The JET Filter

**The New Definition of Purity for Your Medium**

- **Cooling Water**
- **River Water**
- **Sea Water**
- **Sinter and Scale Separation**
- **Emulsions**
- **Process Water**
- **Mussel / Mussel Larvae Separation**

**Our Filter Systems Protect**

- Plate Heat Exchangers
- Spray Nozzles
- Piping Systems
- Mechanical Seals
- Pumps
- Micro Filtration

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**Scope of Delivery**

**flow rate**

4 gpm to 110,000 gpm

**filter fineness**

≥ 50 microns to 5,000 microns

**operating pressure**

22 to 900 psi

**pressure loss with clean filter**

1 to 4 psi

**flange size**

2" to 120"

**temperature**

– 13 to + 392 °F

**automatic / manual backwash**

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**Voltage Options**

- Voltage 230 V or 400 V
- Voltage 110 V to 690 V

**Certifications**

- Pressure Equipment Directive (PED)
- ASME „U“-Stamp

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**Exclusion: Gastverdiessung**

- Explosion protection
- Differential pressure gauging
- Differential pressure as 4-20 mA-signal
- Automatic filter control
- Self-medium backwash
- External medium backwash
- Backwash with suction pump
- Electric or pneumatic backwash valve
- Signal exchange with PLC
- Electrical cabling incl. connectors
- Documentation
- Certificates
- Functional test at manufacturer’s works

**Included in the scope of delivery**

- Electric or pneumatic backwash valve
- Signal exchange with PLC
- Electrical cabling incl. connectors
- Documentation
- Certificates
- Functional test at manufacturer’s works

**Available at extra charge**

- Voltage 110 V to 690 V

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**Materials**

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<th>Sea Water Resistant Design</th>
<th>Special Design</th>
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<td>Filter Housing</td>
<td>Carbon steel galvanized, carbon steel coated</td>
<td>GRP, steel gummed, stainless steel</td>
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<td>Filter Elements</td>
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<td>Stainless Steel</td>
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**Fig. 1**

Standard Design

Sea Water Resistant Design

Special Design

Patented
Filtration Process

Mode of Operation

The raw water enters the filter elements through the ports of the cartridge holding plate. The reduction of the cross section leads to a proportional increase of the axial flow speed in the filter elements up to 16 - 23 fps. At one end of the filter elements a conical common dirt collector is placed.

According to the rule of Bernoulli the raw water filtration takes place in the last third of the filter elements. The raw water passes the filter elements from inside to outside. The cleaned water then passes the common collector and leaves the filter on the clean water side.

Because of the axial flow speed of 16 - 23 fps in the filter elements the dirt particles are discharged in the common collector. The backwash process is triggered off by the differential pressure (pressure difference between raw and clean water side). Additionally an adjustable time lag relay in the electric control permits the start of the backwash process.

Backwash Process

The filter cleaning starts off with the opening of the motor driven backwash valve. Now a small amount of raw water flows through the backwash port thereby flushing the dirt particles from the common collector out of the filter. During backwashing the axial flow speed in the filter elements is increased to up to 33 fps. This high speed also contributes to cleaning the filter elements. Additionally an underpressure in the filter elements is produced. This guarantees the elements’ backwashing from outside to inside with clean water. After 10 - 20 seconds the backwash process is finished and the backwash valve closes automatically. During backwashing the filtration process is not interrupted.
Filter Elements

Stainless steel slotted tube cartridges with axial slots for optimal filter element cleaning.

Electric Control

The backwash process is started off depending on time and/or differential pressure thus ensuring a fully automatic filter operation. The standard control includes the following signal exchanges with the customer's control system (PLC):

- collective fault indication
- ready for operation
- filter is backwashing
- external starting of the backwash process
- external release of the backwash process

Venturi Nozzle and Backwash Valve

The venturi nozzle is dimensioned according to the conditions at site for regulating the necessary backwash water amount and for avoiding pressure fluctuations in the piping system. As standard the backwash valve is equipped with an electric or a pneumatic drive.

Differential Pressure Gauging

Consisting of:

- optical inlet-pressure indicator
- optical indicator of the differential pressure
- 2 adjustable micro-switches
- start filter backwash
- alarm signal
Range of Application

Fig. 8  lake water filtration for snow making system

Fig. 9  river water filtration in chemical works

Fig. 10  cooling water filtration for CERN, Genf (European Organization for Nuclear Research)

Fig. 11  drinking and process water filtration in brewery
Advantages

- high backwash speed (up to 33 fps)
- any mounting position (horizontally / vertically)
- simple installation (inline construction)
- low wear (no movable parts in the filter)
- low backwash water loss
- no differential pressure increase during the filtering process
- wide range of materials
- ready-made cabling
- special design possible on customer’s request