HOT CONDENSATE COOLERS
HCC

DESCRIPTION AND OPERATION

The HCC is a cooling device that allows the mixing of hot condensate with a lower temperature condensate, avoiding hammering .
Condensate discharge from higher pressure lines (drip points, for example) are often connected to a low pressure condensate lines with lower temperature. This sudden pressure drop will convert the sensible heat difference between the two fluid conditions into latent heat generating flash steam.
Flash steam has a much bigger volume than condensate and when mixed with the cold condensate it will cool suddenly, imploding and cause hammering (noises and vibrations).
The HCC avoids this phenomenon since it slowly cools down the hot condensate which circulates inside a coil surrounded by cold condensate which circulates based on the thermo-siphon physical laws.

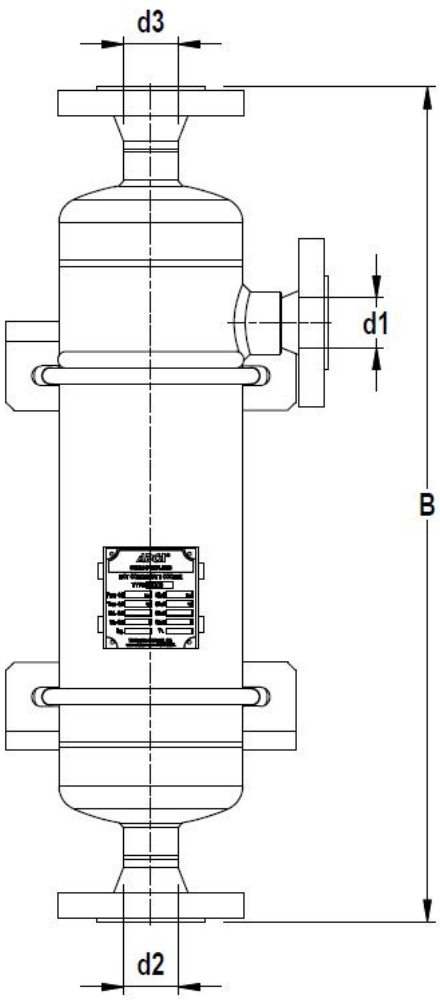
MAIN FEATURES:	Eliminates hammering Corrosion-resistance internal coil
OPTIONS:	Larger flow rates Special tailored designs
USE:	Condensate discharge downstream of steam Traps.
MODELS:	HCC-3 – up to 300 kgs/h
CONNECTIONS:	Flanged EN1092-1 or ANSI. Different connections on request.
CONSTRUCTION:	Carbon steel or stainless steel under request.
INSTALLATION:	Vertical installation Hot condensate angle inlet and vertical outlet Cold condensate bottom inlet and vertical outlet

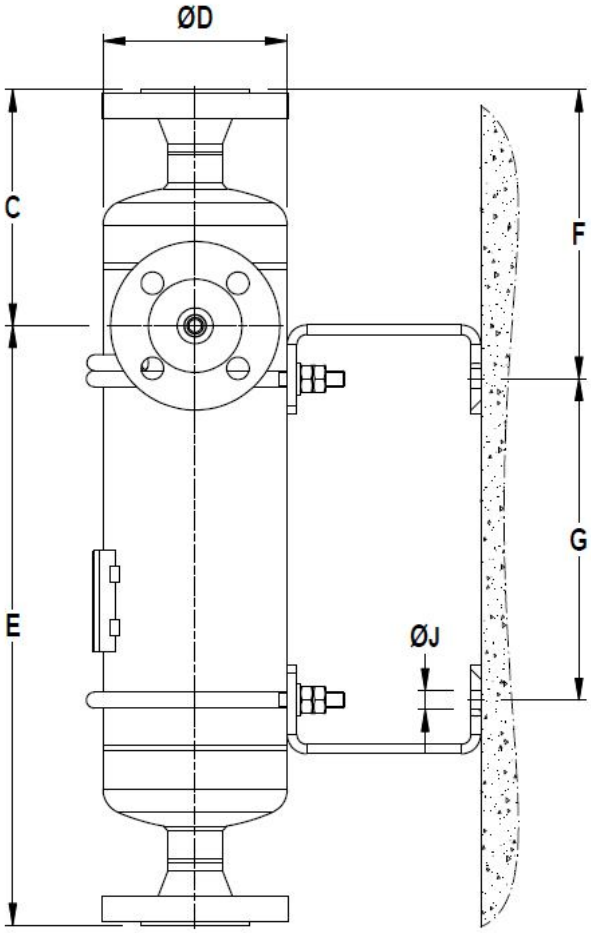
LIMITING CONDITIONS **								
Rating	Press. bar	Temp. ºC	Rating	Press. bar	Temp. ºC	Rating	Press. bar	Temp. ºC
PN16	16	50	ANSI Cl.150 lbs	16	50	PN40 ANSI CL.300lbs	40	50
	16	100		16	100		40	100
	13 *	195		13 *	195		32 *	240
	12	250		-	-		30	300

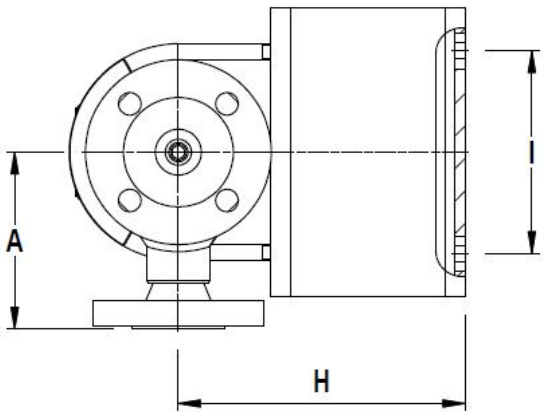
*PMO-Max.operating pressure for saturated steam.
Minimum operating temp.: -10ºC. Design code: AD-Merkblatt
** Rating according to EN1092:2007. Other conditions on request.

DIMENSIONS (mm)													
MODEL	SIZE	A	B	C	D	E	F	G	J	d1	d2	d3	WEIGHT
HCC3-20	DN20x25	110	520	147	115	373	180	200	12	20	25	25	13,8
HCC3-25	DN25x25	110	520	147	115	373	180	200	12	25	25	25	14

Dimensions are besed on EN flanges. Consult factory for certified dimensions and weight and/or for ANSI connections.



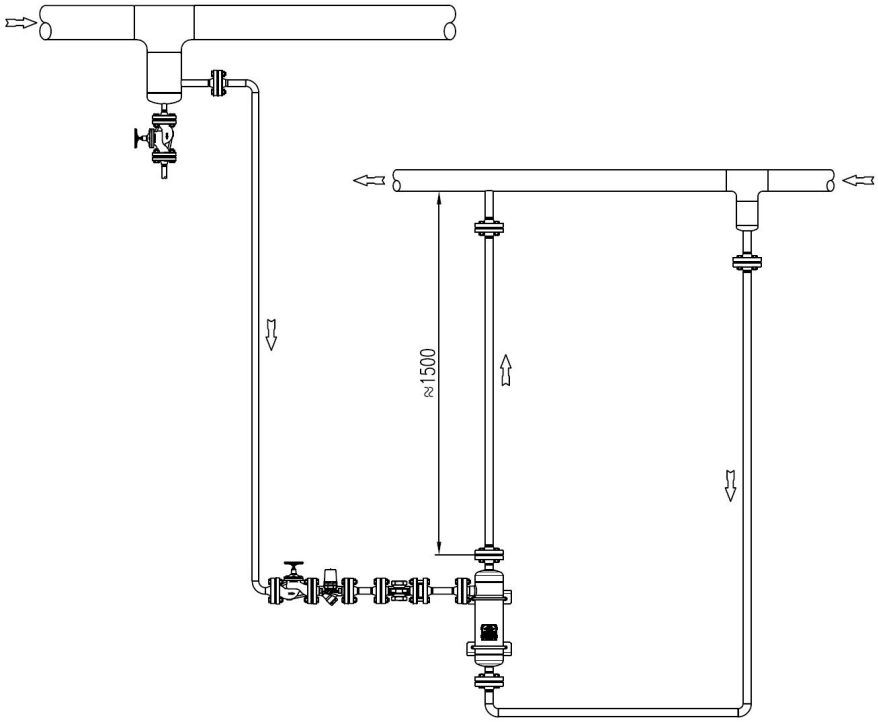




MATERIALS		
DESIGNATION	HCC3S	HCC3SS
Tube coil	AISI316L / 1.4404	AISI316L / 1.4404
Heads and shell	P265GH / 1.0425 ; P235GH / 1.0305	AISI316 / 1.4401; AISI316L / 1.4404
EN flanges	P250GH / 1.0460	AISI316 / 1.4401
ANSI Flanges	ASTM A105 / 1.0432	AISI316 / 1.4401
Sockets	ASTM A105 / 1.0432	AISI316 / 1.4401
Suports	S235 JR / 1.0038	AISI304 / 1.4301

EN 10204 3.1 certificate available if requested with the order.

TYPICAL INSTALLATION



The hot condensate steam trap discharge from the steam line is connected to the top of the HCC coil (horizontal connection) which in turn is surrounded by cold condensate(fig.1), thus starting be cooled down when flowing to the top outlet (fig.2) where it is finally mixed with the colder condensate (fig.3). Flash steam bubbles that are formed meanwhile are decreasing during this process till they completely disappear before the mentioned mixing process. The cold condensate is connected to the bottom of the HCC (fig.1) and in contact with the hot coil it is warmed (fig.2)starting it's natural circulation process by thermosiphon (fig.3).

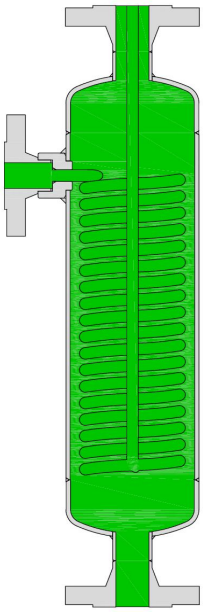


Fig.1 Cold system

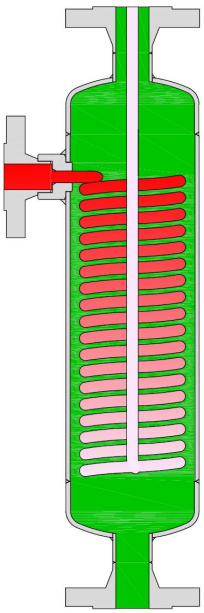


Fig.2 Hot condensate arrival

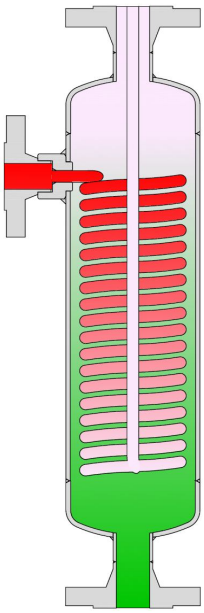


Fig.3 Thermosiphon process

Other applications: The HCC can be specifically designed for other applications and different flow rates, such us: -Small heat exchangers and steam heaters in general; -Preheating of cold make up water to a condensate vessel or deaerator; -Equalizing temperature of boiler feed tanks.