

## DATA SHEET

### FIREMIKS® 2400-1-2-3-PP-M

#### WATER DRIVEN VOLUMETRIC PROPORTIONER - WITH PISTON PUMP FOR MOBILE USE

1%-2%-3% selectable dosing system for fire-fighting – for mobile use. Extinguishing water drives the volumetric water motor, which in its turn drives the single positive displacement piston pump that doses the correct amount of concentrate in the extinguishing water.

Equipped with an Automatic air relief valve, (alt. Manual air relief valve). (no 5 on Flow chart) to speed up priming of dosing pump. Flushing of dosing pump is done automatically when the concentrate inlet is closed with Selector valve Dosing/Flushing, (no 4 on Flow chart). Supplied with Strainer on water inlet (no 12 on Flow chart) to ensure clean water entering the water motor and a Wrench to rotate the unit by hand at maintenance.

Complete with sturdy Stainless-Steel Frame with lockable wheel and a separate suction pipe. Version with handle and bottom bracket also available.

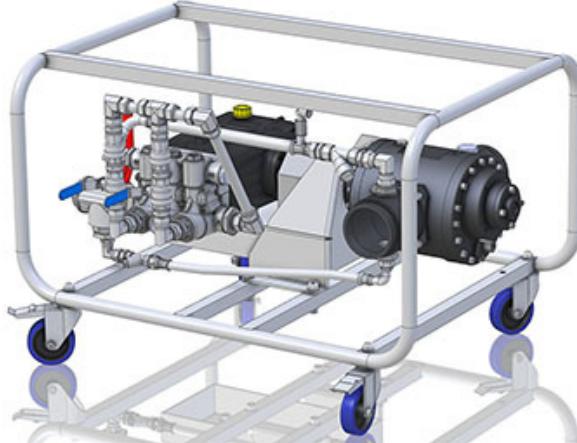
In-house designed multi-vane water motor giving early volumetric function, without using moving elastomer sealings. Correct dosing at system pressures from 2 to 16 bar and from min flow\* up to 2400 lpm.

Available also in different water motor materials (Ni-Al-Bronze, AISI 316L) and with an optional Dosing/Return valve, *DRV*, that allows for testing the system without mixing the concentrate, a Pressure Relief valve *PRV*, also included. More options towards the end of this document.

Easy to select 1%, 2% and 3%, even while unit is in action, with two Selector valves (no 9 on Flow chart) placed on dosing pump.

Lower pressure losses compared with inductors giving longer jet throw length. Dosing is also immediate which allows quickly opening and closing the nozzles (pulsing).

Easy selection of  
1%-2%-3% with just two  
selector valves



#### TECHNICAL DATA

Max water flow rate @rpm:	2400 lpm (634 US gpm) @ 1176 rpm (+/- 5 rpm)
Min water flow rate @ 8 bar 1-20 cP*:	310 lpm (82 US gpm) @3% (@ 1% and 2% the min flow is reached earlier)
Min water flow rate @ 4 bar 1-20 cP*:	260 lpm (69 US gpm) @3% (@ 1% and 2% the min flow is reached earlier)
Viscosity range:**	From 1 cP to 6422 cP at shear rate 1/s
Nominal dosing rate:	Selectable 1%, 2% and 3%
Max inlet operating pressure:	16 bar (232 psi)
Factory tested pressure:	24 bar (350 psi), 20 bar (292 psi) with <i>DRV</i> option incl <i>PRV</i> set at 20 bar
Suction height:	Gravity feed requested at high viscosity non-newtonian concentrate
Operation temperature:	1°C to 55 °C (34°F to 131°F)
Storage temperature, dry condition:	-30°C to 55 °C (-22°F to 131°F)
Connections water motor G (ISO 228-1) male:	G 4" - DN 100 - Hose couplings in customers choice
Connection pump G (ISO 228-1) female:	1 1/4" Cam-lock - DN 32 - Equipped with Suction pipe

\*Notes on minimum flow:

- Minimum flow rate is the flow where dosing reaches reaches 3% (at 3% settings)
- Minimum flow changes depending on system pressure and viscosity properties of the concentrate and design of the suction line. See Instruction Manual
- Below min flow, there is still dosing if the unit is rotating.
- Once min flow is reached in a typical installation, usually dosing is no longer pressure sensitive at higher flows.

\*\*Consult with Firemiks AB for higher viscosities.

\*\*\* Dosing tolerance nominal to +30% according to EN 13565, NFPA 11 and FM 5130. (eg. at 3% setting: 3% to 3.9%)

## MATERIALS

<b>FIREMIKS</b> Aluminium – For fresh water/salt water occasional use		<b>FIREMIKS</b> Bronze – For salt water/offshore	
Water motor:	Alu AA 6082/7075, (housing / rotor) Hard-anodized and PTFE-coated, Stainless steel AISI 316 (fasteners), PET (vanes), NBR (O-rings).	Water motor:	Ni-Al-Bronze JM7 (C95500) (housing/rotor), Stainless Steel AISI 316 (fasteners), PET (vanes), NBR (O-rings)v
Dosing pump:	Wetted: Brass (head), ceramics, NBR (seals), stainless steel. Other: aluminium (body), hardened steel with corrosion protection (crankshaft), AISI 316 Fasteners	Dosing pump:	Wetted: Brass (head), ceramics, NBR (seals), stainless steel. Other: aluminium (body), hardened steel with corrosion protection (crankshaft), AISI 316 Fasteners
Flexible hoses:	High grade stainless steel + PTFE	Flexible hoses:	High grade stainless steel + PTFE
Fittings:	Stainless steel AISI 316L	Fittings:	Stainless steel AISI 316L
Ball valves:	Nickel-plated brass, brass, PTFE SS	Ball valves:	Stainless Steel AISI 316, PTFE

**Note:** water motor made from Stainless steel AISI 316L (housing/rotor) also available, remaining spec same as bronze.

## APPROXIMATE DIMENSIONS AND WEIGHT

Overall dim. L x W x H mm:	970 x 725 x 650
Weight Aluminium:	100 kg (wheels incl.)
Weight Bronze or Stainless Steel:	152 kg (wheels incl.)

Actual dimensions and weight depending on optional equipment.

## PRESSURE LOSS TABLE (@ 8 bar system pressure)

Water flow rate	Pressure loss @3%
250 lpm	0,9 bar
800 lpm	0,95 bar
1200 lpm	1,15 bar
1600 lpm	1,45 bar
2000 lpm	1,9 bar
2400 lpm	2,35 bar

Pressure loss at 1% and 2% is around 0.1-0.2 bar lower. Pressure loss will vary slightly depending on system pressure.

## PRODUCT NAME

Material water motor	Product Name
Aluminium:	2400-1-2-3-PP-M-ALU
Bronze:	2400-1-2-3-PP-M-BRZ
Stainless Steel:	2400-1-2-3-PP-M-SS

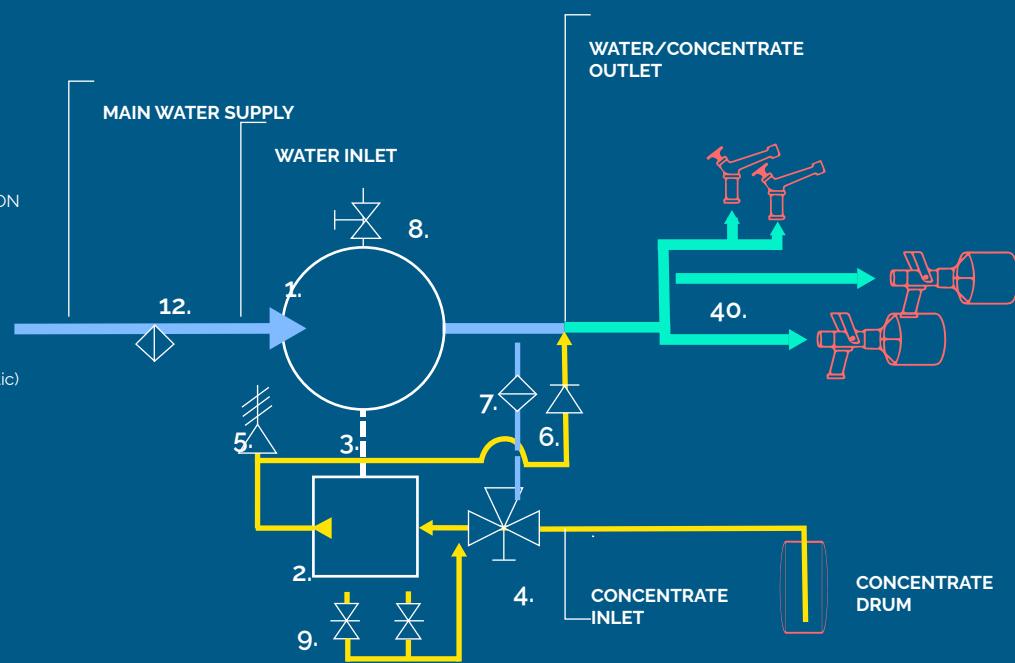
## PRINCIPLE FLOW CHART

NOT INCLUDED WITH FIREMIKS

WATER  
CONCENTRATE  
WATER/CONCENTRATE SOLUTION

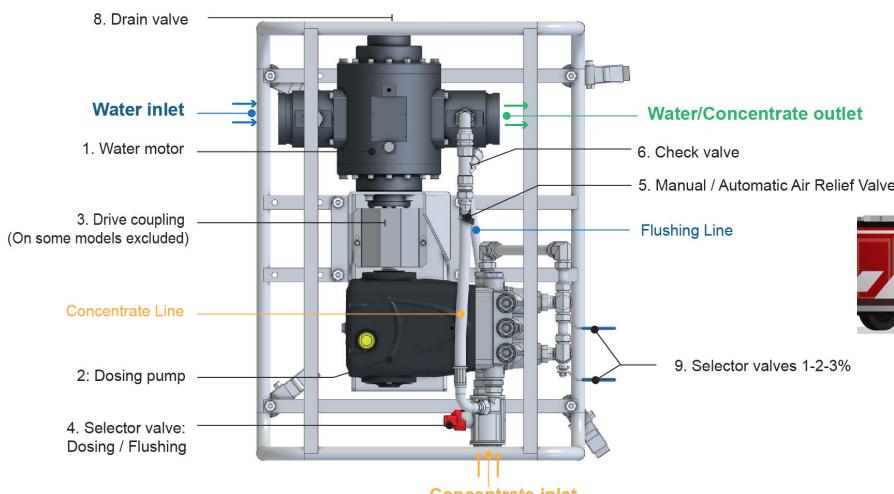
1. Water motor
2. Dosing pump
3. Drive gear
4. Selector valve: Dosing/Flushing
5. Air relief valve (Manual or Automatic)
6. Check valve
7. Filter
8. Drain valve
9. Selector valves 1% - 2% - 3%
12. Strainer

40. For example:  
Nozzles/Monitors



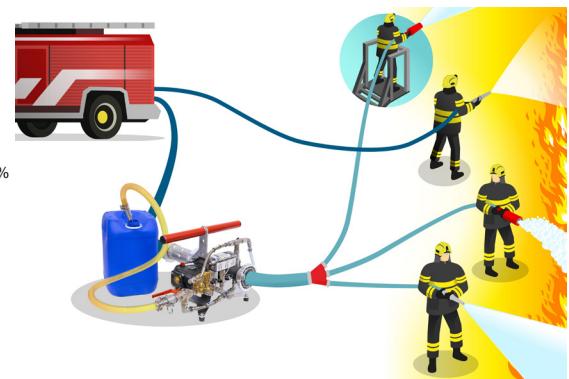
N.B. Reverse water flow direction is optional.

## MAIN PARTS OVERVIEW



FIREMIKS makes it easy to build a flexible system, quickly adapting to different fire-fighting scenarios.

To just one FIREMIKS you may connect several nozzles and handle them independently.



## RECOMMENDED SPARE PARTS FOR 2 – 5 YEARS

Water motor parts	Dosing pump parts	Complete unit parts
1.10 Set of vane plates (4 pcs)	2.10 Water seals and plunger kit	3.10 Automatic Air relief valve
1.20 Set of Mechanical Seals (2 pcs)	2.20 In/Out valve kit	(3.11 Manual Air relief valve)
1.30 Set of Ball Bearings (2 pcs)		3.20 Check valve
1.40 Set of O-rings (8 pcs)		3.40 Filter flushing line
1.45 Set of Gable inserts (2 pcs)		

Always mention the serial number of the units concerned when ordering Spare parts.

## OPTIONAL FEATURES / ITEMS

Features / Items	Description
Reversed water flow direction (right to left)	Standard flow direction is from left to right seen from pump side.
Dosing/Return valve (DRV)	Valve for returning the concentrate to the tank, making it possible to check the functioning of the unit and to measure the admixture rate with suitable equipment's (see below), without generating water/foam solution. Including pressure relief valve (PRV) to avoid over-pressure, in case the return line is blocked for discharge for any reason.
DRV dosing rate measuring equipment	Measuring equipment's consisting of one Mag flow meter for water flow, one Mag flow meter for pumped concentrate and a Pressure regulating valve for simulating working pressure in return line, plus a damped Pressure gauge.
Handheld Tachometer for RPM measurement	Used to give an estimate of the water flow through the water motor and to compare with max flow rpm stated on this Data sheet, to ensure that unit is not over-speeding. Note: RPM cannot be used to correctly verify the dosing rate as the actual unit flow performance is not fully verified with this method.
High temperature application above 55°C (131°F).	Unit adapted with materials for usage up to 80°C (176°F). Relevant low temperature performance may be affected.
Alternative Water motor connections/Couplings	Flanges (ANSI, DIN), Storz couplings, etc.

Features / Items (cont.)	Description
High-grade stainless-steel ball valves	Replacing brass valves (Already standard on Bronze and SS water motor version and valves with iso5211 interface)
Flap check valve on concentrate inlet	To avoid water overflow of the concentrate tank if wrong handling of the Dosing/Flushing valve occurs.
Certifications / Factory Acceptance tested (FAT)	Each unit can be type tested according to applicable parts of NFPA 11 or EN 13565, Factory Acceptance tested (FAT) or delivery inspected by DNV-GL or Bureau Veritas.
Check valve on internal flushing line	To avoid leakage of concentrate in dry pipe or non-pressurized water pipe systems if wrong handling of the Dosing/Flushing valve occurs. (If unit is installed semi-fixed)
Higher spring rate in check valve in internal dosing line	To avoid leakage of concentrate in dry pipe or non-pressurized water pipe systems in combination with gravity feed. (If unit is installed semi-fixed)
Material certificates EN 10204	Depending on availability, material certificates for the water motor materials and some other parts can be provided if specified when ordered.

### APPROXIMATE GROSS WEIGHT AND DIMENSIONS OF GOODS

The unit is delivered on a closed EUR pallet, with instruction manual in printed form.

Overall dim of packaging. L x W x H cm:	120 x 80 x 75
Weight of packaged goods:	Aluminium 152 kg
	Bronze and Stainless steel 207 kg

**Note!** Weight and dimensions specified here serves only as a guideline, and may vary depending if you choose different optional equipment. Correct weight and dimension of the goods are given before delivery.



FIREMIKS® is a registered trademark owned by Firemiks AB in Sweden.

Firemiks AB is SS-EN ISO-9001:2015 certified by Bureau Veritas, cert.no SE008839. Scope of supply:  
Development, production and sales of water motor driven dosing systems for firefighting.

**CE** FIREMIKS® is CE-marked and production is made according to European Directive 2006/42/EC.

Conforms to applicable parts of NFPA 11 and NFPA 1901 

We reserve the right to make changes in the specifications without prior notice.

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