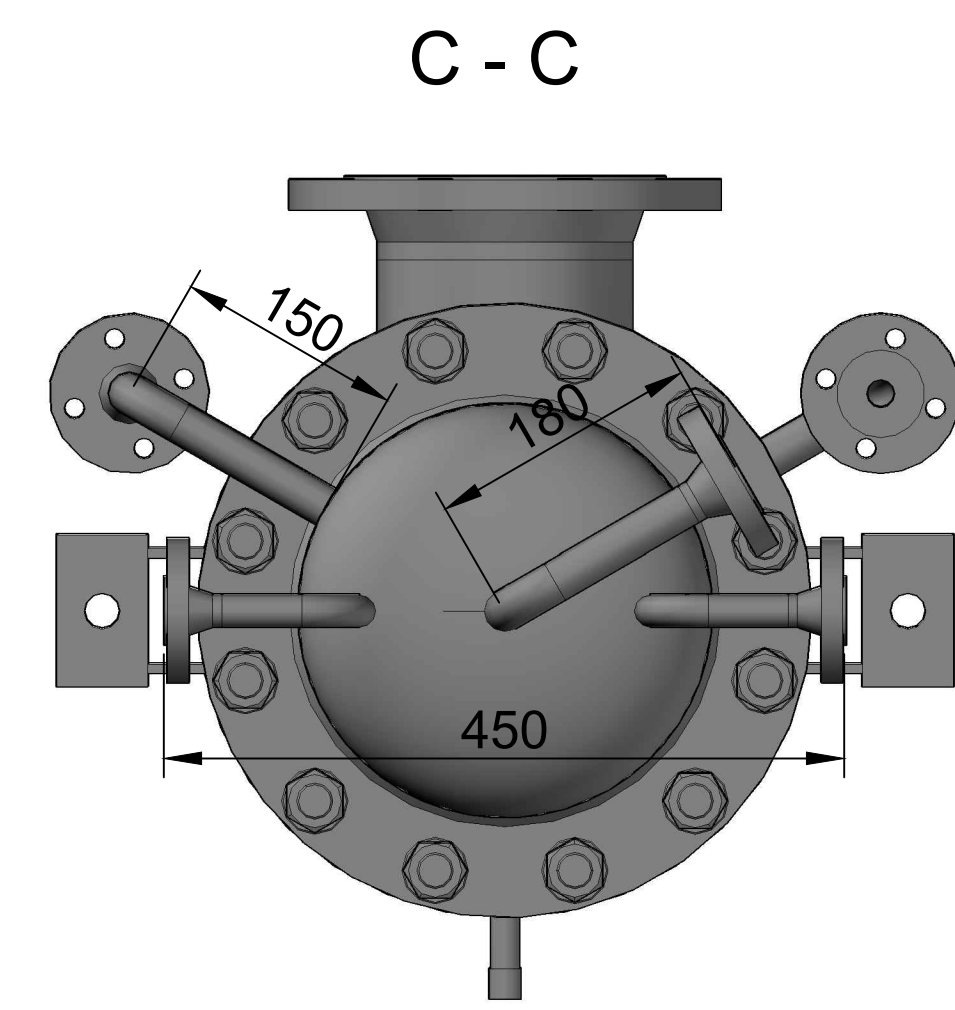
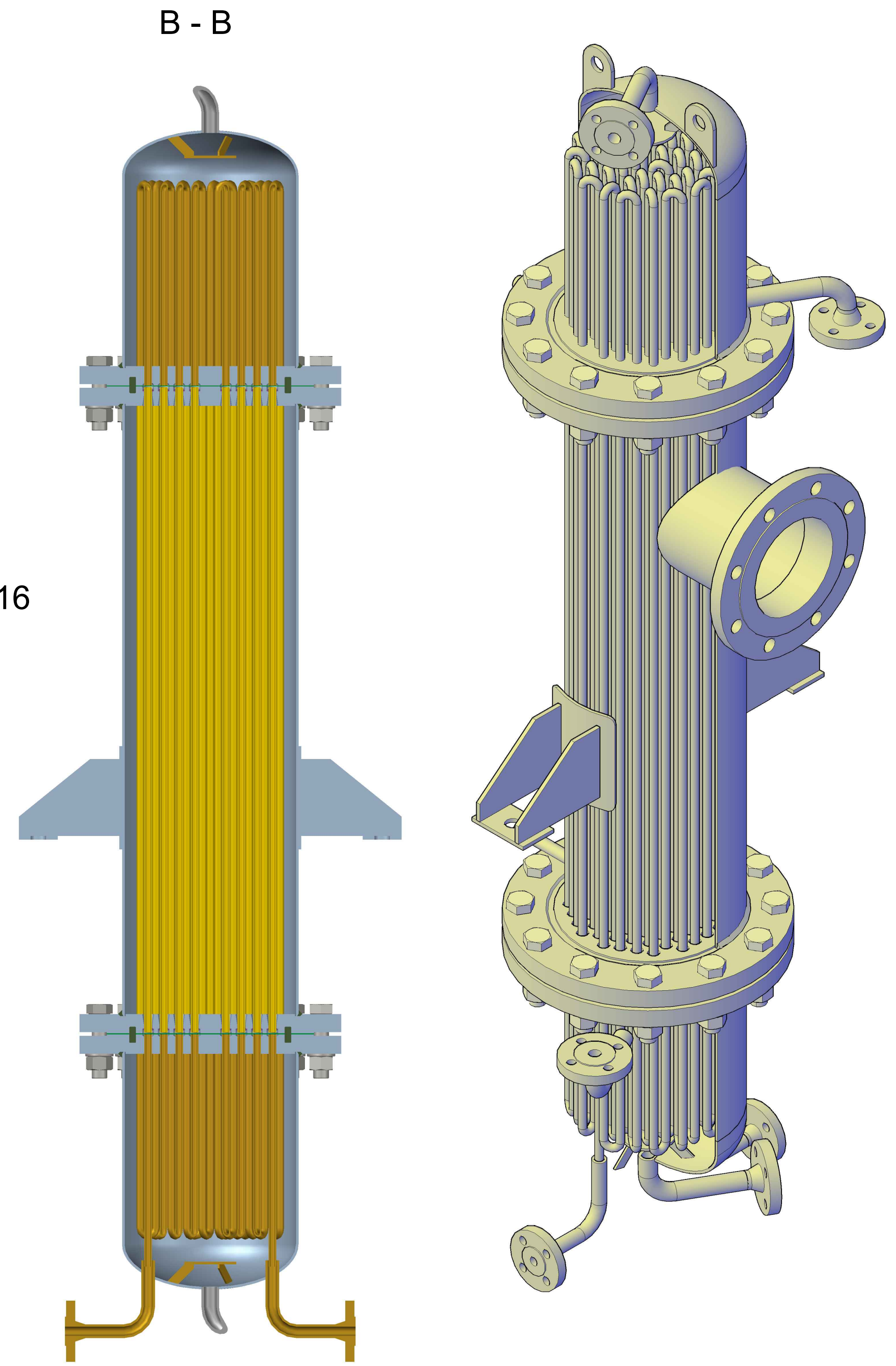
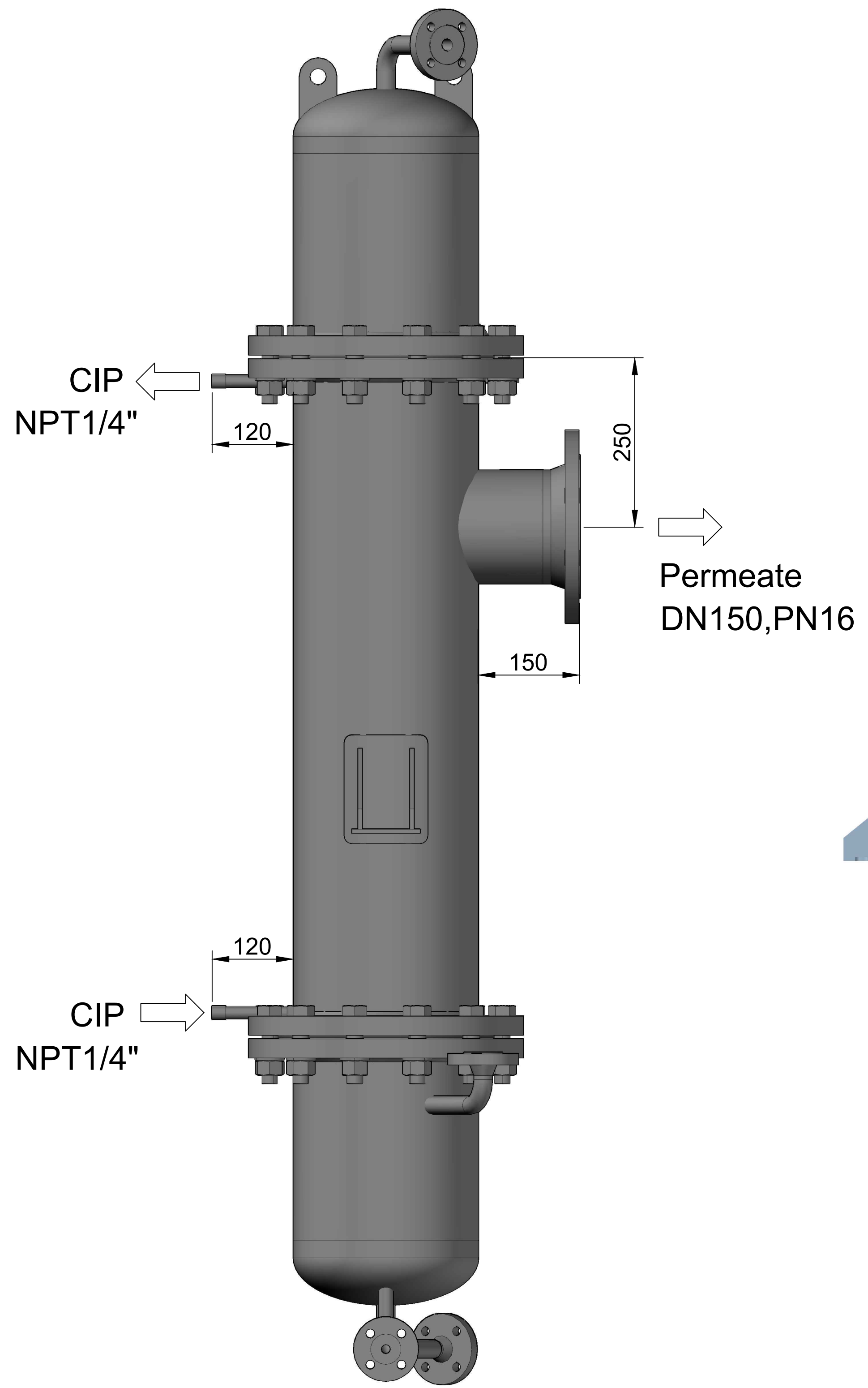
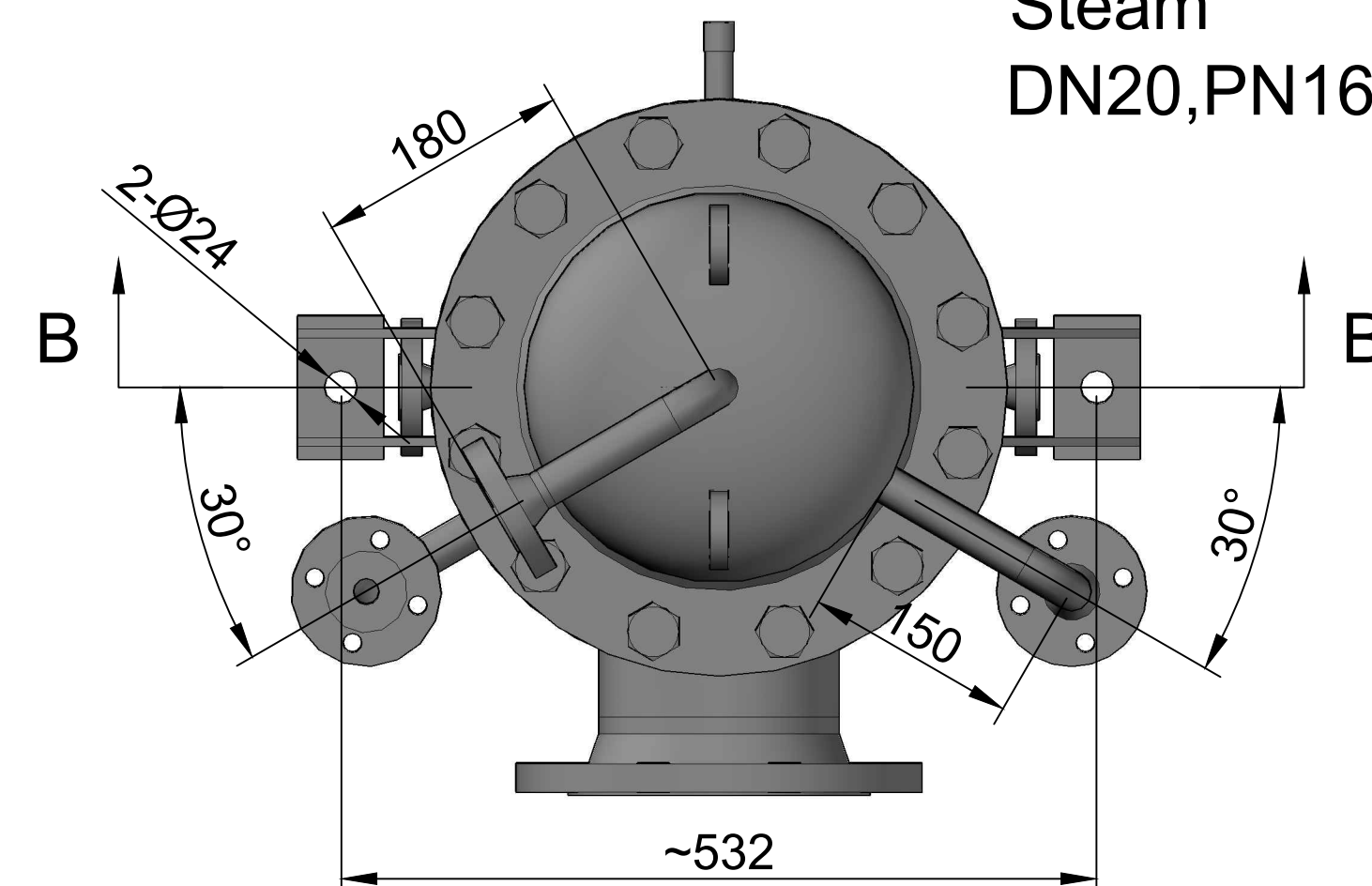
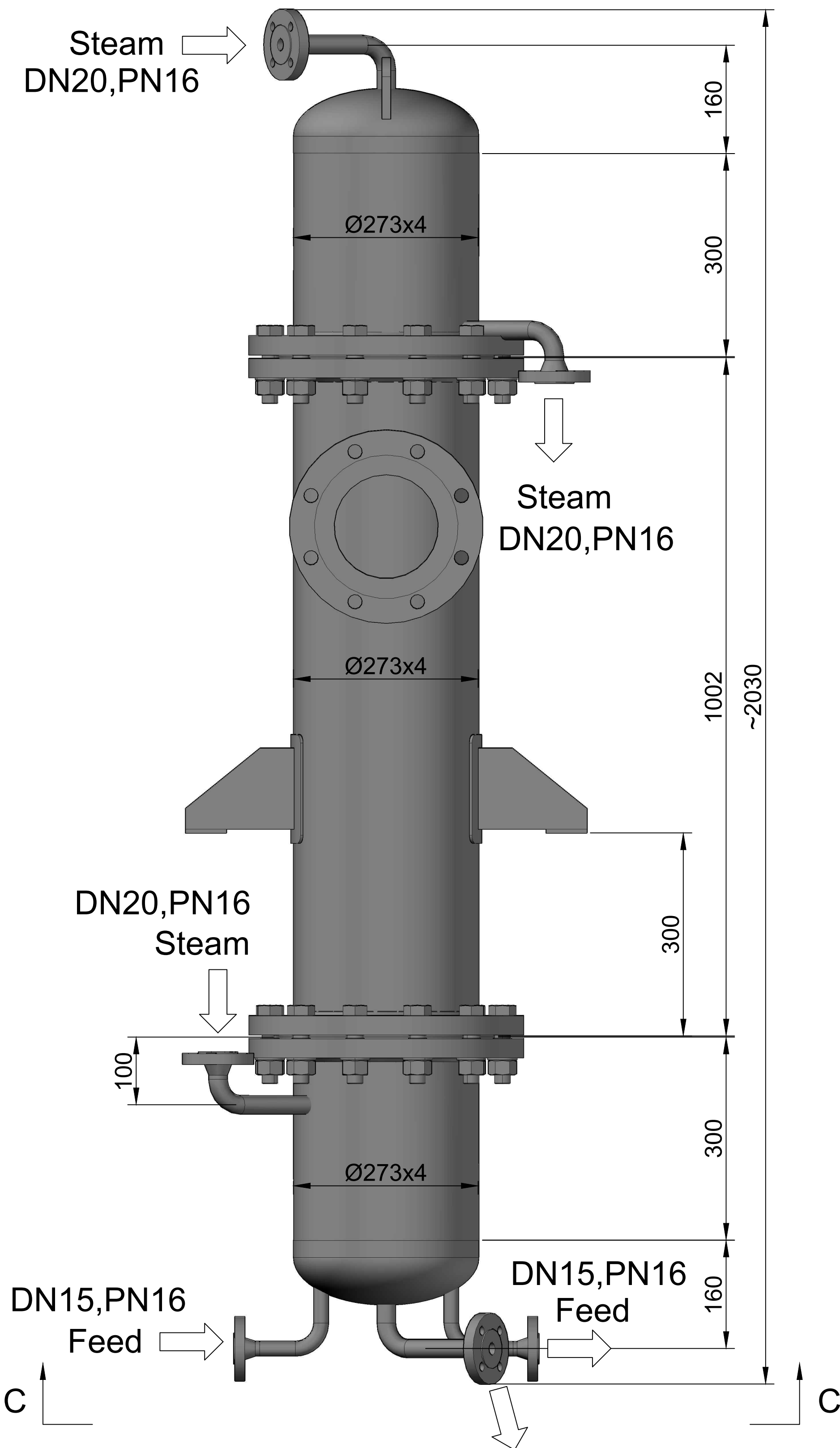


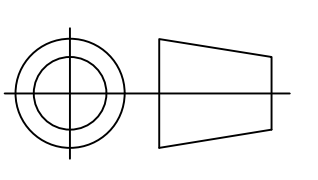

L.p.	Opis	Typ	Oznaczenie	Producent	Ilość	J.m.
1	Moduł membranowy Według rysunku MM-2-IH (2P-40S)-REV.2 Powierzchnia robocza membran – 2m ² (200 sztuk membran)		36FM-1	Pervatech	1	szt
2	Moduły membranowe wraz z odpowiednią ilością sztuk membran (wariant membran o długości 50cm) firmy Pervatech według załącznika ZZR_1 ZZR_3, MM-1(40P-1S) oraz wytycznych projektowych.		36FM-2	Pervatech	1	szt
3	Laboratoryjny moduł membranowy firmy Pervatech według załącznika ZZR_2 z 2 membranami według załącznika ZZR_1 (wariant o długości 50 cm)	PVM-050-1-A		Pervatech	1	szt

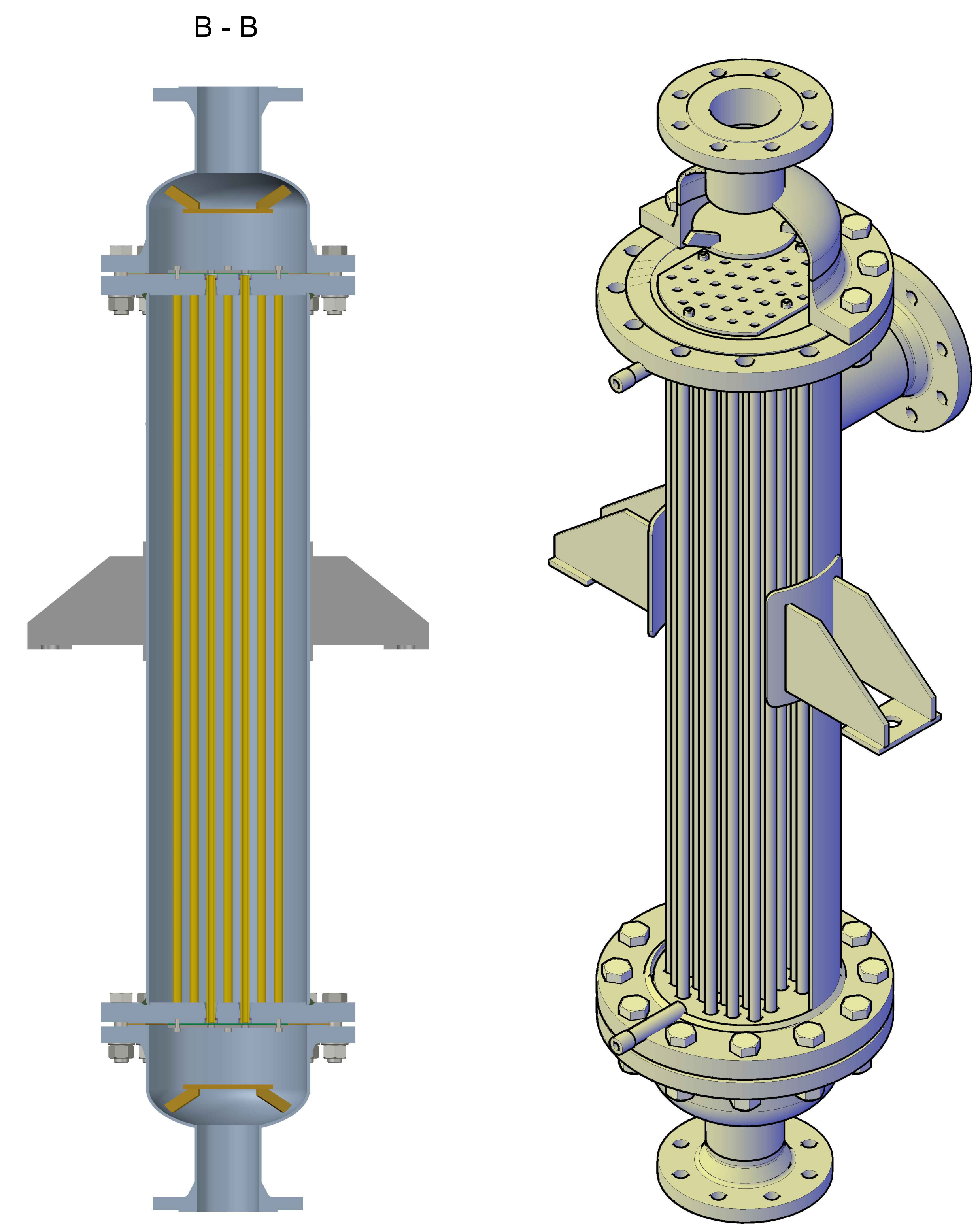
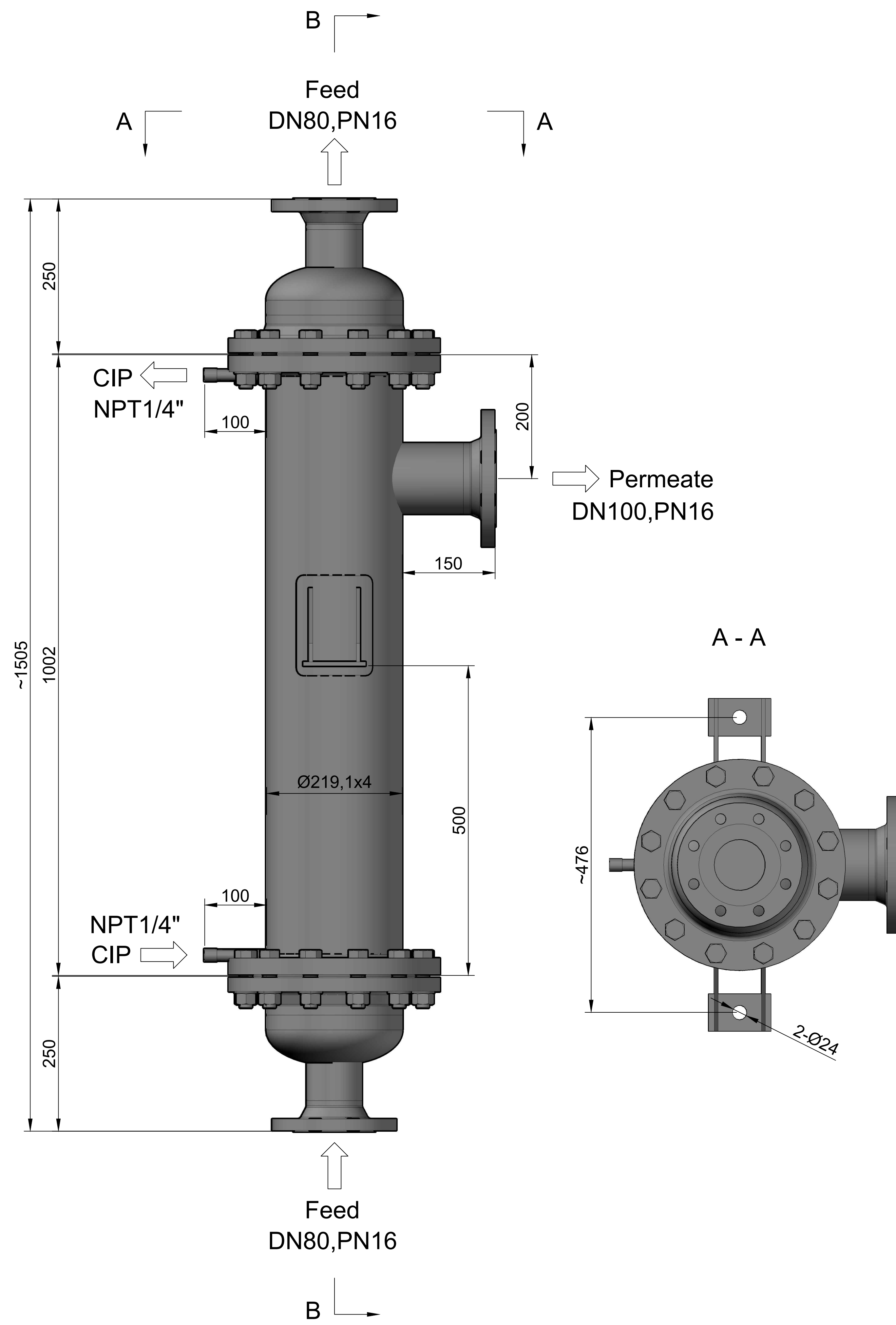
Na fakturze za towar, wszelkie dodatkowe koszty (np. koszt dostawy, opakowania, certyfikatów, itd.) należy zawrzeć w cenie towaru, bez wyszczególniania dodatkowych pozycji.

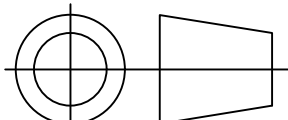
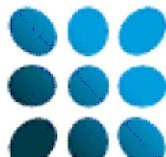
Przeprowadzenie na terenie CBR w Płocku testów SAT dla dostarczonych modułów. Czas trwania: 1 dzień. Zaoferować jako oddzielny punkt w ofercie.

Wymagana dostawa do magazynu na terenie Centrum Badawczo-Rozwojowego ORLEN S.A., zlokalizowanego przy ul. Łukasiewicza 35, 09-400 Płock.



PROJECT REF. MM-2		CUSTOMER	
PROJECT NO. ///		DRAWN BY	
	SIZE A3	DATE	
		APPROVED BY	
PERVATECH BV HELIUMSTRAAT 11 7463 PL RIJSEN THE NETHERLANDS	 E-mail : info@pervatech.nl Website: www.pervatech.com	MATERIAL	SCALE 1:10
		WEIGHT(kg)	REV. 0
		DRAWING NO. HZL007-M26-00	



PROJECT REF. MM-1			CUSTOMER			
			DRAWN BY			
PROJECT NO. ///			SIZE A3	DATE		
				APPROVED BY		
PERVATECH BV HELIUMSTRAAT 11 7463 PL RIJSSSEN THE NETHERLANDS	 PERVATECH®			MATERIAL		SCALE 1:8
				WEIGHT(kg)		
		E-mail : info@pervatech.nl Website: www.pervatech.com			DRAWING NO. HZL007-M26-00	



Datasheet

TUBULAR HYBRID SILICA HybSi® ACID RESISTANT MEMBRANE

Tubular Hybrid Silica HybSi® Acid Resistant membranes have hydrophilic characteristics, which means that the water content of the feed passes preferentially through the membrane.

MEMBRANE ELEMENT

Geometry	Tubular
Dimensions	1-channel tube 250 x 10 x 7 mm, effective membrane surface area 0.005 m ² 1-channel tube 500 x 10 x 7 mm, effective membrane surface area 0.01 m ²
External diameter tolerance	10 mm + 0.5 mm / - 0.0 mm
Substrate material	α -Al ₂ O ₃
Top layer	Hybrid Silica AR Standard
Coating position	Inside of the tube
Tube ends	Tube ends are glazed

OPERATIONAL WINDOW

Temperature	Maximum 150 °C
Pressure	Maximum 10 bar
Burst pressure	> 20 bar
pH	0.5-8.0
Chemical resistance	No reactive (e.g.) secondary amines, no solids

HANDLING, CLEANING AND STORAGE

Please note: the membranes are brittle and cannot withstand shock, excessive vibration nor mechanical bending forces.

Handling

- Always wear clean gloves when handling the membranes to prevent contamination with fungi.
- Keep all pressure gradients smaller than 0.5 bar/min.
- Hybrid silica HybSi® Acid Resistant membranes are sensitive towards sudden strong mechanical shocks and pressure fluctuations/shocks. These pressure fluctuations should be within limits.
- Do not expose wetted membranes to freezing temperatures.

HybSi®
Pervaporation Membranes



Cleaning

At the end of standard dewatering processes:

- Flush the element with clean solvent or demineralized water (max. 50 °C).
- CIP the element with appropriate means. This is either with its own solvent or typically 0.5 % to 1 % enzymatic neutral non-ionic detergent. In some cases, special CIP procedures might be applicable.
- Sterilize with formaldehyde (1 %) or equivalent.
- **Warning: Do NOT use reactive amines or alkaline cleaning agents as they may damage the membrane.**

Please consult Pervatech for more information or consult the separate cleaning datasheet.

Storage

- Store the membranes in a dry place under ambient conditions.
- Make sure that the relative humidity does not exceed 60 %, to prevent the risk of fungi growth on the ceramic element.

EXAMPLES OF APPLICATIONS WITH TUBULAR HYDROPHILIC HYBRID SILICA HYBSI® ACID RESISTANT MEMBRANES

- Breaking of azeotropes
- Removal of water from organics such as alcohols, aprotic solvents, DMAc, DMSO, DMF, NMP, phenol, THF, ACN, esters, acetates, ketones or acids and alike
- Dewatering of organic acids
- Dewatering of food products (e.g. natural vinegar, whiskey), without loss of flavor and fragrance components and therefore retention of taste and smell.
- In-situ dewatering of condensation reactions
- Dewatering of essential oils
- Separation of low molecular weight solvents (e.g. MeOH) from higher molecular weight solvents (purification)

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Datasheet

LAB SCALE MODULE PVM-050-1-A

The stainless steel PVM-050-1-A lab scale module is designed to hold one tubular membrane of 500 mm length for use in pervaporation or vapor permeation applications. The module is designed and manufactured according to the European Pressure Equipment Directive (PED) 2014/68/EU.

MODULE DATA

Module housing material	SS316L
Design standard	2014/68/EU
Design details	see table with Design data on next page
Feed connection	1/4" NPT
Retentate connection	1/4" NPT
Permeate connection	1/2" NPT
Pressure gauge connection	1/4" NPT
Sealing of membrane tubes	O-ring (EPDM-PC, VITON, FFKM)
Sealing of flanges	Gasket or O-ring (EPDM-PC, VITON, FFKM, Teflon)

MEMBRANE DATA

Standard membranes	Tubular Hybrid silica, PDMS, PEBA or POMS
Membrane dimensions	L x OD x ID = 500 x 10 x 7 mm (tubular)
Membrane surface area	0.01 m ²

NOZZLE LIST

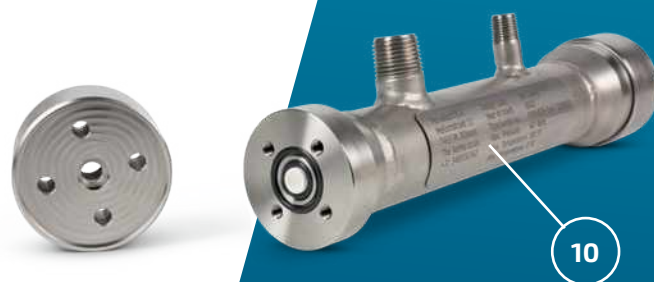
Item	Dim.	Description
N1	1/4" NPT	Inlet
N2	1/4" NPT	Outlet
N3	1/2" NPT	Vacuum piping connection
N4	1/4" NPT	Vacuum meter connection

OPERATIONAL WINDOW

Operating pressure	Maximum 60 barg
Process temperature	Maximum 180 °C (depending on membrane and sealing type)
Vacuum	1 mbar
Feed pump capacity	Up to 500 liter/h

CLEANING

Use general cleaning products for SS316.
Further depending on membrane and sealing.



10: Type and serial number

DESIGN DATA

PED Medium group	1	Dangerous
PED Phase	Gas	
Hydrostatic test pressure	110	barg
Operating pressure	60	barg
Operating Temperature	180	°C
Design pressure	65	barg
Design Temperature	200	°C
Volume	0.47	liter
Weight of vessel empty	3.5	kg
Corrosion allowance	N/A	mm
Classification acc. PED 2014/68/EU	Art.4, par.3	
Design code	EN13445	
Inspection	Beta Technology	
Certificate	DoC	***

*** Declaration of Conformity

Remarks:

- * Materials produced according to European Harmonized Standards
- * Material certificates according to EN10204:2004
- * Surface treatment inside Clean and dry, outside Pickled and passivated

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pervatech.com



Datasheet

INDUSTRIAL SCALE MODULE PVM-050-300-AS

The stainless steel PVM-050-300 industrial scale module is designed to hold 300 1-channel tubular membranes of 500 mm length each, for use in pervaporation or vapor permeation applications. The module is designed and manufactured according to the European Pressure Equipment Directive (PED) 2014/68/EU or the ASME standard (depending on customer requirements).

MODULE DATA

Module housing material	SS316L
Design standard	2014/68/EU
Design details	see table with Design data on next page
Feed connection	3" WNF 150
Retentate connection	3" WNF 150
Permeate connection	4" WNF 150
Pressure gauge connection	1" NPT
Sealing of membrane tubes	O-ring (EPDM-PC, VITON, FFKM)
Sealing of flanges	Gasket or O-ring (EPDM-PC, VITON, FFKM, Teflon)

MEMBRANE DATA

Standard membranes	Tubular Hybrid silica, PDMS, PEBA or POMS
Membrane dimensions	L x OD x ID = 500 x 10 x 7 mm (tubular)
Membrane surface area	3,17 m ²

MODULE CONFIGURATION

Membranes are placed in series

NOZZLE LIST

Item	Dim.	Description
N1	3" WNF 150	Inlet
N2	3" WNF 150	Outlet
N3	4" WNF 150	Vacuum piping connection
N4	1/4" NPT	Instrument connection



OPERATIONAL WINDOW

Operating pressure	Maximum 10 barg
Process temperature	Maximum 180 °C (depending on membrane and sealing type)
Vacuum	1 mbar
Feed pump capacity	Up to 75000 L/h

CLEANING

Use general cleaning products for SS316.
Further depending on membrane and sealing.

DESIGN DATA

PED Medium group	1	Dangerous
PED Phase	Gas	
Hydrostatic test pressure	14,3	barg
Operating pressure	10	barg
Operating Temperature	180	°C
Design pressure	10	barg
Design Temperature	200	°C
Volume	151	liter
Weight of vessel empty	345	kg
Corrosion allowance	N/A	mm
Classification acc. PED 2014/68/EU	IV	
Design code	EN1344	
or		
Classification acc. ASME	VIII, div. 1	
Design code	ASME	
Inspection	Notified Body	
Certificate	CE or U-Stamp	

Remarks:

- * These products are generally designed according to customer process, media and regulatory requirements
- * Materials produced according to European Harmonized Standards
- * Material certificates according to EN10204:2004
- * Surface treatment inside Clean and dry, outside Pickled and passivated

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