

HOT CONDENSATE COOLERS HCC

DESCRIPTION

The ADCA 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 instance) are often connected to 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 causing hammering (noise and vibration).

The HCC avoids this phenomenon, since it slowly cools down the hot condensate which circulates inside a coil, surrounded by cold condensate which circulates according to the thermo-siphon physical laws.

MAIN FEATURES

Eliminates hammering.

Corrosion-resistant internal coil.

OPTIONS: Larger flow rates.
Special tailored designs.

USE: Condensate discharge downstream of steam traps.

AVAILABLE MODELS: HCC3S – carbon steel, up to 300 kg/h.
HCC10S – carbon steel, up to 500 kg/h.
HCC3SS – stainless steel, up to 300 kg/h.
HCC10SS – stainless steel, up to 500 kg/h.

SIZES: 3/4" x 1", 1" x 1", 1 1/4" x 2" and 1 1/2" x 2";
DN 20 x 25, DN 25 x 25, DN 32 x 50 and DN 40 x 50.

CONNECTIONS: Flanged EN 1092-1 PN 16 and PN 40.
Flanged ASME B16.5 Class 150 or 300.
Others on request.

INSTALLATION: Vertical installation.
Hot condensate side inlet and vertical outlet.
Cold condensate bottom inlet and vertical outlet.



CE MARKING – GROUP 2 (PED – EUROPEAN DIRECTIVE)			
PN 16	CATEGORY	PN 40	CATEGORY
HCC3	SEP	HCC3	1 (CE marked)
HCC10	2 (CE marked)	HCC10	3 (CE marked)

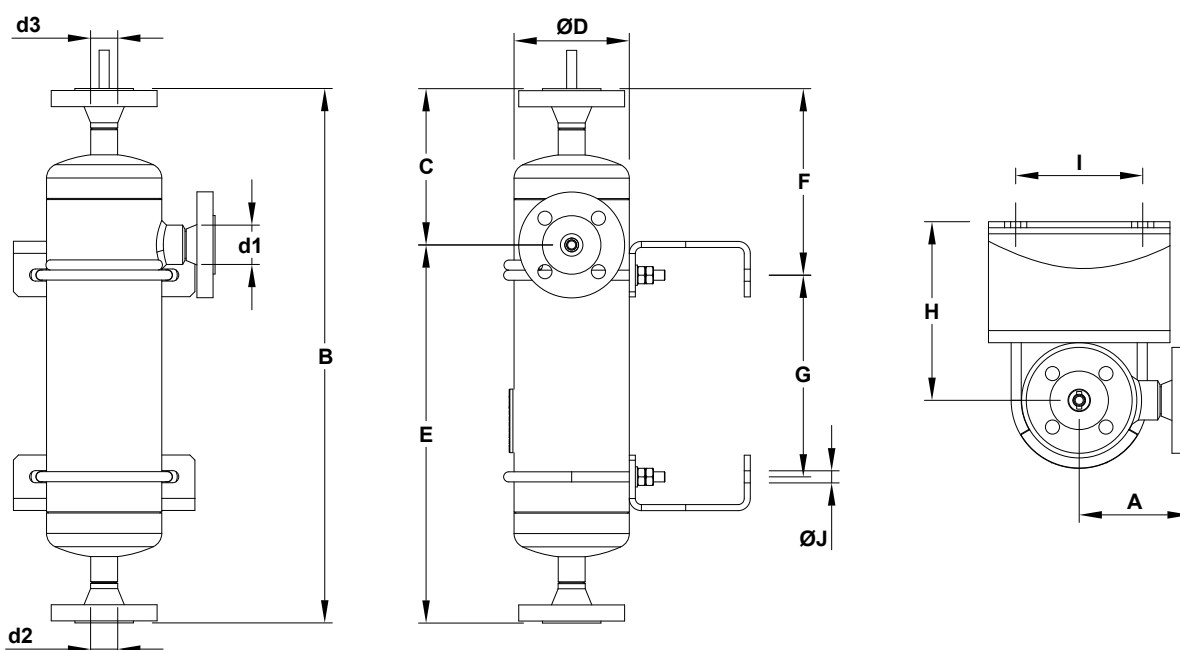
BODY LIMITING CONDITIONS

HCC3S						HCC10S							
FLANGED PN 16		FLANGED CLASS 150 *		FLANGED PN 40 / CLASS 300 *		FLANGED PN 16 *		FLANGED CLASS 150 **		FLANGED CLASS 300 **		FLANGED PN 40 *	
ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.	ALLOW. PRESS.	RELAT. TEMP.
16 bar	50 °C	16 bar	50 °C	40 bar	50 °C	16 bar	50 °C	15,3 bar	50 °C	39,9 bar	50 °C	40 bar	50 °C
14 bar	100 °C	14 bar	100 °C	37 bar	100 °C	15 bar	100 °C	13,3 bar	100 °C	34,4 bar	100 °C	37,9 bar	100 °C
13 bar ***	195 °C	13 bar ***	195 °C	31 bar ***	239 °C	12,7 bar	200 °C	11,1 bar ***	200 °C	26,6 bar ***	250 °C	29,9 bar ***	250 °C
12 bar	250 °C	—	—	27 bar	300 °C	12 bar ***	250 °C	—	—	25,2 bar	300 °C	27,6 bar	300 °C

* Rating according to EN 1092-1:2018; ** According to EN 1759-1:2004; *** PMO – Maximum operating pressure for saturated steam.

Minimum operating temperature: -10 °C.

Design code: AD-Merkblatt.



DIMENSIONS (mm) *

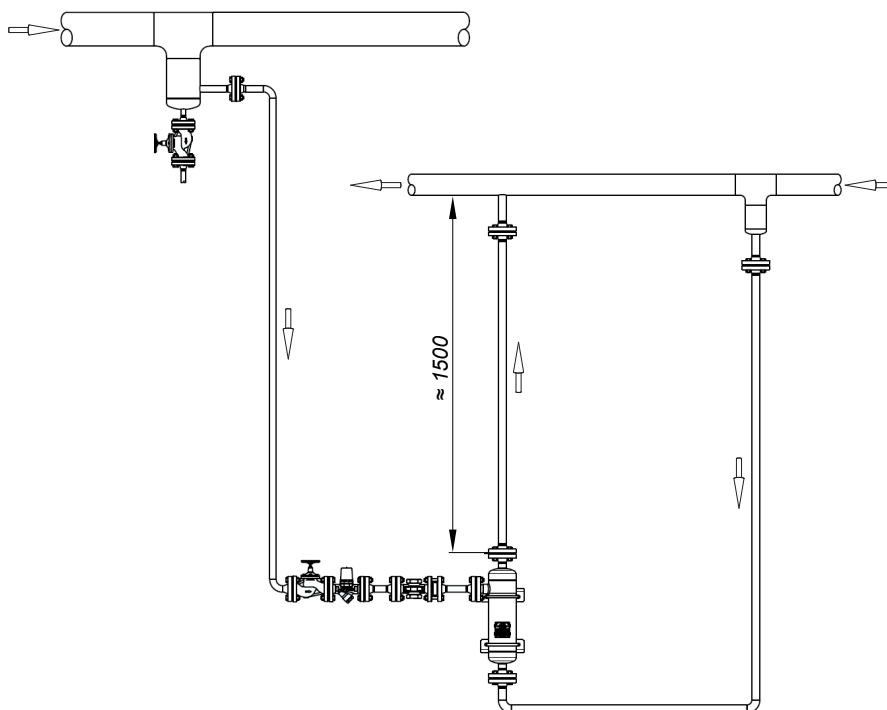
MODEL	SIZE	A	B	C	ØD	d1	d2	d3	E	F	G	H	I	ØJ	WGT. (kg)
HCC3	3/4" x 1" – DN 20 x 25	110	530	155	115	20	25	25	375	185	200	177	126	12	13,8
HCC3	1" x 1" – DN 25 x 25	110	530	155	115	25	25	25	375	185	200	177	126	12	15,5
HCC10	1 1/4" x 2" – DN 32 x 50	190	715	227,5	273	32	50	50	487,5	266	223	257	286	14	62,8
HCC10	1 1/2" x 2" – DN 40 x 50	190	715	227,5	273	40	50	50	487,5	266	223	257	286	14	63,1

MATERIALS

DESIGNATION	HCC3S	HCC10S
Tube coil	AISI 316L / 1.4404	AISI 316L / 1.4404
Heads and shell	P265GH / 1.0425; P235GH / 1.0305	AISI 316 / 1.4401; AISI 316L / 1.4404
EN flange	P250GH / 1.0460	AISI 316 / 1.4401
ASME flange	ASTM A105 / 1.0432	AISI 316 / 1.4401
Socket	ASTM A105 / 1.0432	AISI 316 / 1.4401
Support	S235JR / 1.0038	AISI 304 / 1.4301

Remark: EN 10204 3.1 certificate available on request.

TYPICAL INSTALLATION



OPERATION

The steam trap hot condensate 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 beginning to be cooled down while flowing to the top outlet (Fig. 2), where it finally mixes with the colder condensate (Fig. 3). Flash steam bubbles that are formed during the process decrease, until 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, is warmed (Fig. 2), starting its natural circulation process by thermosiphon (Fig. 3).

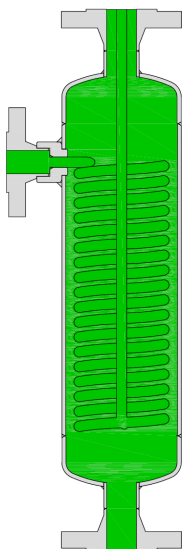


Fig. 1 – Cold system

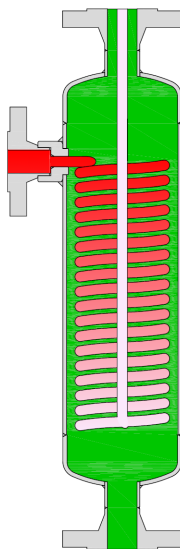


Fig. 2 – Hot condensate arrival

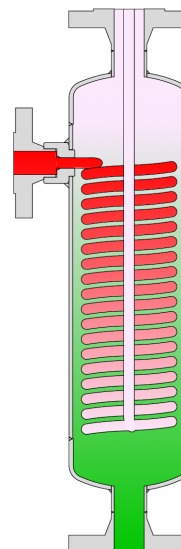


Fig. 3 – Thermosiphon process

Other applications: The HCC can be specifically designed for other applications and different flow rates, such as: 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, etc.