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JAPANESE AMMUNITION

C.I.AMM. TECHNICAL REPORT

No. 33

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2½ KG. SPIGOT CHARGE

FOR PROJECTION FROM THE 50-MM. DISCHARGER, TYPE '98

COMPILED BY
THE CHIEF INSPECTOR OF AMMUNITION,
KIRKEE.

1945.

RESTRICTED.

JAPANESE AMMUNITION.

C.I.AMM. TECHNICAL REPORTS.

REPORT No.33. MARCH 1945.

JAPANESE 2½-Kg. SPIGOT CHARGE. (FOR PROJECTION FROM THE 50-mm. DISCHARGER TYPE '98)

G E N E R A L.

Crude Spigot Charges were used by the Japanese in the Burma area in 1944. Before describing these spigot charges in detail, it will be useful to make some general remarks on their use and method of projection.

2. This type of spigot charge is projected from the "Projectile Discharger, Type '98". General Headquarters India, Military Intelligence Directorate, Japan, P.T.S.No.30 of August 1944 gives a brief description of this discharger and projectile and states the source of the information is a printed manual recovered in the South West Pacific Area. It is quite definite that this is the same weapon as that used in Burma.

Subsequent reports were received from the Engineer-in-Chief, Australia, and a drawing of the Discharger taken from that report, is reproduced at Plate B. This conforms generally to the details given in P.T.S.No.30.

The Discharger is also used to propel a finned type Bangalore Torpedo which is a modification of the normal type '99 Bangalore Torpedo used by the Japanese. This will be fully described shortly in a later Technical Report.

3. The following extracts taken from P.T.S.No.30 are reproduced for ready reference to explain the use of the discharger and projectile:-

"DISCHARGER -

The discharger consists of the barrel, base plate, bipod, and range control device. The barrel is made of steel, and has an aperture for the igniter at the breech. The bipod is clamped at the centre of the barrel and fixes the barrel at a constant elevation of 40 degrees. The feet of the bipod run in grooves on the base plate, being firmly held by screw clamps, and allow a 10 degree traverse left and right. The range control scale is a plate, on which is engraved a scale in units from 0 to 60, and which is attached at the muzzle by a clamp. The scale is moveable in its clamp, and controls the range by limiting the amount of the tail of the bomb or torpedo projecting into the barrel of the discharger. Four metal stakes are used to anchor the base plate.

AMMUNITION - BOMB -

The explosive charge consists of 24 small blocks (2 x 2 x 1" in size) of Picric acid loaded into the box in four columns. There is a hole in the base of the box, and holes are made in the blocks

to .....

to correspond, to take the detonator assembly. The detonator assembly consists of a pull igniter, a length of safety fuze (6 to 8 cms. depending on range), and a detonator.

PROPELLANT CHARGE -

These are made up in two sizes, 25 gms. and 35 gms., and packed in silk bags. They can be used in any combination up to 120 gms., though range graphs show them to be used in 25, 35, 50, 75 and 100 gm. units only. The table below shows the maximum and minimum ranges, taken from the range graphs, ranges being in yards:-

Propellant Charge.	Bomb.		Finned Bangalore Torpedo.	
	Max.	Min.	Max.	Min.
25 gms.	148	93	148	88
35 "	205	143	225	135
50 "	286	205	320	210
75 "	405	275	-	-
100 "	455	410	-	-

METHOD OF USE -

The discharger is mounted, with the barrel central, and the base plate level. On soft ground, the board from one of the packing boxes is placed under the base plate. The propellant charge is placed in the barrel and pushed to the breech with the cleaning rod. The detonator assembly is inserted in the bomb, or the safety pin is removed from the torpedo. The projectile is loaded into the discharger until stopped by the range control device. The string from the pull igniter in the bomb is attached to a projection on the bipod. The pull igniter is inserted into the aperture in the breech, and the string, about 10 feet long, led away to the firers position. On firing the bomb, the string attached to the bipod fires the igniter, which in turn fires the safety fuze. After a delay, dependent on the range, the detonator and main charge is fired.

METHOD OF PACKING:-

The discharger and accessories are packed in two wooden boxes, one holding the discharger complete and cleaning rod, and the other, the 4 stakes, the fuze and powder bag boxes, tools and spares. The two boxes weigh 84.2 kg. (185-lbs.) and form one mule load. It is not known how the ammunition is carried."

4. While it is stated in the above report that the range is controlled by limiting the length of the tail of the bomb or torpedo projecting into the barrel of the discharger, it is not clear why different weights of propellant charge are also used. The Australian report does not refer to different weights of propellant charge. This point remains to be cleared up; otherwise the details are clear.

5. The details below are based on an examination at Kirkee, of one spigot charge brought from the Burma Area in 1944. Although P.T.S.No.30 describes the charge as a bomb it is thought that a more descriptive term should be "2½-Kg. Spigot Charge". 2½ Kg. is the actual weight of the filling which can be loaded in the container and by quoting the weight of filling a better indication of its potentialities can be formed.

D E S C R I P T I O N.

6. For purposes of description the spigot charge may be divided into three parts:-

(a) The charge container,
(b) The wooden spigot,
(c) The explosive charge.

Charge container and wooden spigot.

7. Details of the construction of the charge container and the spigot, are shown in Plate B, while the external appearance can be seen from the photograph at Plate A. The charge container consists of a welded steel box with a lid secured by four screws, through the medium of clamps. Two holes are drilled in the lid to take the igniters, this enables two igniters, if necessary, to be used. It is possible that the use of two is normal practice. To the lid is welded a cylindrical spigot housing to take the wooden spigot which is secured by two nails or screws passing right through the housing and the end of the spigot. In line with the igniter holes in the lid are small semi-circular holes in the flange of the spigot housing. These are presumably to enable a "tie fast" to be used so that, on firing, tension on the friction igniter is taken on this point and not transmitted to the detonator and fuze in the filling.

Explosive charge.

8. The explosive charge is inserted in the field and the internal dimensions of the container shows that it is possible to load 24 of the usual Japanese demolition H.E. blocks 2 x 2 x 1". This number is also reported to have been found in the container (P.T.S.No.30 referred to above). This will give a total charge weight of approximately 5½-lbs. according to the density of the filling used. Any type of H.E. filling can, of course, be used and it is interesting to note that an officer from this Inspectorate found these containers on the Tidim Road (Manipur) filled with broken pieces of pure T.N.T., possibly taken from the block filling of a H.E. shell.

A P P R E C I A T I O N.

(Economic, development and manufacture aspects).

9. This weapon is probably intended for softening up defences prior to an assault. Owing to slowness in setting up, difficulty of timing for effective air burst and other obvious disadvantages it can be regarded as a crude weapon likely to be effective only in a limited role.

SUMMARY .....

SUMMARY OF DATA.

Overall length of spigot charge	..	27 1/2 ins.
Overall length of charge container	..	8 5/8 ins.
Overall length of wooden spigot	..	20 3/4 ins.
Filled weight of spigot charge	..	14 lbs. 3 ozs.
Empty weight of spigot charge	..	8 lbs. 9 ozs.
Filled weight of charge container	..	12 lbs. 8 ozs.
Empty weight of charge container	..	6 lbs. 13 1/2 ozs.
Weight of explosive charge	..	5 lbs. 6 ozs. to 5 lbs. 12 ozs.
Cubic capacity of charge container	..	120 cu. ins.

CHIEF INSPECTORATE OF AMMUNITION, INDIA, KIRKEE.

FIRST ISSUE, MARCH, 1945.

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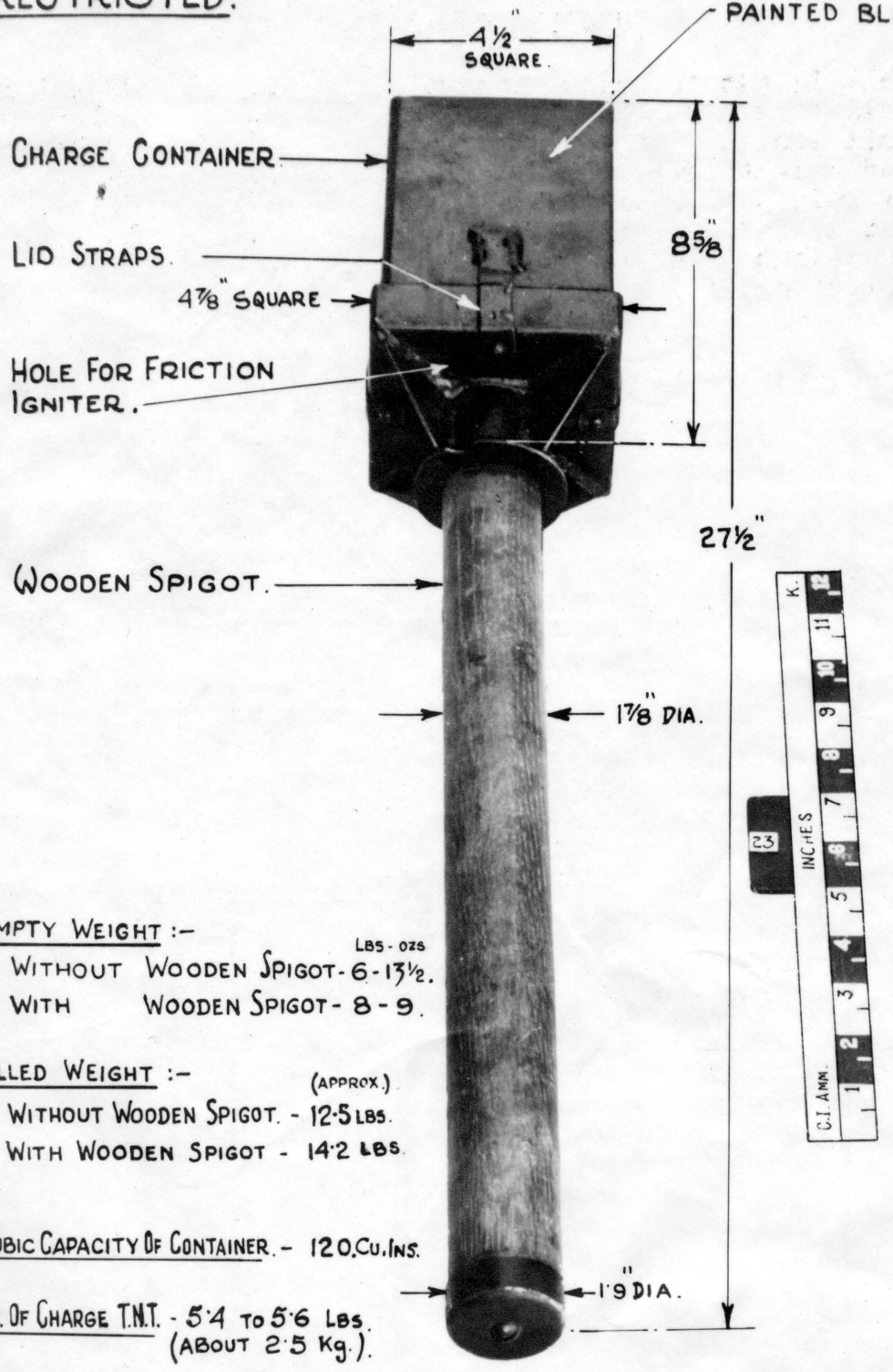

EMPTY WEIGHT :-

	LBS - OZS
WITHOUT WOODEN SPIGOT	6 - 13½.
WITH WOODEN SPIGOT	8 - 9.

FILLED WEIGHT :- (APPROX.)

WITHOUT WOODEN SPIGOT.	12·5 LBS.
WITH WOODEN SPIGOT	14·2 LBS.

CUBIC CAPACITY OF CONTAINER. - 120. CU. INS.

WT. OF CHARGE T.N.T. - 5·4 TO 5·6 LBS. (ABOUT 2·5 Kg.).

JAPANESE.

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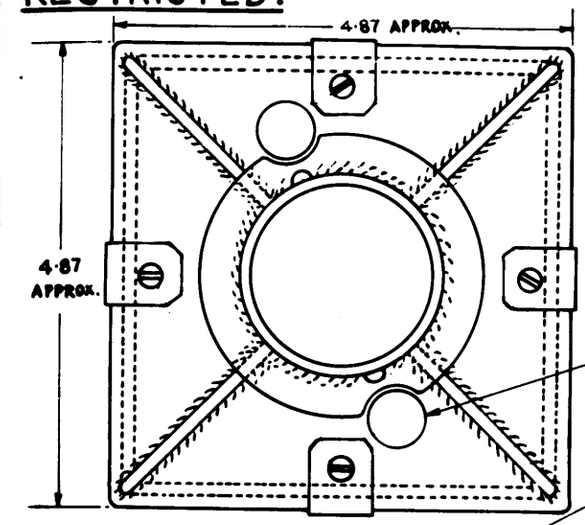
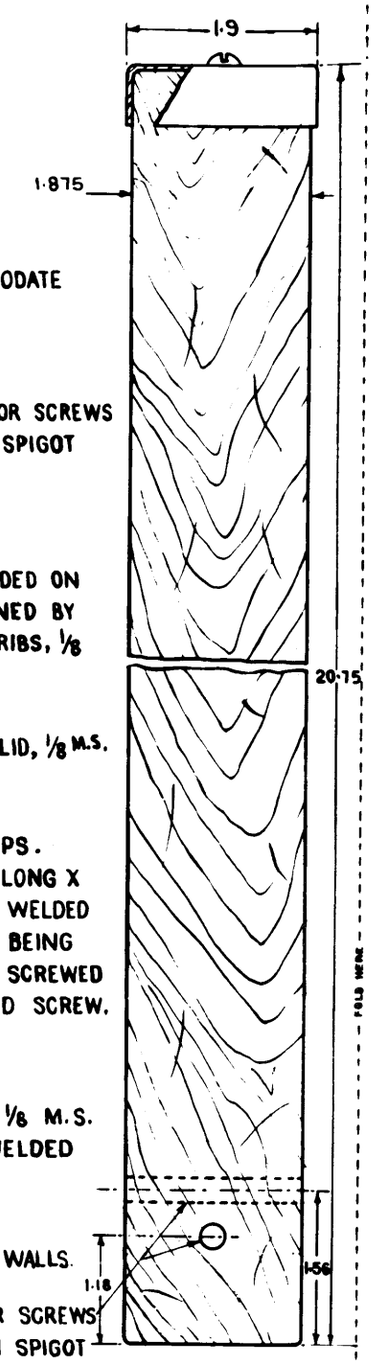
C.I. AMM. S/994.
KIRKEE. FEB. 1945.

RESTRICTED.

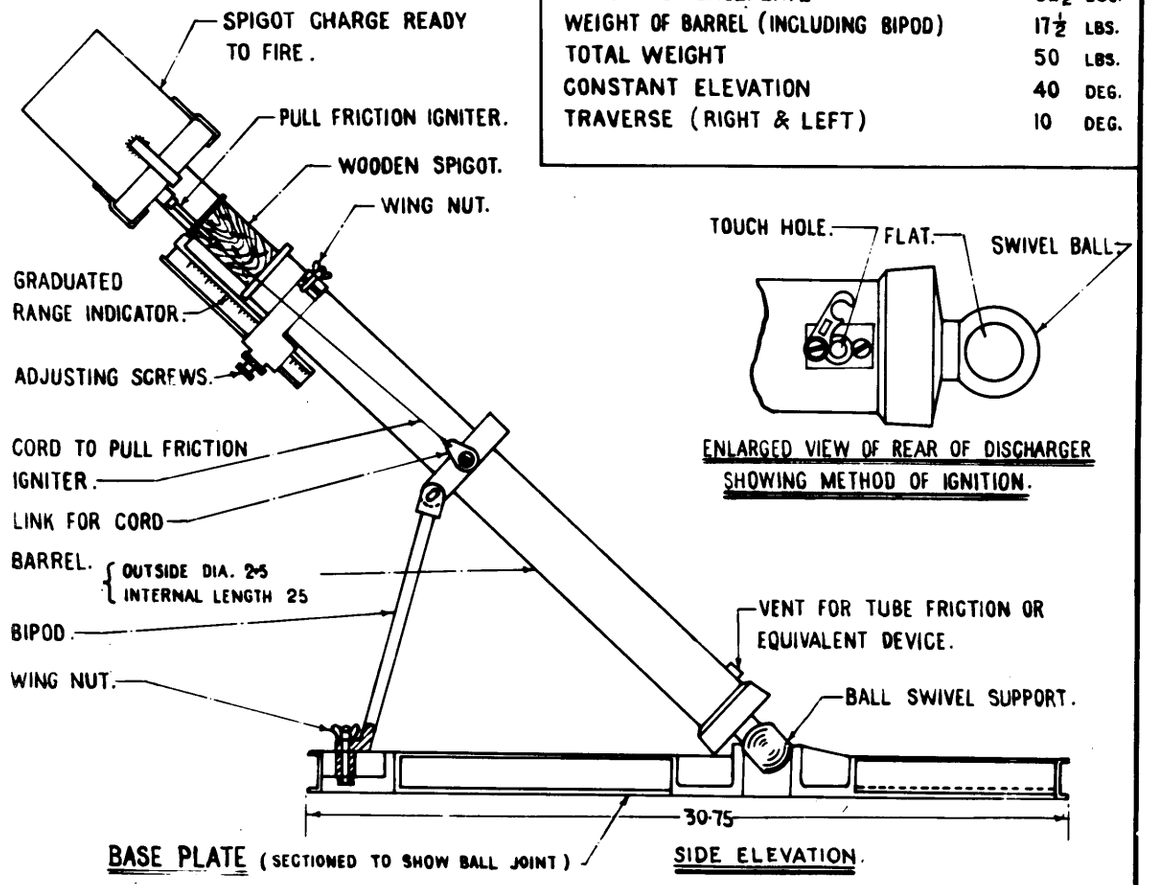


CHARGE CONTAINER.



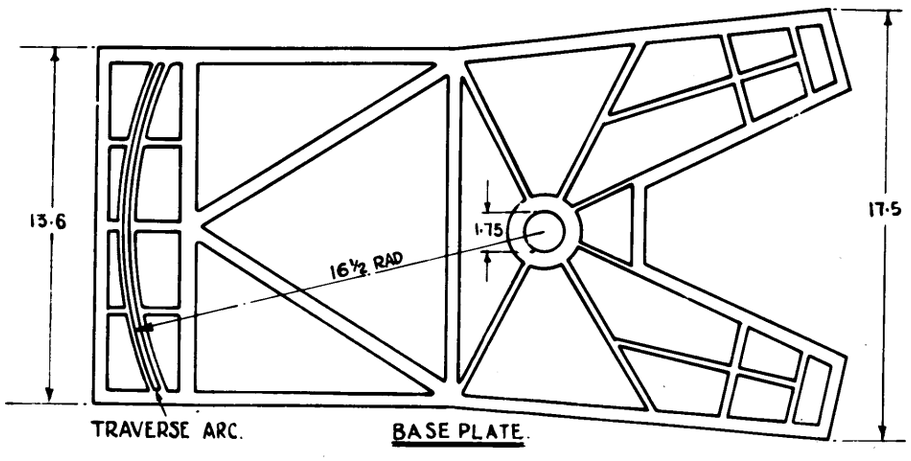
WOODEN SPIGOT.

CALIBRE	50 MM. (1·97 INS).
LENGTH OF BARREL (INTERNAL)	25 INS.
WEIGHT OF BASEPLATE	32½ LBS.
WEIGHT OF BARREL (INCLUDING BIPOD)	17½ LBS.
TOTAL WEIGHT	50 LBS.
CONSTANT ELEVATION	40 DEG.
TRAVERSE (RIGHT & LEFT)	10 DEG.



BASE PLATE (SECTIONED TO SHOW BALL JOINT) SIDE ELEVATION.

ENLARGED VIEW OF REAR OF DISCHARGER SHOWING METHOD OF IGNITION.



50 MM. DISCHARGER TYPE '98.

JAPANESE
2½ Kg. SPIGOT CHARGE
(FOR PROJECTION FROM THE 50 MM. DISCHARGER TYPE '98.)

DIMENSIONS IN INCHES.

C.I.Amm.S/993
KIRKEE. FEB. 45