

Government of Jammu and Kashmir
Directorate of Fire & Emergency Services, J&K, Jammu.


GIST OF e-NIT NO. 4-OF 2017
DATED: - 27-04-2017

For and on behalf of the Governor of J&K State, e-tenders are invited for **fabrication of 08 units of Multipurpose Fire Tenders along-with accessories and equipments** on Ashok Leyland Model 1616 iL-4330 MM Chassis fitted with H Series BS-III Diesel Engine, to be supplied by the department, from reputed/ registered fabricators/ firms having their own registered working sites with facilities as envisaged in tender documents and having vast past experience in such type of fabrications.

S. No	Particulars	Earnest Money	Cost of tender document
1	Fabrication of Multipurpose Fire Tenders	1.00 lacs	7000.00

01	Date of publishing of Tender Notice	27.04.2017
02	Period of downloading of documents	From 28.04.2017 to 18.05.2017
03	Date of submission of online documents	From 28.04.2017 to 18.05. 2017
04	Date of submission of Hard Copy	19.05.2017 up to 02.00 pm
05	Date of opening Tender	22.05.2017

The tender documents along-with other Terms and Conditions of the NIT and relevant documents can be downloaded from the website <http://jktenders.gov.in>. The tender shall be uploaded in electronic format on the website <http://jktenders.gov.in>. The bidders shall have to upload scanned copy of all necessary documents like CDR/PAN/TIN/Demand Draft (Tender Fee)/registration certificate duly renewed and hard copies thereof physically to tender receipting authority well before the date of opening of the bid. The cost of tender documents shall be in the form of Bank Draft drawn in favour of Accounts Officer, Fire & Emergency Services J&K payable at Jammu/ Srinagar and Earnest Money shall be pledged to Director General, Fire and Emergency Services, J&K. Cost of tender documents is non-refundable, while-as the Earnest Money is refundable.


Director,
Fire & Emergency Services,
Jammu.

NO: Acctt/2017-18/NIT-MPFT/

3549-65

Dated: 27-04-2017.

Copy to the:-

1. Principal Secretary to Govt. Home Department, J&K Jammu/ Srinagar for favour of information.
2. Director Fire & Emergency Services, J&K, Jammu/ Srinagar,(Chairman SLPC)
3. Director Finance, Home Department, J&K, Jammu/ Srinagar (Member SLPC)
4. Director State Vigilance Organization J&K Jammu/ Srinagar.
5. Director State Motor Garages, J&K, Jammu/ Srinagar (Member SLPC)
6. Director Information Department J&K Jammu/Srinagar along with 8 copies of Gist of NIT for publication in the Tender Journal, two leading National and two local dailies both from Jammu/ Srinagar for three consecutive days.
7. Joint Director, Industries Department, Jammu/ Kashmir, (Member SLPC)
- 8-9. Station Director Door Darshan Jammu/ Srinagar for telecast of the tender notice for five consecutive days.
- 10-11. Station Director Radio Kashmir Jammu/ Srinagar for putting the tender notice in broadcast for five consecutive days.
12. Joint Director Fire & Emergency Services Kashmir/ Jammu Ranges.
13. Manager Govt. Press Srinagar for publication in Govt. Gazette
14. Dy. Director Central Stores Fire & Emergency Services J&K.
15. Incharge personal section to hoist the NIT on the departmental website.
- 16-17. Notice Board/ concerned file.


Director,
Fire and Emergency Services,
J&K Jammu.



Government of Jammu and Kashmir
Directorate Fire & Emergency Services, J&K Jammu.

NIT NO: **4** of 2017

Dated: **27 04** - 2017

For and on behalf of the Governor J&K State through Director Fire & Emergency Services, J&K, Jammu, **e-tenders are invited for fabrication of 08 units of Multipurpose Fire Tenders along with accessories and equipments** as shown in **Annexure A & B** with the tender documents, on Ashok Leyland Model 1616 iL-4330 MM fitted with H Series BS-III Diesel Engine, to be supplied by the department, from reputed/ registered fabricators/ firms having their own registered working sites with facilities as envisaged in tender documents and having vast past experience in such type of fabrications.

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1. The tender documents along-with other Terms and Conditions of the NIT and relevant documents can be downloaded from the State website <http://jktenders.gov.in> and the tenders shall be deposited in electronic format on the same website.
2. The Tenders uploaded on the website up to due date will be opened on 22.05.2017 in the office of Director General, Fire and Emergency Services, J&K Batamaloo, Srinagar.
3. The complete bidding process will be online.
4. Cost of tender documents of `7000.00 in shape of demand draft (non-refundable) in favour of Accounts Officer, Fire & Emergency Services, J&K.

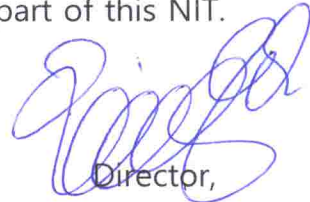
5. The tenders should be accompanied with Earnest Money of [₹]1.00 lacs in shape of CDR pledged to Director Fire & Emergency Services, J&K, Govt.
6. The tender shall remain valid for one year from the date of issuance of the contract order.
7. The earnest money shall be forfeited if:
 - any tenderer withdraws his tender during the period of tender validity or makes any modification in terms and conditions of the tender.
 - the approved manufacturer/fabricator/ firm fails to execute the agreement within 15 days after supply order.
8. **Instruction to bidder regarding e-tendering process:-** Bidders are advised to download bid submission manual from the Download option as well as from "Bidders Manual Kit" on website <http://jktenders.gov.in>. To participate in bidding process bidders have to get Digital Signature Certificate as per information Technology Act 2000. Bidders can get digital Certificate from approved vendor.
9. Bidders have to submit their bids online in electronic format with digital signature. **No financial bid will be accepted in physical form.**
10. Bids will be opened online as per time scheduled mentioned in para 3 or any other subsequent convenient date.
11. Bidders must upload the scanned copy of all necessary documents like CDR/PAN/TIN/Demand Draft (Tender Fee)/Registration certificate duly renewed and hard copies thereof physically to tender receiving Authority before date of opening bid.
12. The registered Manufacturer/Fabricator/firm, who fail to submit the hard copies for their uploaded tenders will be debarred from participating in the tendering process for a period of One year in the first instance. Their online uploaded tenders will not be considered for the said period. Moreover, their CDR/DD uploaded for the supplies shall be forfeited.
Note: Scan all documents on 100 dpi with black and white option.
13. The department will not be responsible for delay in online submission due to any reason.
14. Cost of tender document in the shape of Demand draft and CDR (Earnest money/bid security and relevant documents to be submitted to the Tender Receiving authority by registered post/courier/by hand before due date of submission of tender as per time scheduled specified.



15. The tenderers should possess **minimum five years experience** in the fabrication of Multipurpose Water Tenders and such like jobs and experience certificates shall have to be appended with the tenders.
16. Any insertions/erasing/overwriting/mutilation in the tender form will result in outright rejection of the tender.
17. Conditional and ambiguous tender cannot be entertained.
18. The purchase committee shall reserve the right to accept or reject any tender without assigning any reason thereof.
19. The net rates only shall be quoted without any taxes and duties (Service tax, entry tax, VAT, Excise duty, Toll Tax etc.) in figures as well as in words for which taxes as applicable shall be loaded by the department. However, the rate shall be inclusive of freight/ to and fro transportation charges, Insurance etc. The successful tenderers shall have to draw an agreement on stamp paper worth Rs. 10/- with the department within ten days from the date of issuance of work order, for the satisfactory fabrication/ job and delivery of the ordered quantity of fire appliances along-with accessories and equipments complete in all respects strictly as per specifications of NIT & work order.
20. The job shall have to be completed within a period of 45 days from the date of issuance of the work order. For any delay in completing the job of fabrication and delivery of fabricated Multipurpose Fire Tenders along-with accessories and equipment, penalty upto 0.10% of value of job for each day of delay shall be imposed. However, department have a right to extend the period of delivery in case, the competent authority is convinced/ satisfied of the exigencies put forth.
21. The fabricated Multipurpose Fire Tenders shall be subject to three detailed inspections/survey by the Board of Officers constituted by the Department. First and Second stage inspection will be conducted in the fabricator's premises by the officers nominated by the competent authority along-with 3rd party i.e. authorized Inspecting Authority of reputed National/ International Surveyors and before acceptance of the job third and final stage inspection will be carried out by Board of officers as and when the appliance is received in the Central Stores Gandhi Nagar Jammu/ Batamaloo Srinagar. The inspection charges of 3rd Party Inspecting Authority will be borne by the department.



22. The payment will be released after fabricated appliances are accepted and approved by the Competent Authority.
23. The quantity of Multipurpose Fire Tenders is tentative and can be increased or decreased as per the requirements of the department and availability of funds.
24. The terms and conditions, as reflected in **Annexure – C**, are mandatory and should be read very carefully by the intending tenderers while furnishing their tenders, which are enclosed and shall form a part of this NIT.


Director,
Fire & Emergency Services,
J&K, Jammu/ Srinagar.

NO: Acctt/2017-18/MPFT/ *3549-65* Dated:- *27-04* - 2017.

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Annexure – A

Specification for fabrication of Multipurpose Fire Tender on "Ashok Leyland 1616 il –Cowl Chassis fitted 6ETI 3K Euro III H-Series Diesel Engine, 4330 MM Wheel Base, 6 Speed ZF Synchronesh Gear box.

1. General Requirements:

1.1 The Multipurpose Fire Tender shall incorporate a **CE Certified** High/Low pressure fire pump of 2270 LPM capacity against a head of 3 mtrs. at 7 Kg/cm² & 300 lpm at 35 Kg/cm², a stainless steel water tank of 5000 litres capacity and a foam compound tank of 600 litres capacity. It shall carry an aluminum extension ladder capable of extending upto 10.5 metres and the vehicle should have towing facility.

2. Materials:

2.1 The choice of the materials to be used in the construction of the appliance shall be made with a view to combining lightness with strength and durability. The following choice of materials shall be followed. They shall conform to the specifications mentioned against each.

2.2 Pump Assembly:

The complete pump assembly conforming to IS 318 LTB2 with Stainless Steel Pump Shaft and shall be carrying antifriction bearings. Full technical details shall have to be furnished by the fabricator/ manufacturer of the pump conforms to CE certifications, details of the same shall have to be furnished in the tender.

2.3 Parts which form water ways or come into contact with the water shall be corrosion resistant material or should be made of material duly treated for anti-corrosion. All metal parts exposed to atmosphere shall either be of corrosion resisting material or treated.

2.4 Lubricating nipples shall be provided wherever necessary.

3. Design and construction:

3.1 Engine:

The engine shall be provided with cooling system to permit its continuous stationary running without overheating. Indirect cooling system shall be incorporated, if necessary, which shall be of the open circuit type discharging water to the waste. Arrangement should be made to divert the cooling discharge water to water tank, if necessary.

3.2 The operating temperature of the engine cooling water shall preferably be thermostatically controlled.



- 3.3 The oil in the oil sump shall be prevented from overheating.
- 3.4 Suitable gauge for cooling water and glow lamp for lubricating systems shall be provided in the driver's cab and on the pump panel. This shall be marked with operating temperature.
- 3.5 External filter shall be provided for the lubricating system and a tubular dip-stick to gauge the level of oil in the oil sump shall be provided.
- 3.6 Rear bumper should be supported with suitable angular to the chassis to strengthen towing assembly.
- 3.7 All important electrical circuits should have separate fuses suitable indicated and shall be grouped into a common fuse-box located in an accessible position in Driver's cab and fitted with means for carrying spare fuses. The wiring shall be single pole and shall not be exposed to the atmosphere. Conduits shall be used wherever necessary.

4. **Pump (CE Certified):**

- 4.1 Fire Pump: - The Rear Mounted Pump shall be of either **GODIVA** or **FIREFLY** or **ROSENBAUER** make Centrifugal Type High low pressure fire pump complying EN 1028 and confirming to following features shall be mounted on the appliance-
- 4.2 High-Low pressure type fire pump shall be mounted at the rear of the vehicle driven by vehicle engine through a power take off of suitable ratio to ensure maximum rated hydraulic efficiency of the pump. The pump shall be compact and of modular design having one suction inlet of not more than 100 mm with round threads as per IS 902 with a removable strainer and two 70 mm deliveries shall be fitted with instantaneous delivery coupling as per IS 901. The discharge manifold shall have inbuilt provision for monitor and tank filling piping. The entire high pressure section of the pump shall be made of stainless steel.
- 4.3 The low/normal pressure centrifugal impeller shall be dynamically balanced for which test shall be conducted. The high pressure impeller of regenerative type shall be made up of stainless steel, both the low and high pressure impellers shall be mounted on a single stainless steel shaft. The pump shaft shall be held in heavy duty ball/roller bearings running in oil bath. The pump shall have a self-adjusting mechanical carbon seal. Replaceable impeller wearing rings shall be made of special grade polymer based material.
- 4.4 The pump shall be capable of simultaneous high & low pressure operations and operation of high pressure shall be controlled by an easily accessible

single changeover lever. There shall be two outlets for high pressure of not less than 1.00" size.

4.5 The pump shall have an inbuilt pressure relief valve to control the high pressure within specified limits and a suitably sized thermal relief valve shall also be provided to ensure that the pump water temperature does not exceed 50°C -60°C while operating under closed discharge conditions.

4.6 The pump shall be able to perform the following operations-

Low pressure- 2270 lpm @ 7 bar
2000 lpm @ 10 bar

} when tested at a suction lift of
3.0 mtrs At NTP conditions
High pressure 300 lpm @ 35 bar
Deep lift test from 7 meter.

4.7 The entire pump assembly with all its fittings and priming system shall be hydraulically tested at 21.0 bar for ten minutes.

4.7.1 Make and material of the Pump shall be clearly mentioned.

(All the above tests shall be carried out at pump manufacturer's facility as well as finally on appliances)

4.8 **Pump Test:** The pump will be tested for the following tests:

- I. Static hydraulic test of assembly at 21 kg/cm²;
- II. The High Pressure section should be hydrostatically tested to 45 Kg/cm²;
- III. The pump should perform low pressure and high pressure mode simultaneously or individually. While high pressure mode in operation and delivery 300 lpm at 30 Kg/cm² the pressure in low pressure mode should not exceed 6 kg/cm²;
- IV. Dry vacuum test will attain 640 mm of hg within 20 seconds;
- V. Deep lift test 7 mtrs. within 24 seconds at NTP condition;
- VI. The pump should be kept running for a period of three hours non-stop delivering the rated low-pressure output with a suction lift of 3.0 mtrs. and for one hour operating in high – pressure mode;
- VII. All relevant material test certificates should be issued by an appropriate laboratory should be issued by an appropriate laboratory should be submitted.

4.9 **Suction Inlet and Delivery Valves:**

4.9.1 The pump shall have suction inlet(s) of 100 mm standard suction connection (See IS 902/1974) with internal strainer(s) and blank cap(s). The strainer(s) shall be retained firmly when in use but shall be easily removable.

4.9.2 The pump shall be provided with two delivery valves having 70 mm dia standard hose couplings (IS 903/1975) with screwed type quick closing clock valve (IS 4928/1968) 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.

4.10 **Primer:**

4.10.1 The pump shall be fitted with inbuilt reciprocating type priming system capable of priming the pump from 7 meters in not more than 24 seconds when tested with the 100 mm suction hose at sea level & at NTP conditions and considering the allowances as stated in IS: 950-2012.

4.10.2 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 by pressing a single button **only when it is needed**, however the primers shall disengage automatically at a pump discharge pressure of 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.

Note: Tenderer must produce Pump Manufacturers (OEM) authorization letter confirming uninterrupted supply, full compliance with tender specifications, warranty and spares back up for 10 years after commissioning of the Pump, along with Technical bid; otherwise offer will be liable to reject. Details of Pump such as its make and model with full technical features, supported with catalogues, brochures, drawings etc. shall be attached with the offer, The drawing showing the pump performance curve at low and high pressure shall be enclosed. Any deviation shall be enclosed. Any deviation found in the given specifications the offer shall not be considered.

4.10.2A **Cooling System:** In addition to radiator cooling, an indirect cooling system of the open circuit type shall be provided discharging water to the waste. This enable full power output to be maintained during continuous stationary running of the engine without overheating.



- 4.10.3 The oil in the oil sump shall be prevented from overheating and the pump characteristics shall be chosen in a manner so that the engine does not run at its maximum speed for giving maximum output.
- 4.10.4 The cooling water outlet from PTO and additional cooling tank should be connected through G.I. Pipe and brought back near the pump panel. A flexible rubber pipe at least 5 metres long shall be connected to the open end of the pipe through a threaded adopter so that waste cooling water could be discharged away from the vehicle.

5. WATER TANK;

- 5.1 An elliptical water tank similar to petrol tank of 5000 litres capacity constructed out of Stainless Steel SS 304 grade of 3.15 mm thickness shall be suitably mounted on the chassis in a manner keeping in view the proper load distribution on the axles. The tank shall be suitably baffled to prevent surge when the vehicle is braking, cornering or accelerating. The baffles shall be arranged in a manner to facilitate the passage of a man throughout the tank for cleaning purposes. The tank shall be mounted on three cross bearers to counteract stress caused by chassis flexing and shall be so secured that it can be removed. The body of the tank shall be rectangular with all the eight corners in oval shape to reduce surging.
- 5.2 A full length runner from behind the driver cabin till end of chassis frame shall be provided and made out of **S. S. Channel** of 100 x 50 x 3.5 mm suitably fixed to the chassis frame with 3.15 mm thick SS Plate and bolted t chassis frame wherever holes are available in the chassis frame and also with 5/8" 'U' bolts and nuts shall be nylock nuts only.
- 5.3 The baffled plates shall be of 3.15 mm thickness and made of *construction. The tank shall withstand a Hydraulic pressure of 0.3 Kgs/cm². Suitable stiffeners shall be provided to prevent surge while the vehicle is accelerating cornering and breaking. The manufacturers/ fabricator shall furnish complete fabrication details, design and mounting details, capacity etc.



- 5.4 The entire area above the tank and suction hose lockers shall be covered with 1.60 mm aluminum chequered plates, duly riveted firmly. The joints of the chequered sheet on the top of the water tank should be covered with aluminum beading. The entire area on the rear of the vehicle should also be covered by chequered plate. The inner side portion of the lockers adjoining the water tank wall will be paneled with 18 gauge aluminum chequered plate. Two small aluminum ladders should be provided at the rear side of the water tank to climb to the top of the tank on either side with two horizontal hand railings to enable the crew to stand and climb on the top of the tank.
- 5.5 Tungsten Inert Gas Welding electrodes should be used for fabrication of water tank.
- 5.6 The tank shall be fitted with a 50 mm bore overflow pipes. Two 70 mm instantaneous hydrant connection, incorporating a strainer, shall be provided close to the pump panel control for filling the tank through 75 mm bore pipe work or feeding the hose reel equipment. A 100 mm bore pipe line shall be taken from the tank to the suction inlet of the pump incorporating minimum 100 mm internal dia butterfly type valve. Separate valves for performing the function given in 5.10 below shall be provided to control the flow of water to the hose reel equipment. Drain plugs or drain cocks shall be provided wherever necessary.
- 5.7 The open end of the overflow pipe shall be taken down to a point well below the chassis without affecting the effective ground clearance when fully loaded and shall discharge away from the wheels.
- 5.8 Thick toughened glass tube type water level indicator for the tank shall be provided at the rear side of the water tank indicating the quantity including the readings $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full (preferably calibrated in liters). A gunmetal drain cock shall be fitted at the lower end of the tube.
- 5.9 The tank shall have a bolted man-hole of 60 cm dia minimum. A cleaning hole of at least 25 cm dia, shall also be provided at the bottom. Water tank shall have two inspection man-holes one in front and the other at the rear with 8 inches dia



aluminum blank cap on the top of the tank with one drain hole.

Note:-A hole of 20 cms dia on the lid of man-hole with aluminum blank cap for its closing is to be provided.

5.10 The tank shall be connected with the pump and hose reel besides, valves shall be provided in such a way that any of the following operations are possible:-

- a) Hydrant to Tank
- b) Hydrant to Reel
- c) Tank-pump- Hose Reel
- d) Hydrant-pump- hose Reel
- e) Pump to tank
- f) Off

5.11 Suitable lifting eyes shall be provided on the shell of the tank to enable the tank to be lifted off the vehicle for repairs/ replacement as necessary.

6. Foam Compound Tank:

6.1 Foam compound tank shall be of 600 litres capacity, fabricated out of stainless steel plates and appropriately designed to ensure load balancing of the Fire Tender. The foam compound tank shall be mounted on the chassis. The tank shall be separate and distinct unit which can be removed separately for replacement. Thickness of Stainless Steel sheets shall be 3.15 mm, SS 304 LTB quality material and shall be complete welded construction. Provision of a filter cap with Strainer and a Breather valve for ventilation shall be provided. Tank shall also be provided with a sludge trap, connection to round the pump proportionate unit having flow control valve. Arrangement for filling from outside with the help of electrically operated Foam Transfer pump with control valve and also arrangement for supply of Foam Compound for operating external equipment with control valve shall be provided. The tank shall withstand a hydraulic pressure of 0.3kg/cm^2 . Suitable stiffeners shall be provided to prevent surge while the vehicle is accelerating, cornering and braking. The manufacturer/ fabricator shall furnish complete fabrication details, design and mounting details, capacity etc. alongwith the tender.



- 6.2 Manhole of 450 mm dia on top shall be used for foam filling with a removable strainer fitted to it. The strainer shall be of stainless steel and its total screening area shall be adequate to permit quick filling of foam compound into the tank. The filler cap shall be clearly marked "FOAM".
- 6.3 The foam tank shall have its top of dished/ funneling arrangement to enable easy filling from 20 litres drums. Suitable sharp edged punching device should be provided at the foam tank filling orifice for punching the foam compound directed from the drum into the tank without spillage. The design of tank shall incorporate a removable sump fitted with.
- 6.4 **Foam Compound Inductor & Flow Selector Valve (7-3)%:**
The Foam compound is required to be mixed with water in appropriate proportion as required for the maximum rated discharge of water from the pump installed. Similarly control system for operating either one or two or three or four units of FB 10 or FB 10-X shall have to be provided. Design of mixing system shall be proven and tested design and fabricator/ manufacturer shall have to furnish complete details of the same. The system shall be hydraulically efficient and should ensure minimum loss of water pressure.
- 6.5 A variable round the pump proportionate should be fitted between suction and delivery of the fire pump. The proportionater should have five position selector valves. The off position should isolate the proportionater so that the appliance can be used as a Water Tender.
- 6.6. **MONITOR WITH NOZZLE 1000 LPM:**
- Should be mounted on the roof top and for easy and comfortable manual operation by one member and made of aluminum alloy with polyester coating.
 - Should have handle for vertical movement.
 - Horizontal movement adjustment lockable by knob.
 - It should be capable for 85 degree to -70 degree horizontal movement.
 - It should be capable 360 degree horizontal movement.
 - Inlet should be 3' inch and outer Dia should be 80 mm.



- g. The Self Educating diffuser is made of Stainless Steel and Bronze
- h. Its aspiration can be calibrated at 3% or 6%.
- i. Fog angle of diffuser should be at least 110 degree.
- j. It should be capable to work against salty water.
- k. Monitor should be either POK/Akron/Elkhart make only.

7. Pipelines and Valves:

- 7.1 All pipelines and pipe fittings shall be of stainless steel (SS 304) and all valves upto 50 mm size shall be 3 piece design S 304 ball valves. All valves above 50 mm size shall be standard butterfly valves.
- 7.2 All piping shall be sized so as to have minimum pressure drop and achieve the required pressure and flow at various locations.
- 7.3 All piping shall be designed for 10% over the maximum pressures encountered in the pipe.
- 7.4 The piping shall be flanged for ease of maintenance. However, flange joints shall be kept to minimum.
- 7.5 All lines shall be hydraulically tested at 1.5 times of the design pressure and pressure shall be held for two hours. In no case the lines shall be tested below 25 Kg/sq.cm. (g)
- 7.6 All lines shall be suitably supported so as to provide rigidity and avoid vibrations.
- 7.7 All lines less than 50 mm NB size can be socket welded to matching rating fittings.
- 7.8 All lines above 50 mm NB size shall be butts welded with full penetration welds.
- 7.9 All bolts, nuts and washers used shall be of SS – 304.

8. Control Panel:

- 8.1 Adequately illuminated control panel shall be provided near the pump.



8.2 The control panel (s) shall include the following:

- a) Throttle control for engine;
- b) Pressure gauge – 0 to 17.5 Kgf/cm²; (glycerin filled)
- c) Compound gauge – (glycerin filled) calibrated as under:-
Vacuum – 0 to 75 cm. Hg, preferably in black;
Pressure – 0 to 15 kgf/cm², preferably in black;
- d) Prime Control for exhaust primer;
- e) Temperature gauge and glow lamp for lubricating system;
- f) Cooling water circuit control;
- g) Water tank valve;
- h) Delivery valves;
- i) Suction inlet;
- j) Hose reel valves;
- k) Water level indicator

9. Hose Reel:

9.1 One High Pressure Hose reel of at least 60 mtrs. length shall be provided which shall be connected to High Pressure Outlet of pump with "AUDCO" make SS ball valve of suitable size. The hose reel shall be made from carbon steel/ Aluminum/ Stainless steel material with bearing/ bush made from gunmetal. There shall not be gland scaling for the hose reel and seal shall be done by means of either oil seals or "O" rings. The design and size of hose reel shall be such that it shall accommodate 60 mtrs. High Pressure hose having 19.0 mm bore with quick connect couplings. The hose reel shall have 40 kgs/cm² working pressure and bursting pressure shall not be less than 120 kgs/cm² and shall be hydraulically tested to 50 kg/cm². The hose shall be "Duplon", "Swastik" or "Dunlop" make.

9.2 The H.P hose reel shall be provided with High Pressure fog/Jet trigger type AWG Rosenbauer/ Fireco make gun connected by quick connect couplings. The gun shall be made from aluminum alloy with rubber grip handle. The inlet connection shall be made from aluminum alloy with rubber grip handle. The inlet connection shall be of ¾" BSP and shall have leak proof rotating type hose connector. The gun shall be of constant flow type and shall have discharge capacity of 150 lpm approx. The gun shall have facility to set of either spray or jet pattern reparably in handle grip. The gun shall have ability to work on pressure from 20 kg/cm² to 40 kg/cm² without affecting the discharge pattern. The weight of the gun assembly shall not be more than 3.0 kgs."

9.3 One additional unit of superior quality Hose Reel shall also be provided

10. Body work and Stowage:

- 10.1) Enclosed accommodation for seven 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 compartment of driver's cabin should have one removable seat for full width of cab for 05 (five) crew members. The cab floor should be covered with 3 mm thick Aluminum chequered plate rigidly fixed to the under frame cross members by means of nuts and bolts or riveting except the mudguard arches which shall be covered with 1.60 mm Aluminum chequered plates. Trap doors for topping up oil etc. wherever necessary shall be provided.
- 10.2) One roof light should be provided in the driver's cabin dwell vision and external rear view mirrors should be fitted to the cab.
- 10.3) The driver cum crew cabin shall be provided with full four doors, one for driver, one for officer and two at the crew compartment. The doors shall be generously sized for easy embarking/ disembarking of crew members. 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.
- 10.4) The door handle on outside of driver seat shall have a locking arrangement. Other doors shall be lockable from inside. In addition to the doors locks, aluminum tower bolt shall be provided for all the doors from inside. Adequate grab rails shall be provided for easily boarding and alighting from the appliance.
- 10.5) The windscreen glass shall be provided in the two halves and shall be semi-curved type. Each glass shall be fitted in E.P.D.M rubber beading. The glasses shall be 5 mm thick toughened safety glass.
- 10.6) The rubber beading used for fitting glasses and window frame shall be E.P.D.M rubber.
- 10.7) 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.

- 10.8) The seat cushion shall be of latex foam rubber 75 mm thick upholstered in good quality foam leather cloth. The back seat shall be of latex foam rubber 50 mm thick upholstered in good quality foam leather cloth.
- 10.9) Below the crew seat, two lockers shall be provided one for battery box and another for keeping accessories. The extra length of battery cable if required shall be provided.
- 10.10) 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 firemen, covered with 75 mm x 50 mm cushion latex foam rubber upholstered in good quality foam leather of approved shade.
- 10.11) The rear body shall be fabricated in continuation and in line. The under frame cross members shall be fabricated from the rolled S. S runner of 100 x 50 x 3.5 mm size.
- 10.12) The S. S runner of 100 x 50 x 3.5 mm size shall be provided over the full length of the chassis member for the uniform distribution of load over the chassis.
- 10.13) Each cross members shall be secured to the chassis frame by 16 mm dia "U" Bolts with aluminum packing block and self locking unit.
- 10.14) Balata packing of thickness 6 mm shall be provided in between the chassis frame and across members.
- 10.15) The structure/ frame work shall be welded constructions and made from 2 mm thick MS pressed sections and square tubes. The angles and channels used shall be of min. 3 mm thickness. **The complete structure material shall be treated for anti corrosion by ZINC PLATING.** The plating thickness shall not be less than 20 microns. Two coats of Epoxy paint shall be applied to the completely welded structure.

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

- 10.16) The details of super structure are as follows:-



10.16) The details of super structure are as follows:-

- Under frame cross members 100 x 50 x 5 mm(min.)
- Floor Longitudinal members 50 x 50 x 6 mm (min.)
- The cab and lockers should be composite construction with sufficient rigidity and reinforcement and shall be kept as light as possible.
- The interior paneling shall be done from 1.22 mm thick aluminum sheets and the exterior paneling shall be done from 1.60 mm thick aluminum sheets.
- The roof on the cabin of the vehicle shall be covered with min 1.60 mm thick aluminum chequered plates. All the lockers sides and complete rear of the vehicle shall be covered with min. 1.22 mm thick aluminum chequered plates. The complete rear deck and all lockers floors and the rear foot boards shall be covered with minimum 3 mm thick aluminum chequered plate.

10.17) **LOCKERS:**

- Sufficient storage space in the shape of lockers shall be provided on the sides of fire appliances for keeping accessories along-with delivery hoses. These lockers shall be provided with high quality shutter doors having suitable locking arrangements to make rowdy mob inaccessible to the gears. The shutters shall open upwards. One through and through Central locker shall be provided immediately behind the Driver's cab of the size of 226 cms x 100 cm x 110 cm (l x b x h) for stowage of portable pump like Zeigler/Tohatsu and 20 Nos. of delivery hoses. Two suitable side lockers shall be provided near the back end with sufficient space and dimension in length and breadth for stowage of various accessories and equipments. Doors shall be provided on both sides of the locker. DC electrical light shall be provided in the locker. All space available below the chassis frame level shall be utilized by providing lockers with proper doors. These doors shall be fitted with suitable chains and hooks on both sides so that the same can be used as foot board.
- All lockers shall be provided with internal automatic lighting arrangement with the master switch in the cab.
- All lockers above chassis floor shall be covered with Aluminum roller shutters. The roller shutters shall be made from extruded aluminum sections with suitable roller, spring, guide channels etc. All aluminum sections used shall be properly anodized.



