

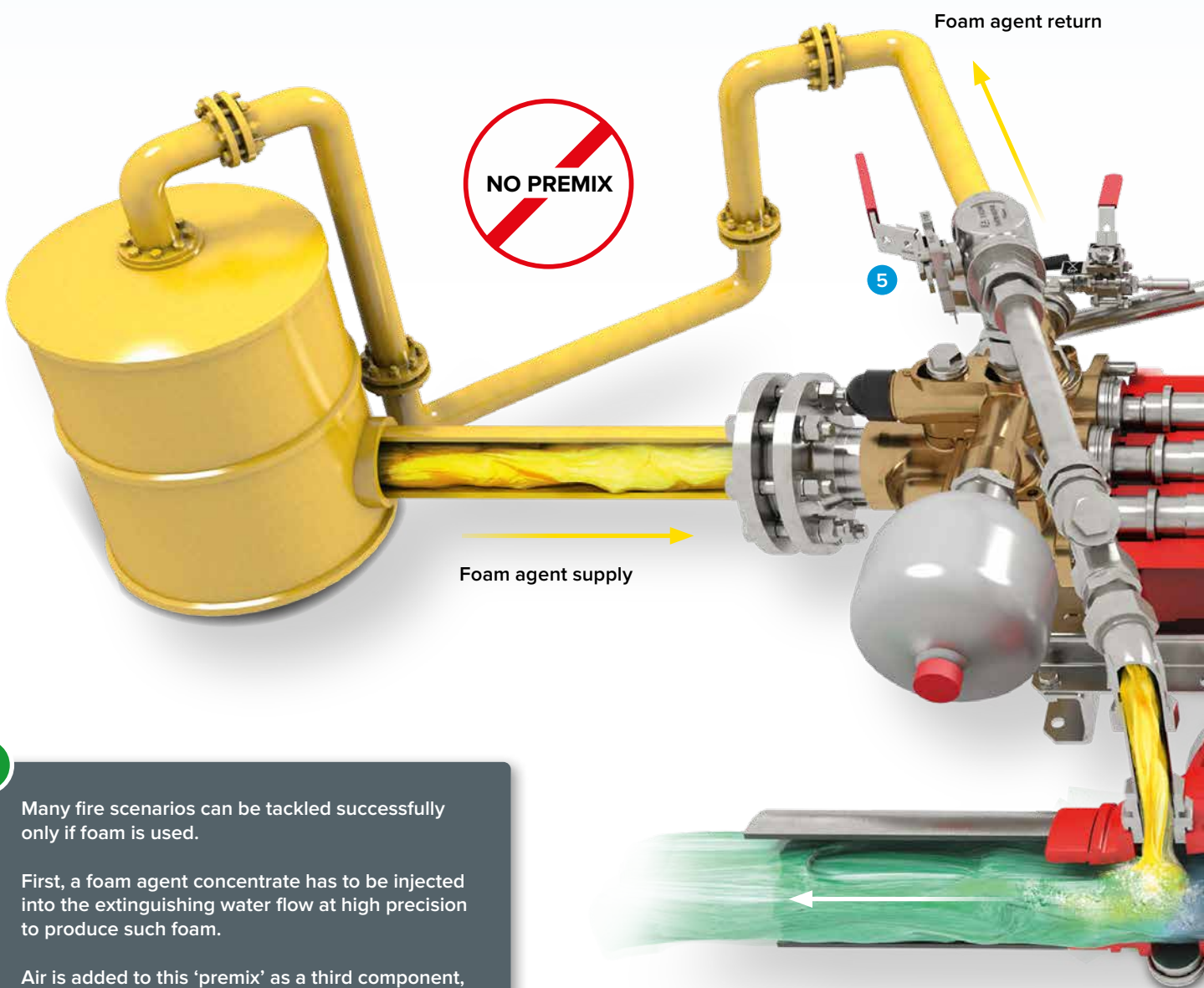
■ **PROPORTIONERS**  
FOR STATIONARY EXTINGUISHING SYSTEMS.

## ■ WE ENSURE SAFETY – IN FIREFIGHTING WITH FOAM.

More than 20 years ago, *FireDos* developed a proportioner for fire extinguishing systems, setting a global standard:

The purely mechanical system is characterized by a constant proportioning rate across a wide

extinguishing water flow rate and pressure range, guaranteeing maximum reliability. Beyond this, testing the proportioning rate can be done without producing premix: an environmentally friendly and cost-saving solution.



Outlet:  
Premix flow rate  $\dot{V}_2$  at pressure  $p_2$



Many fire scenarios can be tackled successfully only if foam is used.

First, a foam agent concentrate has to be injected into the extinguishing water flow at high precision to produce such foam.

Air is added to this 'premix' as a third component, prompting the actual foaming.

## ■ THE FIREDOS PRODUCT CONCEPT: PURELY MECHANICAL, AT A CONSTANT PROPORTIONING RATE.

### Reliable and made-to-last

The *FireDos* proportioner is driven solely by the extinguishing water flow. No further energy source is required. The purely mechanical construction means *FireDos* proportioners are reliable and provide a long service life.

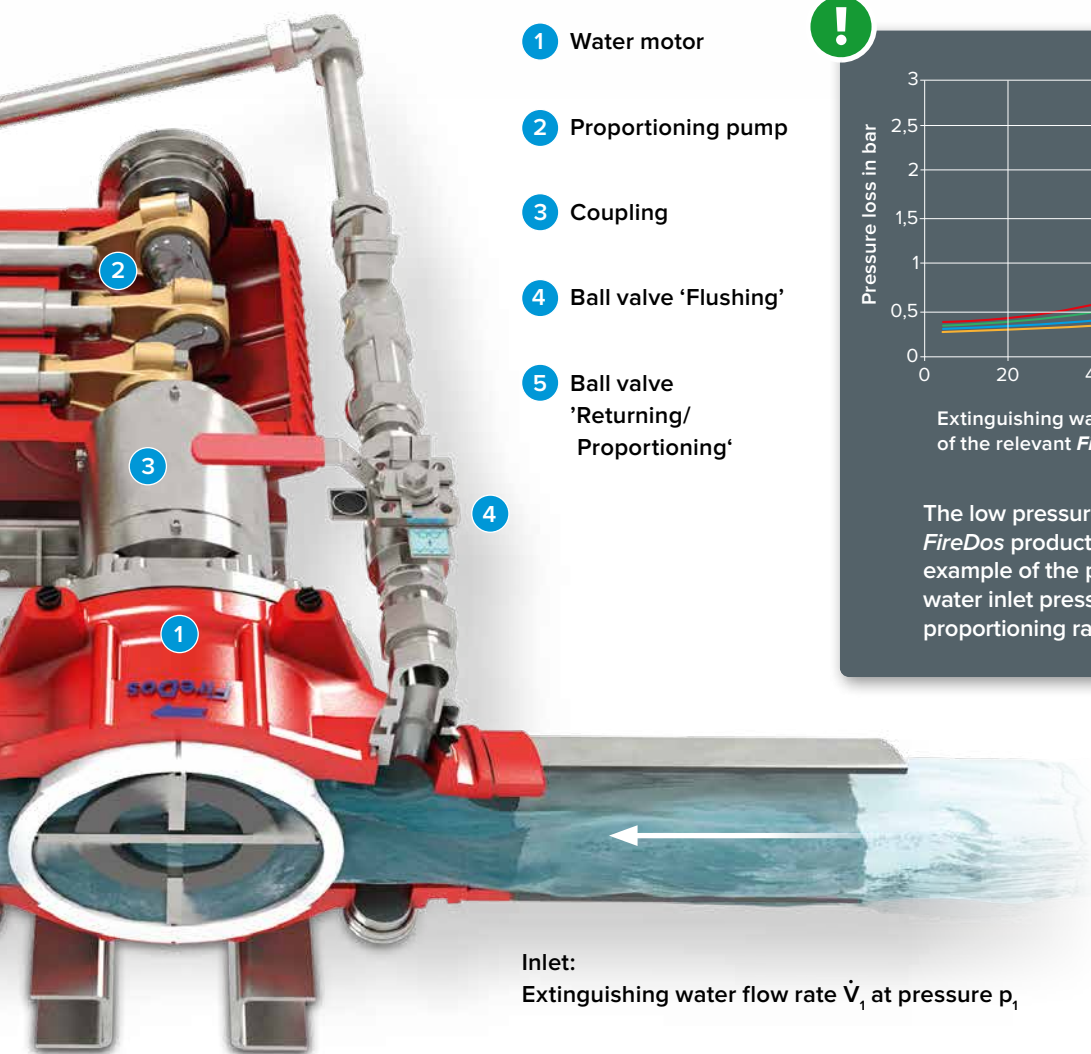
### Optimum extinguishing performance due to constant proportioning rate

The water motor drives a specially developed proportioning pump which injects the foam agent into the extinguishing water. A direct linear correlation exists between the water flow rate and the water motor's number of revolutions.

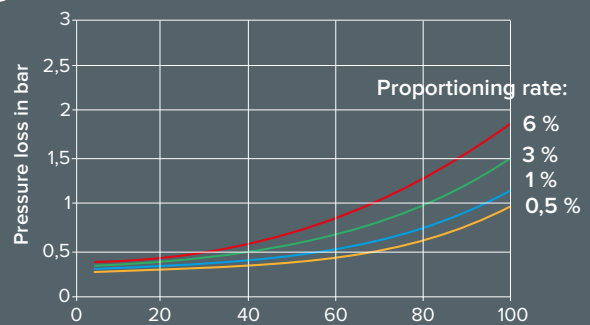
The proportioning pump is directly connected to the water motor via a coupling.

As extinguishing water flows increase through the water motor, the more foam agent is injected. This way, the volume ratio which is referred to as the 'proportioning rate' always stays constant, allowing optimum proportioning as water flow rates change.

Low Pressure loss: Only a small portion of the pressure in the extinguishing water line is consumed as an energy source to drive the water motor and the proportioning pump.



- 1 Water motor
- 2 Proportioning pump
- 3 Coupling
- 4 Ball valve 'Flushing'
- 5 Ball valve 'Returning/Proportioning'



Extinguishing water flow rate in % at full capacity of the relevant *FireDos* proportioner

The low pressure loss is an advantage of the *FireDos* product concept. The graph shows an example of the pressure loss at an extinguishing water inlet pressure of 10 bar and different proportioning rates.

Inlet:  
Extinguishing water flow rate  $\dot{V}_1$  at pressure  $p_1$

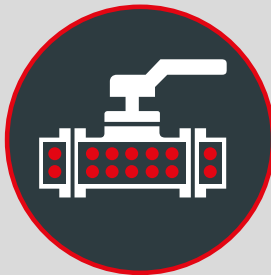
## ■ BENEFIT FROM RELIABILITY AND EFFICIENCY.

Purely mechanical, maximum reliability and efficiency: *FireDos* proportioners feature numerous advantages and are very easy to operate.



### Purely mechanical – high reliability

Driven just by the water flow, operation is independent of electricity and emergency power supplies, resulting in no disposal costs.



### Constant proportioning rate over a wide operating range

The required proportioning rate is available already at very low water flow rates and stays constant across a wide flow rate and pressure range. Automatic adaptation to varying fire scenarios is guaranteed.



### Testing the proportioning rate: cost-saving and eco-friendly

Precise proportioning rate testing is possible without having to produce premix or foam. An eco-friendly solution, as no foam agent is consumed, means no disposal costs.

## ■ SOPHISTICATED DESIGN, FOR ALL FOAM AGENT TYPES.

*FireDos* proportioners are compact, with the latest generation characterized by lower weight and reduced dimensions. Only high-quality components and materials were involved in the development of this technology.

- *FireDos* proportioners are designed to handle an operating pressure of up to 16 bar as a standard.
- The pipework is made of seawater-resistant stainless steel as standard.
- Depending on the type of extinguishing water, the water motor is available in different materials.
- In addition, the proportioners are suitable for all types of foam agents. The proportioning pump is self-priming and reliably mixes highly-viscous, fluorine-free and alcohol-resistant foam agents.



*FireDos* proportioners are designed to handle all foam agent types.

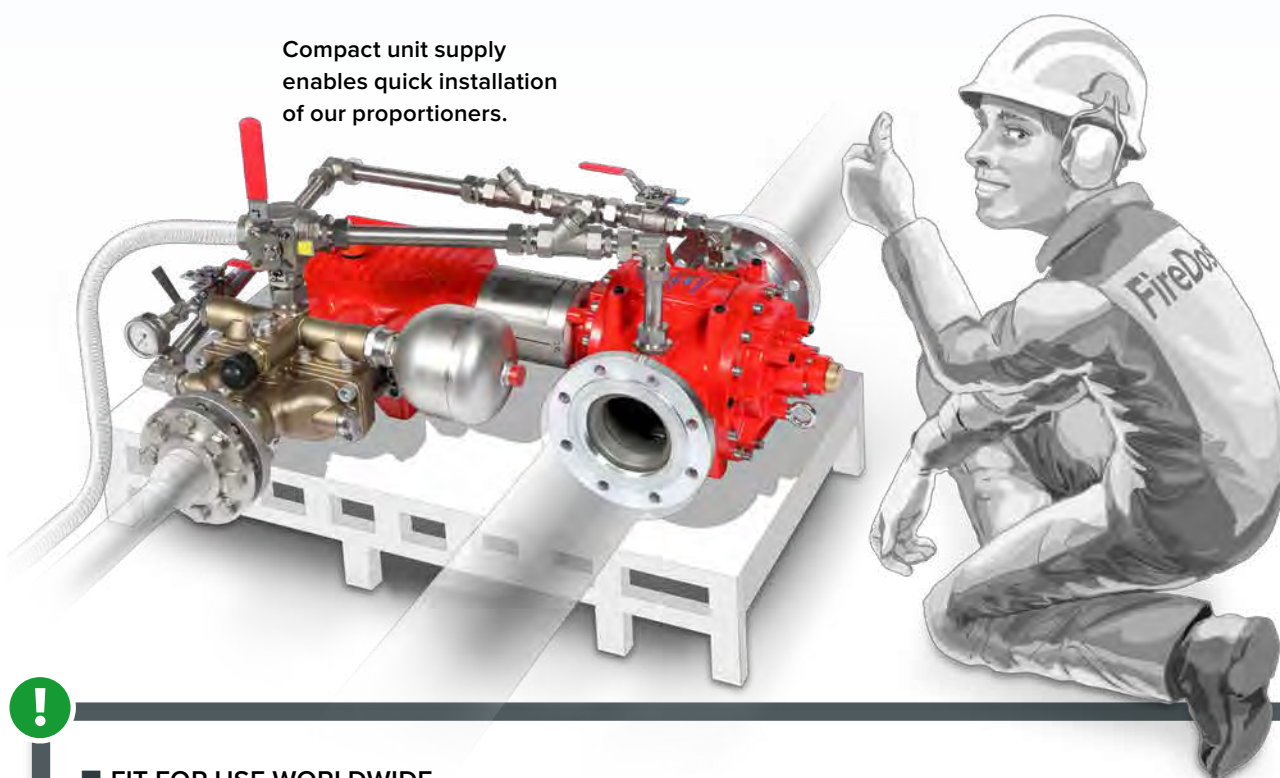
## ■ QUICK TO INSTALL, EASY TO OPERATE.

*FireDos* proportioners are installed rapidly and are easy to commission. All components are supplied as compact units. After installation on-site, the piping for water, premix and foam is connected, followed by commissioning.

The foam agent tank can be refilled whenever needed, enabling firefighting with no time limits due to foam agent capacity.

Switching to a different foam agent at the same proportioning rate is possible at any time since the proportioner is suitable for all foam agent types. Due to the positive displacement construction, the extinguishing water flow directly drives the proportioner. No valves need to be opened first. As it is a closed system, no water is lost, removing the requirement to drain into the sewer system or water tank. Another advantage: The proportioning pump delivers only what is required.

Compact unit supply  
enables quick installation  
of our proportioners.



## ■ FIT FOR USE WORLDWIDE.

*FireDos* meets the requirements of international standards by legislative bodies and insurance companies, allowing use in all types of fire extinguishing systems. No other proportioning system worldwide holds as many approvals. In addition, we work together with international industry associations closely, diligently implementing their recommendations for achieving consistent standards and process optimizations.



## ■ ECO-FRIENDLY AND COST-EFFECTIVE: TESTING THE PROPORTIONING RATE COMPLETELY WITHOUT PREMIX AND FOAM.

Fire extinguishing systems must be tested regularly to ensure their functionality in case of a fire. The same applies to the proportioner. The return line connection enables return of the foam agent back into the foam agent tank under live operating conditions while its volumetric flow rate is measured. The results of this and the measured quantity of water which passes through the unit at the same time are used to calculate the proportioning rate. While doing so, no premix or foam is produced.



### **Cost-effective**

No foam agent consumption,  
no disposal of premix or foam.



### **No contamination, no violation of law**

Both liquids stay separate. As testing takes place in a closed cycle, the foam agent remains separated from the extinguishing water.

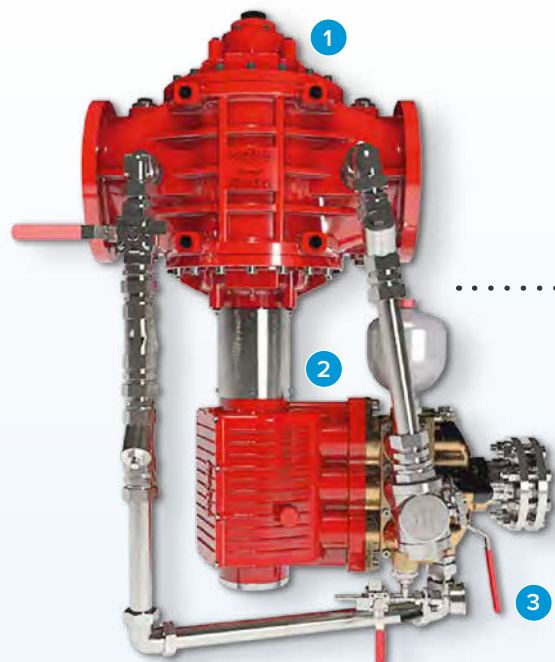


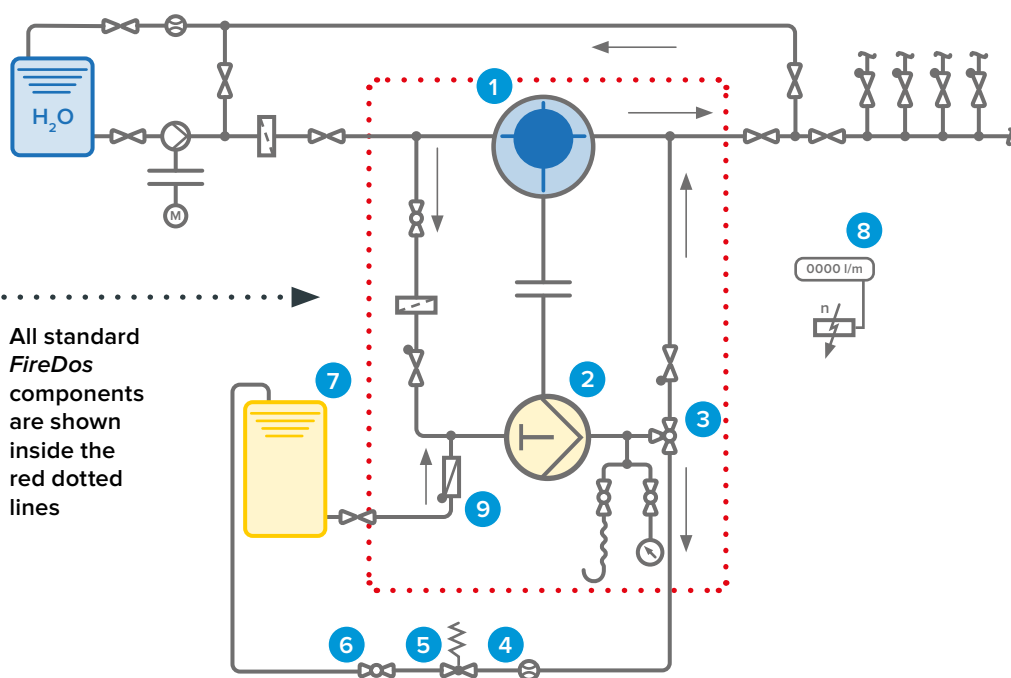
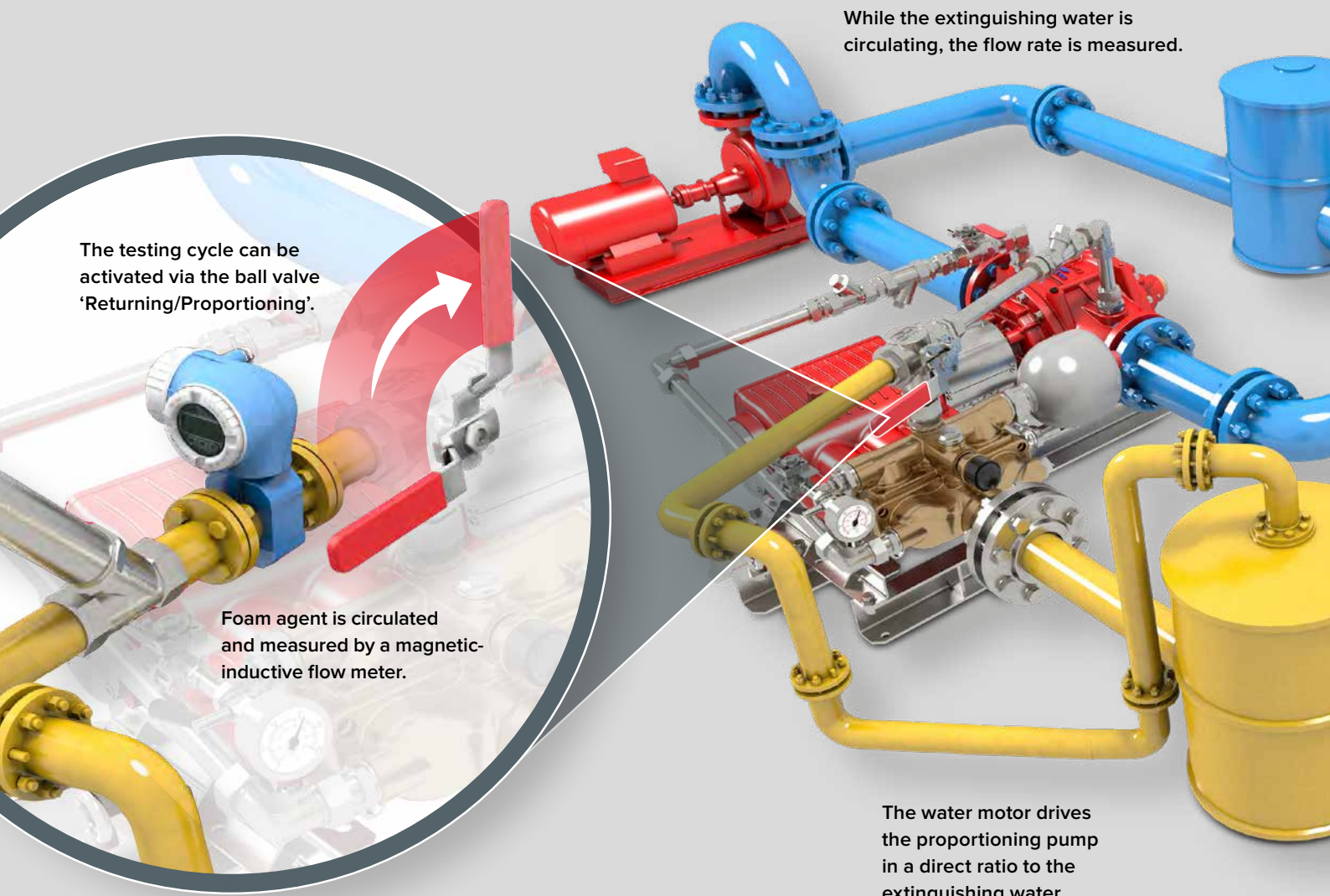
### **Eco-friendly**

No premix or foam is released into the sewer system or the environment, eliminating contamination during testing.

## ■ TESTING OPERATION.

- 3-way ball valve 'Returning/Proportioning' in position 'Returning'.
- Put the proportioner into operation by opening the extinguishing water flow.
- Set the backpressure at the pressure sustaining valve in the return line, which corresponds to the pressure in the water line.
- Read the foam agent flow rate in l/min on the flow meter in the return line.
- Determine the water flow rate in l/min.
- Determine the proportioning rate from the flow rates of foam agent and extinguishing water.





- 1 Water motor
- 2 Proportioning pump
- 3 3-way ball valve  
'Returning/Proportioning'
- 4 Magnetic-inductive flow meter
- 5 Pressure sustaining valve
- 6 2-way ball valve
- 7 Foam agent tank
- 8 Extinguishing water  
flow rate display  
(optional equipment)
- 9 Non-return flap

## ■ OUR PRODUCTS IN ACTION.

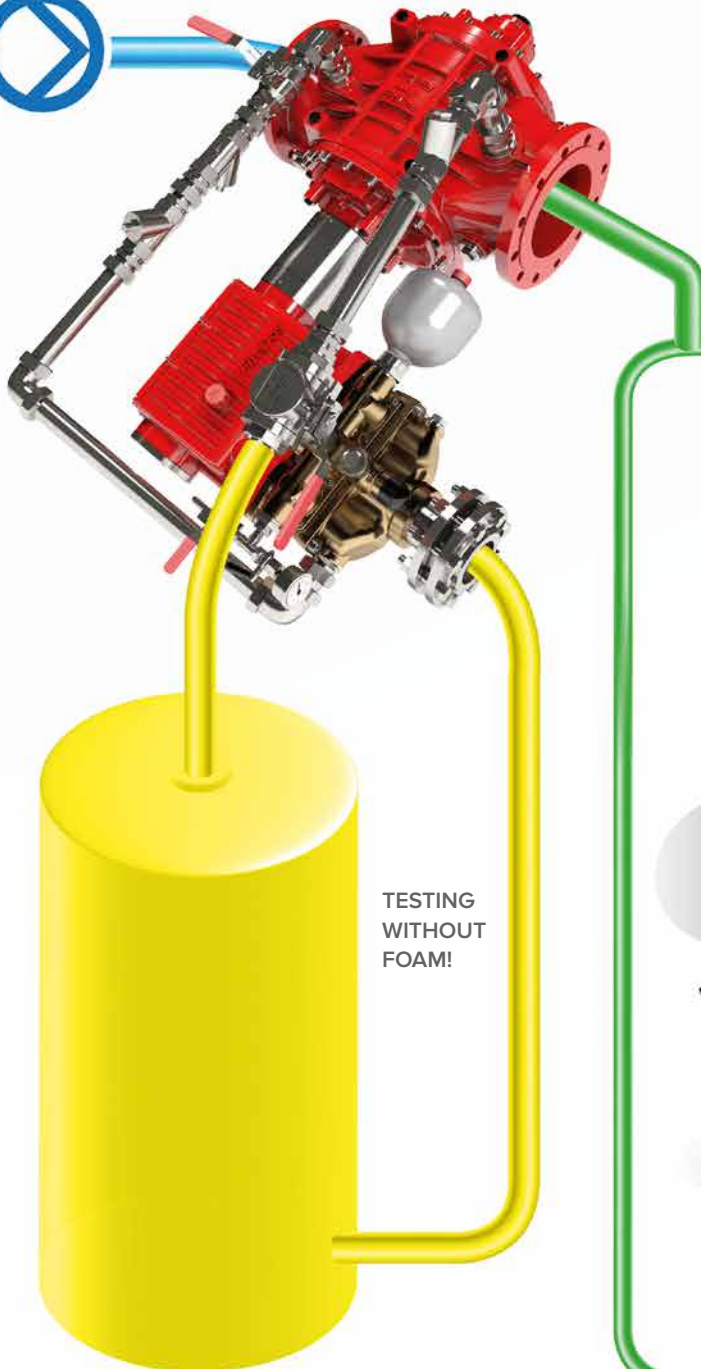
More than 13 000 *FireDos* proportioners are successfully in use worldwide, in various industries like logistics, chemical and oil & gas. Typical fields of application are where flammable liquids or solids are produced, transported or stored. This includes the automotive, aviation and marine industries. Additionally, the beneficial use of foam is increasingly adopted for firefighting in waste incineration and sorting plants.

### *FireDos* PROPORTIONER



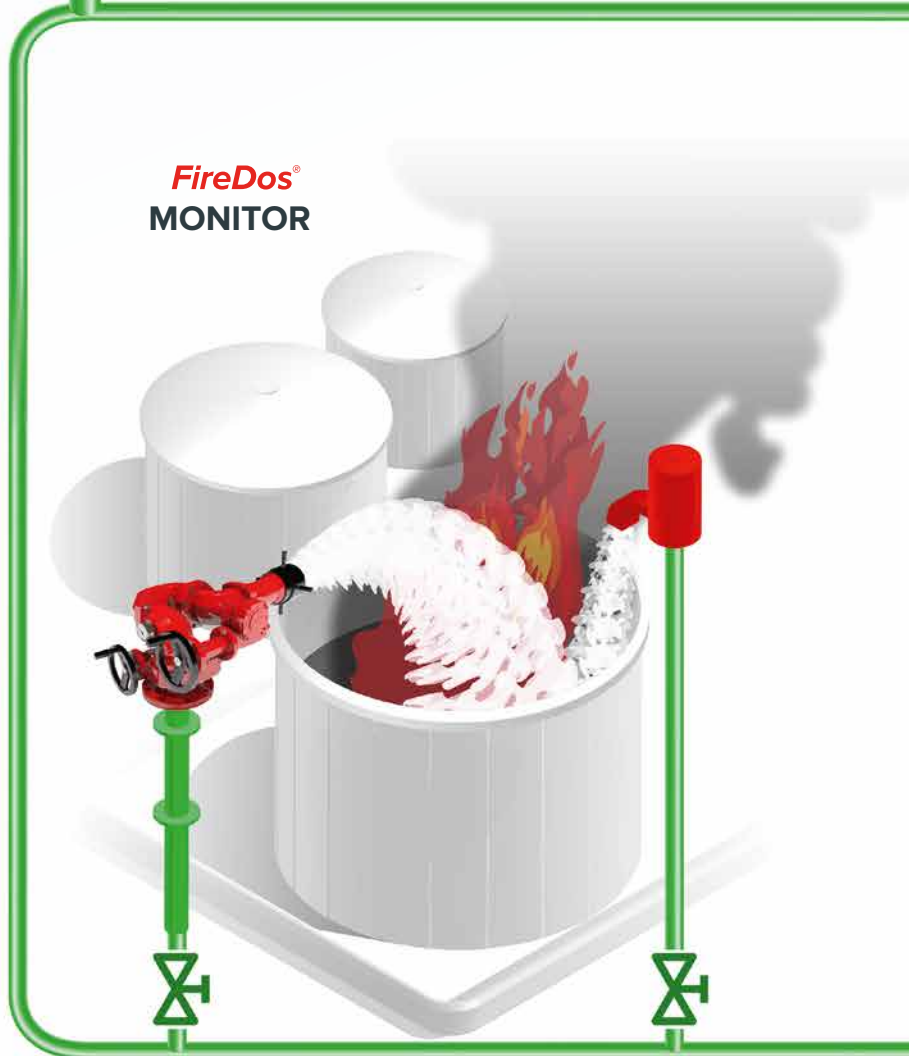
#### FIREDOS SERVICE: ALWAYS THERE FOR YOU!

We provide a full service: from planning through commissioning and maintenance. No matter which project phase you are, we won't let you down. Our service technicians will be there quickly, worldwide.

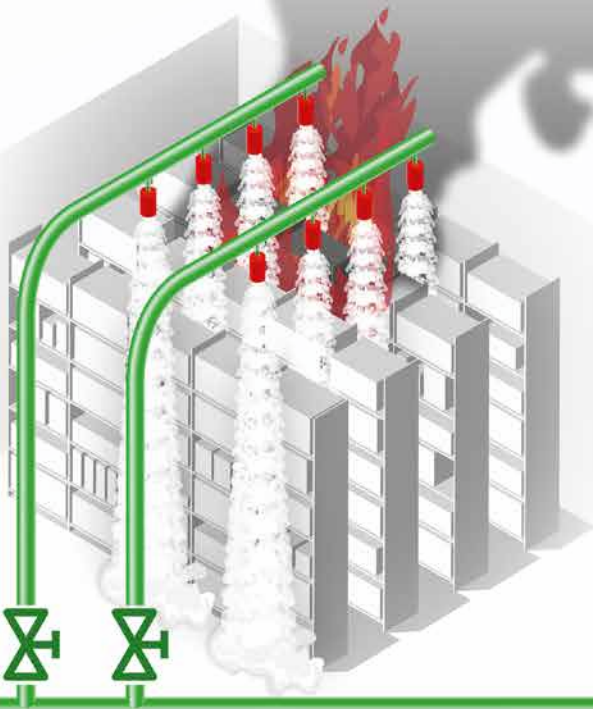


FOAM AGENT TANK

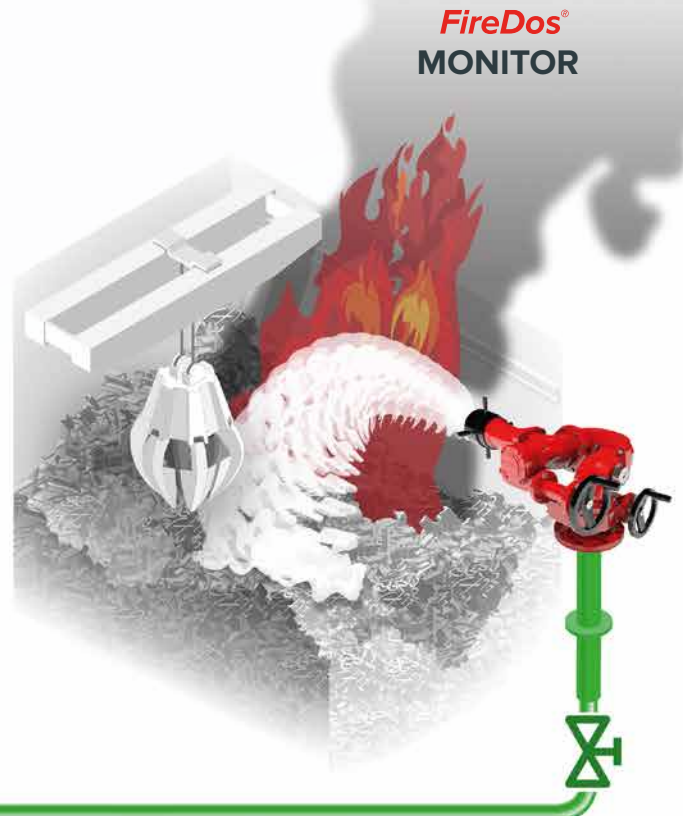
### *FireDos* MONITOR



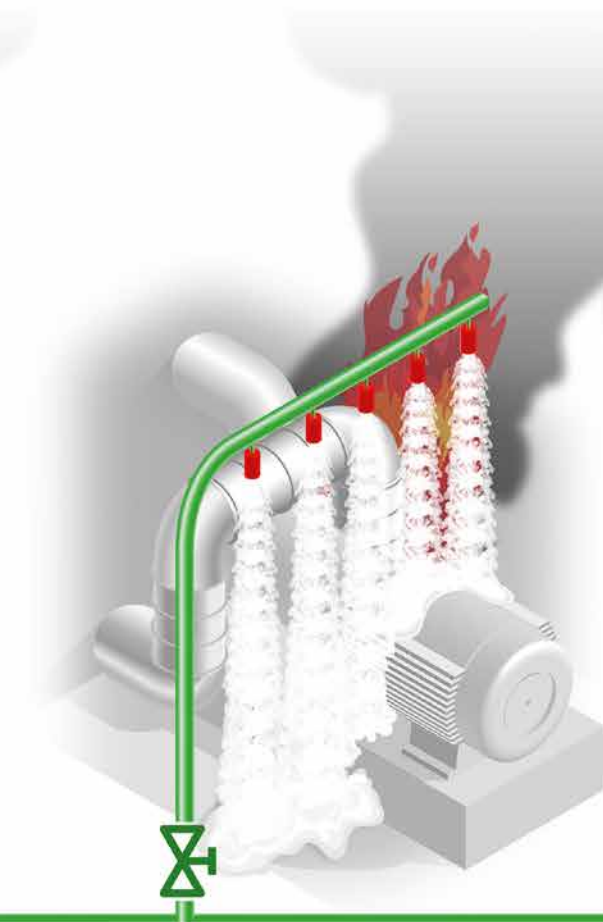
TANK FARM



HIGH-RACK WAREHOUSE



WASTE INCINERATION PLANT











PUMP ROOM



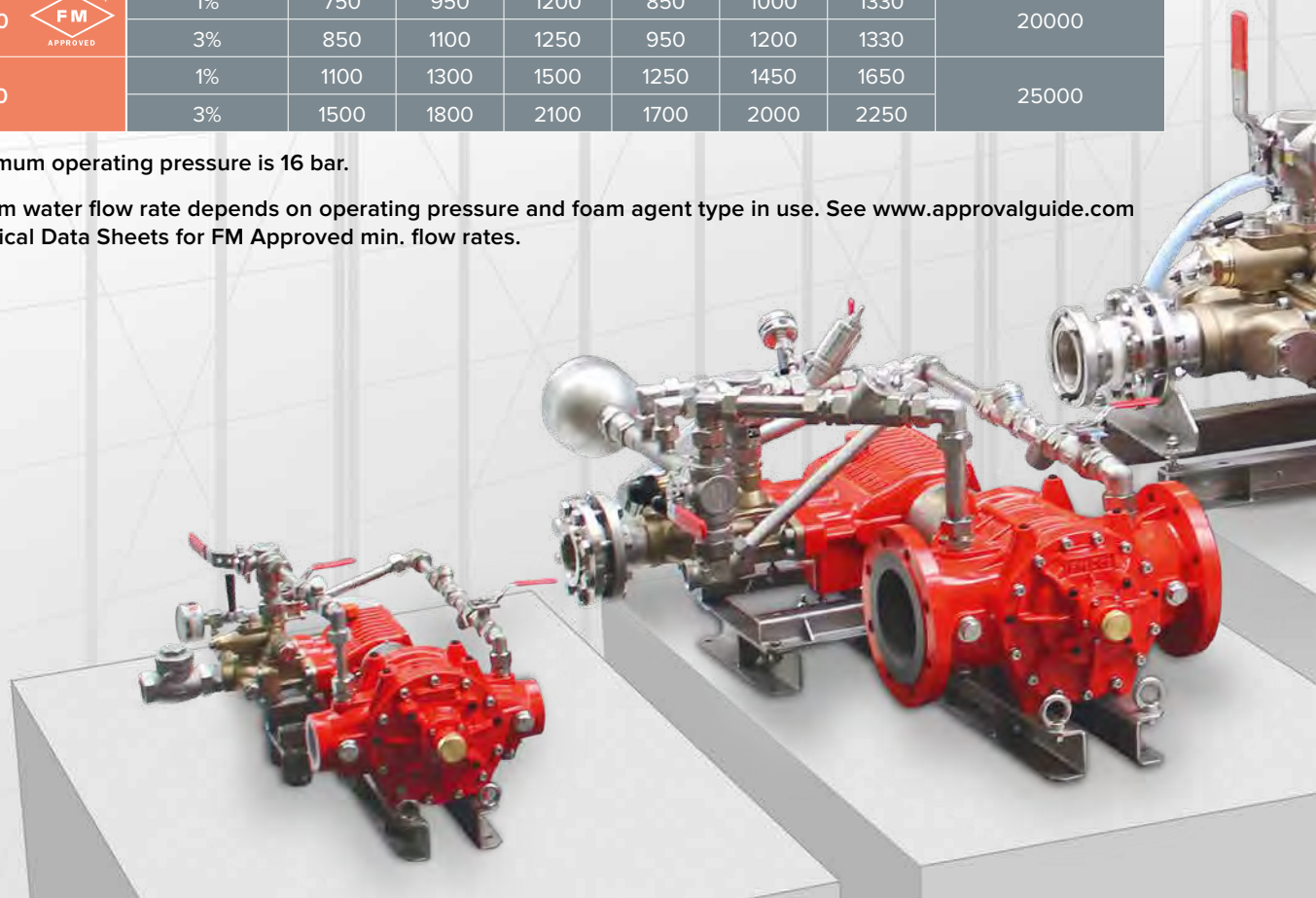
JETTY

# NUMEROUS SIZES

		Low-viscosity, Newtonian foam agent			High-viscosity, pseudoplastic foam agent			
		Operating pressure (bar)						
		5	10	16	5	10	16	
Unit type	Proportioning rate	Minimum extinguishing water flow rate (l/min)						Maximum extinguishing water flow rate (l/min)
FD500	1%	70	90	110	80	100	120	500
	3%	80	100	120	90	110	130	
FD1000 	1%	100	140	160	110	150	190	1000
	3%	120	150	180	130	160	180	
FD2000 	1%	180	220	250	190	230	270	2000
	3%	200	250	280	220	260	280	
FD3000 	1%	220	250	270	220	260	280	3000
	3%	250	340	380	270	360	400	
FD4000 	1%	250	350	380	270	370	400	4000
	3%	280	400	430	300	420	440	
FD6000 	1%	330	420	480	360	460	490	6000
	3%	350	460	520	380	500	550	
FD8000 	1%	410	460	880	450	650	880	8000
	3%	420	480	520	450	500	520	
FD10000 	1%	400	500	620	480	580	690	10000
	3%	450	650	750	550	750	1060	
FD15000 	1%	600	750	1060	700	900	1060	15000
	3%	800	1000	1200	850	1080	1260	
FD20000 	1%	750	950	1200	850	1000	1330	20000
	3%	850	1100	1250	950	1200	1330	
FD25000	1%	1100	1300	1500	1250	1450	1650	25000
	3%	1500	1800	2100	1700	2000	2250	

The maximum operating pressure is 16 bar.

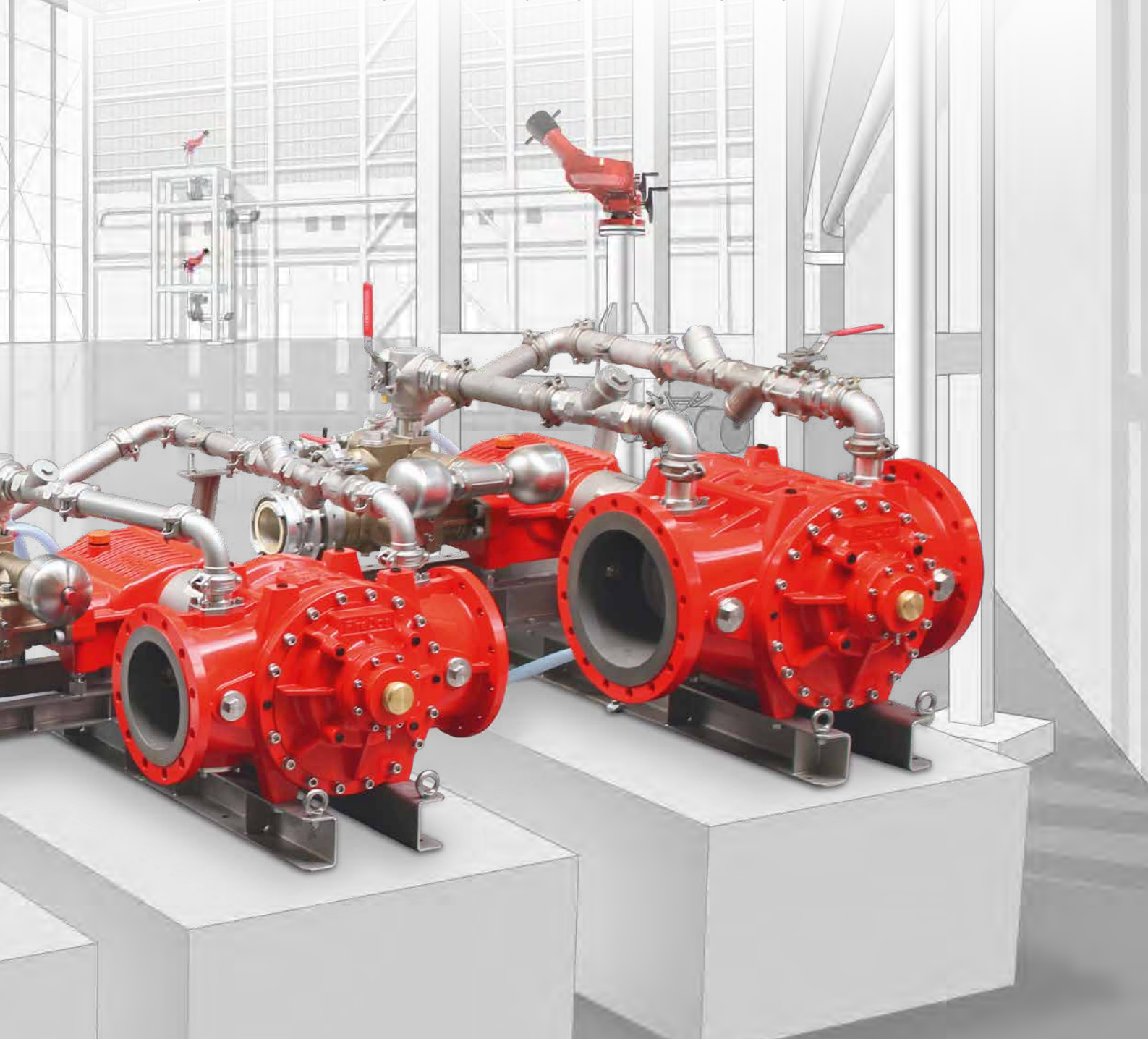
\* Minimum water flow rate depends on operating pressure and foam agent type in use. See [www.approvalguide.com](http://www.approvalguide.com) or Technical Data Sheets for FM Approved min. flow rates.



## ■ THE PERFECT SYSTEM FOR YOUR APPLICATION.

The intended use is most important for selecting the suitable proportioner. We offer various sizes with different minimum and maximum water flow rates. The required proportioning rate is achieved at a low minimum flow rate, and remains constant across wide extinguishing water flow rates and pressure ranges. This guarantees the optimum automatic response to varied fire scenarios, e.g., when sprinklers open or discharge devices (like foam pourers, monitors or branches) are used. All sizes are available at proportioning rates of 0.5%, 1%, 3%, 3+3% and 6%.

The optional addition of cylinder cut-offs enables multiple proportioning rates within a single proportioner, which can be activated by a ball valve if required. Particular cylinders at the proportioning pump will then merely circulate the foam agent instead of injecting it into the extinguishing water flow.



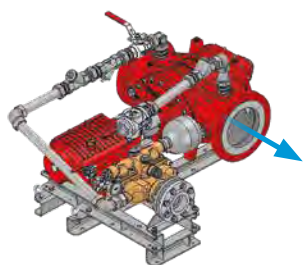
## ■ FITTING INTO YOUR FIRE PROTECTION SYSTEM PERFECTLY.

We offer various optional equipment and versions to make the proportioner fit into your system perfectly.

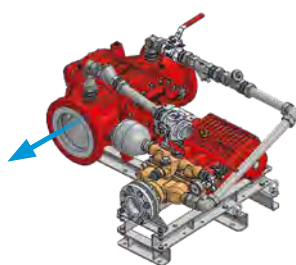
### ■ FLOW DIRECTIONS OF THE WATER MOTOR



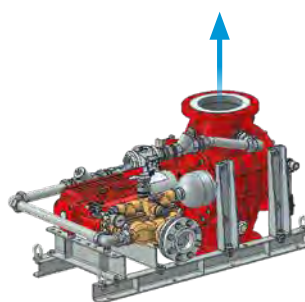
*FireDos* proportioners are available with four different flow directions to suit a wide variety of installation conditions.



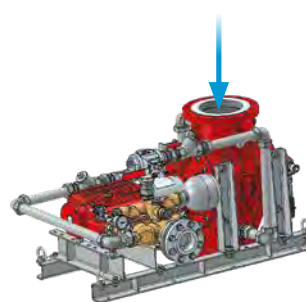
1 horizontal, from left to right



2 horizontal, from right to left



3 vertical, from bottom to top



4 vertical, from top to bottom



### ■ REVOLUTION COUNTER WITH FLOW RATE DISPLAY FOR THE EXTINGUISHING WATER



The water motor's number of revolutions is counted with the help of an optional proximity switch. The current extinguishing water flow rate is calculated from the number of revolutions and shown on an LED display in l/min.

## ■ CYLINDER CUT-OFF



To reduce the proportioning rate, an optional cylinder cut-off can be added to the proportioner. This means a cylinder of the proportioning pump is switched to bypass mode. One or more cylinders will then no longer inject the foam agent into the extinguishing water flow but pass it back to the suction side of the proportioning pump. The proportioning rate is reduced accordingly.

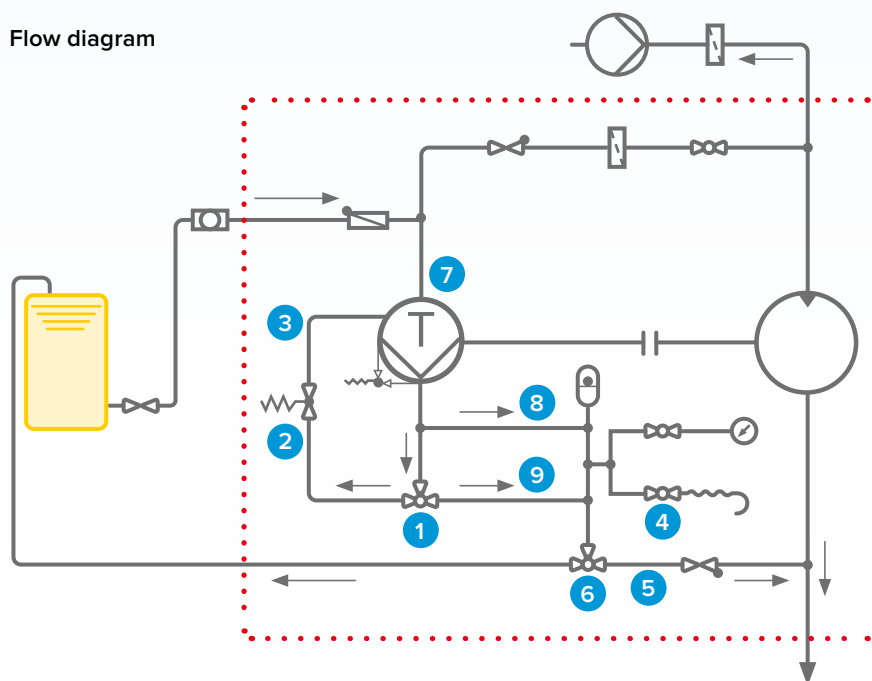
### Different variants are possible:

- 3-1: Reduction of the initial proportioning rate from 3% to 1%
- 3-2: Reduction of the initial proportioning rate from 3% to 2%
- 1-0,3: Reduction of the initial proportioning rate from 1% to 0.3%
- 1-0,7: Reduction of the initial proportioning rate from 1% to 0.7%

If you need another combination, please contact us.



Flow diagram



- 1 "Cylinder cut-off" ball valve
- 2 Pressure sustaining valve
- 3 Return line to pump
- 4 Air bleed valve
- 5 Proportioning line
- 6 3-way ball valve „returning/proportioning“
- 7 Proportioning pump connection, suction side
- 8 Proportioning line, cylinder 3
- 9 Proportioning line, cylinders 1 and 2

## ■ SEAWATER VERSION



For use with seawater, a version with correspondingly adapted materials is available.



## ■ VERSION FOR STATIC PRESSURE > 16 BAR

In static mode, if the maximum permissible pressure of 16 bar is exceeded, particular components in the water motor can be adapted. This allows them to handle a static pressure of up to 25 bar.



## ■ ATEX VERSION



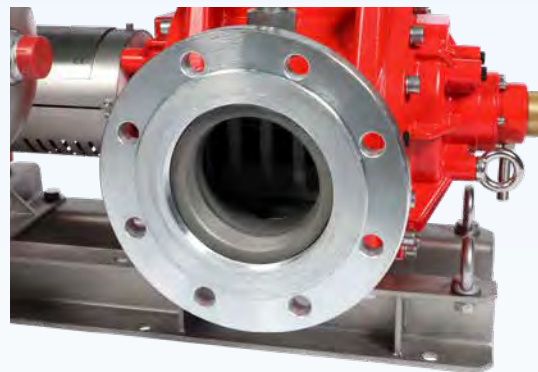
With a declaration of conformity according to 2014/34/EU. Marking:  
II 2G Ex h IIC T4 Gb / II 2D Ex h IIC T130°C Db



## ■ FLANGES

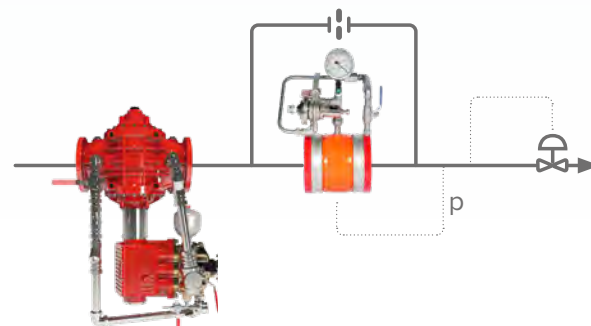


Depending on the type series, the proportioner's flanges are either threaded or cast in the housing. All flanges are available as DIN and ANSI versions.



## ■ SURGE PROTECTION

When water surges occur, i.e. when empty pipework is filled after an alarm activation, there are multiple possibilities to protect the pipework as well as the *FireDos* proportioners. One option is the use of an automatic surge protection valve. This also prevents the potential damage caused by overspeed and water hammer.



## ■ VERSION FOR OPERATING TEMPERATURES OVER 50 °C



Use of a special rotor vane variant enables higher temperatures of up to 80 °C.



## ■ PRESSURE SUSTAINING VALVE WITH OR WITHOUT FLOW METER



When determining the foam agent flow rate in testing mode, it is important to simulate the real pressure conditions in the extinguishing system. The pressure sustaining valve installed in the return line is used to set a defined backpressure. To measure the volumetric foam agent flow rate, it is useful to install an additional magnetic-inductive flow meter, which measures the extinguishing agent flow rate and allows determination of the proportioning rate.



Flow meter for measuring the volumetric flow rate

Pressure sustaining valve for setting a backpressure

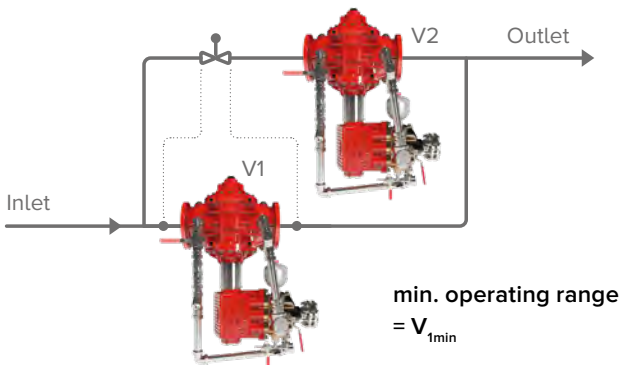


## ■ PARALLEL INSTALLATION

To extend the operating range of a *FireDos* proportioner, it is possible to install two or more proportioners in parallel.

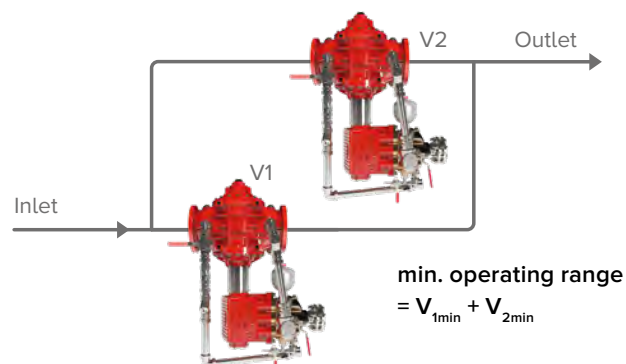
### With a proportional control valve:

The proportional control valve is installed upstream of one proportioner. Typical applications include Wet sprinkler systems.



### Without a proportional control valve:

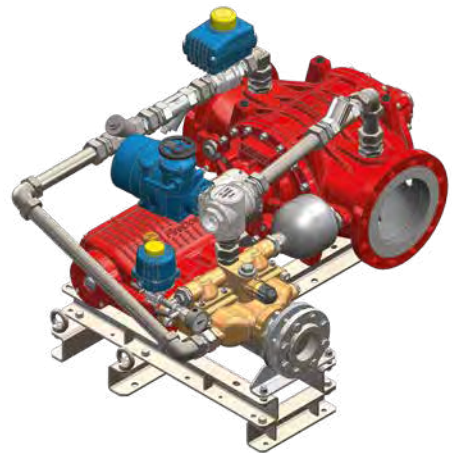
Parallel installations without a proportional control valve have a different operating range. This type of parallel installation is suitable for all fire protection systems with open discharge devices.



## ■ ELECTRICALLY ACTUATED BALL VALVES



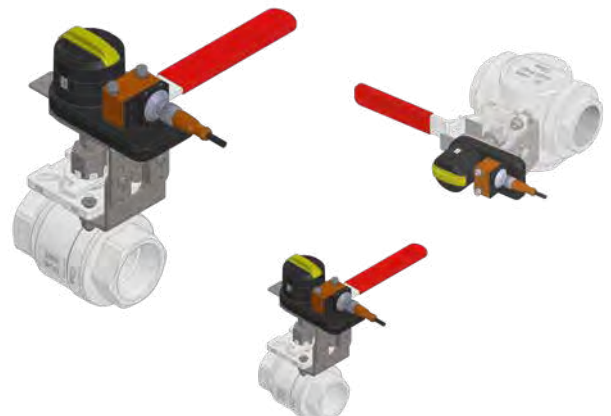
For integration with an on-site control system, the ball valves of the proportioner can be fitted with electric actuators.



## ■ ELECTRICAL BALL VALVE POSITION MONITORING



A switch can be added for electrical monitoring of the ball valve position, which can be integrated to an on-site control system.



## PRODUCTS:

### *Gaseous Suppression*



Inert Gas (IG-01, IG-55, IG-100, IG-541)  
Novec 1230™ Fluid (FK-5-1-12)  
FM-200® (HFC-227ea.)  
Carbon Dioxide (CO<sub>2</sub>)  
Hybrid Systems (N<sub>2</sub> / Water)  
Pressure Relief Vents  
Enclosure Integrity Testing Equipment  
Pipe & Fittings

### *Water Suppression*



Water Mist - High Pressure  
Water Mist - Intermediate Pressure  
Water Mist - Low Pressure  
Hybrid Systems (Water / N<sub>2</sub>)  
Monitors & Delivery Systems  
High Speed Deluge

### *Foam Suppression*



Foam Concentrates  
Foam Proportioning  
Foam Delivery Systems  
Compressed Air Foam  
Foam Concentrate Testing

### *Explosion Protection*



Explosion Suppression  
Explosion Isolation  
Explosion Vents & Pressure Relief  
Spark Suppression  
Explosibility Testing

### *Fire Detection*



Linear Heat Detection - Digital  
Linear Heat Detection - Fibre Optic  
Linear Heat Detection - Micro Chip  
Flame Detection  
Video Imaging Detection  
Spark Detection  
Control & Indicating Equipment  
Thermal Imaging Detection  
Aspirating Smoke Detection

### *Military & Defence*



Military Vehicles  
Naval Vessels

### *Special Applications*



Micro Environment  
Oxygen Reduction  
Kitchen Protection Systems  
Dry Chemical  
Vehicle Systems  
Marine & Offshore  
Vapour Mitigation  
Li-Ion Fire Systems

### *Support Services*



Design / Engineering  
Technical Support  
Services & Testing

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