

Climate
Control

IMI Pneumatex

Zeparo Cyclone



Automatic air vents and separators

Dirt and magnetite separator with Cyclonic technology for horizontal and vertical mounting

Zeparo Cyclone

Comprehensive range of products for sludge and magnetite separation in heating and cooling water systems. The number of potential applications as well as their modular construction is second to none. The **new cyclonic technology** takes dirt separation efficiency to the next level.

Key features

High efficiency independent of dimension

Separation efficiency increases together with flow velocity. The pressure drop remains stable regardless of the amount of dirt collected. Even higher protection for higher flows, e.g. in cooling applications. Suitable for up to 300 kW of system output.

Cleans and protects the installation

Protects critical investments such as boilers, pumps, valves, chillers, and calorie meters, from dirt-related malfunction and failure. No risk of clogging - the dirt collected can be easily and quickly flushed out with the help of the drain valve. Reduces maintenance and associated costs over entire system lifetime.

Magnet Accessory

Optimises separation efficiency even further for sludge and magnetite (black iron oxide) deposits that consist of finer particles. Combines magnetic separation and thermal insulation. Available in a set with the Zeparo Cyclone or as a separate accessory.

Horizontal and vertical mounting

The unique cyclonic technology works in every position, allowing the Zeparo Cyclone to be mounted in vertical pipes as well.



Technical description

Application:

Closed heating and chilled water systems.

Media:

Non-aggressive and non-toxic system media. Addition of antifreeze agent up to 50%.

Pressure:

Max. admissible pressure, PS: 10 bar
Min. admissible pressure, PS_{min}: 0 bar

Temperature:

Max. admissible temperature, TS: 120 °C
Min. admissible temperature, TS_{min}: -10 °C

Material:

Body: Brass
Cyclone insert: PPS Ryton.
Gaskets: EPDM

Marking:

Body: PN, DN, flow direction arrow.
Label with TS and TS_{min}.

Transportation and storage:

In dry places.

Magnet and Thermal insulation:

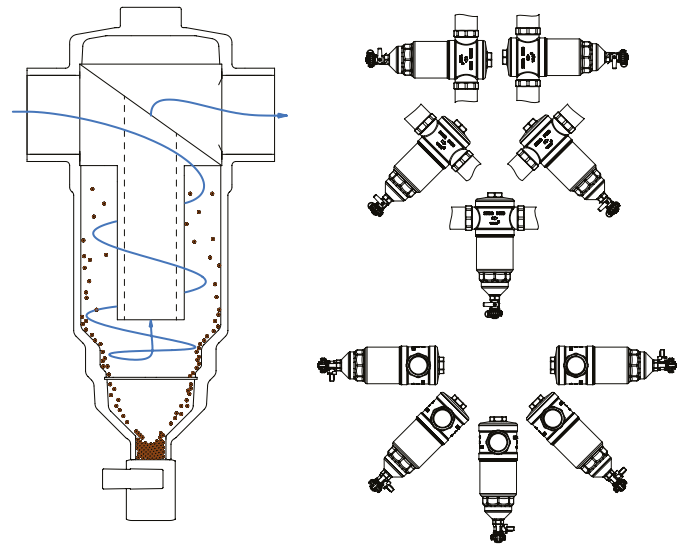
Magnet: NdFeB with Ni-Cu-Ni cover/ protection against rust.
Insulation: Expanded polypropylene (EPP), anthracite. Insulation value approx. 0.035 W/mk.
Fire rating B2 according to DIN 4102 and E in accordance with EN 13501-1.
Max. temperature: 110 °C.
Min. temperature: 6-8 °C (above dew point).

Separation principle

Cyclonic principle

The Zeparo Cyclone is based on a variety of principles that contribute to its high separation efficiency:

- Centrifugal forces - the cyclone creates a rotation within the Zeparo that exerts additional forces on dirt particles. The combination of gravitational and centrifugal forces result in high efficiency.
- Compared to the low force of gravity the centrifugal forces are significantly higher based on the speed inside the separator.
- The difference in density between the water and the denser dirt particles pushes the latter to the outer wall of the Zeparo.
- Downwards stream: the downwards movement created within the Zeparo guides the dirt particles to the bottom and finally into the dirt collection chamber to be flushed out.
- Thanks to the cyclonic principle, the Zeparo can be mounted not only horizontally but at any angle below the horizontal, with negligible changes in separation efficiency.
- In addition, the ZCHM magnets will effectively increase the magnetite separation.

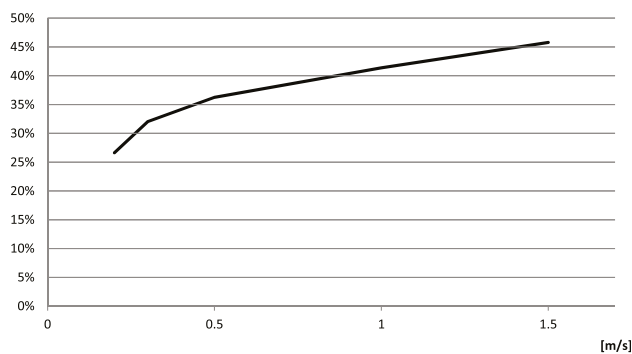


Separation efficiency

Typical curve for horizontal installation

Zeparo Cyclone ZCD

Efficiency [%]



Velocity

Magnet and insulation

Uniquely integrates very strong magnets within the separator's insulation which results in very high efficiency. Given all particles will move towards the outer diameter due to the cyclonic effect, this is where the magnets are located. This ensures the magnets are in the best possible position, whilst the insulation provides the perfect heat loss reduction.

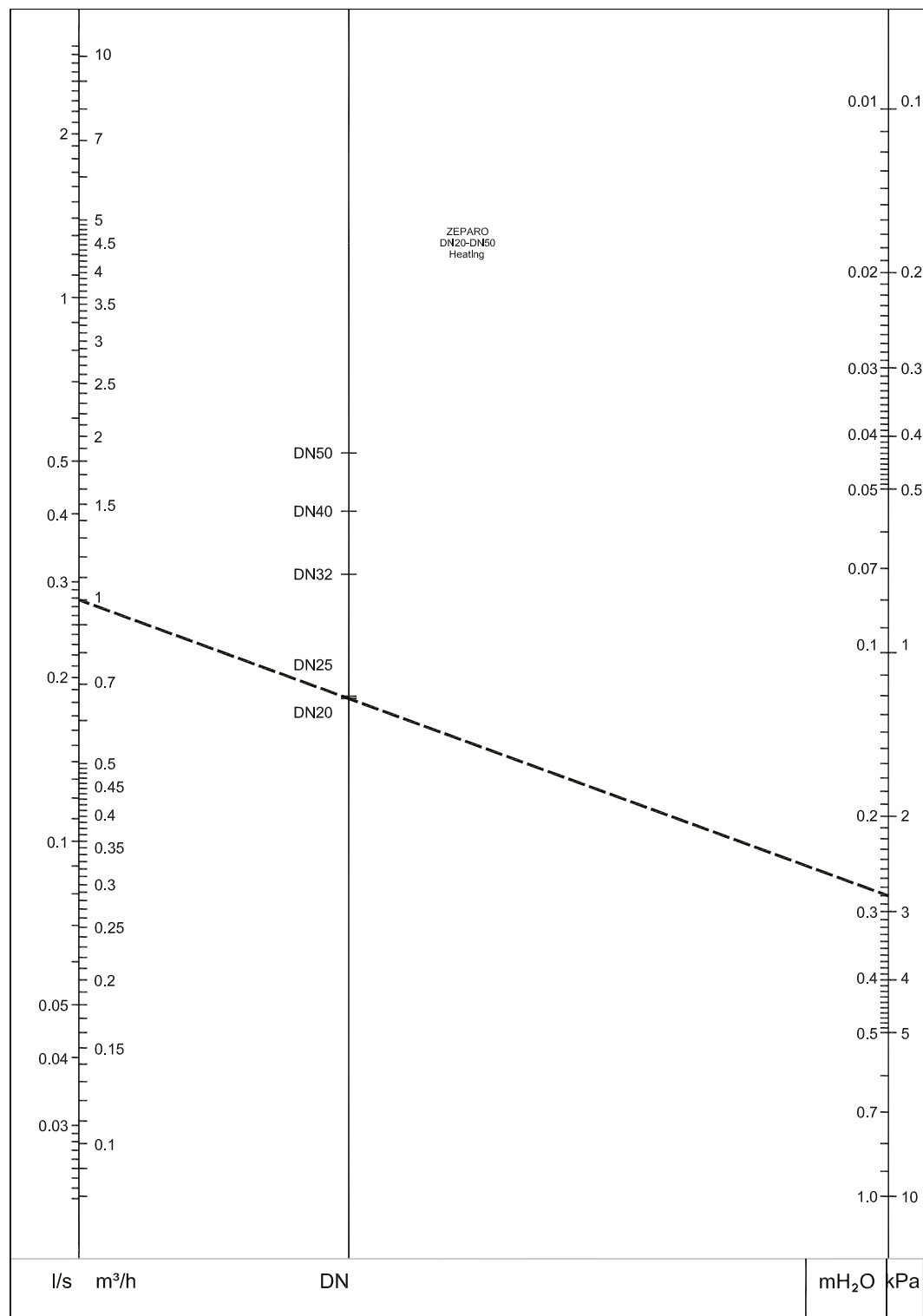
The insulation is made of 4 pieces so that the upper section can stay on the Zeparo Cyclone whilst the lower section, which includes the magnets, is removed to flush out the dirt and magnetite. The unit can be easily mounted after the cleaning procedure.

Quick selection

Heating

Example:

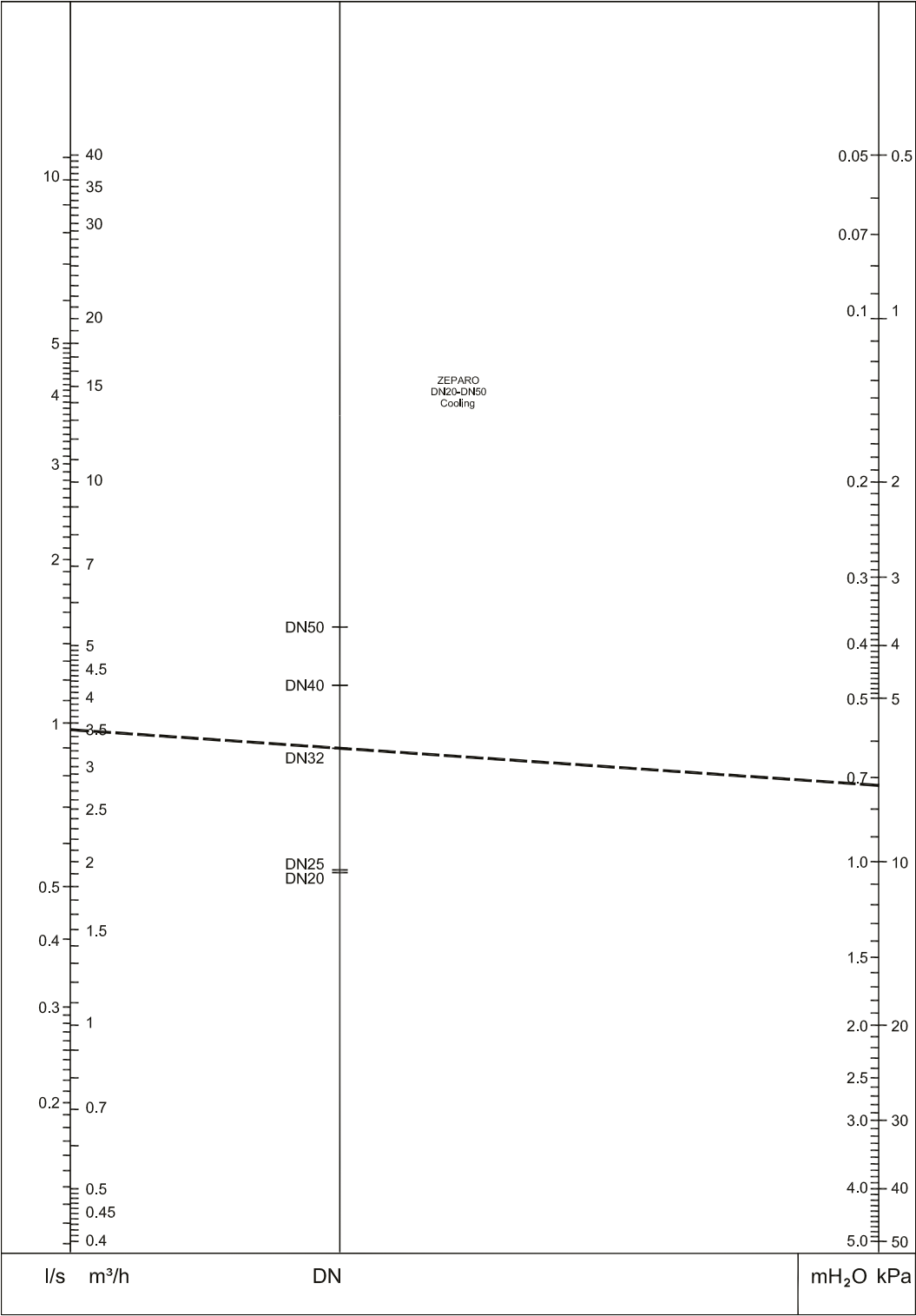
Heating system with a pipe DN 25 and 1000 l/h flow. Draw a line from the point 1 m³/h to required dimension DN20/25 and read on the line for pressure drop 2,8 kPa.



For exact calculations please use the HySelect software.

Cooling

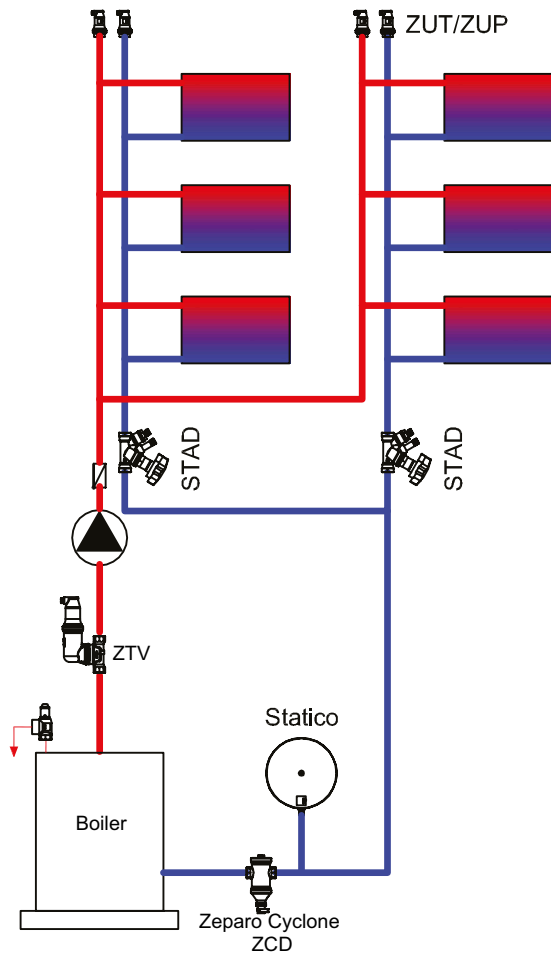
Example:
Cooling system with a pipe DN 32 and 3,5 m³/h flow. Draw a line from the point 3,5 m³/h to required dimension DN32 and read on the line for pressure drop 7,2 kPa.



For exact calculations please use the HySelect software.

Application examples

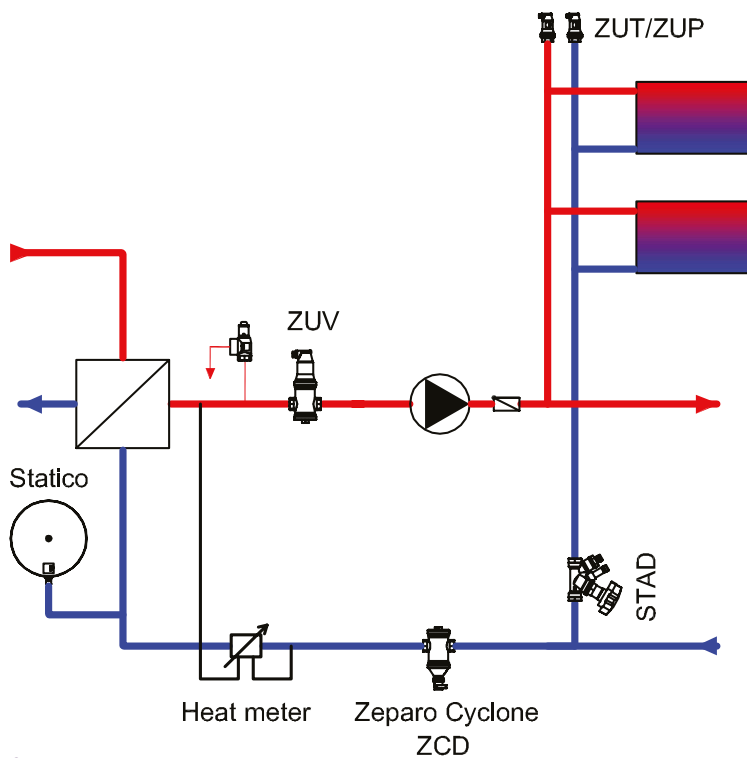
System with boiler



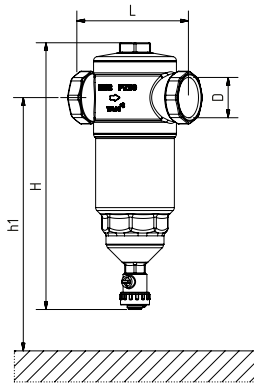
The Zeparo Cyclone dirt separator should be mounted either on the return in front of the unit to be protected or directly in front of the energy source.

There is no minimum distance required to pipe bends etc. before or after the Zeparo Cyclone.

System with heat exchanger



Zeparo Cyclone Dirt ZCD – Separator, version Dirt for sludge particles



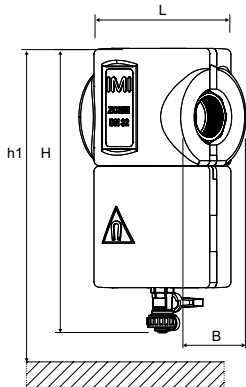
Zeparo Cyclone ZCD

Horizontal and vertical installation.

Internal thread according to ISO 228. DN 20 thread length according to ISO 7/1.

Type	H	h1	L	q_{nom} [m³/h]	q_{max} [m³/h]	m [kg]	D	EAN	Article No
ZCD 20 *	201	305	100	1,18	2,3	1,3	G3/4	7640153570543	789 7420
ZCD 25	201	305	100	1,47	3,8	1,3	G1	7640153570550	789 7425
ZCD 32	258	355	122	3,18	7,2	2,2	G1 1/4	7640153570567	789 7432
ZCD 40	310	400	158	4,75	10,2	3,7	G1 1/2	7640153570574	789 7440
ZCD 50	310	400	160	6,88	16,0	3,9	G2	7640153570581	789 7450

Zeparo Cyclone ZCDM Sets



ZCD + ZCHM

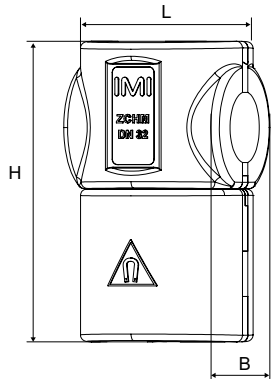
Horizontal and vertical installation.

Type	H	h1	L	B [mm]	m [kg]	D	Number of magnets	EAN	Article No
20 *	213,5	305	100	110	1,4	G3/4	4	7640153570598	789 7520
25	213,5	305	100	110	1,4	G1	4	7640153570604	789 7525
32	269,5	355	122	132	2,4	G1 1/4	4	7640153570611	789 7532
40	327,2	400	158	160,5	3,9	G1 1/2	6	7640153570628	789 7540
50	327,2	400	160	160,5	4,2	G2	6	7640153570635	789 7550

*) Can be connected to smooth pipes by KOMBI compression coupling.

q_{max} calculated on max speed in the pipe of 2 m/s.

Accessories

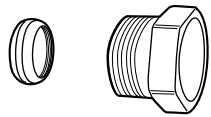


Magnet and Thermal insulation ZCHM

The insulation with magnet can be mounted on the Zeparo Cyclone without draining the system.

Type	Size	H	L	B	Number of magnets	m [kg]	EAN	Article no
ZCHM 20-25	DN 20-25	175	108	110	4	0,126	7640161629158	787 7425
ZCHM 32	DN 32	232	132	134	4	0,189	7640161629202	787 7432
ZCHM 40-50	DN 40-50	289	158,5	160,5	6	0,310	7640161629219	787 7450

To select a Zeparo Cyclone with magnet you have to order a Zeparo Cyclone ZCD and an insulation with magnet ZCHM in the same dimension or use the set ZCDM.



KOMBI compression coupling

Max.: 100°C

(For more information see catalogue leaflet KOMBI.)

Support bush should be used TA 320 for copper pipes and TA 321 for steel pipes, see catalogue leaflet KOMBI.

External pipe threads on thrust screw	For pipes, diameter	EAN	Article No
G3/4	15	7318792875403	53 235-117
G3/4	18	7318792875601	53 235-121
G3/4	22	7318792875700	53 235-123