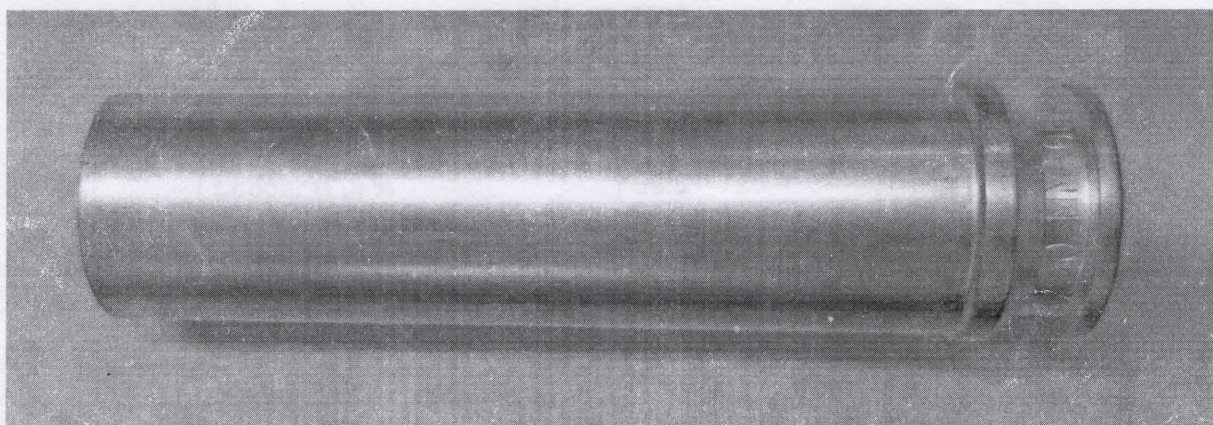


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QUALITY ASSURANCE PLAN **FOR** **30MM ADEN CARTG. CASE**

Drawing Number : S1/13787/E



Prepared by

[Signature]
OIC/QCP

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Checked by

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DO/JRB

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AGM/PE

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SM/AKS

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INTRODUCTION:-

The 30mm ADEN cartridge CASE is a component of the 30X113mm ammunition used in the ADEN revolver cannon, a gas operated, electrically primed weapon developed for aircraft. The cartridge case, typically made of brass, houses the projectile and propellant, and is a key element in the cannon's operation

1. Drawing Number : S1/13787/E
2. Nature of Item : Critical
- 2.1 Method of Manufacture : Deep Drawing (1st draw, 2nd draw, 3rd draw & Final draw)
- 2.2 (Special instructions for manufacturing/specification to be followed)
 - a) Process Schedule : 175/19
 - b) Flow Process Chart : 3A/175/19
3. Raw material : BRASS BLANK DIA.54.5 +0.13mm & THICK. 11.6 +0.1mm
4. Mat. Specification : JSS 9535-02-2008
- 4.1 Tests/Checks and Acceptance Criteria for Raw Material :

S. No.	Test/Check	Parameter & Accp Criteria
	CHEMICAL	
	Copper (Cu) %	68.5 – 72
	Phosphorus (P)%	0 – 0
	Borium (Br)%	0 – 0.004
	Iron (Fe)%	0 – 0.05
	Nickel (Ni)%	0 – 0.1
	Lead (Pb)%	0 – 0.015
	Silver (Sn)%	0 – 0.03
	Antimony (Sb)%	0 – 0.005
	Zinc (Zn)%	Rem
	Arsenic (As)%	0 – 0.01
	MECHANICAL	
	HARDNESS	10 HV

5. Final inspection : Visual and Dimensional
- 5.1 Type of inspection : Normal Inspection
- 5.2 Sample size : As mentioned against each feature/parameter
- 5.3 Visual Inspection :

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S. No.	Detail of Feature	Sample Size		Accp Criteria
		MFR	QCP	
a)	Should be clean from both side	100%	100%	As per IS 2500
b)	Visual defects (Cracks, Dent, Cut damage, Chattering, Scoring	100%	100%	
c)	Protective finish (Improper coating, scratch marks, Lining, any other Defects.	100%	100%	

5.4 Dimensional Inspection :

5.4.1 Geometrical Dimensions :

S. No.	Dimension/Feature	Sample Size		Inspection Method
		MFR	QCP/OF	
1	Total length 111.354 -0.381	100%	As per IS 2500	CRITICAL EXAMINATION OF QTY.05 SAMPLES AND GAUGING INSPECTION OF BULK AS PER GAUGE SCHEDULE No. i) 175/19 ii) 3A/175/19
2	Internal dia 29.54 +0.102	100%		
3	External dia 32.131 -0.203 with datum length 16.662	100%		
4	Depth of Fire Hole 7.874 +0.254	100%		
5	Depth of cap chamber 6.998 +0.127	100%		
6	Flange Width 3.048 +0.203	100%		
7	Belt Dia 33.782 -0.254	100%		
8	Flange dia 33.401 -0.254	100%		
9	Extractor Groove dia 27.026 -0.254	100%		
10	Cap Chamber dia 11.181 +0.05 at datum 2.794	100%		
11	Fire Hole dia 3.048 +0.254	100%		
12	Extractor Groove Width 6.096 +0.254	100%		
13	Cap Chamber H dia 11.232 H Bottom dia 11.217	100%		
14	Base thickness 12.954 -0.762	100%		
15	Wall thickness 0.635 -0.102 at mouth and 1.372MIN. at Distance 19.05 from inner bottom	100%		
16	Wall thickness 0.737 MAX. at a Distance 11.43 from mouth	100%		
17	Dias. Full form H & L & Lengths 'H'	100%		
18	Distance from Belt to Base 14.668 - 0.305	100%		

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19	Conc. Cap Chamber & Fire Hole	100%		
20	Conc. of Extractor Groove Belt & Flange dia with body	100%		
21	Conc. Cap Chamber with body	100%		

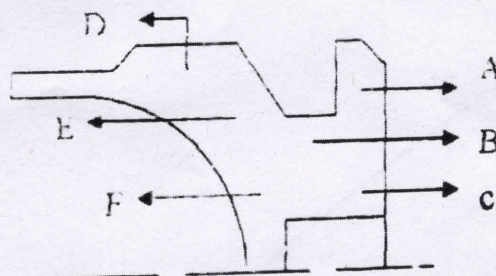
5.4.2 Critical Features :

S. No.	DIMENSION/FEATURE	INSPECTION METHOD
1	Dia 33.782 -0.254 (N) (33.52 to 33.782)	Gauge
2	Flange dia 33.401 -0.254 (M) (33.147 to 33.401)	Gauge
3	Dia 27.026 -0.254 (K) (26.772 to 27.026)	Gauge
4	Cap chamber dia 11.181 +0.051 at 2.794 Datum (J) (11.181 to 11.232)	Gauge
5	Dia 6.985 ±0.127 (6.858 to 7.112)	Gauge
6	R 0.380 Max	Gauge
7	R 0.51 Max	Gauge
8	Depth 7.874 +0.254 (7.874 to 8.128)	Gauge
9	Chamfer 1.143 X 45°	Gauge
10	R 0.254 Max	Gauge
11	R 0.762 Max	Gauge
12	Flange thick 3.05 -0.203 (2.847 to 3.05)	Gauge
13	Ø 30.302 datum at a height of 6.096 +0.254 (6.096 to 6.35)	Gauge
14	Angle 46° Basic	Gauge
15	Ø 32.893 Datum at a height of 14.669 -0.305 (14.364 to 14.669)	Gauge
16	Ø 32.131 -0.203 at a height of 16.662 Datum (31.928 to 32.131)	Gauge
17	Base thickness 12.954 -0.762	Gauge
18	Thick 1.372 min. at a dist of 19.05 datum	Gauge
19	Harness at points marked thus (+) Must not be less than 150 DPN	
	Hardness at a distance of 0.5" 80 – 120vnp (from-MOUTH)	
	Hardness at a distance of 3.0" 150 – 200vnp (from-BASE)	

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Dimensions checked after sectioning and hardness after sectioning are as follows:

Base thickness 12.954 -0.762		
Thick 1.372 min at a dist of 19.05 datum		
Hardness at points marked thus (+) must not be less than 150 DPN		



5.4.3 Major Dimensions :

S. No.	Dimension/Feature	Inspection Method
	NIL	

5.4.4 Minor Dimensions :

S. No.	Dimension/Feature	Inspection Method
	NIL	

6. Tests on Finished Items :

6.1 Details of Test/Checks on finished Items and Acceptance Criteria:

S. No.	Test/Check	Acceptance Criteria
a)	Passivation – Concentration check of the solution for passivation. Report to be submitted	Should be as per specification – No. AIR – 1365 I

6.2 Details of Tests and other Information: NIL

7. DETAILS OF PROOF SELECTION

- 7.1 Proof schedule No. : II 827
7.2 Lot size : 10000 Nos.
7.3 Proof size : 110 + 20 (MN Test)

(A)

- a) Pressure Barrel (Case drilled) – 05 Nos.
b) With Gun single shot – 20 Nos.
c) With Gun Auto – 45 Nos.

MSP

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(B)

- a) Pressure Barrel (Case Drilled) – 05 Nos.
 - b) With Gun single shot – 10 Nos.
 - c) With Gun Auto – 25 Nos.
- (C) MN Test – 20 Nos.

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Drawing Number : S1/11/87/1

Designed by

Checked by

QC/PCB OIC/75

QC/PCB OIC/75

Approved by

AG/75