

Hydraulic separator

548 series



Function

This device consists of several different functional components, each of which meets specific requirements, typical of the circuits used in heating and air-conditioning systems.

- **Hydraulic separator**
To keep connected hydraulic circuits totally independent from each other.
- **Dirt remover**
To permit the separation and collection of any impurities present in the circuits. Provided with a valved connection with discharge piping.
- **Automatic air vent**
For automatic venting of any air contained in the circuits. Provided with a valved connection for maintenance purposes.
- **Insulation**
The separators, threaded and flanged up to DN 150, are supplied complete with pre-formed shell insulation to ensure perfect thermal insulation when used in both hot and cold water systems.

Reference documentation

- Tech. Broch. 01031 Automatic air vent, 501 series
- Tech. Broch. 01054 Automatic air vent, 5020 series

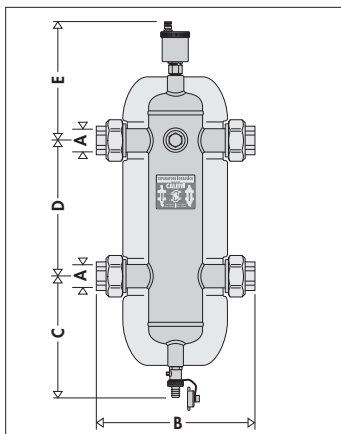
Product range

548 series Threaded hydraulic separator with pre-formed insulation	sizes 1", 1 1/4", 1 1/2", 2"
548 series Flanged hydraulic separator with pre-formed insulation	sizes DN 50, DN 65, DN 80, DN 100, DN 125, DN 150
548 series Flanged hydraulic separator with floor supports	sizes DN 200, DN 250, DN 300

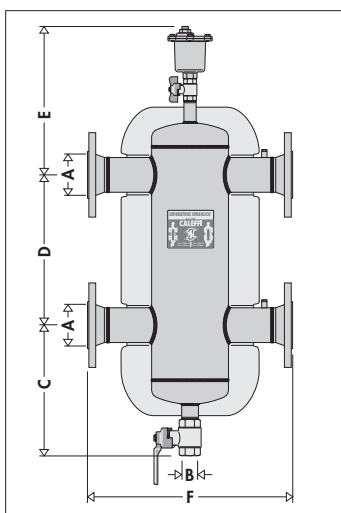
Technical specifications

series	548 threaded	548 flanged
Materials Separator body: Automatic air vent body: Automatic air vent float: Automatic air vent seals: Drain valve body: Shut-off valve body:	epoxy resin coated steel brass EN 12165 CW617N, chrome plated PP EPDM brass EN 12165 CW617N -	epoxy resin coated steel brass EN 12165 CW617N stainless steel VITON brass EN 12165 CW617N, chrome plated brass EN 12165 CW617N, chrome plated
Performance Medium: Max. percentage of glycol: Max. working pressure: Working temperature range:	water, non-hazardous glycol solutions excluded from the guidelines of directive 67/548/EC 30% 10 bar 0-110°C	water, non-hazardous glycol solutions excluded from the guidelines of directive 67/548/EC 50% 10 bar 0-110°C
Connections Separator: Probe holder: Automatic air vent: Automatic air vent discharge: Drain valve:	1", 1 1/4", 1 1/2", 2" F with union front 1/2" F 1/2" M - hose connection	DN 50 - 65 - 80 - 100 - 125 - 150 Flanged PN 16 DN 200 - 250 - 300 Flanged PN 10 to be coupled with counterflange EN 1092-1 inlet/outlet 1/2" F 3/4" F 3/8" F DN 50-DN 150: 1 1/4" F DN 200-DN 300: 2" F

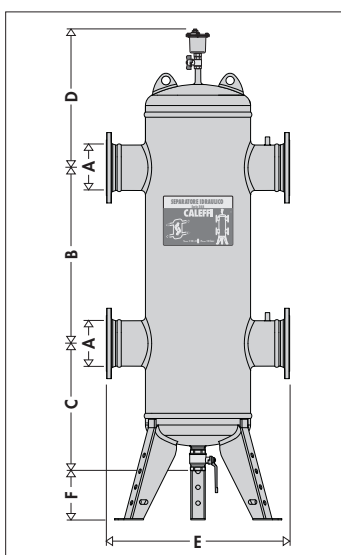
Dimensions



Code	A	B	C	D	E	Mass (kg)
548006	1"	225	195	220	204	2,7
548007	1 1/4"	248	225	240	214	3,8
548008	1 1/2"	282	235	260	224	5,7
548009	2"	315	281	300	230	11,8



Code	A	B	C	D	E	F	Mass (kg)
548052	DN 50	1 1/4"	341	330	398	460	34,5
548062	DN 65	1 1/4"	341	330	398	460	39
548082	DN 80	1 1/4"	389	450	440	526	51
548102	DN 100	1 1/4"	389	450	440	529	55
548122	DN 125	1 1/4"	374	560	499	670	104
548152	DN 150	1 1/4"	374	560	499	670	108



Code	A	B	C	D	E	F	Mass (kg)
548200	DN 200	1000	610	400	900	250	255
548250	DN 250	1100	660	460	1060	250	410
548300	DN 300	1200	710	500	1180	250	600

Without insulation

Volumes

Size	Volume (l)
1"	1,7
1 1/4"	2,6
1 1/2"	4,8
2"	13,5
DN 50	15
DN 65	15
DN 80	30
DN 100	30
DN 125	85
DN 150	88
DN 200	394
DN 250	778
DN 300	990

Technical specifications of insulation for threaded and DN 125 / DN 150 flanged models

Inner part

Material: closed cell expanded PE-X
 Thickness: - threaded 20 mm
 - flanged 60 mm
 Density: - inner part: 30 kg/m³
 - outer part: 50 kg/m³ (threaded), 80 kg/m³ (flanged)
 Thermal conductivity (ISO 2581): - at 0°C: 0,038 W/(m·K)
 - at 40°C: 0,045 W/(m·K)
 Coefficient of resistance to water vapour (DIN 52615): > 1.300
 Working temperature range: 0–100°C
 Reaction to fire (DIN 4102): class B2

External cover (for DN 125 and DN 150 flanged models)

Material: embossed unfinished aluminium
 Thickness: 0,7 mm
 Reaction to fire (DIN 4102): class 1

Technical specifications of insulation for flanged models from DN 50 to DN 100

Inner part

Material: rigid closed cell polyurethane foam
 Thickness: 60 mm
 Density: 45 kg/m³
 Thermal conductivity (ISO 2581): 0,023 W/(m·K)
 Working temperature range: 0–105°C

External cover

Material: embossed unfinished aluminium
 Thickness: 0,7 mm
 Reaction to fire (DIN 4102): class 1

Head covers

Heat moulded material: PS

Operating principle

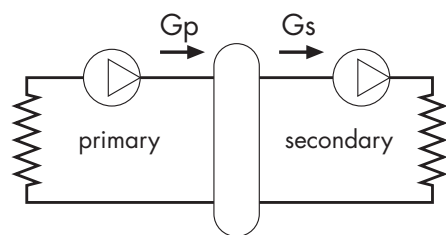
When a single system contains a primary production circuit, with its own pump, and a secondary user circuit, with one or more distribution pumps, operating conditions may arise in the system whereby the pumps interact, creating abnormal variations in circuit flow rates and pressures.

The hydraulic separator creates a zone with a low pressure loss, which enables the primary and secondary circuits connected to it to be hydraulically independent of each other; **the flow in one circuit does not create a flow in the other if the pressure loss in the common section is negligible.**

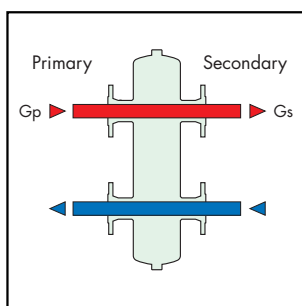
In this case, the flow rate in the respective circuits depends exclusively on the flow rate characteristics of the pumps, preventing reciprocal influence caused by connection in series. Therefore, using a device with these characteristics means that the flow in the secondary circuit only circulates when the relevant pump is on, permitting the system to meet the specific load requirements at that time.

When the secondary pump is off, there is no circulation in the secondary circuit; the whole flow rate produced by the primary pump is by-passed through the separator.

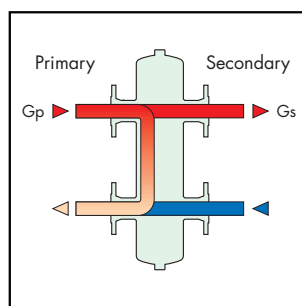
With the hydraulic separator, it is thus possible to have a production circuit with a constant flow rate and a distribution circuit with a variable flow rate; these operating conditions are typical of modern heating and air-conditioning systems.



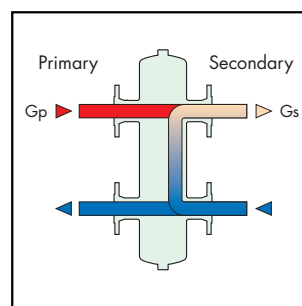
Three possible hydraulic balance situations are shown below.



$G_{primary} = G_{secondary}$

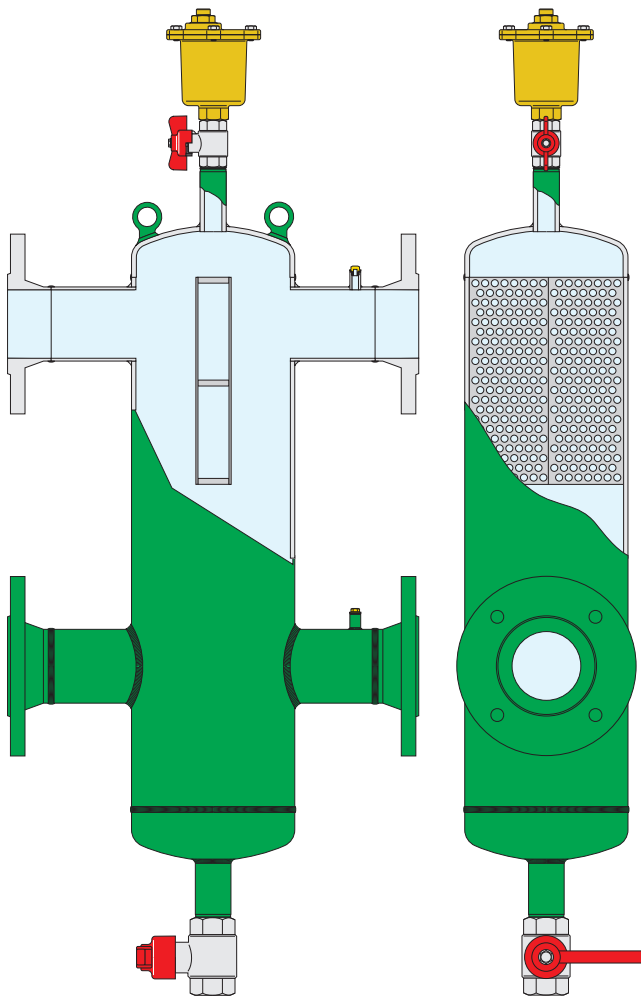


$G_{primary} > G_{secondary}$



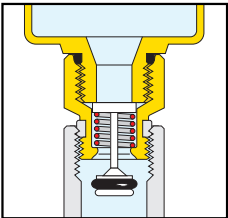
$G_{primary} < G_{secondary}$

Construction details



Air vent shut-off

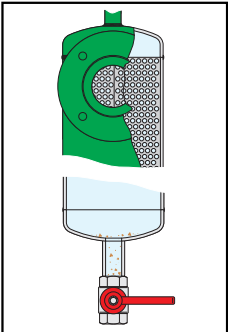
In flanged separators, the automatic air vent is shut off manually using a ball valve. In threaded separators, however, the air vent is shut off automatically by the valve, which closes when the air vent body is removed.



Dirt separator element

An essential function of the hydraulic separator is carried out by the dirt separator element inside the device. This makes it possible to separate and collect any impurities which may be present in the system.

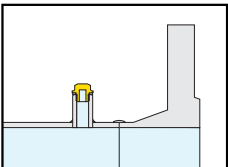
These impurities are removed by means of the drain valve, which can be connected to a discharge pipe, placed at the bottom of the separator.



Probe holder connections

The range of separators is supplied with 1/2" probe holder connections, which can be used with temperature probes or temperature gauges.

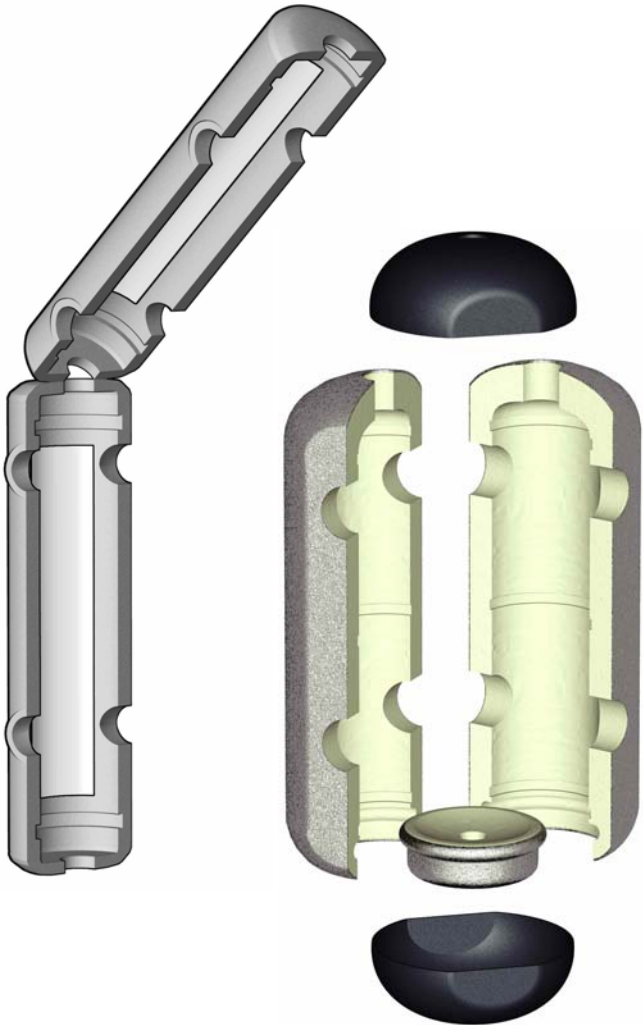
Flanged models have a connection on both flow and return channels, as they are important points for the measurement. Since the separator connections are reversible on the primary or secondary circuit, the temperature reading options for the medium are expanded.



Insulation

Flanged versions separators up to DN 100 are available complete with the insulation made of a shell in expanded polyurethane foam coated with an aluminium layer. For threaded and flanged versions DN 125 and DN 150, insulation is made of a pre-formed shell in closed cell expanded PE-X.

This insulation ensures not only perfect thermal insulation but also the tightness required to prevent atmospheric water vapour from entering the unit. For these reasons, this type of insulation can also be used in cooling water circuits, as it prevents the formation of condensate on the surface of the valve body.



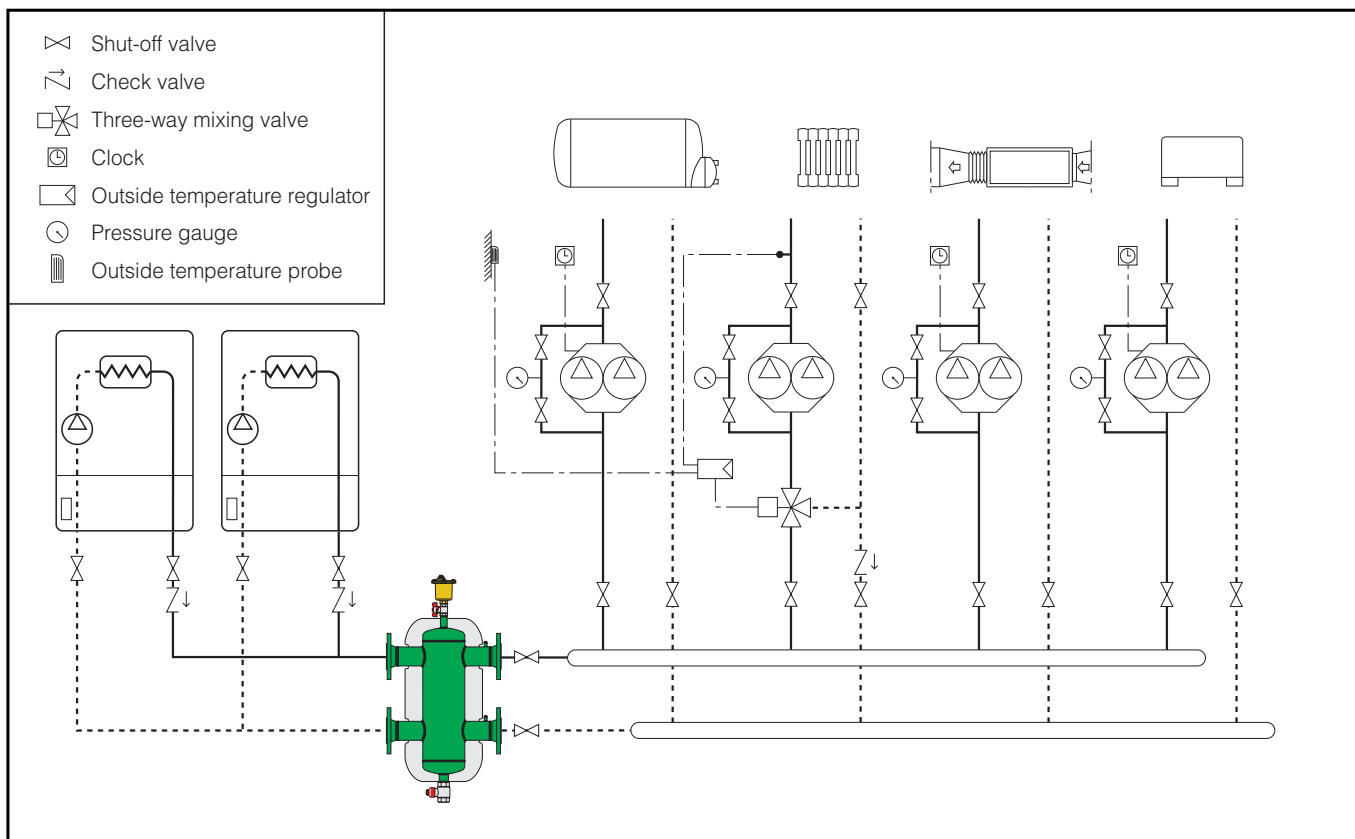
Hydraulic characteristics

The hydraulic separator should be sized in accordance with the maximum recommended flow rate value at the inlet. The selected design value must be the greater between the primary circuit value and secondary circuit value.

Size	Flow rate (m³/h)
1"	2,5
1 1/4"	4
1 1/2"	6
2"	8,5

Size	Flow rate (m³/h)
DN 50	9
DN 65	18
DN 80	28
DN 100	56
DN 125	75
DN 150	110
DN 200	180
DN 250	300
DN 300	420

Application diagram



SPECIFICATION SUMMARIES

548 series

Hydraulic separator. Connections 1" F (from 1" to 2") with union. Epoxy resin coated steel body. Medium water and non-hazardous glycol solutions excluded from the guidelines of EC directive 67/548. Maximum percentage of glycol 30%. Maximum working pressure 10 bar. Working temperature range 0–110°C.

Complete with:

- Automatic air vent. 1/2" M connection. Brass body, chrome plated. PP float. EPDM hydraulic seals.
- Drain valve. Hose connection. Brass body.
- Front probe holder connection 1/2" F.
- Hot pre-formed shell insulation in closed cell expanded PE-X. Working temperature range 0–100°C.

548 series

Hydraulic separator. Flanged connections DN 50 (from DN 50 to DN 150) PN 16, DN 200 (from DN 200 to DN 300) PN 10, for coupling with counterflanges EN 1092-1. Epoxy resin coated steel body. Medium water and non-hazardous glycol solutions excluded from the guidelines of EC directive 67/548. Maximum percentage of glycol 50%. Maximum working pressure 10 bar. Working temperature range 0–110°C.

Complete with:

- Automatic air vent. Connection 3/4" F. Outlet connection 3/8" F. Brass body. Stainless steel float. VITON hydraulic seals.
- Drain valve. Connection 1 1/4" F. Brass body, chrome plated; 2" F for DN 200–DN 300.
- Inlet/outlet probe holder connections 1/2" F.
- Rigid closed cell polyurethane foam insulation for sizes up to DN 100 (closed cell expanded PE-X for DN 125 and DN 150). Embossed unfinished aluminium external cover. Working temperature range 0–105°C (0–100°C for DN 125 and DN 150).
- Floor supports for sizes DN 200–DN 300.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.



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