

■ **PROPORTIONERS**
FOR FIRE BRIGADES.





■ TECHNOLOGY FOR PROFESSIONALS.

Proportioner systems which are referred to as 'Positive-pressure proportioning systems' according to the European standard EN16327 are used to generate fire extinguishing foam or surfactant water. Therefore, a foam or wetting agent must be admixed to the extinguishing water flow at a high rate of precision.

The relief forces of municipal and voluntary fire brigades as well as factory fire departments need equipment to rely on for their demanding job. This was the focus when the **FireDos** proportioners were designed, which offer some great benefits for effective fire-fighting.

To be up to date with all technical novelties in the fire-fighting sector, we participate in all major German associations and councils.

- DIN e. V. - German Institute for Standardization
- vfdb - GFPA German Fire Protection Association.
- VDMA - German Engineering Association



■ **PRODUCT OUTLINE.**

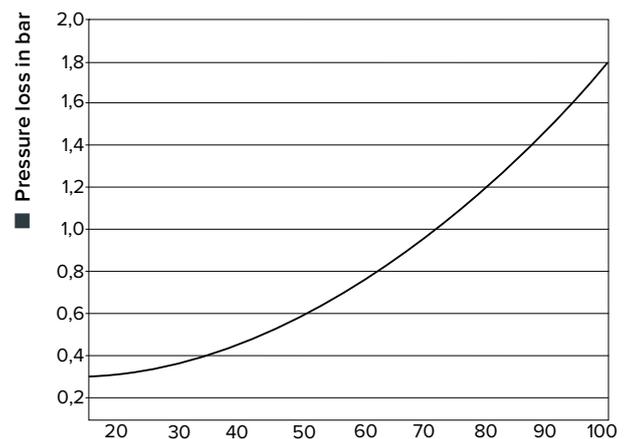
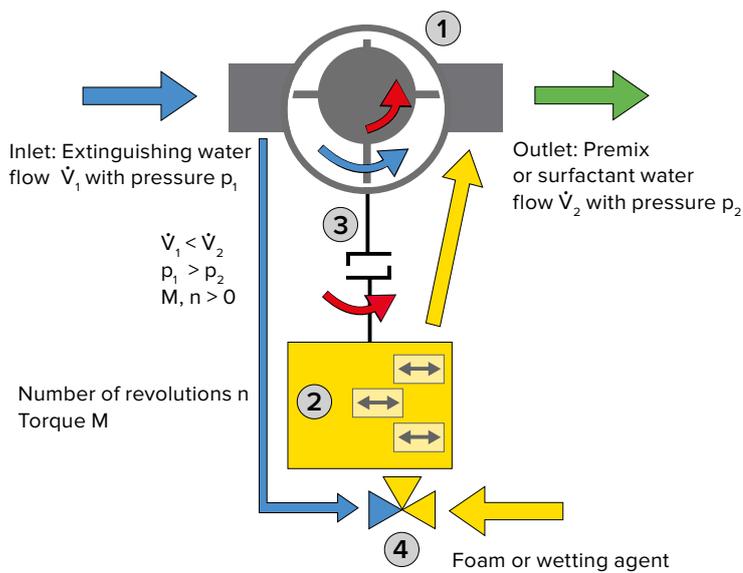
The *FireDos* proportioner is driven solely by the extinguishing water flow. Electrical energy is not required. The purely mechanical system is made-to-last and maintenance efforts are low.

The water motor drives a specially designed pump which delivers the foam agent or wetting agent into the extinguishing water flow. There is a direct linear relationship between the extinguishing water flow rate in litres per minute and the water motor's number of revolutions.

Thus, the quantitative ratio of additive and extinguishing water, which is referred to as the 'proportioning rate', always remains constant.

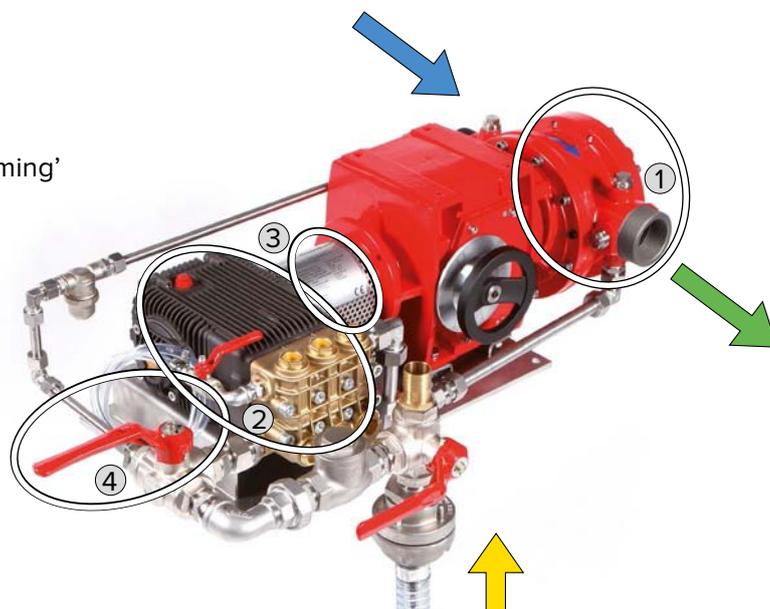
A portion of the pressure in the extinguishing water line is used as an energy source to drive the water motor. The below graph shows that clever dimensioning of the *FireDos* proportioner can keep the pressure loss very low:

■ **Example: Pressure loss at a proportioning rate of 3% and a line pressure of 12 bar:**



■ Extinguishing water flow rate in % of the maximum permitted flow rate of the particular *FireDos* proportioner

- ① Water motor
- ② Proportioning pump
- ③ Clutch
- ④ Ball valve 'Flushing/Priming'



■ THE ADVANTAGES.

■ THE FIRE TRUCK'S POWER SUPPLY IS NOT DISCHARGED.

Only the extinguishing water flow and hence the fire pump or a hydrant are required to drive the proportioner.

■ INDEPENDENT OF THE EXTINGUISHING WATER PRESSURE.

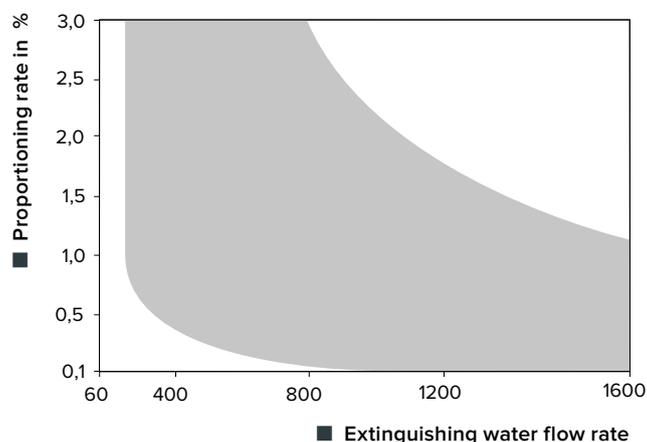
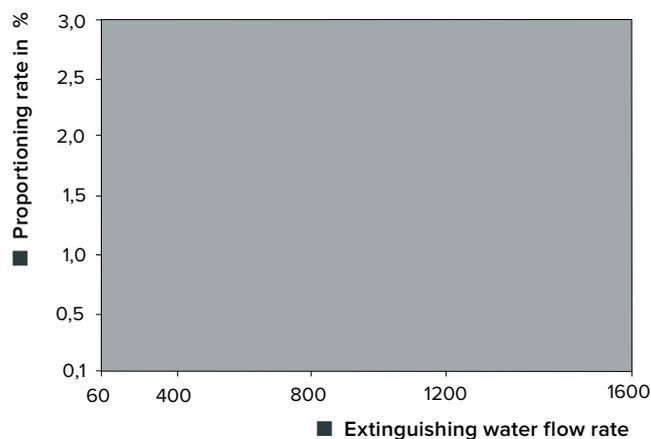
The water motor and the special proportioning pump ensure that neither the pressure nor the extinguishing water flow rate (in litres per minute) have any influence on the precision of proportioning. The selected proportioning rate will be precisely maintained under all operating conditions.

■ MAXIMUM OPERATING RANGE.

If only a small amount of extinguishing agent is consumed at the outlet of the water line, the water motor is able to run even at a very low number of revolutions, unlike an electrical motor. This results in a best possible operating range diagram in square shape (example: a *FireDos* FD1000/0,1-3-APP-F with optional flow reduction):

For comparison:

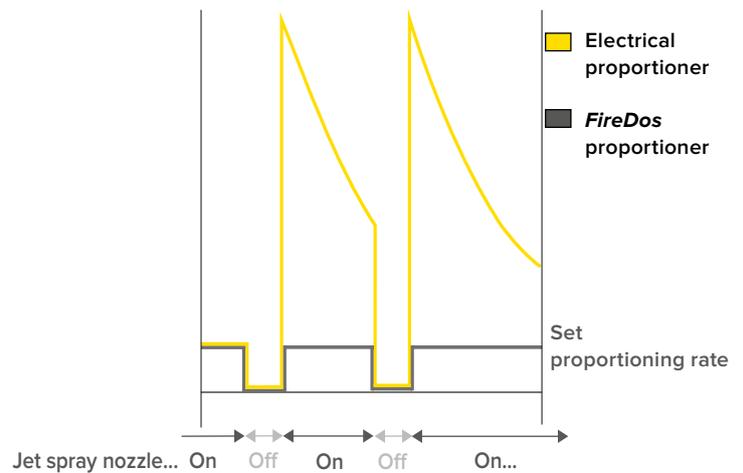
The operating range of an electrical proportioner with its restrictions due to a certain minimum and maximum output of its proportioning pump.



- Required proportioning is possible.
- Required proportioning is not possible.

■ PROPORTIONING RATE IS IMMEDIATELY AS REQUIRED.

After venting the proportioning pump once, the set proportioning rate is available **immediately** at every subsequent start-up. Here is why: The water motor always operates in direct linear correlation with the extinguishing water flow rate. This is completely different from an electrical motor, which always must adjust its required number of revolutions in a time-consuming process and causes excess proportioning rates until then.



■ INDEPENDENT OF THE FIRE HOSES' LENGTH AND COURSE.

Since the extinguishing water pressure has no influence on keeping the proportioning rate, both length and course of the fire hoses can be laid out as needed.

Further advantages:

- The quick operation equipment can be used for foam or wetting agent applications as well.
- The number of outlets or manifolds in use can be varied during operation.
- The proportioner can be placed anywhere within the fire hose layout.



■ PERFECTLY SUITED FOR AERIAL LADDER PLATFORMS.

The height difference between the *FireDos* proportioner and the nozzle at the end of the extinguishing water line does not matter at all. The specially designed proportioning pump adapts itself to the backpressure automatically.



THE ADVANTAGES

■ ALSO SUITED FOR HIGHLY VISCOUS FOAM AGENTS.

Fluorine-free and/or alcohol-resistant foam agents can be very stiff. The proportioning pump was designed especially for them.

■ NO FLUSHING REQUIRED.

The foam or wetting agent can remain inside the pump after operation and is even supposed to do so. This is another guarantee that for the next job, the correct proportioning rate will be at hand from the first drip of water.

■ SUITABLE FOR ALL TYPES OF NOZZLES.

- Jet spray nozzles with or without a foam attachment.
- Medium, heavy and adjustable foam nozzles.
- High-expansion foam generators.
- Monitors.

■ EASY TO OPERATE.

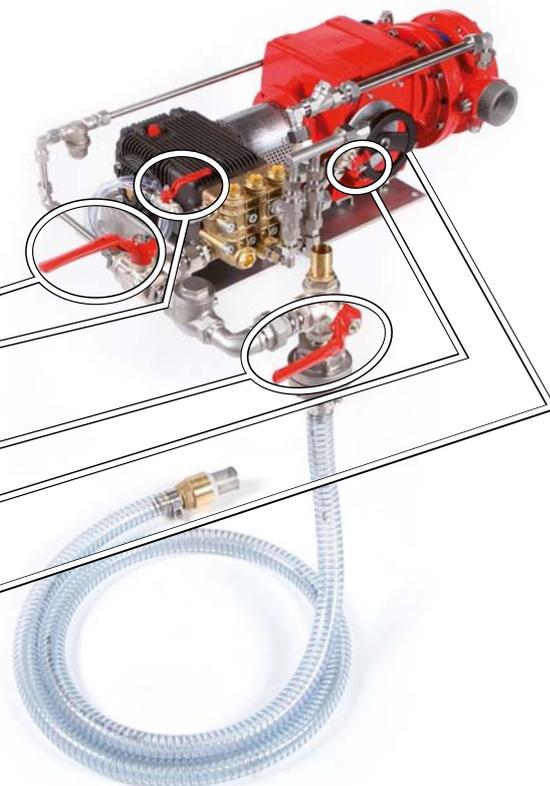
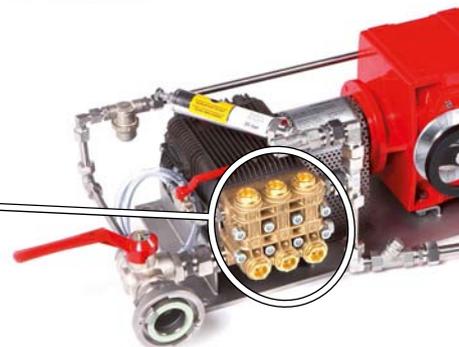
Operation is done intuitively even in stressful situations. Therefore, only little training is required. In most cases, a practical instruction of about one hour is enough.

All manual controls are sturdy and can even be operated while wearing gloves.

Ball valves:

- Flushing/Priming.
- Air venting.
- External priming (from an external container instead of a fixed tank).
- Cylinder cut-off (optional).

Hand wheel for stepless adjustment of the proportioning rate.



■ FLEXIBLE USE.

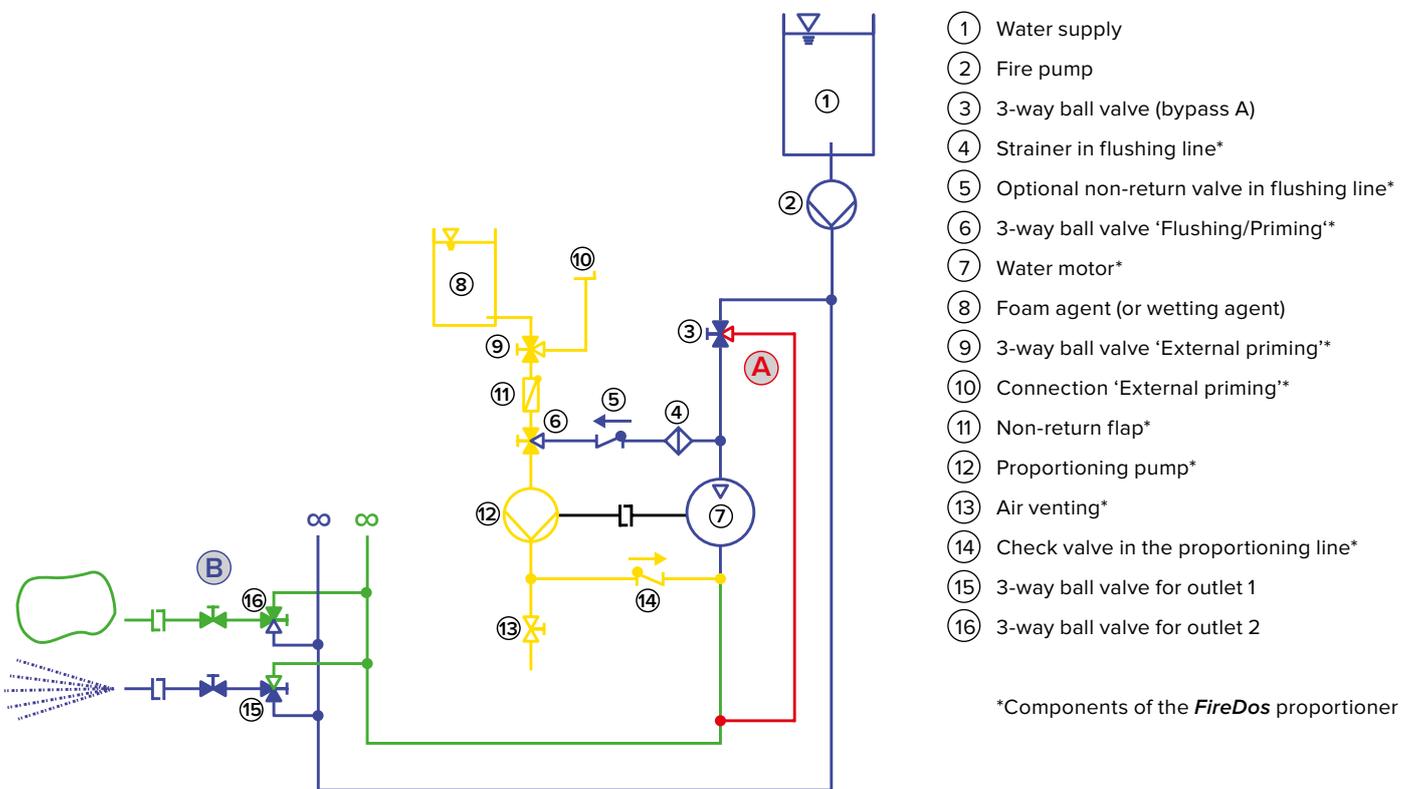
Both below variants of integrating the proportioner into fire trucks or roll-off containers are frequently used:

- The red bypass (A) and the 3-way ball valve upstream of the proportioner allow **uniform** switching between water and foam for all outlets.
- A 3-way ball valve is installed upstream of every outlet (B). One line leads there directly from the fire pump, with another one coming from the proportioner. This allows **individual** switching between water and foam at each outlet.

Both variants benefit from the advantage that the proportioning pump does not have to be flushed and proportioning takes place from the first drip discharged.

The connection for 'External priming' (10) allows switching to further foam or wetting agent containers when the tank has been used up. If vented before, this is possible even without interruption of the proportioning process.

Likewise, two different foam agents can be proportioned in alternating mode.



■ TYPE SELECTION.

The type reference starts with the maximum possible extinguishing water flow rate in litres per minute, followed by the proportioning rate or the proportioning range in percent.

The foam or wetting agent type to be used determines which proportioning rates are required. Only if these are strictly maintained, the extinguishing agent can achieve its optimum effect.

FireDos proportioners can provide proportioning rates in a range between 0.1 and 6 %.

The following variants are distinguished:

- The proportioning rate is fixed and cannot be adjusted.
- The adjustment of the proportioning rate is stepless and the proportioning rate can be reduced to 1/10 of the respective maximum figure. This makes a wide proportioning range available. A control gear reduces the number of revolutions transmitted from the water motor to the proportioning pump.
- The proportioning rate can be adjusted stepwise by cutting off individual cylinders in the proportioning pump.
- Control gear and cylinder cut-off can be combined to achieve particularly low proportioning rates.

■ TYPES FOR MOBILE USE.

The mobile types can be stored in an equipment compartment and are instantly at hand for use. In this field, the FD-DZ types with their reduced dimensions are a **special variant**. Their proportioning rates can be adjusted stepwise and allow both foam and wetting agent applications.



■ TYPES FOR A FIXED INSTALLATION IN FIRE TRUCKS OR ROLL-ON / ROLL-OFF CONTAINERS.

Series	Water flow rate*	Operating pressure	Proportioning rates
FD500 FD1000 FD1600	ca. 60 – 500 l/min ca. 100 – 1000 l/min ca. 150 – 1600 l/min	up to 16 / 25 / 40 bar	Fixed proportioning rates: 0.5 % 1 % 3 % 6 % 3 / 3 % (except FD500)
FD2500 FD4000 FD6000 FD8000 FD10000 FD15000 FD20000	ca. 250 – 2500 l/min ca. 400 – 4000 l/min ca. 500 – 6000 l/min ca. 500 – 8000 l/min ca. 600 – 10000 l/min ca. 800 – 15000 l/min ca. 800 – 20000 l/min	up to 16 bar	Stepwise adjustable proportioning rates: 0.2 % / 0.3 % / 0.5 % 0.3 % / 0.7 % / 1 % 1 % / 2 % / 3 % 1 % / 2 % / 3 % / 4 % / 5 % / 6 % (except FD500) Stepless adjustable proportioning rates: 0.05 – 0.5 % up to FD10000 0.1 – 1 % up to FD10000 0.3 – 3 % up to FD4000 0.6 – 6 % up to FD2500

* without the optional flow reduction

■ TYPES FOR MOBILE USE.

Series	Water flow rate	Operating pressure	Proportioning rates
FD-DZ 5	ca. 60 – 500 l/min	up to 16 bar	0.3 % / 0.7 % / 1 % 1 % / 2 % / 3 %
FD-DZ 10	ca. 100 – 1000 l/min	up to 16 bar	0.3 % / 0.7 % / 1 % 1 % / 2 % / 3 % 0.3 % / 0.7 % / 1 % / 2 % / 3 %
FD500 FD1000 FD1600 FD2500	ca. 60 – 500 l/min ca. 100 – 1000 l/min ca. 150 – 1600 l/min ca. 250 – 2500 l/min	up to 16 bar	Fixed proportioning rates: 0.5 % 1 % 3 % 6 % 3 / 3 % (except FD500) Stepwise adjustable proportioning rates: 0.2 % / 0.3 % / 0.5 % 0.3 % / 0.7 % / 1 % 1 % / 2 % / 3 % 1 % / 2 % / 3 % / 4 % / 5 % / 6 % (except FD500) Stepless adjustable proportioning rates: 0.05 – 0.5 % 0.1 – 1 % 0.3 – 3 % 0.6 – 6 %

OPTIONAL EQUIPMENT AND VARIANTS.

Our goal is to meet your requirements. Here is a small selection of optional equipment that is mostly useful to add:

Start-up flow reduction.

The minimum extinguishing water flow rate which is required to drive the water motor reliably can be reduced to approx. 1/3 of the figure that would be required without a flow reduction.

Initially, a larger amount of extinguishing water flows through the water motor than is actually consumed at the end of the water line. A constant portion of this water then is passed back to the water tank or to the suction side of the fire pump.

The start-up flow reduction is switched on and off using a ball valve.

Drainage.

If there is a risk of damage by frost, ball valves for drainage can be added at the lowest points of the water motor, the proportioning pump and the connecting pipework.

Connection for a second foam agent tank.

Another inlet allows the connection to a second, fixed foam agent tank.

The priming process can be switched using a ball valve.

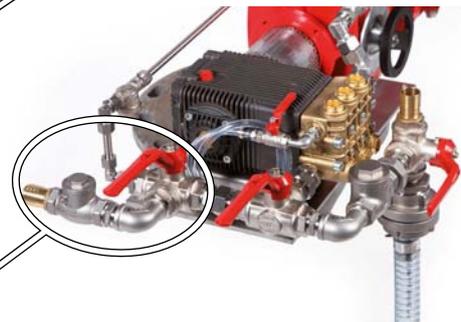
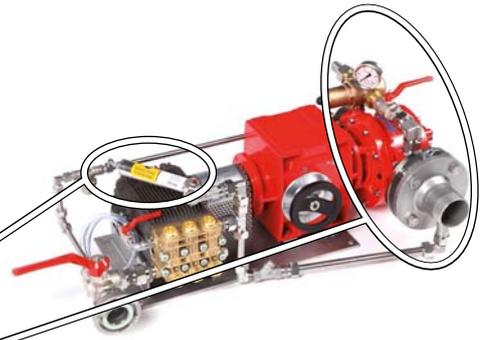
Remote control of the ball valves.

All ball valves can be fitted with pneumatic drives and be integrated into an existing control system in the fire truck.

Also available: Position indicator and emergency hand wheels for the drives.

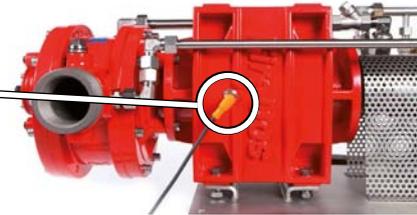
Remote control of the control gear.

The stepless adjustment of the proportioning rate can be done by an electric drive instead of turning the hand wheel and be integrated into an existing control system in the fire truck.



■ **Revolution counter.**

A sensor measures the water motor's number of revolutions. This figure is used to calculate the actual extinguishing water flow rate in litres per minute. The signal can be used by an existing control system in the fire truck.



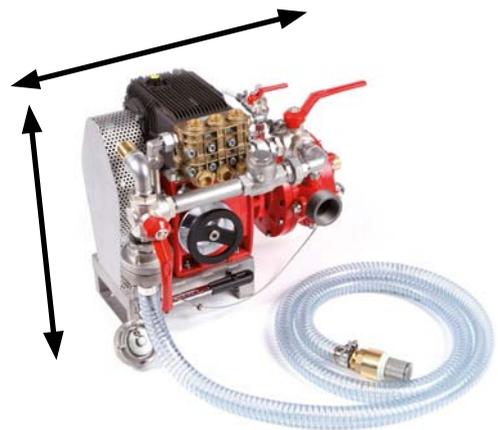
■ **Check valve in the flushing line.**

This valve can be useful under certain conditions to prevent a fixed foam agent tank from running empty.



■ **Different construction designs.**

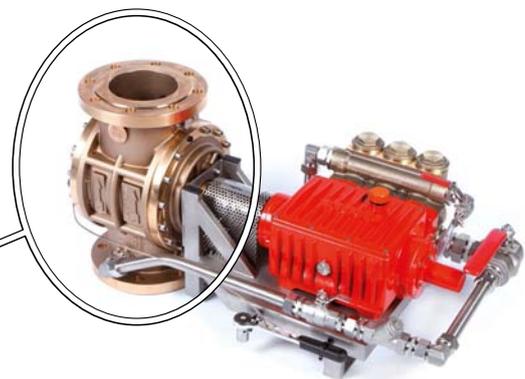
There are two different construction forms (longer & flatter or shorter & higher) to facilitate the proportioner's easy integration. Furthermore, the water motor is available in four different flow directions to suit the installation conditions. This also allows retrofitting into existing fire trucks or roll-off containers.

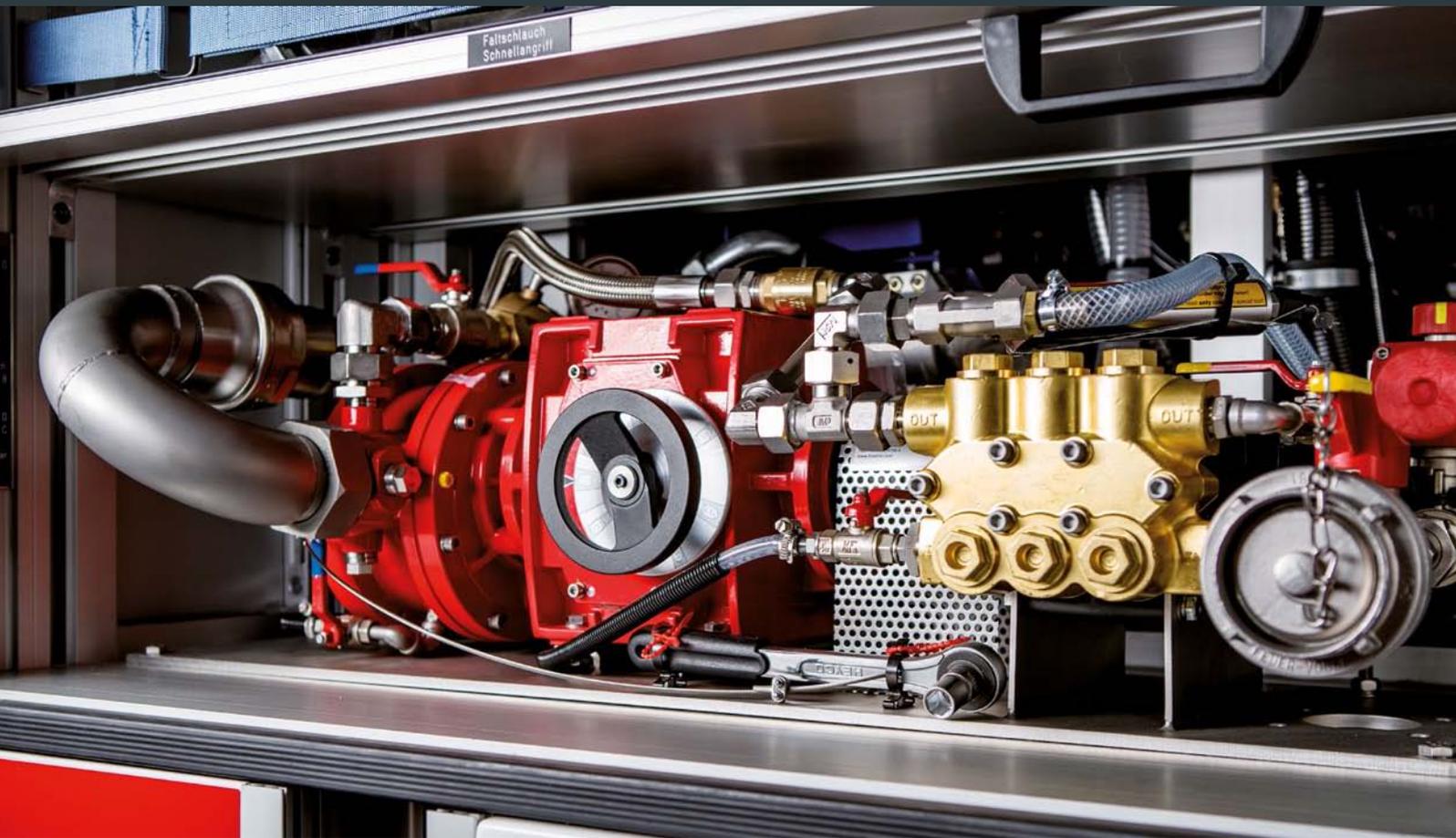


■ **Special requests are welcome.**

We can adapt our technology to your special requirements. We have already successfully accomplished the following tasks:

- High-pressure applications up to 40 bar.
- Proportioning of decontamination agents.
- Proportioning of extinguishing gel.
- Water motor with two pumps proportioning different agents at different proportioning rates simultaneously or alternating.
- Operating temperatures up to 80 °C.
- Proportioning rates > 6%.
- Seawater as extinguishing water.

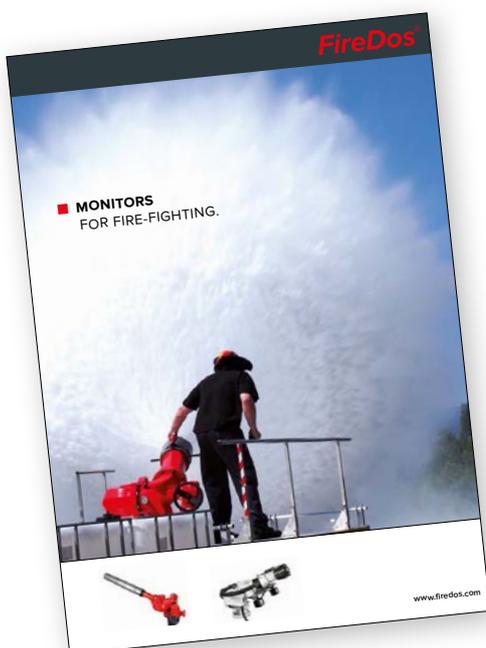




■ WE ARE HERE FOR YOU.

We are proven experts on our proportioners and monitors for fire-fighting, which we designed all by ourselves. Thus, we know just what fire-fighters need. Thousands of our products are used and relied on worldwide. And they are 'Made in Germany.'

We are available for you prior to, during and after purchasing, and it will be our pleasure to assist you by consulting, performance demos and training at any time.



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