



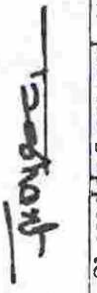





TRIAL DIRECTIVES (TDS) OF HYDRAULIC PLATFORM 32 METERS

Sl No	Parameter	Specification	Procedure suggested for trial	Result expected Desired
1.	SCOPE	<p>1.1 This specification covers hydraulic platform unit with a working height of 32 M Working height shall be measured as the height from ground level to cage base plus 1.5 M. The operational stability shall be safe on an incline of 7°. The structural strength of booms shall be secure and designed for 1.5 times rated load at prescribed reach. The manufacturer of the hydraulic platform shall be an ISO: 9001 certified Company who meets the eligibility conditions.</p> <p>1.2 The scope of the contract includes the manufacture of the hydraulic platform step by step mounting of the same on purchaser's chassis, bodywork and fitment of accessories. Inspection, supply and training of operators nominated by purchaser as well as rendering warranty services.</p> <p>1.3 The Hydraulic Platform shall be designed as per the designed, operational stability and structural strength based on the criteria laid in International/ National norms and other norms and standards applicable for elevated raised platforms used for Fire Fighting and rescue operations.</p> <p>1.4 The manufacturer/ supplier should have supplied similar Hydraulic Platforms of minimum 32M height and above in past to the emergency/fire services with satisfactory performance.</p> <p>1.5 The manufacturer/ supplier should have the facility of trained manpower for repair and maintenance of Hydraulic platform through its authorized sales/service agents in India. Or they should confirm in writing that they will establish service center in India and shall provide support to the</p>	<p>Shall be checked physically by the BOOs and should meet the safety requirements and features as per relevant EN norms other National/ International standards and QRs. Certificates are also to be verified.</p>	<p>Should meet the QRs.</p>

	<p>brakes acting on rear wheels.</p> <p>2.12 Fuel Tank - Capacity shall be minimum 300 ltrs with lockable fuel cap.</p> <p>2.13 The Chassis shall be provided with 11.00 R_x 20 radial tyres - 11 nos with spare tyres or equivalent.</p> <p>2.14 The chassis shall be provided with single day type cab with RED colour, made from high strength steel fully trimmed, external panels hot dip galvanized with hydraulic cab tilting mechanism. The Cab suspension shall be provided with coil spring and shock absorber. The cab shall be provided with adequate ventilation, rear view mirrors, windscreen and windows, adjustable driver seat, wiper system along with all other standards fitments.</p> <p>2.15 The Electrical system shall be 24 V, with suitable capacity batteries & Alternator for charging the batteries.</p> <p>2.16 The chassis shall be supplied with standards tool kit, hydraulic jack of 20 Ton capacity, operator & workshop manuals.</p> <p>2.17 The Chassis shall be fitted with gearbox mounted, suitable capacity Power Take Off, Unit to drive the hydraulic pump for boom movements.</p> <p>2.18 The Chassis shall comply all the provisions and enactment of Motor Vehicle Act 1988 and Central Motor Vehicle Rules 1989 and any amendment from time to time.</p> <p>The unit shall meet the following operating parameters:-</p> <p>a) Minimum working height from ground level.....32.0M</p> <p>b) Minimum cage floor height from ground level.....30.0M</p> <p>c) Minimum safe working load (without water monitor in operation).....400 kg</p> <p>d) Minimum safe working load (with water monitor in operation)...200 kg</p> <p>e) Minimum reach* (*from slew center) to cage corner at 400 kg... 18.0</p>		
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	<p>M</p> <p>f) Continuous unlimited rotation in both directions-360°+endless</p> <p>g) Maximum outrigger width with both jacks extended (as per design)... 6M</p> <p>h) Cage rotation (left and right).....45°</p> <p>i) Full working load permitted in wind speed up to... 12.5 M/Sec</p> <p>j) Max time for reaching to maximum height and vice-versa.....</p> <p>k) Max time for turning through complete circle.... 120 seconds</p> <p>l) Max time for extending jacks on both sides.... 30 seconds</p> <p>m) Total operating time, including stabilizing, cage from rest position to maximum height and 90° turntable/ turret rotation.....</p> <p>..... 180 seconds (Minimum)</p>		
3.	<p>Main Frame</p> <p>The main frame shall be a fully welded rectangular steel structure fixed on to the chassis frame with bolts and springs so as to allow performance and durability of the chassis without causing stress concentration in the chassis beam. The hydraulic tank of suitable capacity shall be integrated into the main frame with proper heat decapitation facilities.</p>	<p>To be checked physically by BOO as per QRs.</p>	<p>Should meet the QRs.</p>
4.	<p>Stabilizing System</p> <p>4.1 The stabilizing and leveling system of the unit should consist of four vertical/horizontal jacks, which allow safe leveling of the whole unit and maximum stability in all permitted working conditions (operating on a slope of 7 degrees). The four welded box section outrigger beams slide inside the outrigger housings and extend and retract by means of four double acting hydraulic cylinders placed inside the beam housing.</p> <p>4.2 The following jacking positions shall be feasible: a) Outrigger beams fully extended on both sides: This is the normal working position, which allows maximum</p>	<p>Shall be tested/ measured/ checked physically by BOO using digital inclinometer for operation as per QRs and relevant standards.</p>	<p>Should meet the QRs.</p>

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outrreach at full working load over 360° continuous unlimited turntable/ turret rotations and the use of the monitor within its full capacity and working range.

b) Outrigger beams fully extended only on one side with turntable rotation interlock:

In order to reduce the jacking width in narrow spaces, outrigger beams should be extended only on one side, either left or right in working direction. A safety system on the turntable should allow only 18 0° rotation over the working direction and automatically stop its motion once the center line of the chassis has been reached, preventing rotation of the turntable over the not extended side. Outreach and height over the working side should not be affected.

4.3 Vertical jacks with positive safety lock valves and self-aligning feed plates:

Each outrigger beam should be equipped at its end with a hydraulic jacking cylinder with self-aligning ground contact foot plate (by means of movable joint) capable of lifting the unit completely off the ground, level the machine and keep it in its position even under continuous load conditions. Each jacking cylinder should be attached to a lock valve that prevents creeping in case of pressure failure.

4.4 Automatically switched on jack blinking lights:

Each vertical jacking cylinder should be equipped, at its upper front side, with a grill protected red blinking light, which is automatically switched on when the PTO control in the truck cab is engaged.

4.5 Additional square spreader plates:

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4.8 Outrigger safety interlocks:

A safety system inhibits any operation of the platform before the outriggers have been set. Outrigger controls are isolated and cannot be moved if the boom is not in transport position and has not activated the boom rest switch. Reciprocally, the boom movement should not be activated until and unless the outriggers have been activated and properly deployed.

4.9 Level sensor with audible alarm:

A level sensor measures both the fore and aft and sideways inclination of the unit and gives audible warning if the permitted level tolerance is exceeded.

A steel framework structure paneled by steel/aluminium should be provided. All the framework should be treated for corrosion resistance before paneling. Two lockers on each side of the vehicle with low and easy access should be provided. The doors/shutters to lockers must be dust and water-resistant. They shall have drain holes to drain away water from the stowed equipment. Lockers shall be equipped with lights so that the operator can have better visibility while stowing the equipment. There shall be two side ladders, one on either-side to provide access to the main work deck.

Should be checked physically by BOOs as per QRs and relevant standards.

Should meet the QRs.

Should be checked and tested physically by BOOs as per QRs and relevant standards. The vehicle shall meet relevant national/international safety standards.

Should meet the QRs.

6.1 The hydraulic platform shall be of telescopic cum-articulated design. So as to meet operating parameters such as safe working load, working height and outreach as well as 'up, over and down' access at building. All booms should be made from high strength welded box section in steel construction-with-internal treatment against corrosion. One Amber light at joint of main boom and tip boom should be provided. The cage pivot should be mounted at

5	Bodywork and equipment locker	Should be checked physically by BOOs as per QRs and relevant standards.	Should meet the QRs.
6	Booms	Should be checked and tested physically by BOOs as per QRs and relevant standards. The vehicle shall meet relevant national/international safety standards.	Should meet the QRs.

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7. Turntable	<p>7.1 The turntable should be powered by a hydraulic motor. The 360° continuous endless clockwise and anti-clockwise rotating turntable should be mounted over sub-frame at chassis rear so as to keep overall transport height of the folded platform to minimum. The turntable should be bolted to a slew ring with High tensile bolts.</p> <p>7.2 The hydraulic motor driving the slew system connected either directly or through suitable reduction gearbox should have adequate power to rotate the turntable in any position with full payload in the Cage. The slew brake should always be in permanently and automatically applied until the slew motion control of the turntable is activated, thus releasing the brake with hydraulic pressure. The fail safe brake should be able to hold the turntable in locked position, with any boom position when hydraulic power is removed.</p> <p>7.3 A well designed rotary connector, mounted under the platform turntable should convey water through 80mm stainless steel or equivalent water way, hydraulic and electric power from the truck chassis to the turntable and up to the cage at boom end, While allowing for endless unrestricted rotation of the turntable over:-360° in both directions.</p> <p>7.4 There shall be provision for the manual rotation of turntable in case of failure of hydraulic system.</p> <p>7.5 Pins securing the hydraulic cylinders to boom and turntable shall be properly installed and secured.</p> <p>7.6 The hydraulic hoses, tubings and connections provided in the turntable shall be free from kinks, chaffing or leaks.</p>	<p>Shall be checked and tested physically by BOOs as per QRS and relevant standards. The vehicle shall meet relevant national/international safety standards.</p>	Should meet the QRS.
8. Working Cage	<p>8.1 The robust and spacious fire fighting cage made of tubular steel/aluminum profiles should have approx. 2 sq mtr floor</p>	<p>Shall be checked and tested physically by BOOs as per QRS and relevant standards.</p>	Should meet the QRS.



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The two entrances provided should allow for a direct and immediate access to the cage with full equipment without the help of an auxiliary ladder from ground level (with lowered tip boom) or from the vehicle deck (with boom in stowed position).

8.8 Automatic cage leveling with emergency over-ride

Cage leveling system should be fully automatic. The cage should remain constantly in a leveled horizontal position referred to the ground, irrespective of boom position and load in cage. In the unlikely event of failure of automatic cage leveling system, an emergency lever, manually controlled, should actuate a hydraulic mechanism to enable crew in cage to level cage directly.

8.9 Independent horizontal cage rotation:

The slew unit of the cage should be set for a rotation of min, 45° left and 45° right directions. This rotation is to be independent of the turntable slew. The cage rotation control should be available from the cage and turntable control. The rotation balconies, windows, roof etc. from the front cage gate, irrespective of the boom position, in case of fire fighting and rescue operations.

8.10 Cage control box:

The cage control should be similar to turn table control. It should also include the same LCD display as main control. The dust and water resistant control box in the cage should contain all necessary control elements. A cover made from weather resistant material is to be provided for protection of the control box when not being used.

8.11 Proportional controls:

a. The lever controls for boom and slew functions shall be joystick type proportional controls ergonomically positioned in weatherproof and spray water resistant control box. Easy interpretable symbols identifying the function of each control

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	<ul style="list-style-type: none"> • 1 No. 24V DC socket that is directly fed by the vehicle electric system. • 1 No. 220 V AC socket with connection line from slew unit up to cage • 2 Nos. 24 Volts X 70 Watts lights mounted on swiveling brackets should be fitted on the cage railing to provide sufficient lighting and safety to the crew during search and rescue operation at night. Two more floodlights will be installed at the rear of the body to provide ground lighting. 		
9. Intercommunication to the turntable control station	<p>The hands free loudspeaker type intercom transmitter and receiver must be placed on the rear center of the cage and connected by a shielded cable with an identical second set placed on the turret of the turntable. The intercom system should allow, once switched on, loudness adjustment and free communication between base control and cage control positions.</p>	To be checked/ tested physically by BOOs and should meet the requirement as per QRS/ relevant standards.	Should meet the QRS.
10. Monitor	<p>10.1 Water monitor shall be connected to the piping system and shall be mounted outside the cage in a suitable position so that the entire cage floor area can be fully utilized.</p> <p>10.2 The monitor shall be made of light alloy and fitted with jet/ fog nozzle with maximum capacity of 2000 LPM at 8 kgf/cm².</p> <p>10.3 The Monitor shall have Horizontal rotational movement to left and right of minimum 160° and also vertical 65° and 15° down movement minimum.</p> <p>10.4 There shall be ball valve type control valve for the monitor and the monitor shall be manually operated.</p>	Shall be checked and tested physically by BOOs as per QRS and relevant standards. The vehicle shall meet relevant national/ international standards.	Should meet the QRS.
11. Rescue Ladder	<p>The unit must be equipped with a Telescopic type aluminium rescue ladder; the width of top section shall be approx 490mm and approx 250 mm railing height. The distance between each rung should be 280mm minimum and shall not be more than 300 mm. To enable an easy access from ladder to the cage, there should be a suitable drop down platform at</p>	Shall be checked and tested physically by BOOs as per QRS and relevant standards. The vehicle shall meet relevant national/ international standards.	Should meet the QRS.

12. Hydraulic System		<p>the cage. The step section should be made of special profile with non-slip external surfaces. The ladder system must be attached onto the side of the booms and shall give direct access from ground to the cage for rescue purposes. In case of platform of telescopic design, the ladder movement shall be synchronized with boom telescopic movement.</p> <p>12.1 The Hydraulic power shall be provided by a reliable and adequate capacity variable displacement axial piston pump, which shall be driven by the vehicle power take off.</p> <p>12.2 The filtration system of the hydraulic oil shall consist of suction strainer in the suction line, pressure filters in each pressure circuit, return filter in return line and air filter von the reservoir. All the pressure filters shall have blockage indicator.</p> <p>12.3 All hydraulic cylinders shall be double acting with hard chrome plated piston rods and shall be fastened by means of self-aligning ball bearings to prevent lateral forces from damaging the seals or piston rods of the cylinders.</p> <p>12.4 Hydraulic oil tank shall be integrated or fitted into the main frame and shall have proper heat dissipation system. The tank shall be fitted with oil level gauge, temperature gauge, and suction connections with closing valves for easy maintenance and draining outlet with closing valve.</p> <p>12.5 All the controls for the boom movement and slew functions shall be joystick type proportional controls, ergonomically designed in weatherproof and spray water resistant control box. Easy interpretable symbols identifying the function of each control lever/button, in English language shall be displayed on panel.</p> <p>12.6 The main platform control levers should allow for a progressive control at infinite variable speed from creep to maximum and proportional to the lever position. All main controls should be</p>	international safety standards.	Should meet the QRS.
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	<p>13.3 MANUAL OVER-RIDE - In case of complete failure of electric and hydraulic power a manually operated hand pump or other suitable arrangement shall be provided for all boom and outrigger movements for stowing the unit.</p>		
<p>14. Electrical system</p>	<p>14.1 The electrical system shall be 24V DC from the chassis battery, which are kept charged when the engine is running. All electrical circuits shall be provided with fuses. Output sockets for battery supply power shall be provided at the turntable and cage.</p> <p>14.2 When the main current is switched on, amber blinking lights, mounted on the outriggers, underneath the working cage and booms shall be automatically switched on. Amber colored rotating beacons on each side of the driver's cabin roof shall be provided. The switching controls shall be in the driver's cabin.</p> <p>14.3 SIREN AND PUBLIC ADDRESS SYSTEM: An electric siren unit will be fitted at a suitable place on vehicle cab. Control, panel for the same will be suitably located in the driver's cabin and siren shall have fast (yelp) and slow (wail) sounds. Microphone shall be fitted With push to talk switch, to allow public address message to override the siren function.</p> <p>14.4 Two yellow fog lights shall be mounted at front bumpers or other suitable locations and controls provided in driver's cabin.</p>	<p>Shall be checked physically and tested by BOOs and should meet the QRS and relevant national/international standards.</p>	<p>Should meet the QRS.</p>
<p>15. Turntable and cage control panel</p>	<p>15.1 Control panels shall be provided at the turntable as well as at the cage. A convenient sitting arrangement for the operator shall be provided at the turntable. Both the panels shall be similar to avoid confusion, with over riding controls provided at the turntable control.</p> <p>15.2 The control station shall be fitted with convenient adjustable seat to provide comfort even in case of prolonged operation. The platform underneath the control position shall be covered by nonslip aluminum plate.</p>	<p>Shall be checked physically and tested by BOOs and should meet the QRS and relevant national/international standards.</p>	<p>Should meet the QRS.</p>









	<p>15.5.16 LCD display monitors indicating-</p> <ul style="list-style-type: none"> • Main boom length. • Main boom angle. • Cage load. • Outreach 		
<p>16. Indicators and control in driver's cabin</p>	<p>The following indicators and controls shall be provided in driver's cabin-</p> <ol style="list-style-type: none"> 1. Visual warning for booms and outriggers not in traveling position 2. Visual indication for any of the lockers not in closed position 3. Visual indication for engagement of PTO 4. Hour meter 	<p>Shall be checked physically and tested by BOOs and should meet the QRs and relevant national/international standards.</p>	<p>Should meet the QRs.</p>
<p>17. Safety Device</p>	<p>The unit must be designed for absolute safety, keeping in view the application and should be equipped with the latest technologies available. The following safety devices should be strictly included-</p> <ol style="list-style-type: none"> a) boom rest until the outrigger beams have been set in permitted jacking position: i.e. all four jacks deployed, with wheels off the ground b) The boom and slew movements shall be consistent with jacking position, described previously c) Outreach management: The installed outreach management should control the boom position of the unit to prevent excessive outreach. An automatic motion should cut or stop the machine once the permitted limit has been reached and thereafter should allow only safe increasing motions. d. Lock valves shall be provided on all cylinders to ensure that the system remains in position in the event of hose failure. Over-center valves shall be provided in place of lock valves on all boom cylinders, which apart from performing the load holding function of lock valve, in event of hydraulic pressure failure, also ensure smooth movement of the boom cylinders. 	<p>Shall be checked physically and tested by BOOs and should meet the QRs and relevant national/international standards.</p>	<p>Should meet the QRs.</p>

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19. Portable Fire Pump	<p>coupling flange and an additional 63mm outlet with shut valve for water hose and hand branch or additional clamp-on monitor are provided.</p> <p>18.3 Multiple self-protection water sprinkler nozzles must be provided at the bottom of the cage to protect cage occupants from radiant heat. The shut valve for the water spray curtain should be located in the cage. The water pipe line shall be fitted with over pressure-relief valve as means to relieve excess pressure. The valve should be mounted beneath the turntable.</p> <p>18.4 Intakes shall be located, one on each side of the vehicle, placed in a well-protected but easily accessible position on the front of rear outriggers. Both the intakes should be fitted with quarter turn ball valves and 63mm male instantaneous couplings are fitted.</p> <p>18.5 Swivel-in-line which shall be mounted in the centerline of the turntable shall be so placed that maintenance is carried out without hindrance. Continuous rotation of hydraulic platform shall be provided even if water supply is used simultaneously.</p> <p>18.6 The water line shall be protected from possible over pressure by means of relief valves (set at a pressure of 12 kg/cm²) mounted underneath of the turntable.</p> <p>18.7 An additional outlet of 3mm (as per BS standards) with female coupling and closing ball valve shall be provided to the water piping the cage. There shall be drain cocks fitted in the piping to enable to drain the water from the piping after use.</p>	<p>Shall be checked physically and tested by BOOs and should meet the requirement as per QRs and relevant standards.</p>	<p>Should meet the QRs.</p>
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	<p>Membrane type Push buttons, LED/Lamps for Warning lights with Backlight.</p> <p>23.3 The display shall show the location of the fault if occurred in the system operating the vehicle.</p>	international standards.	
<p>24. Fault Finding System</p>	<p>24.1 The control system of the vehicle shall have self-fault finding system. If any fault occurs during the operation the system shall find out the same and shall show the location of the defective component on the display .The system shall incorporate simple test screens to enable testing of the working cage and the turntable control panel. The tests shall also cover display unit push buttons, Joysticks.</p> <p>24.2 For maintenance purposes the following tools shall be provided as standards supply.</p> <ul style="list-style-type: none"> • Fault finding system and fault register. • Status screens for sensors, switches, hydraulic valves, control lamps etc. • Total operation and hour meter. • Operation and hour meter since last service • Service counters and alarm for general maintenance • Software verification management . • Service laptop with compatible software relevant to the system. 	<p>Shall be checked physically and tested by BOOs and should meet the QRS and relevant national/international standards.</p>	Should meet the QRS.
<p>25. Accessories</p>	<p>The following accessories will be supplied along with the unit-</p> <ul style="list-style-type: none"> • Wooden outrigger spreader plates..... 04 Nos • Working range diagrams at turn table and cage..... 02 Nos. • 24V/ 70W working light with universalbracket..... 02 Nos. • Lifting hook under cage capacity 400 kg..... 01 No. • Fimments for safety belts and harness at cage 04 Nos. • Hydraulic pressure gauge..... 01 No. • Drop down stretcher at cage..... 01 No. • Plug for 24 V working light at turntable and cage 01 No. 	<p>Shall be checked physically and tested by BOOs and should meet the QRS and relevant national/international standards.</p>	Should meet the QRS.

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27.	Stability The stability of the vehicle (in traveling position) when fully equipped and loaded {excluding crew member}, with hydraulic platform resting on the resting stand and without extending the stabilizing jacks shall be such that it shall remain stable and shall not overturn even if the surface on which the vehicle stands has inclination on either side from the horizontal as per the safety norms stipulated in national/ international standards.	Should be checked physically and tested by BOOs and should meet the QRS and relevant international standards. Should meet the QRS.
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Anancy Singla
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Member

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Dhanraj Singh
Commandr/NSG
Member

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Narash Khambhadi
AC/TBP
Member

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Ajeeraj Shahi
AC/CRPF
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Kaijash Yadav
DC/BSF
Member

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S.K. Tomar
DO/DFS
Co-opt Member

(Signature)
Dr. M.M. Gosai
SSO(T)BPR&D
Member

(Signature)

(Prashant Lonkar) Scientist (E)
DRDO Co-opt Member

(Signature)
(Rajnath Singh)
IG(Fire)/CISF
Member

(Signature)
Alok Kumar Pataria
IG(Fire)/CISF Member

(Signature)
(Udayan Banerjee)
IG(Adm)/CISF
Member

(Signature)
(Alok Kumar Pataria)
SDG(HO)/CISF
Chairman

DIRECTOR GENERAL

RAJESH RANJAN, IPS
Officer-in-Charge / Director General

Director General
CISF Fire Directorate
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