

AIRCRAFT FIRE-FIGHTING AND FIRST INTERVENTION SPECIAL VEHICLE
MAN TGS 18.500 4x4 BB



These images correspond to reality

4. TECHNICAL CHARACTERISTICS REQUIRED FOR AIRCRAFT FIRE-FIGHTING AND FIRST INTERVENTION SPECIAL VEHICLE

4.1 GENERAL REQUIREMENTS

- The vehicle has the technical characteristics of an airport fire fighting vehicle designed to actively extinguish fires and rescue in the event of aviation accidents.
- All components of the vehicle ensure absolute safety in all vehicles working conditions when extinguishing fires and rescuing in aviation accidents.
- The technical characteristics and design of the vehicle meet the standards and recommendations of ICAO, EASA, AACR (RACR AD PETA, PIAC AD SSI - EDITION 2/2016).
- The vehicle complies with all roadway requirements established in accordance with applicable legislation in Romania.

4.2 VEHICLE CHASSIS

- Model: MAN TGS 18.500 4X4 BB

Engine characteristics:

- Diesel, supercharged, with intermediate air cooling (Intercooler).
- Acceleration: 0-80 km / h in 25 seconds from the fixed point, fully loaded, with the engine and transmission at normal operating temperatures.
- Maximum speed: 105 km / h on the maximum load of the vehicle on a dry and paved surface.
- emissions regulations: EURO - 6

Fuel Tank

- Capacity 200 litres

Electrical system and other equipment on the vehicle:

- 24 Volts voltage
- Batteries 2 pcs x 12 volts
- 2 front headlights, long and short beams
- 2 front fog lights
- 2 rear fog lamps
- 2 rear lamps for reverse
- 2 brake lamps on the rear
- 2 front signalling lamps
- 2 rear indicator lamps
- efficient illumination of the luggage space and cabin,
- intermittent red-light beacon/rotating lights located on the vehicle cab –2 pieces
- 1 orange beacon/rotating light located on the rear of the vehicle
- buzzer - sound warning for reversing
- 1 electronic siren with control panel, with loudspeaker and microphone for outdoor communication.
- radio

**Gearbox :**

- MAN TipMatic (semiautomated).

Power axes:

- fitted with lockable differentials.

Number of axes:

- Number of axes: 2

Traction:

- Traction on all wheels (4x4) permanently
- Wheels: Simple on all axes

Shock Absorbers:

- The damping system provides the mobility of the vehicle for driving in various terrain

Fully loaded technical characteristics and angles:

- angle of attack - 30 °
- clearance angle - 30 °
- clearance angle between axes - 12 °
- ground clearance - 350 mm
- static angle of inclination -30 °

Braking system:

- ABS for all wheels.

Towing vehicle:

- 4 towing hooks mounted 2 in front and 2 behind the vehicle.

Vehicle cabin:

- type: 1 + 1 seats,
- the cabin provides a perfect view and a convenient place for the vehicle crew.
- the cabin is insulated against noise and vibration,
- 2 doors for quick entry / exit of the vehicle crew with easy access to cabin equipment. Doors have manual opening / closing,
- electrically powered windows on both sides of the vehicle,
- left-hand steering wheel with height and depth adjustment,
- wipers on the windscreen automatically start when the monitor from the roof of the vehicle is activated,
- 1 seat height-adjustable, longitudinal-adjustable, with pneumatic suspension and lumbar protection for the driver,
- 1 co-driver's seat with possibility to insert breathing device in the back-seat,
- individually equipped seats with heavy-duty seat belts and head restraints of adequate size to sit comfortably with individual protective suits on,
- the cab floor prevents slipping and is resistant to the firemen's shoes
- handles,
- sun protection,
- rear-view mirrors on each side, electrically operated inside the cabin, equipped with heating system,
- heating system that works even when the engine is off;
- the cabin is equipped with air conditioning,
- the vehicle bodywork is designed as to allow easy access to all elements for repair, maintenance and operation of the vehicle,
- the vehicle is equipped with a vibration damping system according to HG 1867/2005, the maximum value being $0,5 \text{ m / s}^2$
- the noise level inside the cabin must be lowest possible
- the steps of the access stairs in the cabin are of the non-slip type, especially for the cold, wet season,
- the steps are illuminated for visibility when climbing and descending from the cabin
- the visibility behind the vehicle is ensured by a video camera and the image displayed on the display in the cabin
- doors, lids, hoods will open easily with protection against uncontrolled closing, but also have a secure locking system for the open position,
- for access to any part of the special vehicle that involves work at a height, the vehicle is fitted with accessories (running rails, railings or the like) to protect against falling from a height.

Superstructure VOLKAN:

- storage facilities for materials and equipment

4.3 EQUIPMENTS

Control panel in the cabin and outdoors (at the rear or on the side of the machine) with the following functions:

- water levels in the water tank and foam tank
- engine start (for the outdoor unit)
- coupling the water pump to the power take-off (PTO)
- gauge for displaying the water / foam-water pressure
- foam dosing knob / dosing with dosage indication
- water / water-foam flow
- water pump flow adjustment
- selecting monitor mode and / or hose reel unit mode.
- selecting the powder fire-fighting mode
- display working mode with LED lamps / display.
- the emergency operation module integrated or separated from the control panel
- display system operating errors and malfunctions
- If a display is used then the menu will be displayed in Romanian language.



Water tank:

- tank capacity: 4,000 litres
- Execution material: stainless steel

The tank have the following equipment:

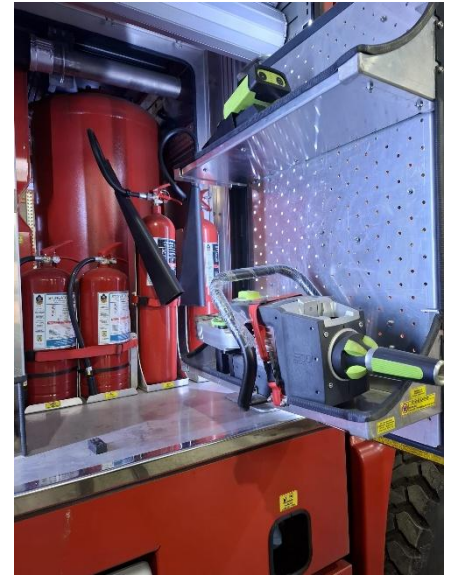
- opening with quick-release cover and pressure safety device
- level indicator of tank water, in the cabin.
- valve for water removal/draining
- protection to prevent water oscillation (wave breaker plates)
- quick-fill protection system.
- 2 type "B" hydrant connections, 1 on the left and 1 on the right side of the vehicle.

Foam tank:

- capacity: 550 litres.
- suitable for preparation of level A, B, C foams.
- Execution material: stainless steel
- opening with quick-release cover and pressure safety device
- level indicator for the foam in the tank, located in the cabin and external control panel.

Central pumping unit VFPN-H 10-400/40-250;

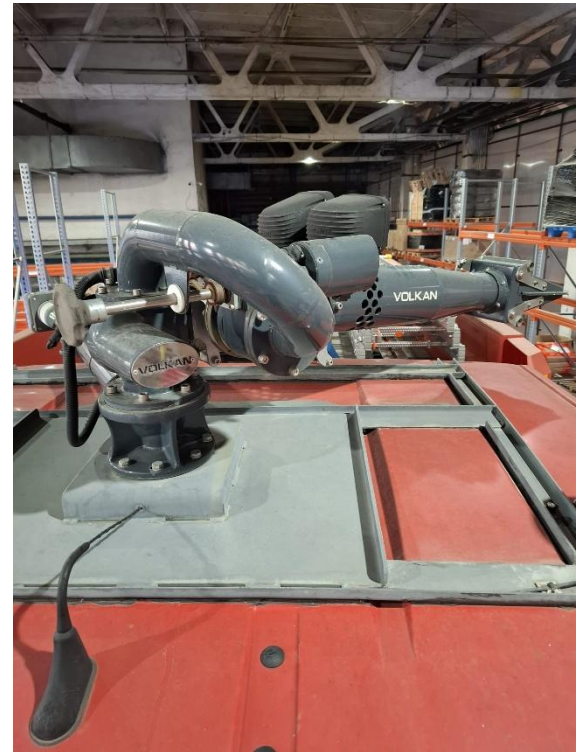
- centrifugal pump with 2 self-priming steps
- pump flow rate of 4,000 l / min;
- coupling the pump from the cabin and the from the external control panel
- protection against running the pump without water
- the possibility of coupling the pump when the vehicle is in motion

**Foam mixer:**

- made of corrosion resistant alloy
- compatibility with all types of foam used in aviation
- possibility of dosing with control from the vehicle cabin as well as from the external control panel

Water / foam monitor located on top of the cabin: VOLKAN WG3000SE

- type: made for pneumatically aspirated foam with deflector.
- monitor flow rate of 3,000 l / min
- manual emergency operating system
- command: joystick type, in the vehicle cab, with the possibility to lock the monitor orientation,
- the shape of the jet adjustable by the joystick
- the monitor follow the joystick command both horizontally and vertically
- range of the monitor at the maximum capacity: with a full jet of foam is 45 m, with a full jet of water is 60 m
- lifting the monitor vertically from -5° to $+45^{\circ}$,
- horizontal rotation of the monitor 270° , (135° in each direction)
- Integrated halogen reflectors that automatically illuminate both when using the monitor and separately when the monitor is not in use.
- the monitor is made of a lightweight, corrosion-resistant alloy (anodised aluminium)
- the ability to manoeuvre the monitor when the vehicle is in motion





Quick Water / Foam Intervention Unit VOLKAN:

- one power- unit for quick intervention (high pressure hose reel)
- non-shrinking rubber hose with a length of 30 m,
- electric re-winding drive mounted inside the hose reel,
- a high pressure water nozzle (water curtain, water spray completely sprayed), and an extension that is quickly mounted to provide foam.
- the hose reel compartment doors and the equipment have a rolling opening (shutters).
- the markings on the installation and the indications for work are written in Romanian language.

Powder Fire-Fighting Unit:

- capacity - 250 kg.
- equipped with a hose reel, with a hose of 30 m
- electric re-winding drive mounted inside the hose reel,
- the hose reel compartment doors and the equipment have a rolling opening (shutters).



High-pressure hoses are winded on two reels, one on each side of the truck-30m.



Self protection system:

- the design and layout of the vehicle self-protection nozzles is realized in such a way as to ensure that the fire produced by the scrapped fuel is effectively extinguished and protect the wheels of the vehicle.

Frost protection

- water system drainage system to prevent water freezing in pipes and hoses
- tank water heating system with thermostat and external power supply at 220 Volts

4.4 VEHICLE DIMENSIONS

- Vehicle length aprox : 7.990 mm
- Vehicle height aprox : 3.890 mm
- Vehicle width aprox : 2.550 mm (without mirrors)



4.5 MATERIALS / EQUIPMENT FITTED ON THE VEHICLE

Tools for forcing entry

- Nailing crowbar - 1 pcs.
- Crowbar aprox. 95 cm - 1 pcs.
- Crowbar aprox. 1.65 m - 1 pcs.
- Large rescue axe without locking - 1 pcs.
- Small rescue axe without locking - 2 pcs.
- Bolt Cutter aprox. 61 cm - 1 pcs
- Sledge hammer aprox. 1.8 Kg - 1 pcs.
- Chisel aprox. 25 cm - 1 pcs.

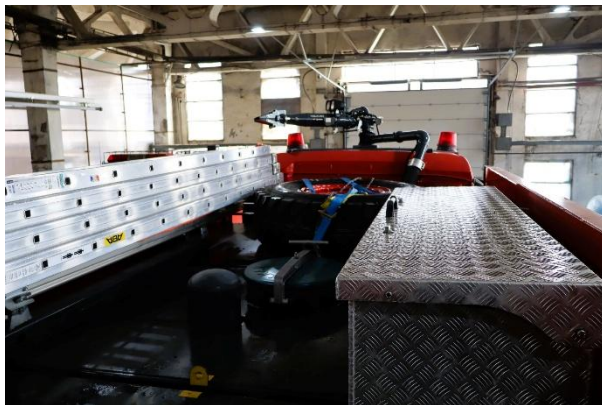


Rescue / Cutting equipment including electrical equipment

- Portable Hydraulic / Electrical Rescue Equipment (or combinations) - 1 pcs
- Full electric rescue circular saw with spare blades with a diameter of 406mm
1 pcs
- Swinging saw - 1 pcs

Equipment for delivery of the fire extinguishing agent

- Firefighting hoses 20 m long x 50 and 64 mm diameter - 11 pcs
- Foam connection (nozzles) - 2 pcs.
- Water connection (nozzles) - 3 pcs.
- Coupling adapter 1 B type and 2 C type - 1 pcs
- Portable CO₂ extinguishers - 3 pcs.
- Portable Fire-Extinguishers DCP - 3 pcs.
- Spare air tank - 1 pcs.
- Spare Face Mask - 1 pcs.



Ladders

- Extensible rescue ladder and suitable for critical aircraft - 1 pcs.
- Ladder for general use, suitable for rescue - 1 pcs.

Personal protection elements

- Safety glasses 2 pcs
- Protective hood 1 pc
- Surgical gloves 1 box
- Fire-proof blanket 2 pcs

Cable lines

- Lifesaving cable line 45m 1 pc
- General purpose cable line 30 m 1 pc
- Pocket cord line 6 m 1 ps

Portable lighting equipment

- Hand lamp (with antiex protection) 2 pcs
- Portable torch - spotted or dispersed beam (with antiex protection) 1pc
- Shovel 1 pc

Cassette / Box with rescue tools and its contents

- Pliers 0.6 Kg 1 pc
- Cutter 1 pc
- socket wrenches 1 set
- Lever 30 cm 1 pcs
- Screwdriver Set - Straight and cross-headed (phillips) 1 set
- Insulated pliers 1 pc
- Side Cutting Pliers 20 cm 1 pcs
- Slide gripper/plier 25 cm 1 pcs
- Belt cutter 1 pc
- Adjustable wrench 30 cm 1 pc
- Combination keys 10 mm - 21mm 1 set

First aid kit

- First aid kit 1 pc
- Automatic External Defibrillator (AED) 1 pc
- Oxygen Resuscitation Equipment (ORE)

Miscellaneous equipment

- Thermo vision camera 1 pc
- Wheel chockes 2 pcs

4.6 VEHICLE COLOR AND MARKINGS

- Chassis: black
- Superstructure: red
- Warning tiles: yellow

4.7 TOOLS FOR MAINTENANCE AND REPAIR OPERATIONS

- Hydraulic jack with hoists for lifting the empty vehicle -2pcs
- Hose for inflation of wheels at least 20 m long -1 pc
- Spare wheel -1 pcs