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JAPANESE AMMUNITION

C.I.AMM. TECHNICAL REPORT

No. 35

ELECTRIC PRIMER FITTED WITH JAPANESE GAINE USED IN NAVAL SHELL AND ADAPTER TO FIT 1.375-IN. FUZE HOLE (BRITISH A.C. BOMB STANDARD FUZE HOLE)

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REPORT NO. 35.

APRIL 1945.

JAPANESE ELECTRIC PRIMER
FITTED WITH
JAPANESE GAINES USED IN NAVAL SHELL AND
ADAPTER TO FIT 1.375-IN. FUZE HOLE
(British A.C. Bomb Standard Fuze Hole).

SHORT TITLE - ELECTRICALLY OPERATED GAINES.

G E N E R A L.

This electrically operated gaine was found during the occupation of Ramree Island late in 1944. By means of a bakelite adapter it can be screwed into British Service Aircraft Bombs (250 and 500-lb. G.P. types). To fit the unit in these bombs it would be necessary to remove the top exploder pellets and it is thought a low order of detonation only can be expected from bombs initiated in this way. The report forwarding this unit described its use as follows:-

"It consists of a gaine attached to a bakelite adapter to enable it to be screwed into the nose of our 250-lb. bombs. Three or four bombs were connected in parallel and placed at the side of trucks or what would appear to be a tank cemetery at the approaches to Ramree. Bombs were placed in a vertical position nose up and 9-ins. below ground level connected by cable in shallow open trenches and fired by 45 volt dry cell battery."

2. The gaine was presumably removed from a bomb and no details of packing or instructions regarding its use were received. The Japanese name for it and its full uses are, therefore, not at present known.

DESCRIPTION.

3. The construction and assembly of the unit will be clear from the photograph at Plate A and the detailed drawing in Plate B. For purposes of description the unit may be divided into three parts:-

- (a) Plastic (bakelite type) adapter.
- (b) Naval type electric primer.
- (c) Naval type H.E. shell gaine.

Adapter.

4. The construction of this can be seen from the Plates. It is screw-threaded externally to screw into British Service G.P. type bombs and internally to take a light alloy coupling (3). It is drilled centrally for the passage of electric leads and the channel and enlarged recess in top of the adapter is filled finally with pitch poured in to secure the leads from any movement and to waterproof the exploder unit.

Electric Primer.

5. This appears to be a standard primer for use in Naval cartridges and has been adapted to initiate the gain electrically. How this is done, will be clear from the Plates. Note that the insulation piece (6) is not shown in the photograph at Plate A. This got smashed up during breakdown. This primer (7) follows normal practice for electric primers and there is nothing unusual in its construction.

Gaine.

6. The construction of the gaine (13) will be clear from Plate B. The body is made of nickel-plated brass and threaded externally to take an aluminium alloy coupling (3), by means of which it is secured to the plastic adapter (1). Two spanner flats which are formed in the middle of the body are presumed only for use when the gaine is screwed into the nose adapter of a H.E. shell. The main explosive filling of the gaine is picric acid pressed in two increments. Above this is a small exploder unit (12), which, following usual Japanese practice, is used to step up the flash from the electric primer and ensure good detonation of the main filling. This exploder unit is positioned by means of a flange on its closing plug (10) resting on a shoulder in the gaine; the unit being held firmly in position by means of the electric primer (7) which is screwed down on to it. Details of this exploder unit are shown clearly in the drawing. Owing to the presence of the perforated pellet there would be, it is thought, a slight delay in the functioning of the gaine.

Action.

7. This will be clear from the drawing. A British 250 or 500-lb. G.P. A.C. H.E. bomb has its transit plug or pistol removed, followed by the top exploder assembly, and the gaine is inserted in its place. The bomb is then ready for firing electrically. The electric primer is of the low tension type and will function with a small voltage. The bridge resistance of the primer examined was 1.65 ohms, and using .5 amp. the bridge fused without any appreciable delay. One torch cell 1.5 volts is, therefore, adequate to initiate the primer but a higher voltage is desirable. The governing factor is of course the length of leads employed.

CHEMICAL ANALYSIS

(By the Chief Inspector of Military Explosives, Kirkee).

Sealing compound in adapter	...	Pitch having a softening point of about 100°C.
Priming composition (Guncotton)	...	Guncotton dust.
Filling from booster plug	...	Gunpowder - quantity in-sufficient for quantitative estimation of ingredients.
Exploder unit filling	...	C.E. (M.P. 129°C).
Gaine filling		
Loose (top increment) -	...	Picric acid (M.P. 122°C)
Pressed (bottom increment)	...	Picric acid (M.P. 122°C)

APPRECIATION

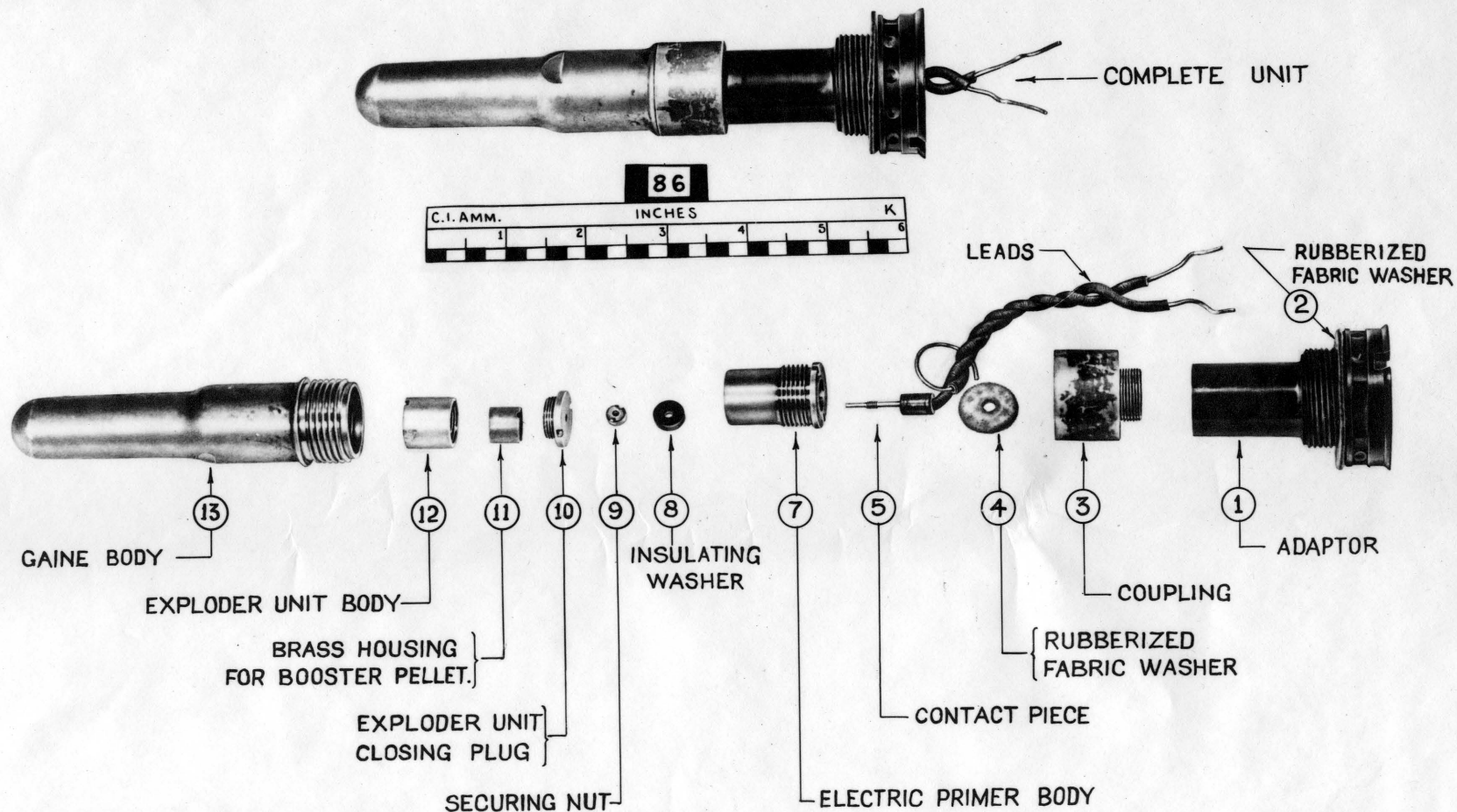
(Economic, manufacture and development aspects)

9. Although this electrically operated gaine is an improvisation it is considered that the work has been carried out in a well-equipped workshop; it is definitely not a field improvisation. The workmanship generally is of a high order. Although investigations have been made to see whether the adapter could be used in any Japanese bomb or shell nothing was found to support this. It would seem that the unit has been prepared specially for use in British aircraft bombs. The Japanese have probably large numbers of captured aircraft bombs and have prepared this unit with a view to using them to the best advantage. This form of gaine lends itself readily by means of a contact strip or other methods to use as a booby trap. Its use may not be confined only to aircraft bombs.

SUMMARY OF DATA.

Length overall	...	...	7.7-ins.
Length of gaine body	...	...	4.8-ins.
Filled weight	...	...	12.5 oz.
Filled weight of gaine	...	...	8.03 oz.
Filling and weight	...	Picric acid	0.78 oz.
Bridge resistance	...	...	1.65 ohms.
Firing current	...	...	0.5 amps.

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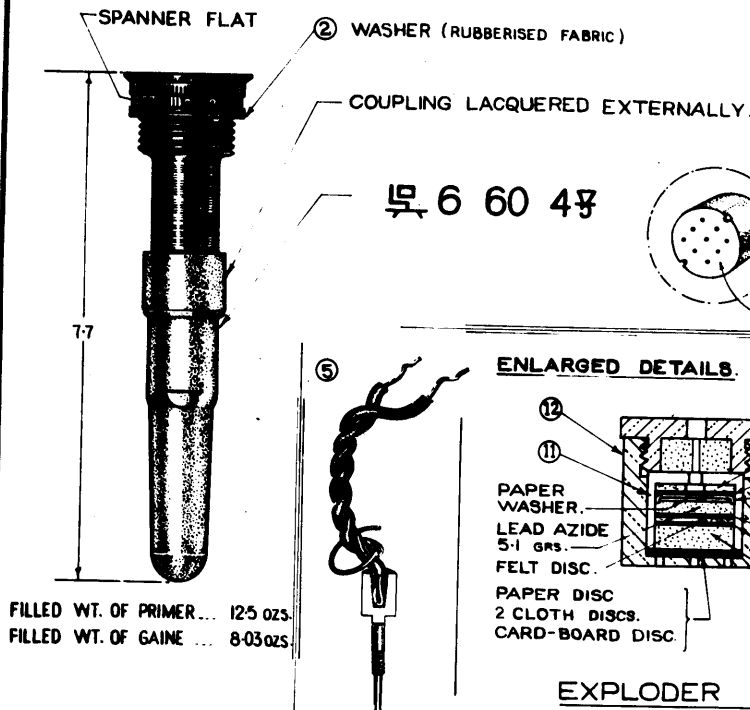
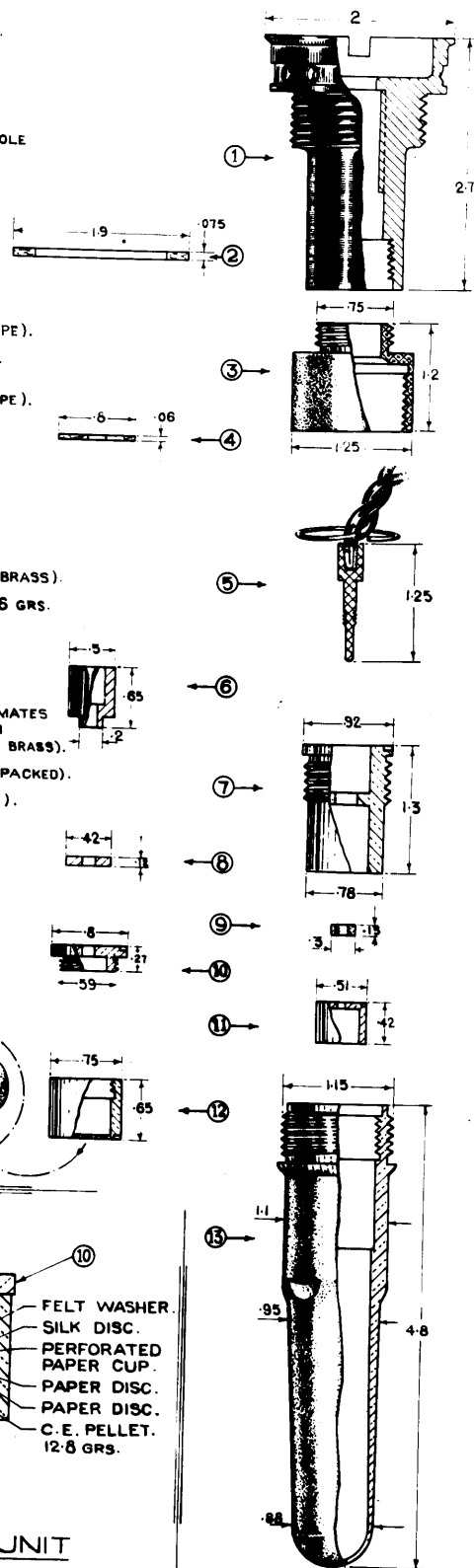
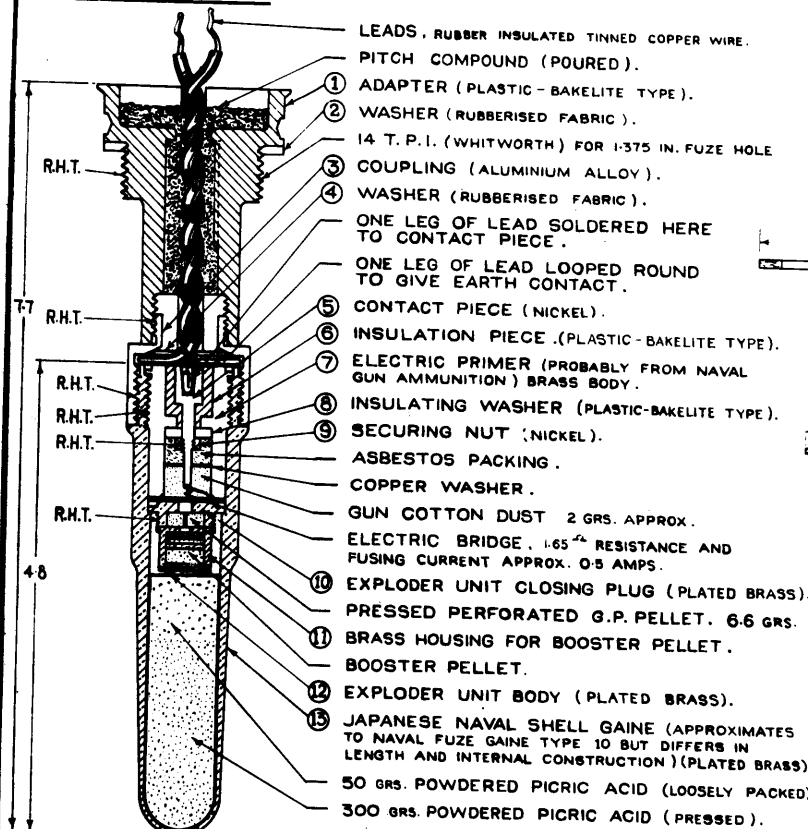


JAPANESE ELECTRIC PRIMER

FITTED WITH JAPANESE NAVAL SHELL Gaine & ADAPTOR TO FIT
1.375 INS. FUZE HOLE (BRITISH A.C. BOMB STANDARD FUZE HOLE)
 EXTERNAL APPEARANCE & ASSEMBLY SEQUENCE.

C.I. AMM. S/1039
 KIRKKEE MARCH 45

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EXPLODER UNIT

JAPANESE ELECTRIC PRIMER

FITTED WITH JAPANESE NAVAL SHELL GAIN & ADAPTER TO FIT 1.375 INS. FUZE HOLE (BRITISH A.C. BOMB STANDARD FUZE HOLE)
 GENERAL ASSEMBLY & COMPONENT DETAILS.

DIMENSIONS IN INCHES.