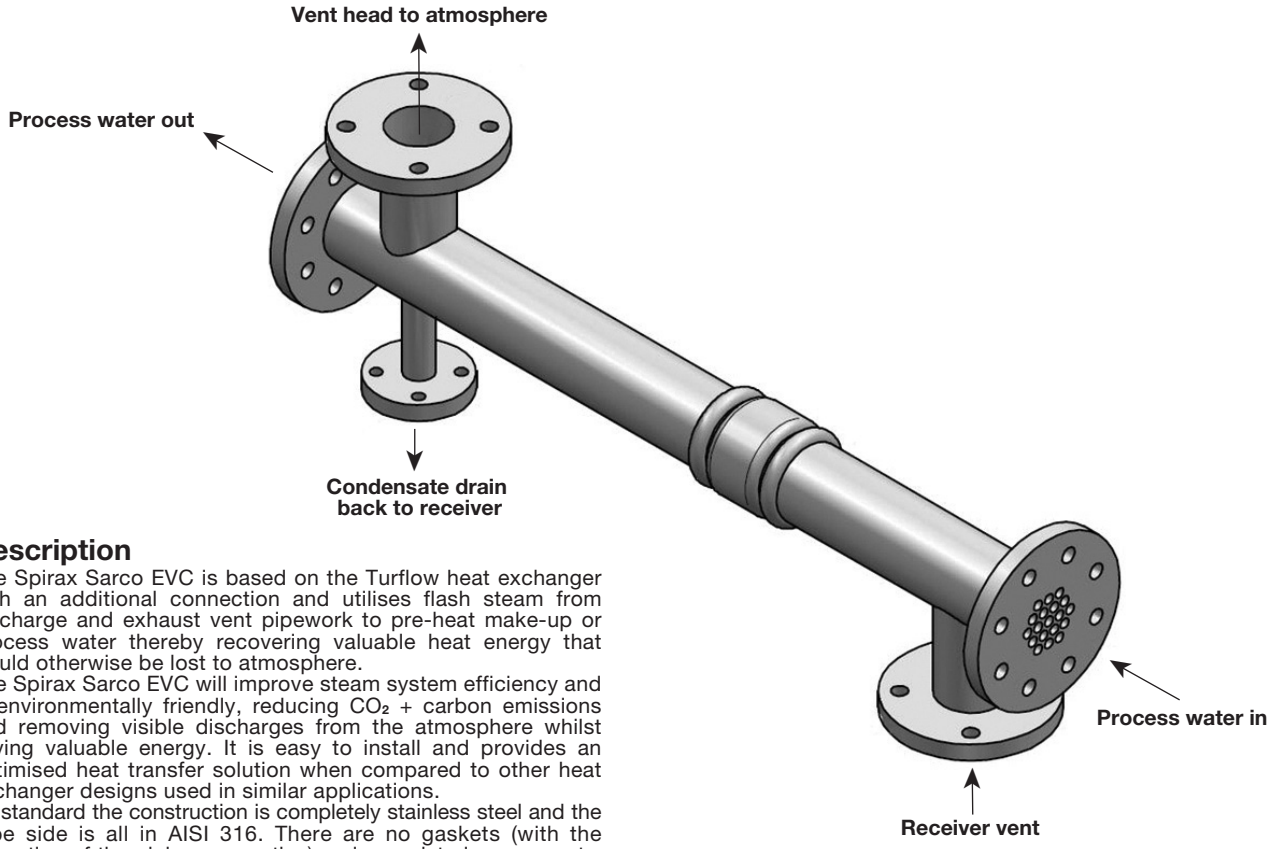
ISO 9001 BUREAU VERITAS Certification

spirax sarco

TI-D646-04
BR Rev.00

Turflow Type Heat Exchanger EVC (Exhaust Vapour Condenser)



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 CO_2 + 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.

Standards
Designed and manufactured in accordance with the `Raccolta VSR Revision 1995 Edition 99' code and fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.

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

Pressure/temperature limits

TMA	Maximum allowable temperature	Shell side	300°C
		Tube side	200°C
PMA	Maximum allowable pressure	Shell side	-10°C to +200°C 12 bar g
			200°C to 300°C 6 bar g
		Tube side	-10°C to +300°C 12 bar g

The cold hydraulic tests are performed at 18 bar g for both sides (shell and tube). This pressure meets with the requirements of Section 7.4, attachment 1, of the European Pressure Equipment Directive 97/23/EC.

Available models:

Heat exchanger	Steam massflow (kg/h)	Heat load (kW)	Water flow (kg/h) 50 to 70°C*	Maximum steam inlet 15 m/s	Condensate connection	Shell connection
EVC 1½" - 1F	30	18.7	804	DN32	DN15	DN40
EVC 2" - 1F	50	31.3	1350	DN40	DN15	DN50
EVC 3" - 1F	75	46.9	2020	DN65	DN15	DN80
EVC 3" - 1F	100	62.5	2690	DN65	DN15	DN80
EVC 4" - 1F	200	125.0	5370	DN80	DN25	DN100
EVC 6" - 1F	300	187.5	8060	DN100	DN25	DN150
EVC 10" - 1F	500	312.5	13400	DN150	DN40	DN250
EVC 10" - 1F	750	468.7	20100	DN150	DN40	DN250

*For calculations representative of other temperatures please contact Spirax Sarco or your local representative who will advise.

Local regulations may restrict the use of this product to below the conditions quoted.
In the interest of development and improvement of the product, we reserve the right to change the specification without notice.

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.

Model	EVC = Exhaust vapour condenser	EVC
Shell diameter	1½", 2", 3", 4", 6" and 10"	3"
Tube side material	SX = Stainless steel AISI 316	SX
EVC length	1 = 1 metre	1
Connection	F = Flanged	F
Design pressure shell side	V	V
Tube / tube sheet coupling	Empty box = Expanding S = Welding	S
PED category	Empty box = CE markings not required CI = Category I CII = Category II	CI

Selection example

EVC	3"	SX	1	F	V	S	CI

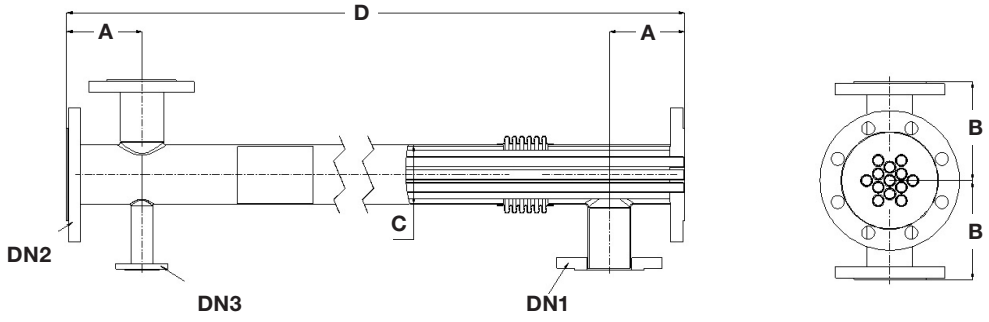
Flow on tube side

Model	Flowrate m^3/h				
	Minimum	Good	Optimum		Maximum
EVC 1½" - 1F	1.5	2	2.5	4	5
EVC 2" - 1F	3	5	7	10	12
EVC 3" - 1F	7	11	16	23	28
EVC 4" - 1F	12	20	28	41	49
EVC 6" - 1F	28	47	65	93	113
EVC 10" - 1F	77	110	187	264	297

Materials

Component	Material	ASTM designation
Shell	Stainless steel	A312-TP304
Expansion joint	Stainless steel	A240-TP321
Tube sheets	Stainless steel	A182-F316/304
Flanged connection	Stainless steel	A182-F304
Tubes (corrugated)	Stainless steel	A249-TP316L

Dimensions / weights (approximate) in mm and kg



Model	DN1	DN2	DN3	A	B	C	D	Weight
EVC 1½" - 1F	32	40	15	94	140	48.3	**1000**	**18**
EVC 2" - 1F	40	50	15	90	140	60.3	**1000**	**19**
EVC 3" - 1F	65	80	15	110	160	88.9	**1000**	**30**
EVC 4" - 1F	80	100	25	125	180	114.3	**1000**	**37**
EVC 6" - 1F	100	150	25	140	220	168.3	**1000**	**62**
EVC 10" - 1F	150	250	40	180	280	273.0	**1000**	**190**

Tolerance according to UNI 6100 and TEMA: D = ±3 mm; **B** = ±3 mm; **Flange rotation** = ±1°; **Connection alignement** = ±1.5 mm.

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; in general the unit can be installed vertically or horizontally, but 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.

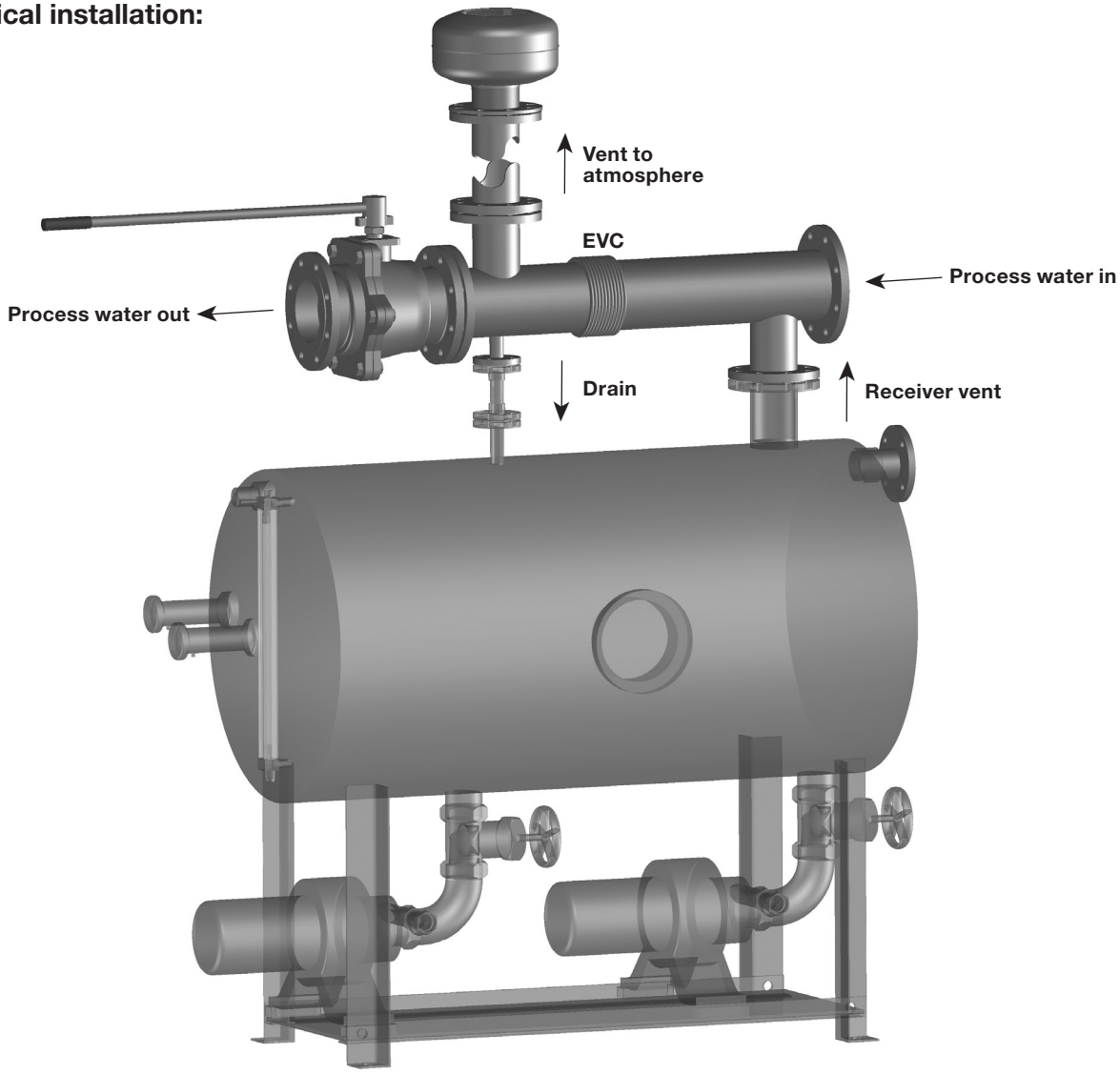
We recommend that an air vent be fitted to the unit to continuously vent during start-up and operation.

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 whist 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:



Reducing emissions from the boiler operation

With today's energy pricing and the need to reduce emissions, a plant's steam/condensate system cannot afford to vent flash steam to the atmosphere. A typical system will incorporate a condensate receiver that allows the flash steam to vent to the atmosphere.

The venting of the flash steam ensures the condensate receiver is never pressurized. To prevent the flash steam loss to the atmosphere, plants install devices such as `flash steam vent condensers' in the flash steam vent line.

Depending on the installation costs, plants will typically recover the cost of a flash steam vent condenser within ten operational months. The cost-saving benefits that a flash steam vent condenser offers include allowing a plant to recover the flash steam energy, and to use that energy to heat a fluid for a process. The other benefit is reducing emissions: by recovering the flash steam energy, the boilers will have to produce less steam, reducing emissions from the boiler operation.