

(P.B.)

[S.S. 622.]

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UNEXPLODED SHELLS, BOMBS AND GRENADES—

METHOD OF DESTRUCTION.

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NOTE.—Where one illustration is given for several fuzes, these fuzes, generally speaking, differ externally in the markings only. In some cases, however, there are other differences in appearance, e.g. :—

- (1) The German Fuze K.Z. 14 n.A has a cap which is more pointed than K.Z. 14.
- (2) K.Z. 11 Gr. differs from K.Z. 11 in that the setting stud, the marks G & S and the correction scale are omitted.

UNEXPLODED SHELLS, BOMBS AND GRENADES— METHOD OF DESTRUCTION.

NOTE.—The method given in Regulations for Army Ordnance Services (Part II, 1914, paragraphs 278 to 284) is not entirely suitable for the conditions of Active Service, under which it may not be possible to destroy a shell *in situ*, and the safety distances laid down are usually unobtainable.

The following instructions have therefore been drawn up as a guide for troops in France:—

1. The destruction of unexploded shell, &c., should always be carried out under the superintendence of a qualified officer. A qualified officer of the A.O.D. or of the R.E. should be detailed for this duty under the instructions of the formation concerned.

2. Blind shells, &c., should be treated with respect. They should be moved as little as possible. If they must be moved care should be taken to prevent them being jolted. If possible they should be carried by hand, or on some form of improvised stretcher; they must not be moved on wheels.

Blind Aerial Bombs, whether German or other, require special care in moving.

Appendix I gives a list of British fuzes showing the relative degree of care that must be exercised in moving blind shells fuzed with them.

Appendix II gives the same information as regards some German fuzes.

3. Provision will be made by the formations concerned for:—

- (a) The necessary explosives, &c.
- (b) A party for laying and exploding the charges.
- (c) A party for digging holes.
- (d) A party for carrying shell.
- (e) Warning all troops or inhabitants in the vicinity.

For (e) careful organization is necessary in order to clear the ground of all persons and to stop traffic within a radius of 500 yards.

4. The projectiles to be dealt with may be:—

- (a) "Blind" shrapnel or H.E. shells, bombs, and grenades.
- (b) "Blind" gas shells, bombs, and grenades.

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(a) If a projectile is in such a position—*e.g.*, in a trench or shell hole—that the fragments from its explosion are not likely to fly a great distance, it should be destroyed without handling or moving, sandbags or earth being placed on it in such a position as to limit, as far as possible, the projection of fragments.

As a rule, however, it will be necessary to move the projectile* into a narrow trench or hole in the ground specially prepared beforehand, not less than 6 ft. deep. The trench or hole should be narrow, as this will tend to project the fragments vertically rather than laterally. (See Plate on page 55.)

In many cases it will be possible to drag or roll the shell, &c., into the hole by means of a long rope.

(i) *Procedure for a single shell, bomb, or grenade.*—In the case of a light field gun shell, or small bomb, one, and in other cases, two 15-oz. slabs of gun cotton will be placed on the shell, &c.,† a dry gun cotton primer and detonator inserted in the hole in the wet gun cotton, and the charge exploded, either electrically or by means of safety fuze. In the case of a single grenade a 1 oz. gun cotton primer is sufficient, and no slab need be used.

One man should be made responsible for the firing end of the leads or fuze, whilst the charge is being laid; the electrical connection to the "Exploser" should not be made, and the end of the safety fuze should be kept carefully covered until the officer in charge gives the order to fire (*see below*).

The shell, &c., should then be covered over with one or more filled sandbags, care being taken not to disarrange the leads. If safety fuze is used, it is advisable to duplicate the means of firing the charge, in case one detonator should prove defective.

Splinter proof shelter at least 150 yards away is required for the party firing the charge.

When these preparations are completed and all persons have retired under cover, the charge will be fired.

(ii) *Procedure for more than one shell, bomb, or grenade.*—The procedure is, generally speaking, the same as for a single shell, &c. The shells should be placed touching each other. Two slabs of gun cotton should suffice.

If many shells have to be dealt with, it will usually be advisable to collect them into lots whose total weight is not more than 200 lbs. and explode each lot separately. Single shell or bombs that weigh more than 200 lbs. should be destroyed one at a time.

* Blind rifle and percussion hand grenades will be destroyed without lifting. There are no percussion hand grenades in the British Service and, so far as is known, the enemy has ceased to use them; only a few experimental ones have been seen recently.

† In the case of a shell or bomb, the charge should be placed close to the fuze. Plugged shell or bombs may be destroyed by removing the plug and exploding a 1-oz. dry primer in the fuze hole. Stokes 3-in. bombs that are not fitted with detonators may be destroyed by exploding a detonator in the central tube. When destroyed in this way they will serve instead of gun cotton for destroying other shell, &c.

For method of arranging Mills grenades see plate on page 55.
The weights of common types of shells, &c., are as follows:—

Mills grenade	...	...	a little under 2 lbs.
3-in. Stokes bomb	...	...	12½ lbs.
18-pr. shell	...	...	18 lbs.
4½ shell	...	...	34 "
6-in. T.M. bomb	...	...	50 "
2-in. " "	...	...	50 "
60-pr. shell	...	...	100 "
6-in. shell	...	...	158 "
9¼5 T.M. bomb	...	...	200 "
8-in. shell	...	...	200 "

After the explosion the site should be inspected to see that all shells, &c., have been destroyed.

In the case of a mine no one should approach the shell, &c., for ten minutes. After this interval one man should uncover and remove the charge, and fresh arrangements should be made. No one else is to approach the shell, &c., until the charge that has missed fire has been removed.

(b) *Blind gas shells, bombs, and grenades.*—When gas shells have to be blown up, the same procedure will be followed as with H.E. shells, except that shells exceeding 100 lbs. in weight should be exploded singly; the gas cloud from a shell of this size will not be dangerous at a distance of 500 yards.

The holes in which the shells are exploded must afterwards be filled in, as some of the contents of the shell may remain at the bottom or on the sides. Box respirators must be worn when filling in the holes.

SERVICE FUZES (Illustrations shown at End).

APPENDIX I.

Fuze No.	Nature.	Figured in Handbook at	Nature of Safety Devices.	Remarks
17	P. D.A.	—	Safety pin and cap before firing. Centrifugal bolt makes fire channel to magazine.	Safe to handle. Steel bullet must penetrate brass disc before magazine is fired. Relatively safe to handle.
18	P., D.A.L.	Fuzes, p. 11	Safety pin and cap before firing. Shot must impact by stem shearing wire.	Relatively safe. Carry on side or near thumb. Shot must be necessary when head is partially crumpled in.
28, 79	T., "Sutton" T.M. Fuze	—	No percussion mechanism. Safety pin and cap before firing.	Relatively safe.
41	P., D.A.	Fuzes, p. 12	Safety pin and cap before firing.	Relatively safe.
40	P., D.A.L.	—	Safety pin and cap before firing. Combination of Nos. 18 and 44.	Relatively safe. Keep nose up-wards.
82	T. and P.	Fuzes, p. 7	Time and percussion safety pins before firing. Percussion pellet has creep spring and centrif. bolt.	Relatively safe. Carry nose up-wards.
80, 87	T. and P.	Fuzes, p. 6	After firing percussion pellet is held back by creep spring.	Relatively safe. Carry nose up-wards.
83	T. and P.	Fuzes, p. 9	When percussion pellet is armed, it is held back by creep springs.	Relatively safe. Carry nose up-wards.
83, 88	T. and P.	Fuzes, p. 8	Time and percussion safety pins before firing. After firing, percussion pellet is kept back by a creep spring.	Relatively safe—point apparatus Do.
80	T. and P.	Fuzes, p. 16	No safety pin.	Relatively safe.

Percussion mechanism as for 83 and 88

Fuze No	Nature.	Figured in B. E. Handbook at	Nature of Safety Devices.	Remarks.
100	P., Graze (with No. 2 gaine)	—	Perussion pellet is retained in cocked position by the graze pellet, which, when the centrifugal bolt has moved outward, rests on a creep spring. Detonator situated below the red patch on the body of the fuze.	Dangerous.
101	P., Graze (with No. 2 gaine)	Fuzes, p. 13	When liberated by outward travel of centrifugal bolt, graze pellet rests on creep spring. Detonator situated in upper part of graze pellet.	To be handled carefully—point uppermost.
102	Do.	Do.	Do.	Do.
103	P., Graze (with No. 2 gaine in No. 10 adaptor)	Do.	Do.	Do.
104E, 104B, 104EX	P., Graze (with No. 2 gaine)	—	As for 101, with addition of safety shifter between graze pellet and gaine.	Handle carefully—nose uppermost.
105BO	P., Graze	—	Perussion pellet, with needle, on very light creep spring.	Dangerous.
106	P., D.A.	Fuzes, p. 14	Has cap before firing. Hammer head retained by brass tape and steel segments, which spin off in 24 revolutions after firing. Cap is retained by copper clearing wire, till impact occurs.	To be handled with great care—Dangerous, when tape has unwound. Carry on side.
108	P., Graze	—	100 fuzes—without gaine. Has cocked percussion pellet.	A fuze for chemical shell with powder barriers. Dangerous.
109	P., Graze	Chemical shell, p. 5	Fuze 101—without gaine—adapted for chemical shell with powder barriers. Mechanism as for 101.	Handle with care—point uppermost.
109E	P., Graze	—	As 109, but has shutter fitted.	Handle carefully—point uppermost.
110	P., D.A.	—	Safety pin and cap before firing. Striker piston shears copper wire on discharge.	To be handled with great care. Fuze for 9-in. and 6-in. T.M. bombs. Carry on side.
146 Always	P.	—	When tape has been unwound and safety bar ejected, needle pellet rests on creep springs. If closing cap at top readily unscrews, steel ball will fall out, followed by needle pellet, and the fuze will explode at any time. Never safe as regards fuzes.	For 2-in. Stokes Bombs. Dangerous.
Pistol Head 2-in. or 4-in. Stokes.	T.	—	Safety ring removed prior to firing fly-off lever, which at its upper end engages the striker, is retained by a small bolt supported on a spring and laterally by flanges. On firing the bolt is forced back and the lever flies off, allowing further to descend.	Safest, with nose downwards, as this relieves the creep springs of the weight of the fuze. Minimum percussion pellet and steel ball.

Fuze No.	Nature.	Figured in R.L. Handbook at	Nature of Safety Devices.	Remarks.
Hotchkiss 107	P. Base	Fuzes, p. 10	When percussion pellet is armed by shock of discharges, it rests on a creep spring.	Relatively safe. Carry shell point upmost. Used with 2-in. T.M. Bombs. To be handled with great care. If to be carried, avoid disturbing cap of fuze.

In the second column abbreviations are used:—

P.—Perussion. D.A.—Direct action. D.A.I.—Direct action impact.
T.—Time. D.A.—Direct action.
In general, gray fuzes require great care in handling owing to the creep spring being relatively weak, and shell fuzed with such fuzes are liable to discharge on impact.
D.A.L. fuzes require a harder blow to fire than D.A. fuzes, as a stout wire must be advanced for the needle to be cranked in on to the detonator.

GERMAN FUZES (Illustrations shown at end).

APPENDIX II.

Description of fuze.	Nature.	Page where figured in Handbook on Fuzes.	Nature of safety devices.	If cover to escape is displaced so as to admit moisture.	Remarks.
Gr.Z. 0.4	P.	55	Powder pellets.	Require special care in moving.	Perussion pellets have no creep springs, hence when they are armed the shell is particularly dangerous to handle.
Gr.Z. 11	P.	55	Powder pellet.	Do.	Do.
Gr.Z. 14n/1	P.	57	Powder pellet and centrifugal bolt	Relatively safe to move.	Do.
Lg.-Belz. 10	P.	61	Powder pellets.	Require special care in moving.	Perussion pellet has no creep spring.
K2Bl.Z. 10	P.	63	Do.	Do.	Do.
K.Z. 13	P.	25	Powder pellet.	Do.	Perussion pellets has in general a creep spring.
H.Z. 14	P.	37	Do.	Do.	K.Z. 14, Z. 1, K.Z. 14
H.Z. 14 V84	P.	39	Do.	Do.	Z.w. have the same construction as K.Z. 14 as far as their safety is concerned.
H.Z. 14 F8	P.	37	Powder pellet and centrifugal bolt.	Relatively safe to move.	Perussion pellets has creep spring.
H.Z. 14 Flsb	P.	37	Do.	Do.	Do.
L.K.Z. 16	P.	27	Centrifugal bolts.	Do.	Do.
L.K.Z. 16 mV	P.	31	Do.	Do.	Do.
K.Z. 16	P.	31	Do.	Do.	Do.
K.Z. 16 mV	P.	29	Do.	Do.	Do.

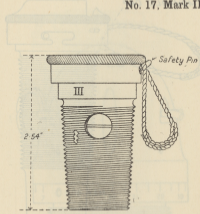
Note.—When it is said that a shell is "relatively safe to move" it is to be understood that great care in handling should be observed, as although centrifugal bolts generally re-engage after impact this is not always the case.

Description of fuzes.	Stations.	Page where the fuzes are described in "System of Fuzes."	Nature of safety devices.	If cover to springs is displaced, whether the fuze will not fire.	Remarks.
K.K.Z. 17	P.	83	Centrifugal bolt.	Relatively safe to move.	In blade examined the centrifugal bolt has acted but owing to the bending of the rod sticking out of the case the needle is unable to reach the detonator.
Gr. Z. 92	P.	51	Powder pellets.	Requires special care in moving.	The fuze is so constructed that the powder pellets cannot be moved, so that if necessary a shell with this fuze might be moved.
Drig. Z. 69	T. & P.	77	Dos.	Dos.	Dos.
Boyp. Z. 86 n/A	T. & P.	55	Dos.	Dos.	Dos.
K. Z. 11	T. & P.	67	Dos.	Dos.	Dos.
H. Z. 05	T. & P.	84	Powder pellets.	Dos.	Percussion pellet has a creep spring. Hence dangerous to handle when armed.
H. Z. 05 Gr.	T. & P.	71	Dos.	Dos.	Percussion pellet has a creep spring, but not a very strong one.
H. Z. 05 6/10r	T. & P.	72	Dos.	Dos.	Percussion pellet has a creep spring, but not a very strong one.
K. Z. 11 Gr.	T. & P.	67	Powder pellets and centrifugal bolts.	Relatively safe to move.	Percussion pellets have no creep springs.
Drig. Z. 15	T. & P.	83	Powder pellets.	Requires special care in moving.	Percussion pellets have no creep springs.
Leg. Z. 6 8/22	P.	73	Special spring to hold centrifugal bolt.	Relatively safe to move.	Used with parachute size shell, which may be dangerous to handle when armed.
A. W. M. Z. 2	T. & P.	117	Powder pellet.	Requires special care in moving.	Percussion pellet has no creep spring.
Za. an. W. M.	T. & P.	119	Powder pellets.	Dos.	Percussion pellet has weak creep springs.

Note.—When it is said that a shell is "relatively safe to move" it is to be understood that great care in handling should be observed, as although centrifugal bolts generally re-engage after impact this is not always the case.

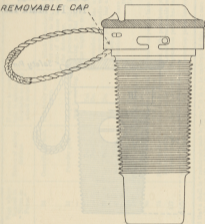
LIST OF BRITISH FUZES.

Fuze, Percussion,
D.A. with Cap,
No. 17, Mark III.

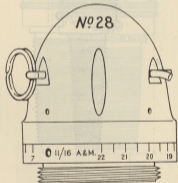


Fuze, Percussion,
D.A. Impact No. 18.

REMOVABLE CAP

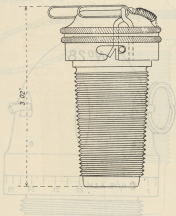


Fuze, Time,
No. 28 and No. 79.



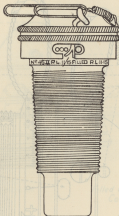
Fuze, Time
No. 38 and No. 39

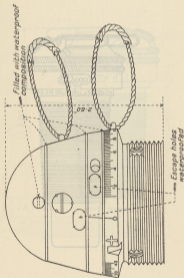
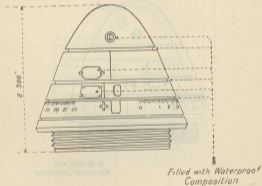
Fuze, Percussion,
D.A., with Cap, No. 44.



Fuze, T. and P.
No. 82 Mark III

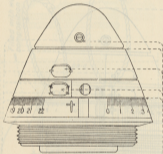
Fuze, D.A., No. 45.



Fuze, T. and P.,
No. 82, Mark III.Fuze, T. and P.,
No. 80, Mark IV.Fuze, T. and P.,
No. 80, Mark IV.

Fuze, T. and P.,
No. 88, Mark IV.

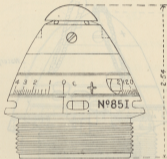
Fuze, T. and P.,
No. 87.

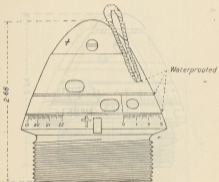
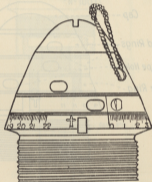


To be filled with
Waterproof Composition

Fuze, T. and P.,
No. 83, Mark I.

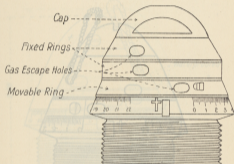
Fuze, T. and P.,
No. 85, Mark I.



Fuze, T. and P.,
No. 83, Mark I.Fuze, T. and P.,
No. 83, Mark I.Fuze, T. and P.,
No. 88, Mark I/L/.

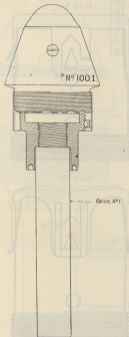
Scale, Full Size.

Fuze, T. and P., No. 89.



Fuze No. 100.

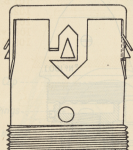
Fuze No. 108 (Without Gaine).



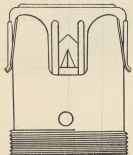
* Typical marking.

Fuze, Percussion, No. 107.

MARK I.



MARK II.



Scale, Full Size.

Fuze No. 101, Mk. I.

101 E.X.

101 E.

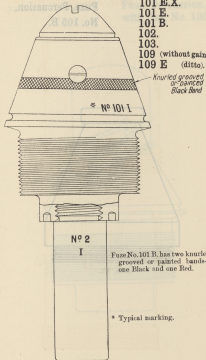
101 B.

102.

103.

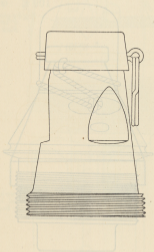
109 (without gaine).

109 E (ditto).



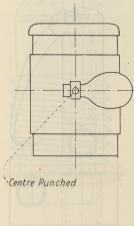
Fuze, Percussion,
With Cap, No. 108.

Fuze, Percussion,
No. 110.



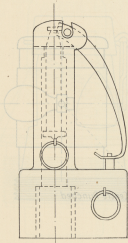
Pistol Head,
3-in. Stokes
and 4-in. Stokes.

Fuze, Percussion,
No. 146.

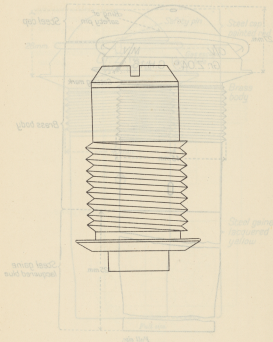


Fuze, Percussion,
No. 148

Pistol Head,
3-in. Stokes
and 4-in. Stokes.

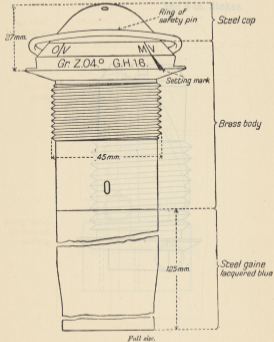


Fuze, Percussion,
Baße Hotchkiss.

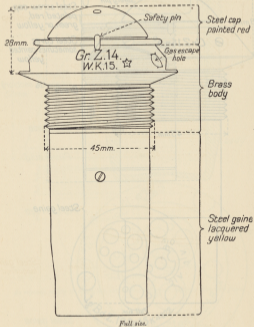


LIST OF GERMAN FUZES.

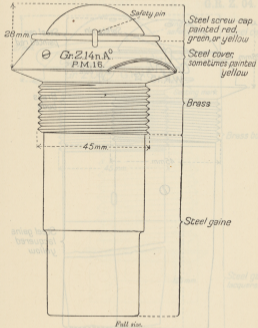
G.R. Z. 04.



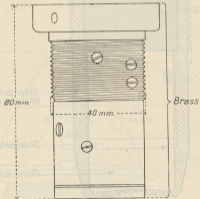
Gr. Z. 14.

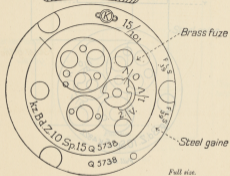
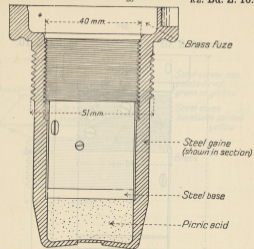


Gr. Z. 14 n.A.

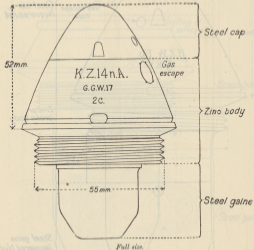


lg. Bd. Z. 10.



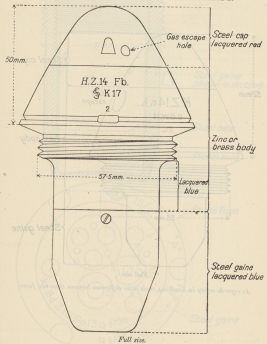


KZ.14.
KZ.14.n.A.

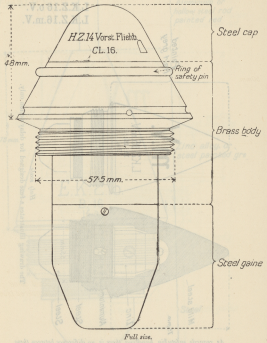


As regards safety in handling, there is no difference between these two fuzes.

H.Z.14Fb.
H.Z.14Fliehb.
H.Z.14.

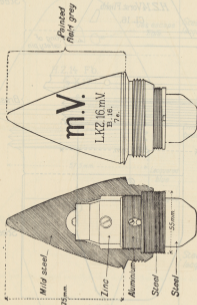


H.Z.14 Vst.
H.Z.14½Vorst Fliehb.



H.Z.14 Vst. Fliehb. differs from H.Z.14 Vst. chiefly in having a centrifugal safety bolt. Great care should be observed in handling.

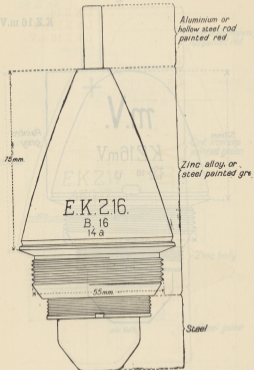
L.K.Z.16.
L.K.Z.16 o.V.
L.K.Z.16.m.V.



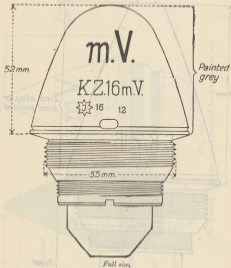
Italy made.
The drawing illustrates a fuse designed for delay action only.

As regards safety in handling, there is no difference between these three fuses.

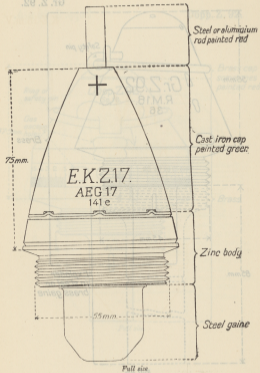
E.K.Z.16.



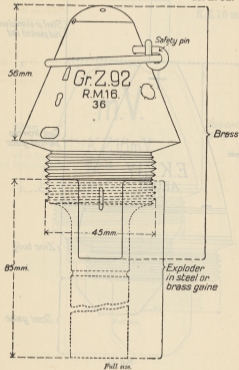
K.Z.16 m.V.



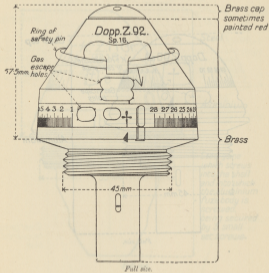
E.K.Z.17.



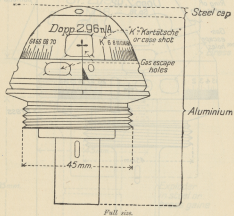
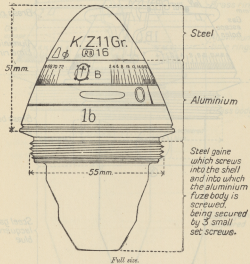
Gr. Z. 92.



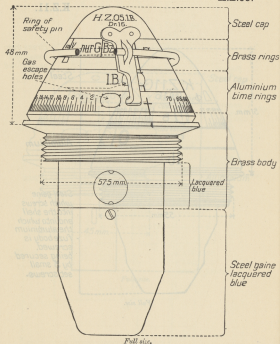
Dopp. Z. 92.



Dopp. Z. 96 n/A.

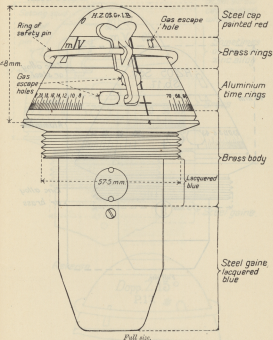
K.Z.11Gr.
K.Z.11.

H.Z.05 I.B.
H.Z.05.



As regards safety in handling, there is no difference between these two fuses.

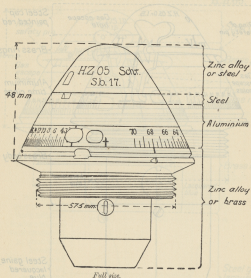
H.Z.05 Gr. I.B.
H.Z.05 Gr.



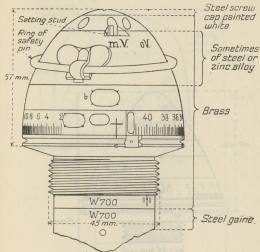
As regards safety in handling, there is no difference between these two fuses.

H.Z. 05 Schr.
H.N. 05 G. I. B.
H.N. 05 G.

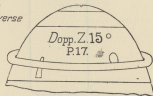
H.Z.05 Schr.



Dopp. Z. 15.

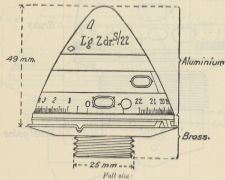


Reverse

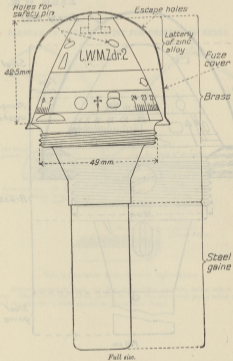


Full size

Lg. Zdr. S/22.



1 W.M. Zdr. 2.



S. r. h. S. M. W. I.

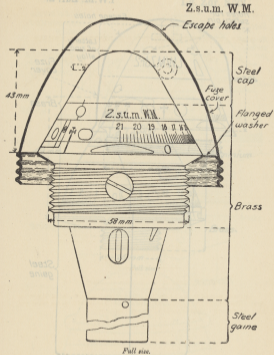
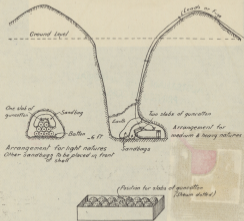


DIAGRAM OF TRENCH OR PIT FOR DESTROYING SHELL.



MILL'S GRENADES PREPARED FOR DESTRUCTION.

Sixteen packed in their own box, the wooden portions being taken out first. The four in the middle should be base upwards, with plugs taken out, and the gunotton slabs should be placed over these.



A W M D 3 6 8 6 5
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Australian War Memorial

4-22062

Z.S.M. W.M.

Chape hole

623. Unexploded
451 shells, bombs and
U56 grenades

RC11576-538

AUSTRALIAN WAR MEMORIAL
PRINTED RECORDS



Australian
War Memorial



Males' GARDENS (Landscape) - Description
Sixteen packed in their own box, the wooden sections being taken out
first. The feet in the middle should be left upwards, with plugs taken out,
and the gutteration slots should be faced over these.