

**QRS/TECHNICAL SPECIFICATION OF EMERGENCY RESCUE TENDER**  
**(IS : 949-2012)**

**1 PURPOSE:**

The Multifunctional Emergency Rescue Tender shall be designed specifically for the purpose of use at fires which requires special equipment, rescue and other special service calls such as:

- 1.1 Large special fires in Cities, Towns and in industries requiring the use of Breathing Apparatus, special equipment, illumination equipment etc.
- 1.2 Lift, goods transport, railway or machine accidents for which special equipment are required. Major leakages of toxic or dangerous Liquids or gases.
- 1.3 To fulfill the above duties, the Rescue Tender shall be comprehensively equipped with an electric generator, lifting, cutting, breaking, pulling, pushing gears, oxy-acetylene cutting equipment, portable electrical tools, hydraulic rescue tools, lighting equipment and power driven winch.
- 1.4 The Rescue Tender shall be fast on road and easily maneuverable in crowded streets and normal sharp corners. The overall dimensions shall not exceed the limit specified herein.

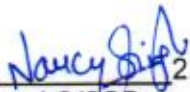









**2. GENERAL REQUIREMENTS**

Design construction features, materials and equipment and interpretation of Terminology of specification of Emergency Rescue tender shall be in accordance with **IS : 949-2012**.

- 2.1 The appliance shall be designed to carry the equipment listed. The equipment shall be arranged on a manner to allow the crewmembers to get ready in vehicle itself.
- 2.2 The appliance shall be suitable geared to provide a road speed of 70 km/h on a level ground. The acceleration shall be such that with a warm running engine, the fully laden appliance shall attain a speed of 64 km/h in 55 sec. from a standing start, through the gears.
- 2.2.1 The appliance shall also be capable of being started from rest up a gradient of 1 in 4 when laden.

**3. MATERIAL SELECTIONS AND TREATMENT**

- 3.1 The choice of materials to be used in the construction of the appliance shall be made with a view to combining lightness with strength and durability.
- 3.2 Timber shall not be used in the body construction
- 3.3 The appliance shall be required for use in conditions with constant high humidity and heat. This shall be given full consideration while selecting the materials
- 3.4 All metal parts exposed to atmosphere shall be of corrosion resisting material.

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| 1. <br>AC/SSB  | 2. <br>Team Comdr/NSG | 3. <br>AC/ITBP        | 4. <br>AC/CRPF       | 5. <br>DC/BSF       |
| 6. <br>DO/ DFS | 7. <br>SSO(T)BPR&D    | 8. <br>AIG/Fire(CISF) | 9. <br>DIG(Fire)CISF | 10. <br>IG(Adm)CISF |

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3.5 Ferrous metal shall not be used for nickel or chromium plated fittings and the plating of all such fittings shall be of extra heavy quality.

**4. DESIGNS AND CONSTRUCTION**

4.1 **The chassis** shall be of 6X2, 16T, 130 BHP, turbo charged air cooled, diesel engine, cowl chassis, Bharat stage – IV/ latest version.

4.2 **Engine** The engine (oil fuel type) shall have sufficient cylinders based on finalization of Chassis. The engine shall be fitted with quick starting system. The engine shall be capable of driving the fully laden appliance at speed from starting without any preliminary running period, even under abnormally cold atmospheric conditions. The operating temperature of the engine cooling water shall be thermostatically controlled.

4.3.1 The fuel tank shall have a minimum capacity of 140 L/OEM. A fuel tank contents gauge shall be fitted on the instrument panel in the driving compartment.

4.3.2 The fitting orifice shall be of ample size, and shall be accessible position. The cap shall be clearly marked to show that it is for fuel.

**4.4 Electrical System**

4.4.1 A heavy-duty alternator/generator shall be fitted to the engine to supply the vehicle 12 or 24 V DC electrical system. The alternator/generator shall be fitted with the necessary control unit.

4.4.2 A trickle charger shall be fitted in the cab and it shall be fitted with socket for connection to 230 V ac electrical systems. A red pilot lamp, to indicate when the battery is being charged from an external supply shall be provided.

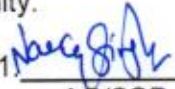



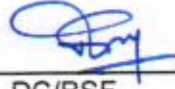

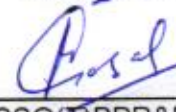

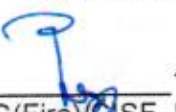
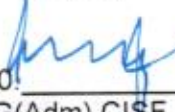
4.4.3 All-important electrical circuits shall have separate fuses suitably indicated and grouped into a common fuse box, which shall be located in an accessible position. Provision shall be made to carry spare fuses in this box.

**4.5 Alternator Unit**

4.5.1 A 230 V, 50-cycle alternator with its independent engine shall be provided.

4.5.2 The alternator shall be screen protected, continuously rated, self-regulating, self-excited, class 'E' insulation type, having an output of not less than 5 KVA at 0.8 power factor, (4 kW) 220 V Three phase, 50 cycles.

4.5.3 The alternator shall be equipped with a direct-coupled flange mounted exciter, which shall automatically keep the alternator voltage constant and provide an approximately straight-line voltage characteristic within 5 percent at all loads, and at any pre-set factor between 0.8 and unity.

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4.5.4 Two cable reels each with 30 m of cable shall be provided. The cable shall be a 3-core duty flexible cords 250 V grade having a conductor of cross-section 4 mm (128/0.20 mm) conforming to IS 434(Part 1):1964 or IS 694:1977.

4.5.5 Controls shall be mounted near the generator and shall consist of the following:

Three sockets (plugs) and switches with 3 phase connections

Four sockets (plugs) & switches (MCB's) with single phase connections of min. 20 AMP capacity

Four sockets (plugs) & switches (MCB's) with single phase connections of min. 10 AMP capacity

RPM Meter digital – 1 No

KW meter – 1 No

Ampere meter separate for each phase – Total – 3Nos.

Frequency meter – 1 No

32 Amps TPN MCB – 1 No

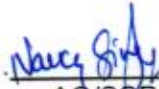






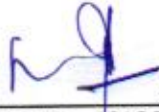


Hand throttle control;

Engine cooling water temperature gauge (if water cooled);

**4.6 Work**

4.6.1 Enclosed accommodation for six persons shall be provided in the driver cab-cum-crew compartment including the driver and the in-charge of the crew. Both the seats should be independent. The driver's seat should be adjustable and comfortable.

- The rear portion of the compartment of driver's cabin should have one removable seat for full width of cab 4 (four) crew members.
- The cab floor should be covered with 3 mm thick Aluminium chequered plate rigidly fixed to the under frame cross members by means of nuts and bolts or riveting.
- Trap doors for topping up oil etc wherever necessary shall be provided.
- One roof light should be provided in the driver's cabin dwell vision and external rear view mirrors should be fitted to the cab.
- The driver cum crew cabin shall be provided with full four doors, one for driver, and one for officer and two at the crew compartment.

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- f) The doors shall be generously sized for easy embarking / disembarking of crewmembers. All the doors shall be fitted on the super structural members, each hung upon three invisible coach type M.S. stout hinges and fitted with best quality handles. The door handle on outside of driver seat shall have a locking arrangement. Other doors shall be lockable from inside.
- g) Aluminium tower bolt of 8" shall be provided for all the doors from inside Adequate grab rails shall be provided for easily boarding and alighting from the appliance.
- h) The windscreen glass shall be provided in the two valves and shall be flat in shape. Each glass shall be fitted in E.P.D.M. rubber beading. The glasses shall be 5 mm thick toughened safety glass.
- i) The rubber beading used for fitting glasses and window frame shall be E.P.D.M. rubber.

#### 4.6.2 SEATS

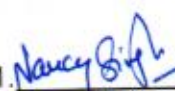




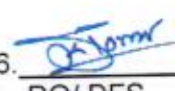
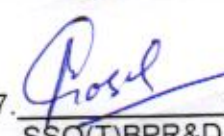


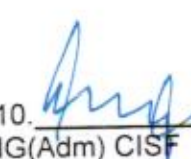
- a) The driver seat shall be adjustable type vertically, forward and backward. The officer seat shall be fixed type. Both the seats shall be rigidly fixed to the flooring by means of nuts and bolts. The seat cushion shall be of latex foam rubber 75 mm thick upholstered in good quality foam leather cloth.
- b) The back seat shall be of latex foam rubber 50 mm thick upholstered in good quality foam leather cloth.
- c) The crew seat shall be rigidly fixed to floor by means of nuts and bolts, running full width of the vehicle suitable for sitting five fire-fighters, covered with 75 mm x 50 mm cushion latex foam rubber upholstered in good quality foam leather of approved shade.
- d) Below the crew seat, two lockers shall be provided, one for storage of batteries and another for keeping accessories. The extra length of battery cable shall be provided if required.
- e) The super structure of the cabin shall be constructed out of 14-gauge M.S. 45 x 45 x 20 mm-pressed "TOP HAT" sections. The super structure shall be strengthened specifically on the members with the lockers doors frames are to be fitted and the other members by providing brackets and gussets of 14-gauge M.S. plate securely welded.

The details of super structure are as follows:

1 Under frame cross members : 100 x 50 x 5 mm

2 Floor longitudinal members : 50 x 50x 6 mm

3 Vertical members on even side : 45 x 45 x 20 mm

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4 Skirt member : 45 x 45 x 20 mm

5 Waist member : 45 x 45 x 20 mm

6 Top deck longitudinal : 45 x 45 x 20 mm

f) The cab and lockers should be of composite construction with sufficient rigidity and reinforcement and shall be kept as light as possible.

g) The structure/frame work shall be of welded constructions and made from 2mm thick MS pressed sections and square tubes.

h) The Angles and channels used shall be of min. 3mm thickness. ZINC PLATING shall treat for the complete Structure material for anti corrosion.

i) The plating thickness shall not be less than 20 microns. Two coats of Epoxy paint shall be applied to the completely welded structure.

j) The structure shall be so designed to avoid any vibration / ratting / deformation in the intended usage of the vehicle.

k) The interior panelling shall be done from 1.22mm thick aluminium sheets & the exterior panelling shall be done from 1.60mm thick aluminium sheets.

**4.6.3 CABLE WINCH**

a) An electrically operated cable winch of 6-ton capacity should be provided.

b) The winch unit should be complete with minimum 5.5 HP 12v DC series wound electric reversible motor for increased pulling power, rope drum, and 90 ft heavy duty galvanized EIPS wire rope with replaceable self-locking clevis hook and shall be mounted on the front bumper of the vehicle with suitable strong supports.

**4.6.4 TELESCOPIC LIGHT MAST:**

a) A compact, low profile, roof mounted lighting system, fitted with 4 X 200 watts LED lights, vertically elevated pneumatically up to 15 feet (4.6m) shall be installed on the roof of the vehicle.

b) Lighting shall be provided by a 12V or 24V DC with REMOTE CONTROL, directional lighting system with rotation & tilt lamps to provide total coverage.

c) The remote control unit shall allow a person to operate all the functions of the light mast & accurately aim for complete directional positioning. In addition Auto-show, a one button command, automatically retracts, turnout the lights and stows the entire system to the compact transport position shall also be included in the remote controller.

d) The complete unit should comprise of handheld remote control with cable, rotation & tilt positioned, mounting frame with built in tilt system.

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| 1. <u>Nancy Singh</u><br>AC/SSB  | 2. <u>[Signature]</u><br>Team Comdr/NSG | 3. <u>[Signature]</u><br>AC/ITBP        | 4. <u>[Signature]</u><br>AC/CRPF       | 5. <u>[Signature]</u><br>DC/BSF        |
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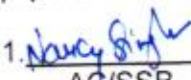
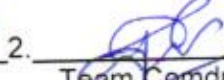
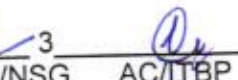


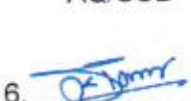




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**4.6.5 MISCELLANEOUS**

- a) A suitable bumper shall be provided at the rear rigidly fixed to the super structural members by means of nuts and bolts, fabricated from 100 x 50 x 5 mm M.S. channel.
- b) Two Cat ladders made out of Stainless steel round or square pipe of 1" dia shall be provided
- c) Two no of 1" dia aluminium pipe railing with sufficient number of aluminium double socket brackets shall be provided to the rear body over the deck.
- d) A heavy-duty towing hook shall be provided and fitted with the rear bumper by means of nuts and bolts;
- e) Quick removable type wire mesh guard made from 1" X1" size MS wire mesh of 16 SWG covered in MS angle frame shall be provided to all the glasses of driver-cum-crew cabin.
- f) An illuminated 'FIRE AND RESCUE' sign shall also be fitted to the outer centre front of the cab.
- g) The bodywork shall be designed to enclose as much as possible of the appliance without interfering with necessary accessibility but at the same time, shall have clean lines.

**4.6.6 LOCKERS:**

- a) The lockers shall be provided for storage of all equipment listed in the Annexure. The lockers will have drawers as per the latest International Standards i.e. roll in-roll out type with opening in tapered position giving very easy & immediate access to all equipment.
- b) All equipment should be stowed very scientifically & systematically in the drawers & each piece of equipment shall have its designated location so that at the time of EMERGENCY the required equipment can be very easily located & removed for use.
- c) Location of equipment (labels) shall be provided on each drawer for immediate identification.
- d) All the equipment shall be properly clamped and strapped in the drawers to prevent shifting of the equipment while the vehicle is in motion.
- e) The drawer sides shall be constructed from aluminium angles of minimum 100mm X 4mm thickness and the bottom floor of the drawers shall be made from 3 mm thick aluminium sheets and then covered with good quality neoprene rubber sheets.
- f) The drawers should have self-locking system to prevent accidental opening while the vehicle is in motion. The bottom edges of the drawers shall be covered with SS 304 angles of min 2 mm thickness.
- g) The ROLL IN-ROLL OUT drawers shall be made according to the required size of the equipment that is to be stowed.

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