Dec. 19, 1944

TB 9X-93

WAR DEPARTMENT TECHNICAL BULLETIN

Preliminary Instructions

FUZE, ROCKET, P. D., T6

War Department, Washington 25, D. C. • • 19 December 1944

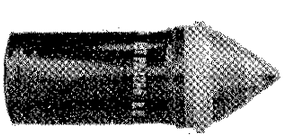
1. GENERAL.

a. Fuze, Rocket, P.D., T6 (Fig. 1) for Army Rocket, 4.5-Inch, M8, M8A3, and T22, is a VT type fuze for ground to ground use. The T6 fuze may be used on M8A1 and M8A2 rockets modified in accordance with paragraph 10.

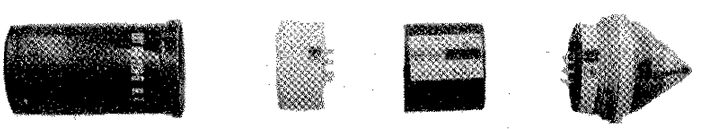
b. Operation of the fuze will result in an air burst, automatically, at a height which is most effective for area blanketing, anti-personnel use regardless of range or flight time. No adjustments are necessary for use of this fuze. The arming time is approximately 3 to 6 seconds (Par. 3 d).

c. These fuzes screw directly into all standard loaded 4.5-Inch Rockets listed above. They are directly interchangeable with the P.D., M4 series contact fuzes, both physically and ballistically.

d. The fuze as issued is not complete. A battery must be installed and components must be assembled prior to use.



FUZE, ROCKET, P.D., T6



BOOSTER HOUSING SWITCH BATTERY NOSE

RAPD 58586

FIG. 1. FUZE AND FUZE COMPONENTS

[redacted]

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FIG. 2. 4.5 INCH ROCKET M8 WITH FUZE T6

2. SECURITY.

a. The utmost care will be taken to make sure that neither information about the fuze T6 nor the fuzes themselves fall into the hands of the enemy. It is believed that the enemy does not know of the existence of these fuzes; therefore, SECURITY MUST BE MAINTAINED IN ORDER THAT ELEMENT OF SURPRISE MAY BE UTILIZED TO THE FULLEST EXTENT.

b. Dissemination of confidential matter will be held to the absolute minimum. Information as to the contents or whereabouts of confidential matter will be disclosed only to those persons whose duties require such knowledge. Such information is exclusively for the official use of the person to whom it is divulged or issued and who will be responsible for its security. Its inviolability is the duty and responsibility of all persons having knowledge thereof, no matter how obtained (See par. 11, 14, and 20, AR 380-5, Mar. 1944).

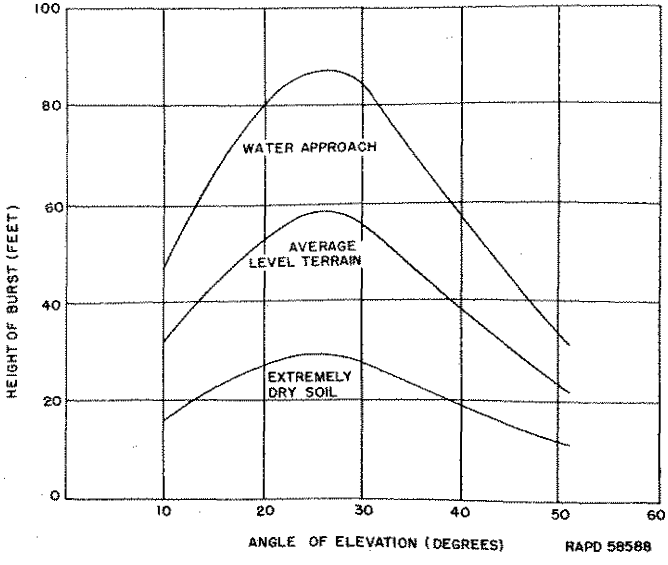

FIG. 3. AFFECT OF ANGLE OF ELEVATION ON AVERAGE HEIGHT OF BURST

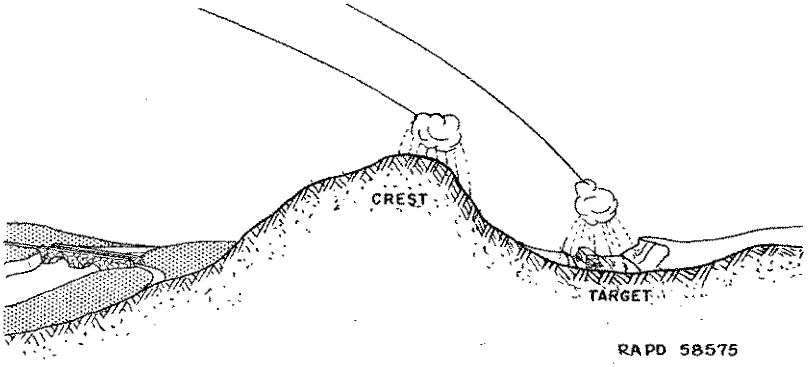

FIG. 4. ADEQUATE CLEARANCE IS REQUIRED TO AVOID WASTING ROUNDS ON CREST.

3. CHARACTERISTICS OF FUZE.

a. General. The fuze will function automatically as it approaches the ground thereby causing an air burst to occur at a predetermined height (fig. 3). NO FUZE SETTING IS REQUIRED. The fuze may be effectively employed to the maximum range of the rocket.

b. Variation in height of burst. The height of burst will vary with changes in the angle of fire (fig. 3), in order to maintain nearly optimum effect over average level terrain. However, bursts will occur higher over water and lower over extremely dry soil. Burst height dispersion will not materially change the lethal effectiveness.

c. Terrain irregularities and material objects such as trees, crests, streams, towers, parked aircraft, mechanized equipment, etc., will cause functions at heights greater than indicated in figure 3. This characteristic may be used to advantage in that fire power may be easily concentrated on such irregularities. When targets are beyond such irregularities, clearance of at least 250 feet should be allowed to assure maximum effect over the target area (fig. 4).

d. Arming of the T6 fuze is delayed for at least 3 seconds (800 yards of flight) after being fired. The exact time of arming will vary between fuzes, within the range of approximately 3 to 6 seconds. The minimum usable range is 1600 yards (8° Quadrant elevation).

e. Safety. The T6 fuze can withstand rough handling and dropping safely. Rocket separations or blow-ups will not arm the fuze.

f. Mid-flight functions up to 10 percent may occur at random, after arming, to the end of the trajectory (see par. 13).

g. Climatic effects.

(1) Full advantage should be taken of the sealed fuze containers in tropical and damp climates. Assembled fuzes may be stored up to ten days at temperatures between +20°F and +100°F. In tropical climates storage time of unpacked fuzes or fuze components should be kept to a minimum (see par. 16c). Exposure to rain or immersion in water will hasten deterioration.

(2) Firing in fog, clouds, or darkness produces no malfunctioning of the fuze. Heavy rain will increase the number of mid-flight functions and duds.

(3) Fuze batteries must not be below +20°F at time of firing. See paragraph 16 c for storage of batteries.

4. DESCRIPTION OF FUZE.

This fuze consists of four basic components; nose, battery, switch, and booster housing.

a. Nose MC-382 ( ). The nose model number may be followed by the manufacturer's code letter in the parenthesis. All MC-382 ( ) noses are interchangeable. The nose unit contains basic electric equipment which initiates the air burst upon approach to a target. It is completely sealed and requires no adjustment. External features are as follows:

(1) Conical plastic ogive with metallic cap.

(2) Shoulder containing slots for fuze wrench.

(3) Base containing 2 sets of threads. The smaller diameter threads are for assembly to the booster housing and the larger diameter threads are for assembly to the rocket.

(4) Electrical contact pins for connection to battery.

(5) Red guide mark and groove for proper alignment and assembly to battery. The groove may be used as a guide for assembly in the dark.

b. Battery BA-75 is a unit which provides the power supply for operation of the fuze. It is incased in a black bakelite cylinder. External features are as follows:

(1) Top plate, marked "AMP" containing a 7 pin socket to receive nose pins.

(2) Bottom plate of tan fiber containing a 6 pin socket to receive switch pins. This plate has a notch for proper assembly to switch in the dark.

(3) Decalcomania which contains battery identification, a red guide strip for alignment with the nose, and a green guide strip for alignment with the switch.

c. Switch SW230A or SW230C, 5 second arming is a unit which contains mechanical and electrical devices necessary to activate and arm the fuze, an electric detonator, and a powder train interrupter for safety during handling and launching. External features are as follows:

(1) Electric contact pins at the top for assembly to the battery.

(2) Fiber terminal disc to support the contact pins.

(3) Top plate and safety key which must be removed before assembly in accordance with instructions on the plate or attached to the key.

(4) Bakelite plug at the center of the fiber disc which holds the electric detonator in place.

(5) Metallic case to form a sturdy protector for the inclosed mechanism and explosive.

(6) Green guide mark and groove on the side of the switch to assist in aligning switch pins and battery. The groove may be used as a guide for assembly in the dark.

(7) Bottom plate containing a small tetryl pellet for detonating the booster charge.

d. Booster Housing M-381 forms a case for the battery and switch. This unit screws onto the lower threads of nose MC-382 ( ). In the bottom of this housing is a chamber containing a tetryl booster charge.

5. PREPARATION OF FUZE COMPONENTS.

a. The fuze T6 is not ready for use as shipped. Batteries will be packed separately and must be assembled to fuze components before use.

(1) Open a box of fuzes, remove the fuze containers, and take out the assembly. Unscrew the booster housing and discard the cardboard spacer.

(2) Open a box of BA-75 batteries and remove only the quantity needed.

(3) Inspect all components to eliminate those that have been deformed in shipping or that have bent or broken pins. Defective components should be destroyed in accordance with paragraph 17.

b. Testing of fuze components is recommended, but may be omitted without seriously impairing fuze performance. Due to limited storage life of fuze batteries, these should be tested if they are over four months old. Testing should be performed on Test Equipment IE-28 in accordance with TM 11-2502. If this manual is not available, the information in paragraphs 6 and 7 is furnished for guidance.

6. TEST EQUIPMENT IE-28.

a. Description. This equipment (fig. 5) is a test set designed for field testing components of the fuze T6. The unit is 13 3/8 inches long by 11 3/8 inches in depth and, with the lid in place, 12 3/8 inches high. Testing of the fuze components is accomplished by simulating operating conditions. Internal batteries in this set (an A supply of 1.5 volts furnished by a Battery BA-23, the B supply of 135 volts furnished by three Batteries BA-36 in series, and the C supply from the 6 volt tap on a Battery BA-34) supply power for testing Switch SW230 and Nose MC-382 ( ). Components are plugged into the proper receptacle of the test set and the proper levers are operated to make the test. Proper operation is indicated by a meter on the panel or a neon bulb at the base of the meter mount, as

FIG 10. TIGHTENING FUZE WITH FUZE WRENCH, T3

c. Unscrew fuze from rocket.

d. Disassemble fuze by unscrewing the booster housing and unplugging components.

e. Replace key and plate on switch.

13. MALFUNCTIONS.

a. Under normal conditions of use, approximately 75% to 85% of these fuzes will function properly.

b. Local conditions or improper assembly may decrease the percentage of proper functions. The following sections list the type malfunction, most frequent cause, and remedy.

Duds

Cause	Remedy
Defective components.	Eliminate by testing. Replace with good components.
Close passage to obstacles in latter stages of arming (4-6 seconds of flight).	Increase angle of elevation to obtain at least 250 feet clearance over obstacles short of target.
Approach to target before arming.	Do not use at ranges less than 1600 yards.
Firing in rain.	None.
Mid-Flight Functions	
Loose fins.	Tighten fins--see paragraph 10.
Loose assembly of fuze.	Tighten fuzes with wrench and tighten set screws.
Close passage to obstacles after arming.	Increase angle of elevation to obtain at least 250 feet clearance over obstacles short of target (fig. 4).
Firing in rain.	None.
Impact Functions	
Crushing of electrical components on fuzes that would otherwise be duds.	Impact functions in excess of 10% usually can be eliminated by applying remedies outlined under "Duds".

14. PACKING AND MARKING.

a. Nose, switch, and booster housing are assembled together and packed in individual sealed metal containers, 15 of which are packed in a wooden box 12" x 20 7/16" x 10 5/8" (fig. 11). The boxes are marked, "15 PD, T6" Fuze lot number is stenciled on box, metallic container, and booster housing. A cardboard cylinder and a silica gel moisture absorber are packed in place of the battery in each metal container.

b. Batteries are shipped in separate wooden boxes marked, "120 BATTERIES BA-75". Each box contains 24 sealed fiber cylinders, with 5 batteries per cylinder (fig. 12). Boxes and battery decalcomanias are marked with date of battery manufacture and battery nomenclature.

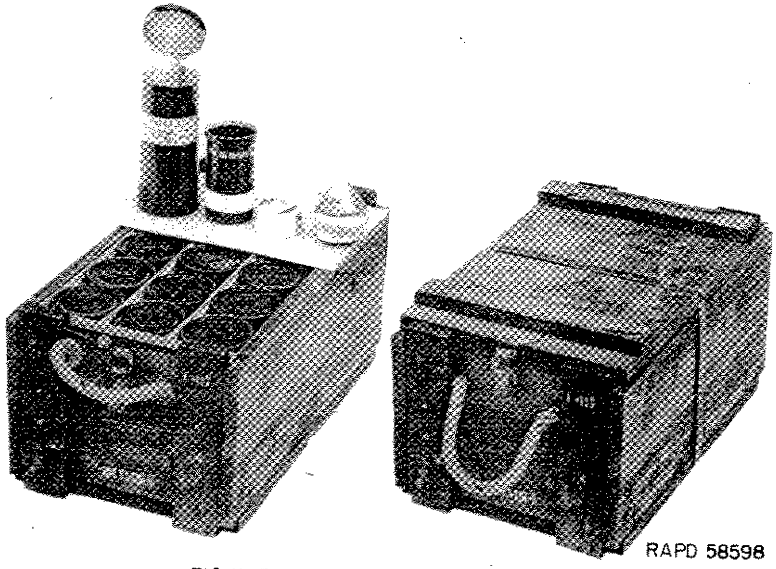

FIG. II. PACKING FOR FUZE, P.D. T6

15. WEIGHTS AND DIMENSIONS. Weights and dimensions of Fuze, P.D., T6 components are listed below.

Unit	Avg. Wt. (lb)	Diameter (in.)	Length Assembled (in.)	Thread
Nose MC-382( )	1.1	3.187 ± .005	3.3125 max.	3.000-16-NS-2
Battery BA-75	0.6	2.600 - .015	2.312 + .020	
Switch SW230A or C	0.54	2.600 - .015	1.282 + .010	
Booster Housing M-381	0.50	2.875 + .010	4.964 max.	2.706-16-NS-2
Assembled P.D. fuze T6	2.74	3.187 ± .005	7.567 max.	

Depth inside fuze well	5.250 Minimum
Length outside rocket	2.3125 Maximum
Diameter-overall	3.187 ± .005

16. HANDLING AND STORAGE.

a. Handling.

(1) Fuzes in their original packing containers may, in general, be stored and handled in the same manner as other fuzes provided proper security is maintained (par. 2).

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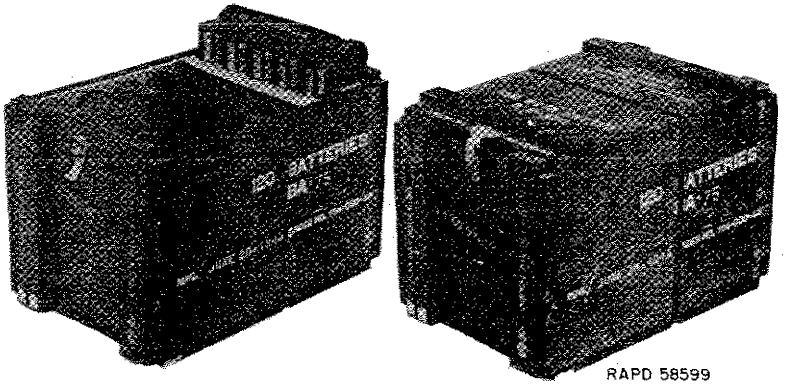

FIG.12. CONTAINER FOR BATTERY BA-75

(2) Fuze components and batteries are thoroughly protected in their packing containers. They should not be opened sooner than necessary and only enough for the mission at hand should be unpacked.

(3) Excessive rough handling may increase fuze malfunctions, but will not decrease fuze safety.

b. Effects of dampness and immersion.

(1) Due to the electrical nature of fuze components, they must be guarded against immersion in water and against dampness.

(2) Fuze components in sealed metal containers will not be affected by immersion.

(3) Battery containers must not be immersed, but unopen containers can withstand spray.

(4) Complete fuzes, when assembled in rockets, can withstand spray and rain but must not be immersed.

c. Storage temperatures.

(1) All fuze components except batteries may be stored at temperatures between $-20^{\circ}F$ and $+120^{\circ}F$.

(2) Batteries may be stored at temperatures between $-20^{\circ}F$ and $+70^{\circ}F$; $0^{\circ}F$ to $+40^{\circ}F$ being the recommended storage temperature limits. At temperatures below $+40^{\circ}F$, battery life will be 6 to 8 months. From $+40^{\circ}F$ to $+70^{\circ}F$, battery life will be 3 to 6 months.

(3) Fuze components may be stored for short periods (up to 48 hours) outside these temperature limits without damage.

17. DESTRUCTION. In the event that destruction of fuzes, fuze components, test equipment, or literature is necessary the following methods are recommended:

a. Fuzes and fuze components.

(1) Deep Water - The individual unopened cans, fuzes or components may be disposed of in deep water.

(2) Explosives - Open a box of fuzes and remove one near the center. Insert a one pound block of TNT with 5 feet of safety fuze attached. Replace the fuze and detonate. Electric detonation may be used, in which case all boxes of fuzes should be prepared and detonated simultaneously. Suitable precautions must be taken to prevent injury to personnel.

(3) Incendiary Grenades - Ignite an incendiary grenade, AN-M14 on top of each opened box of fuzes. Suitable precautions must be taken to prevent injuries to personnel due to exploding boosters.

b. Test Equipment - Remove the instruction card from the inside cover and any other literature from inside the test equipment. Smash the equipment completely with a sledge hammer. Pour gasoline over the resulting debris and set on fire.

c. Literature - Tear all instruction cards, ammunition data cards, bulletins, etc., to pieces, soak in gasoline and set on fire.

18. DISPOSAL OF DUDS.

Duds may be sensitive to shock, jarring, or approach. Disposal should never be attempted by unauthorized personnel.

[A.G. 300.5(19 December 1944).]

By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:
J. A. ULIO,
Major General,
The Adjutant General.

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For explanation of symbols, see FM 21-6.

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