



Frese ALPHA HCR Wafer

Seawater Dynamic Balancing



Frese ALPHA HCR



Seawater
Dynamic
Balancing

Frese at the heart of flow control

Frese

Innovative solutions from Frese balance global HVAC systems accurately and efficiently. From cooling systems in the Middle East to heating systems in Scandinavia, our products transform state of the art technology into everyday solutions.

Over 25 years' experience producing dynamic balancing solutions has positioned Frese as the leading manufacturer of energy saving valves and through our commitment to innovation, we continue to be at the forefront of technological advancements in our areas of expertise.

To support our products, the knowledge, experience and dedication of our employees and partners ensure our solutions are applied correctly to maximise savings and position Frese as the authoritative voice for pressure independent and dynamic solutions.

Dynamic Balancing

Dynamic balancing is an innovative alternative to traditional hydronic balancing methods using static balancing valves. A system with dynamic balancing valves provides efficient and accurate flow and differential pressure control ensuring the design flow conditions are achieved at all times irrespective of pressure fluctuations in the system at part load conditions.

Dynamic balancing valves offer many advantages over traditional, static balancing valves including simplified system design, ease of selection, system flexibility and a minimised commissioning process. In addition, dynamic balancing offers significant energy saving benefits as a result of the elimination of overflows in the system.

Frese ALPHA HCR Dynamic Balancing Valve

The Frese ALPHA High Corrosion Resistant Wafer dynamic balancing valve has been developed for use in a wide range of arduous systems for the accurate and efficient distribution of flow. The ALPHA HCR Wafer can be used in various applications including seawater cooling, filtration and water treatment.

To limit the flow and maintain a constant differential pressure, the ALPHA HCR flow cartridge is installed within the valve housing, ensuring the design flow rate is achieved irrespective of fluctuating pressure conditions.

The ALPHA HCR cartridge is removable for ease of maintenance and system flushing and the patented design ensures silent operation when the system is live.

General Benefits

- Quick and easy selection as only flow data are required
- Design flow rate achieved but not exceeded – always in balance
- Easy to install
- Simplified commissioning process – no proportional balancing
- High comfort for the end-users
- No requirement for additional balancing valves in the distribution pipework, risers and branches
- No straight pipe requirements upstream and downstream
- Improved response to water hammer due to the shock absorption by the rubber diaphragm of the cartridge



Frese ALPHA HCR Wafer for Seawater Applications

For over 25 years, Frese has specialised in the design and manufacture of dynamic, pressure independent flow solutions for global heating and cooling applications.

As a valve manufacturer, Frese has been involved with the marine industry since 2002, delivering dynamic balancing valves for various heating and cooling systems for applications including submarines, cruise ships and ship-yards.

The introduction of the ALPHA HCR Wafer and flow cartridge enables Frese to offer the benefits of dynamic balancing to a variety of new, exciting seawater applications including seawater cooling, filtration and water treatment.

Manufactured from Nickel Aluminium Bronze, the ALPHA HCR Wafer is available in dimensions DN50 to DN450 suitable for flow rates from 3.8 m³/h to 1,584 m³/h.

The ALPHA HCR Wafer works independently therefore it can be installed in either single or multiple parallel distribution lines. Furthermore, the independent nature of the valve provides total system flexibility with no re-commissioning required should the system be extended. In addition, it is also possible to use back flush processes with the ALPHA HCR dynamic balancing valve if necessary.

Applications

Applications for the Frese ALPHA HCR dynamic balancing valve include:

- Seawater District Cooling (SWDC)
- Seawater Air Conditioning (SWAC)
- Ballast Water Treatment (BWT)
- Seawater Reverse Osmosis (SWRO)
- Ocean Thermal Energy Conversion (OTEC)



Frese ALPHA HCR · Dynamic Balancing Valve



Technical Data · Frese ALPHA HCR Wafer

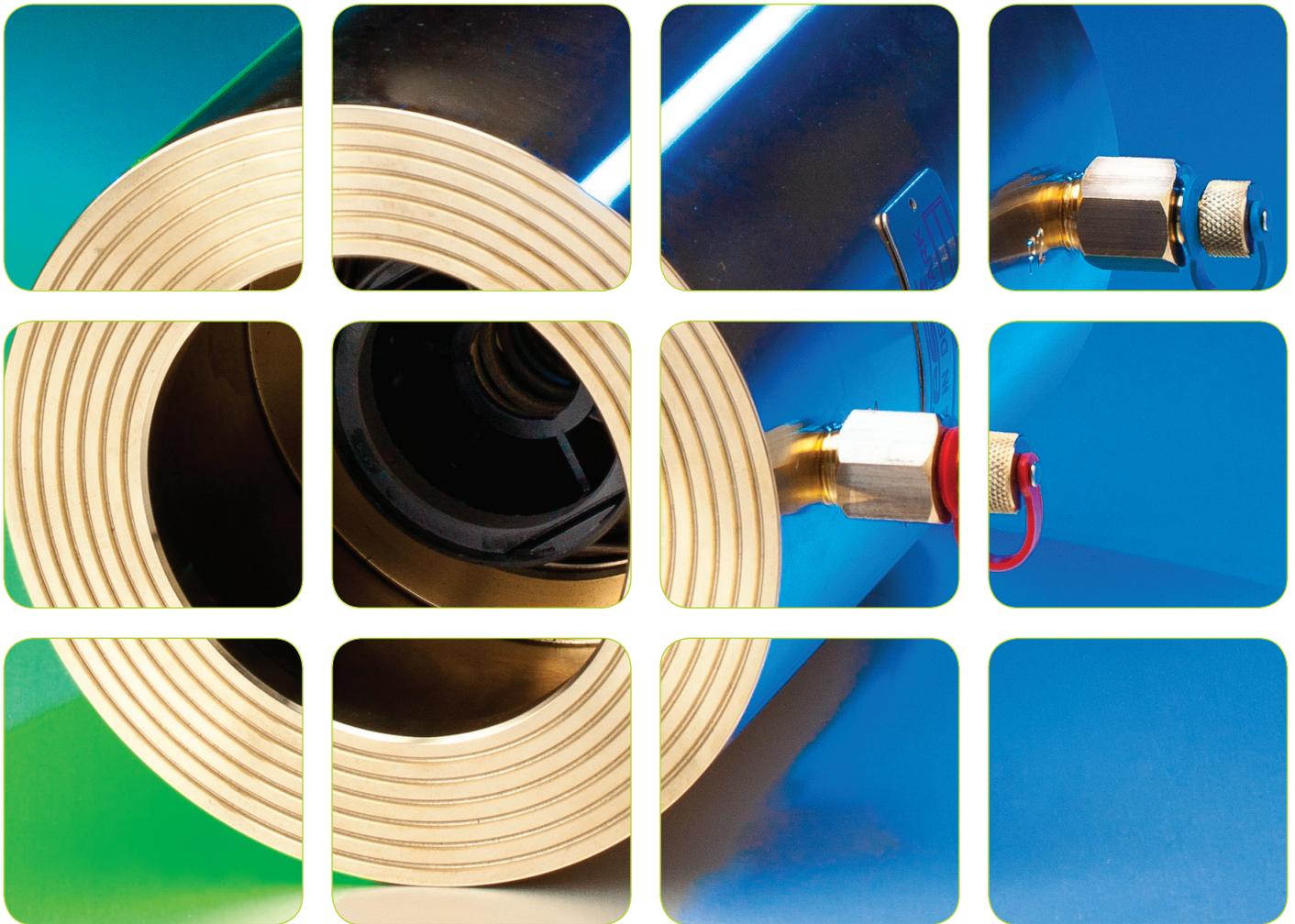
| | |
|-----------------------|---|
| Valve Housing: | Nickel Aluminium Bronze |
| P/T plugs | Nickel Aluminium Bronze |
| Fasteners: | Duplex Steel |
| Pressure class: | PN16 |
| Temperature: | -20 to +30°C |
| Diff. Pressure Range: | 13 - 600 kPa (max 300 kPa recommended) |
| Flow range: | 3.8 m ³ /h - 1,584 m ³ /h |



Technical Data · Frese ALPHA HCR Cartridge

| | |
|---------------------|---|
| Cartridge Material: | PPS 40% glass-reinforced (Fortron 1140L4 Black) |
| O-rings: | EPDM 281 |
| Spring: | Hastelloy - C276 (high corrosion resistant) |
| Diaphragm: | HNBR reinforced |
| Medium Temperature: | -20 to +32°C (Seawater) |



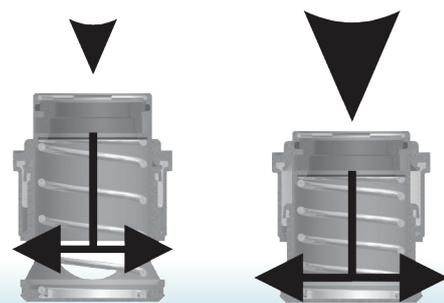


Frese ALPHA Cartridge

Operation

When the pressure increases, the spring will be compressed and the piston will respond and reduce the outlet area and vice versa.

The result is a constant flow rate through the valve, independent of pressure fluctuations.



Function

The following applies to all flow control valves:

$$Q = K_v \cdot \sqrt{\Delta p}$$

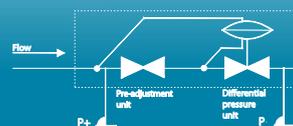
Q = Flow (m³/h)

K_v = Opening area

Δp = Differential pressure (Bar)

The Frese ALPHA HCR cartridge reacts to pressure fluctuations in the system ensuring that the differential pressure across the pre-adjustment unit is kept constant.

This ensures that the maximum flow limit is achieved in accordance with the design.





KNOWLEDGE

QUALITY

INNOVATION

MANUFACTURING
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