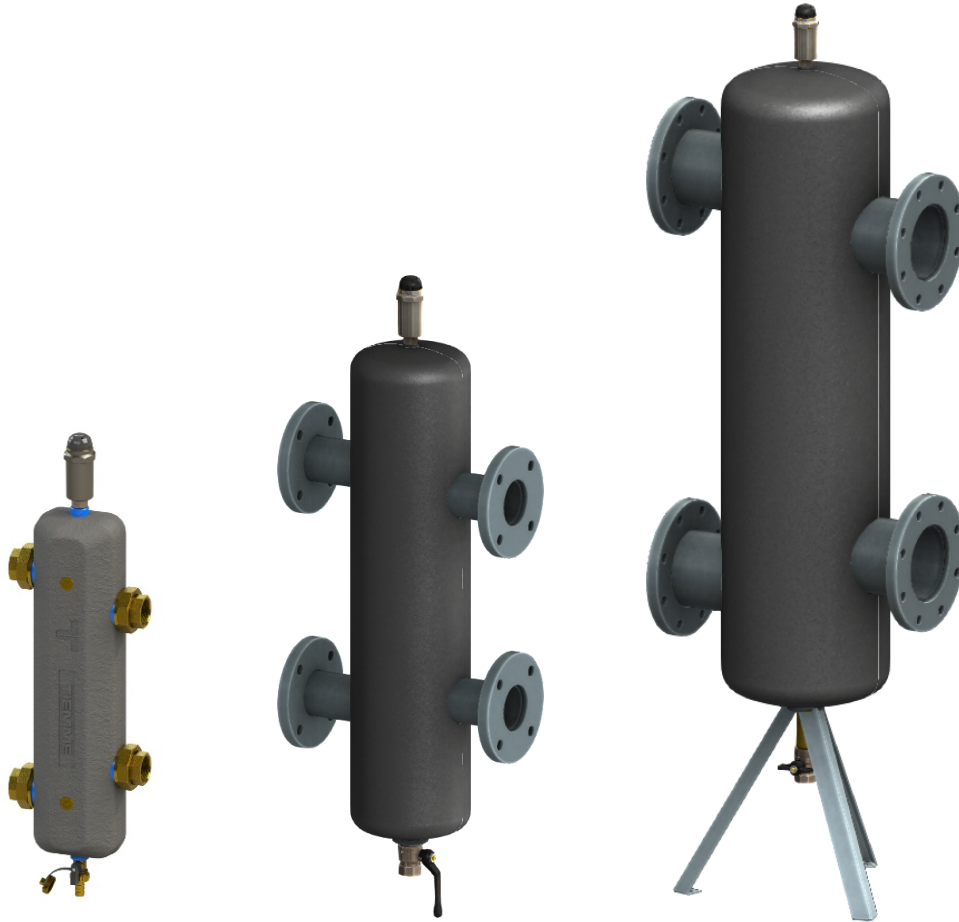


3165 / 3165ISOL / 3144 / 3144ISOL / 3167ISOL STEEL HYDRAULIC SEPARATORS



DESCRIPTION

The hydraulic separator is used to make the primary circuit (heat generator) hydraulically independent from the secondary circuit (utilities), thus compensating for any differences in flow rate or pressure drops required, as well as eliminating any influence between circulators installed in series.

It is used in heating and cooling systems where there is at least one main circulator and one or more secondary distribution circulators.


In addition to its primary function, the Tiemme hydraulic separator also guarantees some other important functions:


- **Acts as a system deaerator** thanks to the application of an automatic air vent valve at the highest point of the separator;
- **Dirt removal function** due to the large section of the device causing the fluid to slow down and any impurities and sludge to deposit on the bottom, which can then be easily eliminated thanks to the drain cock;
- **Magnetic function** that allows ferrous impurities to be captured thanks to the powerful magnet inserted inside, which can be easily removed and cleaned (*art. 3144 - 3144ISOL*).



ADVANTAGES / STRENGTHS



- Three functions performed by a single product: separator / deaerator / dirt separator.
- Equipped with automatic air vent valve with high discharge capacities.
- Magnetic version available (*art. 3144 - 3144ISOL*).
- Insulated version available (*art. 3165ISOL - 3144ISOL - 3167ISOL*).

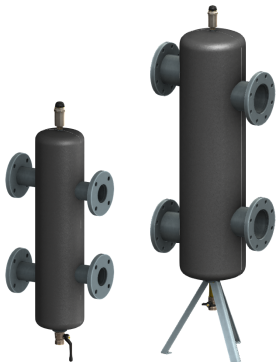
PRODUCT RANGE

	Art.	Description	Code	Fittings	Max flow rate * (m ³ /h)
	3165	Threaded hydraulic separator.	316 0006	G 1" F (ISO 228)	2.5
			316 0003	G 1" 1/4 F (ISO 228)	4
			316 0004	G 1" 1/2 F (ISO 228)	6
			316 0005	G 2" F (ISO 228)	9

	Art.	Description	Code	Fittings	Max flow rate * (m ³ /h)
	3165ISOL	Threaded, insulated hydraulic separator.	316 0001	G 1" F (ISO 228)	2.5
			316 0002	G 1" 1/4 F (ISO 228)	4
			316 0008	G 1" 1/2 F (ISO 228)	6
			316 0007	G 2" F (ISO 228)	9

	Art.	Description	Code	Fittings	Max flow rate * (m ³ /h)
	3144	Threaded, magnetic hydraulic separator. 	314 0001	G 1" F (ISO 228)	2.5
			314 0002	G 1" 1/4 F (ISO 228)	4
			314 0003	G 1" 1/2 F (ISO 228)	6
			314 0004	G 2" F (ISO 228)	9

	Art.	Description	Code	Fittings	Max flow rate * (m ³ /h)
	3144ISOL	Threaded, magnetic, insulated hydraulic separator. 	314 0005	G 1" F (ISO 228)	2.5
			314 0006	G 1" 1/4 F (ISO 228)	4 ←
			314 0007	G 1" 1/2 F (ISO 228)	6
			314 0008	G 2" F (ISO 228)	9

	Art.	Description	Code	Fittings	Max flow rate * (m ³ /h)	
	3167ISOL	Flanged, insulated hydraulic separator.	316 0106	DN50	9	
			316 0107	DN65	20	
			316 0108	DN80	25	
			316 0109	DN100	40	
			Flanged, insulated hydraulic separator, with base for floor support.	316 0110	DN125	65
				316 0111	DN150	95

* Recommended maximum flow rate, calculated at the fittings of the hydraulic separator.

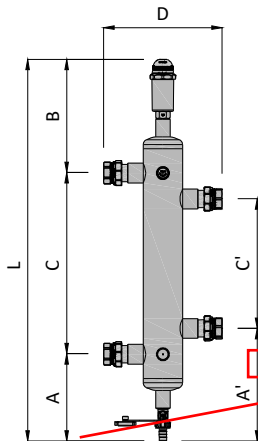
CONSTRUCTION SPECIFICATIONS

- Separator body: Fe360 steel painted with epoxy powders
- Drain valve body: CW617N Brass
- Air vent valve body: Nickel-plated CW617N brass
- Air vent valve float: PP
- 3 connection fitting pieces: CW617N Brass (art. 3165 – 3165ISOL – 3144 – 3144ISOL)
- Hydraulic seals: NBR and EPDM
- Insulation: PE-X (art.3165ISOL - 3144ISOL) / PPE (art. 3167ISOL)
- Threaded connections: ISO 228 - flat seal unions (art. 3165 – 3165ISOL – 3144 – 3144ISOL)
- Flanged connections: PN 16 EN 1092-1 (art. 3167ISOL)
- Front fitting: 1/2" F ISO 228 (art. 3165 – 3165ISOL – 3144 – 3144ISOL)

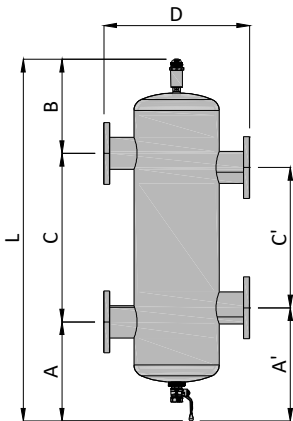
TECHNICAL SPECIFICATIONS

- Maximum working temperature: +110 °C (art. 3165 - 3144) / +100 °C (art. 3165ISOL - 3144ISOL - 3167ISOL)
- Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase)
- Maximum working pressure: 10 bar
- Maximum air vent operating pressure: 4 bar
- Magnet power: 12,000 Gauss (art. 3144 - 3144ISOL)
- Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%)

DIMENSIONAL SPECIFICATIONS



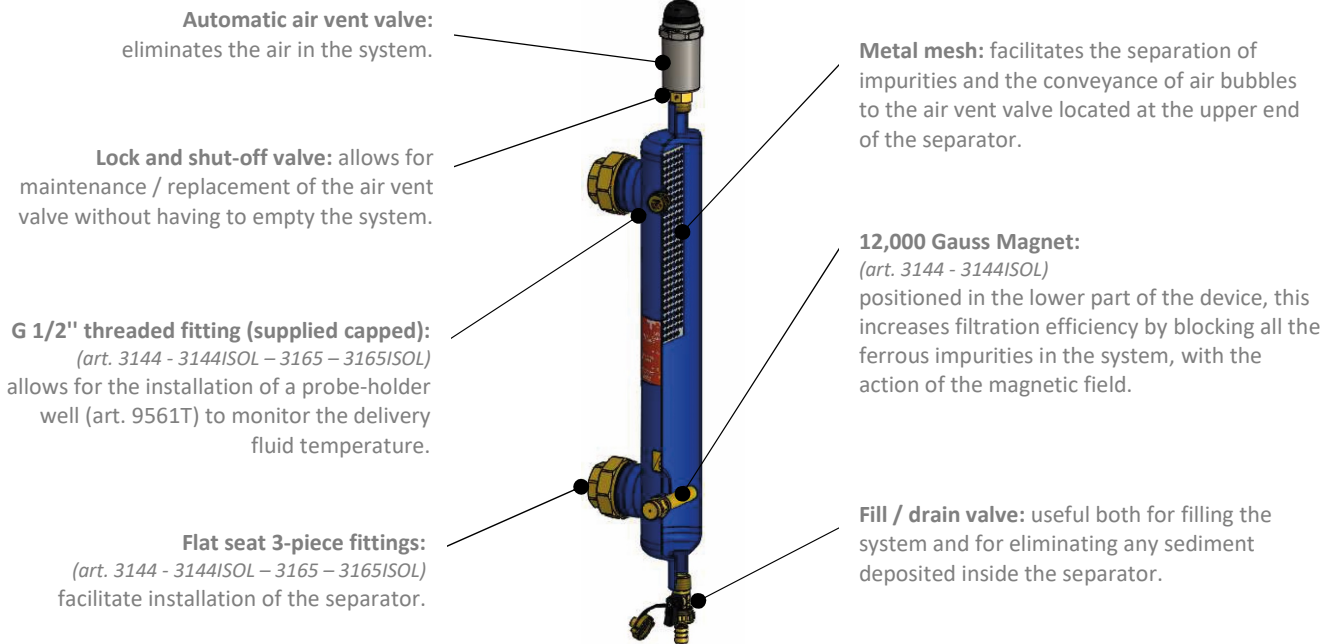
Art.	Code	Size	A (mm)	A' (mm)	B (mm)	C (mm)	C' (mm)	D (mm)	L (mm)	Volume (litres)
3165	316 0006	G 1" F	165	215	220	350	250	229	735	1,9
	316 0003	G 1"1/4 F	165	215	220	350	250	269	735	2,65
	316 0004	G 1"1/2 F	190	240	245	500	400	320	935	6
	316 0005	G 2" F	190	240	245	650	550	338	1085	11,5
3165ISOL	316 0001	G 1" F	165	215	220	350	250	229	735	1,9
	316 0002	G 1"1/4 F	165	215	220	350	250	269	735	2,65
	316 0008	G 1"1/2 F	190	240	245	500	400	320	935	6
	316 0007	G 2" F	190	240	245	650	550	338	1085	11,5
3144	314 0001	G 1" F	165	215	220	350	250	229	735	1,9
	314 0002	G 1"1/4 F	165	215	220	350	250	269	735	2,65
	314 0003	G 1"1/2 F	190	240	245	500	400	320	935	6
	314 0004	G 2" F	190	240	245	650	550	338	1085	11,5
3144ISOL	314 0005	G 1" F	165	215	220	350	250	229	735	1,9
	314 0006	G 1"1/4 F	165	215	220	350	250	269	735	2,65
	314 0007	G 1"1/2 F	190	240	245	500	400	320	935	6
	314 0008	G 2" F	190	240	245	650	550	338	1085	11,5



Art.	Code	Size	A (mm)	A' (mm)	B (mm)	C (mm)	C' (mm)	D (mm)	L (mm)	Volume (litres)
3167ISOL	316 0106	DN50	340	365	320	320	270	350	980	11
	316 0107	DN65	350	375	335	400	350	400	1085	18
	316 0108	DN80	350	400	335	500	400	500	1185	34
	316 0109	DN100	350	400	335	600	500	520	1285	60
	316 0110	DN125	575 *	650 *	335	750	600	520	1660	68
	316 0111	DN150	580 *	655 *	340	1000	850	600	1920	140

* measure inclusive of base for floor support.

DESCRIPTION OF PARTS



OPERATION

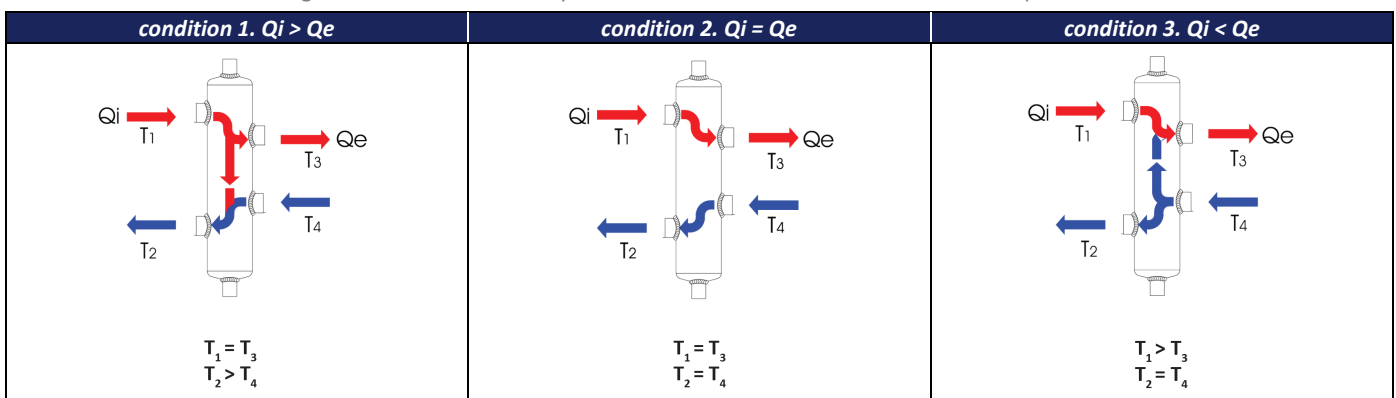
As briefly explained earlier, the hydraulic separator is used to make the primary circuit (heat generator) hydraulically independent from the secondary circuit (utilities), thus compensating for any differences in flow rate or pressure drops required, as well as eliminating any influence between circulators installed in series.

The hydraulic separator consists of a container usually placed in a vertical position, characterised by **high sections for internal passage**, so it has **only slight pressure drops**. It has 4 lateral fittings, two fittings in the upper part and two in the lower, which allow for connection of the primary and secondary circuits.

If the flow rates in the primary and secondary circuit are identical (condition 2), the hydraulic separator does not perform any function, while if one of the two currents has a flow rate higher than the other (conditions 1 - 3), thanks to the hydraulic separator a part of this flow is sent to the other current, to balance the two flows.

This avoids any interference between the pumps of the various circuits, thus improving fluid circulation and guaranteeing operation, under the design conditions, for each individual circuit connected.

Below is an illustration showing the three conditions of hydraulic balance that can be found inside the separator:



Where:

Q_i = primary circuit flow rate

Q_e = secondary circuit flow rate

T_1 = Primary circuit delivery temperature

T_2 = Primary circuit return temperature

T_3 = Secondary circuit delivery temperature

T_4 = Secondary circuit return temperature

During the design phase, it is good practice to consider the possible temperature variations that the primary and secondary circuits may undergo due to their mixing inside the separator.

CHOOSING THE HYDRAULIC SEPARATOR

Tiemme hydraulic separators are pre-sized to avoid the common problems linked to ΔP values that are too high, caused by the interference of two or more circulators, such as:

- circulators that fail to meet the scope of the project;
- circulator failures;
- system areas heated even when the circulator is off;

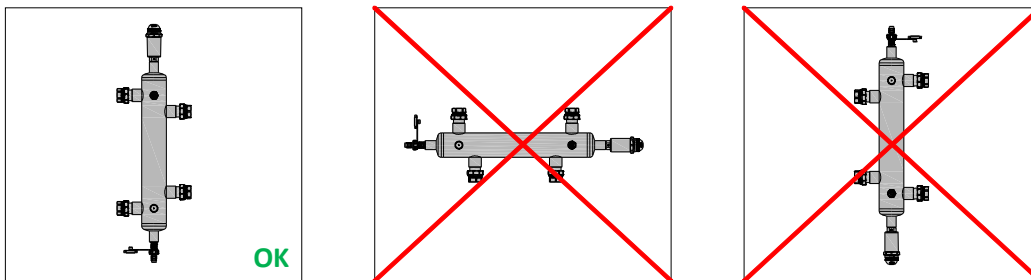
The choice of the most suitable separator to be included in the system is to be made according to the maximum flow rate that can go through the separator (flow rate at the inlets). The maximum flow rate to be taken into consideration must be the greater value of the sum of the flow rates of the primary circuit and the sum of the flow rates of the secondary circuit.

The table on the right shows the maximum flow rate values recommended for the separator, to be taken into consideration during the design phase.

Measurement	Maximum recommended flow rate (m ³ /h)
1"	2.5
1"1/4	4
1"1/2	6
2"	9
DN65	9
DN65	20
DN80	25
DN100	40
DN125	65
DN150	95

INSTALLATION

- Check that the boiler is turned off and the water inside the system is at room temperature. Before carrying out any inspection, cleaning or maintenance operation, turn off the generator, close the shut-off valves and wait for the fluid to cool down.
- Assemble the various parts of the separator, which are supplied loose:
 - mount the fittings on the stub pipes on the separator body (art. 3165 – 3165ISOL – 3144 – 3144ISOL).
 - mount the automatic air vent valve on the upper stub pipe of the separator body.
 - mount the drain valve on the lower stub pipe of the separator body.
- Remove any possible dirt due to the construction of the system.
- Install the hydraulic separator between the primary and secondary circuits, in a vertical position with the air vent valve facing upwards.

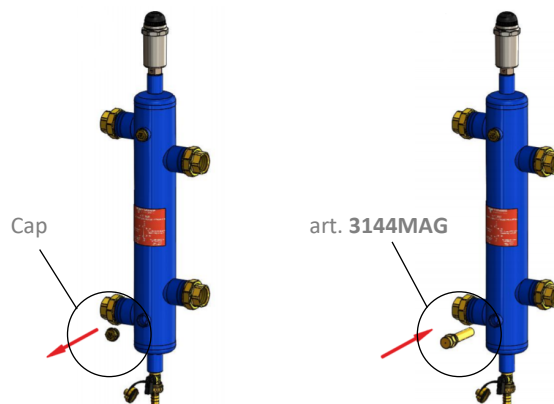


- Provide ball shut-off valves upstream and downstream of the hydraulic separator.

INSTALLATION OF THE MAGNET GROUP ART. 3144MAG:

It is possible to convert the hydraulic separator art. 3165 and 3165ISOL (NON-MAGNETIC) to the magnetic version at any time. Just two simple operations are necessary:

- 1) Unscrew and remove the cap from the separator body.
- 2) Insert and screw the well kit with magnet (optional accessory art. 3144MAG) onto the separator body.



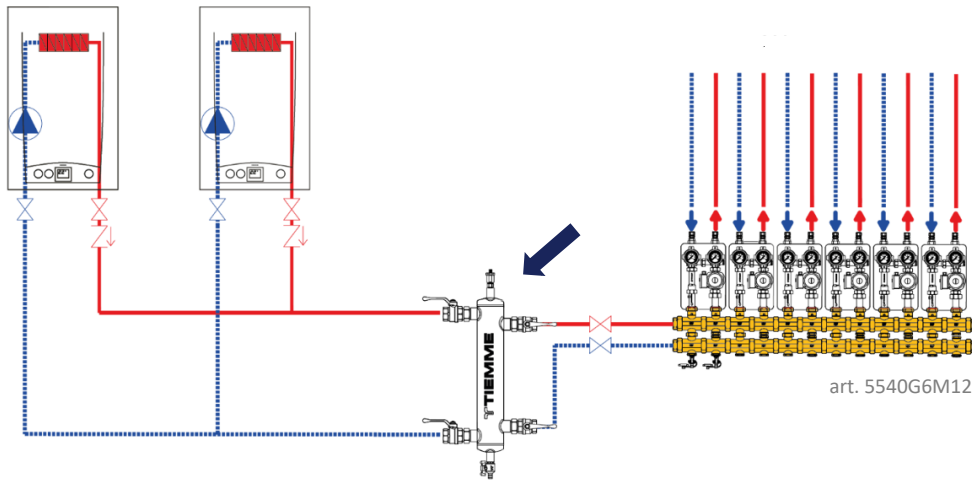
WATER TEMPERATURES ABOVE 50 °C CAN CAUSE SERIOUS BURNS.

DURING INSTALLATION AND MAINTENANCE OF THE HYDRAULIC SEPARATOR, ADOPT THE NECESSARY PRECAUTIONS TO ENSURE THAT SUCH TEMPERATURES DO NOT POSE A THREAT TO PEOPLE.

TIEMME RACCORDERIE S.p.A. will not be held responsible for any failures and/or accidents resulting from failure to comply with these instructions and/or from improper use of the system. The information given does not exempt the user from scrupulously following the regulations and good technical standards that are currently in force.

EXAMPLE OF INSTALLATION

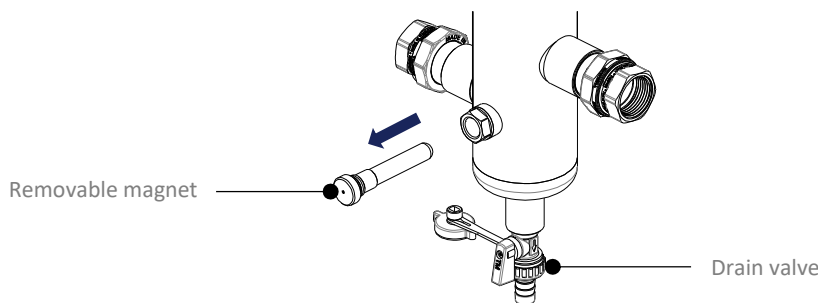
Multi-family system with cascade heat generators. Boiler room manifold in brass art. 5540G6M12 and hydraulic separator in steel.



MAINTENANCE

We recommend periodically cleaning the hydraulic separator:

- Shut-off the ball valves located upstream and downstream of the hydraulic separator.
- Inspect and clean the magnet unit (*art. 3144 - 3144ISOL*): unscrew the magnet and remove it from the well, to allow any ferrous impurities attracted by the magnetic field to detach and settle on the bottom of the separator.
- Drain off the water contained in the separator by opening the lower drain valve. Place an appropriately sized container under the drain valve. Opening the valve will allow the water to drain from the system, along with any impurities that have accumulated on the bottom of the hydraulic separator.



If necessary, the automatic air vent valve can be replaced (spare part art. **1896**). The lock and shut-off valve, placed between the separator body and the air vent valve, allows for maintenance / replacement of the valve without having to empty the system.

ACCESSORIES / SPARE PARTS



Art. 3144MAG
Code 316 0105
Well kit with 1/2" magnet.

Accessory for hydraulic separator art. 3165 - 3165ISOL
Spare part for hydraulic separator art. 3144 - 3144ISOL

Please see the product catalogue for further details.



Art. 1896
Code 198 0068
Automatic air vent valve.

Spare part for hydraulic separator (all models)

ITEM SPECIFICATIONS

Art. 3165

Threaded hydraulic separator, complete with automatic air vent valve and drain cock with hose connection.
 Made of: Fe360 steel separator body painted with epoxy powders, CW617N brass drain valve body, nickel-plated CW617N brass air vent valve body, air vent valve float in PP, 3-piece connection fittings in CW617N brass, NBR and EPDM hydraulic seals. ISO 228 threaded connections (flat seal unions), G 1/2" F ISO 228 front fitting for probe holder, if necessary. Maximum working temperature: +110 °C. Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase). Maximum working pressure: 10 bar Maximum air vent working pressure: 4 bar. Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%).
 Available sizes: 1" (flow rate 2.5 m³/h) - 1"1/4 (flow rate 4 m³/h) - 1"1/2 (flow rate 6 m³/h) - 2" (flow rate 9 m³/h).

Art. 3165ISOL

Threaded, insulated hydraulic separator, complete with automatic air vent valve and drain cock with hose connection.
 Made of: Fe360 steel separator body painted with epoxy powders, CW617N brass drain valve body, nickel-plated CW617N brass air vent valve body, air vent valve float in PP, 3-piece connection fittings in CW617N brass, NBR and EPDM hydraulic seals, insulation in PE-X. ISO 228 threaded connections (flat seal unions), G 1/2" F ISO 228 front fitting for probe holder, if necessary. Maximum working temperature: +100 °C. Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase). Maximum working pressure: 10 bar Maximum air vent working pressure: 4 bar. Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%).
 Available sizes: 1" (flow rate 2.5 m³/h) - 1"1/4 (flow rate 4 m³/h) - 1"1/2 (flow rate 6 m³/h) - 2" (flow rate 9 m³/h).

Art. 3144

Threaded, magnetic hydraulic separator, complete with automatic air vent valve and drain cock with hose connection.
 Made of: Fe360 steel separator body painted with epoxy powders, CW617N brass drain valve body, nickel-plated CW617N brass air vent valve body, air vent valve float in PP, 3-piece connection fittings in CW617N brass, NBR and EPDM hydraulic seals. ISO 228 threaded connections (flat seal unions), G 1/2" F ISO 228 front fitting for probe holder, if necessary. Maximum working temperature: +110 °C. Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase). Maximum working pressure: 10 bar Maximum air vent working pressure: 4 bar. Magnet power: 12,000 Gauss. Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%).
 Available sizes: 1" (flow rate 2.5 m³/h) - 1"1/4 (flow rate 4 m³/h) - 1"1/2 (flow rate 6 m³/h) - 2" (flow rate 9 m³/h).

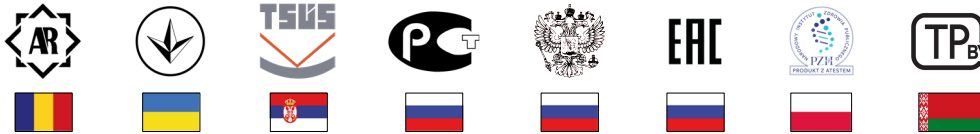
Art. 3144ISOL

Threaded, insulated, magnetic hydraulic separator, complete with automatic air vent valve and drain cock with hose connection.
 Made of: Fe360 steel separator body painted with epoxy powders, CW617N brass drain valve body, nickel-plated CW617N brass air vent valve body, air vent valve float in PP, 3-piece connection fittings in CW617N brass, NBR and EPDM hydraulic seals, insulation in PE-X. ISO 228 threaded connections (flat seal unions), G 1/2" F ISO 228 front fitting for probe holder, if necessary. Maximum working temperature: +100 °C. Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase). Maximum working pressure: 10 bar Maximum air vent working pressure: 4 bar. Magnet power: 12,000 Gauss. Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%).
 Available sizes: 1" (flow rate 2.5 m³/h) - 1"1/4 (flow rate 4 m³/h) - 1"1/2 (flow rate 6 m³/h) - 2" (flow rate 9 m³/h).

Art. 3167ISOL

Flanged, insulated hydraulic separator, complete with automatic air vent valve, drain cock with hose connection and base for floor support (support included only in sizes DN125 - DN150).
 Made of: Fe360 steel separator body painted with epoxy powders, CW617N brass drain valve body, nickel-plated CW617N brass air vent valve body, air vent valve float in PP, NBR and EPDM hydraulic seals, insulation in PPE, PN 16 EN 1092-1 flanged connections. Maximum working temperature: +100 °C. Minimum working temperature: 0 °C (provided the fluid remains in the liquid phase). Maximum working pressure: 10 bar Maximum air vent working pressure: 4 bar. Fluid compatibility: Water and glycol solutions (maximum percentage of glycol 30%).
 Available sizes: DN50 (flow rate 9 m³/h) - DN65 (flow rate 20 m³/h) - DN80 (flow rate 25 m³/h) - DN100 (flow rate 40 m³/h) - DN125 (flow rate 65 m³/h) - DN150 (flow rate 95 m³/h).

CERTIFICATIONS



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