

No. IV-21011/3/2009-Prov-I
Government of India
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,
New Delhi, 11.9.2009

To

11/9
The DGs: Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D *15/9/09*

15/9/09
Subject: - QRs/Technical Specifications for the Hydraulic Ladder Mounted on
Vehicle-regarding

The QRs/Technical Specifications for the Hydraulic Ladder Mounted on
Vehicle have been accepted and approved by the Competent Authority in MHA.

2. Henceforth, all the CPMFs should procure the above items required by them
strictly as per the laid down Technical Specifications/QRs.

11/9/09
(R.S.Sharma)
Director (Prov)

Copy to:-

DD(Procurement),MHA

Copy for information to:-

PS to JS(PM),MHA

11/9/09

QRs for Hydraulic Ladder Mounted

Operational Requirement :	
1	<p>Physical Characteristics. The equipment should meet the following criteria :-</p> <p>(a) Minimum service life of 10 yrs.</p> <p>(b) Light weight.</p> <p>(c) Sturdy and durable.</p> <p>(d) The equipment should have high quality anti-rust coating/treatment to withstand vagaries of weather.</p> <p>(e) Capable of withstanding prolonged exposure to adverse Environmental conditions as per the following :-</p> <p>(i) Storage temperature - -40°C to $+55^{\circ}\text{C}$</p> <p>(ii) Operating temperature - -40°C to $+55^{\circ}\text{C}$</p> <p>(iii) Relative humidity - 95%</p> <p>(iv) Should be able to withstand wind load.</p>
2	<p>Essential Requirements</p> <p>(a) The Hydraulic ladders should be capable to assist intervention of Boeing 747 top entry, as also Air Bus 380 and Boeing 787. Considering the details of height of top hatch for Boeing 747 and Airbus 380, it is essential that the height of the ladder system be min 12 m:-</p> <p>(i) <u>Boeing 747.</u> At present 12 mtr existing ladder is used to negotiate tail wg of the aircraft to carryout top hatch entry (Height of top hatch 10.39m).</p> <p>(ii) <u>Airbus A-380.</u> The max height of ac fuselage is 11.14m and height of tail wing is 11.07m.</p> <p>(iii) <u>Boeing 787(Dream liner).</u> The height of aircraft as per the official site is 16.92 mtr. However there is no detail available about the height of cockpit as well as doors.</p>
3	<p>Engagement of target on Aircraft. The ladder configuration should be capable of addressing tactical aspects of Counter Hijack assault on all commercial aircrafts. In this context, the following requirements are envisaged :-</p> <p>(a) Capable of addressing aircraft targets uptill an elevation of 25 m. However, the following tactical considerations should be fulfilled :-</p> <p>(i) Rapid ladder extension/deployment. This aspect is critical to success of Counter Hijack operation and requisite ladder extension characteristics are as elucidated in para 8.</p> <p>(ii) Comfortable ramp angle for tactical assault including rapid and simultaneous intervention by 10 commandos.</p> <p>(iii) Optimal ladder configuration to ensure rapid extension/deployment of ladder. Ladder configuration requirements are as elucidated in para 4.</p> <p>(iv) Optimal ladder configuration to ensure stability of vehicle during high speed tactical deployment/manoeuvre. Vehicle stability considerations are as elucidated in para 13 and succeeding paras.</p> <p>(v) Removable side safety railings to ensure safety of commandos positioned on the ladder during high speed vehicle manoeuvre/deployment.</p> <p>(b) Capable of addressing all commercial aircraft doors including Airbus A-380, Boeing-747 and boeing-787 (Dreamliner).</p> <p>(c) Capable of addressing Tail wing of all commercial aircrafts</p>
4	<p>Tactical Requirements: The features necessitated by tactical nuances of Counter Hijack operation are :-</p> <p>(a) Camouflage. The following measures are required to ensure tactical camouflage :-</p> <p>(i) Equipment should be painted black in colour.</p> <p>(ii) Equipment should be coated with non-reflective paint.</p> <p>(b) Stealth. Ladder cushion rest should be soft and optimally designed to provide noise reduction.</p> <p>(c) Step ladder rungs should have non-skid surface.</p> <p>(d) Non skid rampway to enable rapid intervention/assault.</p> <p>(e) High side railings for handhold so as to enable faster movement. This is also required to ensure safety of assault troops in high speed vehicle movement during operation.</p> <p>(f) Ballistic protection. NIJ level IV protection in form of ballistic shields should be provided. Removable ballistic shields at intervention/target engagement end should be integral to the ladder / rampway structure. Modular design and ease of attachment of ballistic shields to ladder / rampway structure is a critical requirement.</p>
5	<p>Ladder configuration:- The essential pre-requisites are as under:-</p> <p>(a) Modular multiple stile configuration.</p> <p>(b) Upward compatible.</p> <p>(c) Detachable stiles/Modules with the following options :-</p>

	<ul style="list-style-type: none"> (i) Tactical step ladder configuration with non-skid steps. (ii) Stairway configuration/Retractable non skid running board. (iii) Tactical elevated platforms for Sniper/Observation post. (iv) Perimeter breach platforms/ramp. (v) Tactical Extension/Sliding platforms suitable for deployment of a detachment of 02 commandos
6	Ladder Extension: Timeframe and mechanics of ladder extension are the most critical determinant factors in respect of operational efficiency of this equipment. The desired features are as enlisted in succeeding paras.
7	Ladder extension Mechanics. Rapid deployment of ladder is critical to the success of Counter Hijack operation. The mechanics of ladder extension should meet the twin criteria of stability and speed. Therefore, the following requirements should be fulfilled: - <ul style="list-style-type: none"> (a) The base ladder/section must have hydraulic maneuver capability. <ul style="list-style-type: none"> (i) This is required to provide stability to the base ladder/platform. (ii) Stability and ease of extension of Subsidiary stiles/modules will depend on the stability of base ladder/platform. (b) The deployment of subsidiary stiles/modules should be manual. (c) Interface ladder bars to support individual subsidiary stiles. (d) Stable ladder/ramp configuration to accommodate 10 fully equipped commandos with tactical combat loads and auxiliary equipment.
8	Base ladder Hydraulic system. The hydraulic system of base ladder should have the following essential characteristics: - <ul style="list-style-type: none"> (a) Rapid base ladder extension. (b) Rapid base ladder elevation/depression. (c) The hydraulic system of the ladders should be independent of the vehicle/vehicle hydraulics. (d) Hydraulic enabled rotatable turret for base ladder/deck. (e) Emergency mechanical deployment mode. (f) Switching facility between hydraulic and mechanical modes. (g) The hydraulic fluid used should have fire resistant characteristics.
9	Ladder extension Timeframe. The desired timeframe is as under: - <ul style="list-style-type: none"> (a) Base ladder elevation/depression from - Maximum 45 seconds. Minimum to maximum (Hydraulics enabled). (b) Base ladder elevation/depression from - Maximum 75 seconds. Minimum to maximum (Manual/mechanical)
10	Rotable Ladder Turret. The following operational requirement should be addressed: - <ul style="list-style-type: none"> (a) Rotable ladder turret with mechanical and hydraulic manoeuvre capability. (b) 360° ladder deployment capability. (c) Perpendicular ladder alignment capability. (d) Azimuthal ladder alignment capability. (e) Emergency mechanical deployment mode. (f) Switching facility between hydraulic and mechanical modes.
11	Software based base ladder Setting <ul style="list-style-type: none"> (a) Graphic User Interface (GUI) to simplify ladder deployment. (b) Digital display of ladder settings.
12	Desired Requirements. <ul style="list-style-type: none"> (a) Platform. It is desirable to have a platform at the top end of the ladder to provide standing platform for the hit. (b) Software Based Ladder Setting. <ul style="list-style-type: none"> (i) Graphic user Interface (GUI) to simplify ladder deployment (ii) Digital display and control of ladder settings
13	Surveillance and Real Time Intelligence: The CH Ops is likely to witness highly fluid tactical battle with long term strategic implications. Therefore, flow of real time info to command element is critical and the following surveillance / intelligence gathering features are recommended:- <ul style="list-style-type: none"> (a) Panoramic vision/monitoring facility for vehicle driver as also for ladder operator including robust transmission link to ops room. (b) CCTV monitoring facility of tactical battle space for the vehicle driver/ladder operator including robust transmission link to ops room.
14	Transportation. Rapid mobilization of Counter Hijack Task Force (TF) by air is a critical element of Counter Hijack operation. Therefore, it is imperative that the equipment peculiar to Counter Hijack operation, such as intervention ladders, is capable of being easily transportable. The equipment should fulfill the following criteria :-

	<p>(a) Easy to assemble and dismantle.</p> <p>(b) Modular design.</p> <p>(c) Capable of transportation in a service aircraft.</p> <p>(d) Capable of being transported by a medium payload vehicle.</p>
15	Safety parameters : In built safety measures for the system/equipment and crews/persons is required against any failure of any part of the system.
16	EMI/EMC Compliance : The total equipment should comply with EMI/EMC requirement as per MIL- Std 461 E or equivalent.
17	<p>Vehicle considerations</p> <p>Eqpt Fitment. In case the equipment is not permanently mounted onto the veh, the eqpt should be capable of being mounted onto the vehicle in less than 30 mins and the dismounting process of the same should not take more than 20 mins</p>
18	The vehicle should be provided with run flat system for tyres.
19	<p>Stability. The stability criteria envisaged are as under :-</p> <p>(a) The ladder mounted vehicle should be able to approach the aircraft at a speed of 55 km/hr. The platform should be stable enough to transport and withstand rapid and simultaneous intervention by 10 fully equipped commandos.</p> <p>(b) The ladder mounted vehicle should be capable of tactical manoeuvre with full payload at a speed of 55 km/hr. This may include high speed deployment, fast banking/turning etc.</p>
20	<p>Surprise. The ladders mounted vehicle should have discrete transport covers to disguise its deployment close to the target aircraft. The requisite features for discrete transport covers are:-</p> <p>(i) The covers should be capable of quick attachment/removal.</p> <p>(ii) The covers should enable concealment of this equipment in semi extended state.</p> <p>(iii) The reaction time for removal of covers and complete ladder extension should not be more than 45 sec</p>