

## DATA SHEET

### FIREMIKS® 450-1-2-3-PP-F

#### PISTON PUMP TYPE FOR FIXED INSTALLATIONS

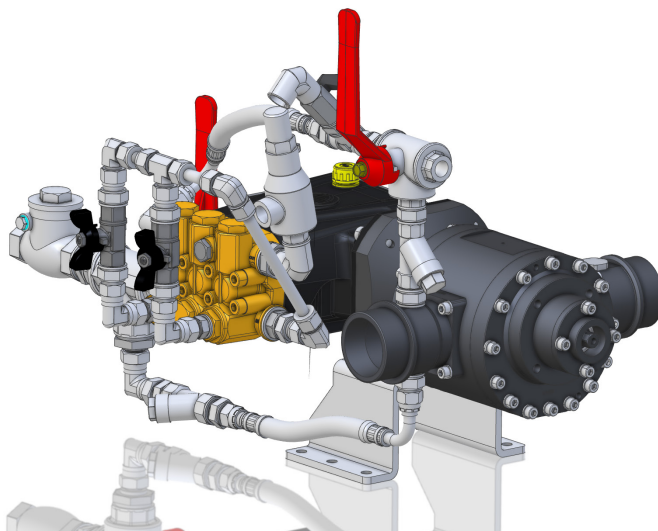
1-2-3 % dosing system for firefighting – for fixed installations connected to a concentrate tank with gravity feed to the dosing piston/plunger pump. Extinguishing water drives the volumetric water motor, which in its turn drives the positive displacement concentrate piston/plunger pump that doses the correct amount of concentrate in the extinguishing water. Selectable dosing during operation 1-2-3% using shortcut valves on piston pump (no 9 on Flow chart).

Equipped with a Manual air relief valve. 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 Flap check valve (no 10) for concentrate inlet and Wrench to rotate the unit by hand at maintenance.

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 450 lpm.

Available also in different water motor materials (Ni-Al-Bronze, SS 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.



**Note:** Showing optional DRV valve with PRV and aluminium water motor. For illustration only, refer to Dimensional Drawing for accurate representation.

#### TECHNICAL DATA

Max water flow rate @rpm:	450 lpm (119 US gpm) @ 1430 rpm
Min water flow rate @ 8 bar 1-20 cP *:	100 lpm (26 US gpm)
Min water flow rate @ 4 bar 1-20 cP *:	85 lpm (22 US gpm)
Viscosity range:**	1-1800/3600 cP (Brookfield #4 60/30rpm)
Dosing rate:***	Selectable 1-2-3%
Max inlet operating pressure:	16 bar (232 psi)
Factory tested pressure:	24 bar (350 psi), 20 bar (292 psi) with DRV option incl PRV set at 20 bar
Suction height:	0 meters (0 ft) Gravity feed
Operation temperature:	1°C to 55 °C (34°F to 131°F)
Storage temperature, dry condition:	-30°C to 55°C (-22° to 131°F)
Connections water motor G (ISO 228-1) male:	G 2" - DN 50 (Optional Cut Groove ANSI/AWWA C 606-15 DN 50 - 60,3 mm)
Connection pump G (ISO 228-1) female:	G 3/4" (0,75") - DN 20
Concentrate delivery pipe/hose diameter:	1" recommended, 1 1/2" for long piping/high viscosities

\*Notes on minimum flow:

- Minimum flow rate is the flow where dosing reaches 3%. Min flow for 2% and 1% are lower than for 3%.
- 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 1 - 1,3%, 2 - 2,6% and 3- 3,9% according EN 13565, NFPA 11 and FM 5130

## MATERIALS

FIREMIKS Aluminium – For fresh water/salt water occasional use		FIREMIKS Bronze – For salt water/offshore	
Water motor:	Alu AA 6082/7075-T6, (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)
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:	620 x 390 x 440
Weight Aluminium:	20 kg
Weight Bronze:	33 kg

Actual dimensions and weight depending on optional equipment.

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

Water flow rate	Pressure loss
100 lpm	0,8 bar
250 lpm	1,2 bar
450 lpm	2,25 bar

Pressure loss will vary slightly ( $\pm 0,3$ bar) depending on system pressure and concentrate used.

## PRODUCT NO

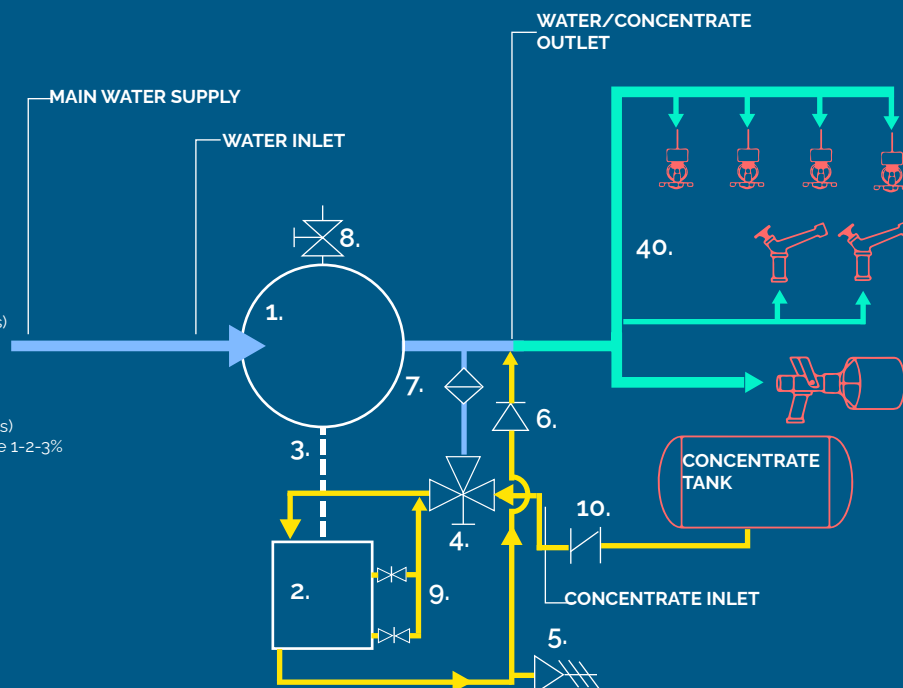
Material water motor	Product Name
Aluminium:	450-1-2-3-PP-F-ALU
Bronze:	450-1-2-3-PP-F-BRZ
Stainless Steel:	450-1-2-3-PP-F-SS

## PRINCIPLE FLOW CHART

- NOT INCLUDED WITH FIREMIKS
- OPTIONAL EQUIPMENT
- WATER
- CONCENTRATE
- WATER/CONCENTRATE SOLUTION

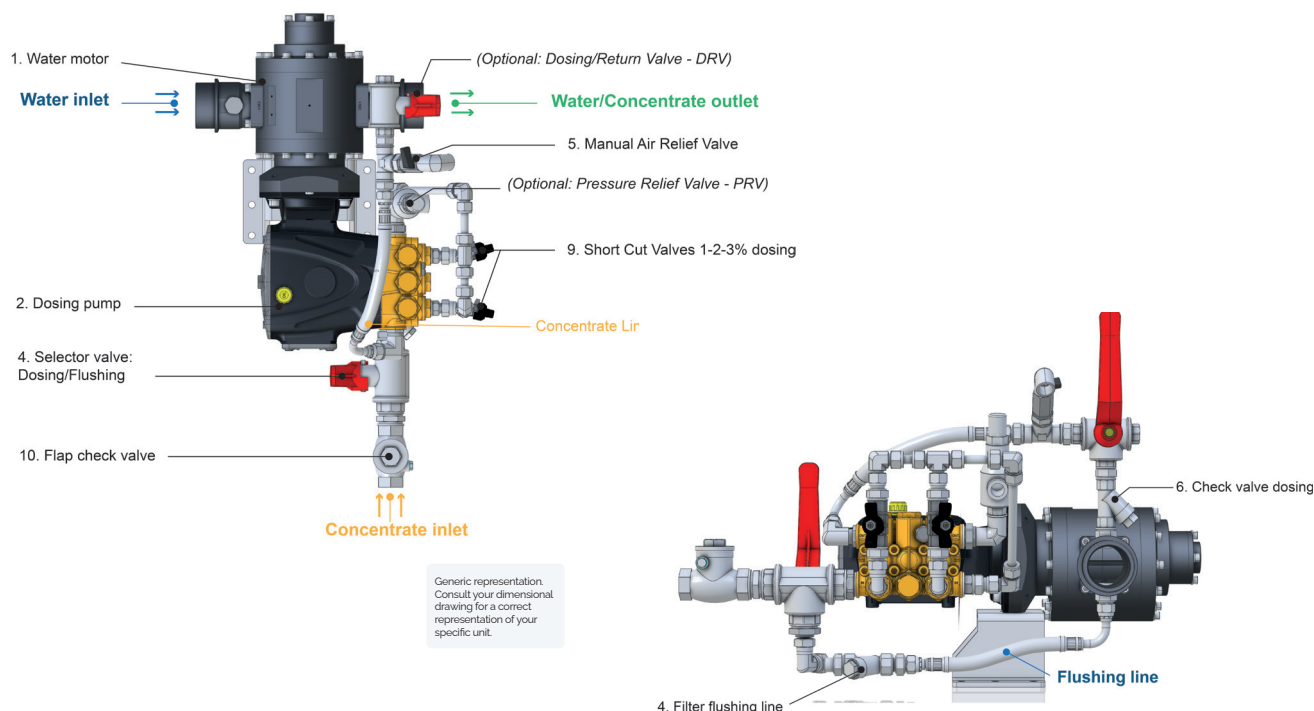
1. Water motor
2. Dosing pump
3. Drive gear (Not included on smaller models)
4. Selector valve: Dosing/Flushing
5. Air relief valve (Manual or Automatic)
6. Check valve dosing line
7. Filter flushing line
8. Drain valve (Not included on smaller models)
9. Short-cut valves for selection of dosing rate 1-2-3%
10. Flap check valve

40. For example:  
Nozzles/Monitors/Deluge systems



N.B. Reverse water flow direction is optional.

## MAIN PARTS OVERVIEW



## 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	3.11 Manual Air relief valve
1.20 Set of Mechanical Seals (2 pcs)	2.20 In/Out valve kit	3.20 Check valve dosing line
1.30 Set of Ball Bearings (2 pcs)		
1.40 Set of O-rings (6 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) or Vertical flow direction (upwards or downwards)	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.
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, especially at start-up (see Instruction Manual). Note: RPM cannot be used to correctly verify the dosing rate as the actual unit flow performance is not 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
Y-strainer	If the firefighting water contains foreign/solid particles a strainer in the main water line before the FIREMIKS is a necessity.
High-grade stainless-steel ball valves	Replacing brass valves (Already standard on Bronze and SS water motor version and valves with iso5211 interface)
Stainless steel selector valves with iso 5211 interface	For automated usage with (fast) actuators. Contact us to align specifications.
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-pressurised water pipe systems, if wrong handling of the Dosing/Flushing valve occurs.
Higher spring rate in check valve in internal dosing line	To avoid leakage of concentrate in dry pipe or non-pressurised water pipe systems in combination with gravity feed.
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.
Supervisory switch	1NC+1NO switch on the Dosing / Flushing valve, allowing remote confirmation that the valve is in the dosing position. Also available on the optional DRV valve.

#### APPROXIMATE GROSS WEIGHT AND DIMENSIONS OF GOODS

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

Overall dim of packaging. L x W x H cm:	80x 60 x 65	
Weight of packaged goods:	Aluminium	50 kg
	Bronze and Stainless steel	63 kg

**Note!** Weight and dimensions specified here serves only as a guideline, and may vary depending on 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.

Scope of supply: Development, production and sales of water motor driven dosing systems for firefighting.

CE FIREMIKS® is CE-marked as 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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