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No. 9

UNITED STATES PACIFIC FLEET
AND PACIFIC OCEAN AREAS

CINCPAC-CINCPOA
SPECIAL TRANSLATION

Data on Japanese Bombs
and Explosives

3 DECEMBER 1944

Items #10,182, #10,418, #10,451

SUBJECT: Data on Japanese Bombs and Explosives, taken from:
Item #10,182 - Army Ordnance School: Ordnance Textbook
Vol. VI; undated.
Item #10,418 - Army Ordnance School: Reference Manual on
Aerial Ammo; dated April 1943.
Item #10,451 - Army Ordnance School: Diagrams of Aerial
Bombs and Ammo; dated April 1943.

SOURCE: Captured on SAIPAN

EDITOR'S NOTE:

This Special Translation consists of tables giving brief specifications of Japanese aerial bombs, including two new air to air cable bombs; tables of chemicals and charges used in various types of aerial bombs and shells; a chart of black powders used in aerial ammunition; and sketches of 12 bombs, 5 fuses and 1 flare. It adds substantially to the information available on aerial bombs and the components of Japanese incendiary and explosive compounds. Notes on the air to air cable bombs have previously been published in CINCPAC-CINCPOA WEEKLY INTELLIGENCE, Vol. 1, No. 16, 27 October 1944.

In the translation the Japanese terms SHOU, MEIA, HEINEI and ANGA are retained, since they are trade names for types of powder and there is no adequate English translation.

CHART OF BOMBS

DESIGNATION	DIA- METER (mm)	OVERALL LENGTH (mm)	CHARGE	WEIGHT OF CHARGE (kg)
Type 92 15 kg Bomb	100	686.65	Yellow Powder and TNT (packaged cast), or TNT (cast filled)	2.500
Type 92 15 kg Bomb (Special)	100	686.65	Mark II ANGA Powder and TNT	2.100 0.310
Type 94 50 kg Bomb	180	1074.00	Yellow Powder and TNT (packaged cast), or TNT (cast filled)	20.185
Type 94 50 kg Bomb (Special)	180	1074.00	Mark II ANGA Powder and TNT	16.180 4.220
Type 94 100 kg Bomb	240	1382.00	Yellow Powder and TNT (packaged cast), or TNT (cast filled)	47.760
Type 94 100 kg Bomb (Special)	240	1382.00	Mark II ANGA Powder and TNT	39.300 4.900
Type 92 250 kg Bomb	300	2011.00	Yellow Powder and TNT (packaged cast), or TNT (cast filled)	107.180
Type 92 250 kg Bomb (Special)	300	2011.00	Mark II ANGA Powder and TNT	91.600 7.360
Type 92 500 kg Bomb	380	2611.00	Yellow Powder and TNT (packaged cast), or TNT (cast filled)	229.500
Type 92 500 kg Bomb (Special)	380	2611.00	Mark II ANGA Powder and TNT	198.400 11.310
Type 99 30 kg Bomb	150	897.00	Mark II Light Yellow Powder, Yellow Powder and TNT (packaged cast), or Mark II Light Yellow Powder and TNT (cast filled)	11.080
12th Year Type 12.5 kg Bomb	125	821.15	Yellow Powder (packaged cast)	4.850

CHART OF BOMBS (CONTINUED)

DESIGNATION	FUZES		OVERALL BOMB WEIGHT (kg)	MAIN- TENANCE CLASSI- FICATION
	NOSE FUZE	TAIL FUZE		
Type 92 15 kg Bomb	12th Year Type Instantaneous		14.700	1
Type 92 15 kg Bomb (Special)	Same as above		14.515	1
Type 94 50 kg Bomb	Type 93 Double Action	12th Year Type Tail	48.430	1
Type 94 50 kg Bomb (Special)	Type 99 Selector Double Action	Type 1 15 sec- ond Delayed Action Tail	47.985	1
Type 94 100 kg Bomb	Same as above	Same as above	112.760	1
Type 94 100 kg Bomb (Special)	Same as above	Same as above	107.815	1
Type 92 250 kg Bomb	Type 92 Large Bomb Nose	Type 92 Large Bomb Tail	250.00	1
Type 92 250 kg Bomb (Special)	Same as above	Same as above	240.820	1
Type 92 500 kg Bomb	Same as above	Same as above	495.00	1
Type 92 500 kg Bomb (Special)	Same as above	Same as above	471.870	1
Type 99 30 kg Bomb	Type 93 Double Action, or Type 99 Selector Double Action	Type 1 15 sec- ond Delayed Action 12th Year Type Tail	29.600	1
12th Year Type 12.5 kg Bomb	12th Year Type Instantaneous		12.500	2

CHART OF BOMBS (CONTINUED)

DESIGNATION	DIA- METER (mm)	OVERALL LENGTH (mm)	CHARGE	WEIGHT OF CHARGE (kg)
12th Year Type 25 kg Bomb	155	1003.15	Yellow Powder (packaged cast)	8.935
12th Year Type 50 kg Bomb	210	1323.50	Same as above	28.962
12th Year Type 100 kg Bomb	270	1701.70	Same as above	61.990
Type 93 1 kg Incendiary Bomb	54	340.00	Small Grain Powder (Primer, Booster, and Incendiary Compounds: 0.455 kg)	0.040
Type 97 12 kg Incendiary Bomb	100	697.65	Small Grain Powder (Primer, Booster and Incendiary Compounds: 2.040 kg)	0.110
Type 2 Air to Air Vertically Connected Bomb (B)	Upper case (spherical) 92 Lower case, 73	328	TNT	0.330
Type 2 Air to Air Horizontally Connected Bomb	60	592.50	TNT (cast filled)	0.850
Type 2 Propaganda Bomb	107	740.50	Quality of paper: newspaper Size: copy paper 1/8; 700 propaganda leaf- lets	
Type 1 30 kg Substitute Bomb (used at high altitude)	130	851.00	Small Grain Powder (smoke compound: 0.470 kg)	0.300
Type 1 30 kg Substitute Bomb (used at extremely low altitude)	130	851.00	Same as above	0.300

CHART OF BOMBS (CONTINUED)

DESIGNATION	FUZES		OVERALL BOMB WEIGHT (kg)	MAIN- TENANCE CLASSI- FICATION
	NOSE FUZE	TAIL FUZE		
12th Year Type 25 kg Bomb	12th Year Type Instantaneous		25.000	2
12th Year Type 50 kg Bomb	Same as above		53.000	2
12th Year Type 100 kg Bomb		12th Year Type Tail	113.00	2
Type 93 1 kg Incendiary Bomb	Arming device		1.220	4
Type 97 12 kg Incendiary Bomb	Type 97 Double Action, using Black Powder		11.920	1
Type 2 Air to Air Vertically Connected Bomb (B)	Fuze used in Type 1 Air to Air Vertically Connected Bomb		6.975	1
Type 2 Air to Air Horizontally Connected Bomb (Note: 2 in cluster)	Time fuze		5.095	1
Type 2 Propaganda Bomb	Type 1 Bomb Nose Aerial Burst, using Black Powder		9.000	1
Type 1 30 kg Substitute Bomb (used at high altitude)	12th Year Type Instantaneous	12th Year Type Tail	29.900	4
Type 1 30 kg Substitute Bomb (used at extremely low altitude)	Equipped with a nose screw	Type 1 15 sec- ond Delayed Action Tail	29.900	4

CHART OF BOMBS (CONTINUED)

DESIGNATION	DIA- METER (mm)	OVERALL LENGTH (mm)	CHARGE	WEIGHT OF CHARGE (kg)
Type 2 30 kg Substitute Bomb (used at high altitude)	130	850.00	Small Grain Powder, or Large Grain Powder; (smoke compound: 0.805 kg)	0.270
Type 2 30 kg Substitute Bomb (used at extremely low altitude)	130	850.00	Same as above	0.270
Type 94 10 kg Substitute Bomb	100	738.65	Small Grain Powder	0.550
Type 87 12.5 kg Substitute Bomb	125	811.15	Small Grain Powder	0.415
Type 88 4 kg Practice Bomb	120	650.00	(stannic chloride) smoke compound: 0.190 kg	
Type 95 4 kg Practice Bomb	120	650.00	Same as above	
Type 96 4 kg Practice Bomb	119	650.00	Smoke compound: stannic chloride: 0.190 kg, or titanium tetrachloride: 0.150 kg	
Type 96 4 kg Night Practice Bomb	119	650.00	Illuminating Compound: 0.020 kg	
Type 90 Wing-Released Flare	53	199.00	Combustion (TN: 助燃) Compound: 1.0 g Activating (TN: 起爆) Compound: 0.2 g Illuminating Compound: 425 g	
Type 90 Small Model Flare	74	670.00	Illuminating Compound: 1.7 kg Priming charge: 0.03 kg	
Type 92 Flare	107	942.50	Illuminating Compound: 6.7 kg Parachute: 0.79 kg	

CHART OF BOMBS (CONTINUED)

DESIGNATION	FUZES		OVERALL BOMB WEIGHT (kg)	MAIN- TENANCE CLASSI- FICATION
	NOSE FUZE	TAIL FUZE		
Type 2 30 kg Substitute Bomb (used at high altitude)	Type 1 Instantaneous	Type 2 Tail, or 12th Year Type Tail	30.255	4
Type 2 30 kg Substitute Bomb (used at extremely low altitude)	Equipped with nose screw	Type 1 15 second Delayed Action	30.115	4
Type 94 10 kg Substitute Bomb	12th Year Type Instantaneous		9.300	4
Type 87 12.5 kg Substitute Bomb	Same as above		12.500	4
Type 88 4 kg Practice Bomb			4.000	4
Type 95 4 kg Practice Bomb			4.000	4
Type 96 4 kg Practice Bomb			4.000	4
Type 96 4 kg Night Practice Bomb			4.000	4
Type 90 Wing-Released Flare	Electric Primer		0.600	1
Type 90 Small Model Flare	Priming device		3.600	1
Type 92 Flare	Type 1 Bomb Nose Aerial Burst Fuze using Black Powder		13.440	1

CHART OF TYPES OF CHEMICALS USED IN AERIAL PROJECTILES AND AMMUNITION

	COMPOUNDS	RELATIVE CON- TENT	USES	SUMMARY
TRACER COMPOUNDS	strontium nitrate strontium carbonate	64% 5	Type 89 Flexible MG shells " " Fixed " " " Type 92 Tracer shells	
	magnesium barium peroxide	10 90	Type 89 Flexible MG shells " " Fixed " " " " " Tracer shells	
	magnalium (15% alu- minum) wax	27 4	Type 94 Flexible Machine Cannon shells Type 94 Tracer HE shells " " " " " Substi- tute shells	
	strontium nitrate strontium carbonate magnalium (15% alu- minum) yellow wax	61 10 25 4	12.7 mm MG shells Type 1 Tracer A.P. shells " " " " shells 20 mm Machine Cannon (Aircraft) shells Type 2 Tracer shells " " " " Substitute shells Type 2 Tracer A.P. shells	Red Tracer Compound
	magnalium (15% alu- minum) yellow wax sodium nitrate calcium oxalate	31 4 45 20	" " " " " "	Yellow Tracer Compound (Substi- tute)
	magnalium (15% alu- minum) yellow wax barium nitrate barium carbonate	21 4 65 10	" " " " " "	Green Tracer Compound (Substi- tute)
	magnalium (15% alu- minum) yellow wax saltpetre calcium carbonate	26 4 60 10	" " " " " "	Pink Tracer Compound (Substi- tute)

CHART OF TYPES OF CHEMICALS USED IN AERIAL PROJECTILES AND AMMUNITION
(Continued)

	COMPOUNDS	RELA- TIVE CON- TENT	USES	SUMMARY
INCENDIARY COMPOUNDS	yellow phosphorus		Type 89 Flexible MG shells " " Fixed " " Type 92 Incendiary shells " 89 " " " 1 " " used in aerial MG	
	strontium nitrate	48	20 mm Machine Cannon	
	magnesium (15% alu- minum)	48	(Aircraft) shells	
	dichloride of naph- thalene	4	Type 2 HE shells " " Tracer HE shells	
	powdered aluminum	15.6	Type 93 1 kg Incendiary Bomb	Thermite
ILLUMINATING COMPOUNDS	ferric oxide	11.4	" 97 12 kg " "	
	granulated aluminum	11		
	manganese dioxide	29		
	magnesium alloy	3.5-6.5	Type 93 1 kg Incendiary Bomb	Electron
	aluminum-zinc alloy	2.5-4.0	" 97 12 kg " "	
	manganese	2.0-0.7	Incendiary Cylinder	
	impurities	under 1.5		
	magnesium	remainder		
	magnesium	57	Type 90 Wing-Released Flare	
	barium nitrate	24		
ILLUMINATING COMPOUNDS	powder	8		
	paraffin	11		
	castor oil	2	Type 90 Small-Model Flare	
	sulfur	4		
	granulated aluminum	8		
	powdered aluminum	10		
	barium nitrate	76		
	saltpetre	40	Type 96 4 kg Night Practice	
	sulfur	13	Bomb	
	antimony trisulfide	7		
ILLUMINATING COMPOUNDS	powdered aluminum	20		
	powder	20		
	main compound is barium nitrate		Type 2 Flare	

CHART OF TYPES OF CHEMICALS USED IN AERIAL PROJECTILES AND AMMUNITION
(Continued)

COMPOUNDS		RELATIVE CON- TENT	USES	SUMMARY
SMOKE COMPOUNDS	stannic chloride		Type 88 4 kg Practice Bomb " 95 " " " " " 96 " " " "	
	titanium tetrachloride		Type 96 4 kg Practice Bomb	
EXPLOSIVE COMPOUNDS	saltpetre	50	Type 1 30 kg Substitute Bomb	
	magnesium (30% aluminum)	50	" 2 " " " "	

CHART OF CHARGES USED IN AERIAL AMMUNITION (INCLUDING PRIMING CHARGES)

TYPES OF CHARGES	COMPONENTS	APPEAR- ANCE	TOXIC	DETONATING POINT (C°)	MELTING POINT (C°)
Yellow Powder	picric acid $C_6H_2(NO_2)_3OH$	light yellow color	yes	300	121 - 122.5
T.N.T.	trinitrotoluene $C_6H_2(NO_2)_3CH_3$	light yellow brown color	yes	at 300 it boils and dissolves	79.5 - 80.6
HEINEI Powder	trinitrophenetol $C_8H_7O_7N_3$	"	yes	295	77.5 - 78.3
MELA Powder (TN: Teteryl)	tetranitromethyl- anilin $C_6H_2(NO_2)_4NCH_3$	light yellow color	yes	190	127.5
SHOU Powder	trimethyltrini- tramin $C_3H_6N_6O_6$	white, or light gray; small, thin crystals	no	220-230	over 199
Mark II ANGI Powder					
Mark II Light Yellow Powder					
Fulminate of Mercury	fulminate of mercury $Hg(CNO)_2$	white, or light gray; hexagonal crystals			
Lead Azide	lead azide $Pb(N_3)_2$	white, or reddish			
Mark I Explosive Powder	fulminate of mer- cury 37.5% potassium chlo- rate 37.5% antimony trisul- fide 25.0%				

CHART OF CHARGES USED IN AERIAL AMMUNITION (INCLUDING PRIMING CHARGES)

TYPES OF CHARGES	HYDROSCOPICITY	SOLUBILITY	STABILITY
Yellow Powder	small	soluble in alcohol, ether, benzol, chloroform, gasoline, and sulfuric acid.	good
T.N.T.	very small	not easily soluble in water; slightly soluble in alcohol; soluble in benzol, acetone and ether.	good
HEINEI Powder	none	soluble in alcohol	good
HEIA Powder (TN: Tetryl)	very small	insoluble in water; slightly soluble in warm water; soluble in benzol, acetone, toluene.	good
SHOU Powder	none	soluble in warm nitric acid and acetone; insoluble in water and alcohol.	good
Mark II ANCA Powder			
Mark II Light Yellow Powder			
Fulminate of Mercury		insoluble in cold water and alcohol; slightly soluble in warm water; soluble in sulfuric acid, hydrochloric acid, and potassium cyanide.	
Lead Azide		insoluble in cold water; slightly soluble in alcohol; soluble in acetic acid.	
Mark I Explosive Powder			

CHART OF CHARGES USED IN AERIAL AMMUNITION (INCLUDING PRIMING CHARGES)

TYPES OF CHARGES	CHIEF USES*	CAUTION IN HANDLING	MAINTENANCE CLASSIFICATION
Yellow Powder	used in all types of bomb charges and boosters.		1
T.N.T.	used in all types of bomb charges.		1
HEINEI Powder	used as charge in DP gun shells		1
MEIA Powder (TN: Tetryl)	Type 94 flexible Machine Cannon HE charges	percussion friction	1
SHOU Powder	20 mm Machine Cannon HE shells; 20 mm DP HE shell burster charge	percussion friction	1
Mark II ANGA Powder		waterproof	1
Mark II Light Yellow Powder		waterproof	1
Fulminate of Mercury	ingredient for explosive powder; priming charge for detonating mechanisms.	percussion friction	1
Lead Azide	used as priming charge for detonating mechanisms.	percussion friction	1
Mark I Explosive Powder	used in priming caps of all types of shells.	percussion friction	1

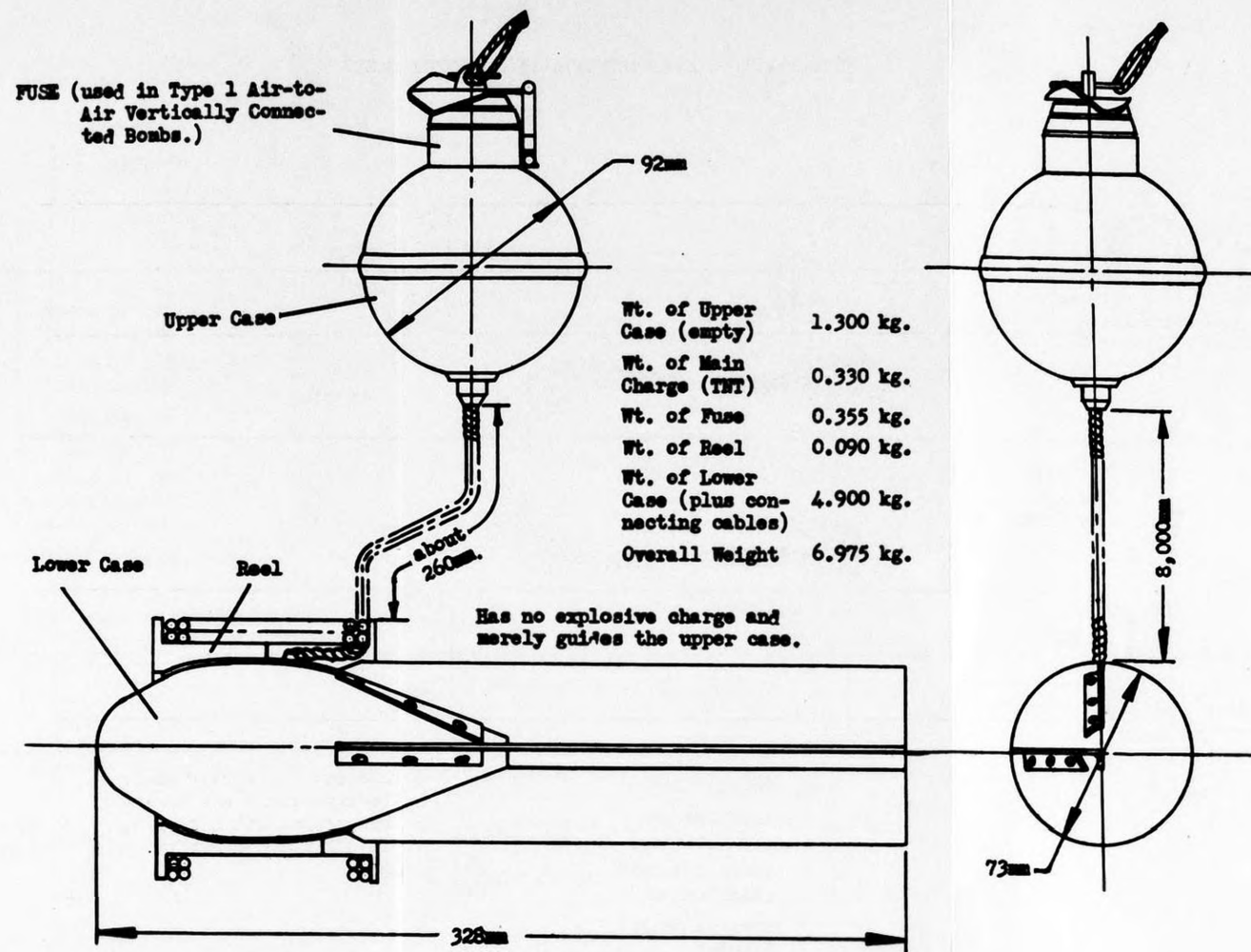
CHART OF CHARGES USED IN AERIAL AMMUNITION (INCLUDING PRIMING CHARGES)

TYPES OF CHARGES	COMPONENTS	CHIEF USES	CAUTION IN HANDLING	MAINTEN- ANCE CLASSI- FICATION
Mark II Explosive Powder	fulminate of mercury 16.0% potassium chlorate 41.7% antimony trisulfide 41.7%	Used as primer in (TN: bomb) fuzes	percussion friction	1
Mark III Explosive Powder	fulminate of mercury 40.0% potassium chlorate 28.0% antimony trisulfide 15.0% potassium and powdered glass 20.0%	Used as priming cap for pistol cartridge	percussion friction	1

CHART OF BLACK POWDERS USED IN AERIAL AMMUNITION

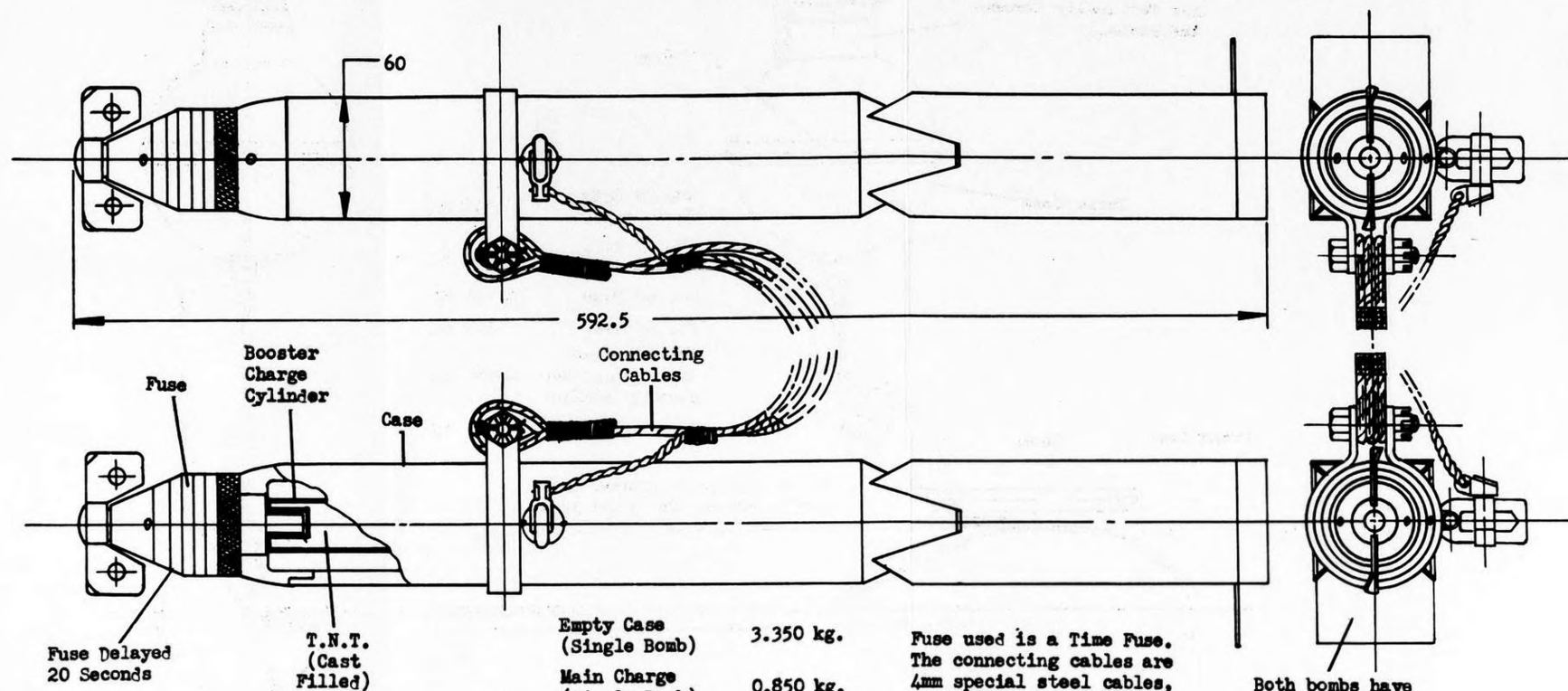
TYPES OF CHARGES		Small Grain Powder	Large Grain Powder	Mark III Powder Train Charge
COM- PON- ENTS (%)	Saltpeter	75	(70)	75
	Sulfur	10	14	10
	Charcoal	15	16	14.5
	Resin			0.5
FORM		amorphous powder	powdered	powdered
PRINCIPAL USES		powder for detonating mechanisms in substitute bombs	substitute bomb charges	used in fuze of Type 89 AA long-pointed shell
MAINTENANCE CLASSIFICATION		1	1	1
NOTE: "(70)" after "Large Grain Powder" indicates sodium nitrate (NaNO_3).				

TYPE 2 AIR TO AIR VERTICALLY CONNECTED BOMB

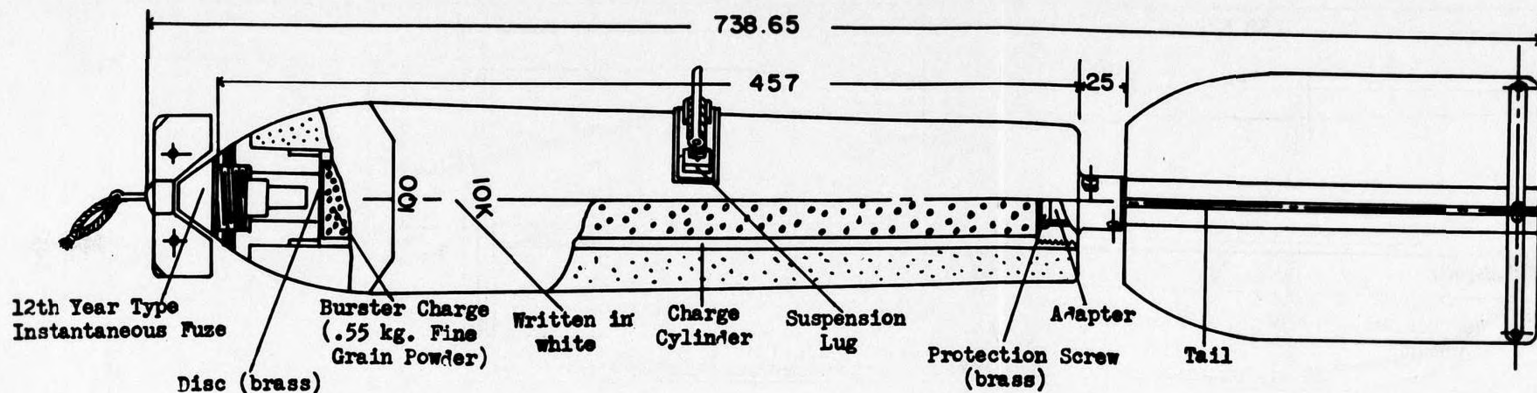


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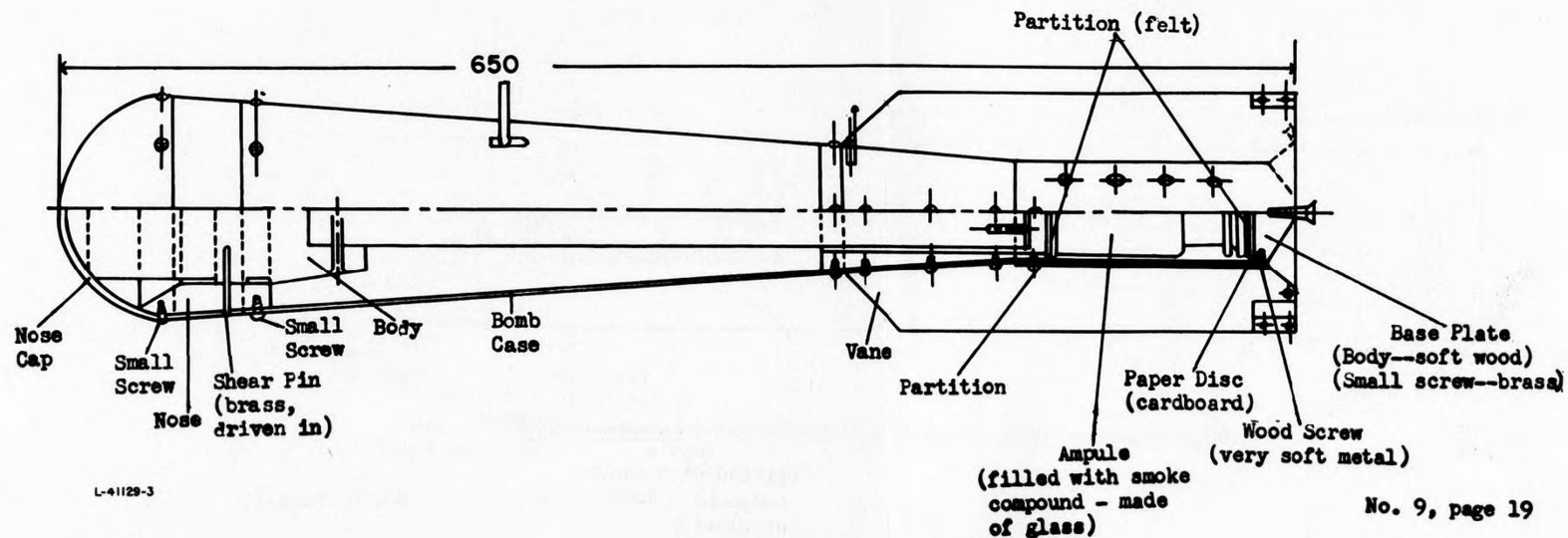
TYPE 2 AIR TO AIR HORIZONTALLY CONNECTED BOMBS



TYPE 94 10 Kg. SUBSTITUTE BOMB

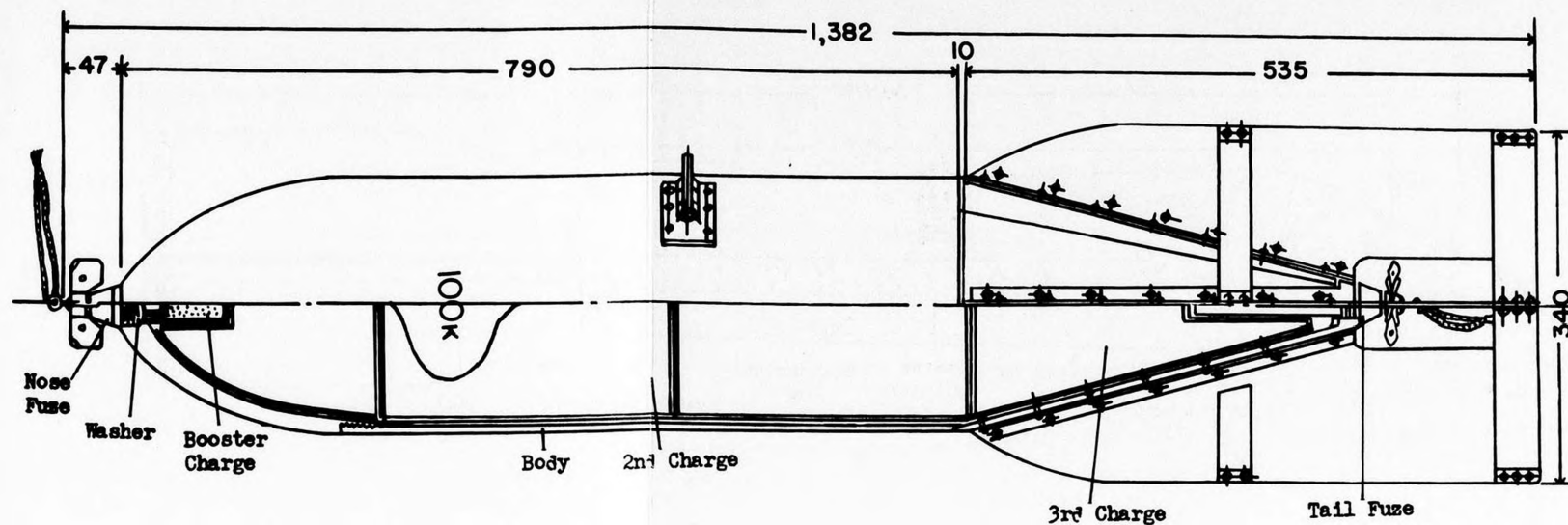


TYPE 88 4 Kg. PRACTICE BOMB

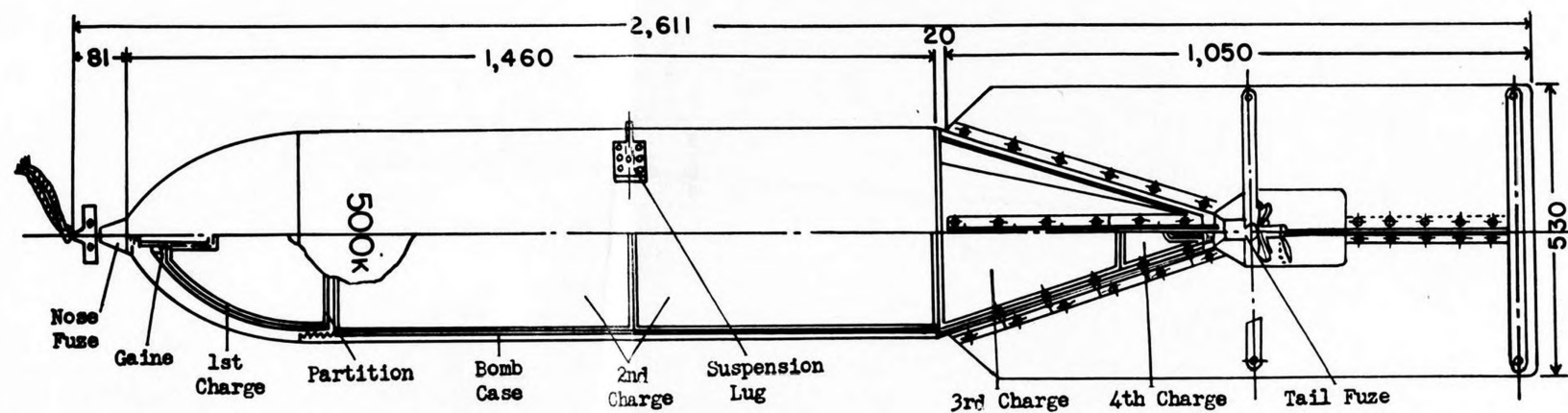


L-41129-3

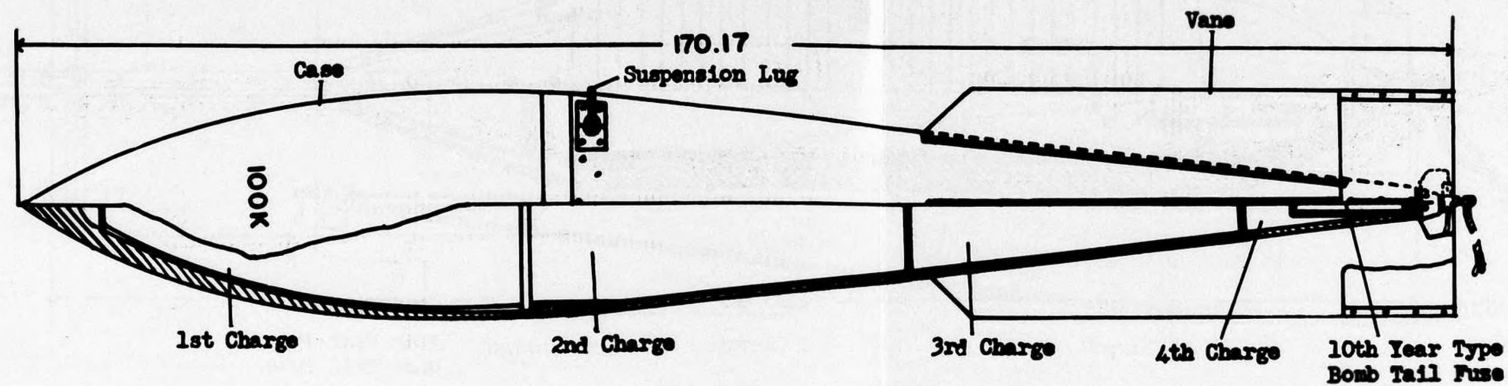
TYPE 94 100 Kg. BOMB



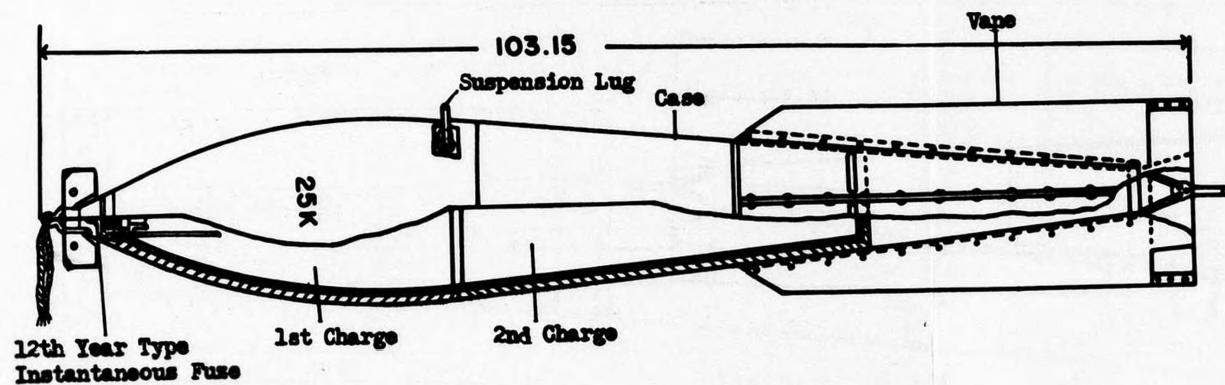
TYPE 92 500 Kg. BOMB



12TH YEAR TYPE 100 Kg. BOMB

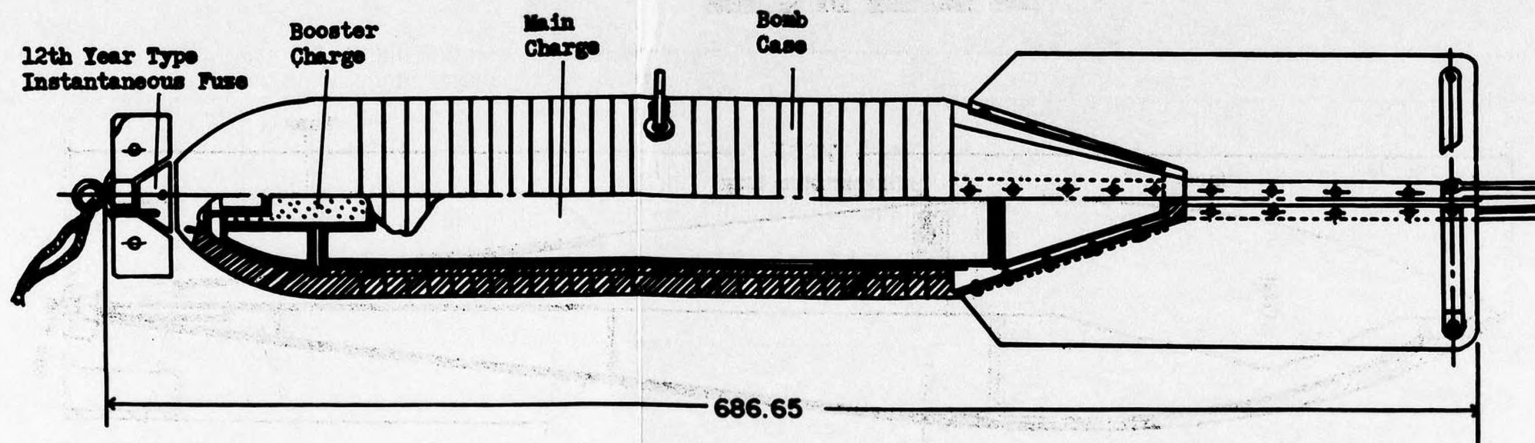


12TH YEAR TYPE 25 Kg. BOMB

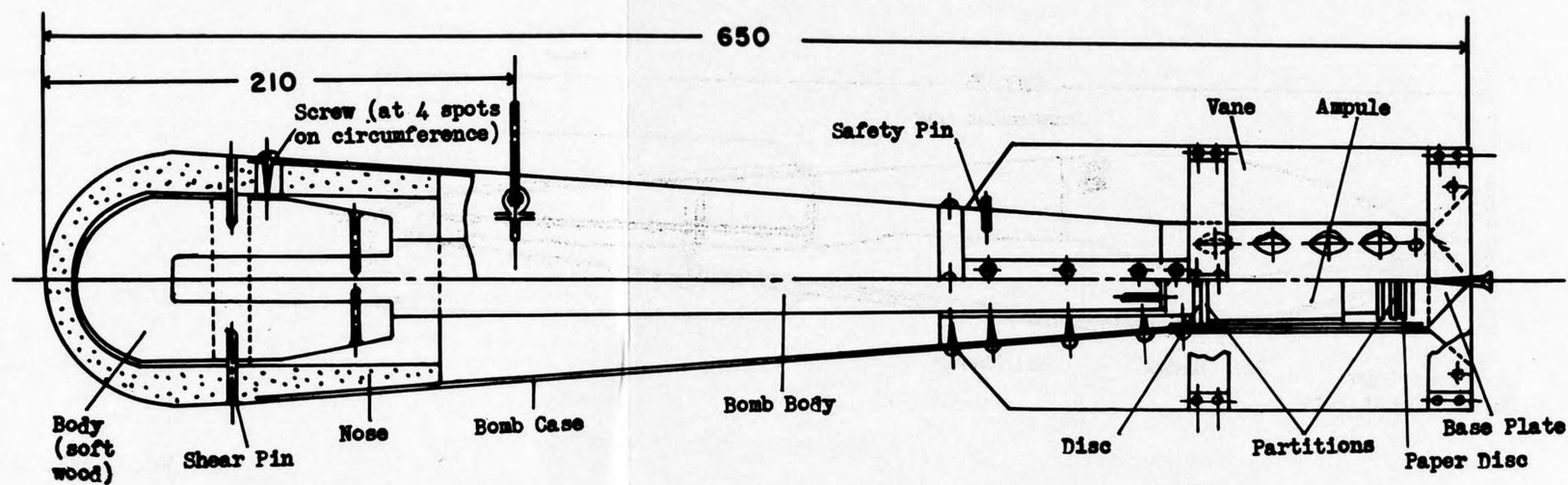


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TYPE 92 15 Kg. BOMB

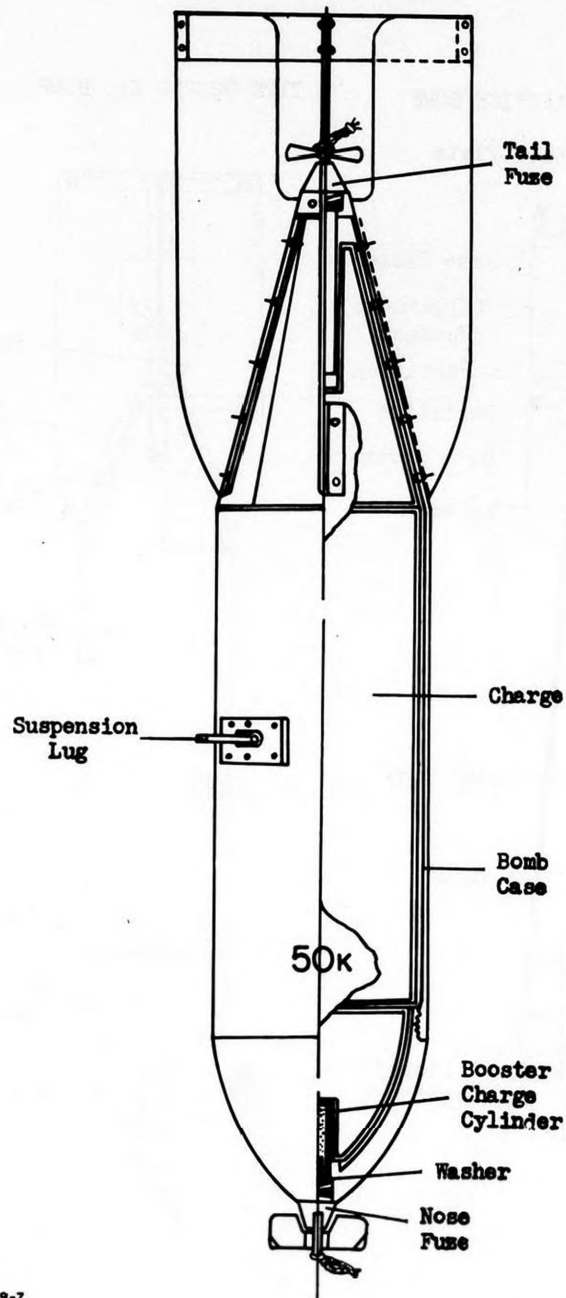


TYPE 95 4 Kg. PRACTICE BOMB



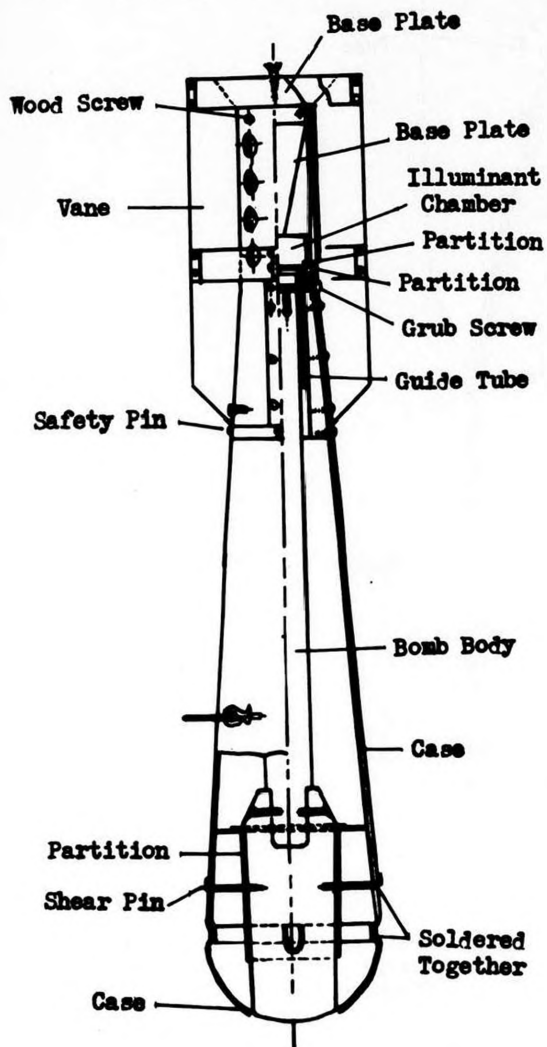
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TYPE 94 50 Kg. BOMB

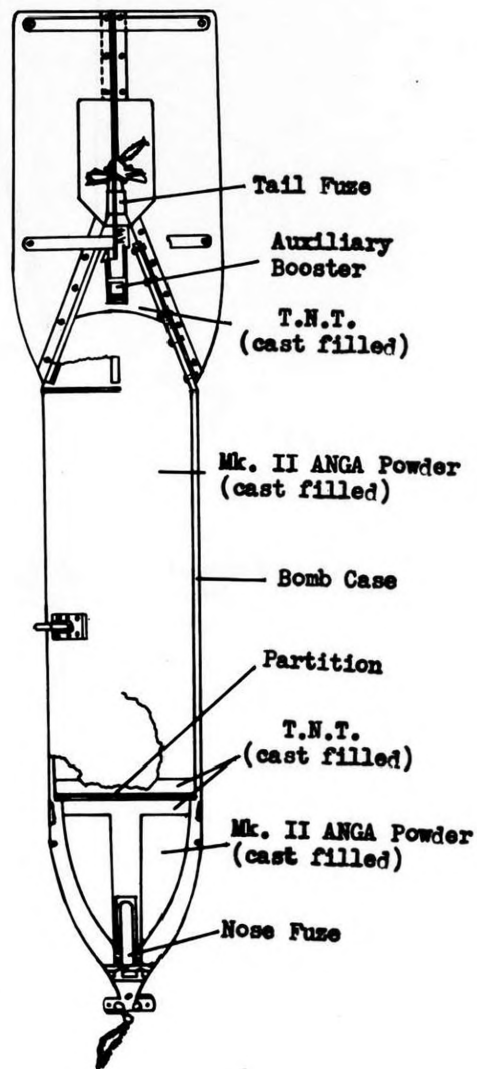


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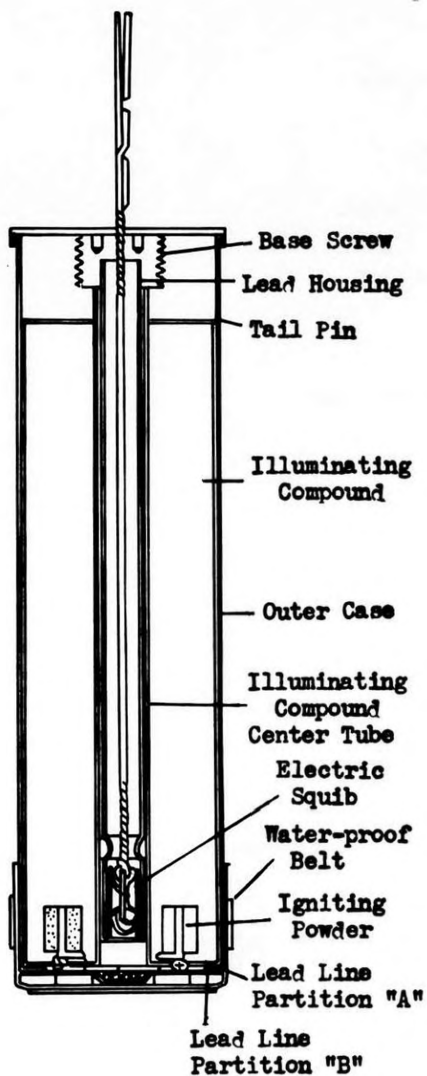
TYPE 96 4 Kg. NIGHT PRACTICE BOMB



TYPE 92 250 Kg. BOMB

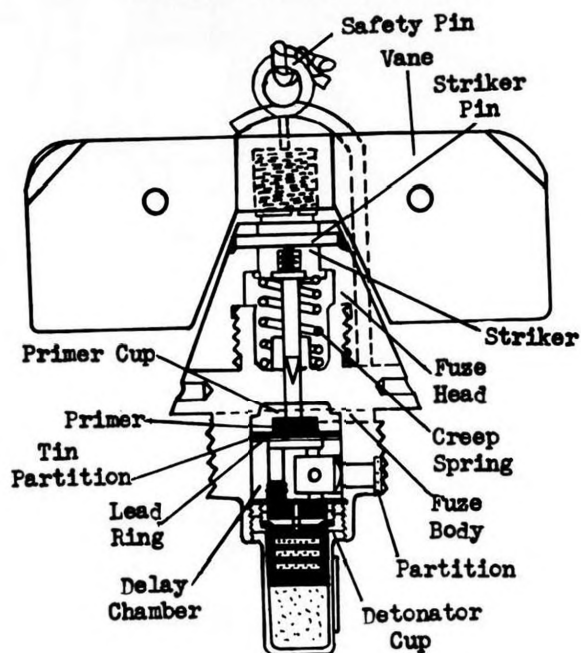


TYPE 90 WING-RELEASED FLARE



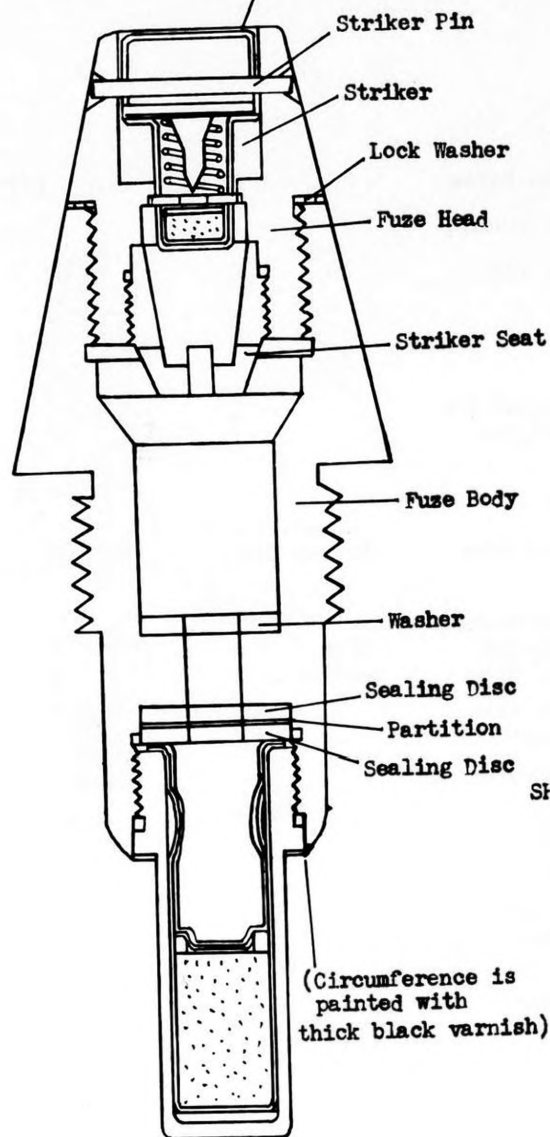
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TYPE 93 DOUBLE ACTION FUZE

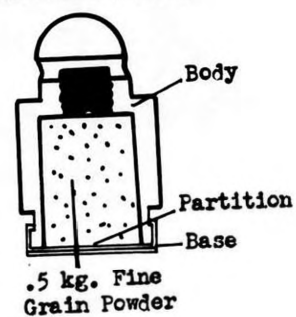


TYPE 93 DOUBLE ACTION FUZE

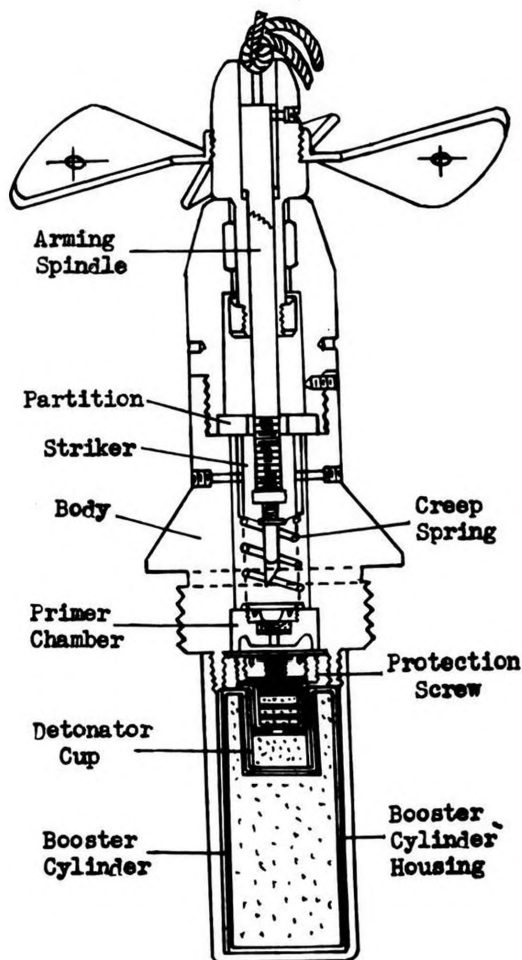
(Upper surface is painted with black varnish and tightly sealed)
(TN: Drawn at large scale to show short delay device)



SHORT DELAY DEVICE

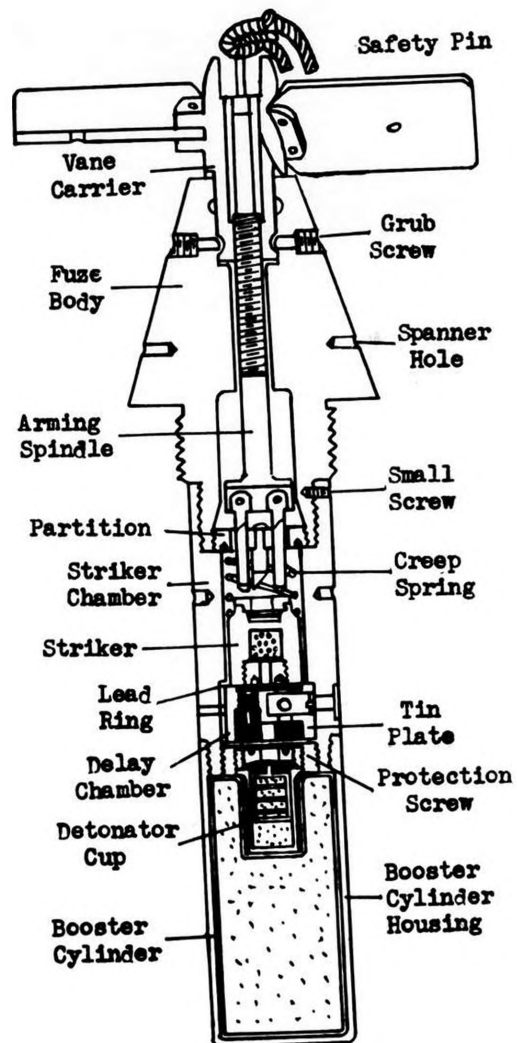


TYPE 92 LARGE BOMB TAIL FUZE



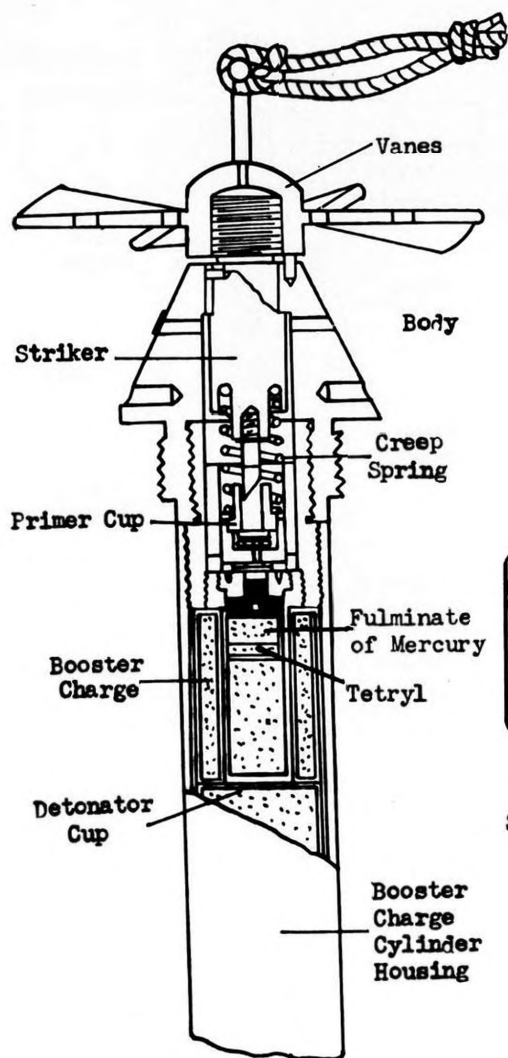
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TYPE 92 LARGE BOMB NOSE FUZE

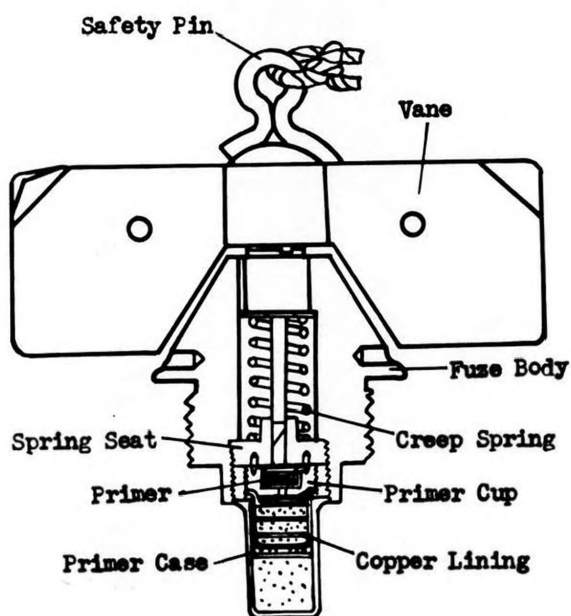


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12TH YEAR TYPE TAIL FUZE



12TH YEAR TYPE INSTANTANEOUS FUZE



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	G-2, H&C, APO 956.....	2
	G-2, IX Corps, APO 309.....	5
	G-2, XXIV Corps, APO 235.....	5
	G-2, 4th Armored Group, APO 957.....	2
	G-2, 19th Armored Group, APO 956.....	2
	G-2, Army Garrison Force, APO 86.....	2
	CG, Army Garrison Force, APO 244.....	2
	CG, Army Garrison Force, APO 248.....	2
	G-2, APO 7.....	2
	G-2, APO 27.....	2
	G-2, APO 77.....	2
	G-2, APO 81.....	2
	G-2, APO 96.....	2
	G-2, APO 98.....	2
	CO, 390th RCT, APO 98, Unit 1.....	2
	G-2, GHQ, SWPA, APO 500.....	3
	Combined Operational Intell. Ctr., GHQ, SWPA, APO 500...	3
	D.M.I., adv. Allied Lang Hqs., Brisbane.....	3
	D.M.I., General Headquarters, New Delhi, India.....	2
	D. of I., SEAC, APO 432.....	2
	BGS (Intell.) adv. Hqs. Eleventh Army Group, SEAC,	
	APO 432.....	2
	G-2, USAF, Burma-India, New Delhi, India.....	2
	CG, XX Bomber Command, Attn: A-2, APO 493.....	5
NAVY	-Cominch.....	3
	CNO.....	14
	CNO (DMI, M.I.-2, War Office, Whitehall, London).....	2
	CNO (DMI, admiralty, Whitehall, London).....	2
	CNO (COIS, Eastern Fleet).....	1
	BuOrd.....	3
	NRL, Bellevue.....	1
	Advance Naval Intelligence School, N.Y.C.....	1
	CO, SEVENTH Fleet Intell. Ctr.....	10
	Dir. of Intell., Hqs. AAF, SWPA, APO 923.....	3
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