www.caleffi.com

SEP4™ Combination hydraulic, air, dirt and magnetic separator with union connections

5495 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 on 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

54950 series	SEP4™ hydraulic, air, dirt and magnetic separator in steel with union connections, drain and insulation:	connections 1", 1¼", 1½", 2" NPT female union
54956 series	SEP4™ hydraulic, air, dirt and magnetic separator in steel with union connections, drain and insulation:	connections 1", 1¼", 1½", 2" press union
54959 series	SEP4™ hydraulic, air, dirt and magnetic separator in steel with union connections, drain and insulation:	connections 1", 1¼", 1½", 2" sweat union

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 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 hydraulic separator, take the necessary precautions to ensure that such temperatures do not endanger people.

Leave this manual for the user

Technical specifications

Materials	- body:	epoxy resin coated steel
	- air vent body:	brass EN 12165 CW617N
	- air vent hydraulic seal:	peroxide-cured EPDM
	- air vent float:	PP
	- air vent float linkages:	stainless steel
	- air vent float guide pin:	stainless steel
	- internal element:	HDPE
	- drain valve body:	brass EN 12165 CW617N
	- magnet:	neodymium rare-earth
	- support bracket:	polyester painted carbon steel

Performance

Suitable fluids:	water, glycol solution
Max. percentage of glycol:	50%
Max. working pressure:	150 psi (10 bar)
Temperature range:	without insulation 32–230°F (0–110°C) with insulation 32–210°F (0–100°C)
Particle separation capacity:	to 5 µm (0.2 mil)
Air sepration efficiency:	100% removal to microbubble level
Ferrous impurities separation efficiency:	up to 100% removal

Connections

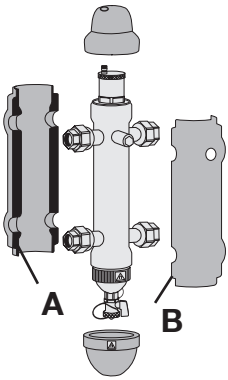
Main connections:	1", 1¼", 1½", 2" NPT female with unions 1", 1¼", 1½", 2" sweat with unions 1", 1¼", 1½", 2" press with unions
Thermowell tap connection:	½" F straight thread
Lay length (press connection):	size 1 inch: 8¾"; size 1¼ inch: 9¾"; size 1½ inch: 11⅝"; size 2 inch: 12½"
Drain valve:	¾" garden hose connections

Technical specifications of insulation

Material:	closed-cell expanded PE-X
Thickness:	13/16" (20 mm)
Density: - inner part:	1.9 lb/ft^3 (30 kg/m^3)
- outer part:	5.0 lb/ft^3 (80 kg/m^3)
Conductivity (ISO 2581):	at 32°F (0°C); .16 BTU/in (0.038 W/(m·K)
	at 105°F (40°C); .26 BTU/in (0.045 W/(m·K)
Water vapor resistance coefficient (DIN 52615):	> 1,300
Temperature range:	32–212°F (0–100°C)
Fire resistance (DIN 4102):	class B2

Insulation

The SEP4™ with union connections does not come standard with a preformed insulation shell. Purchased separately for field installation, the insulation is made of a shell in closed-cell expanded PE-X foam. This insulation ensures not only perfect heat insulation but also the tightness required to prevent atmospheric water vapors 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.



Procedure for field installation

1. Remove the two black head covers at the ends.
2. Open the two side sections.
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 surfaces A and B. Wait for solvent to evaporate (approx. 10 minutes). Note that once the sealant dries it may be difficult to remove the insulation shell in the future without destroying portions of the insulation.
5. Reassemble the two side sections.
6. Finish the assembly with adhesive tape (not supplied).
7. Complete by assembling back in place the two black head covers.

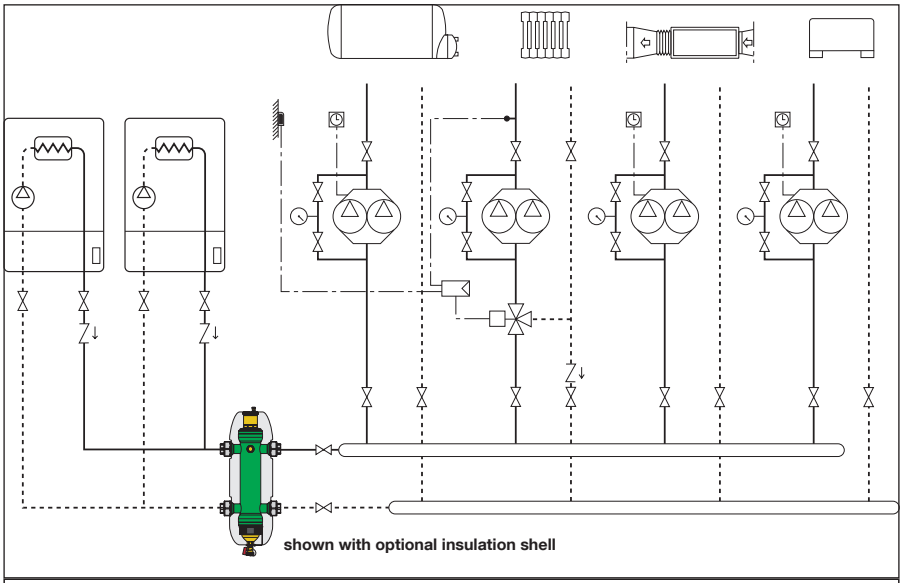
Hydraulic characteristics

The SEP4™ should be sized according to the maximum flow rate at the inlet. The selected value is the primary circuit flow rate, or secondary circuit flow rate, whichever is largest.

Size	**1"**	**1¼"**	**1½"**	**2"**
gpm	11	18	26	37
m³/h	2.5	4.0	6.0	8.5
l/s	0.7	1.1	1.6	2.3
Gallons	0.5	0.7	1.3	3.5
liters	2.0	2.6	5.0	13.2

Installation

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



shown with optional insulation shell

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 air, hydraulic, dirt and magnetic separator.

Leave this manual at the service of users for their use

Scan to view

548, 549 & 5495

Installation Tip

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