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FUZE MANUAL

EURASIAN COMMUNIST COUNTRIES (U)

FSTC-CW-07-100-73

Publication Date: 15 June 1973
Information Cutoff Date: December 1972

AN ARMY INTELLIGENCE DOCUMENT

This product contains agreed Department of the Army Intelligence.

This product was prepared by the Foreign Science and Technology Center of the US Army Materiel Command. It has been reviewed and approved by the Office of the Assistant Chief of Staff for Intelligence, Department of the Army.

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PREFACE

This manual is designed to help identify munitions fuzes produced and used by the Eurasian Communist countries (ECC) and to describe their functioning, appearance, and current status.

This publication outlines the technical characteristics, current status, brief history, and detailed functioning of ECC munitions fuzes which have been recovered to date. No attempt has been made to include each individual fuze, but rather to include the most recent development in a fuze family. Air-dropped, hand grenade, mine, and improvised fuzes are not included.

The fuzes are arranged according to their tactical use and function, and are subdivided by country of origin.

The technical information contained in this manual is general and in most cases has been compiled from hardware examination. In some cases the information has been extracted from US and foreign documents which are considered accurate. Other fuzes are known to exist for which factual information is not available.

A reference to technical reports where additional details may be found has been included whenever possible.

Additions and corrections to this publication are encouraged. Comments should be addressed to: Commander, US Army Foreign Science and Technology Center, 220 7th Street, N.E., Charlottesville, Virginia 22901.

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SUMMARY

Early Soviet fuze designs were based on principles whose use was seen in French Schneider fuzes. The Schneider Company built and operated cannon and projectile manufacturing plants in pre-Revolutionary Russia and exerted a great influence on early Russian artillery thinking. This condition continued until World War II when German munition practices severely modified the original French influence. Today, basic fuze principles originating in all the major munition producing countries of the world are used in Soviet fuzes.

Other Eurasian Communist countries (ECC) have, in general, closely followed Soviet designs.

For example, following the Korean War, several countries duplicated the Soviet fuze designs even to the extent of using Soviet markings or a translation of them. Evidence, however, points to the existence of an independent design and production capability in most Eurasian Communist countries.

Major ECC design changes have included the use of robust fuze bodies, graze weights, and inertial movement of the primer and/or primer detonator concurrently with the rearward movement of the firing pin.

Bore and detonator safety have been achieved by the use of out-of-line detonators or rotors secured by pyrotechnic, centrifugal or setback detents. Environmental proofing has been developed to the point where fuzes have been stored in water for a considerable time with no adverse effects.

Although ECC fuzes do not meet US safety standards, they are considered extremely reliable and effective.

Chapter I

Fuzes for Aircraft and Light Antiaircraft Guns

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Section I.

USSR

1. Introduction

a. Fuzes of this category are mechanical, point detonating, impact types that are designed to function reliably on light materiel targets. Aircraft gun fuzes appear to have been based on World War II German designs. In some cases, exact copies of internal components have been noted.

b. The Soviet antiaircraft gun fuzes employ pyrotechnic type self-destruct features. The same principles are employed in fuzes used in weapons from 23-mm through 57-mm calibers. The purpose of the self-destruct feature is to destroy projectiles that miss their targets at an altitude where the fragmenting projectile will not endanger friendly ground units.

c. All of the Soviet fuzes in the aircraft and antiaircraft classification are boresafe, in that they are provided with mechanical features designed to prevent the fuze from arming while in the tube of the weapon. Some of the earlier fuzes are not detonator safe, by American standards, in that the explosive train is not positively interrupted to preclude an in-bore detonation. However, a major trend is indicated toward both bore and detonator safe fuzes.

d. Soviet fuzes are normally plainly marked on the ogive with the fuze nomenclature. Where space is available the lot number, year of manufacture, and plant number are included. Antiaircraft fuzes are normally "blued" or painted black with an additional coating of varnish or epoxy to inhibit external corrosion. If the fuze is cadmium plated, the exterior epoxy or varnish coating is still applied. Some fuzes have been seen with colored lacquer on the nose. The significance of the color has not been determined. It has been noted that not all fuzes of a specific designation, produced by the same plant, have the color marking.

e. Normally aircraft and antiaircraft fuzes do not require any preparation for firing. The larger calibers, such as 57-mm, possess fuzes with removable shipping caps to increase impact sensitivity, but it has not been determined what the presence of a cap signifies, other than as a shipping safety device.

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Fuze, point detonating, A-20

(No photograph available)

DISCUSSION

The A-20 point detonating fuze is centrifugal armed and impact fired. It is similar in construction and identical in function to the A-23 fuze but differs markedly in length. When assembled to a projectile, it has a visible length of about 0.56 inches compared to 0.95 inches for the A-23. By Soviet standards the A-20 is considered boresafe because of a coiled copper spring which prevents the firing pin from striking the detonator. One spanner wrench hole is located near the base of the fuze body.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	?	Firing method	Impact
Markings	A-20	Safety devices	Coiled arming spring
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	0.57 in	Self-destruct time	None
Explosive	Tetryl	Delay time	Instantaneous
Explosive weight	?		

Fuze, point detonating, A-20

(No line drawing available)

FUNCTIONING DESCRIPTION

Same as A-23.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
20-mm ShVAK Aircraft Gun	20-mm HEI-T OZT

REFERENCE

None

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Fuze, point detonating, A-23

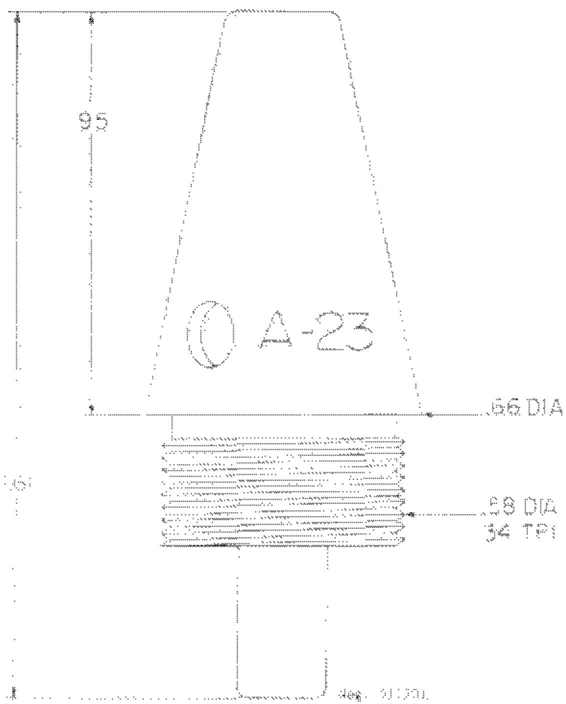
DISCUSSION

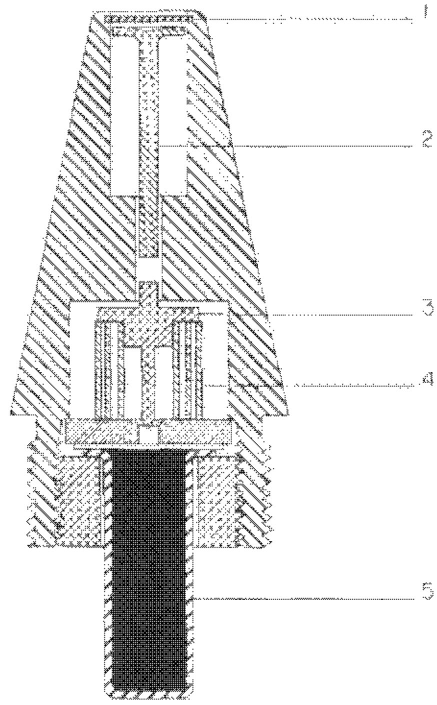
The A-23 point detonating fuze is centrifugal armed and impact fired. Although similar to the A-20, its elongated shape is a striking contrast to the short stubby appearance of the A-20. A coiled copper spring prevents the firing pin from striking the detonator until the projectile clears the bore. One spanner wrench hole is located near the base of the fuze body.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method -------- Centrifugal force
Weight ---------------- 0.056 lb	Firing method ------- Impact
Markings -------------- A-23	Safety devices ------ Coiled arming spring
Booster	Arming distance ----- ?
Body material --------- Aluminum	Arming time --------- ?
Body length ----------- 0.63 in	Self-destruct time--- None
Explosive ------------- Tetryl	Delay time ---------- Instantaneous
Explosive weight ------ ?	

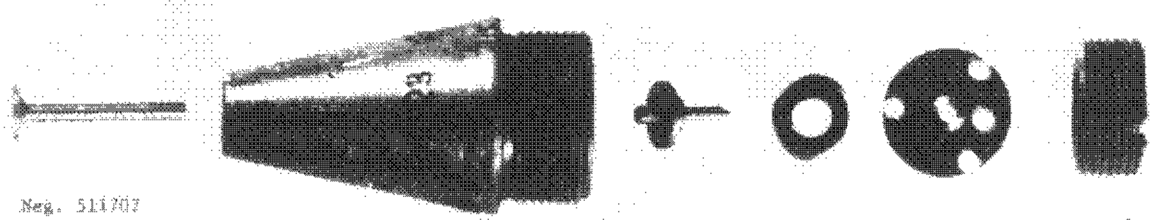
<u>Fuze</u>, point detonating, A-23





FUNCTIONING DESCRIPTION

Prior to firing, the coiled copper arming spring (4) prevents the firing pin (3) from striking the detonator (5). When the projectile has left the bore of the weapon, centrifugal force causes the arming spring to unwind, making the hole in its center large enough to allow the firing pin to pass through. On impact, the nose disk (1) is crushed and the aluminum striker (2) drives the firing pin (3) through the firing pin guide and safety disk into the detonator (5), which initiates the explosive charge in the projectile.



Neg. 511707

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
23-mm Aircraft Gun Models NR and NS	23-mm HEI-T OZT
23-mm Antiaircraft Gun, M1940	23-mm Frag-I-T OZR-132

REFERENCE

None

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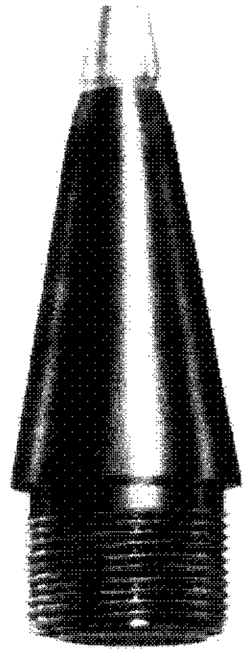
Fuze, point detonating, A-37 and A-37U



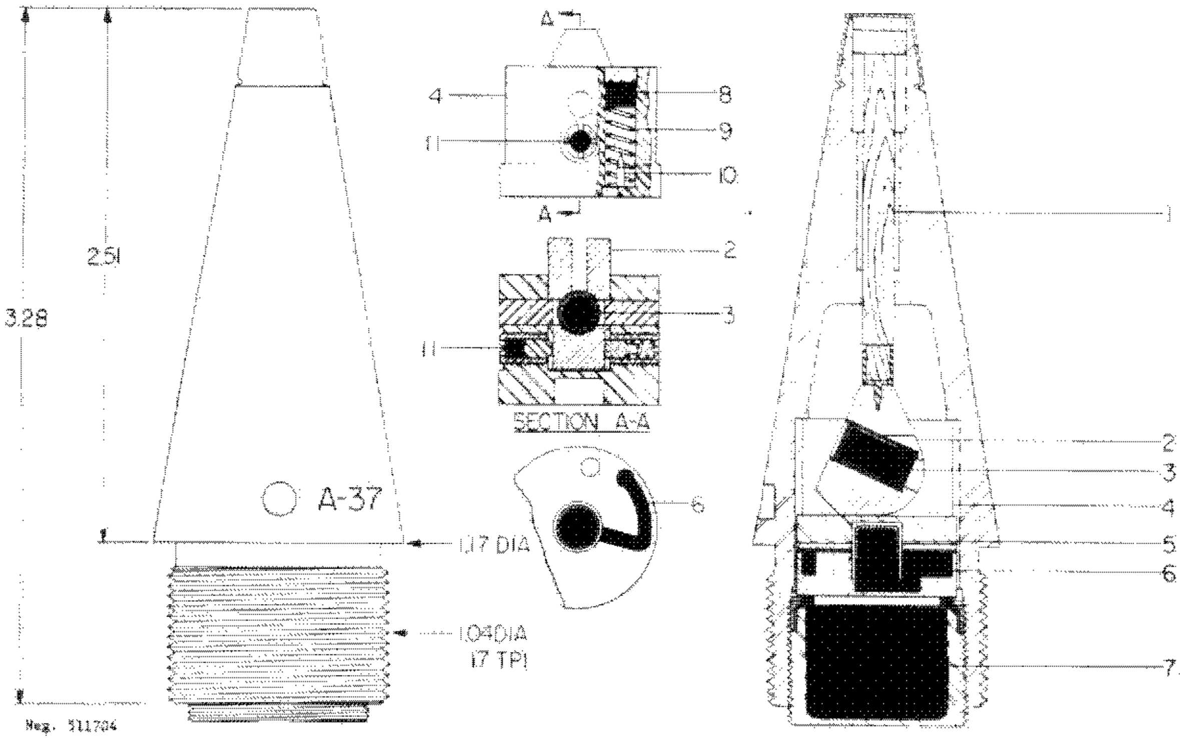
DISCUSSION

The A-37 and A-37U point detonating fuzes are setback and centrifugally armed, self-destruct fuzes which employ an out-of-line detonator. The fuzes are identical with the exception of the self-destruct time.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ----------	Steel	Arming method ----------	Setback and centrifugal force
Weight ----------------	0.39 lb		
Markings --------------	A-37,A-37Y		
Booster		Firing method ----------	Impact
Body material ----------	Steel	Safety devices ---------	Out-of-line detonator
Body length -----------	0.55 in		
Explosive --------------	PETN	Arming distance --------	?
Explosive weight ------	65.3 gr	Arming time ------------	?
		Self-destruct time ----	A-37(3 sec) A-37U(10-12 sec)
		Delay time -------------	Instantaneous

Fuze, point detonating, A-37 and A-37U



FUNCTIONING DESCRIPTION

On firing, the setback igniter pellet (8) overcomes the resistance of the safety spring (9) and strikes the setback firing pin (10). The resulting flash ignites both the self-destruct powder train (6) and a black powder pellet (11) which holds a rotor locking pin in place. As the black powder pellet burns, centrifugal force causes a second rotor locking pin to compress its retaining spring and move out of a recess in the rotor (2); after the black powder pellet burns away, the first locking pin also moves out of its recess in the rotor, which is then free to rotate in the U-shaped trough of the rotor mount (4). (Since the locking pin retained by the powder pellet immobilizes the rotor until the second locking pin clears the powder pellet walled recess in the rotor, any possibility of the rotor jamming the latter pin is precluded. The rotor recess for the pellet-retained pin has sloped walls, so that movement of the rotor tends to cam this pin out of the recess, rather than to jam it.) Centrifugal force causes the freed rotor, whose center of gravity is located off the axis of rotation, to turn 90° around the pivot pins, thus aligning the primer charge (3) with the impact firing pin (1) and the detonator assembly (5). Impact crushes the nose cap and the impact striker (1) drives the impact firing pin into the primer charge. The flash from the primer charge passes to the detonator assembly, which activates the booster (7), and the booster in turn activates the projectile's charge. If impact does not occur first, the burning self-destruct powder train in the powder train ring (6) will ignite the detonator, and the fuze will function 2.5 to 3 seconds after the round is fired. The A-37U will self-destruct 10 to 12 seconds after the round is fired.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
37-mm Aircraft Gun, Model N-37	37-mm HEI-T, OZT

(No disassembled view available)

REFERENCE

Picatinny Arsenal Memorandum Report No 54, dtd May 1954.

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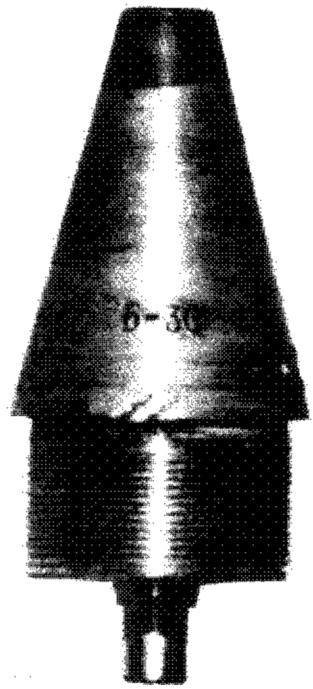

DISCUSSION

The B-30 is a point detonating, self-destruct fuze used on 30-mm high explosive incendiary projectiles. The body material is anodized steel with a red painted tip. The fuze is armed by setback and centrifugal force. Although firing pin movement is prevented by the centrifugal arming coil, the fuze is not considered boresafe by US standards because of the in-line detonator. The design and functioning of the B-30 is similar to the Soviet MG-25 fuze used on 23-mm projectiles.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method ---------- Setback and centrifugal force
Weight ---------------- 0.17 lb	Firing method ---------- Impact or SD
Markings -------------- Б -30	Safety devices --------- Flat coiled spring
Booster	Arming distance -------- ?
Body material ---------- Steel	Arming time ------------ ?
Body length ------------ .583 in	Self-destruct time ----- ?
Explosive -------------- ?	Delay time ------------- Instantaneous
Explosive weight ------- ?	

Fuze, point detonating, B-30

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, the setback sleeve moves to the rear, bending the four tabs of the safety spring and slides into the internal support ring. This frees the coiled flat spring, which expands by centrifugal force and clears the path for the firing pin. Simultaneously, the weighted self-destruct pellet is moved to the rear by setback, overcoming the resistance of its helical spring and impinging on the fixed self-destruct firing pin. The resulting flash passes through the flash channel and ignites the self-destruct delay element. Upon impact, the firing pin is driven into the primer which initiates the detonator and succeeding components of the explosive train. If impact does not occur, the self-destruct powder train, after ignition at setback, burns through its delay period, initiates the primer, and in turn, the detonator, booster, and main explosive charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
	30-mm HEI

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

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Fuze, point detonating, B-37

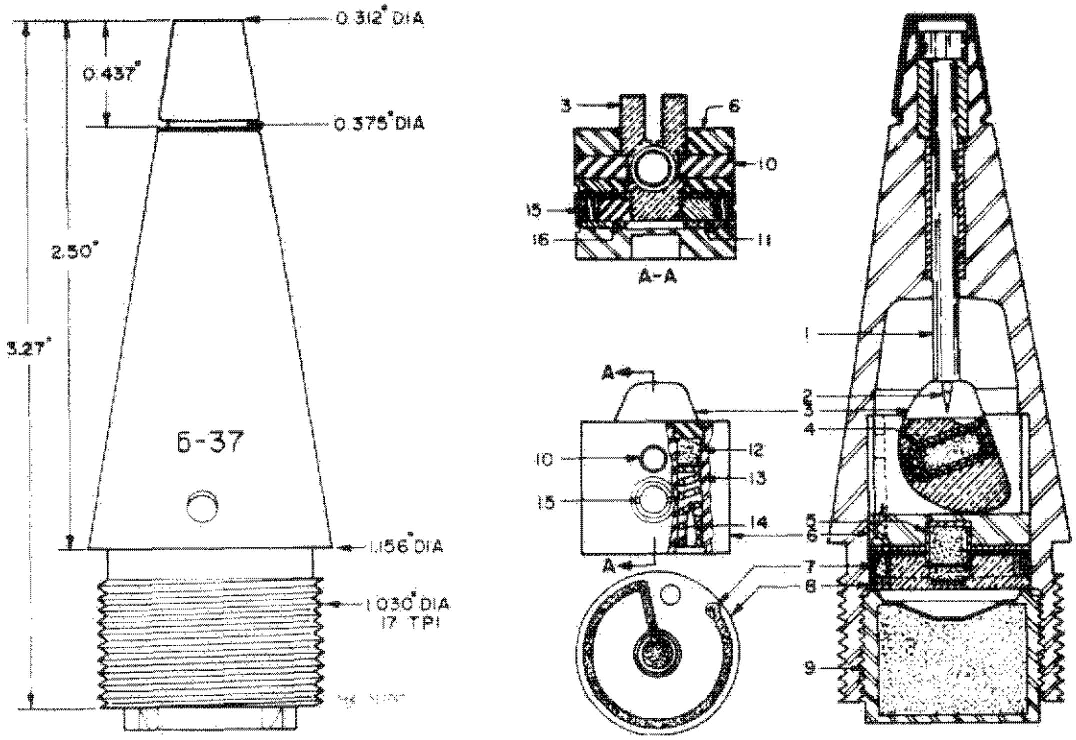
DISCUSSION

The B-37 is a modified MG-37; their appearance and functioning are almost identical. They are setback and centrifugally armed self-destruct fuzes that have an out-of-line detonator. The major internal improvements include a rotor lock pin that locks the rotor in the armed position, replacement of the press fitted detonator with one held in place by a threaded keep ring. Additionally, water proofing qualities have been improved by the incorporation of a press fitted lead ring at the junction of the fuze base and booster cup and a vinyl "O" ring in the nose crimping groove which is compressed by crimping the nose cap.

CHARACTERISTICS

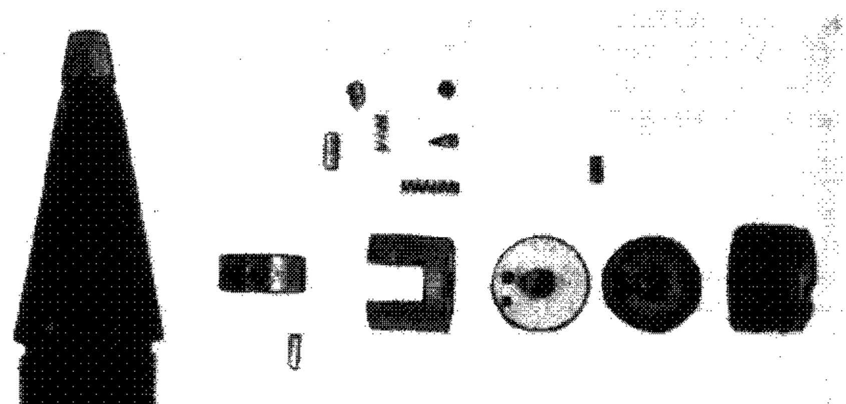
Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	0.38 lb		
Markings	B -37	Firing method	Impact
Booster		Safety Devices	Out-of-line detonator
Body material	Steel		
Body length	0.55 in	Arming distance	?
Explosive	PETN	Arming time	?
Explosive weight	60.6 gr	Self-destruct time	10 to 12 sec
		Delay time	Instantaneous

Fuze, point detonating, B-37



FUNCTIONING DESCRIPTION

The B-37 has a detent lock pin which locks the rotor in the armed position. All other components function exactly like their counterparts in the MG-37.



Neg. 511708

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
37-mm Antiaircraft gun, M1939	37-mm Frag T, OR-167

REFERENCE

FSTC Exploitation Report CR-20-35-71, dated December 1971.

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Fuze, point detonating, K-6

(No photograph available)

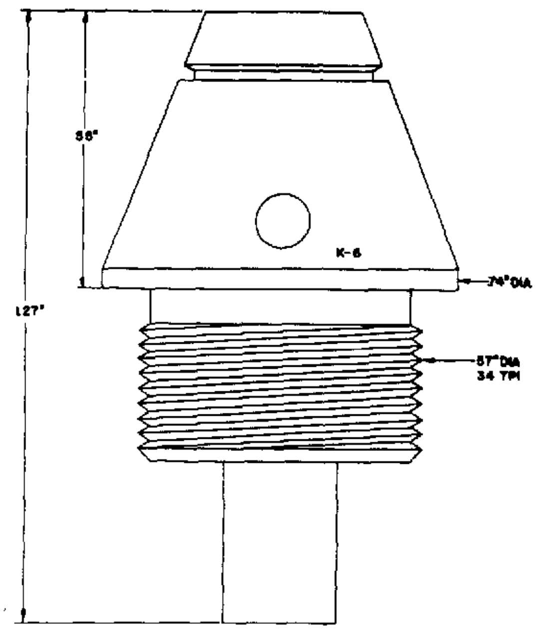
DISCUSSION

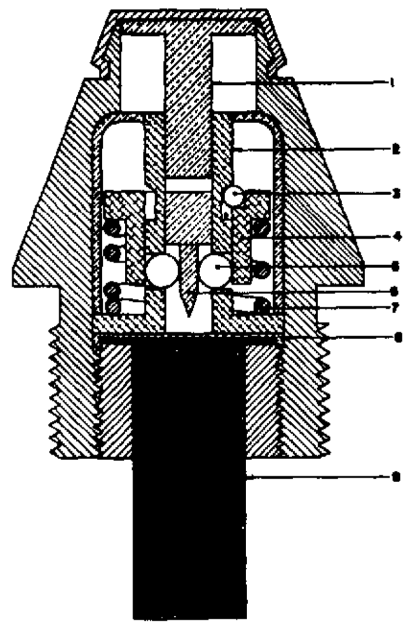
The K-6 is similar to the K-20 in construction, material, and functioning, but is considerably smaller.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	?	Firing method	Impact
Markings	K-6	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	?	Self-destruct time	None
Explosive	?	Delay time	Instantaneous
Explosive weight	?		

Fuze, point detonating, K-6





Neg. 511709

FUNCTIONING DESCRIPTION

Upon firing, inertia causes the arming sleeve (4) to setback, releasing the arming sleeve retaining balls (3) and compressing the arming spring (7). After the projectile leaves the bore, the arming spring moves the arming sleeve forward, freeing the two firing pin check balls (5); the two balls are then forced out of their housing in the firing pin guide (2) by centrifugal force, freeing the firing pin. On impact, the striker (1) drives the firing pin (6) through the safety disk (8) into the detonator initiating pellet which initiates the main explosive charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
20-mm Aircraft gun ShVAK	20-mm HEI-T, OZT

REFERENCE

None

Fuze, point detonating, K-20 and K-20M

(No photograph available)

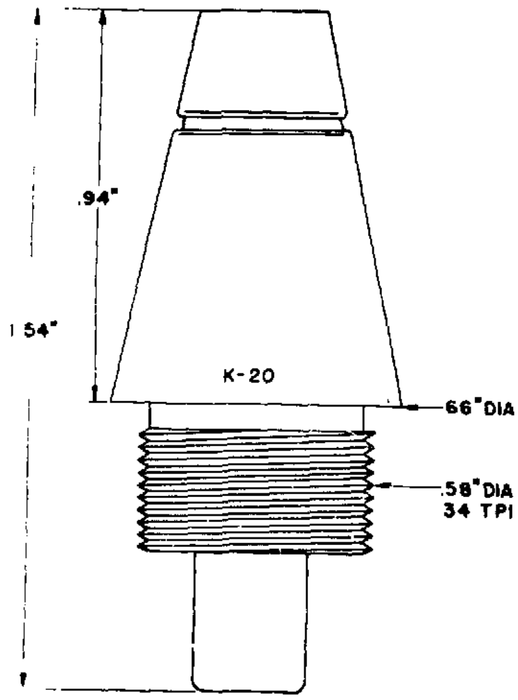
DISCUSSION

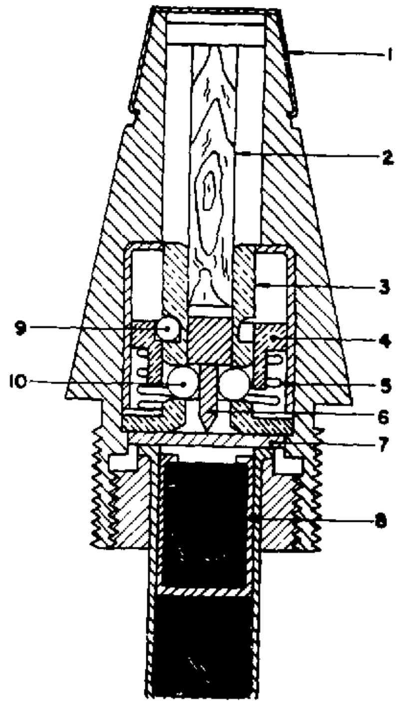
The K-20 and K-20M fuzes are armed by setback and centrifugal force and do not include a self-destruct feature. The fuzes are identical in external dimensions, body material, functioning, and internal construction. Some K-20M internal parts differ in size and material. The external surface has a smooth contour and a foil disk is pressed into the nose. The K-20 has a foil cap that is crimped into a groove around the nose contour.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	?	Firing method	Impact
Markings	K-20 K-20M	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	?	Self-destruct time	Instantaneous
Explosive	?		
Explosive weight	?	Delay time	N/A

Fuze, point detonating, K-20 and K-20M





FUNCTIONING DESCRIPTION

Upon firing, the arming sleeve (4) sets back, compressing the arming sleeve spring (5) and creating an outlet for the three arming sleeve retaining balls (9). After the projectile has left the gun tube and centrifugal force has thrown the retaining balls out of their housing, the arming sleeve spring overcomes the force of inertia and moves the arming sleeve forward until it frees the two firing pin check balls (10). The check balls are forced into the fuze body cavity through openings in the striker guide (3), and only the safety disk (7) remains between the firing pin (6) and the detonator assembly. Upon impact, the foil cap (1) is crushed inward, and the striker (2) drives the firing pin through the safety disk into the detonator initiating pellet (8), which initiates the main explosive charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
23-mm Aircraft gun, Model VYa	23-mm HEI-T, OZT
25-mm Antiaircraft gun, M1940	25-mm FRAG-I-T, OZR-132

REFERENCE

None

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Fuze, point detonating, MG-25

(No photograph available)

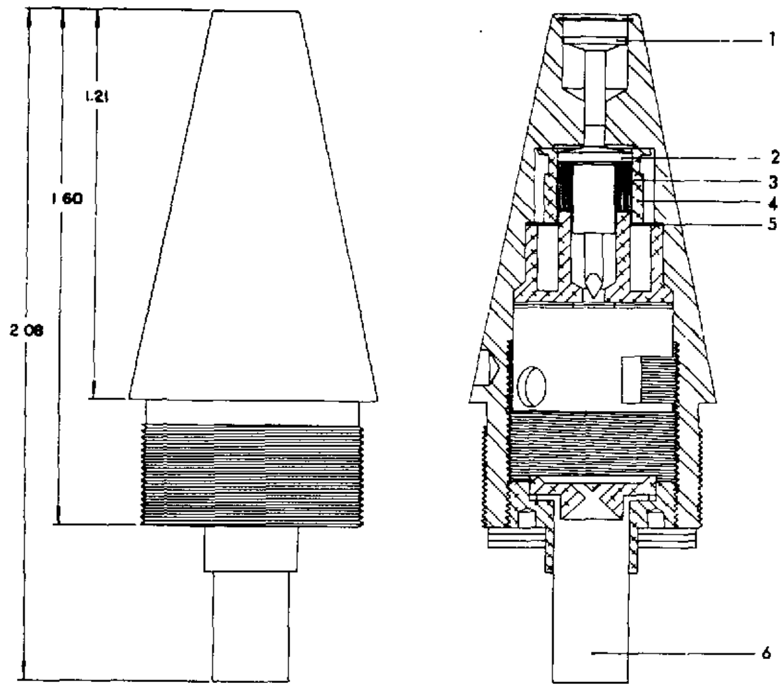
DISCUSSION

The MG-25 fuze is armed by setback and centrifugal force and includes a pyrotechnic 5- to 8-second self-destruct feature. The fuze body is silver with a red-tipped nose. A single spanner wrench hole is located near the base of the fuze body. Bore safety is maintained by the use of a flat coiled spring which prevents the firing pin from initiating the primer until the spring is uncoiled by centrifugal force.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	setback and spin
Weight	0.37 lb	Firing method	Impact
Markings	МГ-25	Safety devices	Coiled arming spring
Booster		Arming distance	10 ft
Body material	Steel	Arming time	?
Body length	?	Self-destruct time	5 to 8 sec
Explosive	PETN	Delay time	Instantaneous
Explosive weight	26.19 gr		

Fuze, point detonating, MG-25



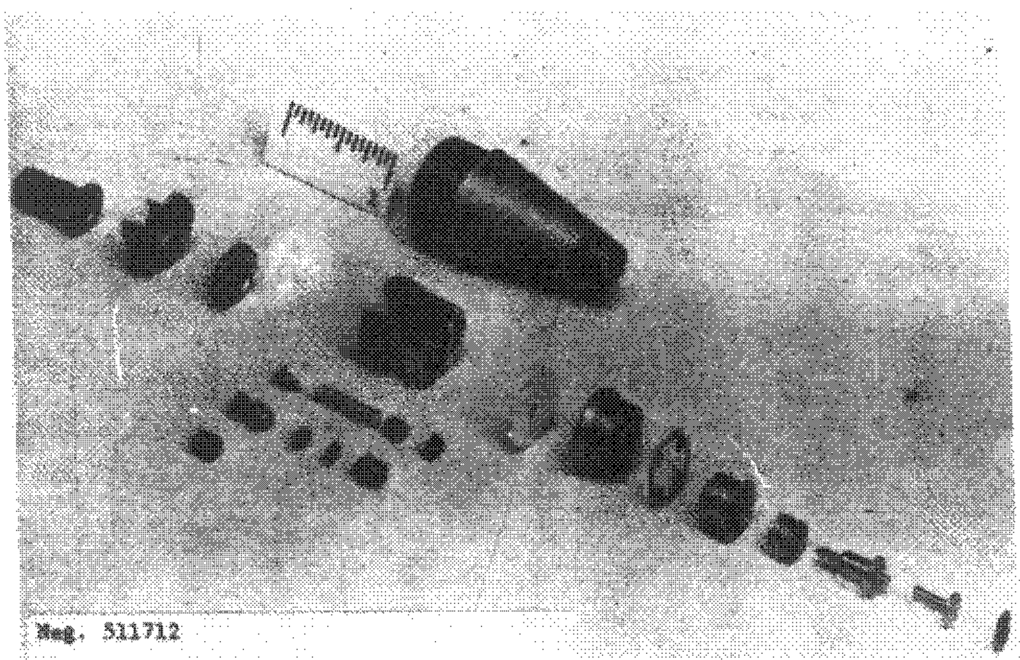
Neg. 511711

FUNCTIONING DESCRIPTION

Upon firing, the setback sleeve (4) moves downward, forcing its way through the four prongs in the setback spring (5) which hold the sleeve in the rearward position. Simultaneously the weighted self-destruct flash pellet moves downward, compressing its spring and strikes the fixed firing pin. The resulting flash passes through a lateral hole from the self-destruct initiator cavity into the pyrotechnic delay cavity, igniting the self-destruct element. Centrifugal force in the meantime, has caused the coiled arming spring (3) to expand, releasing the firing pin (2). Upon impact, the striker (1) and firing pin (2) are driven rearward into the primer. The resulting flash ignites the relay pellet which flashes through the two flash holes in the booster cup detonating the booster (6). If no impact with the target occurs, the self-destruct element will ignite the flash pellet which flashes through the two flash holes in the booster cup causing the booster to detonate the main charge.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
23-mm Antiaircraft gun ZU-23	23-mm HEI-T OFZ-T



REFERENCE

FSTC Exploitation Report, CR-20-08-67, July 1967.

(Reverse Blank)

Fuze, point detonating, MG-37 and MG-8

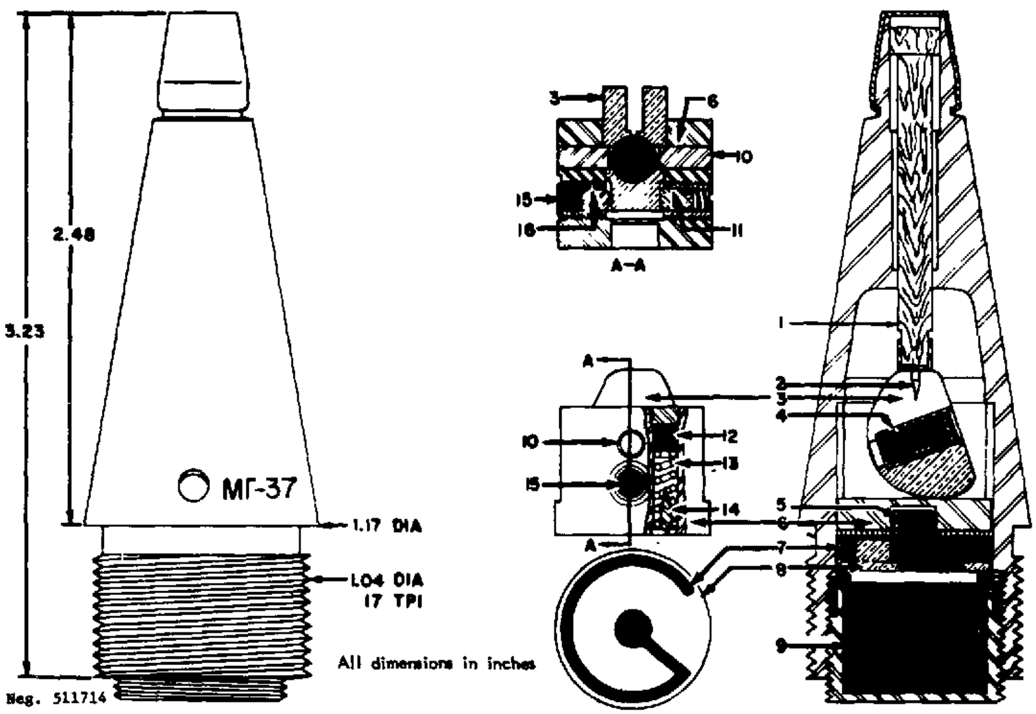
DISCUSSION

The MG-37 is an improved version of the MG-8. They are both setback and centrifugally armed self-destruct fuzes that have an out-of-line detonator. They are almost identical in appearance and the only major internal difference appears to be a redesigned rotor and an improved arming safety arrangement involving two rotor locking pins instead of one.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method ---------- Setback and centrifugal force
Weight ---------------- 0.38 lb	Firing method ---------- Impact
Markings -------------- MГ-37 MГ-8	Safety devices --------- Out-of-line detonator
Booster	Arming distance -------- ?
Body material ---------- Steel	Arming time ------------ ?
Body length ----------- 0.55 in	Self-destruct time ----- 10-12 sec
Explosive ------------- PETN	Delay time ------------- Instantaneous
Explosive weight ------ 60.6 gr	

Fuze, point detonating, MG-37 and MG-8



FUNCTIONING DESCRIPTION

On firing, the setback igniter pellet (12) overcomes the resistance of the safety spring (13) and strikes the setback firing pin (14). The resulting flash ignites both the powder train in the self-destruct element (7) and a black powder pellet (15) which holds a rotor locking pin (16) in place. As the black powder pellet burns, centrifugal force causes a second rotor locking pin (11) to compress its retaining spring and move out of a recess in the rotor (3); after the black powder pellet burns away, the first locking pin (16) also moves out of its recess in the rotor, which is then free to rotate in the U-shaped trough of the rotor mount (6). The locking pin (16) retained by the powder pellet immobilizes the rotor until the other locking pin (11) clears its straight-walled recess in the rotor, thereby eliminating any possibility of the rotor jamming the latter pin (11). The rotor recess for the pellet-retained pin (16) has sloped walls, so that movement of the rotor tends to cam this pin out of the recess, rather than to jam it. Centrifugal force causes the freed rotor, whose center of gravity is located off the axis of rotation to turn 90° around the pivot pins (10), thus aligning the primer charge (4) with the impact firing pin (2) and the detonator assembly (5). Upon impact with the target, the nose cap is crushed and the impact striker (1) drives the impact firing pin into the primer charge. The flash from the primer charge passes to the detonator assembly, which activates the booster (9), and the booster in turn activates the projectile's explosive charge. If impact does not occur first, the burning self-destruct powder train in the powder train ring (8) will ignite the detonator, and the fuze will explode the projectile from 10-12 seconds after the round is fired.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
37-mm Antiaircraft gun M1939	37-mm FRAG-T, OR-167

(No disassembled view available)

REFERENCE

Picatinny Arsenal, Memorandum Report No. 23, Addendum No. 7, Dec 53.

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, MG-57 and MGZ-57

DISCUSSION

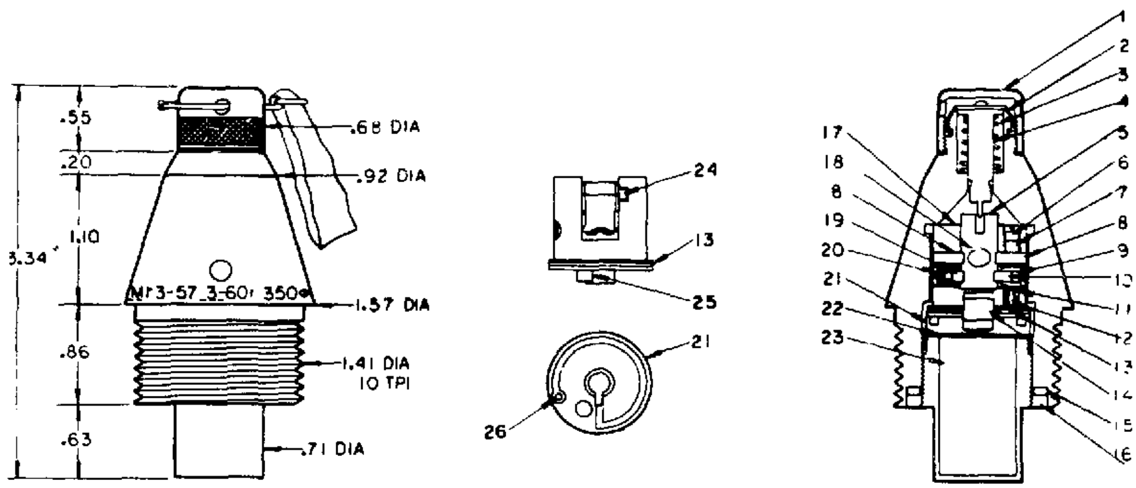
The MG-57 and MGZ-57 fuzes are centrifugally armed self-destruct fuzes that have an out-of-line detonator. Arming is initiated by setback, which causes a weighted detonator to strike a fixed firing pin in the rotor; this flashes through and initiates the delay self-destruct charge and a black powder detent holding the rotor out of line. The MGZ-57 has a steel firing pin supported by a creep spring, and a threaded striker

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	0.74 lb		
Markings	МГ57; МГЗ-57	Firing method	Impact
		Safety devices	Out-of-line detonator
Booster			
Body material	Steel	Arming distance	?
Body length	1.24 in	Arming time	?
Explosive	PETN	Self-destruct time	15 ±3 sec
Explosive weight	129.61 gr (2.57 ozs)	Delay time	Instantaneous

Fuze, point detonating, MG-57 and MGZ-57

protective cap, while the MG-57 has a steel firing pin attached to a wooden striker supported by a wax filler, and a pressed on protective cap with a pull wire. Other modifications that may be found in the MGZ-57 include a removable primer detonator secured by a lock ring, a concave surface on the booster pellet and vinyl washers to improve moistureproofing qualities. Both fuzes may be found with a threaded protective cap or a cap secured by a pull wire.



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FUNCTIONING DESCRIPTION

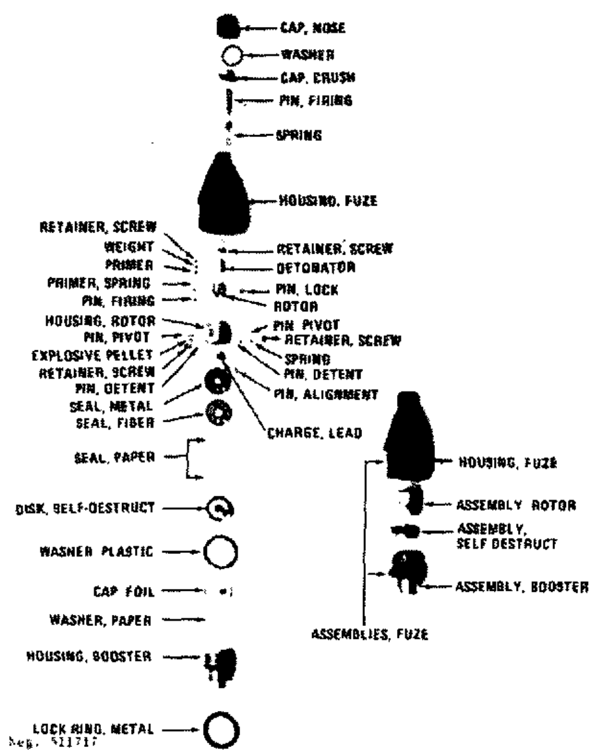
Upon firing, the setback igniter pellet (10) is ignited by the fixed firing pin (12). The flash, ignites both the self-destruct powder train (26) and the rotor lock pellet (20). As the pellet burns, centrifugal force unlocks the rotor detents (10 and 19) and aligns the rotor (5), and the primer and detonator (18) with the firing pin (4). Upon impact with the target the nose cap is crushed and the striker drives the firing pin (4) into the primer which fires the detonator (18), booster and main charge.

If the projectile fails to impact on a target, the self-destruct element completes its burning and initiates the detonator in approximately 15 seconds.

Fuze, point detonating, MG-57 and MGZ-57

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
57-mm Antiaircraft gun S-60	57-mm HE-Frag OR-281



REFERENCE

USAFSTC Exploitation Report, FSTC-318-3152, dated Jan 1966.
FSTC Exploitation Report CR-20-136-68, dated April 1969.

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Section II.

PEOPLE'S REPUBLIC OF CHINA

1. Introduction

No evidence has been received of PRC-designed fuzes for aircraft and light antiaircraft projectiles.

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<u>Fuze</u>, point detonating, Type 37

(No photograph available)

DISCUSSION

The PRC Type 37 is identical in construction and functioning to the Soviet B-37. Soviet markings have been replaced by PRC characters.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	0.38 lb	Firing method	Impact
Markings	百-37式	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	0.55 in	Self-destruct time	10-12 sec
Explosive	PETN	Delay time	Instantaneous
Explosive weight	60.6 gr		

Fuze, point detonating, Type 37

(No line drawing available)

FUNCTIONING DESCRIPTION

None

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles

REFERENCE

None

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Section III.

CZECHOSLOVAKIA

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1. Introduction

Czechoslovakia is capable of indigenous fuze design, but utilizes Soviet or Soviet-designed fuzes for aircraft and light antiaircraft projectiles.

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Fuze, point detonating, A-37

(No photograph available)

DISCUSSION

The Czechoslovak A-37 fuze is a direct copy of the Soviet A-37 fuze. Internal components, functioning and markings are identical.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback and centrifugal force
Weight ---------------- 0.38 lb	Firing method --------- Impact
Markings -------------- A-37	Safety devices -------- Out-of-line
Booster	Arming distance ------- ?
Body material --------- Steel	Arming time ----------- ?
Body length ----------- 0.55 in	Self-destruct time ---- A-37 (3 sec) A-37Y (10-12 sec)
Explosive ------------- PETN	Delay time ------------ Instantaneous
Explosive weight ------ 65.3 gr	

Fuze, point detonating, A-37

(No line drawing available)

FUNCTIONING DESCRIPTION

None

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
37-mm Aircraft gun, Model N-37	37-mm HEI-T, OZT

REFERENCE

Ordnance Technical Intelligence Evaluation Report OTIA-1779, dated October 1958.

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Chapter 2

Base Detonating Fuzes

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Section I.

USSR

1. Introduction

a. The majority of the base detonating fuzes employed by the Eurasian Communist countries are direct copies or modifications of Soviet base detonating fuzes. The mechanical characteristics of individual fuzes, especially in later designs, possess features that reveal a positive trend toward increased safety in handling and firing. The piezoelectric VP-7 displays the greatest departure from standard Soviet base detonating fuze design. This fuze is the first piezoelectric one recovered. It also is the first detonator-safe base detonating fuze, incorporating a vertically sliding detonator carrier in lieu of the normal detonator rotor.

b. Soviet base detonating fuzes are employed in concrete-piercing and armor-piercing ammunition that is fired from field, antitank, or grenade and rocket launchers. All Soviet base detonating fuzes, with the exception of the point initiating base detonating types, are designed to function by impact inertia. Some incorporate the conventional pressed black powder delay pellet or the newer gasless delay mixtures. A few base detonating fuzes have a deceleration discrimination feature to delay fuze functioning until the projectile has achieved target penetration, regardless of target thickness.

c. The Soviets expend the same effort upon environmental proofing base detonating fuzes as they do upon the other fuze classes. Lead sealing rings, nylon pipe thread sealant, plastic rings and sealing compounds are all employed for waterproofing. Although base detonating fuzes are mounted inside explosive ordnance and do not require the same effort toward environmental proofing, it appears that current Soviet ammunition design philosophy requires that all fuzes receive this treatment.

d. Base detonating fuzes receive the same care in marking as do the other classes of fuzes. Each is diestamped with the fuze designation, lot number, and factory identification, when space permits. Those base detonating fuzes that are permanently assembled in projectiles are marked on body flanges so that the information can be read directly from that portion of the fuze that protrudes from the projectile.

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Fuze, base detonating, AV-96

(No photograph available)

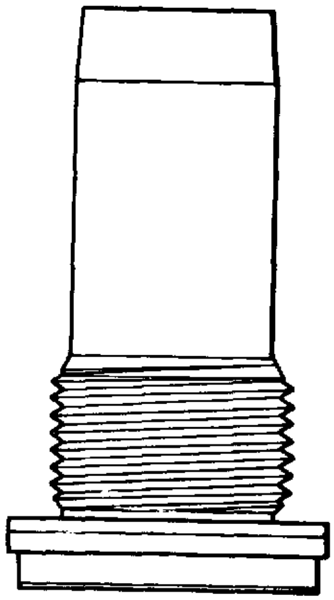
DISCUSSION

The Soviet Model AV-96 fuze is a gas-armed base detonating, impact fuze designed with a slight delay. It is used with 82-mm and 132-mm rockets. The fuze consists of a steel body housing an impact mechanism, a delay pellet, a detonator, and a booster. The delay pellet, located between the primer and the detonator, requires a minimum burning time of 0.04 second before the flame from the primer can be transmitted to the detonator.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Gas pressure
Weight	?	Firing method	Impact
Markings	AB-96	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	?	Self-destruct time	NA
Explosive	Tetryl	Delay time	0.04 to 0.06 sec
Explosive weight	?		

Fuze, base detonating, AV-96



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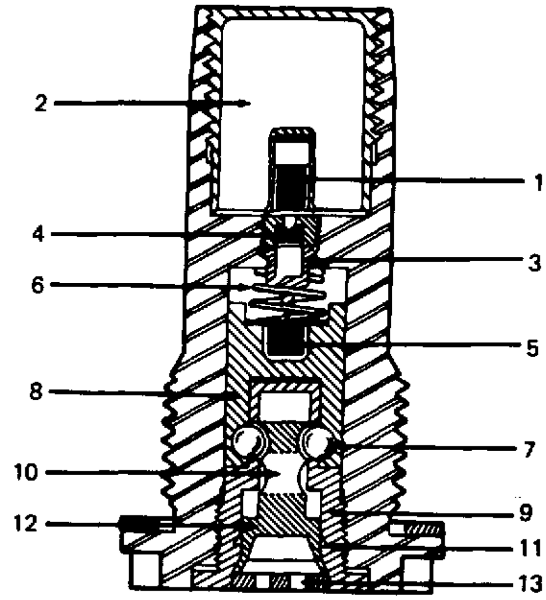

FUNCTIONING DESCRIPTION

The AV-96 is armed by gas generated by the propellant of the rocket motor. The gas enters the fuze through holes in the base bushing (13), driving the safety plunger (12) forward until it is stopped by the shoulder of the base plug (9). With the plunger in the forward position, the gas pressure reexpands the skirt of the plunger into the locking groove (11) cut in the base plug, so that the plunger is locked in the forward position. With the plunger now in the forward position, the safety transverse hold (10) is opposite the safety balls (7), allowing them to move inward to unlock the striker (8). Upon impact with the target, the inertia of the striker causes it to move forward, compressing the anticreep spring (6), and driving the primer (5) onto the fixed firing pin (3). Flame from the primer passes through a hole in the firing pin, igniting the delay pellet (4). After a delay of 0.04 to 0.06 second, the delay pellet transmits the flame to the detonator (1), which in turn explodes the booster (2) and the main charge.

A ring of packing at the fuze flange permits a tight seal to be made when the fuze is screwed into place in the rocket. This prevents gas from the rocket motor from reaching the rocket's explosive charge. Internal packing within the fuze provides similar protection for the fuze itself.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
82-mm rocket launcher	82-mm rocket RBS-82
132-mm rocket launcher, M-13	132-mm rocket RBS-132

(No disassembled view available)

REFERENCE

None

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Fuze, base detonating, DBR

(No photograph available)

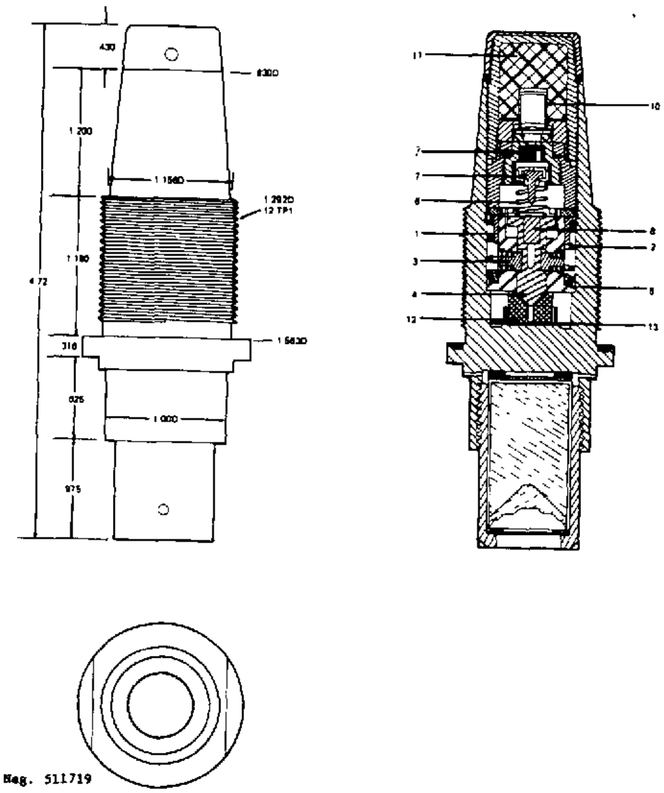
DISCUSSION

The DBR is the first of a new BD fuze family introduced to the Soviet inventory since 1950. It is a setback and centrifugal armed, impact fired fuze, containing a delay element and tracer. Graze sensitivity is obtained by the use of a graze weight in the base of the fuze. A unique safety feature is the use of a cup (or washer) with a central hole of a smaller diameter than the firing pin between the firing pin and the primer. Therefore, a considerable force is required to drive the firing pin through the hole to initiate the primer. The delay element is self-regulated according to the thickness of the armored target. The fuze has been made waterproof by the use of lead crush rings and vinyl washers.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback and centrifugal force
Weight	0.94 lb	Firing method	Impact
Markings	ДБР	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.18 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Self-regulating
Explosive weight	5.96 gm		

Fuze, base detonating, DBR



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FUNCTIONING DESCRIPTION

Upon firing, setback causes the setback sleeve (1) to move to the rear compressing the setback spring (2) and covering the detents. The setback sleeve prevents retraction of the detents (3) until setback diminishes; at this time, the spring (2) forces the sleeve (1) forward uncovering the detents. Centrifugal force can now release the detents from the groove in the primer carrier (4) and the fuze is armed. Upon impact, the impact collar (5) moves forward against the spring (2). Simultaneously the primer carrier (4) moves forward compressing the anticreep spring (6) and forcing the fixed firing pin (7) through a constricted hole in the desensitizer cup to initiate the primer (8). Flame from the primer flashes through a flash channel in the firing pin housing to ignite the delay element (9) which in turn initiates the detonator (10) and booster (11). If the projectile impacts the target on a flat angle, the graze weight (12) is cammed to the side bending down one or more legs of the clip (13) holding the weight in position. The weight continues its sideward movement and the cammed surfaces force the primer carrier and primer into the firing pin and initiate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
122-mm Gun D-74	122-mm APC-BC HE-7-BR-472
130-mm Gun M46	130-mm APC BR-482B

(No disassembled view available)

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-33-70.

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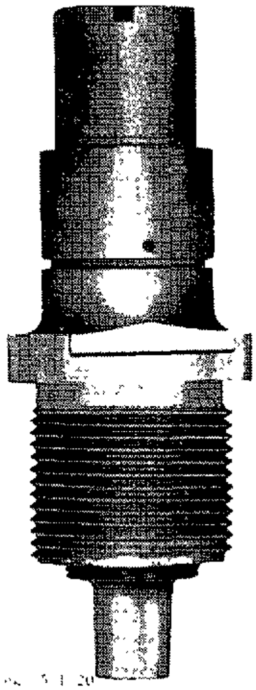
Fuze, base detonating, DBR-2



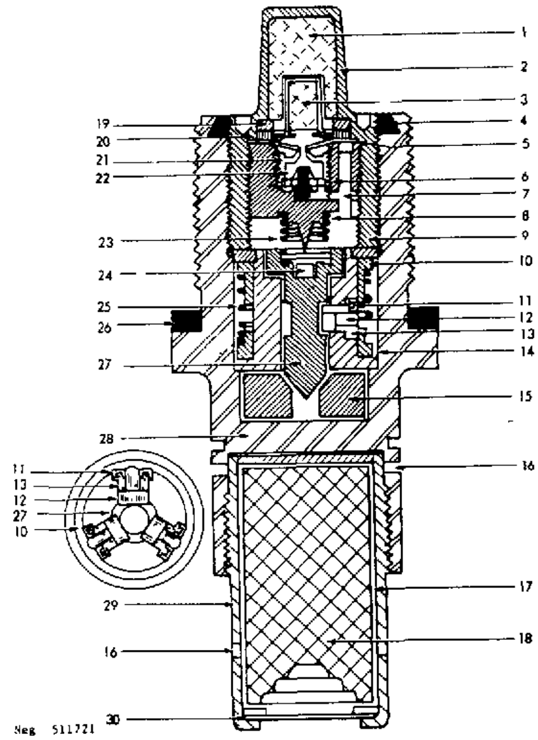
DISCUSSION

The DBR-2 is the second generation in the DBR fuze family. The internal parts and functioning of the DBR and DBR-2 are very similar with the exception of the delay components. Both fuzes use centrifugal force for arming purposes, and setback to lock centrifugal detents in position for bore safety. Two pressure escape ports have been provided in the base of the fuze to release gas from the tracer element.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback and centrifugal force
Weight	0.82	Firing method	Impact
Markings	ДБР -2	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.41 ins	Self-destruct time	NA
Explosive	Tetryl	Delay time	Self regulating
Explosive weight	26.70 gr		

Fuze, base detonating, DBR-2



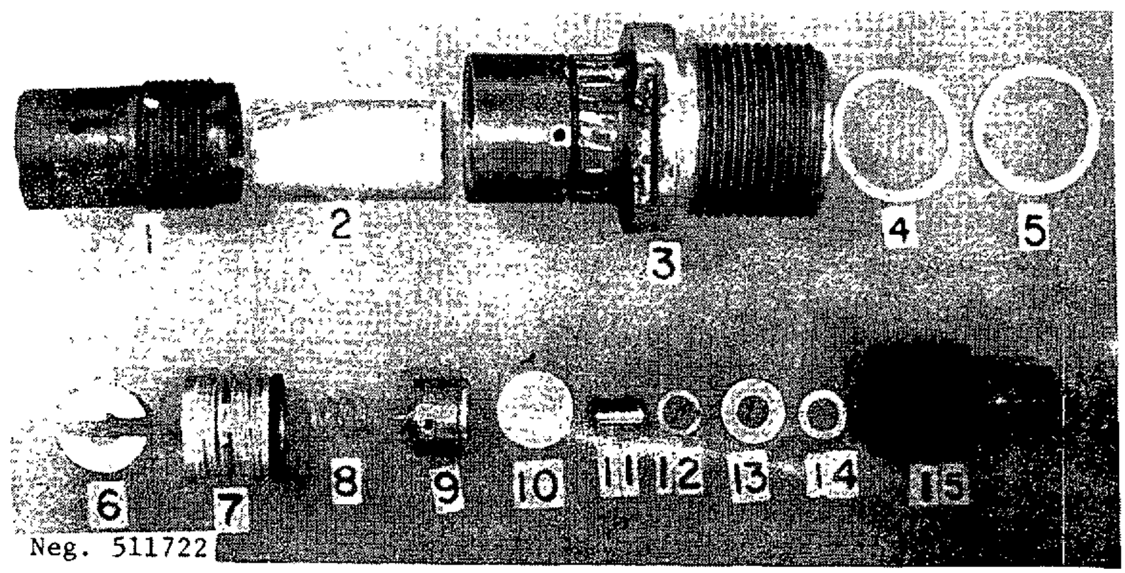
FUNCTIONING DESCRIPTION

Upon firing, setback causes the setback collar (10) to move to the rear, compressing the setback spring (25) and covering the spring loaded detents (12) securing the primer carrier. Approximately one meter beyond the muzzle, setback diminishes, allowing the spring to force the collar forward and uncover the detents. Centrifugal force can now move the three detents outward from the groove in the primer carrier; the fuze is now armed and only the anticreep spring (23) separates the primer (24) and fixed firing pin (8). Upon impact, the primer carrier overcomes the force of the anticreep spring and impinges the primer on the firing pin. Flame and gases pass through the flash channel (7) and ignite a flash pellet (6). The flash pellet flashes through a convex plate (5) into the heat sensitive detonator (3), which initiates the booster (1).

If the projectile strikes at a flat angle, the split graze weights (15) cam the primer carrier and primer into the firing pin.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
100-mm Gun M1944	100-mm AP-T BR-412D
130-mm Gun M-46	130-mm AP-T BR-482



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REFERENCE

Picatinny Arsenal Memorandum Report 1022, dated July 1962.

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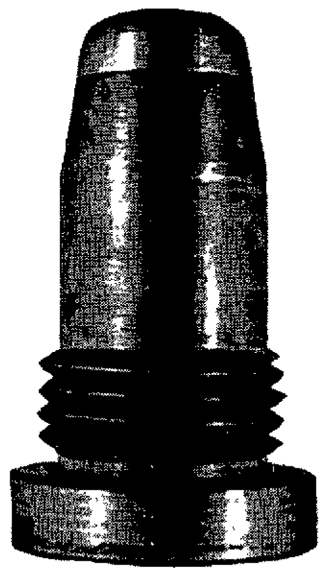
Fuze, base detonating, DBT



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DISCUSSION

The DBT is a setback and spin-armed base detonating fuze used on the 152-mm concrete-piercing projectile model G-530. An out-of-line detonator, as well as a graze sensitive feature, is included in the internal components. During assembly the fuze is set for delayed detonation. The selector can be rotated to instantaneous but once set, it cannot be changed.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Spin and setback
Weight	?	Firing method	Impact
Markings	ДБТ	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.024 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	?		

Fuze, base detonating, DBT

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, the pyrotechnic delay primer sets back against its spring and is initiated by the fixed firing pin. The flash ignites a pyrotechnic safety pellet in the detonator slider housing. Burnout of this pellet frees a spring-loaded plunger which had locked one slider detent in place. Centrifugal force causes this detent and one on the opposite side to release the slider to explosively align, where it is again locked in place by the two detents. Simultaneously, centrifugal force removes two detents from the flash pellet carrier. The carrier is now free to move and the fuze is armed.

Upon impact, if instantaneous action was selected, the flash pellet carrier is cammed forward by the inertia weight against the firing pin. The resulting flash escapes around the firing pin and through the center of the selector housing directly to the heat sensitive detonator, the detonator initiates the lead charge which in turn initiates the booster.

If the selector was set for a delay action, the selector blocks the instantaneous port, the flash is diverted to the delay pellet in the selector housing, which in turn initiates the lead charge and booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
152-mm Gun - Howitzer, D-20	152-mm CP G-530

(No disassembled view available)

REFERENCE

None

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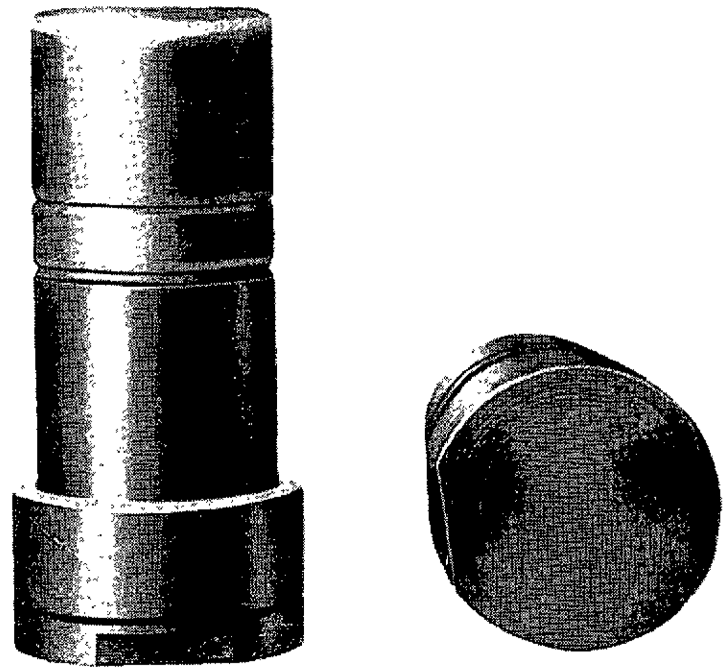
Fuze, base detonating, DK-2



Neg. 511724

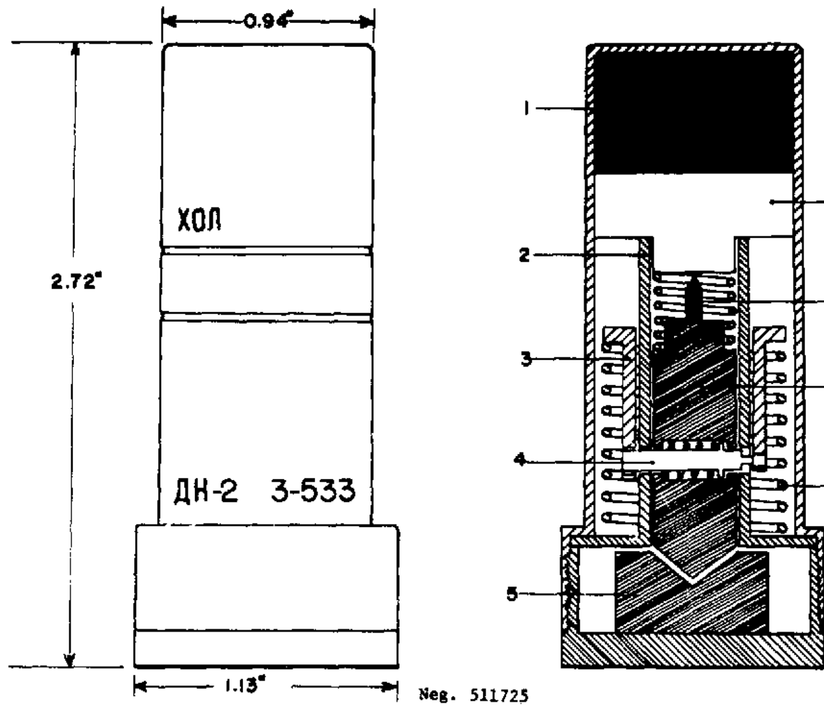
DISCUSSION

The DK-2 is a setback armed impact fired base detonating fuze used in the PG-2 HEAT rocket. The fuze is graze sensitive and employs a zig-zag arming delay. The body is made of aluminum and contains an in-line detonator.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Aluminum	Arming method --------- Setback
Weight ---------------- 0.23 lb	Firing method --------- Impact
Markings -------------- ДН-2	Safety devices -------- None
Booster	Arming distance -------- ?
Body material --------- Aluminum	Arming time ----------- ?
Body length ----------- 0.75 in	Self-destruct time ---- NA
Explosive ------------- Tetryl	Delay time ------------ Non-delay
Explosive weight ------ 43.70 gr	

Fuze, base detonating, DK-2



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FUNCTIONING DESCRIPTION

Upon firing, the zigzag setback sleeve (3) moves to the rear against the resistance of the setback spring (9) and the transverse plunger (4) riding through the zigzag slot. Upon completion of setback, the sleeve is pushed forward by the setback spring and the fuze is armed. On impact, the firing pin assembly (8) moves forward against the anticreep spring (7) and initiates the primer detonator (6). This in turn initiates the booster (1) and main charge. If the round impacts at a slight angle, the graze weight (5) moves laterally to cam the firing pin assembly into the primer detonator.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
40-mm Antitank grenade launcher RPG-2	40-mm HEAT Grenade (Rocket) PG-2

REFERENCE

None

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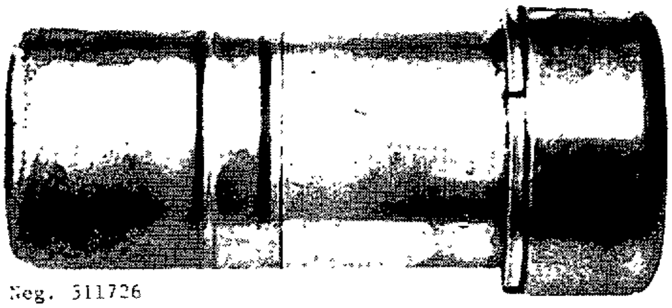
Fuze, base detonating, DK-4



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DISCUSSION

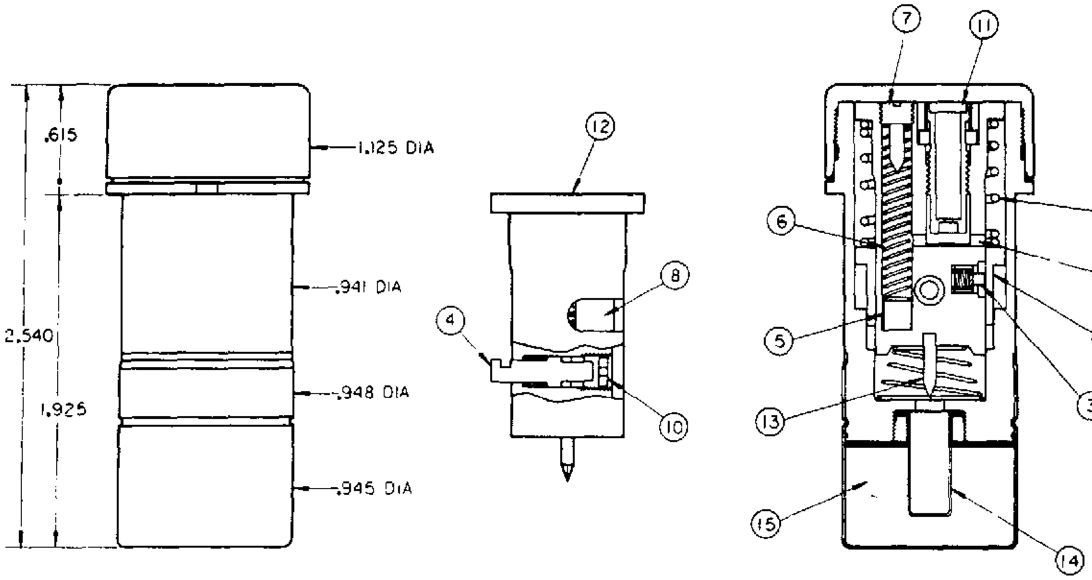
The DK-4 base detonating fuze is an improved version of the DK-2. It is setback armed and impact fired, and includes a self-destruct element which is also used to provide an air burst capability. The fuze body and most internal components are made of aluminum; the booster cup is steel.

A pyrotechnic arming delay pellet prevents the setback sleeve delay pin from moving inward until arming delay has occurred. Arming delay prevents fuze arming unless setback and sustained acceleration have been applied to

CHARACTERISTICS

Fuze Assembly:		**Functional Data:**	
Body material	Aluminum	Arming method	Setback
Weight	0.16 lb	Firing method	Impact or SD
Markings	ДН-4	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.050 in	Self-destruct time	4.16 sec (average)
Explosive	PETN		
Explosive weight	63.50 gr	Delay time	NA

the fuze. If acceleration ceases prior to burnout of the delay pellet, the setback sleeve will move forward and be restrained by the delay pin, preventing the housing from moving forward upon impact or self-destruct functioning. This provides a positive safety for handling and firing.



Neg. 511727

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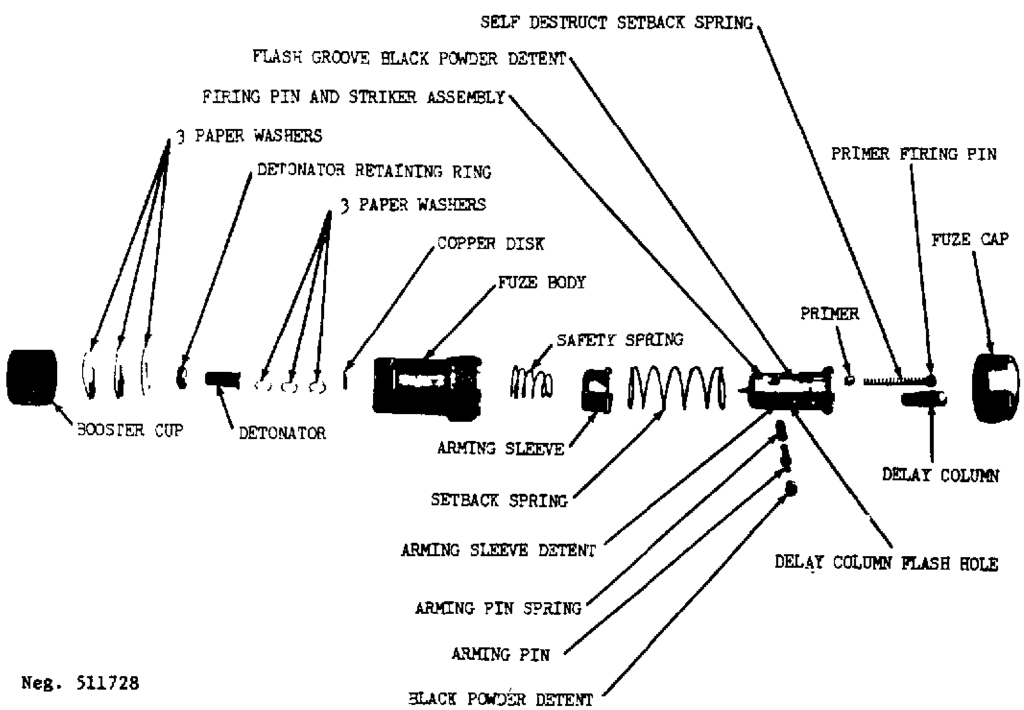
FUNCTIONING DESCRIPTION

Upon firing, setback forces cause the fuze arming sleeve (1) to compress the main setback spring (2), releasing a spring-loaded detent (3) which locks the arming sleeve (1) in place. A short delay is created by a slotted arming pin (4) which rides in a zigzag slot in the arming sleeve (1). Setback forces also initiate the self-destruct cycle, which starts when the primer (5) depresses the self-destruct setback spring (6) and strikes the primer firing pin (7). This fires the primer (5) which flashes along the detent flash groove (8) and the delay flash hole (9). At the end of the detent flash groove (8), the primer flash initiates a black powder detent (10) which releases the spring-loaded arming pin (4) arming the fuze. The primer flash through the delay flash hole initiates the fuze delay (11). The fuze delay (11) burns for approximately 4 seconds and then fires a lead azide charge, which is located at the top of the fuze delay (11), driving the fuze striker assembly (12) and firing pin (13) into the detonator (14), which fires the booster (15) and initiates the round. The fuze will also function on impact when the fuze striker assembly (12) and firing pin (13) are driven into the detonator (14), which fires the booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
40-mm Antitank grenade launcher RPG-2	40-mm HEAT grenade (Rocket) PG-2



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REFERENCE

USA Foreign Science and Technology Center Exploitation Report CR-20-8-68, dated June 1968.

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(No photograph available)

DISCUSSION

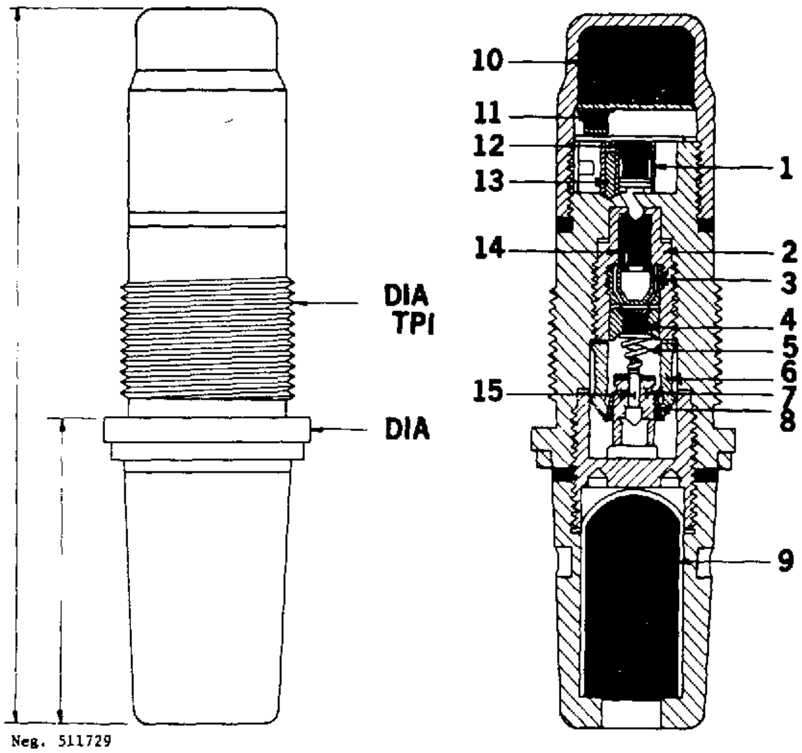
The DR-5 is a graze sensitive, base detonating fuze with a self-regulating delay and a tracer element. The fuze is armed by setback and centrifugal force and has an out-of-line detonator.

Because of its complex design and manufacturing difficulties, it is believed the fuze is no longer produced.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback and spin
Weight ---------------- ?	
Markings -------------- ?	Firing method --------- Out-of-line detonator
Booster	
Body material --------- Steel	Safety devices -------- ?
Body length ----------- ?	Arming distance ------- ?
Explosive ------------- ?	Arming time ----------- ?
Explosive weight ------ ?	Delay time ------------ ?

Fuze, base detonating, DR-5



FUNCTIONING DESCRIPTION

Upon firing, the tracer (9) is ignited by the burning propellant. The stirrup (6) sets back, overcoming the resistance of four offset claws on the striker safety clamp (8). The latter then engages the striker (7). Simultaneously the detent (13) sets back into a recess in the body of the fuze, locking the centrifugal shutter (1) until the shell has left the bore. Two centrifugal detents move free of the shutter while the shell is still traveling through the bore of the gun. When the shell leaves the bore, the centrifugal shutter is released and comes into the armed position, in which the detonator (12) lies opposite the relay charge (11). The striker is prevented from moving during the flight of the shell by the anticreep spring (5). Upon impact, the striker and the stirrup move forward, driving the firing pin (15) into the primer (4). The flash from the primer passes to the powder delay element (14) by traveling along the lateral grooves of the set forward valve (3). Impact inertia also forces the set forward valve against the powder delay element; the gases generated by the combustion of the delay composition, however, pass through grooves on the front and sides of the set forward valve and escape from the powder delay element casing (2), thereby providing an even pressure and a normal rate of delay combustion. When the force of inertia exerted on the set forward valve decreases until its intensity is less than that of the pressure of the gases on the valve, the latter is forced rearward by the gas pressure and closes the exit from the delay element casing. The gas pressure in the casing is therefore sharply increased and the delay element burns more rapidly. Its flame passes to the detonator whose flash reaches the booster (10) by way of the relay charge. The force of inertia decreases when the round has pierced the armor, and this insures the automatic regulation of the delay for the perforation of any given thickness of armor within the limits of the armor-piercing capacity of the projectile.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
107-mm Corp guns M1910/30 and M1940 (M-60) 122-mm Corp guns M1931 and M1931/37 (A-19); Tank gun M1943 (D-25); SP gun M1944 (D-258)	107-mm AP-T BR-240 122-mm AP-T BR-471 & BR-471B

(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, KTD and KTD-2

(No photograph available)

DISCUSSION

The KTD and KTD-2 are varable delay base fuzes that arm by setback and centrifugal force. A delay selector on the base of the fuze may be set on "II H" for transportation (Safe), "3" for delay or "0" for non-delay action. These fuzes are nearly identical in design and function.

To improve the arming qualities at high muzzle and angular velocities, the following modifications were made in the KTD: (a) The steel arming rod has been replaced by an aluminum arming rod to reduce the rods weight and friction; (b) a lead core was pressed into the center of the striker to add weight and increase sensitivity; (c) To prevent gases from reaching

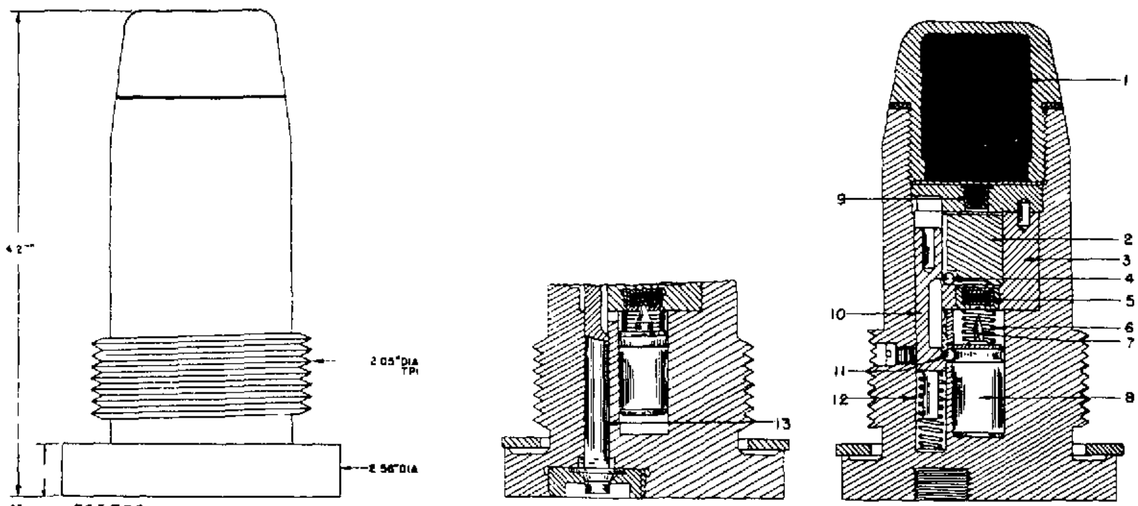
CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method ---------- Setback
Weight ---------------- ?	Firing method ---------- Impact
Markings -------------- НТД & НТД-2	Safety devices -------- Out-of-line-detonator
Booster	
Body material ---------- Steel	Arming distance ------- ?
Body length ----------- ?	Arming time ----------- ?
Explosive ------------- Tetryl	Self-destruct time ---- NA
Explosive weight ------ ?	Delay time ------------ ?

<u>Fuze</u>, base detonating, KTD and KTD-2

the primer, an internal channel has replaced the groove formerly cut in the surface of the selector rod. Fuzes which incorporated the above changes were designated KTD-2 and are not employed in low velocity projectiles because of poor arming qualities.

The KTD and KTD-2 are considered bore safe because of the out-of-line detonator; should a premature function of the primer take place, the shutter would be jammed in the out-of-line position.



Neg. 511730

FUNCTIONING DESCRIPTION

Upon firing, the arming rod (10) is set back by inertia forces compressing the arming rod spring (12). This aligns the recess in the arming rod with the striker check ball (11) which falls into the recess and frees the striker (8). The anticreep spring (6) prevents the striker from moving forward against the primer (5). Upon deceleration of the projectile, the arming rod spring decompresses, forcing the arming rod forward so that the recess in the rod is opposite the shutter check ball (4). Centrifugal force moves the shutter check ball into the recess in the rod and allows the centrifugal shutter (2) to turn and align the detonator and relay charge. Upon impact, inertia drives the striker and firing pin (7) into the primer. If the selector is set for nondelay action "0", the flash from the primer passes along a groove in the selector (13) and ignites the detonator, which in turn initiates the relay charge and booster (1). When the selector has been set for delay action "3", the groove in the setting selector is turned 180° away from the primer (5) and the passage from the primer to the detonator is closed. As a result, the flash from the primer is transmitted to a delay element in the shutter, and then to the detonator, the relay charge, and the booster.

Fuze, base detonating, KTD and KTD-2

WEAPONS AND PROJECTILES USED WITH

Weapons	Fuze	Projectiles
203-mm Howitzer, M1931(B-4)	KTD	203-mm CP G-630
280-mm Mortar (Howitzer) M1939 (BR-17)	KTD	280-mm CP G-675
122-mm Corps guns M1931 & M1931/37 (A-19) Tank gun M1943 (D-25) SP gun M1944 (D-25S)	KTD-2	122-mm CP G-471
152-mm Guns M1910/34 and M1935 Gun-howitzer, M1937 (ML-20) Howitzer M1909/30 and M1938 (M10) Tank-howitzer M1938	KTD-2	152-mm CP G-530, G-540, G-545

(No disassembled view available)

REFERENCE

None

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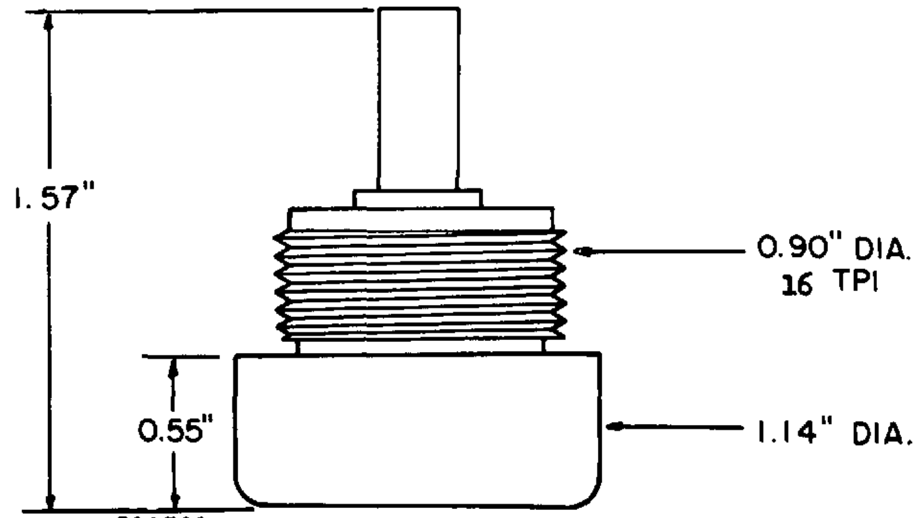
Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, MD-1, MD-2, MD-3, and MD-4



Neg. 511731

DISCUSSION

These are early model base detonating fuzes used in small caliber projectiles. Little definite information is available; but, due to the lack of safety features, they are believed to be obsolete.

CHARACTERISTICS

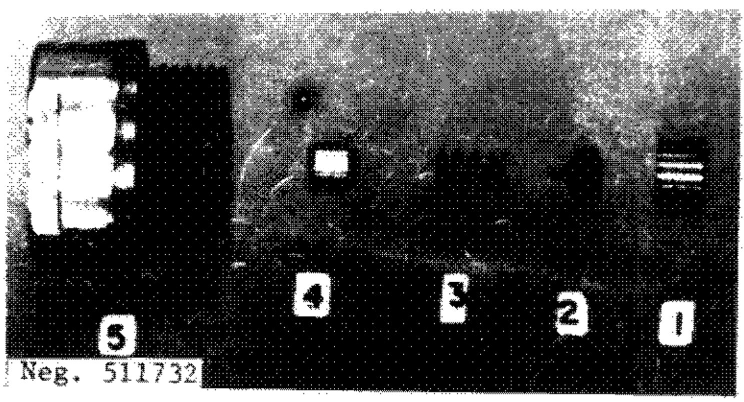
Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback
Weight ---------------- 0.242 lb (app)	Firing method --------- Impact
Markings -------------- NA	Safety devices -------- None
Booster	Arming distance ------- ?
Body material --------- Steel	Arming time ----------- ?
Body length ----------- 2.59 in (app)	Delay times ----------- ?
Explosive ------------- ?	
Explosive weight ------ ?	

Fuze, base detonating, MD-1, MD-2, MD-3, and MD-4

(No line drawing available)

FUNCTIONING DESCRIPTION

Unknown.



Fuze, base detonating, MD-1, MD-2, MD-3, and MD-4

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
Unknown	Unknown

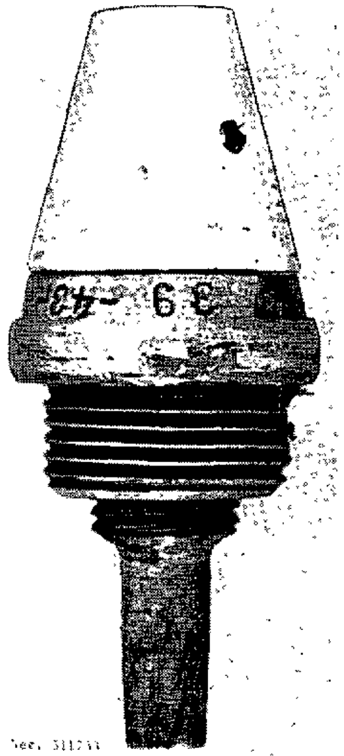
REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, MD-5 and MD-6



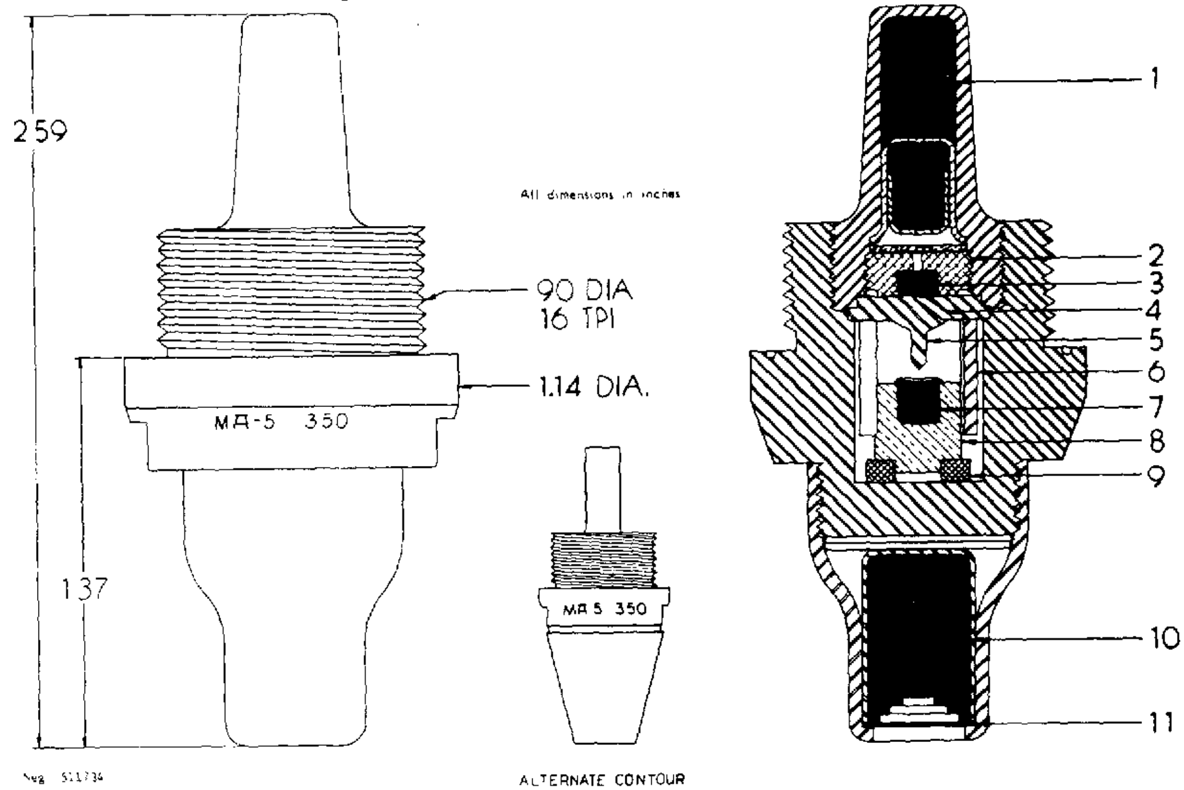
DISCUSSION

The MD-5 is a base detonating fuze used in small caliber armor-piercing projectiles. The fuze is of conventional design and includes a primer, a delay pellet, a detonator, and a removable tracer. An initiator (booster charge) is inserted separately in the projectile just prior to use. The MD-6 is identical to the MD-5 except for slight differences in external appearance and base thread size.

CHARACTERISTICS

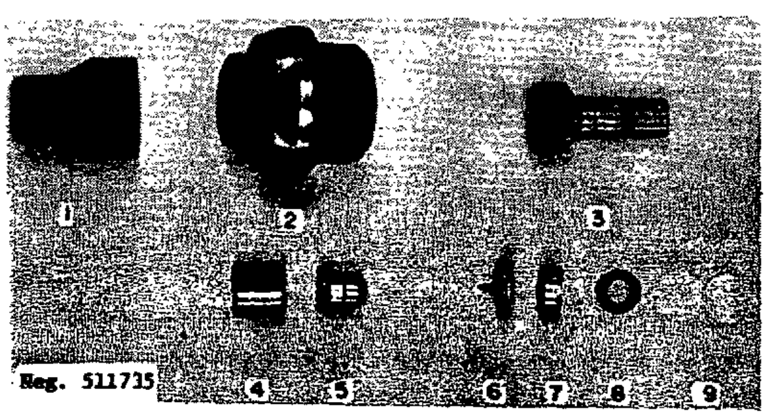
Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.26 lb	Firing method	Impact
Markings	МД-5 & МД-6	Safety devices	None
Booster		Arming distance	?
Body material	NA	Arming time	?
Body length	NA	Self-destruct time	NA
Explosive	NA	Delay time	?
Explosive weight	NA		

Fuze, base detonating, MD-5 and MD-6



FUNCTIONING DESCRIPTION

Upon firing, the tracer element (10) is ignited by the propellant gases and is contained by a solid barrier in the fuze body. At the same time, the stirrup (6) sets back and clamps itself to the primer carrier (8). Upon impact, the stirrup and primer carrier set forward, driving the primer (7) against the fixed firing pin (5). The primer emits a flame through a channel (4) in the firing pin holder to ignite the delay pellet (3), which in turn initiates the detonator (1).



WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
45-mm Antitank guns M1932, M1937 and M1942; Tank guns M1932 and M1934	45-mm AP-T BR-240, B-240
57-mm Antitank guns M1941 and M1943 (ZIS-22)	57-mm AP-T BR-271
76-mm Guns M1902/30, M1933, M1936 (F-22) M1939 (USV), & M1942 (ZIS-3) Tank guns M1938/39 (L-11) and M1939 (F-32) Howitzer M1927 and M1943	76-mm AP-T BR-350, BR-350A, BR-361

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, MD-7 and MD-8

Neg. 511736

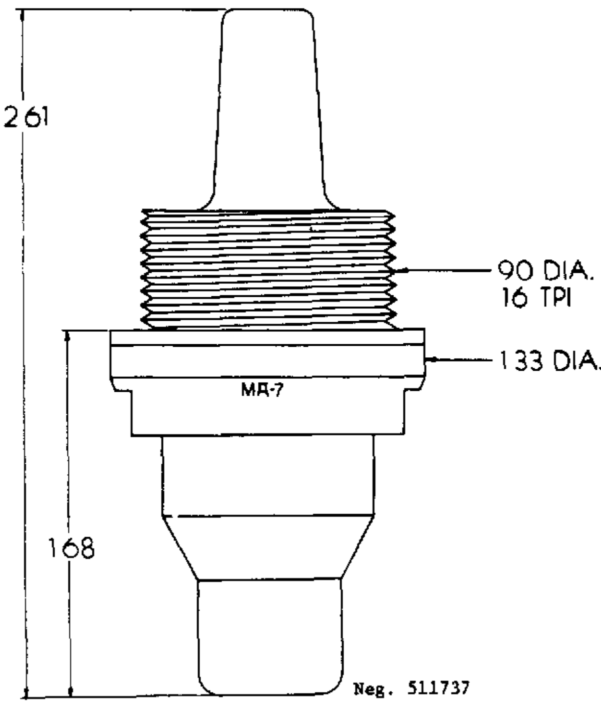
DISCUSSION

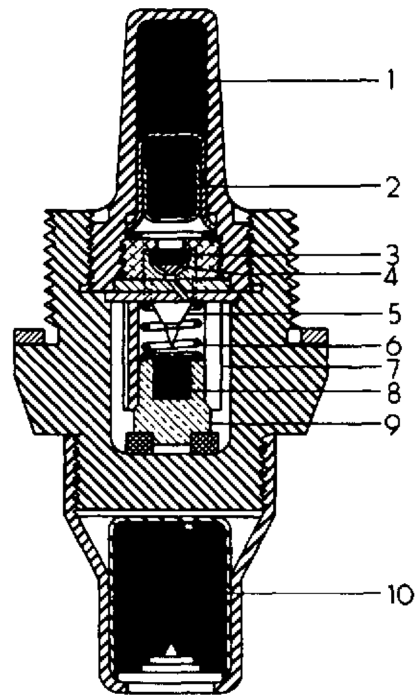
The MD-7 and MD-8 are setback armed, base detonating fuzes used in armor-piercing projectiles. They are similar in design and functioning to the MD-5 and MD-6 with the exception of the addition of an anticreep spring which affords additional safety from premature detonations. These fuzes are designed to regulate the delay according to the thickness of the target to be penetrated. The MD-8 may be used with or without a tracer element.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.31 lb	Firing method	Impact
Markings	МД-7 & МД-8	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.04 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	0.005 to 0.015 sec
Explosive weight	8.5 gr		

Fuze, base detonating, MD-7 and MD-8





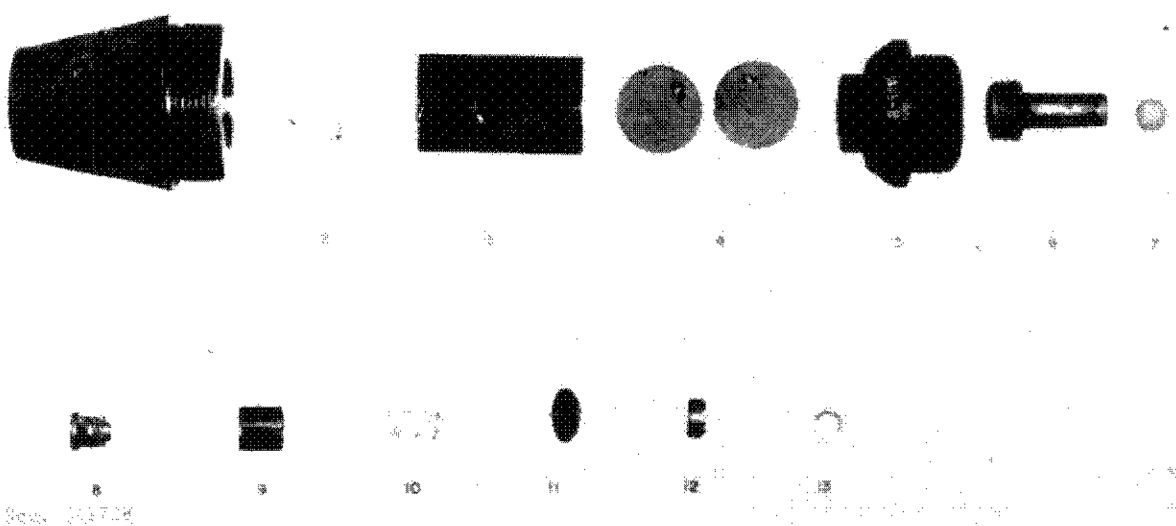
FUNCTIONING DESCRIPTION

Upon firing, the tracer element (10) is ignited by propellant gases. Simultaneously setback causes the stirrup (7) to move rearward, overriding the primer carrier (9). The primer carrier is then held to the rear by the anticreep spring (6). Upon impact the primer carrier and primer (8) move forward against the firing pin (5).

The primer flashes through a flash channel in the firing pin holder and ignites a delay element (3). The set forward valve (4) moves forward by inertia and remains in this position until penetration of the target has been achieved. At this time gases produced by the delay element (3) force the valve to the rear sealing the channel. This causes a rapid increase in pressure, resulting in instantaneous consumption of the delay element and initiation of the detonator (2) and booster (1).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
57-mm A/T Gun M1941 & M1943 S/P Antitank gun	57-mm AP-T, BR-271
76-mm Guns M1939 & M1942 PT-76 tank gun; SU support gun	76-mm AP-T, BR-350, BR-350A, BR-350B
85-mm Tank gun M1943 & M1944 SU-85 & ASU-85 assault guns; field gun D-44	85-mm AP-T, BR-365, BR-365K
152-mm Gun-howitzer M1937 & D-20 Howitzer M1938 and M1943 JSU-152 assault gun	152-mm AP-T, BR-540, BR-540B



REFERENCE

FSTC Exploitation Report, FSTC-CR-20-15-70.

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Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, MD-10

Neg. 511739

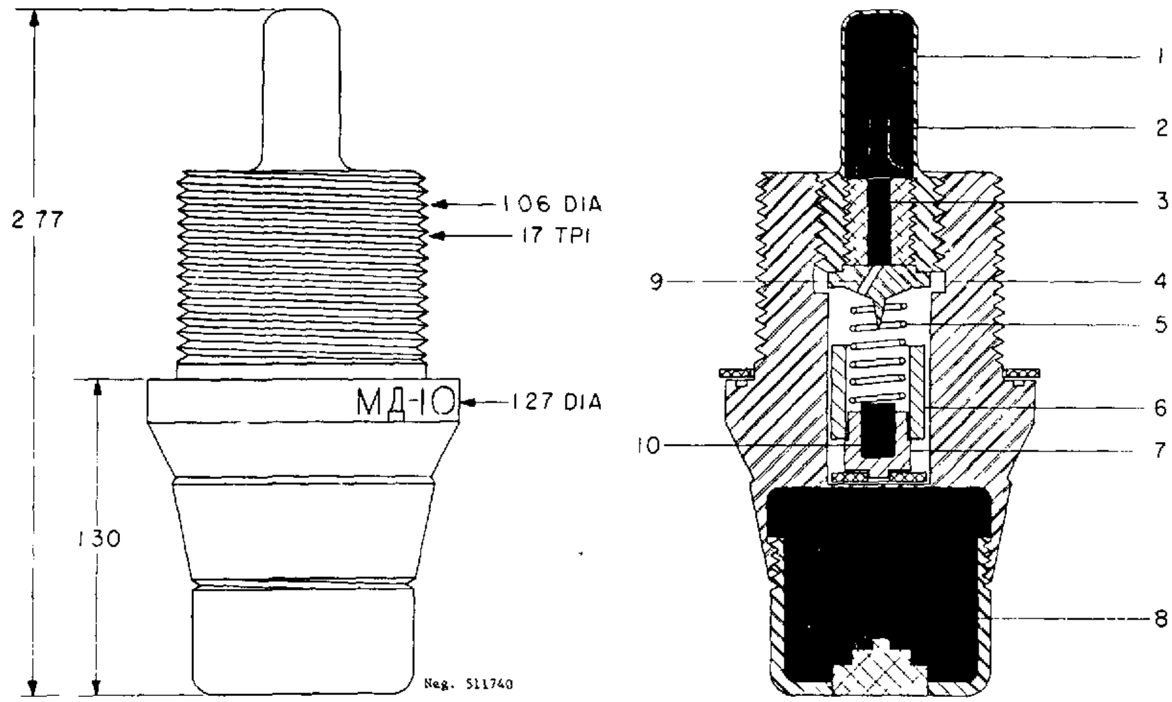
DISCUSSION

The MD-10 is a setback armed, impact fired fuze used in armor-piercing projectiles. The fuze is of conventional design and includes a removable tracer. The self-adjusting delay included in early models of this series (MD-7 & MD-8) has been omitted from the MD-10. This fuze is interchangeable with the MD-6 and MD-8.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.318 lb	Firing method	Impact
Markings	МД-10	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.06 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	0.45 gm		

__Fuze__, base detonating, MD-10



FUNCTIONING DESCRIPTION

Upon firing, the tracer element is ignited by the propellant gases. At the same time, the stirrup (6) sets back and clamps to the primer carrier (7). The fuze is now armed and the resistance of the anticreep spring (5) prevents the primer carrier from moving forward. Upon impact, inertia causes the primer carrier to overcome the resistance of the anticreep spring and drive the primer into the fixed firing pin (4). Gases and flame from the primer flash through a flash channel in the firing pin to ignite the delay element (3), which, after a short delay, initiates the detonator (2) and booster (1).

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

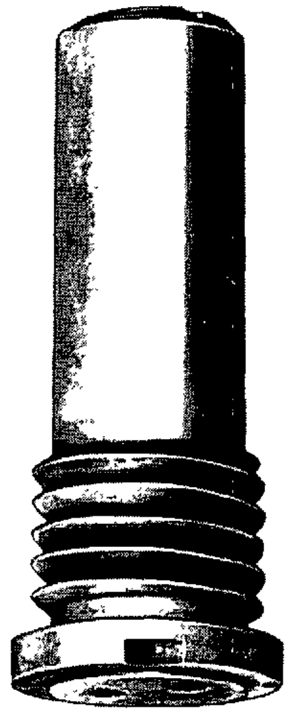
Weapons	Projectiles
57-mm A/T guns, M1941 and M1943 S/P gun (AA) ZSU-57-2	57-mm AP-T, BR-281
76-mm Division guns M1902/30 M1933, M1936 (F-22), M1939 (USZ) and M1942 (ZIS-3) Tank guns M1938/39 (L-11) & M1939 (F-32)	76-mm SP-T, BR-350B
85-mm AA guns, M1939, Tank guns M1943 (D-5T85) and M1944 (ZIS-S53) SP gun M1943 (D5-S85)	85-mm AP-T, BR-365K, BR-365
122-mm Corps guns M1931 & M1931/37 (A-19) Tank gun M1943 (D-25) SP guns M1943 (D-25S) & M1944 (A-19S)	122-mm AP-T, BR-471B

REFERENCE

Foreign Science & Technology Center Exploitation Report - FSTC-CR-20-137-68.

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, MR-Z



Neg. 511741

DISCUSSION

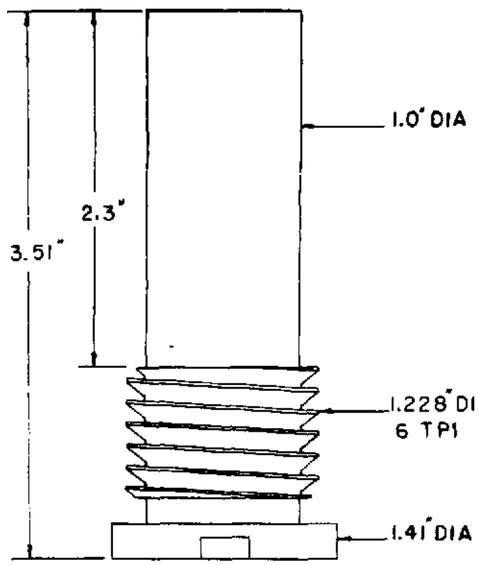
The MR-Z is a setback armed, impact fired, base detonating fuze used in large caliber concrete and armor-piercing projectiles.

The internal components include an out-of-line detonator which is aligned by centrifugal force and a steel spring. A primary identification feature is the heavy modified buttress thread for assembling the fuze to the projectile.

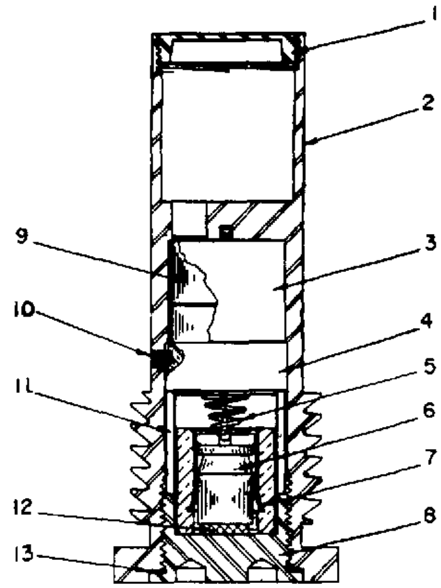
CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback
Weight ---------------- 0.15 lb	Firing method --------- Impact
Markings -------------- MP-3	Safety devices -------- Out-of-line detonator
Booster	
Body material --------- Steel	Arming distance ------- ?
Body length ----------- NA	Arming time ----------- ?
Explosive ------------- Tetryl	Self-destruct time ---- NA
Explosive weight ------ ?	Delay time ------------ ?

Fuze, base detonating, MR-Z



Neg. 511742



FUNCTIONING DESCRIPTION

Upon firing, setback causes the arming sleeve (11) to move to the rear, camming the legs of the stirrup (7) inward to engage the internal groove in the arming sleeve, thus locking the sleeve to the firing pin assembly (6). Simultaneously, a detent pin is moved to the rear by setback, freeing the rotor (9) which is aligned by centrifugal force and locked in the armed position.

Upon impact, the firing pin assembly and arming sleeve are moved forward by inertia, overcoming the resistance of the firing pin spring (5) and initiating the primer detonator and booster.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
130-mm field gun M1946	130-mm APC BR-482, BR-482B 130-mm CP G-482

REFERENCE

OTIA Evaluation Report 5552, Project 10-223-26, dated February 1960 (P.A. Memo Report No. 168)

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Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, 5DM

(No photograph available)

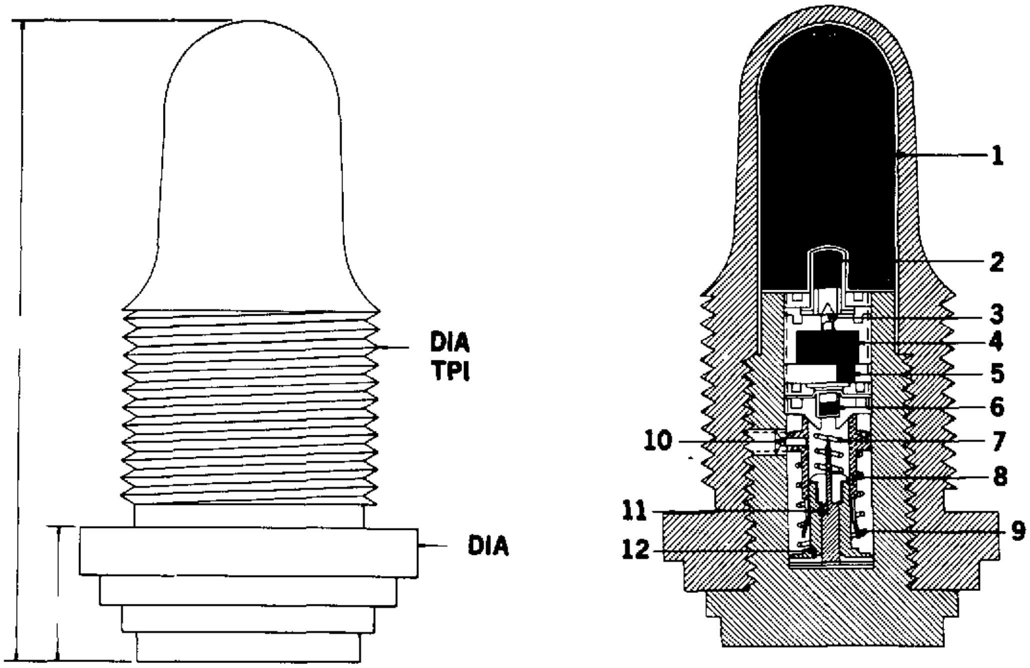
DISCUSSION

Information on the 5DM base detonating fuze is based entirely on documentary sources, and is extremely limited. As other improved fuzes are available, this design is considered obsolete.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback
Weight ---------------- ?	Firing method --------- Impact
Markings -------------- 5ДМ	Safety devices -------- ?
Booster	Arming distance ------- ?
Body material --------- NA	Arming time ----------- ?
Body length ----------- NA	Self-destruct time ---- NA
Explosive ------------- ?	Delay time ------------ ?
Explosive weight ------ ?	

Fuze, base detonating, 5DM



Neg. 511743

FUNCTIONING DESCRIPTION

Upon firing, setback causes the stirrup (8) to shear the safety pin (10), move rearward, and override the striker clip (9), which secures the stirup to the striker (12). Then only, the anticreep spring (7) prevents forward movement of the striker. Upon impact with the target, inertia causes the striker to overcome the anticreep spring and drive the firing pin (11) forward into the primer (6). The primer emits a jet of flame through a flash channel, igniting the delay element (5). When the delay burns through, it ignites the powder charge (4) which forces the firing pin (3) into the detonator (2). The detonator activates the booster (1), which detonates the main charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
Not available	

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, 5DT-2

(No photograph available)

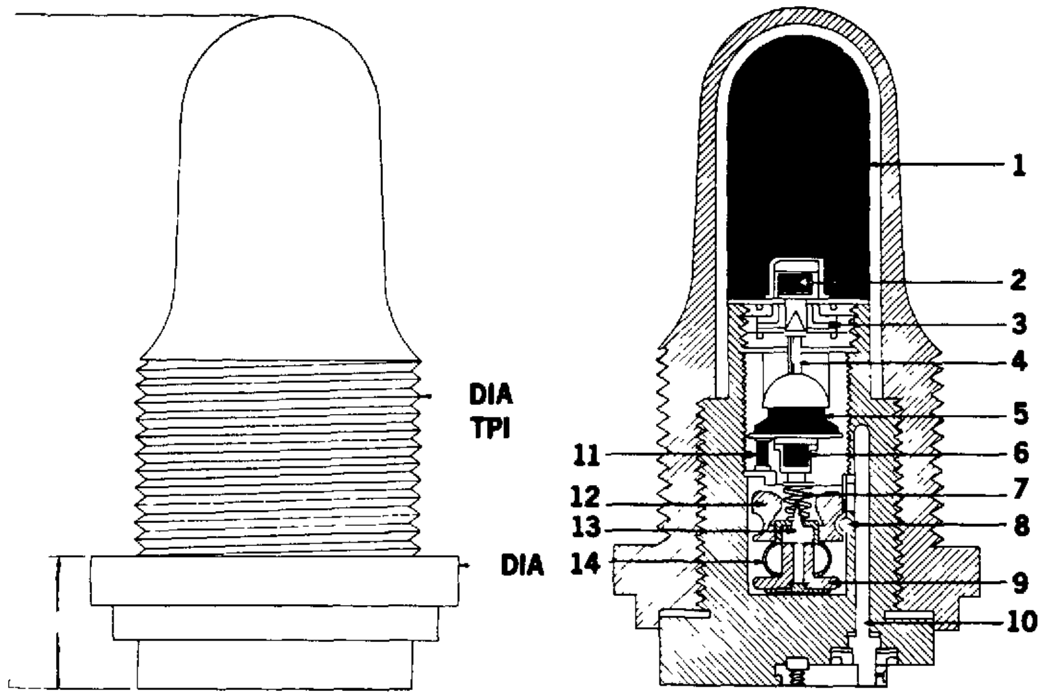
DISCUSSION

The 5DT-2 is a setback armed, base detonating fuze used in large caliber projectiles. Factual information is extremely limited and is based on documentary sources. Because of its design complexity and safety hazards, it is considered obsolete.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	?	Firing method	Impact
Markings	5ДТ-2	Safety devices	?
Booster		Arming distance	?
Body material	NA	Arming time	?
Body length	NA	Self-destruct time	NA
Explosive	?	Delay time	?
Explosive weight	?		

Fuze, base detonating, 5DT-2



Neg. 511744

FUNCTIONING DESCRIPTION

On firing, the stirrup (12) sets back, overcomes the resistance of the stirrup retaining spring (14), pushes the locking ball (8) into the socket of the setting selector (10), and locks itself to the stirrup retaining spring. On impact with the target, inertia causes the striker (9) to overcome the anticreep spring (7) and drive the impact firing pin (13) forward into the primer (6). The flash from the primer passes through the powder delay pellet (11) to the powder magazine (5). Under the pressure of the gases produced by the burning of the powder magazine, the detonator firing pin (4) breaks through the brass disk (3) and pierces the detonator (2). The resulting explosion detonates the booster (1).

(No disassembled view available)

Fuze, base detonating, 5DT-2

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
203-mm Howitzer M1931 (B-4)	203-mm HE F-620
280-mm Mortar (Howitzer) M1939 (BR-5)	280-mm HE ?
305-mm Howitzer M1915	305-mm HE ?

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, 7DT

(No photograph available)

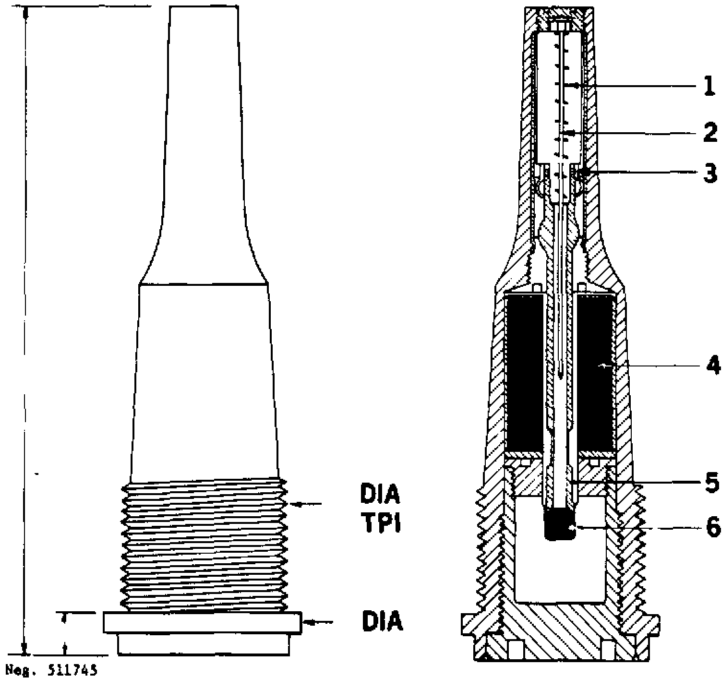
DISCUSSION

Information on the 7DT fuze is limited and unverified. The fuze appears to be a conventional base detonating type and is reportedly used in medium and large caliber naval and coastal artillery in both high explosive and armor-piercing projectiles.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	?	Firing method	Impact
Markings	7ДТ	Safety devices	?
Booster		Arming distance	?
Body material	NA	Arming time	?
Body length	NA	Self-destruct time	NA
Explosive	?	Delay time	?
Explosive weight	?		

Fuze, base detonating, 7DT



FUNCTIONING DESCRIPTION

Upon firing, setback force causes the stirrup (3) to move rearward and engage the detonator carrier (5). During flight the detonator carrier is prevented from moving forward by the anticreep spring (1). On impact with the target, inertia causes the stirrup and the attached detonator carrier to move forward until the detonator (6), which is secured to the detonator carrier, strikes the fixed firing pin (2). At this point, the detonator is approximately in the center of the booster (4). The explosion of the detonator initiates the booster, which activates the main charge of the projectile.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
Not available.	

REFERENCE

None

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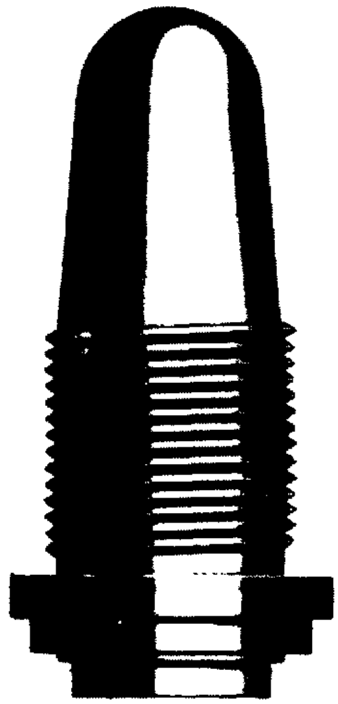
Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, 10DT



Neg. 511746

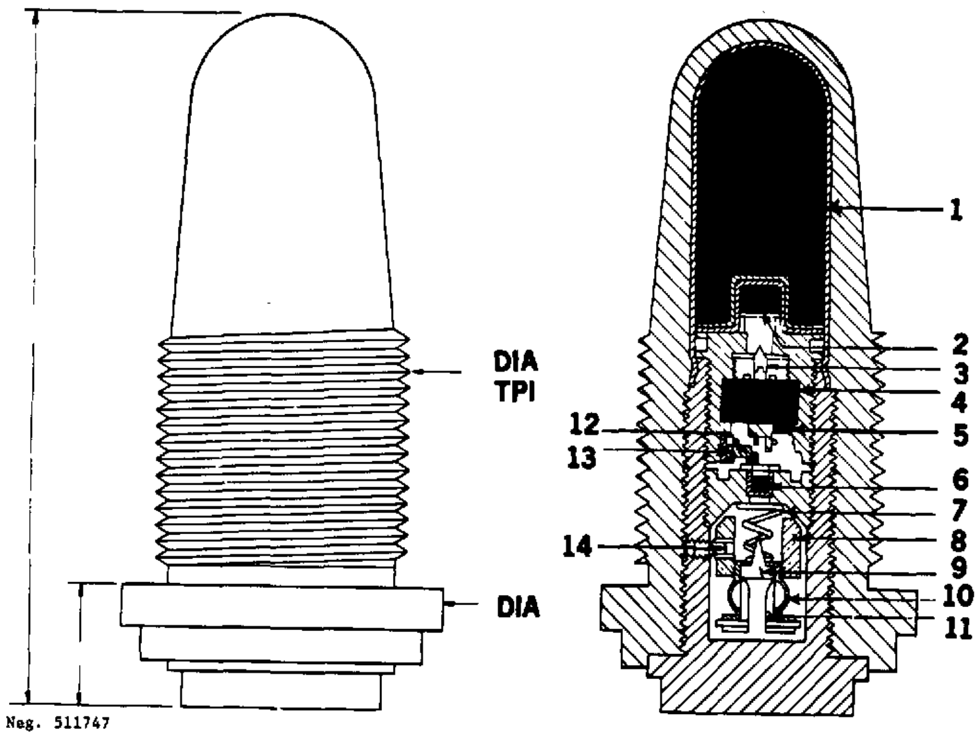
DISCUSSION

The 10 DT is a setback-armed base detonating fuze that has an automatic mechanism which enables it to function as either a nondelay or delay action fuze without setting previous to firing. This feature enables the fuze to detonate a projectile almost instantaneously upon encountering a thin-skinned target, or after a delay upon encountering a thick-skinned target, thus allowing the time necessary to embed the projectile in the target before detonation. The 10 DT, which is fired only in large caliber weapons, differs slightly for each type weapon in which it is used. This difference is necessitated by the difference in terminal velocity, which dictates the tensile strength of the shutter wire (12) that controls the action of the fuze. This fuze has not been recovered. The preceding information was taken from open source publications.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method --------- Setback
Weight ---------------- ?	Firing method --------- Impact
Markings -------------- 10ДТ	Safety devices -------- Safety clamp
Booster	Arming distance ------- ?
Body material --------- NA	Arming time ----------- ?
Body length ----------- NA	Self-destruct time ---- NA
Explosive ------------- ?	Delay time ------------ ?
Explosive weight ------ ?	

Fuze, base detonating, 10DT



FUNCTIONING DESCRIPTION

On firing, the stirrup (8) sets back, cutting the shear pin (14). The stirrup safety clamp (10) is crushed, and the stirrup remains to the rear, fixed with the striker (11) as one piece. The striker, although its forward movement is no longer prevented by the stirrup, is held to the rear by the anticreep spring (7) until impact. On impact with a thick-skinned target, the stirrup and striker move forward, carrying the impact firing pin (9) into the primer (6). At the same time, the metal shutter (13) cuts the shear wire (12), and sets forward to plug the direct flash channel that leads to the black powder pellet (4). The flash from the primer (6) ignites the delay pellet (5) which burns through and ignites the black powder pellet. Gases from the burning black powder pellet drive the detonator firing pin (3) into the detonator. The detonator actuates the booster (1), which in turn explodes the projectile. On impact with a thin-skinned target, the force of inertia is not sufficient for the metal shutter (13) to cut the shear wire (12) and plug the direct flash channel to the black powder pellet (4). Therefore, the primer flash is transmitted directly to the black powder pellet, bypassing the delay pellet (5), so that the action of the fuze is accelerated.

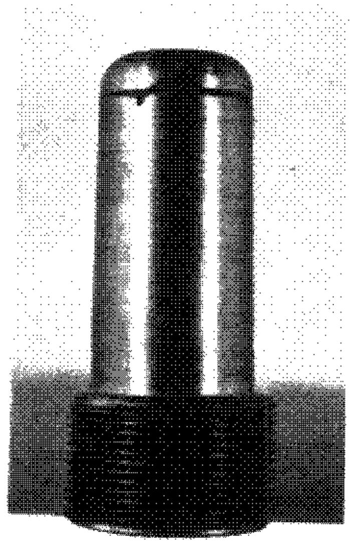
WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
Not available.	

(No disassembled view available)

REFERENCE

None



Neg. 511748

DISCUSSION

The V-350 is a spin and setback armed base detonating fuze used in Soviet semi-armor piercing projectiles. The internal components include a delay selector and an out-of-line rotor assembly. Markings stamped into the steel body include the model designation "B-350", date of manufacture and lot number.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Spin and setback
Weight	1.40 lb	Firing method	Impact
Markings	B-350	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.024 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	?		

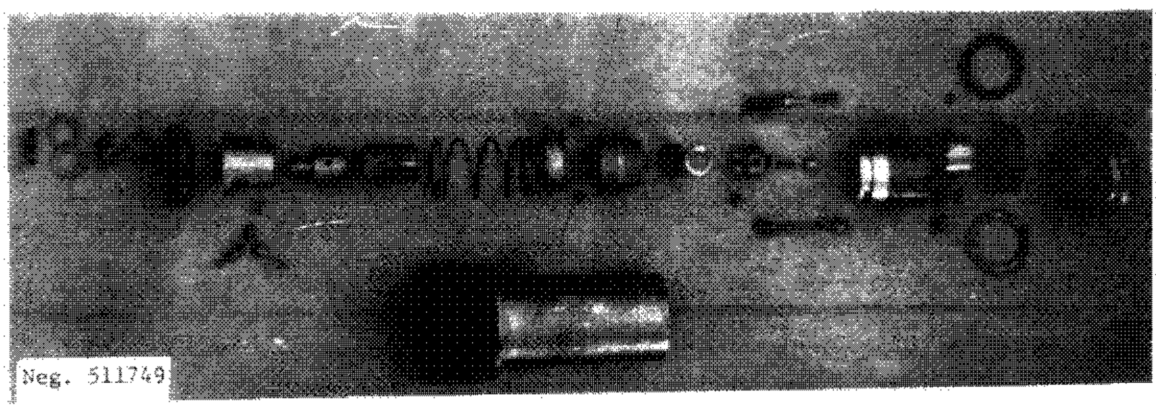
Fuze, base detonating, V-350

(No line drawing available)

FUNCTIONING DESCRIPTION

Prior to firing, the delay selector screw in the base of the fuze must be set for either delay or nondelay action. Upon firing, the weighted arming delay pellet sets back against the fixed firing pin and is initiated. The flash from the arming delay pellet ignites the rotor safety pellet, allowing the rotor safety detent to unlock the rotor.

Centrifugal force completes the arming cycle by turning the detonator rotor to the in line position where it is locked in place by two detents.



Neg. 511749

Centrifugal force also removes three detents from the flash pellet carrier and a small copper cup leading from the delay pellet to the nondelay flash pellet (when the nondelay mode is selected).

Upon impact, depending on the delay selected, the inertia firing pin impinges on, and ignites either the delay or nondelay pellet, which initiates the primer detonator, booster and main charge. (Regardless of the setting, the delay pellet is always activated).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
130-mm Gun, M58 Coastal	130-mm SAP PB-42

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Section II.

PEOPLE'S REPUBLIC OF CHINA

1. Introduction

a. Chinese Communist base detonating fuzes are exact copies of their Soviet counterparts. In many instances it appears that the PRC fuzes were made on the same machines that produced the Soviet fuzes. The only differences noted were in the marking of the fuzes. For this reason all general remarks made on Soviet base detonating fuzes are equally applicable to the PRC fuzes.

b. Since the PRC munitions industry has displayed the ability to produce quality explosive ordnance from indigenous designs, new base detonating fuzes are expected to appear. However, Soviet munitions design philosophies will continue to be employed as standard guides.

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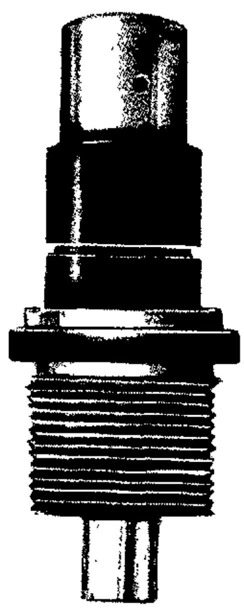
Fuze, base detonating, Type 2 (Artillery)
Chicom



DISCUSSION

The PRC base detonating fuze Type 2 is very similar to the Soviet DBR-2 fuze except for paint and markings. Some sealing elements employed by the Soviets have been eliminated in the PRC copy.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method ---------- Setback & centrifugal force
Weight ----------------- 0.82 lb	Firing method ---------- Impact
Markings ------------- 底百-2式	Safety devices --------- Centrifugal detents
Booster	Arming distance -------- ?
Body material ---------- Steel	Arming time ------------ ?
Body length ------------ 1.42 in	Self-destruct time ---- NA
Explosive -------------- Tetryl	Delay time ------------- Self regulating
Explosive weight ------- 26.70 gr	

Fuze, base detonating, Type 2 (Artillery)
Chicom

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Soviet DBR-2 fuze.

(No disassembled view available)

Fuze, base detonating, Type 2 (Artillery)
Chicom

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
85-mm Field gun type ?	85-mm APC-T Type 367

REFERENCE

US Army FSTC Exploitation Report FSTC-CR-20-55-70.

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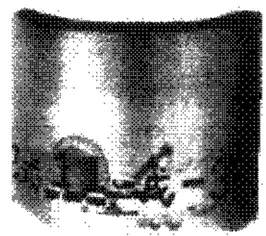
Fuze, base detonating, Type 2, (PG-2 HEAT Grenade) Chicom



ROTATED 180°

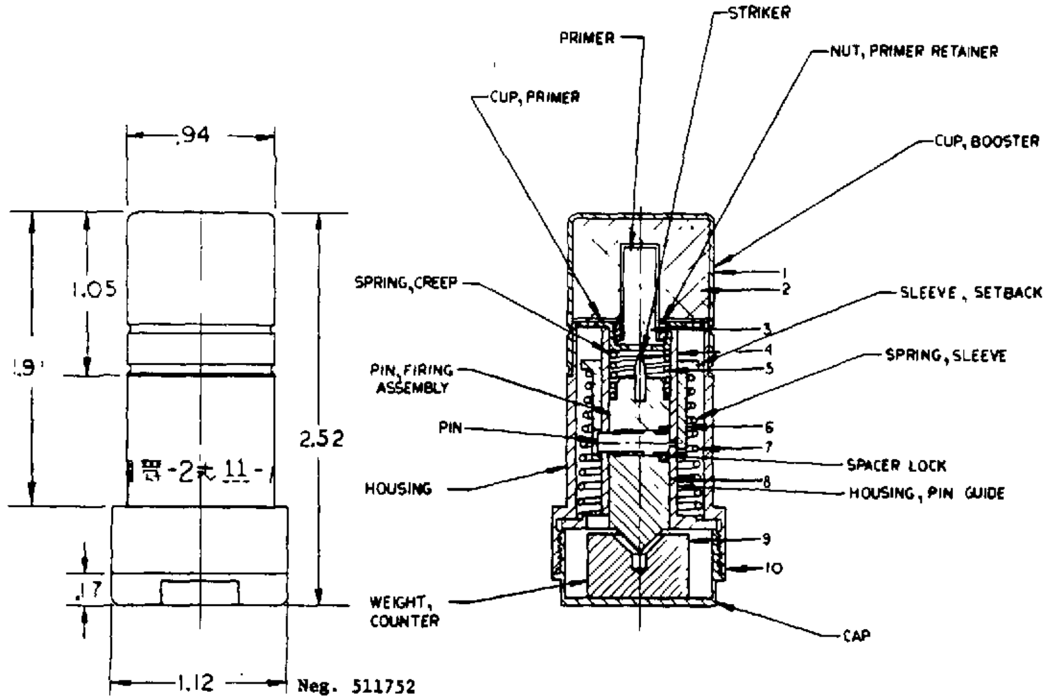
DISCUSSION

The base detonating fuze used in the PRC Type 50 40/80-mm HEAT grenade is a direct copy of the Soviet DK-2 fuze used in the PG-2 HEAT grenade.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.23 lb	Firing method	Impact
Markings	乙-尾-瞬-2式	Safety devices	None
		Arming distance	?
Booster		Arming time	?
Body material	Aluminum	Self-destruct time	NA
Body length	0.75 in	Delay time	Non-delay
Explosive	Tetryl		
Explosive weight	43.70 gr		

Fuze, base detonating, Type 2, (PG-2 HEAT Grenade) Chicom



Neg. 511752

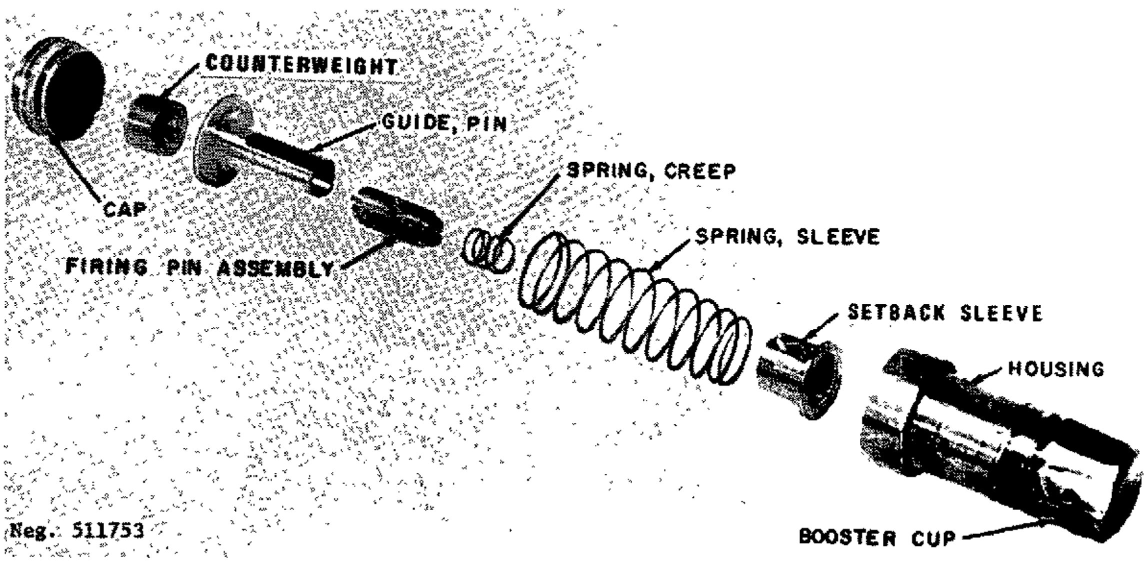
FUNCTIONING DESCRIPTION

Identical to the Soviet DK-2 fuze.

Fuze, base detonating, Type 2, (PG-2 HEAT Grenade) Chicom

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
40/80-mm Type 56 grenade launcher	40/80-mm HEAT grenade Type 50



REFERENCE

None

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Section III.

OTHER EURASIAN COMMUNIST COUNTRIES

1. Introduction

a. The capability of most of the small Eurasian Communist countries to develop and produce indigenous designed ordnance is limited. For this reason they are usually satisfied to produce copies of Soviet fuzes.

b. An exception is the powder train time fuze produced by North Vietnam. This fuze is a crude but effective device to produce an air burst mortar round.

c. The DC-1 base detonating fuze produced by Poland is another exception.

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Fuze, base detonating, Type 2 (PG-2 HEAT grenade)
North Korean

(No photograph available)

DISCUSSION

This fuze is a copy of the Soviet DK-2 and the PRC Type 2 fuzes employed in the PG-2 HEAT grenade. The major difference between the copies is in body material. The Soviet and PRC version are manufactured from aluminum, while the North Korean version employs cadmium plated steel.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.23 lb	Firing method	Impact
Markings	ДН-2	Safety devices	None
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	0.75 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Nondelay
Explosive weight	43.70 gr		

Fuze, base detonating, Type 2 (PG-2 HEAT grenade)
North Korean

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Soviet DK-2 fuze.

(No disassembled view available)

Fuze, base detonating, Type 2 (PG-2 HEAT grenade)
North Korean

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
40/80-mm rocket, RPG-2	40/80-mm HEAT grenade, PG-2

REFERENCE

None

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Fuze, base detonating (B-50 HEAT grenade)
North Vietnam

(No photograph available)

DISCUSSION

The fuze employed in the North Vietnamese type B-50 HEAT grenade is integral to the grenade and therefore has no separate model designation.

The fuze employs an in-line detonator with a jump-out pin to provide safety prior to firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Jump-out pin
Weight	NA	Firing method	Impact
Markings	NA	Safety devices	Jump-out pin
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	NA	Self-destruct time	NA
Explosive	Tetryl	Delay time	NA
Explosive weight	243.4 gr		

Fuze, base detonating (B-50 HEAT grenade)
North Vietnam

(No line drawing available)

FUNCTIONING DESCRIPTION

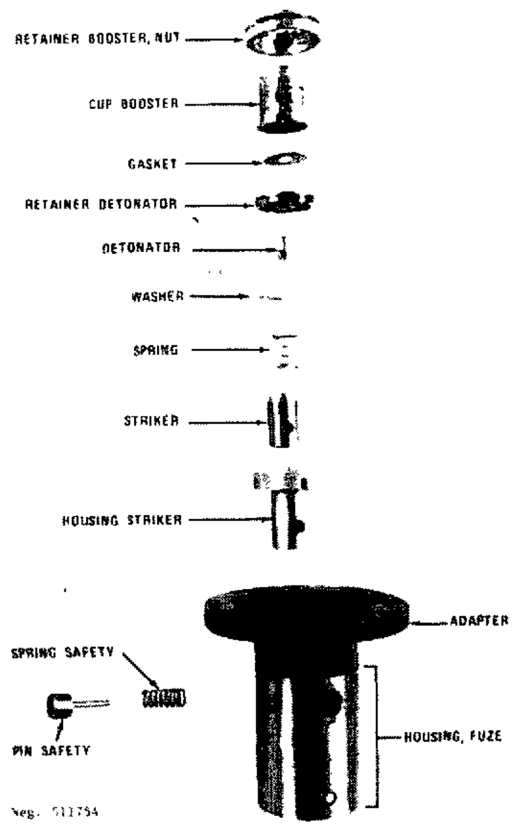
Upon firing, setback moves the fin assembly to the rear, shearing a pin and releasing the jump-out pin. The jump-out pin is expelled by its spring and the fuze is armed.

Upon impact, the inertial firing pin overcomes the resistance of the firing pin spring and initiates the primer detonator and booster.

Fuze, base detonating (B-50 HEAT grenade)
North Vietnam

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
50/100-mm NVA/VC Grenade Launcher, B-50	50/100-mm HEAT Grenade, B-50



REFERENCE

US Army FSTC Exploitation Report CR-20-117-68, dated April 1969.

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Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, base detonating, DC-1
Poland

(No photograph available)

DISCUSSION

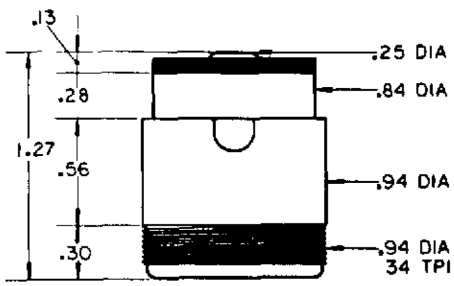
The DC-1 rifle grenade fuze is armed by gas pressure and setback. Nondelay function is initiated on impact with the target or by the graze weights in case of a ricochet or low angle impact.

The fuze body is a machined steel cylinder sealed at each end. In the unarmed condition all arming components are interlocked pending the receipt of setback and gas pressure from the propelling charge.

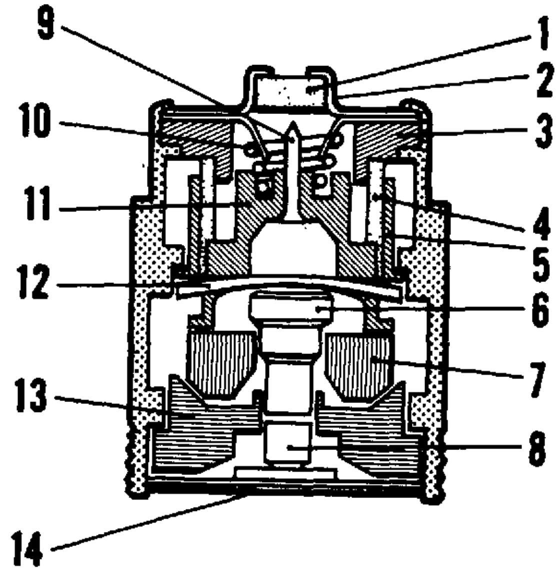
CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method ---------- Gas pressure
Weight ----------------- 0.12 lb	Firing method ---------- Impact
Markings --------------- 329 DC-1	Safety devices --------- Coiled spring
Booster	Arming distance -------- ?
Body material ---------- ?	Arming time ------------ ?
Body length ------------ ?	Self-destruct time ----- NA
Explosive -------------- ?	Delay time ------------- Nondelay
Explosive weight ------- ?	

Fuze, base detonating, DC-1
Poland



Neg. 511755



FUNCTIONING DESCRIPTION

Upon firing, gas pressure from the propelling charge forces the diaphragm (14) and lower piston (8) forward against the upper arming piston (6). The upper piston bends the safety wire (12) inward causing the ends of the wire to unblock the setback weights (5). The upper and lower pistons are now disengaged allowing free lateral movement of the graze weight (7). When the safety wire clears the setback weights, setback forces the weight to the rear releasing the flat coiled spring (4) which expands into the fuze cavity. The fuze is now armed.

Upon impact, the inertia weight (11) compresses the anticreep spring (10) and the firing pin (9) initiates the primer (1). If the rocket impacts at a flat angle the graze weights (7) will move laterally to cam the inertia weight and firing pin forward to initiate the primer and explosive train.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
	Grenade, Rifle, HEAT PGN-60
	Grenade, Rifle, Frag F-IN-60

REFERENCE

None

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Chapter 3

Point Detonating Fuzes

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Section I.

USSR

1. Introduction

a. Soviet artillery fuzes are of conventional design and function on accepted mechanical and explosive principles. Point detonating fuzes are constructed from a wide range of materials. The major proportion of Soviet fuzes have steel components and are exceedingly robust in design. All point detonating fuzes incorporating selective instantaneous and delay features are made of steel and are designed to remain intact and in line even though the fuze may impact against a solid target. Fuzes employed in point initiating base detonating modes are normally made of aluminum. This material has proven sufficiently rigid to maintain high explosive antitank projectiles at a proper standoff for maximum penetration. Many fuzes which function instantaneously are being constructed of plastic. Since these fuzes are not required to withstand impact stresses, a molded plastic offers an economical medium from which to mass produce fuze bodies.

b. Point detonating fuzes are generally equipped with a removable nose cap. For instantaneous fuze action, the cap is removed before firing. If a slight delay is desired (nondelay) the fuze is fired with the cap in place. Soviet fuze terminology defines a delay fuze as one whose functioning delay is 0.01 second or greater. The United States definition is 0.02 second or greater.

c. Soviet fuzes may be found with either black powder or non-gaseous delay elements; however, black powder has apparently been abandoned as being inconsistent with their environment-proof munition design philosophy and has been replaced by gasless compounds in new production items.

d. Soviet fuze markings are die-stamped into fuze bodies on (or near) the greatest diameter. The markings normally consist of a single line of Cyrillic letters and Arabic numbers. The line of markings is separated by dashes into groups which identify the manufacturing plant, fuze designation, lot number and year of manufacture. These markings are sometimes found at random locations and may be stenciled rather than die-stamped.

e. Certain fuzes have different colored nose caps or colored bands around the membrane caps. These markings are apparently employed to identify fuzes which are identical in appearance, but which have different functioning action. Where the color coding is known, it is explained in the text.

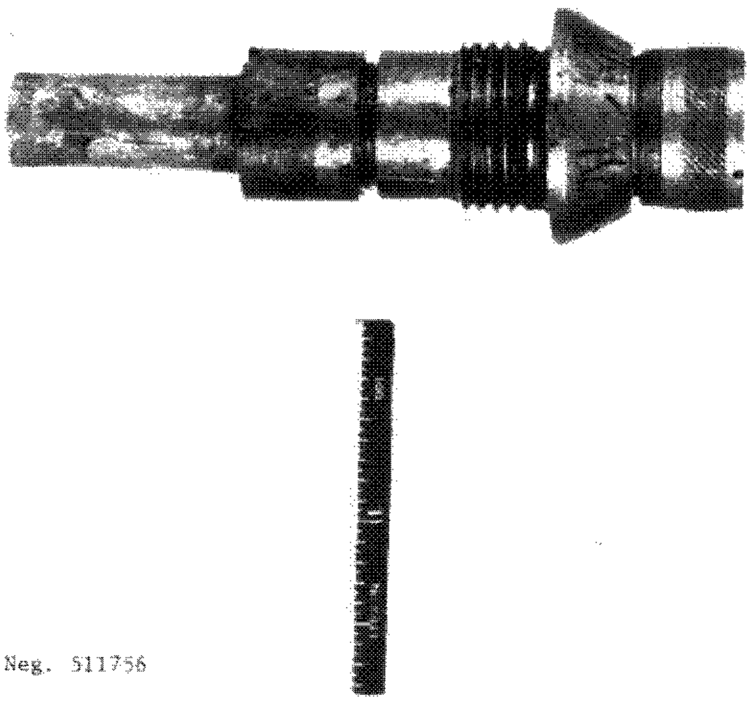
f. The Soviets have adopted the principle of dual fuze action in their point detonating fuzes. This design utilizes the principle of forcing a firing pin rearward upon impact, while simultaneously, the primer-detonator moves forward by inertia. To increase the sensitivity of inertial actuated primer-detonator carriers, graze-sensitive cam weights are employed to cam the carrier forward on impact at flat angles.

g. The Soviets use two words interchangeably for "fuze." One word is "trubka"; the other is "vzryvated." The fuzes are classified either as "igniferous" or "detonating." Ingiferous fuzes contain low explosive and serve as initiators to produce functioning of expelling charges, detonators and detonator-burster combinations. "Detonating" fuzes contain a stab sensitive detonator, a detonator-booster assembly and are intended to initiate direct functioning only in high explosive fragmentation or high explosive armor piercing ammunition.

h. The two major Soviet fuze classifications are further subdivided into classes that are directly comparable to their American counterparts. These classes are point detonating fuzes and base detonating fuzes. The type of functioning action is a basis for a further division into impact, combination time and impact, time and proximity fuzes. Fuze of the impact type are armed by setback, centrifugal force, or a combination of both, and function by direct action upon impact with a target. Some incorporate selective instantaneous or delay features.

i. The degree of safety in handling and firing forms the basis of an additional Soviet fuze classification. "Unsecured" fuzes are unsafe in handling or firing. In this class, the primer and detonator are not shielded or separated from the booster. "Semisecure" fuzes are safe for transport, but are not detonator safe. In this class the primer is isolated from the detonator, but the detonator has free access to the booster. Safe fuzes are both bore and detonator safe.

Fuze, point detonating, AD-N



Neg. 511756

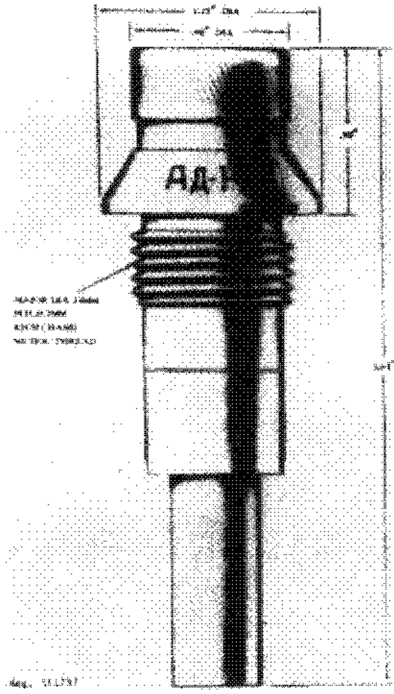
DISCUSSION

The AD-N is a setback armed, point detonating fuze which has been copied from an old French design, (Mark 34/31). The design and functioning description are similar for the fuzes designated "AD", "AD-2" and AD-N. An instantaneous detonation is achieved with the knurled nose cap removed, a nondelay is achieved with the nose cap in place. Two wrench slots are located 180° apart on the conical surface of the fuze body. This fuze is considered obsolete.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ------- Brass	Arming method --------- Setback
Weight ------------- 0.33 lb	Firing method --------- Impact
Markings ----------- A E- H	Safety devices -------- None
Booster	Arming distance ------- ?
Body material ------- Brass	Arming time ----------- ?
Body length --------- ?	Self-destruct time ---- NA
Explosive ----------- RDX and TNT	Delay time ------------ Instantaneous and nondelay
Explosive weight ---- ?	

Fuze, point detonating, AD-N



FUNCTIONING DESCRIPTION

Upon firing, the stirrup sets back, overriding the primer carrier and compressing the stirrup safety spring. The stirrup clips engage the inner surface of the stirrup, locking the stirrup and primer holder together. Simultaneously the primer holder sets back, firmly pressing the lead gas check ring against the base plug, thus preventing accidental ignition of the detonator by the primer while the projectile is in the gun tube.

Deceleration allows the stirrup safety spring to move the stirrup and primer holder forward directly beneath the firing pin.

Upon impact, safety cap removed, the striker and firing pin are driven to the rear initiating the primer and in turn the detonator and booster. A nondelay detonation is achieved by leaving the safety cap in place, inertia then causes the primer holder and primer to move forward against the firing pin initiating the primer, detonator and booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm Gun, M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3) and 1927 Tank Gun M1927/32	76-mm HE, F-354F
152-mm Howitzer, M1909/30	152-mm HE, F-533F

(No disassembled view available)

REFERENCE

None

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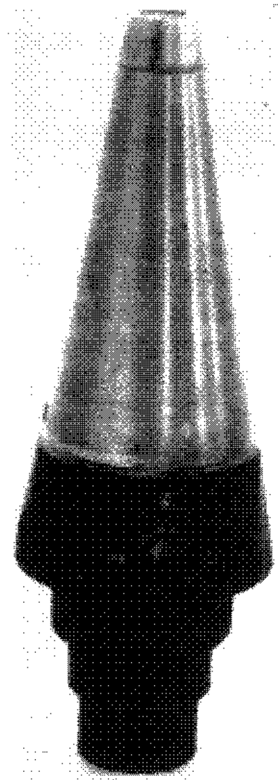
Fuze, point detonating, DKZ-V



Neg. 511758

DISCUSSION

The DKZ-V is a setback armed point detonating fuze used on the Soviet fin and spin stabilized 122-mm rockets.

The fuze is constructed basically of four major subassemblies: the nose section, the arming section, the delay selector section and the booster section. Many of the components are molded of phenolic plastic or of metallic material with a plastic coating.

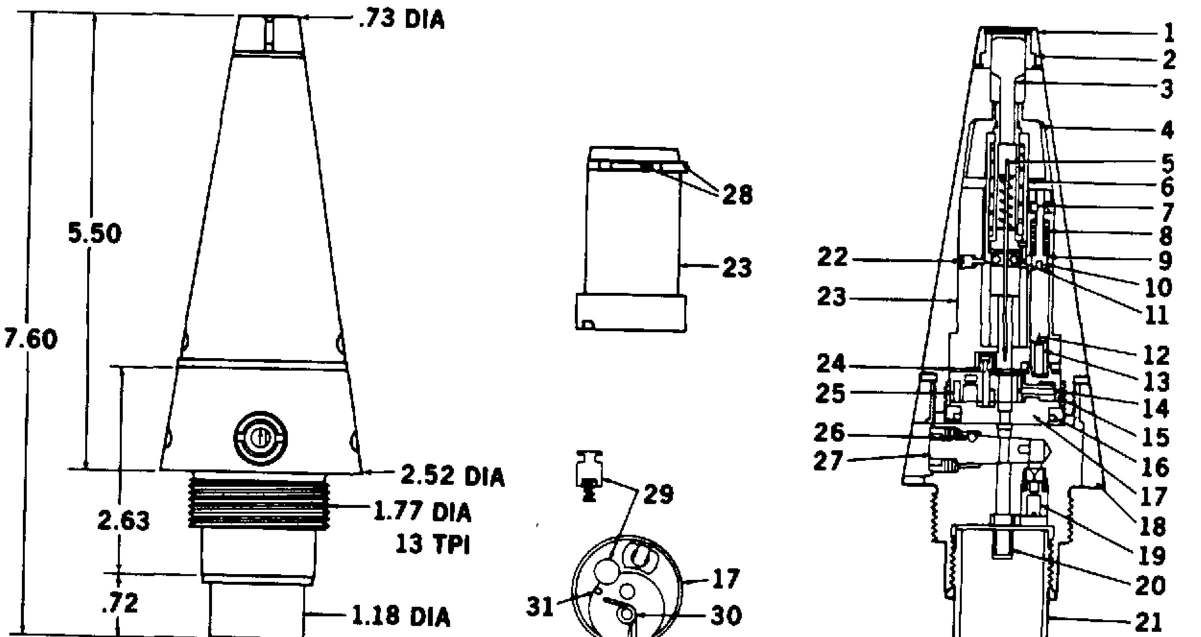
The delay selector on the base of the ogive may be set for superquick action "O", long delay "З", or a short delay mode "M". For superquick

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---- Aluminum, Steel, Plastic	Arming method --------- Setback
Weight ----------- 2.20 lb	Firing method --------- Impact
Markings --------- ДКЗ-V (marking may be removed)	Safety devices -------- Out-of-line detonator
	Arming distance ------- ?
	Arming time ----------- ?
Booster	Self-destruct time ---- NA
Body material ---- Steel	Delay time ------------ 0.016-0.055
Body length ------ 1.53 in	
Explosive -------- Tetryl	
Explosive weight-- 87.1 gr	

action the flash from the detonator is directed through the flash channel to the relay detonator. The long delay mode directs the detonator flash to two long delay elements. When the short delay mode is selected, the detonator flash is directed to both long delay elements and the short delay element. A redundant initiation is provided for both short and long delay modes.

The DKZ-V is longer, more streamlined and heavier than most standard Soviet fuzes. Most of those recovered, have had all identification markings removed except the lot number and delay settings. The entire fuze body with the exception of the plastic portion has a coating of varnish, the plastic coated base may be found painted blue or black with blue predominating.



Neg. 511759

FUNCTIONING DESCRIPTION

Upon firing, setback moves the zigzag arming sleeve (6) to the rear against the resistance of the setback spring and the guide pin moving through the zigzag slot. When the arming sleeve reaches the end of its travel, two levers (28) are cammed inward, releasing the lock ball (7). The spring loaded arming primer (10), propelled by its spring (8) impinges on the fixed firing pin (12) initiating the primer which flashes through the flash holes in the firing pin housing and ignites the relay pellet (13). The relay pellet ignites the delay arming pellet. Simultaneously, setback and acceleration move the weight (29) to the rear, partially unlocking the rotor (17). When the delay arming pellet (14) has burned out, the rotor locking detent is cammed into the cavity by the turning rotor (25). The fuze is now armed.

Upon impact, the nose is crushed and the firing pin (5) driven into the detonator. Dependent on the delay action selected, the applicable delay flashes to the relay detonator (20) and the booster (21).

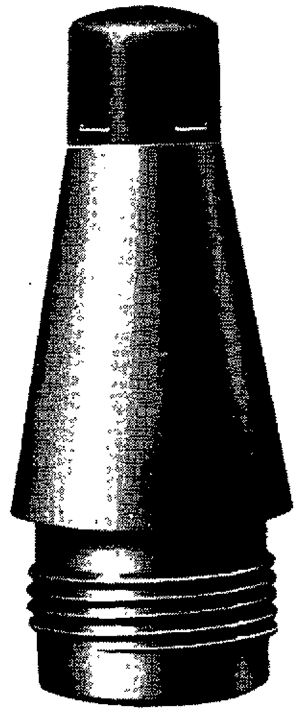
WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
122-mm Rocket DKZ-66	122-mm HE-PE Frag 9M22M

(No disassembled view available)

REFERENCE

FSTC Exploitation Reports, FSTC-CR-20-97-68 and FSTC-CR-20-33-70



Neg. 511760

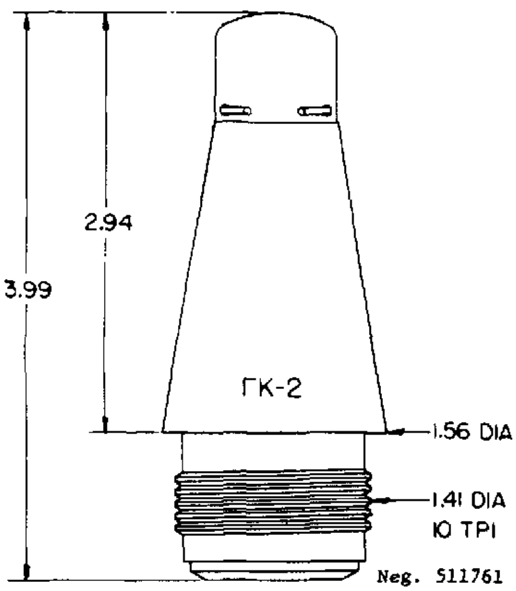
DISCUSSION

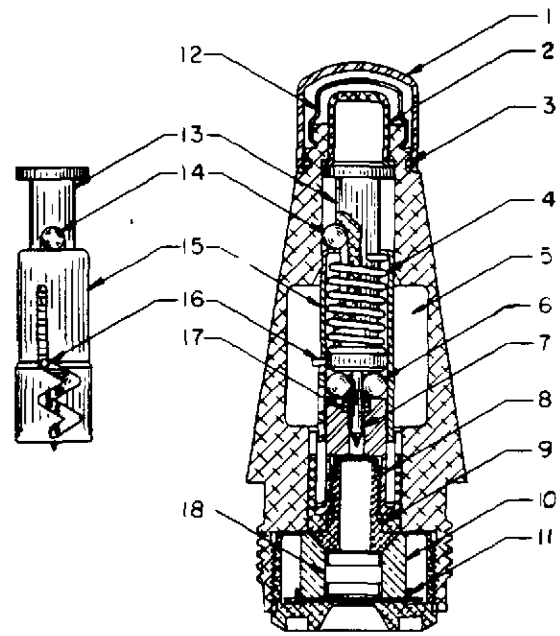
The GK-2 is a graze sensitive, setback armed, impact fired fuze used in both HE and HEAT projectiles. The fuze is similar in construction and function to the GK-1 with the exception of the zigzag arming delay which appears to have been modified to increase the safe arming distance. The fuze is streamlined in appearance, and is unpainted. It contains one spanner wrench hole near the base. A steel cap that protects the nose during shipment and handling is removed prior to firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ----------	Aluminum	Arming method --------	Setback
Weight -----------------	0.39 lb	Firing method --------	Impact
Markings ---------------	ГК-2	Safety devices -------	None
Booster		Arming distance ------	?
Body material ----------	Aluminum	Arming time ----------	?
Body length ------------	0.5 in	Self-destruct time ---	None
Explosive --------------	Tetryl	Delay time -----------	Instantaneous
Explosive weight -------	0.38 gm		

Fuze, point detonating, GK-2

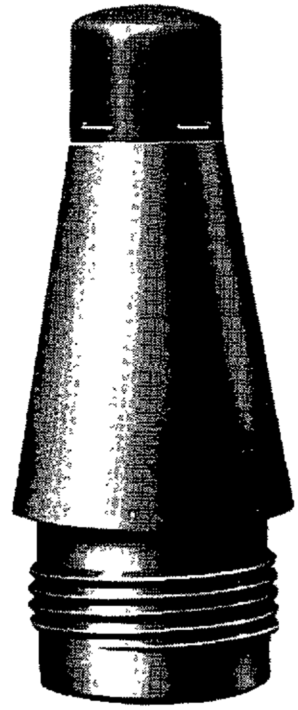




FUNCTIONING DESCRIPTION

Upon firing, setback forces the zigzag setback sleeve (15) to the rear, releasing the sleeve retaining ball (14) which falls into the fuze body cavity (5). As setback decreases, the sleeve spring (4) expands moving the sleeve (15) forward to the head of the firing pin assembly (13), and releasing the four retaining balls (6), allowing them to drop into the fuze body cavity (5). The fuze is now armed, and the firing pin (7) is held away from the primer detonator (9) by the firing pin spring (17). On impact, the plunger (2) drives the firing pin (7) into the primer detonator which initiates the booster (18). If the fuze strikes the target at a slight angle, the graze weights (10) will cam the primer detonator forward into the firing pin.

(No disassembled view available)



Neg. 511760

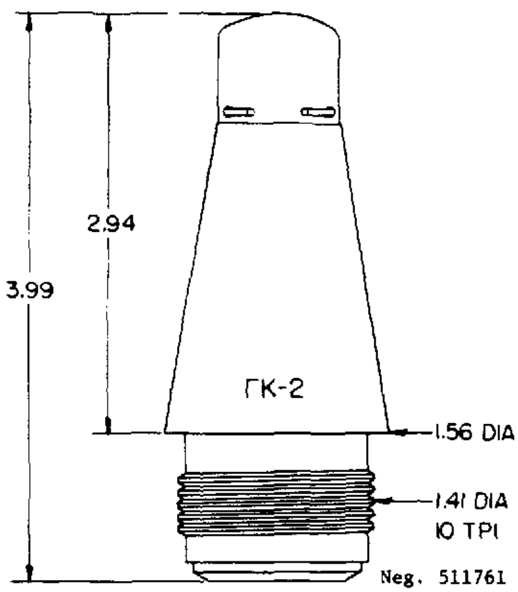
DISCUSSION

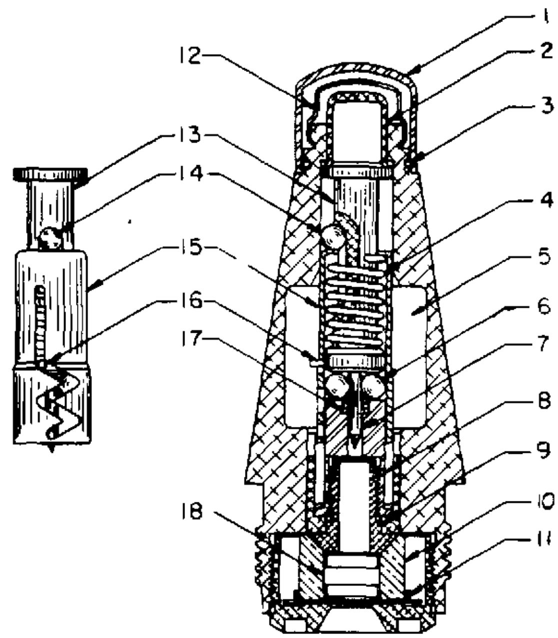
The GK-2 is a graze sensitive, setback armed, impact fired fuze used in both HE and HEAT projectiles. The fuze is similar in construction and function to the GK-1 with the exception of the zigzag arming delay which appears to have been modified to increase the safe arming distance. The fuze is streamlined in appearance, and is unpainted. It contains one spanner wrench hole near the base. A steel cap that protects the nose during shipment and handling is removed prior to firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ----------	Aluminum	Arming method --------	Setback
Weight ----------------	0.39 lb	Firing method --------	Impact
Markings --------------	ГК-2	Safety devices -------	None
Booster		Arming distance ------	?
Body material ----------	Aluminum	Arming time ----------	?
Body length -----------	0.5 in	Self-destruct time ---	None
Explosive -------------	Tetryl	Delay time -----------	Instantaneous
Explosive weight -------	0.38 gm		

Fuze, point detonating, GK-2





FUNCTIONING DESCRIPTION

Upon firing, setback forces the zigzag setback sleeve (15) to the rear, releasing the sleeve retaining ball (14) which falls into the fuze body cavity (5). As setback decreases, the sleeve spring (4) expands moving the sleeve (15) forward to the head of the firing pin assembly (13), and releasing the four retaining balls (6), allowing them to drop into the fuze body cavity (5). The fuze is now armed, and the firing pin (7) is held away from the primer detonator (9) by the firing pin spring (17). On impact, the plunger (2) drives the firing pin (7) into the primer detonator which initiates the booster (18). If the fuze strikes the target at a slight angle, the graze weights (10) will cam the primer detonator forward into the firing pin.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

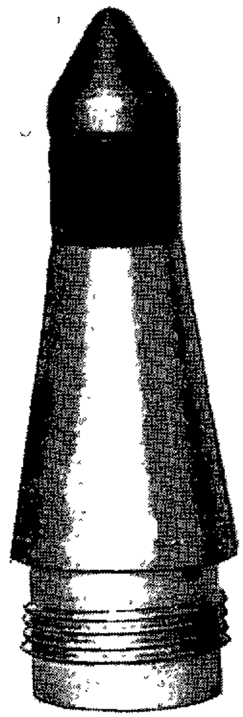
Weapons	Projectiles
82-mm Rocket launcher SPG-82	82-mm HEAT GK-662
82-mm Recoilless gun B-10-82	82-mm Frag, O-881A
107-mm Recoilless gun B-11	82-mm HEAT, BK-881
	107-mm Frag-HE, OF-883A
	107-mm HEAT, BK-883

REFERENCE

Exploitation Report, FSTC-CR-20-82-66, March 1966

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, GK-2M



Neg. 511762

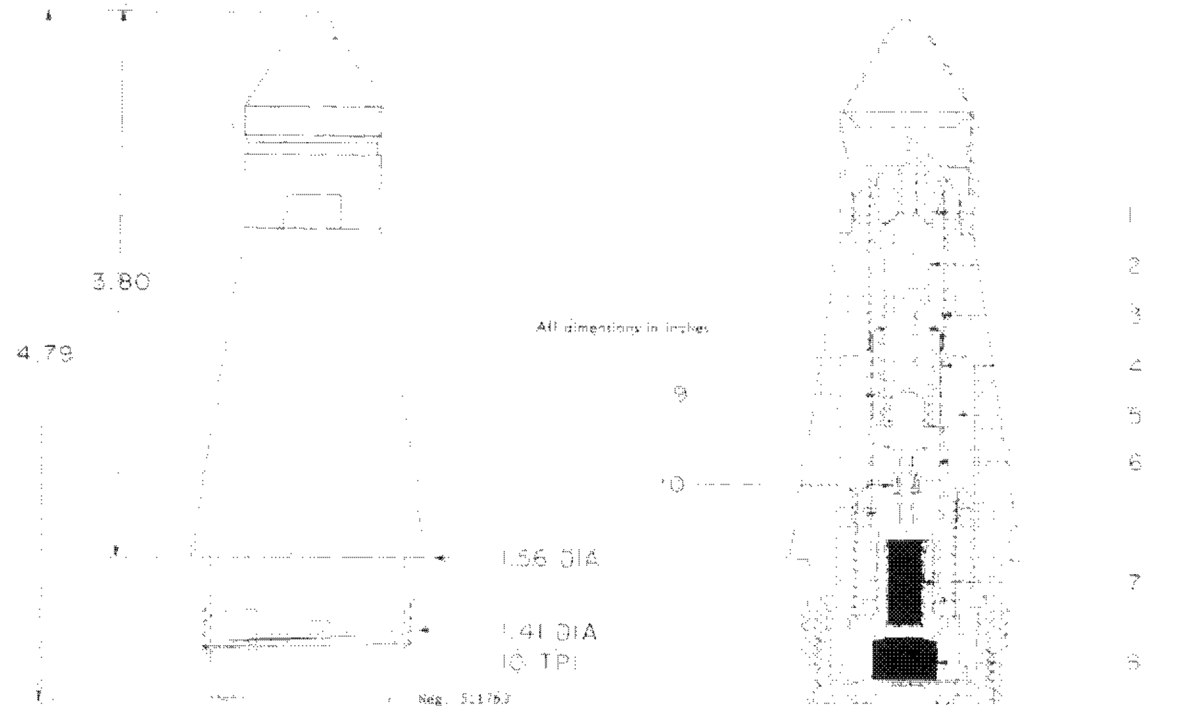
DISCUSSION

The GK-2M is a graze sensitive, setback armed impact fuze used in both HE and HEAT projectiles. The fuze is similar in construction and function to the GK-2 but has been modified internally to facilitate manufacture and improve graze sensitivity. The modified design of the striker, firing pin and nose section allow these components to cam the firing pin into the primer over a wider range of impact angles.

CHARACTERISTICS

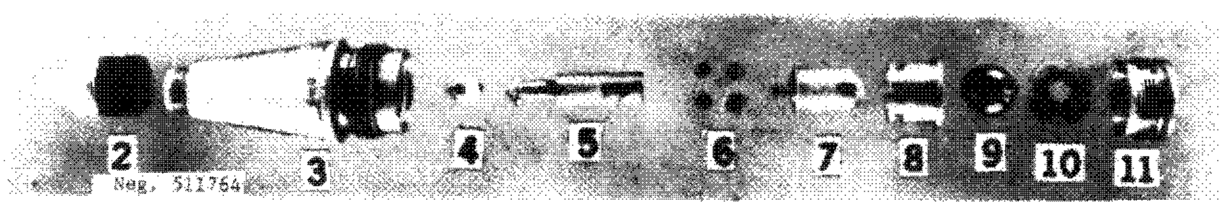
Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.39 lb	Firing method	Impact
Markings	ГК-2М	Safety devices	None
Booster		Arming distance	?
Body material	Brass	Arming time	?
Body length	0.46 in	Self-destruct time	None
Explosive	PETN	Delay time	Instantaneous
Explosive weight	0.38 gm		

Fuze, point detonating, GK-2M



FUNCTIONING DESCRIPTION

Upon firing, setback forces the zigzag setback sleeve (4) to the rear, releasing the sleeve retaining ball (3) which falls into the fuze body cavity (5). As setback decreases, the sleeve spring (9) expands moving the sleeve (4) forward to the head of the firing pin assembly (2), and releasing the four retaining balls (6), allowing them to drop into the fuze body cavity (5). The fuze is now armed, and the firing pin (2) is held away from the primer detonator (7) by the firing pin spring (10). On impact, the plunger (1) drives the firing pin (2) into the primer detonator which initiates the booster (8). If the fuze strikes the target at a slight angle, the graze weights will cam the primer detonator forward into the firing pin.



WEAPONS AND PROJECTILES USED WITH

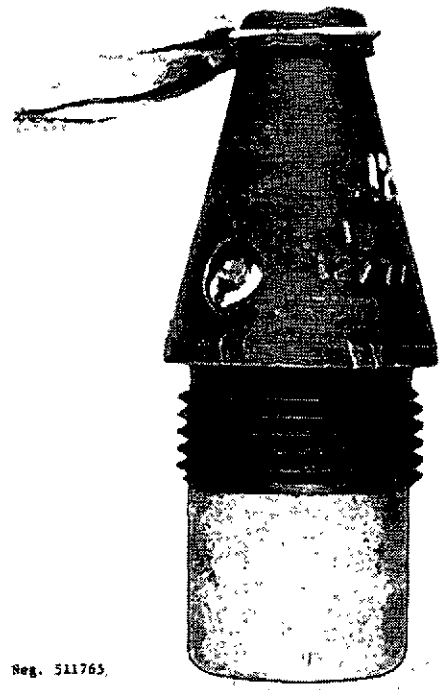
Weapons	Projectiles
82-mm Recoilless gun B-10	82-mm Frag, HE, O-881A
	82-mm HEAT, BK-881
107-mm Recoilless gun B-11	107-mm Frag, HE, OF-883A
	107-mm HEAT, BK-883

REFERENCE

Picatinny Arsenal Technical Memo No. 1359
FSTC Exploitation Report CR-20-155-68

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, GVMZ and GVMZ-1



Neg. 511765

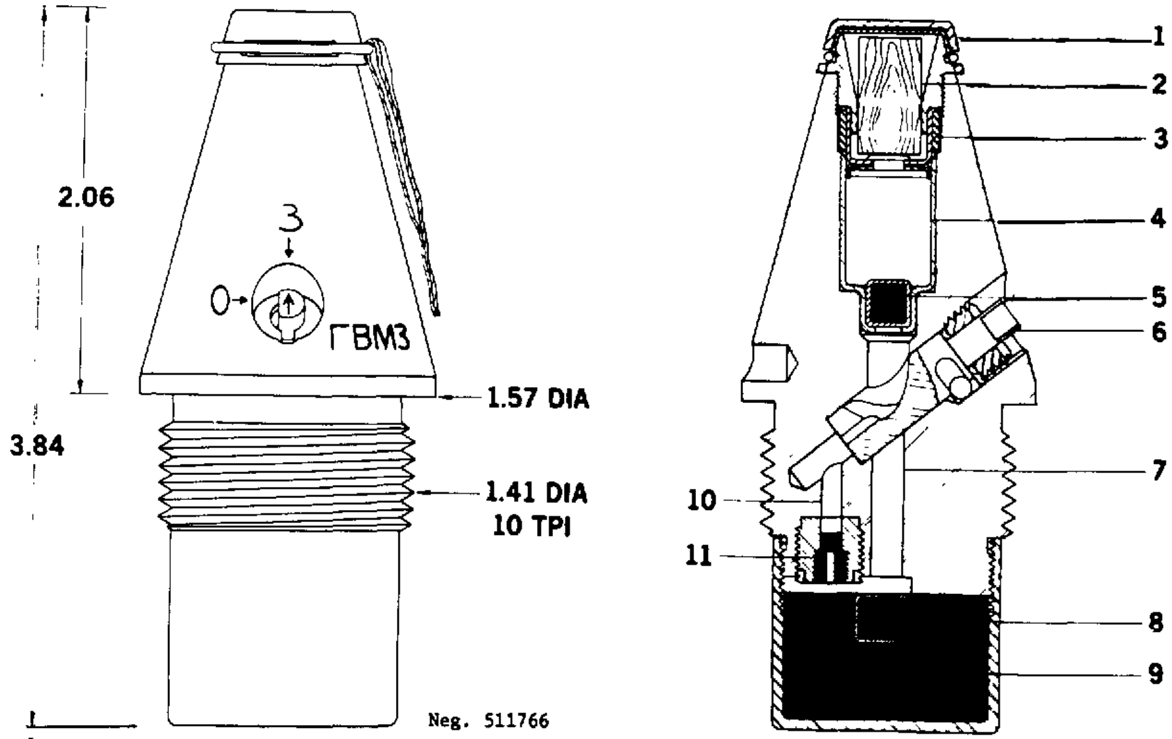
DISCUSSION

The GVMZ and GVMZ-1 are point detonating, pneumatic fired fuzes with selectable delay time. The fuze operates on the "air column" principle of generating heat by the rapid compression of air in the air column to ignite the primer. The delay selector can be set on instantaneous "0" or delay "3".

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ----------	Steel	Arming method ---------	None
Weight -----------------	0.946 lb	Firing method ---------	Impact (pneumatic)
Markings ---------------	Γ BM3-1	Safety devices --------	Shipping cap
Booster		Arming distance -------	NA
Body material ----------	Steel	Arming time -----------	NA
Body length ------------	1.05 in	Self-destruct time ---	None
Explosive --------------	Tetryl	Delay time ------------	Instantaneous or 0.05 - 0.09 sec
Explosive weight -------	14.74 gm		

Fuze, point detonating, GVMZ and GVMZ-1



FUNCTIONING DESCRIPTION

Prior to placing the round in the weapon the safety cap (1) is removed. On firing, no movement of the component parts of the fuze takes place until the projectile strikes the ground. Upon impact, when the fuze is set for instantaneous action, the nose bushing and diaphragm (3) are driven inward, and in turn, drive the compression plug (2) rearward, compressing the air in the air column (4) to a point where sufficient heat is generated to ignite the black powder initiating pellet (5). The flame jet travels down the flash channel (7), through the traverse hole in the setting selector (6), and sets off the detonator pellet (8), which detonates the booster (9). When set for delay action, the flame jet travels through a longitudinally drilled hole in the setting selector (6), down the delay channel (10) to the delay pellet (11), and sets off the detonator pellet (8), which in turn detonates the booster (9).

WEAPONS AND PROJECTILES USED WITH

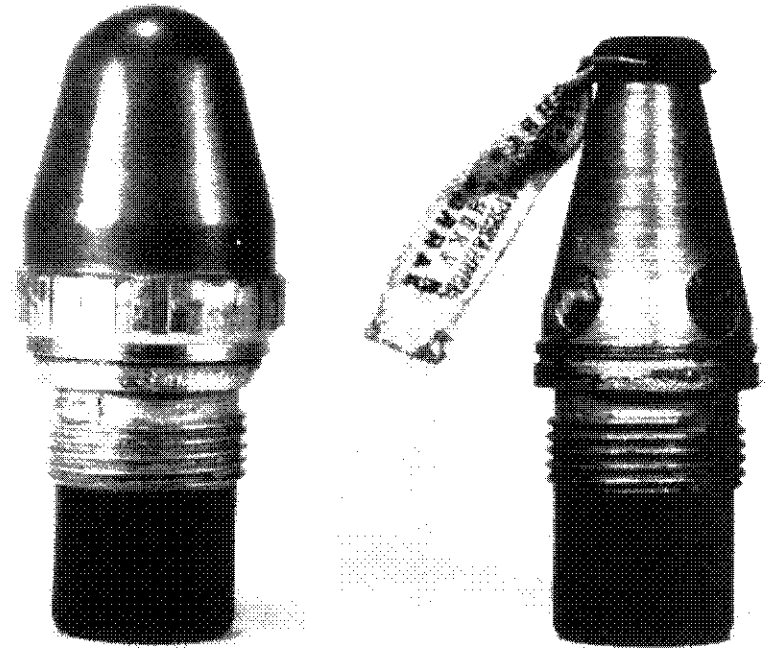
Weapons	Projectiles
120-mm Mortar, M1938 & M1943	120-mm Frag-HE, OF-843A
	Frag-HE, OF-843
	Smoke, D-843A

(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3



SHIPPING CAP INSTALLED (LEFT) AND REMOVED (RIGHT)

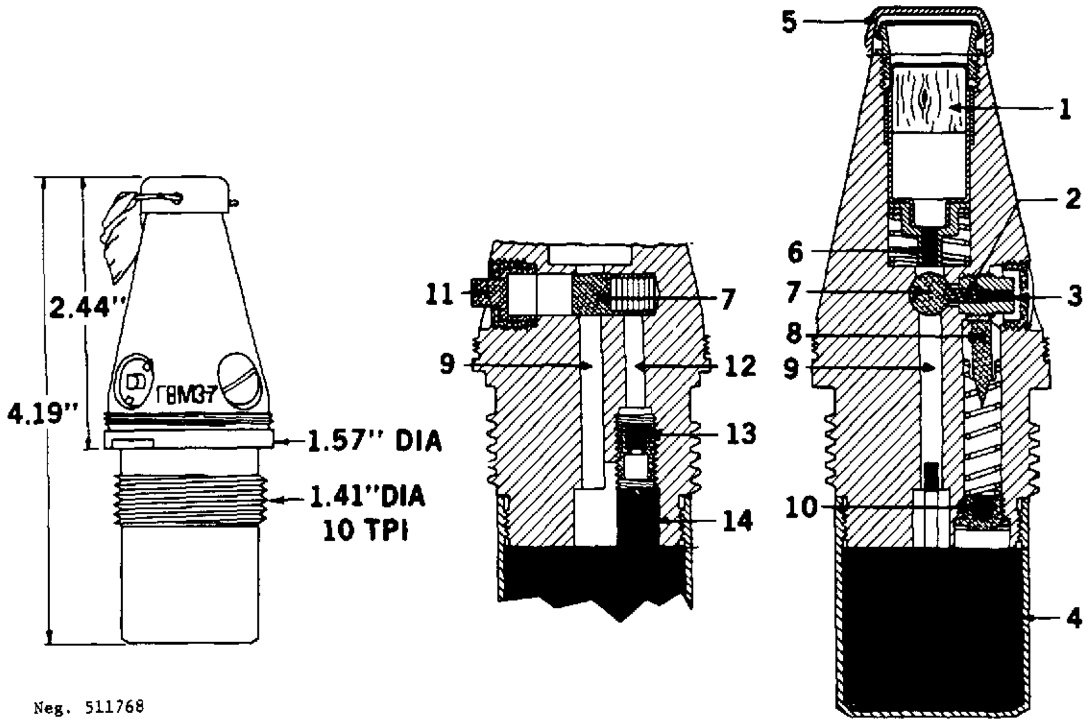
DISCUSSION

The GVMZ-7, is a point detonating setback armed, pneumatic fired fuze, with selectable delay time. This fuze differs from the GVMZ-1 in that setback is required for arming. An ogival shaped shipping cover with a knurled ring protects the fuze prior to firing, an additional safety cap is secured to the nose of the fuze by a safety wire; both caps are removed prior to firing. There are two wrench flats on the rim of the fuze body. Threads on the body just above the rim secure the shipping cover. Two openings, located 90° apart and at right angles to the fuze body contain the delay selector switch, the slider locking pin, and the locking pin charge.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.06 lb	Firing method	Impact (pneumatic)
Markings	ГВМЗ-7	Safety devices	Shipping cap
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.1 in	Self-destruct time	None
Explosive	Tetryl	Delay time	Instantaneou or 0.05 - 0.09 sec
Explosive weight	14.74 gm		

Fuze, point detonating, GVMZ-7



Neg. 511768

FUNCTIONING DESCRIPTION

Upon firing, setback causes the firing pin (8) to be driven into the safety powder pellet (10). The flame from the safety powder pellet passes through the grooves in the firing pin and ignites the black powder detent pellet (3). When the pellet is consumed, the detent moves outward and allows the interrupter (7) to move outward through either one or both flash channels, depending on the setting.

On impack with the target, the piston (1) is driven rearward compressing the air which ignites the primer (6). The flash from the primer then passes directly to the detonator (14) via the instantaneous flash channel (9), or to the delay pellet (13), depending on the setting of the setting selector (11). Setting "3" allows the flash from the primer to ignite the delay pellet (13) which activates the detonator (14), and in turn the booster (4). Setting "0" allows the interrupter to move over far enough to uncover both flash channels so that the flash from the primer will pass directly to the detonator (14) and booster (4), resulting in instantaneous action.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
107-mm Mortar, M1938	107-mm Frag-HE---OF-841A
120-mm Mortar, M1938 & M1943	120-mm Frag-HE---OF-843
	HE--- F-843
122-mm Howitzer, M1938	122-mm Frag---O-462A
152-mm Howitzer, M1938 & M1943	152-mm Frag-HE---OF-534G
	OF-534AG
160-mm Mortar, M1943 & M1960	160-mm HE--F-852

(No disassembled view available)

REFERENCE

FSTC Exploitation Report CR-20-14-72 dated February 1972

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, IPK-2

(No photograph available)

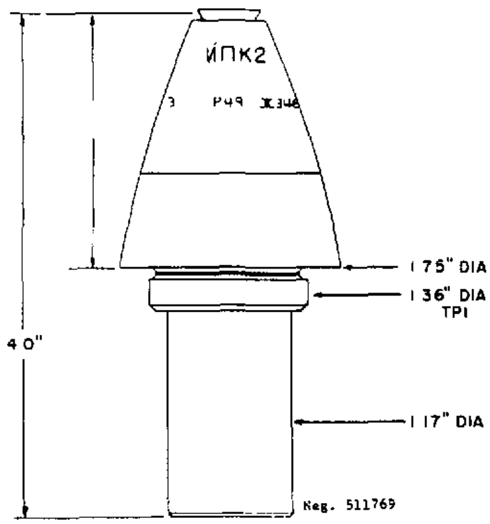
DISCUSSION

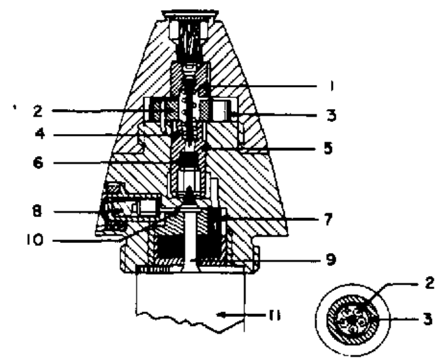
The IPK-2 is a graze sensitive, centrifugal armed, point detonating fuze with selectable delay or nondelay action. The fuze has not been recovered for examination, therefore, the following information has been extracted from Soviet literature. Boresafety is maintained by the use of a flat coiled spring and five centrifugal detents which immobilize the firing pin and primer carrier until the round has traveled approximately 100 meters beyond the gun tube. This fuze is considered obsolete.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	?	Firing method	Impact
Markings	ИДК-2	Safety devices	Centrifugal detents
Booster		Arming distance	100 meters
Body material	Steel	Arming time	?
Body length	?	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	40 gm		

Fuze, point detonating, IPK-2





FUNCTIONING DESCRIPTION

Prior to firing, the delay selector (8) is turned to either delay or nondelay. Upon firing, a flat coiled spring (3) is released and uncoiled, allowing centrifugal force to displace the five centrifugal detents (2), and clearing the firing pin. Upon flat impact the firing pin (1) is driven to the rear impinging on the primer (6). If the projectile impacts at an angle smaller than 75 degrees, the primer carrier carries the primer forward to strike the firing pin, and the flash from the primer is routed direct to the detonator and booster (11), or through the delay element to the booster, depending on the position of the delay selector.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

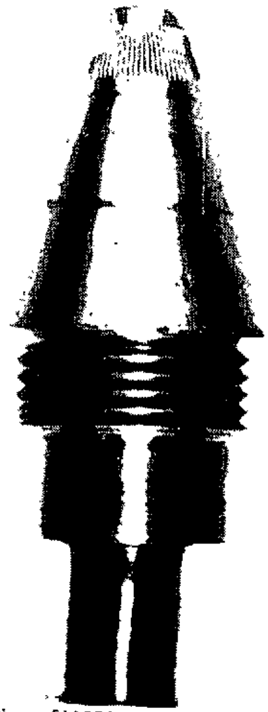
Weapons	Projectiles
Same as the RGM fuze	Same as the RGM fuze

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, KT-1



Neg. 511770

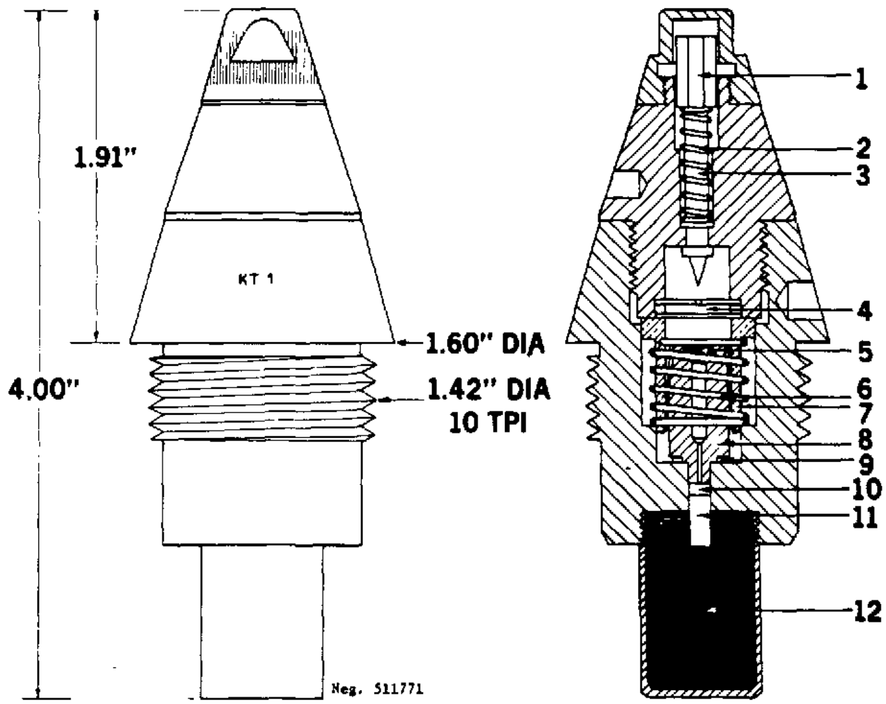
DISCUSSION

The KT-1 is a setback armed impact fired fuze which provides instantaneous, short and long delay functioning time, depending on the presence or absence of a delay pellet and the fuze cap. Fuzes containing the delay pellet are painted black, those without the pellet are painted light gray. The KT-2 and KT-3 fuzes are identical in construction and functioning to the KT-1 except for having smaller diameter base threads designed to screw into a booster cup in the projectile. The KT-1, KT-2, and KT-3 series fuzes are considered obsolete.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.814 lb	Firing method	Impact
Markings	KT-1	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.19 in	Self-destruct time	None
Explosive	Tetryl	Delay time	Instantaneous and delay
Explosive weight	127 gr		

Fuze, point detonating, KT-1



FUNCTIONING DESCRIPTION

When the KT-1 fuze is set for instantaneous action (nose cap removed), the fuze functions as follows: Setback causes the stirrup (7) to compress the spring (6), and then override and lock itself to the primer carrier (8). The primer carrier is also set back and compresses sealing washer (9) over the vent in the body, shielding the detonator (11) from the primer (5) should premature ignition occur. The striker (1) and firing pin (3) are also set back, but the firing pin does not reach the primer. After the projectile leaves the bore, the spring (6) raises the primer carrier (8) and stirrup (7) to a position directly under the firing pin (3). At the same time the spring (2) returns the firing pin (3) and the striker (1) to their original positions. On impact, the striker (1) is driven rearward, forcing the firing pin (3) into the primer (5) which successively sets off the primer, the detonator (11), and the booster (12). When the fuze is set for delayed action (nose cap in place), the action is identical to that of instantaneous action except that on impact the cap prevents the striker (1) and firing pin (3) from being driven rearward. At the same time, inertia drives the primer carrier (8) forward, forcing open the segmented safety shutter (4) and driving the primer (5) against the firing pin to activate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
45-mm Antitank gun M1932, M1937 & M1942	45-mm Frag O-240, O-240A, O-240M
57-mm Antitank gun M1943 & M1941	57-mm Frag O-271, O-271U
76-mm Gun, M1942 Tank Gun D-56T	76-mm Frag-HE OF-343, OF-350A, Smoke D-350A

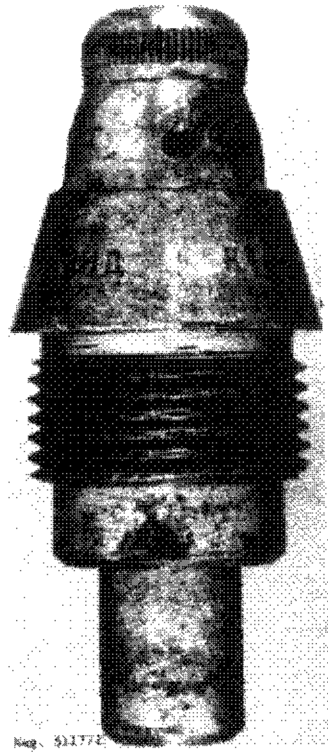
(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, KTM-1



Neg. 51177E

DISCUSSION

The KTM-1 is a setback armed, impact fired fuze used with 45-mm, 57-mm, and 85-mm projectiles. It is capable of instantaneous, short and long delay firing time depending on the fuze color and use of the fuze cap. The KTM-2 and KTM-3 are identical in design and functioning to the KTM-1 but differ in thread size. The fuze may be found with the following color combinations. Body and cap painted green; tin plated body with red nose; body and cap painted black; unpainted steel body with red cap. The KTM-1U and KTM-1 are identical, with two exceptions:

CHARACTERISTICS

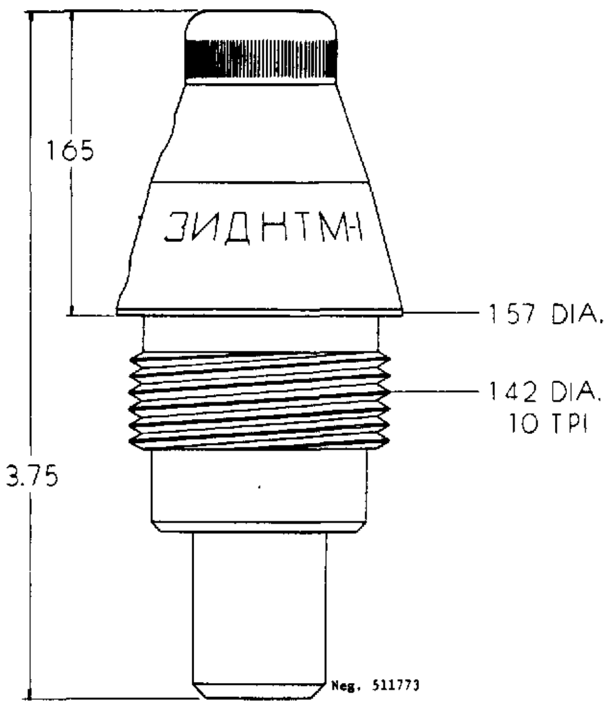
Fuze Assembly:		Functional Data:	
Body material -----------	Steel	Arming method --------	Setback
Weight -----------------	0.77 lb	Firing method --------	Impact
Markings ---------------	KTM-1	Safety devices -------	None
Booster		Arming distance ------	?
Body material -----------	Steel	Arming time ----------	?
Body length ------------	1.19 in	Self-destruct time ---	None
Explosive --------------	Tetryl	Delay time -----------	Instantaneous and delay
Explosive weight --------	126 gr		

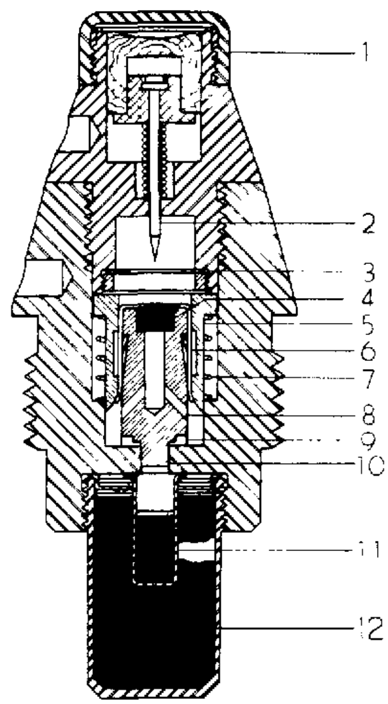
Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, KTM-1

a. The two-piece firing pin holder has been replaced by a one-piece plastic holder.

b. The detonator cap is steel rather than copper, and the explosive composition varies slightly.





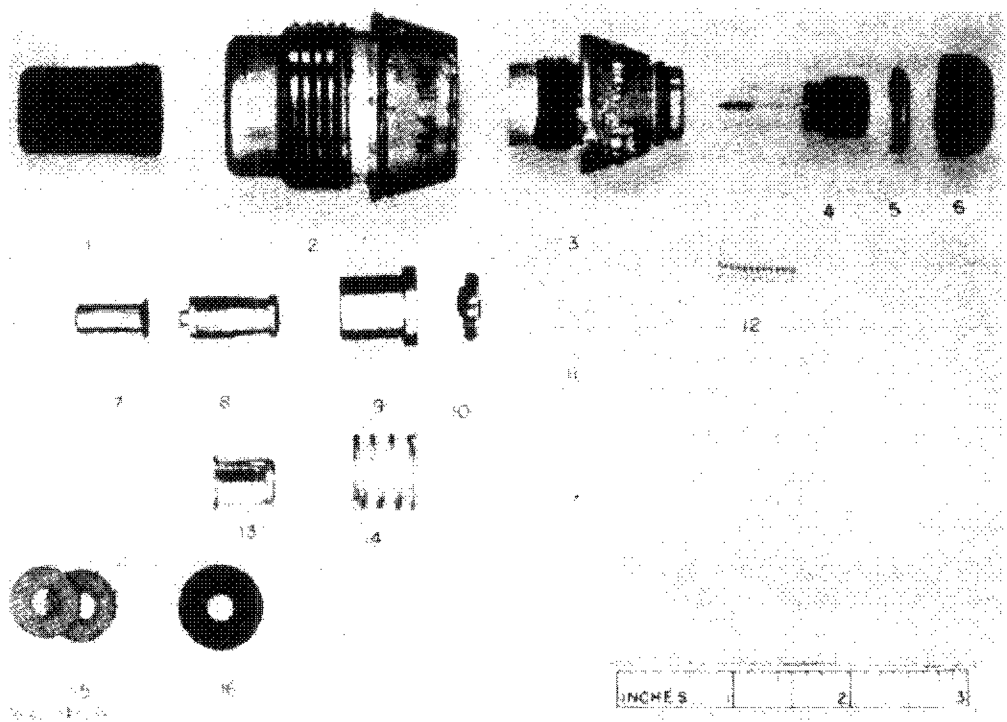
FUNCTIONING DESCRIPTION

On firing, the arming sleeve (5) is set back, compresses the arming sleeve spring (7), overrides the stirrup (6), and locks itself to the primer holder assembly (8). The lower end of the primer holder assembly holds the aluminum sealing cushion (9) over the vent in the fuze body, shielding the detonator (11) from the primer (4), should accidental ignition occur. The striker and the firing pin (2) are also set back, but the firing pin cannot reach the primer (4) at this time. After the projectile leaves the bore, the arming sleeve spring (7) raises the arming sleeve (5) and primer holder assembly (8) to a position directly under the safety disk (3). During the flight of the projectile, the firing pin spring returns the striker and the firing pin (2) to their original positions. On impact, when the fuze is set for instantaneous action (cap removed), the striker drives rearward and forces the firing pin through a hole in the safety disk and into the primer. The primer is thus ignited and in turn sets off the detonator (11) and the booster (12). When the fuze is set for delay action (cap in place), the action is identical with that for nondelay action except that on impact, the cap (1) prevents the striker from being driven rearward. The primer holder assembly moves forward, and, having overcome the resistance of the safety disk, drives the primer against the firing pin to initiate the explosive train of the fuze.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
45-mm Tank guns M1932, M1934 & M1938; antitank guns M1932, M1937 & M1942	45-mm Frag --240, O-240A, O-240M
57-mm Antitank guns M1941, M1943 (ZIS-2), M1949	57-mm Frag O-271, O-271U
76-mm Gun, M1902/30, M1936(F-22), M1939(USV), and M1942(ZIS-3); Howitzer M1927 & M1938. Tank guns M1938/39 (L-11) & M1939 (F-32)	76-mm Frag O-350, O-350A, Frag-HE OF-343, OF-350, F-350A Frag-GAS OKh-350 HE-F-354
85-mm AA Gun M1939; Tank guns M1943 (D-5T85) and M1944 (ZIS-S53) SP gun M1944 (D5-S85)	85-mm Frag, O-365K, O-365

Fuze, point detonating, KTM-1

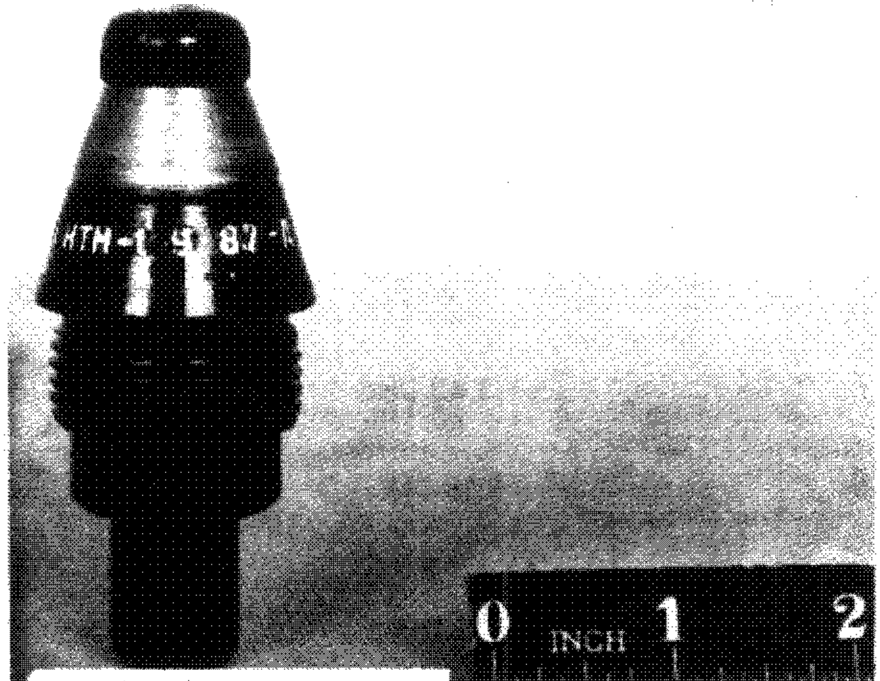


REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, KTM-1U and KTMZ-1U



Neg. 511775

DISCUSSION

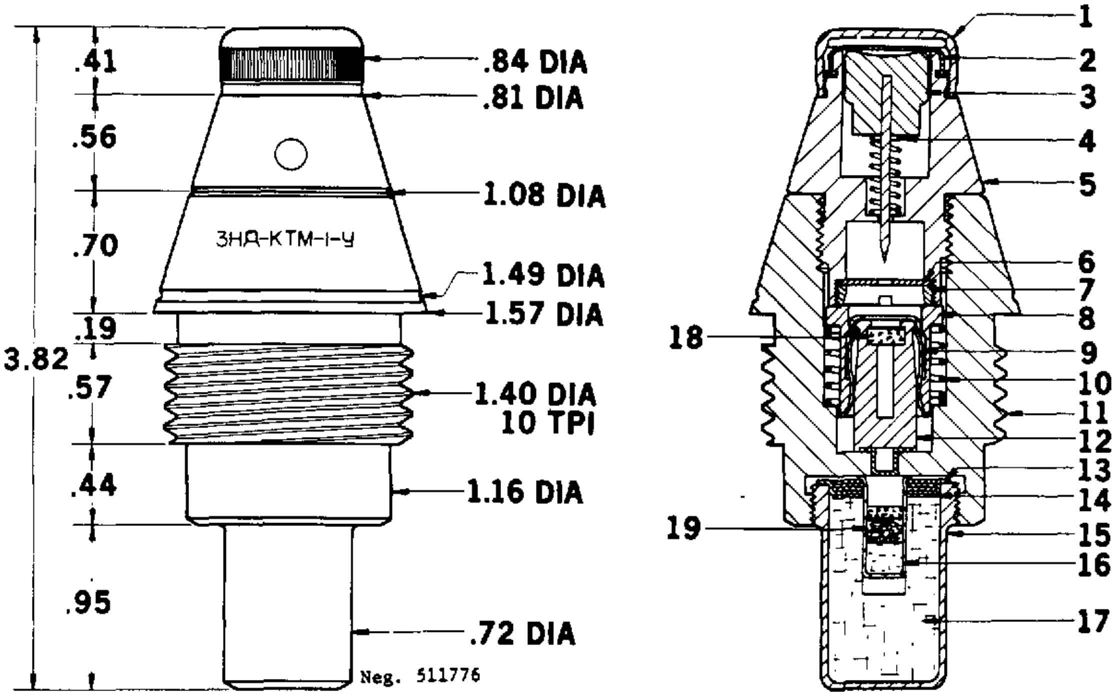
The Soviet KTM-1U and KTMZ-1U are improved versions of the original KTM-1 fuze series. The KTM-1U is identical to the KTM-1 except, the two piece firing pin holder is replaced with a one piece plastic holder, the detonator cup is fabricated from steel rather than copper and the explosive composition varied slightly. They are not considered bore safe and are armed only by setback. The KTMZ-1U includes a fixed delay element which is pressed in place above the detonator. The KTM-1U may be fired either with or without the nose cap, a slight mechanical delay is achieved with the cap in place, instantaneous action takes place with the cap removed.

In overall appearance the KTM-1U and KTMZ-1U are identical, but the nose cap and head of the KTMZ-1U are painted black.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.77 lb	Firing method	Impact
Markings	КТМ-1-У	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.30 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	126 gr		

<u>Fuze</u>, point detonating, KTM-1U and KTMZ-1U



FUNCTIONING DESCRIPTION

Upon firing, setback moves the arming sleeve (8) to the rear compressing the arming spring (10), and locking the stirrup prongs (9) in the groove of the arming sleeve. With the arming sleeve locked to the primer carrier (12) the fuze is armed. As deceleration takes place, the arming sleeve and primer carrier are moved forward by the arming spring. Upon impact, nose cap removed, the firing pin (3) is driven to the rear and impinges on the primer (18) which initiates the detonator (19) and booster (17).

For delay action, with the nose cap (1) in place, the arming sleeve and primer (18) are carried forward by inertia to impinge the primer on the firing pin.

Functioning of the KTMZ-1U is identical, except the flash from the primer initiates the delay element first and then the detonator and booster.

(No disassembled view available)

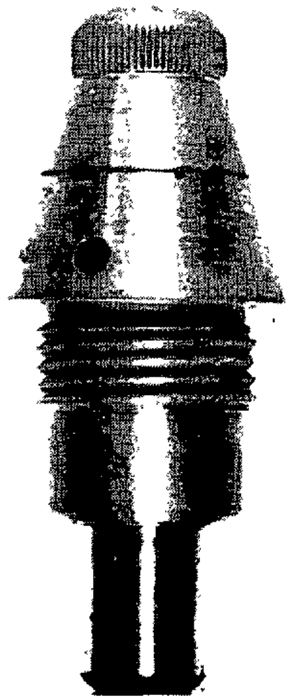
WEAPONS AND PROJECTILES USED WITH

Weapons	Fuze	Projectiles
45-mm Tank guns	KTM-1-U	45-mm Frag-0-240, 0-240A, 0-240M
57-mm Antitank guns M1941, M1943(ZIS-2) and M1949		57-mm Frag 0-271, 0-271U
76-mm Gun, M1902/30, M1936, M1939(USV) M1942(ZIS-3)(F-22) Howitzer M1927 & M1938. Tank gun M1938/39 (L-11) & M1939(F-32)	KTMZ-1-U	76-mm Frag 0-350, 0-350A Frag/HE OF-343, OF-350, OF-350A
85-mm AA gun M1939; tank guns M1943 (D-5T85) and M1944 (ZIS-S53) SP gun M1944 (D5-S85)		85-mm Frag 0-365K

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-15-70
FSTC Exploitation Report CR-20-54-70 dated December 1970

Fuze, point detonating, KTMZ-1 and KTMZ-2



Neg. 511777

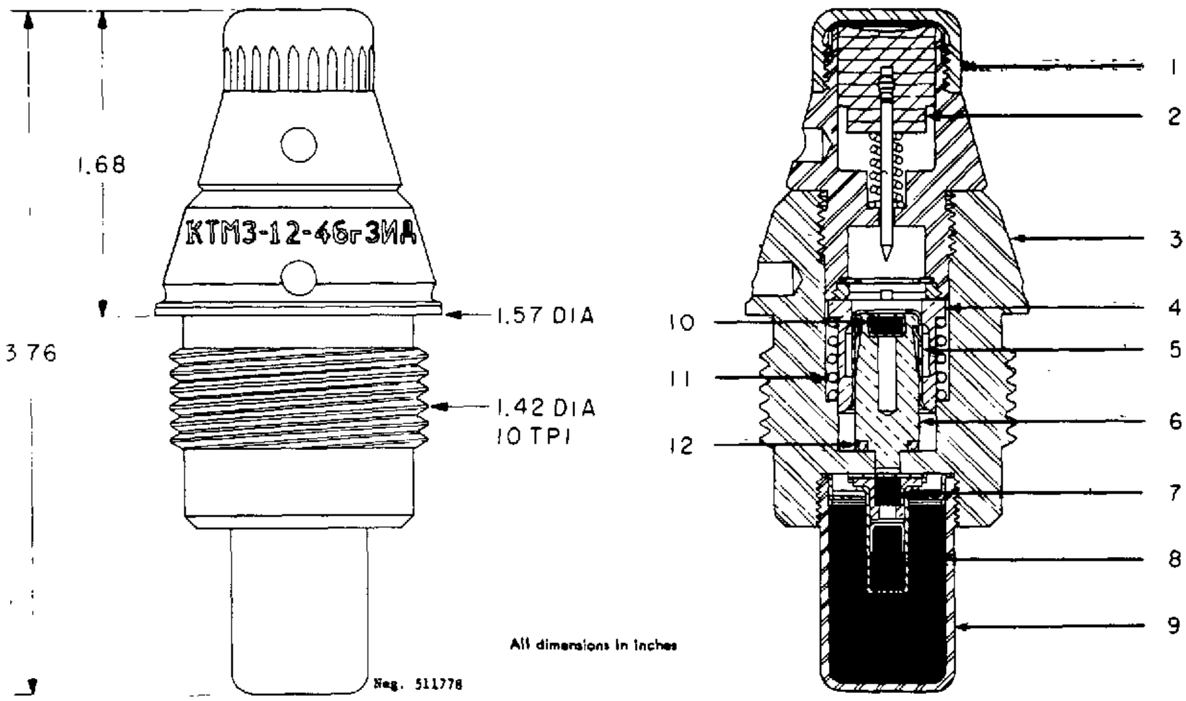
DISCUSSION

The KTMZ-1 and KTMZ-2 are setback armed, impact fired, short delay fuzes. They are identical in design and function to the KTM-1 and KTM-2 with the exception of a delay pellet above the detonator. These fuzes are normally used for delay action and are fired with the nose cap in place. Two shallow circumferential grooves have been cut at the junction of the nose and body and another on the conical surface of the body. The nose and cap of the KTMZ-1 and KTMZ-2 are painted black to distinguish them from the KTM series. There are two spanner wrench holes in the fuze, one on the nose surface and the other on the body.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.79 lb	Firing method	Impact
Markings	HTMZ-1	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.18 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	?
Explosive weight	117 gr		

<u>Fuze</u>, point detonating, KTMZ-1 and KTMZ-2



FUNCTIONING DESCRIPTION

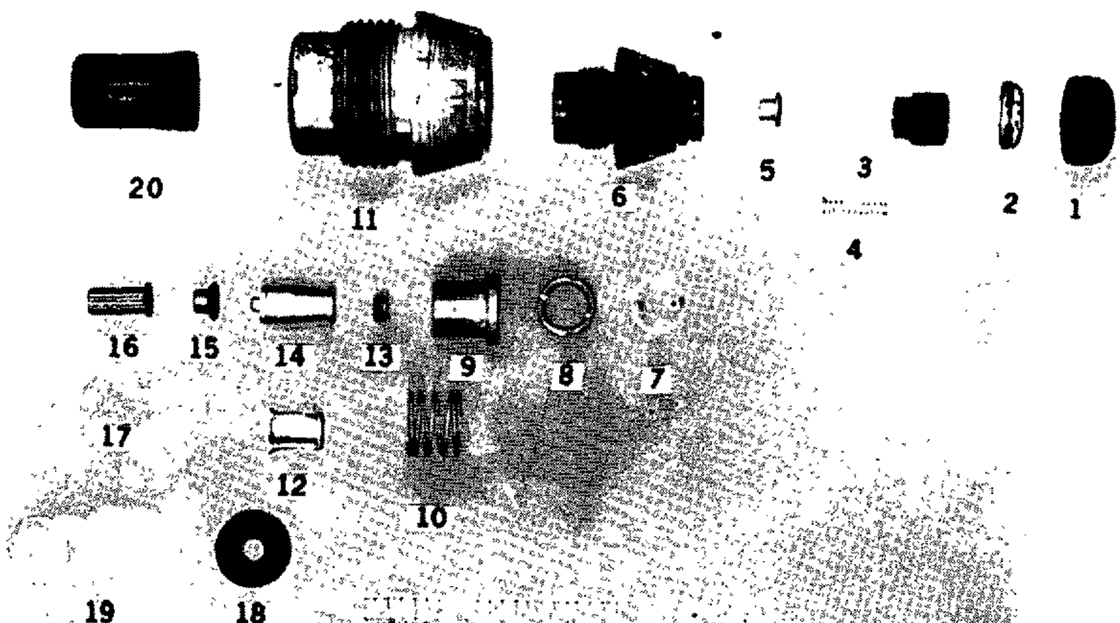
On firing, setback causes the arming sleeve (4) to move rearward; compressing the arming sleeve spring (11) and bending the prongs of the stirrup (5) inward. As the arming sleeve passes over the prongs, they move outward and engage the arming sleeve, simultaneously the striker (2) and firing pin move to the rear and compress the firing pin spring. The length of the firing pin prevents it from striking the primer at this point.

On deceleration, the firing pin spring and arming sleeve spring move their respective components forward. This action withdraws the primer holder (6) from the flash hole (12). The fuze is now fully armed.

Upon impact, the primer holder and stirrup are carried forward by inertia, bending the lugs on the retainer washer and impinging the primer (10) on the firing pin to initiate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm gun, M1939, M1942 SU-76	76-mm Frag O-350A Frag HE, OF-343, OF-350, OF-350-A
85-mm Tank gun, M1943 (D5T85) & M1944 (ZIS-S53); SP gun M1944 (D5-S85)	85-mm Frag O-365K, O-365



Neg. 511779

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

DISCUSSION

The MG-N is a setback and centrifugal armed, point detonating fuze with an out-of-line detonator. It employs a pyrotechnic detent to lock the rotor in the out-of-line position. The fuze is a single piece steel body, waterproofed at both ends with sealing compound, a removable steel shipping cap protects the nose of the fuze during storage and handling. When the cap is left in place during firing, a slight delay occurs. With the cap removed an instantaneous reaction takes place. This fuze has basically the same design and functioning characteristics as the Soviet MG-57, with the exception of the self-destruct feature.

CHARACTERISTICS

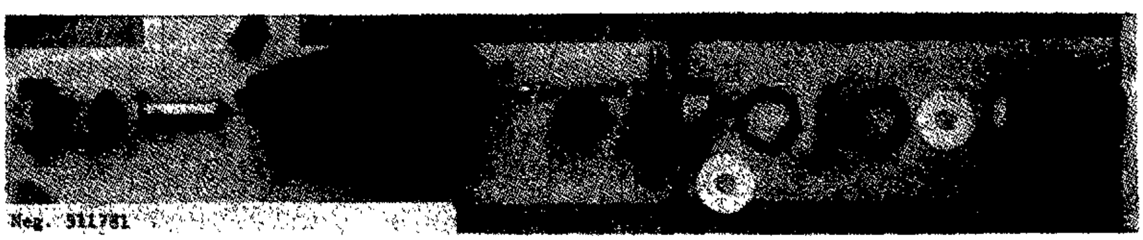
Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback and centrifugal force
Weight	0.78 lb		
Markings	МГ-Н		
Booster		Firing method	Impact
Body material	Steel	Safety devices	Out-of-line detonator
Body length	1.575 in		
Explosive	Tetryl	Arming distance	?
Explosive weight	?	Arming time	?
		Self-destruct time	NA
		Delay time	?

Fuze, point-detonating, MG-N

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, the weighted arming delay primer moves to the rear against its spring and is initiated by the firing pin. The resulting flame flashes through a groove in the side of the rotor housing and ignites the pyrotechnic (black powder) arming delay pellet holding the rotor locking detent in position. As the delay pellet burns, the locking detent is forced into the void by centrifugal force. Simultaneously, the opposite locking detent is also moved outward against its spring by centrifugal force. The rotor is now unlocked, and is turned to the in line position. Upon impact, the firing pin is driven into the primer which initiates the detonator, relay, and booster.



WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
75-mm Gun, M1942 (ZIS-3) Tank Gun D-56T	76-mm HE Frag O-350A OF-350 & OF-350A

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

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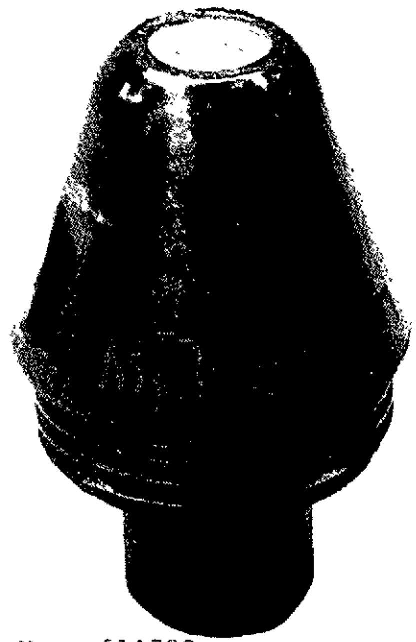
Fuze, point detonating, MP and MP-82



Neg. 511782

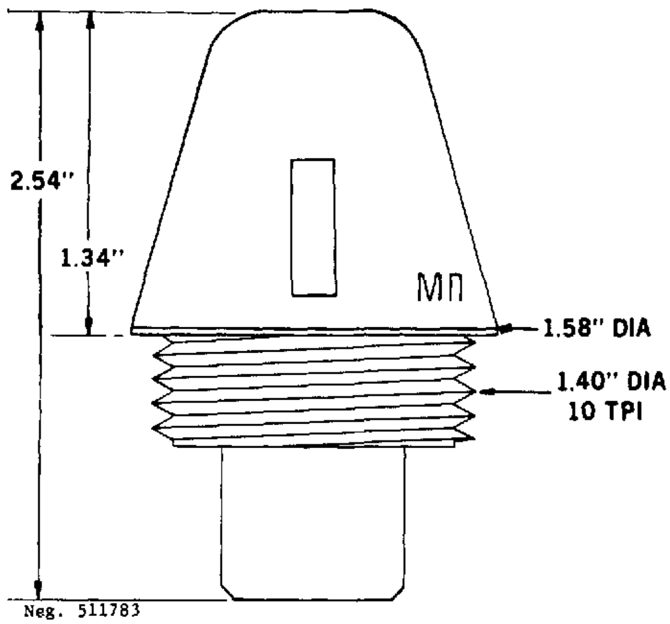
DISCUSSION

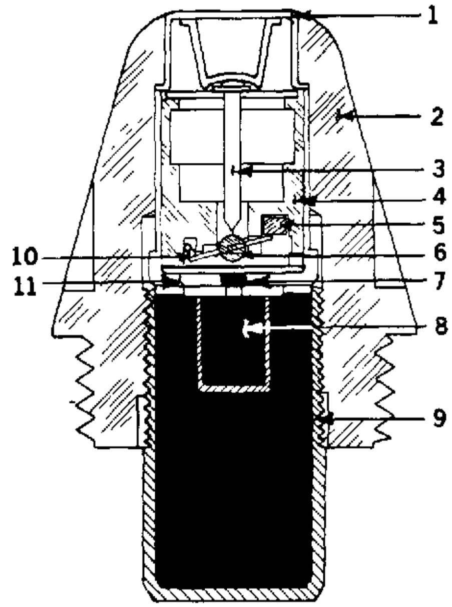
The MP and MP-82 are setback armed, point detonating fuzes used in mortar projectiles. Their construction and function are identical except for the increased arming resistance of the MP-82. The bodies are made of plastic and have a metallic nose cap. Their overall color is black or brown.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---- Plastic	Arming method -------- Setback
Weight ----------- (0.176 lb)	Firing method -------- Impact
Markings --------- MII and MII-82	Safety devices ------- None
Booster	Arming distance ------ ?
Body material ---- Steel	Arming time ---------- ?
Body length ------ 1.36 in	Self-destruct time --- None
Explosive -------- Tetryl	Delay time ----------- Instantaneous
Explosive weight - 10.8 gm	

Fuze, point detonating, MP and MP-82





FUNCTIONING DESCRIPTION

Prior to firing, the small metal boresafety cylinder (6), located in the base of the bushing (4), is held in position by the arming spring (10) so as to prevent the firing pin (3) from contacting the primer pellet (7). Upon firing, the arming weight (5) is violently set back against the arming spring (10), freeing one end of the arming spring from its recess in the bushing (4). The tension of the arming spring causes it to move in an oblique direction, carrying with it the boresafety cylinder (6), and thereby clearing the path of the firing pin (3). Upon impact, the nose cap (1) is crushed rearward, driving the firing pin (3) into the primer pellet (7) in the bushing cup (11) and setting off the detonator (8), which in turn explodes the booster (9). The booster then detonates the explosive filler of the projectile.

(No disassembled view available)

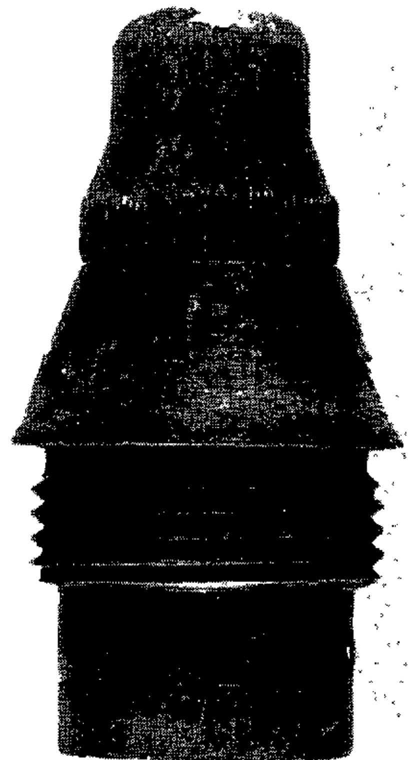
WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
50-mm Mortars, M1938, M1939, M1940, M1941	50-mm Frag, O-822, O-822A
82-mm Mortars, M1937 (82-BM37), M1941 (82-BM41) and M1943 (82-BM43)	82-mm Frag, O-832

REFERENCE

PA - memorandum Report No. 133 dated January 1957

Fuze, point detonating, M-1



Neg. 511784

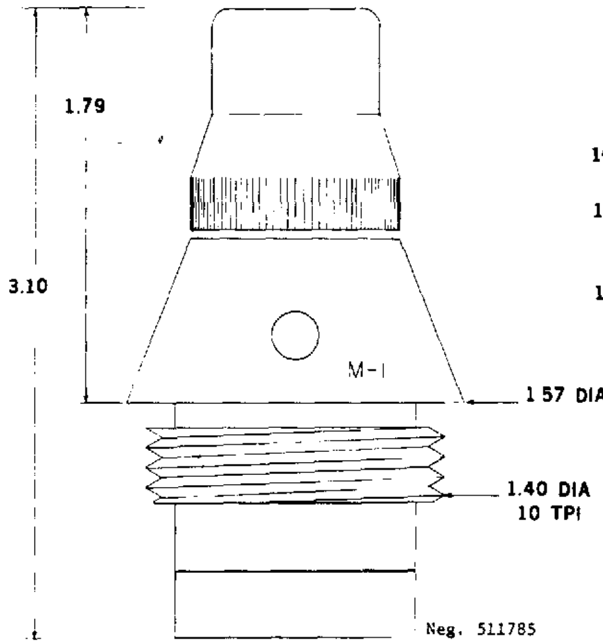
DISCUSSION

The M-1 is a point detonating, setback armed fuze used in mortar projectiles. It is considered obsolete but may still be in existence. The top of the fuze is protected by a metal cap which is removed before firing.

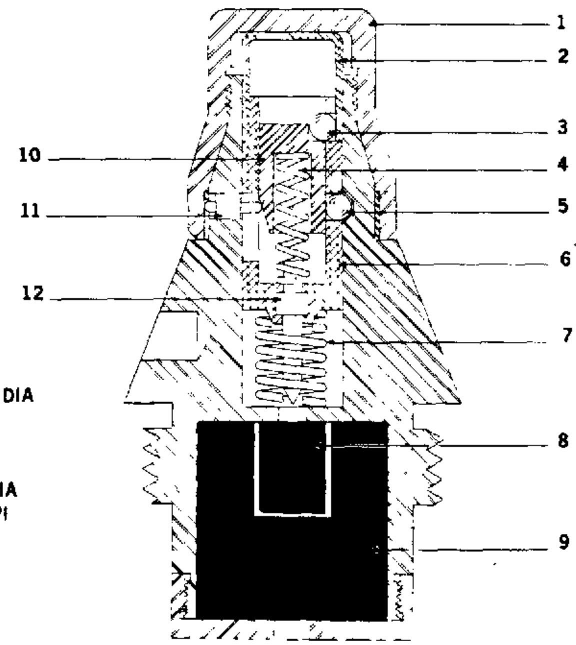
CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material -------- Steel	Arming method -------- Setback
Weight --------------- (0.55 lb)	Firing method -------- Impact
Markings ------------- M-1	Safety devices ------- None
Booster	Arming distance ------ ?
Body material -------- Steel	Arming time ---------- ?
Body length ---------- ?	Self-destruct time --- None
Explosive ------------ ?	Delay time ----------- Instantaneous
Explosive weight ----- ?	

Fuze, point detonating, M-1

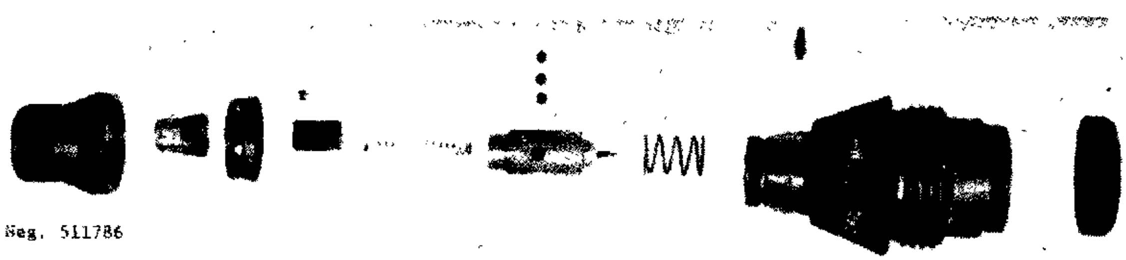


Neg. 511785



FUNCTIONING DESCRIPTION

Upon firing, the arming sleeve (10) sets back, its beveled edge cams the safety pin (11) outward, and the upper check ball (3) drops into the recessed portion of a well on top of the arming sleeve (10), freeing the sleeve for forward movement. When the projectile leaves the bore, the arming sleeve spring (4) decompresses and forces the sleeve forward, permitting the lower check balls (5) to drop inside a well in the sleeve. This frees the striker (2) for rearward movement. During the flight of the projectile, the tension of the safety spring (7) prevents the striker and firing pin (12) from moving rearward and detonating the projectile. Upon impact, the striker (2) is driven rearward, and the firing pin (12) sets off the detonator (8) which in turn actuates the booster (9) and the explosive charge of the projectile.



Neg. 511786

WEAPONS AND PROJECTILES USED WITH

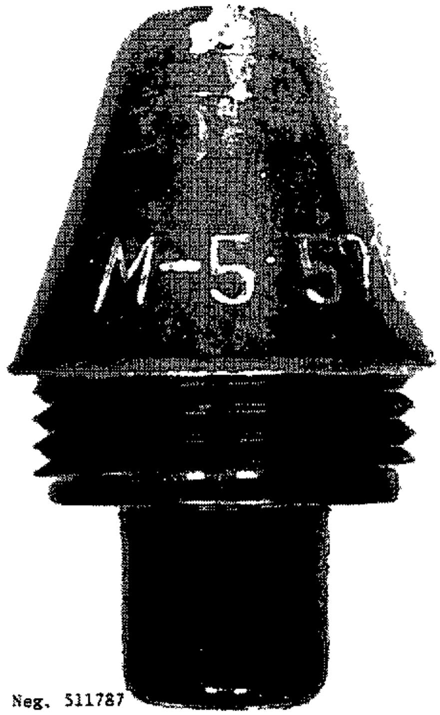
Weapons	Projectiles
50-mm Company Mortars, M1938, M1940 and M1941	50-mm Frag, O-822, O-822A, O-882Sh
82-mm Battalion Mortars, M1937 (82-BM37), M1941 (82-BM-41), and M1943 (82-BM-43)	82-mm Frag, O-832, O-832D Smoke, D-832
120-mm Regimental Mortars, M1938 and M1943	120-mm Frag-HE OF-843 Inc Z-843A

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, M-2, M-3, M-4, and M-5



Neg. 511787

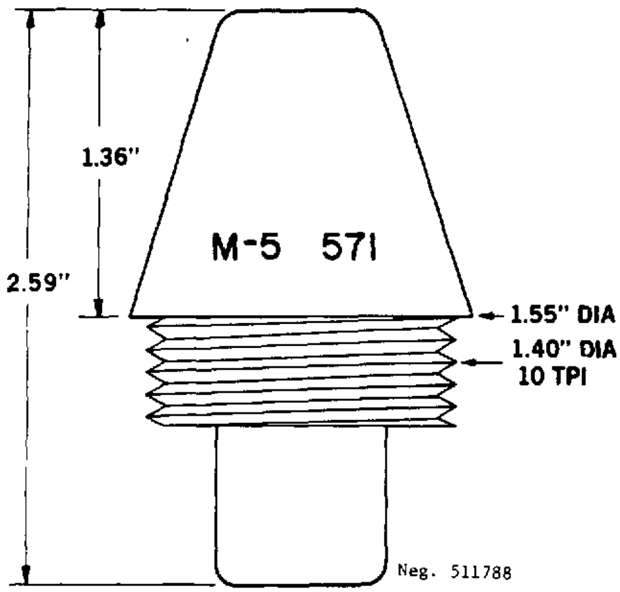
DISCUSSION

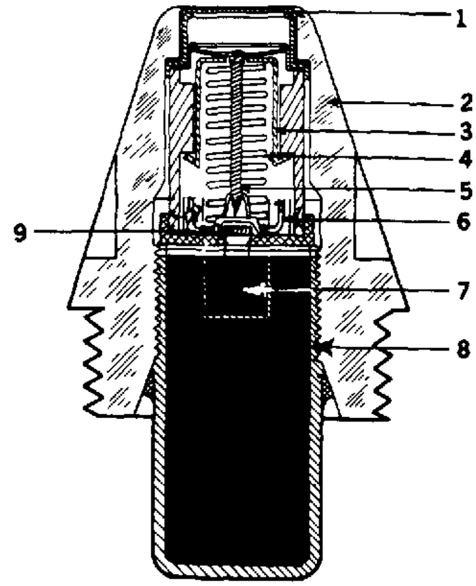
The M-2, M-3, M-4, and M-5 fuzes are setback armed, impact fired, low velocity (mortar) fuzes which are similar in construction and function. The body of the M-3 fuze may be steel or brass; the body of the other fuzes is red, black, or brown plastic. Two spanner wrench slots are located 180° apart on the fuze body. The closure caps may be aluminum foil or plastic, and the booster cups are steel. A lead seal has been placed around the booster cup of the M-5 while the others are sealed with phenolic cement.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ------ Plastic (M-3 Steel)	Arming method -------- Setback
Weight ------------- 0.661 lb approx.	Firing method -------- Impact
Markings ----------- M-5	Safety devices ------- None
Booster	Arming distance ------ ?
Body material ------ Steel	Arming time ---------- ?
Body length -------- 1.30 in	Self-destruct time --- None
Explosive ---------- Tetryl	Delay time ----------- Instantaneous
Explosive weight --- 96 gr	

<u>Fuze</u>, point detonating, M-2, M-3, M-4, and M-5





FUNCTIONING DESCRIPTION

Upon firing, setback causes the arming sleeve (3) to move to the rear, compressing the safety spring (4). As the arming sleeve moves into the stirrup (6), the lip of the arming sleeve engages the prongs of the stirrup, locking the stirrup and arming sleeve together.

Deceleration moves the arming sleeve and stirrup forward as a unit, bringing the safety plug (9) in contact with the point of the firing pin (5). The stationary firing pin forces the safety plug to move out of line with the firing pin and primer detonator. This unblocks the firing pin and arms the fuze.

Impact crushes the nose of the fuze and drives the firing pin into the primer detonator, initiating the explosive train.

Neg. 511789

Fuze, point detonating, M-2, M-3, M-4, and M-5

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
M-2,M-3,M-5	
82-mm Mortars, M1937 (82-BM37), M1941 (82-BM41), & M1943 (82-BM43)	82-mm Frag O-832, O-832D Smoke D-832
M-4	
82-mm Mortars, M1937 (82-BM37), M1941 (82-BM41), & M1943 (82-BM43)	82-mm Frag O-832, O-832D Smoke D-832
120-mm Mortars, M1938 & M1943	120-mm Frag-HE OF843, OF-843A Inc Z-843A Smoke D-843, D-843A

REFERENCE

M-4: P. A. Memorandum Report No. 70, dtd Feb 1955
M-5: P. A. Memorandum Report No. MR-23, undated

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Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

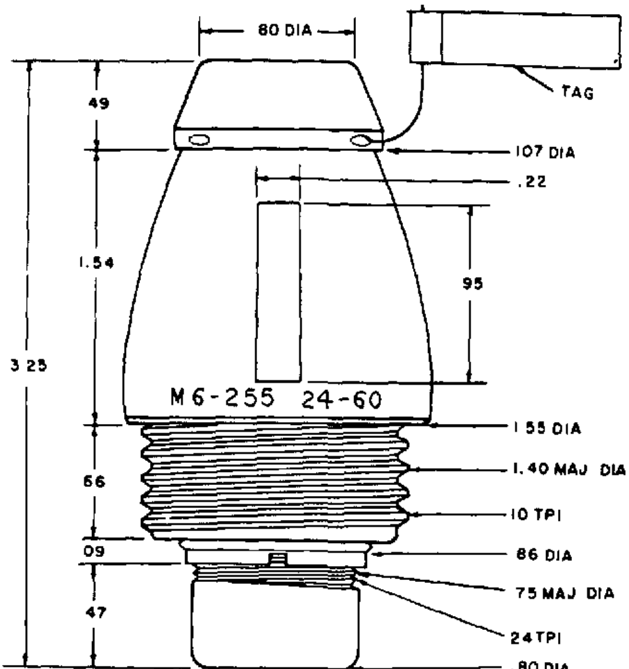
DISCUSSION

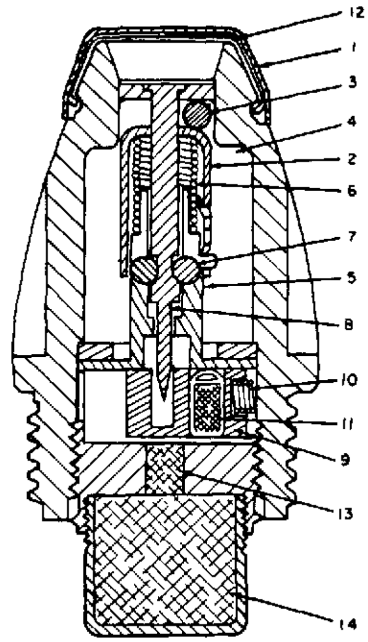
The M-6 is a point detonating setback armed fuze used in low velocity (mortar) projectiles. The fuze body is produced from compression molded brown plastic. A steel sleeve with a zigzag slot, a spring, three steel balls and a slider comprise the arming assembly. The slider, with its out-of-line detonator, is held in the safe condition by the firing pin. A protective steel cap secured by a pull wire is removed prior to firing. Two spanner wrench slots run the length of the ogive.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Plastic	Arming method	Setback
Weight	0.28 lb	Firing method	Impact
Markings	M-6	Safety devices	Out-of-line detonator
Booster		Arming distance	0.75 - 10 meters
Body material	Steel	Arming time	?
Body length	0.72 in	Self-destruct time	None
Explosive	Tetryl	Delay time	Instantaneous
Explosive weight	90.0 gr		

Fuze, point detonating, M-6





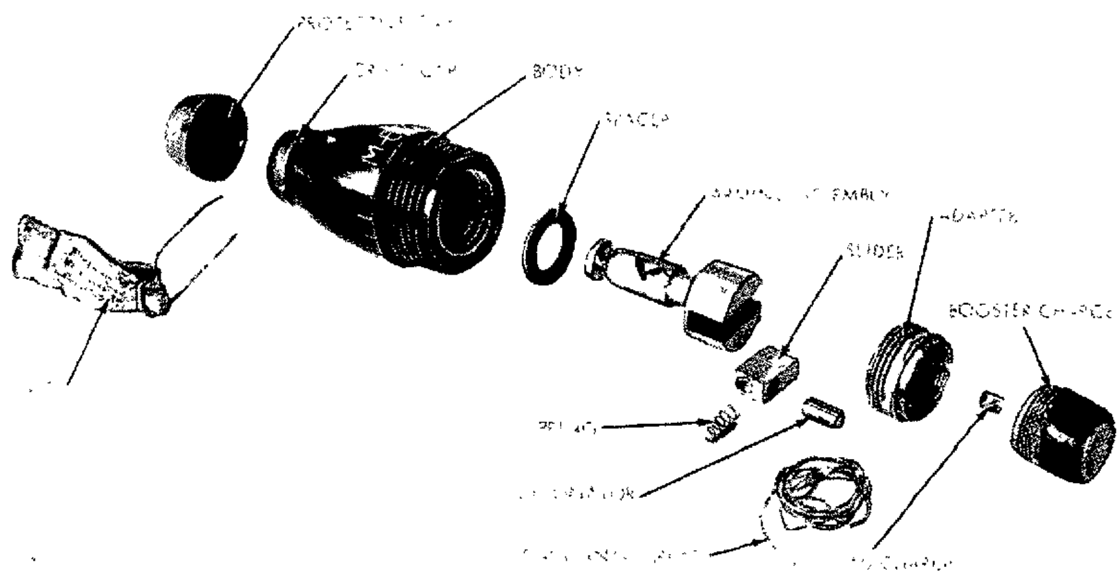
Neg. 511791

FUNCTIONING DESCRIPTION

Upon firing, setback forces the arming sleeve (2) downward. This releases the arming sleeve retaining ball (3) which falls into the body cavity (4). The arming sleeve (2) continues rearward, delayed by the zigzag slot in the arming sleeve and guided by a pin on the slide's holder (5) until it reaches the end of its travel. As setback ceases, the arming spring (6) expands moving the arming sleeve (2) forward, and releasing the two firing pin retaining balls (7), which fall into the body cavity. This permits the firing pin (8) to rise, powered by the arming spring (6), moving the point of the firing pin out of its hole in the slider (9). The slider powered by the slider spring (10), moves laterally aligning the detonator (11) with the firing pin. The fuze is now armed. Upon impact, the firing pin (8) is driven downward crushing the copper membrane. The point of the firing pin pierces the detonator (11), initiating the lead charge (13) and the booster (14).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
82-mm Mortar 1937, M1942 & 1943	82-mm HE-Frag 0-832; 0-832D



REFERENCE

FSTC Exploitation Report, FSTC-CR-20-40-66 dated October 1966.

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Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

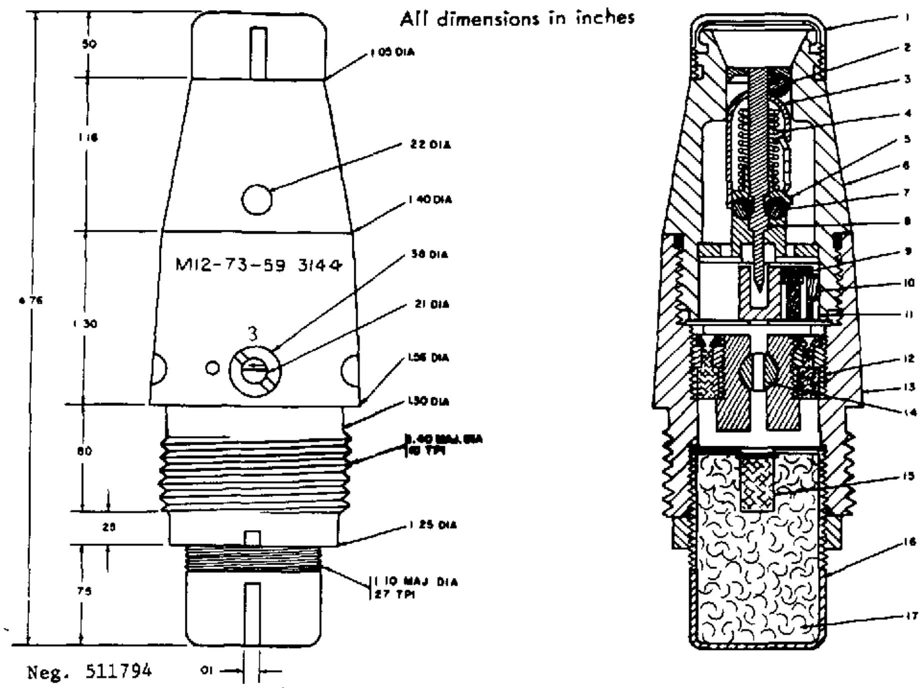
DISCUSSION

The fuze is a setback armed, point detonating fuze with selectable superquick or delay functioning on impact. The fuze is similar in construction and functioning to the M-6 with the exception of the selectable delay interrupter. The nose of the fuze is unpainted, the nose cap and body are painted black or have a black oxide finish. There are two spanner wrench holes in both the nose and body.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.18 lb	Firing method	Impact
Markings	M-12	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.50 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Superquick and delay (0.01 sec)
Explosive weight	24.8 gm		

Fuze, point detonating, M-12



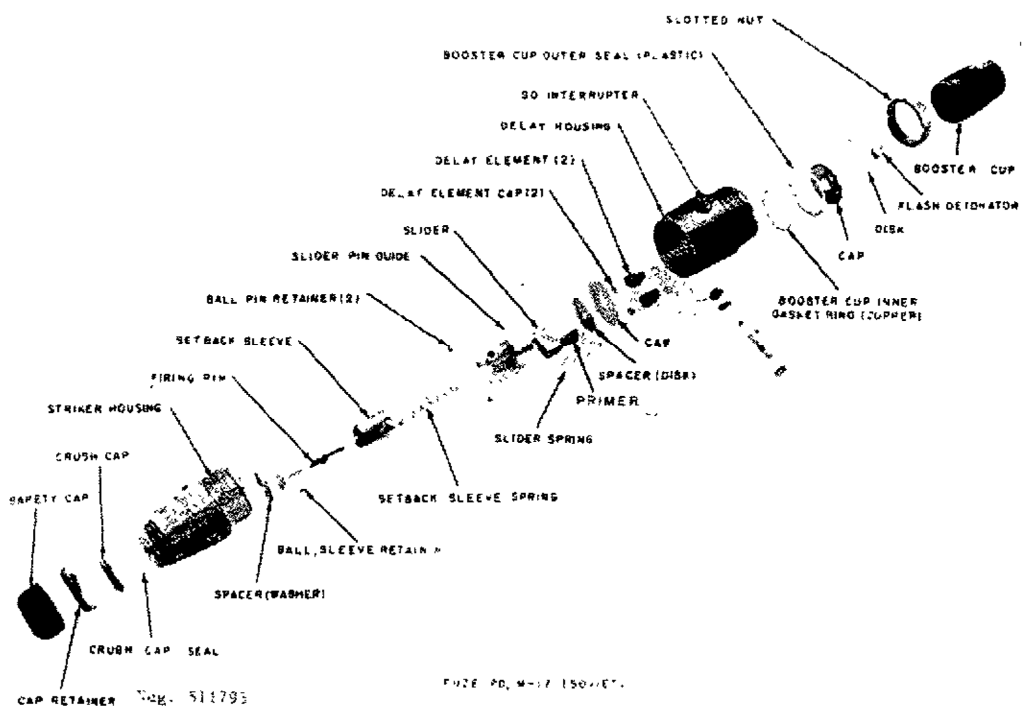
FUNCTIONING DESCRIPTION

Prior to loading the weapon, the fuze safety cap is removed and the desired delay is selected. Upon firing, setback forces the armings sleeve (3) downward. This releases the arming sleeve retaining ball (2) which falls into the fuze body cavity. The arming sleeve (3) continues rearward, delayed by the zigzag slot in the arming sleeve and guided by a pin on the sleeve holder (5) until it reaches the end of its travel. As setback ceases, the arming spring (4) expands moving the arming sleeve (3) forward, releasing the two firing pin retaining balls (7), which fall into the body cavity. This permits the firing pin (8) to rise, powered by the arming spring (4), moving the point of the firing pin (8) out of its hole in the slider (9). The slider, powered by the slider spring (10), moves laterally aligning the detonator (9) with the firing pin (8). The fuze is now armed. Upon impact the firing pin initiates the detonator (9) which on superquick option, flashes through the flash channel to initiate the relay detonator (15) and booster.

If the delay option has been selected, the flash channel is blocked, and the flash from the primer, ignites both black powder delay elements (12) which ignite the relay detonator and booster.

WEAPONS AND PROJECTILES USED WITH

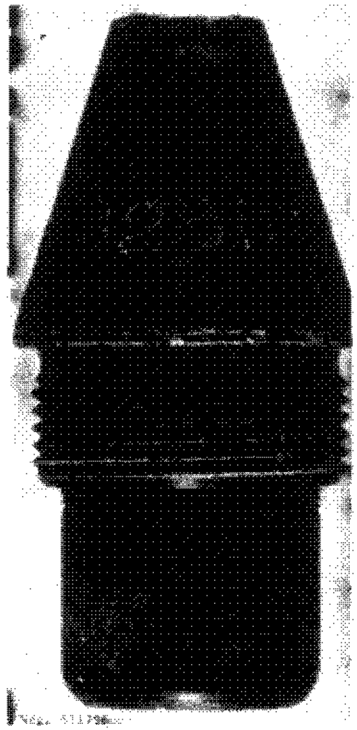
Weapons	Projectiles
120-mm Mortars M1938 & M1943	120-mm Frag - F-843, OF843A, O-843



REFERENCE

FSTC Exploitation Report, FSTC-CR-20-66-66, February 1967

Fuze, point detonating, M-50



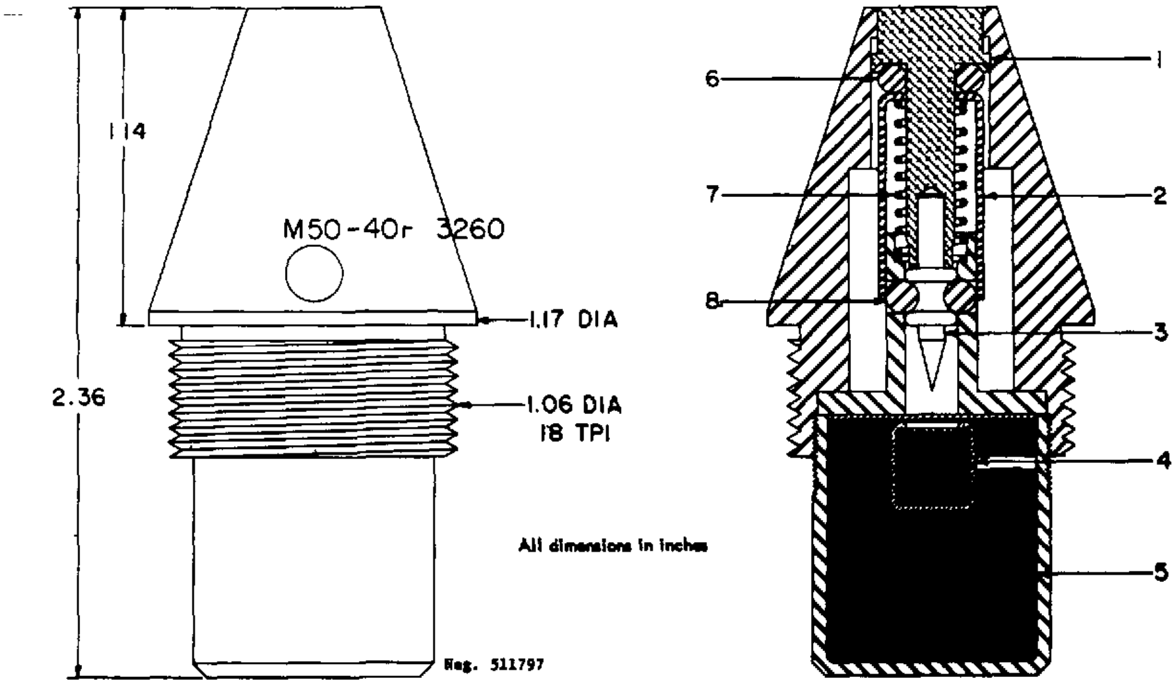
DISCUSSION

The M-50 is a point detonating, setback armed, nondelay action fuze used only with fragmentation projectiles. The M-50 is an extremely sensitive fuze which the Soviets consider "unsecured." Prior to use, the nose of the fuze is covered with a lead foil cap. This cap must be removed before firing. The firing pin (3) is immobilized by two check balls (6) which are lodged between the bottom of the striker head (1) and the top of the stirrup (2), and two check balls (8) lodged at the lower end of the firing pin (3). This prevents any movement of the firing pin until firing takes place. This fuze is considered obsolete.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.246 lb	Firing method	Impact
Markings	M-50	Safety devices	None
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	0.95 in	Self-destruct time	None
Explosive	Tetryl	Delay time	Instantaneous
Explosive weight	0.5 gm		

Fuze, point detonating, M-50



FUNCTIONING DESCRIPTION

On firing, the stirrup (2) sets back and allows the upper check balls (6) to fall away, thus releasing the firing pin (3) for forward movement. After the projectile leaves the mortar tube, the anticreep spring (7) forces the stirrup forward, allowing the lower check balls (8) to fall away, freeing the firing pin for rearward movement. At this point, the striker head (1) protrudes approximately one-half its length above the top of the body of the fuze, showing a red line across its diameter. The firing pin is driven rearward on impact initiating the detonator (4) and booster (5).

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
50-mm Mortars, M1938, M1940, and M1941	50-mm Frag O-822, O-822A, O-822Sh

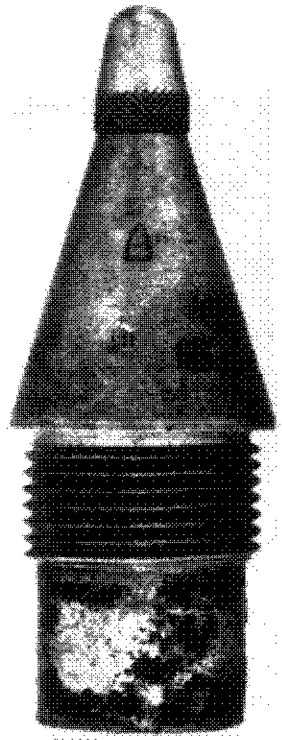
REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, RG-6



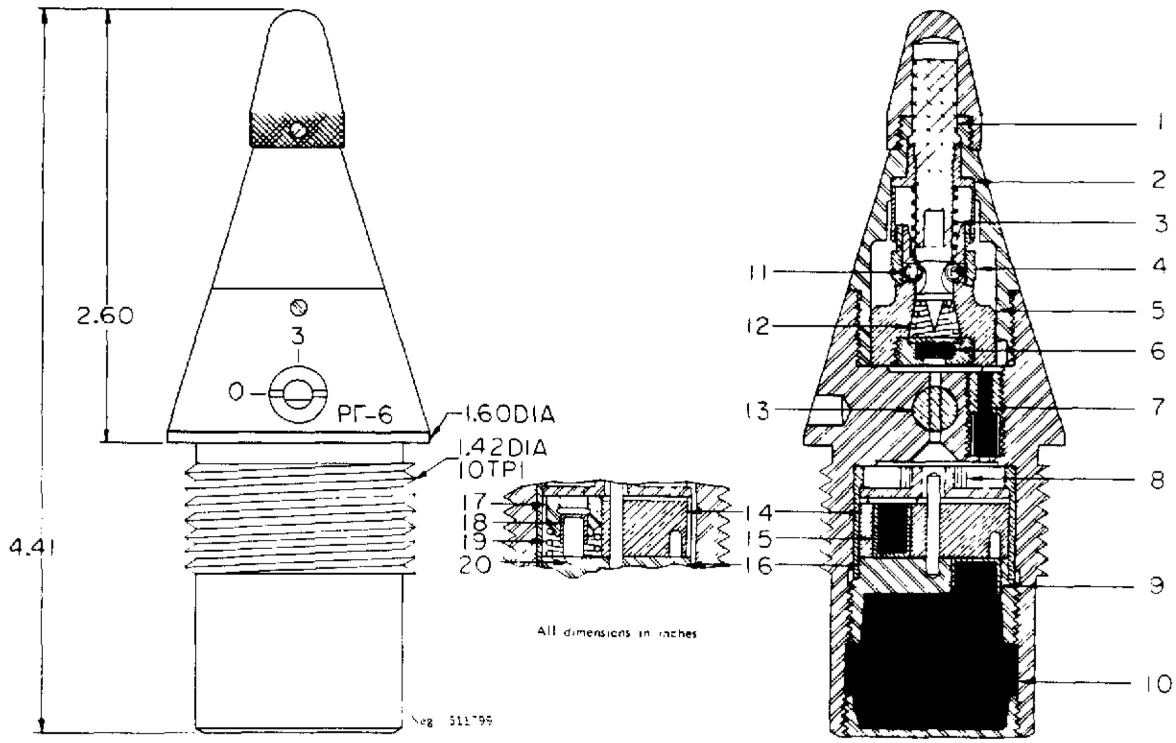
DISCUSSION

The RG-6 is a setback armed, impact fired, variable delay fuze which has been replaced by the RGM series. The RG-6 has no safety device to prevent premature activation of the delay setting and is less sensitive than the RGM or RGM-2. The RG-6 has an elongated nose cap with a rounded top into which the striker extends. The firing delay is achieved by the combined use of the nose cap and selector.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ----- Steel	Arming method -------- Setback
Weight ----------- 0.946 lb	Firing method -------- Impact
Markings ---------- PГ-6	Safety devices ------- Out-of-line detonator
Booster	Arming distance ------ ?
Body material ----- Steel	Arming time ---------- ?
Body length ------- 1 in (approx)	Self-destruct time --- NA
Explosive --------- Tetryl	Delay time ----------- Instantaneous nondelay and delay
Explosive weight -- 555 gr	

Fuze, point detonating, RG-6



FUNCTIONING DESCRIPTION

On firing, the arming sleeve (2) sets back, compresses the arming sleeve spring (3), and locks with the retaining ball sleeve (4). Simultaneously the inertia sleeve (17), overcoming the opposition of the prongs of the inertia pin safety clamp (18), sets back, compresses the inertia sleeve spring (19), and locks with the inertia pin (20). The springs (3) and (19) remain compressed until the shell leaves the bore of the gun, when they overcome the force of inertia. Then the arming sleeve spring moves the arming sleeve and the retaining ball sleeve forward, releasing the three retaining balls (11), and centrifugal force causes the balls to escape from their housings in the striker (1) so that they no longer prevent the movement of the striker or the primer holder (5). At the same time, the inertia sleeve spring moves the inertia sleeve forward, drawing the attached inertia pin out of its socket in the relay charge housing (16) and thereby unlocking the rotor body (14). The rotor body turns under the influence of the spiral spring (8), brings the detonator (15) into alignment with the relay charge (9) leading to the booster (10), and comes to rest on a check pin.

If the fuze is set to instantaneous action ("0") with fuze cap removed, the striker (1) is driven rearward on impact with the target, overcoming the anticreep spring (12), and the firing pin strikes the primer (6). At the same setting, but with the fuze cap on, the primer holder and primer move forward, and the primer strikes the firing pin. In either case, the flash passes directly through an opening in the setting selector (13), and into the detonator in the rotor body. The detonation wave from the detonator travels through the relay charge and activates the booster.

If the fuze is set to delayed action ("3"), the setting selector blocks the direct channel from the primer to the detonator, and the flash must pass to the detonator by way of the powder delay pellet (7). (The fuze cap has the same effect on the operation at the delay setting as in the instantaneous setting: without fuze cap, the firing pin moves rearward to strike the primer; with the fuze cap, the primer moves forward to strike the firing pin.)

Fuze, point detonating, RG-6

WEAPONS AND PROJECTILES USED WITH

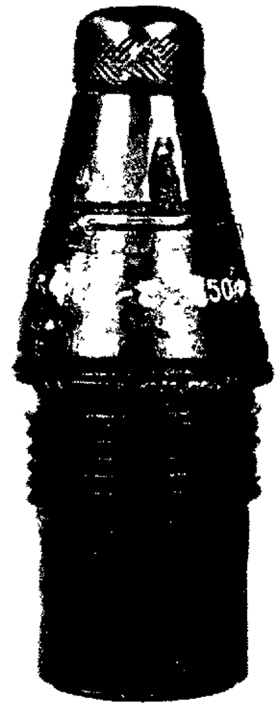
Weapons	Projectiles
122-mm Howitzer, M1910/30, M1909/37, & M1938 (M-30) Guns, M1931 & M1931/37 (A-19)	122-mm HE F-460, F-460K, F-460N, F-460U Frag HE OF-462, OF-462A, OF-462L, OF-462N
152-mm Howitzer, M1909/30, M1938 (M10) & M1943 (D-1) Tank Howitzer M1938/40 Gun Howitzer, M1937 (ML-20) Gun M1910/34 SP Gun M1937/43 (ML-20S)	152-mm HE F-533, F-533K, F-533L, F-533M, F-533N, F-533(U) Frag HE OF-530, OF-530A Frag O-530A

(No disassembled view available)

REFERENCE

None

Fuze, point detonating, RGM, RGM-2, and RGM-3



DISCUSSION

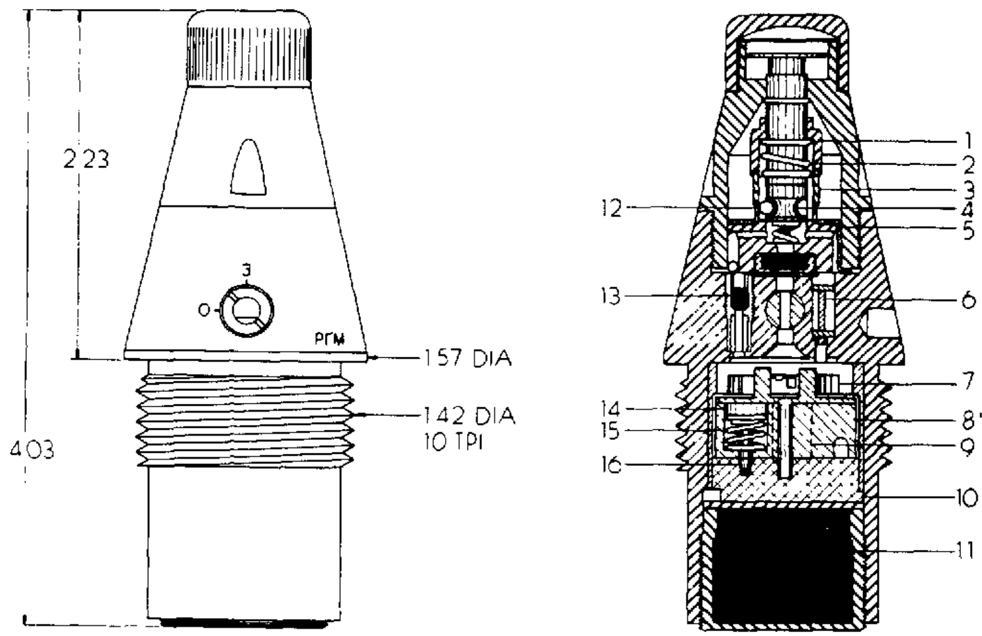
The RGM and RGM-2 are setback armed, impact fired, variable delay fuzes used with medium caliber projectiles. The design and functioning of the RGM and RGM-2 are similar. According to Soviet documents, the RGM was restricted from use in 1949 because of arming failures caused by insufficient setback when low charges were fired. This deficiency was corrected by replacing rigid arming components with springs in the RGM-2. The RGM and RGM-2 provide instantaneous, nondelay, and delayed detonations by the combined use or omission of the nose cap and selector switch.

An RGM-3 fuze was developed but no information as to its design or function is available. It is assumed that the RGM-3 is a modified version of the RGM-2.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.01 lb	Firing method	Impact
Markings	РГМ-2	Safety devices	Out-of-line detonator
Booster			
Body material	Steel	Arming distance	?
Body length	0.827	Arming time	?
Explosive	Tetryl	Self-destruct time	NA
Explosive weight	197.27 gr	Delay time	0.03 to 0.05 sec

Fuze, point detonating, RGM, RGM-2, and RGM-3



FUZE, PD, IMPACT, MODEL RGM, SOVIET

FUNCTIONING DESCRIPTION

On firing, the arming sleeve (1) sets back, compresses the arming sleeve spring (2) and locks with the retaining ball sleeve (3). Simultaneously, the inertia sleeve (14), overcoming the opposition of the prongs of the inertia pin safety clamp (16), sets back, compresses the inertia sleeve spring (15), and locks with the inertia pin. The springs (2) and (15) remain compressed until the shell leaves the bore of the gun, when they overcome the force of inertia. Then the arming sleeve spring moves the arming sleeve and the retaining ball sleeve forward, releasing the three retaining balls (12), and centrifugal force causes the balls to escape from their housings in the striker (4) so that they no longer prevent the movement of the striker or the primer holder (5). At the same time, the inertia sleeve spring moves the inertia sleeve forward, drawing the attached inertia pin out of its socket in the relay charge housing (9) and thereby unlocking the rotor body (8). The rotor body turns under the influence of the spiral spring (7), brings the detonator into position opposite the relay charge leading to the booster (11), and comes to rest on a check pin.

If the fuze is set to instantaneous action ("0"), with fuze cap removed, the striker (4) is driven rearward on impact with the target, and the firing pin strikes the primer. At the same setting, but with the fuze cap on, the primer holder and primer move forward, shearing the claws of the primer holder retainer, and the primer strikes the firing pin. In either case, the flash passes directly through an opening in the setting selector, and into the detonator in the rotor body. The detonation wave from the detonator travels through the relay charge and activates the booster.

If the fuze is set to delayed action ("3"), the setting selector blocks the direct channel from primer to detonator, and the flash must pass to the detonator by way of the powder delay pellet (13). (The fuze cap has the same effect on the operation at the delay setting as at the instantaneous setting: without fuze cap, the firing pin moves rearward to strike the primer; with fuze cap, the primer moves forward to strike the firing pin.) A safety plunger (6) prevents muzzle bursts at this setting, should the fuze primer ignite while the shell is in the bore of the weapon. Premature action of the primer forces the safety plunger to shear its retaining pin, move rearward, and immobilize the rotor body, thereby preventing the rotor body from moving the detonator into alignment with the relay charge and booster. Accordingly, the flash travels from the powder delay pellet to the detonator but, unable to pass from the detonator to the relay charge and booster, cannot activate the projectile.

Fuze, point detonating, RGM, RGM-2, and RGM-3

WEAPONS AND PROJECTILES USED WITH

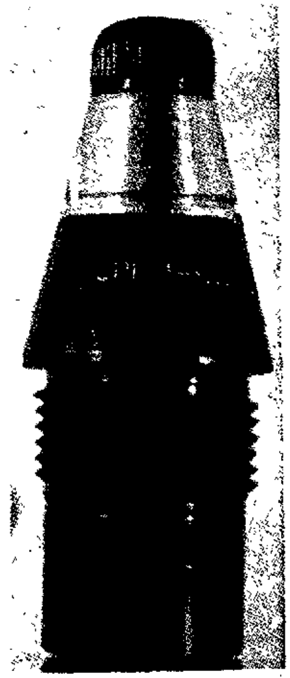
Weapons	Projectiles	
122-mm HOWITZER, M1936 (M-30) Guns, M1931 & M1931/37 (A-19) Tank Gun M1943 (D-25) SP guns M1944 (D-25S) and M1931 (A19S)	122-mm Frag, HE	OF-462 OF-471N
152-mm HOWITZER, M1938 (M-10) and M1943 (D-1) Tank Howitzer M1938/40, Gun M1910/34, Gun-Howitzer M1937 (ML-20) SP Gun M1937 (ML-20S)	152-mm Frag, HE	OF-530 OF-530A OF-540

(No disassembled view available)

REFERENCE

FSTC Exploitation Report CR-20-52-70, dated December 1970

Fuze, point detonating, RGM-6



Neg. 511802

DISCUSSION

The RGM-6 is a setback armed, impact fired, variable delay fuze which is an improved version of its forerunners in the RGM series, and is nearly identical to the V-429 fuze in description and function. Most of the parts of the RGM-6 and V-429 are interchangeable.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.02 lb	Firing method	Impact
Markings	PГM-6	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.8 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Instantaneous, nondelay and delay
Explosive weight	195.96 gr		

Fuze, point detonating, RGM-6

(No line drawing available)

FUNCTIONING DESCRIPTION

See V-429.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

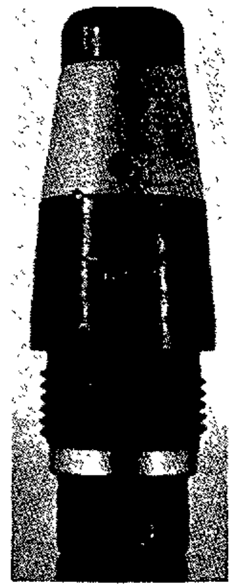
Weapons	Projectiles
122-mm Howitzer, M1938	122-mm Frag/HE, OF-462, OF-462A 122-mm HE, F-460, F-460A
152-mm Howitzer, M1943	152-mm Frag/HE, OF-530, OF-530A 152-mm HE, F-530, F-530A

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-17-71

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, V-22



Neg. 511803

DISCUSSION

The V-22 is a setback and spin armed point detonating fuze used on 122-mm high explosive mortar projectiles. With the exception of the designation "V-22," this fuze is identical in design, material, and function to the Soviet M-12 fuze.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.18 lbs	Firing method	Impact
Markings	B-22	Safety devices	Out-of-line detonator
Booster			
Body material	Steel	Arming distance	?
Body length	1.50 in	Arming time	?
Explosive	Tetryl	Self-destruct time	NA
Explosive weight	24.8 gm	Delay time	Superquick and delay (0.01 sec)

Fuze, point detonating, V-22

(No line drawing available)

FUNCTIONING DESCRIPTION

Same as Soviet M-12.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

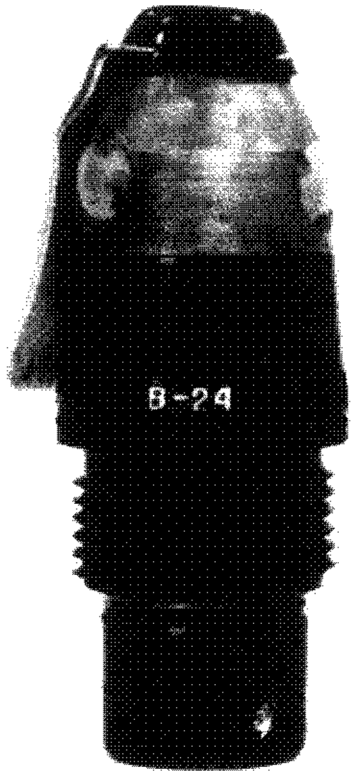
Weapons	Projectiles
120-mm Mortars M1938 and M1943	120-mm Frag F-843 OF-843 OF-843A

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, V-24



DISCUSSION

The V-24 point detonating fuze is used on 140-mm and 240-mm rocket projectiles. The steel body is painted black with a dull gray finish on the ogive. The delay selector may be set on "3" for instantaneous or "0" for delay. Three centrifugal detents maintain the fuze in a safe condition until fired.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	1.08 lb	Firing method	Impact
Markings	B-24	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.49 in	Self-destruct time	NA
Explosive	?	Delay time	?
Explosive weight	?		

Fuze, point detonating, V-24

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, centrifugal force retracts the three spring loaded detents to clear the firing pin.

Upon impact, if delay was selected, the firing pin is driven into the flash pellet which ignites the delay pellet. Upon burnout of the delay pellet, the flash passes on to the detonator which initiates the booster and main charge. For instantaneous functioning the flash pellet bypasses the delay element and ignites the detonator.

(No disassembled view available)

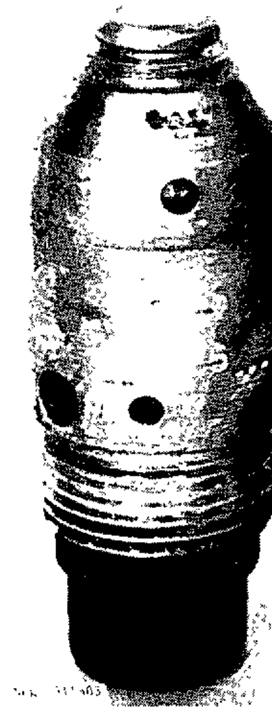
WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
140-mm Rocket Launcher	140-mm Rocket
240-mm Rocket Launcher	240-mm Rocket

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Fuze, point detonating, V-25



DISCUSSION

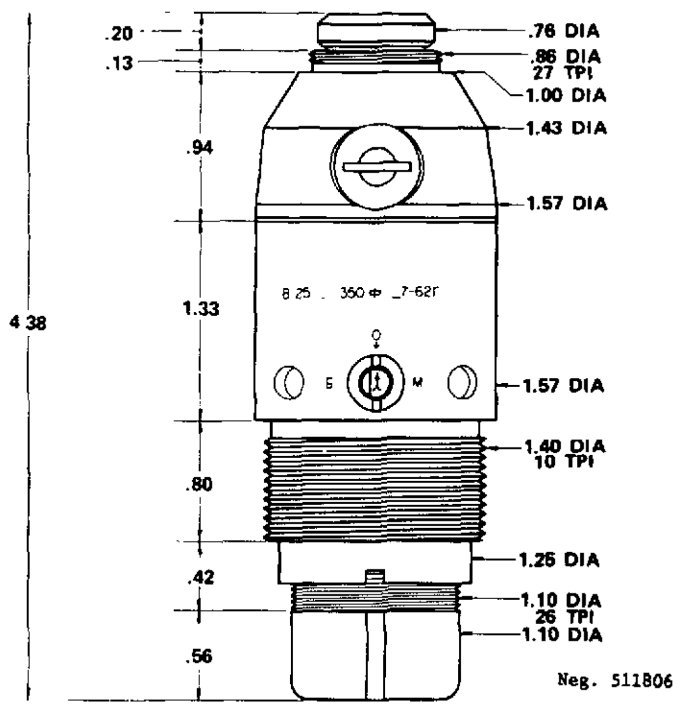
The V-25 is a setback and spin armed point detonating fuze used in spin stabilized rockets. The fuze is made of cadmium plated steel and has a brass delay selector rod. A screw type nose cap protects the head of the fuze from dirt and moisture and plastic sealing washers prevent

CHARACTERISTICS

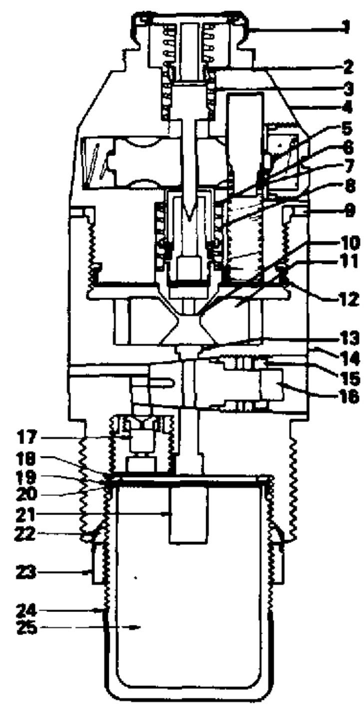
Fuze Assembly: Body material ---------- Steel Weight ----------------- 1.35 lb Markings --------------- B-25 Booster Body material ---------- Steel Body length ------------ 1.43 in Explosive -------------- Tetryl Explosive weight ------- 373 gr	Functional Data: Arming method -------- Setback & centrifugal force Firing method -------- Impact Safety devices ------- Setback & centrifugal detent Arming distance ------ ? Arming time ---------- ? Self-destruct time --- NA Delay time ----------- Instantaneous, short (0.26 sec) or long (0.31 sec) delay

Fuze, point detonating, V-25

moisture from entering through other threaded openings. Bore safety is provided by the use of interlocking setback and centrifugal detents. Three optional delays may be selected by turning the selector rod to "M" short delay, "0" superquick or "M" long delay. On flat impact with the target, two graze weights cam the detonator carrier forward into the firing pin.



Neg. 511806



FUNCTIONING DESCRIPTION

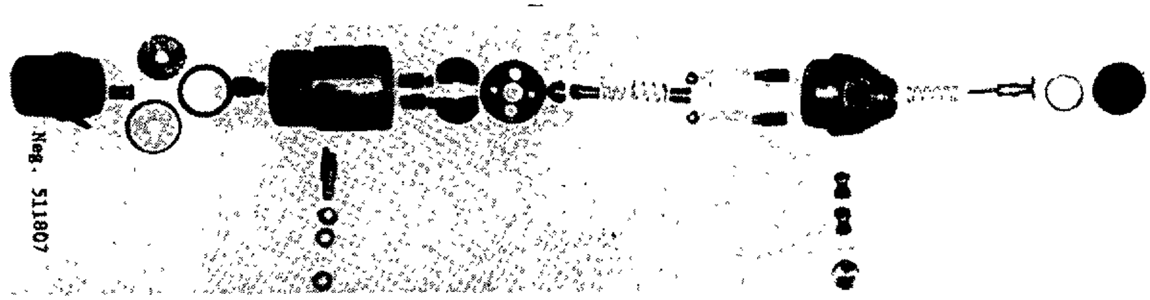
Upon firing, setback moves the two setback weights (7) to the rear, compressing the setback weight springs and unlocking the centrifugal detents (5). Centrifugal force, upon completion of setback, moves the centrifugal detents (5) to the side, unblocking the firing pin (2) and allowing the arming sleeve (6) to move forward under the force exerted by its spring (8). The setback and centrifugal detents are now locked in position and the firing pin has a clear path to the primer (10).

Upon impact, the firing pin is driven to the rear initiating the primer which ignites the detonator directly or the delay elements, depending on the position of the delay selector rod.

If the target is impacted at a low angle, the graze weights (11) cam the primer assembly forward to strike the firing pin and initiate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
140-mm Rocket Launcher	140-mm HE OF-949



REFERENCE

FSTC Exploitation Report, FSTC-CR-116-68 dtd April 1969.

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, V-429

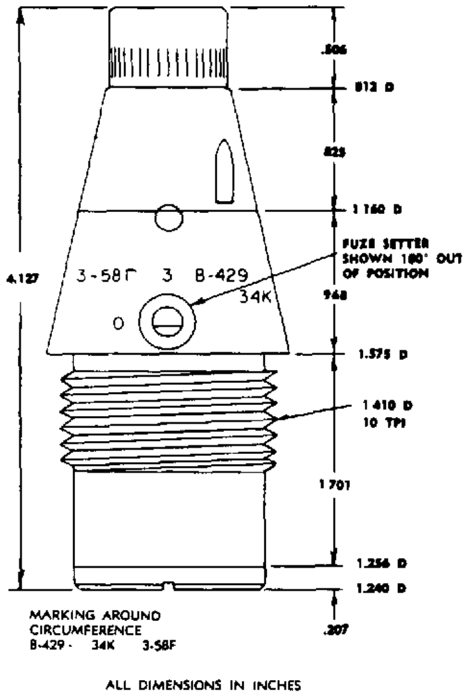
DISCUSSION

The V-429 is a setback armed, impact fired fuze which closely resembles the RGM-2 and RGM-6 in external appearance and functioning. Many of its internal components have been redesigned to improve their performance. The body is machined from steel, the upper portion being cadmium plated and the lower body blued. All openings are sealed by sealing rings and the entire fuze is varnished for protection from corrosion. Premature functioning of the primer drives a detent (14) downward to lock the rotor in the out-of-line position to prevent muzzle bursts. Normal functioning of the primer drives the detent downward to lock the rotor in the armed position and prevent movement upon impact.

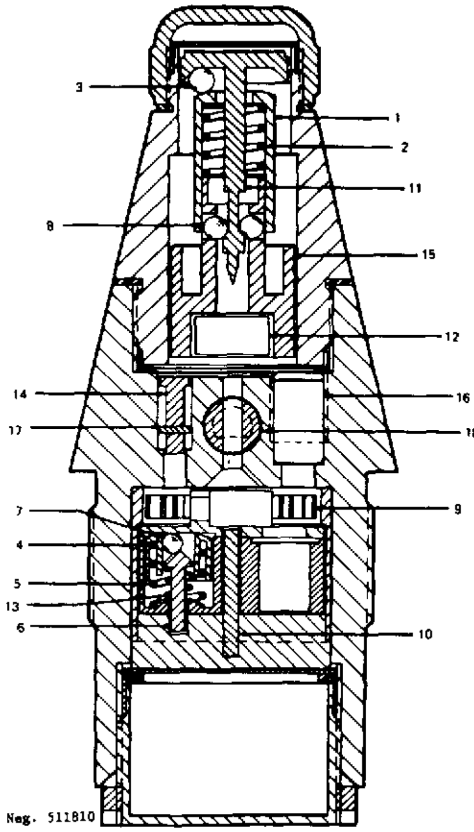
CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.97 lb	Firing method	Impact
Markings	B-429	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.8 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Instantaneous and delay
Explosive weight	192.20 gr		

<u>Fuze</u>, point detonating, V-429



Neg. 511809



Neg. 511810

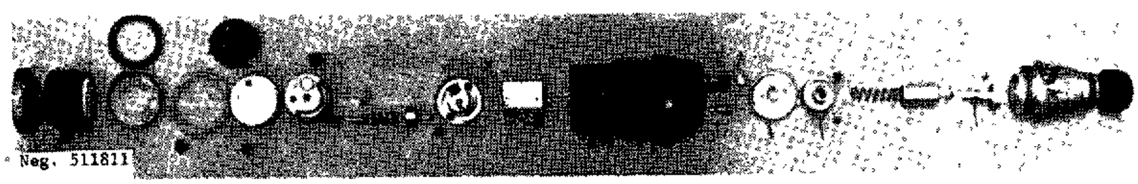
FUNCTIONING DESCRIPTION

Upon firing, the setback sleeve (1) moves down, compressing the setback spring (2) and releasing the locking ball (3). Simultaneously, the setback collar (4) moves downward against its spring (5) and the lock pin (6) releases its pressure on the ball (7) allowing the ball (7) to move into the cavity. As acceleration diminishes, the setback sleeve (1) is moved forward by its spring into the space formerly occupied by the locking ball (3). The firing pin locking balls (8) are now moved into the vacant cavity by centrifugal force. The lock pin (6) is also forced upward by its spring (13) withdrawing its shank from the lock pin hole in the booster lead disk. This unlocks the out-of-line rotor which is rotated by a clock spring (9) and aligns the detonator with the booster lead (10). Travel of the rotor is limited by a stop pin (14).

Upon impact, if the safety cap has been removed, the firing pin (11) is driven into the primer (12). If the safety cap has not been removed, the primer carrier (15) moves forward impinging the primer on the firing pin. The resulting flash passes through the flash channel to ignite the delay element (16) and drive the safety plunger (14) downward shearing its pin (17), and locking the rotor in the armed position. If the selector (18) has been set on superquick action, the primer flash initiates the detonator in the rotor which functions the booster lead and booster. If the selector is set on delay, the flash channel is blocked and the delay element initiates the detonator and booster in turn.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
122-mm Gun D-74	122-mm Frag-HE OF-472
130-mm Gun M-46	130-mm Frag-HE OF-482
152-mm Howitzer, D-20	152-mm Frag-HE OF-540

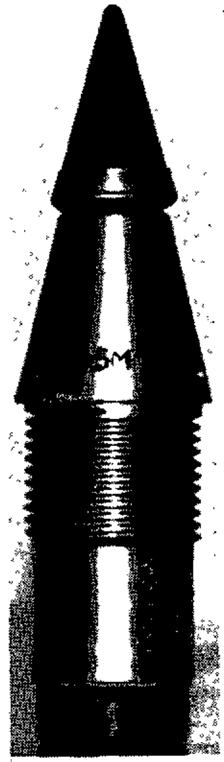


REFERENCE

FSTC Exploitation Report, FSTC-CR-20-33-70A

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, V-5M1



DISCUSSION

The V-5M1 is a point detonating, setback armed fuze used on 57-mm high explosive aircraft rockets. The aluminum body has an anodized finish, and a dark bakelite nose cap. It employs two out-of-line detonator elements and a pyrotechnic self-destruct feature. Arming delay is achieved by setback of a zigzag arming sleeve.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Aluminum	Arming method -------- Setback
Weight ---------------- 0.55 lb	Firing method -------- Impact
Markings -------------- B5M1	Safety devices ------- Out-of-line detonator
Booster	
Body material --------- Aluminum	Arming distance ------ ?
Body length ----------- 0.827 in	Arming time ---------- ?
Explosive ------------- Tetryl	Self-destruct time --- ?
Explosive weight ------ ?	Delay time ----------- Instantaneous

Fuze, point detonating, V-5M1

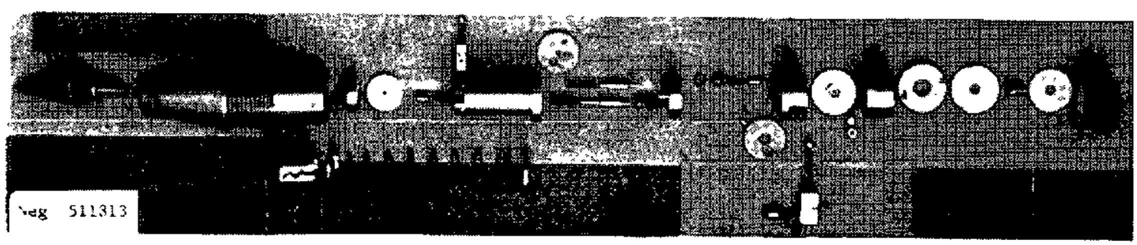
(N ine d. awing available)

FUNCTIONING DESCRIPTION

Upon firing, inertia causes the setback assembly, containing a zigzag sleeve, to move rearward allowing the small setback striker to cam a locking ball from its recess. The setback striker then impinges on a flash pellet which initiates two different actions: it ignites a powder train in the self-destruct housing, and it ignites the pyrotechnic pellets holding spring loaded positive blocks in the upper and lower detonator sliders. (A plunger in the center of the lower slider sets back, removing a final block on this mechanism.) Simultaneously, the impact firing pin sets back into a recess in the upper detonator slider. This provides an additional safety until after the projectile's inertial force is overcome and the impact firing pin moves forward. When the upper and lower pyrotechnic pellets burn out, the spring loaded plungers in both detonator sliders are forced outward into the locked positions. This permits the detonators to explosively align, thus arming the fuze. Impact causes the impact firing pin to impinge on the upper detonator and the flash passes on to fire the lower detonator, which initiates the booster and main charge. If impact does not occur, the self-destruct pyrotechnic train flashes directly through to the booster and the main charge.

WEAPONS AND PROJECTILES USED WITH

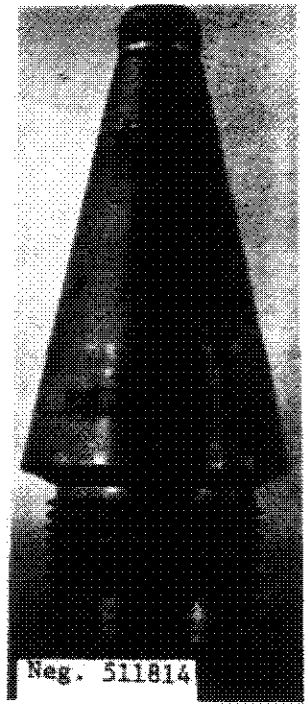
Weapons	Projectiles
57-mm aircraft rocket launcher	57-mm rocket S-5 & S-5M



REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3



Neg. 511814

DISCUSSION

The VGU-1 is a setback and centrifugal armed fuze used in Soviet 130-mm high explosive projectiles.

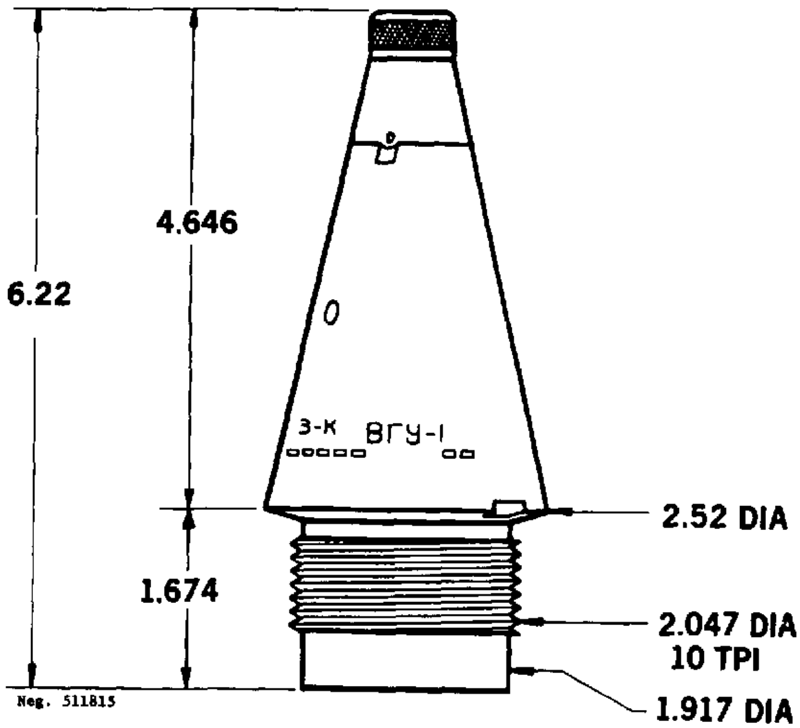
The fuze may be set for either instantaneous or short delay functioning by turning the selector switch to "0" (instantaneous) or "3" (delay). An out-of-line detonator is employed and the fuze is considered boresafe.

The fuze body is a dull silver color and is extremely long and heavy.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback and spin
Weight	3.37 lb	Firing method	Impact
Markings	ВГУ-1	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.10 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Instantaneous & short delay
Explosive weight	?		

Fuze, point detonating, VGU-1



FUNCTIONING DESCRIPTION

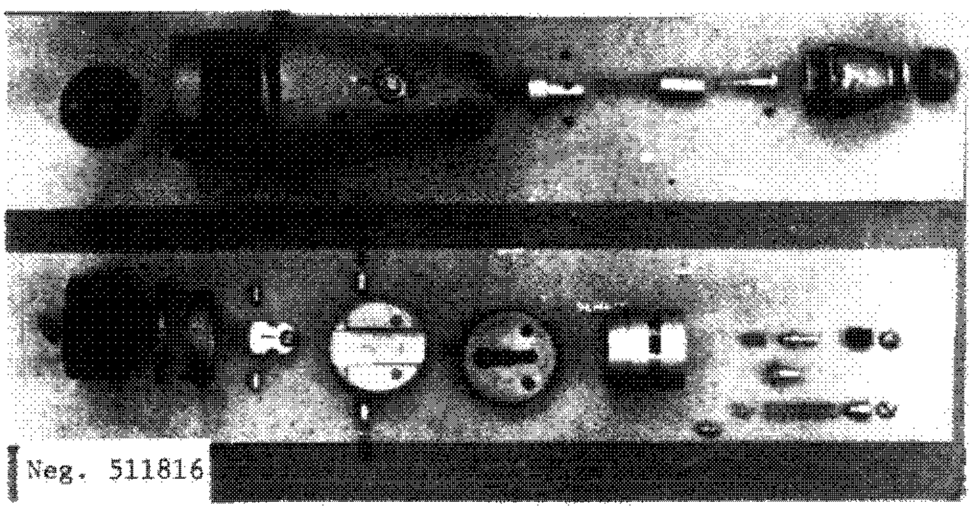
Upon firing, the weighted arming delay pellet compresses its spring and impinges on the fixed firing pin. The flash from the arming pellet, ignites a pyrotechnic delay detent which is preventing movement of the detonator slider. Simultaneously, setback has moved the arming sleeve to the rear and released a locking ball from the head of the firing pin allowing the sleeve to move forward.

Upon burnout of the pyrotechnic delay detent, a spring removes the safety detent from the detonator slider, permitting centrifugal force to complete the arming process as follows: (a) release of two locking balls from the firing pin; (b) releasing two centrifugal detents from the detonator slider; (c) aligning and locking the detonator slider in the in line position.

On impact, the firing pin is driven to the rear, initiating the primer detonator and booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
130-mm Coastal gun M58	130-mm HE Frag OF3S-42



REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, UGT, UGT-2, UGT-3, and 3GT

Neg 511817

DISCUSSION

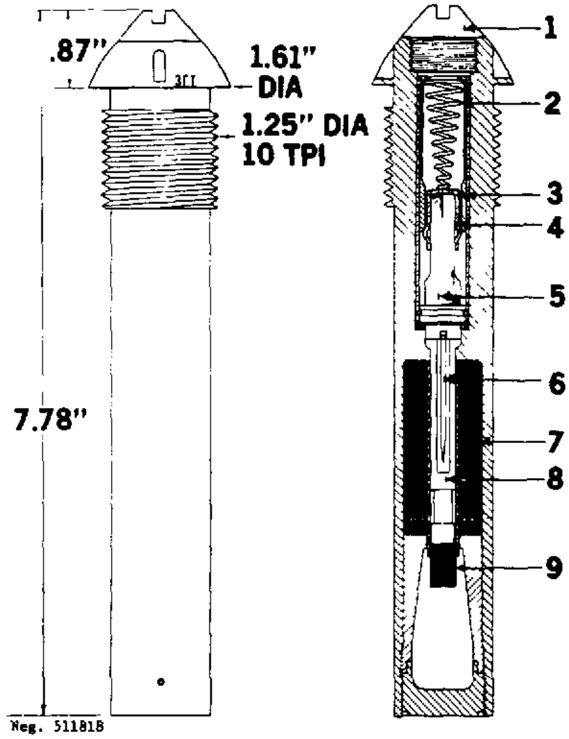
The UGT series of fuzes is an early Soviet design which in general has been replaced by more advanced designs.

The fuzes are setback armed and impact fired; they differ only in minor design changes to the external configuration and function. The UGT-2 has a removable nose cap which provides a nondelay action with the cap removed and a delay of approximately 0.01 second with the cap in place. The booster is integral to all the fuzes of this series.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.726 lb	Firing method	Impact
Markings	УГТ	Safety devices	None
Booster		Arming distance	?
Body material	NA	Arming time	?
Body length	NA	Self-destruct time	NA
Explosive	Tetryl	Delay time	UGT-2 (0.01 sec) others nondelay
Explosive weight	?		

Fuze, point detonating, UGT, UGT-2, UGT-3, and 3GT



FUNCTIONING DESCRIPTION

On firing, setback forces the stirrup (3) to the rear over the primer carrier clamping spring (4) which engages the shoulders on the inner surface of the stirrup, and locks the stirrup to the primer carrier (5). On impact, the stirrup, primer carrier and primer (9) move forward, and the primer strikes the fixed firing pin initiating the detonator, booster (7), and main explosive charge in the projectile.

(No disassembled view available)

Fuze, point detonating, UGT, UGT-2, UGT-3, and 3GT

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm, Guns M1902/30, M1933, M1936 (F-22), M1938/39, M1939 (USV) & M1942	76-mm HE - F-354U
107-mm, Guns, M1910/30, M1940 & M1941	107-mm, HE - F-420U, F-422L FRAG HE - OF420U; SMOKE D-422, D-422U
122-mm, Tank guns M1943 (0.25) corps guns M1931 & M1931/37 (A-19), SP gun M1944 (A-19S); Howitzers M1910/30 and M1909/37	122-mm, HE - F-460K, F-460N, F-460U
152-mm, Gun, M1910/34, M1910/30; Gun Howitzer, M1937 (ML-20); Howitzer M1909/30 and M1910/37	152-mm, HE -- F-533, F-533K, F-533L, F-533M, F-533N, F-533U, F-542ShU, F-542U
203-mm, Howitzer M1931 (B-4)	203-mm, HE, F-621
305-mm, Howitzer, M1940 (BR-18)	305-mm, HE, VF-724K

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, 4GT

Neg 511919

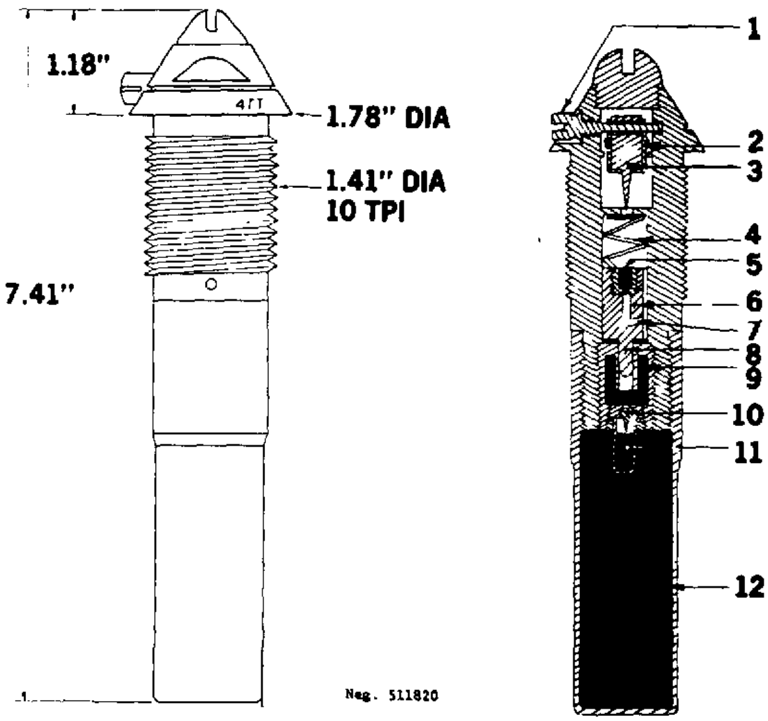
DISCUSSION

The 4GT is a setback armed, impact fired fuze used in 52 and 203-mm HE projectiles. A short delay is achieved by the use of two firing pins, the first of which on impact, initiates a primer, which flashes through and ignites a secondary charge to force the second firing pin into the detonator. A safety pin through the upper part of the fuze immobilizes the upper firing pin prior to firing.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ----------- Steel	Arming method --------- Setback
Weight ----------------- ?	Firing method --------- Impact
Markings --------------- 4ГТ	Safety devices -------- Safety pin
Booster	Arming distance ------- ?
Body material ----------- Steel	Arming time ----------- ?
Body length ------------- NA	Self-destruct time ---- NA
Explosive --------------- Tetryl	Delay time ------------ ?
Explosive weight -------- ?	

Fuze, point detonating, 4GT



FUNCTIONING DESCRIPTION

Upon firing, the upper firing pin (3) moves to the rear and is locked in position to the primer holder by a spring clip (2). On impact, the primer holder (6) moves forward against the creep spring (4) and impinges the primer (5) on the upper firing pin (3). The flash from the primer passes through a flash channel (7) and ignites the secondary powder charge (9). The gases from the charge force the second firing pin (10) into the detonator assembly (11) which initiates the booster (12) and main charge of the projectile.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
152-mm Guns M1910/30 and M1910/34 Gun-Howitzer, M1937 (ML-20)	152-mm HE, F-542G, F-542ShG, F-542Sh
203-mm Howitzer M1931 (B-4)	203-mm HE, F-621G

REFERENCE

None

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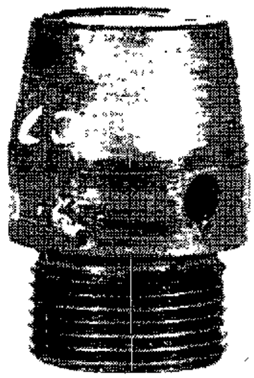
Fuze, point initiating, base detonating, BM



Neg. 511821

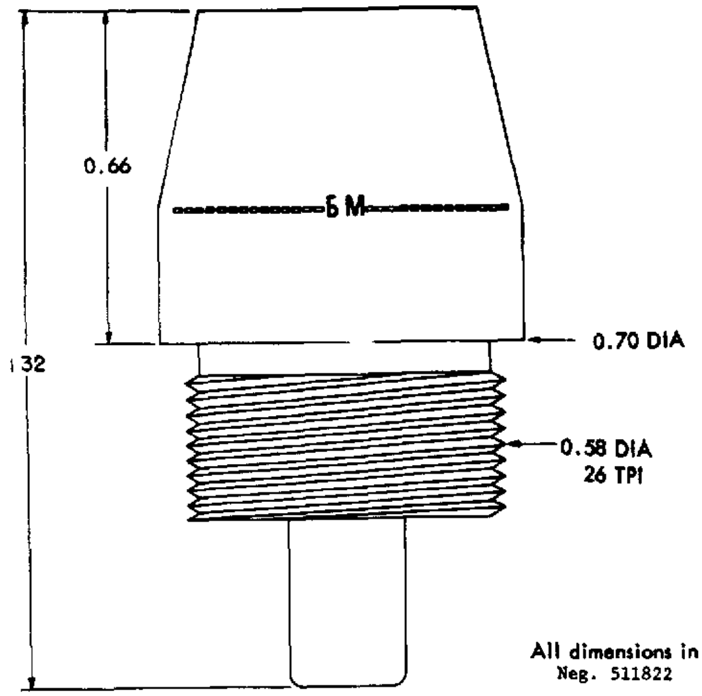
DISCUSSION

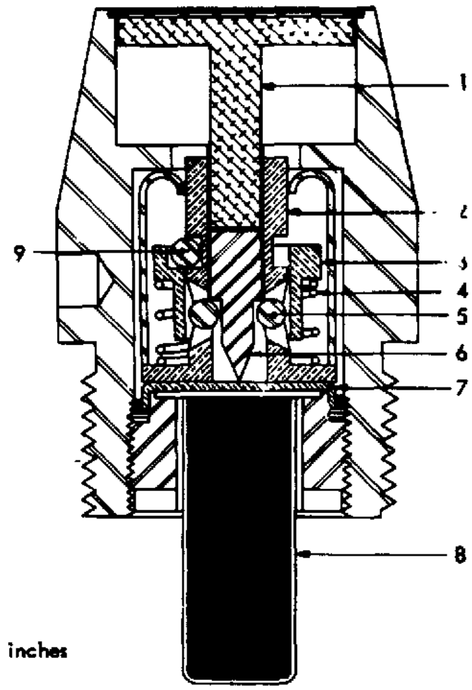
The BM is a setback armed, impact fired, spitback type fuze used in HEAT projectiles. In general appearance the fuze is short and squat with slightly over 1/2" being visible when it is assembled in a projectile. The striker is made of a light alloy and presents a large sectional area to ensure sensitivity on impact. One spanner wrench hole is located on the cylindrical portion just above the junction of the fuze and projectile.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Steel	Arming method -------- Setback
Weight ---------------- 0.60 lb	Firing method -------- Impact
Markings -------------- BM	Safety devices ------- None
Booster	Arming distance ------ ?
Body material --------- Aluminum	Arming time ---------- ?
Body length ----------- 0.56 in	Self-destruct time --- NA
Explosive ------------- ?	Delay time ----------- Instantaneous
Explosive weight ------ ?	

Fuze, point initiating, base detonating, BM





All dimensions in inches
Neg. 511822

FUNCTIONING DESCRIPTION

Upon firing, the arming sleeve (3) sets back and compresses the arming sleeve spring (4). Then centrifugal force causes the three sleeve retaining balls (9) to move outward. After the force of setback has ceased, the arming sleeve spring expands, moving the arming sleeve forward until the two firing pin retaining balls (5) are released from their housings in the firing pin guide (2). The striker (1) and the firing pin (6) are now free to move rearward. Impact drives the striker and firing pin rearward so that the firing pin pierces the thin brass closing cup (7) and stabs the first charge of the primer detonator assembly (8). The flash from the primer detonator assembly initiates the booster at the base of the main explosive charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm Gun M1927 and M1943 Tank Gun, M1927/32 Gun, M1902/30, M1933, M1936 (F-22), M1938/39, M1939 (USV) and M1942 (ZIS-3)	76-mm HEAT BP-344A, BP-350M, BP-353A, BP-353AM BP-354AM

REFERENCE

Addendum No. 2 dated 20 March 1953 to PA Memorandum Report MR-23, dated October 1952.

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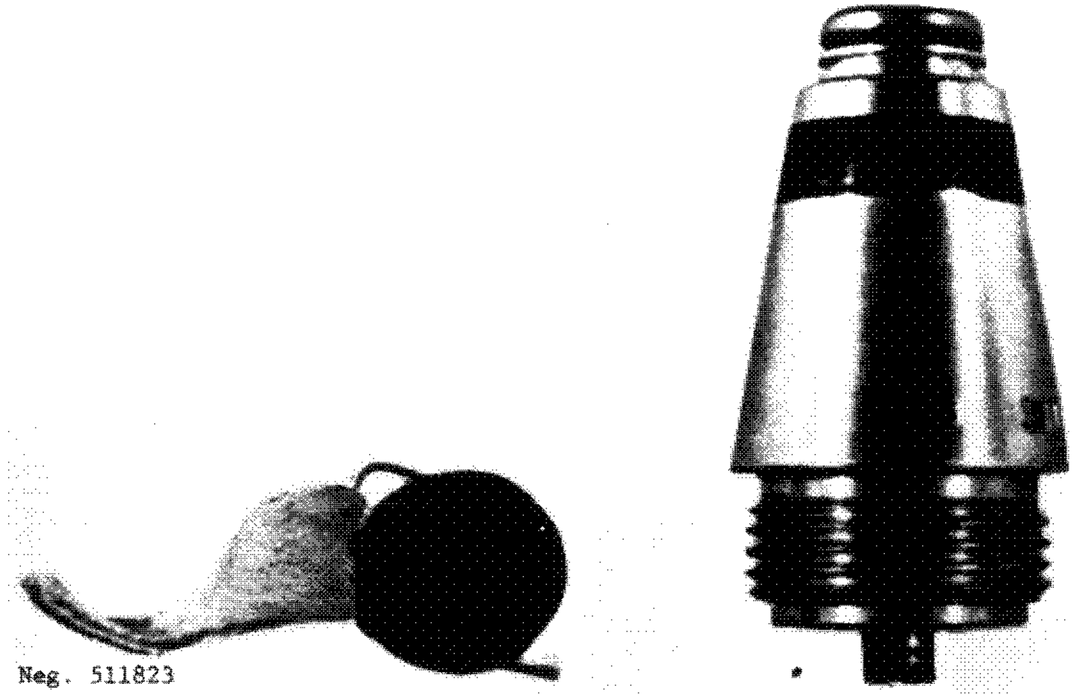
Fuze, point initiating, base detonating, GKV



Neg. 511823

DISCUSSION

The GKV is a point initiating, base detonating fuze used with 122-mm HEAT projectiles. The fuze is armed by setback and centrifugal force and includes an out-of-line detonator locked in place by a pyrotechnic arming delay pellet.

A removable protective cap protects the nose membrane during transportation and handling, and must be removed prior to firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback & centrifugal force
Weight	0.35 lb		
Markings	ΤΗΒ		
Booster		Firing method	Impact
Body material	Aluminum	Safety devices	Out-of-line detonator
Body length	0.669 in		
Explosive	?	Arming distance	?
Explosive weight	?	Arming time	?
		Self-destruct time	NA
		Delay time	Instantaneous

Fuze, point initiating, base detonating, GKV

The body is constructed of unpainted aluminum and has a black band painted around the ogive. A cone shaped cam has been positioned forward of the firing pin to insure fuze functioning regardless of the angle of impact.

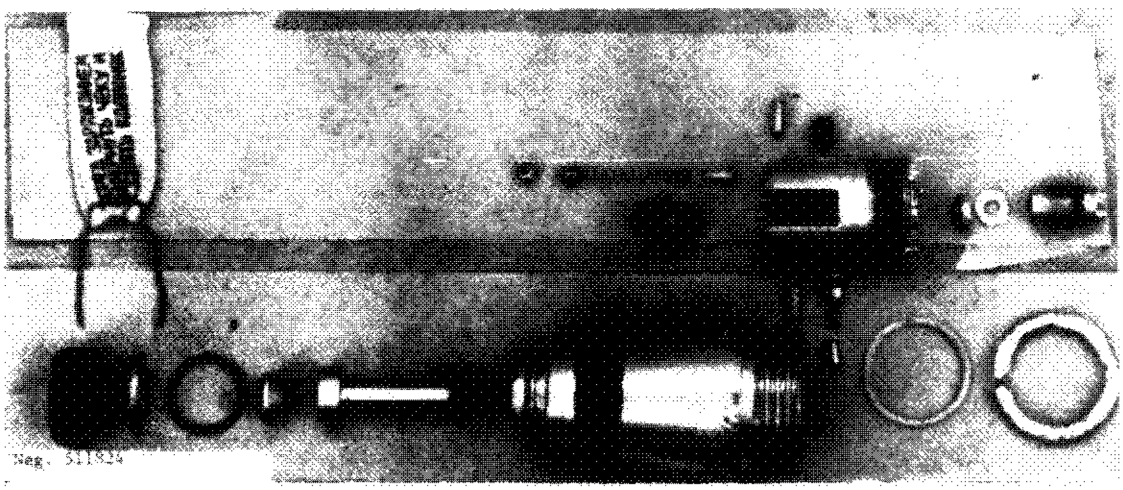
(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, the arming delay primer moves to the rear against its spring and is initiated by the fixed firing pin. The resulting flame passes through a channel in the side of the rotor housing and ignites the pyrotechnic (black powder) arming delay pellet holding the rotor locking detent in position. As the delay pellet burns, centrifugal force forces the detent and its spring loaded counterpart on the opposite side of the rotor into their respective voids. The rotor is now unlocked, and is turned to the in line position by centrifugal force. Impact on the nose from any angle cams the firing pin to the rear to initiate the primer and the detonator, which spits through the cone of the projectile to initiate the booster and main charge.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
	122-mm, HEAT, BP-463

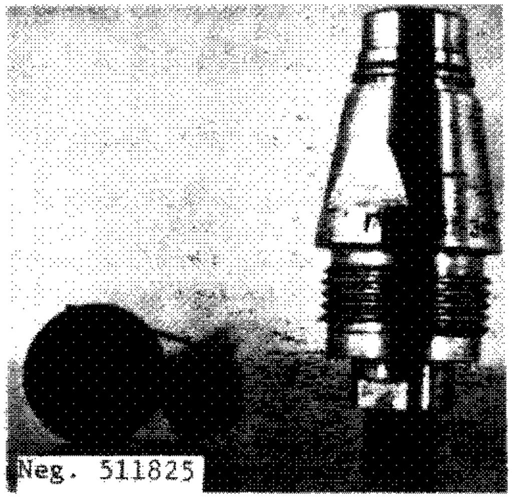


Neg. 511834

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Fuze, point initiating, base detonating, GPV-2



DISCUSSION

The GPV-2 is a setback armed, point initiating, base detonating fuze. It uses a piezoelectric crystal as the point initiating element. The fuze is constructed of unpainted aluminum and has a black steel protective cap which is removed prior to firing. Two wrench flats are machined into the fuze body. Safety features include an out-of-line detonator and an electrical setback disconnect.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.42 lb	Firing method	Impact
Markings	ГДВ-2	Safety devices	Out-of-line detonator and electrical disconnect
Booster			
Body material	Steel		
Body length	0.906 in		
Explosive	?		
Explosive weight	?	Arming distance	?
		Arming time	?
		Self-destruct time	NA
		Delay time	Instantaneous

FSTC-CW-07-100-73

Fuze, point initiating, base detonating, GPV-2

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, a spring loaded electrical contact plunger in the center of the detonator slider and two spring loaded plungers in the slider housing set back. The tapered plunger in the slider housing cams a locking ball into a groove in the detonator slider to hold the slider in the out-of-line position. The other plunger in the slider housing releases the positive safety balls which holds the slider out of alignment during storage and handling.

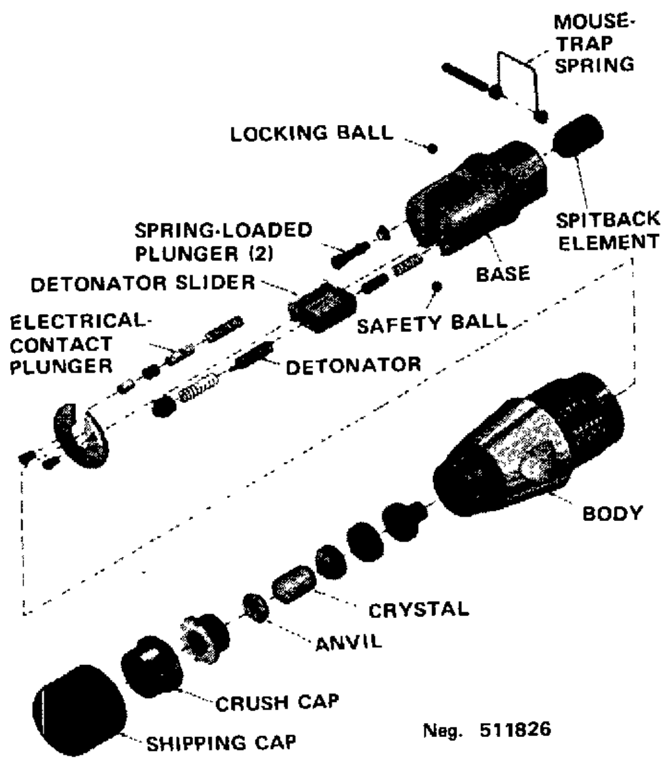
When setback ceases, the tapered plunger releases the locking ball, allowing a mousetrap spring to align the slider. On slider alignment the electrical-contact plunger completes a circuit between the piezoelectric crystal and the electric detonator, arming the fuze.

Impact stresses the crystal providing voltage for the electric detonator to initiate the spitback element which flashes through to the base of the shaped charge cone and ignites the heat sensitive detonator, booster, and main charge.

Fuze, point initiating, base detonating, GPV-2

WEAPONS AND PROJECTILES USED WITH

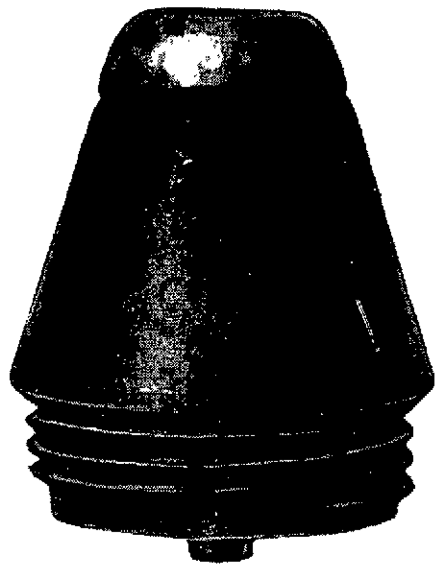
Weapons	Projectiles
115-mm Tank gun	115-mm HEAT, VBK-4
122-mm Howitzer D-30	122-mm HEAT, VBK-6M



REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Fuze, point initiating, base detonating, V-229



Neg. 511827

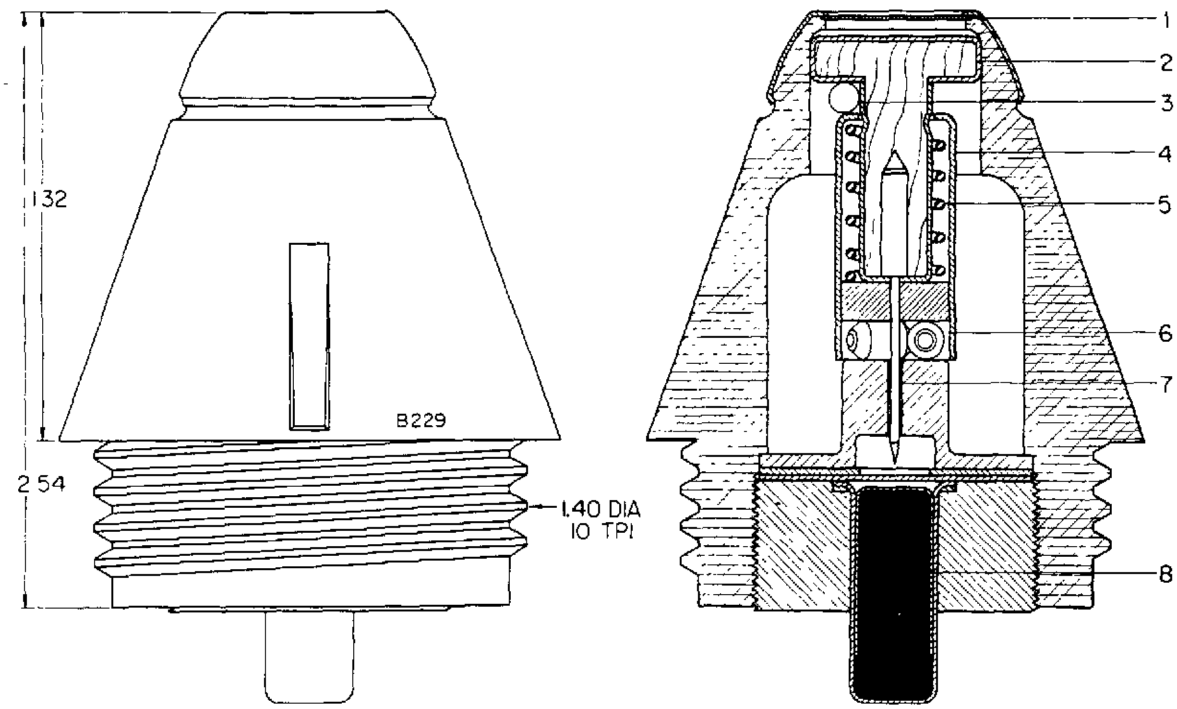
DISCUSSION

The V-229 is a point initiating, base detonating fuze of conventional design, used only on HEAT projectiles. The fuze body is plastic. Three check balls, positioned above the stirrup, prevent forward movement of the firing pin, and three steel rollers, positioned at the lower end of the striker to prevent rearward movement, make this fuze mechanically boresafe. The fuze is extremely sensitive when armed.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ------- Plastic	Arming method -------- Setback
Weight -------------- 0.207 lb	Firing method -------- Impact
Markings ------------ B-229	Safety devices ------- None
Booster	Arming distance ------ ?
Body material ------- NA	Arming time ---------- ?
Body length --------- NA	Self-destruct time --- NA
Explosive ----------- Primer mix	Delay time ----------- Instantaneous
Explosive weight ---- 65.57 gr	

Fuze, point initiating, base detonating, V-229



Neg 511828 POINT DETONATING IMPACT FUZE MODEL V-229, SOVIET

FUNCTIONING DESCRIPTION

On firing, the stirrup (4) sets back and compresses the arming spring (5) and, at the same time, frees the check balls (3) from the recess and allows them to drop down into the fuze body. This frees the stirrup for forward movement, although it is momentarily held rearward by the force of inertia. After the projectile has left the gun tube, the arming spring (5) decompresses and forces the stirrup forward until it contacts the under surface of the striker head (2). This frees the safety rollers (6) and permits them to drop down into the fuze body, freeing the striker for rearward movement. On impact, the foil cap (1) is ruptured, and the striker is driven downward forcing the firing pin (7) into the primer assembly (8).

Flame from the primer assembly passes through a flash tube to initiate the booster of the shaped charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
122-mm Howitzer M1938	122-mm HEAT BP-460A

REFERENCE

None

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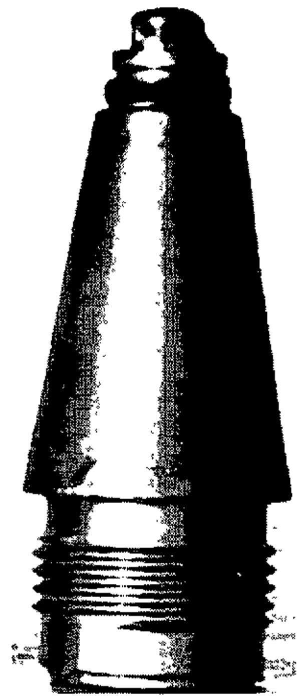
Fuze, point initiating, base detonating, V-5K



Neg. 511529

DISCUSSION

The V5K is a setback armed PIBD fuze used on 57-mm antitank aircraft rockets. The anodized aluminum body is equipped with a plastic nose cap and contains a graze sensitive feature. Safety during transportation and handling is provided by locking balls which immobilize the firing pin. A zigzag sleeve provides a delayed arming effect.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.36 lbs	Firing method	Impact
Markings	B5K	Safety devices	Locking balls
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	0.472 in	Self-destruct time	NA
Explosive	Tetryl	Delay time	Instantaneous
Explosive weight	?		

Fuze, point initiating, base detonating, V-5K

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, setback force moves the zigzag sleeve to the rear releasing the three sleeve retaining balls which fall into the fuze body cavity. As setback force decreases, the sleeve spring which has been compressed by setback force, expands, moving the sleeve forward to the underside of the firing pin and releasing the four retaining balls, allowing them to drop into the fuze body cavity. The fuze is now armed and the firing pin is held away from the primer detonator by the firing pin spring. Upon impact, the primer holder is driven against the firing pin which, in turn, pierces the primer-detonator which ignites the booster. If the target is hit at a slight angle, the graze weight, which is machined with a cammed surface, will cause the primer-holder to move forward into the firing pin, resulting in a detonation.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
57-mm Aircraft rocket launcher	57-mm Rocket HEAT S5K

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

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Fuze, point initiating, base detonating, VP-7

(No photograph available)

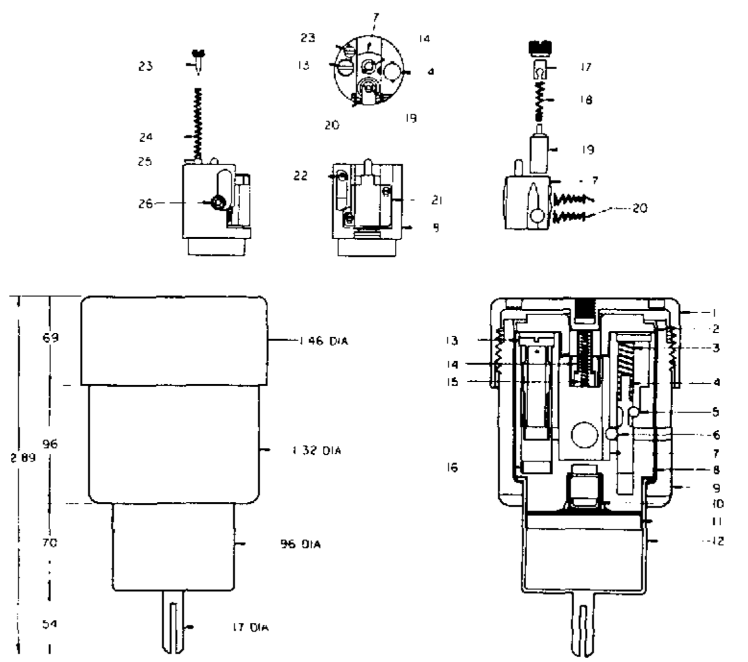
DISCUSSION

The VP-7 is a point initiating base detonating piezoelectric fuze which is armed by setback and fired by impact with the target, or by a self-destruct element. The nose element has an aluminum body which contains the piezoelectric crystal, an anvil and plastic insulation material. A thin aluminum cover is in turn protected by a removable nose cap. The base fuze consists of a body assembly (8), a slider assembly (7), a booster (12), a plastic housing (9), and an aluminum end cap (1). The body assembly (8) is made from aluminum bar stock; a milled slot in the

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Plastic and aluminum	Arming method	Setback
Weight	0.28 lb	Firing method	Impact
Markings	ВЛ-7	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	NA	Self-destruct time	0.003 sec
Explosive	PETN	Delay time	Instantaneous
Explosive weight	218 gr		

center houses the slider assembly (7). On one side of the slot, the body assembly contains the self-destruct mechanism consisting of a delay column (13), detonator (16), spring (24), primer (25), firing pin (23), and black powder detent (26). The body contains the retaining pin (4), spring (3), and locking balls (5 & 6) on the other side of the slot. Closing off one end of the slot is an electrical shorting plate (20 & 21) assembled to the body with two screws. The slider assembly contains an electrical shorting switch (14), and electrical arming switch (19), and an electrical detonator (19). The fuze body (8) is cut down at the forward end to accept a booster cup (12). This assembly is inserted in a plastic sleeve (9); a plastic insulator and positioning plate (2) is placed over the slider and body. The fuze cap (1) is then threaded to the plastic sleeve (9). A metal projection in the center of the fuze cap protrudes through the plastic insulator and positioning plate to contact the electrical shorting pin (14) in the slider assembly (7), completing the electrical shorting circuit.



Neg. 511832

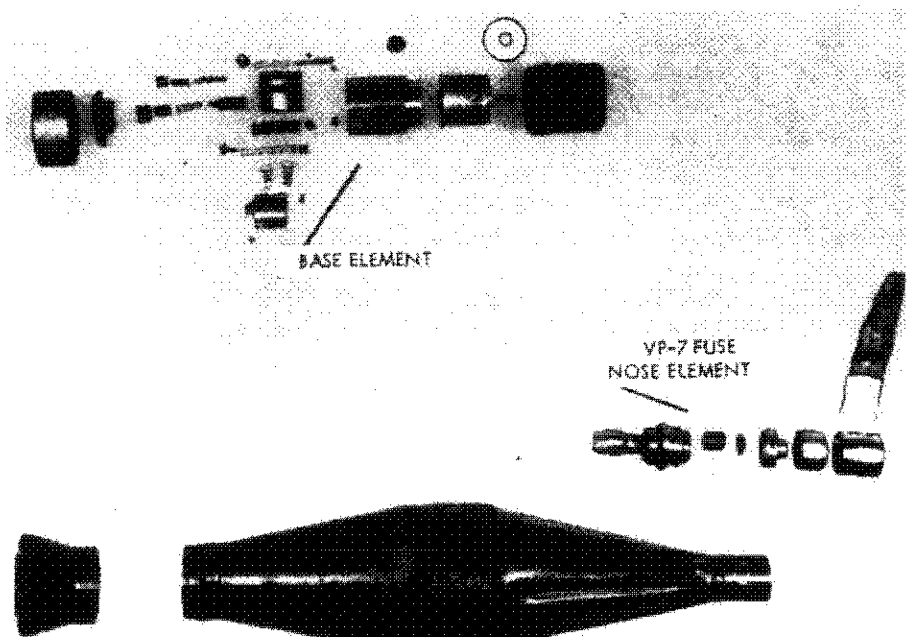
FUNCTIONING DESCRIPTION

Setback, caused by firing the propellant charge, initiates two actions in the base fuze. In the first action, the locking ball retaining pin (4) compresses the retaining spring (3). As the locking ball retaining pin (4) moves rearward, it carries the retaining pin locking ball (5) with it until the ball falls into a clearance groove. In the second action, the self-destruct primer (25) compresses its setback spring (24) and strikes the primer firing pin (23). This fires the primer (25), which flashes through a relay hole (22) to initiate the self-destruct delay detonator (13) and the black powder detent (26). The black powder detent (26) burns out, creating a void which releases the pin locking the slider in position. As the round begins to decelerate, the locking ball retaining pin (4) is moved forward by the retaining spring (3). When the locking ball retaining pin (4) moves the length of its passage, the slider locking ball (6) is free to move into the recess in the locking ball retaining pin (4). The force exerted by the slider springs (20) moves the slider assembly (7) into the armed position. This eliminates the short across the electrical detonator contact pin (19). This contact pin was flush against the electrical shorting plate (21). In the armed position the slider electrical detonator (19) is flush against the main detonator (10). The slider is prevented from moving rearward by the electrical detonator arming pin (19) which is held in position by the plastic insulator and positioning plate (2). As the round strikes the target, the fuze piezoelectric nose element is crushed; the current generated fires the base fuze electrical detonator (19). The main detonator (10) then functions, firing the booster (12), which initiates the main charge.

Fuze, point initiating, base detonating, VP-7

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
Grenade, HEAT, Rocket Assisted	PG-7



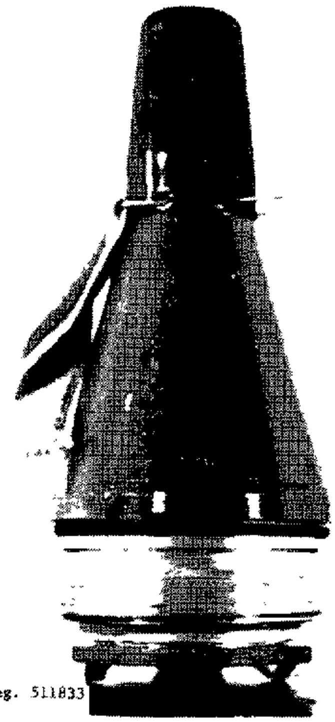
Neg. 511831

(U) SOVIET PG-7 HEAT GRENADE
(PIBD FUZE VP-7 DISASSEMBLED) (U)

REFERENCE

USA Foreign Science and Technology Center Exploitation Report FSTC-CR-20-65-68. FSTC Exploitation Report CR-20-2-70 dated November 1969

Fuze, point initiating, base detonating, ZMGK



Neg. 511833

DISCUSSION

The ZMGK is a point initiating base detonating fuze used on the wire guided antitank, 3M6, "Snapper" missile. Arming functions are initiated by an electrical charge generated by the electronic components within the missile.

The fuze body, as well as most internal components, is made of aluminum, the nose cap is steel. Safety and insurance against premature functioning are provided by an out-of-line detonator.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Aluminum	Arming method -------- Electric
Weight ---------------- ?	Firing method -------- Impact
Markings -------------- ЗМГК	Safety devices ------- Out-of-line detonator
Booster	Arming distance ------ ?
Body material --------- Aluminum	Arming time ---------- ?
Body length ----------- 0.709 in	Self-destruct time --- NA
Explosive ------------- ?	Delay time ----------- Instantaneous
Explosive weight ------ ?	

Fuze, point initiating, base detonating, ZMGK

(No line drawing available)

FUNCTIONING DESCRIPTION

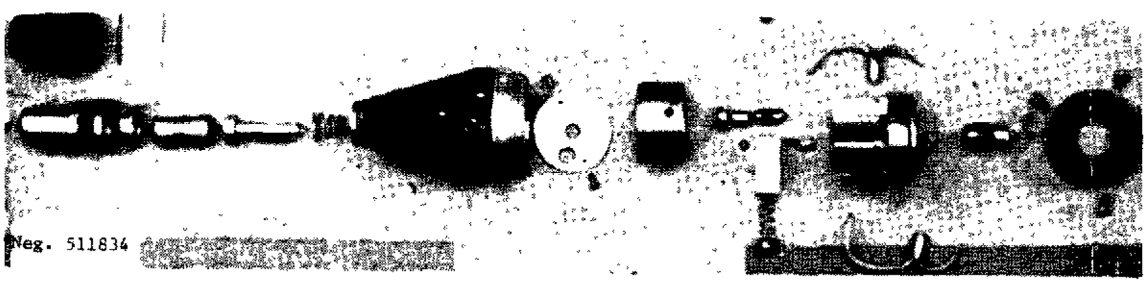
When the missile is fired, setback forces the firing pin to the rear and holds the detonator slider in the out-of-line position. An electrical charge is transmitted to the fuze from the electrical components within the missile, initiating two electric igniters which are connected in parallel. The flash from the igniters initiates a heat sensitive detonator. The detonator blows off an aluminum keep ring, allowing a locking ball holding the detonator slider out of alignment to fall into a cavity in the fuze body. The slider is now aligned and locked in position by a spring loaded detent and the fuze is armed.

Upon impact, the firing pin initiates the primer detonator in the slider which in turn initiates the lead in and the spitback detonator. The detonator then flashes to the booster in the base of the shaped charge warhead.

<u>Fuze</u>, point initiating, base detonating, ZMGK

<u>WEAPONS AND PROJECTILES USED WITH</u>

Weapons	Projectiles
Guided Missile "Snapper" 3M6	



<u>REFERENCE</u>

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

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Section II.

PEOPLE'S REPUBLIC OF CHINA

1. Introduction

a. A direct comparison of current PRC fuzes with those of Korean War vintage show remarkable advances in design and quality. A great number of PRC fuzes are direct copies of Soviet designs, indicating the use of Soviet drawings and machine tools. The only difference lies in the use of Chinese markings.

b. Where projectiles are common to both Soviet and PRC weapons, a PRC copy of the Soviet fuze is usually employed. However, a trend toward indigenous design has been noted in projectiles peculiar to the Chinese. Soviet design philosophy has been retained and quality workmanship including the use of detents and out-of-line detonators for fuze safety is common.

c. PRC Communist fuze designations at first appear to have no meaning. The Arabic number is simply a type designation. The key lies in the Chinese character that precedes the Arabic number. These characters are sometimes abbreviations of more complex Chinese characters. In other cases the characters represent a phonetic that resembles the Soviet spoken word. For example, mortar fuzes that are copies of the Soviet M series have a Chinese character that translates into "MU" ("EM in English") which is as close as the Chinese phonetic can come to the Russian Cyrillic sounds. A second example is the Chinese character appearing on their copy of the Soviet V-429 fuze. The character represents "FU" phonetically which approximates the "V" sound.

d. There are some designation markings on copies of Soviet fuzes appearing both in Chinese characters and English type letters that have not been deciphered. This may represent a new type designation system but only two fuzes possessing this type designation have been examined.

e. The Vietnam conflict caused large quantities of sanitized ordnance to be produced. The PRC produced weapons and ammunition with no designations, lot numbers, or manufacturing dates, or exerted great effort to grind this information off the fuzes. Where this was done on metallic fuzes, the markings were restored and appear in this report.

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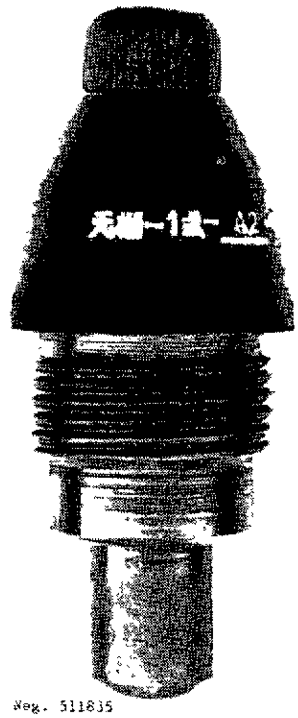
Fuze, point detonating, Type 1 (Artillery)



Neg. 511835

DISCUSSION

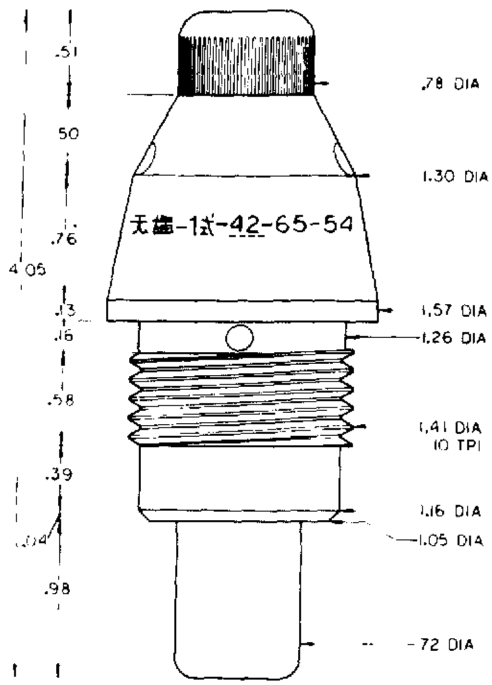
The PRC Type 1 (Artillery) is a setback and centrifugal armed fuze with a pyrotechnic arming delay and a cocked detonator which acts as a graze sensitive feature. The robust steel body is painted black, with markings stamped into the upper body. Waterproofing features currently displayed in other PRC and Soviet fuzes are not evident.

Type 1 and Type 3 fuzes seldom produce dud rounds due to the dual action of the impact and graze sensitive features.

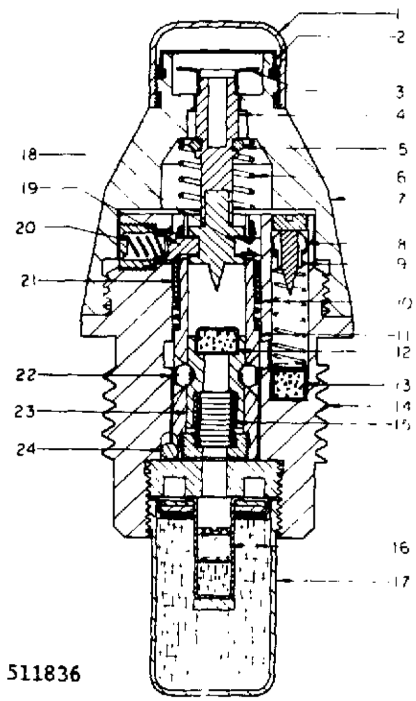
CHARACTERISTICS

Fuze Assembly:		**Functional Data:**	
Body material	Steel	Arming method	Setback & centrifugal force
Weight	0.87 lb	Firing method	Impact
Markings	无榴-1式	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.18 in	Delay time	Instantaneous
Explosive	Tetryl		
Explosive weight	128.81 gr		

<u>Fuze</u>, point detonating, Type 1 (Artillery)



Neg. 511836



FUNCTIONING DESCRIPTION

Upon firing, the detent sleeve (21) moves down and removes the resistance from the centrifugal detents (18 & 19). Simultaneously, the setback firing pin (8) moves down to initiate the primer (13). The resulting flame ignites the arming delay pellet (20). As the pellet is consumed, centrifugal force causes the detents to move outward freeing the firing pin (4). As deceleration commences, the detent sleeve (21) is forced forward by its spring (10) locking the detents in the outward position. The fuze is now armed. Upon impact, the firing pin (4) is driven rearward to initiate the primer (12) which in turn initiates the detonator (16) and booster (17). On graze impacts, inertia causes the primer carrier (23) to move forward releasing the three locking balls (22). The compressed spring (15) can now propel the primer carrier (23) and primer forward to impinge on the firing pin.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
75-mm Recoilless Rifle, Type 52	75-mm HE-Frag Type ?

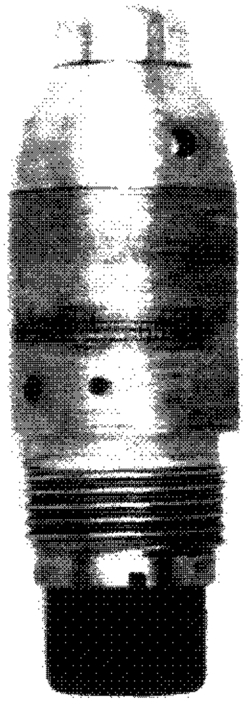
(No disassembled view available)

REFERENCE

FSTC Exploitation Report, CR-20-161-68

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 1 (Rocket)



Neg. 513837

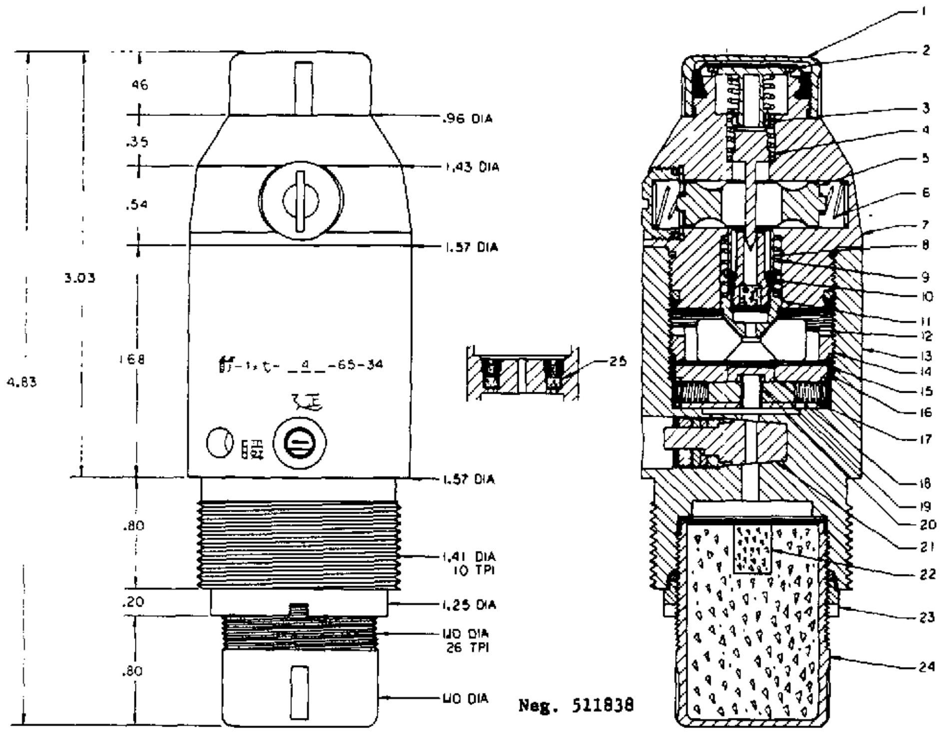
DISCUSSION

The PRC Type 1 (Rocket) fuze is a modified version of the Soviet V-25 fuze which arms entirely by centrifugal force. The heavy steel body is cadmium plated internally, and moveable parts such as detents have been chrome plated. All body openings are sealed with plastic rings to make the fuze completely waterproof. The setback detents and short delay mode (0.1 sec) employed in the Soviet V-25 have been eliminated and an additional centrifugal detent added. This modification increased the overall length of the body by approximately 0.45 inch.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	1.53 lb	Firing method	Impact
Markings	[illegible]	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.5 in	Delay time	0.025 sec
Explosive	Tetryl		
Explosive weight	26 gm		

<u>Fuze</u>, point detonating, Type 1 (Rocket)



FUNCTIONING DESCRIPTION

Upon firing, centrifugal force moves the two centrifugal detents (5) outward which allows the arming sleeve (8) to be forced forward by its spring (9). The arming sleeve now occupies the space between the detents (5) and prevents their return to the original position. The firing pin (3) now has a clear path to the primer (11) but is restrained by the firing pin spring (4). Simultaneously, centrifugal force has moved the slider detents (19) to the side and allowed the slider (18) to move outward, opening the flash channel to the detonator (22). The fuze is now armed. Upon impact, the firing pin (3) is driven to the rear and initiates the primer (11). Depending on the position of the delay selector rod (21), the flash from the primer either directly initiates the detonator (22) and booster (24) or is diverted through the delay element (25) to the detonator and booster. In case of a graze impact, the graze weights (12) cam the primer assembly forward to impinge on the firing pin.

WEAPONS AND PROJECTILES USED WITH

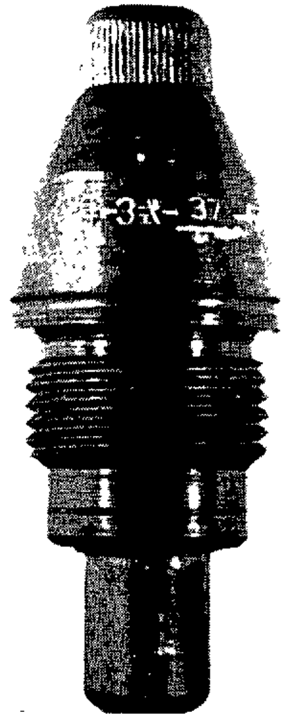
Weapons	Projectiles
140-mm Rocket Launcher	140-mm Rocket, HE, M-14-OF
107-mm Rocket Launcher	107-mm Rocket, HE-Frag H-12

(No disassembled view available)

REFERENCE

FSTC Exploitation Report, CR-20-122-68

Fuze, point detonating, Type 3 (Special)



Neg. 511839

DISCUSSION

The Type 3 (Special) is identical to the Type 1 (Artillery) except for color and marking. Parts are interchangeable between both fuzes. The Type 3 (Special) has a black lower body, while the upper body is cadmium plated and presents a slightly yellow appearance. No explanation can be given for different nomenclatures on identical fuzes, other than the fact that two different manufacturing plants are involved.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback & centrifugal force
Weight	0.87 lb	Firing method	Impact
Markings	特-3式	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.08 in	Delay time	Instantaneous
Explosive	Tetryl		
Explosive weight	130 gr		

Fuze, point detonating, Type 3 (Special)

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the PRC Type 1 Artillery fuze.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
75-mm PRC Recoilless Rifle Type 52	75-mm HE-Frag. T28

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 5

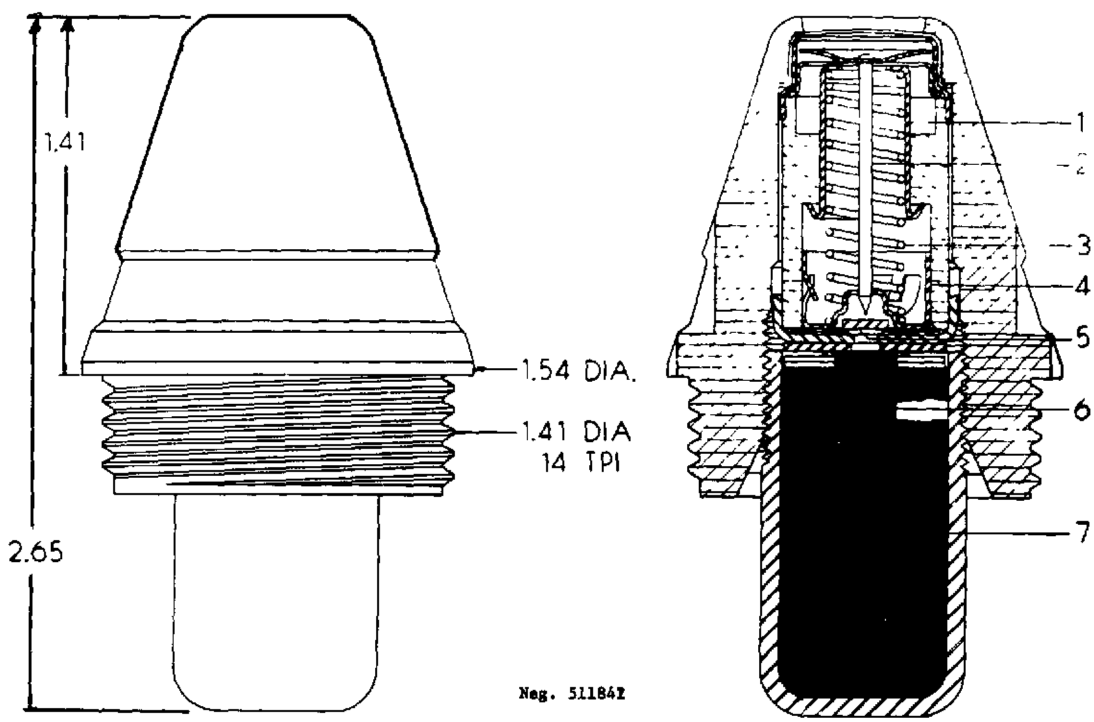
DISCUSSION

The PRC Type 5 point detonating fuze is in most cases identical to the Soviet M5 mortar fuze. Two differences which have been noted are (1) a groove 0.325 inch wide and .05 inch deep at the lower end of the fuze body, (2) the firing pin head is similar to the one in the Soviet M4, PD, Mortar fuze. Some fuzes have been recovered with all factory markings removed.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Plastic	Arming method -------- Setback
Weight ---------------- 0.661 lb	Firing method -------- Impact
Markings -------------- ?	Safety devices ------- None
Booster	Arming distance ------ ?
Body material --------- Steel	Arming time ---------- ?
Body length ----------- 1.35 in	Delay time ----------- Instantaneous
Explosive ------------- Tetryl	
Explosive weight ------ 96 gr	

Fuze, point detonating, Type 5



FUNCTIONING DESCRIPTION

Upon firing, setback causes the sleeve (1) to move rearward, compressing the safety spring (3), and engaging the three prongs of the arming stirrup (4). When acceleration ceases, creep force causes the locked sleeve and stirrup to move forward and uncover the safety plug (5) which drops out-of-line between the firing pin and detonator. Upon impact, the firing pin is driven into the detonator which, in turn, initiates the booster (7).

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
60-mm Mortar, Type 31, and Type 63	60-mm HE-Frag--Type 7

REFERENCE

FSTC Exploitation Report, FSTC-381-3030, dated Jan 1964

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 6

Neg. 511842

DISCUSSION

The PRC Type 6 fuze is an exact copy of the Soviet M-6 fuze with the single exception of markings.

CHARACTERISTICS

Fuze Assembly: Body material ------ Plastic Weight ------------- 0.28 lb Markings ----------- 目-6式 Booster Body material ------ Steel Body length -------- 0.56 in Explosive ---------- Tetryl Explosive weight --- 90.9 gr	Functional Data: Arming method -------- Setback Firing method -------- Impact Safety devices ------- Out-of-line detonator Arming distance ------ 0.75 - 10 m Arming time ---------- ? Delay time ----------- Instantaneous

Fuze, point detonating, Type 6

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Soviet M-6 fuze.

(No disassembled view available)

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WEAPONS AND PROJECTILES USED WITH

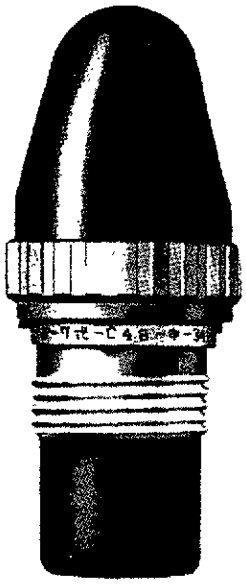
Weapons	Projectiles
82-mm Mortar Type 53	82-mm HE-Frag Type 53; M-30

REFERENCE

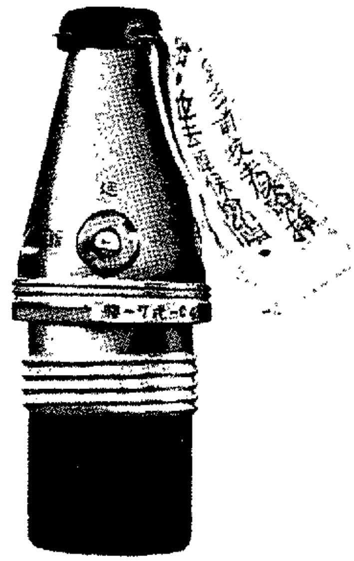
None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 7 (Artillery)
(Copy of Soviet GVMZ-7 fuze)



Neg. 511843



DISCUSSION

The PRC Type 7 (artillery) fuze is a direct copy, except markings, of the Soviet GVMZ-7 fuze. It is known to be employed in the PRC 120-mm mortar, and can be used in other mortar and howitzer applications. The body appears to be unpainted anodized steel with a dark green protective shipping cap.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.946 lb	Firing method	Impact
Markings	格-7式	Safety devices	Interrupter
		Arming distance	?
Booster		Arming time	?
Body material	Steel	Self-destruct time	None
Body length	1.1 in	Delay time	Instantaneous
Explosive	Tetryl		
Explosive weight	14.74 gm		

FSTC-CW-07-100-73

Fuze, point detonating, Type 7 (Artillery)
(Copy of Soviet GVMZ-7 fuze)

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Soviet GVMZ-7 fuze.

(No disassembled view available)

Fuze, point detonating, Type 7 (Artillery)
(Copy of Soviet GVMZ-7 fuze)

WEAPONS AND PROJECTILES USED WITH

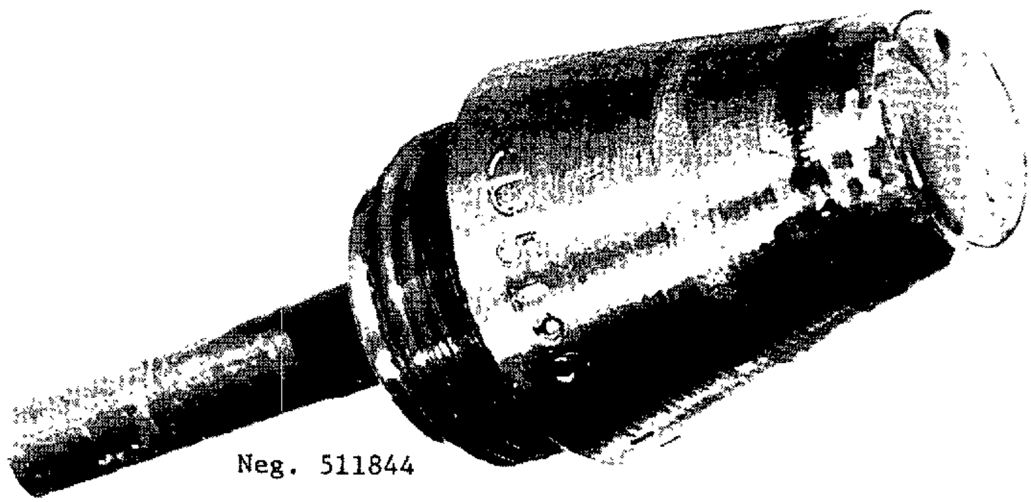
Weapons	Projectiles
120-mm PRC Type 53 Mortar	120-mm HE-Frag Type unknown

REFERENCE

Picatinny Arsenal EOD Project 76-006

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 7 (Mortar)



Neg. 511844

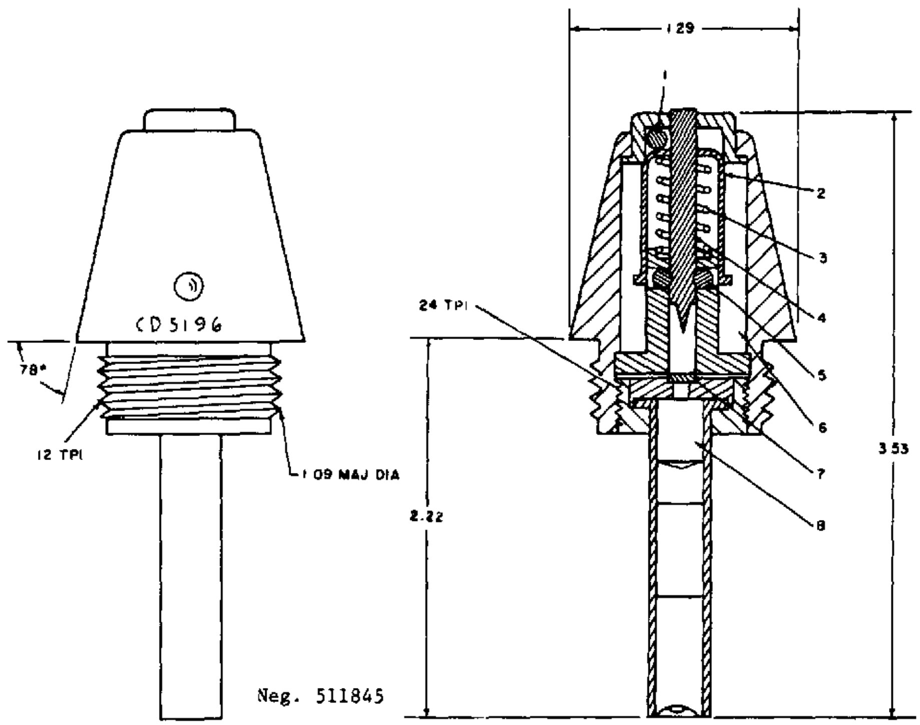
DISCUSSION

The PRC Type 7 (Mortar) fuze is a setback armed, point detonating fuze which is an improved version of the Soviet M-50. The body is machined from brass stock, and has a protruding striker head which produces superquick functioning rather than nondelay as in the case of the M-50. By US standards this fuze is neither bore safe nor detonator safe. A clear cellulose cover has been glued over the nose of the fuze to provide some degree of waterproofing. The booster consists of an upper, an intermediate, and a lower charge, of 0.500 gm mercury fulminate, 0.250 gm of mercury fulminate/TNT, and 2.860 gm of TNT, respectively.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Brass	Arming method	Setback
Weight	0.34 lb	Firing method	Impact
Markings	Φ 5196	Safety devices	Locking balls
Booster		Arming distance	?
Body material	Copper	Arming time	?
Body length	1.85 in	Delay time	Superquick
Explosive	See above		
Explosive weight	See above		

Fuze, point detonating, Type 7 (Mortar)



FUNCTIONING DESCRIPTION

Upon firing, setback forces move the arming sleeve (2) to the rear compressing the firing pin spring (3). This action releases the retaining ball (1) and allows it to fall into the body cavity (6). When the setback force decreases, the compressed spring (3) expands and moves the arming sleeve forward to allow the firing pin retaining balls (5) to drop into the body cavity. This action removes the restraint on the firing pin (4). Upon impact, the firing pin is driven rearward to impinge upon the primer (7), which in turn initiates the detonator (8).

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

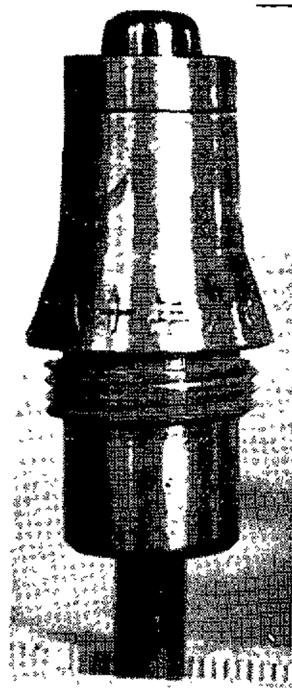
Weapons	Projectiles
60-mm Mortars Type 31 and Type 63	60-mm HE-Frag Type 7

REFERENCE

FSTC Exploitation Report, CR-20-64-67 dated May 1968

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 8



Neg. 511846

DISCUSSION

The Type 8 point detonating fuze was first encountered during the Korean War. It is still found occasionally, but has been replaced to a large extent by more modern fuzes.

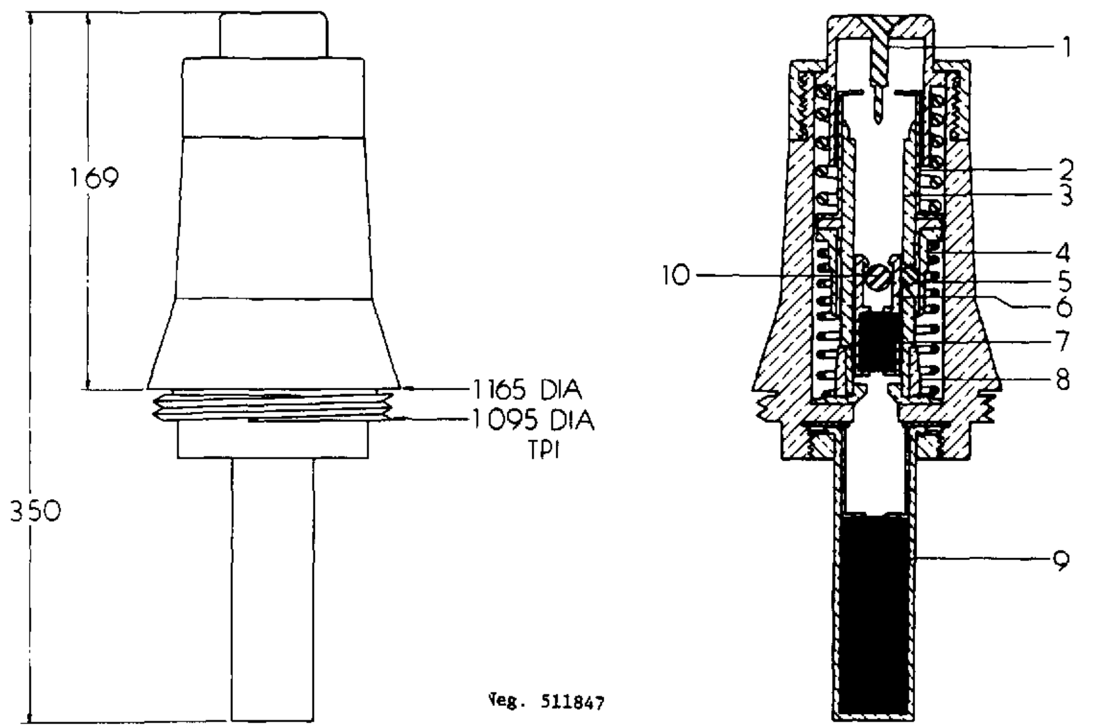
The body may be constructed of either brass or aluminum and has a long slender appearance, it is setback armed and is normally employed in the 60-mm cast iron mortar projectile.

There are known to be three different lengths for this fuze, however, the internal design and function remains the same.

CHARACTERISTICS

Fuze Assembly: Body material ------ Brass Weight ------------ 0.36 lb Markings ---------- 榴-5式 Booster Body material ------ Brass Body length -------- 1.5 in Explosive ---------- ? Explosive weight --- ?	Functional Data: Arming method -------- Setback Firing method -------- Impact Safety devices ------- Locking ball Arming distance ------ ? Arming time ---------- ? Delay time ----------- Instantaneous

Fuze, point detonating, Type 8



FUNCTIONING DESCRIPTION

Upon firing, setback moves the setback sleeve (4) to the rear, striking and mating with the beveled setback locking ring (8). The primer carrier locking ball (5) falls out of its recess in the primer carrier housing (3), allowing the primer carrier to move forward to the primer carrier stop collar (2). At this point the two primer safety balls (10) are cammed out into the recess in the end of the primer carrier housing and the fuze is armed.

Upon impact, inertia holds the primer carrier against the stop collar while the firing pin (1) is forced to the rear, striking and initiating the primer (7), and, in turn, the detonator (9) and booster.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

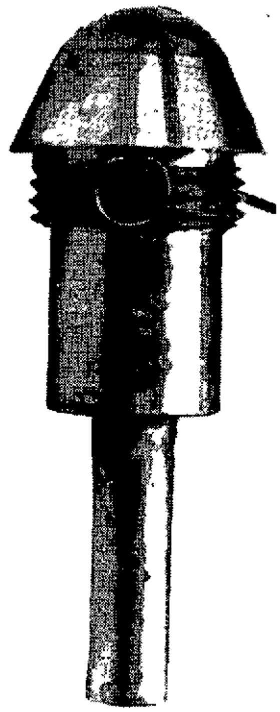
Weapons	Projectiles
60-mm Mortars Type ?	60-mm HE Type ?
82-mm Mortars Type ?	82-mm HE Type ?

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 9



Neg 511848

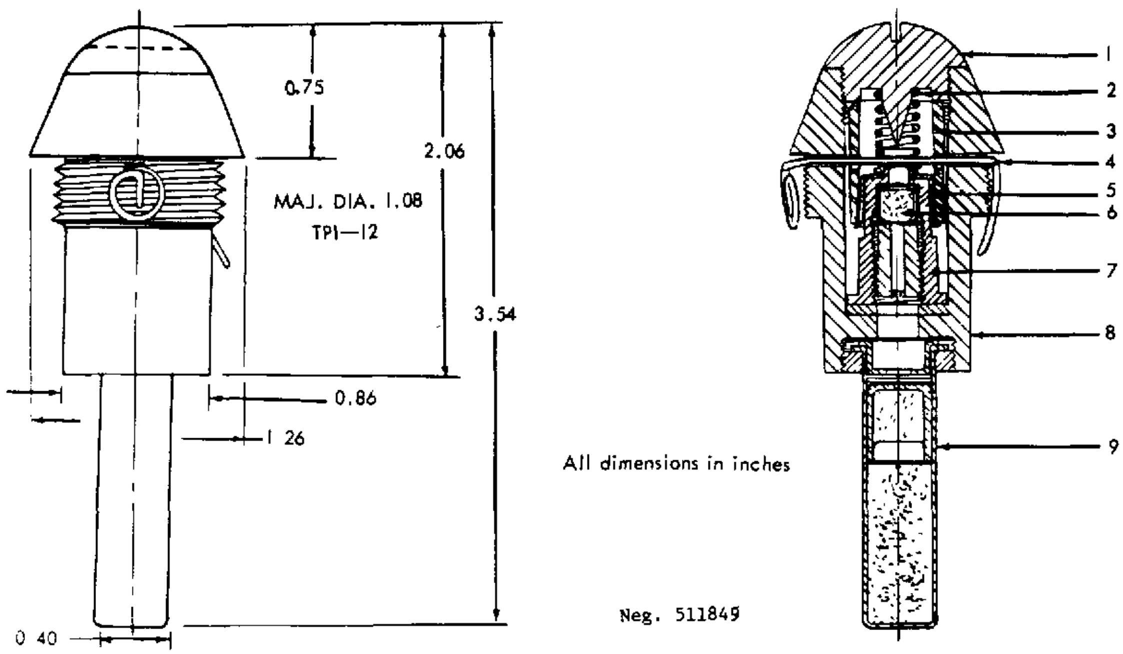
DISCUSSION

The Type 9 point detonating fuze is setback armed and impact fired. The brass body is machined from bar stock and threaded to receive the firing pin-nose assembly and the detonator assembly. A screwdriver slot has been cut in the nose plug. Identification markings may, or may not, be stamped on the body.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ----------- Brass	Arming method -------- Setback
Weight ------------------ 0.38 lb	Firing method -------- Impact
Markings ---------------- A	Safety devices ------- Safety wire
Booster	Arming distance ------ ?
Body material ----------- Copper	Arming time ---------- ?
Body length ------------- 1.65 in	Delay time ----------- Nondelay
Explosive --------------- TNT	
Explosive weight -------- 3.4 gm	

Fuze, point detonating, Type 9



All dimensions in inches

Neg. 511849

FUNCTIONING DESCRIPTION

Prior to assembling the fuze to the projectile, the safety wire (4) is removed. Upon firing, setback causes the arming sleeve (3) to move to the rear and slip over the arming clip (5). The legs of the arming clip are bent inward, permitting the arming sleeve to move over the primer holder (7). With the arming sleeve fully to the rear, the solid block between the primer (6) and the firing pin (1) is removed.

Upon impact, the primer holder (7) moves forward and the primer (6) impinges on the firing pin. The flash from the primer initiates the detonator and booster (9).

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

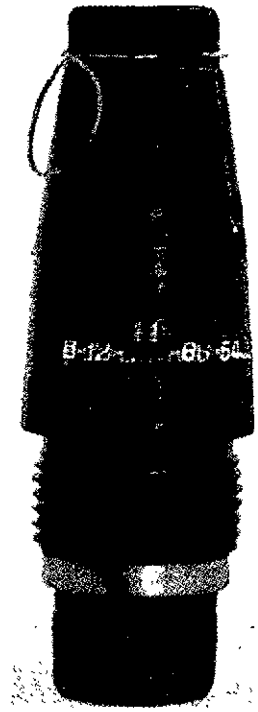
Weapons	Projectiles
60-mm Mortars, Type 31 and Type 63	60-mm Projectile, HE-Frag, Type ?
82-mm Mortar, Type 53	82-mm Projectile, HE-Frag, Type ?
120-mm Mortar, Type 53	120-mm Projectile, HE-Frag, Type ?

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-19-66, dtd Mar 66

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 12



Neg. 511850

DISCUSSION

The Type 12 fuze is setback armed and impact fired. With the exception of its markings, it is an exact copy of the Soviet M-12 Mortar fuze.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ------ Steel	Arming method -------- Setback
Weight ------------- 1.18 lb	Firing method -------- Impact
Markings ----------- 月-12	Safety devices ------- Out-of-line detonator
Booster	
Body material ------ Steel	Arming distance ------ ?
Body length -------- 1.50 in	Arming time ---------- ?
Explosive ---------- Tetryl	Delay time ----------- Superquick and delay (0.01 sec)
Explosive weight --- 0.55 lb	

Fuze, point detonating, Type 12

(No line drawing available)

FUNCTIONING DESCRIPTION

Functioning of the Type 12 is identical to the Soviet Models M-6 and M-12 fuzes.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
120-mm Mortar, Type 53	120-mm Frag-HE type ?

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 51

(No photograph available)

DISCUSSION

The Type 51 point detonating fuze is the first of a series of impact fired, centrifugal armed fuzes manufactured in China, by plant number 524, later redesignated as factory number 54.

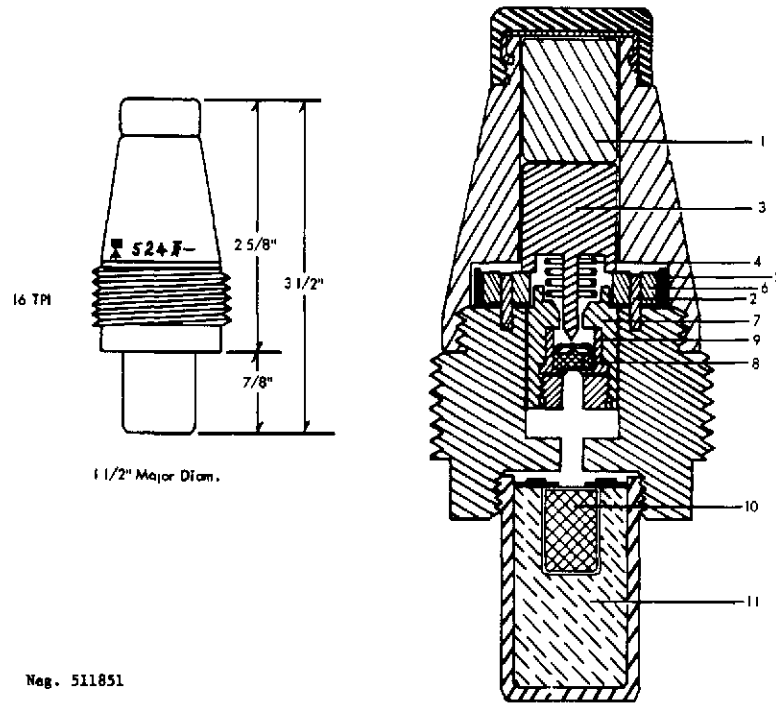
The fuze body is of two piece steel construction with a removable steel nose cap. Some fuzes have been recovered with the nose caps painted red as well as unpainted.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Centrifugal force
Weight	0.83 lb	Firing method	Impact
Markings	五一	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	1 in	Delay time	Instantaneous
Explosive	RDX		
Explosive weight	14.17 gm		

Fuze, point detonating, Type 51

Five centrifugal interlocked detents prevent the firing pin from contacting the primer prior to their being released by deceleration and centrifugal force.



FUNCTIONING DESCRIPTION

Upon firing, setback forces the firing pin (3) downward compressing the firing pin spring (4) and locking the centrifugal detents (6) in place. As acceleration diminishes, the firing pin spring (4) forces the firing pin forward unlocking the detents. Centrifugal force can now act to pivot each detent against the flat coiled spring (5), clearing the path between the firing pin and primer (8). The fuze is now armed. Upon impact, the wooden striker drives the firing pin into the primer. If the nose cap is left on, the primer carrier moves forward, striking the firing pin, which initiates the primer and explosive train.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

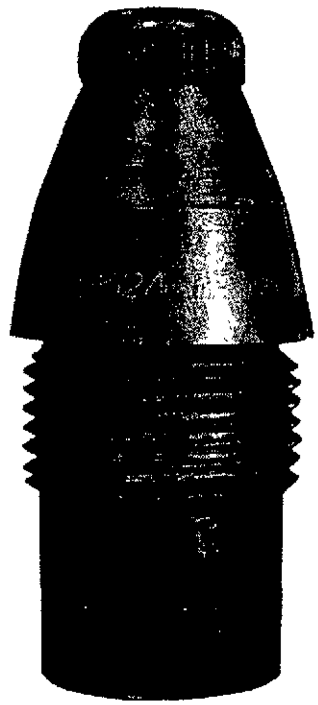
Weapons	Projectiles
105-mm Howitzer Type ?	105-mm HE Frag Type ?

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 53



DISCUSSION

The PRC Type 53 is an impact fired, centrifugal armed fuze which is identical internally to the Type 51. The major differences between the Type 51 and Type 53 are that the Type 53 has a larger diameter booster, and a detonator, which is larger in both diameter and length. Identification markings may, or may not, be present. The overall color is aluminum with a red nose cap.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ------	Steel	Arming method --------	Centrifugal force
Weight -------------	0.866 lb	Firing method --------	Impact
Markings -----------	五三式榴	Safety devices -------	Centrifugal weights
Booster		Arming distance ------	?
Body material ------	Aluminum	Arming time ----------	?
Body length --------	1 in	Delay time -----------	Instantaneous
Explosive ----------	RDX		
Explosive weight ---	?		

Fuze, point detonating, Type 53

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Type 53, Model 1.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

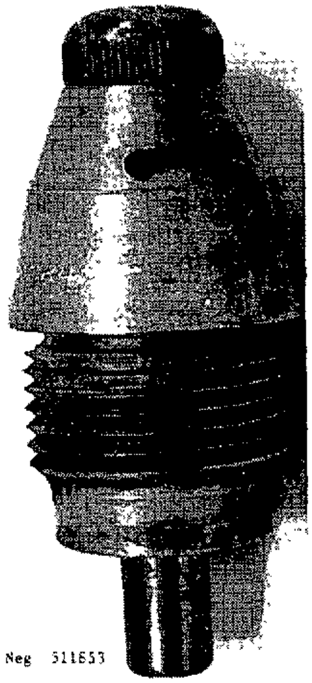
Weapons	Projectiles
105-mm Howitzer, Type ?	105-mm HE-Frag Type ?

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 53, Model 1



Neg 511653

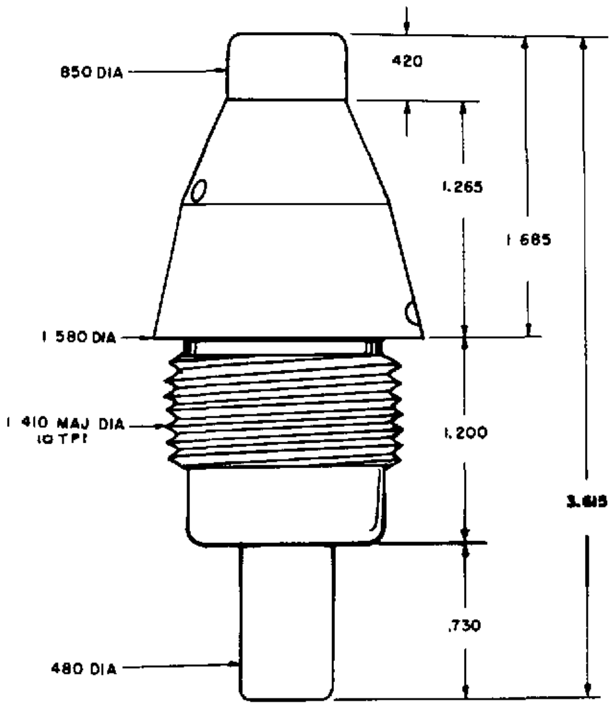
DISCUSSION

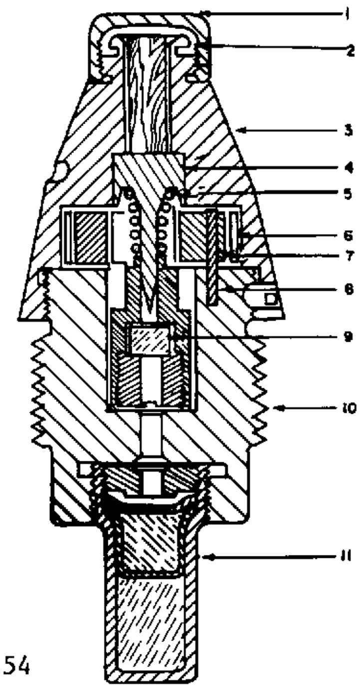
The Type 53 Model 1 fuze is similar in most respects to the Type 53 fuze. Differences that have been noted are inclusion of a small Type 51 booster, and staking, rather than a pin, to secure the upper and lower fuze bodies. The fuze body appears to be made from stainless steel with a steel nose cap painted red.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback & centrifugal force
Weight	0.87 lb		
Markings	五三式 /		
Booster		Firing method	Impact
Body material	Steel	Safety devices	Centrifugal detents
Body length	1.00 in		
Explosive	RDX	Arming distance	?
Explosive weight	14.17 gm	Arming time	?
		Delay time	Superquick

Fuze, point detonating, Type 53, Model 1





Neg. 511854

FUNCTIONING DESCRIPTION

Upon firing, setback seats the firing pin (4) firmly down on the firing pin spring (5) and the centrifugal weights (7), thus preventing the centrifugal weights from moving outward. As the setback force decreases, the firing pin spring expands, moving the firing pin forward and releasing the centrifugal spring. Centrifugal force can now pivot the five centrifugal weights to the side, clearing the firing pin. The primer (9) and firing pin are now separated only by the firing pin spring and the fuze is fully armed. Upon impact, the primer and firing pin are driven together, and the primer flash initiates the detonator (11), which in turn initiates the booster and main charge.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

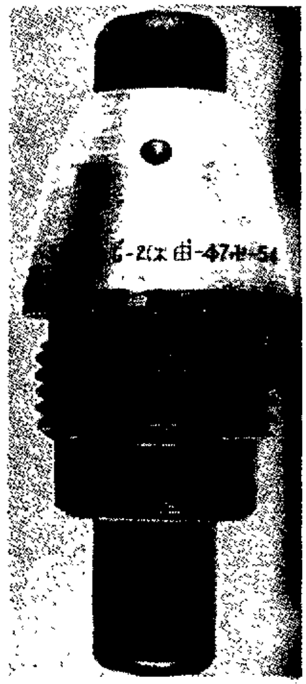
Weapons	Projectiles
105-mm Howitzer, Type ?	105-mm HE-Frag Type ?

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-21-66

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 53 Model 2



DISCUSSION

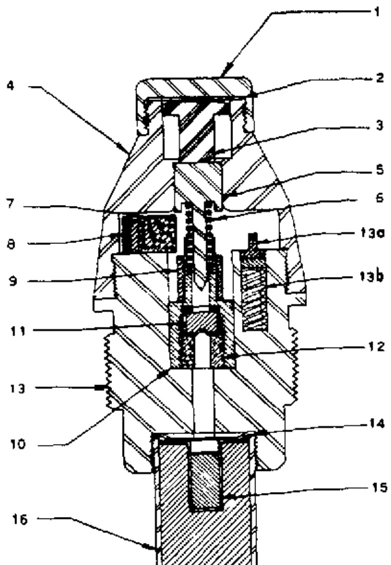
The Type 53 Model 2 is similar in appearance to the Type 53 and Type 53 Model 1, but is slightly longer in overall length and has a smaller overall diameter.

The Type 53 Model 2 consists of the basic Type 53 design, to which has been added a setback detent, detent spring and arming sleeve. The setback detent prevents movement of the centrifugal detents until sustained setback has occurred and the projectile has cleared the gun tube. The arming sleeve prevents the centrifugal detents from returning to their original position under the firing pin.

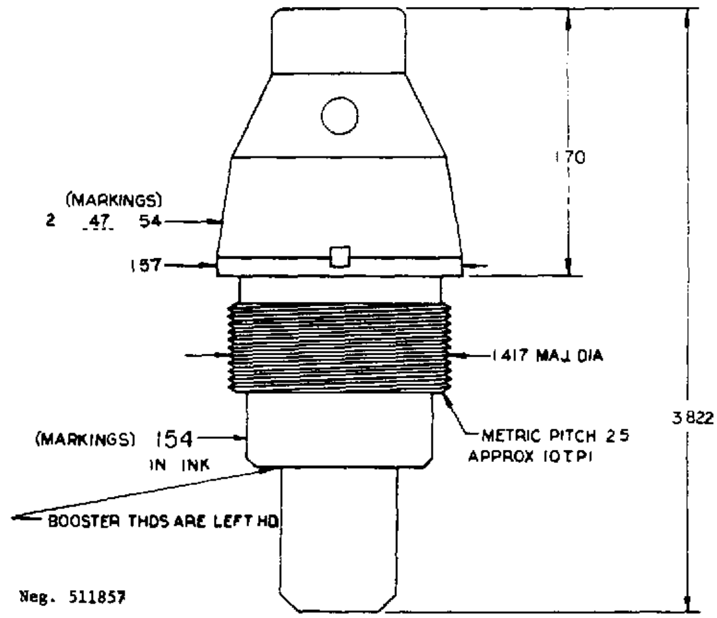
CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback & centrifugal force
Weight	0.88 lb	Firing method	Impact
Markings	五三式-2	Safety devices	Centrifugal detents
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.2 in	Delay time	Instantaneous
Explosive	RDX		
Explosive weight	?		

Fuze, point detonating, Type 53 Model 2



Neg. 511856



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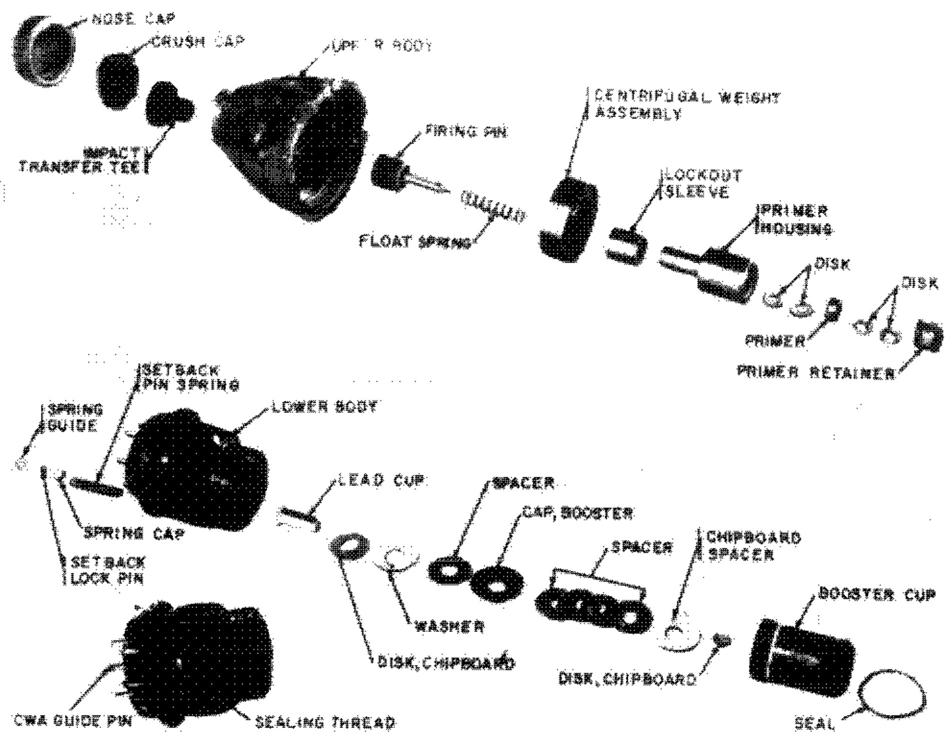
FUNCTIONAL DESCRIPTION

Upon firing, setback causes the setback detent (13a) to move rearward against the setback spring (13b) and to remain in this position during acceleration. With the setback detent removed from the path of the centrifugal detent (7), centrifugal force causes the centrifugal detents to pivot outward against the centrifugal spring (8). Creep action moves the arming sleeve (9) forward preventing the centrifugal spring from returning the detents to their original position under the firing pin (5). The fuze is now armed and the firing pin and detonator (11), are separated only by the firing pin spring (6).

Upon impact the firing pin (5) is driven rearward by the striker (3) initiating the primer-detonator. The flash from the detonator initiates the lead cup (15) and booster (16). If the projectile impacts at a flat angle, or if the nose cap is left on, the detonator housing (10) moves forward, causing the primer detonator to impinge on the firing pin and initiate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
75-mm Recoilless Rifle Type 52	75-mm Projectile HE Type 52

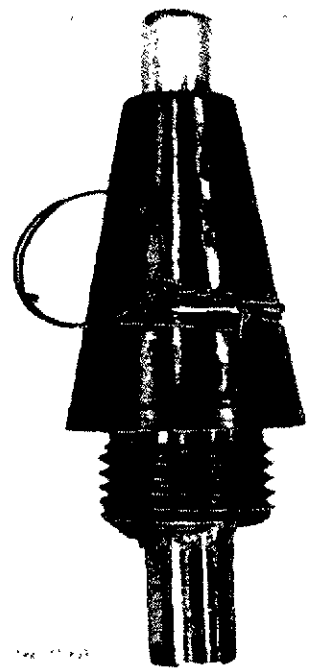


Neg. 511858

REFERENCE

None

Fuze, point detonating, Type 88



DISCUSSION

The Type 88, setback armed, point detonating fuze is made in two versions, both of which are copies of the original Japanese (Type 88) design. Both versions appear identical externally except for markings. One version stamped "E∃" (Instantaneous), is designed for lower velocity howitzer-mortar ammunition. The second version stamped "\1/" (Short Delay) is used in higher velocity gun ammunition.

The conical body is constructed of brass with a protruding aluminum striker. An overall coating of shellac or varnish provides some resistance

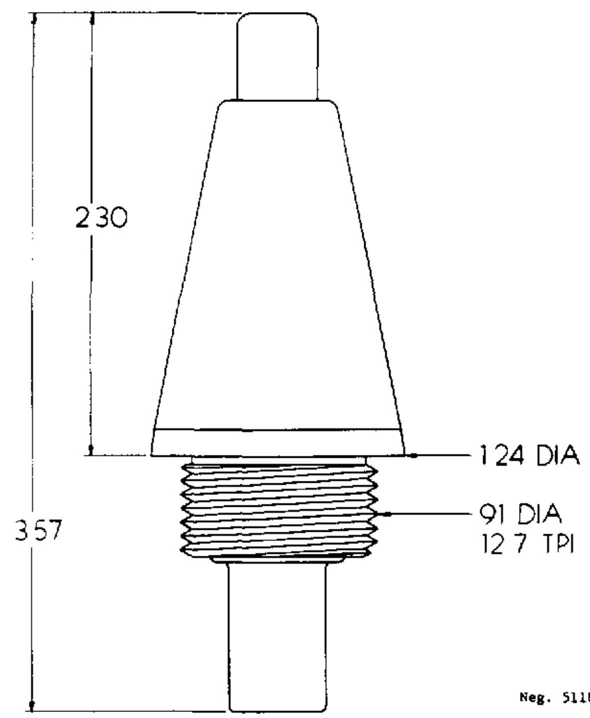
CHARACTERISTICS

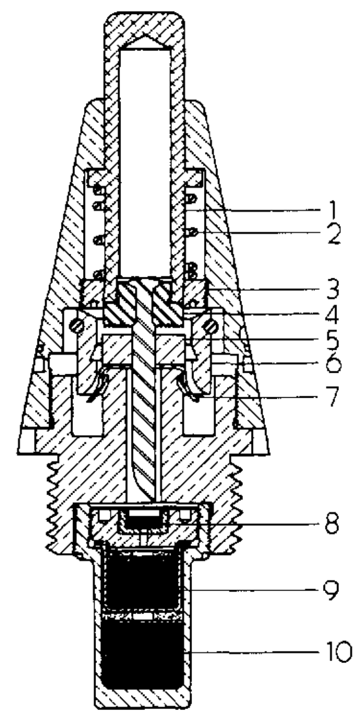
Fuze Assembly:		Functional Data:	
Body material	Brass	Arming method	Setback
Weight	0.38 lb	Firing method	Impact
Markings		Safety devices	Safety wire
Booster		Arming distance	?
Body material	Brass	Arming time	?
Body length	1.05 in	Delay time	Instantaneous
Explosive	Tetryl		
Explosive weight	17 gr		

Fuze, point detonating, Type 88

to moisture. Midway of the body is a safety fork with a wire loop attached.

Internal components in both versions are the same except for the stirrup, which has been strengthened to provide increased resistance for arming high velocity fuzes used in gun ammunition.





Neg. 511860

FUNCTIONING DESCRIPTION

Prior to firing, the safety fork must be removed. Upon firing, setback force causes the setback sleeve (6) to move to the rear, compressing and mating with the prongs of the stirrup (7). Simultaneously, the knurled base of the firing pin sets back and restrains the four brass centrifugal detents (5) from moving outward. When setback force has ceased, centrifugal force frees the safety blocks and causes them to move outward. This removes the obstruction to the downward movement of the firing pin. The fuze is now armed.

Upon impact with the target, the firing pin (1) compresses the firing pin spring (2) and initiates the primer (8), which in turn initiates the detonator (9) and booster (10).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
70-mm Howitzer	70-mm HE-Frag Type ?

(No disassembled view available)

REFERENCE

None

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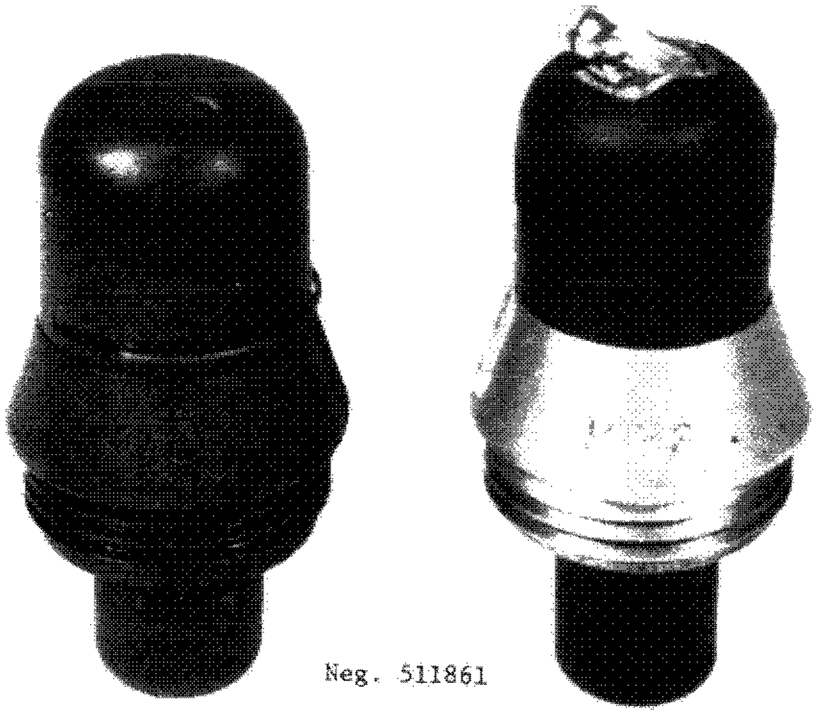
Fuze, point detonating, Type 100-3



Neg. 511861

DISCUSSION

The PRC Type 100-3 is the most recent version of the "Universal" series fuzes. Several variations of the Type 100-3 fuze have been recovered. The variations are in body material and the means of attaching the shipping cap. Aluminum bodies have been found with the steel shipping cap threaded to the body. Other bodies have been made of phenolic plastic with the shipping cap attached by a semicircular wire clip. The fuze is waterproofed, with all openings sealed with washers or a sealing compound. The only safety device is a shear wire which holds the firing pin stationary.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum or plastic	Arming method	Setback
Weight	0.28 lb	Firing method	Impact
Markings	100-3	Safety devices	Shear wire
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	0.75 in	Delay time	Nondelay
Explosive	Tetryl		
Explosive weight	?		

Fuze, point detonating, Type 100-3

(No line drawing available)

FUNCTIONING DESCRIPTION

The shipping cap is removed prior to firing. The closing cup and primer housing are held in place by the shear pin which blocks the firing pin and firing pin disk in position. The primer is held in position at the bottom of the primer housing by a locking plate which rides in slots cut through the primer housing. The locking plate spring helps to hold the locking plate and primer in the lower end of the primer housing if the shear pin is sheared by setback. Upon firing with low velocity weapons, the shear pin remains intact until impact. Upon impact, the shear pin is sheared and the primer housing moved rearward by the closing cup. The firing pin and firing pin disk are also forced rearward. Inertia causes the primer and locking plate to move forward compressing the locking plate spring and impinging the primer on the firing pin, which initiates the detonator and booster.

Neg. 511862

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
60-mm PRC mortars, Type 31 & 63	60-mm HE-Frag Type 7
82-mm Mortar Type 42	82-mm HE Type 42
102-mm Rocket Launcher Type 5[illegible]	102-mm HE Type 488

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 429

(No photograph available)

DISCUSSION

The PRC Type 429 fuze appears to be an identical copy of the Soviet V-429 fuze except for markings.

CHARACTERISTICS

Fuze Assembly:		**Functional Data:**	
Body material	Steel	Arming method	Setback
Weight	0.95 lb	Firing method	Impact
Markings	优429式	Safety devices	Out-of-line detonator
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.8 in	Delay time	Instantaneous and delay
Explosive	Tetryl		
Explosive weight	192.20 gr		

Fuze, point detonating, Type 429

(No line drawing available)

FUNCTIONING DESCRIPTION

Identical to the Soviet V-429 fuze.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
122-mm Gun D-74	122-mm Frag-HE OF-472
130-mm Gun M-46	130-mm Frag-HE OF-482
152-mm Howitzer, D-20	152-mm Frag-HE OF-540

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 3711

(No photograph available)

DISCUSSION

The f/M fuse is essentially a Brandt type, point detonating, nondelay fuze, with an inertia feature for graze functioning. Variations of this fuze have been observed in a number of PRC projectiles. With the exception of dimensions and a variation of the detonator arrangement, it is the same as the PRC Type 8.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.36 lb	Firing method	Impact
Markings	3711 f/M	Safety devices	Locking balls
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.20 in	Delay time	Nondelay
Explosive	Mercury fulminate & Tetryl		
Explosive weight	2.75 gm		

Fuze, point detonating, Type 3711

(No line drawing vailable)

FUNCTIONING DESCRIPTION

Upon firing, setback causes the safety collar to move rearward compressing the safety spring. The collar becomes wedged on the tapered surface at the rear end of the inertia element assembly. The primer locking ball is thus released to move outward and free the primer holder assembly. During flight, the primer holder assembly moves forward by creep action until its forward end contacts the firing pin spring guide.

Upon impact, the firing pin and striker assembly is pushed rearward, while the inertia element assembly moves forward. The primer holder assembly moves forward more rapidly than the inertia element and its assembly components. As the firing pin enters the primer body cavity, the two primer detent balls are pushed outward to protrude into the cavity between the forward edge of the inertia element, the firing pin spring guide, and the firing pin. This locks the primer holder assembly to the forward moving inertia element. The momentum of the entire inertia assembly impales the primer on the firing pin to initiate the primer. The primer initiates the detonator and in turn the booster and main charge.

Fuze, point detonating, Type 3711

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
60-mm Mortar Type ?	60-mm HE Type ?

(No disassembled view available)

REFERENCE

None

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Fuze, point detonating, Universal

(No photograph available)

DISCUSSION

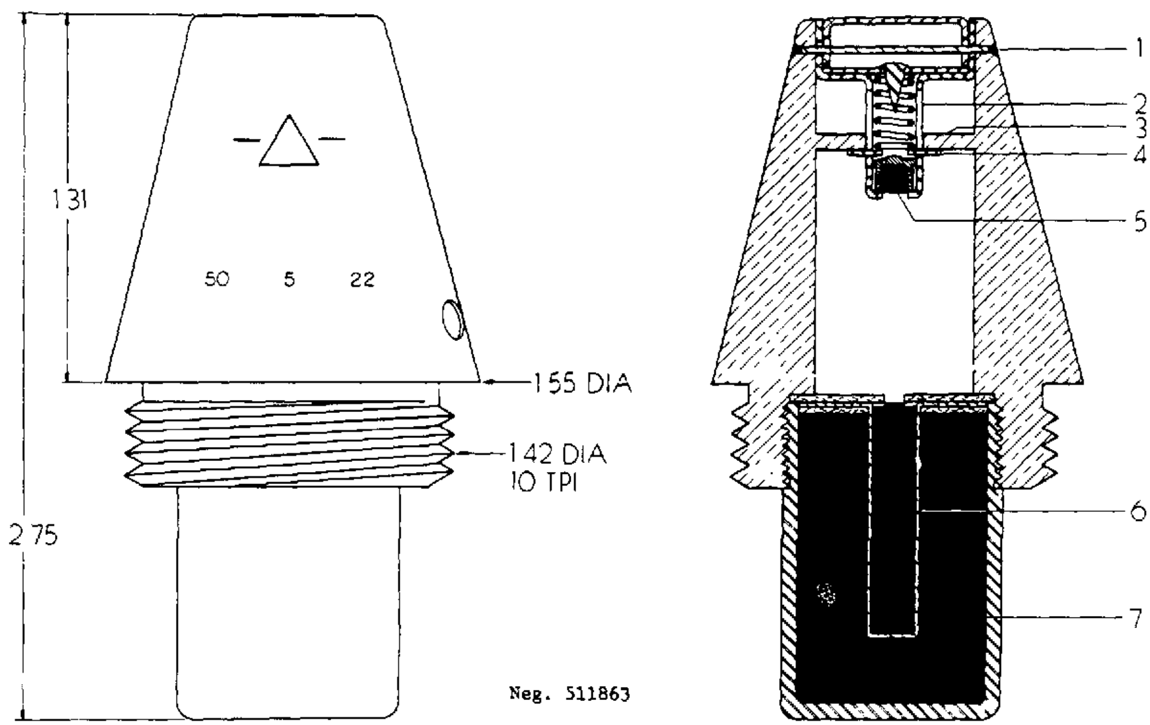
The PRC Universal fuze is a simple setback armed, impact fired fuze which has been replaced by more modern types. These fuzes are identical in internal design but vary somewhat in exterior design and dimensions for ballistic purposes. There are also differences in shipping cap design. Some fuzes have been found with a shipping cap, others have been found with nothing but a wax sealing compound at the forward end. Markings also vary between individual models and some fuzes have been found unmarked.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Brass or plastic	Arming method	NA
Weight	0.62 lb	Firing method	Impact
Markings	50 5 22 P# A	Safety devices	Shear Wire
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	1.38 in	Delay time	Instantaneous
Explosive	RDX/TNT		
Explosive weight	220 gr		

Fuze, point detonating, Universal

The only safety device found in this fuze is a shear wire which holds the firing pin stationary. This fuze has not been encountered in recent years and has probably been replaced.



Neg. 511863

FUNCTIONING DESCRIPTION

Prior to firing, the shipping cap, if present, must be removed. Upon firing at low initial velocities, the shear wire (1) is not sheared until impact with the target. At higher initial velocities, the shear wire is sheared when the projectile is fired, resulting in seating the entire firing pin assembly (2) on the base of the forward cavity (3).

Upon impact with the target under low velocity conditions, the shear wire is severed and the firing pin (2) is driven to the rear to initiate the primer (5). Under high velocity conditions inertia causes the primer (5) and spring retainer (4) to compress the firing pin spring and impinge the primer on the firing pin to initiate the explosive train.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
60-mm Mortar Type 31	60-mm HE-FRAG, Type ?
82-mm Mortars Type 20 and 53	82-mm HE FRAG Type ?

(No disassembled view available)

REFERENCE

None

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Fuze, point initiating, base detonating, Type 1 (75-mm Recoilless Rifle) CHICOM

(No photograph available)

DISCUSSION

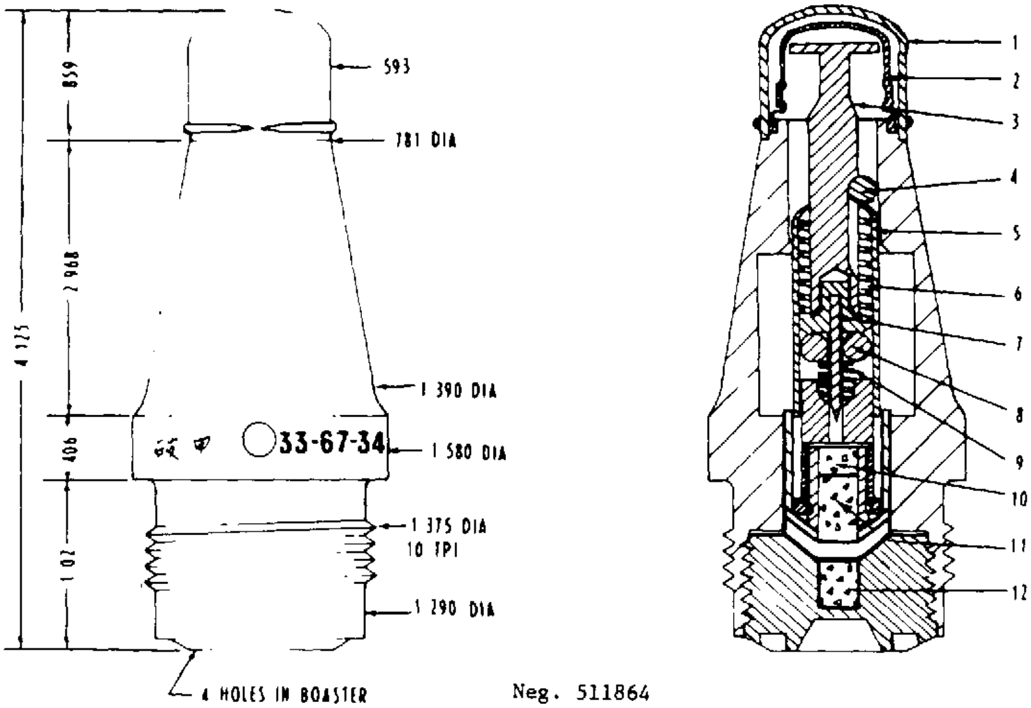
Four PRC fuzes identified as the TS-1, TS-2, Type 1 (1964) and Type 1 (1967) are nearly identical in external appearance. Some minor internal differences may exist, but the function of all four fuzes remains the same.

The Type 1 (1967) differs from the others in the following respects: (a) the ogive tapers to a straight 0.5 inch shoulder; (b) the button type striker has been replaced by a mushroom shaped striker; and (c) the graze weight has been replaced by an enlarged booster cup.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.38 lb	Firing method	Impact
Markings	破-1甲式	Safety devices	Locking balls
		Arming distance	?
Booster		Arming time	?
Body material	Aluminum	Delay time	Instantaneous
Body length	0.5 in		
Explosive	Tetryl		
Explosive weight	0.37 gm		

Fuze, point initiating, base detonating, Type 1 (75-mm Recoilless Rifle) CHICOM



Neg. 511864

FUNCTIONING DESCRIPTION

Identical to the TS-1, TS-2, and Soviet GK-2.

(No disassembled view available)

Fuze, point initiating, base detonating, Type 1 (75-mm Recoilless Rifle)
CHICOM
WEAPONS AND PROJECTILES USED WITH

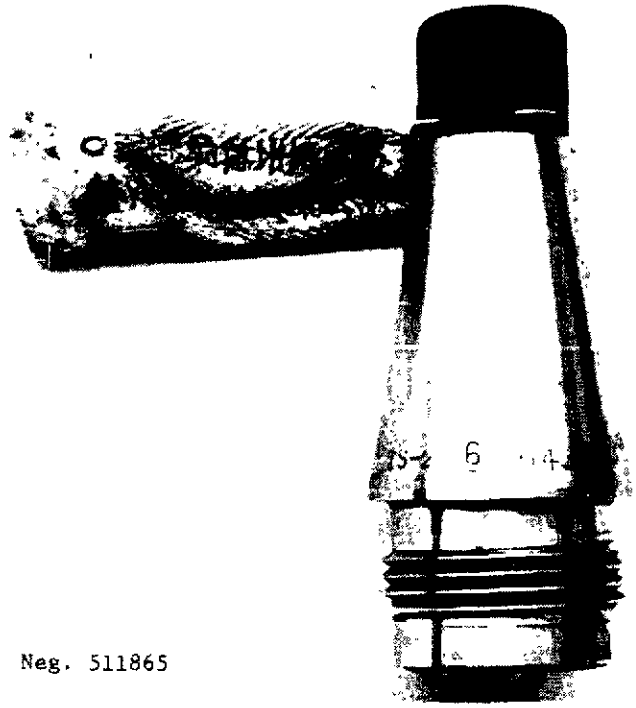
Weapons	Projectiles
75-mm Recoilless Rifle Type 52	75-mm Fin Stabilized Heat Type ?

REFERENCE

FSTC Exploitation Report CR-20-3-72 dated May 1971

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point initiating, base detonating, Type TS-1 and TS-2



Neg. 511865

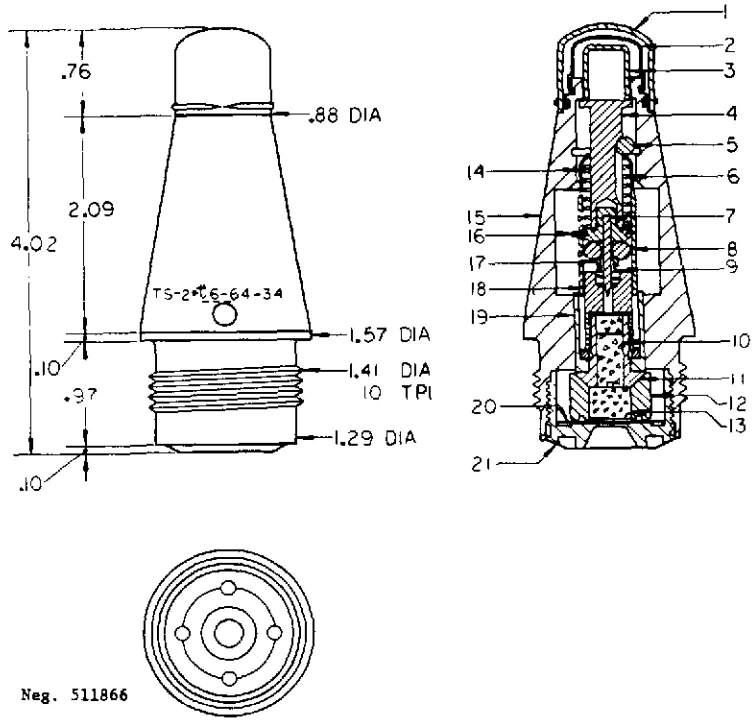
DISCUSSION

The PRC Type TS-1 and TS-2 are copies of the Soviet GK-2 and PRC Type 1 (Recoilless Rifle) fuzes. They are the first PRC fuzes recovered that are identified by an alphabetical designation. The body is made of die cast anodized aluminum. A steel nose cap is secured by a pull wire. Arming delay is achieved by using a zigzag arming sleeve.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	0.39 lb	Firing method	Impact
Markings	TS-2 式	Safety devices	Locking balls
		Arming distance	?
Booster		Arming time	?
Body material	Aluminum	Delay time	Instantaneous
Body length	0.5 in		
Explosive	Tetryl		
Explosive weight	37.00 gm		

<u>Fuze</u>, point initiating, base detonating, Type TS-1 and TS-2



Neg. 511866

FUNCTIONING DESCRIPTION

Upon firing, setback forces overcome the resistance of the arming sleeve spring (6) and force the arming sleeve (14) rearward releasing the locking ball (5) which falls into the cavity of the fuze body. The arming sleeve continues to the rear, delayed by the zigzag slot and the guide pin (16) until stopped by the four firing pin retaining balls (8). As setback force decreases, the arming sleeve spring (6) forces the arming sleeve (14) forward and releases the four firing pin retaining balls (8). The fuze is now armed. Upon impact, the striker (4) and firing pin (7) are driven to the rear, where the firing pin impinges on the detonator (10) which in turn initiates the relay charge (13) and booster in the base of the projectile. If the projectile impacts on a flat angle, the graze weight (12) force the primer holder and primer forward into the firing pin.

Fuze, point initiating, base detonating, Type TS-1 and TS-2

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
75-mm Recoilless Rifle Type 52	75-mm Fin Stabilized HEAT Type ?

(No disassembled view available)

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-16-71

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, Type 137, Type A3 and Rocket Fuze, (PIBD)

(No photograph available)

DISCUSSION

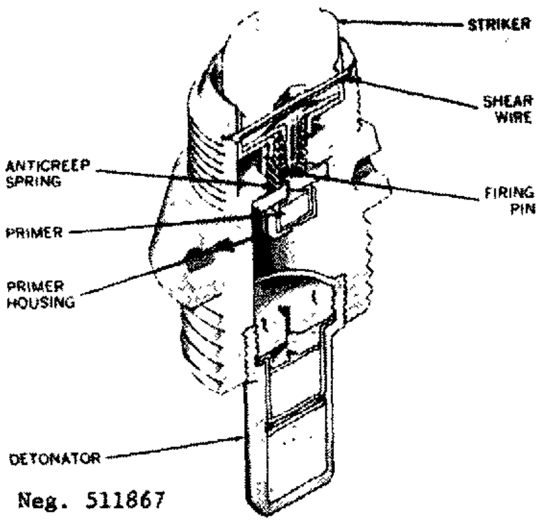
The Type 137 fuze is a member of a simple, unsafe family of fuzes used on PRC mortars and rockets.

The fuze components are made of a variety of material and may be cast, stamped or machined of magnesium or brass. Except for the detonator assemblies and slight variations in size, the components for the mortar and rocket fuzes are identical. The Type 137 and A3 fuzes contain boosters while the fuze for the 87-mm HEAT rocket contains a spitback detonator.

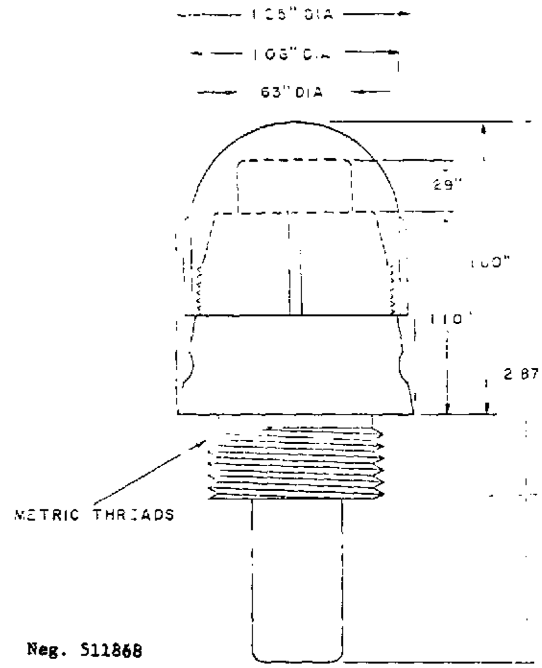
CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Magnesium or brass	Arming method	Setback
Weight	0.28 lb	Firing method	Impact
Markings	None	Safety devices	Shear Wire
Booster		Arming distance	?
Body material	Steel or brass	Arming time	?
Body length	1.27 in	Delay time	Instantaneous
Explosive	Tetryl & mercury fulminate		
Explosive weight	18.14 gm		

Fuze, point detonating, Type 137, Type A3 and Rocket Fuze, (PIBD)



Neg. 511867



Neg. 511868

FUNCTIONING DESCRIPTION

Prior to firing, the shipping cap is normally removed. Upon firing, at setback forces above 4,000 g's, the shear wire fails and the assembly seats itself on the wall separating the forward and rear cavity within the fuze body. The firing pin and primer are now separated by the retainer spring and primer retainer. Upon impact with the target, the plunger and firing pin are held rearward, and the primer is forced forward by inertia to impinge on the firing pin.

(No disassembled view available)

Fuze, point detonating, Type 137, Type A3 and Rocket Fuze, (PIBD)

WEAPONS AND PROJECTILES USED WITH

Weapons	Fuze	Projectiles
60-mm Mortar	Type 137	60-mm Projectile, HE
102-mm Rocket Launcher	Type A3	102-mm Projectile, Rocket, HE
87-mm Rocket	Type PIBD	87-mm Rocket, Antitank (HEAT)

REFERENCE

None

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Fuze, point initiating, base detonating, Type unknown, (for 57-mm HEAT projectiles)

(No photograph available)

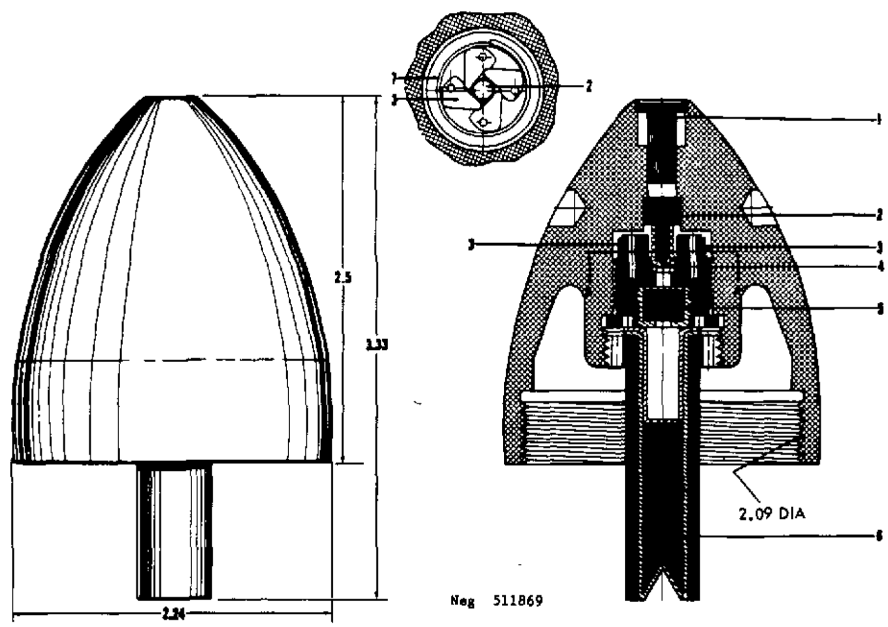
DISCUSSION

The spitback fuze for the PRC 57-mm recoilless HEAT projectile is armed by a combination of setback and centrifugal force. The aluminum body is similar in external appearance to the US 57-mm HEAT fuze, internally the fuze components and arrangements are completely different. Functional components of the fuze resemble those used in the PRC Type 5 and original models of the Type 53 fuzes; they include, brass centrifugal detents, a flat coiled centrifugal spring, a wooden striker and a brass firing pin.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback & centrifugal force
Weight	0.34 lb		
Markings	?		
Booster		Firing method	Impact
Body material	Aluminum	Safety devices	Centrifugal detents
Body length	1.85 in		
Explosive	Tetryl	Arming distance	?
Explosive weight	?	Arming time	?
		Delay time	Instantaneous

Fuze, point initiating, base detonating, Type unknown, (for 57-mm HEAT projectiles)



FUNCTIONING DESCRIPTION

Upon firing, setback forces seat the firing pin (2) on the centrifugal detents (3) and restrain any motion. As deceleration takes place, centrifugal force causes the centrifugal detents to rotate against the tension of the centrifugal spring and clear a path for the firing pin (2). The firing pin is retained in its forward position by the tension of the firing pin spring (4).

Upon impact, the wooden striker (1) forces the firing pin (2) downward against the tension of the firing pin spring (4) and initiates the primer (5). The flash from the primer in turn ignites the detonator (6) which spits back through a flash channel to the base detonator located in the projectile.

Fuze, point initiating, base detonating, Type unknown, (for 57-mm HEAT projectiles)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
57-mm Recoilless Rifle	57-mm HEAT Type ?

(No disassembled view available)

REFERENCE

None

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Section III.

CZECHOSLOVAKIA

1. Introduction

a. Czechoslovakia maintains a small independent capability to design and produce artillery fuzes. In most cases their indigenous designs follow trends established by Germany during World War II.

b. Where projectiles are common to both Soviet and Czechoslovakian weapons the Soviet fuze is usually employed.

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Fuze, point detonating, NZ 10 AV

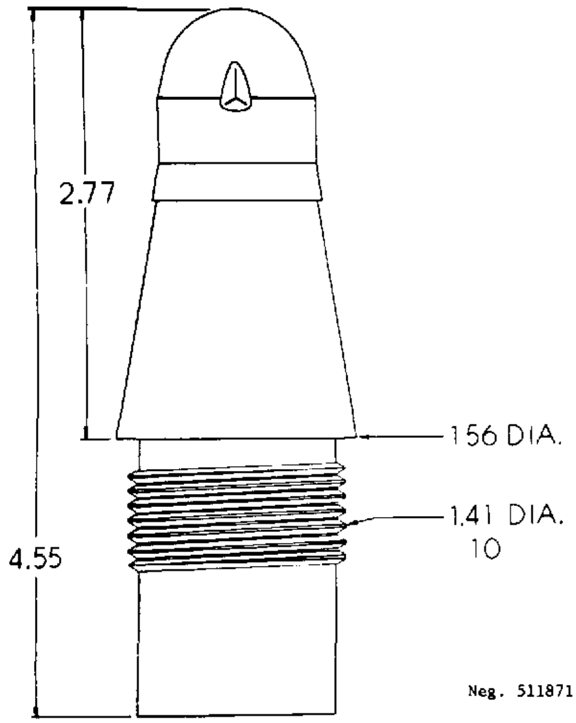
DISCUSSION

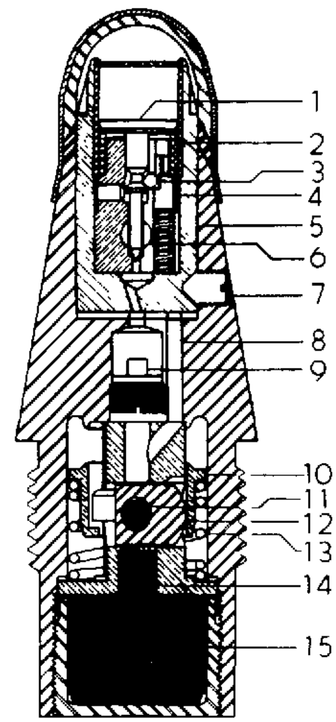
The NZ 10 AV is a setback armed point detonating fuze with optional instantaneous or delay functioning. The one piece steel body has a brass protective cap and a brass delay selector which may be set on either "Z" or "O". An out-of-line detonator provides boresafety.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.16 lb	Firing method	Impact
Markings	NZ 10 AV	Safety devices	Out-of-line detonator
Booster			
Body material	Steel	Arming distance	5 ft
Body length	0.81 in	Arming time	?
Explosive	PETN	Delay time	?
Explosive weight	181.77 gr		

Fuze, point detonating, NZ 10 AV





FUNCTIONING DESCRIPTION

Prior to firing, the brass protective cap, the inner cap, and rubber seal are removed. Upon firing, setback forces the arming pin (4) rearward compressing the arming pin spring and allowing the locking ball (3) to be forced out of its recess. The compressed creep spring (2) forces the firing pin forward, releasing the slider (6), which is forced into line by the slider spring. The sleeve stop pin moves inward, permitting the firing pin sleeve to move downward. The sleeve stop now acts as a safety, preventing contact between the firing pin and primer. Simultaneously, setback forces the rotor housing sleeve (10) rearward compressing the sleeve spring until the setback release ball is released. When the ball is released, the sleeve spring (13) forces the rotor housing forward, simultaneously turning the rotor and aligning the rotor relay with the delay element and the large channel. The fuze is now armed. Upon impact, the firing pin impinges on the primer; the flash from the primer ignites the relay charge (11), which in turn ignites the booster lead (14) and booster (15).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
100-Field Gun M1953	100-mm HE JOF
SP Assault Gun M1944	

(No disassembled view available)

REFERENCE

OTIA Evaluation Report, OTIA 1054 dtd 15 July 1958

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Fuze, point initiating, base detonating, Z-21

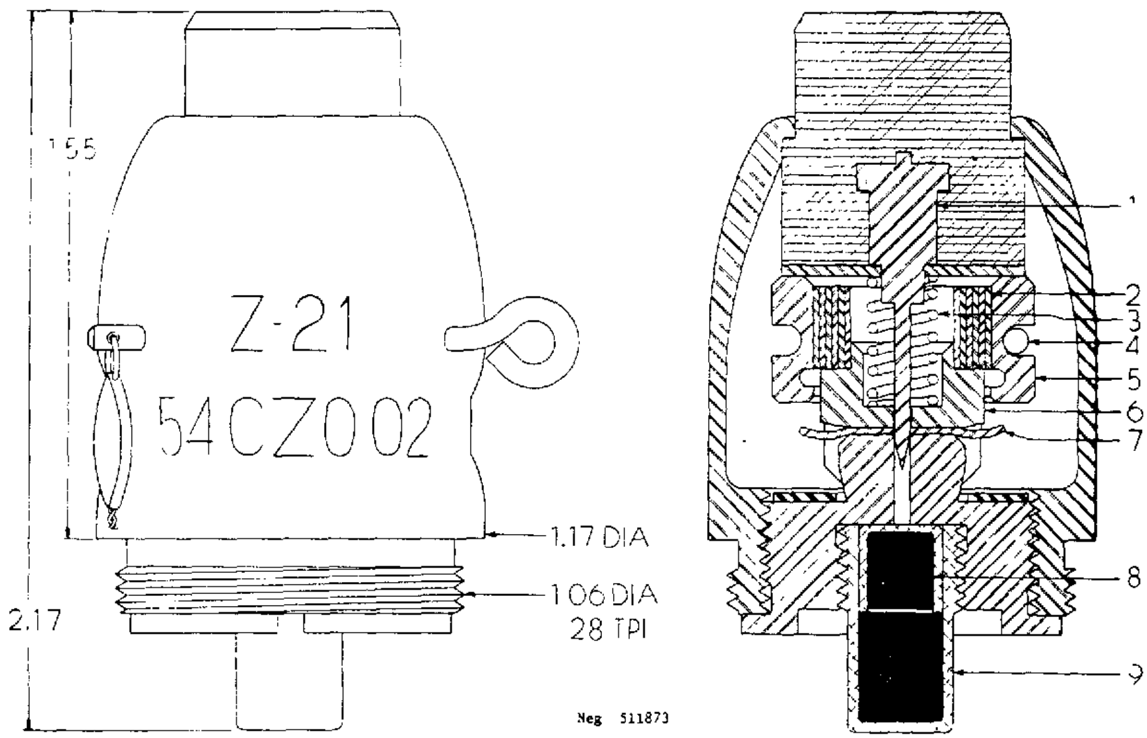
DISCUSSION

The NZ-21 is a setback armed PIBD, fuze used in the 82-mm recoilless HEAT projectile. It is a direct copy of the German AZ5095 fuze. The fuze body is gray steel with the identification and markings stenciled in black. The firing pin assembly protrudes through the top of the fuze body and has been found in both black and red plastic.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.21 lb	Firing method	Impact
Markings	Z-21	Safety devices	Safety pin
Booster		Arming distance	?
Body material	Aluminum	Arming time	?
Body length	0.62 in	Delay time	Instantaneous
Explosive	Lead Azide & PETN		
Explosive weight	2.0 gm		

Fuze, point initiating, base detonating, Z-21



FUNCTIONING DESCRIPTION

Prior to firing, the safety pin seal is broken and the safety pin (4) is removed. Upon firing, setback causes the setback sleeve (5) to move to the rear over the safety spring support (6). The four arms on the setback sleeve retainer (7) engage in the annular groove on the inside of the setback sleeve and retain it in the rear position. Setback also moves the firing pin assembly (1) to the rear as far as the safety spring (2), which is held in place by the safety spring support. As setback eases and forward creep takes place, the firing pin assembly moves forward, releasing the flat coiled safety spring (2), which moves to the outside wall. The firing pin assembly is now held away from the detonator (8) by the firing pin spring (3) and the fuze is armed. On impact the firing pin assembly is driven to the rear into the detonator which initiates the booster (9).

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
	Cartridge, HEAT, Model T-21 "TARASNICE"

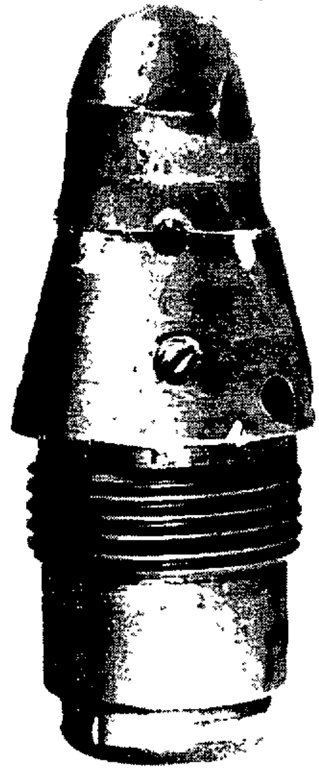
(No disassembled view available)

REFERENCE

Picatinny Arsenal Memorandum Report No. 141, dated April 1957

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, point detonating, NZ 30 AV



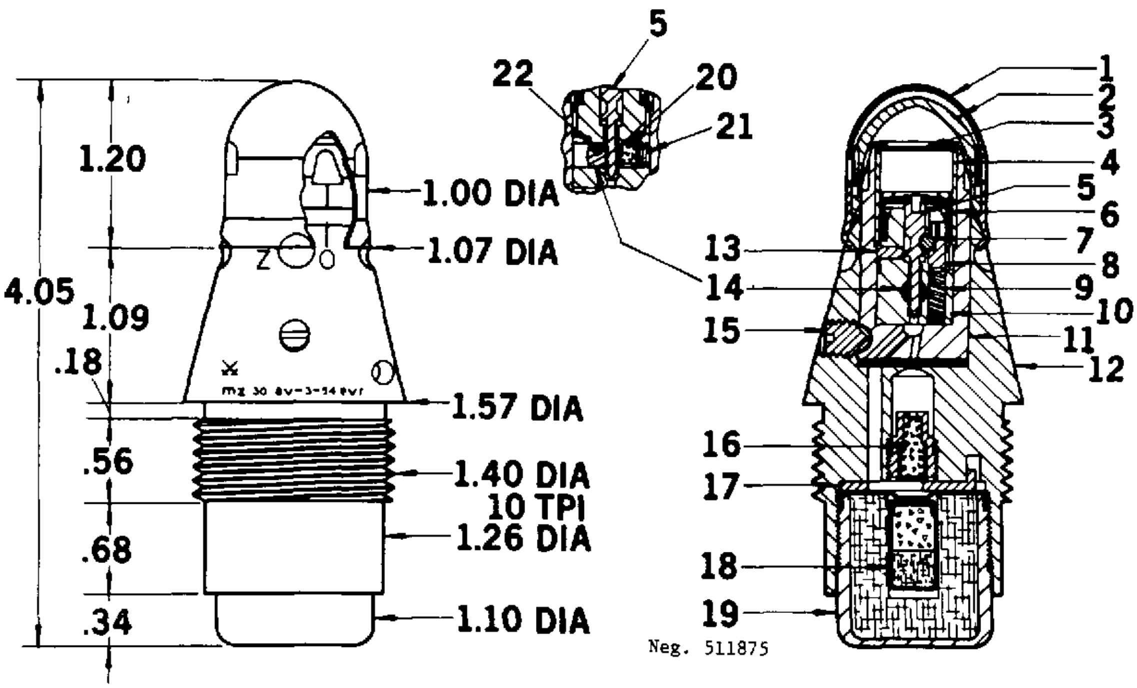
DISCUSSION

The NZ 30 AV is a setback armed, point detonating fuze with optional instantaneous or delay action. The steel fuze body has a dull gray anodized finish, and a removable steel protective nose cap. An out-of-line primer is contained in the upper fuze body, but the rotor safety feature found in the lower portion of the NZ 10 AV is absent on the NZ 30 AV.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	0.97 lb	Firing method	Impact
Markings	MZ 30 V	Safety devices	Out-of-line detonator
Booster			
Body material	Steel	Arming distance	?
Body length	1.10 in	Arming time	?
Explosive	PETN	Delay time	?
Explosive weight	241 gr		

Fuze, point detonating, NZ 30 AV



Neg. 511875

FUNCTIONING DESCRIPTION

Upon firing, setback forces the arming pin (8) to the rear compressing the arming pin spring (9) and allowing the locking ball (7) to drop out of its position. The firing pin (5) is now withdrawn from the slider (14) and forced forward by the creep spring (6), allowing the slider to be forced into alignment by the slider spring (21). The sleeve stop pin (13) can now move inward, permitting the firing pin sleeve (4) to move downward. The sleeve stop pin prevents premature contact between the firing pin and primer. The fuze is now armed.

Upon impact, the firing pin is driven to the rear, severing the sleeve stop pin (13) and initiating the primer (20). With the selector setting on "0" the flash is channeled through the large flash channel to the detonator which initiates the booster. If delay action "3" is selected, the flash from the primer is channeled through the smaller channel to the delay element, which in turn initiates the detonator and booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
120-mm Mortar	120-mm HE OFA

(No disassembled view available)

REFERENCE

FSTC Exploitation Report, FSTC-CR-20-8-70

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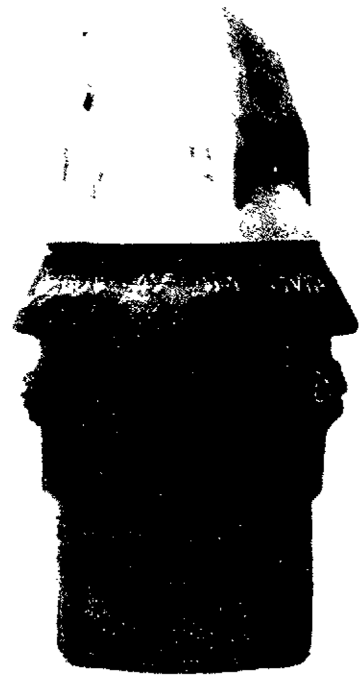
Fuze, point detonating, NZ 60V



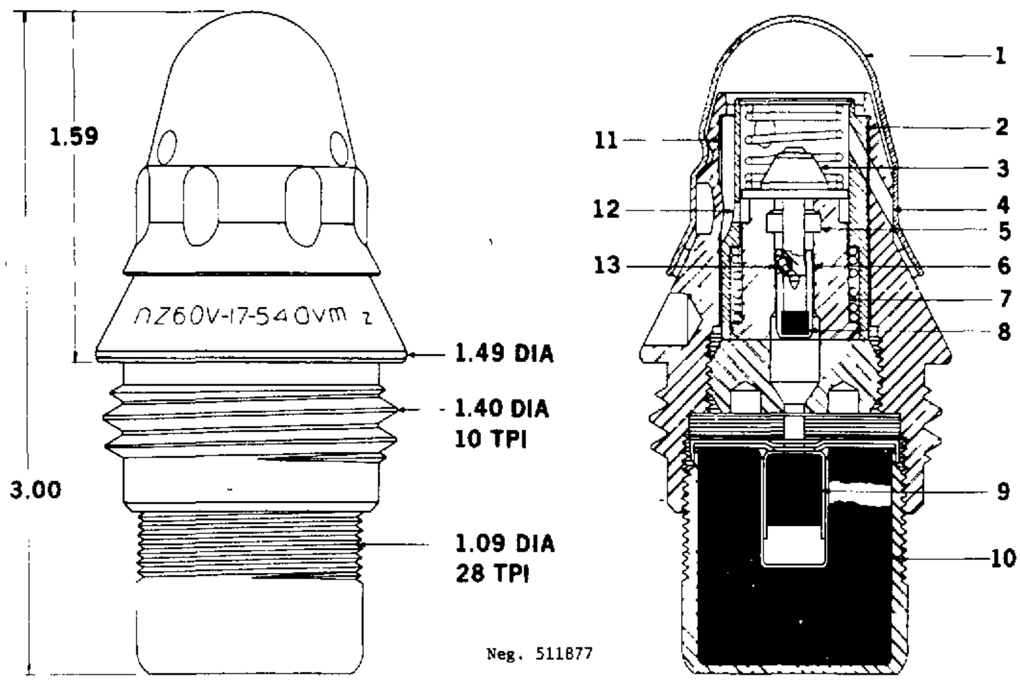
DISCUSSION

The NZ 60V is an air armed, point detonating fuze used on 130-mm rocket projectiles. The fuze body is machined from steel and employs a brass nose cap to provide protection during transportation and handling. A steel ball locks the firing pin and primer carrier in an unarmed position prior to firing.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Steel	Arming method -------- Pneumatic
Weight ---------------- 0.53 lb	Firing method -------- Impact
Markings -------------- NZ 60V	Safety devices ------- None
Booster	Arming distance ------ 60-65 m
Body material ---------- Steel	Arming time ---------- ?
Body length ----------- ?	Delay time ----------- ?
Explosive -------------- PETN	
Explosive weight ------- 0.53 oz	

Fuze, point detonating, NZ 60V



FUNCTIONING DESCRIPTION

Prior to firing the nose cap (1) is removed. Upon firing, no movement of components takes place until a velocity of approximately 250 meters per second is reached; at this speed an overpressure of 0.5 to 1 atmosphere is reached on the nose of the fuze. Air pressure now enters the fuze through three inlets (4) forcing the firing pin (3), primer housing (6), and locking ball (13) to move forward, expelling the air trapped above the firing pin through three outlet holes (2). When the firing pin reaches the top of the inertia weight housing, the locking ball (13) is forced away from the firing pin by centrifugal force, locking the primer holder and inertia weight together. The fuze is now armed.

On impact, the firing pin is driven to the rear, and the inertia weight forward to make the firing pin impinge on the primer (8). The flash from the primer, in turn initiates the detonator (9) and booster (10). If the firing pin is not driven to the rear on impact, the inertia weight will carry the primer forward, causing the fuze to function.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
130-mm Rocket Launcher, RM-130	130-mm RP-2 Rocket

(No disassembled view available)

REFERENCE

OTIA Evaluation Report, OTIA-4521 dated Nov 1959

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Fuze, point detonating, NZ 62

(No photograph available)

DISCUSSION

The NZ 62 is an air armed, point detonating fuze with optional instantaneous or delay action. With the exception of the delay element and delay selector the function and external appearance of this fuze is identical to the NZ 60V.

This fuze has not been recovered to date. Therefore, no specific data are available. The descriptive information was derived from a foreign publication concerning artillery rockets and fuzes.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	?	Arming method	?
Weight	?	Firing method	?
Markings	?	Safety devices	?
Booster		Arming distance	?
Body material	?	Arming time	?
Body length	?	Delay time	?
Explosive	?		
Explosive weight	?		

Fuze, point detonating, NZ 62

(No line drawing available)

FUNCTIONING DESCRIPTION

None.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles

REFERENCE

None

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Chapter 4

Mechanical and Powder Train Time Fuzes and Miscellaneous Projected Fuzes

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

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Section I.

MECHANICAL AND POWDER TRAIN TIME FUZES OF THE USSR

1. Introduction

a. The Soviets possess and distribute to the Eurasian Communist Countries (ECC) a complete range of time fuzes including combination time and impact fuzes. These fuzes are both the mechanical time and powder train time types.

b. Tactically the greater number of this fuze class is employed in an antiaircraft role. Currently, both powder train fuzes and mechanical time fuzes have been seen only in medium caliber projectiles, such as the 85-mm and 100-mm.

c. Powder train time fuzes employing pressed black powder in time rings are severely affected by altitude and humidity; therefore, burning rates may vary to such an extent that renders the fuze ineffective for antiaircraft purposes. For this reason most countries now employ mechanical time fuzes in the antiaircraft role even though mechanical time fuzes are more expensive and more difficult to manufacture. The Soviets took cognizance of the advantages and disadvantages of powder train time fuzes and initiated a redevelopment program to improve this principle. Since the pressed black powder delay train is unreliable, this material is being replaced by a nongaseous, dicromate burning mixture that is relatively nonhydroscopic; this has led to the retention of powder train time fuzes within the Soviet fuze family.

d. It is known that the Soviets have developed mechanical time and powder train time fuzes that are not covered in this document.

e. It is also known that the Soviets and other members of the ECC possess variable time (VT) fuzes. There is evidence that this type of fuze may have been employed in Vietnam, but it has not been verified.

f. Currently, no time fuzes or combination fuzes of ChiCom manufacture have been recovered. It is certain that such fuzes exist, if only for antiaircraft purposes, but all ChiCom 85-mm and 100-mm antiaircraft projectiles recovered to date have been equipped with Soviet fuzes.

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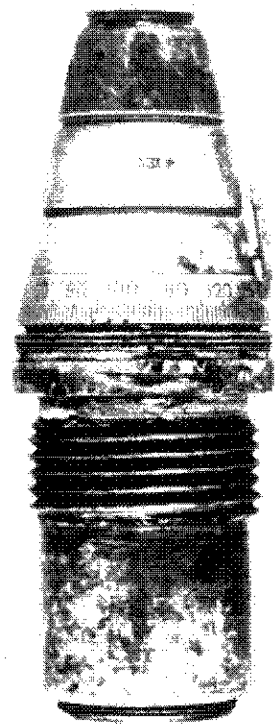
Fuze, powder train time, D-1



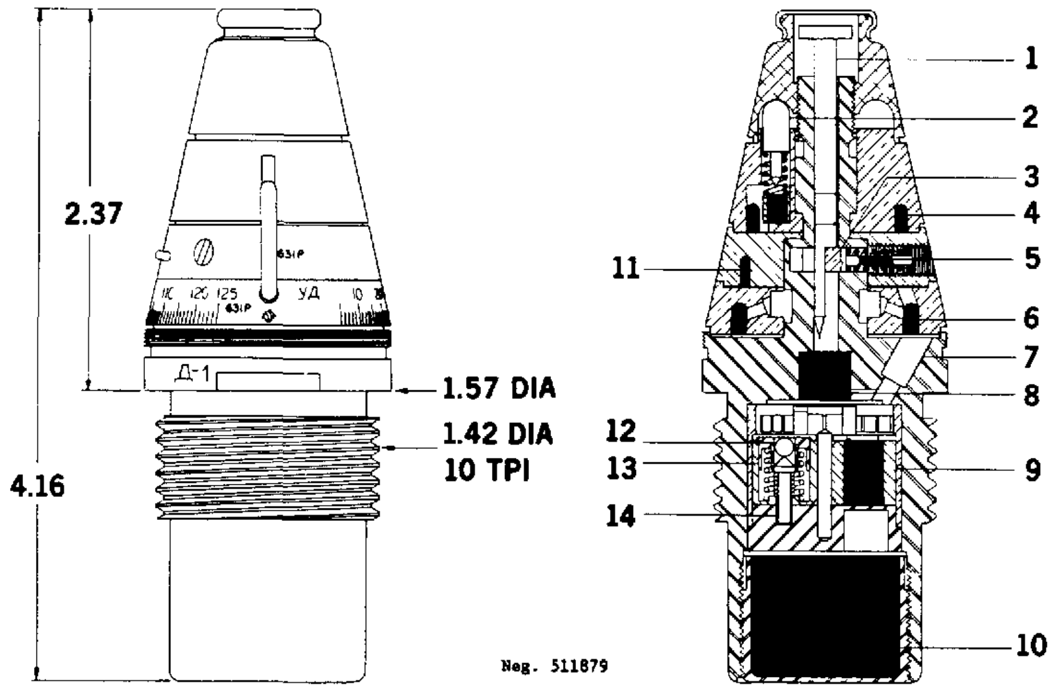
DISCUSSION

The D-1 is a combination powder train time and superquick PD fuze. The maximum burning time varies from 35 to 45 seconds. The bottom time ring has a scale of 125 graduations; the minimum setting on this scale is ten graduations on older fuzes and five on later models. If the graduations are set between 115 and 125, the impact option will not arm. The impact option is selected by turning the time ring to "YA". A protective cover which protects the fuze from moisture is removed before firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Brass & Steel	Arming method	Setback & centrifugal force
Weight	.946 lb	Firing method	Time or impact
Markings	?	Safety devices	Interrupter
Booster		Arming distance	?
Body material	Steel	Arming time	?
Body length	0.72 in	Delay time	NA
Explosive	?		
Explosive weight	?		

<u>Fuze</u>, powder train time, D-1



FUNCTIONING DESCRIPTION

Upon firing, the setback striker (2) moves to the rear and initiates the time train pellet. Simultaneously, the setback sleeve (13) moves to the rear and releases the locking ball (12) allowing the compressed spring to force the lock pin (14) forward and release the rotor (9). As the flame burns around the middle time ring it ignites a pyrotechnic detent pellet (5) which burns and releases the safety detent (3). Centrifugal force can now align the rotor (9) and free the firing pin (1).

If the projectile impacts prior to expiration of the time setting, the firing pin initiates the detonator (8), which in turn initiates the relay and booster (10).

For a time burst the flame travels through the lower time ring and flashes through the flash channel (7) to the relay and booster.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
107-mm Corps Guns M1910/30 & M1940 (M60)	107-mm Frag H.E. OF-420
122-mm Corps Guns M1931 & M1931/37 (A-19) Tank Gun M1943 (D-25) S.P. Gun M1944 (A-19S)	122-mm Frag H.E. OF-462, OF-471, OF-471N
152-mm Gun M1910/34, Gun Howitzer M1937 (ML-20)	152-mm Frag H.E. OF-530, OF-540

(No disassembled view available)

REFERENCE

None

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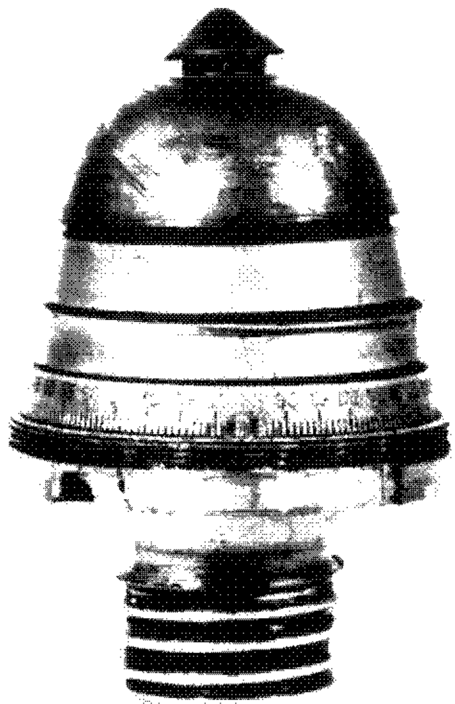
Fuze, powder train time, OM-82



Neg. 511880

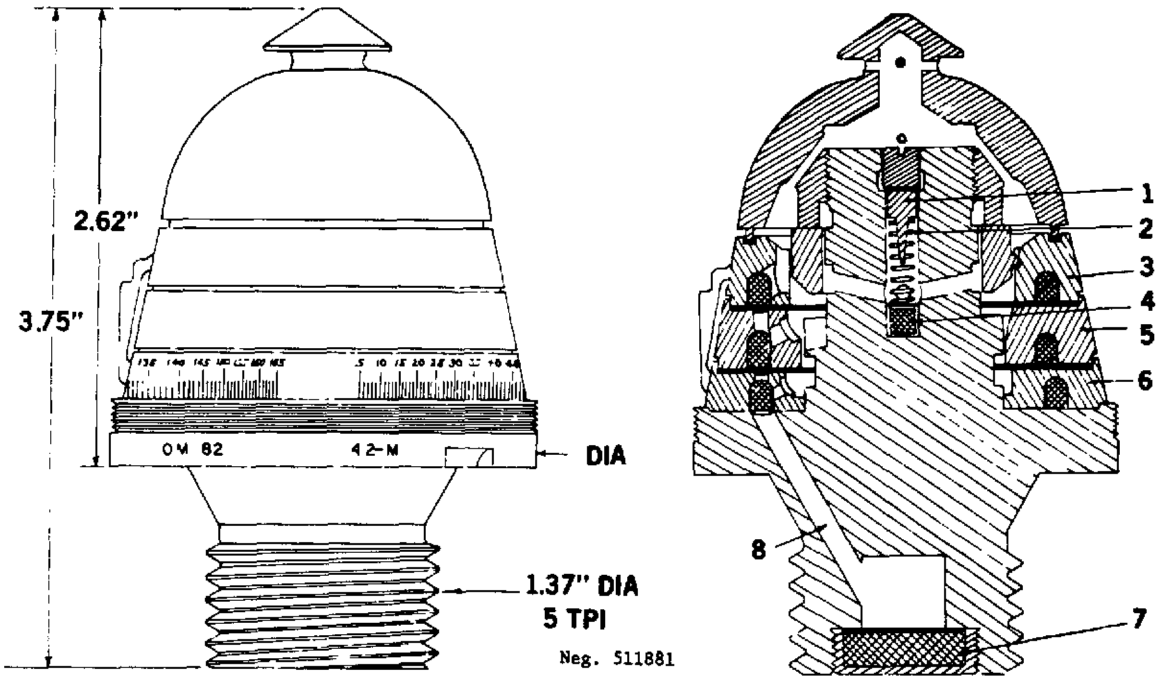
DISCUSSION

The OM-82 is a powder train time fuze initiated by setback. The time rings and body material are steel while the nose material is brass. The nose and upper time ring each have a spanner wrench hole. The hooded tip on the end of the nose has four vent holes spaced 90° apart. This fuze is used to ignite an expelling charge in leaflet projectiles and therefore has a black powder igniter rather than a booster.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material -------- Brass & Steel	Arming method -------- Setback
Weight ------------- ?	Firing method -------- Time
Markings ----------- OM-82	Safety devices ------- None
Booster	Arming distance ------ ?
Body material -------- Steel	Arming time ---------- ?
Body length ---------- NA	Delay time ----------- 0.5 - 16.5 sec
Explosive ----------- Black powder	
Explosive weight ----- ?	

Fuze, powder train time, OM-82



FUNCTIONING DESCRIPTION

When the round is fired, setback causes the firing pin (1) to overcome the resistance of the spring (2) and move rearward until it strikes and ignites the primer (4). The flash from the primer moves along a flash channel until it ignites the powder train in the upper time ring (3). The burning powder train follows a path within the upper time ring through a passage to the center time ring (5), within the center time ring through a passage to the lower time ring (6), within the lower time ring to a flash channel (8), and then ignites the powder magazine (7), which in turn functions the bursting charge of the projectile.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
82-mm Mortar, M1937 (82-BM37) M1941 (82-BM41) and M1943 (82-BM43)	82-mm Leaflet A-832

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

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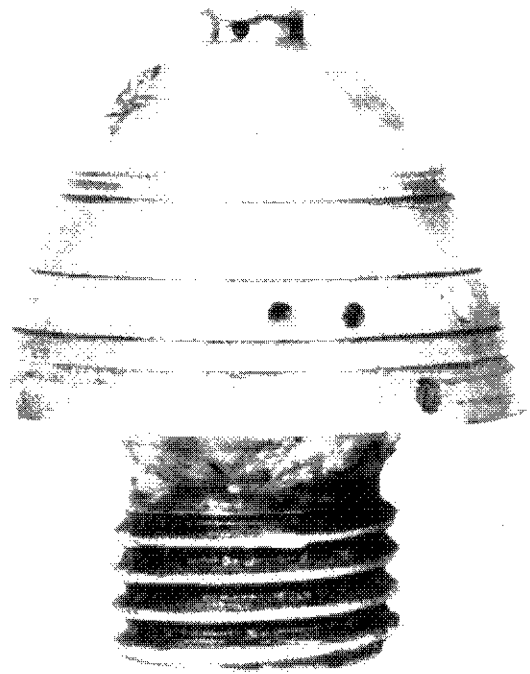
Fuze, powder train time, 22G, 22P, and 22PG



Neg. [illegible]

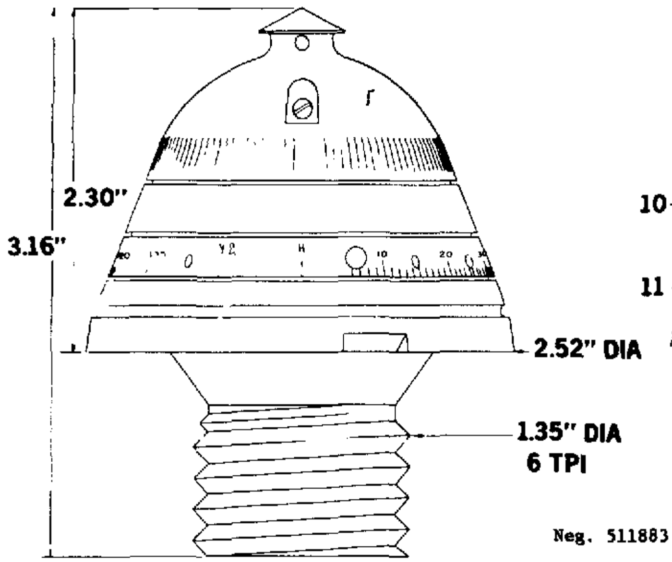
DISCUSSION

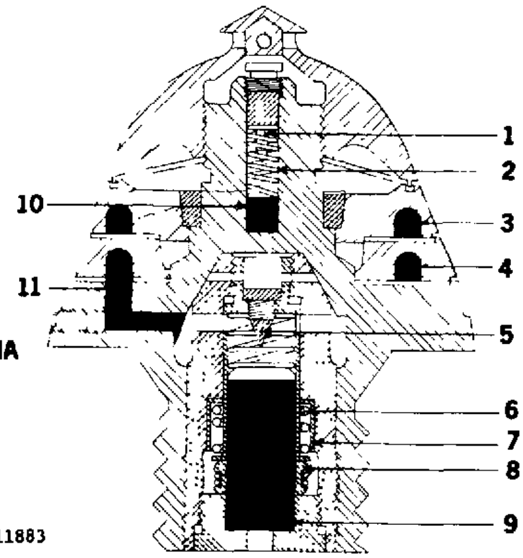
The powder train fuzes in this series are armed by setback and fired according to the selected option of time or impact. The fuze body and time rings are aluminum while the head is constructed of brass. Except for slight modifications to improve safety, the fuzes are identical in design and functioning. Two time rings are employed. The lower ring is graduated from 0 to 130 in addition to the nondelay and canister marks "YD" and "K". The upper ring is unmarked. Some of the fuzes in the series have been found with safety caps, which are removed prior to firing. The "22" series fuzes are probably obsolete.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Aluminum	Arming method --------- Setback
Weight ----------------- 0.836 lb	Firing method --------- Powder train time or impact
Markings --------------- ?	
Booster	
Body material ---------- None	Safety devices -------- None
Body length ------------ ?	Arming distance ------- ?
Explosive -------------- ?	Arming time ----------- ?
Explosive weight ------- ?	Delay time ------------ 0-22 sec

Fuze, powder train time, 22G, 22P, and 22PG





FUNCTIONING DESCRIPTION

On firing, when the fuze is set for time action, the setback firing pin (1) overcomes the resistance of the primer carrier spring (2) and ignites the primer (10) which ignites the upper time ring (3) and lower time ring (4). When the lower time ring burns through, the flame passes through the flash channel and actuates the detonator assembly (9). When set for a canister projectile, the time rings (3 and 4) are lined up and the flash from the primer (1), after burning through the aligned time rings, passes directly into the flash channel (11) and initiates the detonator (9). When impact action is desired, setback causes the arming sleeve (7) to move rearward over the safety ring (8), compressing the arming spring (6) and holding the split safety ring (8) closed; this prevents the safety ring from releasing the detonator while the round is in the bore of the weapon. After the projectile leaves the bore, the arming spring (6) moves the arming sleeve (7) forward, allowing centrifugal force to expand the split safety ring and free the detonator. On impact, the detonator (9) strikes the firing pin (5) and actuates the explosive train.

Fuze, powder train time, 22G, 22P, and 22PG

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm Howitzer M1909 & M1938	76-mm Shrapnel Sh-354, Sh-354P
76-mm Gun, M1902/30, M1936 (F-22) M1939 (USV), & M1942 (ZIS-3)	76-mm Shrapnel Sh-354, Sh-354G, Sh-354U Incendiary Z-354
76-mm Gun, M1900, M1902 & M1902/30, Tank Guns, M1938/39 (L-11), M1939 (F-32) M1940 (F-34) & M1941 (ZIS-5), Howitzer M1909 & M1938 guns M1936 (F-22) M1939 (USV) & M1942 (ZIS-3)	76-mm Shrapnel, Sh-354, Sh-354G, Sh-354U, Sh-352P Incendiary Z-354

(No disassembled view available)

REFERENCE

None

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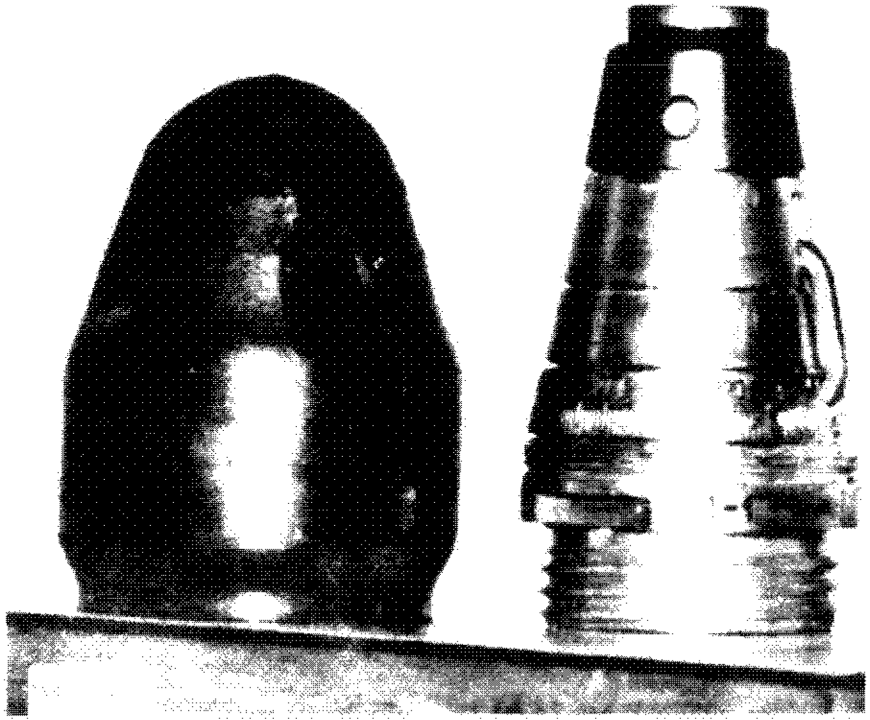
Fuze, powder train time, T-1



DISCUSSION

The T-1 is a powder train time fuze used on illuminating mortar projectiles. In appearance and functioning it is similar to the Soviet D-1 fuze. The fuze has an impact option in addition to the time graduations of 10-125.

The fuze body is constructed of unpainted aluminum, with an anodized nose and a copper protective cap.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Aluminum	Arming method -------- Setback
Weight ---------------- 0.52 lb	Firing method -------- PTT or impact
Markings -------------- T-1	Safety devices ------- None
Booster	Arming distance ------ ?
Body material --------- Brass	Arming time ---------- ?
Body length ----------- ?	Self-destruct time --- NA
Explosive ------------- Black powder	Delay time ----------- None
Explosive weight ------ 31 gr	

Fuze, powder train time, T-1

(No photograph available) (No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, the setback firing pin overcomes the resistance of its spring and initiates the primer pellet. The flame from the primer pellet ignites the powder train in the upper time ring, which burns through, and ignites the powder train in the middle and lower ring. As the flame burns around the middle time ring it ignites a pyrotechnic detent pellet which burns and releases the detent restraining the firing pin. Centrifugal force completes the arming function by forcing the detent to the side clearing the firing pin.

Upon expiration of the time setting, the flame from the lower ring passes through a flash channel to the primer and booster and thence to the projectile filler.

If an impact occurs prior to expiration of the time setting, or if the fuze has been set for impact action (setting "УП") the firing pin is driven into the primer to initiate the booster and filler.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
120-mm Mortar	120-mm 111
82-mm Mortar	82-mm 111 VS-832S

(No disassembled view available)

REFERENCE

None

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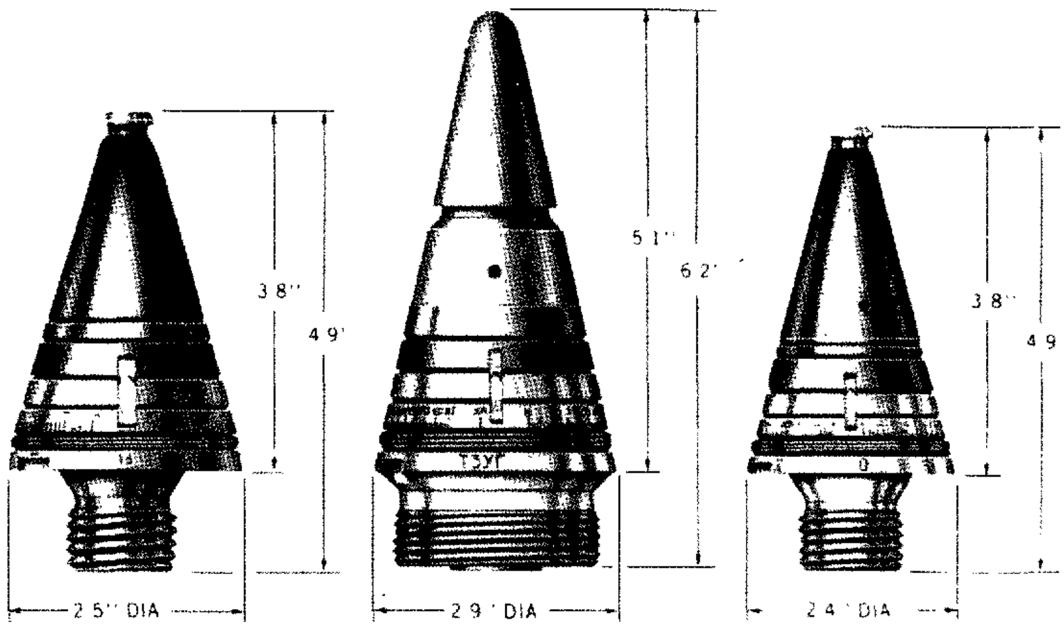
Fuzes, powder train time, T-3, T3(UG) and 32-second



Neg. 511885

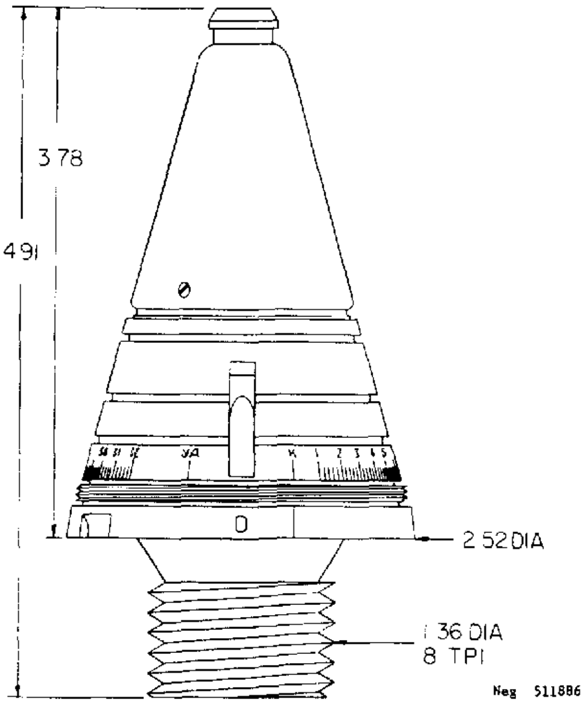
DISCUSSION

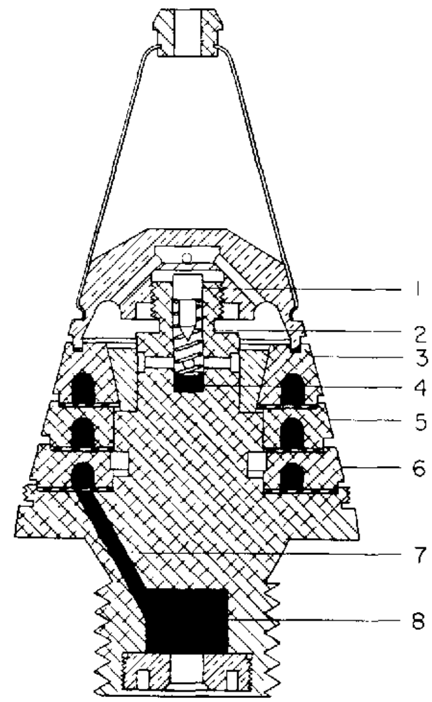
The T-3, T3(UG) and 32-second are powder train time fuzes armed by setback and fired at the selected time by a pyrotechnic powder train. The fuzes are nearly identical in function and construction. The following optional settings are available on the time ring: (1) "YA" deletes the time option and the fuze will not function, (2) "K" is a short delay for canister projectiles, (3) Other time delays up to 32 seconds are set by the time rings. A safety cap or cover is provided which protects the fuze prior to firing.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Steel	Arming method	Setback
Weight	1.43 lbs	Firing method	PTT
Markings	T-3	Safety devices	None
Booster		Arming distance	30 to 60 ft
Body material	Aluminum	Arming time	?
Body length	NA	Self-destruct time	None
Explosive	?	Delay time	0-32 second
Explosive weight	?		

Fuzes, powder train time, T-3, T3(UG) and 32-second





FUNCTIONING DESCRIPTION

With the fuze set for time functioning, upon firing, setback causes the firing pin (1) to overcome the resistance of the spring (2), and move rearward until it strikes and ignites the primer (4). The flash from the primer is transmitted to the upper time ring (3), where it ignites the powder train. The burning powder train follows a path within the upper time ring and through a passage to the center time ring (5), within the center time ring and through a passage to the lower time ring (6), and within the lower time ring to the channel (7). The burning powder train then flashes through the channel to ignite the black powder magazine (8) which functions the projectile. When the fuze is set on "K", for canister effect, the passages of the time rings are directly aligned with the channel (7); consequently, after the burning powder train consumes the path within the upper time ring (3), it goes directly to the channel, to the magazine, and functions the projectile. When the fuze is set on "YA" it will not function. The powder train in the upper time ring is consumed, but the time rings have been set so that the passages are blocked and the powder train is prevented from burning beyond the upper time ring. The "YA" setting results in the projectile having a solid shot effect against the target. This setting is used only for antitank fire, when no armor-piercing projectiles are available.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles	
76-mm AA guns M1931, M1931/33 and M1938; Div guns M1902/30, M1936 (F-22), M1939 (USV) and M1942 (ZIS-3), Tank guns M1938/39 (L41), M1939 (F-32) M1940 (F-34), and M1941 (ZI95), reg. guns M1900, M1902, and M1927	76-mm Shrapnel	Sh-361
85-mm Tank gun M1944 (ZIS-S-53)	85-mm Frag	O-365

(No disassembled view available)

REFERENCE

None

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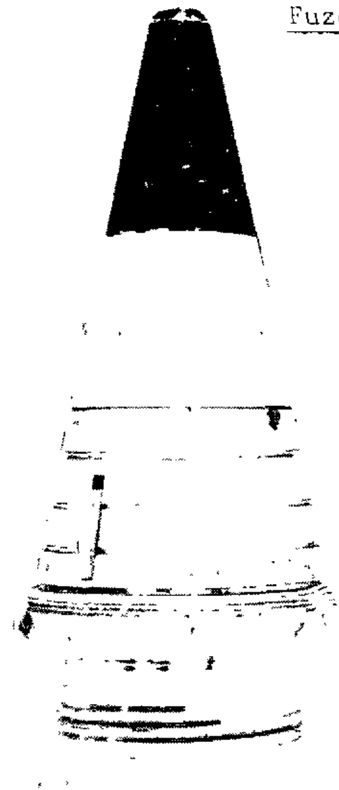


Fuze, powder train time, T-5

DISCUSSION

The T-5 fuze is the fifth model of "T"-series Soviet fuzes. The T-5 fuze was designed for fragmentation shells used in medium caliber anti-aircraft guns. It is a boresafe powder train fuze having the Soviet safety classification of "Safe." The time scale ring is graduated from 5 to 165 and has a maximum burning time of approximately 32 seconds. The fuze is shipped with a setting of "10." According to Soviet regulations the lowest permissible setting is "8"; lower settings are used only for self-defense of a gun battery against attacking aircraft. Original models included a capability for a canister burst 10 to 32 feet

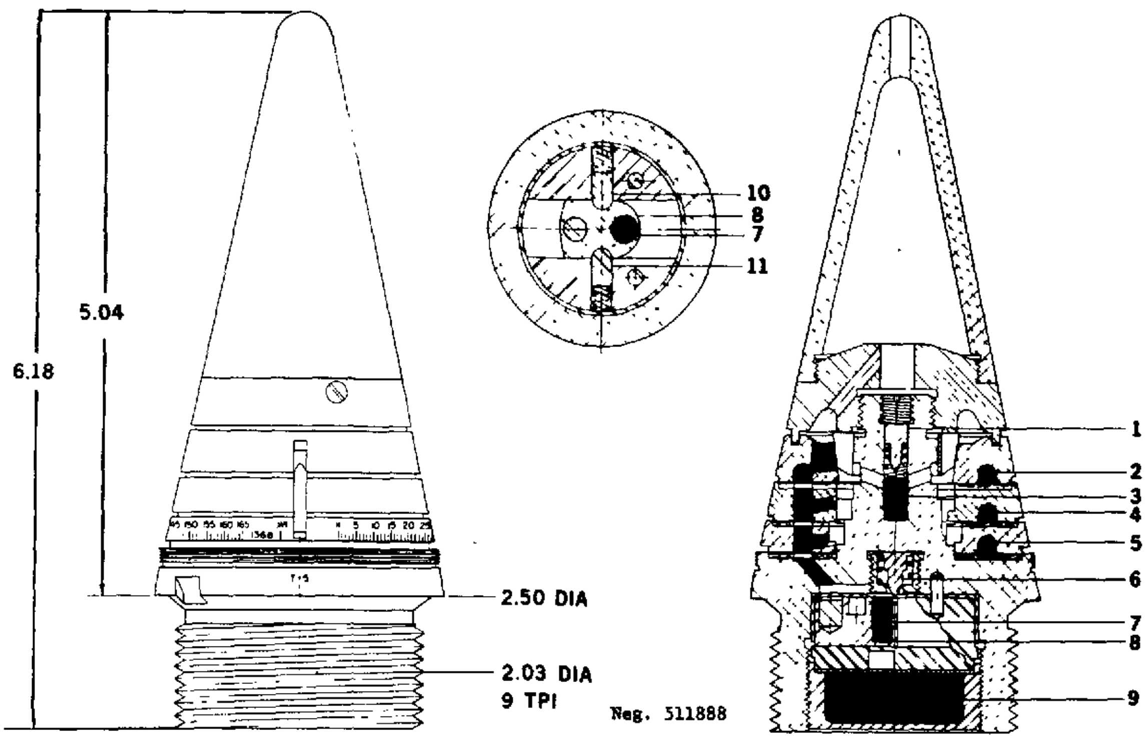
CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material ---------- Aluminum	Arming method -------- Setback
Weight ----------------- 1.56 lb	Firing method -------- Powder train time
Markings --------------- T-5	Safety devices ------- Out-of-line detonator
Booster	Arming distance ------ 10 to 32 ft min
Body material ---------- Steel	Arming time ----------- ?
Body length ------------ 0.6 in	Self-destruct time --- NA
Explosive -------------- Tetryl	Delay time ----------- NA
Explosive weight ------- 2.6 oz	

Fuze, powder train time, T-5

from the muzzle, a solid shot effect, and the time settings. Models of recent manufacture are limited to the time setting.

Externally the T-5 fuze compares with the T-6 fuze except for identification stampings, diameter of the threaded base and the color bands. The diameter of the threaded base of the T-5 fuze is much larger than that of the T-6 fuze. The upper portion of the windshield is painted black and one black band is painted around the circumference of the safety cap. Internally the T-5 fuze compares with the T3(UG) fuze. The functioning is also essentially the same, except for the addition of a detonator slider.



FUNCTIONING DESCRIPTION

Upon firing, regardless of the setting of the time scale rings, the slider setback locking pin (6) overcomes the tension of its spring and sets back into the slider (8) to hold it immovable. As the projectile rotates through the bore, centrifugal force causes the two slider locking pins (10) and (11) to compress their springs and move outward. After the projectile has left the bore and the setback force ceases, the slider setback locking pin spring returns to its original position away from the slider. Centrifugal force then acts upon the counterweight in the slider to move the slider into alignment with the flash channel and the primer detonator and booster (9). Simultaneously with setback, the firing pin (1) overcomes the resistance of its spring and moves rearward until it strikes and ignites the primer (3). The flash from the primer is transmitted to the upper time ring (2) where it ignites the powder train. The powder train burns successively through the center time ring (4) and the lower time ring (5), which passes the flame through the flash channel to ignite the primer detonator (7), in the slider the primer detonator functions the booster (9), and the booster in turn explodes the projectile.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm AA guns, M1931, M1931/33 & M1938	76-mm Frag O-361, O361D
85-mm AA gun, M1939, Tank guns M1943 (D-5T85) and M1944 (ZIS-S53), SP guns M1943 (D5-S85 and D5-S85A)	85-mm Frag O-365

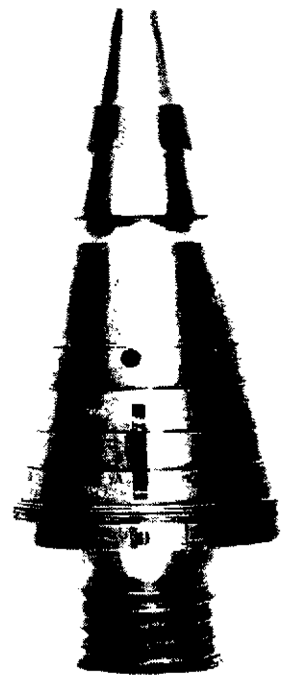
(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, powder train time, T-6



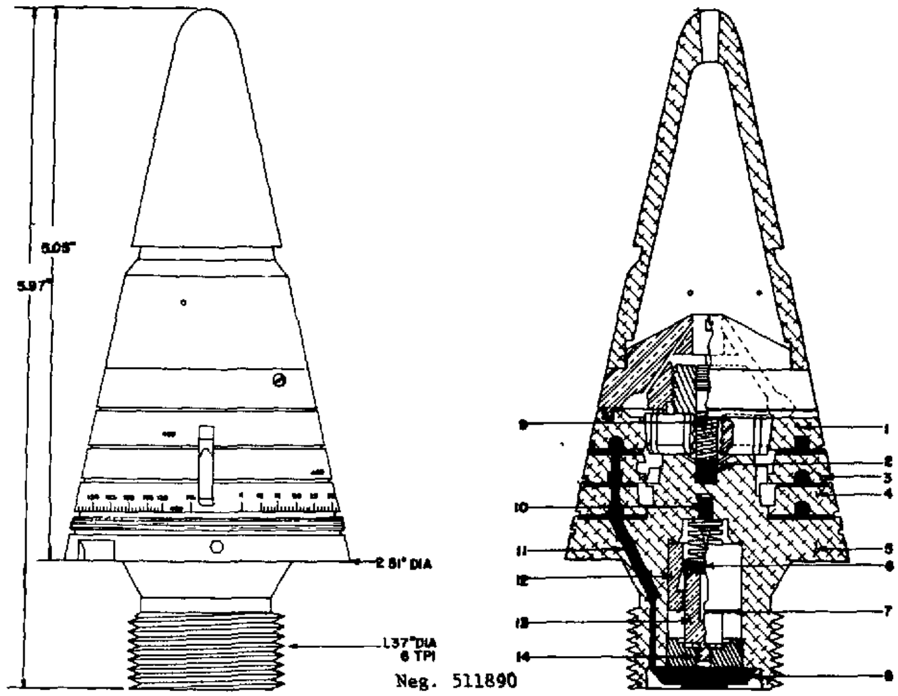
DISCUSSION

The T-6 fuze was designed for shrapnel, incendiary, propaganda, and illuminating shells of medium-caliber weapons. This is a boresafe powder train fuze, having a Soviet safety classification of "safe." It is considered a double-action fuze since it has both time and impact functioning. The fuze is shipped with a hermetically sealed safety cap which must be removed in order to set the time rings. The T-6 fuze is quite similar to other "T"-series fuzes, but is distinguished by having one red color band on the fuze windshield and two red color bands on the safety cap. The major diameter of the base threads of the T-6 and T-7 is approximately the same.

CHARACTERISTICS

Fuze Assembly:	Functional Data:
Body material --------- Aluminum	Arming method -------- Setback
Weight ---------------- 1.19 lb	Firing method -------- PTT or impact
Markings -------------- T-6	
Booster	Safety devices ------- None
Body material --------- Brass	Arming distance ------ ?
Body length ----------- 0.02 in	Arming time ---------- ?
Explosive ------------- Black powder	Self-destruct time --- NA
Explosive weight ------ 30 gr	Delay time ----------- NA

Fuze, powder train time, T-6



Neg. 511890

FUNCTIONING DESCRIPTION

When the round is fired, the primer housing (12) in the base of the fuze body (5) is set back over the stirrup (7) and the prongs of the stirrup become engaged in a groove inside the primer housing in the rearmost position, thus arming the fuze for impact functioning. Simultaneously, the firing pin (9) overcomes the resistance of its spring and moves rearward until it strikes and ignites the primer (2). The flash from the primer is transmitted to the upper time ring (1) where it ignites the powder train. If the fuze is set for time functioning the powder train continues to burn successively through the center time ring (3) and the lower time ring (4). The flame then passes through the flash channel (11) to ignite the black powder base charge (8) which sets off the bursting charge in the shell. If the fuze is set for canister effect (the minimum burning time setting), the action is essentially the same except that the powder train burns in a straight passage through the time rings to the flash channel, and then to the base charge. If the fuze is set for impact functioning, or if the fuze fails to function on the time or canister settings, upon impact the primer holder (13), the stirrup (7), and the primer housing (12) are thrown forward to overcome the tension of the anticreep spring and cause the impact primer (6) to impinge against the fixed firing pin (10). This action causes a projection on the base of the primer holder to be moved out of the central hole in the primer housing retainer (14), thereby opening this orifice to allow the flame from the primer to pass to the base charge and then to the projectile.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm Howitzer, M1927 & M1943, Mountain guns M1909 & M1938, Guns M1902/30, M1936 (F-22) M1939 (USV), & M1942 (ZIS-3), Tank guns M1927/32, M1938/39 (L-11) M1939 (F-32) M1940 (F-34) & M1941 (ZIS-5) SP gun M1942/43 (SAU-76)	76-mm Shrapnel Sh-354T Sh-354U Inc Z-350 Z-354
122-mm Howitzer, M1938	122-mm Illuminating S-426 Propaganda A-462 Shrapnel Sh-462

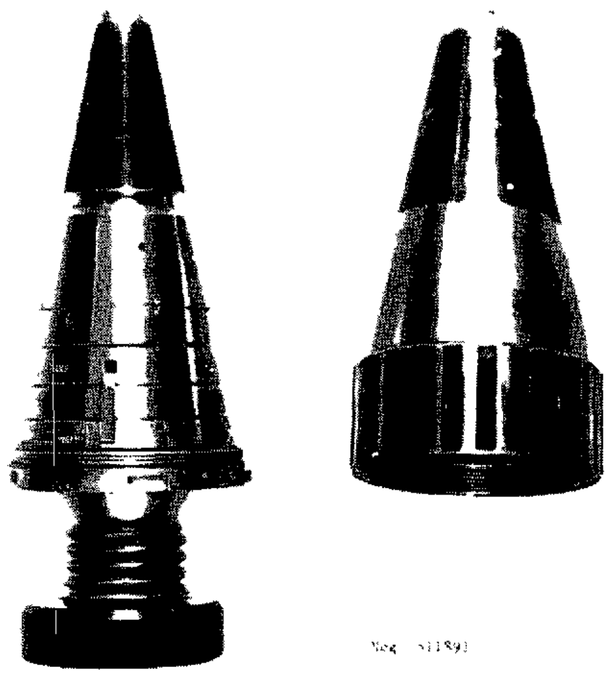
(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, powder train time, T-7



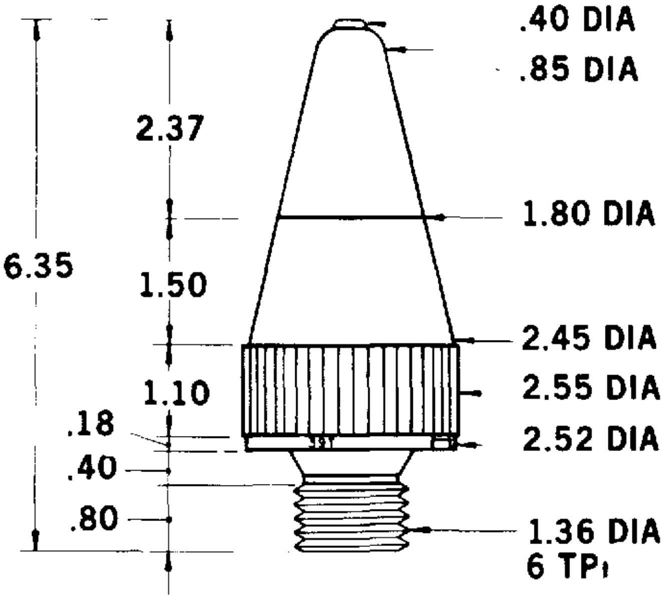
DISCUSSION

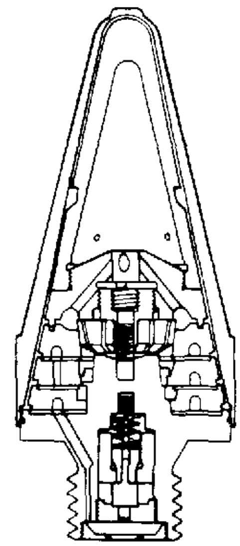
The T-7 is a combination powder train time and ~~point detonating~~ fuze with settings for time and impact action. It is similar in design and function to the T-6 with the exception of the time scale which is graduated from 5 to 165. The T-7 may be identified by the violet colored band on the shipping cap and windshield. It is used in the same projectiles and fired from the same guns as the T-6.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback
Weight	1.19 lb	Firing method	PTT or impact
Markings	T-7	Safety devices	None
Booster		Arming distance	?
Body material	Brass	Arming time	?
Body length	0.02 in	Self-destruct time	NA
Explosive	Black powder	Delay time	NA
Explosive weight	30 gr		

Fuze, powder train time, T-7

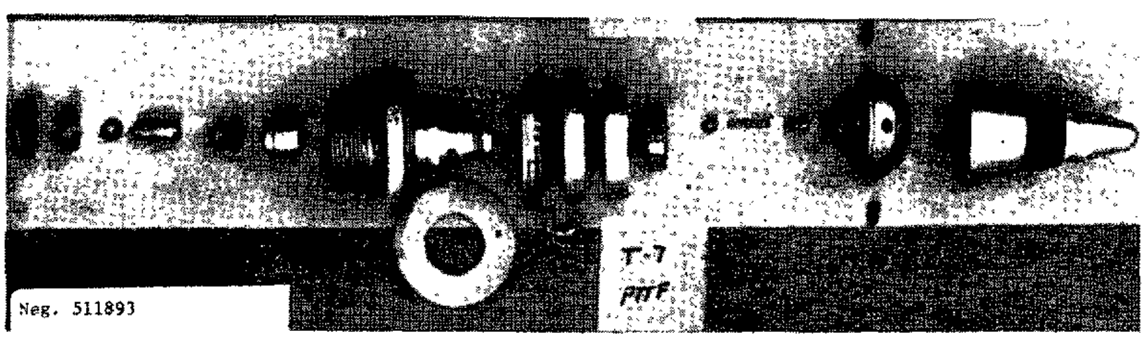




Neg. 511892

FUNCTIONING DESCRIPTION

Same as the T-6.



Neg. 511893

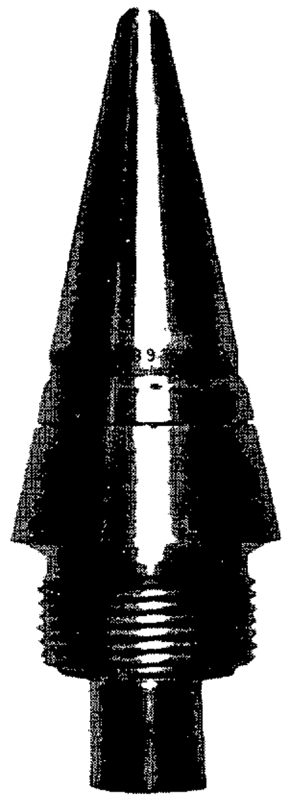
WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
76-mm Howitzer, M1927 & M1943, Mountain guns M1909 & M1938, Guns M1902/30, M1936 (F-22) M1939 (USV), & M1942 (ZIS-3), Tank guns M1927/32, M1938/39 (L-11) M1939 (F-32) M1940 (F-34) & M1941 (ZIS-5) SP gun M1942/43 (SAU-76)	76-mm Shrapnel Sh-354T Sh-354U Inc Z-350 Z-354
122-mm Howitzer, M1938	122-mm Illuminating S-426 Propaganda A-462 Shrapnel Sh-462

REFERENCE

DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U), (SECRET-NFD).

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3



Fuze, mechanical time, VM-2

Neg 511894

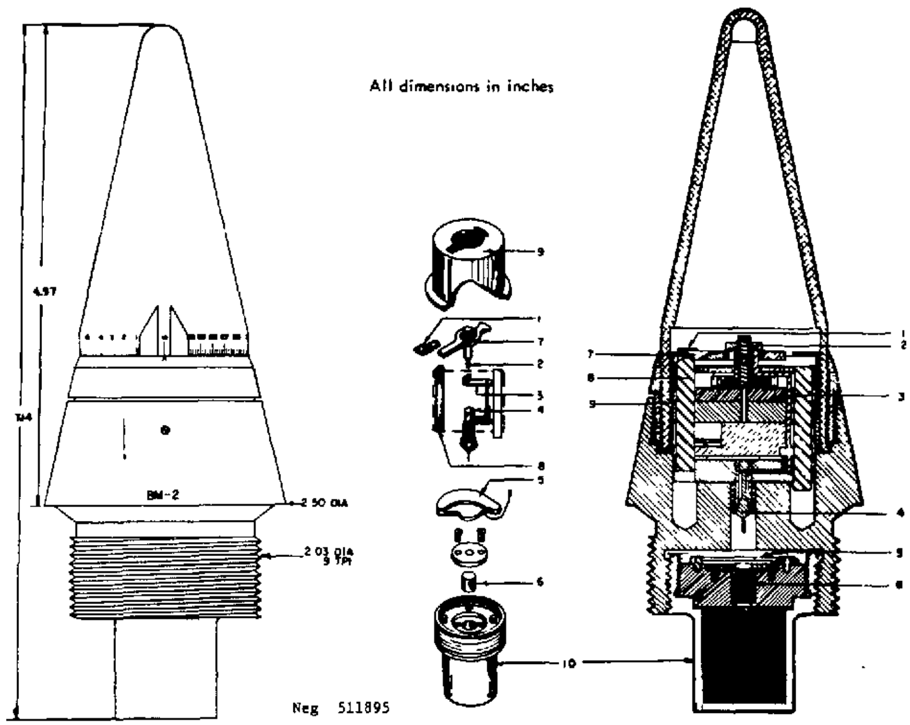
DISCUSSION

The VM-2 is a clockwork mechanical time fuze which is armed by setback and centrifugal force. It was designed for use in 85-mm antiaircraft projectiles with a maximum flight time of 30 seconds. No provisions

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Aluminum	Arming method	Setback & centrifugal force
Weight	1.66 lb		
Markings	BM-2		
Booster		Firing method	Mechanical time
Body material	Aluminum	Safety devices	Mechanical lock on firing pin and interrupter between firing pin and primer
Body length	1.6 in		
Explosive	Tetryl		
Explosive weight	?		
		Arming distance	?
		Arming time	0.8 sec
		Self-destruct time	0.8 to 30 sec
		Delay time	NA

have been made for impact firing. The fuze body and windshield are made of aluminum; the locking ring and internal components are made of brass.



FUNCTIONING DESCRIPTION

On firing, setback causes the trigger (8) to move rearward and release the hand (7). The hand, upon being released, is rotated in a counterclockwise direction by the main spring and clockwork mechanism. The complete clockwork mechanism has not been shown in the drawing. When the hand has cleared the safety bridge (1), it is pressed up against the hand race on the upper surface of the top of the retainer cup (9) by a spring (2) under the center of the hand. When the hand reaches the portion of the hand race which is cut out to receive it, it is forced upward by its spring, and the ringlike section of the hand clears the prong of the safety lever (3), allowing it to move outward under the pressure of its spring and centrifugal force. This pulls the lower section of the safety lever out of the safety slot of the firing pin (4), allowing the firing pin to go rearward under the influence of its spring and to activate the detonator (6), which in turn detonates the booster (10). The fuze has an additional safety feature in its spring-loaded shutter (5) which remains in place, blocking the primer from the firing pin until centrifugal force pulls it to the side and leaves a clear passage to the primer.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
85-mm Antiaircraft gun M1939	85-mm FRAG O-365M

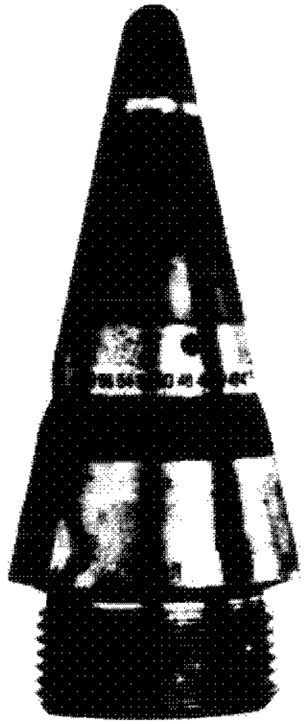
(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, mechanical time, TM-16L and VM-60



Neg. 311595

DISCUSSION

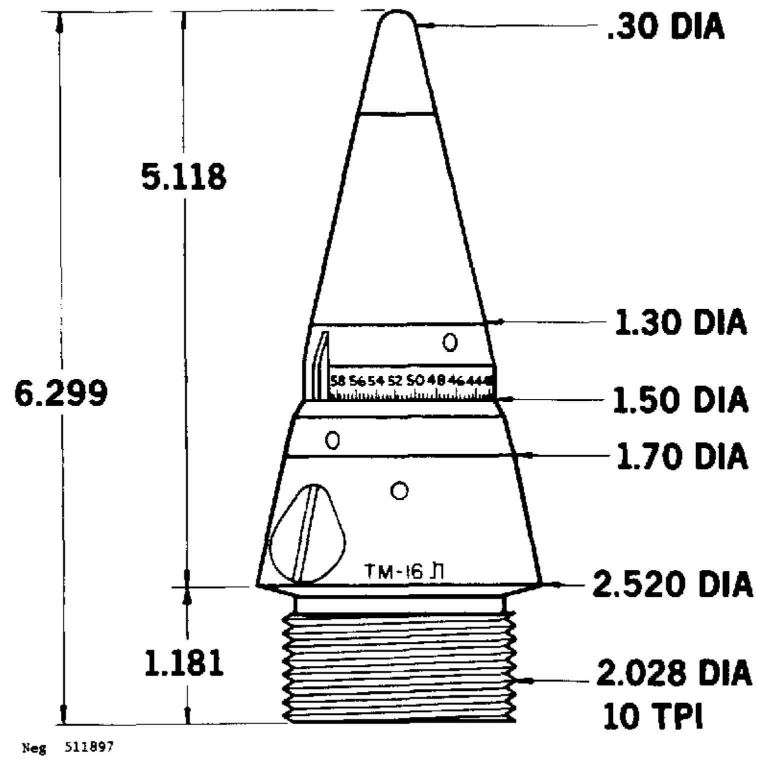
The TM-16L and VM-60 are mechanical time fuzes used in large caliber projectiles. Both fuzes are similar in design and functioning; however, the VM-60 was designed for use with high explosive projectiles and therefore includes an out-of-line detonator and a tetryl booster. The TM-16L was designed for use with an illuminating projectile and uses a black powder booster and an in-line detonator.

Both fuzes employ a spring wound clockwork, adjustable from 2 to 58 seconds in increments of 0.2 seconds.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ------	Aluminum	Arming method --------	Centrifugal force
Weight -------------	1.69 lb	Firing method --------	Mechanical time
Markings -----------	BM-60 TM-16Л	Safety devices -------	Out-of-line detonator
Booster		Arming distance ------	?
Body material ------	Steel	Arming time ----------	2-58 seconds
Body length --------	0.591 in	Self-destruct time ---	NA
Explosive ----------	VM-60 Tetryl; TM-16 Black powder	Delay time -----------	NA
Explosive weight ---	?		

Fuze, mechanical time, TM-16L and VM-60



FUNCTIONING DESCRIPTION

Upon firing, setback moves a spring loaded detent in the base of the fuze, to the rear unlocking the detonator slider. Simultaneously, centrifugal force removes two additional detents from the slider allowing it to rotate and align. When acceleration ceases, the detent locks the detonator slider in place.

Centrifugal force also removes a block from the clockwork locking arm and the clockwork timing arm. This allows the timing arm to be rotated by the spring wound clockwork mechanism. The fuze is now armed and functioning. When the timing arm rotates to the corresponding slot in the timing disk it is spring ejected. This action releases the locking cam arm, allowing a spring in the detonator slider to overcome a detent and impinge the detonator on the transverse firing pin. In the TM-16L fuze the flash is relayed to the fuze ignition charge. In the VM-60 the flash is relayed to the booster.

WEAPONS AND PROJECTILES USED WITH

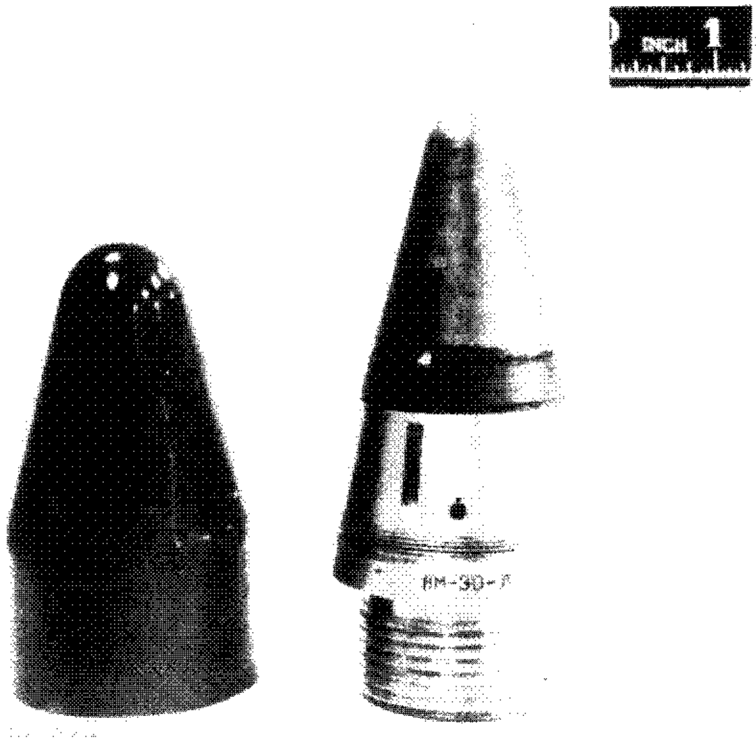
Weapons	Fuze	Projectiles
130-mm Coastal gun, M58	VM-60	130-mm HE OF-3S-42
130-mm Field gun M46	TM-16L	130-mm Illum SP-46

REFERENCE

(S-NFD) DIA Report ST-CR-20-8-69, Field Examination of Selected Items of Foreign Ammunition (U).

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

Fuze, mechanical time, VM-30 and VM-30L



DISCUSSION

The VM-30 and VM-30L are mechanical time fuzes which are armed by setback and centrifugal force. No provisions are included for impact functioning.

The clockwork design and function are similar to the German ZT.Z.S/30 Rheinmatell fuze of World War II, except for the addition of an out-of-line detonator.

CHARACTERISTICS

Fuze Assembly:	
Body material	Aluminum
Weight	1.57 lb
Markings	BM-30
Booster	
Body material	Aluminum
Body length	1.10 in
Explosive	Tetryl
Explosive weight	3.4 gm

Functional Data:	
Arming method	Setback & centrifugal force
Firing method	Mechanical time
Safety devices	Out-of-line detonator
Arming distance	?
Arming time	0 to 30 sec

Fuze, mechanical time, VM-30 and VM-30L

The aluminum body is separated at the base of the ogive by a brass lock ring. The lower body is threaded for an anodized steel protective shipping cap. Firing delay time is set by an automatic fuze setter or with a fuze wrench which engages key slots in the body and ogive. There are no time setting marks on the fuze body.

The VM-30 and VM-30L fuzes are nearly identical in appearance but vary slightly in weight. Internal differences consist of the following: VM-30, brass clockwork with an integral horizontal firing pin and primer slider; VM-30L, aluminum clockwork with a vertical firing pin and a fixed primer located in the base of the fuze body.

(No line drawing available)

FUNCTIONING DESCRIPTION

Upon firing, three setback detents mounted vertically on the clockwork housing move rearward to lock the ogive to the fuze body and to unlock the clockwork, allowing the timing hand to turn. Simultaneously, a safety detent sets back, locking the detonator slider out of line. Centrifugal force also causes two detonator slider detents to be withdrawn. After setback ceases, the detonator slider spring withdraws the safety detent, allowing the detonator slider to align. The fuze is now armed.

When the timing hand reaches the slot in the hand race, it is spring ejected and allows the trigger bar to pivot. This frees the primer slider to impinge the primer on the fixed transverse firing pin and initiate the explosive train.

Functioning of the VM-30L is identical, except that the trigger bar releases a vertical spring loaded firing pin which impinges on a primer located in the fuze body.

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
85-mm AA gun M1939 Field gun D-44	85-mm HE-Frag O-365M

(No disassembled view available)

REFERENCE

FSTC Foreign Materiel Exploitation Memorandum Reports - FSTC-CR-20-57-71 and FSTC-CR-20-58-71

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Section II.

MISCELLANEOUS PROJECTED FUZES

1. Introduction

a. This chapter includes those fuzes that do not, by definition, fit securely in the other sections of this document. However, these fuzes are no less important than those residing in conventional classification.

b. A case in point is the Long Delay Fuze, NNC-82. This fuze holds a unique position in the world's explosive ordnance in that it is the only known long delay fuze employed with projected munitions. Employment of the fuze has been limited, but the threat the fuze presents is real.

c. The NNC is bore safe, well constructed and unique in that it arms only upon impact. By American standards its only disadvantage is its lack of detonator safety.

d. The NVA/VC air burst fuze is an interim attempt to fill a void in their ordnance family. They currently lack a fuze for use in infantry weapons that will produce air bursts for antipersonnel or antiaircraft purposes. It is expected that additional fuzes of this classification will appear.

e. Since the Vietnamese conflict may be classed as a clandestine guerrilla war, it can be assumed that additional special purpose fuzes will be developed that will reside in the miscellaneous classification.

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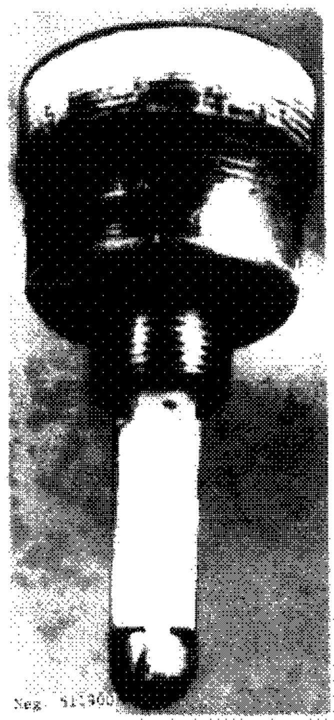
Fuze, base detonating, powder train time



Neg. 515900

DISCUSSION

The North Vietnamese base detonating, powder train time fuze (PTTF) is a cheap, simple answer to their lack of more sophisticated air burst fuzes.

This fuze has been used in both 82 mm air burst fragmentation, and forward ejecting propaganda rounds.

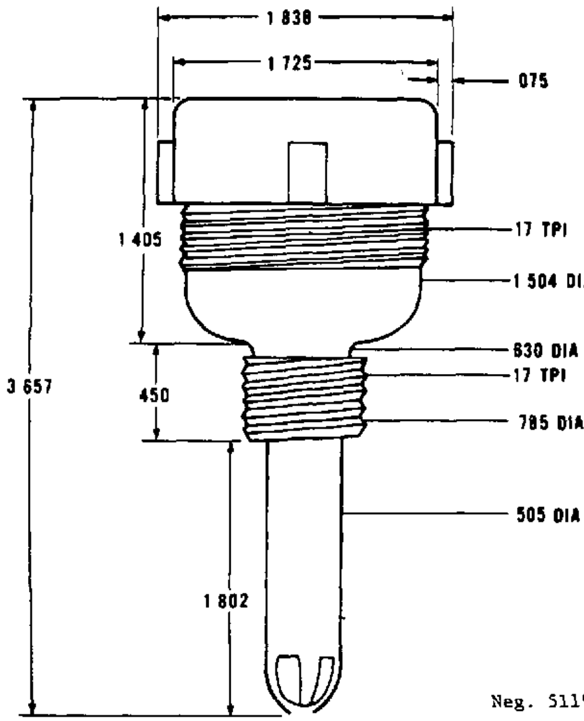
The fuze consists essentially of a setback weight, a pull igniter, a length of time fuze, a blasting cap and burster charge for the fragmentation round, or a three ounce black powder expelling charge in the propaganda round.

The length of the time fuze varies the firing time.

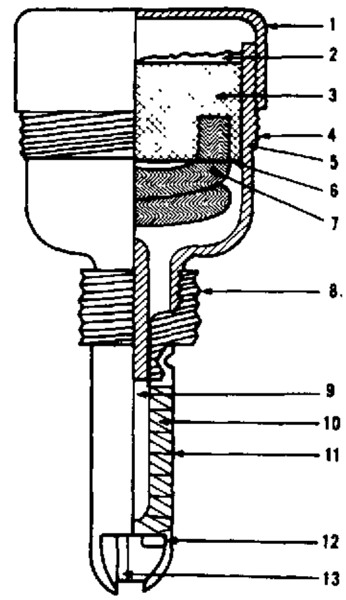
CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material	Brass & plastic	Arming method	Setback
Weight	?	Firing method	Time
Markings	None	Safety devices	None
Booster		Arming distance	NA
Body material	?	Arming time	NA
Body length	?	Delay time	18 sec (app)
Explosive	?		
Explosive weight	?		

Fuze, base detonating, powder train time



Neg. 511901



FUNCTIONING DESCRIPTION

Upon firing, setback forces the lead weight (12) to the rear bending the prongs of the retainer (13) outward. Rearward movement of the lead weight initiates the pull friction igniter (9), which in turn ignites the time fuze (7).

The time fuze burns for a predetermined time interval and ignites the black powder expelling charge (3) which builds up gas pressure for nose ejection of the leaflets. In the fragmentation round, the time fuze initiates a blasting cap which in turn initiates a burster charge expelling the fragments.

(No disassembled view available)

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles	
Soviet or PRC 82-mm Mortars	82-mm HE-Frag Propaganda	Nose ejection

REFERENCE

None

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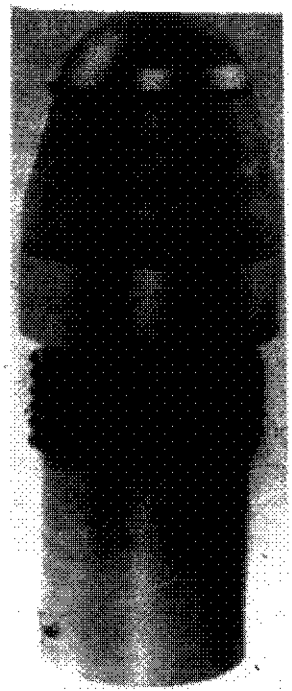
Fuze, impact, chemical long delay, NNC-82



4-55_1482

Neg. 511902

DISCUSSION

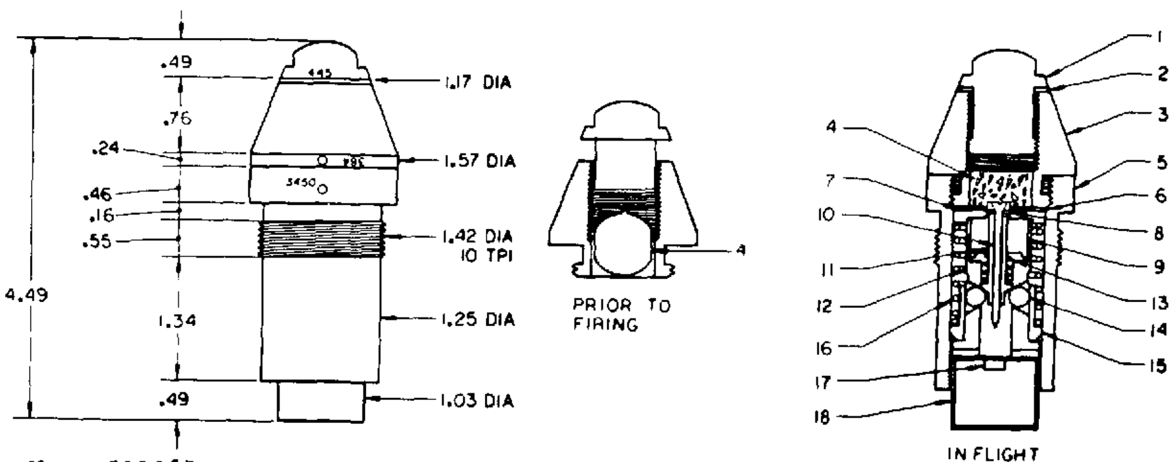
The 82-mm chemical long delay fuze model NNC-82 is the only known long delay fuze employed with projected munitions. The fuze provides four standard long delay periods by selecting different concentrations of acetone. A yellow ampoule produces a delay of 2.5 hours; red produces a delay of 3.5 hours; blue produces 5 hours; and violet 8 hours. All times are ±20% at 86°F (30°C). Lower temperatures will produce longer delays. The fuze ampoule may be crushed at any time prior to firing to reduce the standard delay. Until impact the fuze remains unarmed and safe.

CHARACTERISTICS

Fuze Assembly:		Functional Data:	
Body material ------	Aluminum	Arming method --------	Impact
Weight -------------	232.5 grams	Firing method --------	Chemical delay
Markings -----------	NNC-82	Safety devices -------	Locking balls
Booster		Arming distance ------	NA
Body material ------	Aluminum	Arming time ----------	NA
Body length --------	0.8 in	Self-destruct time ---	NA
Explosive ----------	Tetryl	Delay time -----------	2.5 to 8 hrs at 86°F
Explosive weight ---	12.5 gr		

<u>Fuze</u>, impact, chemical long delay, NNC-82

The fuze can be distinguished by its rugged construction and the two wrench flats on the nose cap. The original version found was uncoated aluminum. Later factory-produced versions are anodized a light yellow.



Neg. 511903

FUNCTIONING DESCRIPTION

Prior to firing, an ampoule (4) is installed in the fuze and crushed by tightening the nose plug (1). This releases acetone on the delay element (8) that retains the striker (10) in the cocked position. The striker is further held in the safe position prior to impact by the two locking balls (14) seated under the striker housing flange. Upon firing, setback locks all movable parts firmly together. Upon impact, the impact arming collar (15) moves forward, compressing the impact spring (16), and simultaneously the locking balls (14) fly out of their recesses due to inertia. The balls move into the circumferential grooves in the firing mechanism housing and are held in this groove when the impact arming collar (15) is forced rearward by the spring (16). The striker (10) is now unlocked and the fuze is armed. As the acetone softens the plastic delay element (8) the striker spring (13) pulls the head of the striker through the softened plastic and propells the sharp pointed striker into the stab sensitive detonator (17), initiating the explosive train.

Fuze, impact, chemical long delay, NNC-82

WEAPONS AND PROJECTILES USED WITH

Weapons	Projectiles
82-mm Mortar, M1937, M1942, M1943	82-mm HE Frag O-832; O-832D

(No disassembled view available)

REFERENCE

None

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

INDEX

Declassified and Approved For Release 2014/03/04 : CIA-RDP09-01333R000100550001-3

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1 ORIGINATING ACTIVITY *(Corporate author)* Foreign Science and Technology Center US Army Materiel Command Department of the Army	2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED 2b. GROUP None

3 REPORT TITLE

Fuze Manual--Eurasian Communist Countries (U)

4 DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

Planned Revision, Annual. Manual.

5 AUTHOR(S) *(First name, middle initial, last name)*

Charles D. Campbell

6 REPORT DATE	7a. TOTAL NO OF PAGES	7b. NO OF REFS
15 June 1973	496	

8a CONTRACT OR GRANT NO	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO	FSTC-CW-07-100-73
c. FSTC Task No. 22TD102AC	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	None

10 DISTRIBUTION STATEMENT

Distribution is limited to US Government agencies only, because document covers evaluation of military hardware. Other requests for this document must be referred to US Army Foreign Science & Technology Center, 220 7th Street, NE., Charlottesville, VA 22901.

11 SUPPLEMENTARY NOTES	12 SPONSORING MILITARY ACTIVITY
	Foreign Science and Technology Center US Army Materiel Command Department of the Army

13 ABSTRACT

This publication outlines the technical characteristics, current status, brief history, and detailed functioning of ECC munitions fuzes which have been recovered to date. No attempt has been made to include each individual fuze, but rather to include the most recent development in a fuze family. Air dropped, hand grenade, mine, and improvised fuzes are not included. (U)

DD FORM 1 NOV 65 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Artillery fuzes Base detonating fuze Point detonating fuze Point initiating fuze Mechanical time fuze Powder train time fuze Soviet fuzes People's Republic of China fuzes North Vietnam fuzes Czechoslovakian fuzes						

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B615 DIA/DI-4D (PENT)
B669 DIA/DI-6E
B737 DIA/DS-4A (4)
B606 DIA/DI-4B

NAVY

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