TECHNICAL SPECIFICATION OF HEAVY INDUSTRAIL FIRE FIGHTING VEHICLE BASED ON MAN TGS 33.400 6x4

This specification covers the supply of a SZCZESNIAK SPECIAL VEHCLES fire fighting vehicle, based on the MAN TGS chassis. The vehicle has been designed for effective firefighting in high risk fire areas. It is equipped with a high volume water tank and a foam compound tank, and is designed to operate from open water sources, fire hydrants or its own tank supplies. The vehicle is capable of operating at high ambient temperatures and in salt laden, high humidity atmosphere. In the design, simplicity of operation, ease of maintenance and repairs, have been given particular care, but special emphasis has been given to the vehicle's prime purpose, namely simple and speedy extinguishing agent discharge. All components of this vehicle are based on approved products, constantly improved and developed. This is the guarantee for absolute reliability and safety of operation.

The engineering and construction of all SV SZCZESNIAK products is conducted in conformity with procedures of the ISO 9001 standards. Moreover, SV SZCZESNIAK has been certified conform with the Environmental Management Standards as laid down by ISO 14001 / EN 14001.

CHASSIS

Model : TGS 33.400 6x4 BB CH
Drive : 6x4
Engine : 294 kW (400 hp)
Engine torque 1,900 Nm torque,
Engine emission Euro 2
Fuel tank : min 300 L
Chassis cabin : 1+1+1

GVW 33 000 Kg
Gearbox : Automatic 12+2
Cabin color : RED RAL 3000
Manual Air Condition
Tires : 13 R22.5 (twin)

Cabin :

Wheels

Front axle tyres Bridgestone 385/65R22.5 M-STEER 001 Steering-S+G TL 0PGXV
Rear axle tyres Bridgestone 315/80R22.5 M-DRIVE 001 Drive-S+G TL

Electrical equipment

Tension: 24 V.
Batteries: 2 x 12V – 180 Ah.
Alternator: 100 A.

CREW COMPARTMENT

A separate crew cab for 4 extra crew members is provided at the front part of the superstructure, allowing easy tilting of the driver's cab and unrestricted access to gearbox and PTO components. This crew cab consists of a steel and aluminum framework with galvanized steel or aluminum exterior paneling, adequately treated to prevent corrosion. It has two large lockable hinged doors with sliding safety glass windows, of which the lower door part is covered with protective aluminum diamond sheet or similar product. Crew cab's lighting is coming on automatically when the doors are being opened. Interior paneling of the crew cab is out of non-splintering material, easy washable. Bolts, fixings or threads which could hinder or hurt crew members are recessed and well protected. The crew cab's floor is covered with chequered slip-free aluminum sheet or similar product. Two large grab handles near each door, guarantee easy access for fire crew members. The crew cab is equipped with its proper air conditioning system.

An intercom system is provided allowing communication between the front cab and the crew cab.The crew cab is equipped with a large and comfortable bench which is covered with an upholstered and washable seat of min. 50 mm thickness, and can accommodate four crew members, facing forward. Each seat is equipped with a safety belt and breathing apparatus bracket.

In the driver cabin a control panel for operation and control of the superstructure is mounted at the original dashboard with an individual adjustable bracket. The control panel is visible from driver and co-driver. The following list of functions is only an example and it will be adjusted accordingly to the equipment of the vehicle. Optional available complete body steering thru 5" industrial panels on CAN-BUS system.

WARNING LIGHTS

The vehicle will be marked in a special way to distinguish it from ordinary vehicles

1 pcs blue LED warning lights bar mounted on the cab with 14 modules
2 pcs blue LED lights mounted on the front hood
1 pcs blue LED light mounted on the back of the superstructure.

All lamps are secured against the mechanical damage.

The vehicle will also have ability to issue voice messages (100W speaker system)

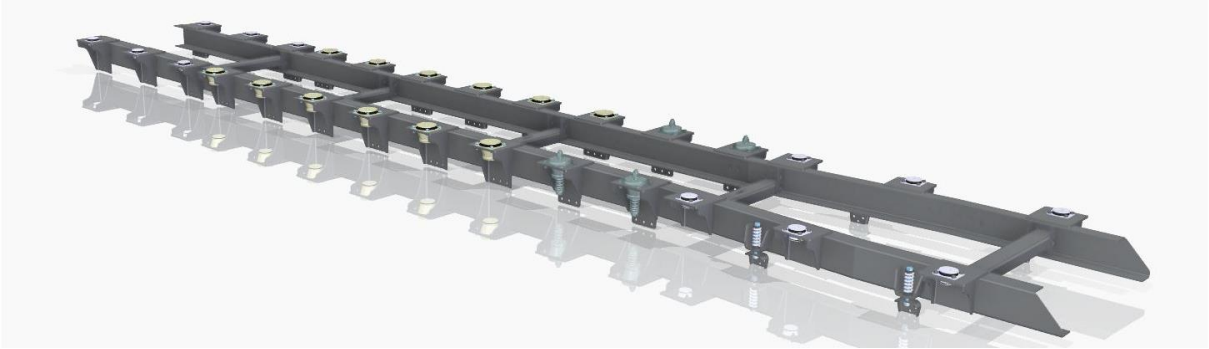
Superstructure is equipped with lights mounted on the roof of the vehicle designed to illuminate the working area within radius of 3 meters which ensures the comfort of the work even during the night time. Superstructure has got high quality reflections finishing on left – right – rear side of the vehicle for easy identification in the night.

RECHARGING UNIT

The vehicle is equipped with a provision for recharging the batteries on site from an external 230 volt supply via a cab or rear mounted weatherproof type plug and socket arrangement. A warning light is provided on the dashboard in clear view of the driver to show when the vehicle is connected to an external electrical supply. All electrical circuits will be fused separately suitably indicated and grouped into a common fuse box.

SUPERSTRUCTURE

A channel section steel sub frame is fitted to ensure even weight distribution of the superstructure over the length of the chassis rails. The design and mounting method allows the chassis to flex independently from the sub frame without damaging the bodywork. All additional mountings and bracketry are fixed directly to the sub frame and treated to ensure low maintenance and maximum corrosion resistance.



All materials used for the construction of the superstructure are completely new and free of defects. Very close attention is paid to the choice of the different materials and the anti-corrosive treatment. The bodywork of the vehicle is made of aluminum profiles, critical areas are in closed steel tubing and anti-corrosion treated hot-galvanized steel panels. The steel profiles have been treated internally against rust by means of a special injection wax. The whole body has been treated and professionally painted to give the vehicle a high resistance against rust.

[+] Interior finishing made in anodized aluminum sheets
[+] Equipment shelves with possibility of changing high (possible relocation)
[+] Individual drainage of each locker
[+] One code key to all rollers shutters
[+] Lowered steps under rear and front locker

[+] Equipment mounted in such way to avoid shaking or falling during driving.
[+] Mounted equipment can be easily removed and replaced.
[+] Equipment compartment equipped with two pull-out drawer for equipment
[+] Superstructure equipped with set of shelf and hose mountings
[+] superstructure roof equips with ladder mounting and suction hose mounting.
[+] Space between axles with lockers were its possible
[+] Front locker / tank / rear pump compartment as three independent modules

The roller shutters are made of light alloy double profiled units, which are fixed together by means of a synthetic joint. This synthetic profile is self-lubricating and resists extreme temperature changes. All roller shutters are water- and dust tight. Equipment and materials are fixed in such a way that damage or blocking of the roller

All equipment in superstructure are securely fastened by means of rattle-free fixings. Heavier equipment is fixed on telescopic runners or on sliding frames.

WATER AND FOAM TANK

The **water tank** is made from high quality material (GRP). Baffles are fitted internally to minimize water surge during braking or cornering. A manhole with 450mm dia. hinged filler lid with saddle bar and clamp is provided on top of the tank for internal inspection. A large overflow pipe prevents pressure/vacuum build up during filling/pumping operations and discharges clear of chassis components at low level. The tank to pump pipe work is of adequate size to support the rated output of the fire pump. A large capacity sump permits maximum discharge of the rated usable capacity while the vehicle is parked on level ground. A 50mm manual valve is fitted to the sump to allow complete drainage of the tank.

The **foam tank** is manufactured as an integral part of the water tank from the same high quality material. The interior of the foam tank if constructed from GPR is finished with a resin rich layup, to ensure compatibility with all known foam concentrates. A large spill tray is provided on top of the tank and incorporates a 450mm dia. hinged inspection/filler lid. A vent/vacuum prevents pressure/vacuum build up during filling/pumping operations and discharges into the decanting tray. A valved drain connection is provided at low level to empty contents of the spill tray complete with blank cap and chain. The foam tank pipe work is of adequate size to support all the pumping operations simultaneously. A 38mm valved tank drain/filler connection is provided at low level at the side of the vehicle, complete with, strainer and blank cap. Tank contents are indicated by an LED light system, located on the cab and rear control panels.

Water tank volume : 7 000 Liter. **Foam tank volume** : 700 Liter.

PUMP

The **single stage centrifugal Godiva P1A 4010** fire pump is located within the rear locker. The pump is constructed from corrosion resistant anodized aluminum alloy with the impeller running on a stainless steel shaft. The pump has a rated capacity of 6 500 liters/min at 8 bar with intermediate lower outputs and pressures to support the monitor and auxiliaries requirements. Pump priming is achieved by the automatic priming device.The **pump drive** is shaft driven from the power take off which is mounted on the transmission. Sufficient engine power is available to operate the pump at maximum output and to simultaneously mode when required to perform in the fire-fighting mode.

FOAM DOZING SYSTEM

Automatic adjustable around the pump foam admix system with a capacity for water flows up to 5000 liter/minute is installed. The foam admix system is of the flow independent type which means that regardless of the flow of water from the pump, the foam concentrate is always added at the selected percentage. The foam admixing ratio can be selected manually from 1 % till 6 %. The around the pump foam admix system is operational when taking water from the tank or hydrant (thru the tank). Water/foam mixture will be available at the low pressure delivery outlets, the monitor and at the hose reels if mounted.

SELF PROTECTION NOZZLES

A total of six under-truck nozzles, two at the front tires and two at the rear, is fitted. The capacity of each nozzle is approx. 85 liters per minute at 8 bars, the nozzles are a combination type for spraying water and producing air foam. The ground spray nozzles are connected to the pressure manifold with a remote controlled shut-off valve, to be operated only from inside the driver's cab.

OUTLETST / INLETS

Piping system : All suction and delivery pipe work is manufactured from corrosion resistant stainless steel or high pressure flexible tubing and is sized to keep frictional pressure losses to a minimum. A pressure relief valve is fitted in the pipe work system to relieve shock loads;

Vehicle will have following outlets :

4 x 2.5” low pressure outlets for extinction process
1 x monitor outlet

Vehicle will have following inlets :

2 x 4” suction inlet for suction water from natural sources as river/lake
2 x 2.5” inlet for hydrant refilling

Two hydrant connections are provided, one at each side of the appliance each fitted with a ball valve terminating in a 2.5” male instantaneous quick release coupling. The filling lines extend

internally to the top of the tank. Tank contents are indicated by a LED light system, located on the cab and rear control panels.

CONTROL PANEL

Central pump panel is fitted at the rear side of the truck, and comprises:

1 Engine tachometer with hour counter
1 Engine throttle
1 Pump suction pressure gauge (manovacuummeter)
1 Pressure gauge for waterpump
1 Foam liquid tank level gauge
1 Water liquid tank level gauge
1 Indicator warning light (red color) for engine oil pressure
1 Indicator warning light for main engine water temperature
1 “STOP” / switch
1 “START” / switch

A separate instrument panel with all necessary instruments for fire pump and monitor, bumper turret and sprinkler operation is also provided inside the crew cab.

ROOF MONITOR

A water and foam monitor, equipped with a foam aspirating tube, is installed on top of the pump compartment, at the rear of the vehicle, and can be operated from the monitor platform. The monitor made out of stainless steel is suitable for water and for both AFFF and FP foam agents. Monitor is capable to traverse horizontally by 360 degrees, to be elevated by 80 degrees from the horizontal, and to be depressed by 20 degrees, which is largely sufficient for all types of interventions. The notched capacities of the roof monitor are 1600 – 3200 liter per minute water/foam mixture at 8 to 10 bars.

SUPERSTRUCTURE ROOF

To give access to the roof of the appliance, a stable ladder with non-slip steps is fitted at the rear of the vehicle. The necessary protection plates and safety rails are provided. The roof is covered with aluminum cheered non-slippery plates of appropriate thickness either painted anti slip surface.. Roof is bordered by a gallery of light alloy tubes either side bodies . All equipment is securely fastened by means of rattle-free fixings. Heavier equipment is fixed on telescopic runners or on sliding frames.

ANCILLARY AGENT DRY POWDER SYSTEM

The dry chemical unit PLA 250 is suitable for use on standard dry chemical firefighting trucks or on twin agent fire fighting vehicles. Dry powder is foam compatible.

The dry chemical unit PLA 200 consists of:

1 off dry chemical container, tested and approved, filled with 250 kg of foam compatible dry chemical powder ABC type. The container is equipped with fill opening, drain plug, safety valve and charging system.

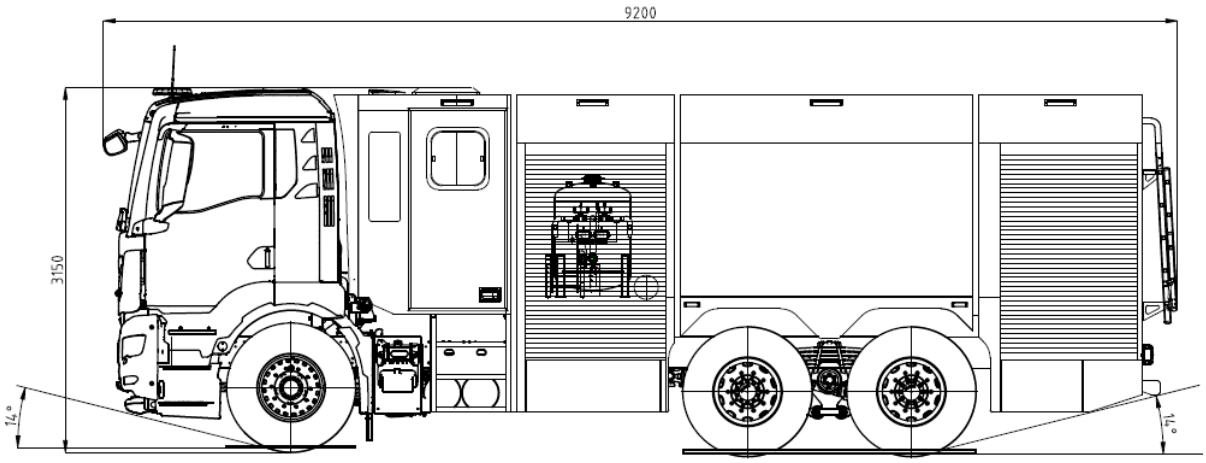
1 off CO2 cylinder capacity 20 liters with screw valve and high pressure hose for connection to the charging system

1 Off hose reel with 20 m dry powder hose 32 mm inside diameter, with dry powder nozzle provided with a 135° elbow

Technical data :

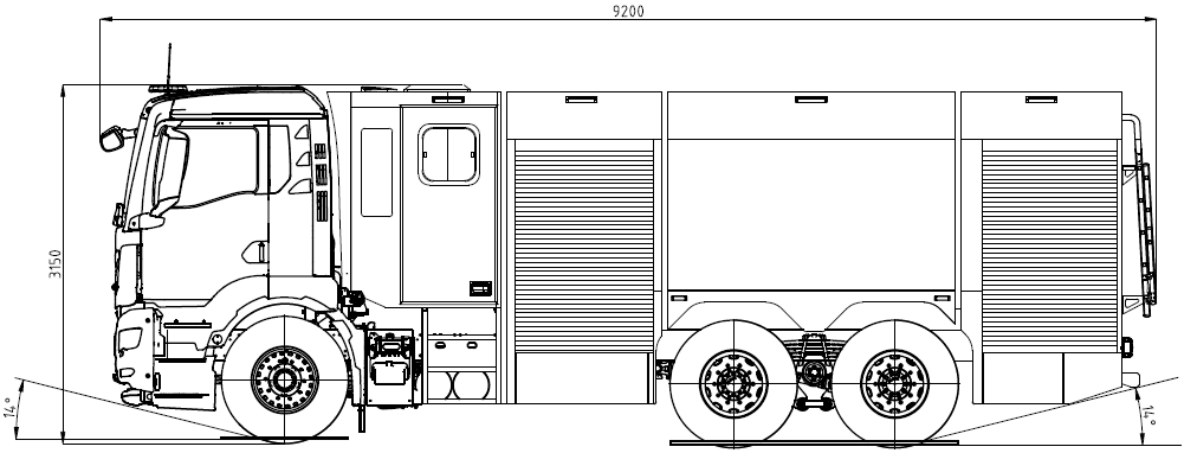
Maximum operating pressure	20 bar
Maximum working pressure	18 bar
Safety valve release pressure	20 bar
Charging time	14-17 S.
Capacity of N cylinder	20 l
Trigger nozzle discharge rate	1,5 kg/sec
Trigger nozzle throw	15-20 m
Inside diameter of dry powder hose	32 mm
Length of hose	20 m

Location of the powder skid :



NOTE SZCZESNIAK SV also reserves the right to substitute alternative items of equipment should original equipment envisaged become obsolete or unobtainable. We guarantee however that any such substituted parts or equipment will be of equal or superior design and quality. Drawings and photographs may show optional equipment available at extra charge only. Optional features, if selected, may influence the weight of the appliance. Any technical solutions applied in the construction of the vehicle are the intellectual and industrial property of the Seller and may not be copied and used by Buyer in whole or in any part. The solutions are patented property of the Seller.

ILUSTRATIVE DRAWING



ILUSTRATIVE DRAWING