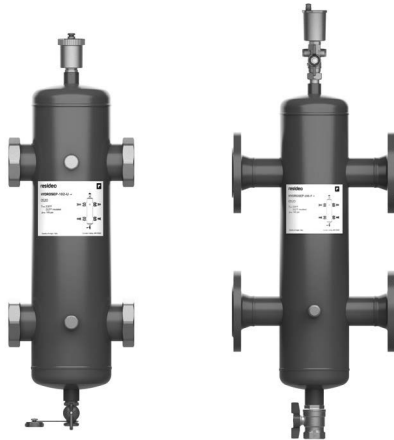


Magnetic Hydraulic Separators

HYDROSEP-1XX

INSTALLATION INSTRUCTIONS

APPLICATION



In modern hydronic installations, the HYDROSEP-1XX magnetic hydraulic separator performs the following functions:

- Hydraulic separator: Makes connected hydraulic circuits independent, preventing any flow influence between circulators installed in series and balancing the difference of flows through the circuits, all according to the characteristics of their corresponding circulator.
- Dirt separator: Separates and eliminates any debris inside the circuits thanks to the combined action of a magnet and a metallic mesh surface which allow for the separation to take place. The impurities can subsequently be removed by the discharge valve.
- Deaerator: Separates and eliminates the air inside the circuits through the air vent placed on the separator's upper connection. The hydraulic separators are equipped with insulation to minimize thermal loss.

Table 1. Models Available.

Model Number	Version	Connections in inches	Max flow rate GPM (m ³ /h)	Weight lbs (kg)	Volume gal (L)
HYDROSEP-102-U/U	Union	1	11 (2.5)	5.95 (2.7)	0.39 (1.5)
HYDROSEP-103-U/U		1-1/4	17.6 (4)	8.15 (3.7)	0.66 (2.5)
HYDROSEP-104-U/U		1-1/2	26.41 (6)	12.56 (5.7)	1.18 (4.5)
HYDROSEP-105-U/U		2	39.62 (9)	15.87 (7.2)	1.9 (7.2)
HYDROSEP-105-F/U	Flange	2	46.23 (10.5)	41.88 (19)	2.64 (10)
HYDROSEP-106-F/U		2-1/2	77 (17.5)	55.11 (25)	4.49 (17)
HYDROSEP-107-F/U		3	110 (25)	79.36 (36)	9.51 (36)
HYDROSEP-108-F/U		4	184.92 (42)	105.8 (48)	17.43 (66)
HYDROSEP-109-F/U		5	286.18 (65)	160.9 (73)	27.73 (105)
HYDROSEP-110-F/U		6	418.27 (95)	213.84 (97)	28.79 (109)

Table 2. Replacement Parts.

Model Number	Description
HS-VENTFLANGED/U	Replacement vent for flanged hydraulic separator.
HS-VENTUNION/U	Replacement vent for union hydraulic separator.



OPERATING SPECIFICATIONS (UNION VERSION)

Temperature Range: 32-230 °F (0-110 °C)

Max. Working Pressure: 145 psi. (10 bar)

Max. Pressure of Air Vent Operation: 102 psi. (7 bar)

Fluids Used: water, glycol-based solution (max. 50 % glycol concentration)

Separator Connections: See Table 4.

Air Vent Valve Connection: 1/2 in. ISO228

Drain Tap Connections: 3/4 in. GHT and threaded cap.

Additional Frontal Connections: 1/2 in. ISO228

Separator Body: FE360 varnished steel

Automatic Air Vent Valve:

Body and cap: ASTM B124 UNS C37700 (CW617N EN 12165) brass

O-Ring: EPDM

Shutter Spring: Inox

Internal Float: PP-H

Connection Fitting Adapters:

Body: ASTM B124 UNS C37700 (CW617N EN 12165) brass

Gaskets: PTFE

Plug:

Body: ASTM UNS C38500 (CW614N EN 12164) brass

Gasket: EPDM

Drain tap: ASTM B124 UNS C37700 (CW617N EN 12165) brass

Insulation:

Shell: open cell PE foam with embossed aluminium lining

Thickness: 0.78 in. (20 mm)

Density: 0.001 lb/in³ (30 kg/m³)

Thermal conductivity: 0.038 W/m K

Fire reaction (DIN 4102): Class B2

Magnet: AlNiCo (AlNiCo magnet provides higher operating temperature and does not corrode.)

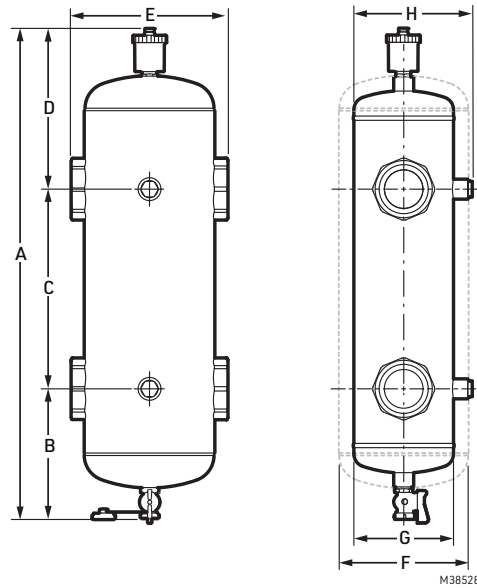


Fig. 1. Dimensions (union models). See Table 3.

Table 3. Dimensions for Union Hydraulic Separator (in inches). See Fig. 1.

Model Number	Size in inches	A	B	C	D	E	F	G	H
HYDROSEP-102-U/U	1	21.5	5.6	8.7	7.3	5.8	4.6	3.0	4.0
HYDROSEP-103-U/U	1-1/4	23.3	6	9.4	7.8	6.5	5.1	3.5	4.5
HYDROSEP-104-U/U	1-1/2	25.3	6.6	10.2	8.4	7.7	6.1	4.5	5.5
HYDROSEP-105-U/U	2	27	7.1	11	8.9	8.7	7.1	5.5	6.5

Table 4. Required Adapters (Union Versions).

Model Number*	Description
HS-NPT-102/U	1 in. Union NPT Threaded Adapter, 2 NPT Fittings
HS-NPT-103/U	1-1/4 in. Union NPT Threaded Adapter, 2 NPT Fittings
HS-NPT-104/U	1-1/2 in. Union NPT Threaded Adapter, 2 NPT Fittings
HS-NPT-105/U	2 in. Union NPT Threaded Adapter, 2 NPT Fittings
HS-PRESS-102/U	1 in. Union Press Adapter, 2 Press Fittings**
HS-PRESS-103/U	1-1/4 in. Union Press Adapter, 2 Press Fittings
HS-PRESS-104/U	1-1/2 in. Union Press Adapter, 2 Press Fittings
HS-PRESS-105/U	2 in. Union Press Adapter, 2 Press Fittings
HS-SWEAT-102/U	1 in. Union Sweat Adapter, 2 Sweat Fittings
HS-SWEAT-103/U	1-1/4 in. Union Sweat Adapter, 2 Sweat Fittings
HS-SWEAT-104/U	1-1/2 in. Union Sweat Adapter, 2 Sweat Fittings
HS-SWEAT-105/U	2 in. Union Sweat Adapter, 2 Sweat Fittings

* Each vessel requires 4 union fittings.

** When 1 inch HS-PRESS-102/U press adapters are required, a HYDROSEP-103-U/U 1-1/4 inch vessel must be used to accommodate unions.

OPERATING SPECIFICATIONS (FLANGED VERSION)

Temperature Range: 32-266 °F (0-130 °C)

Max. Working Pressure: 145 psi. (10 bar)

Max. Pressure of Air Vent Operation: 72 psi. (5 bar)

Fluids Used: Water, glycol-based solution (max. 50 % glycol concentration)

Separator Connections: ASME 150 lb. flange

Air Vent Valve Connection: 1/2 in. ISO228

Discharge Valve Connection: 1 in.

Separator Body: FE360 varnished steel

Automatic Air Vent Valve:

Body and Cap: ASTM B124 UNS C37700 (CW617N EN 12165) brass

O-Ring: EPDM

Shutter Spring: Inox

Internal Float: TPX

Drain Ball Valve: ASTM B124 UNS C37700 (CW617N EN 12165) brass

Insulation:

Shell: Polypropylene

Thickness: 0.78 in. (20 mm)

Density: 0.001 lb/in³ (30 kg/m³)

Thermal conductivity: 0.039 W/m K

Fire Reaction (DIN 4102): Class B2

Magnet: AlNiCo (AlNiCo magnet provides higher operating temperature and does not corrode.)

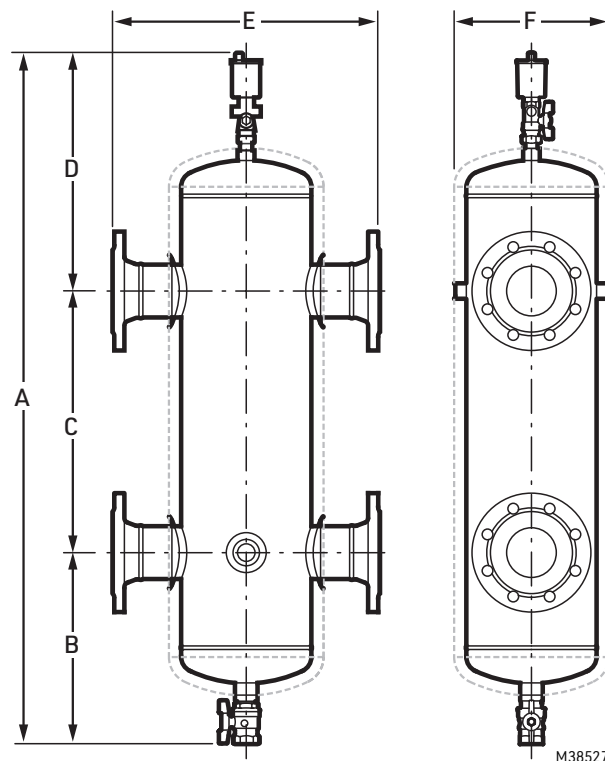


Fig. 2. Dimensions (flanged models). See Table 5.

Table 5. Dimensions for Flanged Hydraulic Separator (in inches). See Fig. 2.

Model Number	Size in inches	A	B	C	D	E	F
HYDROSEP-105-F/U	2	36.5	12	11	13.5	13	7.1
HYDROSEP-106-F/U	2-1/2	41.2	12.8	14.2	14.2	14.1	8.3
HYDROSEP-107-F/U	3	47.5	14.4	17.3	15.8	17.7	10.2
HYDROSEP-108-F/U	4	52	15.4	19.7	17	19.7	12.4
HYDROSEP-109-F/U	5	58.3	15.7	23.6	19	21.7	14.4
HYDROSEP-110-F/U	6	66.1	17.7	27.6	20.9	23.6	15.6

OPERATION

The HydroSEP hydraulic separator enables to decouple the primary circulator flow from the secondary. When the flow running through a primary or secondary circuit exceeds the one circulating in the other, the separator bypasses part of the flow. This results in a production circuit featuring a constant flow and a distribution circuit with a variable flow.

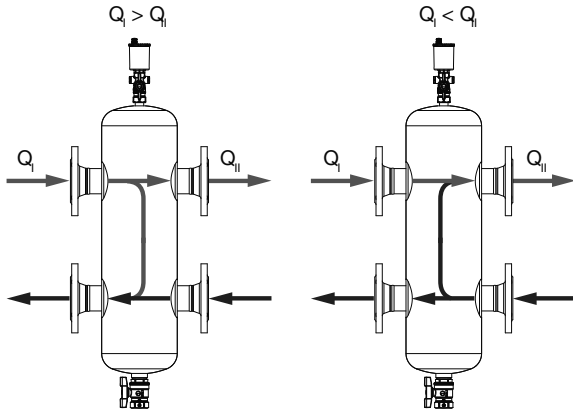


Fig. 3.

The flow enters the separator and slows down to separate the solid debris from the fluid. The solid impurities are separated when they collide with the metal mesh (A) and ferrous particles are retained by the attraction force generated by the magnet (B).

We recommend to periodically open the drain tap (C) on the lower end of the separator to discharge possible debris collected on the bottom of the separator.

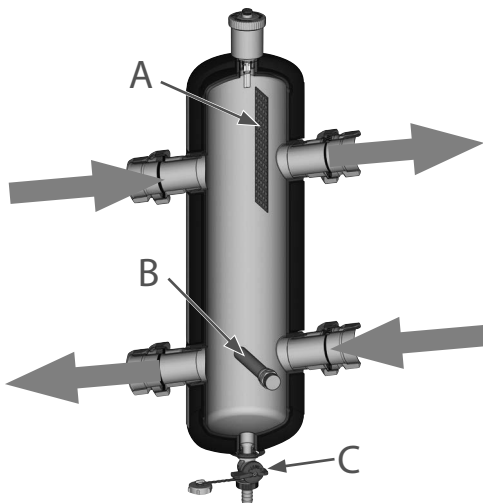


Fig. 4.

INSTALLATION

The HydroSEP hydraulic separator can be installed in heating/cooling systems where there is a main circulator and two or more secondary circulators.

The HydroSEP hydraulic separator can be installed on horizontal pipes. The product cannot be installed in horizontal position and upside down (air vent valve downwards).

When removing the magnet, ensure a space of at least 6 inches is left in the frontal part of the hydraulic separator. For periodic cleaning, see the section on maintenance.

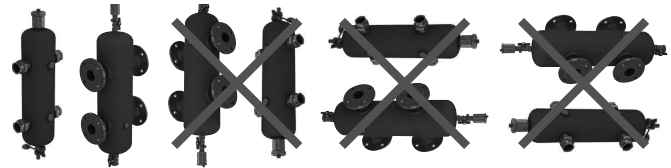


Fig. 5.



WARNING

The symbol on the magnet cap indicates the presence of magnetic fields, which can cause damage to electronic devices (including pacemakers) that are placed in close proximity.

Union models

1. Install the air vent valve on the upper spacer of the separator body.
2. Install the drain tap with 3/4 inch GHT connection and cap on the lower spacer of the separator body.
3. Install the self-sealing plug on the top front connection of the separator body.
4. Install the self-sealing magnet kit on the lower front connection of the separator body.
5. Install the fitting adapters on the side spacer of the separator body.
6. Install the insulation shell with adhesive seal on the separator body, making sure to leave the aluminum tabs on the outside.
7. Fold the adhesive aluminum tabs to seal the insulation.
8. Once all components are installed, the separator must be assembled in vertical position, with the air vent valve placed on the upper spacer, and connected.

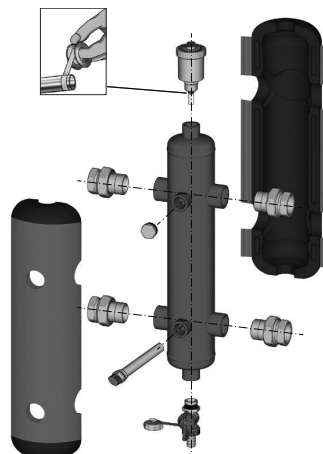


Fig. 6.

Flanged models

The separator is already equipped with an insulation shell.

1. Install the drain valve on the lower part of the separator body.
2. Fit the air vent valve with the interception valve on the upper spacer of the separator body.
3. Install the self-sealing magnet kit on the front connection located in the lower portion of the separator body.
4. Reinstall the insulation shell with adhesive seal on the separator body.
5. Once all components are installed, the separator must be fitted in vertical position, with the air vent automatic valve placed on the upper spacer, and connected according to the flows shown on the label.

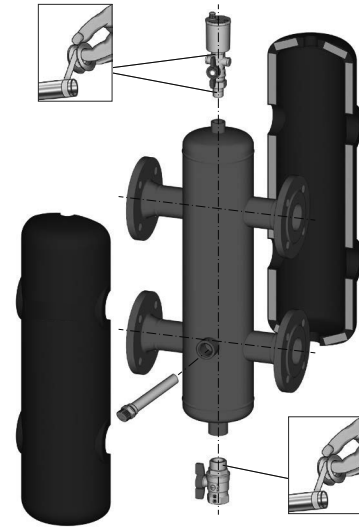


Fig. 7.

MAINTENANCE

To clean the hydraulic separator without switching off the system, proceed as indicated below. However, for more effective cleaning, it is advisable to carry out these steps when the pumps are turned off, forcing the flow to the dirt separator to be shut off. This process only takes a few minutes. That way, all magnetic debris will stay attached to the magnet upon removal.

NOTE: The magnet kit is composed of a magnet-holder housing with gaskets for installation on hydraulic separator and a magnet-holder cap for insertion in the relative housing. To remove the magnet from the housing, unscrew in a **clockwise motion**.

1. During system function, the dirt is deposited on the surface of the housing containing the magnet.

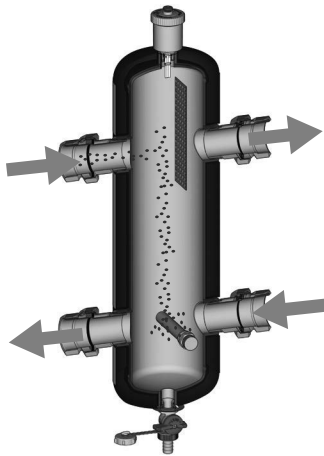


Fig. 8.

2. Remove the magnet from its container housing, unscrewing in a clockwise motion. The dirt that has been accumulated on the surface of the housing will be deposited on the lower part of the hydraulic separator.

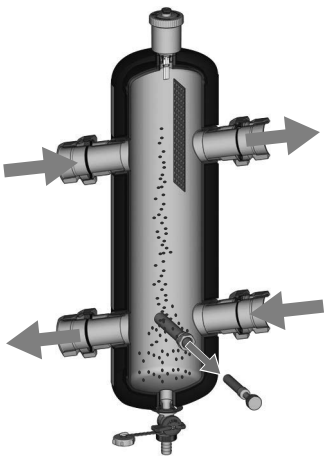


Fig. 9.

3. After waiting a few minutes, proceed with opening the drain cock, turning counterclockwise.

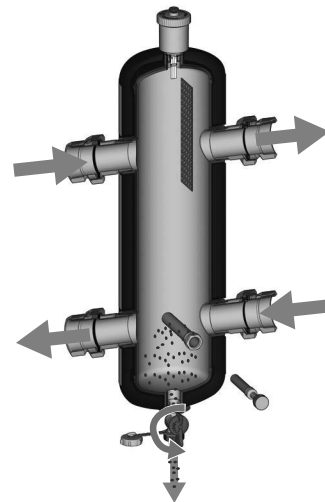


Fig. 10.

4. Once the impurities have been removed, close the drain cock again and reinsert the magnet in its housing, screwing in a counterclockwise motion. The hydraulic separator will resume normal function.

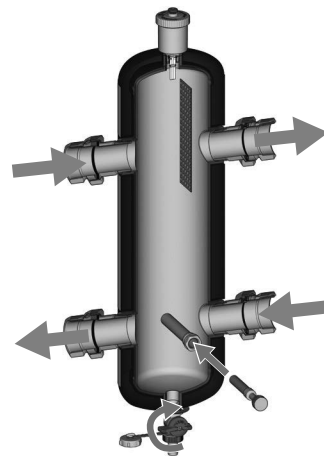


Fig. 11.

MAGNETIC HYDRAULIC SEPARATORS



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