# 548

## hydraulic separator



altecnic

# 548 hydraulic separator

## Function

The Altecnic 548 hydraulic separator combines several different components, each of which performs a specific function, typical of the circuits used in heating and air-conditioning systems.

- Hydraulic separator

  Performs similar to a Low Loss Header keeping the primary and secondary circuits connected hydraulically yet able to function totally independently from each other.

- Dirt remover

  The separation and collection of any impurities present in the circuits. Provided with a blowdown valve for easy debris removal.

- Automatic air vent

  For automatic venting of any air contained in the circuits.

  Provided with a check valve for maintenance purposes.

- Insulation

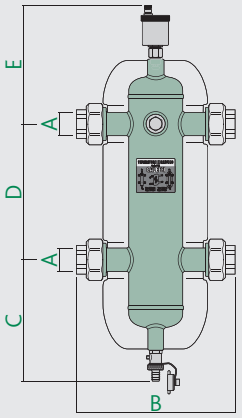
  The threaded and flanged separators up to DN 150, are supplied complete with a pre-formed insulation shell to ensure perfect thermal insulation when used in both hot and cold water systems.

| Product Code | Size | Volume litre | Flowrate l/m | Connections |
|---|---|---|---|---|
| 548006 | 1" | 1.7 | 41 | female - screwed iron |
| 548007 | 1¼" | 2.6 | 66 | female - screwed iron |
| 548008 | 1½" | 4.8 | 100 | female - screwed iron |
| 548009 | 2" | 13.5 | 141 | female - screwed iron |
| 548052 | DN50 | 15 | 150 | flanged PN16 |
| 548062 | DN65 | 15 | 300 | flanged PN16 |
| 548082 | DN80 | 30 | 466 | flanged PN16 |
| 548102 | DN100 | 30 | 933 | flanged PN16 |
| 548122 | DN125 | 85 | 1,250 | flanged PN16 |
| 548152 | DN150 | 88 | 1,833 | flanged PN16 |
| 548200 | DN200 | 394 | 3,000 | flanged PN10 |
| 548250 | DN250 | 778 | 5,000 | flanged PN10 |
| 548300 | DN300 | 990 | 7,000 | flanged PN10 |

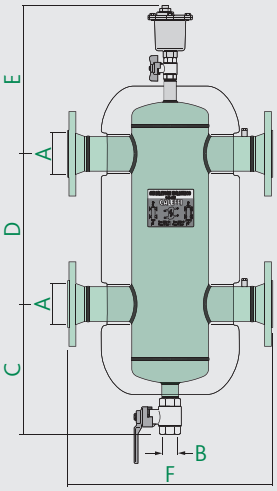
## Hydraulic Characteristics

The hydraulic separator should be sized at the inlet in accordance with the maximum recommended flow rate values.

## Dimensions




| Prod Code | A | B | C | D | E | kg |
|---|---|---|---|---|---|---|
| 548006 | G1 | 225 | 195 | 220 | 204 | 2.7 |
| 548007 | G1¼ | 248 | 225 | 240 | 214 | 3.8 |
| 548008 | G1½ | 282 | 235 | 260 | 224 | 5.7 |
| 548009 | G2 | 315 | 281 | 300 | 230 | 11.8 |

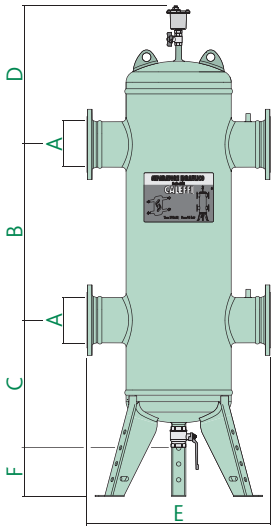



| Prod Code | DN A | B | C | D | E | F | kg |
|---|---|---|---|---|---|---|---|
| 548052 | 50 | G1¼ | 341 | 330 | 398 | 460 | 35 |
| 548062 | 65 | G1¼ | 341 | 330 | 398 | 460 | 39 |
| 548082 | 80 | G1¼ | 389 | 450 | 440 | 526 | 51 |
| 548102 | 100 | G1¼ | 389 | 450 | 440 | 529 | 55 |
| 548122 | 125 | G1¼ | 374 | 560 | 499 | 670 | 104 |
| 548152 | 150 | G1¼ | 374 | 560 | 499 | 670 | 108 |

## Technical Specification

| | | |
|---|---|---|
| Max. working pressure: | | 10 bar |
| Max. operating temperature: | | -10°C to 110°C |
| Max. glycol percentage: | threaded | 30% |
| | flanged | 50% |
| Medium: | | water glycol solution |

## Dimensions




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

## Connections

### Threaded

| | | |
|---|---|---|
| Separator: | | Female screwed iron with union connector |
| Probe holder: | | Front ½" female |
| Automatic air vent: | | ½" male |
| Drain valve: | | Hose union |

### Flanged

| | | |
|---|---|---|
| Separator: | | Flanged |
| Probe holder: | | Inlet/outlet ½" female |
| Automatic air vent: | | ¾" female |
| Automatic air vent discharge: | | 3/8" female |
| Drain valve: | DN50 to DN150 | 1¼" female |
| | DN200 to DN300 | 2" female |

## Materials

| Component | Material | Specification |
|---|---|---|
| **Threaded** | | |
| Separator body: | Carbon steel | epoxy coated |
| Automatic air vent body: | Brass chrome plated | BS EN 12165 CW617N |
| Automatic air vent float: | PP | |
| Automatic air vent seals: | EPDM | |
| Drain valve body: | Brass | BS EN 12165 CW617N |
| **Flanged** | | |
| Separator body: | Carbon steel | epoxy coated |
| Automatic air vent body: | Brass | BS EN 12165 CW617N |
| Automatic air vent float: | Stainless steel | |
| Automatic air vent seals: | Viton | |
| Drain valve body: | Brass chrome plated | BS EN 12165 CW617N |
| Isolating valve body: | Brass chrome plated | BS EN 12165 CW617N |

## Insulation Materials

### Threaded & DN125 and DN150

#### Inner part

| | | | |
|---|---|---|---|
| Material: | | | closed cell expanded PE-X |
| Thickness: | threaded | | 20 mm |
| | flanged | | 60 mm |
| Density: | inner part: | | 30 kg/m³ |
| | outer part | threaded | 50 kg/m³ |
| | | flanged | 80 kg/m³ |
| 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 |

### Flanged DN50 and DN150

#### 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 |

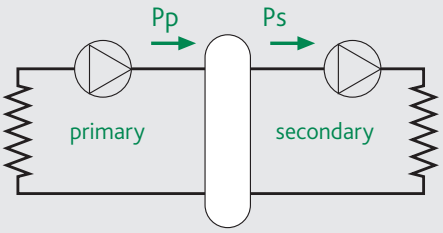
#### External cover

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

#### Head covers

| | |
|---|---|
| Heat moulded material: | PS |

## Operating Principles




When a 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 connecting in series.

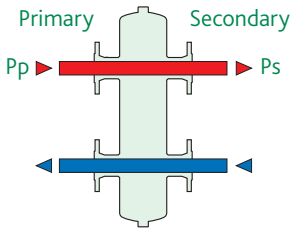
Therefore, using a device with these characteristics means that the flow in the secondary circuit only circulates when the relevant pump is on, permitting the system to meet the specific load requirements at that time.

## Operating Principles

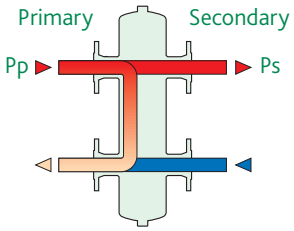
When the secondary pump is off, there is no circulation in the secondary circuit; the whole flow rate produced by the primary pump is by-passed through the separator.

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

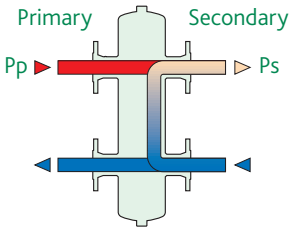
Three possible hydraulic balance situations are shown;




$P_{primary} = P_{secondary}$

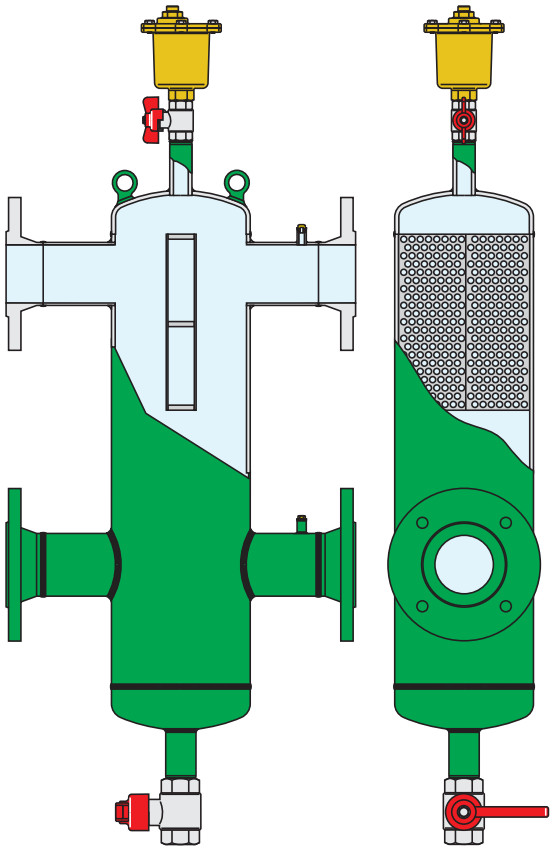



$P_{primary} > P_{secondary}$

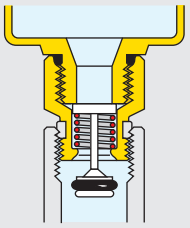



$P_{primary} < P_{secondary}$

## Construction Details



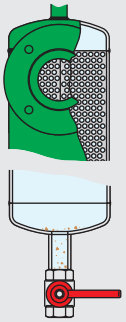
## Air vent shut-off



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 check valve, which closes when the air vent body is removed.

## Dirt separator element



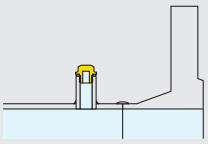
An essential function of the hydraulic separator is carried out by the dirt separator element inside the device.

This makes it possible to separate and collect any debris which may be present in the system.

Debris can be 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

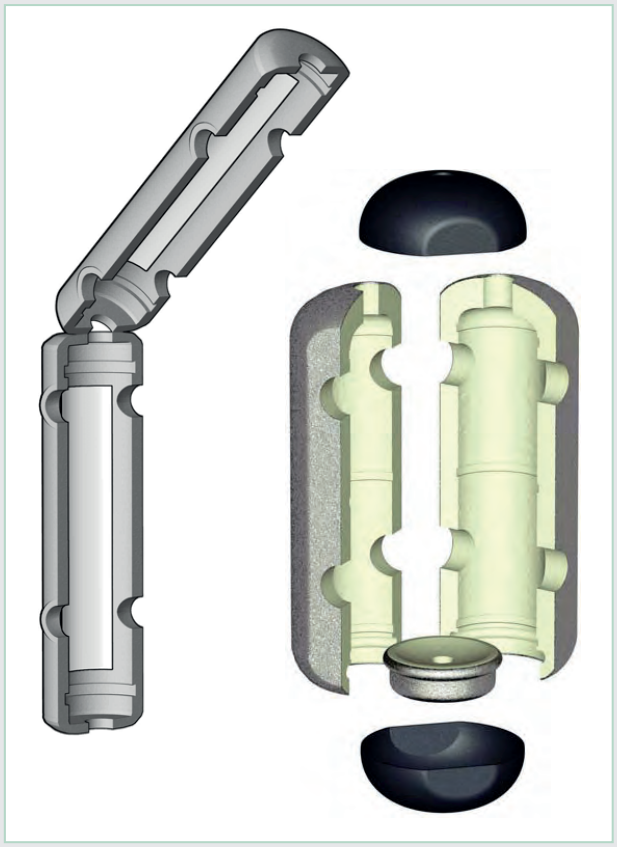
The range of separators is supplied with 1/2" probe holder connections, which can be used with temperature probes or temperature gauges.



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.

## Preformed Insulation



## Insulation

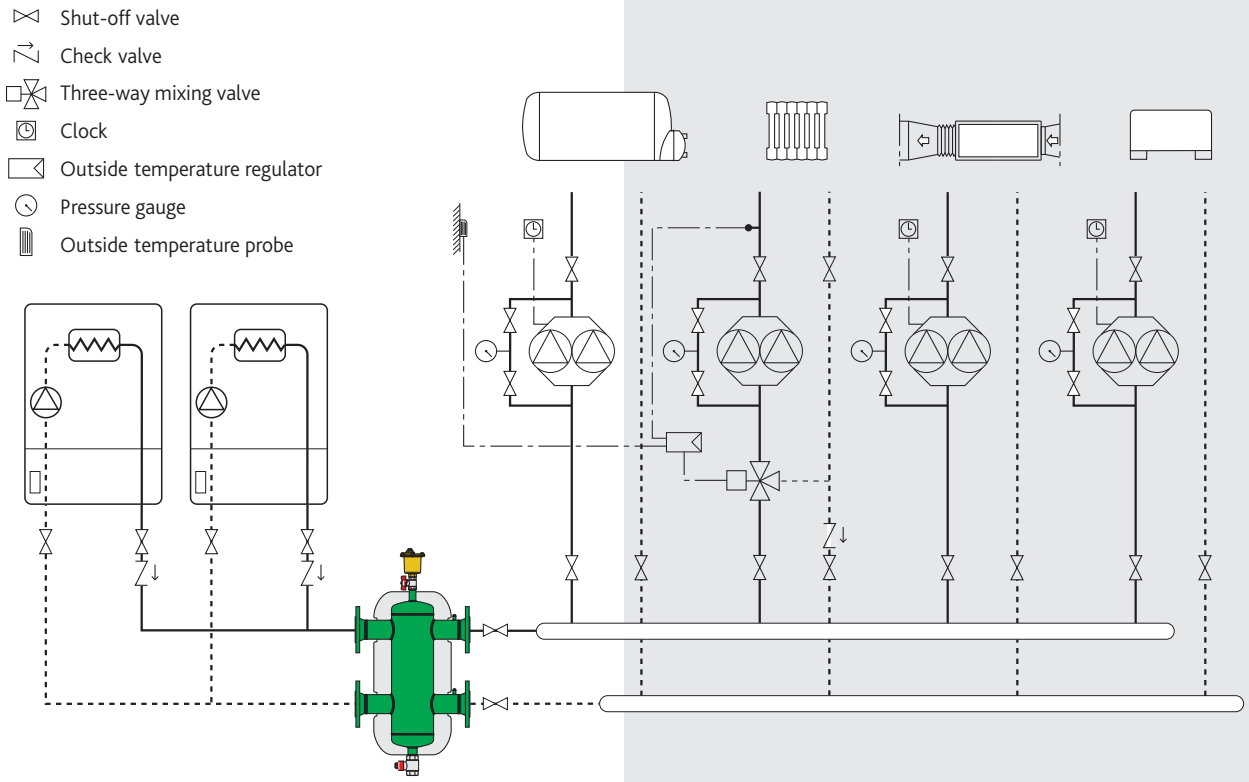
Flanged separators up to DN 100 are available complete with the insulation made of a shell in expanded polyurethane foam coated with an aluminium layer.

For threaded and flanged versions DN 125 and DN 150, the 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 separator body.

## Typical Application




E & O.E

Altecnic Ltd Mustang Drive, Stafford, Staffordshire ST16 1GW
T: +44 (0)1785 218200 E: sales@altecnic.co.uk
Registered in England No: 2095101

altecnic.co.uk