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USSR

BOMBS AND FUZES

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USSR
BOMBS AND FUZES

[redacted]

12 OCTOBER 1954

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

[redacted]

12 October 1954

ORDNANCE PAMPHLET 2009

USSR BOMBS AND FUZES

1. Ordnance Pamphlet 2009 provides descriptive information for the identification of Soviet Bombs and Fuzes representative of those used by the Soviet Air Force during the 1939 to 1945 war.

2. This publication is primarily for the use of qualified Explosive Ordnance Disposal personnel, and by commands and personnel having duties in connection with these operations.

3. Additional material describing later types of Soviet bombs and fuzes, and recommended rendering safe procedures for all known Soviet bombs and fuzes will be issued in the form of EOD Bulletins as the information becomes available.

4. This publication does not supersede any existing publication.

5. This publication is CONFIDENTIAL and shall be safeguarded in accordance with the security provisions of U. S. Navy Regulations and the provisions of applicable Federal Statutes and Executive Orders summarized in the Department of Defense Industrial Security Manual for Safeguarding Classified Information. As stated in Article 0906.2 of OPNAVINST 5510.1A, dated 2 October 1954, it is forbidden to make extracts from or to copy this classified document without authorization.

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Rear Admiral, U. S. Navy
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ILLUSTRATIONS (Continued)

BOMBS and FUZES

INTRODUCTION

The bombs and fuzes described herein are representative of those employed by the Soviet Air Force during the war period of 1939 to 1945. While knowledge of Soviet bombs is limited, general appearances indicate that they were the least developed of their armament equipment. Up to the end of 1942, the Soviet bombs were pre-war stock which had been designed and manufactured with little thought for ballistic qualities. Workmanship was essentially crude, due to their dependence on unskilled labor and a chronic shortage of supervisory personnel. With these conditions existing, little effort was ever expended on improving designs that had proved satisfactory. When new types of bombs were required, they were hastily improvised, frequently, and primitive in design.

However, by the end of 1943, definite improvements had become evident to the point where technicians of the German Air Ministry expressed the opinion that Soviet production of drawn tubes for bombs was equal to, or better than, American and German equivalents. While there must have been some parallel improvement in bomb fuzes during this period, it apparently did not keep pace with the development of bomb case manufacturing technology.

Since very few Soviet bombs and fuzes are available for examination, the material for this publication has been drawn primarily from documentary evidence, which is often inconsistent. Consequently, discrepancies exist, and will be corrected upon receipt of supplemental information. Whenever the actual specimen has been available to this activity for examination, it is so noted.

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SOVIET BOMB FUZES

There is little or no information available on Soviet fuze development since 1943. While such Soviet fuzes as are known are primarily of the mechanical type, it is also known that the Soviets have employed the German electrical fuzes in captured German bombs, with the German electrical system in the plane for charging the fuzes before the bombs are dropped. In other instances, German bombs were modified to receive the Soviet mechanical fuzes.

The Soviets are known to have an electrical fuze about which no details are known, and the use of American type VT fuzes seems quite possible.

The Soviet bomb fuzes, known to date, are either nose or tail types, with right hand threads screwing into fuze pockets in the bomb. The booster and detonator are integral with the fuze. Most of the fuzes are equipped with arming vanes, and at least one other safety feature. So far, no fuzes containing anti-disturbance or extra long delay features have been reported.

Soviet fuzes may be designed to initiate a high order detonation, or merely to ignite a burster charge. In addition to the other markings as described below, those fuzes equipped with high explosive detonators are marked with a violet ring on the fuze body, or violet arming vanes. The fuzes are secured in the bomb body by means of a thin metal washer, with tabs that are bent into appropriate slots in the fuze and the bomb body. When bomb fuzes are used in rockets, the fuzes are secured by means of a grub screw.

An unusual feature of Soviet bomb fuzing practice, is the ability to use the same fuze as either a nose or tail fuze in at least two cases. The fuze is manufactured as a nose fuze, but may be converted for tail use, in the field, by hand-bending the arming vanes to agree with an indicator line marked in the fuze body.

For identification, the fuzes are normally stenciled or stamped with a series of letters and numbers, which indicate the designation, date of manufacture, and factory number. The designation also indicates whether the fuze is to be used for detonation or ignition. In addition to the violet markings, fuzes for detonation purposes will have the letters A, a, or sk/d appended to the designation. Example; AM-A; TM-4a; AGM-lsk/d.

Fuzes for ignition purposes are designated by appending B, b, or b/v to the marking. Example: AM-B; TM-4b; AGM-1b/v.

The fuze designation is also stenciled on the bomb body.

FUZE PARTS REFERENCE LIST

The following parts list refers to the bomb fuze drawings appearing in this section. The numbers and names of the various parts are as follows:

No.	Part Name	No.	Part Name
1	Arming vane	27	Primer
2	Arming vane lock nut	28	Detonator
3	Arming vane cup	29	Relay charge
4	Arming vane cup spring	30	Booster
5	Arming pin	31	Primer initiator capsule
6	Arming vane shaft	32	Fuze body
7	Safety pin	33	Fuze body base
8	Safety block	34	Delay setting screw
9	Locking ball	35	Air cylinder
10	Striker spring	36	Membrane firing pin retainer
11	Striker	37	Detent pin
12	Firing pin	38	Timing pointer
13	Gas vent	39	Timing disc
14	Flash channel	40	Main spring
15	Powder train delay channel	41	Reduction gear
16	Powder train delay	42	Lever
17	Primer carrier	43	Pivot
18	Felt washer	44	Relay channel
19	Limit pin	45	Plunger
20	Sealing screw	46	Piston
21	Upper setting ring	47	Closing plate
22	Lower setting ring	48	Conical rod
23	Asbestos sealing gasket	49	Set screw
24	Cardboard washer	50	Nose cap
25	Anti-creep spring	51	Clamping ring
26	Parchment sealing gasket	52	Ignition charge
		53	Impact disc

[redacted]

COMPARATIVE ALPHABETS

English	Russian		English	Russian	
A	А	а	R	Р	р
B	Б	б	S	С	с
V	В	в	T	Т	т
G	Г	г	U	У	у
D	Д	д	F	Ф	ф
E	Е	е	KH	Х	х
ZH	Ж	ж	TS	Ц	ц
Z	З	з	CH	Ч	ч
I	И	и	SH	Ш	ш
Y	Й	й	SHCH	Щ	щ
K	К	к	Y (as in will)	Ы	ы
L	Л	л	Y (as in yes)	Ъ	ъ
M	М	м	E (as in Emma)	Э	э
N	Н	н	YU	Ю	ю
O	О	о	YA	Я	я
P	П	п			

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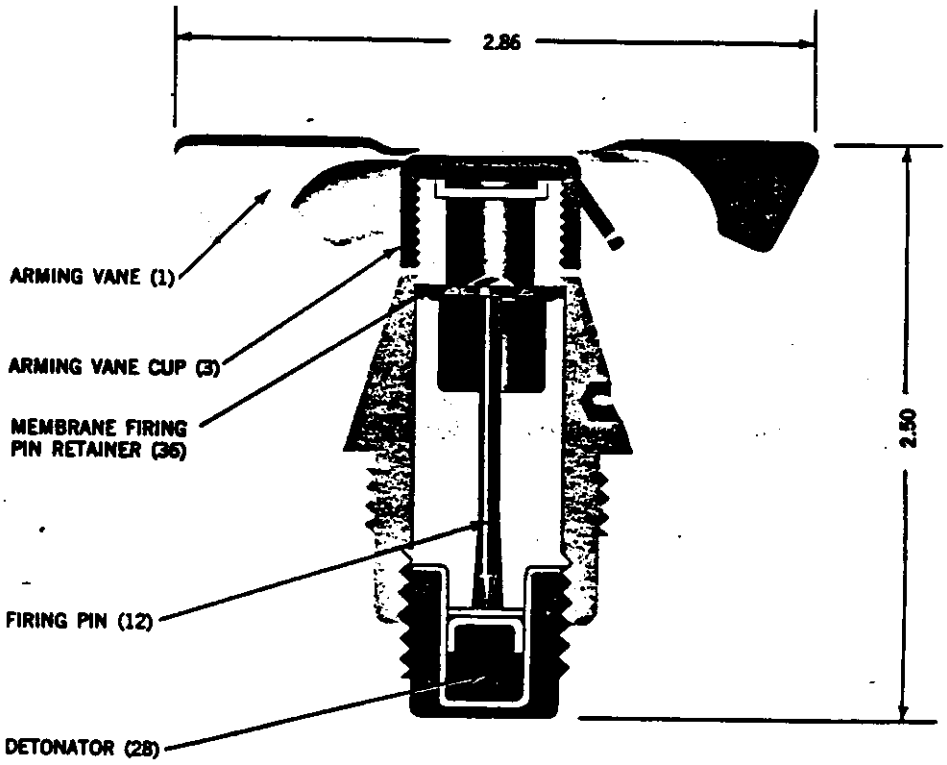

FIGURE 1—AM-A NOSE FUZE.

AM-A, AM-A b/v, AM-B, and AM-B b/v
АМ–А, АМ–А б/в, АМ–Б, and АМ–Б б/в
NOSE FUZE

MAX. DIA. (in.)	1.22
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	2.50
FUNCTIONING	Instantaneous Impact
ARMING	Arming Vanes
BOMBS IN WHICH USED	Incendiary and Signal Bombs; also RS-82, and RS-132 Rockets. The b/v modifications are used in small bombs in clusters.
DESCRIPTION	The AM-A and AM-B fuzes consist essentially of arming vanes attached to a vane cup, an aluminum foil disc that covers the open end of the fuze to prevent firing by air pressure when armed, a long firing pin riveted to a thin metal or plastic disc, and the firing train. The upper shoulder of the plastic striker guide supports the disc, while the lower end steadies the firing pin. The AM-A has a detonator while the AM-B carries a small primer. The AM-A b/v and the AM-B b/v differ in that they have a removable shipping cover in place of vanes and vane cap.
OPERATION	Upon release, the arming vanes (1) rotate, threading the vane cup (3) up and off the fuze body to arm the fuze. On impact the target material enters the open end of the tube rupturing the membrane firing pin retainer (36) and forcing the firing pin (12) into the detonator or primer. Crushing of the fuze body will produce the same effect.

REMARKS — As the b/v modifications of this fuze have no vane cap, they are armed by removal of the shipping cover, when loaded into the cluster container in which they are dropped. Their function on impact is the same.

Information is based on a recovered AM-A fuze. Specimens of the AM-A have been recovered in Korea.

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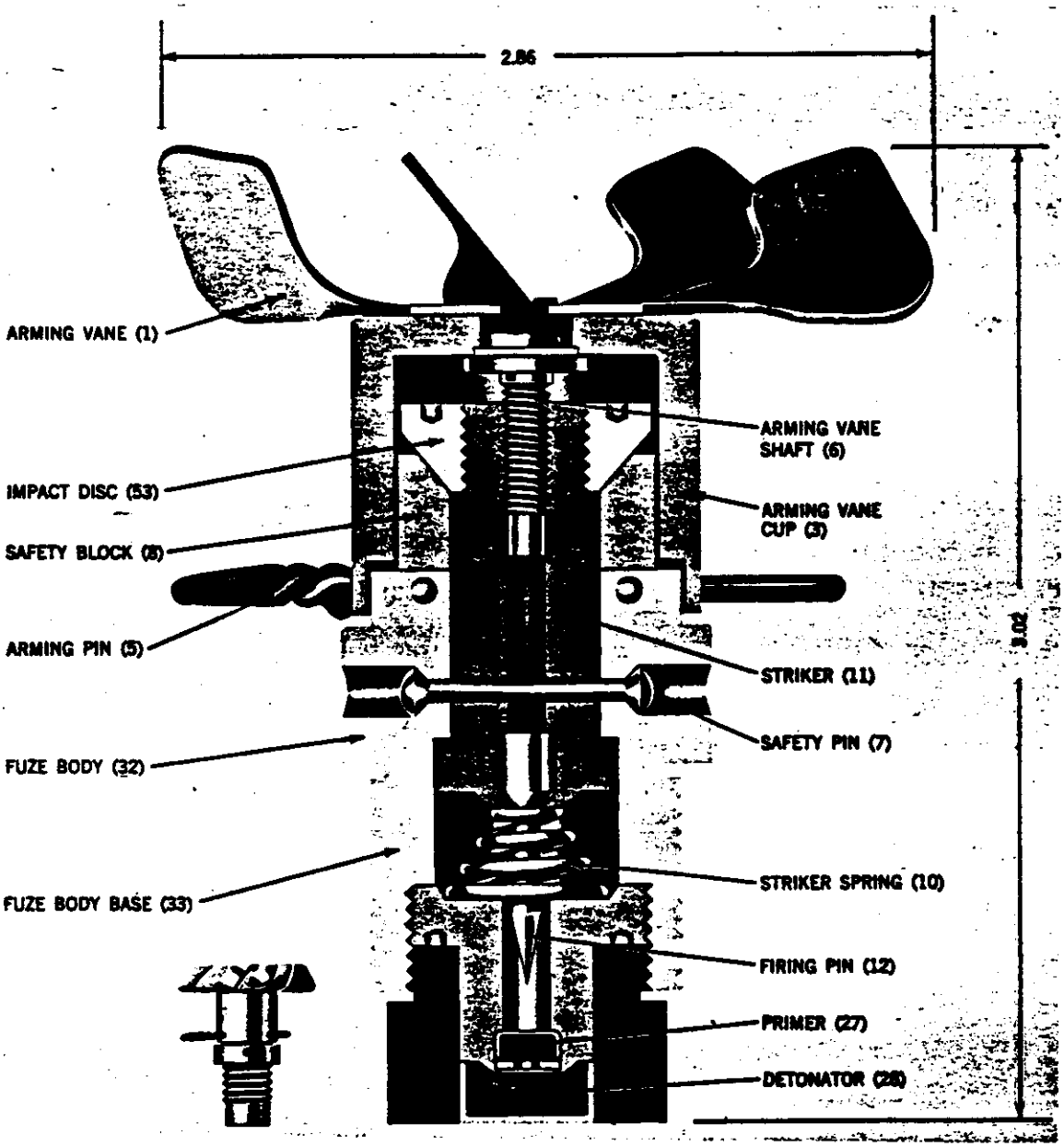


FIGURE 2—AGM-1 NOSE FUZE.

AGM-1 NOSE FUZE
АГМ—1

MAX. DIA. (in.)	1.25
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	3.02
FUNCTIONING	Instantaneous Impact
ARMING	Arming Vane
BOMBS IN WHICH USED	AO, AOKh, and KhAB
DESCRIPTION	The fuze is constructed mainly of brass and aluminum. The fuze is assembled into three major groups: the arming vane and cup assembly, the main body, and the detonator assembly. The safety devices of the fuze are as follows: an arming vane cup, a safety spring, a lead safety pin, and four safety blocks.
OPERATION	Upon release, the arming pin (5) is pulled out, allowing the arming vane (1), arming vane shaft (6), and the arming vane cup (3) to rotate and fall away exposing the impact disc (53). When the arming vane cup is removed, the safety blocks (8) also fall away, freeing the striker (11) which is kept from the detonator by the safety spring (10) and the lead shear pin (7). Upon impact, the striker shears the lead safety pin (7), and compresses the striker spring (10) allowing the firing pin (12) to strike the primer (27). The primer (27) sets off the detonator (28).

REMARKS — The above information has been verified by comparing with an old fuze marked N4 dated 1938, which seems to correspond to the AGM-1.

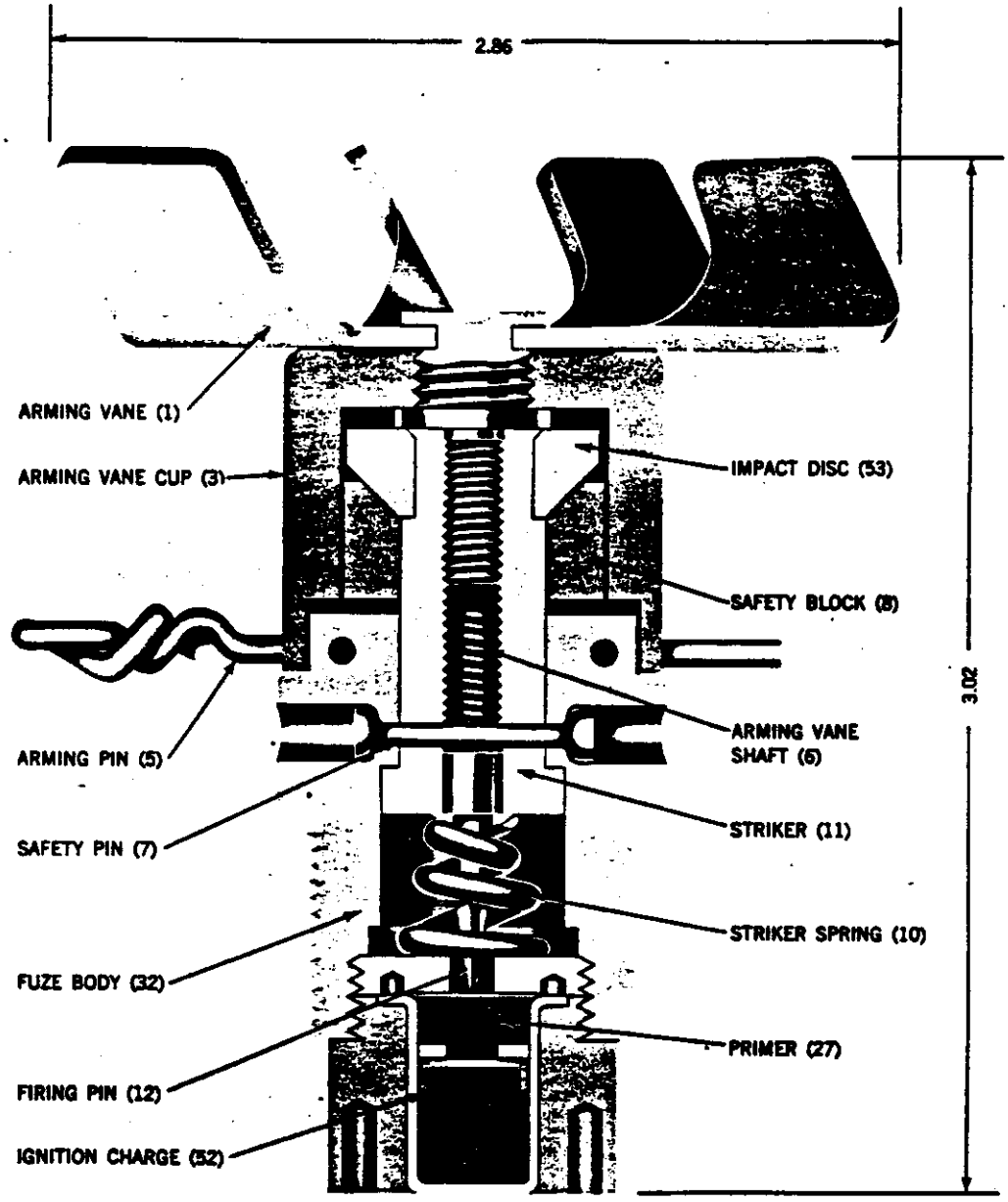


FIGURE 3—AGM–3 NOSE FUZE.

AGM-3 NOSE FUZE
АГМ—3

MAX. DIA. (in.)	1.25
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	3.02
FUNCTIONING	Instantaneous Impact
ARMING	Arming Vanes
BOMBS IN WHICH USED	ZAB, KRAB bombs
DESCRIPTION	The fuze consists mainly of brass and aluminum. The fuze is assembled into three major groups: the arming vane and cup asembly, the main body, and the detonator assembly. The safety devices of the fuze are as follows: an arming vane cup, a safety spring, a lead safety pin, and four safety blocks.
OPERATION	Upon release, the arming pin (5) is pulled out, allowing the arming vane (1), arming vane shaft (6), and arming vane cup (3) to unscrew and fall away exposing the impact disc (53). When the arming vane cup is removed, the safety blocks (8) also fall away, freeing the striker (11) which is kept from the detonator by the safety spring (10) and the lead safety pin (7). Upon impact, the striker shears the lead safety pin (7), and compresses the striker spring (10) allowing the firing pin (12) to strike the primer (27) which initiates the ignition charge (52).

REMARKS — The above information has been verified by comparing with an old fuze marked ЛN143 dated 1932, which appears to correspond to the AGM-3.

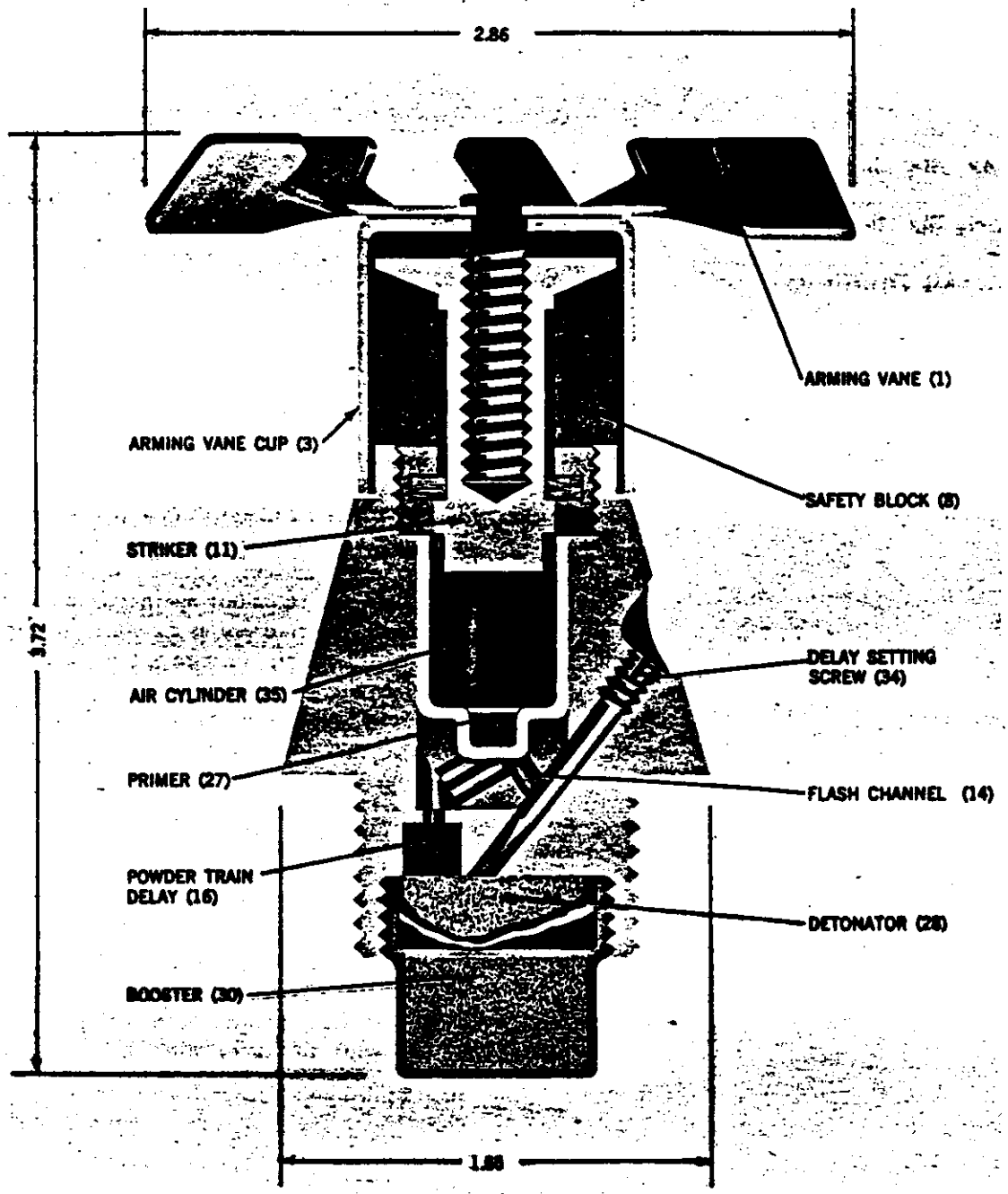


FIGURE 4—AV-4 NOSE FUZE.

AV-4 NOSE FUZE
AB—4

MAX. DIA. (in.)	1.65
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	3.72
FUNCTIONING	Instantaneous impact and 7.0 sec. delay
ARMING	Arming Vanes
BOMBS IN WHICH USED	AO and KhAB
DESCRIPTION	The fuze consists of four main groups: arming mechanism, striker assembly, detonator-booster, and/or, delay mechanism, and fuze body assembly. The fuze functions by the action of heat generated by compressing a volume of air on impact. This fuze does not have a firing pin.
OPERATION	Upon release, the arming vane (1) rotates and unscrews the arming vane cup (3), allowing the safety blocks (8) to fall away. The fuze is now armed. Upon impact, the striker (11) is driven into the air cylinder (35) thereby compressing the air entrapped in the cylinder. The resultant heat of compression ignites the primer (27). The ignition of the primer then has two possible paths to follow, depending on the position of the delay setting screw (34). If set for instantaneous, the ignition flame passes directly through the flash channel (14) to the detonator (28). If set for delay, the ignition flame passes through three small holes to the powder train delay (16). After seven seconds, the detonator is detonated which in turn detonates the booster (30).

REMARKS — The dimensions were estimated by correlating information in different reports. The fuze is set for instantaneous or 7.0 second delay by adjusting a screw in the side of the fuze body.

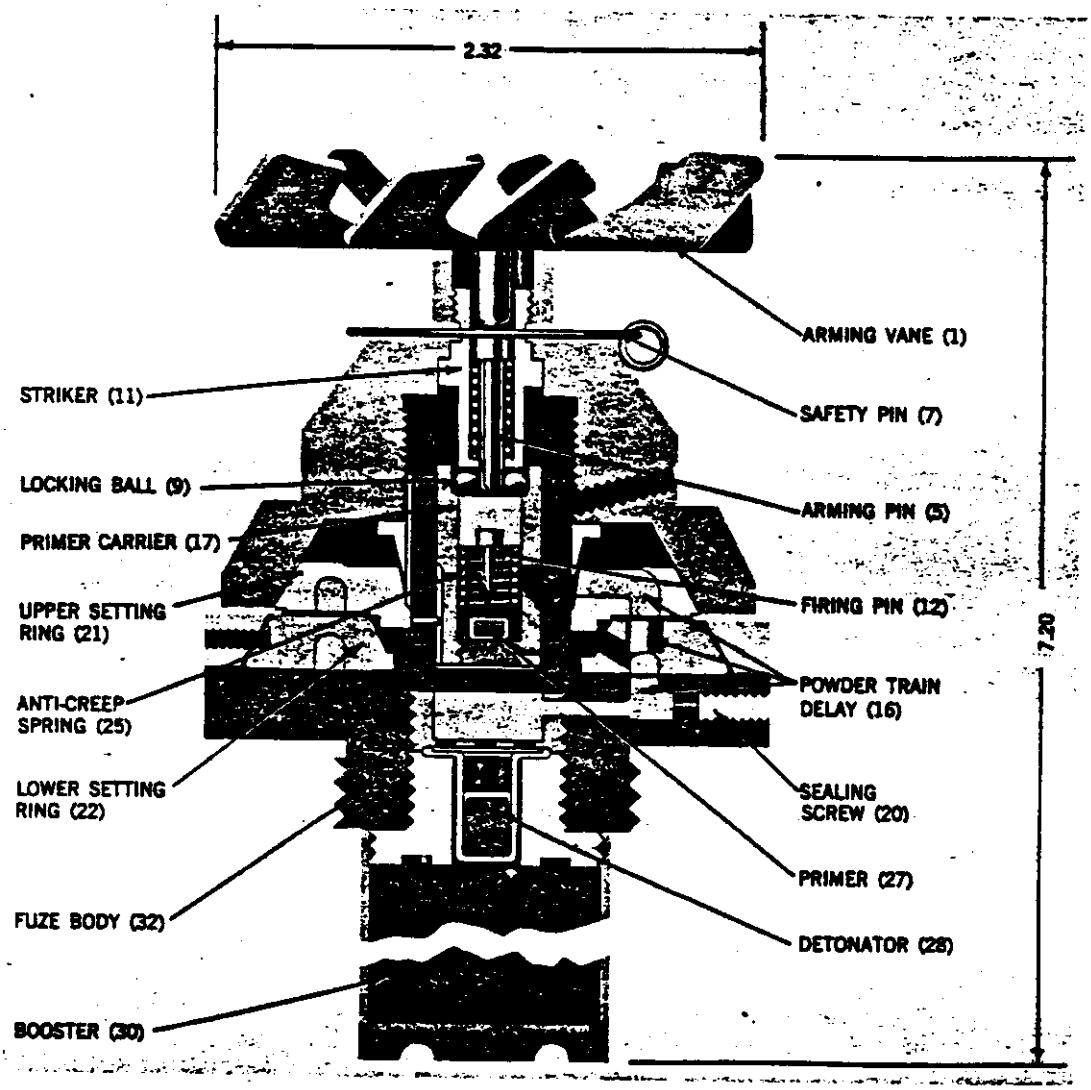


FIGURE 5—AGP NOSE FUZE.

AGP NOSE FUZE
АГП

MAX. DIA. (in.)	2.32
VANE DIA. (in.)	2.32
OVERALL LENGTH (in.)	7.20
FUNCTIONING	.01-.05, .05-.15, 22, and 35 second powder train delay, impact firing.
ARMING	Arming Vanes
BOMBS IN WHICH USED	FAB
DESCRIPTION	The AGP is a vane armed, powder train delay, impact fired, nose fuze.
OPERATION	The safety pin (7) is removed when the bomb is loaded into the aircraft. The vanes are secured from rotating by a fork shaped arming pin which is inserted between the fins of the arming vane (1). The striker (11) extends beyond the nose of this fuze and is threaded externally to receive the arming vane assembly. Upon release of the bomb, the arming vane is free to rotate and falls away. The arming pin (5), which is under spring tension, is then forced out. The locking balls (9), which hold the striker and primer carrier (17) in place, fall inward releasing the striker. Upon impact, the striker is driven inward and at the same time, the inertia-driven primer is forced outward whereupon the firing pin (12) strikes the primer (27). The ignition flame from the primer ignites the powder train delay in the upper setting ring (21) and the lower setting ring (22) in turn. After the preset time has elapsed, the initiating flame passes on to the detonator (28) and the booster (30).

REMARKS — The dimensions were estimated by correlating information in various reports. The manner of setting is by adjusting the setting ring to the desired increment on the time scale.

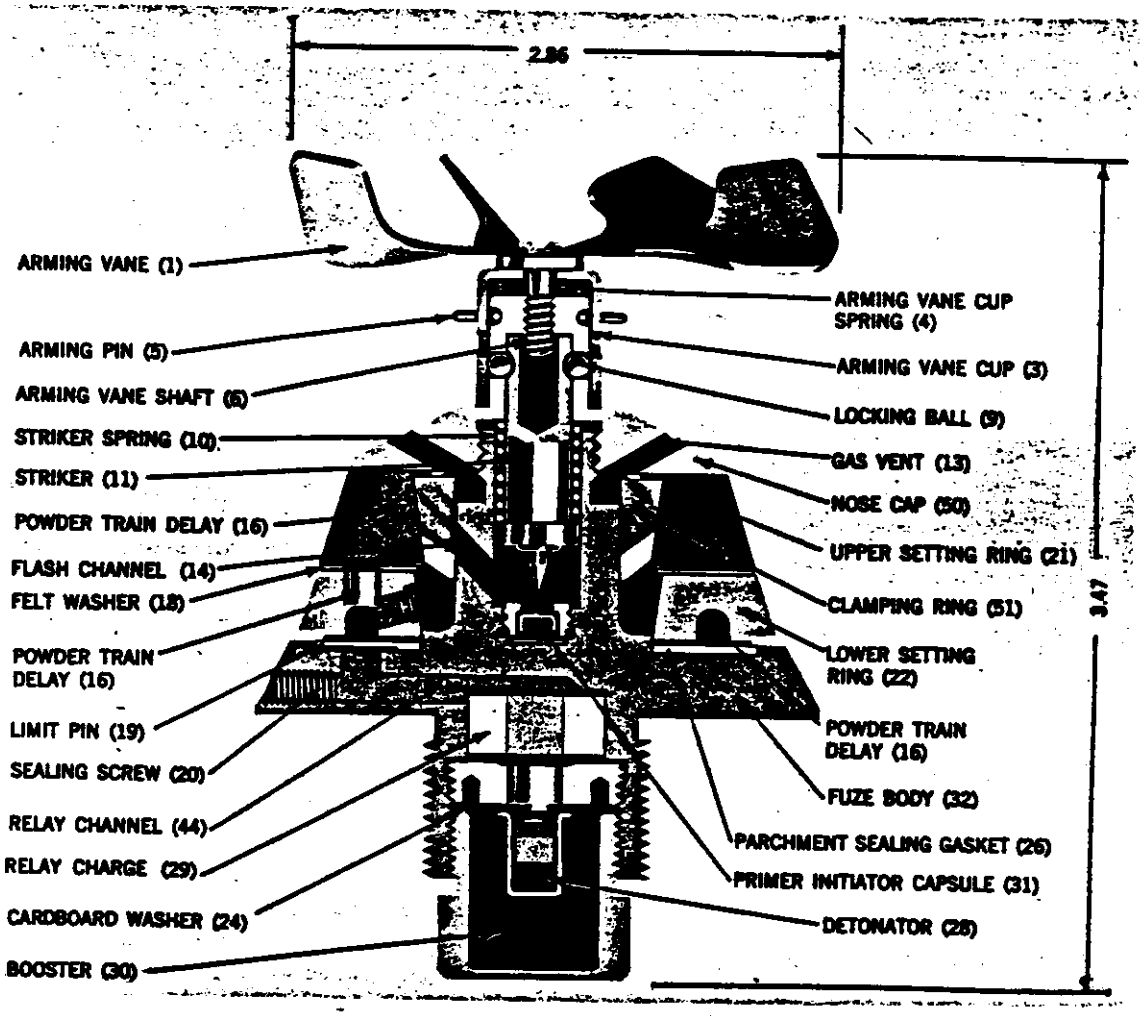
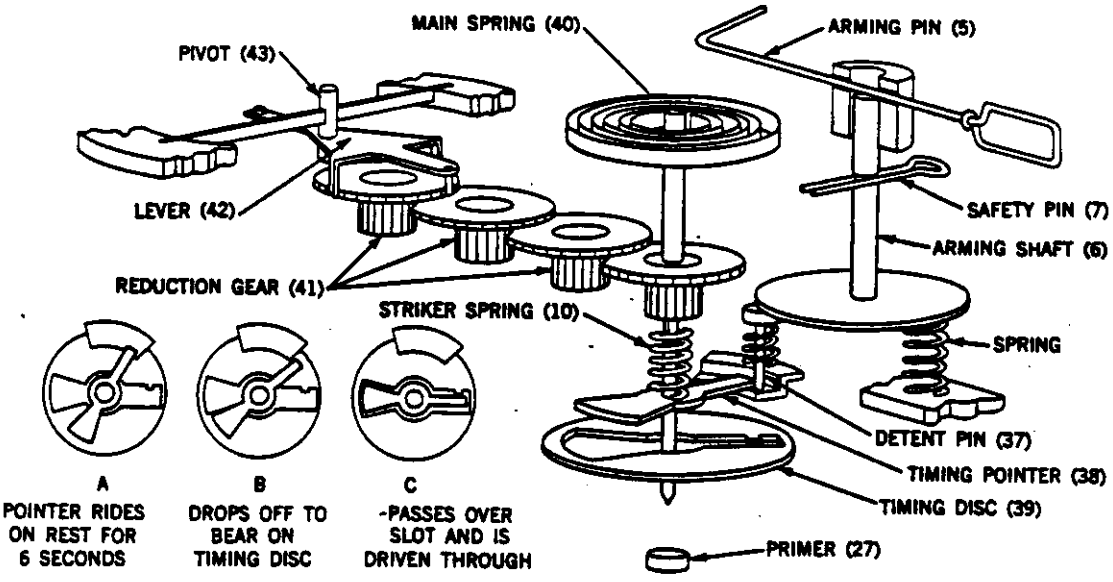


FIGURE 6—AGDT–A NOSE TIME FUZE.

AGDT-A and AGDT-B NOSE TIME FUZES
АГДТ—А and АГДТ—Б

MAX. DIA. (in.)	2.62
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	3.47
FUNCTIONING	Aerial burst, adjustable time delay fuze
ARMING	Arming Vanes
BOMBS IN WHICH USED	AGDT-A: AO, FOTAB, RS-82, and RS-132 AGDT-B: SAB, and KhAB
DESCRIPTION	The AGDT-A is an aerial burst nose fuze with a powder train delay. The fuze starts to function immediately upon removal of the arming vane and cup assembly. The AGDT-B is the same as the AGDT-A except that the detonator is replaced by an ignition charge required to initiate flare and gas bombs.
OPERATION	The striker (11) is held in position under spring action (10) by two locking balls (9). The locking balls are held in place by the arming vane cup (3). Upon release, the arming vane (1), arming vane shaft (6), and the arming vane cup (3) are rotated and fall away due to action of the arming vane cup spring (4). This allows the locking balls to fall out freeing the striker (11), which then, being under spring action, flies inward, striking the primer initiator capsule (31). The ignition flame from the primer travels through the flash channel (14) to the powder train delay (16) in the upper setting ring (21), and then to the powder train (16) in the lower setting ring (22). After burning for the pre-set time, the flame passes through the relay channel (44) to either the detonator (28) and booster (30), or to the ignition charge in case of the AGDT-B.

REMARKS — The dimensions were estimated by correlating information in various reports.



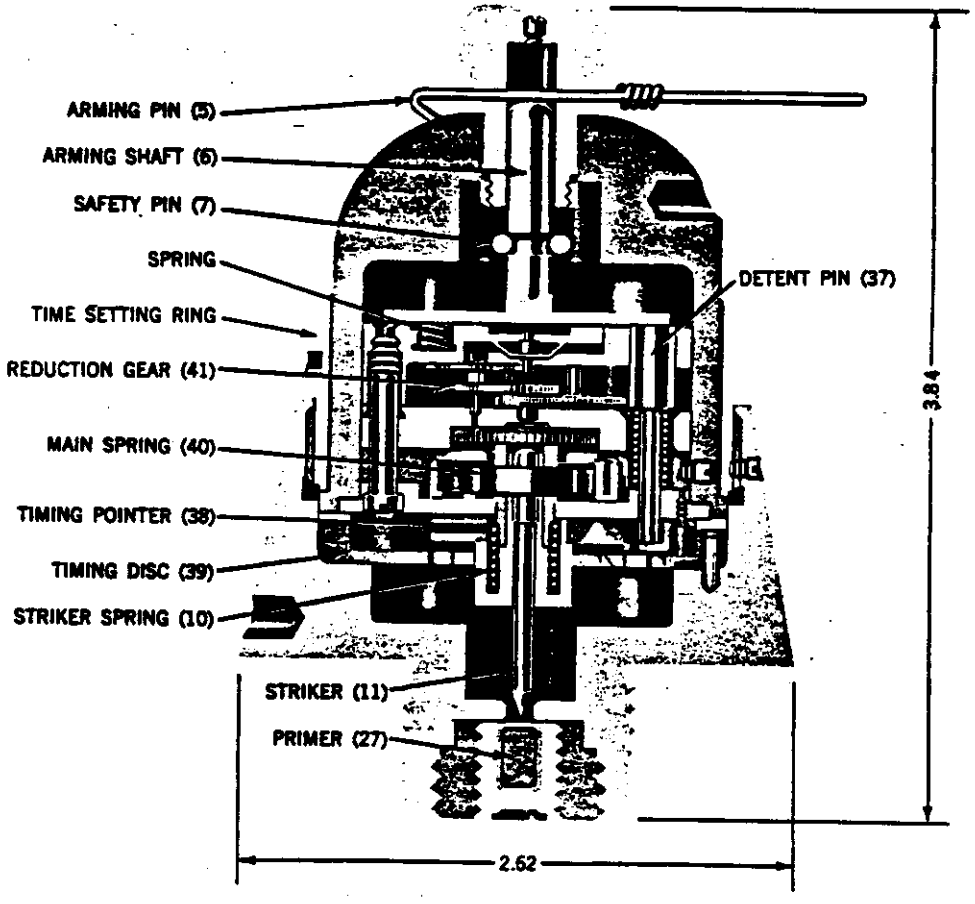


FIGURE 7—TM-4A TIME FUZE.

TM-4A and TM-4B NOSE FUZES
TM—4A and TM—4Б

MAX. DIA. (in.)	2.62
OVERALL LENGTH (in.)	3.84
FUNCTIONING	Clockwork, adjustable time delay
ARMING	Clockwork, initiated upon release
BOMBS IN WHICH USED	TM-4A: AO, ChAB, and FOTAB TM-4B: SAB, and KRAB
DESCRIPTION	This is a dome-shaped, clockwork fuze, with an external time setting ring. The late models of the fuze have a button-like protrusion on the top of the fuze. An arming pin is inserted just beneath the button. A fork shaped safety pin pierces the fuze body just above the time setting ring, and is removed when the fuze is installed in the bomb. An arming wire is attached to the arming pin when the fuzed bomb is loaded in the aircraft. The TM-4A is a detonating fuze while the TM-4B is an ignition type fuze.

OPERATION— After the fuze is installed, the safety pin (7) is removed. The arming shaft (6) is then held in place by the arming pin (5) which is fastened to an arming wire. When the bomb is released, the arming pin is removed allowing the arming shaft to move outward due to the action of a spring. This releases the detent pin (37), which also moves outward. The timing pointer (38) is now free to move in a clockwise direction. After six seconds, the pointer moves off its fixed rest, and bears on the timing disc (39) under the pressure of the striker spring (10). The pointer continues to move until it becomes positioned over the slot in the timing disc. The striker is then driven into the primer (27). Timing is adjusted by varying the position of the release slot, in the timing disc, in relation to the timing pointer. Instantaneous settings are prevented by the fixed rest on which the pointer moves for the first six seconds (two seconds in the case of the TM-4B fuze). The pointer is rotated at a fixed rate by a spring driven clockwork consisting of a main spring (40), reduction gears (41), and an escapement mechanism. The escapement governs the driving speed by means of lever (42), which swings around a pivot (43) mounted on a spring, and engages one gear on the reduction system at each end of its swing.

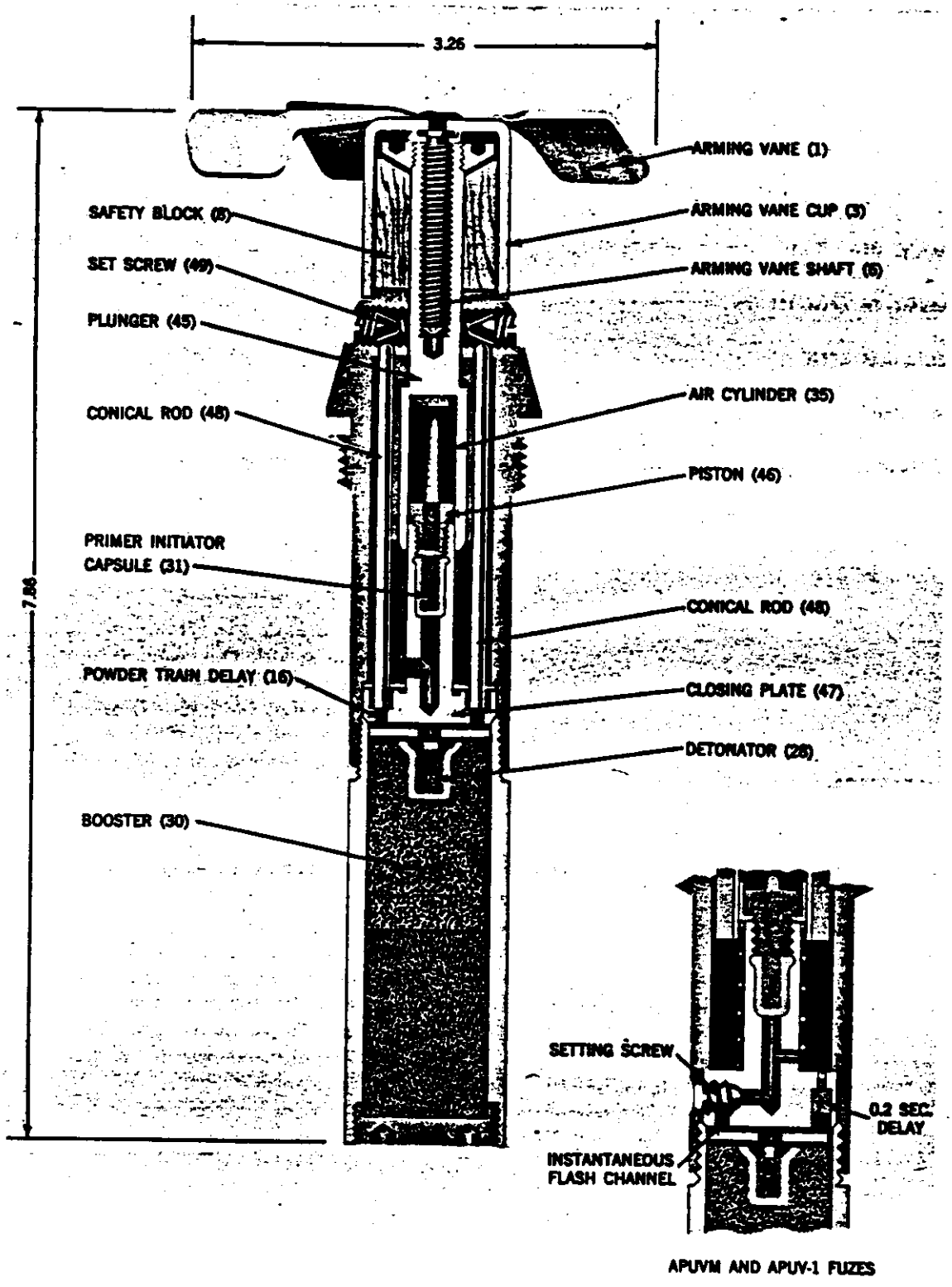


FIGURE 8—APUV NOSE AND TAIL FUZE.

APUV COMBINATION NOSE AND TAIL FUZE
АПУВ

MAX. DIA. (in.)	1.33
VANE DIA. (in.)	3.26
OVERALL LENGTH (in.)	7.86
FUNCTIONING	Instantaneous, 0.1, or 0.3 second delay
ARMING	Arming Vanes
BOMBS IN WHICH USED	FAB, BRAB (MAB). Very common
DESCRIPTION	The APUV is a fuze that was extensively used during World War II. It may be used as a nose or tail fuze. It is direct acting and causes ignition by the principle of violent compression of a column of air. The resultant heat of compression ignites a primer. The fuze may be set for delay or non-delay by adjusting two set screws on the side of the fuze body.
OPERATION	Upon release, the arming assembly (1), (3), and (6) rotate and fall away. This frees the safety blocks (8) which fall free. The fuze is now armed. Upon impact, the plunger (45) is forced inward compressing the air within the cylinder (35). The compression of the air raises its temperature to the igniting point of the primer (31), which ignites. The primer ignites the flash charge, which, in turn, activates the long or short delay, or flashes through the instantaneous channel to fire the detonator (28) and booster (30). When used as a tail fuze, the striker weight causes the fuze to function by inertia.

REMARKS — This fuze is very widely used. Data was obtained from actual examination of a recovered fuze. Specimens have also been recovered in Korea.

VARIATIONS — Two variations of this fuze have been recovered — the APUVM (АПУВМ) and the APUV-1 (АПУВ-1). In appearance, construction and principle of operation these variations are the same as the APUV, except that there are no conical rods and no external adjustable set screws. As assembled, the APUVM and APUV-1 will function with a 0.2 second delay; however, removal of a small setting screw (see inset) in the fuze body base will open a direct flash channel and give instantaneous action. This setting must be made before the fuze is inserted in the bomb.

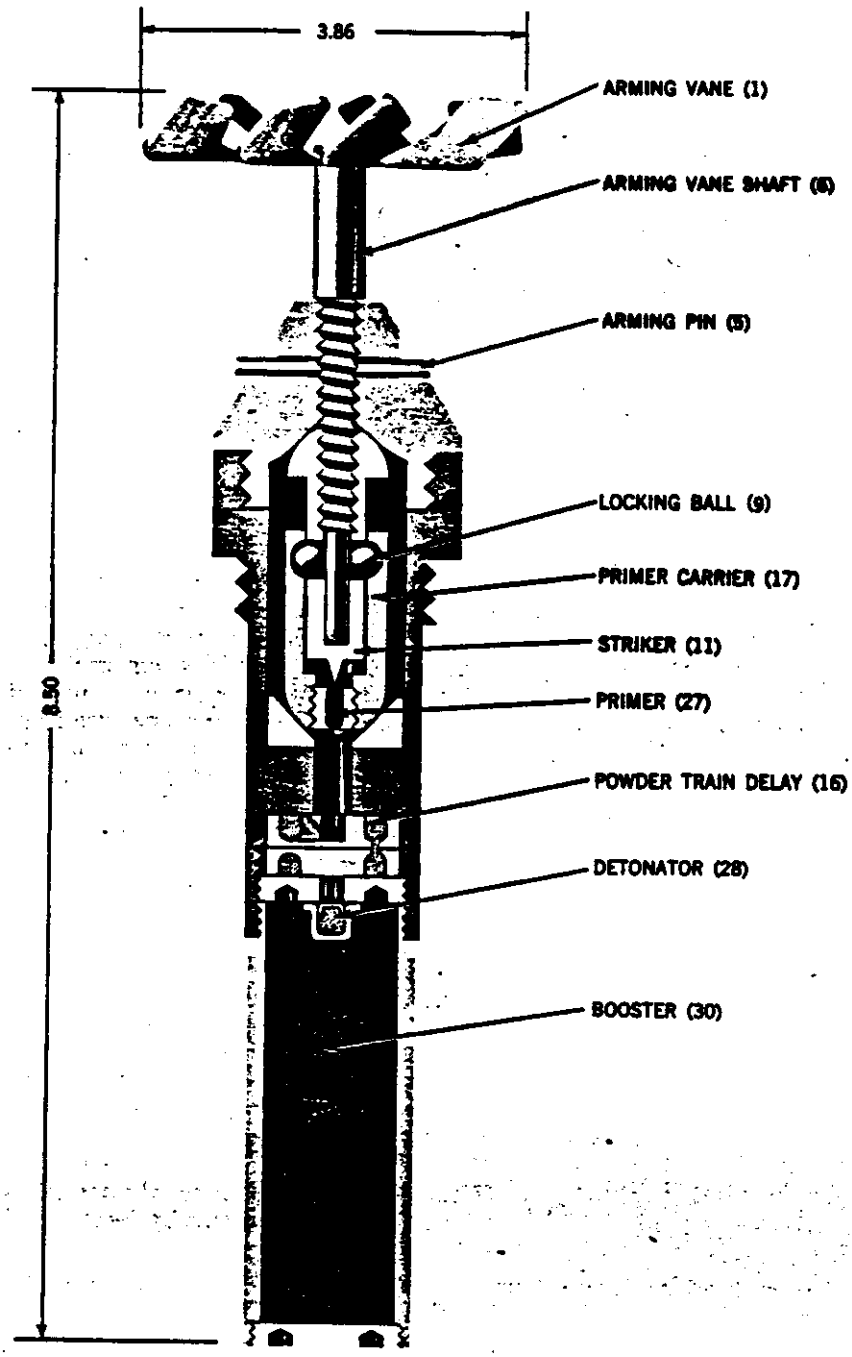


FIGURE 9—AV-1 NOSE AND TAIL FUZE.

AV-1 COMBINATION NOSE AND TAIL FUZE AB–1

MAX. DIA. (in.)	1.75
VANE DIA. (in.)	3.86
OVERALL LENGTH (in.)	8.50
FUNCTIONING	All-ways action type, impact firing with 25-27 second delay.
ARMING	Arming Vanes
BOMBS IN WHICH USED	FAB
DESCRIPTION	The fuze consists of five main groups: the arming mechanism, striker assembly, powder train delay, detonator and booster, and body assembly. The fuze contains three safety devices: an arming pin (5), the locking balls (9), and the arming vane shaft (6).
OPERATION	Upon release, the arming pin (5) is removed and the arming vane (1) and arming vane shaft (6) are free to turn. After approximately 50 revolutions. the arming vane and shaft fall away. The striker (11) and primer carrier (17) are fixed to each other by the locking balls (9). When the arming vane shaft is removed, the locking balls fall inward freeing the striker from the primer carrier. When used as a nose fuze, inertia forces the primer carrier onto the striker (firing pin), and when used as a tail fuze, the striker is forced onto the primer by inertia. Side impact will force the rounded ends of the striker and the primer carrier against the conical ends of the inner fuze body, thus camming the two elements together and firing the primer. Initiation of the primer then ignites the powder train delay (16), which in turn functions the detonator (28) and booster (30).

REMARKS — This information is based on a recovered fuze. Specimens have been recovered in Korea.

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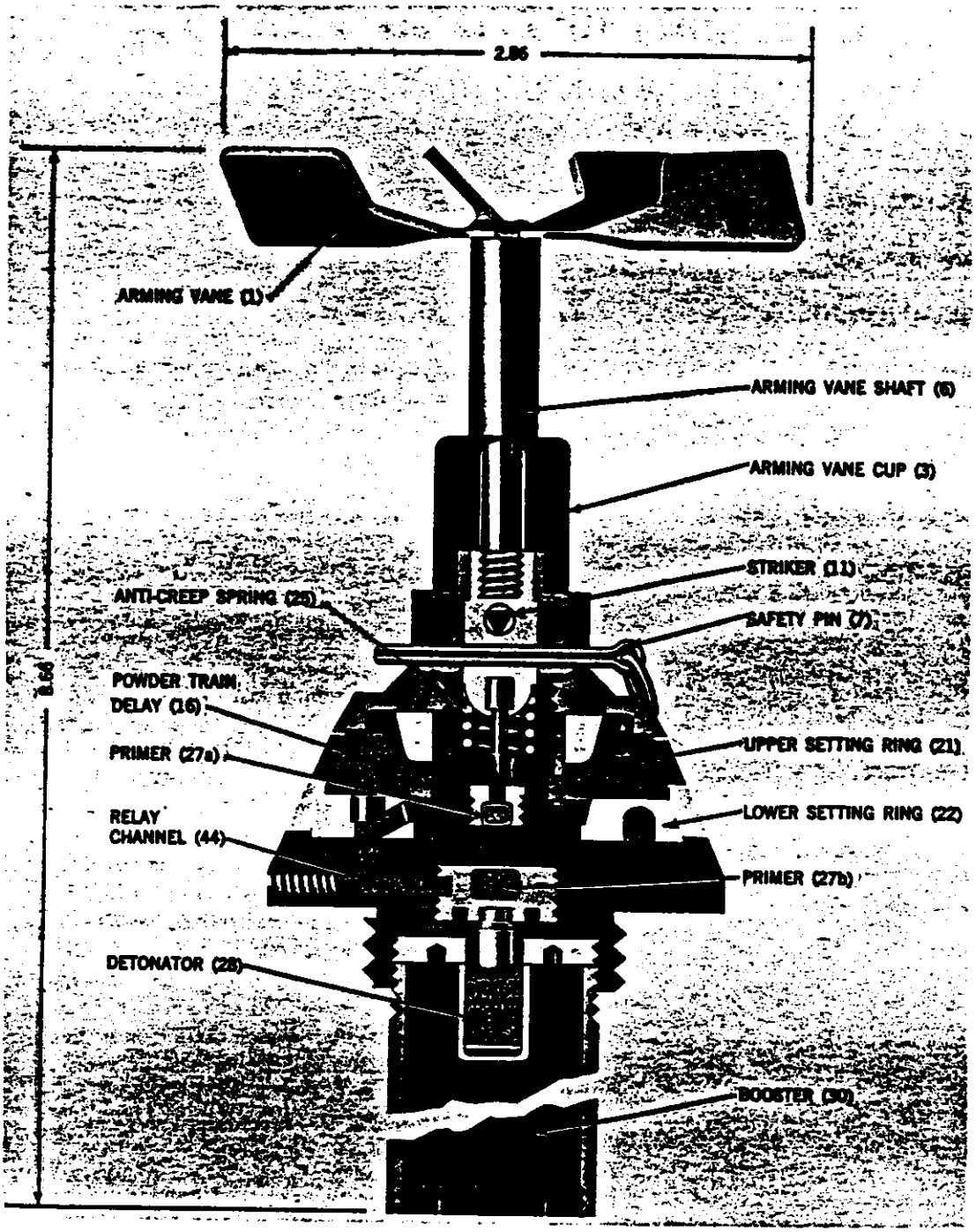

FIGURE 10—ADP TAIL FUZE.

ADP TAIL FUZE
АДП

MAX. DIA. (in.)	2.25
VANE DIA. (in.)	2.86
OVERALL LENGTH (in.)	8.66
FUNCTIONING	Impact firing with selected delays of .01-.05, .05-.15, 5, 10, 15, 20, and 22 seconds.
ARMING	Arming Vanes
BOMBS IN WHICH USED	FAB and BRAB
DESCRIPTION	The ADP is a sensitive tail fuze, vane armed, with an inertia driven striker, and an adjustable powder train delay.
OPERATION	The safety pin (7) is removed from the fuze when the bomb is loaded in the aircraft. The arming vane (1) is secured by means of a fork shape arming pin, fastened to the arming wire placed between the vanes of the arming vane. Upon release, the arming vane (1), arming vane shaft (6), and the arming vane cup (3) rotate and fall away, freeing the striker (11) and arming the fuze. The striker and the primer are separated by an anti-creep spring (25). Upon impact, the inertia driven striker (11) moves forward compressing the anti-creep spring and pentrates the primer (27a). The primer flashes through an explosive canal, initiating the fixed powder train delay (16) in the lower setting ring (22). After burning the preset time, the train ignites the relay channel (44),which, in turn, ignites a second primer (27b), then the detonator (28) and booster (30).

REMARKS — There is a reference to an old type ADP fuze, which is generally similar to the one described here. The old type differed mainly in that it had no provision for a safety pin, and had a sloping shoulder on the external fuze body instead of a stepped shoulder.

TYPES OF SOVIET AIRCRAFT BOMBS

The following table gives the Soviet code designation (translated to the English alphabet), the name of the bomb and its translation, and the equivalent United States ordnance term.

CODE	RUSSIAN DERIVATION	U. S. EQUIVALENT
FAB – ФАБ	Fugasnaya aviabomba	General Purpose

These bombs show some development since 1942 in that welded construction in the smaller bombs gave way to forged construction. The largest size reported in manufacture is 5,000 kg. and the most frequently encountered has been the 100 kg.

BRAB – БРАБ	Bronyeboynaya aviabomba	Semi-Armor Piercing

The Soviets do not appear to have an armor piercing bomb similar to the American or British armor piercing type. They seldom made use of this semi-armor piercing type during World War II.

BETAB – БЕТАБ	Betonoboinaya aviabomba	Armor Piercing

The concrete piercing bombs are rocket assisted and appear to be of a more advanced and cleaner design than other types of bombs. They represent the closest Soviet approach to a true A. P. type bomb.

PTAB – ПТАБ	Protivotankovaya aviabomba	Anti-Tank

Two small shaped-charge anti-tank bombs are the known results of a special development undertaken by the Soviets. These bombs are usually released from containers by ground attack aircraft.

MAB – МАБ	Mostovaya aviabomba	Light Case Blast

This thin walled blast effect bomb is equipped with a parachute to enable a low flying plane to get clear after dropping the bomb. The parachute can be detached to improve accuracy if a high altitude attack is planned.

AO – АО	Oskolochnaya aviabomba	Fragmentation

Some thirty types of fragmentation bombs are known to have been used by the Soviets up until 1945. Most of these were converted artillery projectiles with crudely fitted tails and suspension lugs. However, they have four manufactured types which are considered more satisfactory weapons.

ZAB – ЗАБ	Zazhigatel'naya aviabomba	Incendiary

Soviet incendiary bombs are of two types; small thermite bombs released from clusters, and larger separately dropped bombs containing thermite and a thickened naptha compound. Although the Soviets were among the first to develop cluster incendiary bombs, they were not used as extensively during World War II as other types.

TYPES OF SOVIET BOMBS (continued)

CODE	RUSSIAN DERIVATION	U. S. EQUIVALENT
RRAB – РРАБ	Rotativno Rasseivnaya Yuzhaya aviabomba	Container

This type of container is sometimes reffered to as the "Molotov Breadbasket." It may be filled with small fragmentation, incendiary, or gas and incendiary bombs. Its use was somewhat restricted during World War II.

KhAB or ChAB – ХАБ	Khimicheskaya aviabomba	Chemical

The Soviets are known to possess gas bombs of both persistent and non-persistent types. Fragmentation bombs with special tail compartments for gas have also been recovered.

KRAB – КРАБ	Kuryashchayasya aviabomba	Toxic Smoke

This bomb is used tactically for the laying of smoke clouds.

DAB – ДАБ	Dymovaya aviabomba	Incendiary Smoke

This bomb is known to exist in 80 and 100 kg. sizes. It appears to be a phosphorous type smoke producer with incidental incendiary effect.

SAB – САБ	Svetyashchayasya aviabomba	Flare

The Soviet parachute flares are made in a number of different sizes and are similar to British parachute flares in construction.

FOTAB – ФОТАБ	Foto aviabomba	Photo Flash

This bomb is used for night photographic missions, and is generally similar to those used by other nations.

ANAB – АНАБ	Aeronavigatsionnaya aviabomba	Marker Float

A combination acetylene flare and colored dye sea marker, used for air navigation over water.

AB – АБ	Agitatsionnaya aviabomba	Propaganda

A bomb-shaped, wood and sheet metal container, used for the distribution of pamphlets or other propaganda material.

DS – ДС	Dopolnitel'noy Skorosti	Rocket Assisted

Added velocity.

AOKh or AOCh – АОХ	Oskolochnaya khimicheskaya	Fragmentation-Chemical
YaD – ЯД	Yadovitogo Dyma	Toxic Smoke
RS – РС	Raketny Dyma	Rocket

BOMB LOADING

The explosive, or other filling, of Soviet bombs varies considerably between different types of bombs and even in bombs from the same lots. The following types of loading have been encountered:

A. HIGH EXPLOSIVES

1. Straight TNT. This is the preffered filling for the larger FAB bombs in peace time, when long storage is anticipated.
2. 78% picric acid and 22% Dinitronapthalene. Used in peace time for AO and FAB bombs up to 100 kg.
3. 80% TNT and 20% Ammonium Nitrate. Used for bombs up to 250 kg. during war time, unless quick consumption is expected.
4. 50% TNT and 50% Ammonium Nitrate. Used during war time for FAB bombs of 500 and 1000 kg. size.
5. 80% TNT and 20% Dinitronapthalene.
6. Boosters are composed of tetryl.

B. INCENDIARY

1. Thermite powder of varying composition.
2. Compressed thermite balls.
3. Thermite powder and thickened naphtha, or petroleum mixture, in separate compartments.
4. Thermite powder and electron casing.

C. CHEMICAL

RUSSIAN SYMBOL	U. S. SYMBOL	NAME
P_4	WP	White Phosphorous
P_5 or 5	H	Mustard
P_{15} or 15	DM	Adamsite
P10 or P1010	CG	Phosgene
PC	L	Lewisite
P_{12} (OB-6)	DA	Diphenylchlorarsine
XAΦ	CN	Chloracetophenone
TO	?	Trichlorotriethylamine
	HL	Mustard and Lewisite 50-50
	AC	Hydroyanic acid

BOMB LOADING (continued)

D. TOXIC SMOKE

40% — Adamsite

40% — Potassium nitrate

15% — Starch

5% — Kieselguhr

E. MARKER FLOAT

Calcium carbide with phosphorous igniter.

COLOR CODE

The basic overall color of Soviet bombs is generally a dark gray. The known exception is a propaganda bomb, AB, which is green overall.

Special characteristics are indicated by colored bands around the bomb nose section or body. Variations from the following table may be expected.

CODE	U. S. EQUIVALENT	NOSE BAND	BODY BAND
FAB	G. P.	——	——
AO	Fragmentation	Green	Blue
AOKh	Fragmentation-Chemical	Green	Green and Blue
BRAB	S. A. P.	Orange	——
BETAB	A. P.	Blue	——
ZAB	Incendiary	Red	Blue
ZAB	Incendiary Cluster	——	Red
KhAB	Chemical — Persistent	Red	Green
	Non-persistent	Green	Green
KRAB	Toxic Smoke	——	Yellow and Green
SAB	Parachute flare	White	White
RS	Rocket	Blue	Black
DS	Rocket assisted	Blue	Black
	Practice	Red	White

BOMB MARKINGS

The following information will be found stencilled on the bombs:

A. BODY MARKINGS

1. Designation including weight in Kilograms (e.g. FAB-100)
2. Fuze Type (e.g. AM-A)
3. a. Explosive filler (e.g. TNT)
   b. Chemical filler (e.g. P-5 indicating mustard gas)
4. Number of auxiliary boosters (only on bombs of 250 kg. or more)

B. TAIL FIN MARKINGS

1. Year of manufacture (e.g. 1946)
2. Lot number (e.g. 101/82)
3. Factory number (e.g. zavod 43)

SIZE OF CRATER

The size of crater produced by a bomb depends on the nature of the earth, and the depth of penetration achieved by the bomb before detonation. The following table provides some general data on craters produced by Russian demolition bombs, equipped with fuzes of varying delay, and dropped on ground ranging from normal soil to river boulders.

BOMB SIZE (kg)	DEPTH (feet)	DIAMETER (feet)
50	1-2	6-9
70	1-2	8-13
100	1-4	8-10
250	3-6	15-28
500	5	23

This space is reserved for additional material as it becomes available.

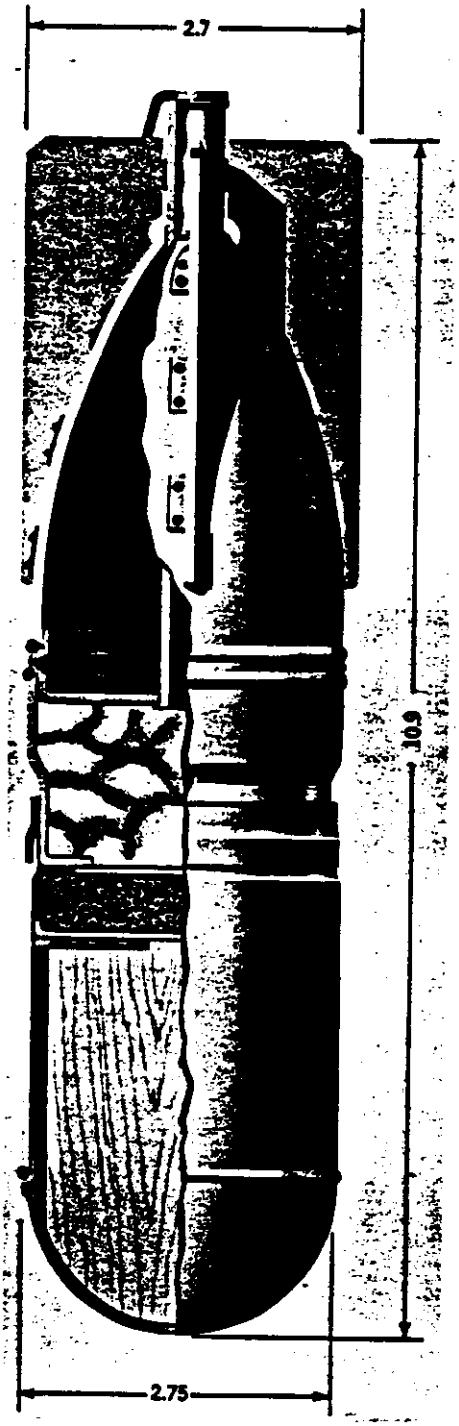

FIGURE 11—ANAB-1 AIR NAVIGATION MARKER BOMB.

ANAB-1

TYPE	Marker float
NOSE FUZE	None
TAIL FUZE	None — tear strip admits water to chemicals
TOTAL LENGTH (in.)	10.9
MAXIMUM DIAMETER (in.)	2.7
TOTAL WEIGHT	2.2 lbs.
MAIN CHARGE (TYPE & WEIGHT)	Phosphor-calcium carbide mixture and sea marker compound.
SUSPENSION	None
BODY CONSTRUCTION	The body is of sheet metal construction with a spherical nose and ogival after section. An emission tube runs up between the tail fins.
TAIL CONSTRUCTION	The tail consists of four sheet metal fins fastened by rivets, or welding, to the after body.

REMARKS — This device is used for air navigation over water. After removing the tear strip, the marker is dropped manually into the water. The water reacts with the calcium carbide mixture to form acetylene and, simultaneously, with the phosphor compound to liberate sufficient heat to ignite the acetylene. It will burn with a bright flame for five to ten minutes. The sea marker compound leaves a fluorescent patch on the surface. An ANAB-2.5 has also been reported with a burning time of 15 minutes.

This space is reserved for additional material as it becomes available.

CALCULATED PENETRATION FOR ARMOR AND CONCRETE PIERCING BOMBS

ARMOR PIERCING BOMB, BRAB-220

PENETRATION IN INCHES WHEN RELEASED AT 240 MPH. AIR SPEED

ALTITUDE FT.	REINFORCED CONCRETE	HOMOGENEOUS ARMOR PLATE	HARDENED ARMOR PLATE
10,000	22.2	3.46	1.82
15,000	26.5	4.20	2.16
20,000	30.0	4.65	2.52
26,000	33.0	5.20	2.75

ARMOR PIERCING BOMB, BRAB-500

PENETRATION IN INCHES WHEN RELEASED AT 240 MPH. AIR SPEED

ALTITUDE FT.	REINFORCED CONCRETE	HOMOGENEOUS ARMOR PLATE	HARDENED ARMOR PLATE
10,000	22.6	4.0	3.08
15,000	27.0	4.75	3.70
20,000	30.5	5.35	4.10
26,000	34.0	5.90	4.65

ARMOR PIERCING BOMB, BRAB-200 DS

PENETRATION IN INCHES

ALTITUDE FT.	HOMOGENEOUS ARMOR PLATE	HARDENED ARMOR PLATE
3,300	3.0	4.36
6,500	4.4	6.20
10,000	5.3	7.48
16,000	6.4	9.45
20,000	7.3	10.20
25,000	8.1	11.50
30,000	8.4	12.00

CONCRETE PIERCING BOMB, BETAB-150 DS

PENETRATION IN FEET WHEN RELEASED AT 220-280 MPH. AIR SPEED

ALTITUDE FT.	CONCRETE	BRICK WALL	SANDY CLAY	SAND AND GRAVEL
3,300	5.40	6.45	22.4	29.4
6,500	5.85	7.05	25.5	32.3
10,000	6.35	7.60	27.5	34.5
16,500	7.10	8.50	30.5	38.5
20,000	7.40	8.80	32.0	40.4
25,000	7.80	9.40	33.8	43.0
30,000	8.00	9.65	34.9	44.0

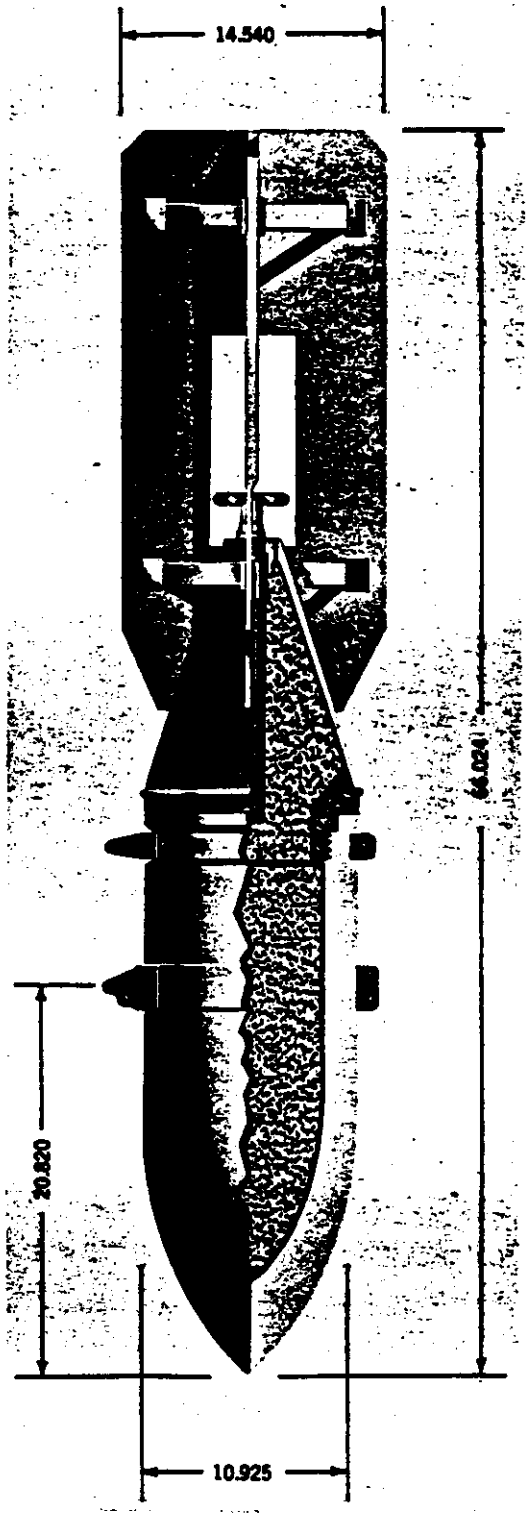

FIGURE 12—BRAB-220 ARMOR PIERCING BOMB.

BRAB-220

TYPE	Armor-piercing, 500 lb.
NOSE FUZE	None
TAIL FUZE	APUV, ADP
TOTAL LENGTH (in.)	66
BODY LENGTH (in.)	40 (approximately)
MAXIMUM DIAMETER (in.)	10.9
WALL THICKNESS (in.)	1.72
TOTAL WEIGHT	524 lbs.
CHARGE/WEIGHT RATIO	16%
MAIN CHARGE (TYPE & WEIGHT)	TNT—84 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Nose band — Orange (red and yellow)
BODY CONSTRUCTION	The bomb body consists of a cast steel naval projectile. The tail cone, which forms the base section, is fastened to the bomb by means of screw threads. The tail cone is filled with explosive and closed with a fuze adapter threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail unit consists of four (4) fins welded to the tail cone. Two sheet metal braces are welded between each of the tail fins for additional support.

REMARKS — This bomb will penetrate up to 33 inches of reinforced concrete, 5¼ inches of homogeneous armor plate, or 2¾ inches of hardened armor plate.

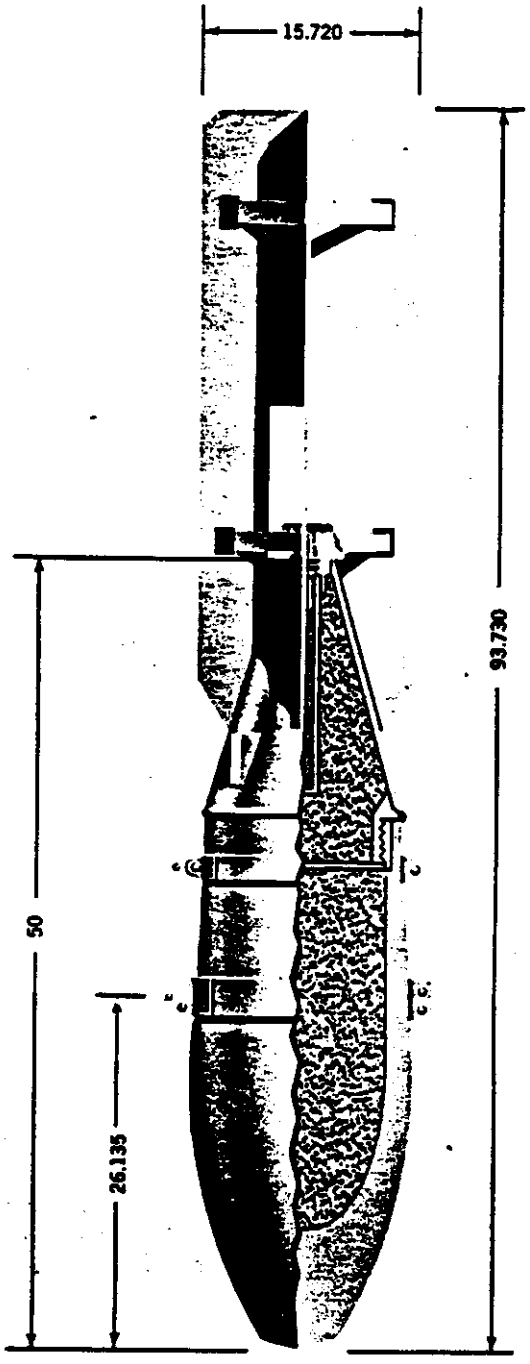

FIGURE 13—BRAB-500 ARMOR PIERCING BOMB.

BRAB-500

TYPE	Armor-piercing, 1000 lb.
NOSE FUZE	None
TAIL FUZE	APUV
TOTAL LENGTH (in.)	93.7
BODY LENGTH (in.)	50 (approximately)
MAXIMUM DIAMETER (in.)	15.7
WALL THICKNESS (in.)	1.24
TOTAL WEIGHT	1102 lbs.
CHARGE/WEIGHT RATIO	21%
MAIN CHARGE (TYPE & WEIGHT)	TNT—233.2 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Nose band — Orange
BODY CONSTRUCTION	The bomb body consists of a heavy-walled, cast steel cylinder, tapering to an ogival nose. The tail cone, which forms the base section, is fastened to the bomb by means of screw threads. The tail cone is filled with explosive and closed with a fuze adapter threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail unit consists of four (4) sheet metal fins welded to the tail cone. Two sheet metal braces are welded between each of the fins for additional support.

REMARKS — This bomb will penetrate up to 34 inches of reinforced concrete, about 6 inches of homogeneous armor plate, or 4⅛ inches of hardened armor plate.

This space is reserved for additional material as it becomes available.

BRAB-1000

TYPE	Armor-piercing, 2000 lb.
NOSE FUZE	None
TAIL FUZE	ADP, APUV
TOTAL LENGTH (in.)	121
BODY LENGTH (in.)	80±2
MAXIMUM DIAMETER (in.)	18.7
WALL THICKNESS (in.)	1.45
TOTAL WEIGHT	2123 lbs.
CHARGE/WEIGHT RATIO	21.4%
MAIN CHARGE (TYPE & WEIGHT)	TNT—456 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Nose band — Orange
BODY CONSTRUCTION	The bomb body consists of a cast steel cylinder tapering to an ogival nose. The tail cone, which forms the base section, is fastened to the bomb by means of screw threads. The tail cone is closed with a fuze adapter, threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail unit consists of four (4) sheet metal fins welded to the tail cone. Two sheet metal braces are welded between each of the fins for additional support.

REMARKS — This bomb will penetrate up to 70 inches of reinforced concrete, 7¾ inches of armor plate, and 6 inches of hardened armor plate.

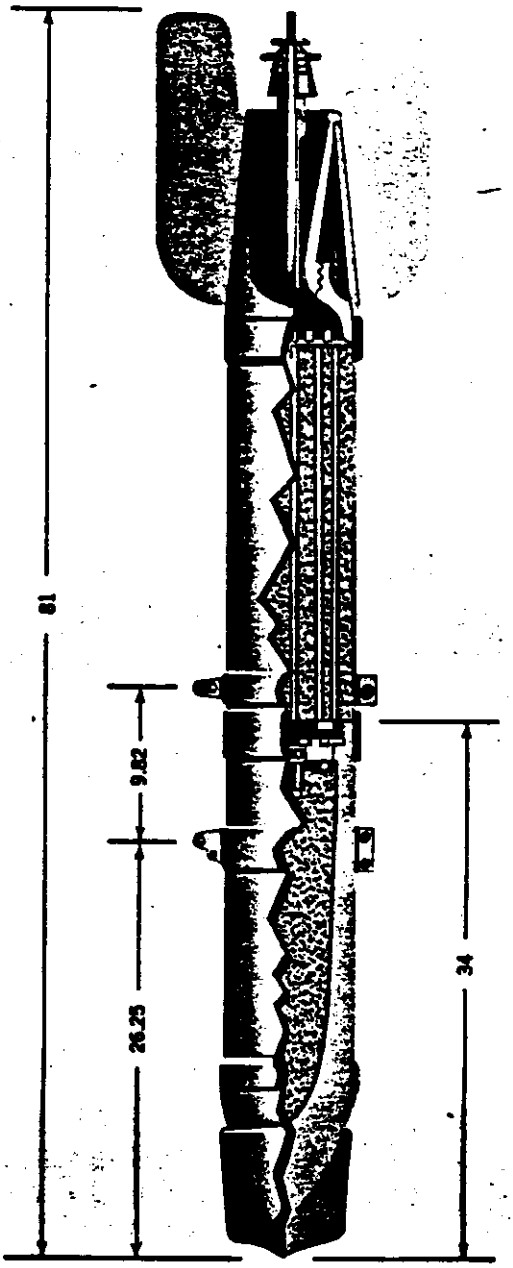

FIGURE 14—BRAB-200 DS ARMOR PIERCING BOMB.

BRAB-200 DS

TYPE	Armor-piercing (rocket-assist)
NOSE FUZE	None
TAIL FUZE	Time-fuze — ignites propellant Base-fuze — detonates bomb
TOTAL LENGTH (in.)	81
BODY LENGTH (in.)	34
MAXIMUM DIAMETER (in.)	8
WALL THICKNESS	—
TOTAL WEIGHT	469 lbs.
CHARGE/WEIGHT RATIO	5.8%
MAIN CHARGE (TYPE & WEIGHT)	TNT—27 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Nose band — Blue Body band (on rocket) — Black
BODY CONSTRUCTION	The bomb body consists of a forged steel cylinder tapering to an ogival nose. An armor piercing cap is fitted over the ogive to prevent ricochets. The outer surface of the body is machine finished. The base of the body is closed by a base plug with a fuze adapter. The wall of the body extends beyond the base plug and is threaded internally to receive the rocket motor.
TAIL CONSTRUCTION	The tail unit consists of four (4) pressed steel fins welded to a conical section. The tail assembly is fitted over the venturi of the rocket motor.

REMARKS — The propellant charge of the motor consists of 42.3 lbs. of nitro-cellulose powder having a burning time of 2.6 seconds. This rocket effect adds about 591 fps. to the velocity of the bomb and allows a penetration of about 6.5 inches armor.

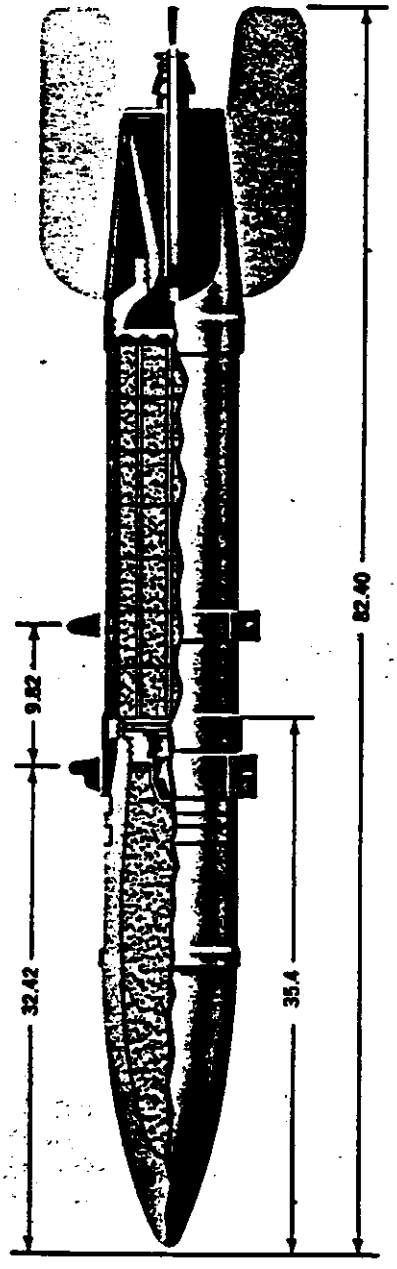

FIGURE 15—BETAB-150 DS CONCRETE PIERCING BOMB.

BETAB-150 DS

TYPE	Concrete-piercing (rocket assist)
NOSE FUZE	None
TAIL FUZE	A base fuze detonates the explosive filling. A time fuze is used to ignite the rocket propellant. The TM 24 is listed as used in the BETAB-170 DS and BETAB-250 DS.
TOTAL LENGTH (in.)	82.4
BODY LENGTH (in.)	35.4
MAXIMUM DIAMETER (in.)	8
WALL THICKNESS (in.)	——
TOTAL WEIGHT	363 lbs.
CHARGE/WEIGHT RATIO	9.3%
MAIN CHARGE (TYPE & WEIGHT)	TNT—33.8 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Nose band — Blue Body band (on rocket) — Black
BODY CONSTRUCTION	The bomb consists of an 8 in. A.P. artillery projectile with the base closed by a plug, which contains an adapter for a base fuze. The wall of the projectile extends beyond the base plug, and is threaded internally to receive the rocket motor.
TAIL CONSTRUCTION	The tail unit consists of four (4) pressed steel fins welded to a conical section. The tail assembly is fitted over the venturi of the rocket motor.

REMARKS — The propellant charge of the rocket motor consists of 38.6 lbs. of nitro-cellulose powder having a burning time of 2.4 seconds. This rocket effect adds about 690 fps. to the velocity of the bomb, and allows a penetration of some 62.5 inches of concrete. A BETAB-170 DS and a BETAB-250 DS have been reported.

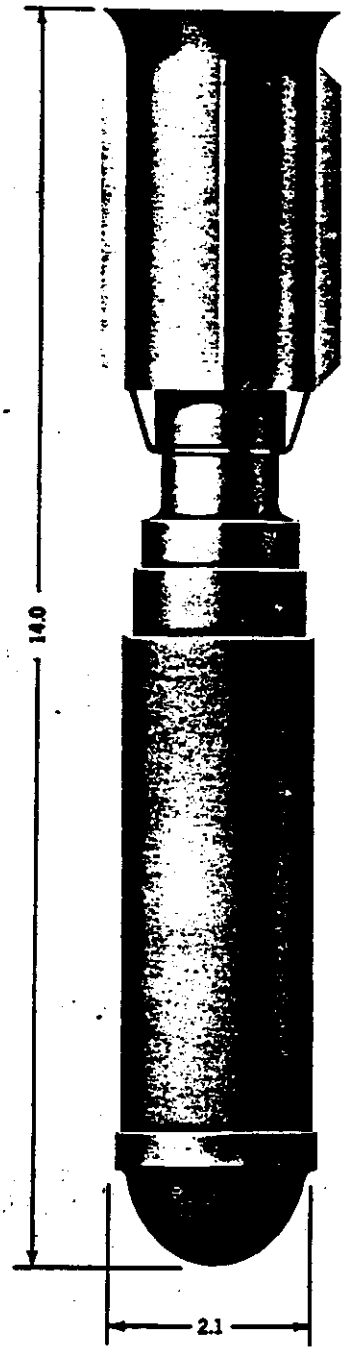

FIGURE 16—PTAB–1.5 ANTI-TANK BOMB.

PTAB-1.5

TYPE	Shaped Charge, anti-tank bomb
NOSE FUZE	None
TAIL FUZE	Mechanical Impact firing mechanism
TOTAL LENGTH (in.)	14
BODY LENGTH (in.)	——
MAXIMUM DIAMETER (in.)	2.1
WALL THICKNESS (in.)	——
TOTAL WEIGHT	3.3
CHARGE/WEIGHT RATIO	43%
MAIN CHARGE (TYPE & WEIGHT)	1.5 lbs.
SUSPENSION	Normally carried in a cluster container
COLOR MARKINGS	——
BODY CONSTRUCTION	The bomb is composed of spot welded sheet metal sections. A cylindrical sheet metal casing is pressed over the spot welded sections for added strength and fragmentation effect.
TAIL CONSTRUCTION	The tail unit is a cylindrical sheet metal member with four narrow longitudinal sheet metal fins.

REMARKS — This bomb will produce a 1.8 inch diameter hole in 3 inch armor plate. It also has some fragmentation effect. Its primary targets are tanks and trucks.
The PTAB-2.5, generally similar to the PTAB-1.5, has been reported.

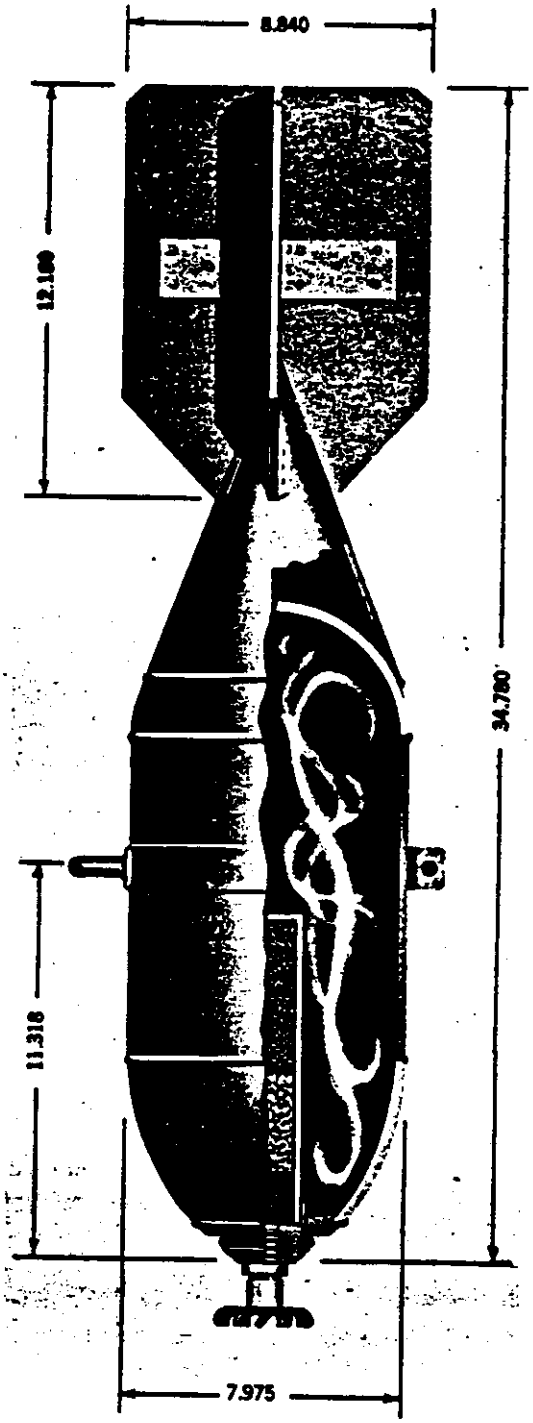

FIGURE 17—KhAB–25 (PERSISTENT) GAS BOMB.

KhAB-25

TYPE	Gas, Persistent
NOSE FUZE	AGM-1
TAIL FUZE	None
TOTAL LENGTH (in.)	34.8
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	8
WALL THICKNESS (in.)	0.157
TOTAL WEIGHT	61 lbs.
CHARGE/WEIGHT RATIO	50%
SUSPENSION	Single suspension band
MAIN CHARGE (TYPE & WEIGHT)	Mustard or 50-50 mustard-lewisite 31 lbs. Burster .9 lbs.
COLOR MARKINGS	Nose band — Red Body band — Green
BODY CONSTRUCTION	The body is formed of thin gauge sheet metal and consists of an ogival nose section, cylindrical main body section, and a conical base section joined together by welds. The central burster is fastened to the nose fuze adapter.
TAIL CONSTRUCTION	The tail assembly consists of four fins riveted to a cone. This assembly is welded to the base of the bomb body. Sheet metal struts are riveted between each fin for added strength.

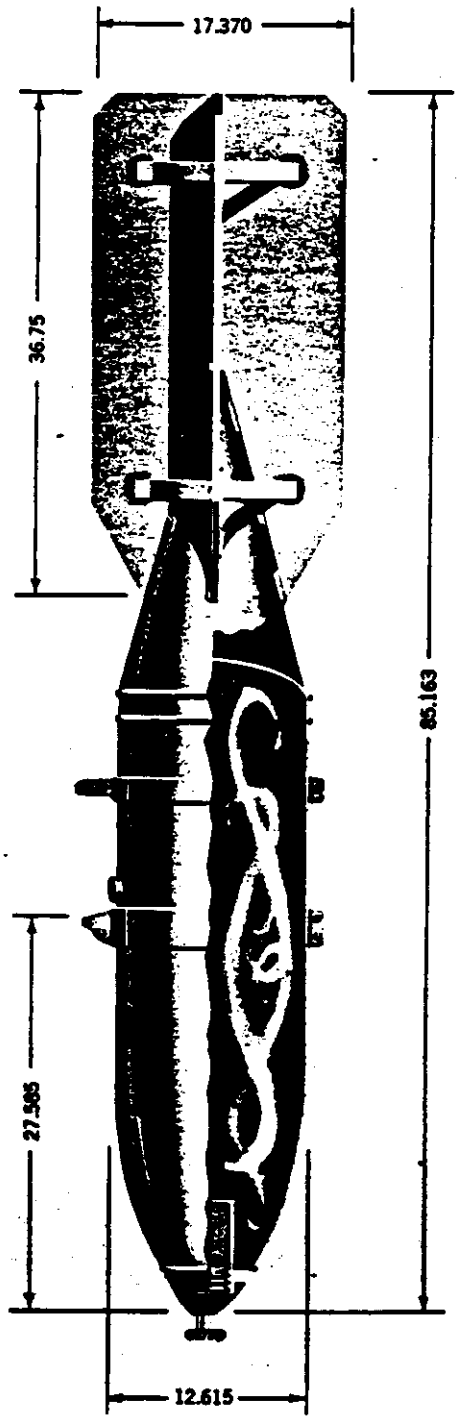

FIGURE 18—KhAB-200 (PERSISTENT) AND KhAB-200 (NON-PERSISTENT) GAS BOMB.

KhAB-200 (Persistent) or (Non-Persistent)

TYPE	Gas, Persistent or Non-Persistent
NOSE FUZE	Persistent — TM-4B, AGDT Non-Persistent — AGM-1, AM-A, AV-4
TAIL FUZE	None
TOTAL LENGTH (in.)	85.2
BODY LENGTH (in.)	65 (approximately)
MAXIMUM DIAMETER (in.)	12.6
WALL THICKNESS (in.)	0.236
TOTAL WEIGHT	Persistent — 346-363 lbs. Non-Persistent — 374-387 lbs.
CHARGE/WEIGHT RATIO	50%
MAIN CHARGE (TYPE & WEIGHT)	Persistent — Mustard or mustard-lewisite 171-183 lbs. Non-Persistent — Phosgene 194-202 lbs. and 2.5 lb. Burster
SUSPENSION	Two suspension bands
COLOR MARKINGS	Persistent — Nose band — Red Body band — Green Non-Persistent — Nose band — Green Body band — Green
BODY CONSTRUCTION	The body is formed of sheet metal and consists of an ogival nose section, cylindrical body section, and a spherical base section. All sections are joined by welds. Nose is closed by a fuze adapter, and fitted with a 1.5 lb. burster charge.
TAIL CONSTRUCTION	The tail assembly consists of four fins welded to a cone. Two struts are welded between each fin for added support. The tail assembly is welded to the base of the bomb.

REMARKS — Bomb will contaminate a total area of about 17,850 square yards.

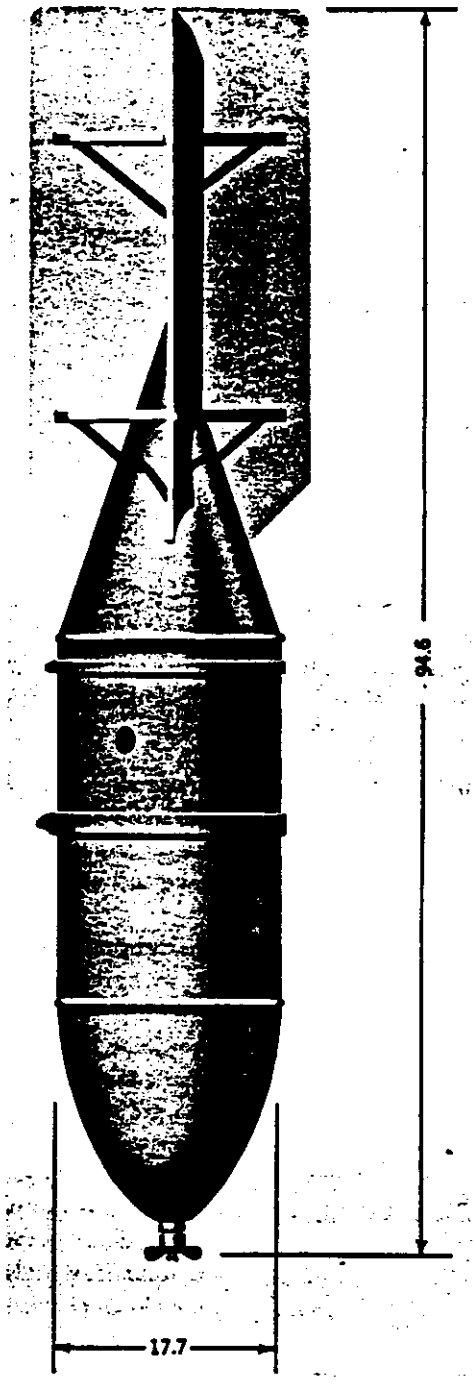

FIGURE 19—KhAB-500 CHEMICAL BOMB.

KhAB-500

TYPE	Gas, Non-Persistent
NOSE FUZE	AGM-1
TAIL FUZE	None
TOTAL LENGTH (in.)	94.6
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	17.7
WALL THICKNESS (in.)	0.236
TOTAL WEIGHT	660-691 lbs.
CHARGE/WEIGHT RATIO	60%
MAIN CHARGE (TYPE & WEIGHT)	Phosgene — 374-407 lbs. Burster — 3.5 lbs.
SUSPENSION	Two suspension bands
BODY CONSTRUCTION	The body is formed of sheet metal and consists of an ogival nose section, cylindrical body section, and a spherical base section. All sections are joined by welds. The nose is closed by a fuze adapter and is fitted with a 2.5 lb. burster charge for summer use and a 3.5 lb. burster charge for winter use.
TAIL CONSTRUCTION	The tail assembly consists of four fins welded to a tail cone. Two braces are welded between each fin for additional support. The assembly is welded to the base of the bomb.

REMARKS — The existence of a KhAB has been reported.

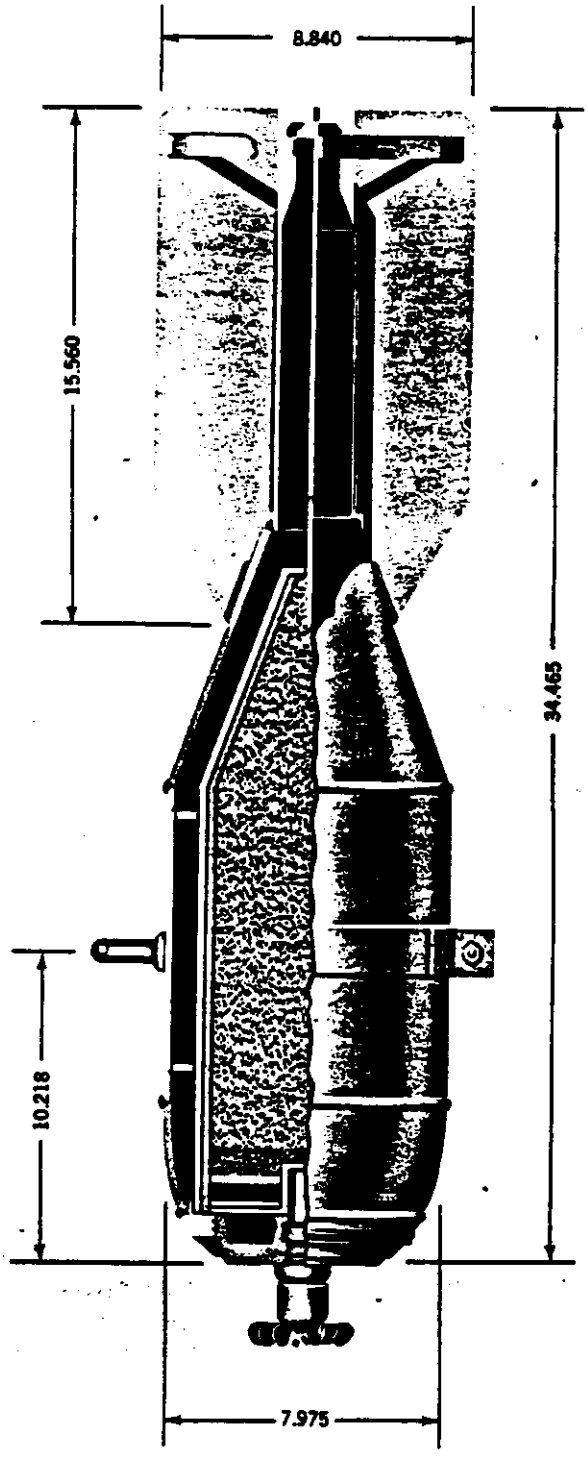

FIGURE 20—KhAB-25 YaD TOXIC SMOKE BOMB.

KhAB-25 YaD

TYPE	Toxic Smoke Bomb
NOSE FUZE	AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	34.5
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	8
TOTAL WEIGHT	76 lbs.
CHARGE/WEIGHT RATIO	21.7%
MAIN CHARGE (TYPE & WEIGHT)	Adamsite — 6.6 lbs. Pot. Nitrate — 6.6 lbs. Starch — 2.4 lbs. Kieselguhr — 0.8 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Body bands — Yellow and Green
BODY CONSTRUCTION	The bomb body consists of an inner and outer sheet metal container. The outer container is formed by welding together a nose cap adapter ring, ogival nose section, cylindrical main body section, and a conical base section. An emission tube is welded to the base section. The inner container is closed, at the nose, by a sheet metal can containing the initiator and primer. The nose cap is fastened to the adapter ring by means of screw threads, and is fitted with a fuze adapter.
TAIL CONSTRUCTION	The tail assembly consists of four sheet metal fins welded to the base section and to the emission tube. A sheet metal strut is welded between each fin for additional support.

REMARKS — Burning time of smoke composition is 5 to 8 minutes, producing a cloud 50 to 65 feet in height, 180 feet wide and extending about 800 feet downwind.

DAB-80F and DAB-100F have been reported. These are smoke bombs with incidental incendiary effect. The "F" in the designation, presumably means "fosfor" (phosphorous).

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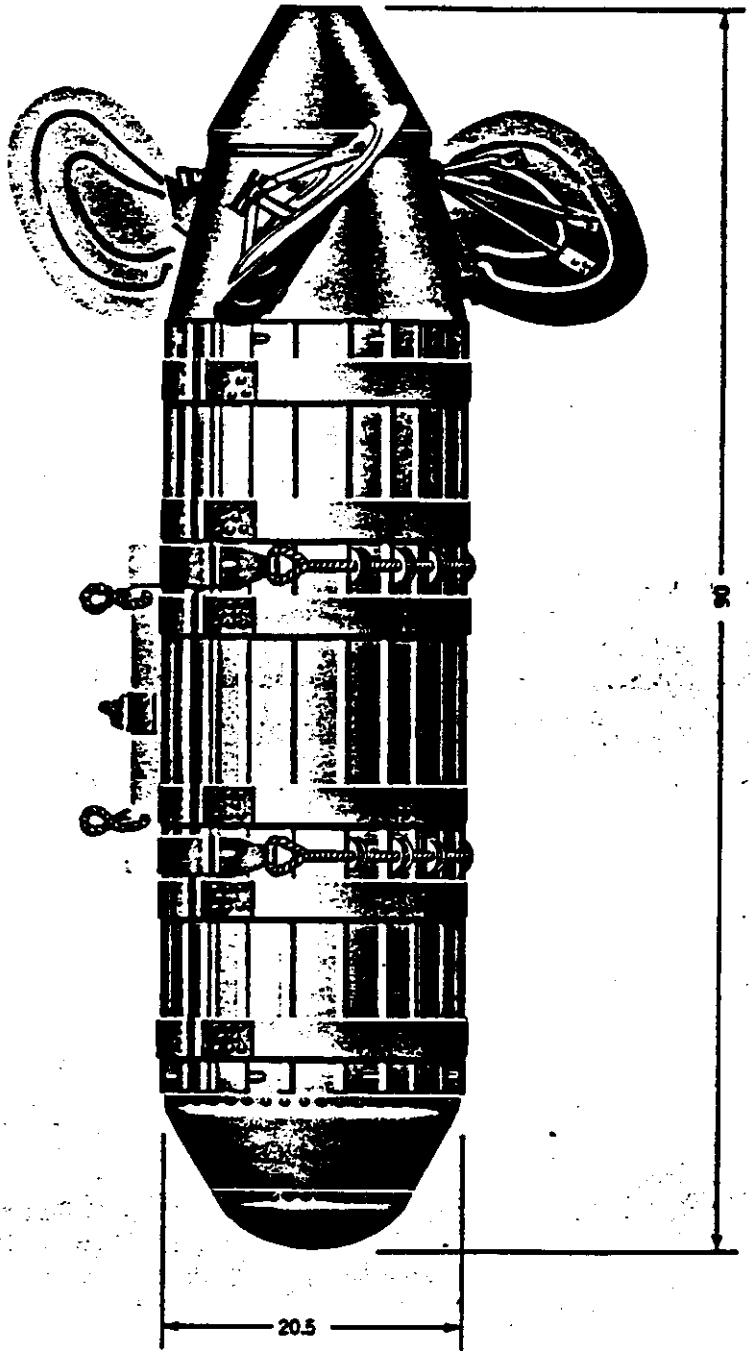

FIGURE 21—RRAB–3 ROTATING CLUSTER BOMB.

RRAB -1, -2, -3

TYPE	Cluster container (Molotov Breadbasket)		
	RRAB-1	**RRAB-2**	**RRAB-3**
TOTAL LENGTH (in.)	152	129	90
MAXIMUM DIAMETER (in.)	28.5	23.5	20.5
TOTAL WEIGHT FILLED (lbs.)	2-3000	10-1500	5-100
TOTAL WEIGHT EMPTY (lbs.)	378	251	150
COLOR OVERALL	Grey	Grey	Grey
FILLING (NO. OF BOMBS)			
Type ZAB-1E	580	260	116
ZAB-2.5	580	260	116
AO-8 or AOKh-8	84-130	50-78	34
AO-10 or AOKh-10	100	66	25
AOKh-15	40	19	13
AO-25	40	19	13
KhAB-25	20	—	—
AF-32	24	15	—
OKT-8 or OKT-11	—	300	100

CONSTRUCTION

The rotating cluster container is formed by two sheet metal sections held together by retaining bands, and is subdivided into small internal compartments. These compartments are filled with small incendiary and fragmentation bombs. The tail unit consists of three spring loaded vanes that spring out upon release. These vanes are placed on an angle to the longitudinal axis of the bomb, so as to cause rotation during fall. Centrifugal force causes the retaining bands to rupture. The hinged doors of the container then open scattering the bombs over a wide area.

REMARKS — Depending upon the contents and altitude, the radius of scatter may be as great as 1400 yards. Spherical gas incendiary containers, OKT-8 and OKT-11 are also used in the RRAB clusters as well as aircraft gear.

FRAGMENTATION BOMBS FAB-50M

	M2	M3	M4	M5	M6	M7	M8
TOTAL LENGTH (in.)	22	23.8	23.8	25.5	20.5	25.3	25.3
MAXIMUM DIAMETER (in.)	6	6	6	6	6	6	6
TOTAL WEIGHT (lbs.)	92.5	88	96	101	98	107	105
FILLING WEIGHT (lbs.)	15.2	15.1	15.4	14.1	—	19.8	17.6
CHARGE/WEIGHT RATIO (%)	16.4	17.2	16	14	—	18.5	16.8
NOSE FUZE	APUV AV-1	APUV AV-1	A6P	APUV	AGM-3	AGM-3	AGM-3
FILLING	—	—	—	—	—	Picric	*

* Dinitronapthalene 12%
Ammonium Nitrate 88%

REMARKS — These bombs are considered to be fragmentation bombs because of their low charge weight ratio. No further information is available.

FRAGMENTATION BOMBS AO-TYPE

TYPE	OVERALL LENGTH (in.)	MAXIMUM DIA. (in.)	TOTAL WEIGHT (lb.)	CHARGE WEIGHT (lb.)	REMARKS
AO-2.5	15	2	5.3	.41	See detailed report
AO-5.9	12	3	—	—	Converted 76mm projectile
AO-6	11.1	3	—	—	Same
AO-8M2	12.6	3	16.3	—	Same
AO-8M4	11.4	3	15.7	2.2	Same
AO-8M6	12.6	3	—	—	
AOKh-8	16	4.1	17.5	HE 1.3 Gas 1.2	See detailed report
AO-10	18.9	3.5	21	1.9	See detailed report
AOKh-10	23	4.2	22	HE 1.7 Gas 1.7	See detailed report
AO-12.5	23.7	4	—	—	—
AO-13.4	24	4.1	29.5	—	—
AOKh-15	24.4	4.2	32.4	HE 2.5 Gas 2.2	See detailed report
AO-20	29.8	4.5	47	6.6	Converted projectile
AO-20M1	18.9	4.5	46	4.9	(?) Similar to AO-20M3
AO-20M2	13.3	4.5	37.5	—	(?) Similar to AO-20M3
AO-20M3	38.7	4.7	46.4	6.6	See detailed report
AO-25M1	19.8	4.8	52	8	Converted 125mm projectile
AO-25M2	20.6	4.8	54.3	6.7	Same
AOKh-25	—	—	52	HE 3.3 Gas 8.3	DM, DH, or Cn gas in tail cone. Converted projectile
AO-26.4	—	—	—	—	Converted projectile
AO-100	42.8	11.1	220	110	See detailed report
AO-250	—	—	—	—	—

COLOR — These bombs generally have a green nose band and a blue body band. Bombs having chemical fillers as well as H.E., carry an extra green band on the body.

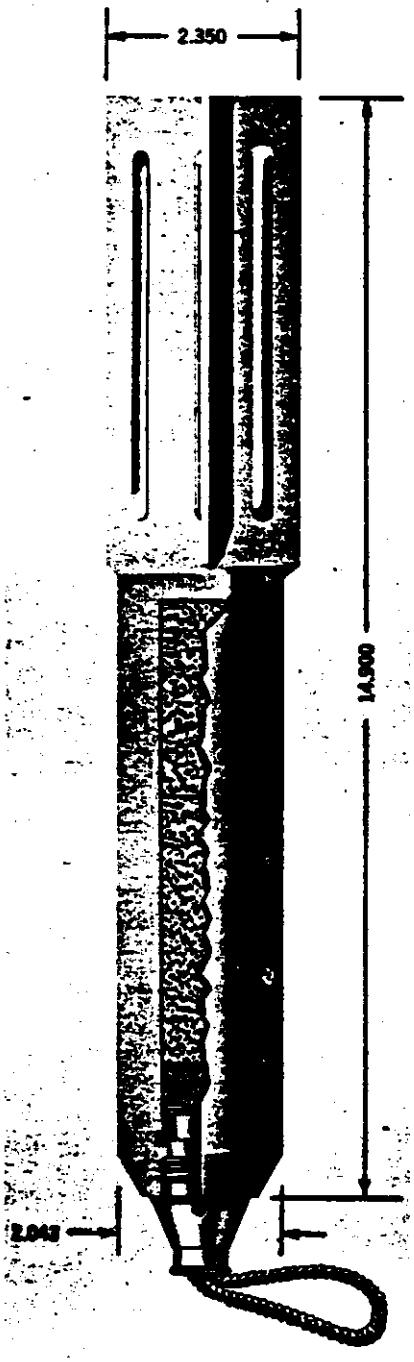

FIGURE 22—AO–2.5 FRAGMENTATION BOMB.

AO-2.5

TYPE	Fragmentation, 5.5 lb.
NOSE FUZE	AM-A, AM-A b/v, AGM-1, AV-4
TAIL FUZE	None
TOTAL LENGTH (in.)	14.9
BODY LENGTH (in.)	8.2
MAXIMUM DIAMETER (in.)	2.043
WALL THICKNESS (in.)	0.55
TOTAL WEIGHT	5.3 lbs.
CHARGE/WEIGHT RATIO	7.7%
MAIN CHARGE (TYPE & WEIGHT)	TNT—.41 lb.
SUSPENSION	Carried in cluster containers
COLOR MARKINGS	Nose band — Green Body band — Blue
BODY CONSTRUCTION	The body consists of a cast steel cylinder with a short conical nose which is threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail unit consists of four pressed steel fins welded to the bomb body.

REMARKS — The bomb breaks up into approximately 150 fragments upon detonation, producing an area of lethality of 485 sq. yds. The illustration shows the AM-A b/v fuze.

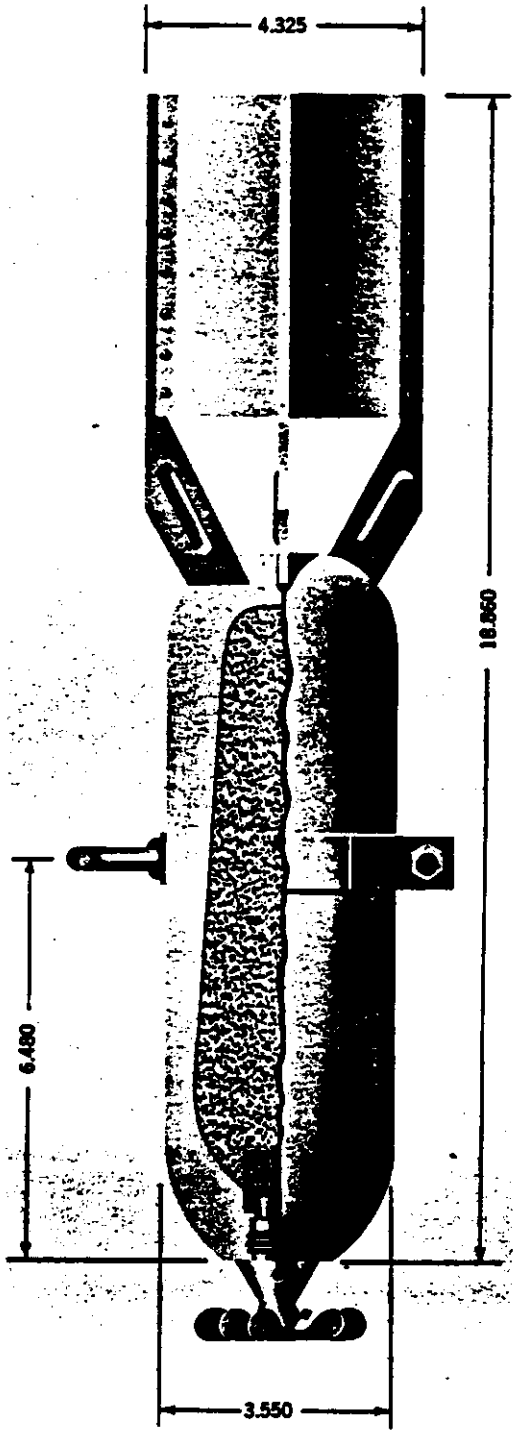

FIGURE 23—AO–10 FRAGMENTATION BOMB.

AO-10

TYPE	Fragmentation, 22 lbs.
NOSE FUZE	AM-A, AGM-1, AV-4
TAIL FUZES	None
TOTAL LENGTH (in.)	18.8
BODY LENGTH (in.)	11.4
MAXIMUM DIAMETER (in.)	3.5
WALL THICKNESS (in.)	—
TOTAL WEIGHT	21 lbs.
CHARGE/WEIGHT RATIO	3%
MAIN CHARGE (TYPE & WEIGHT)	TNT—1.9 lb.
SUSPENSION	Single suspension band, can also be carried in cluster containers.
COLOR MARKINGS	Nose band — Green Body band — Blue
BODY CONSTRUCTION	The bomb body consists of a cast steel cylinder tapering in an ogive to the nose. The nose is threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail consists of four (4) blades welded to the base of the bomb body. Struts are riveted between the four blades to form a square box.

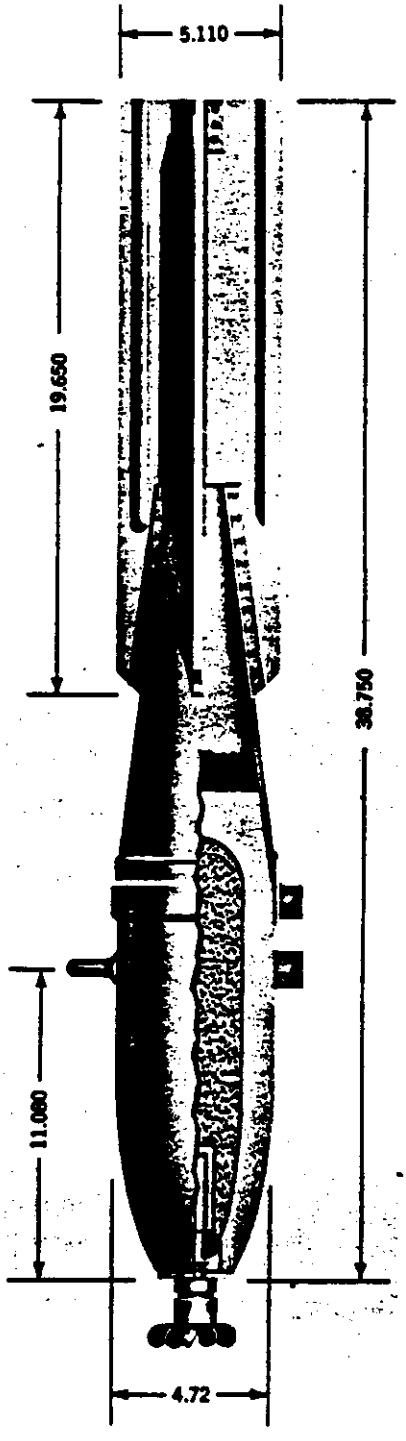

FIGURE 24—AO-20M3 FRAGMENTATION BOMB.

AO-20 M3

TYPE	Fragmentation, 44 lb.
NOSE FUZE	AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	38.7
BODY LENGTH (in.)	16
MAXIMUM DIAMETER (in.)	4.7
WALL THICKNESS (in.)	0.70
TOTAL WEIGHT	46.4 lbs.
CHARGE/WEIGHT RATIO	14%
MAIN CHARGE (TYPE & WEIGHT)	TNT—6.6 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Nose band — Green Body band — Blue
BODY CONSTRUCTION	The bomb body consists of a cast steel cylinder tapering to an ogival nose, which is threaded internally to receive the fuze.
TAIL CONSTRUCTION	The tail consists of four (4) pressed steel fins riveted to a tail cone. The assembly is welded to the base of the bomb body.

REMARKS — The bomb breaks into approximately 280 fragments upon detonation, and has a lethality area of 1800 sq. yds.

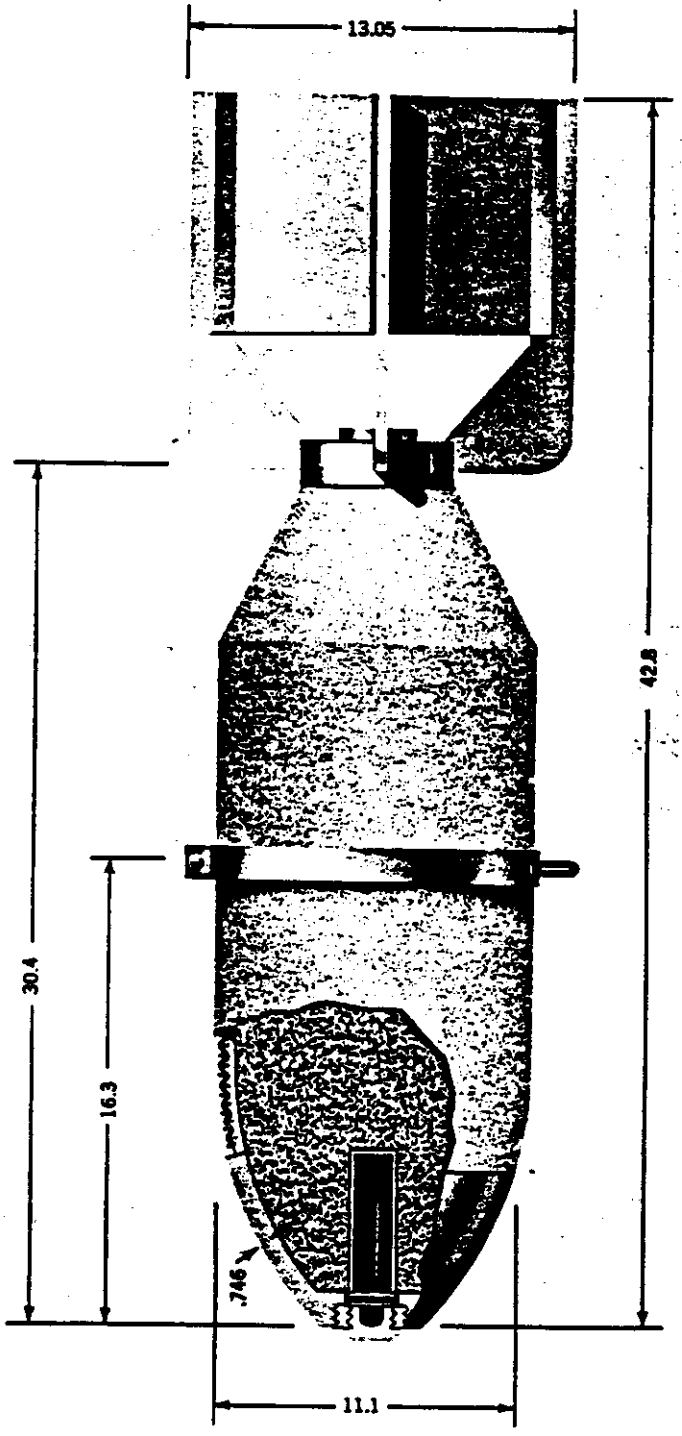

FIGURE 25—AO–100 FRAGMENTATION BOMB.

AO-100

TYPE	Fragmentation, 220 lb.
NOSE FUZE	APUV
TAIL FUZE	APUV
TOTAL LENGTH (in.)	42.8
BODY LENGTH (in.)	30.4
MAXIMUM DIAMETER (in.)	11.1
WALL THICKNESS (in.)	.746
TOTAL WEIGHT	220 lbs.
CHARGE/WEIGHT RATIO	50%
MAIN CHARGE (TYPE & WEIGHT)	Cast TNT and pressed Amatol Approximately 110 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Nose band — Green Body band — Blue
BODY CONSTRUCTION	The bomb body consists of concrete reinforced with toothed longitudinal metal strips, and circumferential wires 3 mm in diameter. The nose section is formed of cast steel fitted with a fuze adapter. The after section tapers in a straight cone, and is closed with a steel plate having a fuze adapter and an external thread to receive the tail assembly.
TAIL CONSTRUCTION	The tail consists of four (4) pressed steel fins welded to a steel cap. Supporting struts are welded between the fins to form a square box. The steel cap is threaded internally, for threading to the base closing plate of the bomb body.

REMARKS — Russian documents state that this bomb is more effective against personnel than the FAB-100.

This space is reserved for additional material as it becomes available.

AOKh-8

TYPE	Frag.-Gas Bomb
NOSE FUZE	AGM-1
TAIL FUZE	None
TOTAL LENGTH (in.)	16
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	4.1
WALL THICKNESS (in.)	.06
TOTAL WEIGHT	17.5 lbs.
CHARGE/WEIGHT RATIO	Gas 7% H.E. 7%
MAIN CHARGE (TYPE & WEIGHT)	Diphenylchloramine 1.2 lbs. High Explosive 1.3 lbs.
SUSPENSION	Single suspension lug
COLOR MARKINGS	Nose Band — Green Body Band — Green and Blue
BODY CONSTRUCTION	The bomb has a light, tapered, sheet iron body. A booster tube extends the length of the bomb body. The space between the booster tube and the bomb casing is filled with steel fragments and the gas mixture.
TAIL CONSTRUCTION	The bomb has a short cylindrical tail, which is attached to the after end of the bomb body by four bars.

REMARKS — The effective fragmentation radius is given as 16 yards, while the gas forms a cloud lasting an average of 35 minutes, and causing nose irritation up to 435 yards.

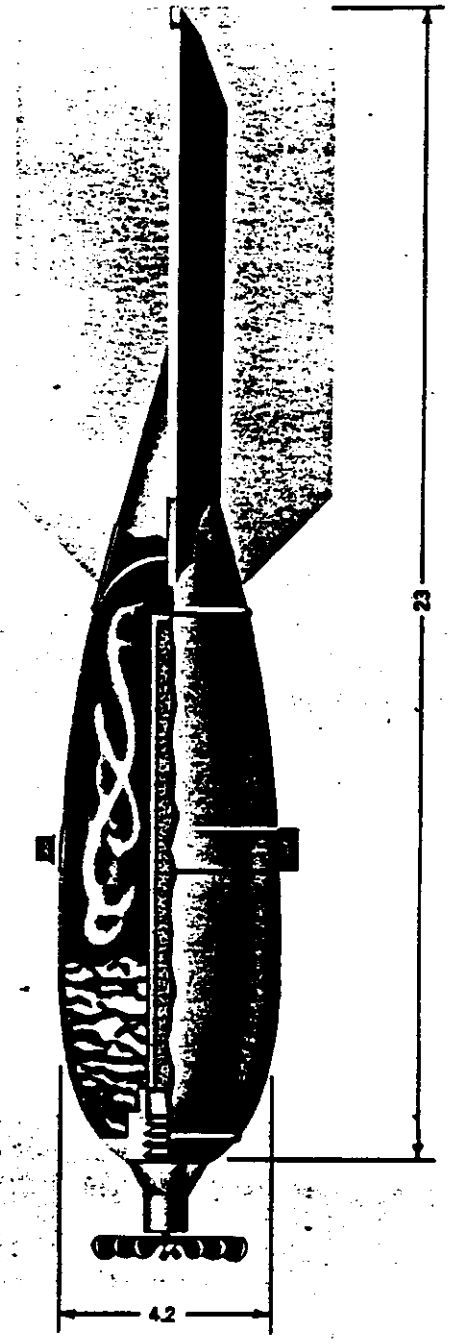

FIGURE 26—AOKh–10 FRAGMENTATION-GAS BOMB.

AOKh-10

TYPE	FRAG/GAS (combined), 22 lb.
NOSE FUZE	AV-4, AM-A, AGM-1
TAIL FUZE	None
TOTAL LENGTH	23 (approximately)
BODY LENGTH (in.)	11.04
MAXIMUM DIAMETER (in.)	4.2
WALL THICKNESS (in.)	.08
TOTAL WEIGHT	22 lbs.
CHARGE/WEIGHT RATIO	Gas 7% H.E. 7%
SUSPENSION	Single suspension band
MAIN CHARGE (TYPE & WEIGHT)	DA, DM, or CN 1.7 lb. and High Explosive 1.7 lb.
COLOR MARKINGS	Nose band — Green Body bands — Green and Blue
BODY CONSTRUCTION	The bomb has a light tapered, sheet iron body. A burster tube extends the length of the bomb body. The space between the burster tube and the bomb casing is filled with a combination of steel fragments and gas mixture.
TAIL CONSTRUCTION	The tail consists of four (4) sheet iron fins attached to a tail cone, which is welded to the bomb body.

REMARKS — The effective fragmentation radius is given as 109 yds. The gas forms a cloud lasting from eight (8) to twelve (12) minutes, and causing nose irritation up to 328 yards.

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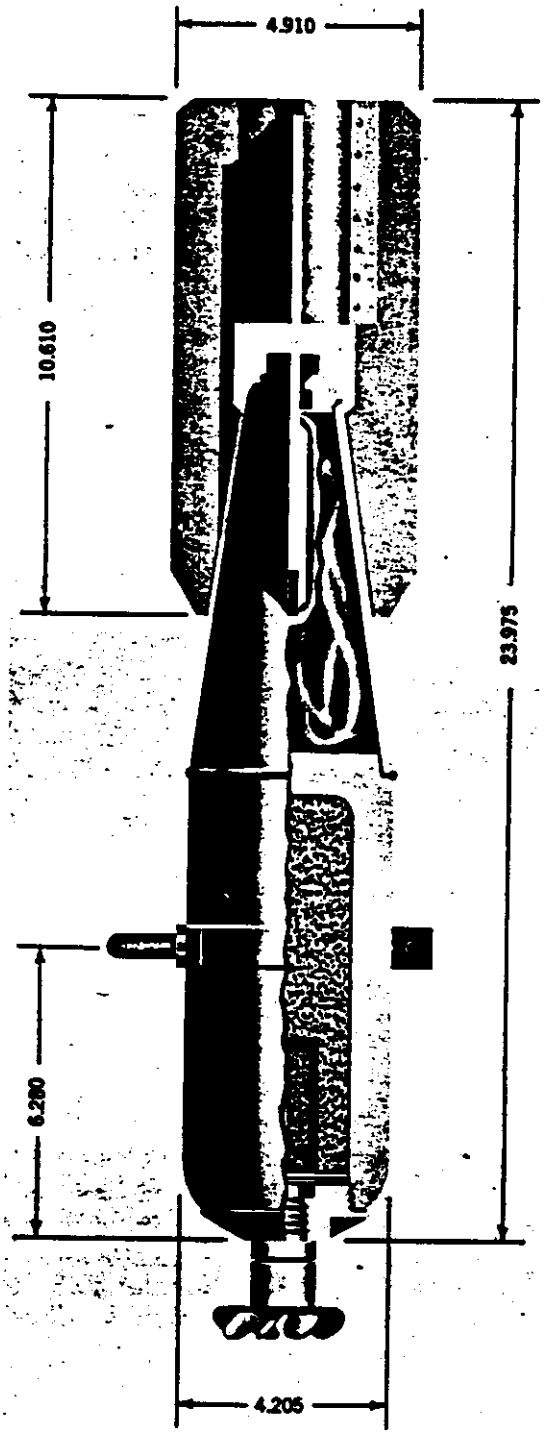

FIGURE 27—AOKh–15 FRAGMENTATION-GAS BOMB.

AOKh-15

TYPE	FRAG/GAS (combination), 33 lb.
NOSE FUZE	AM-A, AGM-1, AV-4
TAIL FUZE	None
TOTAL LENGTH (in.)	24.4
BODY LENGTH (in.)	9.44
MAXIMUM DIAMETER (in.)	4.2
WALL THICKNESS (in.)	.7
TOTAL WEIGHT	32.4 lbs.
CHARGE/WEIGHT RATIO	7.8%
MAIN CHARGE (TYPE & WEIGHT)	DA, DM, or CN 2.2 lb. and TNT 2.5 lb.
SUSPENSION	Single suspension band
COLOR MARKINGS	Nose band — Green Body band — Green and Blue
BODY CONSTRUCTION	The bomb has a cylindrical body, and an abruptly rounded nose. A fuze adapter and a booster are fitted into the bomb nose.
TAIL CONSTRUCTION	The tail consists of four (4) fin blades welded to a tail cone and riveted to a circular strut. The tail cone is generally filled with a gas mixture and closed by a fitting plug. The assembly is welded to the base of the bomb body.

REMARKS — This bomb has been converted from a 107 mm artillery projectile. Fragmentation effect is reported to be good while the gas effect is small.

The AOKh-25 is also made from a converted artillery projectile and is reported to be similar to the AOKh-15 in construction. It has a total weight of 52 lbs. and a filler of 3.3 lbs. of HE, and 8.25 lbs. of Adamsite, Diphenylchlorarsine, or Chloracetophenone in the tail cone.

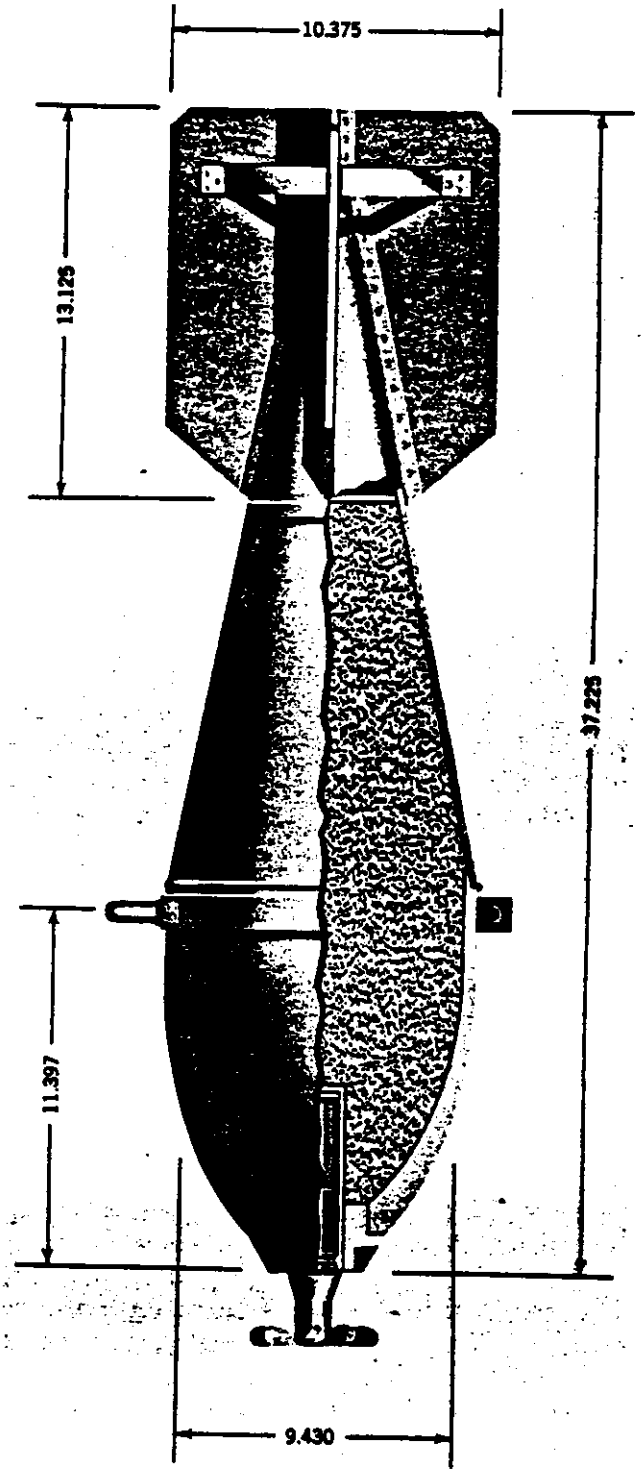

FIGURE 28—FAB-50 (WELDED) GENERAL PURPOSE BOMB.

FAB-50 (welded)

TYPE	G.P., 100 lb. (welded)
NOSE FUZE	APUV, AV-1, AGP
TAIL FUZE	None
TOTAL LENGTH (in.)	37.2
BODY LENGTH (in.)	24.1
MAXIMUM DIAMETER (in.)	9.4
WALL THICKNESS (in.)	.31
TOTAL WEIGHT	133 lbs.
CHARGE/WEIGHT RATIO	41.5%
MAIN CHARGE (TYPE & WEIGHT)	TNT—55 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The tear-drop shaped body consists of two forged steel sections, welded together just aft of the suspension band. The after section is conical and the forward section is ogival, ending in a fuze adapter. The base is closed with a base-plate having a threaded extension for the attaching of the tail unit. There is no provision for a tail fuze.
TAIL CONSTRUCTION	The tail unit consists of a cone with four (4) fins welded, or riveted, to it. Four (4) diagonal struts, are riveted to the fins, for support.

REMARKS — The bomb is fitted with an extra suspension band, when it is to be dropped from an American bomb shackle.

FAB-50 (forged)

TYPE	G.P., 100 lb. (forged)
NOSE FUZE	APUV, AV-1
TAIL FUZE	None
TOTAL LENGTH (in.)	37.2
BODY LENGTH (in.)	23.3
MAXIMUM DIAMETER (in.)	9.5
WALL THICKNESS (in.)	.35
TOTAL WEIGHT	110 lbs.
CHARGE/WEIGHT RATIO	48%
MAIN CHARGE (TYPE & WEIGHT)	TNT—52.8 lb.
SUSPENSION	Single suspension band
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body consists of a single piece forged steel cylinder with ogival nose, cylindrical midsection, and conically tapering after section. A fuze adapter is threaded in the nose, and the base is closed with a ring, which has a threaded extension for attaching the tail unit. There is no provision for attaching a tail fuze.
TAIL CONSTRUCTION	The tail unit is of box construction and is secured to the base with a spanner lock nut.

REMARKS — This bomb strongly resembles the American ANGP bomb of similar weights.

FAB-70

TYPE	Explosive loaded (Oxygen Cylinder)
NOSE FUZE	APUV
TAIL FUZE	None
TOTAL LENGTH (in.)	50 (Approx.)
BODY LENGTH (in.)	32
MAXIMUM DIAMETER (in.)	9.5
WALL THICKNESS	(Unknown)
TOTAL WEIGHT	154 lbs.
CHARGE/WEIGHT RATIO	45-50%
MAIN CHARGE (TYPE & WEIGHT)	TNT—70 to 77 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body is a long slim cylinder with a short ogival nose and conical after section. It has the appearance of having been made from an oxygen cylinder.
TAIL CONSTRUCTION	The tail unit is of the cross blade type, and has been lengthened by an additional ten (10) inches to a total of twenty-four (24) inches, in an effort to improve the stability of the bomb.

REMARKS — The bomb is fitted with an extra suspension band when it is to be dropped from an American bomb shackle. This bomb is of poor design and is probably not in use.

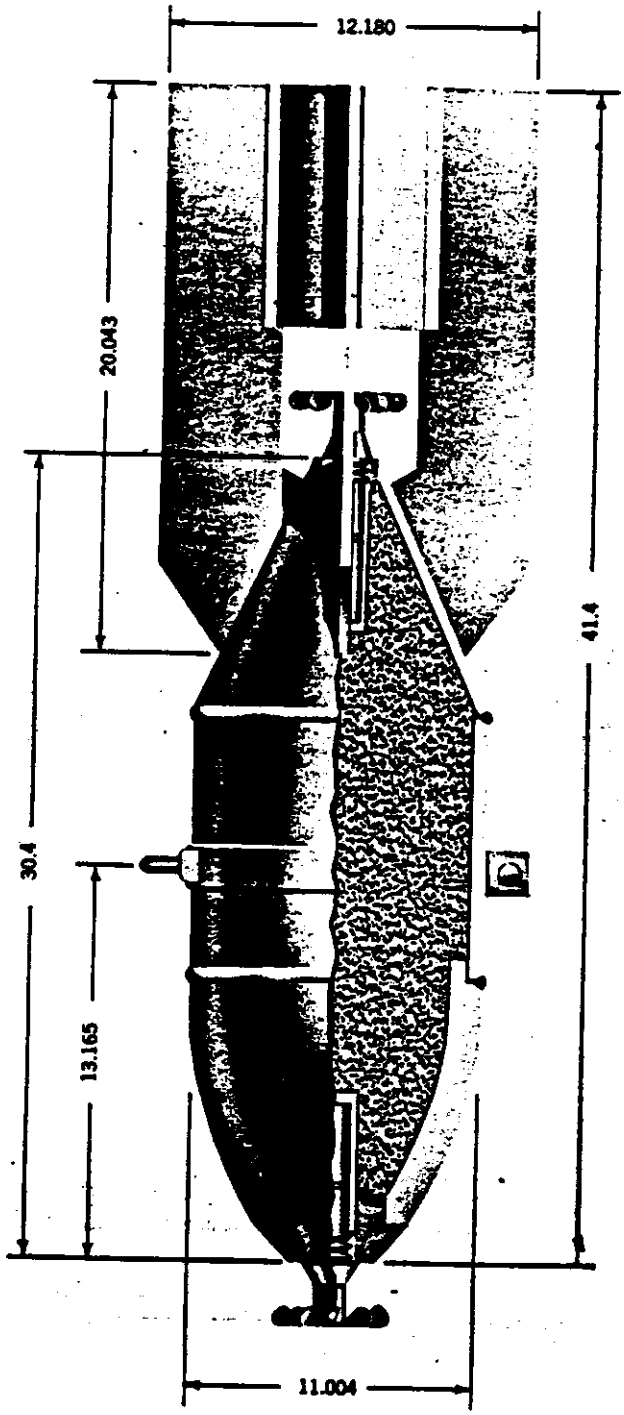

FIGURE 29—FAB-100 (WELDED) GENERAL PURPOSE BOMB.

FAB-100 (welded)

TYPE	G.P., 220 lb. (welded)
NOSE FUZE	APUV, AV-1, AGP
TAIL FUZE	APUV, AV-1, ADP
TOTAL LENGTH (in.)	41.4
BODY LENGTH (in.)	30.4
MAXIMUM DIAMETER (in.)	11
WALL THICKNESS (in.)	.55
TOTAL WEIGHT	220 lbs.
CHARGE/WEIGHT RATIO	32%
MAIN CHARGE (TYPE & WEIGHT)	TNT—70.4 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Grey overall
BODY CONSTRUCTON	The body is formed by a heavy, ogival, cast steel nose section, a cylindrical mid-section, and a conical after section, all welded together. Nose and tail fuze adapters are threaded into the body.
TAIL CONSTRUCTION	The tail consists of four (4) fins, welded to the conical base section of the bomb body. Struts are welded between the fins to form a square box.

REMARKS — Bomb is fitted with an extra suspension lug when it is to be dropped from an American bomb shackle. The bomb may also be carried, vertically, by means of an additional lug welded to one of the tail fins.

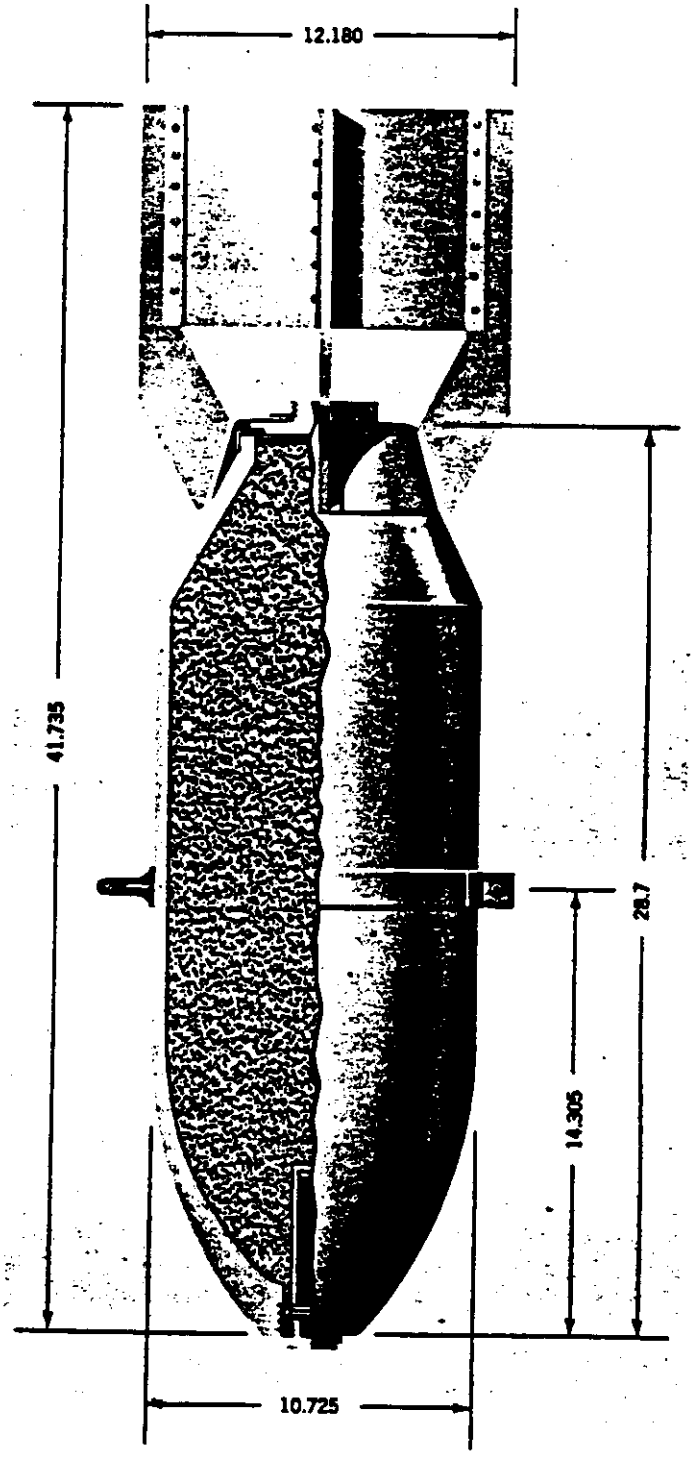

FIGURE 30—FAB-100 (FORGED) GENERAL PURPOSE BOMB.

FAB-100 (forged)

TYPE	G.P., 220 lb. (forged)
NOSE FUZE	APUV, AV-1, AGP
TAIL FUZE	None
TOTAL LENGTH (in.)	41.7
BODY LENGTH (in.)	28.7
MAXIMUM DIAMETER (in.)	10.7
WALL THICKNESS (in.)	.35
TOTAL WEIGHT	216 lbs.
CHARGE/WEIGHT RATIO	47%
MAIN CHARGE (TYPE & WEIGHT)	TNT—101.4 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body consists of a single piece forged steel cylinder with ogival nose, a cylindrical mid-section, and a conical after section. A fuze adapter is threaded in the nose and the base is closed with a ring, which has a threaded extension for attaching the tail unit. There is no provision for a tail fuze.
TAIL CONSTRUCTION	The tail unit is of box construction and is secured to the base with a spanner lock nut.

REMARKS — This bomb strongly resembles the American ANGP bomb of similar weight. A bomb, designated "FAB-100 KD" has been mentioned in reports. It is supposed to contain a liquid explosive and use an APUV fuze.

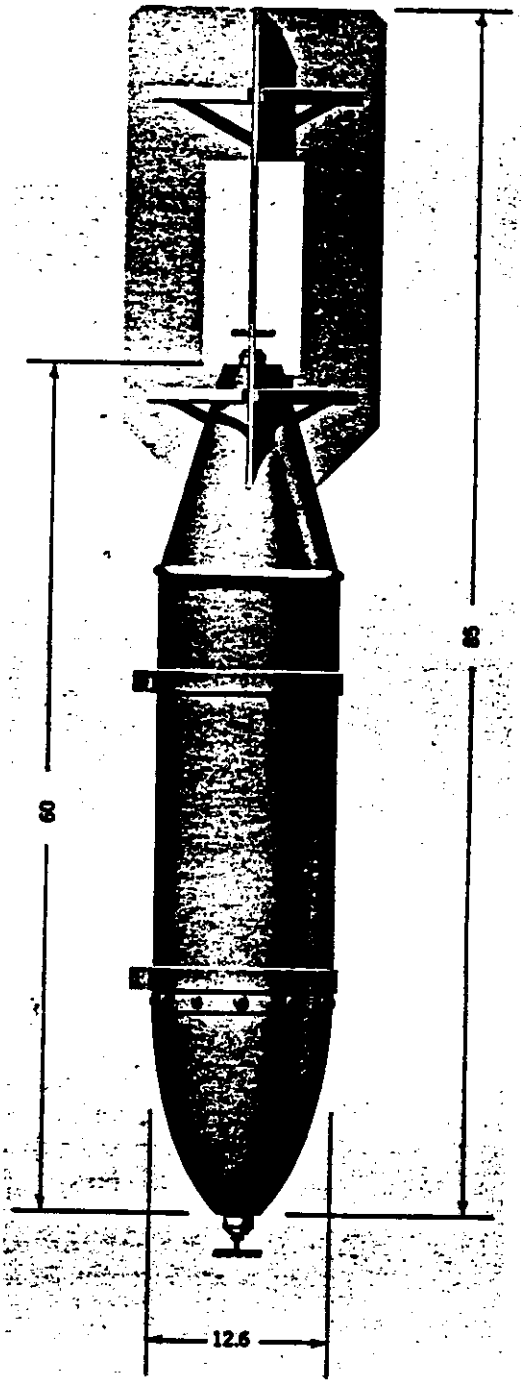

FIGURE 31—FAB-250 (WELDED) GENERAL PURPOSE BOMB.

FAB-250 (welded)

TYPE	G.P., 550 lbs. (welded)
NOSE FUZE	APUV, AV-1, AGP
TAIL FUZE	APUV, AV-1, ADP
TOTAL LENGTH (in.)	85
BODY LENGTH (in.)	60 (approximately)
MAXIMUM DIAMETER (in.)	12.6
WALL THICKNESS (in.)	.25
TOTAL WEIGHT	550 lbs.
CHARGE/WEIGHT RATIO	47.5%
MAIN CHARGE (TYPE & WEIGHT)	TNT—259 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body is formed of a heavy, ogival cast steel nose section, a cylindrical mid-section and a conical after section, all welded together. Nose and tail fuze adapters are threaded into the body.
TAIL CONSTRUCTION	The tail unit consists of four (4) fins, welded to the conical section of the bomb body. Struts are welded between the fins to form a square box.

REMARKS — The bomb is altered for dropping from the front bay of B-24, by shifting the suspension bands and trimming 9.5 inches off the tail. This stabilizing surface is restored by riveting four (4) pieces of 8 x 11 inches sheet metal, diagonally on the fins, to form a rough box tail.

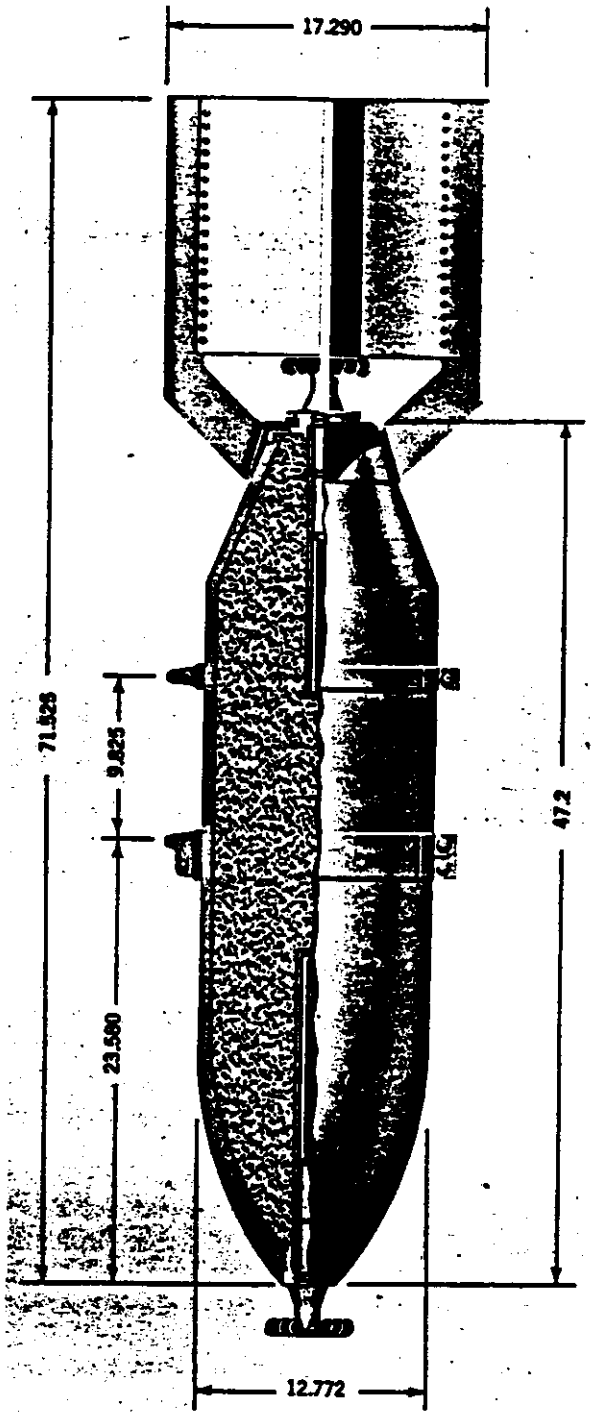

FIGURE 32—FAB–250 (FORGED) GENERAL PURPOSE BOMB.

FAB-250 (forged)

TYPE	G.P., 550 lb. (forged)
NOSE FUZE	APUV, AGP
TAIL FUZE	APUV, ADP
TOTAL LENGTH (in.)	71.5
BODY LENGTH (in.)	47.2
MAXIMUM DIAMETER (in.)	12.8
WALL THICKNESS (in.)	.43
TOTAL WEIGHT	525 lbs.
CHARGE/WEIGHT RATIO	48%
MAIN CHARGE (TYPE & WEIGHT)	TNT—252 lb.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body consists of a single piece forged steel cylinder with ogival nose, cylindrical mid-section, and conically tapering after section. A fuze adapter is threaded in the nose, and the base is closed with a ring having a threaded extension for attaching the tail unit. An adapter is threaded in the ring for the tail fuze.
TAIL CONSTRUCTION	The tail unit is of box construction, and is secured in the base with a spanner lock nut.

REMARKS — This bomb strongly resembles the American ANGP bomb of similar weight.

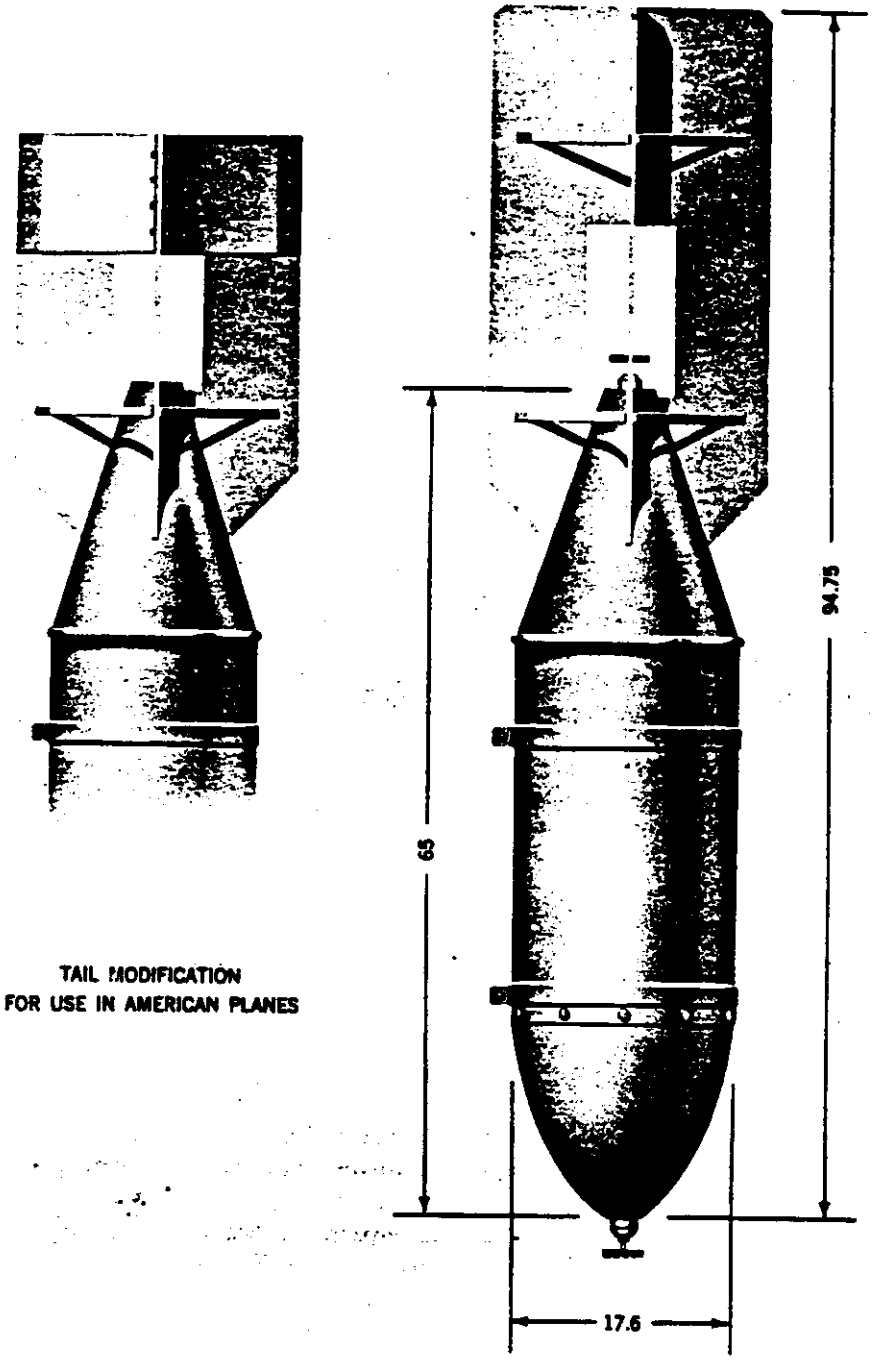

FIGURE 33—FAB-500 (WELDED) GENERAL PURPOSE BOMB.

FAB-500 (welded)

TYPE	G.P., 1100 lb. (welded)
NOSE FUZE	APUV, AV-1, AGP
TAIL FUZE	APUV, AV-1, ADP
TOTAL LENGTH (in.)	94.8
BODY LENGTH (in.)	65 (approximately)
MAXIMUM DIAMETER (in.)	17.6
WALL THICKNESS (in.)	.35
TOTAL WEIGHT	1116 lbs.
CHARGE/WEIGHT RATIO	46.3%
MAIN CHARGE (TYPE & WEIGHT)	TNT—518 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body is formed of a heavy, ogival, cast steel nose section, a cylindrical mid-section, and a conical after section, all welded together. Nose and tail fuze adapters are threaded into the body.
TAIL CONSTRUCTION	The tail unit consists of four (4) fins, welded to the conical base section of the bomb body. Struts are welded between the fins to form a square box.

REMARKS — This bomb is altered to fit the bomb bay of the B-24, by shifting the suspension bands, shortening the tail, and adding four (4) pieces of sheet steel to form a modified box tail, similar to that provided on the 250 kg. bomb for the same purpose.

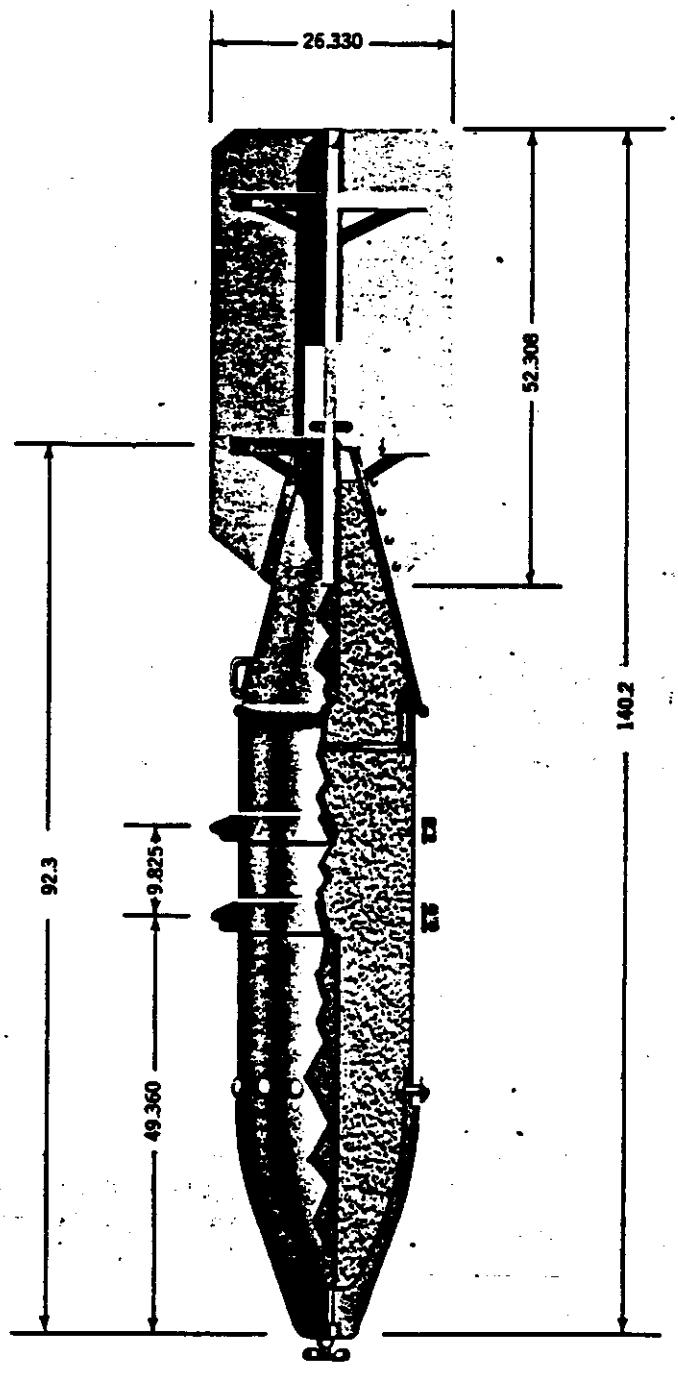

FIGURE 34—FAB-1000 (WELDED) GENERAL PURPOSE BOMB.

FAB-1000 (welded)

TYPE	G.P., 2200 lb. (welded)
NOSE FUZE	APUV, AGP
TAIL FUZE	APUV, ADP
TOTAL LENGTH (in.)	140.2
BODY LENGTH (in.)	92.3
MAXIMUM DIAMETER (in.)	19.6
WALL THICKNESS (in.)	.51
TOTAL WEIGHT	2277 lbs.
CHARGE/WEIGHT RATIO	46%
MAIN CHARGE (TYPE & WEIGHT)	TNT—1047 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Grey overall
BODY CONSTRUCTION	The body is formed of a heavy, ogival, steel nose section, a cylindrical midsection, and a conical after section. The nose section is riveted and welded to the midsection, which, in turn, is welded to the after section. The nose and base sections both contain fuze adapters.
TAIL CONSTRUCTION	The tail unit consists of four (4) fins welded to the conical base section of the bomb body. Double sets of struts are welded between the fins for additional rigidity.

REMARKS — The purpose of the extra lug or ring on the tail cone is not known. There are references to a FAB-2000, and FAB-5000, but no information is available on them.

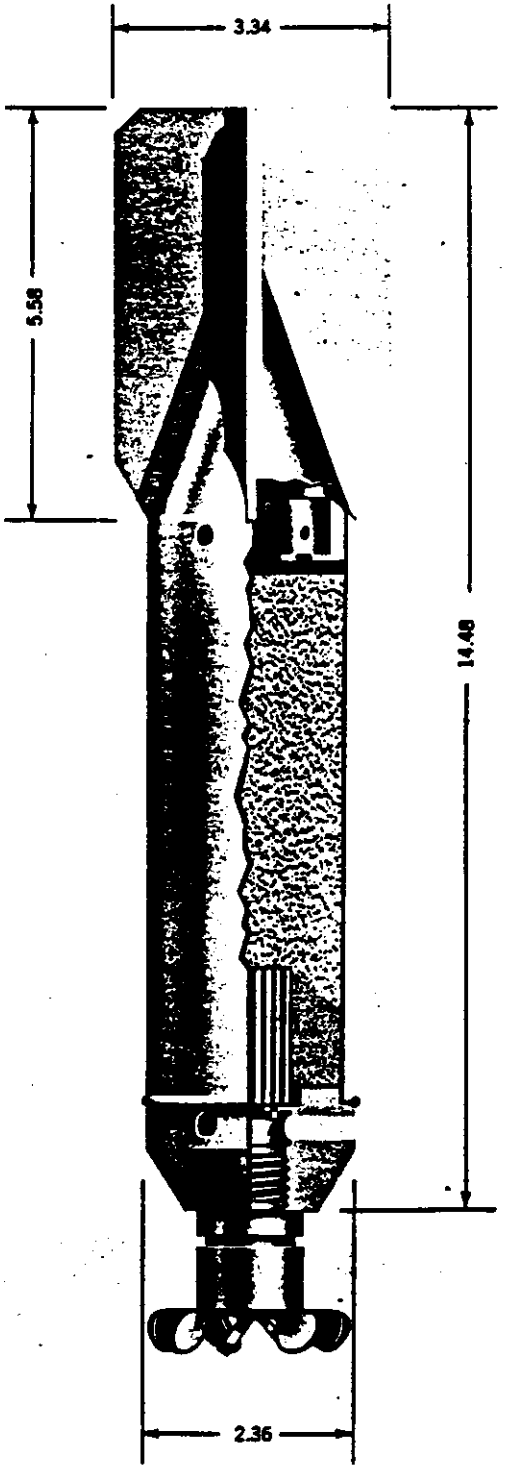

FIGURE 35—ZAB-1E INCENDIARY BOMB.

ZAB-1E

TYPE	Electron Incendiary, 3.3 lbs.
NOSE FUZE	AM-B, AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	14.5
BODY LENGTH (in.)	9
MAXIMUM DIAMETER (in.)	2.4
WALL THICKNESS (in.)	—
TOTAL WEIGHT	3.3 lbs.
CHARGE/WEIGHT RATIO	39%
MAIN CHARGE (TYPE & WEIGHT)	Thermite — 0.99 to 1.04 lbs. Electron Casting — 1.5 lbs.
SUSPENSION	Usually caried in clusters
COLOR MARKINGS	Nose band — Red Body band — Blue
BODY CONSTRUCTION	Body consists of a magnesium cylinder with a short straight taper at the nose. The base is closed with a plug and the nose is fitted with a fuze adapter. Five gas ports pierce the forward bomb body and are covered with a piece of adhesive tape.
TAIL CONSTRUCTION	The tail consists of four fins riveted to a tail cone. (This bomb has been reported to have five fins.)

REMARKS — Also reported to be unpainted, instead it has the natural golden yellow color of the electron alloy which forms the outer casing around the thermite core.

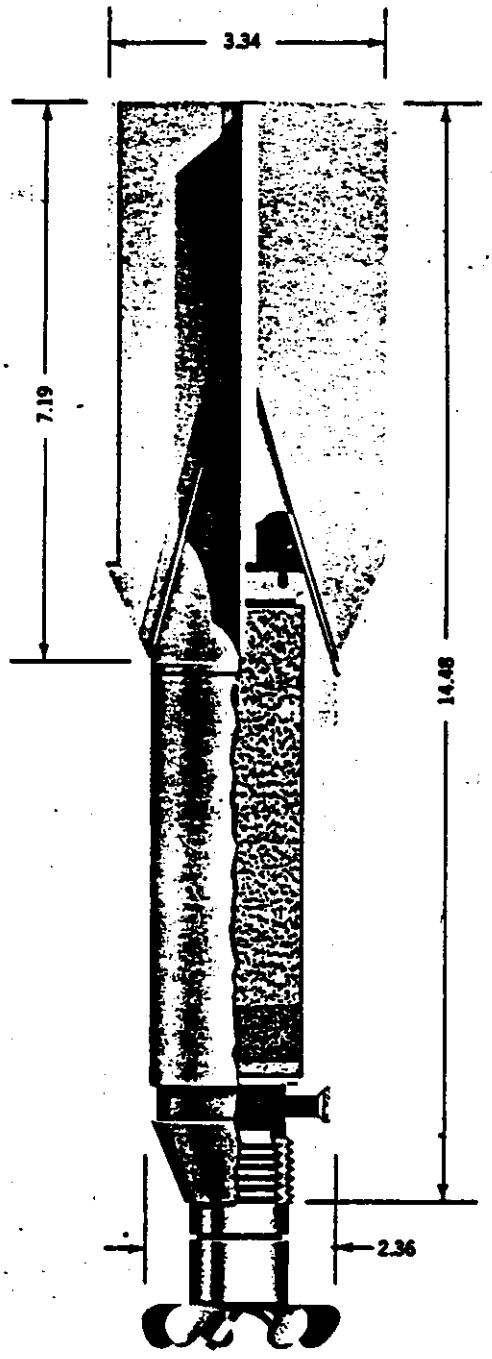

FIGURE 36—ZAB-2.5 INCENDIARY BOMB.

ZAB-2.5

TYPE	Thermite, Incendiary 5.5 lbs.
NOSE FUZE	AM-B, AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	14.5
BODY LENGTH (in.)	9
MAXIMUM DIAMETER (in.)	2.4
WALL THICKNESS (in.)	—
TOTAL WEIGHT	5.5 lbs.
CHARGE/WEIGHT RATIO	51%
MAIN CHARGE (TYPE & WEIGHT)	Thermite — 2.8 lbs.
SUSPENSION	Carried in clusters
COLOR MARKINGS	Nose band — Yellow Body band — Blue
BODY CONSTRUCTION	The bomb body consists of a sheet iron cylinder tapering in a cone to both nose and base. The base is closed with a plug and the nose is fitted with a fuze adapter. The nose of the bomb carries the gas ports, which are sealed with paraffin.
TAIL CONSTRUCTION	The tail consists of four sheet metal fins riveted to the tail cone. The tail cone is fastened to the bomb body by four screws.

REMARKS — Also reported with a red ring on the nose, which is supposed to indicate a delayed action igniter. Burning time is 2-3 minutes.

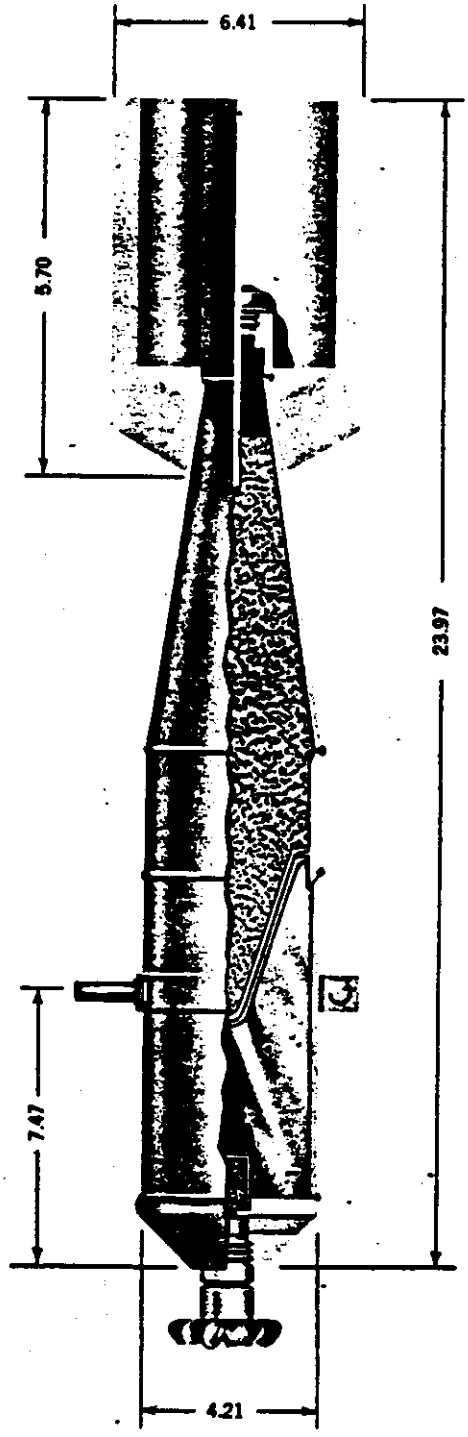

FIGURE 37—ZAB-10TG INCENDIARY BOMB.

ZAB-10TG

TYPE	Combination incendiary bomb
NOSE FUZE	AM-B, AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	24
BODY LENGTH (in.)	20 (approximate)
MAXIMUM DIAMETER (in.)	4.2
WALL THICKNESS (in.)	—
TOTAL WEIGHT	22 lbs.
CHARGE/WEIGHT RATIO	50%
MAIN CHARGE (TYPE & WEIGHT)	Thermite 3.7 lbs. Thickened naptha petroleum 7.3 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Nose band — Red Body band — Blue
BODY CONSTRUCTION	The bomb body consists of a sheet metal cylinder tapering in a cone to the base. A conical steel nose cap, threaded internally to receive the fuze, is welded in place. The base is closed by a plug, fitted with a filling sleeve adapter. The different fillings are separated by a conical shaped steel membrane. Three gas ports on the nose are closed by paraffin.
TAIL CONSTRUCTION	The tail assembly consists of four sheet metal fins welded to the base of the bomb body and riveted to a tubular strut.

REMARKS — Burning time is four minutes for the thermite and ten minutes for the thickened fuel.

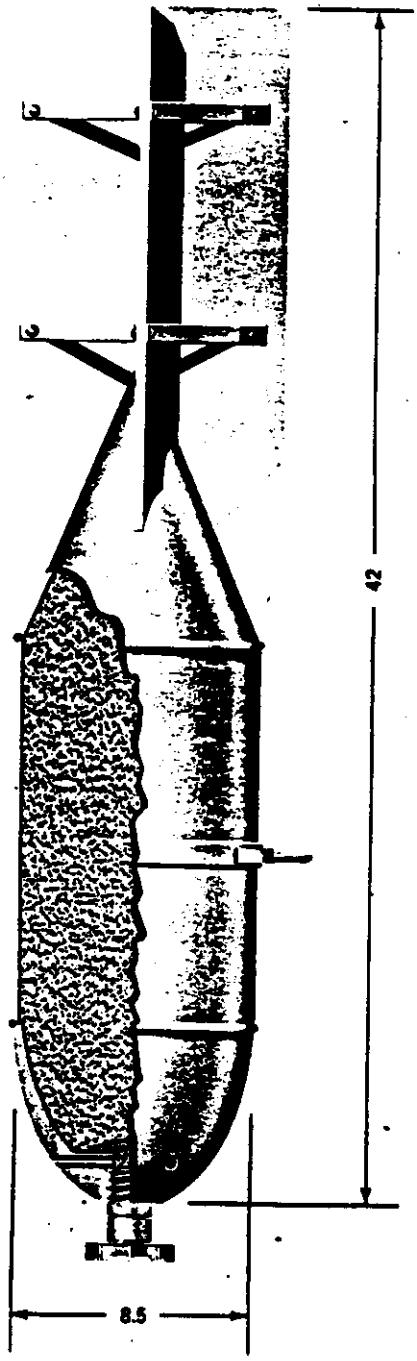

FIGURE 38—ZAB-50TS INCENDIARY BOMB.

ZAB-50TS

TYPE	Incendiary, (Thermite)
NOSE FUZES	AM-B, AGM-3
TAIL FUZES	None
TOTAL LENGTH (in.)	42
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	8.5
WALL THICKNESS	—
TOTAL WEIGHT	138.5 lbs.
CHARGE/WEIGHT RATIO	60.3%
MAIN CHARGE (TYPE & WEIGHT)	Thermite — 83.5 lbs. (Same as in ZAB-50TG Type A)
SUSPENSION	—
COLOR MARKINGS	Nose band — Red or Red and Black Body band — Blue
BODY CONSTRUCTION	The bomb consists of an ogival steel nose section, cylindrical sheet iron body, and a conical after section, all joined by welding. A fuze adapter is threaded into the nose section. The nose section has very large gas ports, which are closed by corks instead of paraffin.
TAIL CONSTRUCTION	The tail consists of four (4) sheet metal fins welded to the tail section of the bomb, and braced by two sets of struts.

REMARKS — The filling of this bomb is of loose thermite powder. It has a reported burning time of 9 minutes.

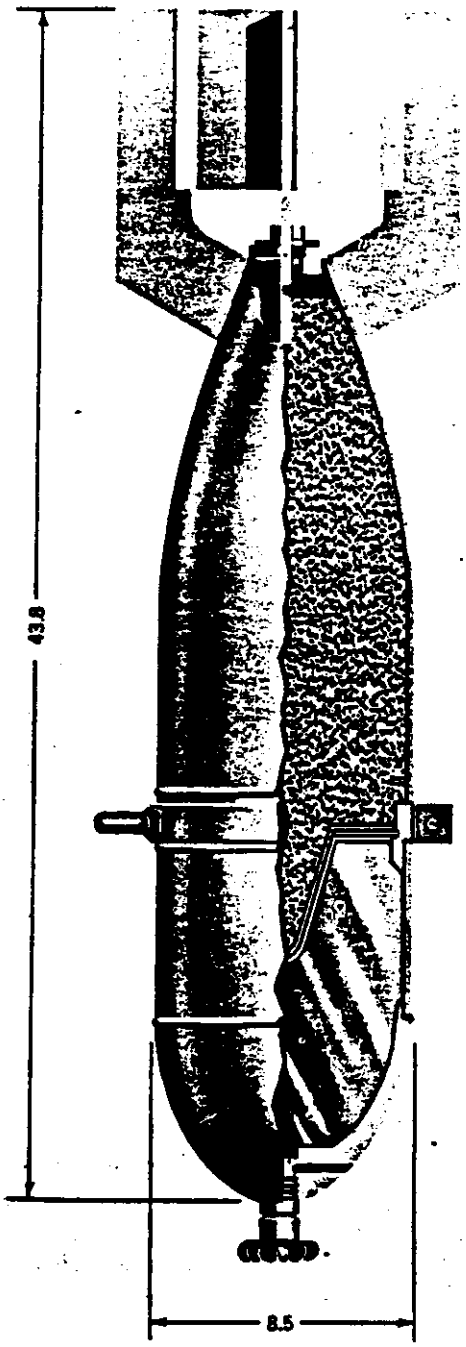

FIGURE 39—ZAB-50TG TYPE A INCENDIARY BOMB.

ZAB-50TG TYPE A

TYPE	Combination incendiary bomb
NOSE FUZE	AM-B, AGM-3
TAIL FUZES	None
TOTAL LENGTH (in.)	43.8
BODY LENGTH (in.)	35.1
MAXIMUM DIAMETER (in.)	8.5
WALL THICKNESS (in.)	—
TOTAL WEIGHT	99 lbs.
CHARGE/WEIGHT RATIO	60%
MAIN CHARGE (TYPE & WEIGHT)	Thermite 35 lbs. Thickened petrol 26.5 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Nose band — Red Body band — Blue
BODY CONSTRUCTION	The bomb body consists of an ogival steel nose section welded to a sheet metal cylinder, which tapers in a cone to the base. The nose section is threaded internally to receive the fuze. The base is closed by a plug fitted with a filling sleeve adapter. The different fillings are separated by a conical shaped steel membrane. The bomb has four gas ports on the nose.
TAIL CONSTRUCTION	The tail assembly consists of four sheet metal fins welded to the bomb body. Struts are welded between the fins to form a square box.

REMARKS — Burns six minutes with a flame height of 13 feet.

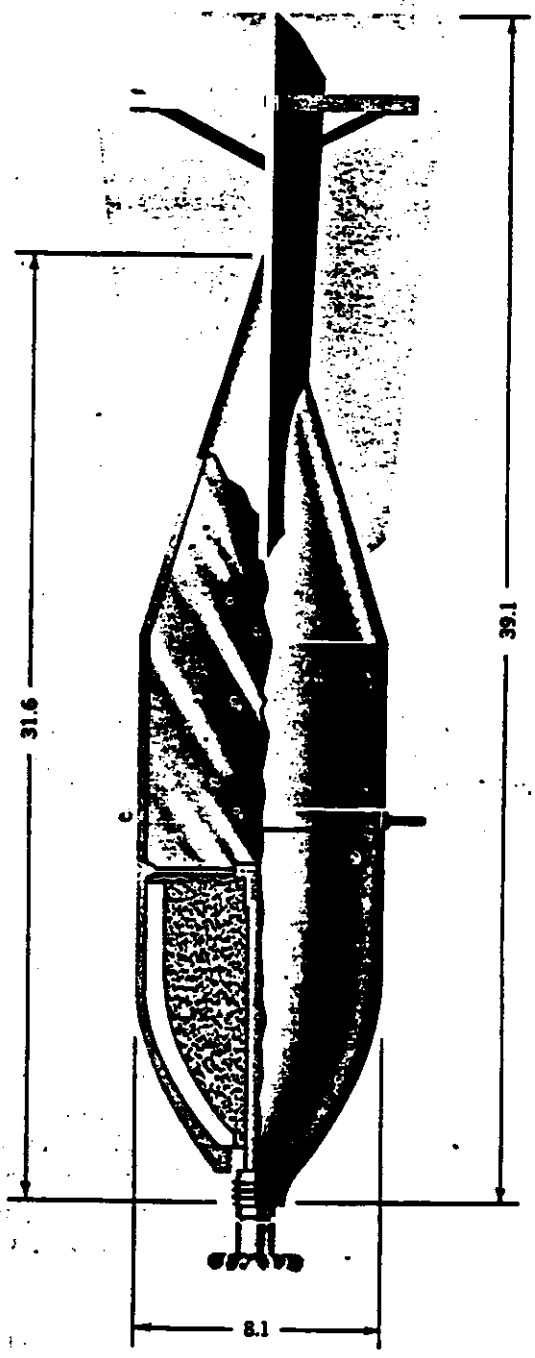

FIGURE 40—ZAB-50TG TYPE B INCENDIARY BOMB.

ZAB-50TG TYPE B

TYPE	Combination incendiary bomb
NOSE FUZE	AM-B, AGM-3
TAIL FUZE	None
TOTAL LENGTH (in.)	39.1
BODY LENGTH (in.)	31.6
MAXIMUM DIAMETER (in.)	8.1
WALL THICKNESS (in.)	—
TOTAL WEIGHT	105.5 lbs.
CHARGE/WEIGHT RATIO	57%
MAIN CHARGE (TYPE & WEIGHT)	Thermite 41.8 lbs. Thickened naphtha petroleum 18.7 lbs.
SUSPENSION	Probably single suspension
COLOR MARKINGS	Nose band — Red Body band — Blue
BODY CONSTRUCTION	The bomb body consists of a cylindrical body, ogival nose, and conical after body. This bomb has no filling plug in the base section. The forward part of the bomb is filled with loose thermite, held in place by four metal partitions. The after section is filled with the thickened fuel. A flat diaphragm of corrugated aluminum separates the two fillings. A powder channel extends from the fuze pocket, through the diaphragm, to the after body. It provides for simultaneous ignition of both fillings, and also allows enough delay so that the bomb penetrates the target before igniting. This bomb has paraffin filled gas ports in the middle of the body near the diaphragm.
TAIL CONSTRUCTION	The tail consists of four sheet metal fins welded to the tail cone and suported by a single strut.

REMARKS — Burns for 6 minutes. Simultaneous ignition of the fuels gives an intense heat.

This space is reserved for additional material as it becomes available.

ZAB-50T SHCH

TYPE	Incendiary, (thermite)
NOSE FUZE	TM-24B, TM-4B
TAIL FUZE	None
TOTAL LENGTH (in.)	41.5
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	11
WALL THICKNESS (in.)	—
TOTAL WEIGHT	110 lbs.
CHARGE/WEIGHT RATIO	60%
MAIN CHARGE (TYPE & WEIGHT)	Approximately 100 thermite balls — 66 lbs.
SUSPENSION	Single lug
COLOR MARKINGS	Body band — Red
BODY CONSTRUCTION	The bomb has an ogival nose section welded to a cylindrical sheet iron body. The ignition charge for the thermite balls is contained in a perforated iron tube, which extends about three quarters of the bomb length. The incendiary spheres are loaded through an opening in the base of the bomb.
TAIL CONSTRUCTION	The tail has four (4) fins and is detachable.

REMARKS — The filling of this bomb consists of approximately 100 compressed thermite balls, weighing about .7 lbs. each. The thermite composition is as follows:

Iron oxide	53.3%
Aluminum	16.0%
Barium nitrate	28.3%
Magnesium	0.4%
Binder	2.0%

The maximum burning temperature is 3632° F.

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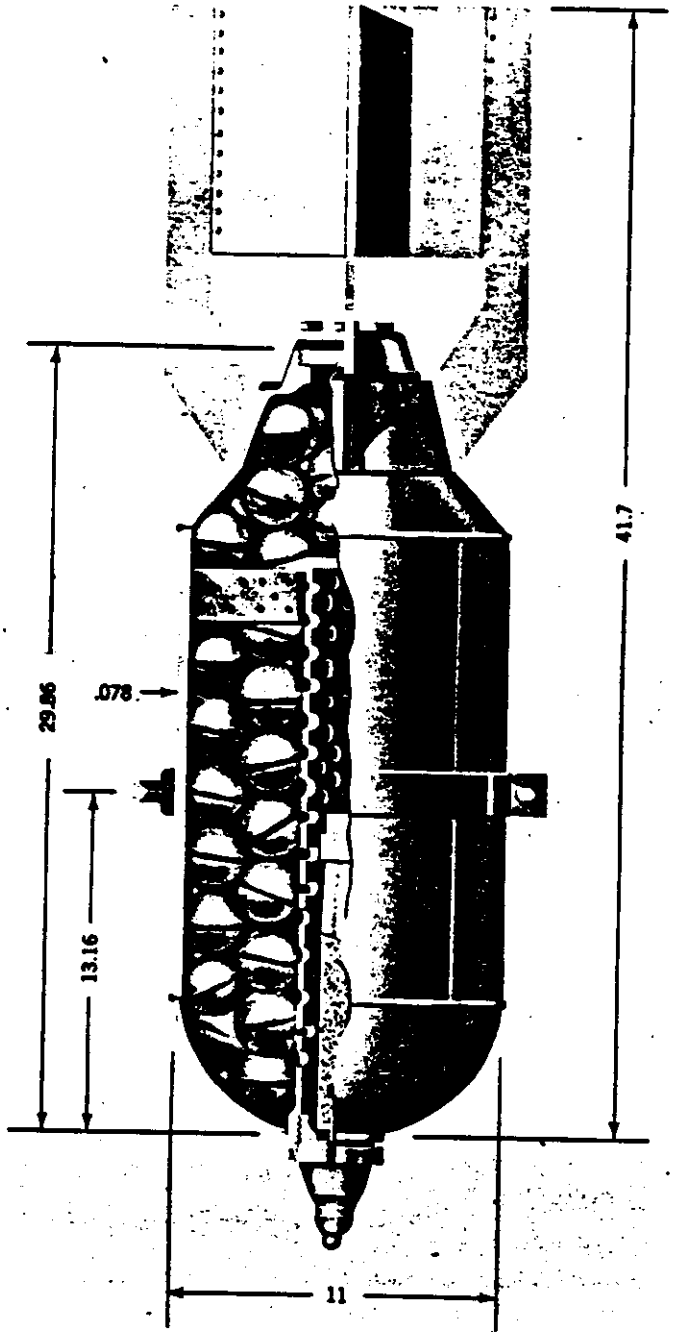

FIGURE 41—ZAB-100T SHCH INCENDIARY BOMB.

ZAB-100T SHCH

TYPE	Incendiary (cluster)
NOSE FUZE	TM-4B
TAIL FUZE	None
TOTAL LENGTH (in.)	41.7
BODY LENGTH (in.)	30.0
MAXIMUM DIAMETER (in.)	11.0
WALL THICKNESS (in.)	.078
TOTAL WEIGHT	143 lbs.
CHARGE/WEIGHT RATIO	64.3%
MAIN CHARGE (TYPE & WEIGHT)	Approximately 140 thermite balls — 91.9 lbs.
SUSPENSION	Single suspension band
COLOR MARKINGS	Body band — Red
BODY CONSTRUCTION	The body consists of a welded sheet metal container welded to a ogival nose, and a stepped conical base. The base is closed with a plug, while the nose is closed with a fuze adapter. A perforated central tube contains a 230 gm. black powder charge to ignite the thermite balls. The thermite balls are formed of two (2) thin sheet metal stampings, about 2.4 inch in diameter, and weighing about 10.5 oz. each.
TAIL CONSTRUCTION	The tail fin consists of a fin sleeve which fits over the base of the bomb, and is held in place by four (4) bolts. Four (4) narrow sheet metal fin blades are welded to the fin sleeve, to form a square box with riveted supporting struts.

REMARKS — Each thermite ball is drilled through the center and contains two ignition pellets. When used against built-up areas, the best altitude for burst is 600 to 1200 feet so that the balls will still be burning when they land. The bomb can be dropped without fuze or black powder igniter charge, or with the fuze on safe. On impact, there is sufficient heat and shock to ignite the thermite balls, and the bomb burns as one mass. Since the bomb will ignite on impact, duds will seldom be encountered. It is believed that the letter "T", in the designation, indicates thermite and SHCH indicates sphere. There is a report of this type of bomb being found with a load of small incendiary bombs, either ZAB 2.5-1 or ZAB 2.5T, without tails or fuzes.

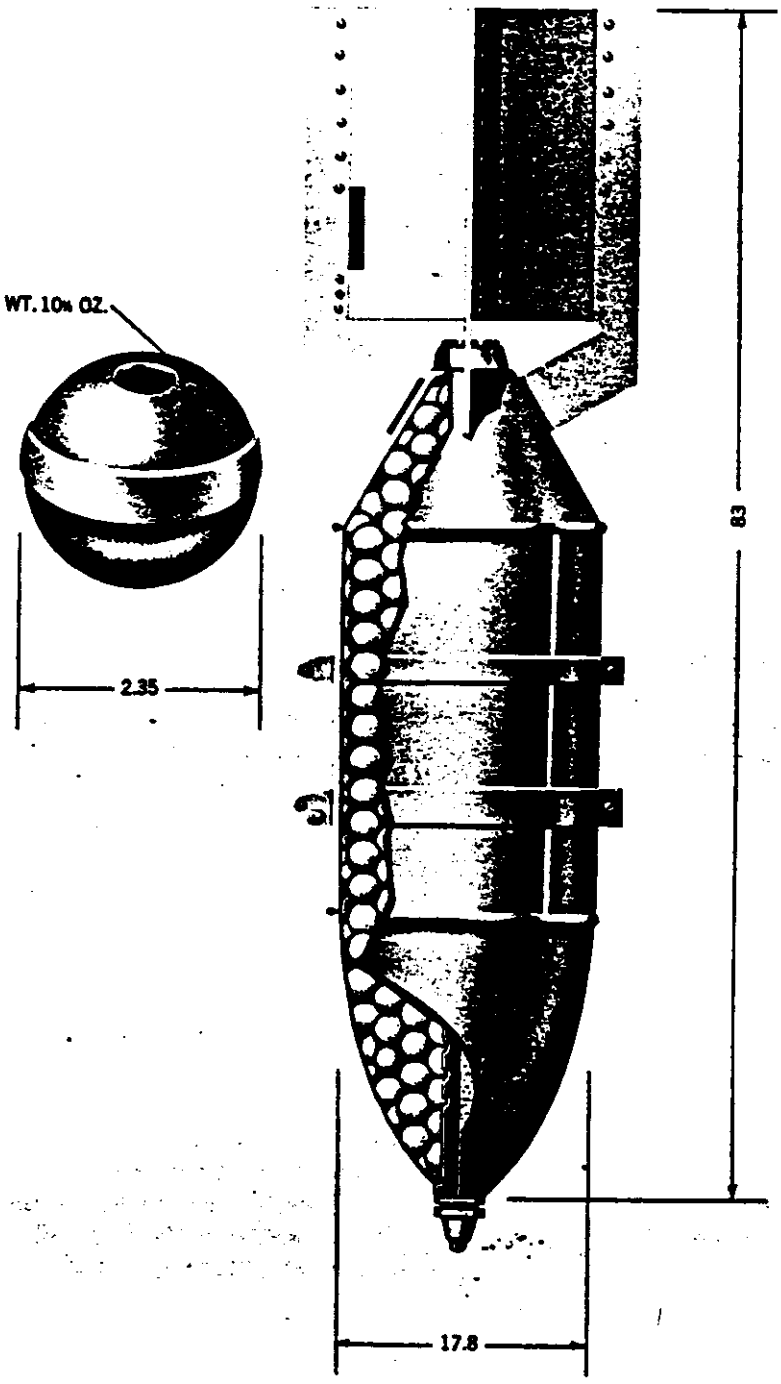

FIGURE 42—ZAB–500T SHCH INCENDIARY CLUSTER BOMB.

ZAB-500T SHCH

TYPE	Incendiary (cluster)
NOSE FUZE	TM-4B
TAIL FUZE	None
TOTAL LENGTH (in.)	83.0
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	17.8
WALL THICKNESS (in.)	.078
TOTAL WEIGHT	660 lbs.
CHARGE/WEIGHT RATIO	77%
MAIN CHARGE (TYPE & WEIGHT)	Thermite balls 775 (approx.) 508.6 lbs.
SUSPENSION	Two suspension bands
COLOR MARKINGS	Body band — Red
BODY CONSTRUCTION	The body consists of a welded sheet metal container tapering to an ogival nose, and tapering to a conical base. The base is closed with a plug, while the nose is closed with a fuze adapter and a perforated central tube, having a 920 gm. black powder charge to ignite the thermite balls. The balls are formed of two (2) thin sheet metal stampings 2.4 in. diameter and weighing 10.5 oz.
TAIL CONSTRUCTION	The tail unit consists of a fin sleeve, which fits over the base o fthe bomb and is held in place by four (4) bolts. Four (4) narrow, sheet metal, fin blades are welded to the fin sleeve, and form a square with wide riveted supporting struts.

REMARKS — See ZAB-100T SHCH for further details on the thermite balls.

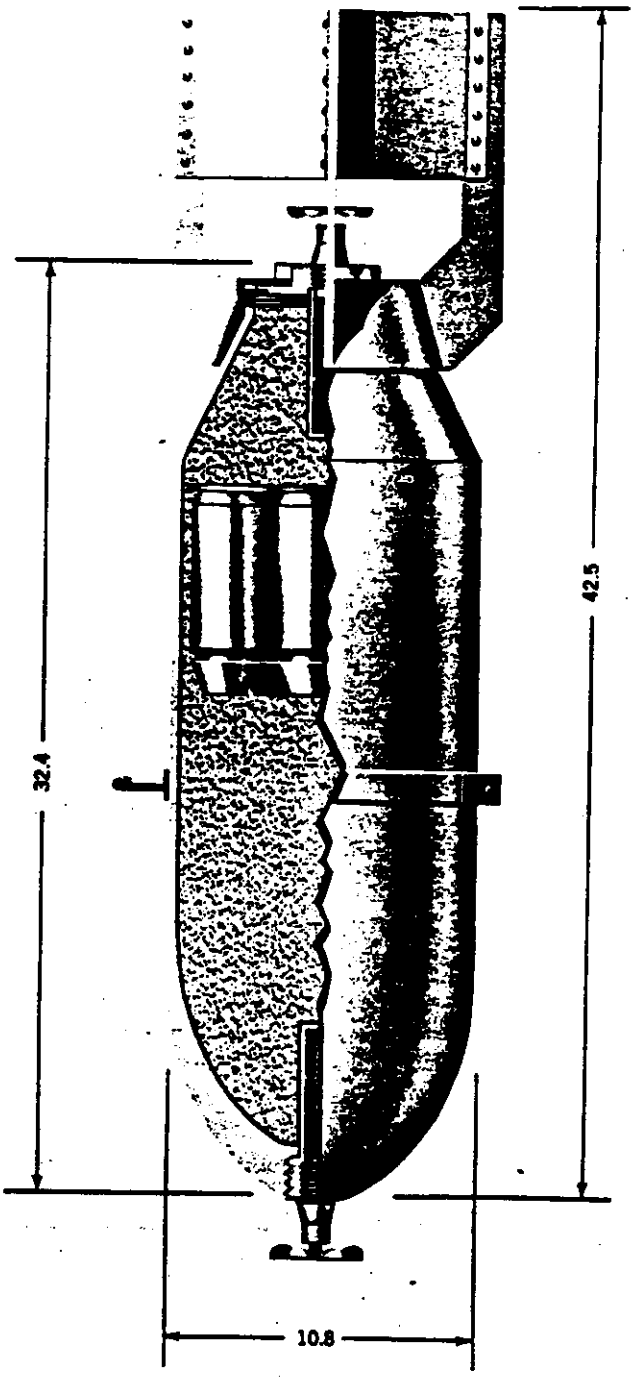

FIGURE 43—FAB-100 ZE SPECIAL INCENDIARY BOMB.

FAB-100 ZE

TYPE	Special incendiary
NOSE FUZE	APUV
TAIL FUZE	APUV
TOTAL LENGTH (in.)	42.5
BODY LENGTH (in.)	—
MAXIMUM DIAMETER (in.)	10.8
WALL THICKNESS (in.)	—
TOTAL WEIGHT	232 lbs.
CHARGE/WEIGHT RATIO	60.3%
MAIN CHARGE (TYPE & WEIGHT)	10 ZAB — 2.5 thermite incendiary bombs, less tails and fuzes, and 29.5 lbs. of explosive filler.
SUSPENSION	Single suspension band
COLOR MARKINGS	Body band — Red
BODY CONSTRUCTION	The bomb body is a FAB-100 case filled with an explosive incendiary powder, and 8 to 10 small incendiary bombs, ZAB — 2.5T without tail units or fuzes. Each small bomb is wrapped in paper and the entire band is covered with a paper disc.
TAIL CONSTRUCTION	Normal for FAB-100

REMARKS — This bomb can be distinguished from the FAB-100 only by the red body band. The explosive filling detonates upon initiation by the APUV fuze. The small incendiary bombs contain a thermite charge, which is ignited by an ignition train located in the fuze pocket. The individual ignition trains are initiated by the detonation of the main filler, which also scatters the small bombs.

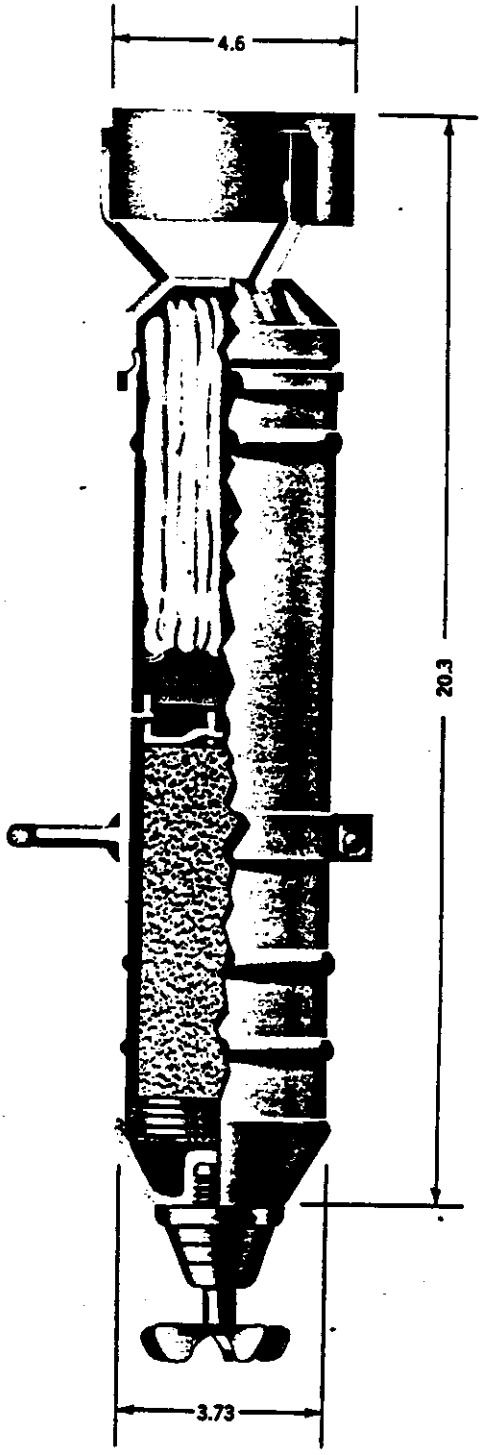

FIGURE 44—SAB-3M PARACHUTE FLARE BOMB.

SAB-3M, -15, -25

TYPE	Parachute Flare		
	SAB-3M	**SAB-15**	**SAB-25**
NOSE FUZE	AGDT-B	TM-4B	TM-4B
TAIL FUZE	None	None	None
TOTAL LENGTH (in.)	20.3	40.4	68.5
MAXIMUM DIAMETER (in.)	3.7	6.3	7.5
TOTAL WEIGHT (lbs.)	8.8	31.7	51.5
WEIGHT OF FILLING (lbs.)	4.8	20.8	26.4
CANDLEPOWER	22,000	500,000	700,000
BURNING TIME (min.)	3.5	2.4	2.2
SUSPENSION	Single suspension band		
COLOR MARKINGS	Nose band — White Body band — White		
BODY CONSTRUCTION	The above bombs are similar in construction. The bodies are cylindrical with detachable tail units, which are believed to fall free in the air before the fuze functions. After the predetermined interval, the nose aerial burst fuze functions and ejects the flare candle and parachute. The flare candle is ignited by a pull igniter, which functions as the flare candle is ejected from the case.		

REMARKS — These flares are very similar to the British para-flares in construction. An SAB-3, SAB-55, and SAB-100 have also been reported.

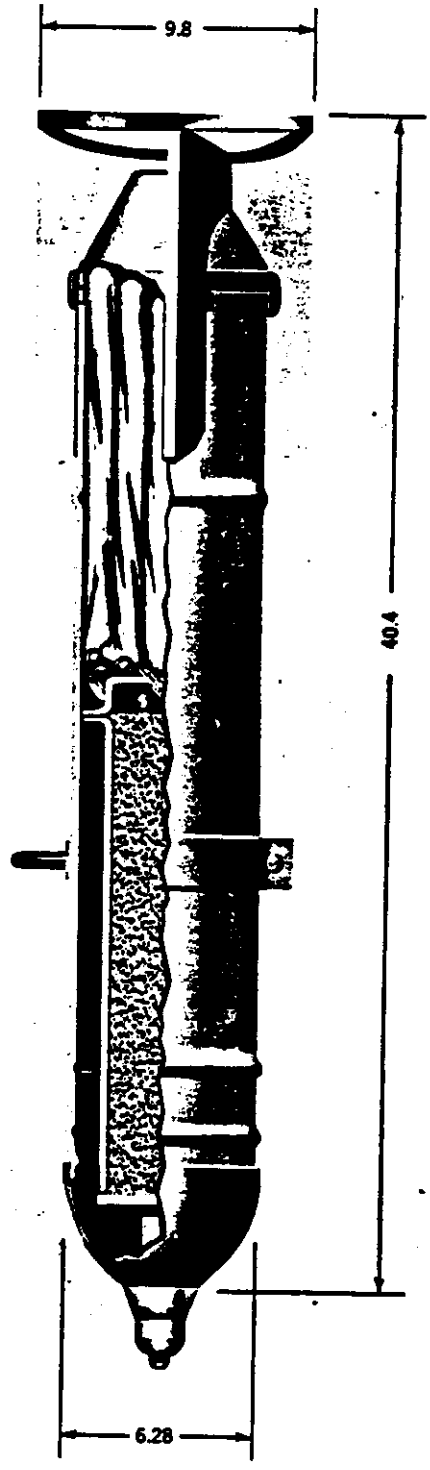

FIGURE 45—SAB–15 PARACHUTE FLARE BOMB.

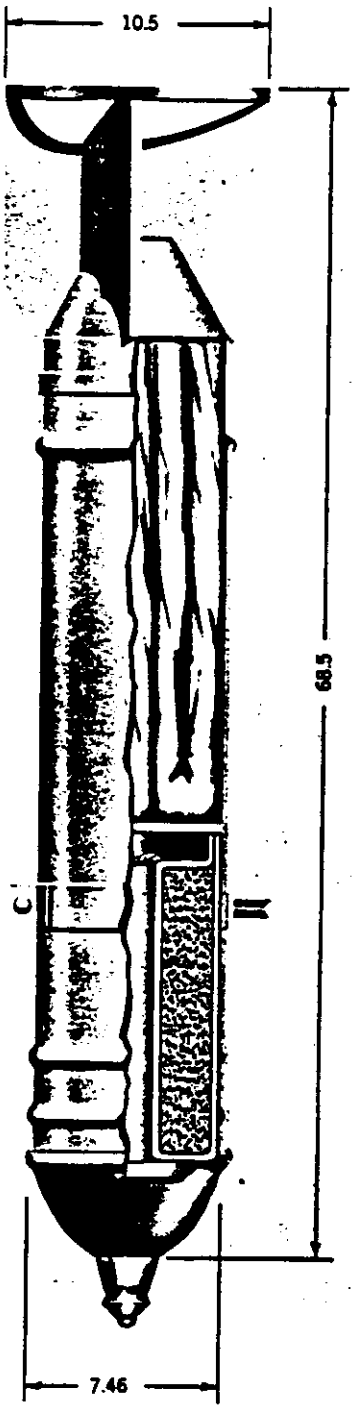

FIGURE 46—SAB–25 PARACHUTE FLARE BOMB.

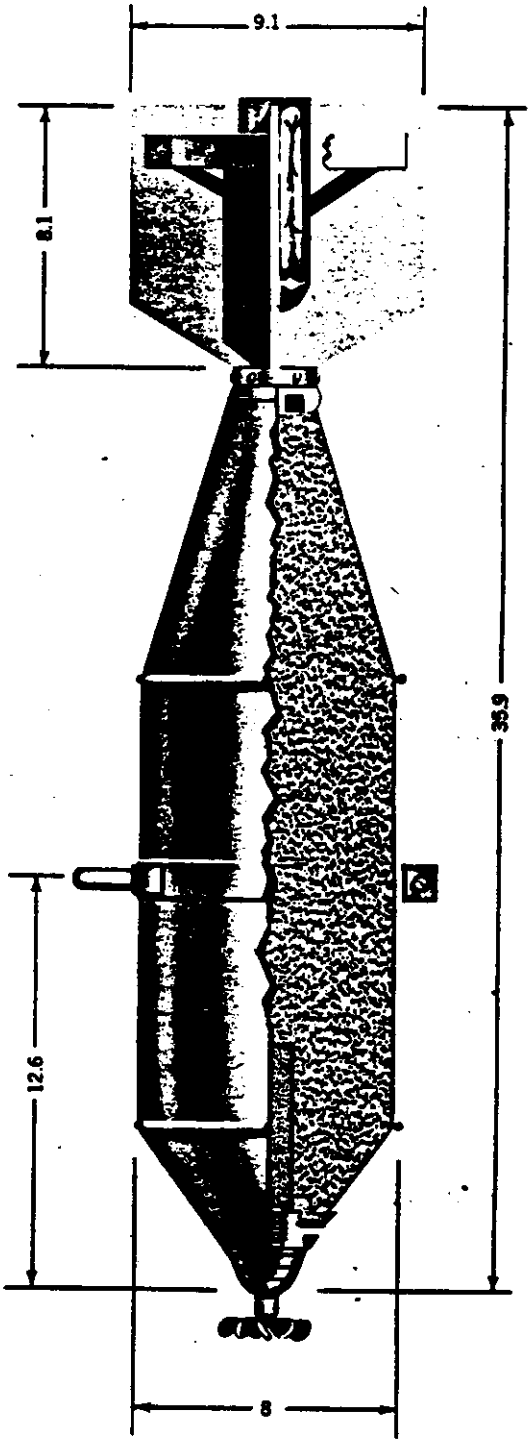

FIGURE 47—FOTAB PHOTOFLASH BOMB.

FOTAB

TYPE	Photoflash bomb
NOSE FUZE	AGDT-A
TAIL FUZE	None
TOTAL LENGTH (in.)	35.9
BODY LENGTH (in.)	27.8
MAXIMUM DIAMETER (in.)	8.0
TOTAL WEIGHT	77 lbs.
CHARGE/WEIGHT RATIO	57%
MAIN CHARGE (TYPE & WEIGHT)	Flash powder — 44 lbs.
SUSPENSION	Single suspension band
BODY CONSTRUCTION	The body consists of a thin sheet metal nose and tail cone, welded to a cylindrical main body section. A fuze adapter is provided in the nose. The tail cone is closed with an adapter ring for the tail fin.
TAIL CONSTRUCTION	The tail consists of four fins welded to the adapter ring of the tail cone. The center of the tail contains a small cylinder which houses a parachute. Struts are welded between the fins for additional support. This bomb is also described as having only two fins. The four struts are welded between the fins and the cylindrical parachute housing.

REMARKS — This photoflash bomb has a burning time of about 0.2 seconds and a light intensity of 230 million candlepower.

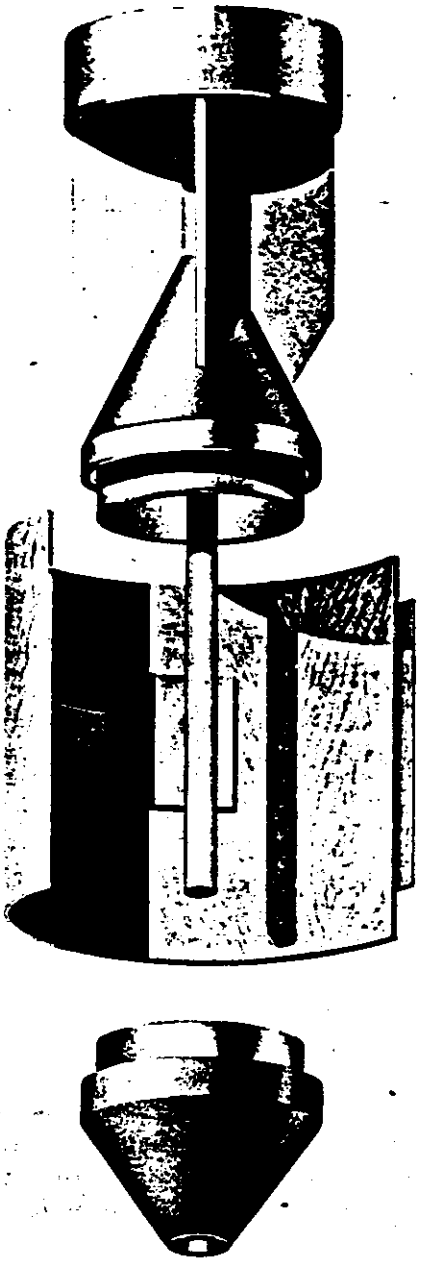

FIGURE 48—AB PROPAGANDA LEAFLET BOMB.

AB

TYPE	Propaganda bomb
NOSE FUZE	Aerial burst
TAIL FUZE	None
TOTAL LENGTH (in.)	44.8
TOTAL WEIGHT	39.6 lbs.
MAIN CHARGE (TYPE & WEIGHT)	Pamphlets — 33 lbs.
BODY CONSTRUCTION	Conical nose and tail section of light sheet metal are connected by means of a wooden rod. The cylindrical body is made of thin plywood with a seam, and fits into circular slots in the nose and tail sections. The nose contains a fuze and a small black powder charge.
TAIL CONSTRUCTION	The tail unit consists of four sheet metal fins, apparently welded to the tail cone, and enclosed in a circular shroud.

REMARKS — Functioning of the fuze blows the tail unit out backwards, allowing the plywood section to escape and scatter the contents.

Many duds were found by the Germans who considered them harmless due to the small charge.

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