

SPECIFICATION:
INDUSTRIAL WATER FOAM TENDER FIRE APPLIANCE
Built in accordance with NFPA and British Standards where
applicable

BASED ON A
MAN TGM 18.290 4x2 Double Cab



Example of Similar Vehicle

General

This specification details a Fire Rescue Vehicle with a very high automotive and operational performance. The complete vehicle is designed and manufactured in accordance with ISO9001 for quality assurance to meet the firefighting requirements of Industrial and Refinery sites.

The chassis is a production-built unit designed to offer maximum performance, coupled with reliability, ease of operation and maintenance

The layout of the vehicle is designed to achieve a low center of gravity and excellent roll stability. The bodywork design provides safe unrestricted access to the crew compartment, working areas and storage lockers.

Maximum attention is given to crew safety and comfort; the cab construction gives considerable crew protection and is acoustically and thermally insulated.

The modular design bodywork and media tank allow for easy maintenance with the option that the individual modules can be lifted clear of the chassis to gain access to major components if required.

Dimensions

Wheelbase	4,775mm
Overall length	9000mm approx
Overall width	2500mm over body
Overall height	3200mm

Chassis

The 2020 MAN TGM 18.290 4x2 chassis is fitted with a front mounted engine with gearbox and power takeoff, selected to provide excellent vehicle maneuverability on highway. It has a maximum **GVW of 19,000Kgs**.

**Engine/cooling
& clutch**

The engine is a water-cooled, four-stroke, direct injection diesel unit with exhaust driven turbo charger with 'air-to-air' after-cooler. Installed at the front of the chassis with good access for daily maintenance.

Make/Model	MAN D Engine
Power output	290 BHP @ 16-1900 rpm
Emission level	Euro V

Features:

radiator and intercooler
viscous fan
EDC engine regulation
Oil sump for gradeability up to 30%
fuel filter
fuel filter heating
connection for external engine speed control
Control module for external data exchange (customer- specific control module) with body functionality
1-cyl. compressor 238 cc
engine brake with additional actuation via brake pedal
exhaust valve brake
Without flame-start/jump-start system
clutch with 395 mm diameter
Engine start/stop device under front panel
Speed limiter electronic 110 km/h
Cruise control
Crankcase ventilation closed
anti-noise package 80 dB (92/97EEC)
confirmation for international registration

**Transmission
Automatic**

Gearbox software MAN TipMatic® “Emergency” (**emergency services vehicles in road deployment**)
MAN TipMatic® 12 12 OD gearbox
neutral pos. switch
Switch position DS leads to increased fuel consumption as well as wear to the driveline incl. clutch

Power Take Off

An engine driven PTO is provided to drive the fire pump.
Power take-off NM AS/10b with flange f=1.50 top

Fuel System

The engine manufacturers approved fuel system installation, includes mechanical fuel pump, primary and secondary fuel filters and flexible fuel lines where necessary which are protected from damage, exhaust heat and exposure to ground fires. The fuel tank is mounted at low level to the right side of the chassis.
Fuel tank 150L
AD Blue 27L

Air Cleaner

The standard air cleaner is of the disposable element type mounted behind

Exhaust system The standard manufacturers steel exhaust system is fitted to discharge at low level away from the pump operator.

Permissible weights

Total weight	19000 Kg
Front axle	7500 Kg
Rear axle	13000 Kg

Front axle front axle VOK-07 dropped
front springs parabolic 7.5 t
Caution: Front springs uprated to maximum
Stabiliser for front axle

Rear Axle Rear springs, air, 13 t
Caution: Rear springs uprated to maximum
hypoid rear axle HY-1350
with differential lock in rear axle
ECAS air suspension
ECAS parameter input for automatic setting of normal- height level from 20 km/h
Stabiliser for rear axle

Steering The steering is hydraulically power assisted with adjustable steering wheel.
POSITION RIGHT HAND SIDE

Braking system The system is fully pneumatic with air provided by an engine driven compressor with air dryer and multi-circuit protection valve feeding the air reservoirs. The service brake is a dual circuit system split front to rear. ABS anti-lock braking is provided as standard to enhance braking performance and on road maneuverability, automatic slack adjusters are fitted as standard.

The secondary/parking brake system is of the spring applied type acting on the rear wheels. A fast build up system is provided to permit quick release of the spring brakes.

The parking brake is capable of holding the fully laden vehicle on a 20% grade without air assistance. The engine exhaust brake is foot operated. An independent reservoir provides air for auxiliary functions.
MAN BrakeMatic (electronic brake system)

anti-lock braking system (ABS)

Features:

anti-spin regulator (ASR)

Electronic stability program (ESP)

disc brake for front axle

disc brake for rear axle

without brake connection on frame end

Air filler connection at front

Air dryer

Wheels and Tyres

The vehicle is fitted with the following tyre combination.

Front Tyres: - Michelin 315/70R22.5

Drive Tyres: - Michelin 315/70R22.5

Spare wheel & tyre with front tyre pattern

Chassis frame

Ladder frame construction with channel section side members and fabricated cross-members of various sections. The chassis frame is fully painted in synthetic enamel over a primer base coat.

Front mounted winch

One Extra heavy duty 24V winch will be mounted to the front of the vehicle.

Line pull 6340KGS, wander lead 3.7Mtr, main winch line 12mm dia x 30m



Electrical System

The 24-volt electrical system is fully suppressed in accordance with BS 833, each cable is individually identified or colour coded. A high capacity engine driven alternator charges the system. All circuits are protected by suitably rated circuit breakers; the system is insulated, waterproofed and protected against chafing and exposure from ground fires.

Single-tone horn, electric

Without 12/24 V socket on end of frame

Battery main switch, mechanical

2 batteries 12 V 88 Ah

Battery box lockable (without lock)

Maintenance sign for batteries - 'maintenance-free'

Basic alternator

windscreen washer electric



Cab- double

The 5-man cab (2 front and 3 rear) standard double cab is a full width rigid safety cell designed in accordance with current **European safety regulations for cab safety and roll over protection.**

The ergonomic design provides spacious accommodation and unrestricted access for crew members wearing fire-fighting suits. The module is forward mounted on the chassis, on flexible 4-point suspension mountings. The cab is a fully tilting module allowing good access for maintenance.

The main construction incorporates a steel framework; doors are manufactured to the same standard. The inside is fully trimmed with thermal and acoustic insulation to provide a comfortable working environment for the crew and reduce noise and heat levels

Easy access to the cab is via deep, wide non-slip steps with large pattern grab handles; the cab floor is covered with sealed rubber mats with a non-slip finish for crew safety and longevity. Wide opening doors are fitted on either side with electric windows, large handles, double latching locks and heavy-duty check strap devices.

The driver is provided with fore and aft adjustment, headrests and a retractable lap and diagonal seat belts. The driver's seat is mounted on an air sprung suspension unit with adjustable shock absorber. OEM supplied driver's seat to meet crash approvals ECR29.

One Passenger (front) and three rear crew seats will be fully NFPA compliant- Bostrom tanker series SCBA seats. The seats will incorporate a Zicomatic SCBA bracket fully adjustable to suit either 30min or 60min cylinders, includes integrated 3 point red seat belts



Excellent vision is provided by the tinted, single piece, wide angle, laminated glass windscreen. Twin windscreen wipers and fixed washer jets are fitted and a multi-speed heater blower unit provides rapid demisting. Toughened tinted safety glass is used for the side windows. Large rear-view mirrors are fitted on either side with secondary convex and kerb mirrors fitted on the passenger side of the cab.



EXTERIOR

- double cab 'DK' 4 doors 'DK' 2240mm wide, 2785mm long
- Cab mounts air suspended at rear
- Windscreen of laminated glass tinted
- Door windows tinted
- Cab rear wall without windows
- Side windows tinted behind B-post
- Mechanical lifting roof
- Kerb mirror, left
- EU front mirror on co-driver's side
- Mechanical rear mirror and wide-angle mirror
- Mirror brackets for body width 2500-2600 mm width 2500 mm
- spray reducer

INTERIOR

- seat coverings in standard quality
- driver's seat static, longitudinal, seat back and height adjustment
- Seating for up to 4 persons at rear
- two additional vehicle keys
- door interior paneling washable
- Brushed aluminum insert on instrument panel
 - air conditioning system AC R134A with automatic temperature control without CFHC
- Red/white interior lighting in cab roof
- reading lamps for driver and co-driver
- Safety belt display, driver's side
- Electric door window lifters for driver and co-driver
- Roller blind for windscreen, mechanical
 - handles left and right (on B-post)
 - handles left and right (on A-post)
- Grab handles above RH and LH doors
- Storage compartment above windscreen

Interior design in Sand
Signs in English
Plastic floor and engine tunnel covering

Driving controls

Steering wheel - Adjustable
Automatic gear selector - dash mounted
Spring brake release - dash mounted
Brake pedal - on floor to right of steering
Engine speed pedal - to right of brake pedal



Example TGM dash board

Automotive Instruments

The cab is equipped with a full set of instruments as follows:
Speedometer (c/w odometer & hour-meter) Engine tachometer
Brake air pressure gauges Engine oil pressure gauge
Coolant temperature gauge
Fuel tank contents gauge
Clock

Automotive Lighting Equipment

The vehicle is provided with a complete set of vehicle road lighting equipment comprising:
Headlamps - 2 off
Side lamps/rear lamps & stop lamps
Direction indicators with side repeaters
Hazard warning system
Reversing lights and beeper

Front fog lamps

Two fog lamps are fitted, controlled from a dashboard-mounted switch and linked to the headlamp-dipped beam.

Rear fog lamps

Two rear fog lamps are fitted, controlled from a dashboard-mounted switch.

Front marker lights Two white marker lamps are fitted to the front of the cab roof to help describe the overall outline of the appliance, controlled from the side light circuit.

Side marker lights Amber marker lamps are fitted each side of the appliance at waist height to help describe the overall outline of the appliance, controlled from the side light circuit.

Rear marker lights Two red marker lamps are fitted to the rear of the body at high level to help describe the overall outline of the appliance, controlled from the side light circuit.

Switches

Panel mounted:	
Power master switch (ignition key)	Engine start (ignition key)
Heater and Blower controls	Air Conditioning
Hazard lights	Side/Headlamps
Driving lamps	Cab interior lights
PTO 1 engage	
Locker lights	
Steering column mounted:	
Direction indicator	Headlamp main beam (including flash)
Windscreen wipers, washer	Road horn

Warning devices Warning / indicator lights and buzzers, where indicated are provided for the following:

Low air pressure (light and buzzer)	Low engine oil pressure (light/buzzer)
Turn signal hazard light	Parking brake applied light
Headlight main beam light	Coolant maximum temperature light
Low coolant level (light and buzzer)	
Alternator not charging light	
PTO engaged light (Buzzer interlocked with Parking brake)	

VIDEO Data recorder & seat belt monitoring system-Class 1- NFPA data compliant:

Data Downloadable via USB
Software included
CANBUS based system via J1939

Data captured:

Speed
Acceleration
Deceleration
Engine RPM
Throttle %
ABS
Seating status
Seat belts status
Master optical warning
Time and date

Seating warnings SBMS:

All seating positions monitored
Seated and buckled- GREEN
Seated and unbuckled- RED and alarm
No occupant and buckled – RED and alarm
Empty – no indication or alarm



Rear view Video camera system including microphone, 7" display for drivers' convenience.

**Ancillary
Electrical
Equipment**

In addition to the standard automotive and road lighting equipment, the following ancillary equipment is fitted on the vehicle. All ancillary electrical equipment is controlled from a control panel on the cab console. All switches and controls are clearly labeled with international symbols or English. All systems are CANBUS controlled using FB-CAN interface and programming via J1939. Switching and control via FireBug UK-CAN panel.



- One red LED warning Light Bar mounted on the top of the vehicle sized to suit cab overall width (no less than 56")
- Two red flashing repeater LED lamps mounted at the front
- Two red flashing repeater LED lamps mounted at the rear
- Two red flashing repeater LED lamps mounted on each side

Example below of light bar



- Two LED scene lamps fitted on each side
- One LED scene lamps fitted on the rear
- One set of flush mounted LED lamps for top working surfaces and access steps
- One set of internal lighting for storage lockers white (LED)
- 12v supply in the cab for installation of radio equipment
- Battery saver function through CANbus system inc load shedding
- Torch charging facility in cab
- Radio antenna base installed in cab roof, cables to header panel

Siren / PA system

An electronic siren system with Yelp/Wail/Hi-Lo & P.A. with loud speaker are fitted, control via dash board switch within easy reach of either driver or passenger. Also activated via road horn through CAN system

**Air horns**

Air Horns and compressor located at front of chassis, controlled via a red floor mount foot switch suitably mounted for driver operation.

Automatic Battery Charger

A 240v battery charger is fitted, with automatic regulation and battery balancing facility. Power for the battery charger is supplied via the specified external mains input installation

Auto-Eject socket mains input

A mains input shoreline auto-eject socket is fitted for the mains equipment specified. A plug is supplied loose for fitment to the customers power supply, wiring is provided for an indicator light to warn that the mains plug is connected. Linked to the vehicle ignition system to auto eject on engine crank. A visual LED display is provided at the input point as to battery status.

Fitted at rear of cab on the driver's side.

Additional Items**CAB SPOTLIGHT:**

There will be two white LED spotlights located on the cab roof, one each side. The spotlights will be mounted on pedestals.

SPOTLIGHT CONTROL:

There will be one wireless dash mounted remote provided for each spotlight.

SPOTLIGHT CONTROLLER LOCATIONS

The remotes to control the spotlights will be stowed- one within reach of the driver and one within reach of the officer.

HAND HELD LAMPS

There will be two Streamlight, Model Survivor 90503, LED flashlights with

chargers.

PUMP PRESSURE GAUGE IN CAB

A pump pressure gauge will be provided in the cab.

"DO NOT MOVE APPARATUS" INDICATOR- if PTO is engaged

A flashing red indicator light (located in the driving compartment) will be illuminated automatically per the current edition of NFPA. The light will be labeled "Do Not Move Apparatus If Light Is On".

The same circuit that activates the Do Not Move Apparatus indicator will activate a pulsating alarm when the parking brake is released.

OPEN DOOR INDICATOR LIGHT

A red "open door" indicator light will be provided inside the cab, in clear view of the driver, to warn of an open door.

Bodywork

The rear bodywork comprises of a one-piece body module. The module is manufactured using a co-polymer (PPC) engineering grade polypropylene material, which is resistant to salt water environments and impervious to all commercially available fire-fighting foam concentrates. The module is designed and extrusion welded to offer maximum strength and rigidity. Upper surfaces of the body are fitted with an anti-slip material.

9 lockers are provided in total, front section will be pump bay compartment see General arrangement drawing. Three equipment lockers on each side and a locker at the rear of the vehicle. Each large side locker is enclosed by a flat section, flush fitting roller shutter, with anodized aluminum slats, weatherproof seals and lift bar pattern locks. All lockers are fitted with internal ultra-bright white LED strip lighting controlled by a master switch in the cab. All lockers are white PPC internally and are resilient to foam and most other chemicals, this material offers ease of cleaning and high impact resistance thus offer a finish that will last the life of the vehicle.

The body work will be suitable mounted on a subframe via vibracoustic mounting points spaced along the chassis subframe thus to allow transfer of torsional loads throughout the chassis and body work, not subjecting the bodywork to any unnecessary loads outside its design parameters. All body work mounting is subject to approval by the chassis manufacturer.

All body work is designed by FB UK using proven practice and the highest quality materials, all designs are subject to Finite analysis. All materials are cut at controlled temperatures using the latest CNC technology to maintain the closest tolerances possible. Our welders are all trained and approved to industry standards. All tanks are subject to 48hour hydro static testing.

The provision stowage is provided as follows: exact position TBA with customer. All trays are constructed from anodized Heavy duty aluminium section with perforated 4mm floor plates to enable easy repositioning of equipment if required without the need for drilling holes.

Forward Pump bay Compartment will have firefighting controls and house cross lay hoses

Front O/S locker 1 x slide and tilt shelf
 1 x HD slide out tray 500KG rated- DP vessel

Mid O/S locker 1 x fixed shelf

Rear O/S locker 3 x fixed tray

Front N/S locker 1 x Slide & tilt shelf
 2 x fixed shelves

Mid N/S Locker 1x fixed shelf

Rear N/S Locker 3 x fixed shelf

Each locker will be fitted with VAN Trucking mounting tracks to offer shelf support and height adjustability



10years warranty offered on FB UK PPC body work

**Additional
items**

Tow bar: fitted to the rear of the Chassis- rated to 9000Kgs straight pull
The unit will be design to ensure SWL greater than the rated value and will be subject to finite analysis

Towing eyes: points will be fitted at the front and rear of the vehicle to aid recovery of the vehicle and will be suitably rated.

Tail board: a rear tail board will be fitted to aid access to the rear access steps for easier removal of hoses etc. from rood area. It will be fitted with a non slip coating.

Rear access: step cups and grab handles will be fitted to the rear bulk head for access to roof for removal of suction hoses, lay flat hoses and the ladder.

Hose beds-cross lay: hose beds will be fitted to the roof of the main body and above the pump compartment (cross lays). Adjustable dividers will be fitted to suit various hose sizes required in SOW. All hoses will be suitable restrained. Construction will be PPC and Aluminum.

Hose Troughs: 2 suction hoses will be stowed either side of the roof and safely secured.

Walkway: All walkways will be coated in anti-slip material- either tread plate or 3M grip floor matting.

SCBA spare bottle storage: secured by 4 Zicomatic brackets final locker position to be agreed at pre-production meeting.

Roof Ladder: stowage only to be provided for 1off 10' Duo safety ladder 775-A, located on the R/H side of the appliance roof in a stainless steel trough and secured with a suitable quick release strap.

Stowage only on roof for 8ft Pike pole as per NFPA 1901 requirement, customer to advise

**Water Tank -
Usable capacity
– 3200 litres**

The water tank is integral to the rear body module and is constructed from high quality Polypropylene Co-polymer (PPC). Baffles are fitted internally to minimize water surge during braking or cornering compliant to BS-EN1846.

A manhole with 500mm 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.

Filling/drain:

One hydrant connection is provided, on the rear of the appliance and fitted with a ball valve terminating in a 2.5" male instantaneous quick release coupling and inlet strainer. The filling line extends internally to the top of the tank. Tank contents are indicated by a LED five-light system, located on the pump control panel. A suitable water tank drain valve will be fitted.

Lifetime warranty on FB UK PPC tanks, water/foam

**Foam Tank -
Usable Capacity
– 800 litres.**

The foam tank is manufactured as an integral part of the water tank from the same high-quality Polypropylene Co-polymer.

A large spill tray is provided on top of the tank and incorporates a 200mm dia. hinged inspection/filler lid. A vent/vacuum prevents pressure/vacuum build up during filling/pumping operations and discharges into the decanting tray. A valve 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 pneumatically actuated isolating valve is fitted to allow remote operation from control panels. The tank design permits maximum discharge of the contents.

Filling/drain:

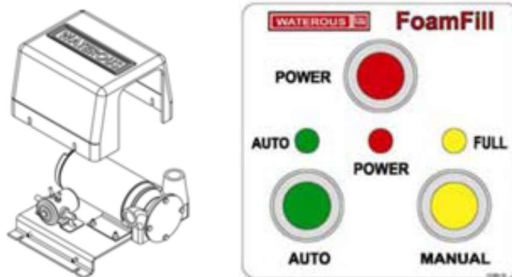
A valve tank drain/filler connection is provided at low level at the rear of the vehicle, complete with blank cap. Tank contents are indicated by a LED five light system, located on the pump bay control panel. An audible warning is fitted for low media level alert.

Foam Pump fill pump

Waterous foam fill pump: 24v 10GPM self-priming foam tank filling pump. The operator panel includes color-coded stainless-steel push button switches, LED indicator lights and a polycarbonate overlay.

Operational functions and LED indicator lights:

- Red "POWER" push button ON/OFF switch
- Red "POWER" system operational LED
- Green "AUTO" push button Auto Mode switch
- Green "AUTO" Auto Mode LED
- Yellow "MANUAL" push button overrides of Full Tank switch
- Steady yellow "FULL" LED indicates full tank
- Flashing yellow "FULL" LED indicates tank filling



Foam RTP system

The foam round the pump foam proportioner (RTP) will be fitted on the intake side of the water pump suitable for Class B foam concentrates. Provided with a metering valve, instruction chart and operational range.

Manufacturer – **Williams- WATP=1500**

The system will be provided with a clean water flushing facility via main water tank or external source.

Features ■ Operates against pump intake pressure up to approximately 33% pump discharge pressure. Example: pump discharge pressure of 150 psi (10.3 bar), intake pressure of 50 psi (3.4 bars). ■ Selectable proportioning rates between 0.25% and 6% suitable for municipal and industrial applications.

- Proportions up to 4,000 gpm (15,140 Lpm) of foam solution at 1%.
- Proportions up to 1,250 gpm (4,730 Lpm) of foam solution at 3%.
- Proportions up to 625 gpm (2,360 Lpm) of foam solution at 6%.



Fire Pump

Model **Waterous CXPA**, single stage-Mid ship mounted 1250GPM@150psi

Drive Engine driven Power take off

Material Iron casing and bronze impeller, stainless steel centre shaft.



CX Pump Performance						
GPM	l/min	l/sec	PSI	bar	kPa	MPa
750	3000	50	150	10	1000	1.0
1000	4000	65	150	10	1000	1.0
1250	5000	80	150	10	1000	1.0
1500	6000	100	150	10	1000	1.0

Pump Features

- Two-Piece, vertically-split, high-tensile, close-grained iron (bronze Optional) body.
- Bronze, double-hubbed, balanced impeller. Flame –plating optional.
- Replaceable bronze wear rings to increase pump life.
- Stainless steel impeller shaft supported by oil-lubricated ball bearings.
- Self-adjusting mechanical seal.
- DIN PN10 150 Flange (CXN Model)

5yr warranty

The Pump will be mounted to the subframe and connected by a flexible coupling to the water tank to allow dynamic movement and flexibility, ensuring no loads are transfer to either the main tank or the pump itself.

Pump speed Governor:

FRC Pump BOSS 200 suitable for MAN using J1939 CAN network.

The Pump Boss 200 pressure governor uses state-of-the-art programmable microprocessor technology and operates in one of two modes, pressure or RPM. It maintains a steady pump discharge pressure within system capabilities by controlling the engine speed or holds a selected engine RPM.

**Over heat protection: Watrous**

Thermal Relief Valve:

Opens and releases water from the pump when the water temperature reaches 140°F (60°C).

Thermal Switch:

Activates a flashing red light on the control panel when the water temperature reaches 180°F (82°C). This is an additional safety function to alert the operator that the water temperature is continuing to rise.

Optional Audible Alarm:

Will sound in conjunction with the flashing red light and provide an additional warning that the water temperature is rising.

Control Panel:

Contains the red flashing light as well as a test circuit for the light



Intake Relief Valve: Waterous “NEW” For 2020

Set an forget, discharge to ground.



Primer: Hale Environmentally safe priming system ESP

Hale's ESP priming system provides the ultimate in fast priming, high vacuum performance and reliability without the use of a lubricant. Technologically advanced and environmentally safe, the Model ESP is self-lubricating. There is no oil tank to check and refill, no oil is expelled to the ground. The ESP is a semiautomatic priming system with a single action control valve which simultaneously activates the entire system ensuring fast consistent air evacuation.



Pipework

The pipe work system is designed to work with incoming pressures of 0 – 16bar on site ring-mains supplies or suction draft may be boosted by the fire pump to give operating pressures of up to 16 bar.

All suction and pressure pipe work are manufactured from stainless steel or high-pressure flexible tubing and is sized to keep frictional pressure losses to a minimum.

All system valves are fitted with operating levers for manual operation in the pump bay or on the monitor platform as appropriate for smooth operation. A pressure relief valve is fitted in the pipe work system to relieve shock loads; the discharge is piped to waste at low level.

Test points are fitted to both suction and discharge sides of the pipework to for annual pump testing.



Water/Foam Monitor

The Akron DeckMaster Monitor 1250 GPM is a 24-volt Electric wireless remote-control monitor and nozzle mounted on the front of the body module. The monitor is specifically designed for long range and high performance.

Features

The unique design of the DeckMaster Monitor allows electric elevation and positioning more than 24" above the base of the flange for operation over obstructions with the push of a switch. DeckMaster Electric Monitor

- 340° horizontal rotation with adjustable stops
- Vertical travel 90° above to 45° below horizontal
- Manual override for horizontal, vertical and elevation control
- Stow position set easily by the end user
- Automatic drain for freeze protection
- Diagnostic light for trouble-shooting
- Connection for deployed indicator light



This monitor shall include all electric U2 technology 12 VDC controls.

The monitor shall include the automatic stow feature.

A panel mounted control shall be installed on the pump operator panel

A position sensor shall be provided on the monitor that shall activate the "do not move apparatus" light inside the cab when the monitor is in the raised position.

Wireless remote control shall be provided and located at the pump operators panel.

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Akron Deluge Riser: Deck Master Monitor mounted to riser

Features

- 3" waterway
- 12" extension
- With unique three-piece design, the extremely compact device is only 18 1/2" (470 mm) when nested
- Can be utilized within pump modules that have limited space
- Electrically actuated (24 volt)
- Durable lightweight Pyrolite construction
- Manual override
- 5-year warranty
- Inlet: 3" (75 mm) standard



**Fire Fighting
System**

Main pump inlet will be via 6" manifold
Tank to pump line- 4" remote butterfly valve including non-return valve
Pressure manifold 5"
Monitor feed 3" and 3" remote butterfly valve
Foam feed 2" and 2" remote butterfly valve including non-return valve

RH side-Main suction inlet 6" with removable strainer- NST thread and CAP

RH side Outlets: two discharge water foam outlets with 2.5" ball valves, 2.5"
BS inst. Female Coupling/fitted with bleeder valve

LH side: one auxiliary inlet 2.5" ball valve, outlet 2.5" BS inst. Female
Coupling/fitted with bleeder valve

LH side Outlets: two discharge water foam outlets with 2.5" ball valves, 2.5"
BS inst. Female Coupling/fitted with bleeder valve

Rear mounted discharge: one discharge water foam outlet with 2.5" ball
valve, 2.5" BS inst. Female Coupling/fitted with bleeder valve

All main operation ball valves will be 3-piece stainless steel valves with ¼ turn
handles with PTFE seals.

All butterfly valves will be EDPM seals and stainless-steel paddles, ¼ turn
manual handles will have gates fitted, or pneumatic air operated valves will
be fitted with KINERTROL actuators.

**All inlets and outlets up to 2.5" will be fitted with LA BS instantaneous
couplings**

**Dry
Chem/Hydro
chem Hose reel**

A PERRIN Engineering 230Kgs (500Lbs) capacity dry powder tank will be fitted
located in the RH side front locker mounted to an extra heavy duty slide out
tray to allow easy maintenance and filling of tank. The Tank will be refillable
via spin off top with relief valve. A sized Nitrogen cylinder will be located as
to ensure effective manual handling for ease of removal. The cylinder will be
controlled via a remote regulator. All discharge controls will be via a simple
switch panel (pneumatically switched) panel will include tank pressure
gauge. DP Tank is manufactured and tested in accordance European
standards to the requirements PD5500. Powder supplied with Vehicle.

The DP tank will provide discharge to the dual agent hose reel, location LH front locker.

Hose reel will be supply plus- 24V electric rewind fitted with 75' of 1" twin agent hose. Fitted with a Williams handgun Hydro chemical Nozzle for the discharge of water/foam and dry chemical.

Water foam feed to reel will be via 1.5" hose and controlled via 1.5" ¼ turn valve. Water foam flow rate- 60,95 and 125 GPM

Chemical discharge rate- 3,5 and 10Lbs per sec.

**Pump Panel
Left on side**

The pump control panel is located in the Pump compartment with easy reach from ground level with the following controls:

Water valve on/off switch and open indicator

Foam valve on/off switch and open indicator

Valves for water inlet to pump and pressure manifold

External foam supply inlet isolation valve- foam pump control

Primer switching

Water discharge and suction pressure gauges-analogue 50mm

Warning Light PTO/Pump engaged - Green LED ultra-bright flashing

Monitor valve on/off switch and open indicator

Monitor controls

Foam flushing

Foam RTP adjustment control

Water tank level lights

Foam tank level lights

Engine speed control Pressure governor- FRC BOSS will provide:

Engine coolant temperature and oil pressure warning lights

Pump speed RPM indication

Pump pressure

Return to idle

Panel illumination auto upon locker open

All pipe work drains will link to a master drain valve adjacent to the control panel



ALL Pneumatically controlled valves will be fitted with emergency manual override levers.



Example Fire Panel switching/level lights with LED indication

Tank contents: Level indication as below

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

Protective Treatment and Paint Finish

Chassis- OEM Painted	Two pack epoxy paint with additional wax protection.
Cab-OEM painted.	Galvanized and Zinc plated panels, sealed primed and painted.
Sub-frame	the sub-frame; tank and body mountings are sealed primed and tow pack epoxy painted.
Under-body	Wax protection Dinotrol-anti corrosion protection
Cab & Body	External cab body sections finish painted in Carmine red RAL3002(Fire Brigade Red)
Wheels	Standard manufactures Silver finish.
Bumpers	Standard manufacturers finish

Wings	Standard manufacturers finish
Lockers	Natural finish. Plastic washable
Shutters	Anodized aluminum left natural.

Sign writing

A suitable logo and sign writing are applied on each side of the appliance in white lettering approx. 150mm high letters to customer's requirements. 5" hi reflective diamond grade tape along the length of the vehicle - Yellow. The rear of the vehicle will have 4" yellow/red chevrons, excludes rear shutter. Front will have white hi viz stripes.

Loose equipment

The following equipment is to be suitably stowed.

- 10- 2.5" x 100' red lay flat with BS LA inst. couplings
- 5- 1.5" x 100' red lay flat with BS LA inst. couplings
- 2- 5" x 50' yellow lay flat with LA 5" stortz
- 1 SM 5" stortz x 6" FNST LA- adaptor anodized
- 1 hydrant adaptor 5" stortz-4" FBSRT
- 2 spark proof spanner sets
- 1 stortz wrench 4-5"
- 1 hydrant wrench
- 1 25ltr 3-6% AR-ARFF foam barrel
- 4 kegs DP 25kgs per keg
- 4 provenger nozzles 150 GPM
- 1 Akron Mercury Monitor
- 1 Siamese clapper 3 way 6" out x 2.5" x3 inlets
- 1 wye gated 2 way 2.5MBIx1 x 2.5" FBI x2 outlet- dividing breech
- 1 foam tube 125GPM w/shut off pistol grip aspirated
- 2 ABC DP chem extinguishers 9kg
- 2 Co2 extinguishers 5kg
- 1 serrated axe 15"
- 2 600mm bolt cutter
- 1 1.8m crow bar
- 1 2 kg mallet
- 1 fire blanket
- 1 first aid kit

Pre-Production Meeting

A Representative of FB UK would attend a preproduction meeting with IRP (local Partner) at the customers location to ensure the specification meets with full approval prior to production. Any changes or issues can be resolved and any changes agreed prior to production commencing to ensure 100% customer satisfaction upon delivery. This also gives the customer a point of contact throughout the project. This visit would be arranged as soon as an order is received.

Manuals and Technical

Two sets of instruction books, all in ENGLISH are provided, and include the following:

Description, Operation and maintenance manual including comprehensive wiring diagrams and assembly drawings for all major components.
Operators handbook for Main chassis (MAN)

**Testing,
Acceptance and
Commissioning**

FIREBUG will provide facilities for progress and in-build inspection by Fire Service and Engineering inspectors, if required. Firebug will arrange for an **independent inspector** to approve the vehicle to specification and performance.

Prior to delivery, FIREBUG will confirm in writing that the appliance meets all functional and performance requirements and will provide certificates for:

- Water Tank capacity
- Foam tank capacity
- Monitor outputs at a specified operating pressure
- Foam calibration test results. (water used as a substitute for media)

FIREBUG will arrange and provide all facilities for the following:

- Vehicle weight testing, both laden and unladen
- Tilt angle testing
- Automotive (road) tests at fully laden state

NOTE STATIC STABILITY TILT ANGLE WILL BE NO LESS THAN 30 degs

Training

FIREBUG will provide 1 week's onsite appliance familiarization training to cover all instructors or shift patterns as required. At customer location in Trinidad.

Warranty

FIREBUG will provide a **full two-year warranty** for all component parts and workmanship commencing from the date of vehicle commissioning and further guarantee to supply all component parts for a period of 15 years from the date of the vehicle commissioning.

Any additional warranty provided by component suppliers will be passed on directly to the end user.

Additional Warranty:

LED lighting- 3years

FB-UK looms- 5years

Main Body/locker Module – 10 Years

Water/Foam Tank – life time

Stainless steel pipework and welding- 20years

**Product
Support**

As a valued customer, we aim to provide you with an expert, prompt and friendly service through Firebug's fully trained, highly motivated and enthusiastic staff.

We are aware that in emergency situations, you need help straight away. You can be assured that we are striving to maintain the highest standard of personal service whenever you contact us through our emergency, 24 hours a day, telephone service. Our staff will endeavor to answer your telephone call within 20 seconds, evaluate your queries, offer advice and send a service engineer to attend your breakdown or service requirement within 24 hours, if necessary, dependent on location. In some cases, we will send in our local partner to assess the problem.

In addition to emergency support, you will be provided with technical and design advice on vehicle build; improvement, service and maintenance of your fire and rescue appliance.

You can be assured that your views will be sought to ensure that we constantly develop and improve our services to meet your needs.

Quality control

FIREBUG ensures that all inspection requirements are determined and satisfied throughout all phases of manufacture. A comprehensive stage inspection process is used to ensure quality is maintained throughout the build process. All vehicles are built to ISO 9001-2015 Part 1 standards for design and quality assurance. All designs conform to EC construction and use, all current health and safety regulations where applicable, consideration of manual handling for best practice is always forefront of our designs.

Simon Pitt
Technical Director
FB Fire Technologies Ltd



End...

FB Fire Technologies Ltd

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