



EVC (Exhaust Vapour Condenser), EVC Food+ Turflow Type Heat Exchanger



Description

The Spirax Sarco EVC is based on the Turflow heat exchanger with an additional connection and utilises flash steam from discharge and exhaust vent pipework to pre-heat make-up or process water thereby recovering valuable heat energy that would otherwise be lost to atmosphere.

The Spirax Sarco EVC will improve steam system efficiency and is environmentally friendly, reducing CO² + carbon emissions and removing visible discharges from the atmosphere whilst saving valuable energy. It is easy to install and provides an optimised heat transfer solution when compared to other heat exchanger designs used in similar applications.

As standard the construction is completely stainless steel and the tube side is all in AISI 316. There are no gaskets (with the exception of the piping connection) and no painted components.

The heat-exchanging surface is of straight corrugated tubes designed for low viscosity fluids and for turbulent flow working conditions. The tube sheets are of an integral type and are supplied ready for installation.

EVC Food+ available with a food contact regulation Declaration of Compliance

Designed, manufactured and approved for Steam and Condensate applications, the EVC Food+ product complies with:

- (EC)1935:2004 Materials and Articles Intended to come into Contact with Food
- (EC)2023:2006 Good Manufacturing Practice for Materials and Articles Intended to come into Contact with Food
- (EU)10/2011 Plastic Materials and Articles Intended to come into Contact with Food
- FDA Code of Federal Regulations - title 21 - Food and Drugs

This product is intended to be connected into a system that can operate a food contact compliant process.

A list of the materials that could come directly or indirectly into contact with foodstuffs can be found in the Declaration of Compliance available for this product.

Standards

Designed and manufactured in accordance with EN 13445 code and fully complies with the requirements of the Pressure Equipment Directive (PED).

Turflow type heat exchangers fully comply with the requirements of the ASME Boiler and Pressure Vessel Code and carry the "U" ASME Stamp when so required.

Certification

This product is available with a manufacturers Typical Test Report.

Note: All certification/inspection requirements must be stated at the time of order placement.

Food+ can be supplied with material Certification for all wetted parts at extra cost.

Note: All certification/inspection requirements must be stated at the time of order placement.

Food contact

For EC1935 compliance (tube side only) "FB" designation must be selected in the nomenclature at time of order.

EN	ASME	GB National standard
CE mark with Pressure Equipment Directive (PED)	ASME VIII design with U stamp certification	Chinese GB national standard

Available models

Heat exchanger	Steam mass flow		Heat load		Water flow	
	kg/h	(lb/h)	kW	(MBtu/h)	kg/h	(Gal/m)
EVC 1½" - 1F	30	(66)	19	(0.06)	804	(3.5)
EVC 2" - 1F	50	(110)	31	(0.1)	1350	(6)
EVC 3" - 1F	100	(220)	62	(0.2)	2690	(11.8)
EVC 4" - 1F	200	(440)	125	(0.42)	5370	(23.5)
EVC 6" - 1F	300	(660)	187	(0.6)	8060	(35.5)
EVC 8" - 1F	500	(1 102)	312	(1.06)	13400	(59)
EVC 10" - 1F	750	(1 653)	469	(1.6)	20 100	(88.5)

* Performance sized with water from 50 °C to 70 °C (122 °F to 158 °F).

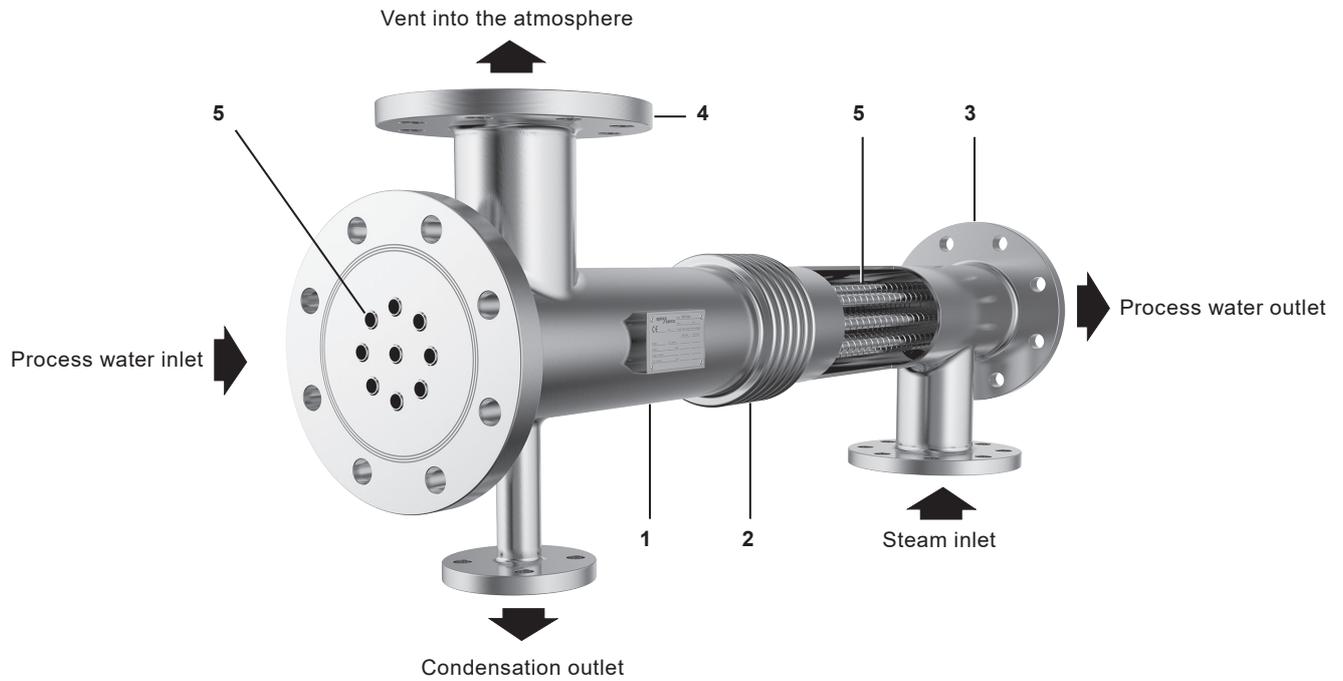
** Sized with maximum inlet steam velocity 15 m/s (49 ft/s).

Pressure/temperature limits

TMA	Maximum allowable temperature	Shell side	6 bar g (87 psi g)	300 °C (572 °F)
		Tube side	12 bar g (174 psi g)	200 °C (392 °F)
PMA	Maximum allowable pressure	Shell side	-10 °C to +200 °C (14 °F to 392 °F)	12 bar g (174 psi g)
		Tube side		

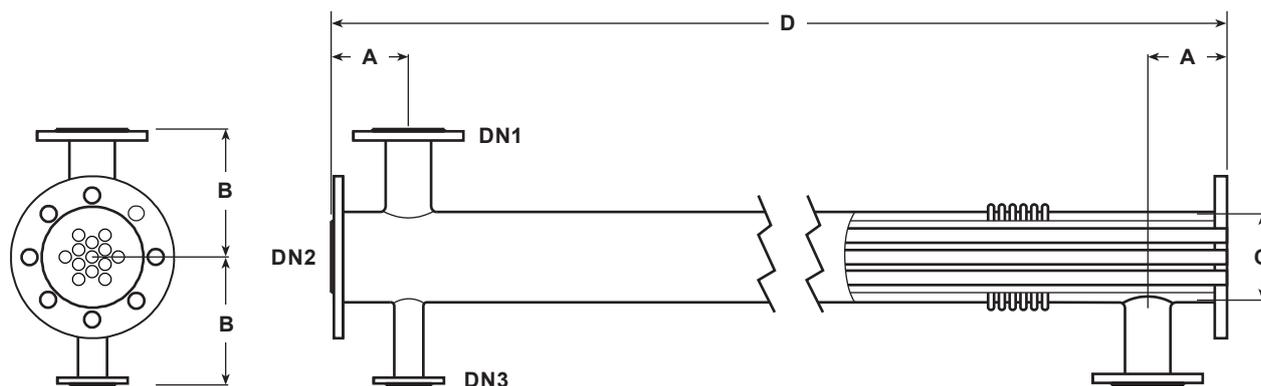
The cold hydraulic tests are performed at 21 bar g with design limit to 12 bar g (304.5 psi g with design limit to 174 psi g) and at 10.5 bar g with design limit to 6 bar g (152.2 psi g with design limit to 87 psi g). This pressure meets with the requirements of Section 7.4, attachment 1, of the Pressure Equipment Directive (PED).

Materials



No.	Part	Material	ASTM designation
1	Shell	Stainless steel	A312 TP304
2	Expansion joint	Stainless steel	A240 TP321
3	Tubesheet	Stainless steel	A182 F316
4	Shell side connections	Stainless steel	A182 F304
5	Tubes (corrugated)	Stainless steel	A249 TP316

Dimensions/weights (approximate) in mm and kg (inches and lbs)



Model	DN1	DN2	DN3	A	B	C	D	Weight
EVC 1½" - 1F	32 (1¼")	40 (1½")	15 (½")	94 (3¾")	140 (5½")	48.3 (2")	1000 (39¼")	13.2 (29)
EVC 2" - 1F	40 (1½")	50 (2")	15 (½")	90 (3½")	140 (5½")	60.3 (2¼")	1000 (39¼")	16.5 (36)
EVC 3" - 1F	65 (2½")	80 (3")	15 (½")	110 (4¼")	160 (6¼")	88.9 (3½")	1000 (39¼")	23.0 (50)
EVC 4" - 1F	80 (3")	100 (4")	25 (1")	125 (5")	180 (7")	114.3 (4½")	1000 (39¼")	36.4 (80)
EVC 6" - 1F	100 (4")	150 (6")	25 (1")	140 (5½")	220 (8½")	168.3 (6½")	1000 (39¼")	68.2 (138)
EVC 8" - 1F	125 (5")	200 (8")	32 (1¼")	160 (6¼")	250 (9¾")	219.1 (8½")	1000 (39¼")	106.0 (233)
EVC 10" - 1F	150 (6")	250 (10")	40 (1½")	180 (7")	280 (11")	273.0 (10¾")	1000 (39¼")	145.0 (319)

Table notes:

- **Dimension tolerance:**
 A = ± 3 mm,
 B = ± 3 mm,
 D = ± 6 mm,
 Flange rotation = ± 1°,
 Connection alignment = ± 3 mm.
- Flange sizes according to EN 1092-1 rating PN16, optional equivalent diameter according to ASME B16.5 rating 150 lb.
- PED categorisation assuming a 'not dangerous fluid', Group 2 according to the classification as per the Pressure Equipment Directive (PED).

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product.

Installation note:

The installation depends on the application and on the service required; however **the unit must always be installed horizontally**. It is always necessary that one end of the heat exchanger is allowed to move axially, in order to permit the normal expansion of the exchangers tubes during operation.

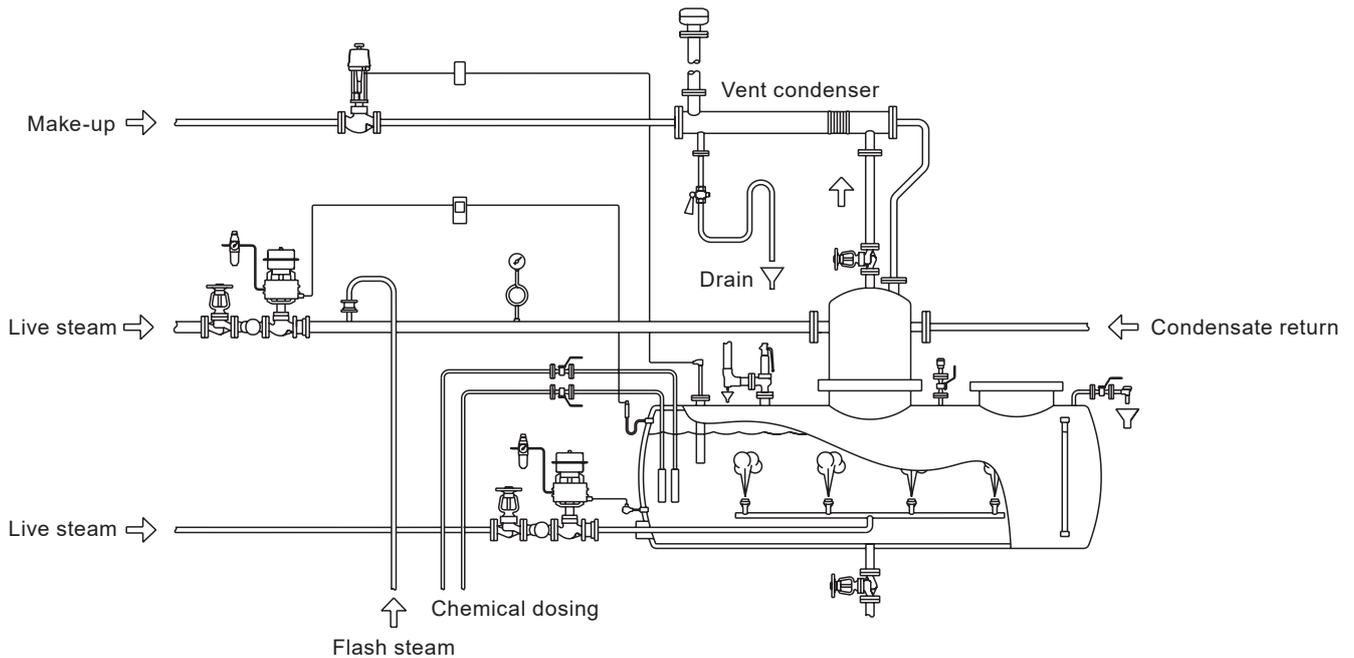
We recommend that an air vent be fitted to the unit to continuously vent during start-up and operation.

Insulation is recommended, and it is absolutely necessary, if the shell temperature is much higher than the ambient one - If insulation is required it is suggested that it be fitted on site to eradicate its damage whilst in transit.

Disposal

This product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.

Typical installation



Sizing and selection

Spirax Sarco has developed integrated thermal modelling, sizing and selection software, to select and fully optimise an EVC heat exchanger to precisely match your application needs. Trained technicians are available at your local Spirax Sarco company to ensure the correct heat exchanger is always selected. Because of Spirax Sarco's expertise and wide product range we can provide a complete heat transfer solution, advising on the most suitable control system and ancillary equipment for your heat exchanger. Our technicians can also advise on the suitability and sizing of heat exchangers for most gases, vapours and superheated liquids other than water.

EVC product nomenclature:

Please note that other units are available on request to suit the specifics of a particular process application.

Turflow type	EVC = Large diameter tubes	EVC
Shell diameter	1½", 2", 3", 4", 6", 8", 10" = Range in inches	3"
Tube and tubesheet material	SX = Stainless steel AISI 316	SX
Tube length	1 m (39") = Range in meter	1
Connection type	F = UNI 2278/2229 PN16 flanges	FE
	FA = ANSI B16.5 Class 150 Flanges	
	FE = EN1092-1 PN16 flanges	
Mechanical code	Empty = VSR	E
	E = EN13445	
	A = ASME VIII Div.1	
Shell design pressure	V = 12 bar g (174 psi g)	V
Tube to tube sheet coupling	Empty = Expanding	
Certifications	Empty = None	
	FB = EC 1935 certificate (tube side) (**)	
PED category	Empty = CE marking not supplied	CI
	CI = Category I	
	CII = Category II	

Product selection example	EVC	3"	SX	1	FE	E	V		CI
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