

**QRS/SPECIFICATION OF WATER TANKER OF CAPACITY 12KL
WITH FIREFIGHTING PUMP**

A) SCOPE OF SUPPLY

- i) The chassis Shall be supplied by the manufacturer.
- ii) A 6x4, full forward control, any suitable indigenous make, BHARAT STAGE IV /Latest version with cowl chassis.
- iii) Fabrication and mounting of 12000 Ltrs capacity water tank as per specification.
- iv) Supply and mounting of high & low pressure firefighting pump as per specification.
- v) Supply and mounting of water monitor.

B) USE

The Water Tanker shall be used to carry the water for firefighting purposes. The pump will be driven by P.T.O.

C) DETAILED SPECIFICATIONS

1) CHASSIS

The chassis shall be suitable Indigenous make as per following specifications suitable for mounting Water Tank having 12000 ltrs capacity with pump.

- 1.1 Make of the chassis: 6x4, 25T, 180 BHP, Full forward control, Cowl Chassis, BS -IV or any suitable indigenous make.
- 1.2 6x2, Cowl chassis, full forward control, RHD, wheel base shall not be less than 4600mm.
- 1.3 Engine: 6 In line cylinder, water cooled, direct injection, turbo charged diesel engine developing minimum 180 B.H.P. with Bharat Stage IV/latest version.
- 1.4 G.V.W: Shall not exceed maximum permissible limit weight of chassis.
- 1.5 Fuel Tank: As per OEM.
- 1.6 Tyres & Wheels: As per OEM, Spare wheel: 1 No.
- 1.7 Steering: Integral power steering
- 1.8 Tools: a) Hydraulic jack 40 Ton with lever
b) Wheel spanner with lever
c) Standard Tool kit.
d) Tyre inflation hose.
- 1.9 Manuals (1copy): a) Workshop manual
b) Spare parts catalogue.
- 1.10 Driver Cabin: The chassis shall be fabricated for accommodation of 06 personnel including driver, Driver view mirror Cabin, windscreen, side windows, doors, adjustable driver seat, fixed Co-driver seat, wiper system, Horn, complete instrument cluster, preferably in PO RED colour.

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2) WATER TANK

- 2.1 The water tank shall have a capacity of 12000 lts when fully filled and made from SS sheet of grade 304 as per IS 6603, and Rectangular in shape with round corners. The tank shall be mounted on the chassis behind the drivers cabin. The detailed design drawing of the tank with its mounting shall be submitted with tender for scrutiny.
- 2.2 The water tank shall be mounted behind the driver cabin with a gap of min.450 mm.
- 2.3 The mounting of tank shall be directly on the chassis and as per the design approved by the chassis manufacturer.
- 2.4. The tanks shall be rectangular in shape, with inbuilt forming (reinforced ribs) on both the sides. The sheet thickness shall be as follows:-

Bottom	:	6mm
Sides/front/Rear/Top	:	5mm
Baffles	:	4mm

- 2.5 Center of gravity of the vehicle shall be minimum.


- 2.6 The tank construction shall be such that there shall be no leakage and shall have overlapped joints of 25.4mm between the bottom sheet and side sheets. The bottom sheet corner shall be rolled upward up to a minimum of 300mm height and shall be welded to side sheets. The dimensions of the tank along with the recess for fire pump shall be clearly stated in the offer along with detailed volumetric calculation.
- 2.7 All the welding shall be by MIG welding process only. The welding of the tank shell be in such a manner that the first beading is from inside the shell and subsequent bead from outside the shell. The welded surface shall be cleaned of all slags, scale etc. There shall be minimum joints in the tank shell and hence plates used for fabrication of tank shall be of maximum size.
- 2.8 The tank shall be mounted on the chassis on a sub frame using Rubber Meta -cones with sufficient saddle supports placed as per the availability of bolt holes in the chassis frame. The details shall be submitted alongwith the offer. These supports shall be fabricated from S.S. plate of minimum 10mm thick with a reinforcement plates of 6mm thick welded to tank shell from outside to the bottom sheet up to with continuous welding.
- 2.9 S.S. plate of suitable size and thickness shall be welded to the tank mounting pedestal for mounting the tank on mounting brackets provided in the chassis frame. The plates/brackets fitted to chassis frame shall also be provided with suitable gusset plates for reinforcement.
- 2.10 The Tank shall be fitted on the chassis with the help of 5/8" dia. High tensile bolts with nylock nuts.
- 2.11 The tank shall be mounted slightly sloping towards the rear so as to decant the tank completely.
- 2.12 There shall be two circular manhole of 600mm dia. Mounted on top of the tank.
- 2.13 The water tight manhole cover of SS with good quality of rubber gasket shall be bolted to the collar of manhole. The manhole cover shall be provided with round threaded blank cap with lugs of 10" dia. with rubber gasket.


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- 2.14 The tank shall be provided with suitable arrangement of baffle plates to prevent the surge of water when the vehicle is in motion and accelerating, braking in speed and covering. The arrangement of baffle plates shall be clearly shown in the drawing.
- 2.15 The baffle shall be arranged in a manner to facilitate the movement of a person throughout the tank for cleaning and welding purposes.
- 2.16 Suitable eyes shall provide on the shell of water tank to enable it to be lifted from the vehicle for repairs/replacement as and when required.
- 2.17 The tank shall be fitted with 100mm dia. Overflow pipe of 'C' class galvanized taken down below the chassis but without reducing the ground clearance.
- 2.18 The tank shall be fitted with one 63 mm instantaneous hydrant connection with non-return valve, closed to pump panel for filling the tank throughout 50mm above galvanized 'C' class pipe.
- 2.19 A draw pipe of 100 mm dia. of 'C' class galvanized shall be taken from the tank to the pump suction inlet, incorporating 100 mm butterfly valve of flexible connection (Rubber Below) shall be provided to this pipe to take the vibrations. A suitable size sump shall be provided below the tank to connect water draw pipe with SS strainer.
- 2.20 A drain cock with 50 mm suitable ball valve shall be provided at the bottom of water tank.
- 2.21 A cat ladder shall be provided and fitted at the rear of water tank and fabricated out of 1" dia. M.S. tabular pipe and 2mm thick.
- 2.22 The complete top of water tank shall be covered with 10SWG aluminum cheque red plate and fixed to the frame fabricated from 40 x40 x 4 mm S.S. angles properly welded to the tank shell. The chequered plates shall be bolted to this frame and shall be removable type.
- 2.23 Suction hose brackets of aluminum sheet of 3.15 mm thick with suitable fastening arrangement shall be provided on the top deck to accommodate 4 Nos. 140 mm dia and 2.5 mtrs. Length suction hoses with male and female couplings.
- 2.24 The locker of suitable size shall be provided with doors and locking arrangement on both sides. The location and size shall be shown in the drawing. These lockers will be used for keeping delivery hoses accessories and high pressure hose reel. The structure of the locker shall be made from 40x40x4 mm thick S.S. angles with 16SWG aluminum paneling from outside and 16SWG aluminum chequered plate from inside. The floor paneling of locker shall be 10 SWG aluminum chequered plates
- 2.25 Suitable rear mudguards made from 16 SWG M.S. sheet with reinforcing ribs shall be provided and supported on M.S. brackets.
- 2.26 A suitable towing hook shall be provided at the rear of vehicle.
- 2.27 An additional draw pipe of 150 mm dia. of 'C' class galvanized incorporating 150 mm butterfly " Audco" make valve with gun metal, female suction hose coupling shall be provided to the rear side of the vehicle.
- 2.28 A suitable size recess shall be provided in the tank in the lower front side to accommodate the fire pump. The volumetric capacity of the tank shall not be reduced due to this recess and shall remain 12000 ltrs.


1.  AC/SSB


2.  Team Comdr/NSG

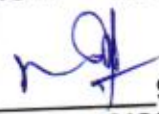
3.  AC/ITBP


4.  AC/CRPF

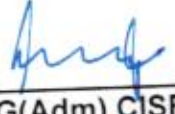
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9.  DIG(Fire)/CISF


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3. FIRE PUMP (MULTI PRESSURE)

- 3.1 The pump shall be centrifugal type, multi pressure, made of bronze/gunmetal, having output capacity of 4000 LPM at 10kg/cm² and 300LPM at 35 kgs/cm² at 3 mtrs suction lift at NTP condition with automatic primer. The low pressure side will be of single stage and the high pressure side also with single stage having regenerative type impeller.
- 3.2 The pump shall be CE marked meet international standard and confirming to EN-1028 Part-I & II.
- 3.3 The pump shall comply following performance parameters.
- Normal Pressure output :4000 LPM at 10kgs/cm²
 - High pressure output :300 LPM at 35 kgs/cm²
 - Maximum pressure in :14 kg/cm² (shut off pressure normal pressure mode).
 - Maximum pressure in :45 kgs/cm² high pressure mode
 - Deep lifting capacity of pump:30 cm/sec. max.upto 7mtrs in 30 sec. at NTP condition.
- 3.4. The overall pump shall be constructed from gunmetal. The normal (low) pressure impeller, volute, and impeller wearing shall be made from gunmetal confirming to Gr.II of IS 318/1981 and the regenerative type high pressure impeller shall be of Stainless steel. The pump shaft shall be made from stainless steel (Grade04Cr18Ni10 of IS 6603). The bearing housing will be made of C.I and all the studs and bolts coming in contact with water shall be of stainless steel. The bearings used in the pump shall be of reputed make.
- 3.5 The normal and high-pressure impeller shall be mounted on a single shaft and normal (low) pressure impeller shall be dynamically balanced.
- 3.6 The pump shall be provided with self-adjusting mechanical carbon seal assy.
- 3.7 The pump shall be provided with an inbuilt filter of easily removable type, which shall filter the water before entering into the high pressure stage impeller.
- 3.8 Operation of low pressure to high pressure or vice a versa shall be possible by actuation of single lever.
- 3.9 The pump shall have facility to operate low pressure and high pressure mode simultaneously or individually, While high pressure mode is in operation and delivering 300 LPM at 35 kg/cm², the pressure in low pressure side shall not exceed 8.5 kg/cm².
- 3.10 The pump shall be provided in built (integrated in the pump outlet manifold) Pressure Relief Valve(PRV) which shall operate automatically and shall not allow the high pressure to increase beyond 45 kgs/cm².
- 3.11 The size of high – pressure outlet shall be of 35mm connected to high pressure hose reel.
- 3.12 The thermal relief valve (TRV) shall be provided and fitted in the pump housing, which will open when both deliveries (HP and LP) are shut off for longtime to control the temperature of pump water. The thermal Relief Valve (TRV) should open at 60°C and shall reset automatically when the temperature of water is within limit.

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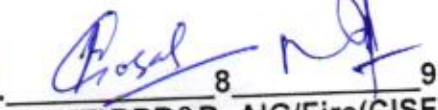
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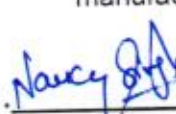
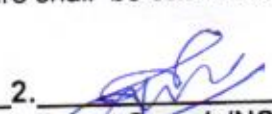
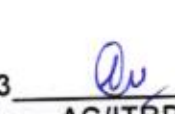

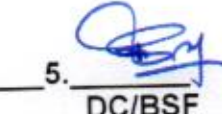
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- 3.13 The pump design shall be modular type and shall not have gaskets/packing. The arrangement shall be such that the carbon seal can be attended/removed without removing the pump body. The pump shall be provided deep groove heavy duty dual angular contact bearing immersed in oil bath.
- 3.14 The pump shall be provided with one suction inlet of 140 mm dia having round threads confirming to IS:902 of 1974 and three numbers of 63 mm delivery outlets(IS:903) having screw down type quick closing clack valve(IS:4928) fitted with instantaneous couplings as per IS 903/1993. Blank caps fastened with chains and incorporating means to relieve pressure between the valve and the cap shall be provided one for each delivery valve. One 38mm outlet with ball valve and female instantaneous coupling. The delivery valve screw shall not be with gland. The high pressure outlet shall not less than 25mm and shall either be flange on screw type.
- 3.15 The efficiency of the pump shall be such that the power required shall not be more than available with the chassis at safe RPM for stationery and continuous operation.
- 3.16 The pump shall be midship mounted connected to P.T.O by propeller shafts and universal and slip joint
- 3.17 If required the pump shall be provided with suitable ratio inbuilt gear box to match the PTO rpm and required pump rpm.
- 3.18 All the valves used shall be of any standard make with all the piping of required size of 'C' class Galvanized.
- 3.19 Pump primer – The pump shall be fitted with inbuilt twin piston reciprocating type priming system capable of priming the pump from 7 meters in not more than 34 seconds, when tested with the 140mm suction hose at NTP conditions and considering the allowances as stated in IS:950-2012.
The entire priming system shall be constructed in stainless steel and shall be actuated by an electromagnetic clutch immersed in oil bath of pump's bearing housing. Arrangement shall be made to actuate the primer in Manual and AUTO modes. When operating in Manual mode primer should be engaged simply by pressing a single button, only when it is needed. When operating in Auto mode, primer must be internally actuated and must automatically re-engage when pressure is lost. However, in both operating modes the primer shall disengage automatically at a pump discharge pressure or not more than 0.8 bar. The primer deactivation shall be controlled directly by a pump pressure sensing device. Priming system driven by any external belts/chain is not acceptable.
- 3.20 The pump with its fitment shall be tested hydrostatically to 1.5 times the working pressure at the pump i.e. for low pressure side it shall be tested to 21 kg/cm² and high pressure side will be tested to 52 kgs/cm². This testing shall be carried out in presence of authorized representative of CISF and certificate to this effect from pump manufacture shall be submitted .

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