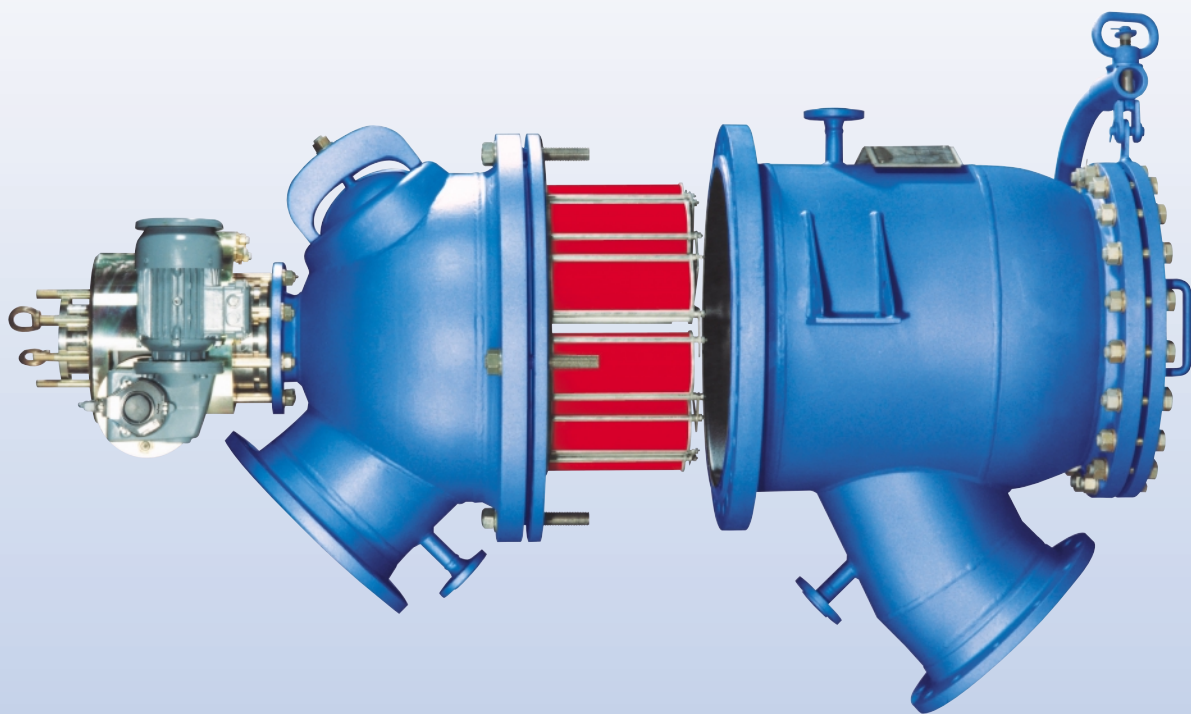


# IN-TA-CT<sup>®</sup>

Filter Type PR-BW 100-FC



Filtration

3

## Fine Filtration for Cooling Water and other Liquids

The PR-BW 100-FC is a filter series for fine filtration of liquids. Its design is based on the successful spherical PR-BW 100 and the particularly powerful "active filter elements". These are available in progressive gap widths from 50 to 1,000 µm. TAPROGGE takes fine filtration into areas that had been out of reach before: volume flows of up to 12,000 m<sup>3</sup>/h can be mastered with the PR-BW 100-FC. This opens up new possibilities for fine filtration, especially for cooling water circuits with once-through or recirculative cooling, but also as preliminary stage of membrane filtration. The filter presents itself particularly for the protection of systems against mussel larvae - an important task to combat an alarming problem potential.

### Field of application:

- Operation in seawater, brackish water, river water, for the protection from macro fouling of objects installed downstream, such as plate, or tube and shell, heat exchangers
- Special application: protection of objects installed downstream from mussel growth, which means by separation of mussel larvae in sea and fresh water - in particular: zebra mussel and asiatic clam
- Fine filtration of auxiliary and main cooling water flows of open circuits
- Fine filtration of cooling tower makeup water
- Application in partial flow filtration
- Preliminary or final stage in the fine filtration of industrial water circuits
- Preliminary stage in drinking water filtration
- Preliminary stage in membrane filtration (MF / UF / NF / RO)

Filter type PR-BW 100-FC in industry



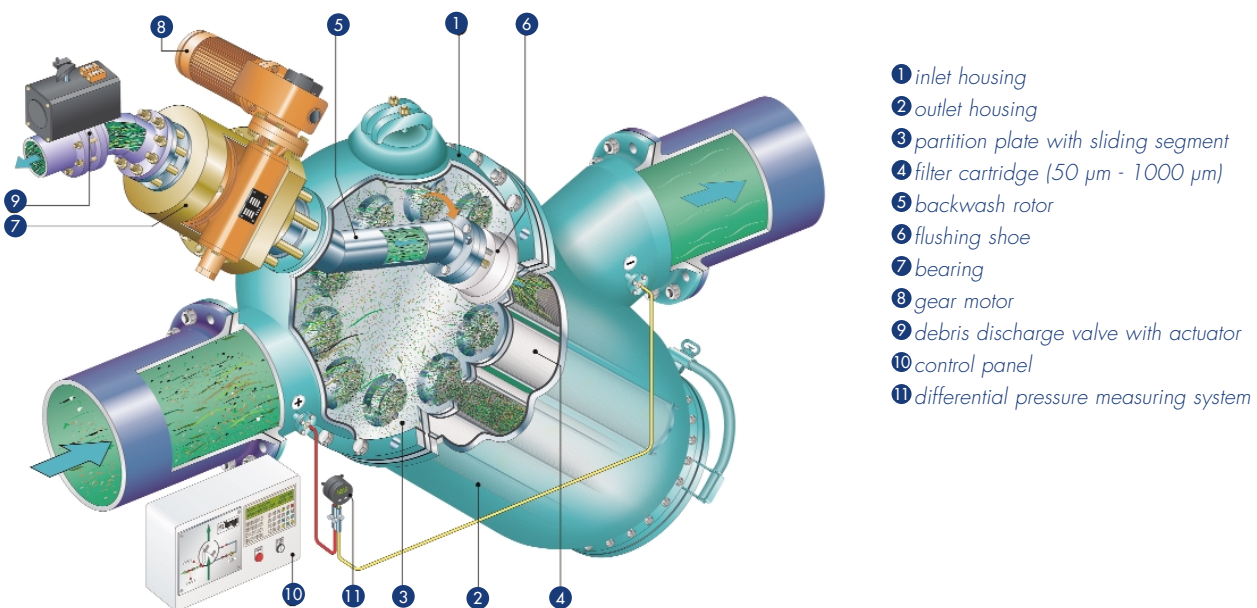
## Filter Design

The PR-BW 100-FC consists of two housing halves that are connected by mating flanges. Between the pair of flanges a partition plate (3) with sliding segment is fitted that separates the inlet housing (1) from the outlet housing (2) without gaps. Fixed to the partition plate are a number of filter cartridges (4), whose numbers vary according to the relevant layout, that may be executed in single or multiple rows. The semi-spherical inlet housing (1) is provided with a backwash rotor (5) that is connected with bearing (7) and gear motor (8) and, at its free end, carries the flushing shoe (6). The flushing shoe is shaped in such a way that it docks to the partition plate, thereby covering a single filter cartridge.

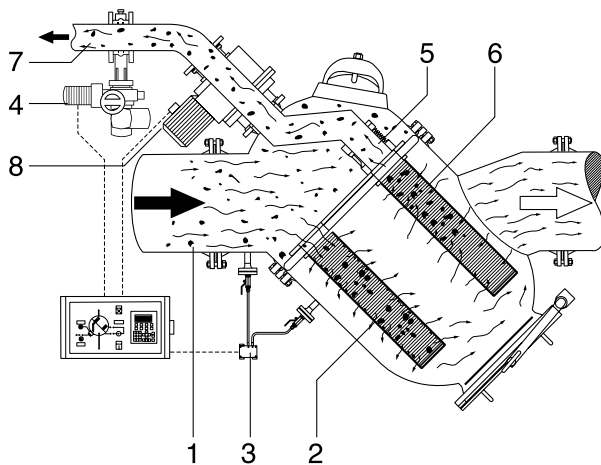
Connected to the bearing (7) is the backwash pipe with debris discharge valve and actuator (9). A differential pressure measuring system (11) monitors the pre-selected backwash point and starts the backwash process. Additionally the backwash process can be initiated by a timer.

The functions necessary for the automatic filter operation, such as, for control, protection, and signalling, are contained in the control panel (10).

The fine filter is combined according to a modular system. A computerized expert system administers this modular system and can perform the optimization of all process-technical parameters and the adaptation of the dimensions most individually to meet customers' requirements.



## Filter Function



The liquid to be filtered enters into the fine filter via the inlet stud (1) and flows through the filter cartridges (2) from inside to outside. All particles that are larger than the selected gap width are retained in the filter cartridges (2). The differential pressure measuring system (3) starts the backwash process once a defined degree of fouling of the cartridges has been reached: the debris discharge valve (4) opens and the backwash rotor with flushing shoe (5) successively slides over each individual filter cartridge. Additionally, the backwash process can be initiated by a timer. As a result, the pressure difference that is built up between the filter location and the end of the discharge pipe initiates a backwash with its own medium (BW = backwash) in the filter cartridge (6) covered by the flushing shoe.

By the hermetic shut-off of the covered filter cartridge from inflowing medium the particles to be filtered are pressure-relieved (= PR) and can thus most effectively be lifted off from the filter cartridge and discharged by the backwash flow through the discharge pipe (7). The highlight in this respect: our "active filter elements" that enable the discharge even of jammed particles from the filter cartridges.

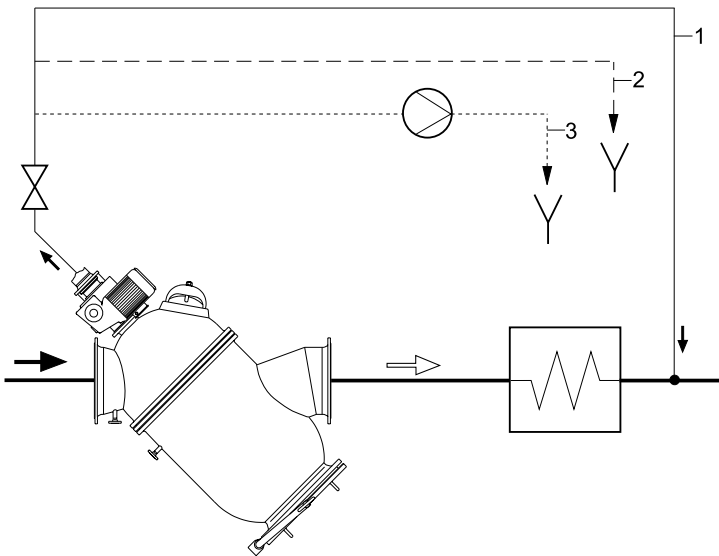
Upon complete travel of the backwash rotor all filter cartridges have been flushed. The gear motor (8) switches off and the debris discharge valve (4) closes. The backwash process of the filter section has thus been accomplished without interruption of the medium flow.

## Technical Data

series:	PR-BW 100-FC
volume flow:	170 – 12,200 m <sup>3</sup> /h
connecting diameters:	DN 100 - DN 1,200
filter fineness degrees:	50 - 1,000 µm
filter element:	"active filter elements" made of plastic
material of housing:	steel, rubberlined; stainless steel
temperature:	max. 80 °C
control:	programmable controller
special executions:	upon request

## Installation

The PR-BW 100-FC is normally arranged directly upstream of the object to be protected, or installed as partial flow filter. The backwash process necessitates a pressure drop in the discharge pipe. If the pressure drop is generated by the object to be protected itself, the flow can be re-injected downstream of the object (1). The backwash water can also be discharged atmospherically by making use of the static overpressure downstream of the filter (2), or can be transported via a booster pump (3).

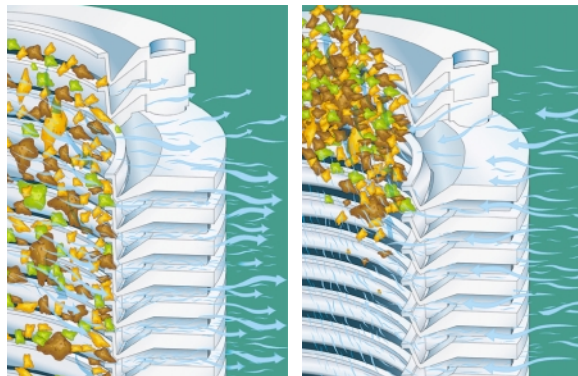


## Technical Features and Benefits

### Functional Safety through “Active Filter Elements”

The patented filter cartridges are the heart of the PR-BW 100-FC. In contrast to filter media known to date, the TAPROGGE filter cartridges consist of “active filter elements” with elastically variable filter gap: while during current filtering process the filter gaps are fixed to a defined size, the filter gaps of the “active filter elements” open independently, only caused by the flow reversal during backwash, so that even jammed particles are released and cleaned off intensively.

The application of “active filter elements” enhances the cleaning safety of particles; as they require much smaller backwash velocities than conventional filter elements, the “active filter elements” often render filtration feasible after all, even in cases where conventional filter elements would be permanently blocked.

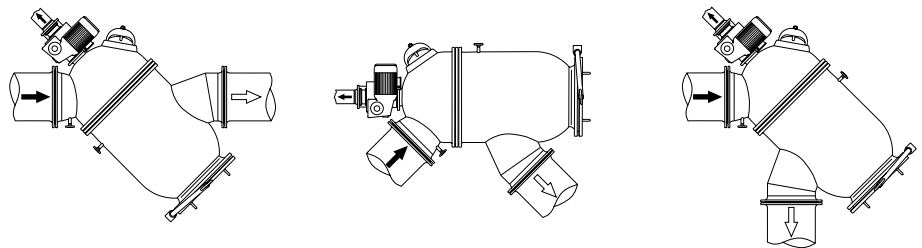


filtration phase

backwash phase

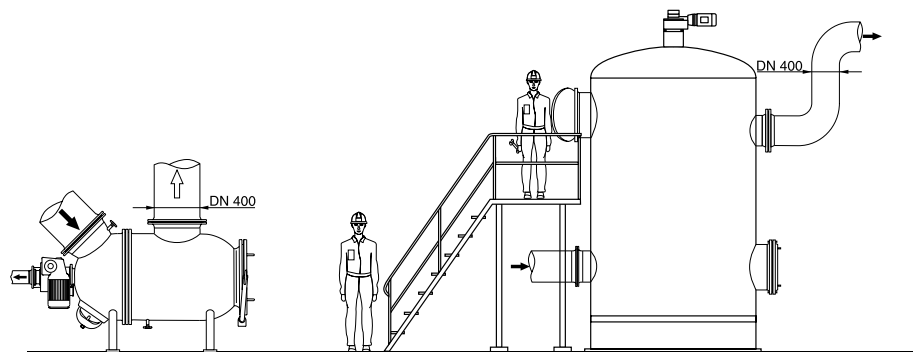
## Flexible Installation through patented Housing Design

The following sketches show examples of how by turning of the housing halves the filter can absolutely flexibly be adapted to the existing pipe routing which considerably reduces the installation expenditure.



## Compact Performance in reduced Space

The following sketch shows a comparison of dimensions between a conventional backwash filter with DN 400 inlet diameters and the TAPROGGE PR-BW 100-FC Fine Filter. The much more compact construction of the PR-BW 100-FC mainly results from the performance capacities of the "active filter elements". The advantages with regard to space requirement, pipe routing and accessibility are apparent.



Filter type PR-BW 100-FC

conventional filter

## Flexible Optimization

A particular benefit for operators and architect engineers is the free selection of important, cost-relevant parameters, such as, for example, backwash flow rate and pressure loss. In this way the effects of a system-technological layout on capital and operational cost may be individually influenced at an early stage. This is realized through the organisation of all components of the filter series according to a modular principle that is administered and created by a computer-aided expert system.

## **TAPROGGE Care & Comfort Package**

### **Quality right from the Start**

- Performance by TAPROGGE as per DIN EN ISO 9001
- Safety of design by fulfilling the requirements of the European Pressure Equipment Directive 97/23/EC
- Application of a management system for safety, health and environmental protection (SCC)
- Standard documentation; documentation upon customer's request, respectively
- The use of extremely corrosion-resistant materials with long lifetimes safeguards the preservation of the value of investment.

### **Compatibility by IN-TA-CT® Modules**

- The PR-BW 100-FC is a modular element of IN-TA-CT®, our integral principle for the optimization of cooling water circuits.
- By combination with our TAPIS® prescreening system upstream and a TAPROGGE ultrafiltration plant downstream, an effective overall solution presents itself for problems of micro and macro fouling, even reaching the level of bacteria and viruses. Without interfaces - and inclusive of the TAPROGGE System Guarantee.

### **Competence and Experience out of one Hand**

- Application consultancy, project management, fabrication, installation and commissioning of the PR-BW 100-FC are available from TAPROGGE out of one hand.
- With more than 12,000 successful applications, TAPROGGE can make use of its application-technological experience in its special field that stands unparalleled the world over. This plus of competence is indispensable for difficult media and unknown cleaning behaviour.
- In addition to that, the cooling water test circuits of TAPROGGE's Technological Centre allow a particularly reliable and cost-efficient simulation of site conditions.

### **Comprehensive Operator Support by IN-TA-S®**

- By the installation and commissioning of the PR-BW 100-FC, operators have immediate access to IN-TA-S®.
- By IN-TA-S®, TAPROGGE takes care of the operator in all questions of operation and maintenance. Scope, duration and frequency of the care can be determined by the operator.





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