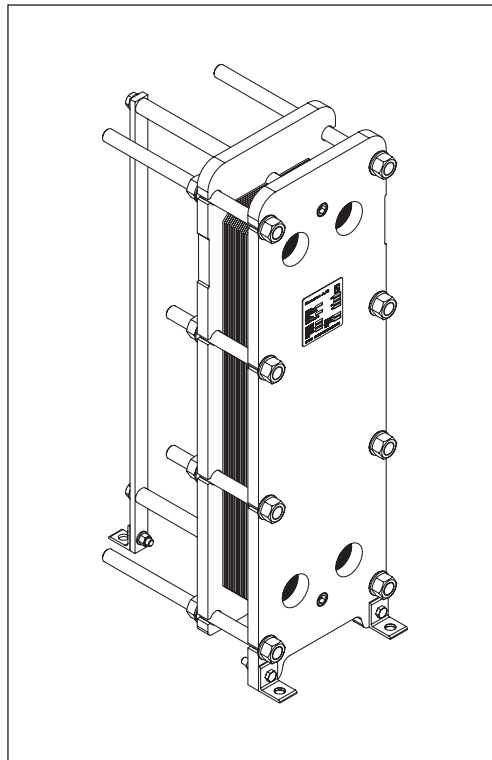


## Data sheet

# Gasketed Plate Heat Exchangers (DN 300 / 12")

## S81 / S121 / S188 / S251

## Description



SONDEX® gasketed plate heat exchangers are the ideal choice for a wide range of applications across numerous market segments.

We have the largest plate portfolio in the world, and we customize each heat exchanger to meet your exact requirements. Innovative technologies and smart design make our gasketed plate heat exchangers a stellar investment.

**Benefits:**

- Individually customized solution that perfectly matches your requirements and lowers your energy consumption.
- High performance and a low pressure drop eliminate unnecessary burdens on your system and optimize overall system performance.
- The design results in a compact solution with a small footprint, simple installation, and easy access for maintenance.

**Common applications:**

- HVAC industry
- Marine/offshore industry
- Dairy/food/beverage industry
- Sugar industry
- Biogas industry
- Pulp and paper industry
- Heavy industry
- Mining industry
- Petrochemical industry
- Chemical industry

**Main data:**

- Min. temperature  $-10\text{ }^{\circ}\text{C}$
- Max. temperature  $180\text{ }^{\circ}\text{C}$
- Max. working pressure 16 / 25 bar (10 bar on request)
- Water and different fluids, steam
- Connection size DN 300 or 12"

**Approvals:**

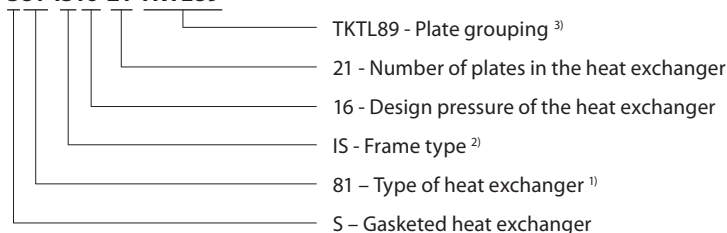
- Please contact your local Danfoss/SONDEX® sales representative for an overview of the available approvals in your region

**Construction standard:**

- EN13445 (PED 2014/68/EU)
- ASME sec VIII, Div. 1

**Naming of units**

**S81-IS16-21-TKTL89**



**<sup>1)</sup> Type of heat exchanger:**

81 - ...  
 Letter S81 shows type of the attachment of gasket to plate:  
 e.g. 81 (without A) – SonderLock  
 81A (with A) – Hang-on

**<sup>2)</sup> Description of frame types:**

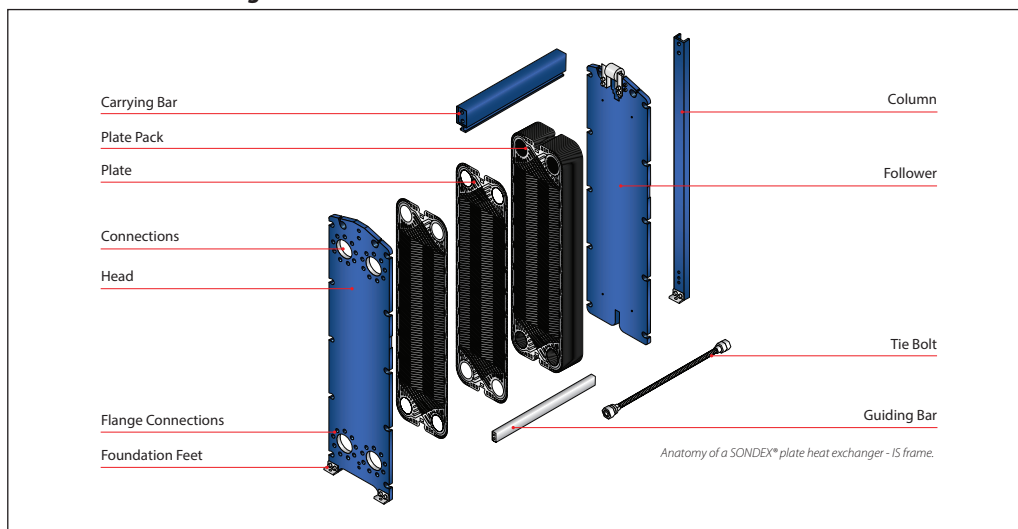
There are few different frame types which can be offered for different applications and duties.  
 IS – with suspension roller,  
 IG – without suspension roller,  
 FS – food/sanitary with suspension roller,  
 FG - food/sanitary,  
 ST – simple design of frame with threaded connections

**<sup>3)</sup> Channel grouping:**

In this example, the heat exchanger combines TK and TL channels. The share of TL channels equals 89% of the total number of channels.  
 The number of channels is defined as “the number of plates - 1”.  
 TK - short thermal length  
 TM - medium thermal length  
 TL - long thermal length

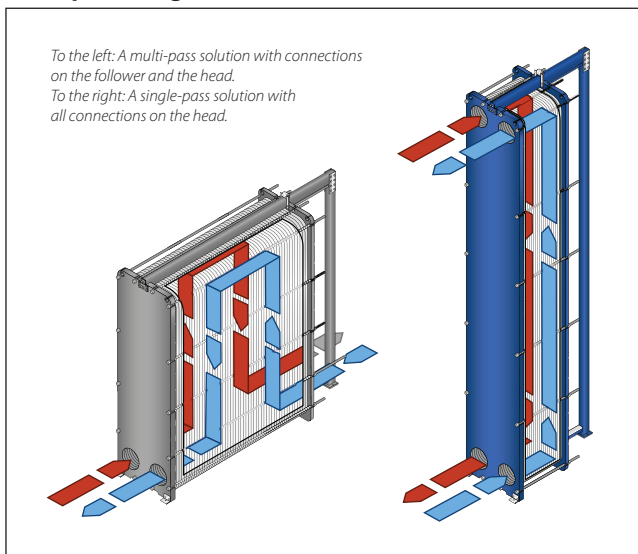
**Heat exchanger design**

**Gasketed heat exchangers consist of**



**Heat exchanger design**  
(continued)

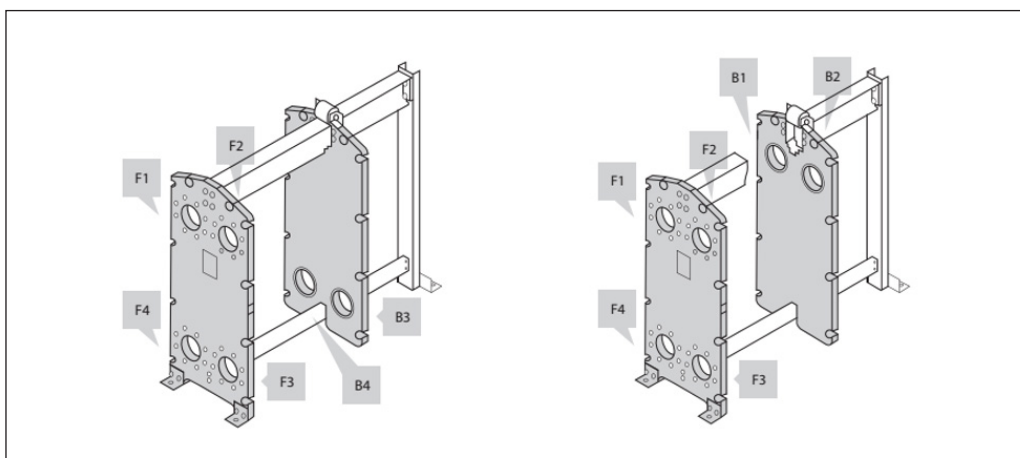
**Multi-pass design**



**Connections**

The heat exchanger may have connections on both front and back-end sides of the unit.

Connections on the front-end plate are marked with F and connections on the back-end plate are marked with B. The numbers 1, 2, 3 and 4 designate the position of the connection on the end-plate from the top-left port clockwise.



Technical data

Heat exchanger **S67 / S113 / S155**

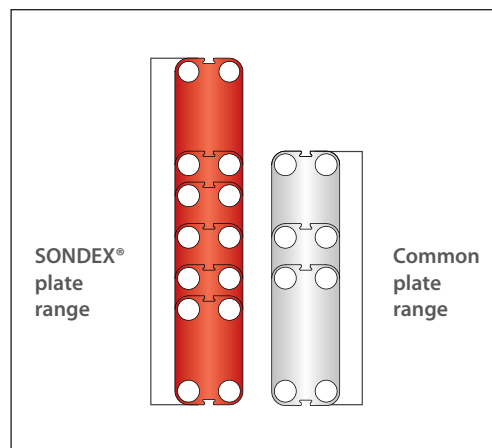
Type		S81	S121	S188	S251
Max. working pressure	PN (bar)	(10) <sup>1)</sup> , 16, 25			
Max. operating temperature	°C	Up to 180			
Min. operating temperature		-10			
Flow medium		Water and different fluids, steam			
Volume / channel	l	3.1	4.7	7.3	9.8
Connection size		DN 300 / 12"			
Connection type		• DN 300/12" flanges. Carbon steel, rubberlined or clad with AISI 316L (other materials available on request)			
Plate material		Stainless steel EN 1.4404 (AISI 316L), EN 1.4301 (AISI 304), SMO254, Hastelloy C276, titanium Gr.1 Other materials available on request			
Plate thickness	mm	0.4; 0.5; 0.6; 0.7 <sup>1)</sup> 2 x 0.4 SonderSafe plates <sup>2)</sup> Other thicknesses available on request			
Gasket material		NBR, EPDM, Other materials available on request			
Gasket attachment type		Sonder Lock			
Liners in connections		• Rubber NBR, EPDM, • Stainless steel EN 1.4404 (AISI 316L), EN 1.4301 (AISI 304), SMO254, Hastelloy C276, titanium Gr.1			
Frame		• Painted frame, color RAL 5010 (other colors available on request) • Stainless steel frame, designed for the sanitary applications (e.g. food and dairy industries)			
Frame painting specification		Painting available for corrosion categories C2L, C4M, C5M			

<sup>1)</sup> Not available for all frame variations

<sup>2)</sup> SonderSafe - double plate

Using the right plate for each individual duty is very important, as it greatly impacts the efficiency of the entire installation. It is important that the length of the plates and the type of pattern match the requirements of individual thermal duty. We have developed a wide plate portfolio to provide the perfect plate and connection size for any duty. No application is too small or too big for us - we provide the optimal technical solution every time.

Our extensive SONDEX® plate portfolio includes plates that lie outside the commonly manufactured plate sizes to cover all thermal duties optimally.



Accessories

**Insulation**

*Recommended applications:*

The insulation jacket for the plate heat exchanger is used in different applications with high temperatures and cooling systems.

Application	Heating	Cooling
Material	45 mm mineral wool Not flammable DIN EN 4102A2	40 mm PU-foam DIN 4102-1 B2
Outer cap	1 mm aluminium "Stucco" Embossed	
Internal insulation	0.05 mm aluminium foil	
Panel fixation	Plastic rivets	
Temperature	20 ... 200 °C	-50 ... -80 °C
U-value	0.55 W/m <sup>2</sup> K	0.38 W/m <sup>2</sup> K
Insulation class	3 <sup>1)</sup>	4 <sup>1)</sup>
Heat loss	17.1 W/m <sup>2</sup>	-

**Please note:**

*Inlet and outlet temperatures in the exchanger have been based on 90/50 – 30/70 °C.*

<sup>1)</sup> *The loss of heating/cooling is stated per m<sup>2</sup> surface on the insulation jacket.*

*The bottom of the heat exchanger is not insulated and this fact has been excluded.*

*A possible loss of ventilation, largely dependent on the mounting of the heat exchanger, has not been taken into account either.*

**Drip trays**

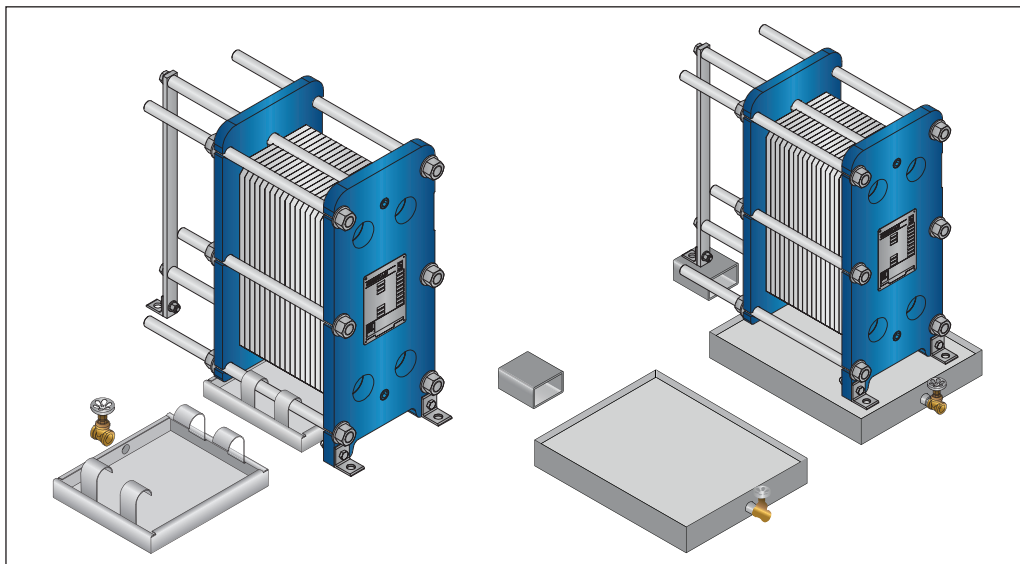
*Recommended applications:*

The drip tray is available in two types. A "fail-safe" solution which prevents water or liquid from leaking onto the floor, or when the heat exchanger is dismantled, or opened for inspection and maintenance. And an insulated drip tray for cooling applications, which collects condensate formed outside of the plate heat exchanger.

*Materials*

Drip tray consists of:

- 1 mm galvanized steel frame
- Hanging brackets in galvanized steel
- 60 mm Polyurethane insulation for cooling applications
- Draining valve.



**Spare parts**

Spare parts for gasketed heat exchangers, such as plates, gaskets, frame parts can be ordered for maintenance, repair, increasing heat exchanger capacity, etc.

Please contact your local Danfoss or SONDEX® sales representative to provide you with information on spare parts available for gasketed heat exchangers.

**Selection and ordering**

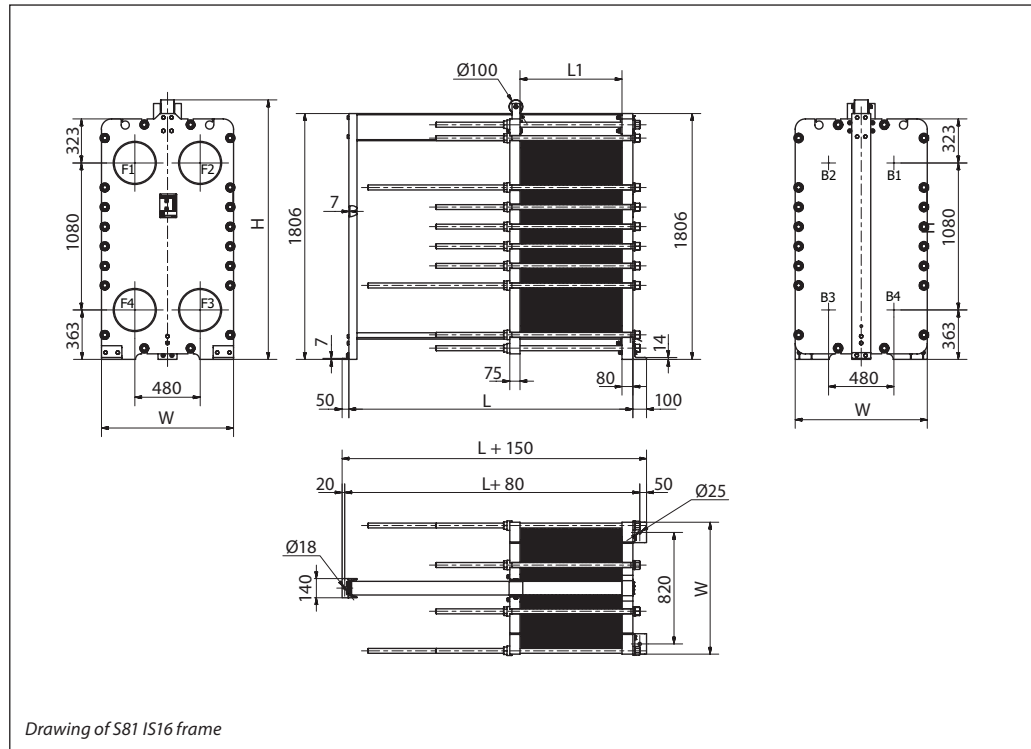
Please contact your local SONDEX® or Danfoss sales representative for the selection and / or ordering of the heat exchangers, spare parts, and accessories.

For contact information please visit <https://www.danfoss.com/en/contact-us>.

**Dimensions**  
Non-sanitary applications

Any connection can be used for primary side in.  
All the rest are made correspondingly.

**S81 frames**



Drawing of S81 IS16 frame

Number of plates <sup>1)</sup>	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty <sup>2)</sup> (kg)	Connection type
<b>S81 IS16</b>					
7 – 29	687	970 (38.19")	1906 (75.04")	2108	DN 300 flange or 12" flange
30 – 95	1087			2498	
96 – 145	1387			2806	
146 – 179	1587			3024	
180 – 262	2087			3546	
263 – 348	2740		4546		
349 – 431	3240		5109		
432 – 598	4240		6240		
599 – 765	5240		7370		
766 – 931	6240		8497		
<b>S81 IS25</b>					
7 – 31	697	1030 (40.55")	1906 (75.04")	2430	DN 300 flange or 12" flange
32 – 96	1097			2939	
97 – 145	1397			3323	
146 – 178	1597			3581	
179 – 260	2097			4222	
261 – 342	2740		4863		
343 – 424	3240		5504		
425 – 588	4240		6786		
589 – 752	5240		8068		
753 – 916	6240		9351		

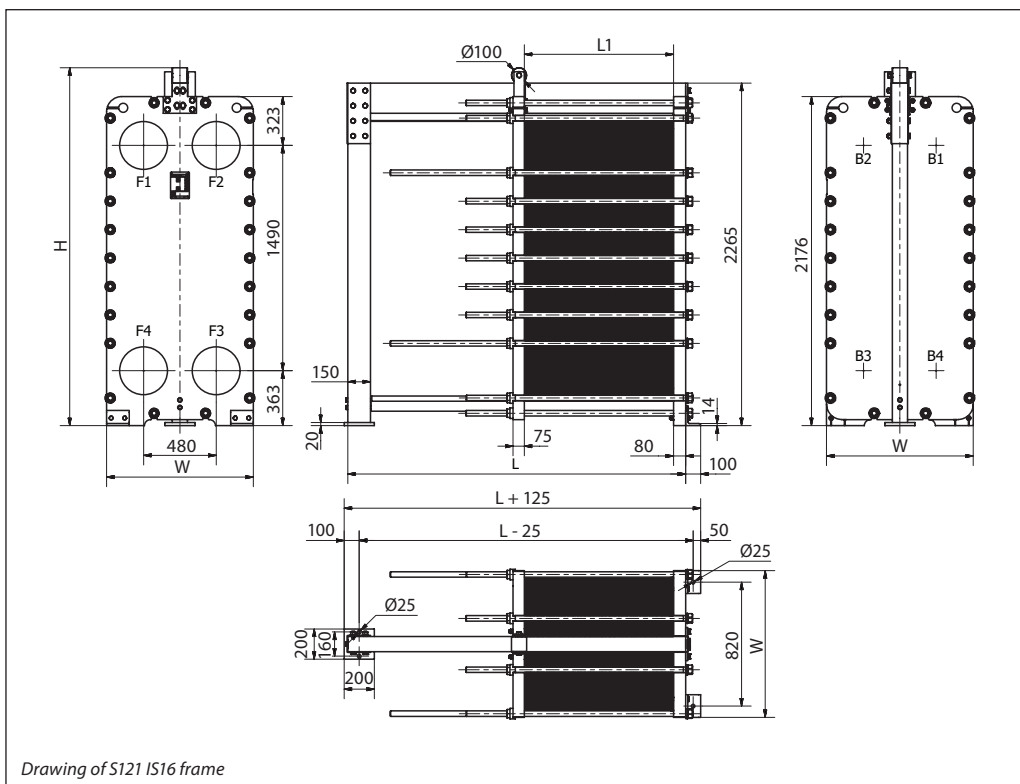
<sup>1)</sup> the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;

<sup>2)</sup> the maximum weight of the empty unit with the maximum allowable number of plates;

<sup>3)</sup> PN class 6 bar / 10 bar is available on request.

Dimensions (continued)  
Non-sanitary applications

S121 frames

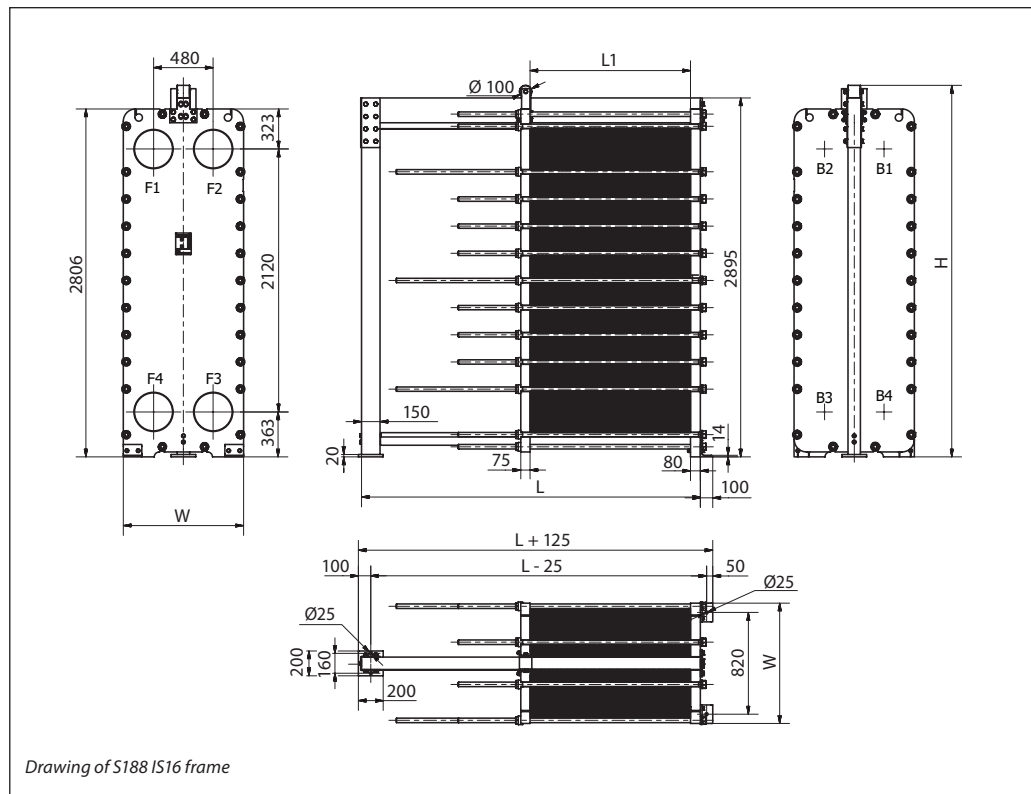


Number of plates <sup>1)</sup>	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty <sup>2)</sup> (kg)	Connection type
<b>S121 IS16</b>					
7 - 29	830	970 (38.19")	2366 (93.15")	2713	DN 300 flange or 12" flange
30 - 95	1230			3229	
96 - 145	1530			3634	
146 - 179	1730			3929	
180 - 262	2230			4585	
263 - 345	2730			5273	
346 - 429	3230			6037	
430 - 595	4230			7433	
596 - 762	5230			8911	
763 - 929	6230			10332	
<b>S121 IS25</b>					
7 - 26	850	1030 (40.55")	2366 (93.15")	4171	DN 300 flange or 12" flange
27 - 91	1250			4820	
92 - 140	1550			5309	
141 - 173	1750			5637	
174 - 255	2250			6456	
256 - 337	2750			7273	
338 - 419	3250			8091	
420 - 583	4250			9726	
584 - 747	5260			11362	
748 - 911	6260			12997	

<sup>1)</sup> the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;  
<sup>2)</sup> the maximum weight of the empty unit with the maximum allowable number of plates;  
<sup>3)</sup> PN class 6 bar / 10 bar is available on request.

Dimensions (continued)  
Non-sanitary applications

S188 frames



Drawing of S188 IS16 frame

Number of plates <sup>1)</sup>	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty <sup>2)</sup> (kg)	Connection type
<b>S188 IS16</b>					
7 - 29	830	970 (38.19")	2996 (117.95")	3553	DN 300 flange or 12" flange
30 - 95	1230			4226	
96 - 145	1530			4752	
146 - 179	1730			5132	
180 - 262	2230			5988	
263 - 345	2730			6878	
346 - 429	3230			7848	
430 - 595	4230			9652	
596 - 762	5230			11554	
763 - 929	6230			13463	
<b>S188 IS25</b>					
7 - 26	850	1030 (40.55")	2996 (117.95")	4540	DN 300 flange or 12" flange
27 - 91	1250			5323	
92 - 140	1550			5958	
141 - 173	1750			6412	
174 - 255	2250			7435	
256 - 337	2750			8590	
338 - 419	3250			9693	
420 - 583	4250			11896	
584 - 747	5250			14230	
748 - 911	6250			16437	

<sup>1)</sup> the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;

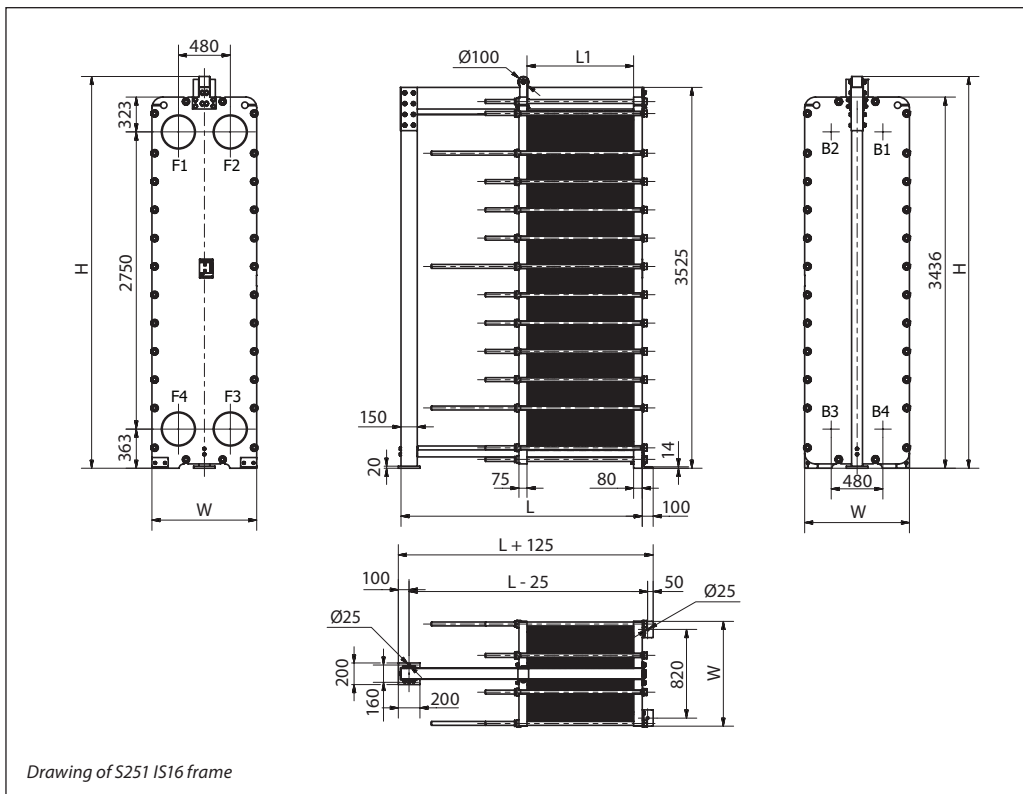
<sup>2)</sup> the maximum weight of the empty unit with the maximum allowable number of plates;

<sup>3)</sup> PN class 10 bar is available on request.



Dimensions (continued)  
Non-sanitary applications

S251 frames



Drawing of S251 IS16 frame

Number of plates <sup>1)</sup>	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty <sup>2)</sup> (kg)	Connection type
<b>S251 IS16</b>					
7 - 29	830	970 (38.19")	3626 (142.76")	4393	DN 300 flange or 12" flange
30 - 95	1230			5222	
96 - 145	1530			5869	
146 - 179	1730			6332	
180 - 262	2230			7386	
263 - 345	2730			8479	
346 - 429	3230		9666		
430 - 595	4230		11861		
596 - 762	5230		3878 (152.68")	14249	
763 - 929	6230		16485		
<b>S251 IS25</b>					
7 - 26	850	1030 (40.55")	3626 (142.76")	5603	DN 300 flange or 12" flange
27 - 91	1250			6541	
92 - 140	1550			7353	
141 - 173	1750			7910	
174 - 255	2250			9173	
256 - 337	2750			10578	
338 - 419	3250		11932		
420 - 583	4250		14483		
584 - 747	5250		3878 (152.68")	17086	
748 - 911	6250		19623		

<sup>1)</sup> the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;

<sup>2)</sup> the maximum weight of the empty unit with the maximum allowable number of plates;

<sup>3)</sup> PN class 10 bar is available on request.





