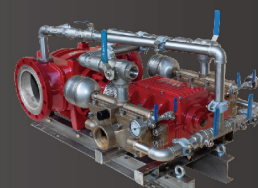
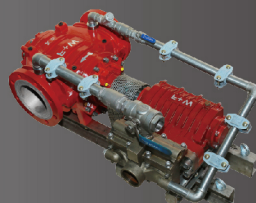
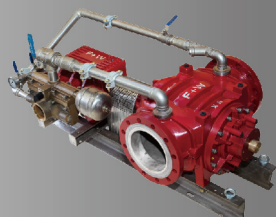


Proportioners

Water Motor Driven • Variable Viscosity

Version:1.0



F+W
Forward Fire

About us

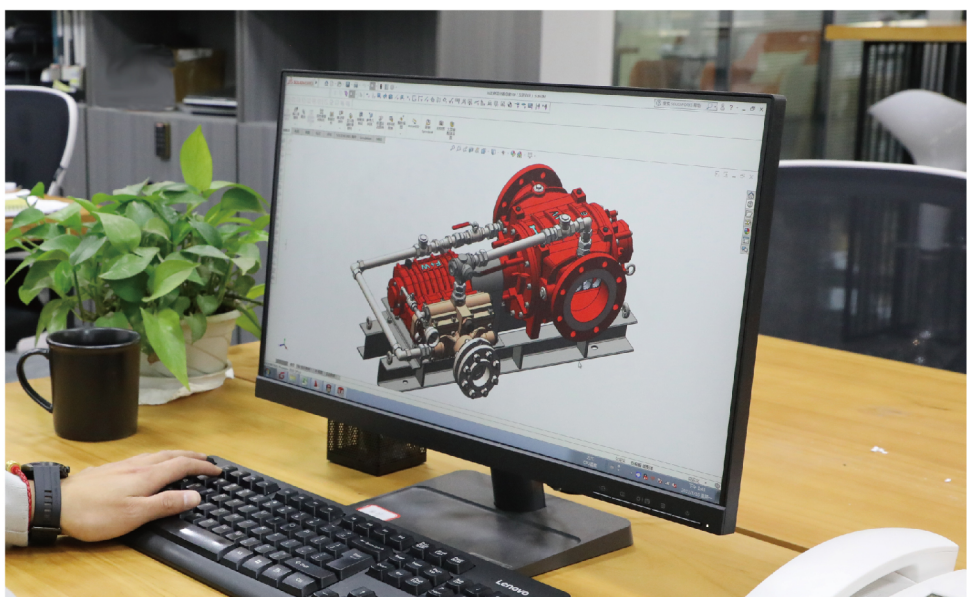
Founded in 2021, Forward Fire is dedicated to the research and development of water motor driven proportioner. After nearly 2 years of research and development and thousands of tests, the product has fully met and exceeded the requirements of national standards and international standards such as FM.

Water motor and Piston Pump are independently developed according to the requirements, patented technology (pending) water motor, so that the proportioner has a wide flow range, and less pressure loss, and self-designed piston pump can make the system flow rate up to 36,000 liters/minute.

The F+W water motor driven proportioner adopts a unique structural design and self-developed composite material, which makes the continuous service life of the proportioner longer and the performance more stable.

Products

- Stationary System
- Fire Vehicle
- Remote water supply foam proportioning moduler
- Portable Proportioner
- Trailer Proportioner
- Qustomized



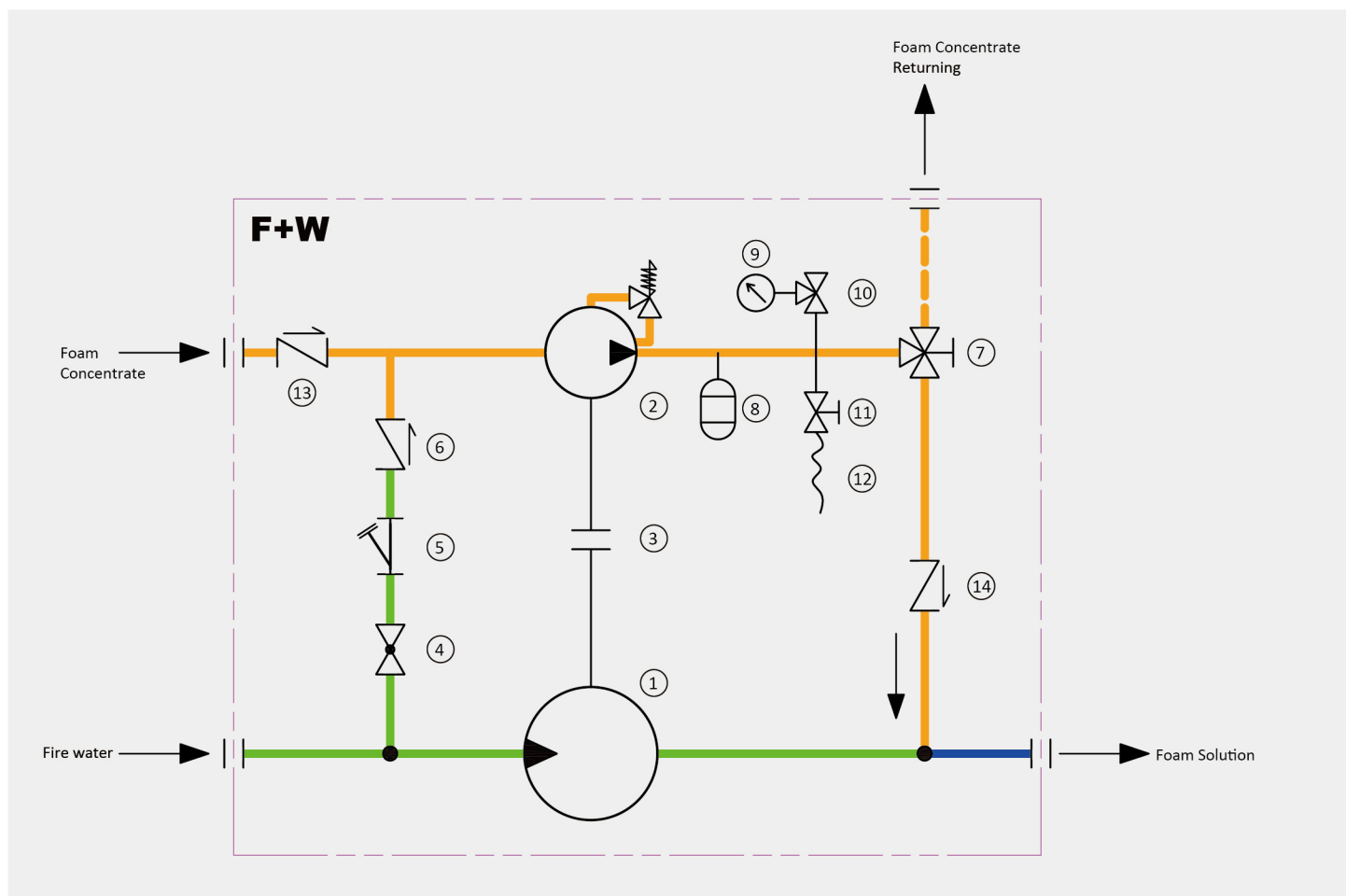
Approvals information, please contact F+W, for the details

How Does it works

F+W Proportioner is purely mechanical system consist water motor ① and piston pump fire ② , Fire water go through water motor ① , water motor ① , rotating and drive the piston pump ② , piston pump ② ,draws the foam concentrate and pressurized,then inject into the outlet of the water motor ① . Both water motor and piston pump are positive displacement fluid machinery,In theory the flow rate is proportional to the speed,so as long as the displacement of the water motor and piston pump meet the requirement of the proportioning rate,then accurate proportioning rate can be achieved,the applicable flow rate range depends on the difference between the theoretical and actual displacement.

3-way Ball Valve “proportioning/Returning” ⑦ is in the proportioning position under standard working condition,when remote injection or proportioning rate testing is required,it is in the returning position,the proportioning rate testing refer to page 9.

Ball Valve ④ normally closed, after each use, the ball valve ④ opened to clean the piston pump and related pipe components.



- | | | | | |
|---|---|---------------------|--|--------------------------------|
| 1. Water motor | 2. Piston pump | 3. Coupling | 4. 2-way ball valve “Flushing/Priming” | 5. Filter in the flushing line |
| 6. Check valve in the flushing line | 7. 3-way ball valve “Proportioning/Returning” | 8. Pulsation damper | | |
| 9. Pressure gauge | 10. Shut-off pressure gauge | 11. Air bleed valve | | |
| 13. Non-return flap in the suction line | | 12. Air bleed hose | | |

Feature and Advantage

■ High Flow Rate

Innovative designed water motor and piston pump, the max. flow rate can up to 36,000L/min.

■ Wide Range Flow Rate

Normally, flow rate range can up to 20 times, that is the max. flow rate is 20 times the min. flow rate, some size can up to 25 times.

■ Low pressure Loss

Unique structural design, the pressure loss is significantly less than that of some internationally renowned brands. proportioning rate 3%, working pressure 10 bar, the pressure loss only around 1.0 bar, refer to left diagram.

■ Long Service Life

- High strength aluminum alloy stator, hard anodizing, increase the surface hardness, reduce the friction coefficient.
- Split type vane, make the vane stress more uniform.
- Independently developed carbon fiber reinforced PVDF, greatly improve the mechanical properties of the vane.
- Carbon fiber rod, high strength, low density, low friction coefficient.

■ High Suction Capacity

- The viscosity of the foam concentrate can up to 10,000cps.
- Suction height (Newton fluid) up to 7.5m.
- Suction height (Non-Newton fluid) up to 6 meters.

■ Meets 10 min Dry Running

Conform NFPA 20 and FM 5130 requirement.

■ Proportioning Rate Testing Not Need Mixed

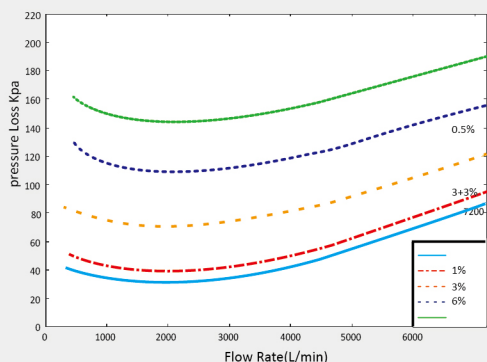
- Eco-friendly
- Cost-effective
- Operation easily



Purely Mechanical-High Reliability

Driven by Fire water only,
Don't need outside power.

- ▶ Design Easily
- ▶ Installation Easily
- ▶ Use Friendly
- ▶ Maintenance Easily

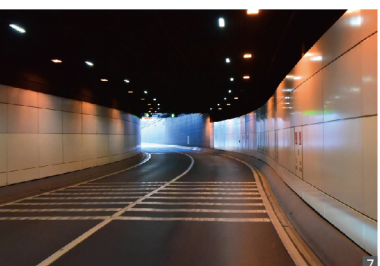
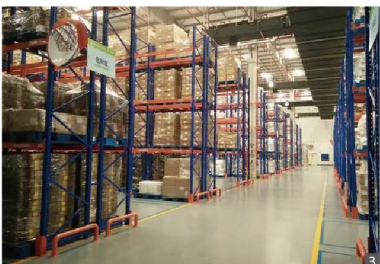


Model: X8, working pressure: 10 bar

Applications

Applicable to all foam extinguishing system anywhere in the world, in any environment.

- Low, medium, High foam extinguishing system
- Mobile Fire Fighting
- Vehicle Mounted system
- Foam spray system
- Foam-water sprinkler system



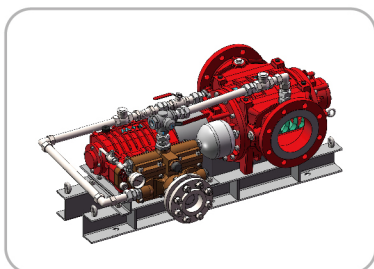
- 1 oil and gas, Petroleum chemical
- 2 Aircraft hangar
- 3 Flammable and Combustible liquid storage
- 4 Waste Incineration plant
- 5 Jetty
- 6 Offshore
- 7 Road tunnel
- 8 Parking Garage
- 9 Fire Vehicle
- 10 Mobile Fire Fighting

SELECTION

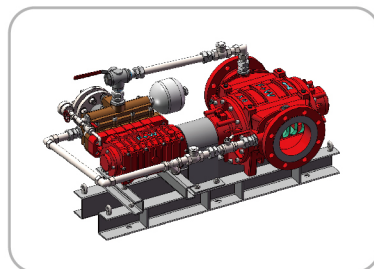
Standard Version

- Applicable to all sizes
- Fire Water: Fresh
- Working Pressure: 16bar
- Working Temp: 4°C-50°C

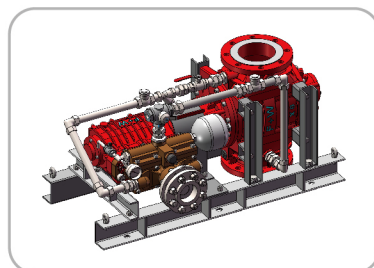
Flow Direction



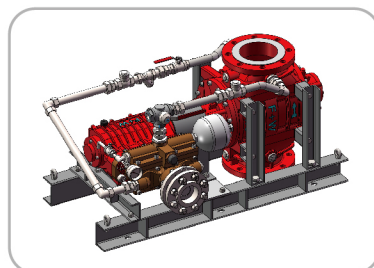
Horizontal:Left to Right



Horizontal:Right to Left



Vertical:Up to Down



Vertical:Down to Up

Sea Water Version

- Applicable to all sizes
- Fire Water: Sea Water
- Working Pressure: 16bar
- Working Temp: 4°C-50°C

High temperature type

- Applicable to all sizes
- Applicable to Standard Version and Sea Water Version
- Working Temp: 4°C-80°C
- Flow Rate Range contact F+W for the details

Explosion-proof

- Explosion Proof Version(2014/34/EU) on request

Static Pressure 25bar

- Applicable to all sizes
- Applicable to Standard Version and Sea Water Version

Working Pressure 25bar

- Applicable to all sizes
- Applicable to Standard Version and Sea Water Version
- Used for Jetty、 aircraft hangar etc. that need high working pressure for long distance foam solution transportation.

Working Pressure 40bar

- Applicable to small sizes
- Applicable to Standard Version and Sea Water Version
- Used for vehicle mounted high pressure pumps

The inlet and outlet flange of water motor can be ISO、 EN、 ANSI、 JIS、 AS etc. on request.

Options

Proportioning Rate Testing

Set 3-way ball valve “Proportioning/Returning” in returning position, and arrange the flow meter and pressure sustaining valve on the return pipe, The flow rate of foam concentrate can be easily and quickly measured, refer to P&ID on page 9.

Remote Injection

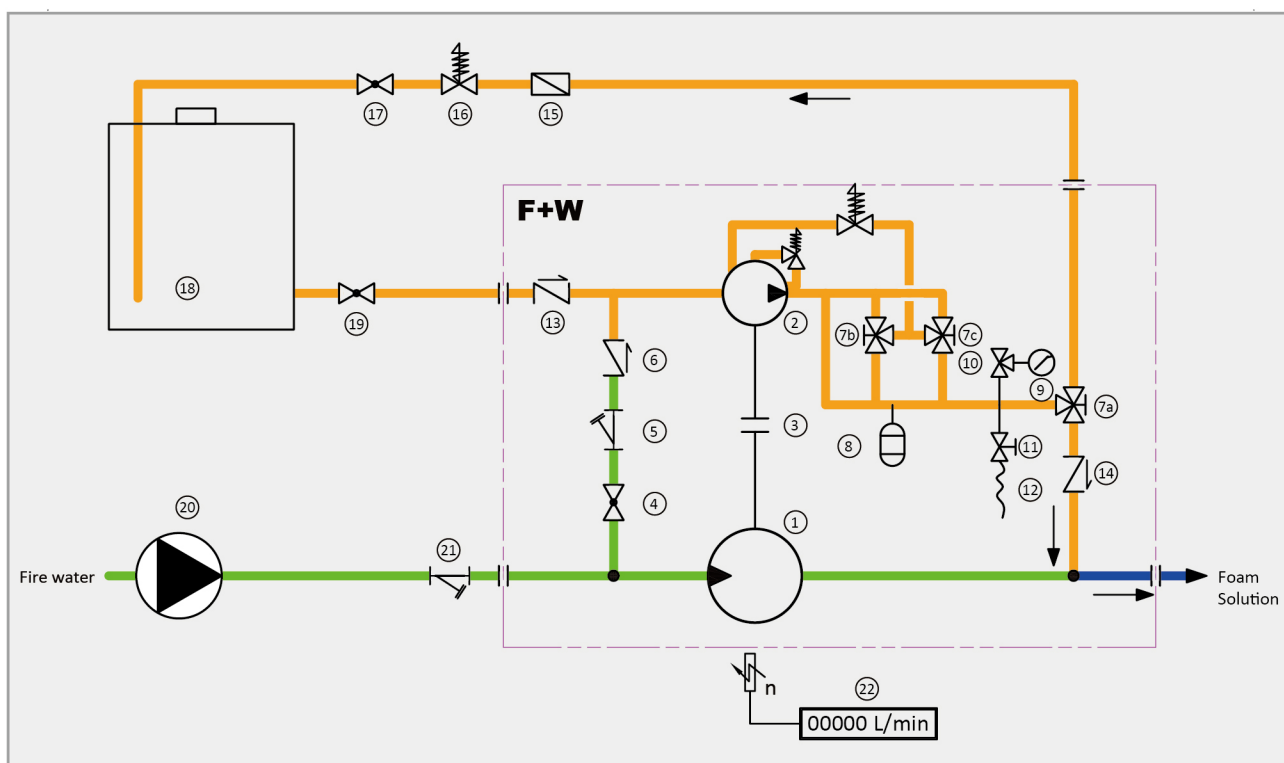
When 3-way ball valve “Proportioning/Returning” in returning position, and connect the pipe to remote injection point, remote injection foam concentrate can realized, It can greatly shorten the conversion time of water-foam sprinkler systems, and the remote injection distance of foam concentrate can be up to hundreds of meters, which is suitable for foam-water sprinkler systems and foam-water spray systems, such as car garage garages and road tunnels.

Proportioning Rate Switching

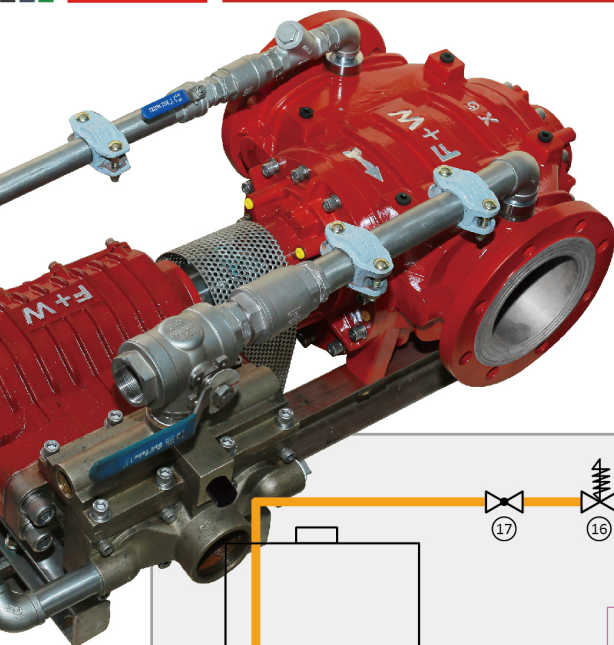
The piston pump with two pump heads operates with a proportioning rate of 3% when a single pump indraft foam concentrate, and 6%(3%+3%) when a double pump indraft foam concentrate, thus achieving a switching of 3% and 6% proportioning rate, suitable for mobile fire extinguishing systems, refer to P&ID on page 10.

Proportioning Rate Adjustment

Each pump head has 3 pistons, which can inject 3 piston displacement into the water motor outlet at the same time, and can also make 1 or 2 of the piston displacement return, such as a 3% piston pump, when 2 pistons return, you can achieve 1% proportioning rate, suitable for mobile fire extinguishing system.

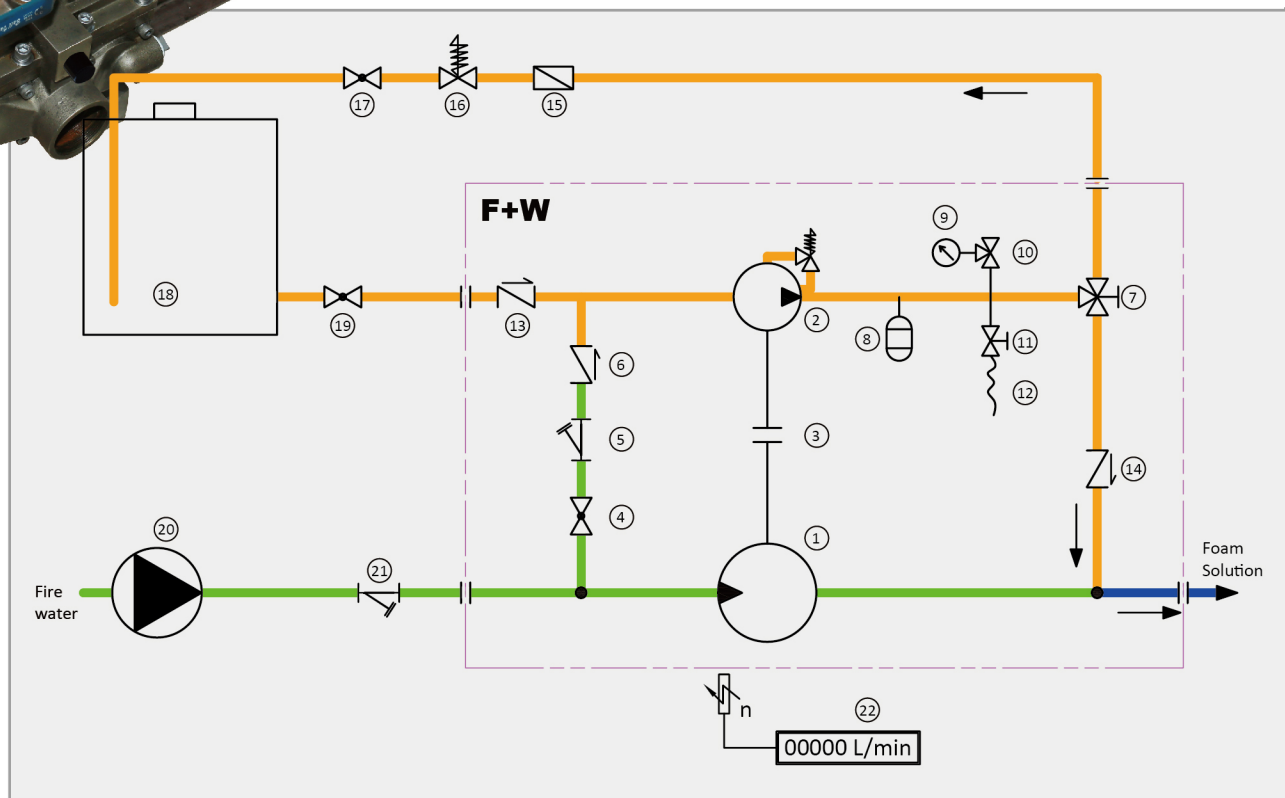


1. Water motor 2. Piston pump 3. Coupling 4. ball valve 5. Filter in the flushing line 6. Check valve in the flushing line 7a. 3-way ball valve “Proportioning/Returning” 7b. 3-way ball valve “Proportioning/Returning” 7c. 3-way ball valve “Proportioning/Returning” 8. Pulsation damper 9. Pressure gauge 10. Shut-off valve 11. Air bleed valve 12. Air bleed hose 13. Non-return flap in the suction line 14. Check valve in the proportioning line 15. Flow meter for return line 16. Pressure sustaining valve 17. ball valve 18. Foam agent supply 19. ball valve 20. Extinguishing water supply 21. Water filter 22. Revolution counter with flowrate display



Series X

The X series proportioner is equipped with a single-head piston pump for stationary extinguishing system to achieve a variety of fixed proportioning rates, including 0.5%, 1%, 2%, 3%, 6%, and 1%, 2% and 3% proportioning rates can be switched as required for mobile fire fighting system. Proportioning rate adjustment, refer to page 7.



- | | |
|---|--|
| 1. Water motor | 12. Air bleed hose |
| 2. Piston pump | 13. Non-return flap in the suction line |
| 3. Coupling | 14. Check valve in the proportioning line |
| 4. 2-way ball valve "Flushing/Priming" | 15. Flow meter for return line |
| 5. Filter in the flushing line | 16. Pressure sustaining valve |
| 6. Check valve in the flushing line | 17. ball valve |
| 7. 3-way ball valve "Proportioning/Returning" | 18. Foam agent supply |
| 8. Pulsation damper | 19. ball valve |
| 9. Pressure gauge | 20. Extinguishing water supply |
| 10. Shut-off valve | 21. Water filter |
| 11. Air bleed valve | 22. Revolution counter with flowrate display |

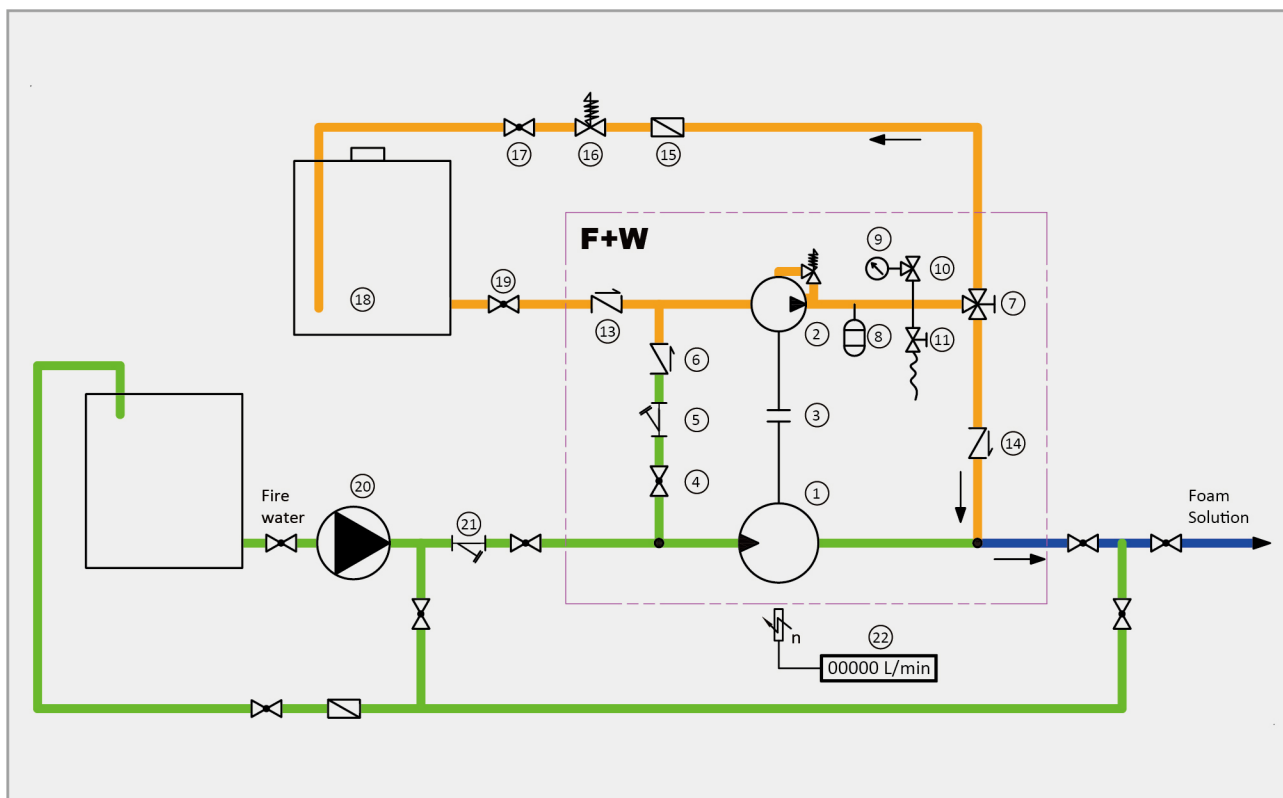
Note: All on/off valve can fitted with supervisory switch, please contact F+W for the details or download from www.foamandwater.com

Size	Connection	Min.Flow Rate	Max.Flow Rate	Proportionong Rate
-	mm	L/min	L/min	-
X2	50	60	600	0.5,1,3,6%
X3	80	120	1200	0.5,1,3,6%
X4	100	180	2400	0.5,1,3,6%
X6S	150	180	4000	0.5,1,3,6%
X6	150	180	4800	0.5,1,3,6%
X8	200	360	7200	0.5,1,3,6%
X8L	200	420	8400	0.5,1,3,6%
X10	250	480	10200	0.5,1,3,6%
X10L	250	600	12000	0.5,1,3,6%
X12	300	750	15000	0.5,1,3,6%
X12L	300	900	18000	0.5,1,3,6%
X14	350	1050	21000	0.5,1,3%
X14L	350	1200	24000	0.5,1,3%
X16	400	1500	27000	0.5,1,3%
X16L	400	1800	30000	0.5,1,3%
X16H	400	2400	36000	0.5,1,3%

Note: 6% of X14 and up size, please select D series.

Proportioning Rate Testing -No Mixing Required

Fire protection system must be tested periodically to ensure that play a role in the fire, foam proportioning rate is the same. In running state, return pipe allows the foam concentrate back into the tank, foam concentrate flow rate is measured, water flow rate measured by water motor at the same time, then proportioning rate ratio can be calculated. This way, there is no need for the foam concentrate to mix with water.



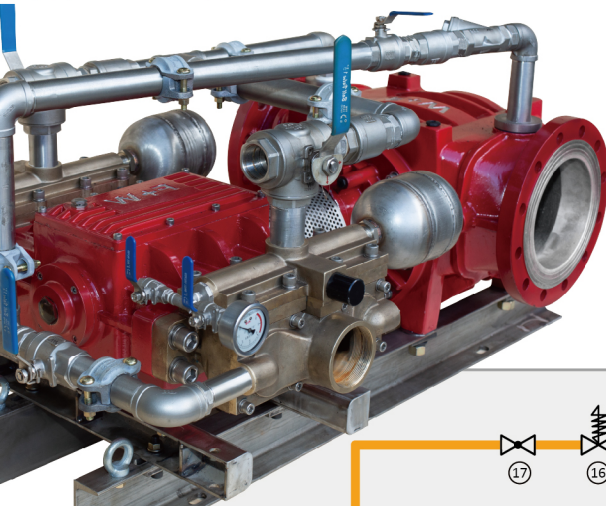
Flow Meter(Optional)

Electromagnetic flow meter can accurately measure the flow rate of the Newton and non Newton foam concentrate, considering the flow range of proportioner, should consider the full-scale range of the flow meter.

Pressure Sustaining Valve(Optional)

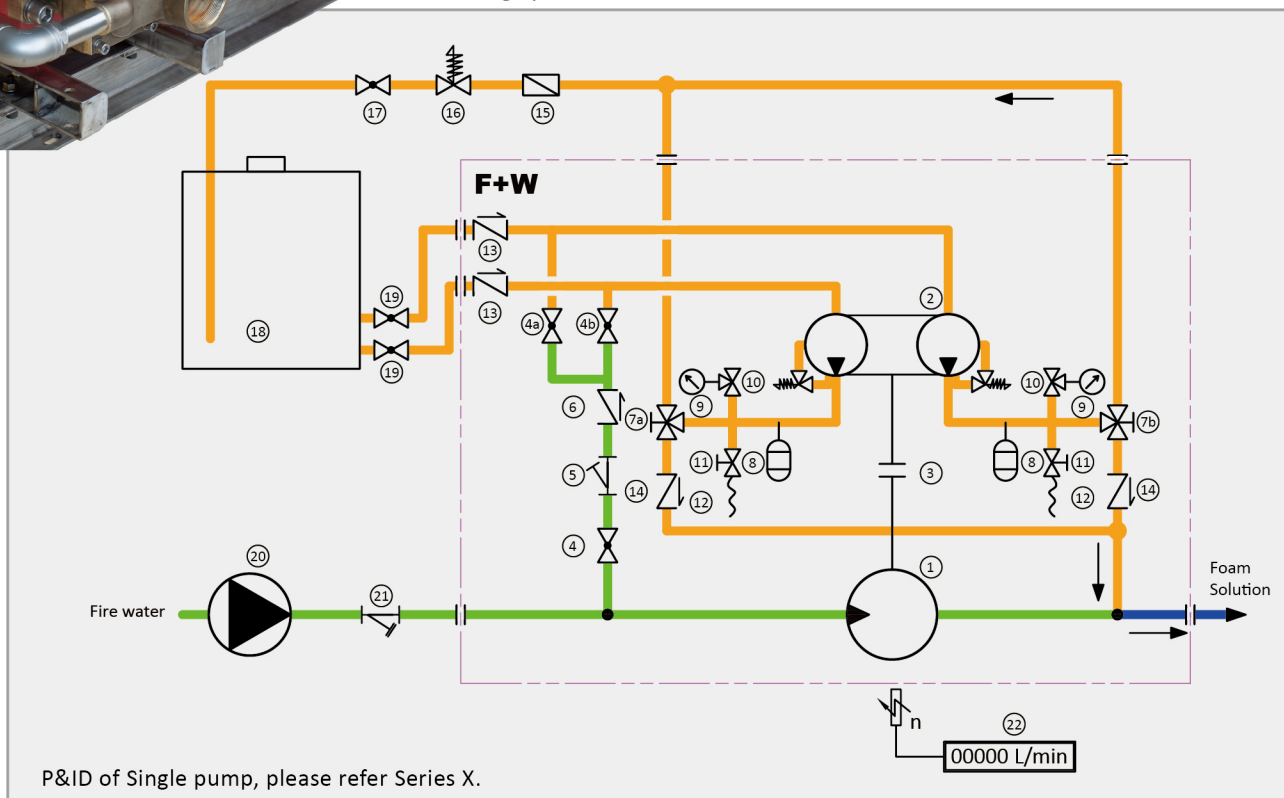
Pressure sustaining valve can be used to simulate the pressure of foam concentrate injection points, including remote injection system, in order to accurately test proportioning rate.

- | | |
|--|--|
| 1. Water motor | 13. Non-return flap in the suction line |
| 2. Piston pump | 14. Check valve in the proportioning line |
| 3. Coupling | 15. Flow meter for return line |
| 4. ball valve | 16. Pressure sustaining valve |
| 5. Filter in the flushing line | 17. Ball valve |
| 6. Check valve in the flushing line | 18. Foam agent supply |
| 7.3-way ball valve "Proportioning/Returning" | 19. Ball valve |
| 8. Pulsation damper | 20. Extinguishing water supply |
| 9. Pressure gauge | 21. Water filter |
| 10. Shut-off valve | 22. Revolution counter with flowrate display |
| 11. Air bleed valve | |
| 12. Air bleed hose | |



D Series

D series can be equipped with double piston pump for vehicle-mounted applications, implementation of 3% and 6% than switch, also can achieve 1%, 2%, 3%, 4%, 5%, 6% of the proportioning rate switch, when the pump is equipped with a single head can also be applied to fixed fire extinguishing system.



- | | |
|--|--|
| 1. Water motor | 11. Air bleed valve |
| 2. Piston pump | 12. Air bleed hose |
| 3. Coupling | 13. Non-return flap in the suction line |
| 4a. ball valve | 14. Check valve in the proportioning line |
| 4b. ball valve | 15. Flow meter for return line |
| 5. Filter in the flushing line | 16. Pressure sustaining valve |
| 6. Check valve in the flushing line | 17. ball valve |
| 7a. 3-way ball valve "Proportioning/Returning" | 18. Foam agent supply |
| 7b. 3-way ball valve "Proportioning/Returning" | 19. ball valve |
| 8. Pulsation damper | 20. Extinguishing water supply |
| 9. Pressure gauge | 21. Water filter |
| 10. Shut-off valve | 22. Revolution counter with flowrate display |

Size	Connection	Min.Flow Rate	Max.Flow Rate	Proportionong Rate
-	mm	L/min	L/min	-
D6S	150	180	4000	0.5,1,3,6%,3/3%
D6	150	180	4800	0.5,1,3,6%,3/3%
D8	200	360	7200	0.5,1,3,6%,3/3%
D8L	200	360	8400	0.5,1,3,6%,3/3%
D10	1250	480	10200	0.5,1,3,6%,3/3%
D10L	250	600	12000	0.5,1,3,6%,3/3%
D10H	250	960	15000	0.5,1,3,6%,3/3%
D12	300	750	15000	0.5,1,3,6%,3/3%
D12L	300	900	18000	0.5,1,3,6%,3/3%
D14	350	1050	21000	0.5,1,3,6%,3/3%
D14L	350	1200	24000	0.5,1,3,6%,3/3%
D16	400	1500	27000	0.5,1,3,6%,3/3%
D16H	400	2400	36000	0.5,1,3,6%,3/3%

Electric/pneumatic three-way ball valve

Three-way ball valves can be equipped with electric or pneumatic actuators to achieve remote proportioning rate switching.

Mobile Fire Fighting System

Vehicle Mounted Proportioning System

Can be used for foam Vehicle, including elevating vehicle, instead of the electronic type positive pressure injection proportioning system and around the pump proportioning system, system is simple, reliable, and meet the needs of the remote water supply system.

Portable proportioner

Please contact F+W for the details.

Trolley Proportioner

Please contact F+W for the details.

Trailer Proportioner

Please contact F+W for the details.

Forest Fighting

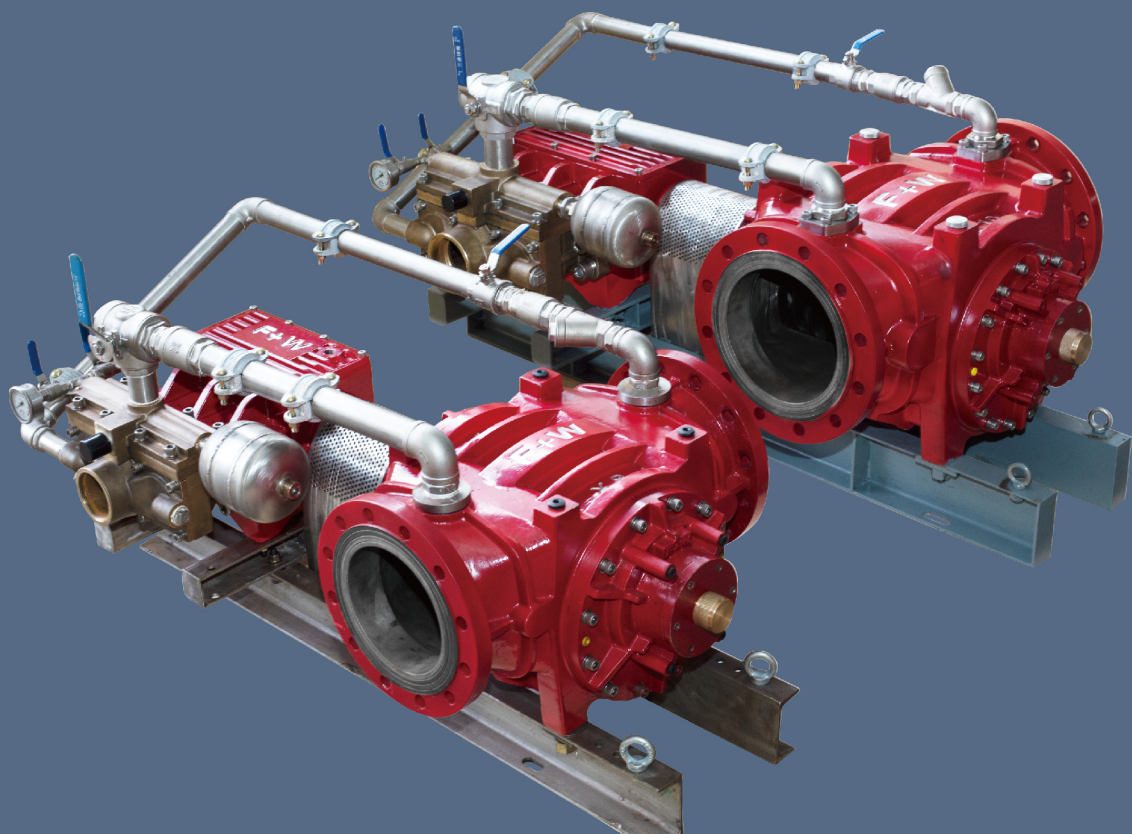
Customized proportioner on request for forest fire fighting.

Series XP

XP series portable proportioner, suitable for mobile applications, detailed information please contact F+W.

Model V8

Designed for vehicle mounted application, more compact, maximum flow 10200 L/min, can realize the proportioning rate of 3%, 6%. Detailed information please contact F+W.



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F+W
Forward Fire