

Hydraulic separator

series 548



cert. n° 0003
ISO 9001

01076/05 GB

Replaces 01076/02 GB



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 valve**
 For automatic venting of any air contained in the circuits. Provided with a valved connection for maintenance purposes.

Reference documentation

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

Product range

Series 548 Threaded hydraulic separator with insulation _____ Sizes 1", 1 1/4", 1 1/2" F with union
 Series 548 Flanged hydraulic separator with insulation _____ Sizes DN 50, DN 65, DN 80, DN 100
 Series 548 Flanged hydraulic separator _____ Sizes DN 50, DN 65, DN 80, DN 100, DN 125, DN 150

Technical specification

series ⇄	548 threaded	548 flanged
Materials: - Separator body: - Air vent body: - Shut-off and drain valve body - Air vent hydraulic seal - Air vent float	epoxy resin coated steel brass EN 12165 CW617N brass EN 12165 CW617N EPDM PP	epoxy resin coated steel brass EN 12165 CW617N brass EN 12165 CW617N, chrome plated VITON stainless steel
Performance: - Max working pressure: - Temperature range: - Medium: - Max percentage glycol:	10 bar 0 –110°C water, glycol solutions non hazardous, therefore excluded from the guidelines of 67/548/EC Directive 30%	10 bar 0 –110°C water, glycol solutions non hazardous, therefore excluded from the guidelines of 67/548/EC Directive 50%
Connections: - Separator: - Front (thermometer pocket) - Air vent relief - Drain valve	1", 1 1/4", 1 1/2" F with union 1/2" F - hose connection	DN 50 - 65 - 80 - 100 - 125 - 150 flanged PN 16 to be coupled with counterflanges EN 1092-1 - 3/8" F 1 1/4" F

Technical specification of insulation for threaded versions

- Material: double density closed cell expanded PEX
- Thickness: 20 mm
- Density: - internal part: 30 kg/m³
- external part: 50 kg/m³
- Thermal conductivity (ISO 2581): - 0°C: 0,038 W/(m·K)
- 40°C: 0,045 W/(m·K)
- Coefficient of resistance to the diffusion of vapour (DIN 52615): > 1.300
- Temperature range: 0 – 100°C
- Reaction to fire (DIN 4102): class B2

Technical specification of insulation for flanged versions to DN 100

Internal part

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

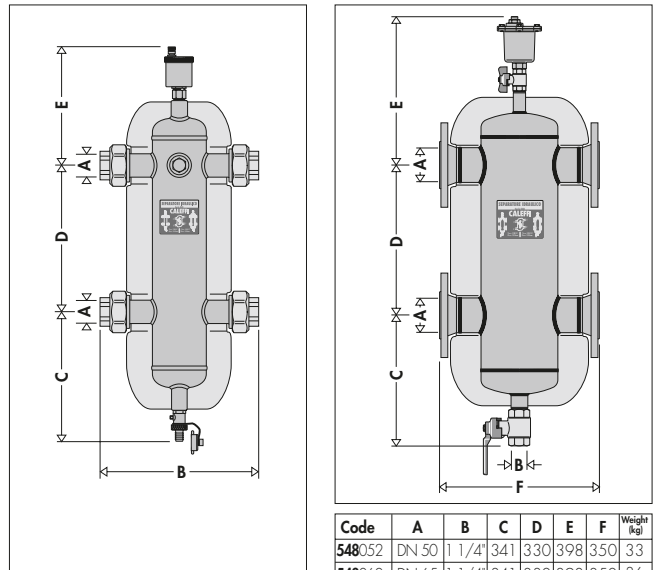
External cover

- Material: Alluminio grezzo goffrato
- Thickness: 0,7 mm
- Reaction to fire (DIN 4102): class 1

Head covers

- Heat moulded material: PS

Dimensions



Code	A	B	C	D	E	Weight (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

Code	A	B	C	D	E	F	Weight (kg)
548052	DN 50	1 1/4"	341	330	398	350	33
548062	DN 65	1 1/4"	341	330	398	350	36
548082	DN 80	1 1/4"	389	450	440	466	49
548102	DN 100	1 1/4"	389	450	440	470	53
548120*	DN 125	1 1/4"	374	560	499	635	100
548150*	DN 150	1 1/4"	374	560	499	635	105

Size	1"	1 1/4"	1 1/2"	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
Volume (l)	1,7	2,6	4,8	15	15	30	30	85	88

* without insulation

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.

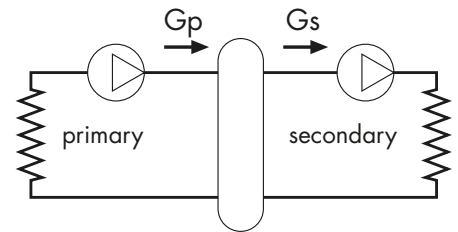
The hydraulic separator creates a zone with a low pressure loss, which enables the primary and secondary circuits connected to it to be hydraulically independent of each other; **the flow in one circuit does not create a flow in the other if the pressure loss in the common section is negligible.**

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.

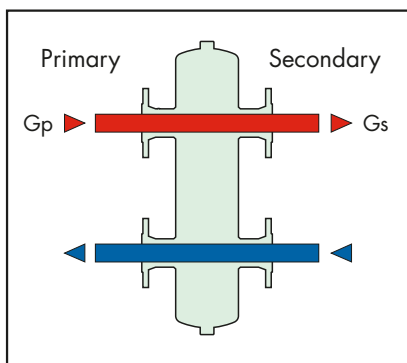
Therefore, using a device with these characteristics means that the flow in the secondary circuit only circulates when the relevant pump is on, permitting the system to meet the specific load requirements at that time.

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.

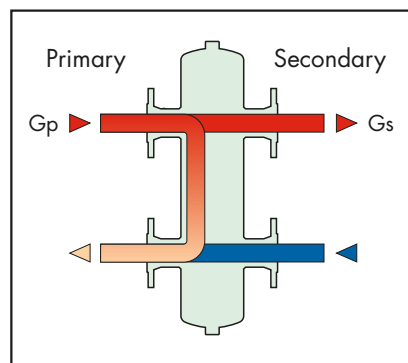
With the hydraulic separator, it is thus possible to have a production circuit with a constant flow rate and a distribution circuit with a variable flow rate; these operating conditions are typical of modern heating and air-conditioning systems.



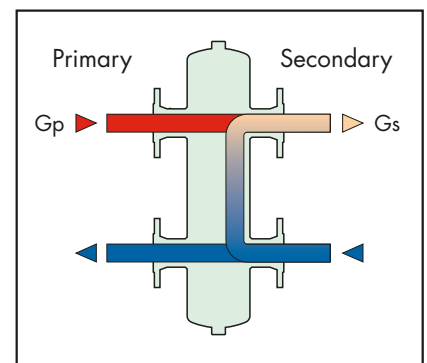
Three possible hydraulic balance situations are shown below.



$$G_{\text{primary}} = G_{\text{secondary}}$$

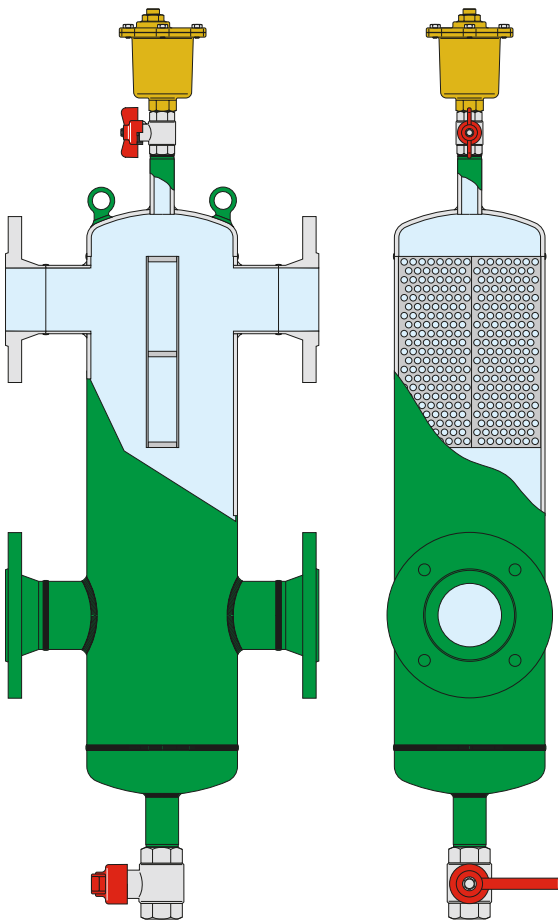


$$G_{\text{primary}} > G_{\text{secondary}}$$



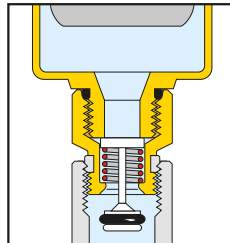
$$G_{\text{primary}} < G_{\text{secondary}}$$

Construction details



Isolating the air vent valve

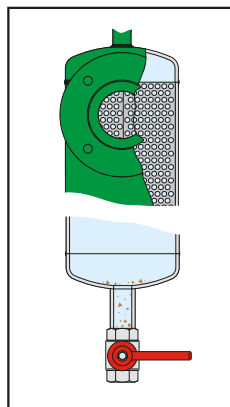
In flanged separators, the air vent is isolated manually, using a shut-off ball valve. In threaded separators, however, the air vent body is automatically isolated by the built-in valve, which closes when the air vent body is removed.



Dirt removing element

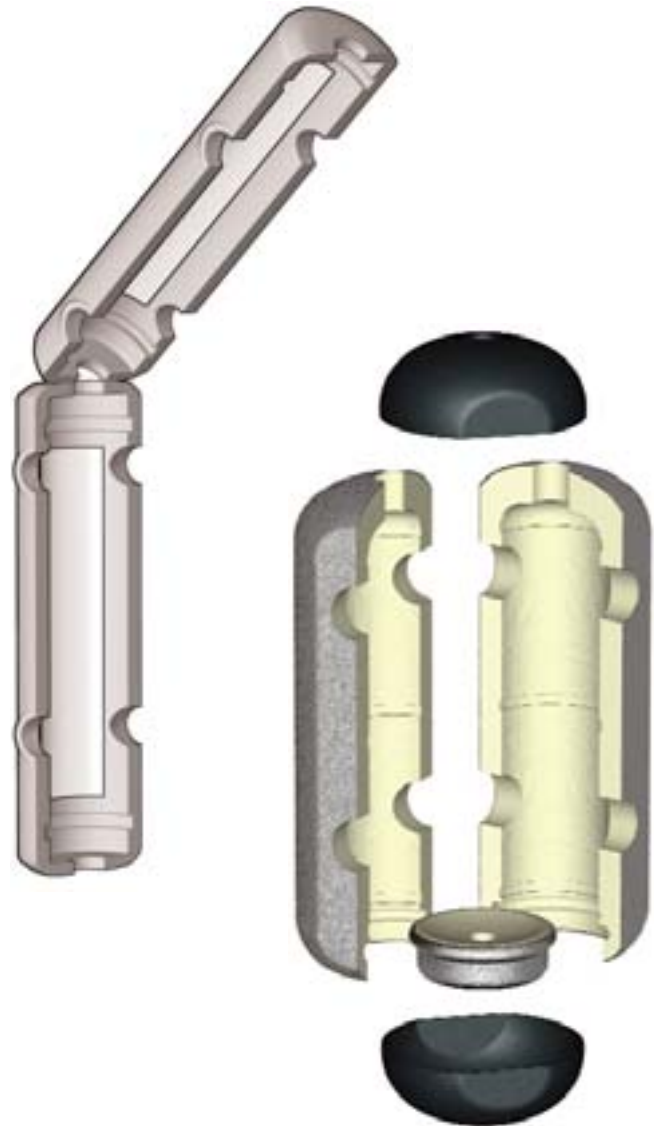
A vital function of the hydraulic separator is carried out by the dirt removing element inside the device. This makes it possible to separate and collect any impurities which may be present in the system.

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.



Insulation

Hydraulic separators are available complete with a hot preformed insulation shell. In the flanged series, up to DIN 100, the insulation is made of a shell in expanded polyurethane foam coated with an aluminium layer. In the threaded version the insulation is made of a pre-formed shell in double density closed cell expanded PEX. This insulation ensures not only perfect heat 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.



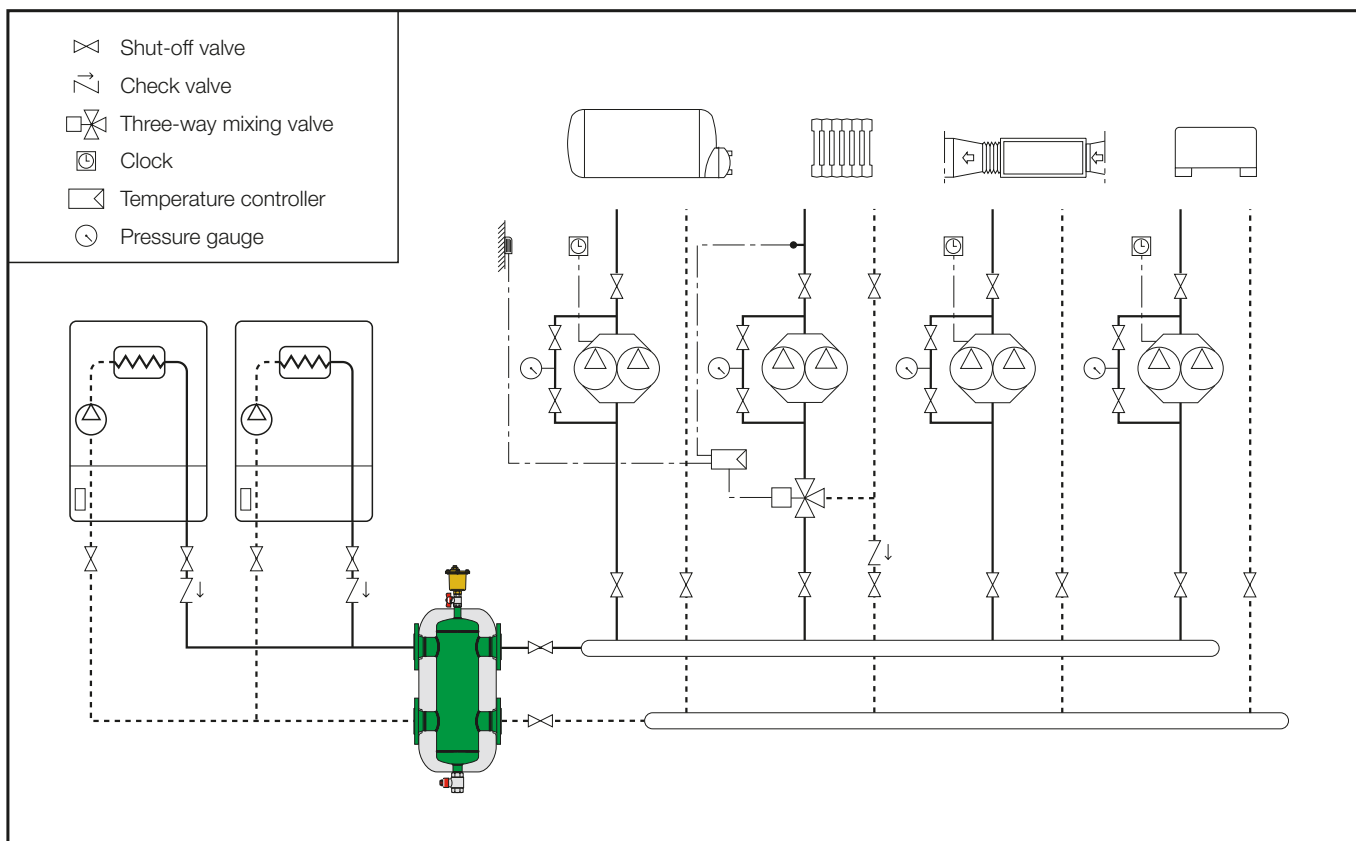
Hydraulic characteristics

The hydraulic separator should be sized according to the maximum flow rate value at the inlet. The selected design value must be the greatest between the primary circuit and the secondary circuit.

Size	Flow rate m ³ /h
1"	2,5
1 1/4"	4
1 1/2"	6

Size	Flow rate m ³ /h
DN 50	9
DN 65	18
DN 80	28
DN 100	56
DN 125	75
DN 150	110

Application diagram



SPECIFICATION SUMMARIES

Series 548

Hydraulic separator, female threaded connections with union, 1" (from 1" to 1 1/2"). Epoxy resin coated steel body. With insulation. Temperature range 0 –110°C (0 –100°C with insulation). Maximum working pressure 10 bar. Supplied with:

- Automatic air vent valve, 1/2" M connection. Brass body, chrome plated.
- Shut-off cock for air vent. Brass body.
- Drain cock. Hose connection. Brass body.
- Hot preformed shell insulation in double density closed cell expanded PEX.

Series 548

Hydraulic separator, flanged connections EN 1092-1 PN 16 DN 50 (from DN 50 to DN 100). Epoxy resin coated steel body. With insulation. Temperature range 0 –110°C (0 –105°C with insulation). Maximum working pressure 10 bar. Supplied with:

- Automatic air vent. 3/8" F outlet connection. Brass body.
- Shut-off valve for air vent. Brass body. Chrome plated.
- Drain valve. 1 1/4" F connection. Brass body. Chrome plated.
- Rigid closed cell expanded polyurethane foam shell insulation with external embossed aluminium cover.

Series 548

Hydraulic separator, flanged connections EN 1092-1 PN 16 DN 50 (from DN 50 to DN 150). Epoxy resin coated steel body. Temperature range 0 – 110°C. Maximum working pressure 10 bar. Supplied with:

- Automatic air vent. 3/8" F outlet connection. Brass body.
- Shut-off valve for air vent. Brass body. Chrome plated.
- Drain valve. 1 1/4" F connection. Brass body. Chrome plated.

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

