

INDEX

1. INTRODUCTION.....	2
2. TECHNICAL SPECIFICATIONS OF CABIN (RHD):	2
3. DRAWINGS	3
4. ACCEPTANCE STAGES FOR CABIN (RHD):.....	3
4.1 VISUAL INSPECTION:	3
4.2 STATIC CHECK: 100%.....	4
4.3 DIMENSIONAL CHECKS.....	9
4.4 WEIGHT MEASUREMENT	9
4.5 FUNCTIONAL TESTING.....	9
4.6 QUALITY, COMPLETENESS AND RELIABILITY.....	10
5. REPORTS TO BE SUBMITTED ALONG WITH CABIN.....	11
 APPENDIX - A	 12

1. INTRODUCTION

This document defines the various checkpoints / acceptance criteria of **Armored Driver's Cabin (Flat type-RHD) for BEML HMV 8x8** Project. Based on the performance, the quality plan may be modified and updated from time to time improvement in the quality of the final product offered to the customer.

2. TECHNICAL SPECIFICATIONS OF CABIN (RHD):

The technical specifications & scope of supply for the CABIN are brought out in **Procurement Technical specification of Armored Driver's Cabin (Flat type-RHD) for BEML HMV 8x8** Doc no: **BEML/GAT/R&D DEFENCE/A-CAB/001** Dt: 05.10.2020

The brief specifications are shown below for reference:

Main Dimensional Data & Weight Of Cabin	
Length	2371 mm
Width	2600 mm
Height	1746 mm
Weight of outfitted cabin	1850 kg $\pm 5\%$

3. DRAWINGS

The key dimensional details of cabin are provided in Technical specification of Driver's Cabin (RHD) document. (Ref Dwg No. 518 CA 02007)

4. ACCEPTANCE STAGES FOR CABIN (RHD):

Design & drawing should be vetted by BEML Team as per IS 9435:2004 before development of proto type. Design clearance will be carried out in the following stages.

a) Design

- i. Conceptual Layout design of shell structure of cabin
- ii. Detailed design of shell structure of cabin
- iii. Detailed specification of supplier of Bought out items
- iv. Integration of Bought out items on Cabin Structure

Note: Supplier shall submit the technical specifications, 3D model & drawings in hard & soft format for all the above stages for approval by BEML.

b) Manufacturing & Inspection in the following stages

- i. Process Plan for stage wise cabin structure production
- ii. Inspection report stage wise
- iii. Cabin tubular structure fabrication
- iv. B/O item integration and functionality check
- v. Cabin will be integrated on 8x8 truck chassis at BEML premises.
- vi. BEML team will participate and witness the Factory Acceptance Test (FAT) at Supplier premises, before dispatch.

4.1 VISUAL INSPECTION:

1. CABIN SL.NO. _____
2. CABIN TYPE & MODEL _____
3. AC UNIT SL. NO. _____

	ACCEPTANCE TEST PLAN FOR Armored Driver's Cabin (Flat type-RHD) for BEML High Mobility Vehicle 8x8	Doc No. BEML/GAT/RD/A-CAB/ATP/001 Revision No. Date: 05.10.2020
---	---	---

Outfitted cabin is checked for:

- a. Functioning of doors, handles, locks, HVAC and all other electrical accessories.
- b. Completeness and proper fitment of all components in CAB
- c. Assembly.
- d. Tightening of fasteners.
- e. Defects in construction, sharp corners / edges if any.
- f. Moisture, dust & distortion.
- g. Corrosion of metal parts.
- h. Any form of deterioration of material and finishing's.
- i. Mechanical imperfection.
- j. Preservative coating & welding joints.
- k. Should be complete, no missing and loose items are allowed
- l. Inspection "OK" sticker on cabin.
- m. All dummy holes to be covered with proper plugs.
- n. Proper dummy plug for all hoses and pipe free ends.
- o. Lubrication for moving part like hinges, check arm etc.
- p. Operating Instruction sticker if required.
- q. Check list for items to be supplied in loose as per scope of supply.

4.2 STATIC CHECK: 100%

SL. NO.	DESCRIPTION OF CHECKS	OBSERVATIONS	REMARKS
I. STATIC CHECKS:100 %			
1.	CABIN (Inside)		
a)	Ignition box/ Steering lock i) Ignition key operation in 03 positions ii) Ignition On/Off iii) Functioning of Steering Lock		

b)	Cabin Doors i) Functioning of Lock/ Unlock from outside ii) Functioning of Lock/ Unlock from inside iii) Fitment of door handles		
c)	Driver/Co-Driver Seat i) Forward/Backward adjustment ii) Raising/lowering iii) Back rest inclination adjustment iv) Safety belt for Driver & Co- driver		
d)	Bonnet i) Functioning of Lock/ Unlock		
e)	Horn i) Functioning		
f)	Sun visors (02 Nos.) i) Fitment ii) Free movement of sun visors		
g)	Steering Wheel i) Position (8-20) ii) Steering wheel play (10-40 mm.) Max.18 Deg. With engine operating iii) No. of Steering wheel turns – $5\frac{2}{3}$	- mm - Deg. - turns.	
h)	Wind Shield Wiper i) Functioning ii) Position of wiper blade ii) Sprinkler functioning/ jet spray adjustment		
i)	Manhole i) Cover fitment ii) Functioning of Lock/ Unlock		
j)	Fitment/ Functioning of Instrument Panel Board Meters i) Tachometer / Eng. Hrs. meter ii) Double Air Pressure Gauge of Brake iii) Oil pressure gauge iv) Fuel gauge with reserve indicator v) Tyre pressure gauge vi) Voltmeter		
k)	Fitment/ Functioning of Instrument Panel Switches i) Winch lamp switch ii) Engine stop button iii) Convoy light switch iv) Winch Control Knob vi Head lamp change over switch vi) Hazard lamp switch vii) Tortoise/ Rabbit mode switch viii) Exhaust brake switch ix) Fan switch x) Electric fuel delivery pump switch		

	xi) Fog lamp switch xii) Dome light switch xiii) Rotary illumination switch (03 steps)		
l)	Functioning of Instrument Panel Signal Lamps i) Engine Overheating (red) ii) Electronic Cooling malfunctioning (red) iii) Engine preheating (yellow) iv) 65 % system air pressure (red) v) 90 % system air pressure (red) vi) Fog lamp (green) vii) Winch signal lamp (yellow) viii) Turn signal (green) ix) Trailer turn signal (green)		
	x) Charging indicator (red) xi) High beam (blue) xii) IAD lock (green) xiii) AD lock (green) xiv) Cabin lock (red) xv) Beacon lamp (yellow) xvi) Electric delivery pump (white) xvii) Hazard lamp (red) xviii) PTO engagement indicator (if applicable)		
m)	Ventilators/Cabin Heaters i) Functioning of 03 speeds fan ii) Functioning of Dependent heater (oil) iii) Functioning of Independent heater (fuel) iv) Functioning of Independent heater LCD		
n)	Map reading lamp		
o)	Accelerator Pedal i) Free play ii) Free movement of pedal		
p)	Gear Shift Lever i) Fitment ii) Fouling iii) Condition and locking of rubber boot		
q)	Clutch Pedal i) Free play (4-11mm) ii) Free movement of pedal	- mm	
r)	Brake Pedal i) Free play (4-11mm) ii) Free movement of pedal	- mm	

s)	Exhaust Brake i) Functioning ii) Releasing (800-900 RPM)		
t)	Parking Brake i) Functioning		
u)	Fitment/ functioning of Misc. accessories i) Gun mounting clips ii) Instruction stickers (Tyre inf./def, AD/IAD etc.) iii) Electric Wiring diagram iv) Fire extinguisher mounting bracket v) Sprinkler tank vi) Radio socket vii) Blind Spot Mirrors		
v)	Other snags - Visual and general defects which is not specified in the check list		
2.	CABIN (Outside)		
a)	Electrical lamps i) Front double parking lamp ii) Upper head lamp (dim/ dip/ straight beam/ passer) iii) Lower head lamp (dim/ dip/ straight beam/ passer) iv) Fog lamps v) Contour lamps vi) LH/ RH side indicator lamps vii) Hazard indicator lamps viii) Beacon lamps ix) Search lamp x) Rear double parking lamp xi) Tail lamps xii) Brake lamps xiii) Reverse lamp xiv) Winch lamp		
b)	Bonnet i) Locking/ seating		

c)	Fuses i) Fitment/ rating of fuses under cover of instrument panel ii) Fitment/ rating of fuses under bonnet of cabin		
d)	Cabin Lifting/ Lowering i) Locking/ unlocking of securing hook ii) Cabin lifting/ lowering function iii) Oil leakage from lift pump iv) Oil Leakage from lift cylinder v) Fitment/ correction of instruction sticker		
e)	Other snags - Visual and general defects which is not specified in the check list		
3.	Miscellaneous Fitments		
a)			
4.	Details of Measuring Instruments Used:		
	Description of Instruments	Sl. No. of Instrument	Calibrated upto
a)			
	Commencement time :- Hrs Concluding time :- Hrs. Total Time Taken :- Hrs Date:		
	<div style="text-align: right;"> (Signature) Name: Firm rep. BEML rep. </div>		

4.3 DIMENSIONAL CHECKS

The key dimensions of the Cabin will be checked as per IS 9435:2004 & recorded as per format given below

Sl. No	Parameter	Specified (mm)	Observed
1	Over all length	2410	
2	Over all width	2400	
3	Height	1800	

4.4 WEIGHT MEASUREMENT

The weight measurement of the cabin will checked as per IS: 11825:1986

Sl. No	Parameter	Specified (IN Kg)	Observed
1			

4.5 FUNCTIONAL TESTING

Cab tilting test : The cab with seats and other accessories fitted should be tilting forward through a hand pump with nominal human effort without any abnormal sound. The cab should hold in tilted position for at least 10 Hrs without any permanent damage/ set up.

Operation of accessories : The adjustments of seats, operation of roof hatch, doors, lights etc will be checked. All the accessories should work satisfactorily.

HVAC system : The HVAC system of cabin will be operated and functionally to be checked.

Dash board : The dash board should be illuminated during night and readable during day time. All the indicators and markings should be working fine and satisfactorily.

Blast Protection : The strengthened cab will be tested for blast pressure equivalent to exhaust gases from Muzzle. (Exact values will be intimated during development stage) The cab integrated with dash board, seats & simulated loads of HVAC & other accessories will be integrated on a fixture and a blast pressure will be generated at a

distance as shown in APPENDIX - A. The cab should sustain the blast without any permanent damage/ bending of panels, damage to seats & accessories. Strain measurement will be carried out at maximum 10 locations. Blast pressure and attenuation also to be measured. The locations and plan of strain measurement will be mutually decided as per design. A spare cab to be provided by contractor for this testing along with fixtures. The testing will be carried out at TBRL Chandigarh, PXE, Balasore or any other suitable agency (Mutually agreed). Testing charges to be borne by Contractor. All transportation, logistics, instrumentation etc for this testing to be borne by supplier.

Small Arm Protection : The cabin should comply STANAG Level-I standard or any other as decided mutually during design stage. The material to be tested at TBRL, Chandigarh or any other suitable agency. Testing charges to be borne by Contractor. All transportation, logistics, Instrumentation etc for this testing to be borne by contractor.

Strain measurement : Strain measurement will be carried out during blast testing of cab at approximately 10 locations. The locations will be mutually decided based on design. All charges for measurement, logistics, and miscellaneous arrangements will be borne by supplier. Agency conducting these measurements should be approved by BEML.

4.6 QUALITY, COMPLETENESS AND RELIABILITY

The workmanship of the cabin must be in accordance with the Production drawings, technological process and their technical Conditions.

4.6.1 Welds must satisfy the following requirements:

- a) The beads of the welds must be symmetrical and deposited in one direction.
- b) The weld must have full penetration to the basic material.
- c) There should be not patches, regions of over runs and unfilled craters with cracks.
- d) Finishing of the weld must be continuous.

	<p>ACCEPTANCE TEST PLAN FOR <i>Armored Driver's Cabin (Flat type-RHD) for BEML High Mobility Vehicle 8x8</i></p>	<p>Doc No. BEML/GAT/RD/A-CAB/ATP/001 Revision No. Date: 05.10.2020</p>
---	---	--

e) There should not be any cracks at the root of the welds.

4.6.2 Riveted parts

Riveted parts must not be either damaged or deformed during riveting. Riveted joints must be done as per CSN standards and as specified in the production drawings. Parts joined by riveting must not be movable. The finished head of rivet must not be split.

5. REPORTS TO BE SUBMITTED ALONG WITH CABIN

1. Overall & critical dimensions report for cabin
2. Type approval certificate copies for components
3. Shower test report
4. Toque list for trims items fitment
5. Functional verification of various electrical systems with simulated test rigs
6. Assembly instruction for interface.

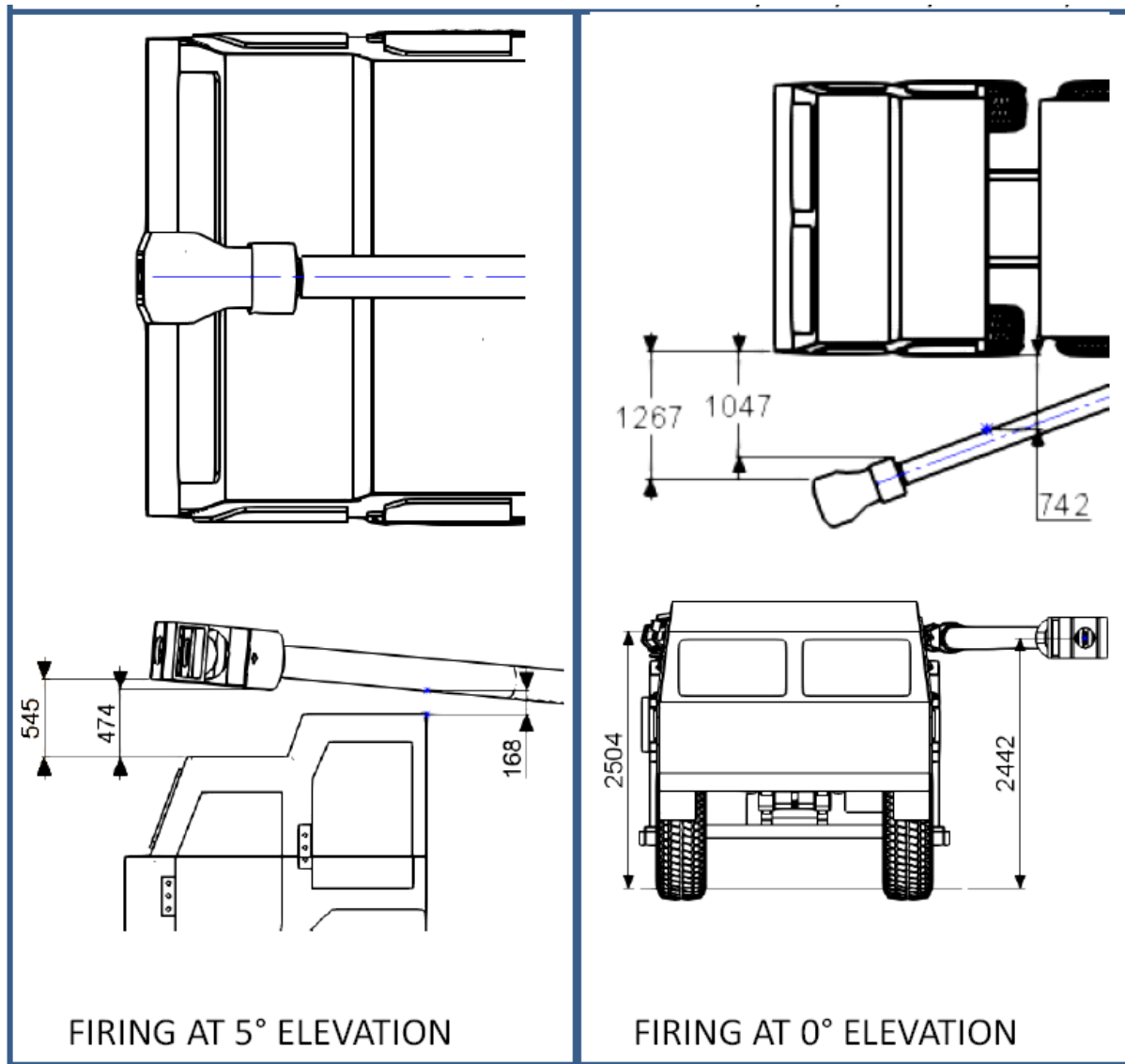
* * * * *



**ACCEPTANCE TEST PLAN
FOR**
*Armored Driver's Cabin (Flat type-RHD)
for BEML High Mobility Vehicle 8x8*

Doc No. BEML/GAT/RD/A-CAB/ATP/001
Revision No.
Date: 05.10.2020

APPENDIX - A



NOTE : 1 .ONLY FOR REFERENCE

2. ALL DIMENSIONS ARE IN MM