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Technical specification

Fire tanker ATs 3,0-40 (JAC N120) on JAC N120 chassis



**** the image is for reference only***

Fire tanker (hereinafter referred to as ATs): a fire vehicle equipped with a fire pump, tanks for storing liquid fire extinguishing agents and means of supplying them, intended for delivering personnel, fire-technical weapons and equipment to the fire site and for performing fire-fighting and rescue operations.

The ATs design must provide the possibility of:

- filling the tank with water through the filler neck;
- drawing water from a water body or a fire hydrant and supplying water and foam for fire-fighting needs through fire monitors and hand nozzles;
- drawing foam concentrate from an external tank;
- accommodating the necessary fire-technical weapons and equipment in the body.

The vehicle can be used as an independent combat unit or as a pumping unit when operating «in relay» with one or more other vehicles.

The ATs must conform to climatic version U (operation at ambient temperature from -45 to +40°C), and must be kept indoors at an ambient temperature not lower than +5°C during standby.

Technical parameters of the fire vehicle

Parameter name	Value
Chassis	JAC N120
Dimensions L×W×H, mm, max.	8000×2500×3000
Wheel arrangement	4×2
Engine	Diesel, rated power not less than 152 kW
Vehicle condition	New, not previously in operation
Year of manufacture	Not earlier than 2026
Water tank capacity	Not less than 3.0 m³
Pump capacity	Not less than 40 l/s.
Crew cab including the driver's seat	Not less than 6 persons

Pump location	Rear (in the pump compartment)
Foam tank capacity	Not less than 180 l.
Set of fire-technical weapons:	Available
Chassis emission standard	Euro 5 or higher

The ATs must be certified in the certification system for mechanical transport vehicles and trailers and must have the necessary accompanying operational documentation for registration with the traffic police (GIBDD).

The chassis must be new, not converted, not a conversion unit. The chassis must have a service book.

1. Cab

The crew cab (CC) is a four-door modular type and must consist of two sections (front and rear saloons) and provide accommodation for 6 crew members (including the driver).

The front saloon is the driver's cab supplied with the chassis, tiltable to provide access to the engine. The rear saloon is a special cab for the crew, which must be installed permanently. The damping mounts of the driver's cab and of the rear saloon must be independent of each other.

The crew cab must be of frame-and-panel construction with a load-bearing frame. The load-bearing frame of the rear saloon must be welded, made of rectangular steel tubes, and must provide increased safety and preserve the survival space if the vehicle rolls over.

The internal and external cladding of the crew cab frame must be lined with plastic panels made of a glass-fibre reinforced polymer material and impact-resistant plastic. The panels must be attached to the frame by adhesive technology. The front and rear walls, the roof and the floor of the crew cab external cladding may be made of steel sheet.

The cab interior lining must be made of durable water-repellent materials allowing quick and convenient cleaning of the saloon from dirt. The saloon floor covering must have a non-slip surface.

All cab surfaces must be heat-insulated and soundproofed against external influences.

Direct (immediate) voice and visual (audiovisual) contact between the crew in the saloons must be provided through an opening in the adjacent cab walls.

The opening must have a split airlock – a seal along the contour of the opening that separates when the driver's cab is raised. The airlock must prevent heat exchange between the ATs saloon and the outside space and prevent the ingress of water and dust into the cab saloons.

The cab doors must open in the direction of travel of the vehicle and have locking devices with external and internal handles. The internal locks must have a device that precludes their accidental opening while driving by the crew members sitting in the vehicle. The handles of the locking mechanisms must be shaped so as to preclude injury. The doors must have devices fixing them in the closed and open (at least 75°) positions.

The glazing of the cab saloon must be made of safety glass.

The rear saloon seats must be of the locker type; mounts for breathing apparatus must be built into the seat backrests.

All seats must be equipped with seat belts.

The rear saloon of the cab must be equipped with an independent heater that maintains the temperature in the cab saloon at not lower than +15°C during the cold season.

The cab design must preserve the survival space if the vehicle rolls over or collides with an obstacle or another vehicle.

The equipment in the saloon must be positioned so that there are no sharp corners and edges able to injure the crew. The fastening of the equipment must preclude its spontaneous movement while the vehicle is in motion.

On the cab front panel, in the area where the crew commander is seated, a place must be provided for installing and connecting special communication equipment. The installation and connection of the special light and sound signalling and of its control panel must comply with GOST R 50574-2019 and with the regulatory and technical documentation for this signalling. The equipment used must be certified.

A place must be provided in the saloon for installing one or more fire extinguishers.

2. Water tank

The ATs must be fitted with a water tank made of a corrosion-resistant material (low-pressure polyethylene) with a capacity of not less than 3000 l. The tank must be attached to the vehicle frame with damping elements, independently of the cab and the bodies.

To provide for inspection and maintenance, the tank must have a hatch of at least 0.45×0.45 m. The hatch must be positioned so that access into the tank is provided without dismantling the superstructure and without removing fire-technical weapons (FTW) from the roof.

The arrangement of the tank's internal elements must not hinder inspection of their internal cavity and replacement of damaged elements.

The tank must be equipped with a device for continuous or discrete (1, 3/4, 1/2, 1/4, 0) monitoring of the water filling level and consumption.

The use of glass tubes in level indicators is not permitted.

The level indicator must be accessible for clear visual monitoring from the operator's workplace.

Baffles (wave breakers) must be located inside the tank to damp liquid oscillations when the vehicle is in motion.

The tank must have devices preventing the creation of excess pressure in it during filling and of vacuum during emptying by the pump.

The tank design must provide for emptying of water by the fire pump or by gravity drain.

The tank must be capable of being filled both by its own pump and from an external source.

The device for draining water when the tank overflows during filling must be located in an area that excludes water entering the wheel brake mechanisms during filling and while driving.

A filter made of corrosion-resistant mesh with a cell size of not more than 5×5 mm must be installed in every pipeline filling the tank.

3. Foam tank

The foam concentrate tank (foam tank) must be made of a corrosion-resistant material (low-pressure polyethylene). Capacity – not less than 6% of the water tank capacity.

The foam tank must have a device preventing foaming of the foam concentrate during filling, as well as a device precluding the creation of vacuum in the tank when the foam concentrate is supplied.

The pipelines and fittings of the foam concentrate filling and supply system must be made of materials resistant to corrosion by the foam concentrate.

The connection of the foam tank to the pumping unit must have elastic elements precluding the occurrence of fatigue failure in the tank under the vibration loads from the chassis and the pump.

4. Body

The body is a prefabricated frameless construction of aluminium sheets. The roof of the body (superstructure) has an anti-slip coating. For access to the roof, the rear part of the superstructure is equipped with two or one fixed ladders.

The superstructure compartments for accommodating fire-technical weapons are equipped with roller shutter doors made of anodised aluminium profile with a drum winding system. The superstructure compartments and the pump compartment are equipped with LED panels with diffusers. The three-section ladder mount is provided with guides, a retainer and rollers.

The containers for suction and pressure-suction hoses are made of galvanised steel. The containers are fitted with a hose strap for extracting the suction hoses.

An independent diesel heater is installed in the rear compartment; fuel is supplied from the vehicle tank. LED lights for illuminating the working areas are installed above the FTW compartments. The pump compartment door is a panelled swing door on gas struts.

All doors are equipped with locking devices holding them in the closed or open position and with open-door signalling indicated in the driver's cab.

The door openings, hatch covers and other body elements have seals protecting the compartments from the ingress of atmospheric precipitation and dirt.

FTW having sharp edges is stored in covers and sockets (cases).

All equipment and tools located in the compartments are securely fastened.

Hoses in rolls stowed in the compartment are separated by partitions. The steps and walking platforms are made of a non-slip material.

A fixed fire monitor with manual control is installed in the front part of the body superstructure.

Colour scheme of the tanker paintwork:

Colour – the special colour scheme of the fire vehicle must be applied in accordance with GOST R 50574-2019. The coating thickness is not less than 80 μm; the enamel must have increased resistance to temperature conditions (from -50 °C to +70 °C) and to the action of acids and alkalis; the lower part of the vehicle must be treated with an anti-gravel waterproofing coating and an anti-corrosion compound. Reflective tape used for the contour marking of trucks must be applied to the vehicle in accordance with the requirements of Decree No. 720 of the Government of the Russian Federation of 10.09.2009 «On approval of the technical regulation on the safety of wheeled vehicles».

The special light and sound signals must be manufactured in accordance with the requirements of GOST R 50574-2019.

Signalling acoustic unit:

The special loudspeaker device must be made in the form of a light bar (colour blue + blue) and have a power of not less than 120 W, or in the form of two flashing beacons.

The ATs must be equipped with a blue flashing beacon installed at the rear of the vehicle.

5. Fire pump

The ATs must be equipped with a combined fire pump that complies with the requirements of GOST R 52283-2004 «Fire centrifugal pumps. General technical requirements. Test methods» and must have the following parameters:

Parameter name	Value
Pump capacity	Not less than 40 l/s
Head in rated mode, m, min.	100
Vacuum system	automatic (two-piston pump with belt drive from the drive shaft)

The pump must be driven by a cardan shaft from the chassis power take-off (PTO).

The pumping unit of the tanker, comprising the fire pump, the water-and-foam lines, the control valves and fittings, as well as the controls and monitoring devices, must be located in the rear (pump) compartment of the tanker.

The design of the pumping unit must provide for drawing water from open water bodies in an automatic control mode in which the priming vacuum system is switched on by an operator command from the control panel, and its switching off occurs automatically (without operator intervention) once the pump is ready for operation.

The design of the pumping unit must provide for operation of the foam proportioning system with foam concentrate drawn both from its own foam tank and from an external source.

The distribution and direction of the fire extinguishing agent flows must be performed by means of built-in manually controlled valves and fittings, as well as remotely controlled valves and fittings access to which is difficult.

The pumping unit must be controlled from a single panel.

The pumping unit control panel must be made in a single sealed housing and must enable the operator to work in protective gloves. All the monitoring indicators and displays used in the control panel must be based on LED elements that are not subject to freezing at low temperatures.

The pump must be manufactured in climatic version U, placement category 3.1 in accordance with GOST 15150.

The dimensions of the connecting lines for fire-fighting equipment must comply with GOST R 53279-2009 «Fire-fighting equipment. Fire connecting heads. General technical requirements. Test methods».

The pump shaft material is a corrosion-resistant material.

The pump bearings must not require lubrication throughout the entire service life.

Complete draining of liquid from all working volumes of the water-and-foam lines and of the pump must be provided.

The drain plugs must be located in places providing free access and draining of liquids without spillage onto the surfaces of adjacent vehicle elements.

The design of the pump and of the water-and-foam lines must ensure their tightness at a vacuum of not less than 0.08 MPa (0.8 kgf/cm²).

The design of the shut-off valves must preclude the possibility of water hammer. The tightness of the valves must be not lower than class A in accordance with GOST 9544-2015 «Pipeline valves. Valve tightness norms».

The pressure branches of the fire pump must be located on the sides of the fire superstructure.

The handwheels and handles of the controls must be made of, or have coatings of, a low-heat-conductivity material. The handles (levers) of the pumping unit controls must be shaped to allow operation in mittens.

The controls of the pump installed on the ATs must be located within the operator's reach area, taking into account the requirements of GOST 12.2.033-78 «Occupational safety standards system (SSBT). Workplace for performing work while standing. General ergonomic requirements».

Near each control there must be a marking defining its purpose and position. The marking must not be located on removable parts if these parts are to be dismantled during the operational use of the ATs.

6. Requirements for the fire monitor

A fixed universal (water-and-foam) fire monitor with a water capacity of not less than 40 l/s and with manual control must be installed on the roof of the ATs body.

7. Requirements for the shut-off and connecting valves

The lines forming part of the pumping unit must be isolated from the tank (by elastic elements) and must be equipped with shut-off and connecting valves enabling the ATs to function.

The height of the pressure branches above the road surface (operator platform) is not more than 1300 mm.

The design of the shut-off valves must preclude the possibility of water hammer.

The possibility of complete draining of liquid from all tanks and working volumes of the water-and-foam lines and of the pump must be provided.

The drain plugs must be located in places providing free access and the possibility of discharging liquids without spillage onto the surfaces of adjacent vehicle elements.

The elements of the pipelines in the water-and-foam line system may have an ovality of not more than 10% of the nominal pipe diameter, unless other requirements are provided in the working documentation. Sharp transitions without fillet radii, build-ups and steps in the lines are not permitted.

The design of the pump and of the water-and-foam lines must ensure their tightness at a vacuum of not less than minus 0.08 MPa.

Leakage and droplet formation of liquid are not permitted at the fixed joints of the pump.

The discharge branches of the side gate valves of the fire pump must be located on the sides of the fire superstructure.

8. Requirements for the control system

All indicators and signalling devices must be visible from the operator's workplace, and their readings must be easy to read at any time of day.

The handwheels and handles of the controls must be made of, or have coatings of, a low-heat-conductivity material. The handles (levers) of the pumping unit controls must be shaped to allow operation in mittens.

Near each control there must be a marking defining its purpose and position. The marking must not be located on removable parts if these parts are to be dismantled during the operational use of the ATs.

9. Requirements for additional electrical equipment

The additional electrical equipment must provide:

- illumination of the working place in the dark;
- illumination of the compartments;
- in the crew cab, signalling of open doors of the crew cab and of the body;
- operation of the air heater;
- operation of communication equipment, control instruments, etc.

An independent heater must be installed in the rear (pump) compartment.

When installing the additional electrical equipment and wiring, compliance with fire safety requirements must be ensured.

The ATs must be equipped with fog lamps and searchlights in the front and rear parts of the vehicle.

The front searchlight must be controlled from the cab from the far right seat.

The interior lighting of the ATs must provide clear visibility of the markings and of the scale divisions of the indicators, measuring and control instruments.

The saloon must be equipped with interior lighting domes.

The ATs must be fitted with a battery switch (master switch) of the base chassis.

The electrical wiring running inside the body compartments must have connectors allowing the units and assemblies of the fire superstructure to be dismantled without dismantling the wiring.

Each electrical supply circuit of any element of the additional electrical equipment must be fitted with a fuse (or an automatic circuit breaker) facilitating quick fault finding in the system. The fuses must be mounted in a single block.

Circuits supplying devices with low current consumption may be fitted with a common fuse.

All wires must be reliably protected and firmly secured so that their breakage, chafing or wear is precluded.

Holes and cut-outs for the passage of wires through body or chassis elements must be protected (treated or edged) to protect the wire insulation from damage.

All wires must be reliably insulated and withstand the effects of temperature and humidity to which they are exposed.

The terminals of the electrical equipment (contact clamps, etc.) and the wires must be marked.

The ATs must be provided with a clamp for connecting the protective earth. The location of the clamp must be marked with an earth symbol. The contact surface of the earthing device must have a corrosion-resistant coating with high electrical conductivity.

The location of the earthing clamp must be electrically connected to the outlet branches for water supply from the pump.

Earthing must be performed with a bare stranded copper wire with a cross-section of not less than 10 mm², provided with a special device for attachment to earthing structures.

10. Requirements for fire-technical and rescue equipment.

The ATs must be supplied with fire-technical and rescue equipment according to the attached List.

Item No.	Name	Quantity, pcs.
1.	Suction hose B-1-125, length not less than 4 m, with hose strap	2
2.	Pressure-suction hose B-2-75-10, length not less than 4 m, with hose strap	2
3.	Stored-pressure fire extinguisher OP-4	1
4.	Stored-pressure fire extinguisher OP-8	2
5.	Special loudspeaker device SGU	1
6.	Tools and accessories in accordance with the chassis manufacturer's list	1
7.	Set of spanners, kit	1
8.	Hydraulic jack	1