



TITAN 4X4

AIRCRAFT RESCUE & FIRE FIGHTING VEHICLE

6,000 LITERS WATER TANK
852 LITERS FOAM TANK
250 KG DRY POWDER SYSTEM



Cab meets:

- *SAE2420 / ECE R-29 (A) (Front Impact Test)**
- *SAE2422/ ECE R-29 (C) (Roof Static Load Test)**

ARFF VEHICLE SPECIFICATIONS

Frame:

551,724KPA yield strength low carbon tubular steel rails 305mm x 101mm x 9.5mm with 6,147mm wheelbase, tow eyes front and rear.

Bumper:

Formed aluminium front and rear bumpers finished in gloss black.

Fuel System:

Two fuel tanks for a total of 348 litre capacity with primary and secondary filters, mechanical fuel pump.

Front Axle & Suspension:

14,061 kg capacity, front drive and steering assembly, variable rate coil spring suspension with 178mm wheel travel with telescopic shock absorbers and sway-bar assembly, power steering and 508mm diameter two spoke padded steering wheel.

Rear Axles & Suspension:

14,061 kg capacity axle rear drive assembly, variable rate coil spring suspension with 178mm wheel travel with telescopic shock absorbers and sway-bar assembly.

Differentials:

Driver controlled locking type on all axles with indicator light showing positive engagement.

Brakes:

Full air with 434mm diameter air ventilated discs with dual callipers. Anti-lock brake system located between the frame rails on each axle shaft with 720 cm³ air compressor, heated desiccant air dryer, drain valves at each tank, spring parking and emergency brake on rear axle.

Tyre & Wheels:

Four (4) Michelin® 24R21 XZL wide-base, radial ply tyres mounted on 533mm x 457mm steel disc wheels. Spare tyre and wheel shipped loose with vehicle.

Engine:

Rear mounted Tier III Scania DC16-087A (700HP) 515 kW Diesel, with muffler, vertical exhaust stack. An 8,387 sq cm radiator with fan and shroud, 50/50 ethylene glycol mixture and sight level gauge. Block heater with thermostat.

Transmission/Transfer Case:

Twin Disc Automatic Model TD61-1179 transmission with a Twin Disc Model 8MLW-1758-1 power divider / torque converter directly coupled to the engine.

Cab:

The vehicle cab shall be an all-welded aluminium construction designed exclusively for aircraft rescue fire-fighting service with seating for up to four (4) – driver, first officer and crew.

The inner structure shall be designed to create an interlocking internal "roll-cage" effect and shall be designed to effectively transmit roof loads downward into the sub frame structure to protect the occupant compartment from crushing in a serious accident. All joints shall be electrically seam welded internally using aluminium alloy welding wire. The interior of the cab shall be of the open design with an ergonomically-designed driver area that provides ready access to all controls as well as a clear view of critical instrumentation.

All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 414.

To aid in the safety of entrance and exit into and out of the cab the large step areas shall be provided with an incline angle design as opposed to straight up and down ladder type design.

The cab test and certified to meet SAE2420 / 2422 and ECE R-29 (A&C)

ARFF VEHICLE SPECIFICATIONS

Seating:

Driver's seat is a mechanical adjustable type located left of centre.
Officer's seat is a mechanical adjustable individual SCBA type located right of centre.
Two (2) Crew seats are individual SCBA type located behind driver and officer.
All seats supplied with 3-point safety belts.

Mirrors:

Remote controlled top glass mirrors with separate convex unit, attached to doors. A convex parabolic mirror is fitted above windshield on the left and right side.

Air Conditioner:

A 60,000 BTU/hour airflow air conditioner with multi-directional air outlets in cab.

Electrical Systems:

The apparatus shall have an on-vehicle networking system, also known as multiplexing, which will provide real time or current state diagnostic capability and reduced troubleshooting or down time when compared to a standard point to point wiring scheme.

Cab controls shall include: master electrical switch, starter button, shutdown switch, dash lights with rheostat and compartment light switch.

Instrumentation includes: electronic tachometer with hour meter, electronic speedometer with odometer, front and rear air gauge with warning lights and alarm, oil pressure and water temperature gauges with warning lights and alarm, voltmeter, fuel gauge, transmission temperature gauge, high beam indicator, self-cancelling turn signal, hazard switch, water and foam tank level lights.

Equipment includes: engine start and stop controls, directional lights, cab heater, lighted rocker type switches marked and back lighted, and fire system switches - guarded toggle type.

Wiring per SAE J-1128 with colour coding and function imprint every 76mm. Headlights, single faced, amber turn signals.

Clearance and rear stop/tail/turn and back up lights.

Alternator:

Dual 100 amp (total 200 amp) alternators with voltage regulator.

Batteries:

Four (4) Group 31, 1000 CCA, 12-volt batteries mounted in a ventilated area, accessible for checking. On-board charger with shore line connection.

Body:

The body skins shall be fabricated from materials designed to provide the lightest weight consistent with strength, heat and corrosion resistance requirements. **Rivets, sheet metal screws or glue shall not be used in construction of the apparatus body.**

Body framing shall be aluminium extrusion to provide maximum structural support consistent with the lightest weight that can withstand five (5) times the gravitational pull of body member loads to assure safe off road use and body member longevity.

The body module shall be separate and distinct from the water/foam tank and pump modules and be easily removable as a unit.

Rear engine access shall be provided by hinged "swing out" style assemblies located on each side and through a "lift up" section on top of the body to provide **ease** of maintenance and service of all engine components and fluid fills.

Slip resistant walkway on top of tank to fill hatches. Rear step access to top from ground. Removable panels and/or doors provided for access.

ARFF VEHICLE SPECIFICATIONS

Equipment Compartments:

The compartments shall be of moisture resistant construction and include louvers to facilitate airflow into the compartments. They shall be accessible from the ground by personnel of average height without the aid of steps or ladders.

There shall be a total of eight (8) compartments (4 on each side) to provide 10.2 cubic meter useable storage and / or mounting of complimentary agent hose reels, pre-connected hand lines with hose and nozzle, roll-out trays and adjustable shelves. **The compartments shall not be utilized for fuel tanks, pump plumbing, piping or access to plumbing, battery systems or generator mounting.**

ROM (Robinson) brand roll up door with satin finish shall be provided on all side compartments of the vehicle.

Handrails:

Provided at cab doors, rear walkway and top body centre.

Water Tank:

6,000 Litre capacity, 25mm polypropylene shell with 10mm baffles and 508mm x 508mm top hatch, 6mm mesh screen and maintenance free design, mounted on chassis frame.

Foam Tank:

852 Litre capacity, 25mm polypropylene shell with 10mm baffles and 508mm x 508mm top hatch with 6mm mesh screen, Integral to water tank, foam pail opener.

Pump:

9,463 L/min @ 15.52 bar single stage centrifugal PTO driven pump with bronze impeller and wear rings, self-adjusting mechanical seal and corrosion resistant cast housing with capacity to supply all crash mode outlets simultaneously.

Plumbing:

Stainless steel and flexible high pressure hose plumbing throughout with clamp and seal type removable connections.

Tank to Pump:

One (1) air actuated 203mm butterfly valve shall be installed between the pump and the tank. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times. A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

Left side Structural Panel:

- One (1) 65mm male BSS water fill/drain with ball valve.
- One (1) 38mm Female NST foam fill/drain with ball valve.
- One (1) 65mm female BSS discharge outlet with ball valve and pressure gauge.
- One (1) manual metering valve with setting chart for use with the discharge outlet.
- One (1) 127mm chrome plated NST suction fitting with cap.
- One (1) primer with control handle for use with the suction inlet.
- One (1) master drain.

Right side Panel:

- One (1) 65mm male BSS water fill/drain with ball valve.
- One (1) 38mm Female NST foam fill/drain with ball valve.
- One (1) 65mm female BSS discharge outlet with ball valve and pressure gauge.

Pre-connect Hand Lines:

One (1) 38mm discharge in each side front compartment.

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Foam Proportioning System:

Up to 908 L/min concentrate induction (11,356 L/min solution) Automatic Around-The-Pump type foam proportioning system. The microprocessor controlled system shall automatically maintain a selected foam percent mixture (0.5 to 10%) at the pump discharge regardless of water flow fluctuations. It shall monitor the flow rate of foam concentrate from the foam tank and the total flow through the discharge.

The three (3) LED displays shall show the flow rates and the foam percent selected. The operator shall be able to override automatic control by using the manual override buttons to adjust the proportioning valve.

Integrated Foam Testing System (OPTIONAL EXTRA):

A foam testing feature shall be an integral part of the ARFF plumbing system and designed to accurately test foam percentages *without the use of foam*. The completely integral foam test system is designed to simulate Aqueous Film-Forming Foam (AFFF) concentrate for test purposes.

Roof Turret:

Remote electronically Joy-Stick controlled, cab interior, non-aspirating type with dual rates 1,420 & 2,840 L/min and 7.26 kg per second Dry Chemical nozzle.

Bumper Turret:

Remote electronically Joy-Stick controlled, cab interior, non-aspirating type with 1,800 L/min nozzle.

Dry Chemical System:

The dry chemical system pressure vessel in compartment L1 shall hold 250 kg of dry chemical.

A nitrogen cylinder with sufficient capacity to discharge the agent and purge the system shall be provided. An Electric Nitrogen Bottle lift system shall be installed to meet the intent of FAA and NFPA guidelines for one person to handle and service the cylinder from ground level.

Booster Hose Reel (Water/Foam/DCP):

Electric rewind booster reel with twin 30m x 25mm hose and Hydro-Chem nozzle.

Lighting & Warning Equipment:

Electronic siren with PA system and output speaker at cab front.

One (1) 610mm LED warning light bar mounted on cab top left and top right visible 360° in horizontal plane.

One (1) 360° LED warning beacon with amber lens on each side on rear engine cover.

Ten (10) Micro Pulse LED red warning lights mounted on vehicle front, sides, and rear.

Four (4) LED scene lights mounted: (1) each side of cab and (1) each side of rear body.

Two (2) LED flood lights mounted on front cab brow.

Two (2) LED flood lights mounted on top rear body facing rearward.

Two (2) LED deck lights mounted on top rear body facing forward to illuminate top deck.

LED lights in each enclosed compartment, two (2) in the engine compartment and two (2) in the body service areas.

12-volt electric back up alarm

Finish:

Cab interior in Plexstone

Chassis painted black

Exterior finish acrylic urethane high gloss enamel in user choice of single non-metallic colour: lime, red, white, or yellow.

Up to sixty (60) 76mm - 203mm reflective film letters and three numerals for vehicle identification.

Titan Performance Parameters

Water Capacity: 6,000 litres
Foam Capacity: 852 litres
Dry Chemical Capacity: 250 kg
Overall Length: 10,668mm
Overall Width with mirrors: 3,505mm
Overall Height: 3,708mm
Wheelbase: 5,715mm

Gross Vehicle Mass Rating:
Front: 14,061 kg
Rear: 14,061 kg

Engine:
Make: Scania
Model: DC 16 - 515 kW @ 1800 rpm
Displacement: 14,994 cm³ (15 litre)
Torque: 2,615 Nm @ 1800 rpm

Transmission/Transfer Case:
Make: Twin Disc
Model: TD61-1179

Power Divider/Torque Converter:
Make: Twin Disc 8MLW-1758-1
Power Divider to Pump: Hydraulic, multiple disc clutch

Approach Angle: 30°
Departure Angle: 30°
Inter-axle Clearance Angle: 12°
Under-body Clearance: 460mm
Under-axle Clearance: 330mm
Turning Diameter (Wall to Wall): 33m

Chassis Flexibility: Climb a vertical wall 460mm high and negotiate terrain which will deflect the opposite wheels of the truck in alternating contrary directions at least 356mm without the remaining wheels losing traction.

Acceleration: 0 - 80 km/h in 25 seconds or less.

Top Speed: 112 km/h minimum.

Gradeability: 20% @ 13 km/h ascend and maintain speed.
40% @ 1.6 km/h ascend, stop, start, descend, while extinguishing agents from the primary turret.
50% @ 1.6 km/h ascend and descend.

Side Slope Stability:
Static: 30° (58%)
Dynamic: 11° (20%) while extinguishing agents.

Dynamic Balance at 30m radius: 35.2 km/h
J-Turn Test at 46m radius: 48 km/h
Evasive Manoeuvre Test: 40 km/h (per **NATO document AVTP 03-16W**)

Titan Performance Parameters

Brake Holding:	
Park:	20% ascending & descending
Service:	50% ascending & descending
Brake Stopping Distance:	11m at 32.2 km/h 40m at 64.4 km/h
Pump Flow Rate:	9,463 L/min at 1,380 to 1,552 kPa
Roof Turret (Non-Aspirating):	1,420 & 2,840 L/min at 1,400kPa
Control:	Electronic Joystick.
Reach Straight Stream:	76.2m
Reach Dispersed Stream x Width:	22.8m x 10.5m
Horizontal Rotation:	90° either side of centre
Vertical Travel:	45° up and 20° down
Dry Chemical Discharge:	7.26 kg/sec
Bumper Turret (Non-Aspirating):	1,800 L/min at 1,400kPa
Control:	Electric Joystick
Reach Straight Stream:	46m
Reach Dispersed Stream x Width:	15m x 9m
Horizontal Rotation:	90° either side of centre
Vertical Travel:	45° up and 20° down
Triple Agent Hose reel:	One (1) Dual agent reel with twin 25mm x 30m hose and Dry-Chem nozzle for Water/Foam & Dry Chemical discharge in L1 compartment
Side Lines:	Four (4) 65mm discharges (2 x each side). Two (2) 38mm pre-connected discharges (1 x each in L4/R4 side compartments).
Under-truck Nozzles (3):	57 L/min each at 1,400 kPa

The Titan meets or exceeds all National Fire Protection Association (NFPA) 414, Federal Aviation Administration (FAA), and International Civil Aviation Organization (ICAO) requirements.

Note: These specifications reflect design standards at time of publication and are subject to change without notice.

