 (g)	AN-M14 (h)			Mk I		
Suspension—Double	Bands A-2	Bands A-3	Lugs	None	None	None		
Suspension—Single	Band A-2	Band A-3	Lug	Lug	None (f)	Lug		
Rack Group (Section 1)	Group A, B, C, E	Group A, B, C, E	Group A, E MK50	Group B, E		Group B, E		
Status	Obsolete	Service	Service	Obsolescent	Service	Service		

### NOTES

- (a) The Bomb AN-M47A2 is very similar to the Navy Bomb Mk 28; however, the latter is equipped with a filler cap. Both bombs are prone to leak and should be carefully inspected around the nose and filler cap and along the welded seams after filling.
- (b) Some of the various fillers used in these bombs are: Gasoline, gasoline-gel, gasoline and waste, or rubber.
- (c) The ballistic coefficient will vary with the weight of filling. See ballistic notes, Section 2.
- (d) All 25-lb. Incendiary Bombs Mk I have been converted to parachute-type bombs by the addition of Parachute Attachment No. 1 Mk I and Mk II, and a striker.
- (e) Incendiary fire-pots (magnesium-thermite) ejected by small gunpowder charges.
- (f) Mk I, II, II M, III, III M, and IV have been manufactured and distributed. The M modifications are equipped with suspension bands to enable suspension by the British bomb carrier. Mk I is obsolete; Mk II and III are no longer being procured; however, they may be encountered in the field. Mk IV differs from Mk III in that the body and nose are made of lighter gauge metal.
- (g) Burster AN-M12 contains 450 grams of a 50/50 mixture of black powder and magnesium. Burster AN-M13, containing 57.5 grams of TNT and 0.82 grams of tetryl, is used with Igniter AN-M9(W.P.), containing 2.2 pounds of W.P., or Igniter AN-M9(Na), containing 0.7 pounds of sodium. For further information, see O P 1234.
- (h) Burster AN-M14 contains 1.25 pounds of tetryl and is used with Igniter AN-M5, which contains 4 pounds of W.P.
- (i) All bursters and igniters are shipped separate from the bomb and must be assembled in the field.

Service	Navy			
	50		100	
Weight Class (lbs.)				
Mark and Mod No.	Mk 1 Mod 1 & 2 (a)	Mk 3 (a)	Mk 28	Mk 42
Weight Empty (lbs.)	26	43	23	51
Charge (lbs.)	28	59	64 (c)	43
Weight Loaded (lbs.)	54	102	87 (c)	94
Ballistic Coefficient	0.63	0.88	0.8	.95
Drawing Number	387639	387638	300350	329850
Diameter (in.)	8.8	10.2	8.0	8.0
Length, Total (in.)	35.3	48.5	47.9	39.4
Fuze—Nose Tail	Mk 3 Mod 1 (b)	Mk 3 Mod 1 (b)	M108	AN-Mk 219
Burster	None	None	M4	Note (d)
Suspension—Double	None	Bands	Bands A-2	Lugs
Suspension—Single	Band	Band	Band A-2	Lug
Rack Group (Section 1)	Group B, E	Group A, B, C, E	Group A, B, C, E	Group A, B, C, E.
Status	Service	Service	Obsolete	Service

## NOTES

- (a) Aircraft smoke bombs Mk 1 Mod 1 and Mk 3 are floating bombs designed for dropping from aircraft for the purpose of creating a smoke screen on the surface of a body of water. The Floating Smoke Bomb Mk 1 Mod 2 is identical to the Bomb Mk 1 Mod 1, except that the burning time has been increased to 7½ minutes. For further information, see O P 1050.
- (b) Nose Fuze, Mk 3 Mod 1 is actuated upon impact with water. The firing mechanism detonates the primer which, in turn, ignites a specific length of time fuze giving a delay of 18 seconds, during which time the smoke bomb is returning to and becoming stable upon the surface of the water.

# CHEMICAL BOMBS—Gas or Smoke

AN			Army
100	500	1,000	115
AN-M47A2	AN-M78	AN-M79	M70
29	283.0	552.0	58
68 (c)	383 AC 488 CG	403.9 CC 708.7 AC 925.9 CG	64
97 (c)	—	—	122
0.88	No data	2.4 AC; 3.5 GG	1.0
329851	420301	419551	373798
8.0	14.2	18.8	8.1
45.4	59.2	69.5	48.7
AN-M125A1	AN-M103A1 AN-M101A2	AN-M103A1 AN-M102A2	AN-M110A1
M4	AN-M15	AN-M16	M10
Bands A-3	Lugs	Lugs	Lugs
Band A-3	Lug	Lug	Lug
Group A, B, C, E	Group A, E & Mk 50	Group A, E	Group A, B, C, E
Obsolescent	Service	Service	Service

(c) Weights listed for H has filling.

(d) Burster charge is 0.73 pound Grade A TNT.

The Chemical Warfare Service is developing a 10-pound Smoke Bomb, M77, which is outwardly identical to the Incendiary Bomb AN-M69.

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## BRITISH SMOKE BOMBS AND SMOKE FLOATS

Service  Type  Weight Class (lbs.)	British				
	Smoke Bombs				Smoke Floats
	4	100	120	500	250
Mark and Mod. No.	Mk II	Mk II	MK I, II	Mk I	No. 2 Mk II (e)
Weight Empty (lbs.)		7	65	155	112
Charge (lbs.)	2.9	83	50	270	95
Weight Loaded (lbs.)	3.9	93	115	415	207
Ballistic Coefficient					
Drawing Number					
Diameter (in.)	3.62	Note (b)	10	13.1	14.5
Length, Total (in.)	7.85	18.3	31	66	45.5
Fuze—Nose	859 Mk I	854 Mk I	864 Mk I	Pistol No. 30 Mk I. Det. No. 54	Pistol No. 48 Mk I
Burster		Integral with Fuze	Has an Ejection Charge	No. 3 Mk I	—
Suspension—Double	Note (a)	Note (c)	Note (d)	Lugs	None
Suspension—Single	Note (a)	Note (c)	Single	Lug	Lug
Rack Group (Section 1)			Group A, B, E	Group A, B, C, D, E	
Status	Service	Service	Service	Service	Service

(a) Packed 14 in a metal container, three of which are loaded in the British small bomb container. The small bomb container is for suspension in bomb bays and has a single lug suspension only.

(b) Rectangular in shape, dimensions are for 10 in. x 9.7 in. x 18.3 in. long.

(c) Three are packed in the British small bomb container.

(d) Suspension bar is provided for suspension in American aircraft.

(e) Smoke Float No. 2 Mk I is obsolescent and is used for training purposes. This float requires Fuze No. 844 Mk I. Neither Mark has a tail.

# ANTIAIRCRAFT BOMBS

## A. A. BOMBS

Service	Navy
Size Designation	3 in.
Mark and Mod No.	Mk 34
Weight, Total (lbs.)	5.5
Explosive Charge (lbs.)	2.0
Drawing Number	3283.9
Diameter (in.)	3.0
Length, Total (in.)	15.0
Fuze—Nose	Mk 227
Container	Mk 3
Status	Service

## NOTES

A—Solenoids Mk 24 (12-volt)  
or Mk 24 Mod 1 (24-  
volt).

## BOMB CONTAINERS

Mark and Mod No.	Mk 3	Mk 3 Mod 1
Weight, Empty (lbs.)	65	67
Weight, Loaded (lbs.)	175	177
Drawing Number	328433	330848
Length (in.)	51.0	51.0
Diameter (in.)	15.0	15.0
Capacity	20 Mk 34	20 Mk 34
Release	Note A	Note A
Suspension (Racks)	Mk 41 or Mk 50	Mk 35, 41, 50, or 51
Status	Service	Service

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# SECTION 3

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## DATA ON ADDITIONAL ITEMS

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MISCELLANEOUS BC/MS

# CLUSTERS

## FRAGMENTATION CLUSTERS

Service	AN		ARMY			
	AN-M1A1 AN-M1A2	AN-M4 AN-M4A1	M1	M3	M28	M29
Weight Loaded (lbs.)	125	37.2	125	192	155	415
Drawing Number	339132	373786	82-0-56	82-0-54	82-0-107	82-0-108
Width (in.)	8.8	10.5	8.8	10.8	8	13.89
Length (in.)	46.6	31.0	46.8	52.0	47.35	59.635
Bombs—Number	6	3	6	6	24	90
Bombs—Mark No.	AN-M41 or AN-M41A1	AN-M40 or AN-M40A1	M41	M5	M83	M83
Suspension—Double	Lugs (a)	Lugs (a)	Lugs	Lugs	Lugs	Lugs
Suspension—Single	Lug	Lug	None	None	Lug	Lug
Cluster Adapter	AN-M1A2 or AN-M1A3	AN-M3	M1	M2	M15	M16
Firing Cartridge	None (b)	None (b)	M6	M7	Fuze M111A2	Fuze M111A2
Rack Group (Section 1)	Group A, B, C, E	Group A, B, C, E	Group A, C	Group A, C	Group A, B, C	Group A, B
Status	Service	Service	Obsolete	Obsolete	Service	Service

### NOTES

- (a) Three suspension lugs on top, retained in the "up position" by pins. By removing pin(s) two lugs may be dropped down, leaving one lug for single suspension; or the center lug may be dropped down leaving two lugs for double suspension.
- (b) Cartridge release replaced by spring-loaded bombs.
- (c) The Cluster M28 is shipped with 24 Bombs M83, installed in the adapter.
- (d) The Cluster M29 is shipped in two separate units: (1) the Adapter M16 and (2) nine wafers of ten Bombs M83. These must be assembled in the field and, when assembled, are called the Cluster M29.
- (e) A cluster is being developed which will contain six Fragmentation Bombs M82.

Service	AN					
Mark and Mod No.	AN-M6 (M1)	AN-M8 (M2)	AN-M12 (M4)	AN-M13 (M4)	AN-M14(c)	AN-M17A(c)
Weight Class (lbs.)	100	100	100	500	500	500
Drawing Number	309949	309949	370975	370956	C14-23-327	C14-23-210
Width, Loaded (in.)	8	8	8.6	17.4	—	—
Length (in.)	43	43	39.4	59.2	56	56
Bombs, Number	34	34	14	60	110	110
Bombs, Mark No.	AN-M50A1 AN-M50XA1 (b)	AN-M54 AN-M54X (b)	AN-M69	AN-M69	AN-M50TA2 AN-M50XA3	AN-M50A2 AN-M50XA3
Suspension(a)	Lugs	Lugs	Lugs	Lugs	Lugs	Lugs
Cluster Adaptor	M5 (AN-M3)	M5 (AN-M3)	M4 (AN-M4)	M7 (c) (M2)	AN-M10A1	AN-M10A1
Rock Group (Section 1)	Group A, B, C, E	Group A, B, C, E	Group A, B, C, E	Group A, E, Mk. 50	Group A, E Mk. 50	Group A, E Mk. 50
Status	Service	Obsolete	Service	Service	Service	Service

The designation of incendiary bomb clusters and cluster adaptors has recently been revised. The old designation is included in parentheses directly after the new.

## NOTES

- (a) Three suspension lugs on top, retained in the "up position" by cotter pins. By removing pin(s) two lugs may be dropped down, leaving one lug for single suspension; or the center lug may be dropped down, leaving two lugs for double suspension.
- (b) The cluster contains approximately 20 percent explosive bombs.
- (c) The Aimable Clusters AN-M14 and AN-M17A1 are fuzed in the nose of the cluster with the Fuze M127 or M138. This fuze can be set to burst open the cluster at a predetermined time (5 to 93 secs.). However this fuze does not meet Navy Safety requirements. A fuze for the aimable clusters that does meet Navy Safety requirements is under development and will be released in the near future.

# INCENDIARY CLUSTERS

Army			
M7 (M1)	M9 (M2)	M10 (M3)	M11 (M3)
500	500	100	500
C14-23-82	397774	397796	337217
13.7	13.7	8	13.7
43	43	43	43
128	128	51	192
AN-M50A1 AN-M50XA1 (b)	AN-M54 AN-M54X (b)	AN-M52	AN-M52
Lugs	Lugs	Lugs	Lugs
M6 (M1)	M6 (M1)	M5 (AN-M3)	M8 (M3)
Group A, E, Mk. 50	Group A, E, Mk. 50	Group A, B, C, E	Group A, E, Mk. 50
Service	Obsolete	Service	Service

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Service	Navy		
Weight Class	1,000		
Mark	Mk 13 Mod 0	Mk 13 Mod 5	Mk 36, Mk 36 Mod 1 (d)
Type	Bomb	Bomb	Parachute
Weight, Total Lbs. TNT Loaded Torpex Loaded	1030 1090	970 1030	1020 1085
Explosive Charge Lbs. TNT Loaded Torpex Loaded	640 700	640 700	570 635
Dwg. No. (Outline)	239329	383725	384084
Diameter (in.)	19.9	19.9	18.6
Length, Total (in.) (without bomb fuze)	68.8	68.8	70.6
Suspension—Double	Lugs (b)	Lugs (b)	Two Lugs
Suspension—Single	None	None	British
Hoisting—Double Cable	Band Mk 8	Band Mk 8	Band Mk 8
Hoisting—Single Cable	Lug	Lug	Lug
Rack Group (Section 1)	Group A	Group A	Group A or E
Bomb Fuze, Note (a)	AN-Mk 219	AN-Mk 219	None
Status	Service	Service	Service
Limiting Speed (Aircraft-Knots) (c)	175 (max.)	175 (max.)	210 (max.)
Limiting Height (Aircraft-Feet)	500 (max.)	500 (max.)	200 (min.)
Parachute	None	None	Mk 2

## NOTES

- (a) Nose Fuzes AN-M103 and AN-Mk 219 or Mk 221 and Mods can be installed and the mine used as a blast bomb.
- (b) There are three sets of lugs located 45° apart. These are provided since the tail cannot be rotated.

# AIRCRAFT MINES

## MINES

Navy		AN
1,600	2,000	1,000
Mk 12 Mod 1	Mk 25 Mod 0	AN-Mk 25 Mod 1
Parachute	Parachute	Parachute
1395 1725	1850 1980	1000 1060
1095 1225	1120 1250	465 525
239300	369015	363050
20.8	22.4	18.6
130	86.5	68.5
Torpedo Slings	Two Lugs or Torpedo Sling	Two Lugs
None	British	British
Band Mk 8	Band Mk 1 or Mk 5	Band Mk 8
Band Mk 8	—	Lug
Group A	Group A or F	Group A or E
None	None	None
Service	Service	Service
110 (min.) 165 (max.)	200 (max.)	210 (max.)
650 (min.)	200 (min.)	200 (min.)
Mk 1 or Mk 5	Mk 2	Mk 2

- (c) Limiting speed refers to ground speed for band type mines and to IAS for parachute type mines.
- (d) Same as Mk 36 except that two-position detachable lugs are provided.

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Type	MINES				
	1,500	1,000	1,500	1,000	500
Weight Class (lbs.)	1,500	1,000	1,500	1,000	500
Mark No.	"A" Mks I—IV	"A" Mk V	"A" Mk VI	"A" Mk VII	"A" Mk VIII
Weight, Total (lbs.)	1,480	1,000	1,780	1,050	480
Explosive Charge (lbs.)	750	625	950	620	180
Diameter (in.)	17.83	15.75	18.53	16.8	13.3
Length, Total (in.)	170 with tail 121 with parachute	91.5	109.25	91	57.0
Fuze (or pistol)					
Suspension—Double	—	—	—	Lugs (detachable)	Lugs (detachable)
Suspension—Single	Strop	Lug	Lug or Strop	Lug	Lug
Hoisting	Band Mk 8	Band Mk 8	Band Mk 8	Band-Mk 8	Band Mk 8
Rack Group (Section 1)	Group A, E	Group A, E	Group A, E	Group A, E	Group A, E
Status	Service	Service	Service	Service	Service
Limiting Speed	200 (a)	200	200	200	300
Limiting Height	200—6,000	100—6,000	200—6,000	200—6,000	250
Parachute Parachute Diameter opened	No. 6 Mks I—II 5'-6"	No. 8 Mks I—II 4'-6"	No. 13 Mk I 7'	No. 9 Mks I—II 4'-6"	—

## NOTES

Parachute Mk I cannot be used at greater speed than 200 m.p.h.

- (a) Mine "A" Mk I—Mk IV, when fitted with tail, can be used only from fleetairarm aircraft at a maximum height of 500 ft. and speed of 150 m.p.h.
- (b) Concave nose fitting, when added to Depth Charge Mk VIII, increases length by 2.4 in.
- (c) Equipped with two additional lugs 14 in. apart, welded 180° from British lug.
- (d) The Pistols Mk XIX and Mk XX become air-arming when the Tail Mk IV is used with the D. C. Mk XI or Mk XI\*.

# BRITISH MINES and DEPTH CHARGES

DEPTH CHARGES		
250	250	250
VIII	XI	XI*
250	265	265
160 (Amatol) 185 (TorpeX)	175 (TorpeX)	175 (TorpeX)
11.0	11.0	11.0
57.5 (b)	55.0	55.0
Mk XIV, XIV* (f) (g) Mk XVI	Mk XIV, XIV* (f) (g) Mk XVI, XIX, or XX (d)	Mk XIV, Mk XIV* (f) (g) Mk XVI, XIX, or XX (d)
—	—	Lugs (c)
Lug	Lug	Lug
Band Mk 8	Band Mk 8	Lug or Band, Mk 8
Group B	Group B	Group A, B, E
Obsolescent	Service	Service
200	175 (e)	175
750	750 (e)	750 (e)
—	—	—

- (e) The limiting height is 500 feet when fitted with the Pistol Mk XVI or Mk XIX. It is 750 feet when fitted with the Pistol Mk XIV or Mk XX.
- (f) Uses Detonator Mk VII and Primer Mk VIII. The Pistol Mk XIV\* is fitted with an inertia safety clip, permitting the D. C. to be dropped safe.
- (g) The Pistols Mk XIV and Mk XVI can be fitted with an explosive safety clip, which is a positive means of preventing the arming of the pistol in event forced landing at sea is made.

CHEMICAL TANKS

Service	Navy		Army	AN	British	
	600	1,000	500	1,300	250	500
Mark and Mod No.	Mk 10 Mk 6 Mod 2	Mk 5 Mods 2 & 3	M10	AN-M33A1	Mk IV (f)	Mk III (f)
Capacity (gal.) (a)	30	46	30	70	13.3	25
Weight, Empty (lbs.)	68	184	58	170	98	132
Weight, Loaded (lbs.) (b)	548	911	542	1,276	327	567
Drawing Number	127430	272621 c.	C28-4-350	C28-4-481	SIS 2126	
Diameter (in.)	14.0	19.0	14.0	21.4	12.4	71.5
Length, Total (in.)	84.0	67.2	84.0	64.8	70.4	25.5
Suspension—Double	Lugs	Lugs	Lugs (d)	Lugs 14" (g)	None	
Suspension—Single	Lug	None	None	Lug	Lug	Lug
Hoisting	Lug	Lug	Band Mk 8 (e)	Band Mk 8 or Lug	Band Mk 9	Band Mk 8
Rack Group (Sec. 1)	Group B	Group A	Group B	Group A	Group B, E	
Status	Service	Service	Service	Service	Service	Service

NOTES—CHEMICAL TANKS

- (a) Actual gallons of filling as shown is about 10 percent less than capacity to allow for expansion due to heat. The Tank Mk. 7 type is filled to 94 percent capacity.
- (b) This weight loaded with F3 mixture. Weight with other fillings is always less.
- (c) Tank Mk 5 Mod 3 has the drainage cap in the nose. Tank Mk 5 Mod 2 has two filling or drainage caps on top and is shown on BuOrd Dwg. 272319.
- (d) On the A-20 (BD) model airplane, streamline fairings are used between the top of the tank and the airplane.
- (e) There is a single handling lug located 45° either side of the suspension lugs.
- (f) British smoke tanks are known as Smoke Curtain installation Type G and are referred to by initials, i.e., S.C.I. Type G. Mark numbers follow after the letter G.
- (g) Lugs are on an adjustable band that can be positioned either 14 in. or 30 in. apart.

# CHEMICAL TANKS and TORPEDOES

## TORPEDOES

Service	AN
Weight Class (lbs.)	2,200
Mark and Mod No.	AN-Mk 13 Mods [See Notes (c)-(i).] 1, 2A, 3, 4, 5, 6, 7, 8 and 9.
Weight, Total (lbs.)	2228 ±20
Weight of Explosive (lbs.)	600
Drawing Number	225393* 226245**
Diameter (in.)	22.4
Length (in.)	161.0
Speed (kts.)	33.5
Range (yds.)	5,000
Depth Setting (ft.)	0-50
Location of C. G. (in.) Note (a)	90
Hoisting	Band Mk 1 or Mk 8
Suspension	Note (b)
Status	Service

### NOTES—TORPEDOES

- (a) Distance from end of tail to the center of gravity with drag ring and stabilizer installed ready for exercise or war run.
- (b) Suspended between two racks or shackles by slings, or from one rack or shackle by means of a suspension bar. Only one shackle need be used if one of each sling is anchored to the airplane.
- (c) Mod 3 is the same as the Mk 13 Mod 2A, except that it has external gyro angling feature—BuOrd Sk. 124435.
- (d) Mod 4 is the same as the Mk 13 Mod 3, except that it has an additional strengthening ring in the after body.
- (e) Mod 5 is the same as the Mk 13 Mod 1, except that it has igniter water delay valve installed.
- (f) Mod 6 is the same as Mk 13 Mod 2A, except that shroud ring is attached.
- (g) Mod 7 is the same as Mk 13 Mod 3, except that shroud ring is attached.
- (h) Mod 8 is the same as Mk 13 Mod 4, except that shroud ring is attached.
- (i) Mod 9 is the same as Mk 13 Mod 5, except that shroud ring is attached.
- \* Dwg. for Mk 13 Mods 1, 5, 8, and 9
- \*\*Dwg. for Mk 13 Mods 2A, 3, 4, 6 and 7

# SECTION 4

## DATA—FUZES AND PISTOLS

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FUZES AND PISTOLS

**FUZES—General Data**

The following is a complete list of current Navy bomb fuze designations, including AN-Standard fuzes of Navy origin:

AN-Mk 219	Mk 229 Mods 1, 2, and 3
Mk 221 Mods 1, 2, 3, and 4	AN-Mk 230 Mods 1, 2, 3, and 4
Mk 223 Mods 1, 2, 3, and 4	AN-Mk 234
AN-Mk 224	Mk 239
Mk 227	Mk 243
AN-Mk 228	

Values of arming air travel as listed in the tables are approximate values only. The distance represented by an arming air travel value is measured along the actual trajectory of the bomb and a listed value for any given fuze will vary slightly when the fuze is installed in different bombs.

**NAVY IMPACT FUZES**

**ALL NAVY fuzes are safe for dive bombing and for landings and take-offs anywhere, including carrier decks.**

**MK 221 MODS 1, 3, AND 4**

These fuzes are all similar in design. The modifications indicate different manufacturers of the inert components.

**MK 223 MODS 1, 3, AND 4**

These fuzes are all similar in design. The modifications indicate different manufacturers of inert components.

**MK 227**

This is a small, spinning-type, instantaneous impact nose fuze for use in antiaircraft bombs.

**MK 239**

This is a nose fuze for all U. S. G. P. bombs, except Navy 100-lb. Bomb Mk 4. It is a Fuze Mk 221 with modified body (reduced in diameter) and functions on impact with 0.01 second delay.

**MK 243**

This is a water-discriminating nose fuze for all U. S. G. P. bombs, except Navy 100-lb Bomb Mk 4. It will function with 0.025 second delay upon impact with  $\frac{1}{4}$ -in. steel plate, but will not function upon impact with water.

# NAVY IMPACT FUZES

Service	Navy						
	Mark 221		Mark 223		Mark 227	Mark 239	Mark 243
Mark No.							
Modification No.	Mods 1, 3, & 4	Mods 1 A.S. & 2	Mods 1, 3, & 4	Mods 1 A.S. & 2	All Mods	Mod 0	Mod 0
Position	Nose	Nose	Tail	Tail	Nose	Nose	Nose
Delay (sec.)	0.01	0.01	0.01	0.33	Instant	0.01	0.025
Arming Air travel (ft.)	850-1, 100 a)	800-1, 100	850-1, 100	900-1, 100	1,500 (b)	850-1,100	400-500
Method of Arming	Vanes	Vanes	Vanes	Vanes	Centrifugal force	Vanes	Vanes
Weight (lbs.)	7.6	7.6	10.5	10.5	0.7	7.5	.
Drawing Number	202618	234564	202619	234568	236875		344638
Striking velocity required for water impact function	400 feet per second	650 feet per second	400 feet per second	400 feet per second		400 feet per second	Will not function on water impact. Will function on impact with steel plate.
Vertical fall of bomb required to assure water impact functioning of the fuze.	2,000 ft.	7,000 ft.	2,000 ft.	2,000 ft.			
Standard fuze for the following bombs	500 lb. Mk 9, Mk 12 and Mods 1,000 lb. Mk 9, Mk 13 and Mods. Mk 36				A. A. Bombs Mk 34	All U.S. G.P. bombs except Navy 100-lb. Bomb Mk 4	All U.S. G.P. bombs except Navy 100-lb. Bomb Mk 4

## NOTES

- (a) When used in flat-nosed aircraft depth bombs, the air travel required to arm is approximately 2,500 feet.
- (b) At an altitude of 20,000 feet the air travel required to arm is 3,000 feet.

Service	AN			
	AN-M100A2	AN-M101A2	AN-M102A2	AN-M103A1
Mark and Mod No.	AN-M100A2	AN-M101A2	AN-M102A2	AN-M103A1
Position	Tail	Tail	Tail	Nose
Delay (sec.)	Note (a)	Note (a)	Note (a)	0 or 0.1
Arming Air Travel (ft.)	445-485	555	465-665	Notes (b) (d)
Weight (lbs.)	2.7	2.9	3.2	3.7
Drawing Number	309538	309535	309533	276324
Detonator	M14	M14	M14	Integral
Standard fuse for the following bombs	AN-M30 or A1 AN-M57 or A1 AN-M81	AN-M43 AN-M64 or A1 AN-M58 AN-M58A1 AN-M58A2	AN-M44 AN-M65 or A1 AN-M34 AN-M66 or A1 AN-M59 or A1 AN-M56 or A1	All AN-Std. G. P. bombs and 325-350-lb. depth bombs and 90-lb. Frag. M82 & 260-lb. Frag. Bomb AN-M81 Note (d)

FUZE AN-M103A1—TABLE

Bomb	Wt. Class	Arming Air Travel (Ft.)	
		(Instant)	(0.1 sec. delay)
AN-M30 AN-M30A1	100	765	510
AN-M57 AN-M57A1	250	940	630
AN-M43 AN-M64 AN-M64A1	500	1,000	670
AN-M44 AN-M65 AN-M65A1	1,000	1,300	685
AN-M34 AN-M66 AN-M66A1	2,000	1,620	1,080
AN-M56 AN-M56A1	4,000	1,300	685

# AN-STANDARD IMPACT FUZES

AN					
AN-M104	AN-M110A1	AN-M120 AN-M120A1	AN-M126 AN-M126A1	AN-Mk 219	AN-Mk 228
Nose	Nose	Nose	Nose	Nose	Tail
Instant	Instant	Instant	Instant	Instant	0.08
2.25-2.75 seconds	725	AN-M120 2.5 seconds AN-M120A1 1.9 seconds	725	1,000	800-1,100
0.6	1.1	1.1	1.0	4.1	10.5
73-8-14	339670	374536	73-8-166 73-8-167	202656	236220
Integral	Integral	Integral	Integral	Integral	Integral
AN-M40 AN-M40A1	AN-M41 AN-M41A1	AN-M40 AN-M40A1	AN-M47A2	Note (c) Note (d)	Mk 1 AN-Mk 1 AN-Mk 33

## FUZE NOTES

- (a) Fuzes AN-M100A2, AN-M101A2, and AN-M102A2 use the interchangeable primer detonator M14, which is furnished in four delays, namely, Non-delay, 0.01-, 0.025-, and 0.1-second. A special delay of 0.24 seconds can also be furnished with the Detonator M14.
- (b) Arming air-travel distance of the Fuze AN-M103A1 varies with the delay and type of bomb. See table at left.
- (c) Nose Fuze AN-Mk 219 will fit directly into the 30-lb. Frag. Bombs Mk 5 Mods 2 and 3' the 100-lb. Chem. Bomb Mk 42, and the 100-lb. Navy G. P. bombs. It will also fit all other Navy G. P. bombs and depth bombs by the use of an extra Auxiliary Booster Mk 1 and adapter ring, and will fit all AN-M standard G. P. bombs by the use of an Auxiliary Booster Mk 4 and an adapter ring.
- (d) For vertical fall to arm when used in flat-nose depth bombs, see table on page 70.

All AN-Standard fuzes for general purpose bombs are safe for dive bombing and for landings and take-offs anywhere, including carrier decks.

## USE OF NOSE FUZES IN FLAT-NOSE DEPTH BOMBS

Nose Fuze AN-M103A1 may be used in all depth bombs if the standard vane is replaced by the special vane for flat-nose depth bombs. This special vane is shipped with each depth bomb tail.

Bomb	Air Travel Required to Arm	Vertical Fall of the Bomb Required to Arm at			
		100 kts.	150 kts.	200 kts.	250 kts.
325-lb. Mk 41 or Mk 47	1,050 ft.	100 kts.	150 kts.	200 kts.	250 kts.
		500 ft.	300 ft.	150 ft.	100 ft.
350-lb. Mk 53 or Mk 54	850 ft.	400 ft.	200 ft.	125 ft.	65 ft.
650-700-lb. Mk 38 or M 49	1,300 ft.	700 ft.	400 ft.	250 ft.	150 ft.

Nose Fuze AN-Mk 219 may also be used with flat-nose depth bombs. Vertical fall of the bomb required to arm this fuze is as follows.

Bomb	Air Travel Required to Arm	Vertical Fall of the Bomb Required to Arm at		
		100 kts.	200 kts.	250 kts.
325-lb. Mk 41 or Mk 47	2,700 ft.	100 kts.	200 kts.	250 kts.
		1,500 ft.	1,000 ft.	800 ft.
350-lb. Mk 53 or Mk 54	1,400 ft.	600 ft.	300 ft.	220 ft.
650-700-lb. Mk 38 or M 49	2,840 ft.	2,000 ft.	1,000 ft.	720 ft.

## AN-STANDARD FUZES—DESCRIPTION

### AN-M100A2, AN-M101A2, AN-M102A2

These fuzes are all of the same general design, differing only in the overall length. The A1 modification of these three fuzes—AN-M100A1, AN-M101A1, and AN-M102A1—have a much longer arming air-travel distance (2,000–3,500 feet) than the A2 modification. It is therefore necessary to pre-arm these fuzes. The original fuzes, M100, M101 and M102 (Army fuzes) were not made AN-Standard, as they do not have an interchangeable primer detonator, but have a fixed delay of 0.1 second. They also have the same long-arming air-travel as the A1 modification, and are used only in Army bombs.

# AN-STANDARD IMPACT FUZES

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## AN-M103A1

This fuze replaces the Fuze AN-M103. The modification prevents accidental arming if the arming mechanism is broken off.

## AN-M104

This is a very sensitive arming-pin-type fuze into which is incorporated a time delay arming detonator safety. This fuze is not recommended for carrier use, because it does not require air travel to arm.

## AN-M110A1

This is a sensitive nose fuze which functions with instantaneous action upon impact. The striker and detonator are always in line; hence the fuze may fire if the fuze body is crushed by a blow. Therefore, especial care should be given all bombs fitted with this fuze.

## AN-M120 and AN-120A1

This is an instantaneous nose fuze with a time-delay arming mechanism designed to replace Fuze AN-M104. It is not recommended for carrier use, because it does not require air travel to arm.

## AN-M126 and AN-M126A1

These fuzes are similar to the M110 and AN-M110A1 respectively, but do not contain an integral booster. The striker and detonator are always in line; hence the fuze may fire if the fuze body is crushed by a blow. Therefore, especial care should be given all bombs fitted with this fuze.

## AN-Mk 219

Formerly designated Mk 19 Mods 2, 3, and 4, this fuze can be used in place of Nose Fuze Mk 221 or AN-M103A1 by using an adapter (BuOrd Dwg. 275073) and one additional auxiliary booster Mk 1 (BuOrd Dwg. 327960) for Navy bombs, or one Auxiliary Booster Mk 4 for AN-Standard G.P. bombs.

## AN-Mk 228

Formerly designated Mk 28 and Mk 28 Mod 1, this fuze is standard for A.P. bombs.

# BOMB DATA

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Service	Army				
Mark and Mod No.	M100	M101	M102	M103	M110
Position	Tail	Tail	Tail	Nose	Nose
Delay (sec.)	0.1	0.1	0.1	0 or 0.1	Instant
Arming Air Travel (ft.)	2,000-3,500	2,000-3,500	2,000-3,500	1,720-2,040	2,200 ft.
Weight (lbs.)	2.7	2.9	3.2	3.7	1.1
Drawing Number	73-8-3	73-8-7	73-8-8	73-8-14	73-8-47
Primer Detonator	Integral	Integral	Integral	Integral	Integral
Standard fuze for the following bombs	M30, M57	M43	M32, M33 M34, M44	All G. P. bombs of "M" series	M41 M47A1

Service	Army			
Mark and Mod No.	M112A1 (a)	M113A1 (a)	M114A1 (a)	M115
Position	Tail	Tail	Tail	Tail
Delay (sec.)	4-5 or 8-11	4-5 or 8-11	4-5 or 8-11	4-5 or 8-11
Arming Air Travel (ft.)	100	100	100	400-650
Weight (lbs.)	2.3	2.5	2.8	2.6
Drawing Number	372739	372742	372745	374922
Primer Detonator	M16A1	M16A1	M16A1	M16A1
For use in the following bombs	M31, AN-M30 AN-M57 AN-M30A1 AN-M57A1	M32, AN-M43 AN-M58 AN-M58A1, A2 AN-M64 AN-M64A1	M33, AN-M34 AN-M44 AN-M59 AN-M59A1 AN-M65 AN-M65A1 AN-M66 AN-M66A1	M31, AN-M30 AN-M57 AN-M30A1 AN-M57A1

## NOTES

(a) Fuze is safe for dive bombing, but is not safe for use from carriers.

# ARMY IMPACT FUZES

For description of these Army impact fuzes, see page 74.

Army				
M116	M117	M123A1 (b)	M124A1 (b)	M125A1 (b)
Tail	Tail	Tail	Tail	Tail
4-5 or 8-11	4-5 or 8-11	1-144 hrs	1-144 hrs	1-144 hrs
400-650	400-650	50-100	80-100	80-100
2.8	3.1	2.9	3.1	3.4
374925	374925	73-8-169 73-8-170	73-8-169 73-8-170	73-8-169 73-8-170
M16A1	M16A1	Integral	Integral	Integral
M32, AN-M43 AN-M58 AN-M58A1 AN-M64 AN-M64A1	M33, AN-M34 AN-M44 AN-M59 AN-M59A1 AN-M65 AN-M65A1 AN-M66 AN-M66A1	AN-M30A1 AN-M57A1 M31	AN-M43A1 AN-M64A1 AN-M58 AN-M58A1 M32	AN-M44A1 AN-M65A1 AN-M59A1 AN-M34A1 AN-M66A1 M33

(b) For further information, see NAVORD OTI AV 3-44

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**ARMY IMPACT FUZES** (See Also Pages 72-73.)

**M100A1, M101A1, M102A1**—These fuzes are similar in design except for the length, which is greater for larger-sized bombs.

**M103**—This is the same as Fuze AN-M103, except for the arming distance. The delays are selected by a pin, which is turned for selecting either "no-delay" or "0.1" second delay. When used in 1,000-pound bombs, this fuze requires 2,040 feet of air travel to arm. when set for instantaneous action and 1,720 feet when set for delay action.

**M106**—Obsolete.

**M108**—Obsolete; replaced by AN-M123A1

**M110**—This fuze is of the arming-vane type for instantaneous action. It is similar to the AN-M110A1; however, the latter is of sturdier construction and has a reduced arming air travel.

**M112A1, M113A1, M114A1**—These are all the same except for length, which is greater for larger-sized bombs. Their characteristics are a cocked firing pin, which makes them supersensitive, a very short arming distances and interchangeable delays of 4-5 or 8-15 seconds. These fuzes are safe for dive bombing, but are not safe for use from carriers.

**M115, M116, M117**—These fuzes are similar to the Fuzes M112A1, M113A1, and M114A1, except for a longer arming distance. They are safe for dive bombing and for take-offs and landings anywhere, including the decks of carriers.

**M123, M124, M125**—Long-delay tail fuzes issued with delays of 1, 2, 6, 12, 24, 36, 72, and 144 hours. An anti-removal device prevents withdrawal of the fuze; therefore unexpended bombs should be jettisoned before landing.

**M123A1, M124A1, M125A1**—These are essentially the same as the Fuzes M123, M124, and M125 respectively except that less air travel is required to arm the fuze.

**M127**—Non-detonator-safe aerial-burst fuze for aimable clusters.

**M129, M130, M131**—Aerial burst, impact, delay, or anti-disturbance fuzes for Frag. Bomb M-83. Fuze is shipped installed in the bomb. These fuzes must not be removed from the bombs.

**M132, M133, M134**—Chemical short-delay fuzes, 5-30 minutes, with booby trap feature.

**M138**—This fuze is Fuze M127 with reduced booster charge for aimable clusters, is not safe for carrier use.

# ARMY IMPACT FUZES AND BRITISH FUZES

## BRITISH FUZES

Number	30	32	36 (a)	37	38 (b)
Mark No.	I, I*, II, III	II*, III, IV	I, II, II ND (c)	I	I, II
Position	Tail	Nose	Nose	Tail	Nose
Delay (sec.)	0.1	0 to 2.0		0.1	0.5
Arming Air Travel (Ft.)	700	625	70	700	None
Standard fuze for the following bombs.	S. A. P. 250 and 500-lb. Mks II, II (c), III (c), IV	A. S. 100-, 250- & 500-lb. Mk I, II, III	Smoke 250-lb. Mk I & II Incen. 250-lb. Mk I & II	A. P. 2,000-lb. Mks I, II, III	

### NOTES

- (a) This fuze is not safe for dive bombing or use from carriers.
- (b) Arming-pin type fuze; not safe for dive bombing or use from carriers.
- (c) ND denotes non-delay.

**DESCRIPTION OF THE BRITISH FUZES**

- No. 36 Mks I and II—An ejection charge No. 1 Mk I or No. 1 Mk II is used in conjunction with this fuze. The fuze Mk II has a stronger body, but is otherwise the same as the Mk I. The Mk II ND is a non-delay fuze similar to the Mk II and uses the ejection charge No. 2 Mk I.
- No. 37 Mk I—Tail fuze for 2,000 pound A. P. bombs. Similar in construction and operation to the No. 30 Mk III, it differs only in length and in construction of the arming spindle.
- No. 38 Mk I and Mk II—This is a nose fuze for small bombs. This fuze is armed when the bomb is loaded into the container. No provisions are made for "safe" dropping.
- No. 52—This is an air-arming impact nose fuze for use in the 250-lb. G. P. Bomb AN-M57, 500-lb. G. P. Bombs AN-M43 and AN-M64, and 1000-lb. G. P. Bomb, AN-M44 and AN-M65.
- No. 844 Mk I—This is a tail fuze for use in the Smoke Float Mk I.
- No. 846 Mk I—This is a simple impact fuze which is secured in the bomb by a nose plug. It is used in the 30-lb. Incendiary Bomb Mk III. The fuze is armed when loaded in the plane.
- No. 854 Mk I—This is an "Always" impact fuze to which is attached a burster for use with the 100-lb. Smoke Bomb Mk II.
- No. 859 Mk I—This is an "Always" impact fuze for use in the 4-lb. Smoke Bomb Mk II.
- No. 862—Hydrostatic tail fuze for use in the 600-lb. A.S. Bomb Mk I. This fuze functions at a depth of approximately 30 feet. Depth setting cannot be changed.
- No. 864 Mk I—Impact fuze having a delay of 0.5 seconds for use with the 120-lb. Smoke Bombs Mk I and Mk II.
- No. 873—This is an air-arming diaphragm-operated impact fuze used in the 20-lb. fragmentation or 40-lb. G. P. bombs (without parachute).

# BRITISH FUZES AND AMERICAN HYDROSTATIC FUZES

## Navy—AN-Standard HYDROSTATIC FUZES

Service	Navy			
	AN			
Mark and Mod No.	Mk 229 & Mods	AN-Mk 230	AN-Mk 224	AN-Mk 234
Position	Tail	Tail	Athwartship	Athwartship
Depth Settings (ft.)	25, 50, 75, 100, or 125	25, 50, 75, 100, or 125	25, 50, 75, 100, or 125	25, 50, 75, 100, or 125
Air Arming Travel (ft.)	300-400	300-400	None	None
Type of Arming	Vanes	Vanes	Fins and hydro- static pressure	Fins and hydro- static pressure
Weight (lbs.)	14.5	15.0	10.5	10.5
Drawing Number	300256	344435	242658	344482
Detonator	Integral	Integral	Semi-integral	Semi-integral
For use in the following bombs:	650-lb. Depth Bombs Mk 37, 38 and 49. G. P. Bombs Mk 12 & 13	AN-M64 AN-M64A1 AN-M65 AN-M65A1 AN-M66 AN-Mk 53 Mod 1 AN-Mk 54 Mod 1 AN-M66A1	Either fuze can be used in all depth bombs except AN-Mk 53 Mod 1 and AN-Mk 54 Mod 1.	

### MK 229 AND MODS

Tail hydrostatic fuze for all 650-pound aircraft depth bombs and for Navy 500- and 1,000-pound general purpose bombs. Depth setting is changed by a knob on the side of fuze.

### AN-MK 230

This fuze is similar in design to the Fuze Mk 229, except that the portion of the fuze which fits into the fuze cavity of the bomb is shorter. It is an alternate tail fuze for the General Purpose Bombs AN-M64, AN-M65, and AN-M66 and Depth Bombs AN-Mk 53 Mod 1 and 54 Mod 1.

### AN-MK 224

Formerly designated Mk 24 Mods 1 and 2. The depth setting is changed by partial disassembly of the pistol and insertion of the combination of firing spring and auxiliary spring giving the desired depth setting. All fuzes as issued at present are assembled to function at a depth of 25 feet.

### AN-MK 234

Formerly designated Mk 34 Mods 1 and 2. This fuze is similar to the Fuze AN-Mk 224, except that the depth setting is changed by means of a knob on the pistol instead of disassembling the fuze.

## BRITISH PISTOLS FOR BOMBS AND SMOKE FLOATS

Pistol No. and Mark	Position	Bombs Used In	Notes
No. 27 Mks I, I*, II	Nose	Current G. P., M. C., H. C.	Air-arming; blunt striker; Mk I has bronze shear wire. Mk I* has aluminum shear wire.
No. 28 Mks II*, III, IV	Tail	250- & 500-lb. G. P. Mk IV; 1,000- & 1,900-lb. G. P. Mk I; 250- & 500-lb. S.A.P. Mk V; 2,000-lb. A. P. Mk IV; all M. C.	Air-arming; blunt striker; Mk III is used in M. C. bombs.
No. 29 Mks I, II Obsolescent	Nose	20-lb. Frag. & 40-lb. G. P.	Fin-type arming; bronze shear wire; blunt striker.
No. 30 Mks III*, IV	Tail	100-, 250-, & 500-lb. A. S.	Air-arming; sharp striker; No. 30 Mk IV can be used in G. P. and M. C. bombs.
No. 33 Mk I	Nose	20-lb. Frag. & 40-lb. G. P.	Fin-type arming; blunt striker; parachute version of No. 29 Mk I.
No. 34 Mk I Obsolescent	Nose	20-lb. Frag. & 40-lb. G. P.	Fin-type arming; blunt striker; aluminum shear wire.
No. 38 Mks I, I M, II, II M, III, IV	Nose	20-lb. Frag. & 40-lb. G. P.	Fin-type arming; blunt striker.
No. 42 Mks I, II	Nose	G. P., M. C., & H. C.	Air-arming; sharp striker; aluminum shear wire.
No. 44 Mks I, II	Nose	Mk I for G. P. & M. C. up to 1,000-lb.; Mk II for G. P. & M. C. up to 4,000-lb.	Air-arming; sharp striker; diaphragm-operated. Must not be used with H. C. bombs.
No. 45	Nose	20-lb. Frag. & 40-lb. G. P.	Air-arming; sharp striker; diaphragm-operated.
No. 48	Nose	250-lb. Smoke Float No. 2 Mk II.	Fin-type arming; blunt striker.

### BRITISH PISTOL NOTES

A British pistol, in itself, does not constitute a fuze as defined by U. S. service terminology. However, when a British pistol is combined with a detonator (See list, Section 5) this combination represents and functions like a U. S. service fuze. The principal advantage of a British pistol is that without a detonator it is inert and may therefore be shipped in a bomb and handled without the precautions normally required with a fuze. The various delays are obtained by selecting the appropriate detonator. British pistols which are not air-arming are not safe for dive bombing or use from carriers. The arming distance of all British pistols should be investigated before use from carriers or in dive bombing.

# BRITISH PISTOLS

## BRITISH DEPTH CHARGE PISTOLS AND VALVE UNITS

Mark No.	Position	Static Firing Depth	Bombs used in	Notes
XIV	T	14-18 ft.	250-lb. D.C. Mks VIII, XI, XI*	XIV* is fitted with inertia safety clip to enable dropping the D.C. "safe".
XIV*	T	14-18 ft.		
XVI	T	20-24 ft.	250-lb. D.C. Mks VIII, XI, XI*	
XIX	T	20-24 ft.	250-lb. D.C. Mks XI & XI*	When the Tail Mk IV is used, the fuze is converted to air arming.
XX	T	14-18 ft.	250-lb. D.C. Mks XI & XI*	When the Tail Mk IV is used, the fuze is converted to air arming.

### DEPTH CHARGE PISTOL AND VALVE UNIT NOTES

The Pistols Mk XIV and Mk XX function at a depth of approximately 25 feet when used in the 250-lb. Depth Charges Mk VIII, Mk XI, and Mk XI\*.

The Pistols Mk XVI and Mk XIX function at a depth of approximately 28 feet when used in the 250-lb. Depth Charges Mk VIII, Mk XI, and Mk XI\*.



# SECTION 5

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## DATA—MISCELLANEOUS

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MISCELLANEOUS

## ADAPTERS

### U. S. NAVY

The only adapter used in Navy bombs is shown in BuOrd Dwg. 275073 and is used in substituting a Nose Fuze AN-Mk 219 (inst.) for the Nose Fuze Mk 221 (0.01 sec. delay) on the Nose Fuze AN-M103A1.

### AN-STANDARD

An adapter is used in the General Purpose Bombs AN-M64 (500-pound), AN-M65 (1,000-pound), and AN-M66 (2,000-pound) to permit the use of the Tail Fuze AN-Mk 230 (hydrostatic) as an alternate to the Fuzes AN-M101A2 and AN-M102A2. The adapter will be furnished installed in these bombs to fit the Fuzes AN-M101A2 and AN-M102A2. The adapter is removed when the Fuze AN-Mk 230 is installed.

### U. S. ARMY

The army has no separate adapters.

The fuze seat liner and booster combination used in Army bombs is often called an "Adapter-Booster", but it is considered an integral part of the bomb base plug, and should NOT be removed.

## AUXILIARY BOOSTERS

### U. S. NAVY

Auxiliary Booster Mk I, BuOrd Dwg. 327960, is used only in Navy type bombs. Each Navy bomb is shipped with one of these auxiliary boosters in each fuze cavity, nose, or tail. An additional Booster Mk 1 must be inserted in the fuze cavity if a Nose Fuze AN-Mk 219 (instantaneous) is used to replace a Nose Fuze Mk 221 (0.01 sec. delay). The Auxiliary Booster Mk 4 must be used in all AN-Standard G. P. bombs if the Nose Fuze AN-Mk 219 is used.

### AN-STANDARD

There is no auxiliary booster used in any of these bombs except the depth bombs and armor-piercing bombs of Navy origin. The Navy auxiliary booster is shipped in the nose fuze cavity of depth bombs and in the tail fuze cavity of armor-piercing bombs. In both cases the booster is considered an integral part of the bomb.

### U. S. ARMY

The Army does not use any auxiliary boosters.

# DETONATORS

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## U. S. NAVY

There are no separate Navy detonators; all are integral with the fuzes.

## AN-STANDARD

M14—This is the only detonator used with AN-Standard fuzes. It is furnished with four alternate delays, namely, nondelay (not as fast as instantaneous), 0.01, 0.025, and 0.1 second. This detonator is used in the Fuzes AN-M100A1 or A2, AN-M101A1 or A2, and AN-M102A1 or A2. A special delay of 0.24 seconds is available for use in the Detonator M14.

## U. S. ARMY

Mk II B or II C—These are instantaneous detonators used in the Fuze Mk XIV. The II C version is preferable. They will be withdrawn from service when the obsolete Fuzes Mk XIV are used up.

M16—This detonator is furnished in two delays, namely, 4-5 and 8-11 seconds. It is used in the Long-Delay Tail Fuzes M112, M113, M114 (and A1 modifications), M115, M116, and M117.

M16A1—A modified version for use only in Long-Delay Tail Fuzes M112A1, M113A1, M114A1, M115, M116, and M117.

M19—This detonator is furnished with all chemical delay fuzes.

## BRITISH

The next page contains a list of British detonators and the type pistol and bombs they are used with. The type detonator used is determined by: (a) the type action wanted, i.e., delay or non-delay, (b) the size fuze pocket in the bomb, and (c) the type pistol used, i.e., blunt or sharp striker.

# BOMB DATA

OP 878

Pistol No.	Detonator No.	Position	Detonator <sup>TM</sup> Delay (Secs.)
27 Mks I*, II	43 Mk I	Nose	Inst.
42 Mks I, II	52 Mks I, II	Nose	Inst.
44 Mk I	52 Mk II	Nose	Inst.
28 Mks I, II*, III, IV	43 Mk I	Tail	Inst.
28 Mk I, II*, III, IV	49 Mks I, III	Tail	0.05
28 Mks I, II*, III, IV	47 Mks I, II, III	Tail	0.12
28 Mks I, II*, III, IV	44 Mks I, II, III	Tail	1.00
28 Mks I, II*, III, IV	35 Mks II, III, V	Tail	11.00
30 Mks II, III, III*, IV, V	52 Mks I, II	Tail	Inst.
30 Mks II, III, III*, IV, V	51 Mk I	Tail	0.025

# BRITISH DETONATORS

Bombs Used in
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II; 1900-lb. Mks I and II; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; H. C. Bombs, 2000-lb. Mks I, II, III; 4000-lb. Mks I, II, III, and IV; 8000-lb. Mks I, II; 12000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mk I, II; 1900-lb. Mks I, II; 4000-lb. Mks I, II; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, V; 4000-lb. Mk I; H. C. Bombs, 2000-lb. Mks I, II, III; 4000-lb. Mks I, II, III, IV; 8000-lb. Mks I, II; 12000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III and IV; 1900-lb. Mks I, II; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; 1900-lb. Mks I, II; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; 1900-lb. Mks I, II; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I
G. P. Bombs, 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; 1900-lb. Mks I, II; S. A. P. Bombs, 250- and 500-lb. Mk V; M. C. Bombs, 500-lb. Mks I, II, III, IV, V; 1000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, and IV; 1900-lb. Mks I, II; S. A. P. Bombs, 250- and 500-lb. Mk V; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; S. A. P. Bombs, 250- and 500-lb. Mk V; M. C. Bombs 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; 1900-lb. Mks I, II; 4000-lb. Mks I, II; A. S. Bombs, 250-500-lbs. Mk IV; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, and V; 1000-lb. Mk I; 4000-lb. Mk I
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mks I, II, III, IV; 1900-lb. Mks I, II; S. A. P. Bombs, 250- and 500-lb. Mk V; A. S. Bombs, 100-, 250-, 500-lb. Mk IV; M. C. Bombs, 250-lb. Mk I; 500-lb. Mks I, II, III, IV, V; 1000-lb. Mk I; 4000-lb. Mk I

# BOMB DATA

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Pistol No.	Detonator No.	Position	Detonator Delay (Secs.)
30 Mks II, III, III*, IV, V	48 Mk I	Tail	0.04
30 Mks II, III, III*, IV, V	56 Mk I	Tail	0.05
30 Mks II, III, III*, IV, V	50 Mk I	Tail	0.14
30 Mks II, III, III*, IV, V	55 Mk I	Tail	11.00
29 Mk I or II, or 38 Mks I M, II, II M, III, IV, or 45 Mk I	43 Mk I 52 Mk I	Nose Nose	Inst. Inst.
33 Mk I	43 Mk I	Nose	Inst.
30 Mks II, III, III*, IV, V	53 Mk I	Tail	0.50
30 Mks II, III, III*, IV, V	54 Mk I	Tail	3.00

# BRITISH DETONATORS

Bombs Used In
S. A. P. Bombs, 250- and 500-lb. Mk V
A. P. Bomb, 2000-lb. Mk IV
G. P. Bombs, 250- and 500-lb. Mk IV; 1000-lb. Mk I, II, III, IV; 1900-lb. Mk I, II; S. A. P. Bombs, 250- and 500-lb. Mk V; A. S. Bombs, 100-lb. Mk IV; M. C. Bombs, 250-lb. Mk I; 500-lb. Mk I, II, III, IV, and V
G. P. Bombs, 250-lb. Mk IV; 1000-lb. Mk I, II, III, IV; 1900-lb. Mk I, II; A. S. Bombs, 250- and 500-lb. Mk IV; M. C. Bombs, 250-lb. Mk I; 500-lb. Mk I, III, IV, and V; 1000-lb. Mk I; 4000-lb. Mk I
G. P. Bombs, 40-lb. Mk I, II, III; Frags. 20-lb. Mk I, II, III
G. P. Bombs (parachute), Mk I, II, III; Frag. (parachute), 20-lb. Mk I, II, III
A. S. Bombs, 250- and 500-lb. Mk IV
G. P. Bombs, 250- and 500-lb. Mk IV; 4000-lb. Mk I and II; A. S. Bombs, 250- and 500-lb. Mk IV; M. C. Bombs, 250-lb. Mk I; 500-lb. Mk I, II, III, IV, V

## BANDS—GENERAL NOTES

Normally, no hoisting provisions are made for bombs weighing 250 pounds or less, as bombs of these weights can usually be hoisted more quickly by hand. In particularly difficult situations, such as hoisting 250-pound bombs to patrol planes, a satisfactory hoisting band arrangement can be made up from the Universal Hoisting Band Mk 8.

To meet all the hoisting arrangements in the various models and types of Naval aircraft, it is necessary to provide, on each bomb, no less than seven points of attachment for the hoisting cable fittings. There are four basic hoisting conditions; namely, (1) hoisting by single cable to a rack, (2) hoisting by single cable with shackle attached to the bomb, (3) hoisting by double cable with shackle attached to the bomb, and (4) hoisting by double cable when bomb or torpedo is suspended by slings. For all four of these conditions, the point(s) of attachment of the cable(s) should normally be located 6.1 in. aft of the center of the forward suspension lug (except in the case of a torpedo). Thus, for condition (1), one hoisting lug is required located in line with the two suspension lugs; for (2), two lugs are required, one on either side approximately 45° from the single lug required by condition (1); for (3) two lugs are required, located approximately 180° to either side of the two required for condition (2); for (4) two lugs are required, each located approximately 90° to either side of the one lug required by condition (1). Normally, the hoisting lug which is furnished with the bomb (welded directly to the bomb body) is that required for condition (1). In order to meet the other hoisting conditions, to provide a lug for condition (1) when it is not furnished (AN-Standard G. P. bombs), and to provide trunnions for bombs not adapted to take trunnions of the screw-on type, various bands are available. These bands may be intended for hoisting only or for the provision of trunnions only; or they may be combination bands which provide both a hoisting lug and trunnions.

The several types of hoisting bands now available are listed on the following pages. It is possible that other obsolete bands or modifications of the bands shown are in stock at various Naval establishments; however, the ones listed have been procured in sufficient quantity to allow distribution to the service.

The Army Air Forces have not used hoisting bands to any great extent but have made wide use of canvas slings. These are not satisfactory in meeting the majority of conditions encountered in hoisting to Navy airplanes; however, such slings will be encountered and prove useful with Navy airplanes procured from the Army. Any of the bands mentioned in these notes are interchangeable and can be used on any bomb, provided there is a fairly close fit and the conditions of hoisting are met with safety. It is possible, when loading bombs on low airplanes, to make excellent use of any of the hydraulic lift trucks.

When a choice exists as to the type of hoisting band to use, a removable band is preferable to a nonremovable one. The use of nonremovable hoisting bands will affect the trajectory of the bombs and produce unpredictable errors (Usually the bomb will fall short in range).

# BANDS

## EXPENDABLE BANDS

Type	Code	Diameter (inches)	Drawing No.	Used With
Suspension (single suspension lug on top of band) See Note (a)	A1	8.0	170153	100-lb. G. P. Mk 1 Mod 3
	A2	8.0	300355	100-lb. Incend. Mk 28
	A3	8.0	297116	100-lb. Incend. M47
	Army M1	8.2	82-3-308	100-lb. G. P. M30
	B1	14.0	294200 (Forged lug)	1,600-lb. A. P. Mk 1
	B2	14.0	328452 (Formed lug)	1,600-lb. A. P. Mk 1
SUSPENSION-TRUNNION (single suspension lug on top and a trunnion on each side)	C	8.0	161058	100-lb. G. P. Mk 1 Mod 3
TRUNNION (one trunnion on each side)	D	14.0	294244	500-lb. G. P. Mk 12 Mod 2
	E	17.7	294242	1,000-lb. G. P. Mk 13 Mod 2
	F	18.6	329330	1,000-lb. G. P. Mk 36
	G	15.0	387706	325-lb. Depth bombs.
TRUNNION-HOISTING (single hoisting lug top center of band and a trunnion on each side)	H	14.0	328386	1,600-lb. A. P. Mk 1
	Army M1	14.2		500-lb. G. P. M43
	Army M1A1	14.2	308037	500-lb. G. P. AN-M43, AN-M64 and 1,400-lb. A. P. M63
	Army M2	18.8		1,000-lb. G. P. M44

### NOTES (Applicable to pages 89-90)

- (a) The Army supplies bands with several of their A. P. bombs, namely, the M52, M60, M61, M62, and M63, which are not listed, as the bands are supplied with and considered an integral part of the bomb.
- (b) Later issues of Bands M4 and M5 have two additional hoisting lugs, one directly behind each trunnion pin, for use in double-cable hoisting.
- (c) These bands are cut away on the sides to provide clearance for nonremovable trunnions.
- (d) Hoisting Band Mk 1 Mod 2, an improved modification of the Band Mk 1, will soon be issued to the service.
- (e) This is an expendable band designed for hoisting, suspension and use as a trunnion band.

This band was designed to convert the 2000-lb. G. T. bomb from 30-inch suspension to 14-inch suspension.

## EXPENDABLE BANDS

Type	Code	Diameter (inches)	Drawing No.	Used With
TRUNNION-HOISTING—(Continued)	Army M2A1	18.8	308038	1,000-lb. AN-M44, AN-M65, AN-M65A1
	Army M3A1	12.3	338228	800-lb. A. P. M61, 900-lb. A. P. M60, 1,000-lb. A. P. M52, M52A1
	Army M4 (b)	11.8	338235	500-lb. S. A. P. AN-M58, AN-M58A1, AN-M58A2.
	Army M5 (b)	15.1	338226	1,000-lb. S. A. P. AN-M59, AN-M59A1
	Army M6	10.4	82-3-346	600-lb. A. P. M62, M62A1, M62A2.
	AN-M7	22.1	82-3-423	2,000-lb. G. P. AN-M34, AN-M66, AN-M66A1
	AN-M8	34.1	82-3-425	4,000-lb. G. P. AN-M56, AN-M56A1
HOISTING: (Single hoisting lug on top center of band) (c) (Hoisting lug on each side and guide key on top)	I	15.0	199006	500-lb. G. P. Mk 9
	II	14.0	199007	500-lb. G. P. Mk 12, Mk 12 Mod 1
	III	14.0	294200	1,600-lb. A. P. Mk 1

## NON-EXPENDABLE OR REMOVABLE BANDS

Type	Mark No.	Diameter (Inches)	Drawing No.	Lugs	Use
HOISTING (removable hoisting bands for single- and double-cable hoisting).	1 (d)	22.4	300468	2	Torpedoes
	1 Mod 2	22.4	393832	2	Torpedoes
	2	14-15	328932	1	Bombs—Cap. 500 lbs.
	6	14.0	328820	2	1,600-lb. A. P. Mk 1
	8	Universal	329748	1 or 2	General

NOTES (See page. 89)

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