# 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 EN 13445 code and fully complies with the requirements of the European Pressure Equipment Directive 2014/68/EU.

## 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.

## Available models

| Heat exchanger | Steam mass flow (kg/h) | Heat load (kW) | Water flow (kg/h) |
|---|---|---|---|
| **EVC 1½" - 1F** | 30 | 19 | 804 |
| **EVC 2" - 1F** | 50 | 31 | 1 350 |
| **EVC 3" - 1F** | 75 | 47 | 2 020 |
| **EVC 3" - 1F** | 100 | 62 | 2 690 |
| **EVC 4" - 1F** | 200 | 125 | 5 370 |
| **EVC 6" - 1F** | 300 | 187 | 8 060 |
| **EVC 8" - 1F** | 500 | 312 | 13 400 |
| **EVC 10" - 1F** | 750 | 469 | 20 100 |

* Performance sized with water from 50 to 70 °C.
** Sized with maximum inlet steam velocity 15 m/s.

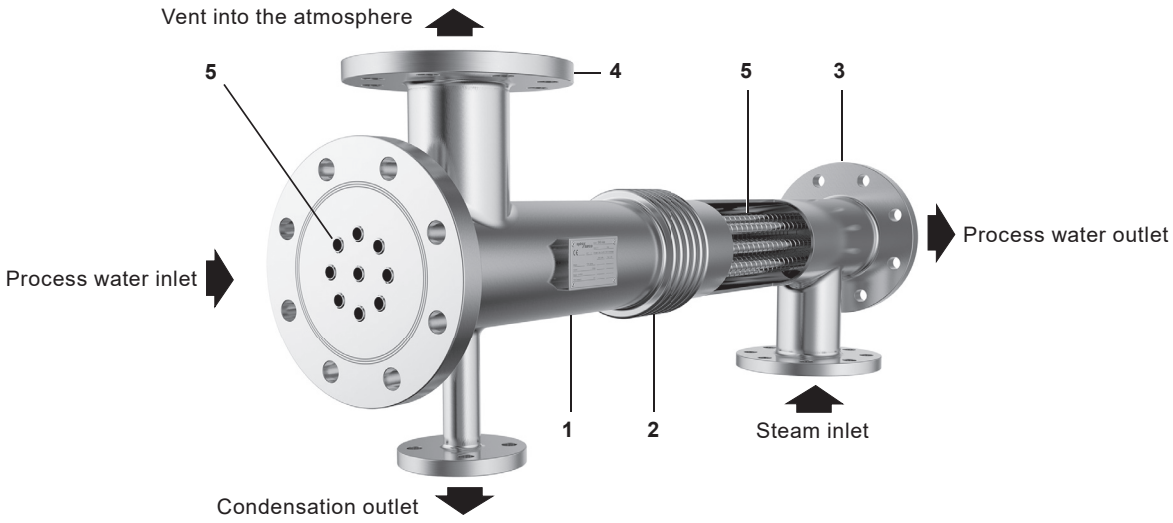
## Pressure/temperature limits

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

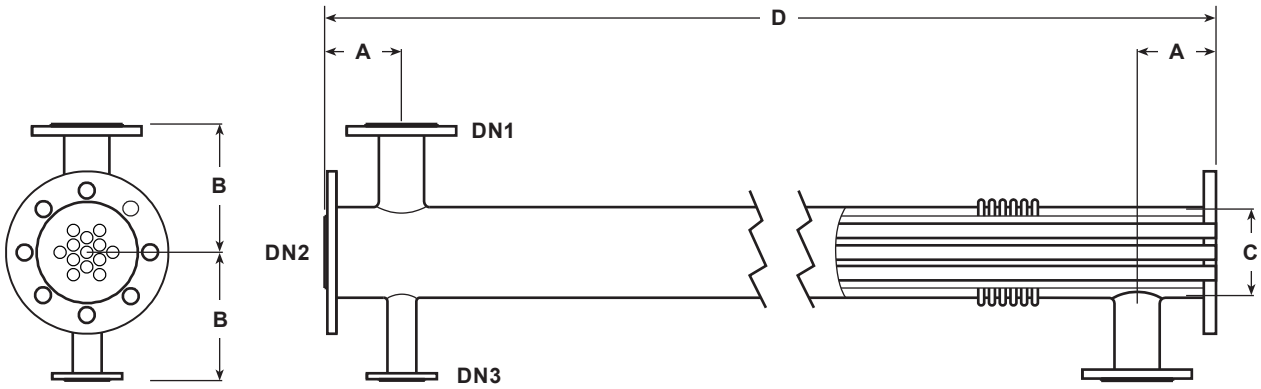
The cold hydraulic tests are performed at 21 bar g with design limit to 12 bar g and at 10,5 bar g with design limit to 6 bar g. This pressure meets with the requirements of Section 7.4, attachment 1, of the European Pressure Equipment Directive 2014/68/EU.

## 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**




| Model | DN1 | DN2 | DN3 | A | B | C | D | Weight |
|---|---|---|---|---|---|---|---|---|
| **EVC 1½" - 1F** | 32 | 40 | 15 | 94 | 140 | 48.3 | 1000 | 13.2 |
| **EVC 2" - 1F** | 40 | 50 | 15 | 90 | 140 | 60.3 | 1000 | 16.5 |
| **EVC 3" - 1F** | 65 | 80 | 15 | 110 | 160 | 88.9 | 1000 | 23.0 |
| **EVC 4" - 1F** | 80 | 100 | 25 | 125 | 180 | 114.3 | 1000 | 36.4 |
| **EVC 6" - 1F** | 100 | 150 | 25 | 140 | 220 | 168.3 | 1000 | 68.2 |
| **EVC 8"- 1F** | 125 | 200 | 32 | 160 | 250 | 219.1 | 1000 | 106.0 |
| **EVC 10" - 1F** | 150 | 250 | 40 | 180 | 280 | 273.0 | 1000 | 145.0 |

### 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 2014/68/EU.

## Safety information, installation and maintenance

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

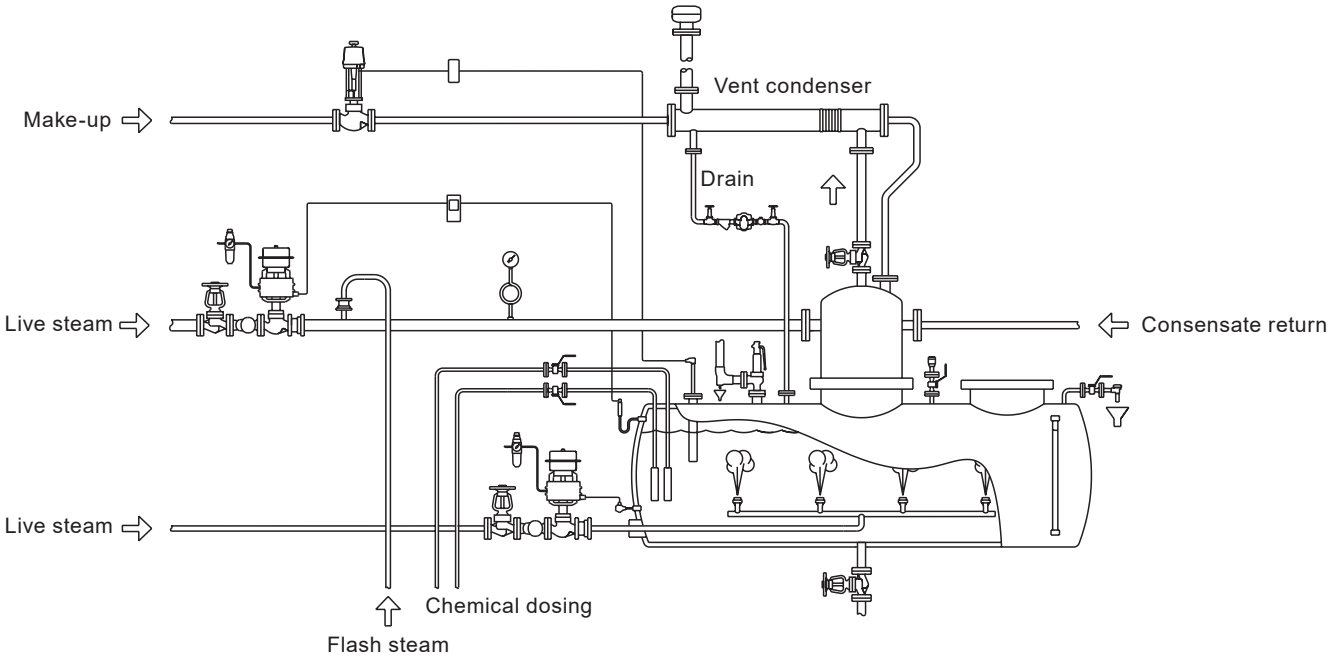
### Installation note:

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 = Range in meter | | 1 |
| **Connection type** | F = UNI 2278/2229 PN16 flanges | | FE |
| | FE = EN1092-1 PN16 flanges | | |
| **Mechanical code** | Empty = VSR | | E |
| | E = EN13445 | | |
| **Shell design pressure** | V = 12 bar g | | V |
| **Tube to tube sheet coupling** | Empty = Expanding | | |
| **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 |