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HIGH ENERGY MATERIALS RESEARCH LABORATORY
DRDO, MINISTRY OF DEFENCE
GOVERNMENT OF INDIA
SUTARWADI, PUNE - 411 021



उच्च ऊर्जा पदार्थ अनुसंधान प्रयोगशाला
रक्षा अनुसंधान तथा विकास संगठन,
रक्षा मंत्रालय, भारत सरकार
सुतारवाडी, पुणे - ४११ ०२१

Tel : 020 - 2586 9984 , 020 - 2591 2101 Fax : 020 2586 9316

E-mail : director@hemrl.drdo.in

No. HEMRL/TECH/ED&S/ERA MK-I/Prod/IX

Date : 14 Mar 2019

To
The General Manager,
Ordnance Factory, Bhandara
Bhandara-441 906 (MS)

(Kind Attn : Shri Harish Kumar, Addl. General Manager)

Sub : Provisional Specification for Cassette Container (Doc. No. HEMRL/MED/PS/288
Rev001)

Ref : Letter No. BT/043/ERA dt. 12/03/2019

Subject document is enclosed herewith for your perusal please. Kindly note that the subject document was sent to CQA(AVA), Avadi, Chennai for vetting vide letter no. HEMRL/TECH/ED&S/ERA Mk-I/Prod/VII dated 04 Dec 2018.

Kindly acknowledge the receipt.

S.S. Bhise
(S.S. Bhise)
Sc 'E'
For Director

Encl : As above

GM'S SECRETARIAT O.F. BHANDARA	
No.	8P/ 2106
Date	19/03/2019
GM/OE/TC	<i>[Signature]</i>
NGM	<i>[Signature]</i>
Section	BT



RESTRICTED

Rev. No. 001

Date of Issue: Dec 2018

**PROVISIONAL SPECIFICATION
FOR
CASSETTE CONTAINER**



No. HEMRL/MED/PS/288

**HIGH ENERGY MATERIALS RESEARCH LABORATORY
DRDO, MINISTRY OF DEFENCE, SUTARWADI,
PUNE - 411021 (INDIA)**

RESTRICTED

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Rev. No. 001

Date of Issue: Dec 2018

**PROVISIONAL SPECIFICATION FOR
CASSETTE CONTAINER**

No. HEMRL/MED/PS/288



Prepared By

LS Nag

LS Nag

Scientist 'C'

Reviewed By

S S Bhise

S S Bhise

Scientist 'E'

Recommended By

S C Aglawe

S C Aglawe

Group Director

Issue Authorized By

Dr R K Sinha

Dr R K Sinha

Associate Director

**HIGH ENERGY MATERIALS RESEARCH LABORATORY
DRDO, MINISTRY OF DEFENCE, SUTARWADI,
PUNE - 411021 (INDIA)**

RESTRICTED

RECORD OF AMENDMENTS

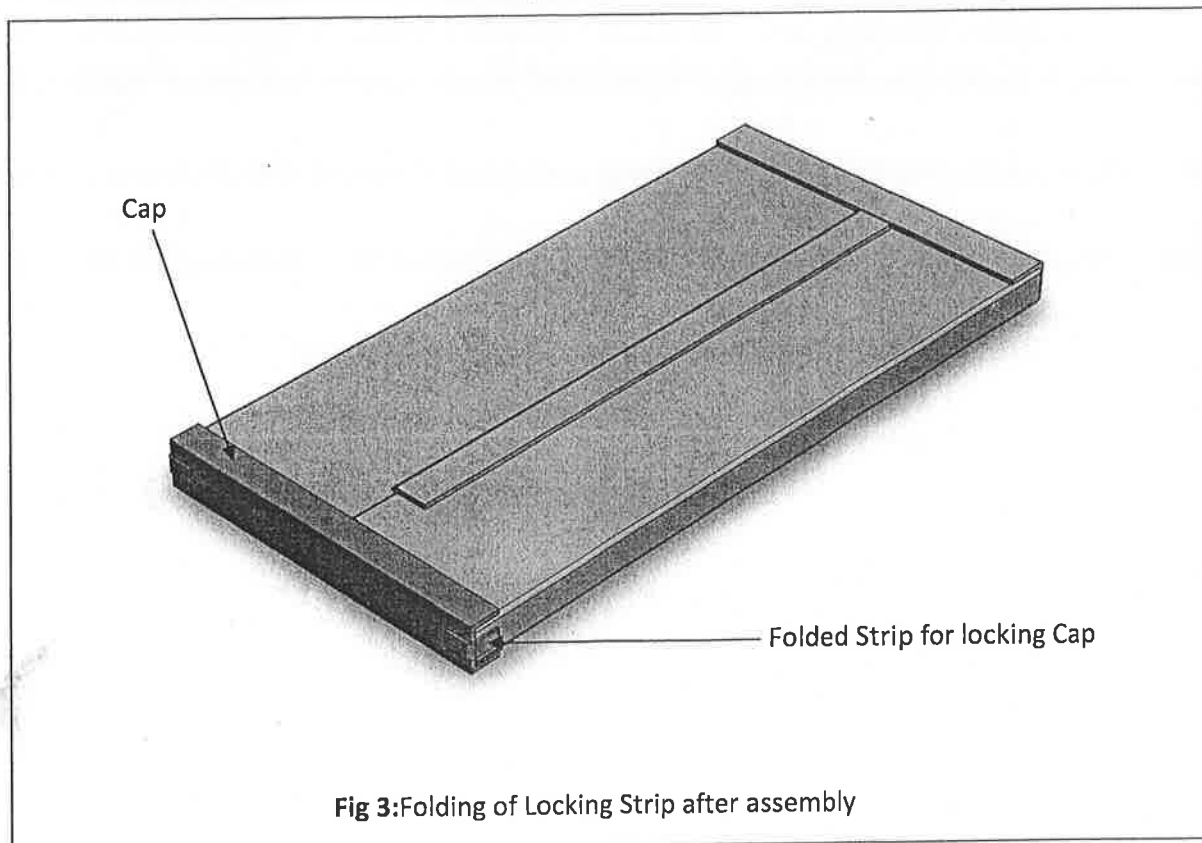
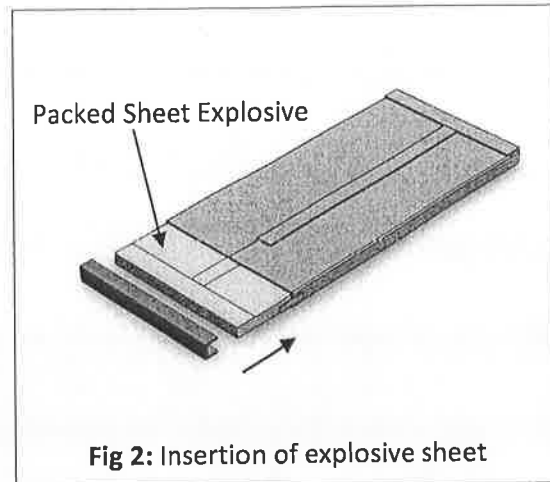
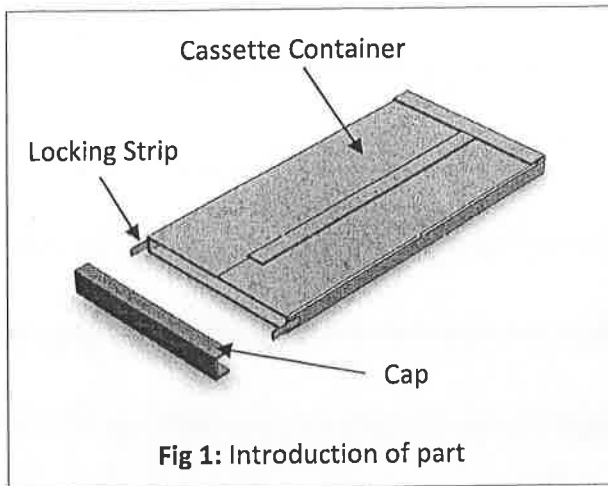
Sl. No.	Amendment No.	Date of Amendment	Amendment Pertaining to Sl.No./ Para No./ Clause No.	Amended by (Name & Designation)	Signature & Date

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1. Introduction

Standard ERA Cassette Container is a rectangle sheet metal box made of 1 mm thick galvanised steel sheet. The purpose of the cassette container is to house the sheet explosive. It consists of a container and cap as shown in Fig.1. The sheet explosive is inserted in to the container through its opening end as shown in Fig. 2. Then it is closed with cap. After closing the side locking strips are pressed to lock the container with cap as shown in Fig. 3.



2. Scope

This Provisional specification is meant to govern the introduction, drawings, material specifications, process schedule and inspection schedule of Standard ERA Cassette Container.

3. Drawings

Drawings of the Standard ERA Cassette Container confirms to HEMRL Drg No. 1457 while that of special cassette container confirm to HEMRL Drg No. 1460.

4. Materials Specifications

All parts of Standard / Special ERA Cassette Container are manufactured from Galvanised Steel Sheet as per **IS: 277: 2003**. The thickness of Galvanised Steel Sheet for cassette container is 1mm while thickness of locking strip is 0.8mm.

5. Process Schedule

Manufacturing of standard cassette container requires simple fabrication techniques which will be generally available with any small to medium scale traders aslo.

5.1 List of Equipment

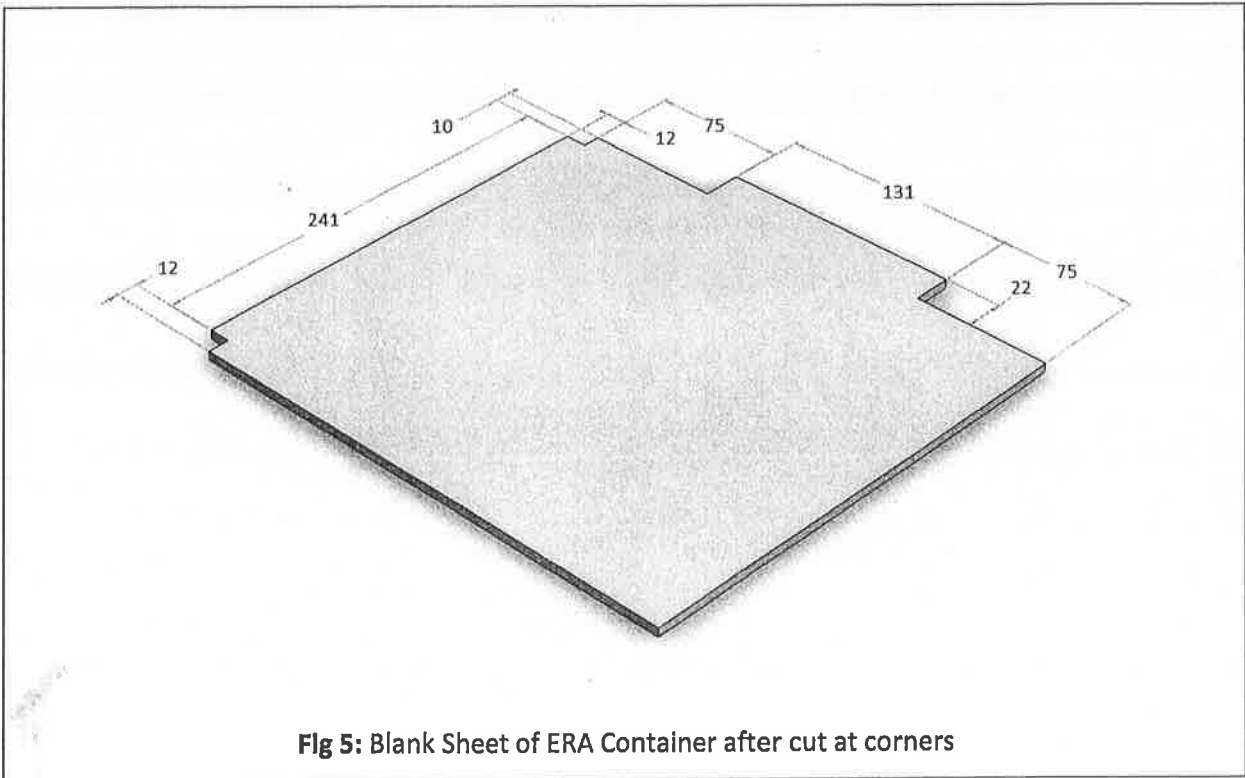
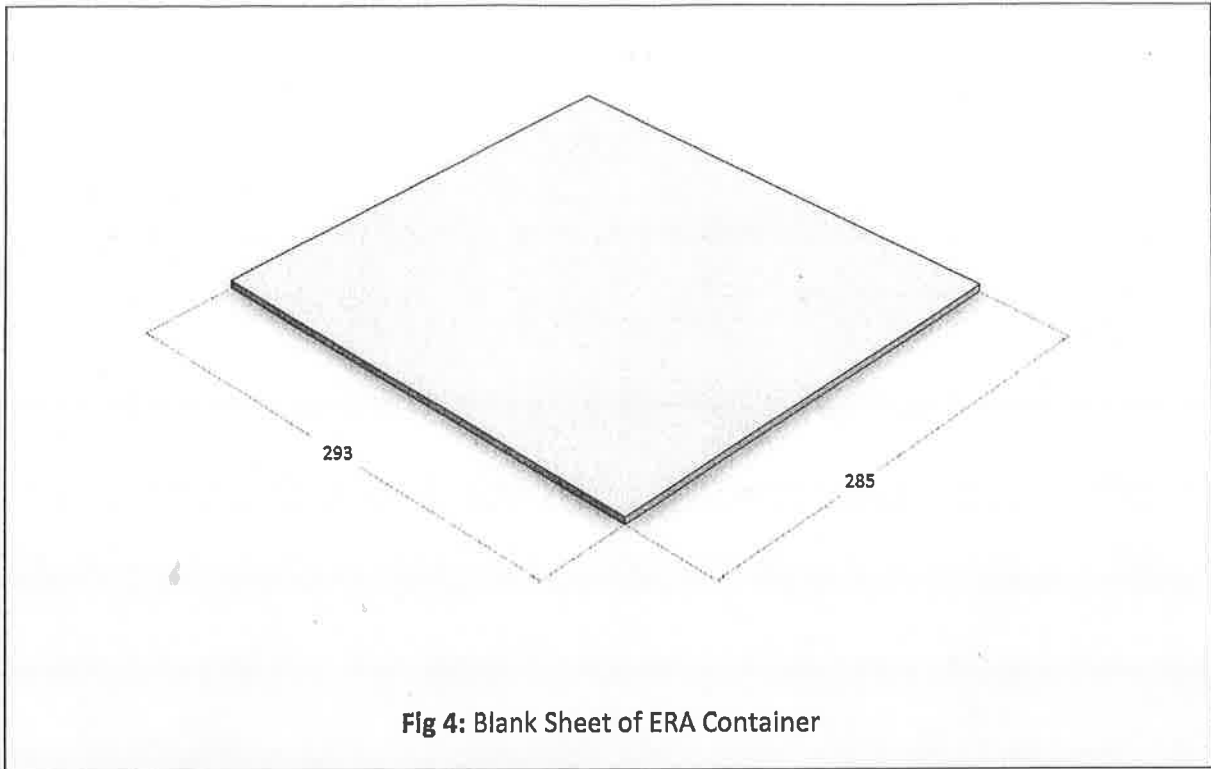
Manufacturing of standard cassette container requires simple fabrication techniques which will be generally available with any small to medium scale traders. Fabrication of standard ERA cassette container requires the following equipment:

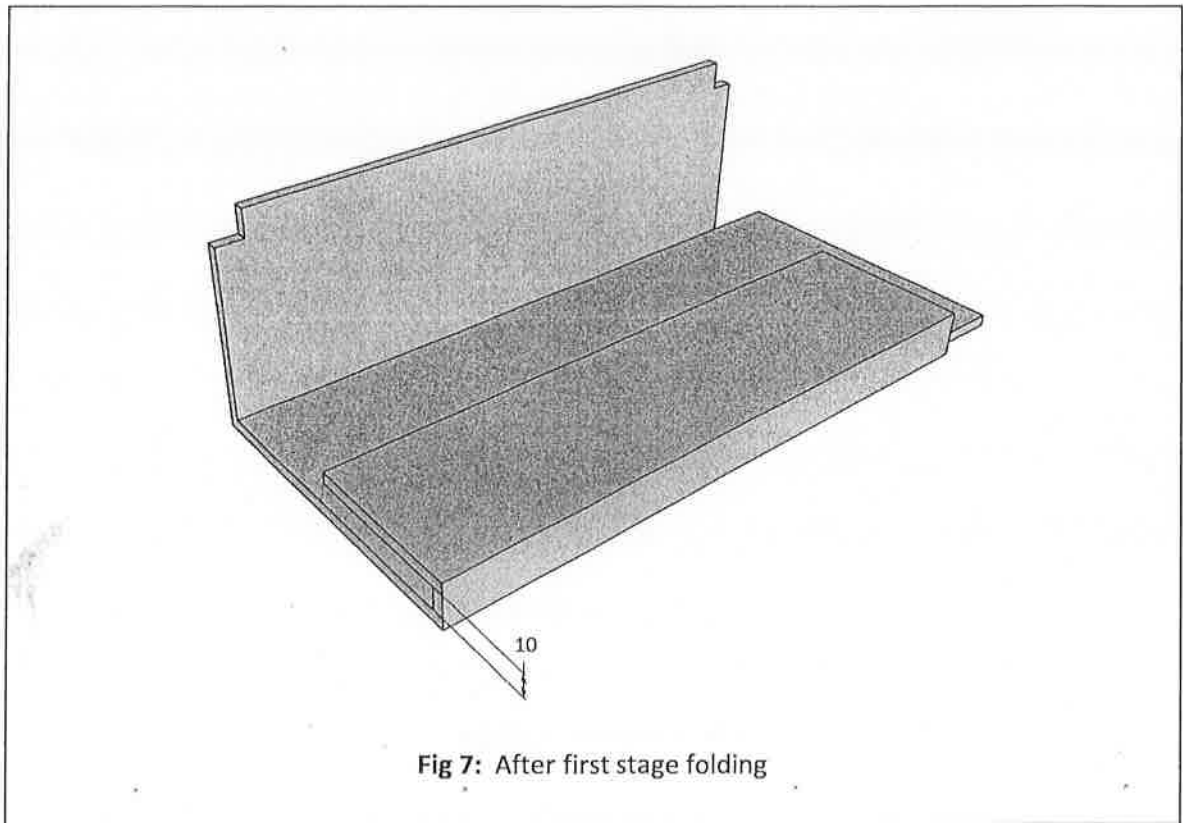
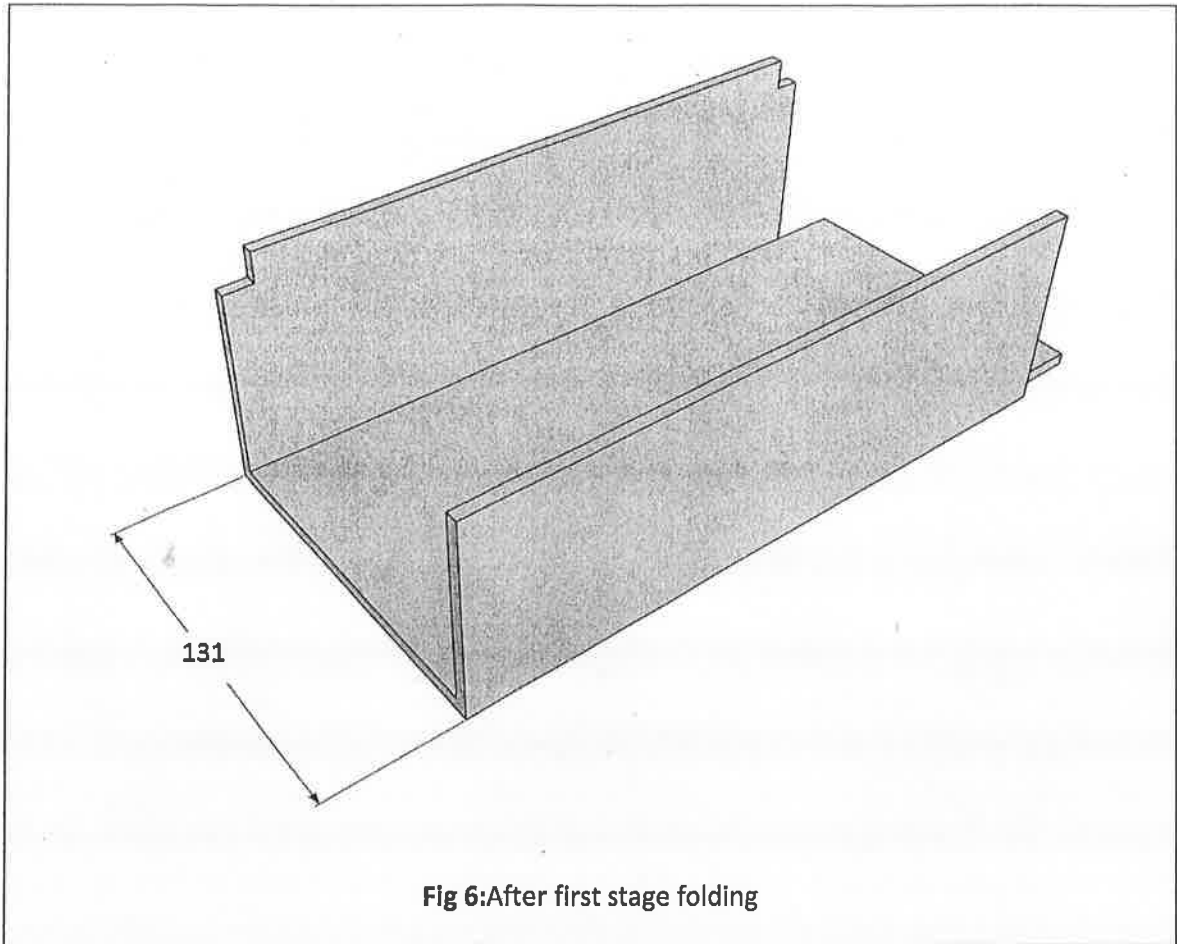
Sl. No.	Equipment	Source
1.	Shearing Machine	Trade
2.	Soldering Equipment	Trade
3.	Pressing Machine	Trade
4.	General Purpose Tools	Trade

5.2 Process

5.2.1 Process of Container

First, shear the blank GI sheet as per dimensions mentioned in the drawing as shown in Fig 4. After that, cut the corners of sheet as per dimensions as shown in Fig 5. Fold the sheet to the shape as shown in Fig 6, 7, 8. After these processes, solder at the joint & locking strip as shown in Fig 9. Same procedure for fabrication is applied to special cassette container.





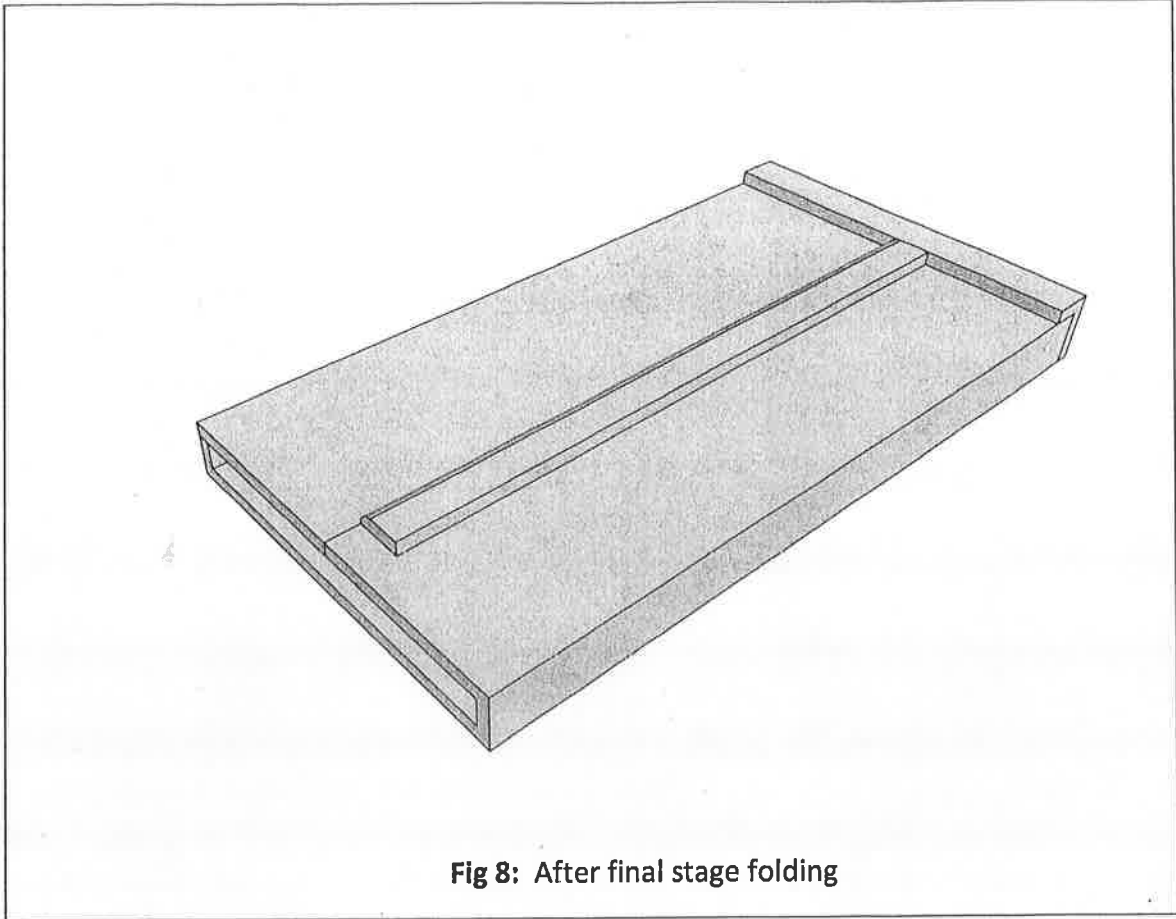


Fig 8: After final stage folding

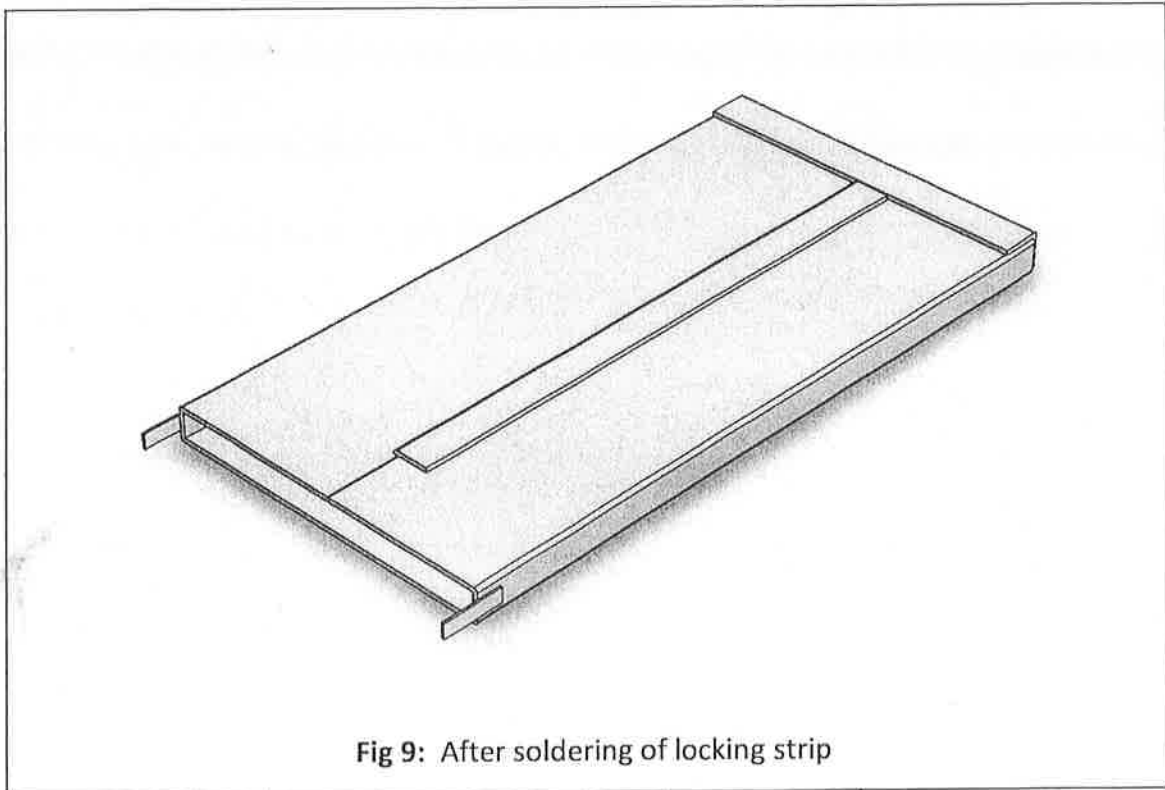
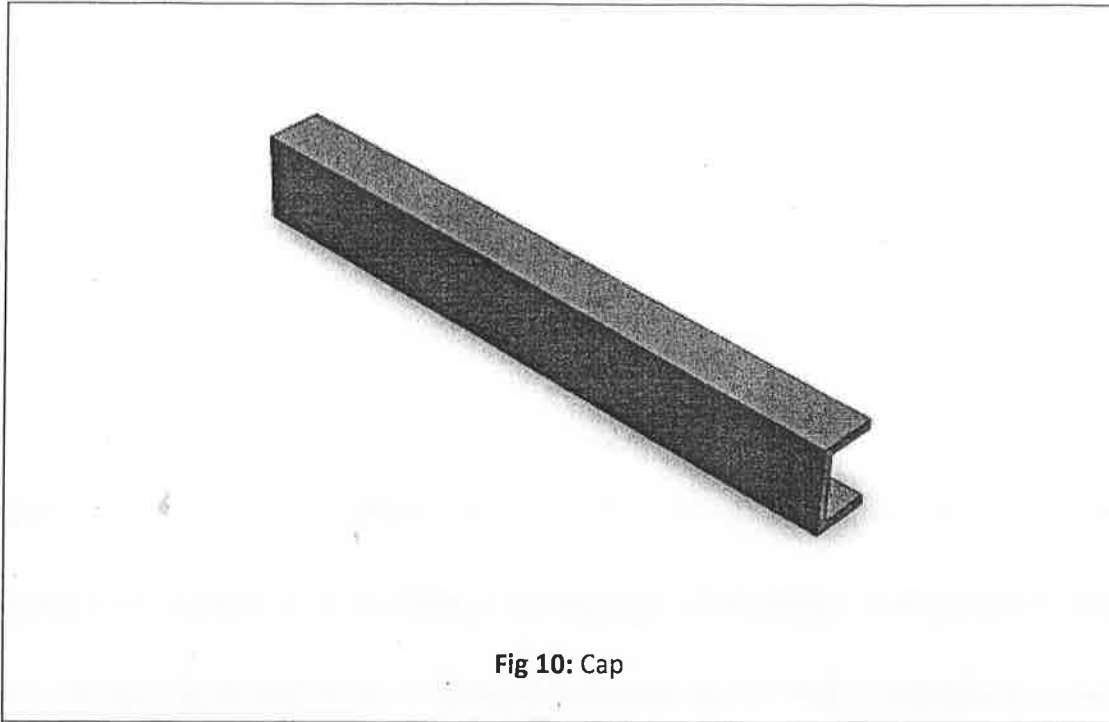


Fig 9: After soldering of locking strip

5.2.2 Process of Cap

First, shear to the blank size as per dimensions and then press to shape as shown in Fig 10.



6. Inspection Schedule

100% Inspection for all the parts as per inspection schedule mentioned in appendix A.

(a) For Standard Cassette Container

- Visual Inspection for any physical damages
- Overall length = 268mm (max)
- Overall width (including locking strip)= 136 ± 0.75 mm
- Overall thickness = 14.3mm (max)

(a) For Special Container

- Visual Inspection for any physical damages
- Overall length = 183mm (max)
- Overall width (including locking strip)= 136 ± 0.75 mm
- Overall thickness = 14.3mm (max)

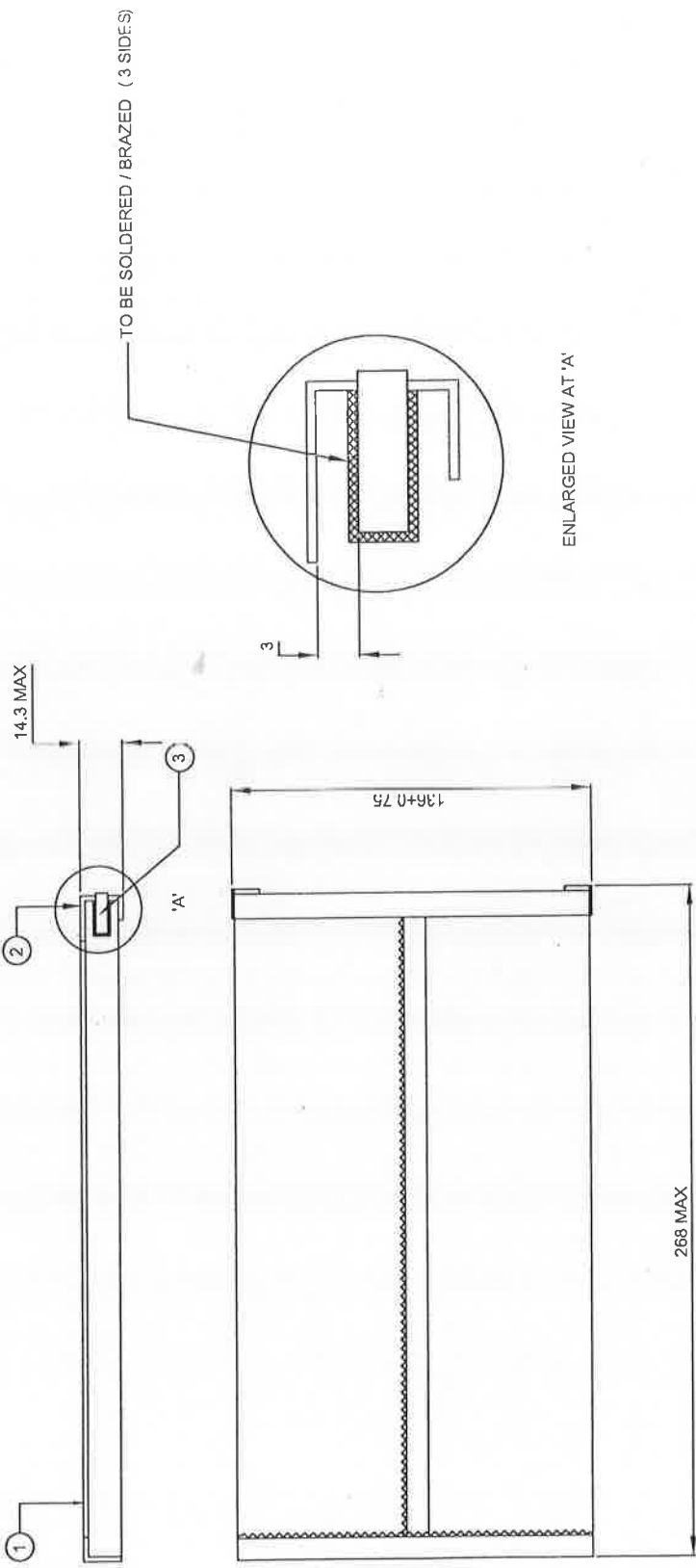
Note:

1. The stains spots / marks on the cassette container should not be considered as the reasons for rejection. However efforts should be made to minimize the stains. The same may be covered by aluminium as per **IS:2339: 2006**.
2. To improve the strength of the joint between locking strip and container the same may strengthened by brazing.

Appendix - A:

Drawing and Gauge Schedules for Standard and Special Cassette Container

Sl. No.	Components	Drawing No. /Det. No.	Store Dimensions to be gauged (mm)	Description of gauges
1.	Standard Cassette Container	HEMRL DRG 1457	268 max	Vernier Calliper
			136±0.75	
			14.3 max	
2.	Special Cassette Container	HEMRL DRG 1460 Det. No. 8	183 max	Vernier Calliper
			136±0.75	
			14.3 max	



ENLARGED VIEW AT 'A'

TO BE SOLDERED / BRAZED (3 SIDES)

*** NOTE:**

1. SOLDERING SHOULD BE DONE WITH SOLDER Sn 40 IS:193-2000
2. UN-SOLDERED PART OF LOCKING STRIP TO BE FOLDED AFTER COVERING WITH CAP
3. OUTER SURFACE OF CASSETTE CONTAINER TO BE PAINTED BY ALUMINIUM PAINT AS PER IS:2339: 2006
4. THE STAIN / SPOTS ON THE CASSETTE CONTAINER SHOULD NOT BE CONSIDERED AS REASON FOR REJECTION. EFFORTS TO BE MADE TO MINIMIZE THE STAIN.

Sl. No.	DESCRIPTION	DRG. No.	DET No.	QTY
3	LOCKING STRIP	HEMRL DRG 1457	11	2
2	CAP	HEMRL DRG 1457	10	1
1	STANDARD CONTAINER	HEMRL DRG 1457	9	1

LIST OF COMPONENTS

R. No.	DATE	AUTHORITY	ZONE	CD.	GO.	SIGN.

DEVIATION -OR UNTOLERANCED DIMENSIONS TO CONFIRM OT SPEC. IS:2102 MEDIUM		DRAWING CONVENTIONS CONFIRM TO IS SPEC.	
SCALE: RA		DRAWING: DRN. L S NAG, Sc 'C'	DATE: 16-11-2018
EST MASS: -		CHD. P C RAO, Sc 'E'	PASSED
GUAGE SCHD. -		APPROVED	FOR DIRECTOR
DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED			
MATL: -	ASSY.DRG. HEMRL DRG 1457		
PROTECTIVE FINISH: ---	DRG.NO.		
TITLE: STANDARD CASSETTE CONTAINER			
DESIGN AUTHORITY: HEMRL DRG 1457			
HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021			
DET No.	SHTS.	SHT.No.	
PART No.		D.S.CAT.No.	
A.H.S.P.			

1

2

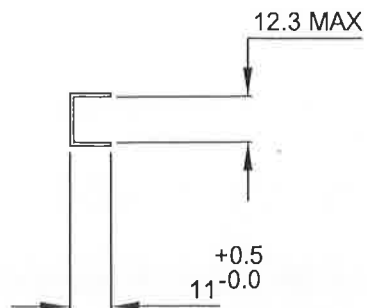
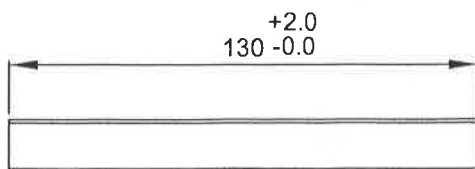
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NOTE: ALL SHARP CORNERS TO BE REMOVED.

D

R. NO.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.
					SIGN.	

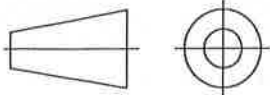
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DRAWING CONVENTIONS CONFIRM TO INDIAN STANDARD SPECIFICATION

SCALE: NA

EST MASS: -

GAUGE SCHD.



DRAWING:

DRN. L S NAG, Sc 'C'

DATE: 16-11-2018

CHD. P C RAO, Sc 'E'

PASSED

E

DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

MATL: Galvanised Steel Sheet IS 277 : 2003 (1 mm thick)

APPROVED

FOR DIRECTOR

PROTECTIVE FINISH: —

ASSY.DRG. HEMRL DRG 1457/8

TITLE:

CAP

DRG.NO.

HEMRL DRG 1457/8

F

DESIGN AUTHORITY:

HIGH ENERGY MATERIALS RESEARCH
LABORATORY, PUNE - 411021

DET No. 10

SHTS.

SHT.No.

PART No.

D.S.CAT.No.

A.H.S.P.

1

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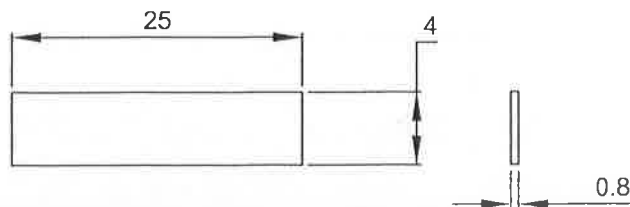
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NOTE:

1. ALL SHARP CORNERS TO BE REMOVED.
2. LOCKING STRIP TO BE BRAZED TO CONTAINER CAP ASSEMBLY AS SHOWN IN HEMRL DRG NO. 1457.

D

R. NO.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.
					SIGN.	

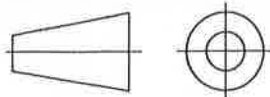
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DRAWING CONVENTIONS CONFIRM TO INDIAN STANDARD SPECIFICATION

SCALE: NA

EST MASS: -

GAUGE SCHD.



DRAWING:

DRN. L S NAG, Sc 'C'

DATE: 16-11-2018

CHD. P C RAO, Sc 'E'

PASSED

E

DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

MATL:

Galvanised Steel Sheet IS 277 : 2003 (0.8 mm thick)

APPROVED

FOR DIRECTOR

PROTECTIVE FINISH: —

ASSY.DRG. HEMRL DRG 1457

TITLE:

LOCKING STRIP

DRG.NO.

HEMRL DRG 1457

F

DESIGN AUTHORITY:

HIGH ENERGY MATERIALS RESEARCH
LABORATORY, PUNE - 411021

DET No. 11

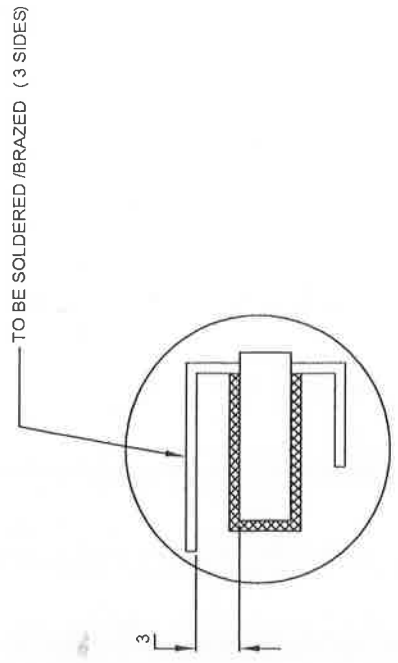
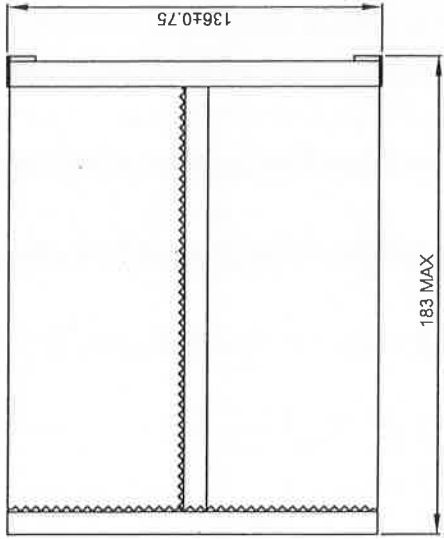
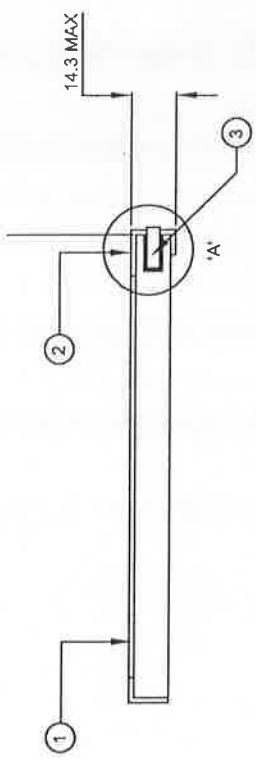
SHTS.

SHT.No.

PART No.

D.S.CAT.No.

A.H.S.P.



ENLARGED VIEW AT 'A'

NOTE:

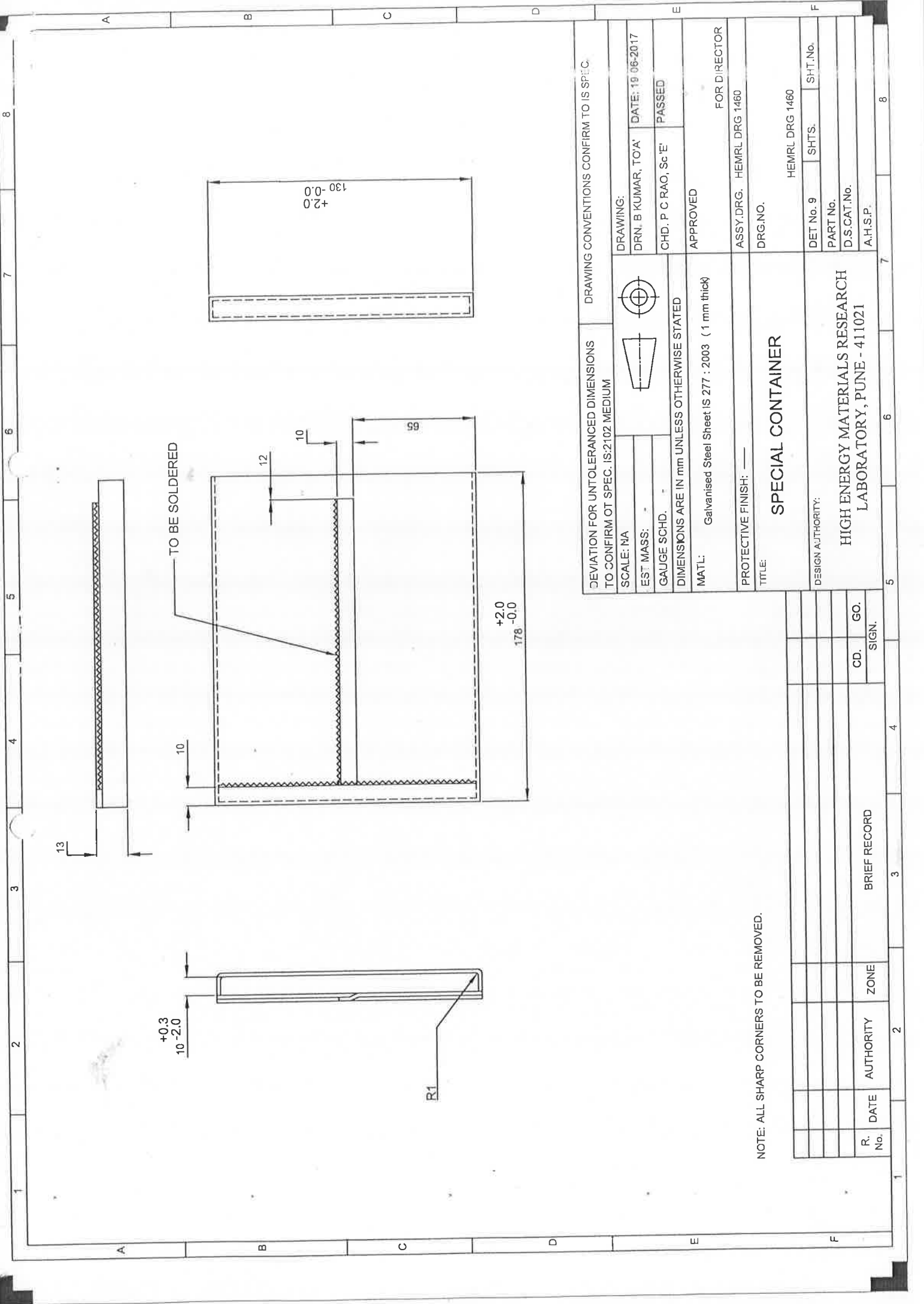
- SOLDERING SHOULD BE DONE WITH SOLDER Sn 40 IS:193-2000
- UN-SOLDERED PART OF LOCKING STRIP TO BE FOLDED AFTER COVERING WITH CAP
- OUTER SURFACE OF CASSETTE CONTAINER TO BE PAINTED BY ALUMINIUM PAINT AS PER IS:2339: 2006
- THE STAIN / SPOTS ON THE CASSETTE CONTAINER SHOULD NOT BE CONSIDERED AS REASON FOR REJECTION. EFFORTS TO BE MADE TO MINIMIZE THE STAIN.

Sl. No.	DESCRIPTION	DRG. No.	DET No.	QTY
3	LOCKING STRIP	HEMRL DRG 1460	11	2
2	CAP	HEMRL DRG 1460	10	1
1	CONTAINER	HEMRL DRG 1460	9	1

LIST OF COMPONENTS

R. No.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.	SIGN.

DEVIATION FOR UNTOLERANCED DIMENSIONS TO CONFIRM OT SPEC. IS:2102 MEDIUM		DRAWING CONVENTIONS CONFIRM TO IS SPEC.	
SCALE: N/A	DRAWING: DRN. L S NAG, Sc'C'	DATE: 16-11-2018	PASSED
EST MASS: -	CHD. P C RAO, Sc'E'	APPROVED	FOR DIRECTOR
DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED		ASSY.DRG. HEMRL DRG 1460	
MAT.:	PROTECTIVE FINISH: —		
TITLE: SPECIAL CASSETTE CONTAINER			
DESIGN AUTHORITY: HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021			
HEMRL DRG 1460		DET No. 8	SHTS.
HEMRL DRG 1460		PART No.	SHT. No.
HEMRL DRG 1460		D.S.CAT.No.	
HEMRL DRG 1460		A.H.S.P.	



DEVIATION FOR UNTOLERANCED DIMENSIONS TO CONFIRM OT SPEC. IS:2102 MEDIUM		DRAWING CONVENTIONS CONFIRM TO IS SPEC.	
SCALE: NA		DRAWING: DRN. B KUMAR, TO'A'	DATE: 19-06-2017
EST. MASS: -		CHD. P C RAO, Sc 'E'	PASSED
GUAGE SCHD. -	DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED		
MATERIAL: Galvanised Steel Sheet IS 277 : 2003 (1 mm thick)			
PROTECTIVE FINISH: ---			
TITLE: SPECIAL CONTAINER			
DESIGN AUTHORITY: HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021		FOR DIRECTOR	
DET No. 9		HEMRL DRG 1460	
PART No.		HEMRL DRG 1460	
D.S.CAT.No.		HEMRL DRG 1460	
A.H.S.P.		HEMRL DRG 1460	

NOTE: ALL SHARP CORNERS TO BE REMOVED.

R. No.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.	SIGN.

1

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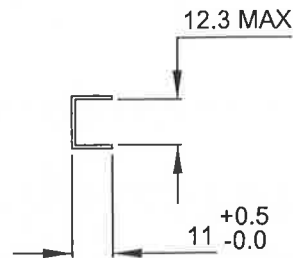
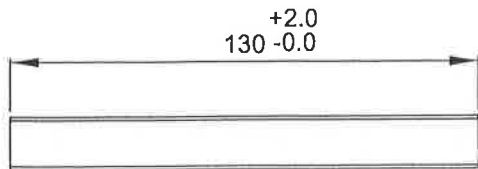
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NOTE: ALL SHARP CORNERS TO BE REMOVED.

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					SIGN.	

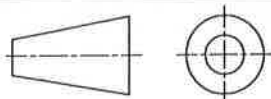
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DRAWING CONVENTIONS CONFIRM TO INDIAN STANDARD SPECIFICATION

SCALE: NA

EST MASS: -

GAUGE SCHD.



DRAWING:

DRN. L S NAG, Sc 'C'

DATE: 16-11-2018

CHD. P C RAO, Sc 'E'

PASSED

E

DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED

MATL: Galvanised Steel Sheet IS 277 : 2003 (1 mm thick)

APPROVED

FOR DIRECTOR

PROTECTIVE FINISH: —

ASSY.DRG. HEMRL DRG 1460

TITLE:

CAP

DRG.NO.

HEMRL DRG 1460

F

DESIGN AUTHORITY:

HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021

DET No. 10

SHTS.

SHT.No.

PART No.

D.S.CAT.No.

A.H.S.P.

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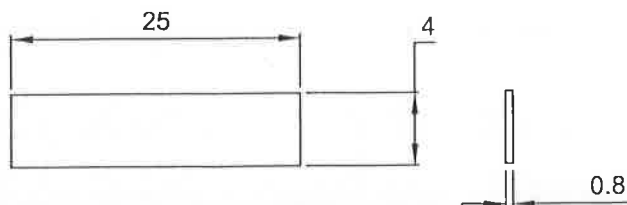
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NOTE:

1. ALL SHARP CORNERS TO BE REMOVED.
2. LOCKING STRIP TO BE BRAZED TO CONTAINER CAP ASSEMBLY AS SHOWN IN HEMRL DRG NO. 1460, DET No. 8.

D

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R. NO.	DATE	AUTHORITY	ZONE	BRIEF RECORD			CD.	GO.
							SIGN.	
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SCALE: NA				DRAWING:				
EST MASS: -				DRN. L S NAG, Sc 'C'		DATE: 16-11-2018		
GAUGE SCHD.				CHD. P C RAO, Sc 'E'		PASSED		
DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED				APPROVED				
MATL: Galvanised Steel Sheet IS 277 : 2003 (0.8 mm thick)				FOR DIRECTOR				
PROTECTIVE FINISH: —				ASSY.DRG. HEMRL DRG 1460				
TITLE: LOCKING STRIP				DRG.NO. HEMRL DRG 1460				
DESIGN.AUTHORITY: HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021				DET No. 11		SHTS.	SHT.No.	
				PART No.				
				D.S.CAT.No.				
				A.H.S.P.				