

PROCUREMENT TECHNICAL SPECIFICATIONS

ARMOUR BODY FOR LIGHT ARMoured PERSONNEL CARRIER (LAPC)

Document No: GA/3048(a)/LAPC/PTS/1077/Rev 1.0

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BEML LTD
Under Ministry of Defence
(Govt. of India Undertaking)
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India



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SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 2 of 14

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This Technical specification document identifies and defines the functional and physical characteristics of 'Armour Body' for BEML Light Armoured Personnel Carrier (LAPC).			
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**PROCUREMENT
TECHNICAL
SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 3 of 14

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**PROCUREMENT
TECHNICAL
SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 4 of 14

Contents

Sl. No	Description	Page No.
1.	Introduction.....	5
2.	Project Requirement.....	5
3.	Technical Requirements.....	6
4.	General Requirements.....	10
5.	Technical Literature.....	10
6.	Scope of Work and Supply / List of deliverables.....	11
7.	Warranty Terms.....	11
8.	Product Support.....	12
9.	Service.....	12
10.	Inspection.....	12
11.	Acceptance Criteria.....	12
12.	Delivery Schedule.....	13
13.	LAPC Chassis Layout.....	14

1. Introduction:

Light Armoured Personnel Carrier (LAPC) is to cater troops in counter insurgent environments, capable of high mobility, ballistic and blast resistant and with electronics on board for recce, forward operations, asymmetric warfare deployment etc. In all terrain including mountain terrain also similar requirement/business prospects are available for Military/Overseas market.

During the counter insurgent operations, the vehicles are forced to move both on the roads and off-road where they can encounter individual mines (in case of roads) and minefield sectors (off-road) emplaced by the adversary. Considering the above, in order to provide underbelly grenade detonation resistance, as well as resistance to ballistic fire and the ability to operate in various terrains and climatic conditions should characterize safety to the crew and ergonomic transport conditions.

Concisely, during the vehicle design stage particular attention should be paid to the vehicle hull construction (its shape and armor), its suspension, seat construction and seat fixing method in the crew compartment, as well as mobility both on- and off-road.

2. Project Requirement - Fully Furnished Armoured Hull

LAPC is to be developed on indigenous BEML 4x4 chassis with all 4 wheel drives and front dis-engagable. The vehicle is bullet and blast proofed in a manner to conceal the occupants completely from the threats. The vehicle will be tested by accredited Government testing and certification agencies (VRDE/ARAI) for road-worthiness as per QR and trial directives meeting CMVR norms. The vehicle operating temperature is from -20°C to +55°C.

Hence an ergonomically designed **Fully Furnished Armoured Hull** to be developed for where the scope of work is to design, build, fabricate and supply ballistic resistant hull and designed for blast protection on 4x4 chassis of M/s BEML as per the technical and general requirement described in this document.

The major portion of the supply includes NATO STANAG Level II protected Fully furnished Armoured Hull with wind shield , bullet proof glasses doors with three point locking arrangement and meshes as mentioned

3. Technical Requirements:

Sl No	Particulars	Requirement	Remarks
1.	Seating Capacity	Minimum: 10-crew - Front Offside - Driver's seat (RHD), - Front Nearside - Observer's seat (Commander seat) - Four lateral seats foldable type accommodating 4 crew members on each side. All seats to be equipped with seats belts (3 point or 4 point)	To be supplied along with automotive certificate for seats and seat belts as per Indian/European norms
2.	Towing-Front	Front Towing Hooks having capacity to towing of similar weight class	To be supplied
3.	Winch	Provision for Vehicle to be fitted with an electric winch at the front of capacity about 06 tons. (Cable: Steel type)	Provision for electric winch; Winch is BEML Scope
4.	Towing- Rear	Rear towing attachment - Combination Pin and Ball Type, (3500 kg) , ball diameter 50 mm (Heavy Duty type)	To be supplied
5.	Scraper Blade	Front retractable heavy duty steel Dozer Blade (Galvanized type) and hydraulically (actuators) operated by front observer from the interior. (Width of scraper blade should not exceed 2500mm). Mechanical Launch of scraper blade is desirable.	To be supplied
6.	Grenade Launcher	Provision for the vehicle with a Grenade Launcher System (electronic)	Provision for Grenade Launcher and position to be detailed in the installation
7.	AD Gun	Provision for AD Gun	Provision for AD Gun and position to be detailed in the installation



**PROCUREMENT
TECHNICAL
SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 7 of 14

8.	Fume extractors	Fume extractors system for extracting fumes generated during firing from inside crew compartment.	To be supplied
9.	Stretcher	The vehicle to be provided with mounting one stretcher with two retractable arms behind the observer's seat for Casualty Evacuation.	To be supplied
10.	HVAC & External Protection	Twin independent Air conditioning System has to be mounted. Roof-mounted evaporator with directional control. Cooling capacity for 10 persons. Note: The evaporator must have a protective cover against Molotov Cocktail attack in PPO mode.	To be supplied
11.	Mesh	Tough Anti-corrosion treated protective mesh of standard size for all side window glass panes and Wind Screen. Front windscreen protection should open and close electrically.	To be supplied
12.	Siren	Police Siren and Public Address System	To be supplied
13.	Bar Light	Standard roof Police Light Bar Led type, equipped with tough Anti-corrosive treated protective mesh.	To be supplied
14.	Strobe lights	Strobe lights system with tough Anti-corrosive treated protective mesh on all sides of the vehicle of standard design	To be supplied
15.	Police communication wireless set	Installing Police communication wireless set & Antenna platform on both sides at the rear upper section to be made.	Provision to be made
16.	cigarette lighter sockets	3 cigarette lighter sockets coupled with three on/off switches are to be fitted on the dashboard of the hull.	To be supplied
17.	antenna platform	One antenna platform must be provided at the rear of each vehicle (on the top right side from a driver's view).	To be supplied



**PROCUREMENT
TECHNICAL
SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 8 of 14

18.	Space for communication equipment	Enough space is to be provided at the rear of the driver's seat so that military communication equipment could be fixed / installed. It is to be informed that the customer will acquire and install the communication equipment after the delivery of the vehicle.	To be supplied
19.	Intercom and AM/FM radio	Intercom and AM/FM radio with speakers (two in the dash board and two at the rear). Intercom facility between drivers and passengers is to be.	To be supplied
20.	Fire fighting system	The hull is to be provided with a Fire fighting system comprising four (4) Bottles /Cartridge with 01 KG Capacity refillable Dry Powder of standard capacity and connected to nozzles by piping to: (i) Engine Compartment (ii) Front wheels (iii) Rear wheels System activation for each individually controlled by driver and appropriately located.	To be supplied
21.	Search Lights	100 to 110 watt Halogen Spot/Flood/Search Lights with tough Anti-corrosive treated protective mesh, mounted on the vehicle's dome electrically operated by front observer from the interior, rotating 360 degrees.	To be supplied
22.	rear view camera and rear buzzer	The vehicle to be fitted with a rear view camera and rear buzzer.	To be supplied
23.	Female socket	Three (3) 12V port female socket with ON/OFF switch to be fitted inside vehicle cabin on the dashboard for RX/TX set	To be supplied
24.	Ballistic Protection	NATO STANAG Level II	Certificate of conformity of above test to be submitted.
25.	Blast Protection	As per NATO STANAG LEVEL II	Certificate of conformity of above test to be submitted.

26.	Color	To be painted in olive green (matt finish) The paint to be fire resistant	To be supplied
27.	Flooring	Anti skid interior flooring	To be supplied
28.	Molotov Cocktail attack protection	The front and upper part of the vehicle to be designed in such a way to prevent fire entering the engine and passenger compartment against Molotov Cocktail attack.	Design to meet requirement.
29.	Reinforcement for Gun	The vehicle rear structure to be reinforced to bear the weight of a 12.7 mm Gun.	Design to meet requirement.
30.	Heat insulation	Interior roof and all interior panels to be fitted with heat insulation.	To be supplied
31.	Glasses	All windscreen, door glasses and vision blocks to be armored. Warranty for Min 70% transparency for five years to be provided.	Protection as per the Ballistic Protection of the hull. To be supplied
32.	Gun Ports	Adequate Gun Ports with vision armoured glass (Port to be suitably located . Gun ports should be operable from inside only. Minimum Qty: 8 port (4 on each side).	Protection as per the Ballistic Protection of the hull. To be supplied
33.	Rear door	The rear door to be hydraulic operated and fitted with emergency exit. One observation glass on either side of the emergency exit to be provided.	Protection as per the Ballistic Protection of the hull.
34.	Design and Construction	All constructions should be according to NATO Compliance.	Certificate of conformance to be provided
35.	Integration	Vendor to provide assistance during integration of Hull to the chassis	To be Provided.

4.0 General Requirements:

4.1. Vendor certificates:

All reports for the material used shall be submitted to BEML, by the firm from NABL/International accredited labs or other Government agencies/labs specifically designated for this purpose wherever required by the user. The provided sample report must be of the same heat material that is used for the Hull.

4.2. Indigenous percentage:

Vendor should specify indigenous percentages with details of the parts/assemblies in response to the tender

4.3. Spares and Maintenance Characteristics:

The accessories/fitments/spares and technical expertise of automobile should be easily available in the Indian market at various places. The supplier of the hull should certify to this effect and enclose a list of such all India Locations. Ballistic material should be fixed in such a way that engine/other parts/assemblies are easily repaired/dismounted for repairs.

Servicing/fast-moving spare parts for the maintenance and repair of the proposed vehicle during the first 2 years as per manufacturer's recommendations, to be supplied along with the vehicle.

List of servicing/fast-moving spare parts to be provided.

5. Technical Literature:

Following literatures are to be furnished by the firm at the time of supply limited to the scope of supply.

- Spare Parts Catalogue/ Workshop / repairs manual/Operators Manual.
- Manufacturers Recommended List of Spares.
- All maintenance tools pertaining to hull.
- Training Aids and Charts.

6. Scope of Work and Supply / List of Deliverables For Armoured Body kit (Part No. 513 MD 00114) :

- 6.1.** 2D and 3D model preparation and drawing submission to BEML for Approval.

- 6.2.** BEML will verify the 3D model by manufacturing a mockup hull and assembling on the vehicle. Based on the feedback vendor to incorporate relevant design changes/modifications
- 6.3. Manufacture and supply of Armour body along with all the accessories mentioned in sec 3 of this document.
- 6.4. Assistance during ballistic & blast test which will be conducted by BEML at GOI designated lab.
- 6.5. The vendor needs to submit his proposal with Bill of Material within his scope. In addition the vendor to specify in details the list of in-house/bought-out items.
- 6.6. A comprehensive design report including the pneumatic and electrical schematic diagram pertaining to vendor scope and as mentioned in the agreed Bill of Material to be submitted to BEML for final Approval.
- 6.7 The Intellectual property rights for overall vehicle configuration would be with BEML

7. Warranty terms:

The supplier should provide a warranty of 10 years for BP metal/composite material parts and 05 years for BP Glass for BP properties. As far as the visibility criteria of the BP Glass are considered, it should be minimum 70% visibility. supplier shall submit a certificate from the accredited labs to the effect that the BP glass has got a minimum visibility of 70%. The firm has to guarantee that in case the visibility of the BP glass does become less than 70% within a period of 3 years without the BP glass having suffered any visible mechanical damage, the firm replaces the BP glass at free of cost excluding wear and tear.

Warranty conditions must be fully described, including period on corrosion-free for climatic / tropical condition

All metal parts underneath hull should be treated against anti-corrosion.

Specify warranty on windscreen and all armoured glasses against blurring & leakage

8. Product Support:

The OEM shall be required to confirm that he is in a position to provide product support in terms of maintenance, material, and spares for a period of minimum 15 years. The OEM must provide at least 2 Years notice to BEML



PROCUREMENT TECHNICAL SPECIFICATIONS

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 12 of 14

before closing the production line so as to enable “LIFE TIME BUY” of all the material & spares before closure of the production line. All upgrades & modifications carried out on the equipment during the life cycle must be intimated to buyer.

9. Service:

Service terms and conditions to be provided by the firm and to be mutually agreed.

10. Inspection:

As per BEML terms and conditions mutually agreeable with manufacturer.

11. Acceptance Criteria

Acceptance of “Armour Body“ contains the fulfillment of technical requirements and test performances as listed below

Supply of the Hull meeting all the requirements mentioned in Clause 3.

Material certificates for Opaque and transparent armour from NABL/International Accredited lab meeting NATO STANAG LEVEL II

Test Report for Rain test/shower test (for no leakages) to be provided.

12. Vendor Qualification Requirements:

The Armouring firm should have prior experience for armoring upto NATO STANAG Level II for both ballistic and blast or Technological tie up / JV with a reputed international company having relevant experience upto NATO STANAG Level II for both ballistic and blast. Relevant Documents to be attached along with projects performed of similar nature.

In house Design and Simulation studio with Catia / Solid Works etc. for 3D design facility with qualified engineers for designing the armoured vehicle. (Copy of valid licences from software manufacturer to be enclosed).

Company should have adequate Automobile background with HMC / VMC machining facilities for manufacturing different parts, hinges, etc. for the fabricated capsule.

In house testing facility such as hardness, Hinge strength, welding strength, leakage test (rain test) should be there with the vendor. Relevant documents to be provided.



**PROCUREMENT
TECHNICAL
SPECIFICATIONS**

GA/3048(a)/LAPC/PTS/1077/Rev 1.0

Date:08-08-2018

Page 13 of 14

13. Delivery Schedule:

T₀ - Date of placement of PO / LOI

The following delivery scheduled is provisional and the vendor may propose his delivery schedule in the same style.

SI No	Description	Schedule
1	Design of Armour Body Hull and submission of 3D Model to BEML	T ₁ = T ₀ + 4 weeks
2	Review, Modifications & Finalization of 3D model. And testing of samples.	T ₂ = BEML Feedback on 3D Model + 2 Week
3	Manufacturing of Armour Body	T ₃ = T ₂ + 4 Weeks
4	Integration of Armour Body on BEML 4x4 Chassis at BEML's premises and complete furnishing	T ₄ = T ₃ + 2 weeks

Project Schedule for Armour Body, Fully furnished and integrated on BEML Chassis, tested, painted and despatch to BEML : **15 weeks from the date of PO (Assuming BEML will prepare mock up hull & provide feedback in 3 weeks)**

Note:

This Procurement Technical Specifications document is provisional and tentative to be updated at the descretion of BEML and refers to supply of scheduled deliverables required for the proto-development only.

BEML Chassis Layout 4x4

