BYVAP® Steam Desuperheater
TYPE DVX

Description

The BYVAP steam desuperheater type DVX is designed for accurate and cost effective steam temperature control.
The desuperheater DVX is a complete temperature control product cooling the superheated steam by introducing water into the steam flow, because of a multi-hole nozzle design combined with a Venturi effect.

Characteristics

Body material: 1.7383 / A182 F22 cl3
1.0352 / A105
1.4404 / A182 F316L
TMS: 570°C
PN250 / Class1500
Water flange: DN15/DN25
Minimum temperature above saturation 5°C
Accuracy: +/- 1,5%

Particular advantages

Excellent spraying by high quality vortex nozzles, greatly reducing the risk of water accumulation in the pipe, and large turndown ratio.

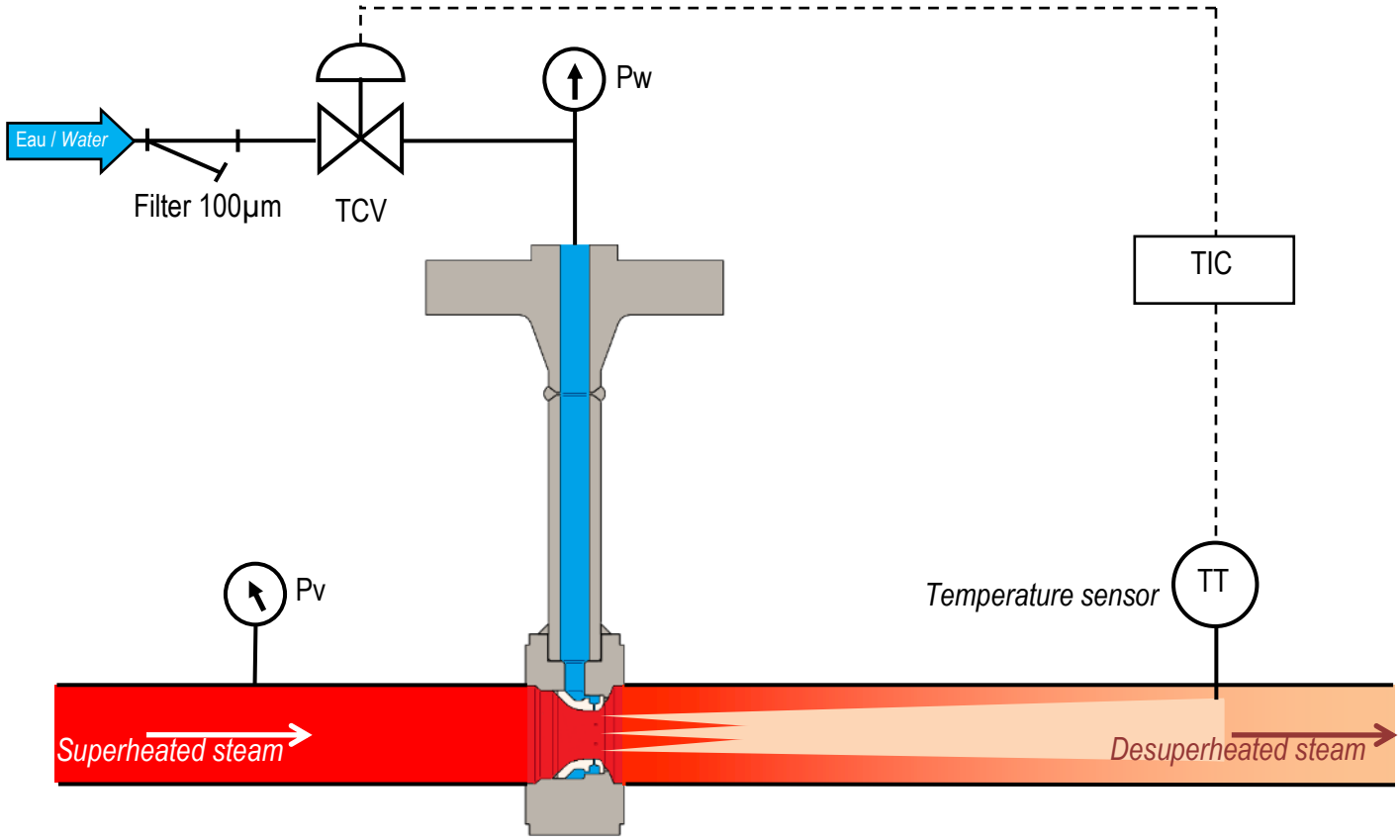
How to order

DVX Body DN…, Material…, PN/Class …, Kv…,
Water flange PN/Class …

Certification

This desuperheater complies with 2014/68/EU PED.
Because of the limited dimension of equipment, it is subjected to article 4.3 (Sound Engineering Practice) of the directive and as such it cannot receive EU marking.

Schematic Diagram



Recommandations

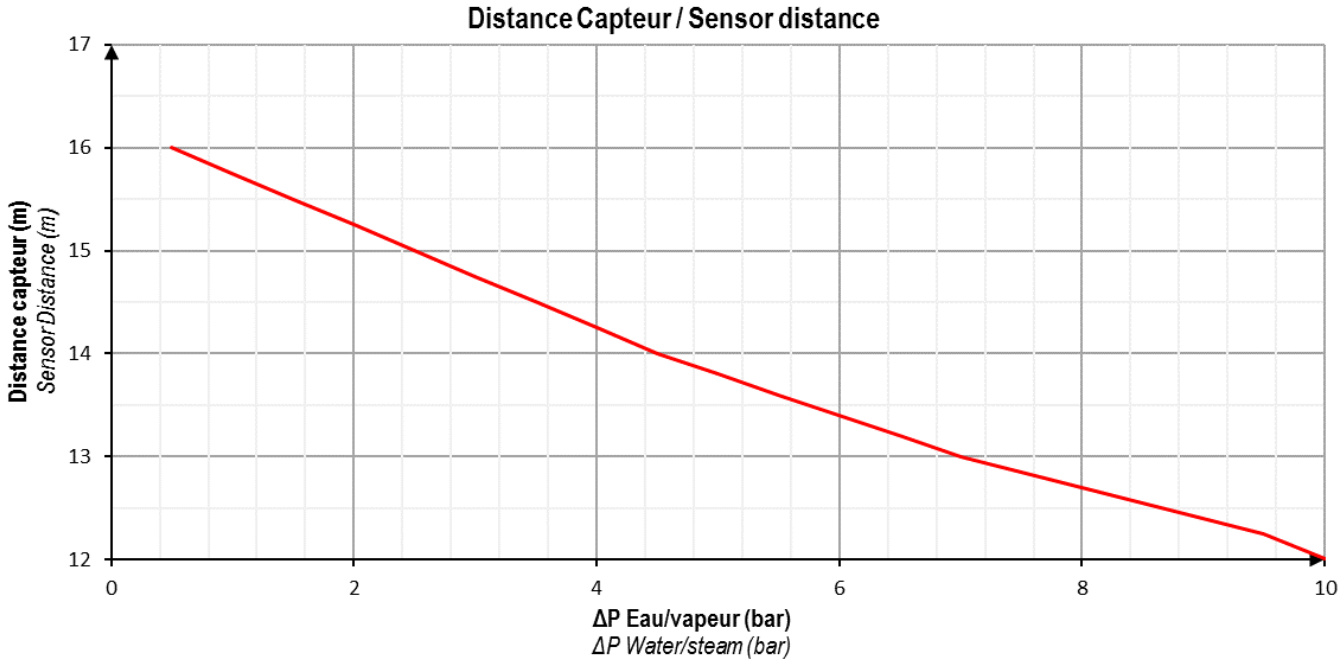
Filter
The installation of a 100µm filter in the desuperheating water line is recommended to protect the desuperheater DVX

Straight length
The first elements that can impair the desuperheating, must not be located less than 6xD upstream and 20xD downstream

Pressure difference
The difference of pressure between water of desuperheating and steam must be between 0,5bar and 10bar.

Steam speed
Minimal speed of steam must not be below 7m/s.

Temperature Sensor Distance



Standard capacity:

DN	40	Kv	0.012	0.024	0.036	0.048	0.072	0.096	-	-	-	-	-
		Cv	0.014	0.028	0.042	0.055	0.083	0.111	-	-	-	-	-
	50	Kv	0.024	0.036	0.048	0.072	0.096	0.12	-	-	-	-	-
		Cv	0.028	0.042	0.055	0.083	0.111	0.14	-	-	-	-	-
	65	Kv	0.036	0.048	0.072	0.096	0.12	0.16	0.20	-	-	-	-
		Cv	0.042	0.055	0.083	0.111	0.14	0.18	0.23	-	-	-	-
	80	Kv	0.048	0.072	0.096	0.12	0.16	0.20	0.27	0.36	0.45	-	-
		Cv	0.055	0.083	0.111	0.14	0.18	0.23	0.31	0.42	0.52	-	-
	100	Kv	0.072	0.096	0.12	0.16	0.20	0.27	0.36	0.45	0.56	0.64	0.81
		Cv	0.083	0.111	0.14	0.18	0.23	0.31	0.42	0.52	0.65	0.74	0.94

Table 1

Flow calculation :

To select a Sprayhead to install on the desuperheater two calculations have to be done:
- A calculation to define the water flow based on the process data.
- A calculation to define the Kv

The water flow Q_w is first calculated from process data using the following formula:

$$Q_w = Q_v \frac{H_{ve} - H_{vs}}{H_{vs} - H_w}$$

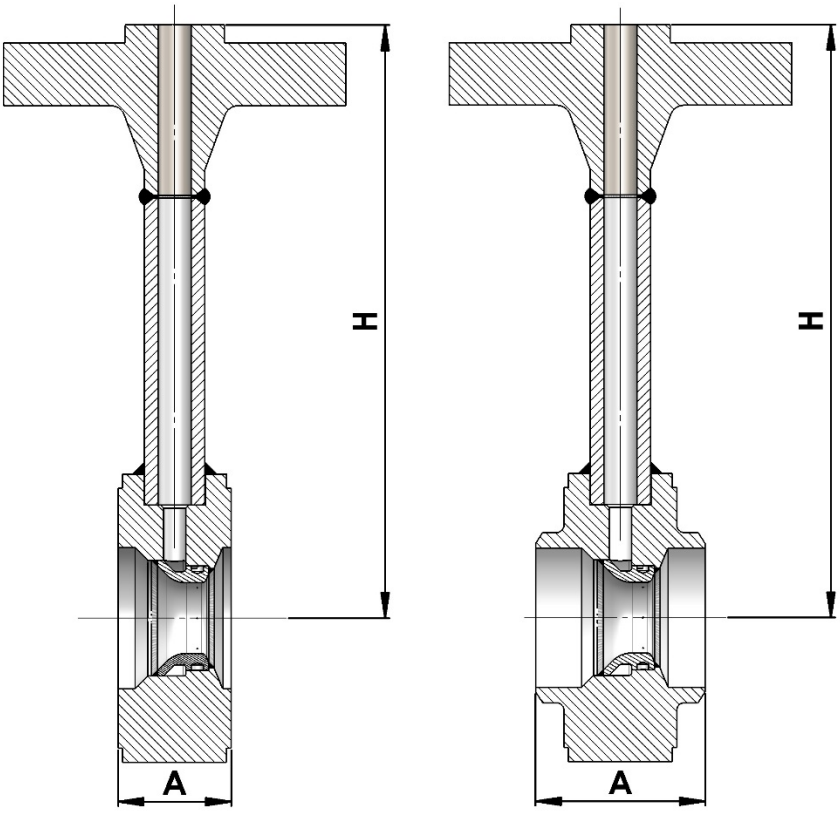
Q_v = Steam flow (m^3/h)
Q_w = Water flow (m^3/h)
H_{ve} = Upstream Steam enthalpy
H_{vs} = Downstream Steam enthalpy
H_w = Water enthalpy

Q_w = Water flow (m^3/h)
P_v = Steam pressure (bar)
P_w = Water pressure (bar)

A simplified Kv calculation can be done using the following formula:

$$Kv = \frac{Q_w}{\sqrt{P_w - P_v}}$$

Dimensions

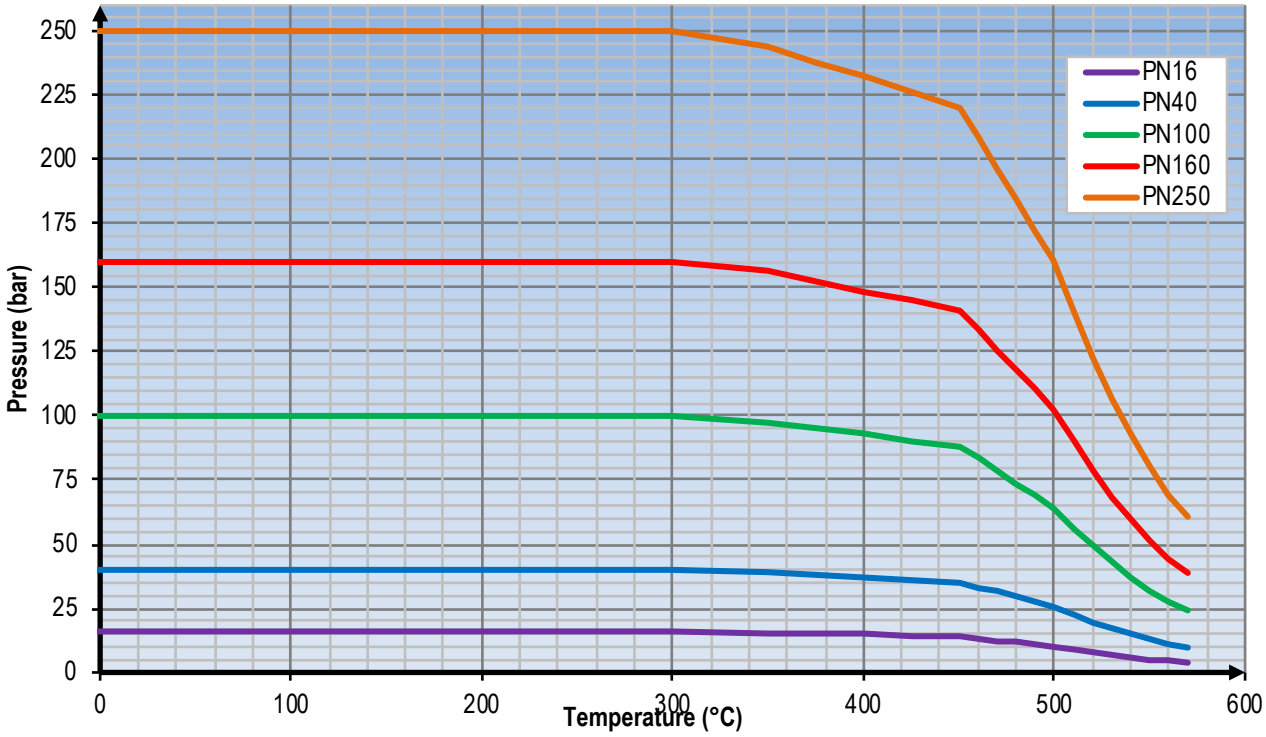


DN	H (mm)	A (mm)		Water flange
		Between flanges	Welded BW	
40	200	40	60	DN15
50	205	40	65	DN15
65	215	45	70	DN15
80	227	50	75	DN15
100	260	60	90	DN25

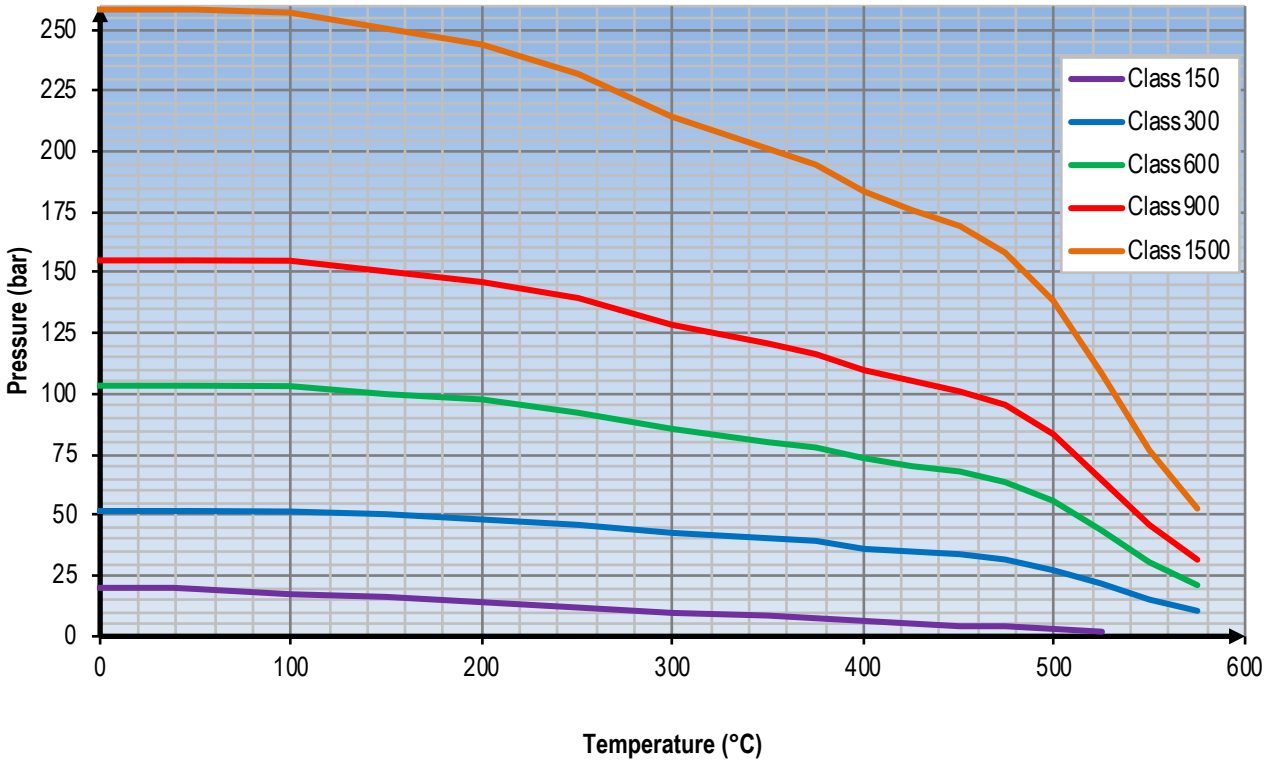
Table 2

Pressure -Temperature Charts

High temperature forged stainless steel 1.7383 according to EN1092-1

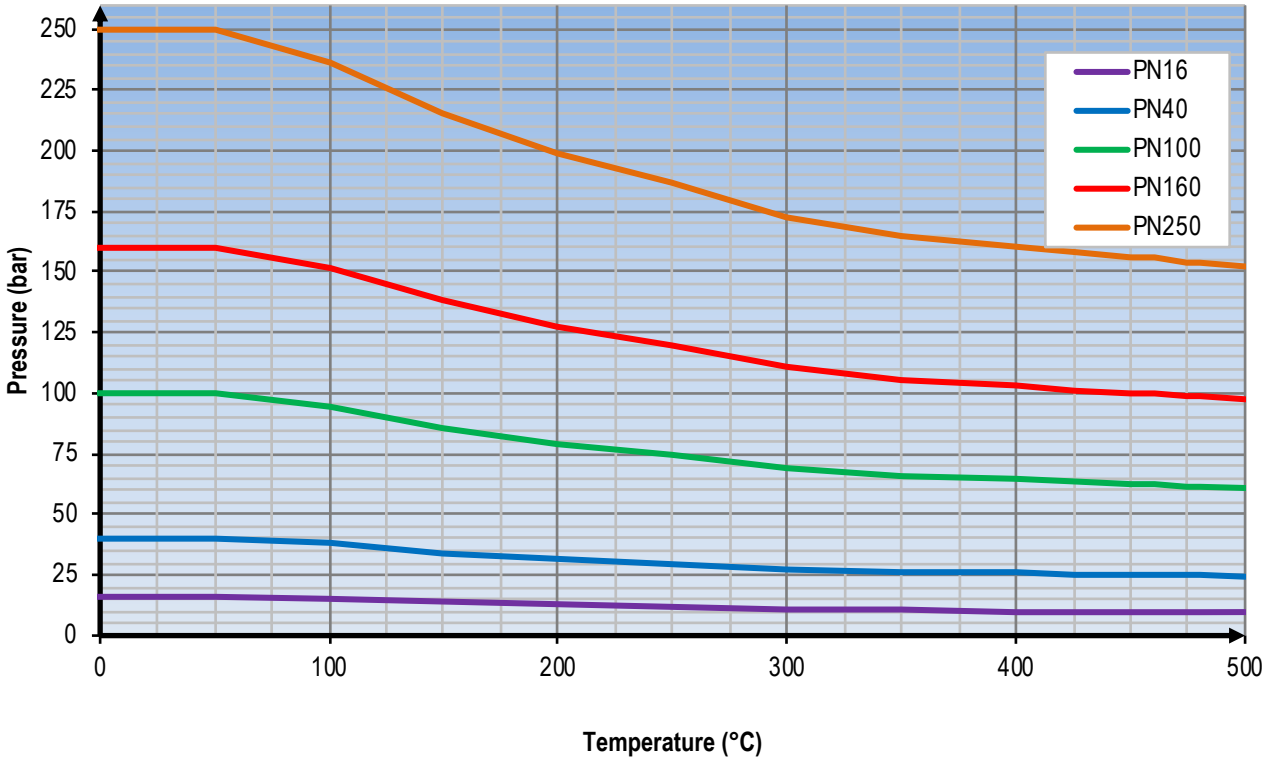


High temperature forged stainless steel A182 F22cl3 - according to EN1759-1

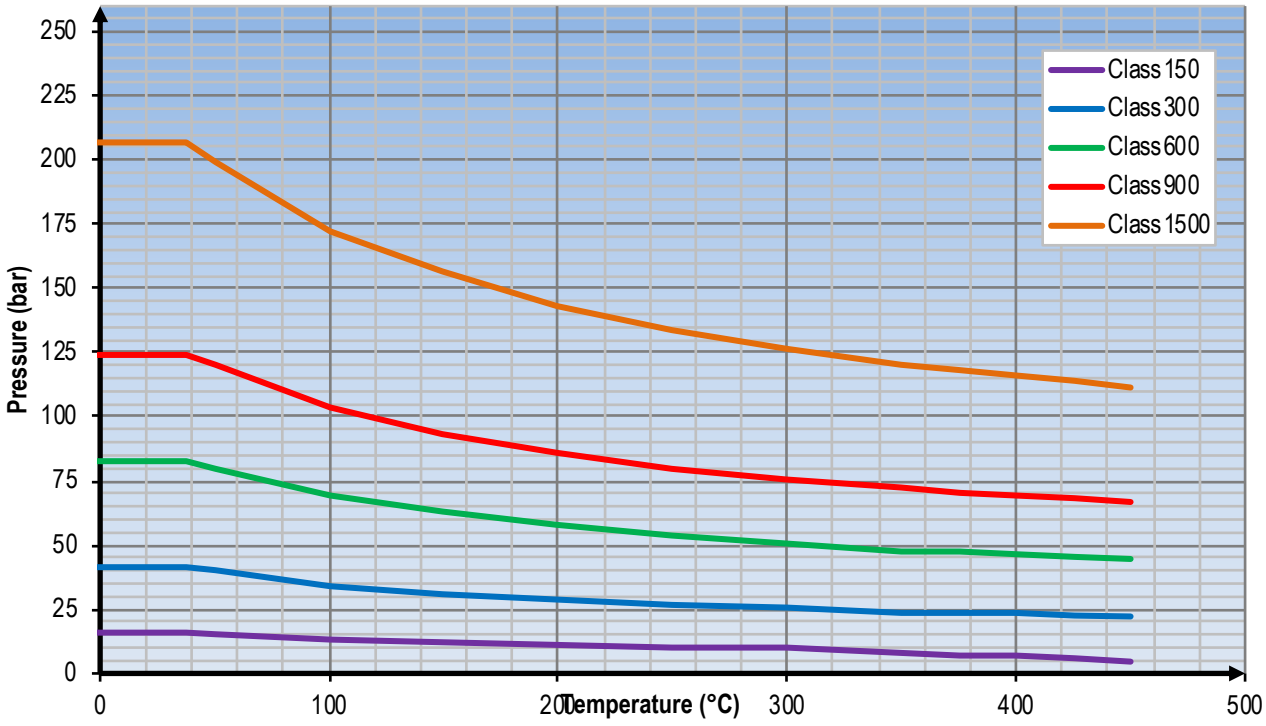


Pressure -Temperature Charts

Forged stainless steel 1.4404 - according to EN1092-1

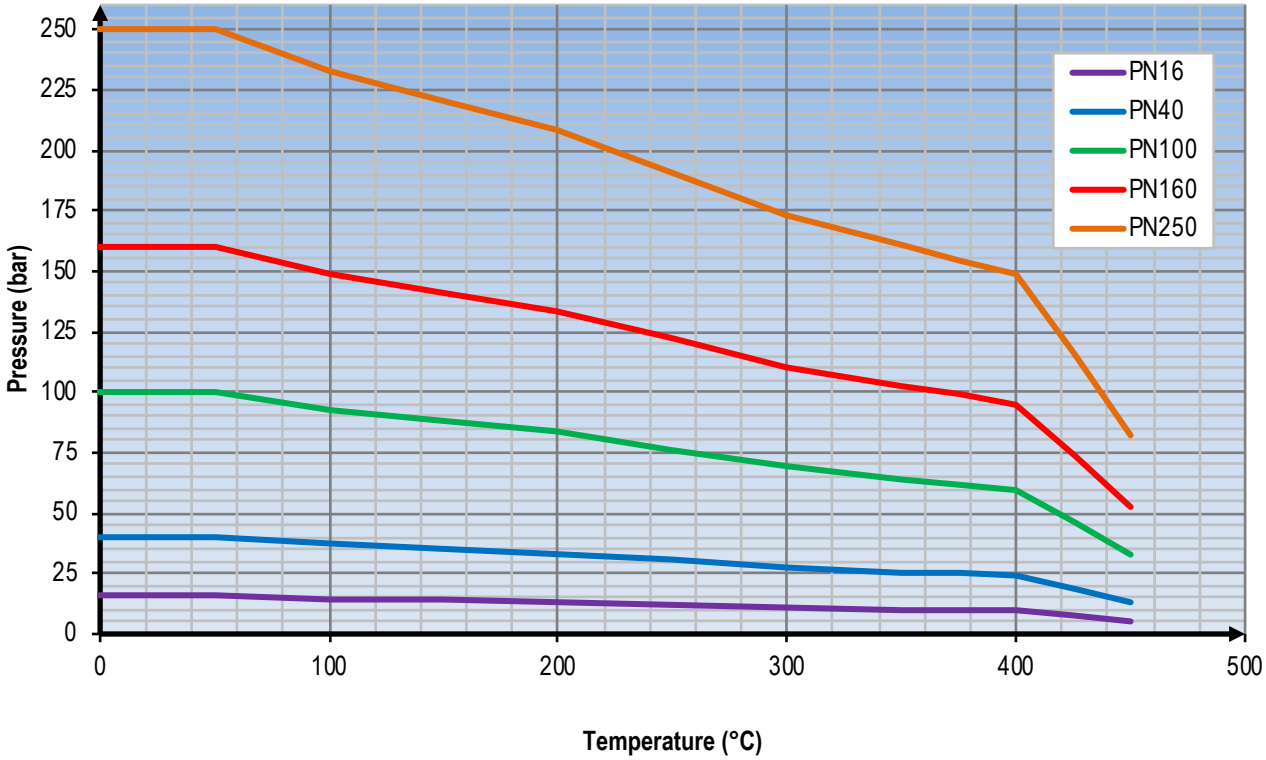


Forged stainless steel A182 F316L - according to EN1759-1



Pressure -Temperature Charts

Forged steel 1.0352 - according to EN1092-1



Forged steel A105 - according to EN1759-1