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JAPANESE AMMUNITION

C.I.A.MN. TECHNICAL REPORT

No. 46

COMPARATIVE PERFORMANCE OF
DIFFERENT CALIBRES AND
NATURES OF SMALL ARM
AMMUNITION AGAINST
PORTABLE SHIELDS FOR
JAPANESE RIFLEMEN.

ADDENDUM NO. 1 DATED 13-9-45

TO

C.I.AMN. TECHNICAL REPORT NO. 46.

Library

COMPARATIVE PERFORMANCE OF DIFFERENT CALIBRES AND NATURES OF
SMALL ARM AMMUNITION AGAINST PORTABLE SHIELDS FOR
JAPANESE RIFLEMEN.

Since going to press the results of metallurgical examination have been received from the Inspector of Metal & Steel, Ishapore; these are reproduced below:-

The Plate was a 6.2-mm. thick (.244-in.) Homo hard type of plate showing a hardness of 500 Brinell. It analysed:-

Carbon	0.33%	Nickel	2.48%
Manganese	0.51%	Chromium	1.05%
Silicon	0.21%	Molybdenum	Trace
Sulphur	0.023%	Tungsten	Nil
Phosphorus	0.022%	Copper	Trace

The Plate was flaky.

Insert as Sub-para. to Para.1 of the Parent Report.

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C. I. AMN. TECHNICAL REPORTS

REPORT NO.46

AUGUST 1945

COMPARATIVE PERFORMANCE OF DIFFERENT CALIBRES
AND NATURES OF SMALL ARM AMMUNITION
AGAINST PORTABLE SHIELDS
FOR JAPANESE RIFLEMEN

Portable shields for use by Japanese riflemen received here are of two sizes, large and small. The general appearance of the plates is shown in the photograph at Plate A and detailed drawings are given in Plates B and C. The plates are of armour plate and typical hardness figures are given in Plate B. The detailed results of metallurgical examination are not yet available.

2. Firing trials were carried out here to estimate comparative performance of the more common British and American natures of small arm ammunition in various calibres to supplement the information obtained from American trials reported in General Headquarters, India, Military Intelligence Directorate Periodical Technical Summary No.30 of August 1944. To facilitate quick reference this report is reproduced below. Only American weapons and small arm ammunition were used.

"Two types of Portable Armoured Shield have been recovered in the South West Pacific Area. It was thought originally that they were carried by Light Machine Gunners, but a number were later found in the openings of pill boxes, suggesting that this is their primary use.

"The two types of shield differ only in the size, and the shape of the firers slit. The armour, in both shields, is face hardened and is 0.25-in. thick. The large size shield is a plate 14-ins. x 20-ins., while the small size is a plate 12-ins. x 16-ins.

"A firing trial was carried out at various ranges using American Ball and A.P. ammunition, and American rifles and machine guns. The results, tabulated below, show that the shields are proof against American .30-ins. calibre Ball ammunition, but are penetrated by A.P. ammunition up to 200 yards. It was found also that A.P. ammunition in addition to penetrating the shield, broke large fragments off the rear of the Plate.

Table showing Results of Firing Trials

Trial No.	Weapon	Ammunition	Range	Angle of Shield	No. of Hits	Results
1	U.S. Rifle M.1 Cal. .30-in.	Ball U.S. M.2	100 ft.	10-15° approx	6	No penetration. Slight dents only.
2	U.S. Rifle M.1	A.P.	100 ft.	do.	8	Complete penet- ration and fragments.
3	U.S. Spring- field rifle, M.1903 Cal. .30-in.	Ball U.S. M.2	100 yds.	Nor- mal.	5	No penetra- tion.
4	U.S. Browning M.G. M.1917 Al. Cal. .30-in.	Ball U.S. M.2	100 yds.	Nor- mal.	5	No clean pene- tration. One round struck a bolt head and pene- trated.
5	Springfield Rifle	A.P. U.S. M.1	100 yds.	30°	6	Complete pene- tration.
6	Springfield Rifle	A.P. U.S. M.1	200 yds.	Nor- mal.	5	4 complete penetrations. 1 round dented plate.
7	Browning M.G.	A.P. U.S. M.1	500 yds.	Nor- mal.	7	6 rounds dented plate. 1 round struck near edge of firing slot, and broke off a small frag- ment plate.

Note:- Trials 1, 2, 4 and 5 were fired against the large shield, and Trials 3, 6 and 7 against the small shield."

3. A summarised statement giving results of firing trials at Kirkee at different ranges with various natures and calibres of ammunition is attached. The small shield was used generally for the shorter ranges and the large shield for the longer ranges.

4. These plates are immune to all natures of small arm fire except A.P. A heavy machine gun burst of BESA 7.92-mm. ball is likely to be effective at short ranges owing to cracking and probable pettalling at rear of plate. All A.P. is effective upto at least 300 yards but 7.92-mm. and .303-in. appear to be more effective than .30-in. A.P. and this is likely to be maintained at longer range

TRIAL NO.	WEAPON	NATURE OF AMMUNITION WITH MANUFACTURER & DATE.	RANGE (YDS.)	NO. OF ROUNDS FIRED.	NO. OF HITS.
1.	.45-IN. THOMPSON MACHINE CARBINE.	BALL, W.C.C. 4-42.	30	6	6
2.	.45-IN. THOMPSON MACHINE CARBINE.	BALL, W.C.C. 4-42.	10	2	2
3.	.38-IN. PISTOL REVOLVER, S. & W.	BALL, MK.2 K.F. 1-45.	30	6	6
4.	.38-IN. PISTOL REVOLVER, S. & W.	BALL, MK.2 K.F. 1-45.	10	2	2
5.	9-mm. STEN, MACHINE CARBINE, MK.3.	BALL, MK.1-2, H.N. 7-43.	30	6	6
6.	9-mm. STEN, MACHINE CARBINE, MK.3.	GERMAN S.A.P. (M.S. CORE) 2-42.	30	6	6
7.	9-mm. STEN, MACHINE CARBINE, MK.3.	BALL, MK.1-2, H.N. 7-43.	10	2	2
8.	.303-IN. RIFLE, NO.1, MK.3.	BALL, MK.7 R.G. 8-44.	30	5	5
9.	.303-IN. RIFLE, NO.1, MK.3.	A.P. W. MK.1, K. 6-41.	100	5	2 1 1 1
10.	.303-IN. RIFLE, NO.1, MK.3.	A.P., K. 1941.	300	12	10
11.	7.92-mm. BESA, MACHINE GUN, MK.2.	BESA, BALL, MK.2.	30	5	5
12.	7.92-mm. RIFLE.	BESA, BALL, MK.2.	100	5	5
13.	7.92-mm. RIFLE.	BESA, A.P.	300	5	5
14.	.30-IN. RIFLE, U.S., M. 1903.	BALL, M2.	100	5	5
15.	.30-IN. RIFLE, U.S., M. 1903.	A.P. R.A. Lot 44, 21-7-44.	300	8	6
16.	.30 - U.S. CARBINE, M.1.	BALL	30	5	5

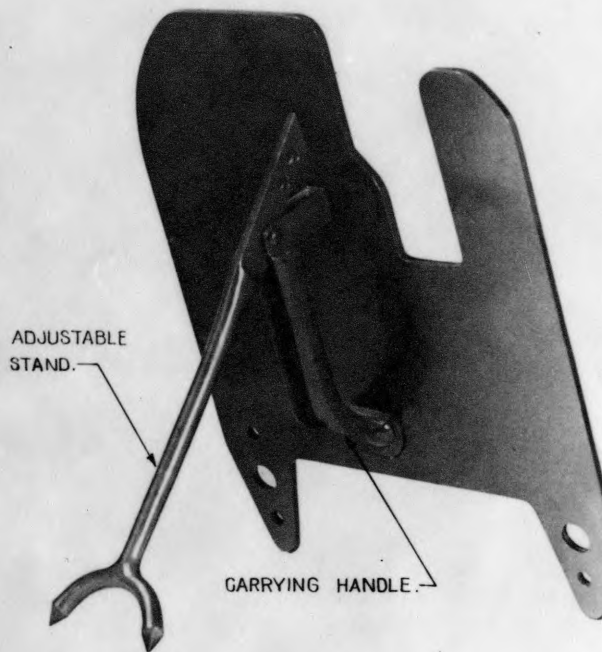
FIRING TRIALS
KIRKEE.

POSITION OF SHIELD.	RESULTS ON PLATE.	REMARKS.
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	NO EFFECT.	
NORMAL	FIRST, THIRD, FOURTH AND FIFTH ROUNDS CAUSED SLIGHT DENTS, SECOND ROUND HIT A STUD HEAD DESTROYING A PORTION OF IT.	SECOND ROUND KNOCKED OUT THE SUPPORTING STAND, SHEARING THE HINGE STUD.
NORMAL AT 10° AT 20° AT 30°	CLEAN THROUGH. CLEAN THROUGH. CLEAN THROUGH. CLEAN THROUGH.	
NORMAL	EIGHT ROUNDS THROUGH. ALL CAUSED PETALLING TO SOME DEGREE. ONE ROUND SCOOP AND ONE ROUND SEVERE DENT WITH CRACKING AT REAR.	
NORMAL	FIRST ROUND SEVERE DENT, SLIGHT CRACK AT REAR OF PLATE. SECOND ROUND SEVERE DENT, HEAVY CRACKING BUT NO PETALLING. REMAINING ROUNDS HEAVY DENTS.	THE DENTS WERE VERY MUCH DEEPER THAN THOSE CAUSED BY .303-IN. BALL.
NORMAL	ALL ROUNDS CAUSED DENTS FROM SLIGHT TO HEAVY.	
NORMAL	ALL ROUNDS THROUGH.	
NORMAL	NO EFFECT.	
NORMAL	FIRST ROUND CORE LODGED. THIRD AND FOURTH ROUNDS NEARLY THROUGH. REMAINDER CLEAN THROUGH. ALL ROUNDS GAVE CLEAN HOLES WITH NO PETALLING AT REAR OF PLATE.	
NORMAL	NO EFFECT.	

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LARGE SHIELD
(14 INS. X 20 INS.)



SMALL SHIELD
(12 INS. X 16 INS.)

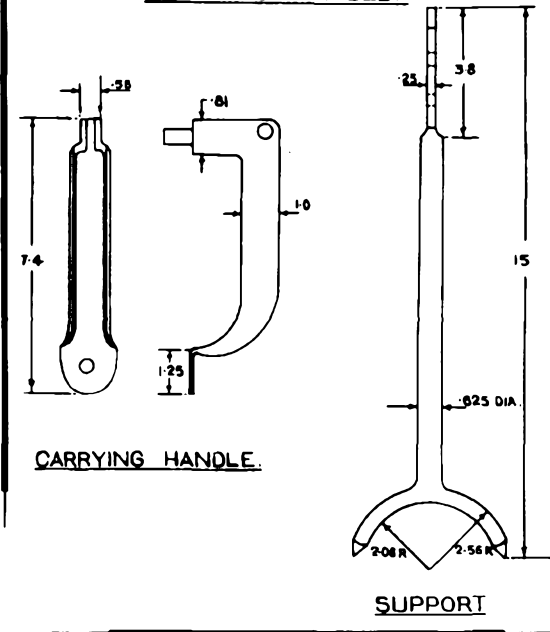
— JAPANESE —
— PORTABLE RIFLEMAN'S SHIELD —

C.I. AMN. S/1169
KIRKEE JULY '45

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PLATE B.

DETAILS OF ADJUSTABLE STAND AND CARRYING HANDLE.

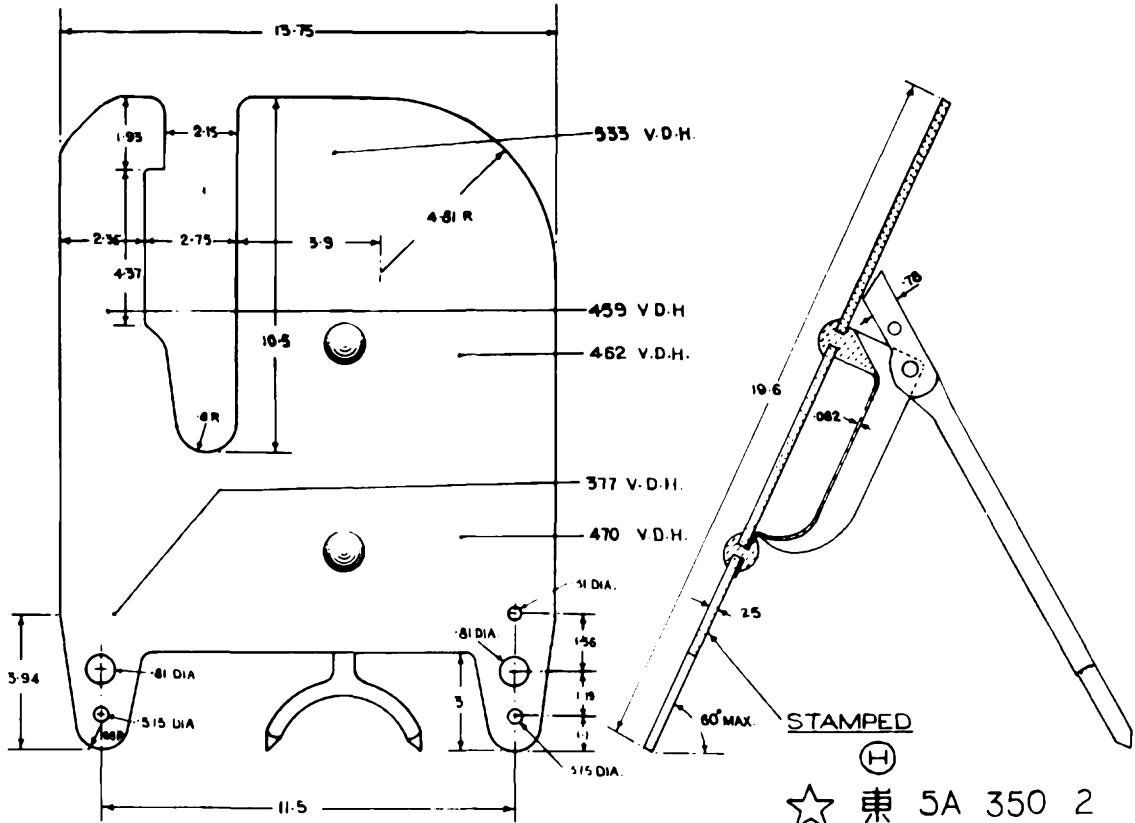


CARRYING HANDLE.

SUPPORT

NOTES:-

SHIELD MADE OF ARMoured STEEL AND PAINTED OLIVE-DRAB.
COMPLETE WT. OF SHIELD :- 15½ LBS.



FRONT VIEW

STAMPED

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TOKYO (TO)
INSPECTION TOKYO
MARK

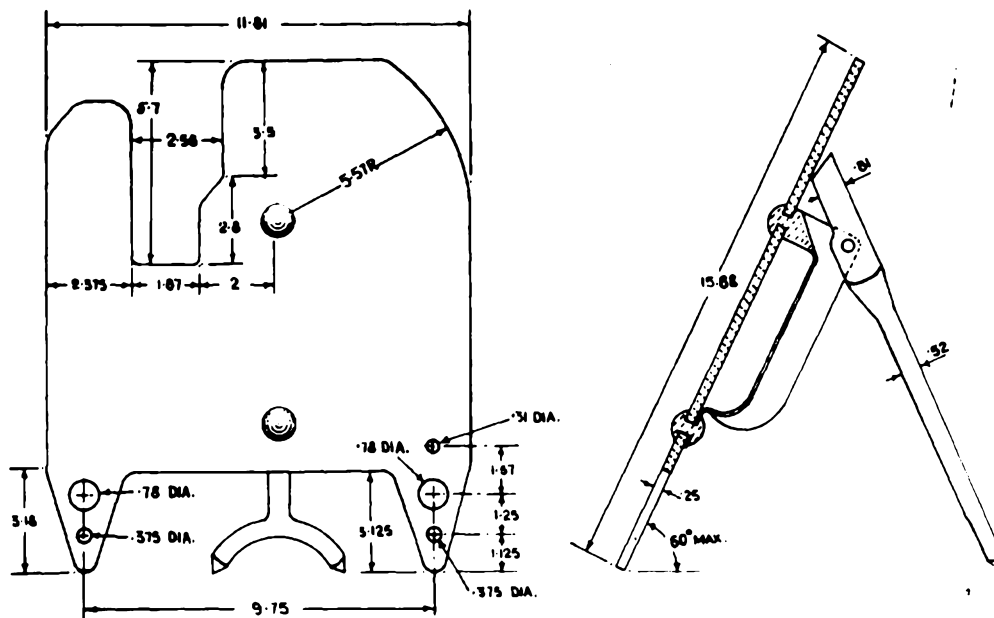
SIDE VIEW.

— PORTABLE SHIELD —
— FOR —
— JAPANESE RIFLEMAN —
— LARGE —

DIMENSIONS IN INCHES.

C.I. AMN. S/1189
KIRKEE JULY '45

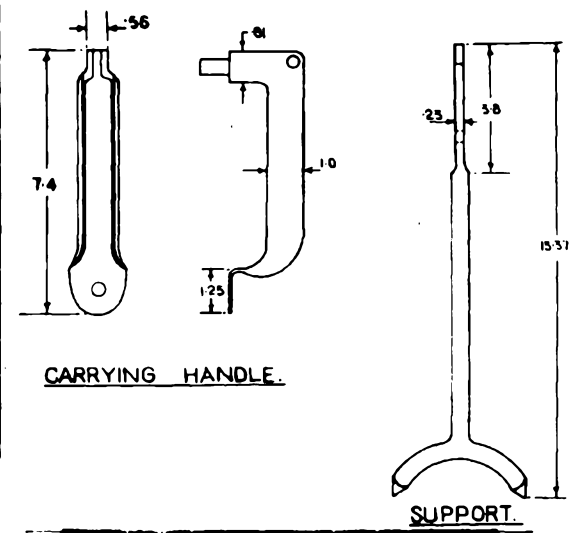
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FRONT VIEW

SIDE VIEW

DETAILS OF ADJUSTABLE STAND
AND
CARRYING HANDLE.



CARRYING HANDLE.

SUPPORT.

NOTES:-

SHIELD MADE OF ARMoured STEEL
AND PAINTED OLIVE-DRAB.
COMPLETE WT. OF SHIELD :- 11 LBS.

— PORTABLE SHIELD —
— EOR —
— JAPANESE RIFLEMAN —
— SMALL —

DIMENSIONS IN INCHES.

C.I. ANN. S/1190
KURKEE JULY '45

PLATE C.