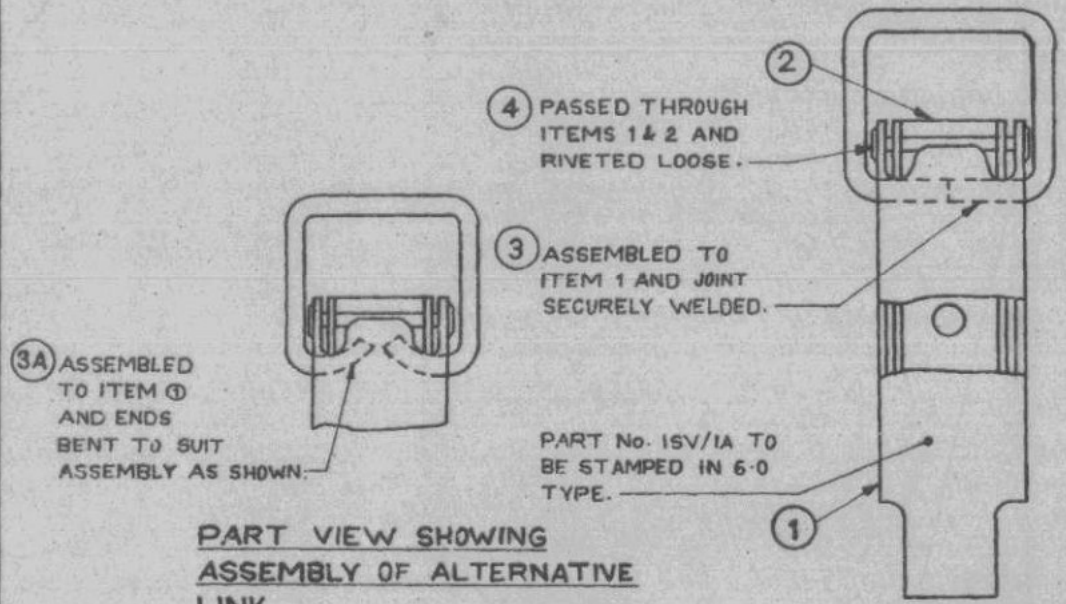
8	7	6	5	4	3	2	1

PART No. ISV 1A

DRG. CONVENTIONS CONFORM TO IS : SPECIFICATIONS.
DIMENSIONS ARE IN mm.

D.C. 19879-A

TOLERANCES ON UNTOLERANCED DIMENSION ± 0·5



PART VIEW SHOWING ASSEMBLY OF ALTERNATIVE LINK

ASSEMBLY

SCHEDULE OF COMPONENTS

ITEM No.	DESCRIPTION	SHEET No.	PART No.	No. PER SET.
1.	CATCH PIECE.	4	ISV/1	1
2.	CHANNEL.	5	ISV/2	1
3.	LINK.	6	ISV/3	1
OR 3A	ALTERNATIVE LINK.	6	ISV/4	1
4.	PIN HINGE, STEEL WIRE 3·15 DIA. 28·5 LONG TO IS: 2801-1978 (THIRD REVISION) (AMENDMENT ONE) (REAFFIRMED IN 1992) V/4 HARD BRIGHT FINISH		ISV/5	1

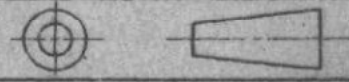
TECH. REQUIREMENT :- AS PER SPEC. № I A 1169 (n)

R.No.	DATE.	AUTHORITY	REVISION.	ZONE.	AHSP SIG.	D.O.
	23-7-04	D.C 36978-A	REF. D.C.			
	8-8-03		SCANNED WITHOUT CHANGE			
	14-7-99	DC. 35750-A	PIN HINGE MATL. SPEC. UPDATED.			
	13-5-94	DC 35710-A	DRG. FORMAT BOX ENTRIES ADDED.			
	24-2-94	DC 35672-A	ESTIMATED MASS ADDED.			
	17-11-93	DC 35622-A	DRG FORMAT BOX ENTRIES & TECH. REQUIREMENT NOTE ADDED, IS: SPEC⁵ WAS IS: C96 & SPEC. UPDATED			
	27-6-82		RETRACED WITHOUT CHANGE.			
			PREV. D.C⁵ No:- 19879-A, 20941-A, 29195-A, 29474-A, 29750-A & 29886-A,			SD/-

DRG. SEALED :- 19-5-47.

DRN:-	CHD:-	TRD:-	COMP:-
C.D'MAN.	O I/C D.O.	SCALE :- 1:1	
APPD :- FOR CQA (A)		EST. MASS :- 70 g	
		GAUGE SCHD :- NOT APPLICABLE	
		DATE :-	
MATL :- NOT APPLICABLE			
PROTECTIVE FINISH :- AS PER DRG NO. ISV 479A			

ASSY. DRG. ISV 479A
ISV 381A



DESIGNER'S REF.
I.A. 793 SHEET 3

PART No. ISV 1A

D.S.CAT No. NOT APPLICABLE

AHSP :- C.Q.A.(A) KIRKEE

CATCH

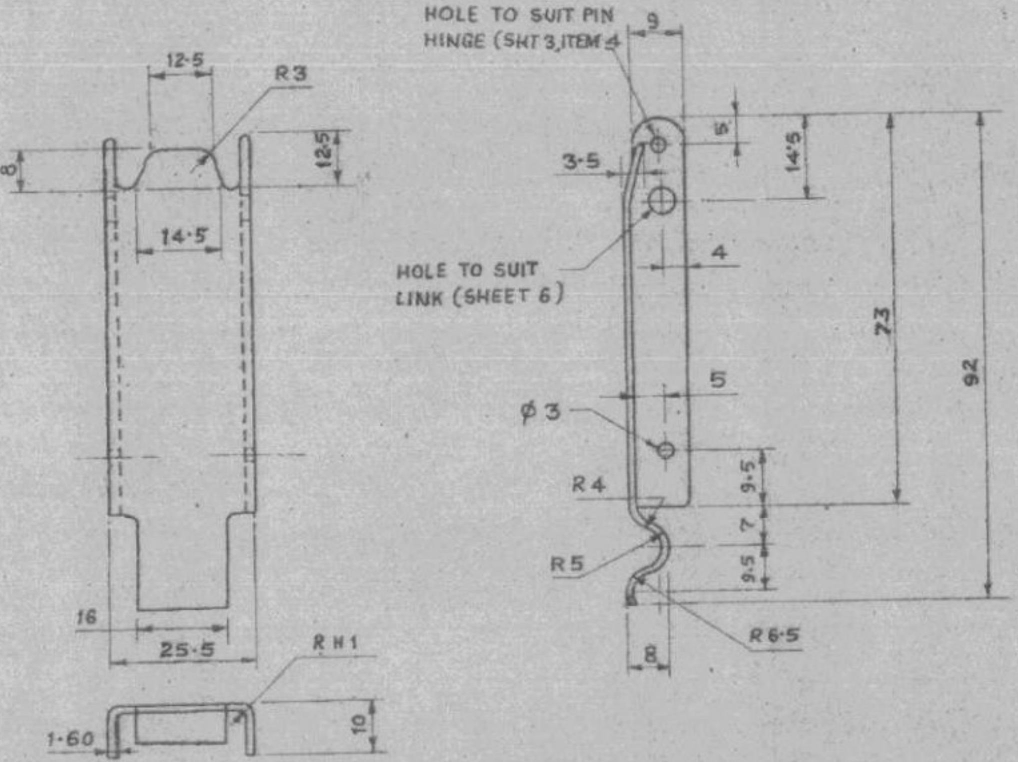
ISV 1

PART NO

(1) 19879-A

DRG. CONVENTIONS CONFORM TO IS SPECIFICATIONS.
DIMENSION ARE IN mm.

TO BE RUSTPROOFED BY ANY APPROVED PROCESS.



MATERIAL:-
STEEL PLATE TO SPEC. IS:513:1986 (THIRD REVISION) (AMENDMENT THREE) (REAFFIRMED IN 1992) COLD ROLLED AND ANNEALED TYPE 'D' BEST SURFACE.

NOTE:-

TOLERANCE ON UNTOLERANCED DIMENSION ± 0·5

TECH REQUIREMENT:- AS PER SPEC. NO. IA 1169 (n)

(1)

RNº	DATE	AUTHORITY	REVISION	ZONE	SIGN AHSP	SIGN D.O.
	13.07.04	D.C. 36970-A	REF. D.C.			
	9·4·03		SCANNED WITHOUT CHANGE			
	14-7-94	DC 35756 A	MATL SPEC UPDATED			
	24 2 94	DC 35672-A	ESTMATED MASS ADDED			
	17 11 93	DC 35622-A	DRG FORMAT BOX ENTRIES, TECH REQUIREMENT NOTE ADDED, MATL NOTE AMENDED & IS SPEC WAS IS 838			
	10-6 92		RETRACED WITHOUT CHANGE			
			PREVIOUS D.C.(s) NOs 19879-A, 26870-A, 29158-A, 29474-A, 29750-A, 29886-A & 34661-A			SD/-

DRG SEALED:- 19-5-47

DRN -	CHD -	TCD - ARG	COMP
C D MAN	O I/C D O	SCALE - 1 : 1	
APPD FOR CQA (A)		EST MASS - 30 g	
		GAUGE SCHD. - NOT APPLICABLE	
		DATE:-	
MATERIAL :- AS ABOVE			
PROTECTIVE FINISH :- REFER TO DRG. NO. ISV 479 A			

ASSY DRG. ISV 1A

DESIGNER'S REF. I.A. 793 SHEET 4

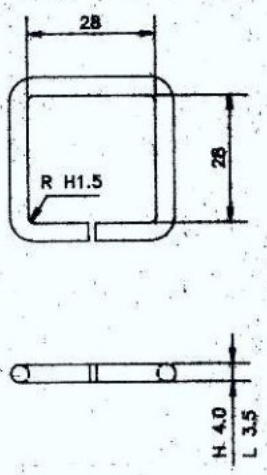
PART Nº ISV 1

D.S. CAT Nº NOT APPLICABLE

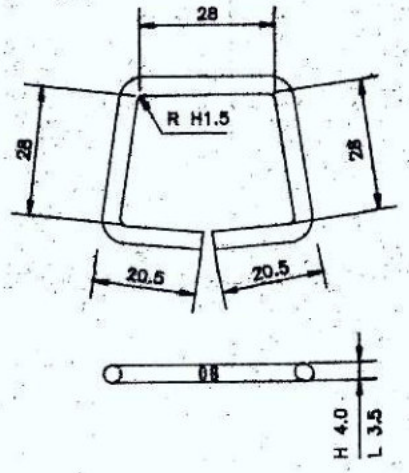
CATCH, PIECE

PART NO.	DRG. CONVENTIONS CONFORM TO IS: SPECIFICATIONS DIMS ARE IN mm.

DC.19879-A.



(3) PART No. ISV 3



(3A) ALTERNATIVE

PART No. ISV 4

NOTE:-

TOL. ON UNTOL. DIMS. ± 0.5

TO BE RUSTPROOFED BY ANY APPROVED PROCESS.

MATERIAL:-

STEEL WIRE IN CONFORMITY WITH THE RELEVANT CLAUSE IN SPEC. FOR WOODEN BOXES I.A. 948 (a,d)

TECHNICAL REQUIREMENT:-

AS PER SPEC No. I.A.1189(n).

R. NO.	DATE	AUTHORITY	REVISION	ZONE	AHSP	D.O.
	13-7-00	DC.36970-A	REF. D.C.			
3	3/2000	D.C.36653-A	REDRAWN WITHOUT CHANGE & NEW MASTER COPY REPLACED IN SUPERSESSION OF EXISTING DILAPIDATED COPY.		SD/-	SD/-
			PREVIOUS DC.Nos. 19879-A,29870-A,29188-A,29474-A, 29780-A,29889-A,30622-A & 35672-A.		SIG.	

DRG. SEALED:- 19 - 5 -47.

DRG:-	CHD:-
C.D'MAN	0 I/C D.O
APPD	FOR CQA(A)
MATL:- AS ABOVE	
PROTECTIVE FINISH:- AS PER DRG. ISV 479 A	
TRD:- M-S B	COMP:- U.K.
SCALE:- 1:1	
EST.WGT.- 3 g. (Approx.)	
GAUGE SCHD.- NOT APPLICABLE	
DATE:-	

ASSY. DRG. NOT APPLICABLE

DESIGNER'S REF I.A.793 SHT. & DET. No.

PART No. AS ABOVE.

SUB-CONT NO NOT APPLICABLE

AHSP:- CQA(A) KIRKEE

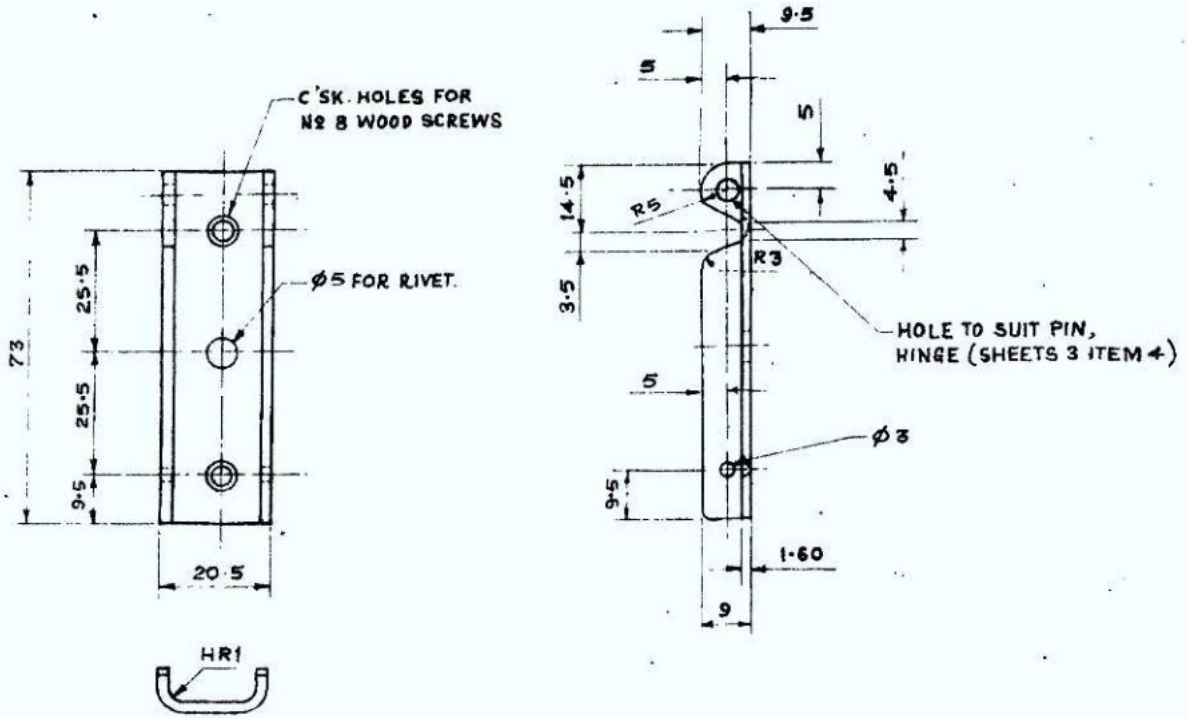
LINK

PART Nº ISV 2

DRAWING CONVENTIONS CONFORM TO IS: SPECIFICATIONS.
DIMENSIONS ARE IN mm.

D.C.I. 19879-A

TECHNICAL REQUIREMENT:-
AS PER SPEC. Nº I A 1169 (n)



HR1

NOTE:-

TOLERANCES ON UNTOLERANCED DIAMENSION ± 0·5

TO BE RUSTPROOFED BY ANY APPROVED PROCESS.

THE C'SK HOLES FOR WOOD SCREWS TO BE ELIMINATED, WHEN CATCHES ARE PROCURED FOR STEEL PACKAGES.

MATERIAL:-

STEEL PLATE TO SPEC. IS:513:1986 (THIRD REVISION) (AMENDMENT THREE) (REAFFIRMED IN 1992) COLD ROLLED & ANNEALED TYPE 'D' BEST SURFACE.

R.Nº	DATE	AUTHORITY	REVISION.	ZONE	AHSP SIGN.	D.O
	13-7-04	DC 36970-A	REF. D.C			
	28-4-03		SCANNED WITHOUT CHANGE			
	14-7-94	DC.35750-A	MATL. SPEC. UP-DATED.			
	24 2 94	DC 35672-A	ESTIMATED MASS ADDED.			
	17 11 93	DC-35622-A	DRG. FORMAT BOX ENTRIES, TECH REQUIREMENT NOTE ADDED, MATL NOTE AMENDED & IS SPEC. WAS IS:696.			
	6-6-92		RETRACED WITHOUT CHANGE			
			PREVIOUS D.C.(S) Nº: 19879-A, 26870-A 29159-A, 29474-A, 29750-A, 29896-A, 32535-A & 34661-A			

DRG. SEALED :- 19-5-47

DRN:-	CHD:-	TCD:- ADG.	COMP:
C.D'MAN	O/C D.O.	SCALE :- 1:1	
APPD. FOR CQA (A)		EST. MASS :- 60 g	
		GAUGE SCHD :- NOT APPLICABLE	
		DATE:-	

MATL:- AS ABOVE

PROTECTIVE FINISH:- REFER TO DRG. NO. ISV 479A

ASSY DRG. ISV 1A

DESIGNER'S REF I.A.793 SHT 6

PART Nº ISV 2

D.S CAT Nº NOT APPLICABLE

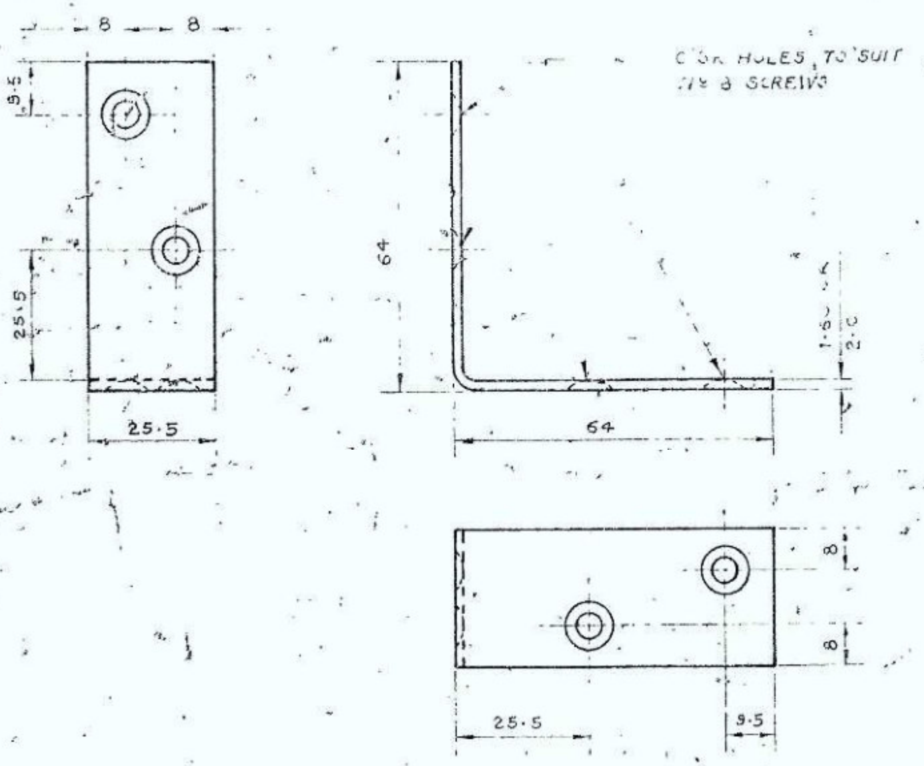
AHSP:- CQA(A) KIRKEE

CHANNEL

PART No ISV 8

DRG CONVENTIONS CONFORM TO IS 696
DIMENSIONS ARE IN mm

D.C.I. 198/8-A



NOTE :-

TOLERANCES ON UNTOLERANCED DIMENSION ±.5

TO BE RUST PROOFED BY ANY APPROVED PROCESS

MATERIAL :-

STEEL IN CONFORMITY WITH THE RELEVANT CLAUSE IN SPECN. FOR WOODEN BOXES I.A 948.

R No	DATE	AUTHORITY	REVISION	ZONE	AHSP	D.O. SIGN
	28-2-84		RETRACED WITHOUT CHANGE PREVIOUS D C (I) NO: 19879 A, 19893-P, 26670-A, 29158-A, 29474-A, 29750-A & 29885-A			S0/-

DRG SEALED :- 19-5-47

DRN. | CHD. | TCD. RDT | COMP
SCALE :- 1:1
C D'MAN | O/C D.O. | EST. MASS. -
APPD. | GAUGE SCHD -
FOR C.I.(A) | DATE -
MATL - AS ABOVE
PROTECTIVE FINISH -

ASSY DRG

DESIGNER'S REF I.A.793 SHT 8
PART No ISV 8
D.S. CAT No

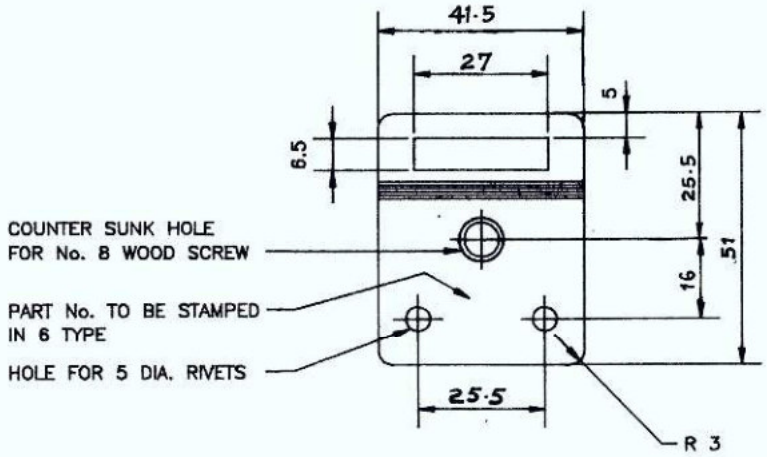
PLATE, ANGLE, 64 X 64

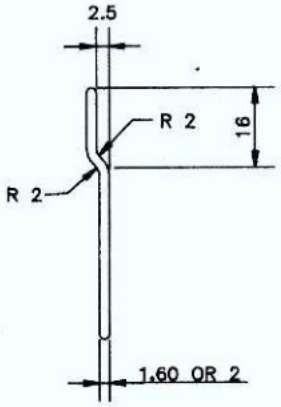
AHSP :- C.I.(A) KIRKEE

9 ΛSI PART NO.

DRG. CONVENTIONS CONFORM TO IS: SPECIFICATIONS
DIMS ARE IN mm.

D.C.19879–A





NOTE:–

TOLERANCES ON UNTOLERANCED DIMENSION ± 0.5
TO BE RUSTPROOFED BY ANY APPROVED PROCESS.

MATERIAL:–

STEEL PLATE TO SPEC. IS: 513:1986 REAFFIRMED IN 1992
COLD ROLLED & ANNEALED TYPE 'D' BEST SURFACE

R. NO.	DATE	AUTHORITY	REVISION	ZONE	AHSP SIG.	D.O.
	3 3/2000	D.C. 36653-A	REDRAWN WITHOUT CHANGE & NEW MASTER COPY REPLACED IN SUPERSESSION OF EXISTING DILAPIDATED COPY.		SD/–	SD/–
			PREVIOUS D.Cs. Nos. 19879–A, 22334–A, 26870–A, 29158–A, 29474–A, 29750–A, 29986–A, 34661–A & 35671–A.			

DRG.SEALED:– 19 – 5 – 47

DRN:– C.D'MAN | CHD:– 0 I/C D.O. | APPD. FOR CQA(A)

TRD:– A G K COMP:– UAK
SCALE:– 1:1
EST.MASS:–
GAUGE SCHD:–
DATE:–

MATL:– AS ABOVE.
PROTECTIVE FINISH:– AS ABOVE.

ASSY.DRG. NOT APPLICABLE

DESIGNER'S REF. I A 793 SHT. 8

PART NO. ISV 6

D.S. CAT NO. NOT APPLICABLE

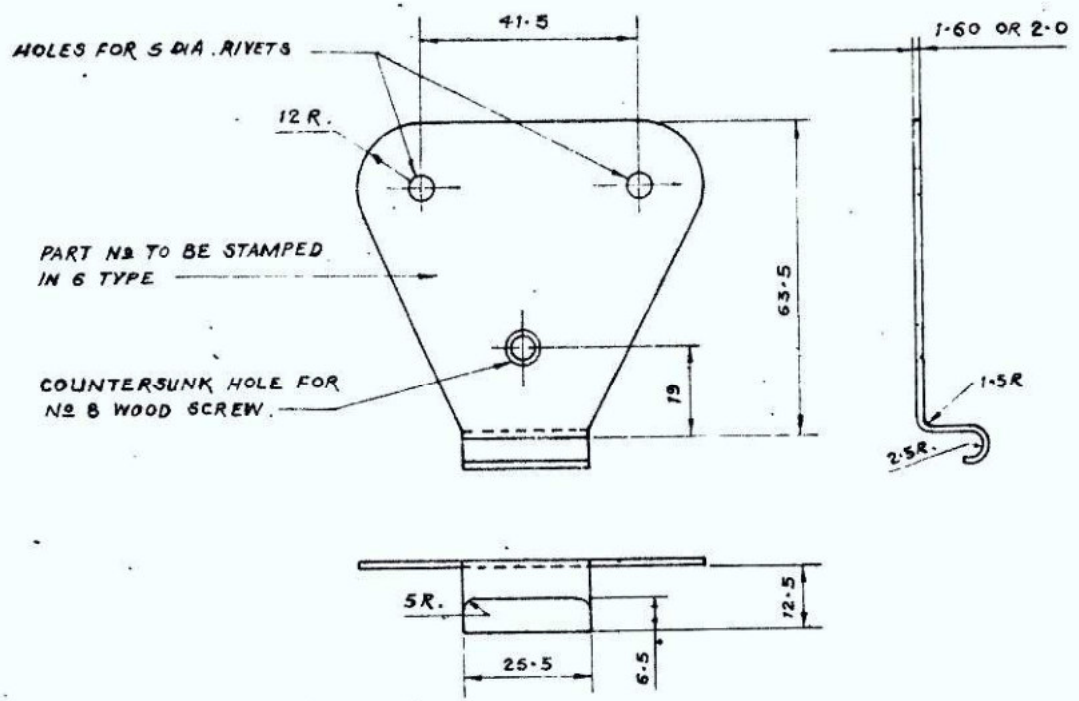
AHSP: CQA(A) KIRKEE

PLATE, ENGAGING

CAD/00415 (Dt. 25/02/2000)

PART NO	DRG. CONVENTIONS CONFORM TO IS: SPECIFICATIONS. DIMENSIONS ARE IN mm
7/ISI	

D.C.I./19879-A.



NOTE :-

TOLERANCES ON UNTOLERANCED DIMENSION ±·5

TO BE RUSTPROOFED BY ANY APPROVED PROCESS.

MATERIAL :-

STEEL PLATE TO SPEC. IS : 513 : 1986, REAFFIRMED IN 1992 COLD ROLLED & ANNEALED TYPE 'D' BEST SURFACE.

R Nº	DATE	AUTHORITY	REVISION	ZONE	AHSP. SIGN.	D.O.
			SCANNED WITHOUT CHANGE			
	24-2-94	DC 35671-A	DRG FORMAT BOX ENTRIES ADDED. MATL. NOTE AMENDED. IS:SPECS. WAS IS:636.			
	7-7-89	DC 34661-A	EXISTING MATERIAL NOTE DELETED & NEW NOTE SUBSTITUTED.			
	6-2-84		RETRACED WITHOUT CHANGE			
			PREVIOUS D.C.I.(I) Nos. 19879-A, 20535-A, 22324-A, 25870-A, 25158-A, 25474-A, 23750-A & 23866-A.			

DRG SEALED :- 13-5-47

DRN.	CHD.	TCD. RDT	COMP. YM	ASSY. DRG. NOT APPLICABLE
C.D.MAM	o/c D.O.	SCALE :- 1:1		
APPD. FOR CQA(A)		EST. MASS :-		
		GAUGE SCHD :-		
		DATE :-		

MATL :- AS ABOVE.

PROTECTIVE FINISH :- AS ABOVE

DESIGNER'S REF 1.A.783 SHT. 7

PART NO 1SV/7

D.G.SAT NO

PLATE, HOOK.

AUTHOR: C.Q.A.(A) KIRKEE

(12)

8	7	6	5	4	3	2	1

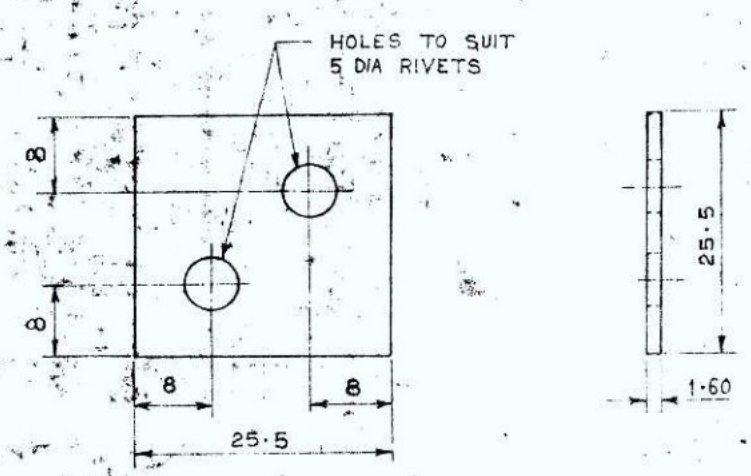
6 ASI — PART No

DRG. CONVENTIONS CONFORM TO IS :~~696~~ SPECS.

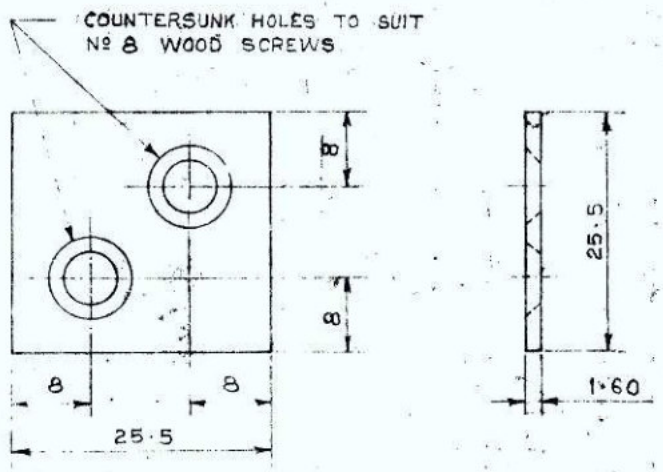
DIMNS. ARE IN mm

TO BE RUSTPROOFED BY ANY APPROVED PROCESS.

D.C.I. 19879 – A



TYPE A



TYPE B

MATERIAL :-

~~STEEL PLATE TO ANY ONE OF THE FOLLOWING SPECIFICATIONS.~~

STEEL PLATE TO SPEC. 15:513:1986 REAFFIRMED IN 1992 COLD ROLLED & ANNEALED TYPE 'D' BEST SURFACE

~~BS:1449 PT 1 (LATEST ISSUE) CS4 SEC 2 COLD ROLLED & ANNEALED~~

~~[illegible]~~

NOTE :-

TOL. ON UNTOL. DIMNS. ± 0·5

R Nº	DATE	AUTHORITY	REVISION	ZONE	AHSP SIGN	D.O
	24-2-94	DC 35671-A	DRG. FORMAT & BOX ENTRIES ADDED. MATL. NOTE AMENDED TO SPECS. WAS 1:1696			
	7-7-89	DC 34661-A	EXISTING MATERIAL NOTE DELETED & NEW NOTE SUBSTITUTED.			
	7-2-84		RETRACED WITHOUT CHANGE.			
			PREVIOUS D.C.I(1) Nos 19879-A, 26870-A, 29158-A, 29750-A & 29886-A			SD/-

DRG. SEALED :- 18 - 5 - 47

DRN : C.D MAN	CHD : O/C D.O.	TCD: MVJ	COMP: mm
APPD. FOR CQA(A)		SCALE :- 2 : 1	
		EST. MASS :	
		GAUGE SCHD	
		DATE :-	
MATL – AS ABOVE			
PROTECTIVE FINISH :- AS ABOVE			

ASSLY DRG. NOT APPLICABLE

DESIGNERS REF. I. A. 793 SHT. 1

PART Nº. ISV 9

DS CAT Nº.

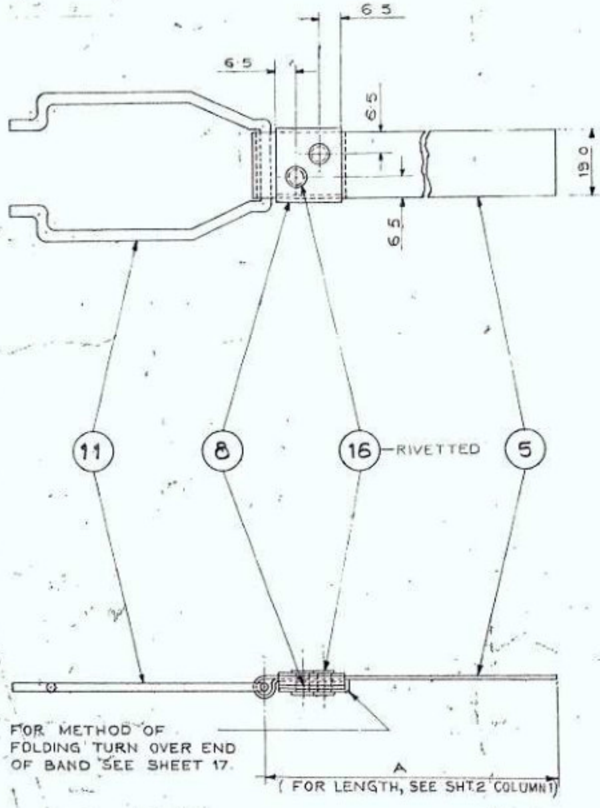
AHSP CQA(A) KIRKEE

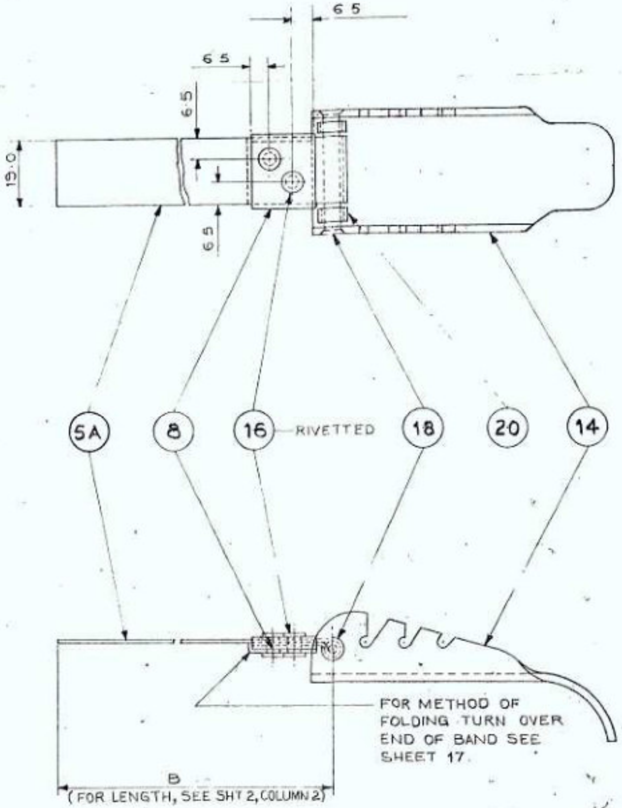
PLATE, STRENGTHENING, 25·5 X 25·5.

12303

PART Nº	DRG CONVENTIONS CONFORM TO IS 696 DIMENSIONS ARE IN mm

D.C.I 19879-A





NOTES:-

ALL PARTS TO BE RUSTPROOFED BY ANY APPROVED PROCESS AND SUBSEQUENTLY PAINTED OLIVE GREEN. (SCAMIC 314)

TOLERANCE: ON UNTOLERANCED DIMENSIONS ± ·5

STAMPING:-

SERIAL Nº OF BAND AND PART Nº (AS APPLICABLE) SEE SHEET 2 TO BE STAMPED IN 6·0 TYPE.

BAND, 19·0 WIDE (WITH HOOK)

GENERAL ARRANGEMENT

PART Nº 15V 99 A

BAND, 19·0 WIDE (WITH TOGGLE)

GENERAL ARRANGEMENT

PART Nº 15V 1:.A

R Nº	DATE	AUTHORITY	REVISION	ZONE	AHSP SIGN.	D.O. SIGN.
	94-2-84	DC 35671-A	[illegible]			
	29-10-86		RETRACED WITHOUT CHANGE.			SD/-
			PREVIOUS D.C.Rs (+) NºS:- 19879-A; 21437-A; 28750-A AND 29886-A.			

DRG SEALED:- 19-5-47.

DRN.	CHD.	TRD RCD COMP
C.D'MAN	O I/C D.O.	SCALE 1/1
APPD.		EST. MASS.
	FOR C.I.(A).	GAUGE SCHD.
		DATE

MATERIAL:-

PROTECTIVE FINISH:-

ASSY. DRG.

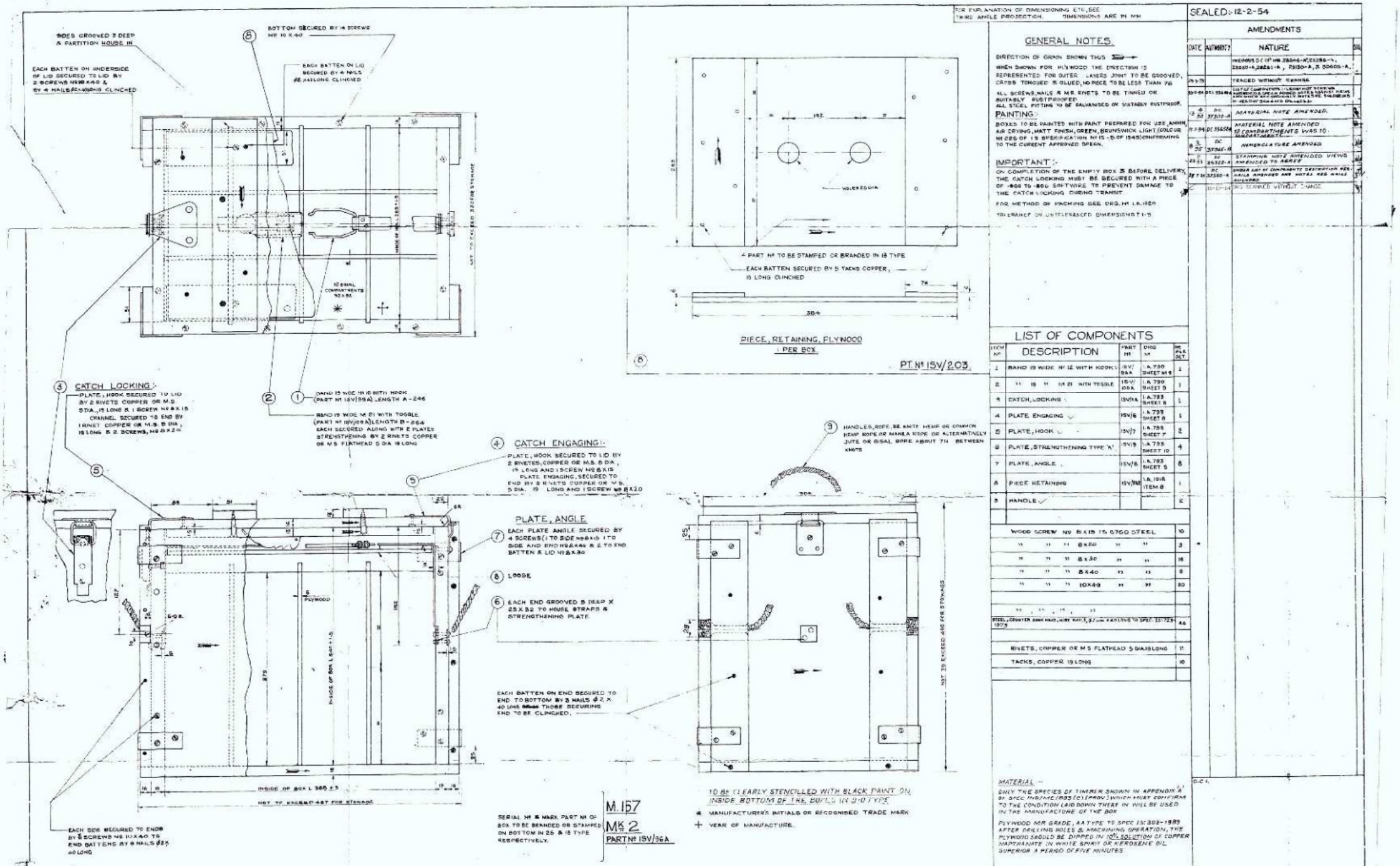
DESIGNER'S REF. I.A. 790. SHEET 9

PART Nº

D.S. CAT Nº

AHSP:- C.I.(A) KIRKEE.

12119



AMN. CONT. BOX, M.167, MK 2/...

WOOD FOR AMN. CONT. ASSY No. 95

DC 36527

DC - 36868-A

Specification No. IA 948 (a, e) ~~K~~)
(a, K)

GENERAL SPECIFICATION (WITH APPENDICES) TO GOVERN THE MANUFACTURE AND QUALITY ASSURANCE OF WOOD BOXES/CASES AND PACKING PIECES FOR GUN AND SMALL ARMS AMMUNITION, EXPLOSIVES, MINES, DEMOLITION STORES, GRENADES, PYROTECHNICS, ANTI-GAS AND ALLIED STORES FOR LAND SERVICE.

ISSUED BY

CONTROLLERATE OF QUALITY ASSURANCE (AMMUNITION)
KHADKI PUNE - 411003

DC (I) 36868 ~~6527-A~~

SPECIFICATION No. I. A. 948 (a, K) ~~(a, G, H)~~
(Partly based on specn. L/9708-A)

Supersedes Specns. I. A. 315–T (1)
I. A. 382–H(k), L/5446–N(a), L/5451–Z(a),
L/5898–AB(a), L/6131–I(a), L/8130–E(a),
S.A.A. 90–A(c), S.A.A. 137–C(a), S.A.A. 158–D(a)
S.A.A. 159–C, S.A.A. 160–C, S.A.A. 171–F(a),
S.A.A. 190–A(c), C–1308–BB.

THIS SPECIFICATION IS THE PROPERTY OF THE DIRECTOR GENERAL OF QUALITY ASSURANCE AND MUST BE RETURNED TO THE CONTROLLER OF QUALITY ASSURANCE (AMMUNITION), KIRKEE, PUNE 411 003 ON DEMAND.

This specification, or any Patterns, Drawings, or other information issued in connection therewith, may only be used for specific enquiries, tenders or orders placed by Competent Authority. It is not to be used for any other purpose whatsoever without the sanction of the Director General of Quality Assurance.

GENERAL SPECIFICATION (WITH APPENDICES) TO GOVERN THE MANUFACTURE AND QUALITY ASSURANCE OF WOOD BOXES/CASES AND PACKING PIECES FOR GUN AND SMALL ARMS AMMUNITION, EXPLOSIVES, MINES, DEMOLITION STORES, GRENADES, PYROTECHNICS, ANTI-GAS AND ALLIED STORES FOR LAND SERVICE

Approved on 4-4-1956

SECTION ONE - GENERAL

1. This Specification is equally applicable to all boxes, cases/crates (hereinafter referred to as the package) used for packing of on ammunition, S.A.A..., Pyrotechnics, Explosives, Mines, Demolition stores, Grenades, Anti-Gas and allied stores, other than those for which a separate or individual specification has been sealed or unless otherwise stated to the contrary in this specification or the relevant drawings.

2. Where British Standard Specifications are quoted, the current issue is implied. Copies of British Standard and Indian Standard Specifications may be obtained from the Indian Standards Institution, 9, Mathura Road, Manak Bhavan, New Delhi-1.

3. The supply of all materials or articles produced in accordance with this specification will be governed by the "Conditions of contract governing Department of Supply Contracts" as amended to date.

4. The construction, assembling and marking of the package and/or drawings are to be inaccordance with the drawing or drawings quoted on the order governing the supply of the package.

5. Special attention is directed to any note on the drawing or drawings issued, which explain the system of dimensioning adopted also to any special requirements regarding materials, the treatment of materials or conditions of manufacture.

6. Any question relating to the drawing or drawings, and this specification should be referred to the Controller of Quality Assurance (Amn.), Kirkee or other Quality Assurance Officer duly authorised to act on behalf of him, herein after called the Quality Assurance Authority and Quality Assurance Officer respectively.

7. Where this specification or the drawing permits, a choice of alternative materials, or forms for particular components, the Manufacturer is required to notify the Quality Assurance Officer, in writing, which of the alternatives he chooses to produce. Should the Manufacturer during the course of his order, wish to alter his choice he shall again notify the Quality Assurance Officer in writing and obtain his sanction before commencing production of his revised choice.

8. A tender sample/advance sample submitted by the Manufacturer and approved by the Quality Assurance Authority from a general constructional point of view, will be taken only as a general guide and not as a guide to quality of materials dimensioning, workmanship and finish of the bulk supply of stores on the order/acceptance of Tender.

9. Neither the store nor any component part may be built up or repaired in any way not provided for by the Drawing or this specification unless authorised by the Quality Assurance Authority.

10. The manufacturer must notify, the Quality Assurance Officer when he is in a position to start work, and must inform him in writting of all suborders placed in connection with the order, as soon as they are placed, in order that arrangements may be made for testing the materials as necessary. The Quality Assurance Officer shall have the right of access in all times, to enter all Departments of manufacturing plant or storage accommodation which are concerned with the production and storage of material or components at the works either of the Manufacturer or as Sub-Manufacturers, in order to test materials, check processes of manufacture or inspect components/stores.

11. No material/ingredient shall be taken into use until the same has been approved by the Quality Assurance Officer for the purpose intended. The Quality Assurance Officer may at his discretion, require the bulk of materials/ingredients to be bonded or sealed until the results of the tests are known. It is, however, the Manufacturer's sole responsibility to ensure that all materials and ingredients used in the manufacture of packages conform strictly to the approved relevant specification.

12. The Quality Assurance Officer, on receiving notification from the Manufacturer, may also arrange to be represented at the works of the latter or at those of his Sub–Manufacturers.

13. The Manufacturer is entirely responsible to ensure that no deterioration takes place in packages or materials used in their construction, either before or after Quality Assurance on their premises or during storage.

14. Nothing in this specification shall releive the Manufacturer responsibility for the safety of his operations.

SECTION TWO — MATERIALS

Following materials should conform to the specifications mentioned against them :—

Sl. No.	*Material*	*Specn.*
1.	Timber	IND/ME/883 (Prov) ... (x)
2.	Plywood BB ~~WWR~~ MR/BB	IS 303 - 89 (a, g)
3.	Glue	IS 852
4.	Screws	IS 6760 (Latest issue)
5.	Rivets	IS 2155
6.	Nails	IS 723
7.	*Cordage Manila H/L	IS 1084
8.	*Cordage Hemp	IS 5176
9.	*Cordage sisal *Breaking strength however should be minimum 9 times the filled mass of the box. To be rot proofed as per Appendix 'C'.	IS 1321
10.	Split pins	IS 549
11.	Wire Half hard bright annealed	IS 280
12.	Line natural whipcord (tarred) ammunition (to be rot proofed as per Appendix 'C'.)	JSS 1252
13.	~~Line natural whipcord nylon (to be rot proofed as per Appendix 'C')~~ cord nylon (a, e)	~~IND/ME/745~~ JSS-4020--06 (ed)
14.	Tin plate	IS 597
15.	Steel sheets	IS 513 'O' or 'D' Grade or IS 1079 'O' Grade
16.	Copper Naphthanate	IS 1078
17.	Acid cupric chrome composition	IS 401
18.	Copper chrome arsenic composition	IS 401
19.	Penta chlorophenal	IS 716
20.	Sponge Rubber Vulcanised	IND/ME/645–IND/ME/584
21.	Vulcanised Natural Rubber	
22.	Paint Ready Mixed, air drying, Brushing, Spraying & dipping for general purposes as applicable for defence	IS 168 ~~JSS 1-69-07~~ JSS-8305-18 (9e)
23.	Webbing cotton proofed	IND/ME/719
24.	Varnish Air drying ammn	

Sl. No.	*Materials*	*Specn.*
25.	Casein glue	IND/ME/381
26.	Synthetic adhesive	IND/ME/788
27.	Sodium Pantachlorophenate	IS 6515
28.	Fire Resistant Paint	IND/ME/904

Note :— (1) All ferrous fitting, screws, rivets, nails, wire and split pins are to be suitably rust proofed by tinning, galvanizing phosphating or any other process approved by the Quality Assurance Authority.

(2) The breaking strength of the rope should be minimum nine times the filled mass of the box. The rope should be rot proofed as stated in Appendix C, unless otherwise stated in the drawing.

(3) Link natural whip cord and webbing shall be rot proofed in accordance with Appendix C, unless otherwise stated in the drawing.

(4) All iron, steel or metal fittings and parts used in the manufacture of packages are to be made of materials which are homogenous and free from physical defects such as cracks, flaws, laminations irregular thickness, pittings or any other imperfections. The material employed must be of suitable quality to withstand, without creaking or breaking the operations such as pressing, folding and assemblying called for by the construction on the drawing. The metal fittings assembled to the box must withstand repeated functional tests laid down in clause 8 of Section Four.

(5) Plywood should confirm to IS 303.

(6) The Copper Naphthanate solution can be prepared by mixing approx. 8·7 g Copper Napthanate (confirming to IS 1078–87) in 100 ml. of Petrolium Hydrocarbon solvent (confirming to the requirements for solvents 150/300 grd. material as laid down in Table 1 of Indian Standard Specification No. IS : 1745).

5.1 The dimensions.

5.1.1 The dimensions of plywood board shall be coated in the following order. The first dimension shell present length that is, the dimension parallel to the grain of the faces, the second, the width and the the third the thickness.

5.2 Tolerance. The following tolerances on the nominal sizes of finished boards shall be permissible.

Dimension	*Nominal size*	*Tolerance*
Length	Upto and including 120 cms	+ 3 mm — 0 mm
	above 120	+ 6 mm — 0 mm
Width	Upto and including 90 cms	+ 3 mm — 0 mm
	above 90 cms	+ 6 mm — 0 mm
Thickness	Upto and including 5 mm	± 10 percent
	6 to 9 mm	± 7 percent
	above 9 mm	± 3 percent

5·2·1 The faces of plywood boards shall be reasonably smooth and face veneers shall be reasonably of uniform thickness. Slight sanding may be given to rough boards in order to make them reasonably smooth. The edge of the board shall be trimmed square within 3mm.

5·3 Workmanship and finish.

5·3·1 The plywood boards shall be of uniform thickness within the tolerances specified under 5·2.

5·3·2 ~~Minimum~~ min average and individual shear strength for plywood.

Average and min. individual shear strength for plywood as shown under table 4 para 11.4 of (a,g) IS : 303

GRADE	SHEAR STRENTH MIN (N)		
	DRY STATE	MYCOLOGICAL	WATER RESISTANT (CB)
MR			
MIN. AVERAGE	1000	800	800
INDIVIDUAL	800	650	650

5·4 Sampling

5·4·1 The method of drawing representative samples and criteria for conformity shall be as prescribed in IS 7638 (latest issue).

5·5 Tests

5·5·1 Test pieces, cut from each of the boards selected under 5·5·1 shall be subjected to tests specified under 1·2·1, 10·2·2 and 10·2·3 of IS 303 of 75.

5·5·2 For the purpose of test specified under 10·2 and 10·3 of IS 303 the mean of all the observations shall be taken as average.

5·6 Retest. If samples selected as specified under 5·4·1 are found not to fully complying with requirements of 10·2 and 10·3 of IS 303 : 75 a further similar set of samples shall be taken at random from the same batch and subjected to the tests, if any of the samples in second test is also found not to comply fully with the requirements of tests, all the boards in the batch represented by the samples shall be rejected.

5·7 Quality requirements of plywood for general purposes are given in Appendix 'F' to this specification.

SECTION THREE—CONSTRUCTION

1. All components of the package must conform to the Drawing or Drawings supplied. Only the methods of securing shown therein are to be employed and the package must be accurately assembled as indicated on the drawing. The surface finish of the wood work is to be smooth.

2. When the sides, ends, lid or bottom are made in more than one piece, the joints must be grooved cross-tongued and glued. Any excess glue must be carefully removed from all joints. The tongues used are to be normally 25mm. Wide, except where in special circumstances the Quality Assurance Authority approved the use of 18mm wide tongues. Plywood to the same standard as permitted for

internal fitting (Appendix 'B' Para 2 refers) may be used for tongues. The thickness of the tongues is to be 3mm for boards up to 15mm thick and 5mm for thicker boards. The depth of grooves must be 13mm or 9mm to suit the side of the cross-tongues. No cross tongue piece used in any joint should be less than 152mm in length. Alternatively the "Lidderman" or other mechanically locked joint may be employed subject to prior approval of the Quality Assurance Officer having been obtained. No piece of timber is to be less than 16mm width, and care is to be taken that a joint doon not come with in 25mm of the position for any screw or pin-hole. When packages are fitted with end handles, the ends of the packages should, if possible be one piece only. Joints in the sides and ends of a package must not be contineous to each other. Such joints must be at a minimum distance of 38mm apart.

L 76mm (a,f)

Note :— (1) Each piece of timber is to be secured at each end by at least one screw.

(2) The number of screws and/or nails shown on the relevant drawing is the minimum required to be used and is based on the use of planks of normal widths. When a number of narrow widths of timber are used, the number of screws and/or nails will require to be increased as decided by the Quality Assurance Authority.

(3) Strict attention must be paid to the position of screws and/or nails which must be positioned as shown on the drawing subject to the provisions laid down in the penultimate sentence of Note 2 above.

(4) Where a number of widths of timber are used, the greatest widths available should be used for the bottoms, ends and lower portions of the sides of packages.

(5) Excessive splitting during nailing operation will mean rejection.

3. Any of the materials employed are to conform to the requirements of current approved specifications as stated in Section Two.

4. (*a*) The iron, steel or metal fittings, where called for, must be inserted so that they will not fall out under normal conditions when the screws are removed.

(*b*) All ferrous fittings must be rust proofed by tinning, galvanising, phosphatising or other approved process. Where a phosphate process is used, the phosphated fittings will be coated with one coat of paint immediately after rustproofing. When manufactured for bulk issue as components only, the tinned and galvanised fittings will be further treated by a coat of paint prior to issue This painting instruction does not refer to nails. screws, rivets or split pins, before used.

5. All nails are to be driven home clear of the face of the work, protruding nails are to be clinched on the inside in the direction of the grain of the wood and below the surface of the wood.

6. All holes for screws are to be countersunk and the screws, which should be well greased, screwed home clear of the face of the work, those for the lid passing through the brass seatings when provided. Screws will only be inserted by means of a screw-driver used in the proper manner. The use of any impliment as a hammer for the insertion of screws is expressly forbidden. In order to ensure that the correct screws are used and that the method of screwing is satisfactory, a few screws from atleast 5% of the boxes selected at random should be removed from screwed components and re-inserted, during inspection of the completed store.

7. All corners and sharp edges of the package, cleats and battens are to be removed.

8. Where tarred string is employed for securing split pins to the package, the free ends of the string are to be dipped in waterproofing matterial to prevent unravelling, such as paraffin wax to the approved specification.

9. When packages are fitted with split pins for securing the lid or lid fasteners, the split pins prior to insertion, will be dipped in good quality grease or thick lubricating oil; surplus oil or grease will be removed.

Note :— The split pins must be capable of being inserted by hand. The use of a mallet or similar implement is not permitted. Care should be taken to ensure that holes are drilled sufficiently deep and that they are free from wood chips or other debris.

10. Where handles are called for, the following methods of constructions are to be applied :— Spliced Handles. The ends of the wire are to be hook jointed, the joint being made by hooking each of the 4 plies separately, turning back the joint ends on each side of the joint, lapping one end over the other and then whipping together as indicated on the drawing. Care is to be taken that the wire is unlaid and each ply bent and hooked with the opposite ply in such a manner as to bring equal stress upon each of the hooked plies. The joint is to be covered, as shown, with leather from which the grain side has not been removed, stitched with black waxed thread, six stitches per 25 mm.

Grummet Type Handles. The handle is to consist of a grummet, made from a strand of 4 wires of the description shown on the drawing 4 turns forming the grummet.

A strip of leather about 64 mm long and 25 mm wide is to be split half its length into two equal parts and each part passed under separate strands of the wire as shown. The three ends are to be securely sewn to the leather grip and the projecting ends neatly trimmed off. The grip is to be made of leather from which the grain side has not been removed or buffed, stitched with black waxed thread, six stitches per 25mm. The leather grip must not be capable of movement along the wire.

11. Where rope handles are called for they must be spliced or the ends 'knotted' in the manner shown in the drawing. The rope must not be a loose fit in the wooden cleats, but should allow sufficient movement, to enable the handle loop to be drawn to its fullest extent, or 'knots' to be pulled into the recesses provided in the box for this purpose.

12. Where rubber pads or packing pieces are called for in a package, the rubber is to conform to the latest approved specification and the pads or packing pieces are to be thoroughly secured as shown on the drawing, by nails and an approved adhesive. The method of using the adhesive is given in Appendix 'E'.

SECTION FOUR - TESTS

1. Before proceeding to manufacture a store, materials must be submitted (in batches) to the Quality Assurance Officer to enable him to select samples for tests in all instances where such tests are laid down in the specification or elsewhere, as a condition of acceptance, and the Manufacturer must not take into use any material before it has been accepted by the Quality Assurance Officer as satisfactory for the purpose intended.

Note :— If during bulk manufacture of a store it becomes necessary to replenish any stocks of materials, the Manufacturer should in his own interest take necessary action, well in advance to get the fresh material tested and approved by the Quality Assurance Officer. No responsibility will rest on the Quality Assurance Officer, for any delay in this connection.

2. The manufacturer will be required to supply, free of charge, necessary materials for tests or analysis, selected by the Quality Assurance Officer of his representative.

3. MOISTURE CONTENT OF TIMBER

(*a*) The moisture content of the timber at the time of manufacture and Quality Assurance of boxes shall be within the limits stated in Appendix 'A', Para 10.

(*b*) The percentage moisture contents of timber is based on the oven dry mass of wood and shall be calculated as follows :–

$$\text{Percentage of moisture} = \frac{M_1 - M_0}{M_0} \times 100$$

Where M_1 = Original mass
M_0 = Oven dry mass

(*c*) For the determination of moisture content according to the formula given above, an adequate number but not less than three (depending on the type of store) or representative sections of wood of suitable size shall be taken at random, and each accurately wighed M_1. They shall be dried in an oven at a temperature of 373·15K to 378·15K till the dry mass of each is constant (M_0). Care should be taken to prevent changes in moisture content between the cutting of the section and the first weighing or between removal from the oven and subsequent weighing.

(*d*) In cases where samples cannot be obtained in the manner described above samples shall be taken by the use of an auger or bit, boring to the entire depth (thickness of the boards/planks, and boring from each piece collected separately and placed in a proper receptacle to guard against moisture loss before they are weighed. The location of the bore shall be in the centre of the width of board/plank at a point not less than 305 mm from either end excluding the longest end split. The borings from each receptacle shall be dried separately in an oven in the manner described in 3(*c*) above, till a constant dry weight is attained. At the discretion of the Quality Assurance Officer or his representative, boring to a depth of one half the thickness of the piece may be permissible when the thickness is above 38 mm.

(*e*) An electronic instrument based on resistance of dielectric measurements and suitably calibrated for moisture content for specific species of timber, may also be used for routine determinations. But the method specified in 3 (*c*) shall be regarded as standard in all cases of dispute.

(*f*) When testing the moisture content of planks by the method in 3(*c*) above the test should be taken in the centre of the width of the plank and at a position not less than 305 mm from either end of the plank axcluding the length of the longest end crack, if any.

4 METAL FITTINGS (NON-FERROUS)

Any brass, copper or copper alloy employed in the manufacture of screws, seatings of screws, corner brackets, handles or other metal fittings, is to be of an approved commercial quality. The fittings must withstand repeated functional tests as laid down in Clause 8 of Section Four.

5 WIRE GALVANISED

The galvanising of the wire to be employed in the manufacture of the handles will be tested as follows :—

The wire will be stranded and a single wire, which has been previously dipped into Methylated Spirit or Denatured Spirit and wiped dry, will be immersed in a freshly made neutral saturated solution of Copper sulphate at about 288·65 K for a period of one minute. It will then be removed, washed in clean water and wiped clean. The galvanising must admit of this process being performed twice with each sample of wire without any sign of a deposite of metallic copper. Not more than three samples of wire are to be immersed in the solution at one and the same time.

Should the sample show a metallic copper deposite, the whole of the wire represented by the sample will be rejected.

6. HANDLES

Handles, wire or rope, will be capable of withstanding a test load of three times the filled mass of the Box with a minimum load of 136 kg except those for small Arms Ammunition Boxes, which will be capable of withstanding a test load of three times the filled mass only. The test load will be applied for a minimum period of five minutes.

7. Where rust proofed components are called for the rust proofing will be tested in accordance with the relevant specification according to the method of rust proofing agreed.

8. ROUGH USAGE

To ensure that the packages have been properly constructed and will meet the normal service requirements, representative sample/samples from each batch/consignment drawn at random and packed to simulate its design purpose, shall be subjected to rough usage tests, given in Appendix 'D'. At the conclusion of tests, minor damage to the package like, cracks, dents, loosened screw/nails, loosened planks, damaged hinges/latches/fitments etc not rendering the package unusable/unserviceable, can be accepted provided the contents are in undamaged and serviceable condition.

SECTION FIVE – PRESERVATION

1. Timber will be pressure impregnated with preservative salts unless otherwise stated to the contrary in accordance with the conditions laid down in Appendix 'A'.

2. All components and fitments made from plywood are to be dipped in 10% Copper Naphthanate dispersion in White Spirit or Kerosine oil superior for a period of five minutes. The edges of all plywood components after being cut to size and holes drilled in such components, will be liberally brushed with an approved presertative.

3. String, line, rope and webbing will be rot-proofed as called for in Appendix 'C' unless otherwise called in the drawing.

SECTION SIX-PAINTING OR STAINING OF PACKAGES

1. (*a*) Unless otherwise specified in the order, or elsewhere the package are to be painted externally with a prime coat of Fire Resistant Paint to specification IND/ME/904 or as an alternative a primer coat of paint ready mixed quick drying mattfinish general purposes Red Oxide (JSC–446 to IS : 5) may also be used (latest issue) followed by a coat of the colour called for in the relevant drawings, the paint to conform to the current approved specifications. Metal fittings however be given one coat of primer red-oxide followed by one coat of service paint as specified in the relevant drawing.

(*b*) Where staining is called for on the drawing, this will be in accordance with the relevant specification.

(*c*) The undermentioned colours of paints as applicable, when used for packages, will approximate those given in the Indian Standard Schedule of Colours No. IS 5 : 1961 of current issue.

Paint Ready Mixed Quick Drying
Matt for general purposes to Specn
IS 168 (amended update)

Olive Green	Colour No ISC 220
Green Brunswick Light (Matt Finish)	Colour No 225
Grey, Admiralty Dark (Matt Finish)	Colour No 632
Red Signal (Matt Finish)	Colour No 537
Brown Light (Matt Finish)	Colour No 410

(*d*) Painting, whether brushed or sprayed will give a continuous and homogeneous external coat all over the store including metallic fittings, but excluding rope handles or any webbing line of string, used in the construction of the packages.

2. Plywood packing pieces where used must be well coated with shellac varnish 20% or 30% or Varnish air drying ammunition to specification IND/ME/719 on both sides and edges. Alternatively these may be painted with Paint Ready for use Finishing, Ammunitions, Air-drying, Semi-Glossy/Matt Finish, Brushing/Spraying/Dipping or appropriate shades.

SECTION SEVEN - MARKING

1. The packages are to be marked with the particulars in the positions shown on the drawing. The branding or stamping is to be completely legible to the satisfaction of the Quality Assurance Officer.

SECTION EIGHT - QUALITY ASSURANCE

1. When packages are to be painted or stained, they will be inspected both prior to and after painting or staining.

2. The packages or the materials used may be inspected during the process of manufacture by the Quality Assurance Officer. The Quality Assurance Officer, may, at his discretion, at any stage during the manufacture of the packages, take samples of any of the materials and ingredients used, for the purpose of analysis or testing. On completion the work will be subject to examination by and to the final approval of the Quality Assurance Officer, either in the Manufacturer's works, or after delivery, as may be stated in the relevant Order/Acceptance Tender.

3. Any component or complete package which is not finished to the satisfaction of the Quality Assurance Officer, or which has any flaw or imperfection will be rejected. If the Quality Assurance Officer has reason to believe that more than 5% of the timber scanaling/timber components used in the manufacture of any lot of boxes tendered for Quality Assurance do not satisfactorily comply with the condition laid down in Appendix 'A' of this specification, he will have the right to return the lot of boxes to the Manufacturer even though the preliminary quality Assurance of these boxes may have been carried out. If the Manufacturer wishes to resubmit these boxes for acceptance he must arrange to resubmit them to the Quality Assurance Officer after eliminating all discrepencies from each box.

4. If at any time during examination of 20% of a lot of packages tendered for quality assurance on any one day, it is found that 20% of the packages in the lot depart from the approved design, further examination may be suspended and the whole of the lot returned to the Manufacturer for the elimination or rectification of the faulty packages.

5. These packages in which departures can be rectified may be brought upto the approved design by the Manufacturer and the packages resubmitted for examination. The Quality Assurance Note will be endorsed to this effect.

SECTION NINE – REPLACEMENT BY MANUFACTURER

1. Where finished or partly finished packages or components thereof are expended or damaged in test, re-test or examination, as stipulated for in this specification, or elsewhere as a condition of acceptance, the Manufacturer supplying the packages will be required, to supply, place or repair the quantity or number so expended or damaged, free of charge.

SD/-

(A J DAWSON)

for CHIEF SUPDT OF DEVELOPMENT (AMMUNITION)
for DIRECTOR OF TECHNICAL DEVELOPMENT

Notes :— (i) This specification is to be returned to the Controller of Quality Assurance (Ammunition), Kirkee, immediately on submission of tender or completion of order.

(ii) This specification only holds good for the particular order for which it was issued.

Correct copy of the sealed specification at this date.

(M·T·BANSOD)
DY. Asstt·Controller
for CONTROLLER OF QUALITY ASSURANCE (AMN)

KIRKEE
DATED : 23 Dec 2000

APPENDIX 'A' TO SPECIFICATION IA 948 (~~ac~~) (a, h)

(*See* Section 2, Para 1)

TIMBERS WHICH ARE SUITABLE FOR THE PURPOSE OF THIS SPECIFICATION

1. Unless specially stated to the contrary in the Order/Acceptance Tender/Drawing, only the following species of timber will be used in the manufacture, of packages. Quotations will clearly indicate which species of timber are intended to be used by the Manufacturer.

Mango	Mangifera indica
Aini	Artocarpus Hirusta
Mundani	Acrocarpus fraxingifolius
Champ	Michelia champaca
Hollock	Terminalia myriocarapa
Chaplash	Artocarpus Chaplasha
Kathal	Artocarpus heterphyllus (Attocarpus integrifolious)
Chickrassy	Chukrasias tabularis
Jaman	Eugonia Jambolana
Kokko	Albizzia lebbeck
Kanju	Holoptelea integrifolia

2. Normally a package will not be manufactured using two or more species of timber in the same package, without the prior sanction of the Quality Assurance Authority or unless shown in the drawing.

3. Timbers to be procured and employed in the manufacture of packages shall be sawn straight and sqare trimmed at the ends. They shall be free from brashness, shakes, splits across, the grains, wane, centre heart (pit) sabstain, warp, insect attack and any kind of decay (rot) spike/splay knots and the any other defect (except those permitted in 3·2) which is likely to reduce their strength or durability. Where necessary, corrugated fastness should be used in assembled boxes.

3·1 When nominal sizes are ordered length, width and thickness of planks and scantlinges shall be measured on the basis of accepted sizes. Plus tolerances shall not be added while calculating cubical contents

3·1·1 The measurements of length, width and thickness and computation of volume shall be made as follows. The measurement shall be made in the midline of the surface on which it is measured.

(*a*) **Length**	The length shall be measured in metres. The fractions of a metre shall be taken in multiplies of 0·01 m and to the nearest lower 0·05 m.
(*b*) **Width**	The width shall be measured in centimeters to the nearest lower one centimetre.
(*c*) **Thickness**	The thickness shall be measured in centimetres to the nearest lower one centimeter.
(*d*) **Volume**	The shall be computed in cubic metres correct to three places of decimal on the bosis of accepted sizes.

3·2 PERMISSIBLE DEFECTS

Plugging of defects is not permissible. Permissible defects shall be considered collectively and not singally. The permissible defects for ammunition boxes shall be to the extent specified in 3·2·1 to 3·2. The defects shall be evaluated and measured as in IS 3364.

3·2·1 Cross crain permissible to a maximum deviation of 1 in 10.

3·2·2 End split – The longest end split at each end shall be measured and the lengths added together. The total length thus obtained shall not exceed 20mm per metre length of the piece. If any piece has splits exceeding this limit, the express shall be excluded from the length measurement of the piece.

3·2·3 **LIVE KNOTS**

(*a*) Acceptable if measuring upto 15mm in diameter provided they are not so numerous or so located as to affect unduly the strength or usefulness of the piece.

(*b*) Acceptable if measuring over 15mm in dia upto one knot per 750mm length of the piece to the following extent.

(i) Width upto 150mm. The diameter of the knot should not exceed ¼ width of the plank.

(ii) Width over 150mm. The diameter of the knot should not exceed 40mm.

3·2·4 **DEAD KNOTS**

(i) Acceptable if measuring upto 5mm in diameter provided they are not so numerous or so located as to affect unduly the strength of usefulness of the piece.

(ii) Acceptable if measuring over 5mm in diameter and upto 15mm diameter in width 75mm and over, provided these are located at least 25mm away from edges and limited upto one such knot for every 1200mm.

3·2·5 Live and dead knots combined – Live knot on one face and dead on the other face are permitted as given below provided the depth on the affected surface does not exceed 5mm and there is not more than one such knot for every 1200mm length and the knot is 25mm away from edges.

(*a*) For planks width upto 150mm. The max dia of the knot should be 25mm.

(*b*) For planks width above 150mm. The maximum length of 25mm per 300mm of length.

3·2·6 Cracks – Cracks are permissible to the following extent :—

(*a*) 2mm in the face subject to a maximum length 25mm per 300mm of the length.

(*b*) 3mm in the edge subject to the maximum length of 25mm per 300mm of the length and

(*c*) 3mm in the ends provided the lengths of the chacks is maximu 15mm per 300mm of the length.

3·2·7 Timber is to be preserved in accordance with clause 5,6 and 7 of the Appendix A.

3·2·8 End coating. To prevent and to minimize end cracking, splitting etc the ends of each plank and scantling are recommended to be coated with any of the materials mentioned in IS 1141 for a distance of at least 25mm more than the length of the longest split. Application of end coating shall be done soon after the Quality Assurance of timber.

4. All the species mentioned in para 1 above, except teak and Padauk which may be air seasoned, will require to be well kiln seasoned.

5. All shooks/timber components made from the species of timber mentioned in para 1 above, with the exception of Teak, andaman Padauk, Sissco Aini, Chaplash and Jack are required to be impregnated with an approved timber preservative by the pressure process. In the event however, of any of the above named species, containing sapwood they will also be treated with an approved preservative by pressure treatment.

7(c)/1

NOTE : (1) The estimation of preservative should be done according to IS 2753 part I & II (after converting 'g' percent to Kg in3 taking a sample of known mass and volume).

NOTE : (2) The method to be used for determination of depth of penetration of copper napthenate preservative, shall be as per Appendix 'D' of IS 401 : 1982. This method is suitable for the said purpose, as indicator diphenyol carbazide reacts with copper to give(characteristic/positive indication) purple colour which is the basis of determination.

(3) [illegible]:- 50%(by mass) solution of copper Naphthenate in white spirit or kerosene oil superior is taken for pressure treatment.

Application of copper Napthenate by brushing or dipping is not permitted.

6. The timber after seasoning, as stated in para 8 below will be pressure treated with any of the following preservatives.

(*a*) Copper – Chrome – Arsenic Composition

Copper Sulphate ($CuSO_4$, $5H_2O$)	3 parts
Arsenic Pentoxide (As_2O_5, $2H_2O$)	1 part
Sodium Dichromate ($Na_2Cr_2O_7$, $2H_2O$) or Potassium dichromate ($K_2Cr_2O_7$, $2H_2O$)	4 parts

(*b*) Acid-Cupric-Chromate-Composition

Chromic acid (CrO_3) (equivalent to 2·5 parts of sodium dichromate)	1·6 parts
Copper Sulphate ($CuSO_4$, $2H_2O$)	50 parts
Sodium Dichromate ($Na_2Cr_2O_7$, $2H_2O$)	47·5 parts

(*c*) Copper -Chrome-Boric-Composition

Boric acid (H_2BO_3)	1·5 parts
Copper Sulphate ($CuSO_4$, $2H_2O$)	3 parts
Sodium dichromate ($Na_2Cr_2O_7$, $2H_2O$) or Potassium dichromate ($K_2Cr_2O_7$, $2H_2O$)	4 parts

(*d*) Pentachlorophenol

(*e*) Copper Naphthenate

(*f*) Zinc Naphthenate.

7. The treated timber shall contain the following quantities of preservatives and depth of penetration when tested in accordance with Specification IS 401 as indicated below :—

	Preservatives	Minimum absorption in Kg/m³	Minimum depth of Penetration in mm
(*a*)	Copper Chrome Arsenic Composition	4	4
(*b*)	Acid Cupric Chromate Composition	4	4
(*c*)	Copper Chrome Boric Composition	6·5	4 (a,h)
(*d*)	Pentachlorophenol	4·0	
(*e*)	Copper Naphthenate	0·5 (As copper)	4 (a,h)
(*f*)	Zinc Naphthenate	0·8	(a,h)

7 (e)/1. Please see Notes 1, 2, & 3 added ✓

8. Before commencing pressure treatment the timber will :—

(*a*) Where a water solution preservative is used, first be kiln seasoned to a moisture content not exceeding 16% before trertment.

(*b*) Where an organic solvent preservative is used, first be kiln seasoned to a moisture content not exceeding 12% before treatment.

(*c*) In all cases where a water solution preservative is used the timber scantlings/timber components will be dried out to a moisture content not more than 12% before they are used in the assembly of boxes/cases.

(*d*) Where organic solvents are used with preservatives the volatile matter must be allowed to evaporate before scantlings/timber components are assembled into boxes.

9. If the samples tested from the lot withdrawn from pressure impregnation chamber fail to indicaets minimum stipulated absorption and depth of penetration is less than specified the lot represented by the samples shall be rejected and returned for reimpregnation, with the same preservatives which was originally used. In no case inadequately treated timber will be taken into use for fabrication of the boxes/crates/CWP.

10. The moisture content of timber at the time of assembly of packages will not be more than 12%. In the time of Inspection, contents of clauses 3·1 and 3·1·1 and table 1 of Specn IS : 28 7 : 1960 will be kept in view.

11. Timber thickness shown on the design must be regarded as actual finished thickness, unless a reduction in thickness is permitted either by a note on the drawing or separate instructions issued by the Quality Assurance Authority.

12. Planks containing centre heart or pith shall be rejected.

ROUGH USAGE TESTS

Each sampled package as described in Section 4, para 8 will be subjected to the following tests :

1. JOLT TEST

Package will be jolted for a total 8 hours on the machine having a lift of 50 mm and frequency 60 jolts/min on one or more sides.

OR

Package will be subjected to 5000 bumps each in three different orientations on bump test machine with 40 g rating.

2. DROP TEST

Jolt tested package will be drop tested from 1·4 metres on concrete/hard surface on

(*a*) Base

(*b*) Lid

(*c*) One end

(*d*) One side

3. STACKING

Loaded with the equivalent of 1½ times the load of a 5·66 metres packed stack of its own nature for 24 hours.

(a,k)

APPENDIX 'B' TO SPECIFICATION IA 948 (a,h)

(*See* Section 2, Para 2)

PLYWOOD FOR STORES COVERED BY THIS SPECIFICATION

1. Where plywood is permitted for the construction of any exterior components of packages, it must conform to the current IND/GS approved specification for "Plywood Moisture Proof".

2. Plywood used for internal fittings including partitions or tongues must, unless otherwise permitted by the Quality Assurance Authority be Grade II to IND/GS/1127.

3. The moisture content of plywood must not exceed 14% at the time of manufacture of packages.

(a,k)

APPENDIX 'C' TO SPECIFICATION IA 948 (a,h)

(*See* Section 2 Paras 5, 6 & 7)

SPECIAL CONDITIONS FOR STRING, LINE, ROPES AND WEBBING

1. String, Line, Ropes and Webbing used in the manufacture of packages, will be rot-proofed by an approved process to the satisfaction of the Quality Assurance Authority, such as being soaked in a 5% solution of Copper Naphthenate Dispersion in Ammonia or Copper Naphthenate in White Spirit or Kerosene Oil Superior conforming to the current approved specification or by any other process approved by the Quality Assurance Authority.

2. The period of immersion will be sufficient to ensure complete penetration of the preservative.

(*See* Section 3, para 12)

Instruction for the use of Rubber Resin Cement (Bostrick) or Rubber/Resin Cement XN or Rubber/Resin Cement X. P. KK when sticking rubber pads and packing pieces/strips or wooden packages.

1. GENERAL

(*a*) Cleanliness is essential at all times.

(*b*) Surfaces to be stuck together must be clean and dry.

(*c*) An even and adequate coat of adhesive must be used on each surface.

2. INSTRUCTIONS

(*a*) The temperature in the shop in which the work is carried out should not be less than 288·65 K.

(*b*) The adhesive must be well strirred before use.

(*c*) The surface of the rubber and wood will be thoroughly cleaned and dried. This may be ensured by wiping them over with a clean rag moistened with trichlorethylene. The rag should be changed frequently to ensure that it is clean and free from grease. To improve the gripping power of the rubber pad its surface may be roughened slightly with a rasp.

(*d*) Apply an even coat of the adhesive to both the rubber and wood surfaces ensuring that the area of wood covered is slightly larger than that of the rubber.

(*e*) Allow to dry. Drying time will depend on shop conditions and should be ascertained by experiment.

(*f*) When the adhesive is properly dry, the two surfaces should be pressed together and rolled to ensure that no air is trapped in the joint.

Note :— No stress should be applied to the joint for at least 24 hours after sticking the pad to the wood.

1	2	3	4	5	6
(xiii)	Splits	On split not more than 1·0 mm wide & not longer than 50 mm provided it is filled with a	2 splits, not more than 6 mm wide & total length not more than 200 mm provided they	3 splits, not more than 10 mm wide & total length not mare than 300 mm	6 splits, not more than 25 mm wide & total length not exceeding 400.

APPENDIX 'F' TO SPECIFICATION IA 948
(*See* Section 2, Note 5-7)

QUALITY REQUIREMENTS OF PLYWOOD FOR GENERAL PURPOSES

Sl. No.	Defect	Type of Surfaces			
		A	B	C	D
1	2	3	4	5	6
(i)	Blister	Nil	Nil	Nil	Occassional
(ii)	Checks	Individual check not more than 25 mm in length and the total length not more than 300 mm/m²	Individual check not more than 50 mm in length & the total length not more than 600 mm/m²	Individual check not more than 100 mm in length & the total length not more than 1000 mm/m²	Individual check not more than 125 mm in length & the total length not more than 1200 mm/m²
(iii)	Discolouration (second not injurious)	3% of the area	25% of the area	50% of the area	75% of the area
(iv)	Discolouration (unsound)	Nil	Nil	Nil	20%
(v)	Dote	Nil	5cm/m²	15cm/m²	15cm/m²
(vi)	Insect hole	Nil	Scattered upto 12 holes/m²	Scattered up to 24 holes/m²	Scattered upto 50 holes/m² may be permitted.
(vii)	Joints	None in 250mm wide face and the joint for every multiple of 200mm in width	None in 200mm wide face & one joint for every multiple of 150mm in width	No restriction	No restriction
(viii)	Knots (dead)	Nil	2 upto 10 km dia/m²	4 upto 20mm dia/m²	8 knots upto 20mm in dia m² including drop out holes may be permitted.
(ix)	Pin knots (dead)	Nil	2/m²	6/m²	10/m²
(x)	Pin knots (live)	Permitted, provided they do not mar the appearance	No restriction	No restriction	No restriction
(xi)	Knots (tight)	3 upto 25 mm dia/m²	6 upto 25 mm dia/m²	No restriction	No restriction
(xii)	Patches	Nil	4 patches/m² provided they are all tight patches & do not mar the appearance	Any number provided they are all tight patches & are matched for colour	Any number provided they are all tight patches & properly made

1	2	3	4	5	6
(xiii)	Splits	On split not more than 1·0 mm wide & not longer than 50 mm provided it is filled with a suitable filler	2 splits, not more than 6 mm wide & total length not more than 200 mm provided they are filled with suitable veneer inserts	3 splits, not more than 10 mm wide & total length not mare than 300 mm Provided they are filled with suitable veneer inserts. Splits upto 25 mm long & 0·8 mm wide may be ignored provided they are suitably filled	6 splits, not more than 25 mm wide & total length not exceeding 400.
(xiv)	Swiri	Upto 4/m^3 provided they do not mar the appearance	Unlimited, provided they do not mar the appearance	No restriction	No restriction

AIDE-MEMOIRE - W/4

This Aide-memoire should be read in conjunction with Specification IA 948 for Wood boxes/ cases and packing pieces :

1. In addition to the approved species of timber quoted in Appendix A to Specification IA 948, the manufacturer may be permitted to use any of the under mentioned timbers, on concession, subject to the approval of Quality Assurance Officer.

HALDU	ADINA CORDIFOLIA
JUTILI	ALTINGIA EXCELSA
DEODAR	CEDRUS DEODARA
GURJAN	DIPTEROCARPUS GRANDIFLORUS
KAIM	MITRAGYNA PARVIFOLIA
SANDAN	OUGENIA DALBERGIOIDES
HATTIPAILA	PTEROSPERMUM ACERIFOLIUM
KEORA	SONNERETIA APETALA
PADRI WOOD	STEREOSPERMUM CHELONOIDES
WHITE SIRIS	ALBIZZIA PROCERA
BAHERA	TERMINALIA SELERICA

2. Quality Assurance Officer should be given prior intimation about the use of above mentioned species.

3. Concession granted to use the above mentioned species does not imply that this concession would be automatically applicable for future supplies or quantities beyond the permitted numbers.

4. Permissible defects, seasoring, preservative treatment and finish would be as stipulated in Specification IA 948. Mixing of timber of two different species in the box should not be permitted.

5. Timber from the proposed species should be separately stacked and should not be mixed up with approved species permitted vide Appendix A to Specification IA 948.

6. Five sample boxes should be made from any one of the proposed species strictly as per the relevant drawing and submitted, free of cost, to the Quality Assurance Officer for tests.

7. Receipt of samples by the Quality Assurance Officer for tests should not be taken as permission or right to commence bulk manufacture from the proposed timbers. Quality Assurance Officer is not bound to take Quality Assurance of boxes made from proposed timber if the sample submitted to him do not meet specification requirements.

8. Construction of the boxes will be governed by specification IA 948.

(KB GROVER)
LT col
A C Q A
CONTROLLER OF QUALITY ASSURANCE (AMN.)

1/1

D-C. 35576-A

IA 1169 (m)
Supersedes I.A. 726-K (n)

LAND SERVICES

GENERAL SPECIFICATION TO GOVERN THE MANUFACTURE REPAIR AND QUALITY ASSURANCE OF WATERTIGHT AND NON-WATERTIGHT STEEL AMMUNITION PACKAGES AND THEIR COMPONENTS.

Approved 30 May 1978

5. Special attention is called to any notes on the drawing.

6. Any sample lent to the manufacturer must be taken as a general guide only.

7. Neither the stores nor any component part may be built up or repaired in any way not provided for by the drawing or this specification, unless authorised by the Quality Assurance Officer.

8. The Manufacturer must provide the Quality Assurance Officer with copies of all sub-orders in connection with his order as soon as they are placed.

9. The Manufacturer must notify the Quality Assurance Officer when he (or his Sub-Manufacturers) is in a position to start work. On receipt of this notification from the Manufacturer the Quality Assurance Officer may arrange to be represented at the Works of the latter or at those of his Sub-Manufacturers.

10. Where tests are laid down in this specification or elsewhere for any of the materials to be used, the Quality Assurance Officer may require that such materials shall not be taken into use until accepted by him as satisfactory for the purpose intended, and may require the bulk to be bonded or sealed until the results of the tests are known.

11. The Manufacturer will be required to supply, free of charge the necessary material for test and analysis. Such material will be selected by the Quality Assurance Officer or his representative. The Quality Assurance Officer will inform the Manufacturer to what extent testing of materials will be carried out. He may, if considered necessary during the progress of a order, vary the quantity of material taken for test.

12. Where component parts are issued to the Manufacturer, these will be in good condition and must, whilst in his possession be kept in that condition. The Manufacturer shall guarantee the due return of the component parts sent to him and shall be responsible to their full value for all loss of damage from whatever happening there to whilst in possession or control of himself, his servants or agents.

13. The Manufacturer will be required to carry out, free of charge, the work of assembly of the packages or component parts taken for test under the provisions of this specification, or otherwise as stipulated elsewhere as a condition of acceptance. He shall provide, free of charge, the sample welds referred to in para 5, section Four. The material so expended shall be held at the disposal of the Government as represented by the Quality Assurance Officer.

SECTION TWO — MATERIALS

1. Materials must conform to the requirements laid down in their relevant specification or as otherwise specified herein.

2. Sheet or strip steel employed is to be of a suitable quality to withstand breaking or cracking, the pressing, folding and assemblying operations called for by the construction shown on the drawing. All sheets or strips shall comply with :-

(a) IS : 1079 Grade S4 34 hot rolled and annealed.

or

(b) IS : 513 Cold rolled and annealed.
Best surface type 'D'.

or

(c) BS : 1449 Pt. 3B-CS 4 Cold rolled and annealed.

or

(d) BS : 1449 Pt. 3A - HS 4A, hot rolled and annealed.

3. Bar steel emplyed in the Manufacture of parts such as handles, collers, tie-rods, etc. must conform to IS : 2073-(J), DES C20 or as quoted on the relevant drawings.

SECTION ONE — GENERAL

1. Any question relating to this specification, other specifications referred to herein, or to the drawings should be referred to CQA (A), Kirkee or other Quality Assurance Officer duly authorised to act on behalf of him hereafter called Quality Assurance Authority and Quality Assurance Officer respectively.

2. (a) Where specifications are quoted, the current issue is implied.

(d) Materials, their specifications and the office from which these specifications are obtainable are given below :—

	Material	*Specn No.*	*Obtainable from*
(i)	Steel Sheet or strips	IS : 1079 – 19.. IS : 513 — 19.. BS : 1449	Indian Standards Institution, Manak Bhavan, 9, Mathura Road, New Delhi - 1.
(ii)	Bar Steel	IS 7203 : 1992 ~~IS : 2073~~	– do –
(iii)	Spring Steel	BS : 1449 (IS 1079 : 1968)	– do –
(iv)	Rubber	IND/ME/584 (S)	The Controller, Controllerate of Quality Assurance (Military Explosives), Aundh Road, Kirkee, Pune – 3.
(v)	Timber	IA : 1001 (S)	CQA (A), Kirkee, Pune – 3.
(vi)	Paint	IS : 168 – 1973 (amended-upto date) (for air drying) with the amendment ... JSS-16302 ... (for stoving)	ISI, New Delhi–1. CQA (ME), Kirkee, Pune–3.
(vii)	Galvanising	BS : 729, Pt. I	ISI, New Delhi – 1.
(viii)	Phosphating	JSS 0465–01–1988	CQA (A), Kirkee, Pune – 3.
(ix)	Sprayed metal coating	BS : 2569, Pt. I	ISI, New Delhi – 1.
(x)	Wire Steel	IS : 280 – 1978	ISI, New Delhi – 1.
(xi)	Red Oxide Zinc Chrome Primer	JSS 1–63–05 (b)	CQA (ME), Kirkee, Pune – 3.

Note :— Reference in this specification to any other specification or documents means, in any tender or contract, the edition current at the date of such tender or order.

3. The dimensions, construction, assembling and marking of the ammunition packages or boxes (hereinafter referred to as packages) and their component parts are to be in accordance with the drawings issued to govern the supply of the stores.

4. Where the drawing or specification permits a choice of alternative materials or forms for particular components, the Manufacturer is required to notify the Quality Assurance Officer, in writing, which of the permitted alternative he chooses to produce. If the choice of alternative is changed during the course of the order the Manufacturer shall again notify the Quality Assurance Officer of such change.

4. Spring steel shall comply with all the requirements of BS 1449 En 42F unless otherwise specified on the relevant drawing,

5. Wire steel used in the manufacture of clips, catches, hinges etc. must conform to IS : 280 half hard bright.

6. Rubber sealing rings and pads are to conform to IND/ME/584 Class 'A' unless otherwise stated on the drawings or elsewhere and to be secured in the positions called for on the appropriate drawing in accordance with instructions on the drawings. Samples of adhesives to be used to secure rings/pads should be approved by CQA (ME), Kirkee.

7. Timber or plywoood required for fittings shall conform to the requirements of specification IA 1001 where applicable. Timber components of non-water-tight packages shall be impregnated with approved preservative salts; components for water-tight packages shall not be impregnated.

SECTION THREE — MANUFACTURE AND ASSEMBLY

1. The various parts of the package are to be formed and assembled as shown on the drawing. The dimensions and methods of securing them in position as laid down in particulars shall be strictly adhered to.

2. The steel or metal fittings when called for, must be well finished and a good fit; the holes in the diaphragms of packages so fitted are to be well shaped and in correct alignment when assembled, and free from raw edges and burrs.

3. The corners and joints of boxes must be closed completely. Rivets must be a tight fit and rivetted to the satisfaction of the Quality Assurance Officer. Handle grips if present, must be in good condition when finally accepted. Steel handles shall move freely and shall fall flush with the sides of the package when not in use.

4. Any loose components which need selective assembly will be assembled by the manufacturer to the satisfaction of the Quality Assurance Officer.

5. Parts which are to be joined by welding are to be so formed that when assembled the surfaces to be welded are in close contact so that the welded joint is not under stress. Particular care will be taken that the nature number and size of welds are strictly adhered to.

6. Where a watertight lapped seam is to be made, width of overlap must be as shown on the drawing. When no dimension is laid down, care is to be taken that sufficient width of overlap is provided to ensure that the welded joint is watertight.

7. Spot welds, where called for, are to be correctly positioned as shown on the drawings. In particular, the distance of the welds from the edges of fittings etc. is to be strictly complied with.

8. Particular care is to be taken that the seling for lids of watertight packages is fixed truly at right angles to the axis of the body, so that the pressure on the securing device causes even pressure all round on the rubber seal.

9. The rubber sealing washer (where employed) is to be assembled in its supporting channel and efficiently secured as stated in the drawing or with the material called for in Section Two Para 5 of this specification.

10. Immediately prior to despatch, all rubber components should be given a light covering of french chalk or other approved material.

SECTION FOUR — WELDING

1. All metal surfaces to be welded must be thoroughly clean and free from scale, rust or oil.

2. All welding machines employed must be equipped with a device giving fully automatic time control of the welding current under all workshop conditions and this device must be in use at all times when work on the order is proceeding. Means must also be provided for setting the welding pressure to a given value which is within the pressure range of the machine and for varifying that this pressure is maintained within ± 10% during the working cycle.

3. The manufacturer must make suitable arrangements to supervise his machines so that they are at all times maintained in such condition as will ensure the required standard of quality of welds.

4. The manufacturer must supply his welding operators with a process schedule setting forth :—

(*a*) The manner and order of making the welds.

(*b*) Particulars of tip changing and maintenance.

(*c*) Particulars of preparation of routine tests and methods of recording results.

(*d*) A standard specimen for comparison purposes.

A copy of the process schedule must be supplied to the QAO's representative, and any amendments thereto, which may subsequently be agreed as necessary. The manufacturer's records of tests must, at all times, be available for Quality Assurance by the QAO's representatives.

5. If required by the Quality Assurance Officer the manufacturer shall before beginning work or at anytime during which work on the order is proceeding, produce sample welds on strips of the correct material in order that the condition of the machine and reliability of the operator may be checked by examination and tearing apart of welds.

6. Appendix hereto contains instructions for the guidance of manufacturers in controlling the technique and upkeep of equipments manufacturers will be deemed to have agreed to adopt the recommended procedure on any order governed by this specification, unless prior notice has been given to the Quality Assurance Officer in writing, of their intention to depart wholly or in part, from the procedure and giving full details of the alternative methods proposed to be adopted.

SECTION FIVE — MARKING

1. The packages are to be marked, by embossing or impressing with the particulars called for on the relevant drawings. The positions of the marking must not depart from these shown on the drawings.

SECTION SIX — TESTING

1. The package will be tested by the application of a load equal to four times the mass of the filled package, on each handle (when present), and must be capable of withstanding this test without showing any signs of defect either in the package or in the handles. Where no filled mass is given on the drawing, the test mass shall be 180 kg.

2. A percentage of the completed packages may, at the discretion of the Quality Assurance Officer be taken for testing to distruction to determine that the welding is satisfactory.

3. Test welds (when routine or otherwise) from any particular machine shall be made under conditions approximating as closely as possible to those experienced in production.

4. Spring steel clips : The clips when manufactured from spring steel wire will be tested as follows for the quality of welding.

A percentage of the clips will be subjected to a minimum load of 35 kg for 30 seconds on the arms of the clips by any suitable method. The clips should not show any signs of failure.

5. On tearing open the test samples the welds will only be considered satisfactory if a slug or strip is torn from one of the components.

6. All lids for water tight packages must be pressure tested before painting. Those embodying a rubber sealing washer must be painted before assembly.

7. All bodies for watertight package must be pressure tested before painting; the sealing rings are to be removed before and replaced after painting the packages bodies.

8. A minimum of 5% complete watertight packages with their correct lids must be tested for leakage, after final painting and assembly by immersion in water heated to 333·15 kg. for a period of not less than 90 seconds. The lid being closed and secured by normal method.

9. The pressure test for watertight packages is to be carried out by the Manufacturer's staff in the presence of a representative of the Quality Assurance Officer as follows :–

By an internal air pressure not less than 20·6 kPa not exceeding 34·3 kPa. For this test the lid will be replaced by a similar one which is fitted with an adapter to convey air under pressure into the package. The lid will be separately tested under similar pressure when held in suitable clamp. The test shall either be carried out under water or if loss of pressure can be observed on a mercury column, or other approved gauge. The test shall be applied for not less than 30 seconds during which period no loss of pressure shall be indicated.

10. Under any one of these tests neither the body nor the lid shall shown any sign of leakage at any joint, and where lid and body are tested together a perfect seal shall be made on the sealing device.

11. Packages must be properly dried after immersion.

12. Package should be jolted for 8 hrs on a jolting machine having a lift of 50 mm and frequency of 60 jolts per minute. After jolt test packages will be drop tested. After drop test watertight packages should withstand leak proof test as per para 9 Section six...(k).

SECTION SEVEN — RUSTPROOFING AND PAINTING

1. Unless otherwise specified in order or elsewhere, the packages are to be delivered painted with paint specified in the order and will approximate to one of the following colours given in Indian Standard Schedule of colours No. IS : 5.

Olive Green	..	Colour No. 220
Light Brunswick Green	...	Colour No. 225
Signal Red	...	Colour No. 537

2. Before painting the Manufacturer shall arrange for the packages to be adequately treated to secure freedom from scale, rust or corrosion and no packages which fails to satisfy the Quality Assurance Officer in this respect or which is dirty shall be allowed to forward for rust proofing or painting. The package must not be contaminated with grease or oil.

WATERTIGHT PACKAGES (BOXES & CONTAINERS)

3. After closing and inspection the body and lid are to be galvanised or phosphatised or painted with red oxide zinc chrome primer or sprayed with aluminium (thickness of aluminium spray 0-15 mm) in accordance with specification BS : 729 Pt I or JSS 0465-01-1988 (class of phosphating is class II) or JSS 1-63-05 or BS : 2569 Pt I respectively.

NON WATERTIGHT PACKAGES

4. After cleaning and inspection the packages are to be galvanised or phosphatised or painted with red oxide zinc chrome primer or aluminium sprayed (thickness of aluminium spray 0-15 mm) in accordance with specification BS : 729 Pt I or JSS 0465-01-1988 (class of phosphating is class II) or JSS 1-63-05 or BS : 2569 Pt I respectively.

5. If galvanising is adopted, the package and all steel fittings are to be galvanised either before or after assembly, the stage at which galvanising is carried out being at discretion of the Manufacture. If phosphating or aluminium spraying is adopted the package and all metal fittings are to be phosphatised or aluminium sprayed after assembly.

PAINTING PACKAGES

6. After rust proofing and Q. A. the packages will be painted internally and externally with a coat of specified paint. The Paint must be applied evenly and each coat must be thoroughly dry before the application of the next coat.

7. Paint may be applied by Brushing, spraying or dipping, except that brushing or spraying is not to be used when the package is fitted with diaphragms or other fittings with concealed surfaces. As soon as the order is placed the Manufacturer must state the method he proposes to employ. When dipping is employed the Manufacturer must also state in the sub-order placed for paint the viscosity at which he intends to, work his tanks, which must be maintained during use at the viscosity declared. The mixing of paints from different paint manufacturers will not be permitted.

8. The paint shall domply with the requirements of specn IS-168 (amended to date) or JSS : 46302 (for stoving). The paint is to be obtained from the Manufacturer in a consistancy appropriate to the method of application exployed, and no thinners are to be added for any purpose other than the replacement of evaporation losses or to produce the required viscosity of the dipping tanks. The thinners used must be those supplied by the paint manufacturer for use with each particular type of paint.

9. Immediately before use the paint must be thoroughly stirred and agitated (by any suitable means) in the containers so that all the pigment is uniformly dispersed throughout the medium and no sediments remains on the bottom of the container. Periodical stirring of the paint in the container must be carried out if necessary during the day to ensure that the material is maintained in a uniform consistency throughout painting operations.

10. If dipping is employed, care must be taken to ensure that the paint reaches all internal surfaces Accumulation of paint due to faulty draining must be avoided.

11. Before despatch, the paint on the packages must be thorougly dried and must be to the satisfaction of the Quality Assurance Officer.

12. Any screw threads or working parts of the hinges etc. must be free from paint and well greased.

13. The lids and any components not secured to the body by a fixed fastening are to be separately painted before assembly.

14. Sealing rings and sealing washers must not be shot blasted painted or subjected to the stoving temperature.

SECTION NINE — QUALITY ASSURANCE

1. The packages and components will be subject to Quality Assurance at any stage of the process of manufacture or repair and after delivery. Acceptance at an intermediate stage does not necessarily imply that the article on potentially acceptable in the finished state.

2. The Quality Assurance Officer may at his discretion, take during the progress of the order, samples of any of the materials used in manufacture for the purpose of analysis or testing.

3. Any package component or fitting, which at any stage fails to conform to the stipulated requirements and is not to the satisfaction of the Quality Assurance Officer will rejected. Those stores in which departures can be rectified may be brought up to the approved design by the Manufacturer and be resubmitted for examination.

4. To permit of the foregoing Quality Assurance the Quality Assurance Officer, shall as a condition of the order, have a right of entry into the works of the Manufacturer and/or the works of any sub. Manufacturer where work on the order is in progress.

5. The manufacturer will submit for acceptance the material, components or assemblies called for in the order in suitably sized batches. The amount of material or number of units that comprise a batch will be decided by the Quality Assurance Officer after consultation with Manufacturer. If the QAO's examination of a proportion of a batch of material, components or assemblies submitted to him reveals departures from the drawings and/or specification the whole batch may be rejected. At the discretion of the Quality Assurance Officer a rejected batch may be resubmitted to him provided that the Manufacturer has examined all the units therein and eliminated any defective.

SECTION TEN — PACKING

1. The stores shall be packed for delivery in accordance with the terms of the order.

2. Not-withstanding the conditions for packing prescribed by the order, the Manufacturer shall be responsible that the stores are packed in containers which will prevent damage in transport or in storage and which are so marked that the stores may be readily recognised and identified with the order on which they are supplied.

Revised and approved

Sd/ x x x
(LH SHAW)
DSS
for CONTROLLER OF QUALITY ASSURANCE (AMN)

Dated 30 May 1978

Notes :- (i) This specification is to be returned to the Controller, Controllerate of Quality Assurance (Amn) Kirkee, Pune-3, immediately on submission of tender or completion of order.

(ii) This specification only holds good for the particular order for which it was issued.

Correct copy of the sealed specification at this date.

(A.M. ATHALE)
DY. ASSISTANT CONTROLLER
for CONTROLLER OF QUALITY ASSURANCE (AMN)

Kirkee, Pune-411 003.

Dated 31 MAY 1989

15. Air drying paints may be used for the purpose of ' touching up ' small areas of damaged paint or surfaces which show slight discrepancies.

SECTION EIGHT — REPAIR OF PACKAGES

1. The provisions of all the foregoing Sections shall apply except in so far as they are clearly applicable to new manufacture only.

2. Packages shall be emptied of any containers or packing pieces, which shall be sorted, segregated and reported for disposal instructions.

3. The Manufacturer shall sort the packages and segregate those unstuitable for repair, which will be reported for disposal instructions.

4. The packages shall be cleaned, and all rust and water strains shall be removed, by an approved process. The Manufacturer must inform the Quality Assurance Officer of the process, he proposes to use and obtain his approval before commencing production. After cleaning and completely de-rusting inside and out, the packages shall be inspected by a representative of the Quality Assurance Officer before any further work is done.

5. All large dents and distortions shall be removed to the satisfaction of the Quality Assurance Officer Complete removal of dents will not usually be necessary, but any small dents which remain must not interfare with the correct functioning of fittings, the opening, closing, and securing of the package or to the insertion and removal of the stores to be packed.

6. Cracks must be welded up, and punctures covered with plates welded on, to the satisfaction of the Quality Assurance Officer.

7. Broken or damaged fittings are to be removed and replaced. Missing components are also to be replaced. Components for repair will be obtained as far as possible from packages not worth repair.

8. Any new component supplied by the Manufacturer must confirm to the relevant drawing, and be secured to the package in the manner lain down in the drawings.

9. Fittings which are broken away from their attachments are to be re-secured in a suitable manner to the satisfaction of the Quality Assurance Officer.

10. Rivets shall be tightened to the satisfaction of the Quality Assurance Officer or renewed; missing rivets shall be replaced.

11. New fittings are to be well finished and fitted, and where necessary are to be assembled in correct alignment. Raw edges and burrs from whatever cause are to be removed to the satisfaction of the Quality Assurance Officer.

12. All non-watertight packages are where called for, to be provided with drainage and ventilation holes drilled in the positions shown in the drawing.

13. Rubber sealing ring of watertight packages shall be removed and new ones provided. They shall be secured as shown in the drawing or with adhesive to the current approved specification.

14. The packages shall be rustproofed and painted, as provided in Section Seven. Brushing may be used as an alternative to dipping or spaying. If packages have been previously rustproofed and the metalized or phosphated surface is still maintained these packages shall be painted as provided in Section Seven. Air drying paints may be used to paint small areas after removal of patches of rust or seals, and to repair damaged paint.

15. The packages shall be tested as specified in Section Six of this specification.

16. The packages are to be stencilled with initials of the repairing Manufacturer and the year of repair, in a position agreed with the Quality Assurance Officer.

APPENDIX 1 TO SPECIFICATION 1A 1169

(*See* Section 4)

WELDING

1. SEAM WELDING

(*a*) The working face of the electrode must be maintained flat, smooth and clean. The width must not be allowed to increase more than 20% above the initial width which the machine was set up to work. Filing of wheels is not permitted.

(*b*) A gauge should be provided for checking the width of the electrode working face.

(*c*) Test welds should be made as follows on strips of the material being used :—

At the commencement of each shift. Each time the electrodes are changed or dressed. At two hourly intervals during each shift. Or as other agreed upon.

2. SPOT WELDING

(*a*) The diameter of the electrode tips, or of the one tip in the case where a pad type of electrode is used must not be allowed to increase more than 20% above the initial value with which the machine was set up to work.

(*b*) A gauge should be provided for checking this.

(*c*) When the maximum permitted diameter has been reached, the tip or tips must be changed or dressed. Filing of the tips is not permitted.

(*d*) Test welds should be made at the commencement of each shift and before and after tips have been changed or dressed.

APPENDIX '1' TO SPECIFICATION 1A 1169

(*See* Section 2, Clause 5)

Instructions for the use of rubber Resin Cement when sticking non-intercellular rubber and ber rubber pads and packing strips to steel packages.

GENERAL

(*a*) Cleanliness is essential at all times.

(*b*) Surface to be stuck together must be clean and dry.

(*c*) An even and adequate coat of cement must be used on each surface. The amount of surface which can be covered per litre is 2·2 to 2·4m². So far the two surfaces a litre is required for every 1·1 to 1·2m² of non-intercellular or other rubber.

INSTRUCTIONS

(*a*) The temperature of the shop in which the work is carried out should not be less than 289·15 k.

(*b*) The cement must be well stirred prior to use.

(*c*) The cleanliness and dryness of the surface of the rubber and the metal will be ensured by wiping them thoroughly with a clean rag moistered with trichloerethylene.

Note :— To ensure that the rag is clean and free from grease, it will be changed.

(*d*) Apply an even coat of the cement adhesive to both rubber and metal surface ensuring that the area of metal covered is slightly larger than that of the rubber.

(*e*) Allow to dry. Drying time will depend on the shop conditions but should not be less than 15 minutes nor more than 35 minutes.

(*f*) When the cement adhesive is properly dry the two surfaces should be pressed together and rolled to ensure that no air is trapped in the joint.

Note :— No stress should be applied to the joint for 24 hours.

AIDE MEMOIRE — P/11

Specification IA 1169 for steel boxes/carriers will be read in conjunction with the following : —

A Steel boxes (other than those which are air tight) and carriers packed as per service condition will be subjected to jolting and individually drop tested thereafter ...(k)

DROP TEST

One box/carrier per lot will be subjected to drop test from a height of 140 cms on to a concrete floor, successively on its base, top, side and any on corner/or any other position at the discretion of the Quality Assurance Officer with contents packed inside as per Service condition.

After drop test the box/carrier will be examined for the following :—

(i) Catches, handles, hinges are not damaged to such an extent that they are beyond minor repairs by slight tapping with mallet.

(ii) Welding should be intact.

(iii) Boxes/carriers should be easy to open and close.

(iv) Containers/Liners/Cylinders/Boxes and rounds packed therein should be easily removable.

B Hermetically sealed boxes with contents packed as per service conditions will be subjected to jolt and drop test (in their outer package as applicable)...(k) followed by leak test.

JOLT TEST

Boxes will be subjected to jolt test in a machine having a lift of 50 mm and frequency of 60 jolts per minute for 8 hours. The boxes after jolt test as above should withstand leak test in accordance with specification IA 1169. Section Six Clause 8.

Revised and approved

Sd/ x x x
(LH SHAW)

Dated 30 May 1978

for CONTROLLER OF QUALITY ASSURANCE (AMN)

Certified correct copy of approved Aide Memoire at this date.

DATED :

for CONTROLLER OF QUALITY ASSURANCE (AMN)

Special Instruction for Test for Box M-167 MK-2/L (wood)

Item code : 6570512000

As per section Two Sl. No. 1 of the specn. No. IA 948 (a,k) the material timber should confirm to specn No. IND/ME/883 (f) (Prov)-1998 and following test will be carried out in Ordnance Factory Khamaria.

Name of the Test **Specn. No. IND/ME/883 (f) (Prov)-1998**

1. **For Timber - Sample- 02 nos (Planks) from 01 Box**			**Specified limit**
(i) Moisture content	Para 5.3.2 Sl. No. 4 -	page No. 9	Max. 12%
(ii) Preservative as Copper Napthenate	Para 5.3.2 Sl. No. 6 -	page No. 10	Min. 0.5 kg/m^3
(iii)Penetration	Para 5.3.2 Sl. No. 6 -	page No. 10	Min. 4mm

2. **Rough Usage Test for Box** : **Specn.No.IA 948(ak)**

Rough Usage Section four Para 8 – Page -8

Sample -02 Nos Box

Each sampled package as described in Section 4, para 8 will be subjected to the following tests :

(i)Jolt Test :

Package will be jolted for a total 8 hours on the machine having a lift of 50mm and frequency 60 jolts/min on one or more sides.

Or

Package will be subjected to 5000 bumps each in three different orientations on bumps test machine with 40 g rating.

(ii)Drop Test

Jolt tested package will be drop tested from 1.4 meters on concrete/hard surface on

(a)Base

(b)Lid

(c)One end

(d) One side

(iii)Stacking

Loaded with equivalent of 1½ times the load of a 5.66 metres packed stack of its own nature for 24 hours.

3. **Fitment Trial of Box** : **Specn.No.IA 948(ak)**

Sample – 05 Nos Box

The following details are to be confirmed in the consignment of Box M-167

(1)The outer surface should be smooth.

(2) Proper visibility of the marking / stencilling to be maintained.

(3) Inner fitments are properly assembled.