

SEP4™ 4-in-1 hydraulic, air, dirt and magnetic separator, ANSI flanged

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5495, NA549_AM Series

Installation, commissioning and servicing instructions



Function

The Caleffi SEP4™ combination separator is a device that incorporates four critical functions for hot or chilled water systems. It combines high performance air and dirt (magnetic and non-magnetic) removal into the hydraulic separation function which makes the primary and secondary circuits connected to it hydraulically independent. The SEP4™ features an internal coalescing element that continuously and automatically eliminates air micro-bubbles with the simultaneous removal of dirt particles as tiny as 5 microns. The air discharge capacity is very high, with the capability of automatically removing all the air present in the system down to the micro-bubble level. The 4-in-1 high performance functionality of the SEP4™ saves system installation and maintenance costs as there is no need to include separate air and dirt separators. In addition to removing solid impurities in the system without isolating the separator or shutting down the system, the added powerful removable external magnet belt (union) or probe(s) (flanged) in the lower body removes up to

100% of the ferrous impurities, including magnetite, that can form in a hydronic system. The SEP4™ has 2½ times the ferrous impurities removal performance of standard air and dirt separators.

These items are designed for use in closed hydronic systems. Do not use in plumbing applications. These items do not meet the low-lead plumbing standards of U.S. and Canada.

Product range

- | | | |
|----------------|---|---------------------------|
| 5495 series | SEP4™ hydraulic, air, dirt and magnetic separator in steel with flanged connections, drain and insulation | connections 2" – 4" ANSI |
| NA549_M series | SEP4™ hydraulic, air, dirt and magnetic separator in steel with flanged connections and drain, ASME | connections 2" – 14" ANSI |
| | -pre-formed insulation shell included on 2" – 4" sizes. | |
| | -CRN approval for 2" – 8" sizes; consult factory for 12-14" sizes. | |



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



CAUTION: If the SEP4™ is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.



CAUTION: Make sure that all the connecting pipework is water tight.



CAUTION: When making the water connections, make sure that the hydronic separator connecting pipework is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



CAUTION: Water temperatures higher than 100°F (38°C) can be dangerous. During the installation, commissioning and maintenance of the hydronic separator, take the necessary precautions to ensure that such temperatures do not endanger people.

Technical specifications

Materials

Separator body:	epoxy resin coated steel body
Air vent body & shut-off and drain valve body:	brass
Internal element:	300 series stainless steel
Air vent seal:	VITON
Air vent float:	stainless steel
Magnet:	neodymium rare-earth
Magnet probe:	brass

Performance

Suitable fluids:	water and non-hazardous glycol solutions up to 50%
Max. operating pressure:	150 psi (10 bar)
Temperature range:	- with insulation 32–220°F (0 – 105°C)
	- without insulation 32–270°F (0 – 132°C)
Particle separation capacity:	to 5 µm
Air separation efficiency:	100% removal to microbubble level
Ferrous impurities separation efficiency:	up to 100% removal

Connections

Flanged:	2"–14" ANSI B16.5 150 CLASS RF
Drain valve:	- connections 2"– 6": 1¼" NPT female
	- connection 8"– 14": 2" NPT female
Thermo well tap (8 – 14" only):	
	- front center: ¾" NPT female
	- inlet/outlet flanges: ½" NPT female

Agency Approval

Series NA549_M is designed and built in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code and tagged and registered with the National Board of Boiler and Pressure Vessel Inspector, and CRN registered, and stamped for 150 psi (10 bar) working pressure, with ASME U stamp. 12"-14" is CRN pending, contact Caleffi.

Technical specifications of insulation

Inner part

Material: rigid closed cell expanded polyurethane foam
 Thickness: 2 3/8" (60 mm)
 Density: 2.8 lb/ft³ (45 kg/m³)
 Thermal conductivity: 6 BTU·in/hr·ft²·°F (0.023 W/(m·K))
 Temperature range: 32–220°F
 (0–105°C)

Outer part

Material: Embossed aluminium
 Thickness: 7-mil (0.70 mm)
 Fire resistance (DIN 4102): Class 1

Head covers

Heat formed material: PS

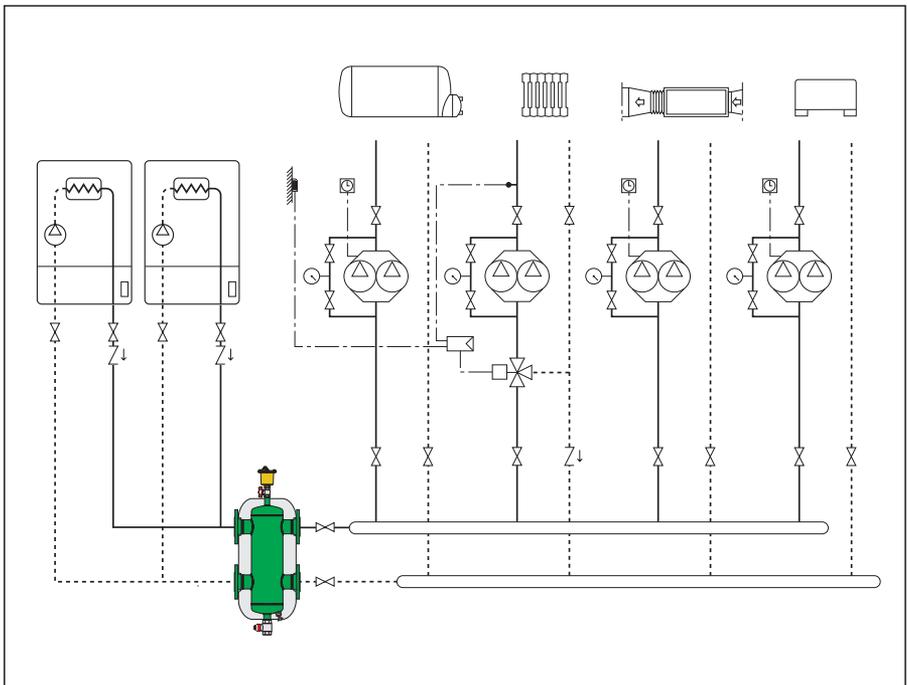
Hydraulic characteristics

The SEP4™ should be sized according to the maximum flow rate of either the primary circuit, or secondary circuit, whichever is largest.

Size	2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"
gpm	60	80	124	247	300	484	792	1330	1850	2500
m ³ /h	13.6	18.2	28.2	56	68	110	180	302	420	568
l/s	3.8	5.0	7.8	15.6	19	30.5	50	84	117	158
Gallons	4.0	4.0	8.0	8.0	23	23	95	175	255	450
liters	15.1	15.1	30	30	87	87	360	662	965	1703

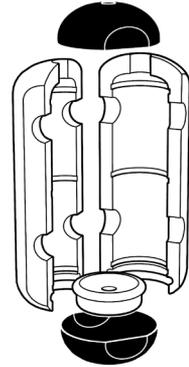
Installation

The installation of SEP4™ should only be done by qualified personnel in accordance with current legislation. The SEP4™ is installed between the primary and secondary circuits, always in a vertical position.



Procedure for installation and insulation assembly (only for 2" to 4" sizes)

1. Remove the two black head covers at the ends.
2. Open the two side sections and the lower cap.
3. Install the separator in the system.
4. For cooling applications, consider using a silicon caulk or sealant by spreading a thin layer of sealant over the shell mating surfaces.
5. Reassemble the two side sections, fitting the lower cap into one of the two sections and then connecting the other.
6. Complete with the two black head covers.
7. Install the automatic air vent and the drain valve.

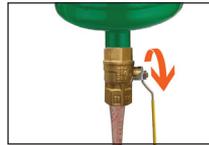


Isolating the air vent valve

The air vent (A), replacement part number 501502A, is isolated manually, using a shut-off ball valve (B), replacement part number NA39589.

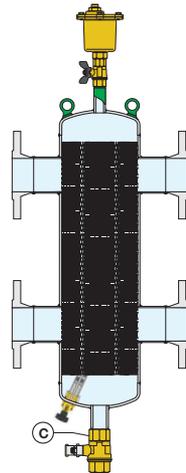
Dirt removing element

The SEP4™ dirt removing element separates and collects any impurities present in the system.



Ferrous impurities removal element

The SEP4™ ferrous impurities removing element is a flexible magnetic stack inside a brass dry-well probe (three for the 8 to 14 inch size SEP4™) just below the flow stream in the lower body. The probe(s) attracts and holds the magnetite in the lower body and is flushed by unscrewing the magnetic probe(s) and slowly pulling it out of the dry-well and purging through the open drain valve- aided by the system pressure.



CAUTION: Corrosion or leakage can cause damage or injury. Periodically inspect for signs of corrosion or leakage. If corrosion or leakage is noted, the vent must be replaced. Failure to follow these instructions could result in property damage and/or personal injury.

Service Instructions

There is no service required for the SEP4™ combination hydraulic, air, dirt, and magnetic separator.

Leave this manual for the user.

Scan to view



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Installation Tip

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