

TECHNICAL SPECIFICATION SHEET

MORITA FIRE FIGHTING VEHICLE CHEMICAL TENDER MODEL MCF-50

CHASSIS MAN TGM 18.240 4x2 BB

1. GENERAL

1.1. General Specifications

Scope	These specifications are provided to fight all kinds of fires including the house fires and petroleum & gas fires. The vehicle is suitable for high mobility along extremely rough or soft roads as well as along the inner ways of the industrial complex and can support without any damage extended periods of stand-by in full load conditions. The fully loaded vehicle has high stability and power to weight ratio in order to safely and speedily reach the fire by driving in narrow ways with sharp corners.		
Basic Specification	Fire pump	MORITA ME-5	
	Water Tank	5000L	
	Foam Tank	500L (Class B foam concentrate)	
	Around the pump proportioning system (manual)		
Crew	The vehicles can transport a crew of SIX (06), including the driver, in the cabin.		
Standard	the vehicle will be generally engineered according to JAPANESE SAFETY STANDARD FOR FIRE TRUCKS standards - where applicable.		
Couplings	The coupling will comply to GOST STANDARD		

1.2. Dimensions & Weights

Overall length – approx.	8,220	mm
Overall width	2,490	mm
Overall height – approx.	3,500	mm
Wheel-base	4,425	mm
Tread, front	2,660	mm
Tread, rear	1,802	mm
Ground clearance	295	mm
GVWR	18,000	kg

2. CHASSIS

2.1. Chassis Specifications

Make	MAN
Model	TGM 18.240 4x2 BB (EURO 4)
Drive	4 x 2
Steering	LHD
Type	standard commercial truck specially fitted for heavy duty firefighting service
Clutch Type	Dry single plate, hydraulic with cushioning spring with air assist
Gear box	ZF 9 speed, 1 reverse
Axles nos.	02
Front axle	chassis standard
Rear axle	chassis standard
Tires – front	single
Tires – rear	twin
Size	front 02WA 295/80R22,5 Rear 04WA 295/80R22,5
Spare wheel c/w tire	(01) – supplied loose for transit
Service Brakes	MAN BrakeMatic electronic brake system with ABS
Suspensions	Semi-elliptic, leaf spring

2.2. Chassis Electrical System

Voltage	24 V
Batteries quantity	2 x 12 V
Alternator	24V-155A
Fuses box	in the cabin
Traffic lights	according to chassis manufacturer's standard to local traffic regulations, including : head light, braking light, stop light, turn signal light, reverse light and plate light
Electric horn	according to chassis manufacturer's standard

2.3. Chassis Ancillary Equipment

Tow eyes	01, at rear with towing bar
Accessories	- Wheel spanner - Hydraulic jack - Wheel chocks (02)

3. ENGINE

Model	MAN D0836LFL53 (EURO 4)
Type	4 stroke-cycle, water-cooled direct injection turbo charged diesel engine
Location	front
Cylinders	line
Displacement	6.900cc
Max power	176kW (240HP)
Max torque	925 Nm
Max speed	89 km/h
Fuel tank	150 liter

4. CABIN

4.1. Cabin Specifications

Type	Double cabin, forward control type, electrohydraulic operated tilting driver and crew's cab. The cab construction on framework of sheet steel members and is clad with hot-dip galvanized sheet steel. Cabin is made with solid and modern design for broad view
Doors	(04) doors
Seats	(06) seats – fully adjustable driver's seat, 01 driver seat and 01 co-driver seat, 04 Crew seats –all equipped with lockers for 04 SCBA Mounting on the front side of the rear seat
Windshield	top shaded – laminated type c/w wiper/washer
Side windows	toughened safety type – wind-up

4.2. Cabin Control Panel

Driver's dashboard	is fitted with every gauge and control necessary for safe drive – according to chassis manufacturer's standard
Controls of the fire-fighting system	are located on a separate control panel which is accessible both from driver's seat and officer's seat and operator. It is well lighted for nocturnal operation and control and gauges have labels in English. It encloses: <ul style="list-style-type: none">- Light bar – siren switches- Main switch for shutter box lighting- Power Take Off , control + warning light

Air conditioning unit

Chassis manufacturer's air conditioning unit – suitable for tropical areas.

5. SIGNALS & ALARMS

5.1. Lights and Siren

Model	Manufacturer's standard
Type	Bar type (01) on cabin roof – red color /blue / red color configuration
Rotating lights	(04) lights are integrated in light bar
Amplifier	(01) 100W amplifier

5.2. Public Address System

Model	Manufacturer's standard
Type	100W type
Siren	Electronic
Tone	AIR HORN/ WAIL/YELP/HI-LO/YEOW
Position	At cabin dashboard
Speaker	100 watt

6. BODYWORK

6.1. Bodywork Specifications

Design	from front to rear, the bodywork comprises of: <ul style="list-style-type: none">- Front module with two side lockers- Water & foam tanks- Rear module with two side lockers and one rear pump bay- Steps for side lockers
Construction	The body is made of rigid steel frame and panel structure.
Lockers	The lockers have walls and floor made from checkered aluminum plate, and they are fitted with suitable brackets for the auxiliary equipment. The flooring has suitable drain and ventilation holes.
Fire Pump Compartment	The pump and the piping are located into a wide-size compartment, giving protection but also easy access for maintenance and over-haul. The quick response hose reel, 1"x20m with nozzle is located in the pump compartment.
Closures	all lockers are closed by Aluminum roller shutters – anodized
Shutters	Dust and waterproof aluminum roller shutters with double handle grip type and locks.
Illumination	All lockers are automatically lighted for nocturnal operation.
Deck	The upper deck is covered with aluminum no-skid layer and grab-rails and handles are provided wherever necessary for the crew safety. Ladder storage brackets are provided. The deck is boarded via rear stairways. Brackets for suction hoses storage.
Mudguard	Rubber mud flaps are provided

6.2. Painting Specifications

Primer	30 micron
Surfacer	30 micron
Putty	50 micron
Acrylic Urethane	150 micron

6.3. Colors Scheme

- Cab & Body	Fire Red
- Bumper	Fire Red
- Rim	Chassis original color
- Tire pressure	Above the wheels in bar

7. TANKS

7.1. Water Tank

Capacity	5,000 liters (useable)
Location	On and at the center of chassis frame, in front of the pump
Material	Stainless steel (SUS 304)
Thickness	4 mm
Construction	The tank is integral part of the body, has rectangular shape with reinforced sidewalls, equipped with shock absorber
Suction line	from tank to pump – with butterfly valve Ø 100mm – manual control
Refill line	from pump to tank – with valve Ø 65 mm – manual control
Fittings	<ul style="list-style-type: none">- Removable anti-surge bafflers- Manhole Ø 450 mm c/w quick open lid- Overflow pipe Ø 65mm- Water tank level gauge- Anti-swirl prevention for a funnel formation during suction operation- Tank drain with valve

7.2. Foam Concentrate Tank (Class B foam concentrate)

The foam tank is connected directly to the Around the pump proportioning system.
Top filler manhole is sufficiently large to allow inspection and maintenance.

Capacity	500 liters
Material	Stainless Steel (SUS316)
Thickness	4 mm
Construction	The foam tank is separated from water tank
Suction line	tank to foam proportioning system – manual valve
Filling	From the roof of the vehicle
Fittings	<ul style="list-style-type: none">- Manhole Ø 450 mm c/w quick open lid- Vent valve- Foam concentrate level gauge- (01) Drain valve- Ejector for foam suction to the pump proportioning system

8. FIRE PUMP & PIPING

8.1. Water & foam system

General	the system will comprise of: <ul style="list-style-type: none"> - (01) water tank - (01) foam tank (Class B foam concentrate) - (01) fire pump - (01) Around the pump proportioning system
Around the Pump Proportioning	Around the pump proportioning system is designed such that foam concentrate can be added at suction side. The in-line proportioner is designed for range ability of 400 to 3000 l/min. It will be possible manually to set the foam percentage at 0(zero) and proportionally between 1% to 6% (normally 3%) of Class B foam concentrate.
All components and the piping	will be designed for a minimum working pressure of 22 bar and will be able to withstand a test pressure of 29 bar the working pressure.
Piping	All water piping and pump connections are made of corrosion resistant, hot dipped galvanized steel or rigid rubber hoses or flexible rubber joints. All foam piping and pump connections are made of high-grade stainless steel, brass or rigid rubber hoses or polyester material.

8.2. Fire Pump

Location	at rear in a closed bay
Manufacturer	MORITA
Model	ME-5
Type	centrifugal balanced turbine pump
No. stages	02
Flow rate	3'000 l/min @ 8 bar (Total Head) Flow rate when suction lift of 1m and using 01 line of suction hose
Priming	Oil-less piston type priming pump is equipped to the main fire pump and is propelled by a pump drive shaft simultaneously and transmitted by an electro-magnetic clutch. The priming system incorporated safety function is started engaging by controlling only one operation and will be automatically disengaged.
Piston stroke	34 mm
Displacement	973 cc / rev
Fire pump materials	
Pump cover	Bronze casting, sea water anti-corrosion
Impeller	Bronze casting , sea water anti-corrosion
Valve	Bronze casting or stainless , sea water anti-corrosion

Pump shaft	High tension stainless steel
Drive	The pump is driven by the truck engine, via high-torque Power Take Off. The pump is located at the rear end of the truck.
Water suction inlet	(01) – rear facing – coupling 125mm with GOST coupling and cap and chain
Pressure outlets to water	(02) – rear facing – ball valve – instant coupling 65mm GOST coupling with cap and chain

8.3. Around the pump proportioning system

Foam system	the pump is fitted with manual foam system
Type	Around the pump proportioning
Mixing ratio	manually adjustable from 0%, and normally 1% to 6% (usually 3%) (Class B foam concentrate)
Flow rate	Adjustable foam flow from 400 to 3000L/min, Max. 3,000L/min
Foam concentrate	The foam proportioning system is suitable for all protein and Fluor Protein based foam concentrate, as well as for synthetic foam concentrate, including AFFF

9. CONTROLS

9.1. Pump Control Panel

Location	The external control panel is located in the pump compartment, It is well lighted for nocturnal operation.
Labels	Control and gauges have suitable labels in English and/or internationally recognized pictograms.
It encloses:	<ul style="list-style-type: none">- water pump duplex gauge- water pump pressure gauge- water tank level gauge- foam tank level gauge- control of water tank suction valve- control of foam tank suction valve- control of foam system flushing valve- control of water tank refill valve- Pump throttle- Pump lubrication nipple- PTO water cooling valve- Primer ON/OFF switch

10. MONITOR

Type	Manual control type
Location	On the roof
Mode	Spot mode/Flood mode (for both water and foam)
Material	Lightweight, durable anti-corrosion material
Rated flow rate	2400 L/min
Vertical travel	-30 degrees to +80 degrees
Horizontal rotation	360 degrees continuously

11. HOSE REEL

Type	Manual control type
Location	In the pump compartment
Hose length	1" x 20m , rubber hose
Water nozzle	1 pc

12. COMMUNICATION SYSTEM

Maker: Motorola (supplied by VT)

Frequency : VHF 136 – 174 MHz

01 unit of Radio, mounted on the vehicle, model : XiR M3688

Channel Spacing : 12,5/25 kHz

Power : 25W

Sensitivity : 0.22 μ V

Standard : IP54, MIL-STD 810 C,D&E

02 units of Portable Radio, model : XiR P3688

Channel Spacing : 12,5/20/25 kHz

Power : 5W

Sensitivity : 0.19 μ V (Digital) and 0.22 μ V (Analog)

Standard : IP54, MIL-STD 810 C,D, E,F &G

- Battery : 02 units (01 unit spare battery), Lithium Ion, 21900 mAh and equipped cable and software.

13. ANCILLARIES

The following equipment will be delivered with each truck and properly stored on-board

- 1) 12 Discharge hose (Ø51) of 20m length with coupling GOST 50, material rubber nilon, working pressure 16 bar



Brand : OSW

Origin : Germany

- 2) 10 Discharge hose (Ø66) of 20m length with coupling GOST 70, material rubber nilon, working pressure 16 bar



Brand : OSW

Origin : Germany

- 3) 10 Discharge hose (Ø 77) of 20m length with coupling GOST 80, material rubber nilon, working pressure 16 bar



Brand : OSW

Origin : Germany

- 4) 04 Suction hose (D125) of 2m length with coupling GOST 125



Brand : OSW
Origin : Germany

- 5) 01 Suction strainer (D125) with coupling GOST 125



Brand : AWG
Origin : Germany

- 6) 01 Rope for suction hose 20m length



Brand : Morita
Origin : Japan

- 7) 02 Stop/Straight/fog water branch pipe (Ø66) with coupling GOST D70



Brand : OSW
Origin : Germany

- 8) 04 Stop/Straight/fog water branch pipe (Ø51) with coupling GOST D50



Brand : OSW

Origin : Germany

- 9) 01 Three way divider D80-D80-D50x2



Brand : AWG

Origin : Germany

- 10) 01 Three way divider D70-D70-D50x2



Brand : AWG

Origin : Germany

- 11) 02 Connector D80/D70



Brand : AWG

Origin : Germany

12) 02 Connector D80/D50



Brand : AWG

Origin : Germany

13) 02 Connector D70/D50



Brand : AWG

Origin : Germany

14) 01 2-section ladder 8m , aluminum made



Brand : Hasegawa

Origin : Japan

15) 01 short handle axe



Brand : Morita

Origin : Japan

16) 01 hammer



Brand : Morita

Origin : Japan

17) 01 Saw, steel handle



Brand : Greenlee

Origin : USA

18) 01 bolt cutter



Brand : HIT

Origin : Japan

19) 01 shovel with handle



Brand : TOMBO

Origin : Japan

20) 01 crowbar



Brand : Morita

Origin : Japan

21) 01 pick axe



Brand : Morita
Origin : Japan

22) 02 fire blanket



Brand : SANKYO
Origin : Japan

23) 01 ABC fire extinguisher 6.0 kg powder



Brand : Morita
Origin : Japan

24) 01 CO2 fire extinguisher 2.0 kg



Brand : Nippon Dry
Origin : Japan

25) 04 Delivery hose spanners



Brand : AWG

Origin : Germany

26) 02 Suction hose spanners



Brand : AWG

Origin : Germany

27) 01 Fire ejector with GOST 50 (for water tank) (supplied by VT)



Brand : AWG

Origin : Germany

28) 01 Auxiliary pump for suction foam (supplied by VT)



Brand : Flux

Origin : Germany

The pump include 05 m suction hose and have battery (including charger), driven by vehicle's power.

Capacity : 45 Imp

29) 02 Low-expansion foam nozzle 400L/min type



Brand : OSW

Origin : Germany

30) 02 SCBA (supplied by VT)



Brand : MSA

Origin : Germany

Including : face cover, respirator, supporting rack, strap, gauge, indicator horn & standard accessories

Air cylinder: 6.8 liters, pressure 300 bar

31) 01 Gas detector (supplied by VT)



Brand : MSA

Origin : US

Model ALTAIR-4X multi-gas detector w/motion-alert O₂/CO/H₂S sensors

C/W: - with audio and visual, vibrating alert

- * Built-in motion alert

- * 0-30% Oxygen sensor

- * 0-1999 ppm CO sensor

- * 0-200 ppm H₂S sensor

- * Built-in datalogging

- * Lithium rechargeable battery

- * Gloabl charger

Standard US

14. DOCUMENTS & TESTING

14.1. Technical Manuals

Operation manuals	(02) sets – English language
Maintenance manuals	(02) sets – English language
Spares catalogs	(01) sets – English language

14.2. Quality System

Quality system certification	The project, development and production of the offered fire fighting system and equipment are under quality system regulation in accordance with ISO 9001.
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14.3. Testing

Pre-shipment inspection	at MORITA factory in Japan by our Quality control dept.
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14.4. Training & Commissioning

Training & Commissioning	at End User's site – 01 engineer for 3 days.
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