Hydraulic separator

The function of the hydraulic circuit breaker, as suggested by its name (see the previous example) is to separate the heating circuit from the DHW circuit, making the functioning independent one from each other. The problems that can occur if this component is not used are the followings:

• pumps that can not manage to provide the requested flow (installation with different pumps, small and big) . This is the case of the small pumps that have to spend to much energies to face the opposite action of the bigger ones (induced opposite ΔP)
• pumps that burns (interferences between circuits can push the pumps to work out of the optimal functioning range)
• warm radiators also when the pump stops (due to eddy currents developed by other active pumps). These phenomena are caused by natural circulation or circulation in the by-passes when the valves are switched off
• functioning of the system for the most of time in different conditions from those established during the project, that means in the best conditions

Usually ΔP is supposed to be an index to evaluate the interference between the circuits.
It is, anyway, possible to fix the minimum ΔP acceptable value, that means minimum values in which the interference between circuits does not causes clear functioning anomalies, as these values depends from too many variables.
The following rule is acceptable :

$\Delta P<0,4\div0,5$ mca

Interposing the hydraulic circuit breaker between the heating circuit and the circuit that includes collectors and secondary parts of the system the ΔP between return and flow becomes equal to the resistance to the flow of the hydraulic circuit breaker , which is unimportant.
This value is constant and independent from the number of secondary pumps that function simultaneously in a specific moment.

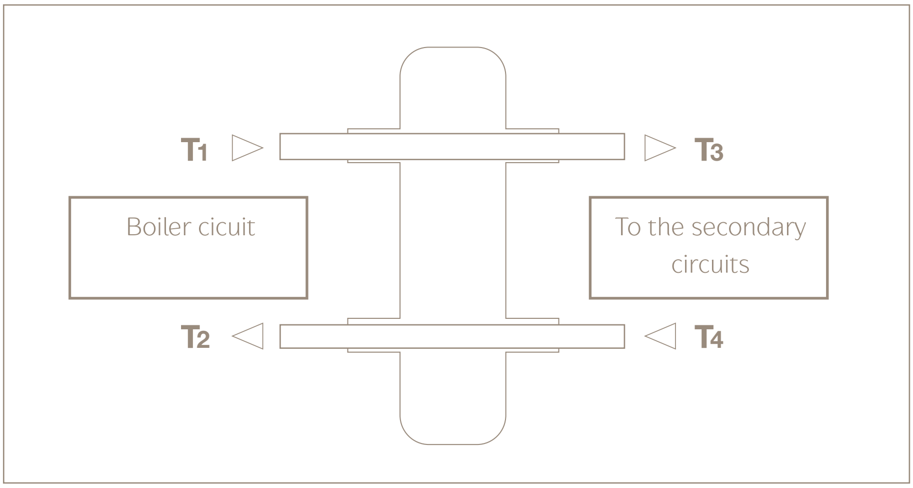
Changing in the temperature due to the hydraulic circuit breaker

This phenomenon is caused by the important mixing activities of the outputs between flow and return. It is clear that by adopting this installation solution, in some cases, radiators will have to be dimensioned bearing in mind the differences in temperature with the solution without a hydraulic circuit breaker.
The maximum flow temperature to the radiators will therefore be T3.

a) Flow rate of the heating circuit same as the flow rate of the internal boiler circuit.

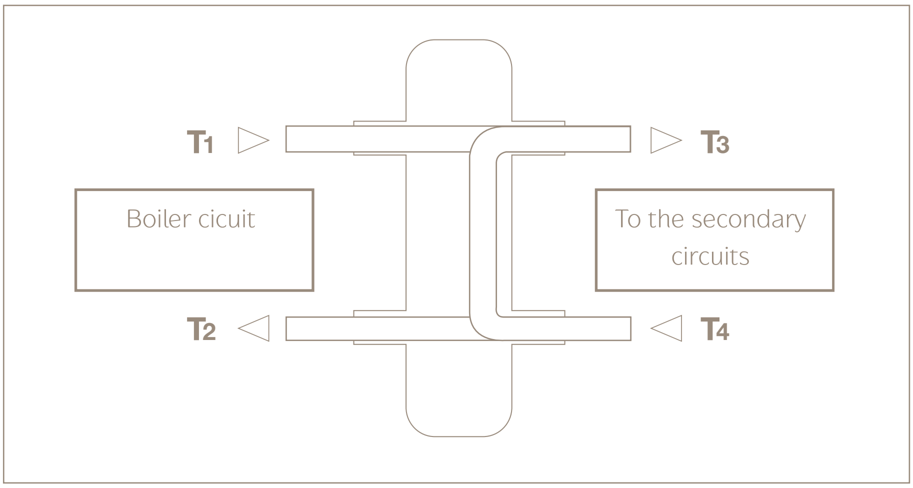
That is what happens in the traditional heating systems (where the pumps of the primary circuit are chosen with input that are like the ones of the secondary).
In this case, the use of the separator does not change the values of the temperatures so that the radiators can be dimensioned according to the maximum flow temperature of the fluid produced by the boiler.

Hydraulic separator



In this case the link between the temperatures, as anticipated above is : T1= T3 e T4=T2

b) Flow rate in the heating circuit greater than the flow rate of the internal boiler circuit



In this second case the relationships between the temperatures of the water to the connections of the hydraulic circuit breaker are the followings:

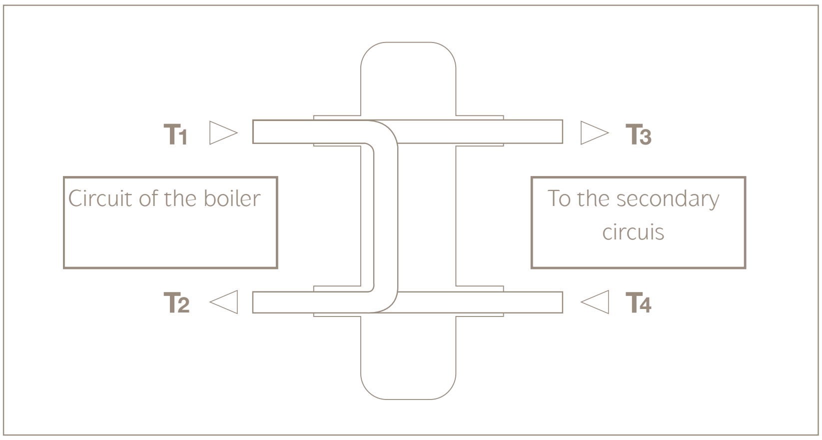
T1 > T3 e T2 = T4 $\Delta T_{boiler}=Q/G_{boiler}$ $\Delta T_{system}=Q/G_{system}$

$T_2=T_1-\Delta T_{boiler}$ $T_3=T_4+\Delta T_{system}=T_2+\Delta T_{system}$

Where Q means the output of the boilers and Gsystem and Gboiler represents the flow rate of the heating circuit and of the boiler. This is what happens in the systems with under station at distance when you prefer to keep the input value of the primary circuit to contain the expenses of the system as well as the operational expenses.

Hydraulic separator

c) Flow rate of the heating circuit lower than the one of the circuit of the boiler



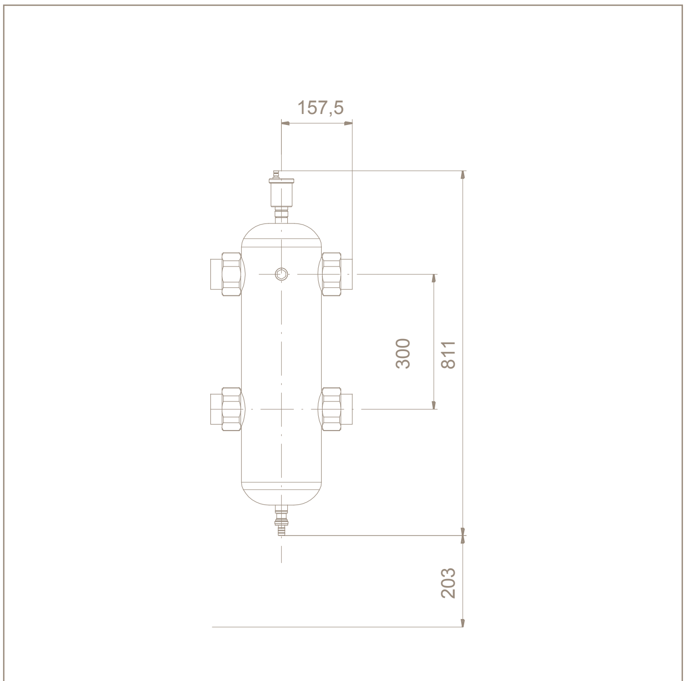
In the third example the relationships are the following:

T1 = T3 e T2 > T4 $\Delta T_{boiler}=Q/G_{boiler}$ $\Delta T_{system}=Q/G_{system}$ $T_2=T_1-\Delta T_{boiler}$

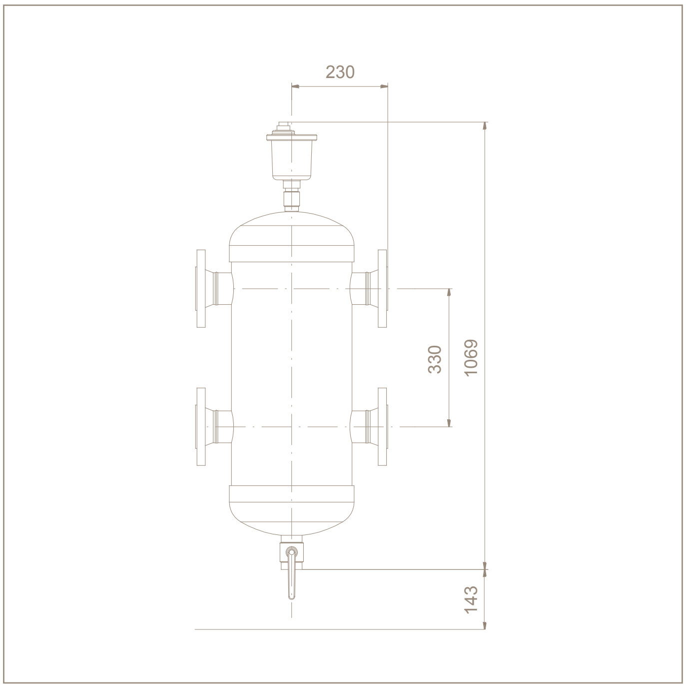
With the same meaning of the symbols. This eventuality may be favourably exploited in system with radiating panels linked with traditional boilers for raising the return temperature in the boiler above the values that involve condensation of fumes.

BAXI hydraulic separators have the following characteristics:

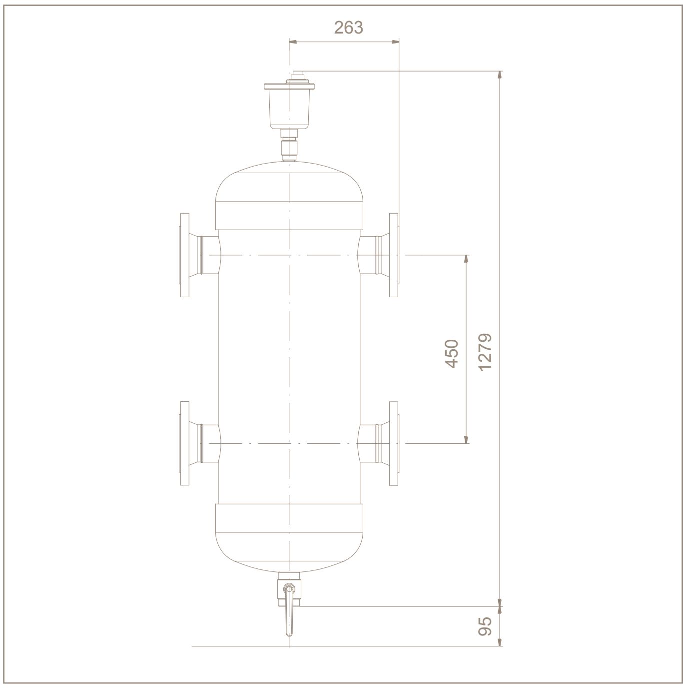
- steel body painted with epoxy powders
- maximum working pressure: 10 bar
- equipped with automatic air vent and discharge valve
- equipped with ½"F inlet/outlet sensor fixing
- insulation in closed cell expanded and rigid polyurethane foam



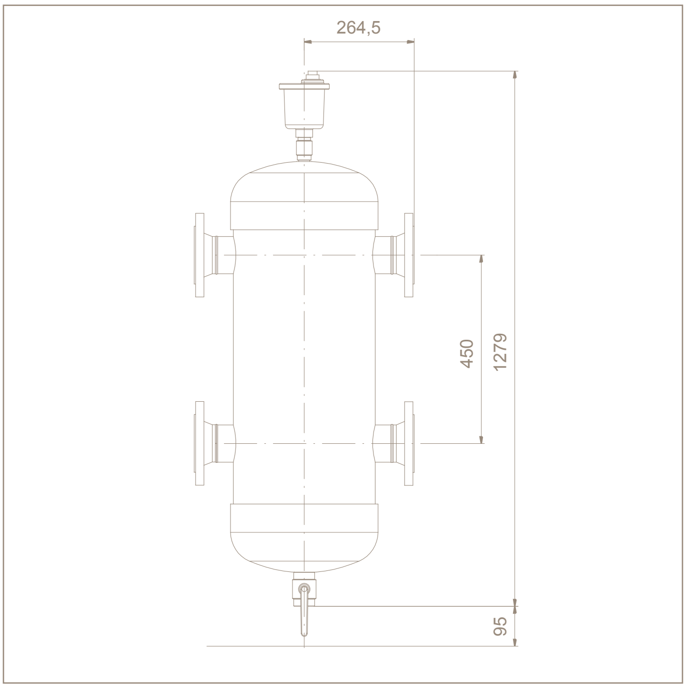
Hydraulic separator 8,5m³/h – 2" threaded joints
Weight: 11,8 kg



Hydraulic separator 18m³/h – flanged joints Ø 65 PN 16
Weight: 39 kg



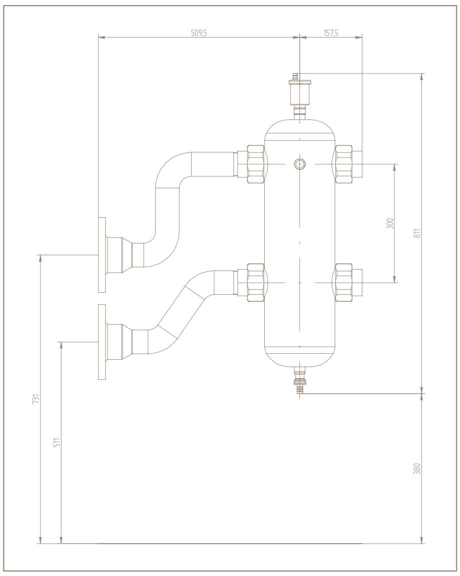
Hydraulic separator 28m^3/h – flanged joints Ø 80 PN 16
Weight: 51 kg



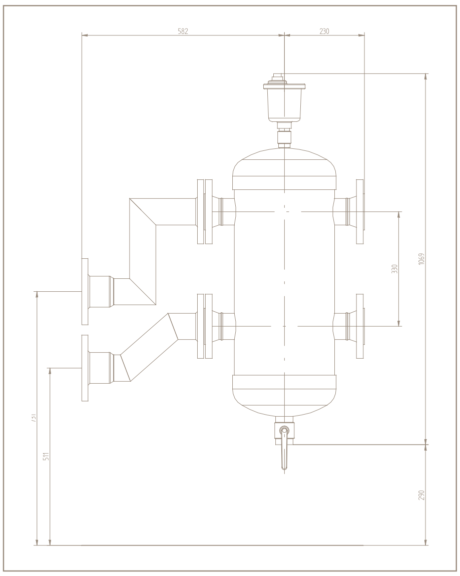
Hydraulic separator 56m^3/h – flanged joints Ø 100 PN 16
Weight: 55 kg

Hydraulic separator kit

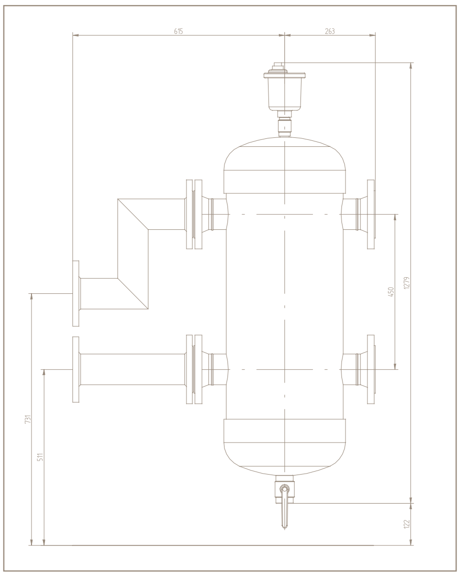
The hydraulic separator kits make possible the connection between the flow/return manifolds of single or cascade installation of Luna Duo-tec MP and the various types of available hydraulic separators (from 8,5-18 and 28 m^3/h)



Connection to hydraulic separator kit
8,5m^3/h – 2" threaded joints



Connection to hydraulic separator kit
18m^3/h – flanged joints Ø 65 PN 16



Connection to hydraulic separator kit
28m^3/h – flanged joints Ø 80 PN 16