

# Zeparo G-Force



## **Automatic air vents and separators**

Microbubble, dirt and magnetite separator with Cyclonic technology

# Zeparo G-Force

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 unique. Its **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 heating and cooling installations.

### > Cleans and protects the installation

Protects critical investments such as boilers, pumps, valves, chillers, and calorimeters, 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

Optimizes separation efficiency even further for sludge and magnetite (black iron oxide) deposits that consist of finer magnetic particles. Easy handling and cleaning.

### > Air separation

Due to the cyclonic effect, pressure in the centre of the device is below system pressure, causing more air bubbles to be released than in standard separators. The air is concentrated in the centre forming larger bubbles, which can rise in the upper section of the G-Force where there is less flow. This function requires an additional ZUTX automatic air vent.



## Technical description

### Application:

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:  
PN 16 and PN 25 (see each product)  
Min. admissible pressure, PSmin: 0 bar

### Temperature:

Max. admissible temperature, TS:  
- PN16: 110 °C  
- PN25: 180 °C  
Min. admissible temperature, TSmin:  
-10 °C

### Material:

Steel. Color beryllium.

### Marking:

Body: flow direction arrow.  
Label: DN, PN, TS and TSmin.

### Connection:

Flanges according to EN 1092-1.  
Welding ends.

### Transportation and storage:

In dry places.

### Standard:

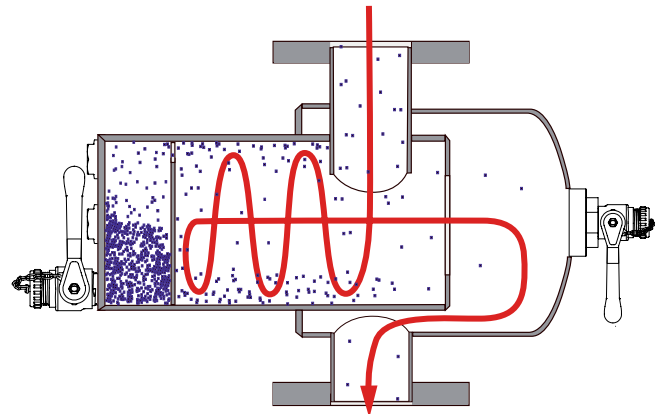
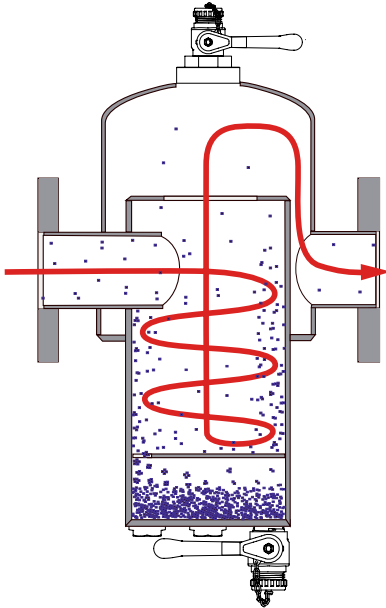
Constructed according to  
PED 2014/68/EU.

## Separation principle

### Cyclonic principle

The Zeparo G-Force is based on a variety of principles that guarantee its high separation efficiency:

- Centrifugal forces - the cyclone creates a rotation within the Zeparo which results in additional forces on the dirt particles. The combination of gravitational and centrifugal forces result in high efficiency.
- Compared to the low gravity forces the centrifugal forces are significantly higher based on the speed inside the separator.
- The difference in density between the water and dirt particles (which have higher density) pushes the dirt particles 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.
- In addition the ZGM magnetic rod will effectively increase the magnetite separation.

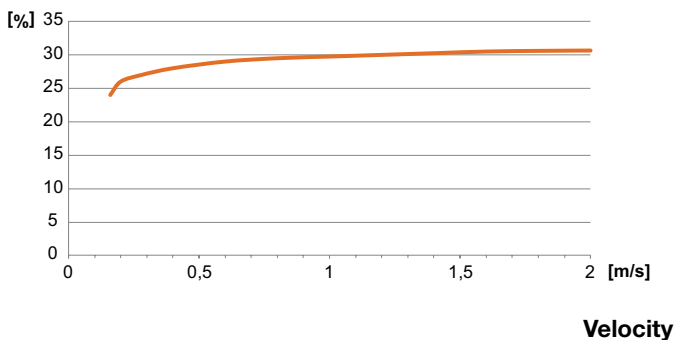


The cyclonic principle works independent from the position. The separator can be mounted either horizontally or vertically in any position.

## Separation efficiency

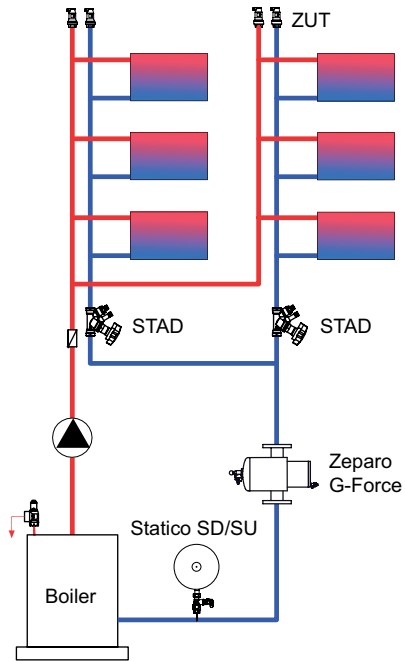
### Typical curve

#### Efficiency

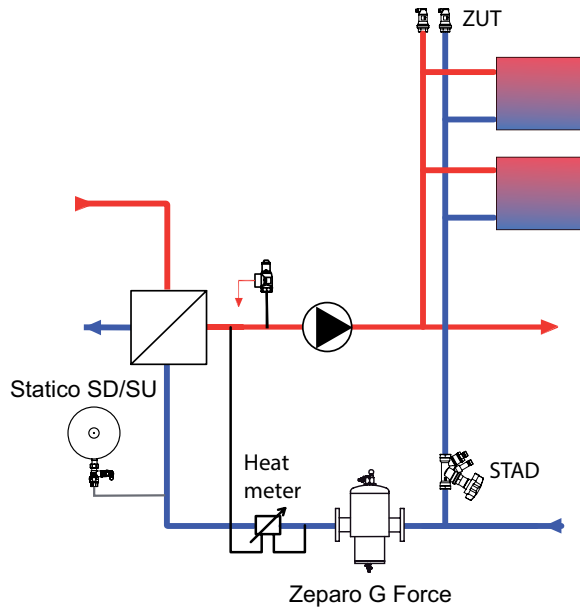


## Application examples

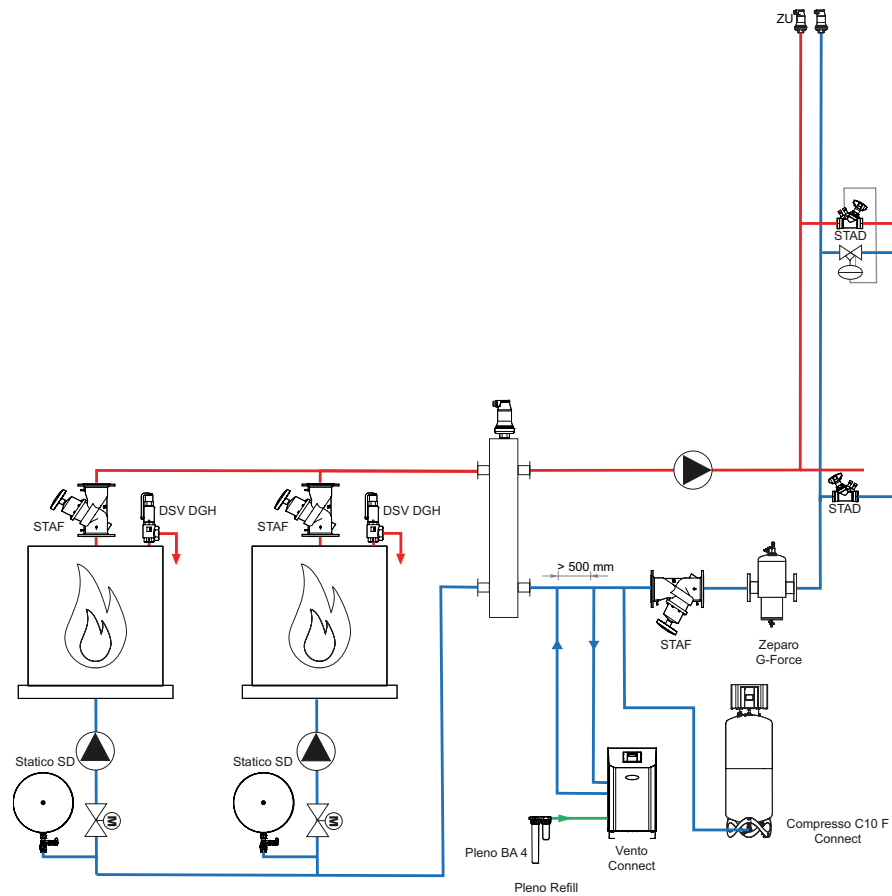
**System with boiler - PN16**



**System with heat exchanger**

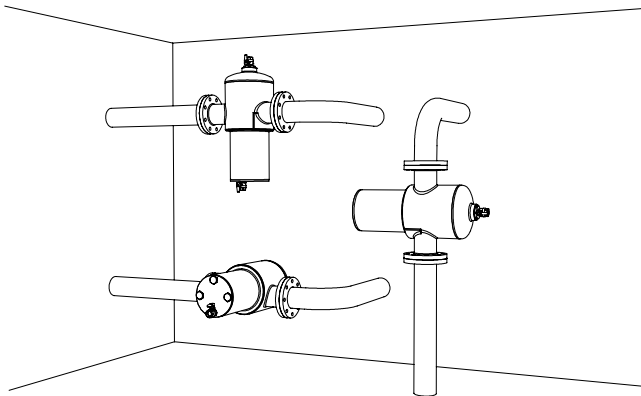


**System with boiler - PN25**



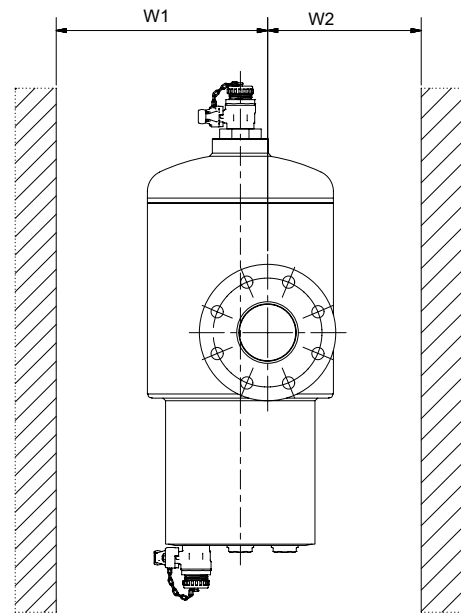
The Zeparo G-Force should be mounted either on the return in front of the unit to be protected or directly in front of the energy source. There is no minimum distance required to pipe bends etc. before or after the Zeparo G-Force.

## Installation



### Wall distance (all versions)

Type	W1	W2	with insulation	
			Wi1	Wi2
ZG 65	150	100	200	140
ZG 80	185	105	235	170
ZG 100	185	115	235	170
ZG 125	275	150	335	210
ZG 150	275	150	335	210
ZG 200	405	225	470	290
ZG 250	515	315	580	380
ZG 300	515	315	580	380



## Volumes and Flows

DN	VN [l]	qN [m <sup>3</sup> /h]	qN <sub>max</sub> [m <sup>3</sup> /h]
65	12	10	40
80	25	18	56
100	28	37	95
125	71	68	148
150	78	100	216
200	239	200	375
250	583	345	575
300	624	540	815

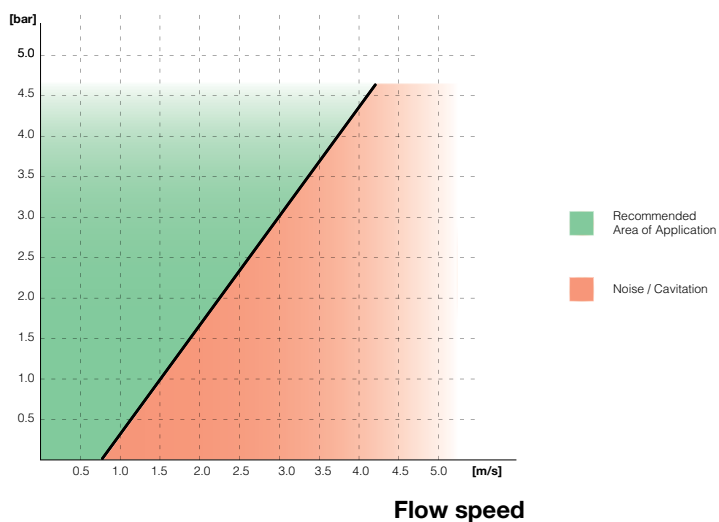
VN = Nominal volume

qN = Nominal flow/flow rate

qN<sub>max</sub> = Maximum flow

## Minimum System Pressure

### System Pressure



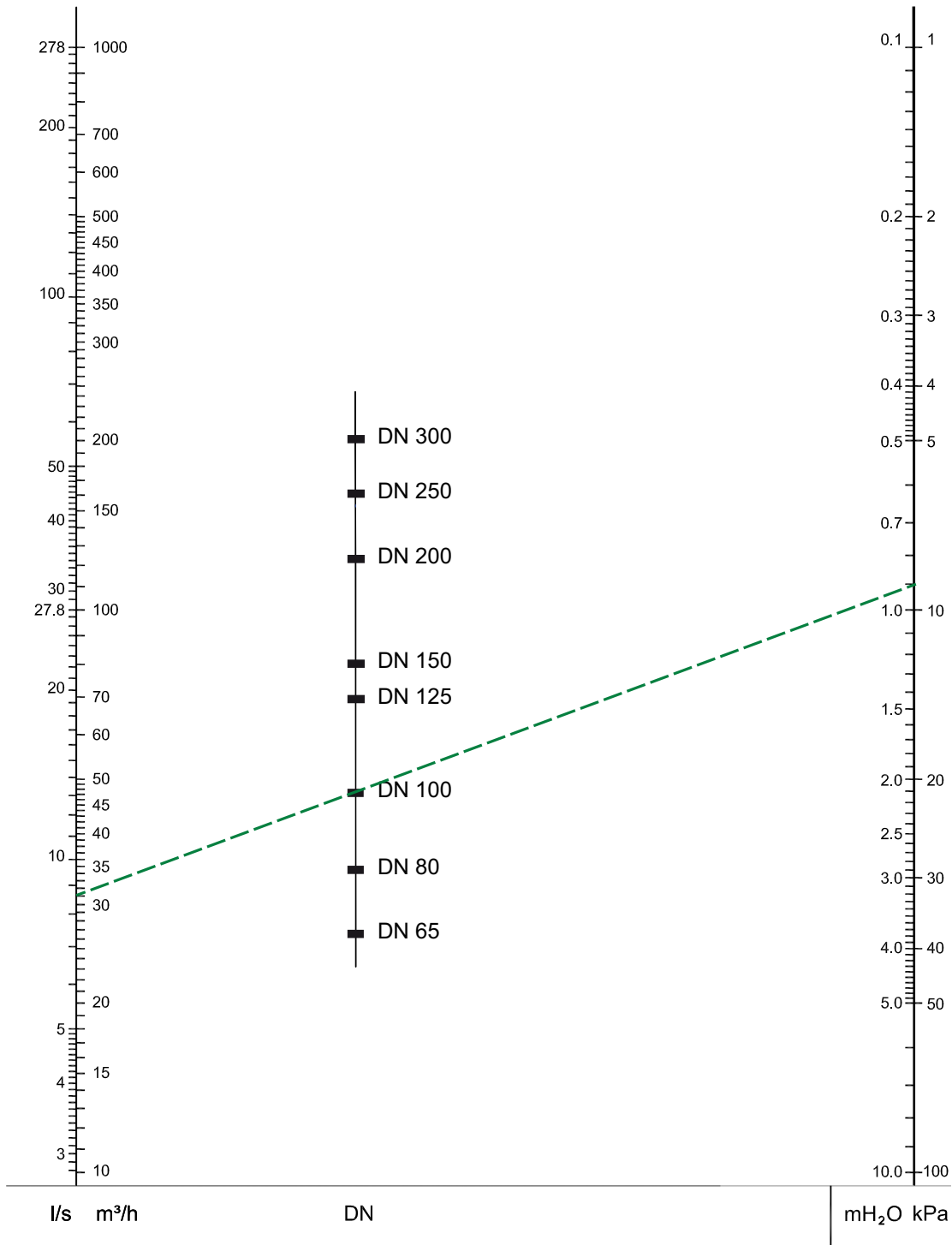
As seen in the above graph, at a flow speed of 2 m/s a minimum static+dynamic pressure of 1.7 bar must be maintained at the inlet of the G-Force in order to avoid cavitation.

## Quick selection

### Heating

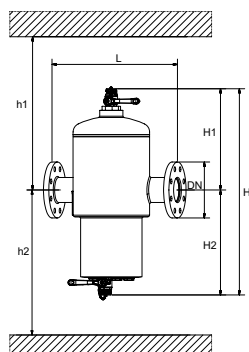
#### Example:

Heating system with a pipe DN 100 and 31 m<sup>3</sup>/h flow. Draw a line from the point 31 m<sup>3</sup>/h to required dimension DN 100 and read on the line for pressure drop 9 kPa.



Flow rate must not exceed the max flow rates of the relevant dimension.  
For exact calculations please use HySelect software.

## Articles



## Flanged

## PN16

Horizontal, vertical and lying installation.

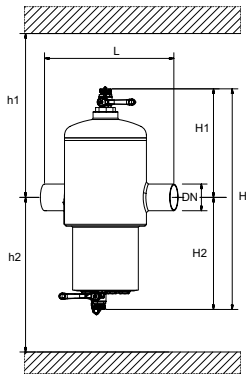
Type	S [DN]	H	H1	H2	h1	h2	L	$q_{nom}$ [m <sup>3</sup> /h]	$q_{max}$ [m <sup>3</sup> /h]	m [kg]	EAN	Article No
ZG 65	65	815	420	395	685	645	350	10	40	23	7640161631489	303041-11000
ZG 80	80	900	445	455	710	705	470	18	56	37	7640161631496	303041-11100
ZG 100	100	960	445	515	710	765	475	37	95	40	7640161631502	303041-11200
ZG 125	125	1180	560	620	935	870	635	68	148	108	7640161631519	303041-11300
ZG 150	150	1250	560	690	935	940	635	100	216	118	7640161631526	303041-11400
ZG 200	200	1470	580	890	1065	1140	900	200	375	238	7640161631533	303041-11500
ZG 250	250	1705	630	1075	1115	1325	1100	345	575	443	7640161631540	303041-11600
ZG 300	300	1855	655	1200	1140	1450	1100	540	815	490	7640161631557	303041-11700

## PN25

Horizontal, vertical and lying installation for high pressure/high temperature applications.

Type	S [DN]	H	H1	H2	h1	h2	L	$q_{nom}$ [m <sup>3</sup> /h]	$q_{max}$ [m <sup>3</sup> /h]	m [kg]	EAN	Article No
ZG 65	65	815	435	410	700	660	350	10	40	24,5	7640161632400	303041-31000
ZG 80	80	900	460	470	725	720	470	18	56	43	7640161632417	303041-31100
ZG 100	100	960	460	530	725	780	475	37	95	46	7640161632424	303041-31200
ZG 125	125	1180	575	635	950	885	635	68	148	130	7640161632431	303041-31300
ZG 150	150	1250	575	705	950	955	635	100	216	142	7640161632448	303041-31400
ZG 200	200	1470	595	905	1080	1155	900	200	375	355	7640161632455	303041-31500
ZG 250	250	1705	640	1065	1125	1315	1100	345	575	640	7640161632462	303041-31600
ZG 300	300	1855	665	1190	1150	1440	1100	540	815	715	7640161632479	303041-31700



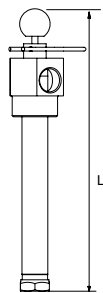

**Welded connection**

Horizontal, vertical and lying installation.

**PN 16**

Type	S [DN]	H	H1	H2	h1	h2	L	$q_{nom}$ [m <sup>3</sup> /h]	$q_{max}$ [m <sup>3</sup> /h]	m [kg]	EAN	Article No
ZG 65 W	65	815	420	395	685	645	340	10	40	19	7640161631564	303041-21000
ZG 80 W	80	900	445	455	710	705	455	18	56	30	7640161631571	303041-21100
ZG 100 W	100	960	445	515	710	765	460	37	95	31	7640161631588	303041-21200
ZG 125 W	125	1180	560	620	935	870	615	68	148	97	7640161631595	303041-21300
ZG 150 W	150	1250	560	690	935	940	615	100	216	102	7640161631601	303041-21400
ZG 200 W	200	1470	580	890	1065	1140	880	200	375	220	7640161631618	303041-21500
ZG 250 W	250	1705	630	1075	1115	1325	1080	345	575	408	7640161631625	303041-21600
ZG 300 W	300	1855	655	1200	1140	1450	1080	540	815	446	7640161631632	303041-21700

## Accessories

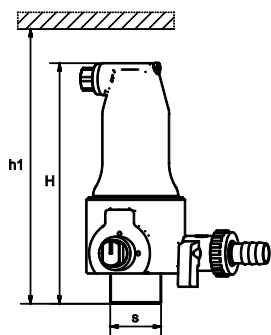


### Zeparo G-Force Magnet ZGM

Magnet Attachment. For retrofitting to mounting on site in the range Zeparo G-Force. T-branch with magnetic rod and pocket. To increase the magnetite capture. Heating, solar and cooling water systems. Addition of antifreeze agent up to 50%.

Type	PS [bar]	TS [°C]	m [kg]	L	EAN	Article No
ZGM 65-100	16	110	3,1	261	7640161632301	303051-11000
ZGM 125-150	16	110	3,6	371	7640161632318	303051-11300
ZGM 200-300	16	110	4,0	481	7640161634794	303051-11500

ZGM for PS > 16 bar and/or TS > 110°C on request.



### Automatic air vent, version Top

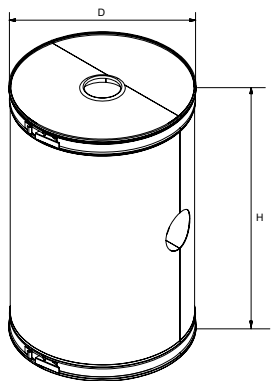
#### Zeparo ZUTX eXtra-lockable

Male thread. Vertical installation.

Type	H	h1	m [kg]	S	dpu [bar]	EAN	Article No
ZUTX 25	159	184	1,3	R1	10	7640148632485	789 1325

dpu = Working pressure range

Pressure class reduced to PN 10 when ZUT is mounted on the Zeparo G-Force



### Zeparo ZGI

Thermal insulation for Zeparo G-Force.

Heating water systems.

Rockwool 2 part galvanized steel cladding, easy to fit with toggle clamps.

Insulation value approx. 0.040 W/mK.

Fire rating A2 to DIN 4102.

Type	S DN	SD*	H	D	m [kg]	EAN	Article No
ZGI 65	65	40	520	305	2,8	7640161632325	303051-41000
ZGI 80	80	50	610	385	4,2	7640161632332	303051-41100
ZGI 100	100	50	670	385	4,6	7640161632349	303051-41200
ZGI 125	125	50	890	520	8,0	7640161632356	303051-41300
ZGI 150	150	50	960	520	8,7	7640161632363	303051-41400
ZGI 200	200	50	1130	720	22,0	7640161632370	303051-41500
ZGI 250	250	50	1350	930	38,0	7640161632387	303051-41600
ZGI 300	300	50	1470	930	41,5	7640161632394	303051-41700

\*) Insulation thickness

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