FIREMIKS®

THE SWEDISH ORIGINAL

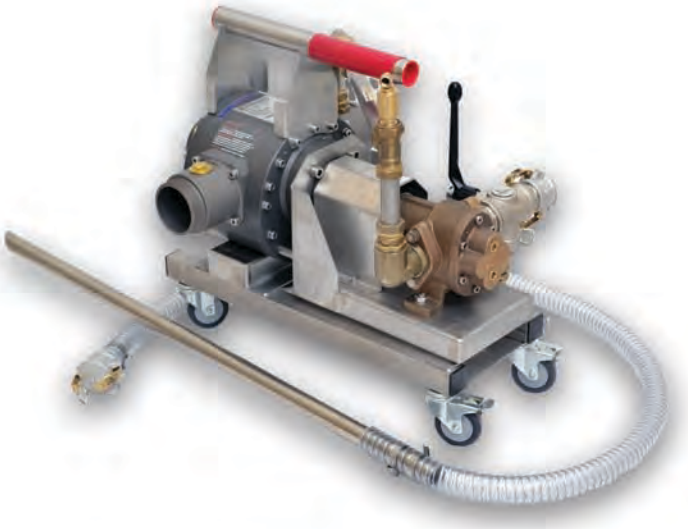
THE FIRE FIGHTING DOSING SYSTEM WITH MULTIPLE USES

POWERFUL CUSTOMIZABLE EASY-TO-USE

FIREMIKS® is a mechanical foam dosing system used for fire-fighting. The circulation of the water solely drives the motor - no other additional energy is required. Efficient and environmentally friendly.

FIXED

MOBILE



INDUSTRY

FIRE TRUCKS

MOBILE USE

CUSTOMIZABLE APPLICATIONS

ARETEK AB

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FIREMIKS®
THE SWEDISH ORIGINAL

THE FIRE FIGHTING DOSING SYSTEM WITH MULTIPLE USES

FIREMIKS IS A MECHANICAL FOAM DOSING SYSTEM USED FOR FIRE-FIGHTING. THE CIRCULATION OF WATER SOLELY DRIVES THE MOTOR – NO OTHER ADDITIONAL ENERGY IS REQUIRED! EFFICIENT AND ENVIRONMENTALLY FRIENDLY.

POWERFUL

With FIREMIKS® dosing is flow-proportional and works effectively regardless of pressure variations up to 12 bar. You have the freedom to use several nozzles or sprinkler heads of different types, at different heights and open or close them independently of each other. FIREMIKS® gives you the power to concentrate on fire fighting, instead of spending energy controlling the dosing unit.

CUSTOMIZABLE

The FIREMIKS® system is based on modules. We fabricate mainly from standard material, which enables us to easily customize the unit to our customers' requests. You may freely choose the water motor and pump connection types and dimension that suits your purpose. Also you choose the admixture rate and the type that you require: Fixed or Mobile.

EASY-TO-USE

The FIREMIKS® system is very compact, flexible and easy to use and install, without the need of expensive and complicated control devices. Just open the water flow and the FIREMIKS® will immediately produce a foam solution with correct admixture. FIREMIKS® is suitable for all common fire-fighting liquids, including the AR-types.

Made in Sweden

MAIN ADVANTAGES WITH FIREMIKS

- **Dosing is flow-proportional** and works effectively regardless of pressure variations. This gives a steady admixture within the max and min limitations of flow and pressure for FIREMIKS.

- Available in 10 different flow sizes; **from capacity 400 lpm up to 10.000 lpm**, with fixed dosing alternatives; 1%, 3% or 6%, or selectable. Other alternatives available on request.

- Works with virtually **all types of foaming agents, included the AR-types. Is also suitable for wetting agents and other fire fighting chemicals.**

- Consists of a sturdy hydraulic water motor and a strong industrial gear pump, both of the **displacement type**, that are linked mechanically to each other with a direct drive coupling.

- Permits **uninterrupted application time** as long as foam liquid and water are supplied.

- You may use **different types of nozzles, at different heights and lengths from FIREMIKS.** Changes of length or diameter of pipe/hose system after FIREMIKS up to the nozzles are not affecting the admixture as long as the water pressure from main pump is sufficient to transport the foam/water solution to the end of the system.

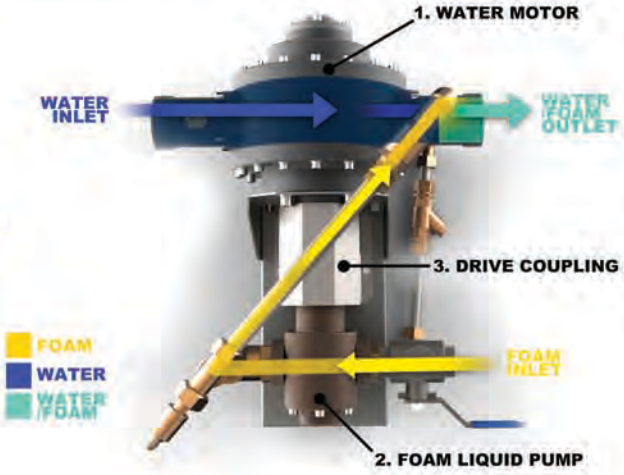
- Materials used are PTFE-coated hard anodized aluminum in water motor and bronze in foam pump. All other parts are also made in **corrosion resistant material** such as AISI 316 stainless steel, brass and PET. Requires little maintenance. Other materials available on request.

- **Flushing of foam pump** is made with water when foam inlet is closed.

- Optional equipment delivered on request; for example, foam return valve for **easy and quick checking of admixture rate,** without generating water/foam solution.

FUNCTION PRINCIPLE

N.B. Reverse flow direction is optional.



FIREMIKS dosing system is driven solely by the extinguishing water flow - no other additional energy is required.

The water flow from a main water pump goes through the FIREMIKS water motor (1). The power of the water flow generates a circular rotor motion, which is transferred to the foam pump (2) over the direct drive coupling (3). The foam pump (2) pumps foam concentrate into the water motor outlet, creating the water/foam solution.

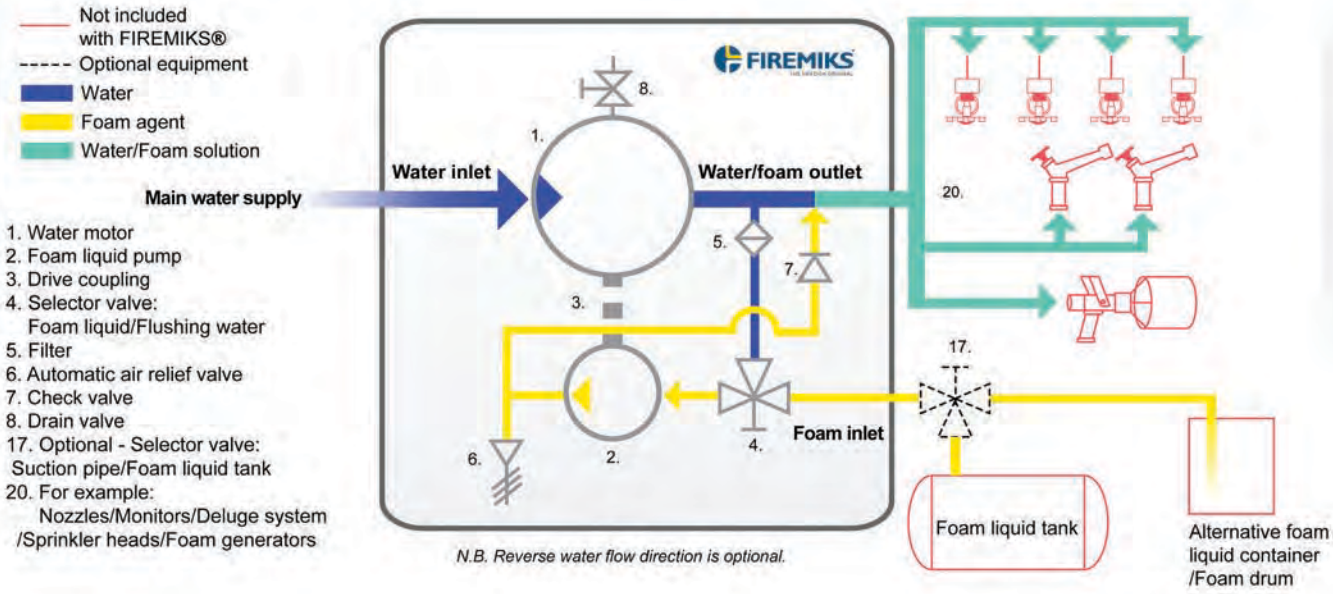
Since the water motor (1) and the foam pump (2) are directly connected with the drive coupling (3), the system is by that flow-proportional. Dosing is automatically adjusted from the amount of water that goes through the FIREMIKS.

I.e. the more water that goes through the water motor (1), the faster it rotates and the more extinguishing agent is pumped in by the foam pump (2), and vice versa, regardless of pressure variations.
Visit www.firemiks.com to view an animated illustration of the function principle!

FIREMIKS FIXED TYPE

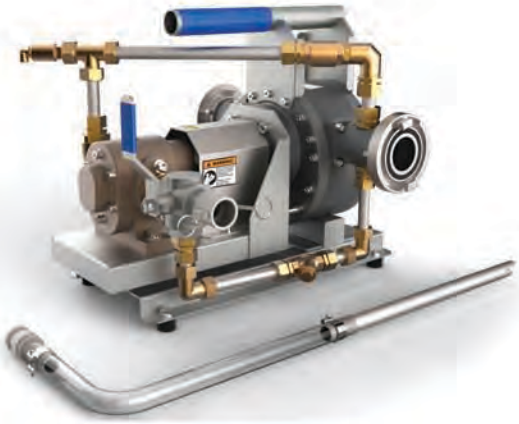
For fixed installations to a foam tank. Equipped with an automatic air relief valve to make it possible to suck foam liquid from below the unit. Flushing of the foam pump is done when the foam inlet is closed. Optional: separate suction tube, suitable for fixed installations, for instance in a fire truck, where there is a need for suction from an alternative foam supply.

FLOW CHART FIREMIKS FIXED TYPE

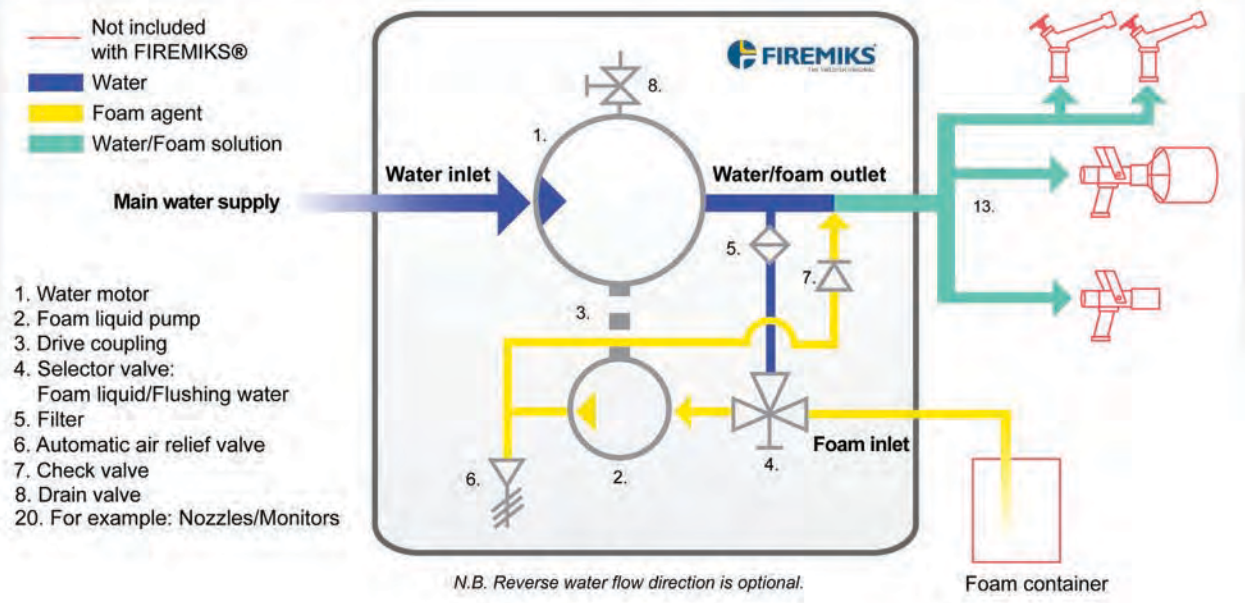


FIREMIKS MOBILE TYPE

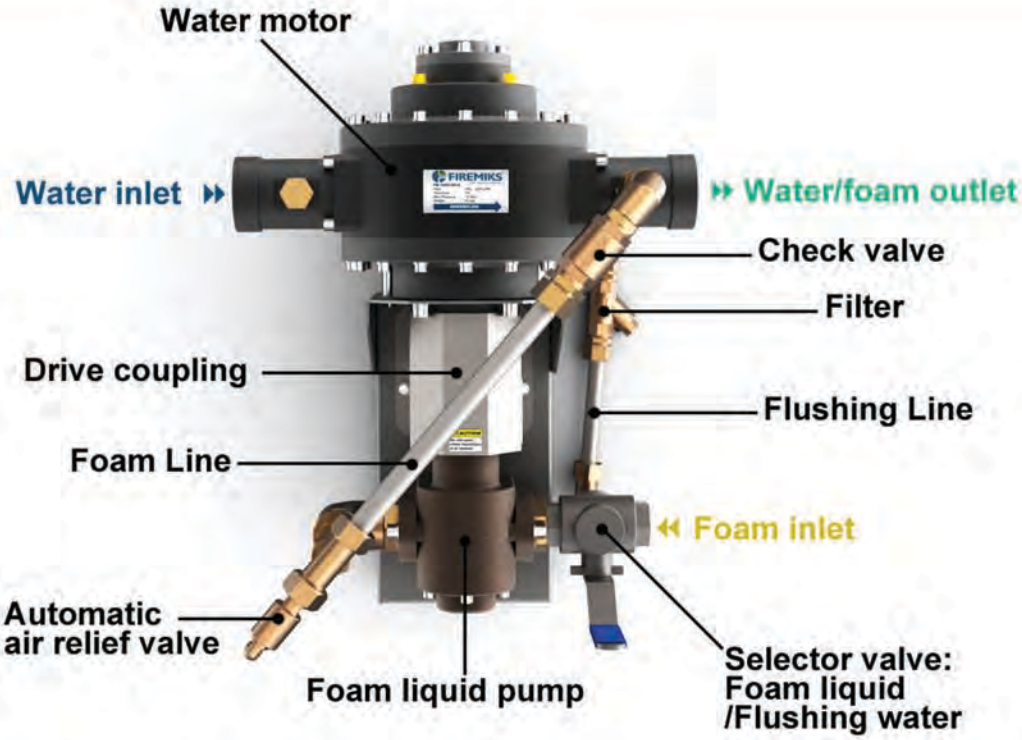
Mainly used by Fire brigades as a handy complement to fixed foam admixing systems. Just connect FIREMIKS to the fire hoses and put down the suction tube into a foam drum and it is ready to be used! Flushing of the foam pump is done when the foam inlet is closed. Smaller sizes (FM 400, 800 and 1200 lpm) are carried by using the handle. Units from size 1800 lpm and larger are placed on a wheeled frame to ensure easy movement.



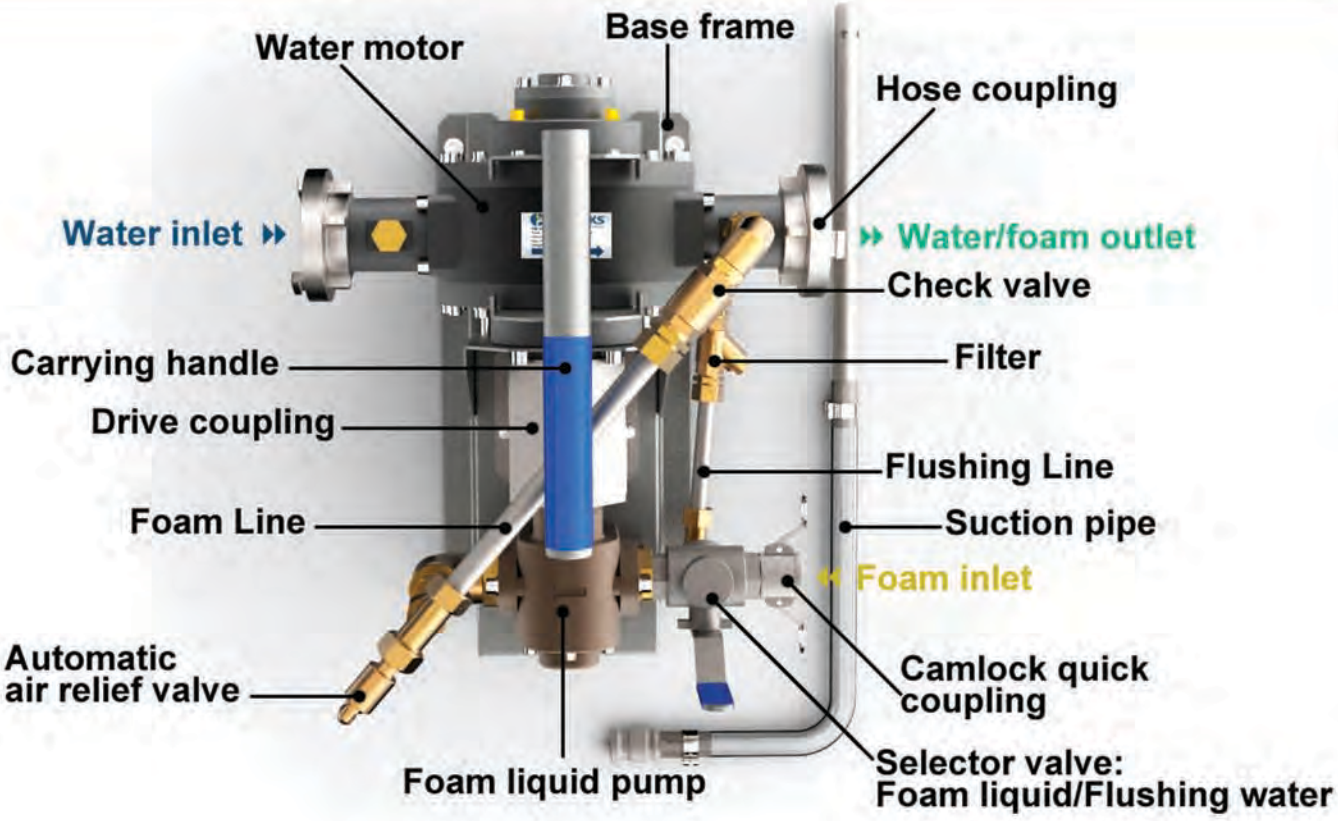
FLOW CHART FIREMIKS MOBILE TYPE



FIXED TYPE OVERVIEW



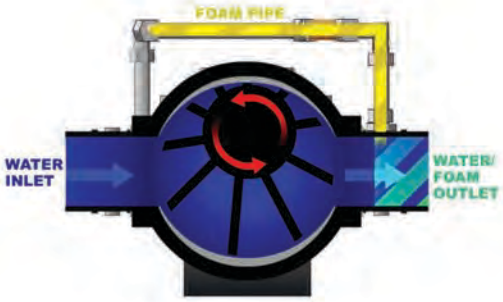
MOBILE TYPE OVERVIEW



SPECIFIC ADVANTAGES

Swedish FIREMIKS® shares, with other brands on the market, the basic concept of a mechanical volumetric water-motor driven foam pump. This concept gives the advantages of a practical pressure and flow insensitive admixture, within the min and max limits. Another advantage is; only the firewater is needed to drive the unit, no other additional energy is required.

10 Specific advantages with FIREMIKS®



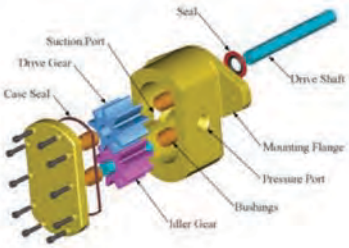
The water motor rotor has 10 working vanes (on 6000, 8000 and 10000 lpm-units 8 vanes).
1) This gives more stable rotation at low rotation speed than our older 4 vane version, i.e. earlier volumetric function of the water motor.

FIREMIKS® and the water motor with its connections is designed and built using a flexible modular system.
2) We can modify - even for a single unit – the water motor size in lpm and/or make the unit in another material (for example bronze, duplex or titanium) for a special customer request.

3) FIREMIKS® can be delivered with almost any type of connection (for example BSP-threads, NPT-threads, Cut groove adaptors, Flanges, etc). For the end-user it is therefore easy, if necessary, to change connections afterwards without exchanging large parts of the water-motor - also to convert for example a fixed unit into a mobile unit (and vice-versa).

The foam/additive pump type is a heavy-duty industrial Gear pump.
4) The foam pump is made in a durable and corrosion resistant bronze material and needs no oil lubrication.

5) The foam pump has the same rotating movement as the water motor, giving lower vibrations and noise. It creates also a steady flow of additive liquid.



6) An industrial Gear pump is a rugged and a reliable solution to achieve the correct admixture within the approved tolerances. (The right picture shows the principal construction of a gear pump).

7) It can be placed in both vertical and horizontal positions.

8) The Gear pump is relatively light and demands little space, especially on larger sizes, giving a compact and easy-to-install dosing unit.

The water motor is machined from standard rolls and bars.
9) Many consider machined parts to be stronger than moulded materials.

FIREMIKS® is designed to be easy to understand. Arrows clearly showing the flow direction of the admixture and flushing water.
10) The design is made so a short over-view of the unit should be enough to comprehend the function of the FIREMIKS®. A minimum of training is required to ensure safe and secure handling of the FIREMIKS® unit.

FIREMIKS BASIC DATA

TECHNICAL OVERVIEW | FIREMIKS with 1% Pump

Model Size	Flow lpm	Standard Connection Water motor	Connection Foam pump BSP female	Weight kg (F-type)
FM 400/1-RP	80-400	DN 40 - BSP 1,5" male	0,5"	15
FM 800/1-RP	160-800	DN 65 - BSP 2,5" male	0,5"	34
FM 1200/1-RP	250-1.200	DN 80 - BSP 3" male	0,75"	40
FM 1800/1-RP	350-1.800	DN 100 - BSP 4" male	1"	55
FM 2400/1-RP	500-2.400	DN 100 - BSP 4" male	1"	60
FM 3200/1-RP	650-3.200	Cut groove DN 125 - 5"	1,25"	74
FM 4000/1-RP	800-4.000	Cut groove DN 125 - 5"	1,5"	81
FM 6000/1-RP	1.200-6.000	Cut groove DN 150 - 6"	2"	112
FM 8000/1-RP	1.600-8.000	Cut groove DN 200 - 8"	2,5"	135
FM 10000/1-RP	2.000-10.000	Cut groove DN 250 - 10"	2,5"	183

TECHNICAL OVERVIEW | FIREMIKS with 3% Pump

Model Size	Flow lpm	Standard Connection Water motor	Connection Foam pump BSP female	Weight kg (F-type)
FM 400/3-RP	80-400	DN 40 - BSP 1,5" male	0,75"	17
FM 800/3-RP	160-800	DN 65 - BSP 2,5" male	1"	38
FM 1200/3-RP	250-1.200	DN 80 - BSP 3" male	1,25"	46
FM 1800/3-RP	350-1.800	DN 100 - BSP 4" male	1,5"	61
FM 2400/3-RP	500-2.400	DN 100 - BSP 4" male	2"	71
FM 3200/3-RP	650-3.200	Cut groove DN 125 - 5"	2,5"	84
FM 4000/3-RP	800-4.000	Cut groove DN 125 - 5"	2,5"	98
FM 6000/3-RP	1.200-6.000	Cut groove DN 150 - 6"	2,5"	129
FM 8000/3-RP	1.600-8.000	Cut groove DN 200 - 8"	2,5"	153
FM 10000/3-RP	2.000-10.000	Cut groove DN 250 - 10"	3"	204

FIREMIKS BASIC DATA

TECHNICAL OVERVIEW | FIREMIKS with 6% Pump

Model Size	Flow lpm	Standard Connection Water motor	Connection Foam pump BSP female	Weight kg (F-type)
FM 400/6-RP	80-800	DN 40 - BSP 1,5" male	1,25"	19
FM 800/6-RP	160-800	DN 65 - BSP 2,5" male	1,5"	43
FM 1200/6-RP	250-1.200	DN 80 - BSP 3" male	2"	58
FM 1800/6-RP	350-1.800	DN 100 - BSP 4" male	2,5"	76
FM 2400/6-RP	500-2.400	DN 100 - BSP 4" male	2,5"	87
FM 3200/6-RP	650-3.200	Cut groove DN 125 - 5"	2,5"	103
FM 4000/6-RP	800-4.000	Cut groove DN 125 - 5"	2,5"	115
FM 6000/6-RP	1.200-6.000	Cut groove DN 150 - 6"	3"	157
FM 8000/6-RP	1.600-8.000	Cut groove DN 200 - 8"	3"	188
FM 10000/6-RP	2.000-10.000	Cut groove DN 250 - 10"	4"	244

Other admixture rates available on request.
We reserve the right to make changes in the specifications without prior notice. Production is made according to European Directive 2006/42/EC and conforms to applicable parts of NFPA 11 and NFPA 1901.

We can offer the possibility to deliver any FIREMIKS unit with a third party inspection report by Germanischer Lloyd or Bureau Veritas, at a minor additional cost.

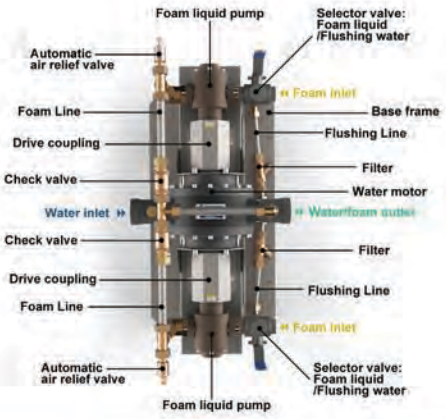
Materials

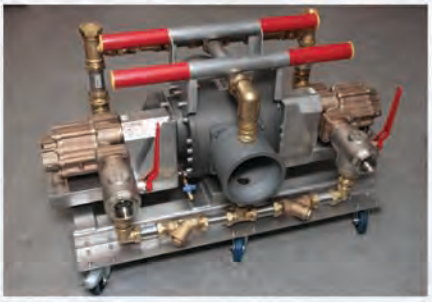
FIREMIKS Aluminium		FIREMIKS Bronze	
Water motor:	PTFE-coated and hard-anodized Alu AA 6082/7075, AISI 316 (fasteners), PET (vanes), NBR (O-rings)	Water motor:	Bronze gunmetal, AISI 316 (fasteners), PET (vanes), NBR (O-rings)
Foam liquid pump:	Bronze, Shaft AISI 316 L	Foam liquid pump:	Bronze, Shaft AISI 316 L
Pipings:	AISI 316	Pipings:	AISI 316
Couplings:	Brass	Couplings:	AISI 316
Ball valves:	Nickel-plated brass	Ball valves:	AISI 316

FIREMIKS DUAL PUMP SYSTEM

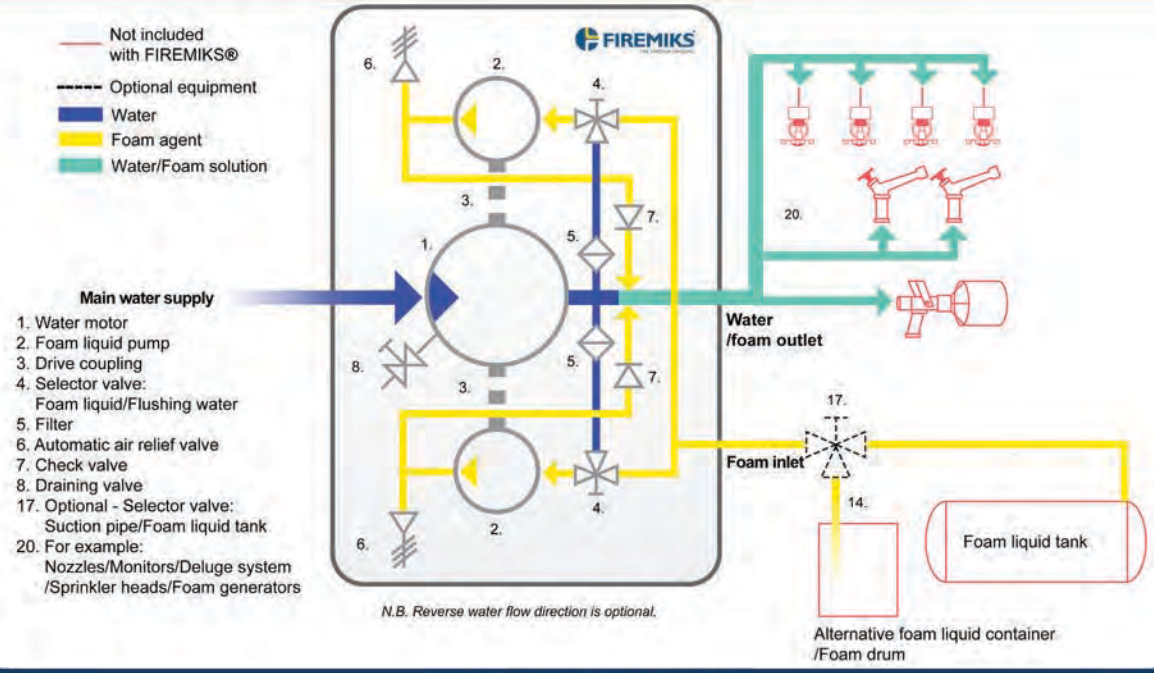
With a dual pump system you will get a FIREMIKS unit with a selectable dosing rate of your choice. For example: 3% and 6% (with two 3% pumps), 1% 2% and 3% (with one 1% and one 2% pump) or 0,5% and 3% (with one 0,5% and one 3% pump).

Select your dosing rate with the selector valves (no. 4 on Flow chart). When both pumps are in use both valves are open for foam liquid. When only one pump is selected to suck foam, the second selector valve is open for flushing.





FLOW CHART FIREMIKS DUAL PUMP FIXED TYPE



SEA WATER RESISTANT

FIREMIKS is available with the water motor completely or partly made in bronze, to make it suitable for offshore, shipping and other installations where seawater is used. Other material options are high-grade stainless steel, super-duplex, titanium, etc. The foam pumps are made of bronze as standard.

Our hard-anodized + PTFE-coating is also a very strong anti-corrosion treatment which can be chosen when there is a possibility to flush the unit afterwards with fresh water.

SUITABLE FOR OFFSHORE APPLICATIONS

ENVIRONMENTAL AND SAFETY BENEFITS WHEN USING FIREMIKS

There are several important environmental and safety benefits when using the FIREMIKS system.

FIREMIKS is driven solely by water. No additional energy is required. Compared with other foam dosing systems on the market that need additional energy, for example an electrical or diesel driven foam pump, FIREMIKS has the benefit of minimized energy consumption which also helps to reduce CO^2 emissions.

An electrically driven foam pump may in some cases be an increased risk in hazardous areas. Electricity may create sparks and cause explosions in areas where there are flammable gases. With FIREMIKS this risk can be eliminated if you specify an explosion proof unit. Furthermore water in itself is environmentally friendly, non flammable, inexpensive, clean and easily disposable.

Another important environmental aspect with a powerful and easy-to-use foam dosing system, such as FIREMIKS, is that it is extremely quick and effective in extinguishing a fire based on chemical flammable liquids or solids. These fires may otherwise create very severe environmental effects and in some cases endanger people's lives. New studies points also out that forest fires are behind 19% of CO^2 emissions that increase the global warming. With effective fire fighting systems such as FIREMIKS we can help to decrease that effect.

To give our contribution to a more sustainable world we support WWF in its campaign for saving the Baltic sea.

INSTALLATION AND USAGE INFORMATION

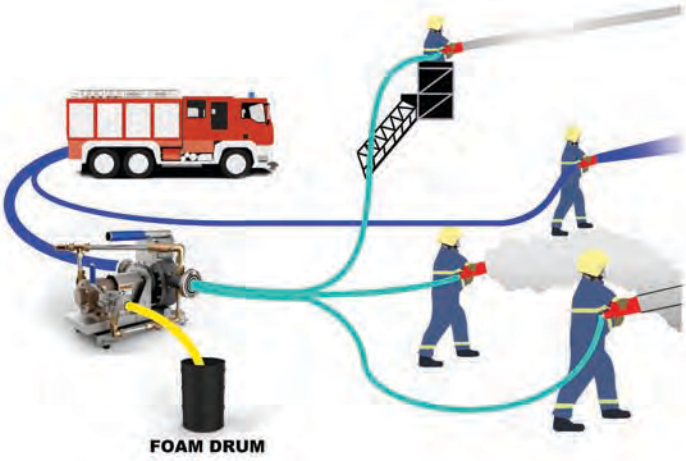
Below you will find useful tips when using and installing the FIREMIKS system.

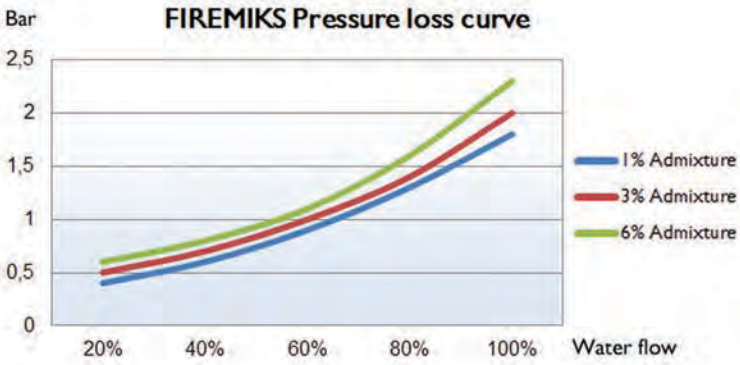
HEIGTHS

It is possible to use FIREMIKS on the ground to nozzles on heights up to 50 meters. The admixture is not affected as long as the main pump has enough power to transport the foam solution to the end of the system.

PARALLEL INSTALLATION

We recommend on larger systems to use parallel installations instead of relying on one big unit. Parallel installation with FIREMIKS increases the safety, reliability and furthermore the capacity of the system. For example one may install 2 x 6.000 lpm-units and achieve 12.000 lpm, or 3 x 8.000 lpm-units to achieve 24.000 lpm flow capacity.





ONE FIREMIKS - SEVERAL NOZZLES

With FIREMIKS the fire brigade has an extremely flexible system easy to quickly adapt to different fire fighting situations. You may use several different nozzles at the same time, positioned at different lengths and different heights from the FIREMIKS. You may add or remove hoses and open or close nozzles independently. It does not affect the quality of the admixture as long as min and max flows of the FIREMIKS unit are kept.

PRESSURE LOSS CURVE

FIREMIKS draws the energy needed for the admixture process from the flow of extinguishing water. It means that one has to calculate, especially in fixed systems, for the pressure loss at the max flow in the system. See principle pressure loss curve above. For more exact figures consult the data sheet for each unit.

FREQUENTLY ASKED QUESTIONS

Here you will find the most frequently asked questions. Note! All answers are based on the supposition that the stated min and max limitations of flow and pressure are kept for the FIREMIKS unit.

Frequently asked questions for use of FIREMIKS® in Fire Brigades

Q: Can we apply several different types of foam nozzles to a FIREMIKS?
A: Yes, you can use e.g. spray nozzles, low, medium, or high expansion devices, or any other type of nozzle, at the same time, as long as they are designed for roughly the same nominal pressure.

Q: Can we use different and varied feed pressures to a FIREMIKS?
A: Yes, the admixture is practically independent of the inlet and back-pressure in the system.

Q: Can we distribute good foam solution to a nozzle placed on a 40-meter high raised platform?
A: Yes, the FIREMIKS can cope with heights up to 50 meters if the inlet pressure to the FIREMIKS from the main pump is 12 bar. (Pressure drop over FIREMIKS is 1-2 bar, 50 meters height 5 bar, leaving about 5 bar for hoses and nozzles.) Tests have been carried out at heights of 40 meters with excellent results.

Q: What length of hoses can we use after the FIREMIKS?
A: You can use whatever length you want or need since the length does not affect the function of the FIREMIKS. (The crucial factor is having an adequate pressure on the water from the main water pump so the water/foam solution can be transported to the nozzle at the required flow and pressure.)

Q: Can we divide the hoses and use several nozzles positioned in different lengths and heights from the FIREMIKS?
A: Yes, there are no problems with this. It creates practically no effect on the dosing rate. You may also close and open these nozzles independently. (See also crucial factor in previous answer.)

Q: Does the FIREMIKS function even with high-viscous AR foam liquid?
A: Yes, FIREMIKS works well with all common types of foam liquids, also with other fire fighting liquids such as wetting agents.

Frequently asked questions for use of FIREMIKS® in Fire Fighting Installations

Q: Can we install a FIREMIKS in an existing water sprinkler system?
A: Yes, you only have to install the FIREMIKS somewhere suitably between main pump and sprinkler heads and connect to an atmospheric foam tank.

Q: Can we use FIREMIKS in a deluge system?
A: Yes, it works perfectly. Deluge systems are designed for a certain flow/pressure; with a FIREMIKS you have an increased safety margin if the system by any reason does not keep this intended flow/pressure.

Q: Do we need a pressure tank for the foam supply?
A: No, just a normal atmospheric tank, you may well use the foam container from the foam supplier.

Q: Can we install two FIREMIKS in parallel?
A: Yes, there are no problems; you may even install 3-4 units in parallel as long as you create a harmonic flow in the pipes and you keep the required min flow of each unit.

INSTALLATION GUIDE

The purpose of this installation guide is to inform on the general needs for preparing an installation of the FIREMIKS, before our delivery to you. Below are brief extracts from the guide. If you have to make critical decisions in your preparations, do not hesitate to contact us to get the latest and most comprehensive information.

The FIREMIKS F-type is for fixed installations to a foam tank. Equipped with an automatic air relief valve to make it possible to suck foam liquid from below the unit. Flushing of the foam pump is done when the foam inlet is closed. Optional: separate suction tube, suitable for fixed installations, for instance in a fire truck, where there is a need for suction from an alternative foam supply.

- The FIREMIKS complete unit is designed to be held in place by using the mounting plane with four (six) threaded holes on the bottom of the water motor. You will also need a support under the foam pump bracket to balance the weight but the support **should not be bolted or fixed rigidly to the foam pump bracket, this is to avoid possible unwanted tensions.** A support with a rubber mat or rubber feet is appropriate. For alternative ways of fixating the unit, contact us.

- Install the unit with the connections pipes on the water motor in-and outlet.

- It is very important that there are no movements on the water main line that could create tensions through the connections onto the water motor. If any such movement exists on the pipes, a separate support must be made to stabilize the pipe line before connecting to the FIREMIKS.

- Make sure there is enough space around the unit to enable easy accessibility for service and maintenance.

- Temperature tolerances: the unit should preferably be installed in a frost-free environment. If this is not possible it is important to drain the unit completely before frost season. It should not be exposed or used in higher temperature than 50 degree Celsius. This is both valid for the ambient temperature, and for the water temperature. **Note! Be observant for direct solar radiation that can heat up the unit above 50 degrees. Contact us if higher temperature tolerance is needed!**

- The water flow must be in the direction shown by the arrow on the upper side of the water motor. (Note! The direction of rotation of the drive shaft is reversed compared with the direction of the water flow arrow.) The unit can optionally be configured with the water flow in the opposite direction, in such case tell us when ordering.

- The suction line should be connected to the Selector valve Foam Liquid/Flushing Water (no. 4 on flow chart in data sheets) on foam pump inlet. Connection type and size is found on the respective data sheets for each model. **Note! It is very important that there are no air leakages anywhere between the tank and the foam pump.** The suction system should be pressure tested (preferably with a manual hand pump up to about 2 Bar) before the start, to expose possible air leakages.

INSTALLATION GUIDE

- **Internal diameter on suction system must have equal diameter as the inlet of the Selector valve Foam Liquid/Flushing Water (no. 4 on flow chart in data sheets), or one size larger.** Avoid sharp 90-degree bends. Any other check valves, ball valves, etc. should also have at least the same internal diameter as the Selector valves.

- We recommend that the foam tank lowest possible foam level is placed above the inlet of the foam pump on this fixed type of FIREMIKS, because this makes the start of the suction immediate. In that case, you will need a valve in the suction line which is normally closed when the unit is not in use, and which will open automatically when the systems starts. Otherwise the foam will slowly leak through the automatic air relief valves. The selector valve present on the unit before the suction hose can be used for this purpose.

- You may also install the foam tank below the inlet of the foam pump. With this installation you do not need the above described valve in the suction line. The disadvantage is that the foam pump needs some seconds before it has pumped out all air through the air relief valve (=priming) and suction of foam liquids starts.

- The max flow in the system should be checked with a flow meter if water source pumping capacity is higher than the max flow of the FIREMIKS. If there is a risk that the water flow could exceed the stated max flow, there should be some kind of flow limiter placed before the unit.

- **In the case that the pressure capacity of the pumping system is higher than 12 bar, it is recommended that a pressure relief valve is installed in the main system before the FIREMIKS.**

- FIREMIKS is designed to operate with clean water. No abrasive particles should be present in the water flow; otherwise it will wear much quicker. In most cases the FIREMIKS can cope with sporadic particles up to 2 mm size. If there is a risk of particles entering the FIREMIKS or when polluted or contaminated water is used, the piping system must be designed so that there is a suitable filter or strainer where this pollution can be collected fully, placed before the FIREMIKS. **We refuse any responsibility for blockage of the water motor by any foreign objects in the water, whatever their size.**

- If the installation is to operate for an extended period of time with extinguishing water only, a by-pass with suitable valves should be installed around the FIREMIKS system to avoid unnecessary wear.

- **NOTE! As in all safety-related installations, there should always be a back-up plan. Never design the installation in such a way so that the water flow through the FIREMIKS is the only source for fire fighting water.**

- **NOTE! It is extremely important that a unique shut-off valve is installed before the FIREMIKS-unit. This is to ensure a risk-free service/maintenance, i.e. the risk for sudden rotation of the water motor due to unexpected water flow will be eliminated by closing this valve. When working on the FIREMIKS, put a clear sign on this valve stating: "Do not open, maintenance work in progress".**

- Consider when installing that dry running of the FIREMIKS foam pump is not allowed.

The full installation guide, data sheets and flow charts mentioned above are available on our website www.firemiks.com

FIREMIKS®
THE SWEDISH ORIGINAL

THE FIRE FIGHTING DOSING SYSTEM WITH MULTIPLE USES

ARETEK AB - A FAMILY COMPANY IN THIRD GENERATION

Originally founded in 1979, ARETEK AB is a Swedish family based business currently operating in the third generation.

Throughout the years, our main focus has been to develop, manufacture and distribute our product line of water motor driven dosing systems worldwide.

Having re-established the company in early 2010, we are now ensuring our customers around the globe they will receive a redefined and reliable fire fighting product.

We are always open for product adaption according to customers' different preferences, staying trustworthy to our long line of proficiency, making ARETEK AB a company to count on.

CONTACT

Contact us for more information about our products, for specific questions, a quotation or for an order.
Visit our website www.firemiks.com where you can download technical data sheets and general information.

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