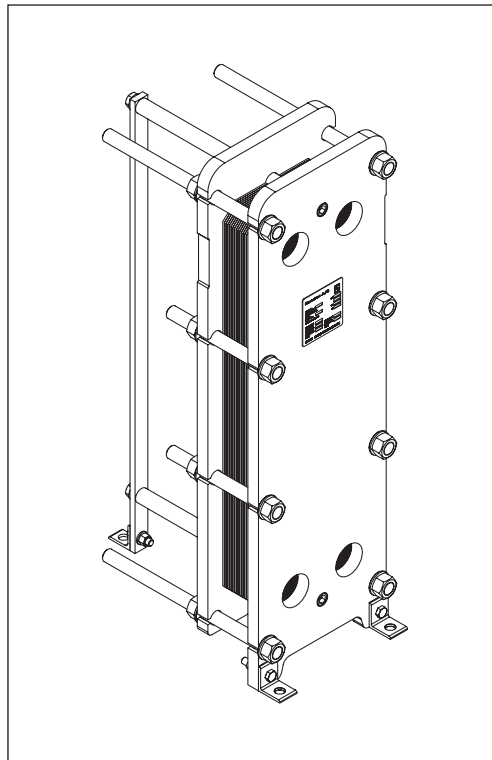


Data sheet

Gasketed Plate Heat Exchangers (DN 100 / 4")

S21 / S21A / S21SE / S22 / S36 / S37 / S45SE / S47 / S55SE / S64

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 DN 100

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 4" or DN 100

Approvals:

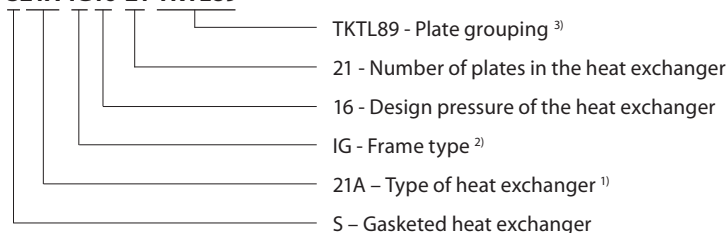
- Please contact your local Danfoss/SONDEX® sales representative for an overview of the available approvals in your region

Construction standard:

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

Naming of units

S21A-IG16-21-TKTL89



¹⁾ Type of heat exchanger:

21 - ...

Letter A shows type of the attachment of gasket to plate:

e.g. 21 (without A) – SonderLock

21A (with A) – Hang-on

SE - SonderLock Energy Saving plate design

²⁾ 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

³⁾ 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”.

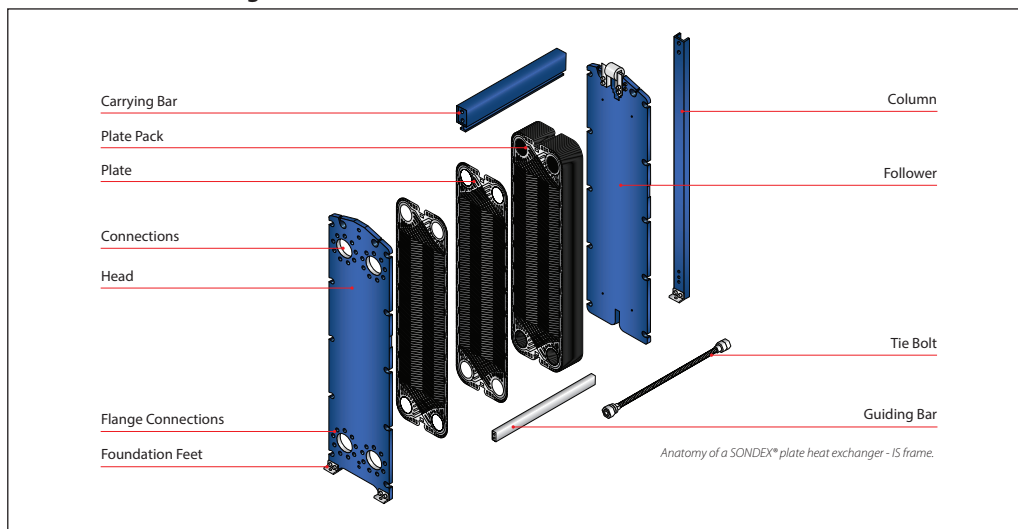
TK - short thermal length

TM - medium thermal length

TL - long thermal length

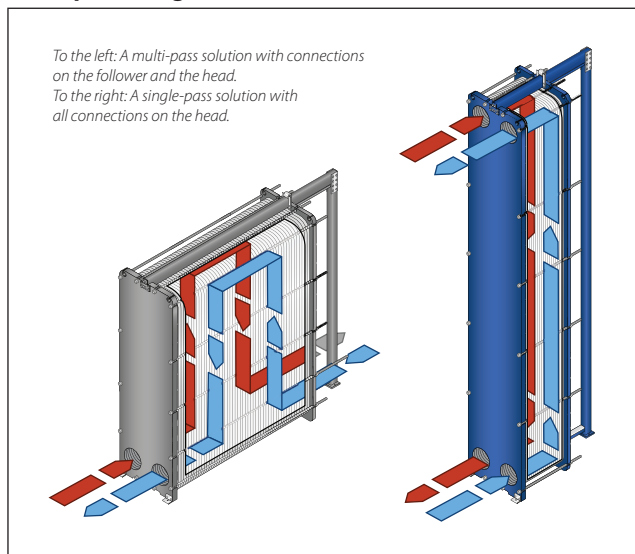
Heat exchanger design

Gasketed heat exchangers consist of



Heat exchanger design
(continued)

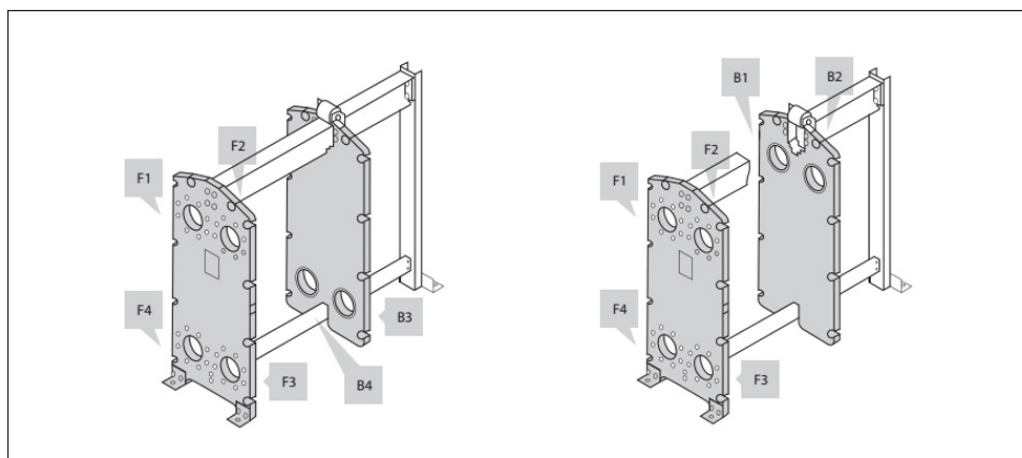
Multi-pass design



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 **S21 / S21A / S21SE / S22 / S36 / S37 / S45SE / S47 / S55SE / S64 (DN 100)**

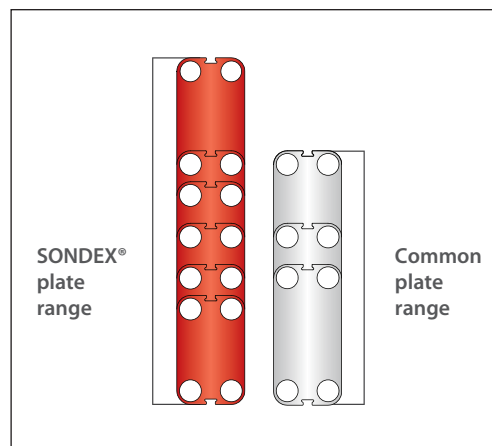
Type		S21(S21A)	S21SE	S22	S36	S37	S45SE	S47	S55SE	S64
Max. working pressure	PN (bar)	(10) ¹⁾ , 16, 25								
Max. operating temperature	°C	Up to 180								
Min. operating temperature		-10								
Flow medium		Water and different fluids, steam								
Volume / channel	l	0,6	0,48	0,75	0,9	1,2	0,81	1,15	1,11	1,7
Connection size		DN 100 / 4"								
Connection type		<ul style="list-style-type: none"> • DN 100/4" flanges. Carbon steel, rubberlined or clad with AISI 316L (other materials available on request) • DN 80 / 3" Dairy union (for food/sanitary industry frames only) 								
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 (ti) ¹⁾ 2 x 0.4 SonderSafe plates ²⁾ Other thicknesses available on request								
Gasket material		NBR, EPDM, FKM Other materials available on request								
Gasket attachment type		Hang-on; Sonder Lock								
Liners in connections		<ul style="list-style-type: none"> • Rubber NBR, EPDM, FKM • Stainless steel EN 1.4404 (AISI 316L), EN 1.4301 (AISI 304), SMO254, Hastelloy C276, titanium Gr.1 								
Frame		<ul style="list-style-type: none"> • 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								

¹⁾ Not available for all frame variations

²⁾ 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 ² K	0.38 W/m ² K
Insulation class	3 ¹⁾	4 ¹⁾
Heat loss	17.1 W/m ²	-

Please note:

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

¹⁾ *The loss of heating/cooling is stated per m² 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

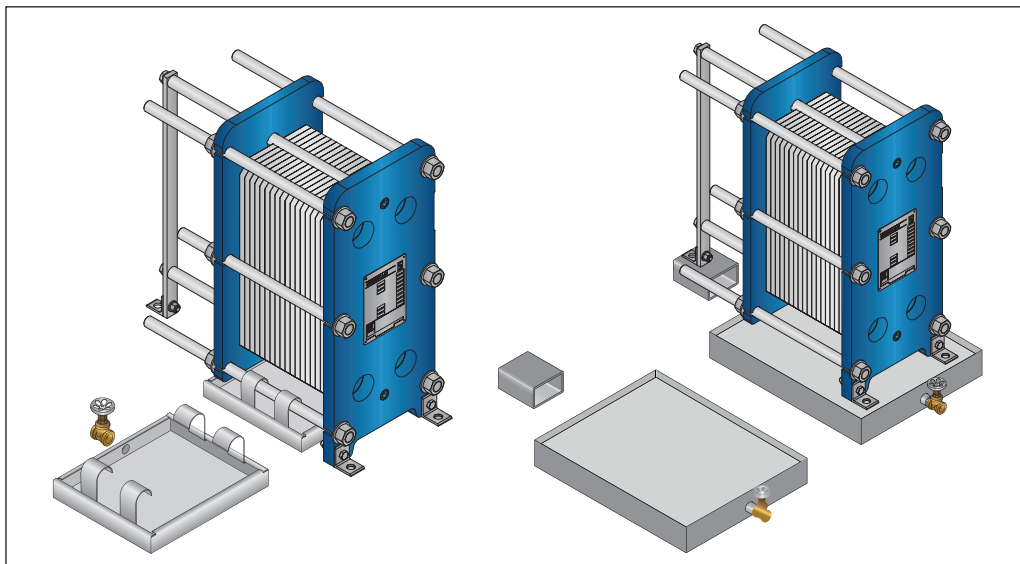
Recommended applications:

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

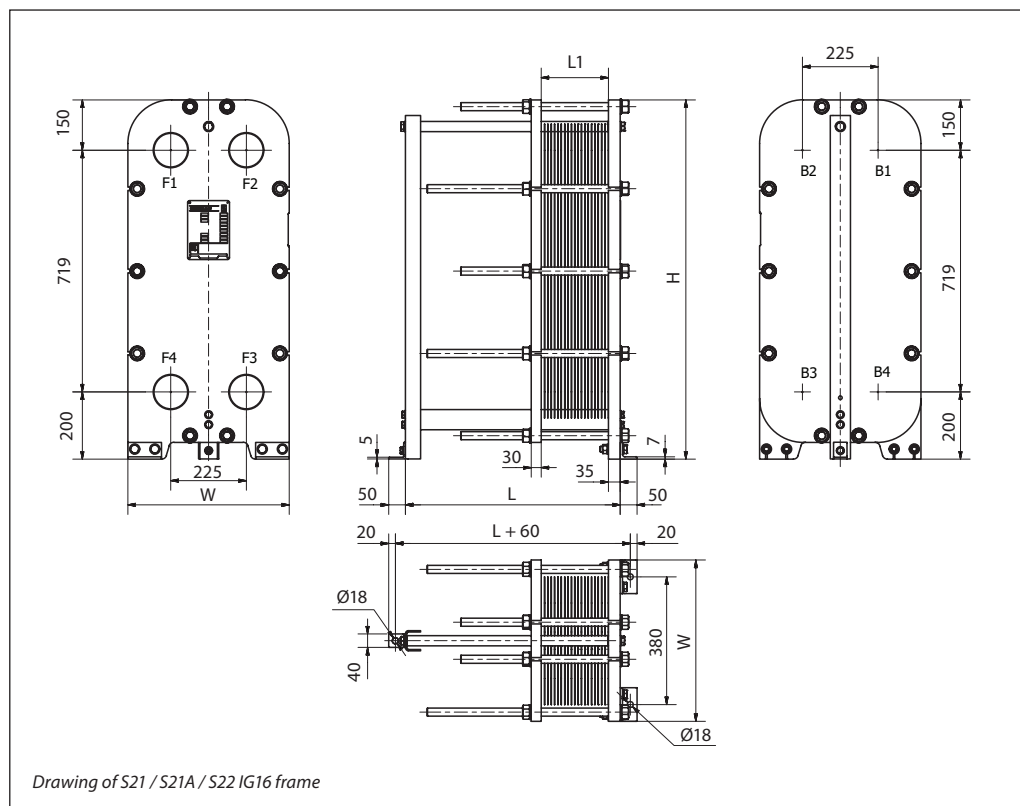
Please contact your local SONDEX® or Danfoss sales representative for the selection and / or ordering of the heat exchangers, spare parts, and accessories.

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.

S21 / S21A / S22 frames

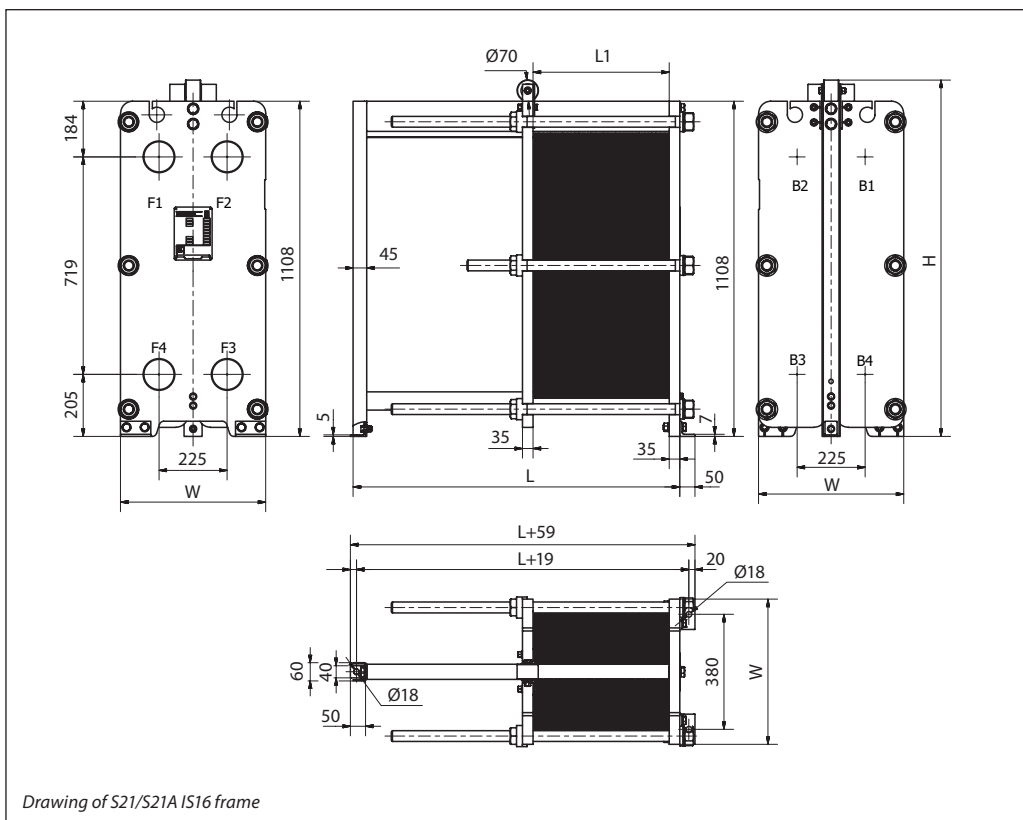


Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S21 IG16					
7 - 42	439	480 (18.89")	1069 (42.09")	320	DN 100 flange or 4"
43 - 60	539			349	
61 - 79	639			382	
80 - 152	1039			499	
S21A IG16					
7 - 42	439	480 (18.89")	1069 (42.09")	320	DN 100 flange or 4"
43 - 60	539			349	
61 - 79	639			382	
80 - 152	1039			499	
S22 IG16					
7 - 25	439	480 (18.89")	1069 (42.09")	296	DN 100 flange or 4"
26 - 40	539			321	
41 - 54	639			347	
55 - 112	1039			443	

¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;
³⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S21 / S21A / S22 frames

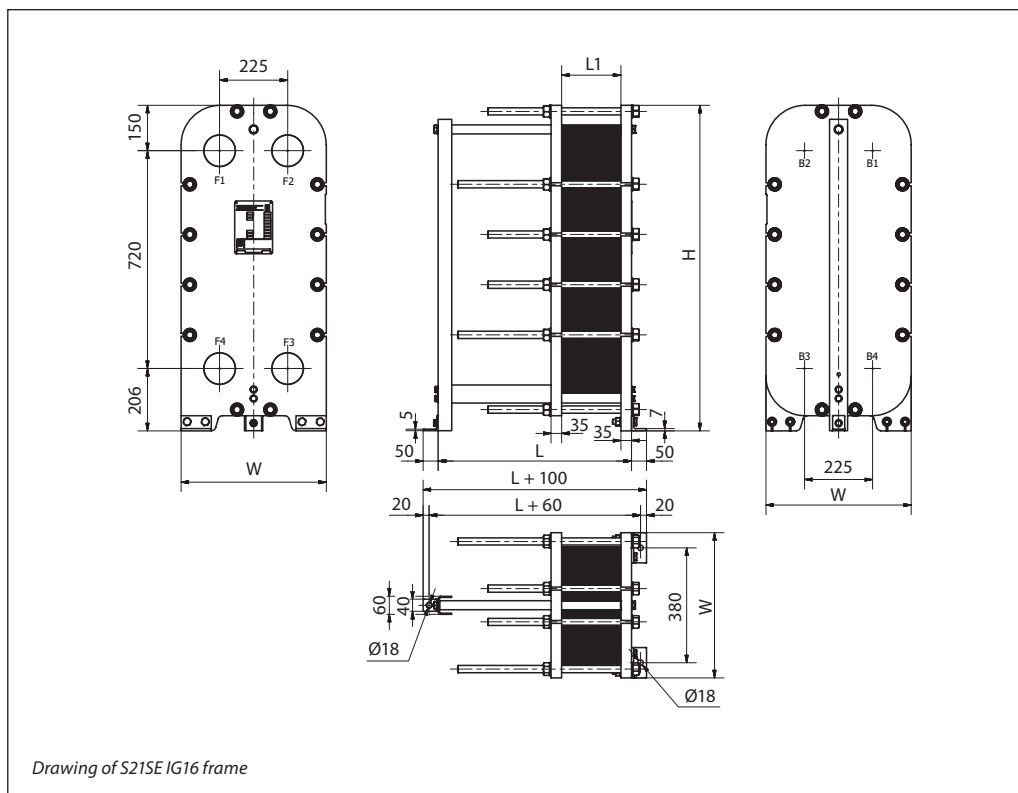


Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S21 / S21A IS16					
7 - 70 ³⁾	680	495 (19.48")	1178 (46.38")	568	DN 100 flange or 4"
71 - 142 ³⁾	1080			701	
143 - 197 ³⁾	1380			802	
198 - 233 ³⁾	1580			868	
234 - 324 ³⁾	2080			1036	
S21 / S21A IS25					
7 - 67 ³⁾	685	495 (19.48")	1178 (46.38")	600	DN 100 flange or 4"
68 - 139 ³⁾	1085			752	
140 - 192 ³⁾	1385			864	
193 - 228 ³⁾	1585			941	
229 - 317 ³⁾	2085			1129	
S22 IS16					
7 - 47 ³⁾	680	495 (19.48")	1178 (46.38")	535	DN 100 flange or 4"
48 - 105 ³⁾	1080			649	
106 - 149 ³⁾	1380			735	
150 - 178 ³⁾	1580			792	
179 - 250 ³⁾	2080			933	
S22 IS25					
7 - 54 ³⁾	685	495 (19.48")	1178 (46.38")	561	DN 100 flange or 4"
55 - 111 ³⁾	1085			689	
112 - 154 ³⁾	1385			785	
155 - 182 ³⁾	1585			849	
183 - 254 ³⁾	2085			1010	

¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;
³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;
⁴⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S21SE frames

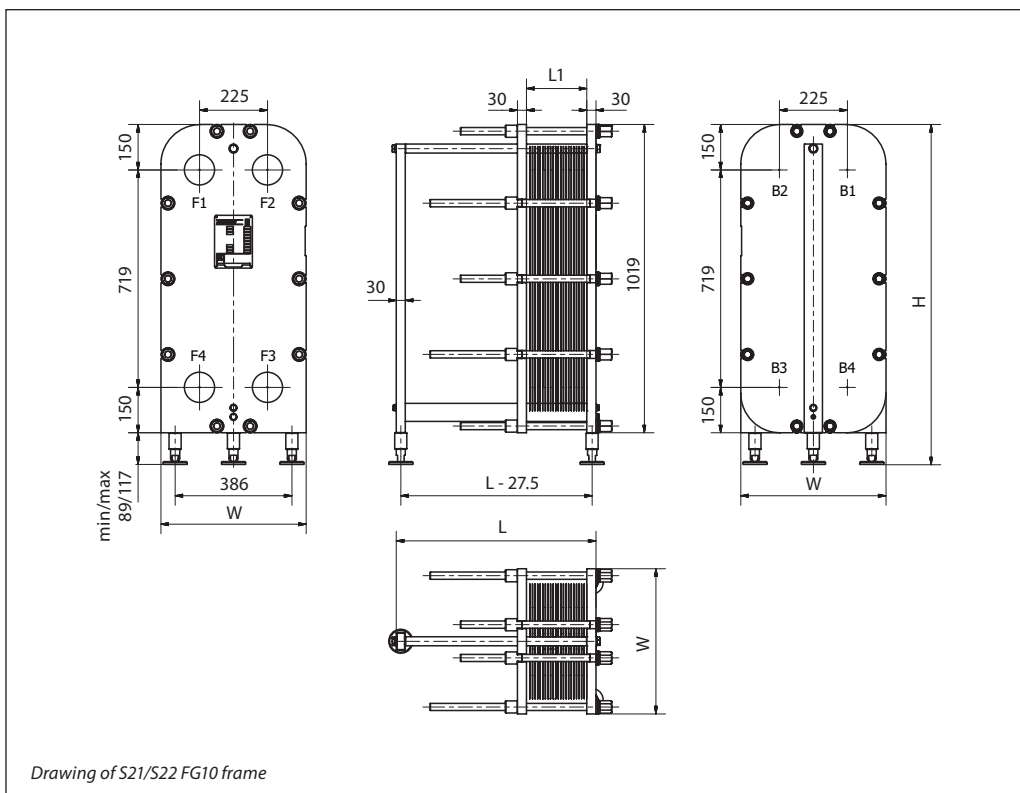


Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S21SE IG16					
7 - 46	439	480 (18.89")	1076 (42.4")	349	DN 100 flange or 4"
47 - 66	539			383	
67 - 86	639			418	
87 - 166	1039			552	
S21SE IS16					
7 - 76	685	495 (19.5")	1185 (46.65")	481	DN 100 flange or 4"
77 - 156	1085			618	
157 - 216	1385			722	
217 - 256	1585			796	
257 - 356	2085			969	
S21SE IS25					
7 - 72	695	495 (19.5")	1185 (46.65")	582	DN 100 flange or 4"
73 - 150	1095			740	
151 - 209	1395			844	
210 - 249	1595			951	
250 - 347	2095			1151	

¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;
³⁾ PNclass 10 bar is available on request

Dimensions (continued)
Sanitary applications

S21 / S21A / S22 frames



Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S21 / S21A / (S22) FG10					
7 - 38 (7 - 22)	460	480 (18.89")	1108 - 1136 ⁴⁾ (43.62" - 44.72")	292 (274)	DN 100 flange or 4"
39 - 57 (23 - 37)	560			321 (298)	
58 - 75 (38 - 52)	660			347 (321)	
76 - 150 (53 - 110)	1060			459 (414)	
S21 / S21A / (S22) FS10					
7 - 71 ³⁾ (7 - 48) ³⁾	700	700 (27.56")	1387-1417 ⁴⁾ (54.60-55.79")	564 (486)	DN 100 flange or 4"
49 - 145 ³⁾ (49 - 107) ³⁾	1100			669 (574)	
108 - 200 ³⁾ (108 - 151) ³⁾	1400			747 (640)	
201 - 237 ³⁾ (152 - 180) ³⁾	1600			799 (684)	
238 - 330 ³⁾ (181 - 254) ³⁾	2100			931 (794)	
331 - 423 ³⁾ (255 - 327) ³⁾	2600			1063 (904)	
424 - 515 ³⁾ (328 - 401) ³⁾	3100			1194 (1015)	
516 - 700 ³⁾ (402 - 548) ³⁾	4100			1456 (1235)	

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

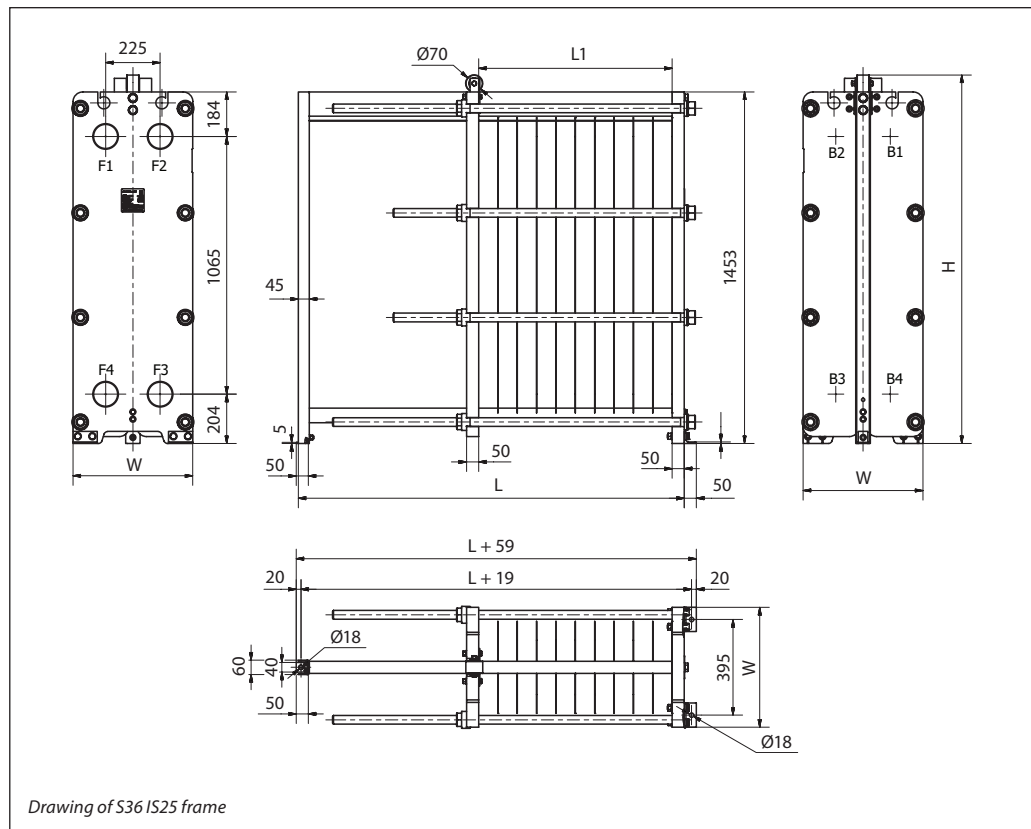
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ the height of the heat exchanger can be modified with special adjustable feet.

Dimensions (continued)
Non-sanitary applications

S36 frames

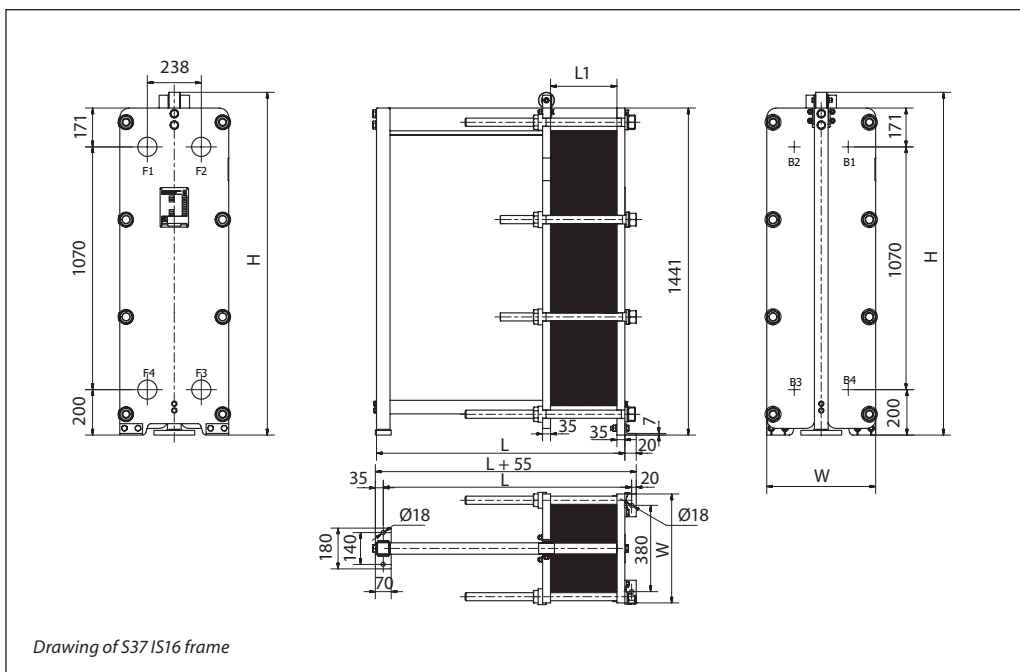


Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S36 IG16					
7 - 42	434	480 (18.89")	1415 (55.71")	431	DN 100 flange or 4"
43 - 60	534			469	
61 - 79	634			512	
80 - 152	1034			677	
S36 IS16					
7 - 70 ³⁾	680	480 (18.89")	1523 (59.96")	659	DN 100 flange or 4"
71 - 142 ³⁾	1080			836	
143 - 197 ³⁾	1380			970	
198 - 233 ³⁾	1580			1059	
234 - 324 ³⁾	2080			1283	
325 - 415 ³⁾	2580			1506	
S36 IS25					
7 - 66 ³⁾	695	495 (19.45")	1523 (59.96")	775	DN 100 flange or 4"
67 - 137 ³⁾	1095			977	
138 - 191 ³⁾	1395			1131	
192 - 226 ³⁾	1595			1231	
227 - 316 ³⁾	2095			1486	
317 - 405 ³⁾	2595			1740	

¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;
³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;
⁴⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S37 frames



Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S37 IS16					
7 - 38 ³⁾	695	480 (18.89")	1510.5 (59.47")	580	DN 100 flange or 4"
43 - 105 ³⁾	1095			755	
61 - 155 ³⁾	1395			885	
80 - 188 ³⁾	1595			972	
325 - 271 ³⁾	2095			1188	
7 - 355 ³⁾	2595			1407	
71 - 438 ³⁾	3095			1623	
143 - 605 ³⁾	4095			2059	

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

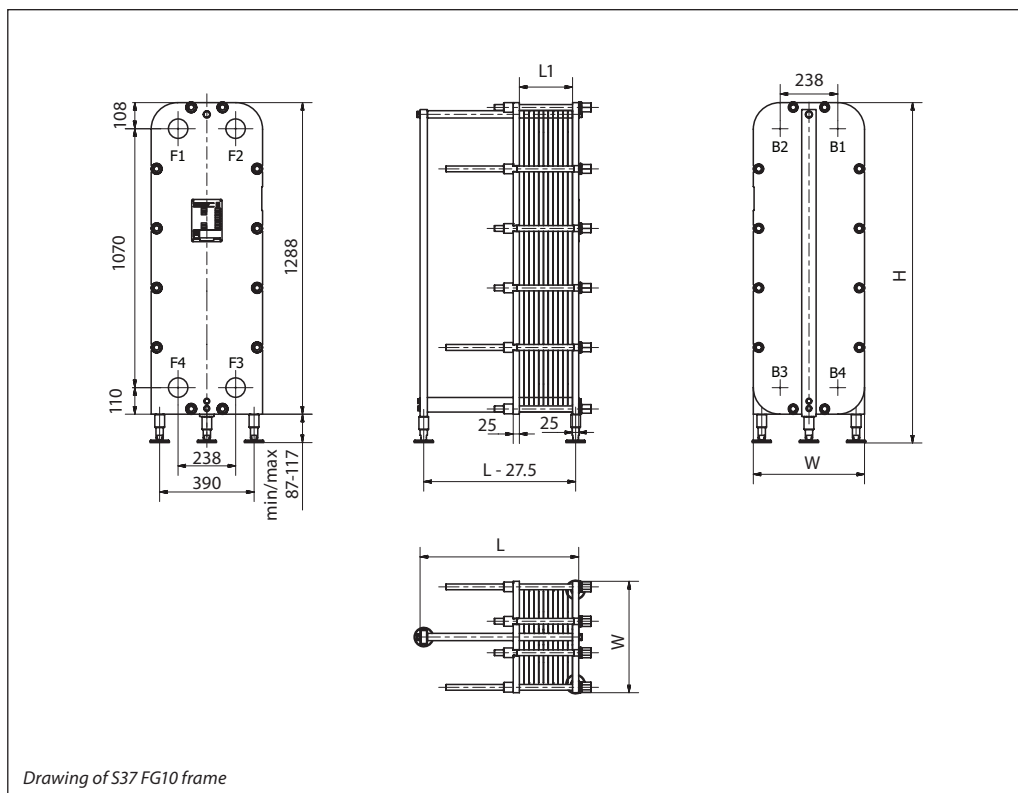
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ PNclass 10 bar is available on request

Dimensions (continued)
Sanitary applications

S37 frames

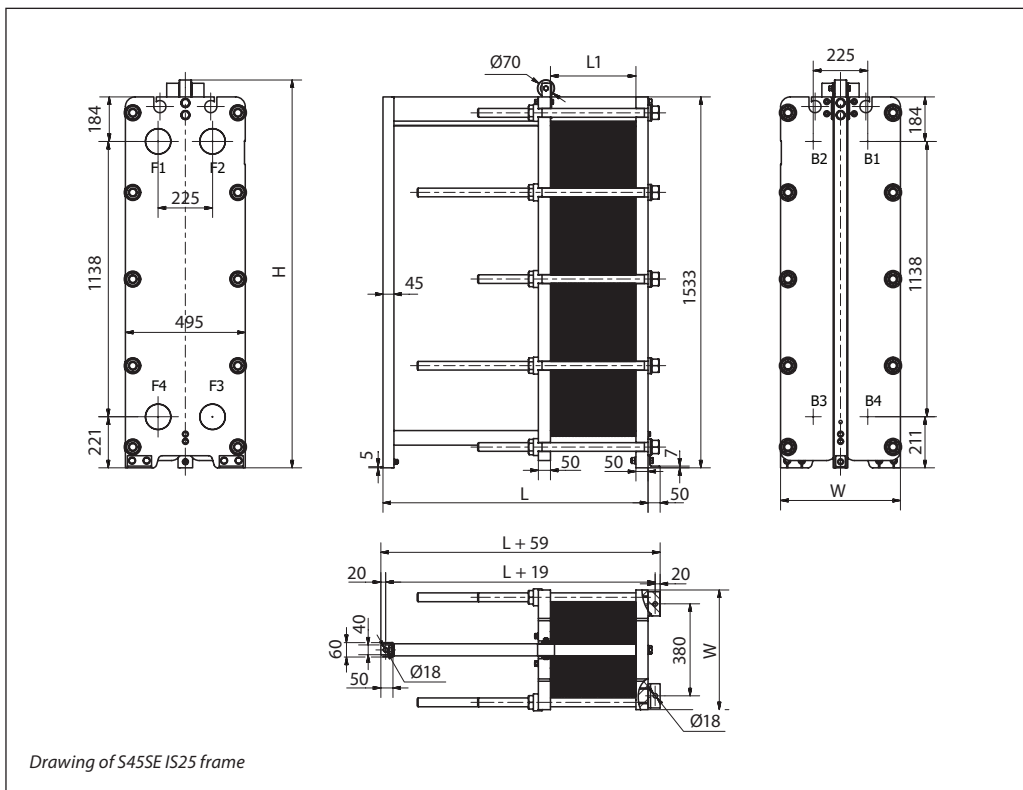


Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S37 FG10					
7 - 26	455	460 (18.11")	1375-1405 ⁴⁾ (54.13-55.31")	321	DN 80 flange or 3"
27 - 43	555			362	
44 - 60	655			404	
61 - 126	1055			565	
S37 FS10					
7 - 32 ³⁾	723	700 (27.56")	1769.5-1819.5 ⁴⁾ (69.66"-71.63")	813	DN 80 flange or 3"
34 - 100 ³⁾	1123			966	
101 - 150 ³⁾	1423			1081	
151 - 183 ³⁾	1623			1156	
184 - 267 ³⁾	2123			1349	
268 - 350 ³⁾	2623			1539	
351 - 433 ³⁾	3123			1729	
434 - 600 ³⁾	4123			2112	
S37 FS16					
7 - 32 ³⁾	723	700 (27.56")	1769.5-1819.5 ⁴⁾ (69.66"-71.63")	573	DN 80 flange or 3"
32 - 99 ³⁾	1123			726	
100 - 149 ³⁾	1423			841	
150 - 182 ³⁾	1623			916	
183 - 266 ³⁾	2123			1109	
267 - 349 ³⁾	2623			1299	
350 - 432 ³⁾	3123			1489	
433 - 599 ³⁾	4123			1872	

¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;
³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;
⁴⁾ the height of the heat exchanger can be modified with special adjustable feet.
⁵⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S45SE frames



Drawing of S45SE IS25 frame

Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S45SE IG16					
7 - 46	439	480 (18.89")	1494 (58.82")	498	DN 100 flange or 4"
47 - 66	539			549	
67 - 86	639			598	
87 - 166	1039			794	
S45SE IS16					
7 - 76	685	495 (19.48")	1603 (63.11")	686	DN 100 flange or 4"
77 - 156	1085			896	
157 - 216	1385			1052	
217 - 256	1585			1157	
257 - 356	2085			1419	
S45SE IS25					
7 - 72	695	495 (19.48")	1603 (63.11")	806	DN 100 flange or 4"
73 - 150	1095			1043	
151 - 209	1395			1222	
210 - 249	1595			1344	
250 - 347	2095			1641	

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

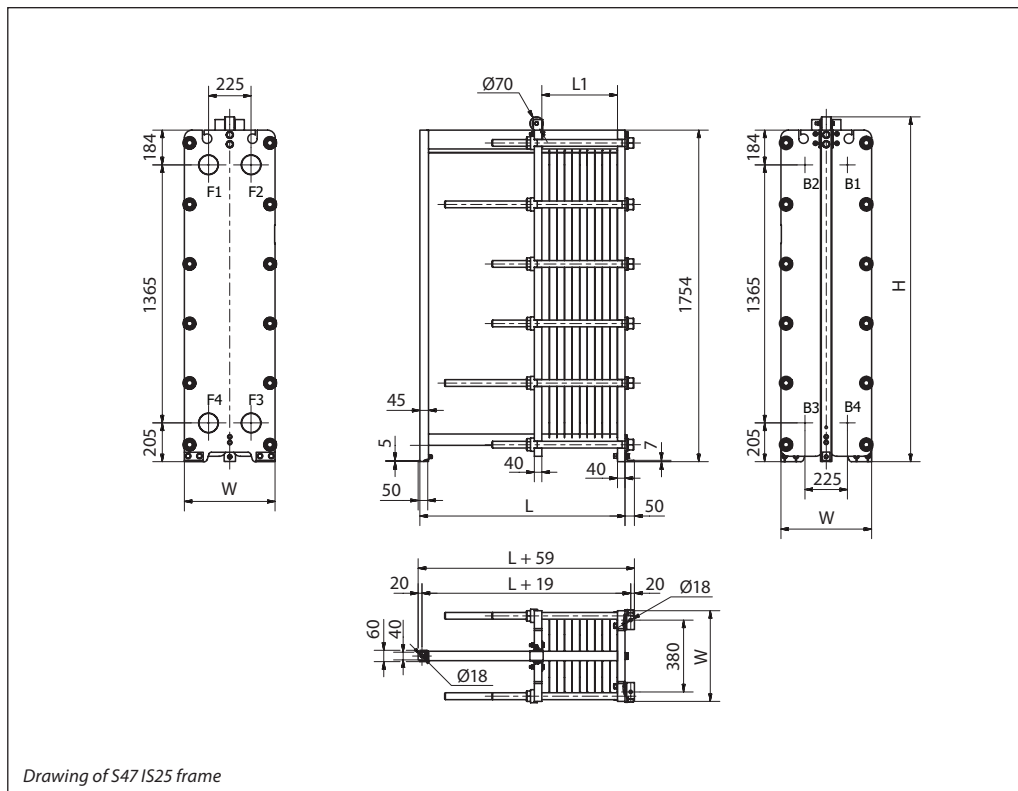
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S47 frames



Drawing of S47 IS25 frame

Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S47 IG16					
7 - 42	439	480 (18.89")	1715 (67.52")	529	DN 100 flange or 4"
43 - 60	539			581	
61 - 79	639			634	
80 - 151	1039			833	
S47 IS16					
7 - 70 ³⁾	680	480 (18.89")	1823 (71.78")	862	DN 100 flange or 4"
71 - 142 ³⁾	1080			1091	
143 - 197 ³⁾	1380			1265	
198 - 233 ³⁾	1580			1379	
234 - 324 ³⁾	2080			1668	
S47 IS25					
7 - 67 ³⁾	685	480 (18.89")	1824 (71.81")	1088	DN 100 flange or 4"
68 - 139 ³⁾	1085			1350	
140 - 192 ³⁾	1385			1545	
193 - 228 ³⁾	1585			1676	
229 - 317 ³⁾	2085			2001	

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

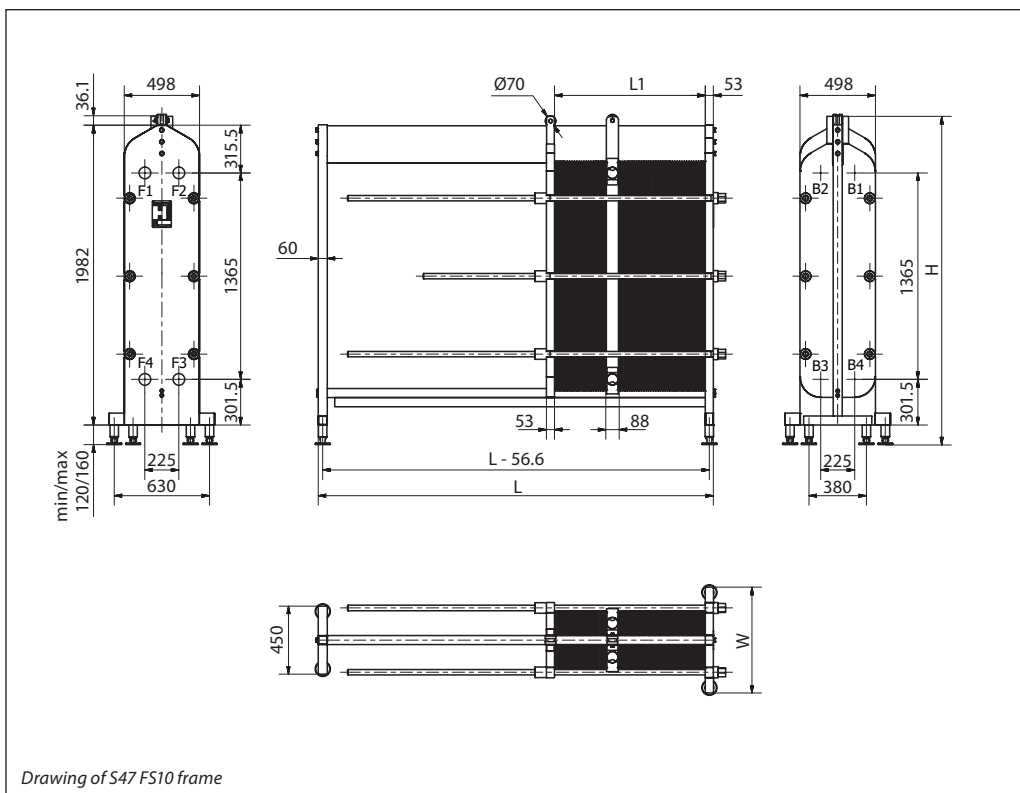
²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ PNclass 10 bar is available on request

Dimensions (continued)
Sanitary applications

S47 frames



Drawing of S47 FS10 frame

Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S47 FG10					
7 - 39	485	456 (17.95")	1754-1782 ⁴⁾ (69.05" - 70.15)	423	DN 100 flange or 4"
40 - 58	585			472	
59 - 76	685			517	
77 - 150	1085			703	
S47 FS10					
7 - 71 ³⁾	700	700 (27.56")	2160 - 2200 ⁴⁾ (85.04" - 86.61")	872	DN 100 flange or 4"
72 - 145 ³⁾	1100			1049	
146 - 200 ³⁾	1400			1180	
201 - 237 ³⁾	1600			1270	
238 - 330 ³⁾	2100			1492	
331 - 423 ³⁾	2600			1714	
424 - 515 ³⁾	3100			1934	
516 - 700 ³⁾	4100			2377	

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

²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

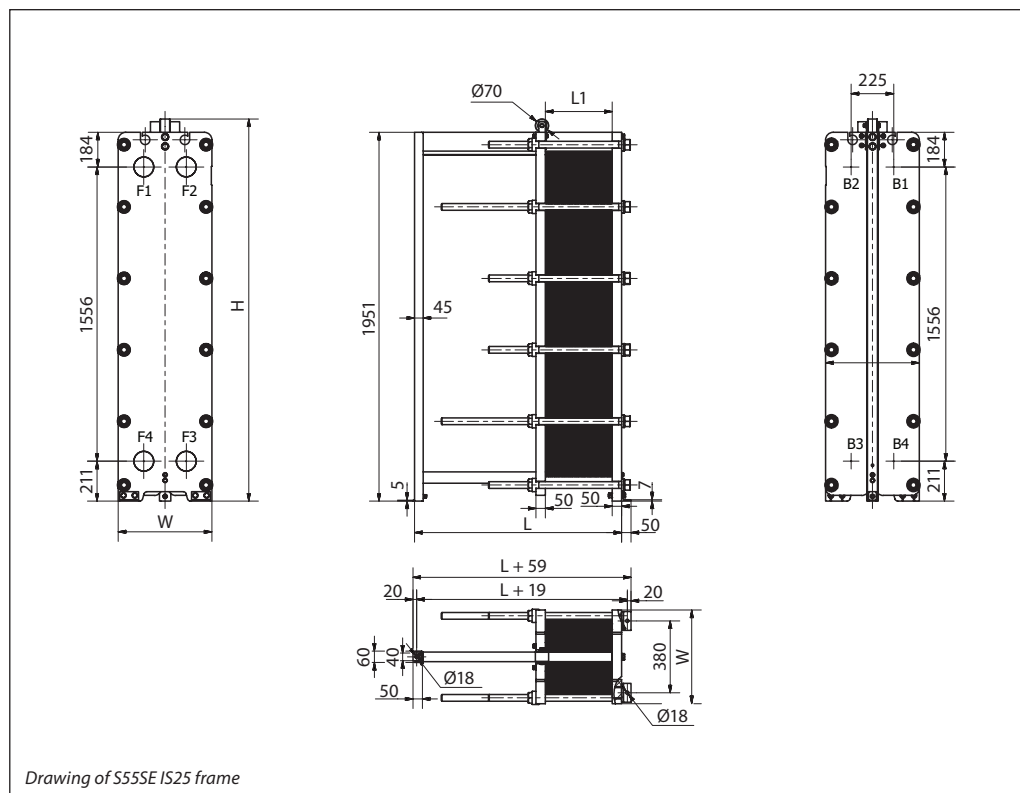
³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ the height of the heat exchanger can be modified with special adjustable feet.

⁵⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S55SE frames



Drawing of S55SE IS25 frame

Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max, empty ²⁾ (kg)	Connection type
S55SE IG16					
7 - 46	439	480 (18.89")	1912 (75.27")	646	DN 100 flange or 4"
47 - 66	539			711	
67 - 86	639			776	
87 - 166	1039			1029	
S55SE IS16					
7 - 76	685	495 (19.48")	2021 (79.56")	988	DN 100 flange or 4"
77 - 130	1085			1200	
131 - 216	1385			1489	
217 - 256	1585			1635	
257 - 356	2085			1995	
S55SE IS25					
7 - 72	695	495 (19.48")	2021 (79.56")	1071	DN 100 flange or 4"
73 - 150	1095			1380	
151 - 209	1395			1614	
210 - 249	1595			1822	
250 - 347	2095			2260	

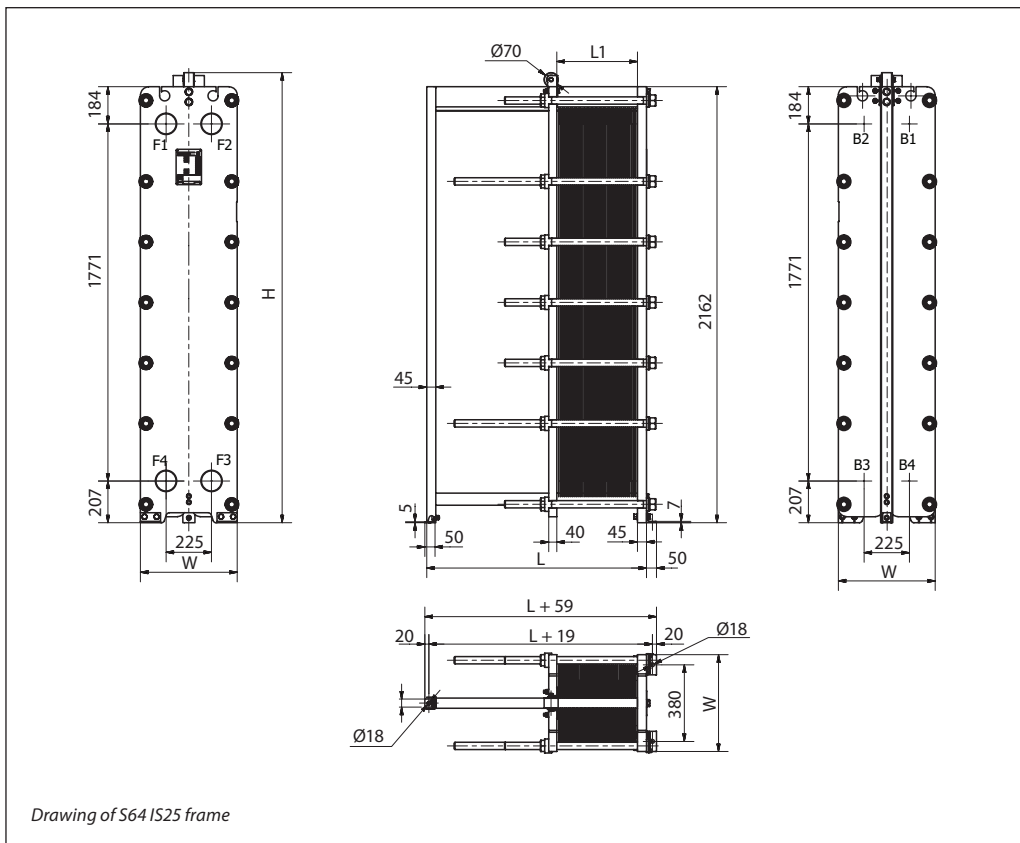
¹⁾ the indicated maximum number of plates is based on the minimum plate thickness allowable for the PN level of the unit;

²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ PNclass 10 bar is available on request

Dimensions (continued)
Non-sanitary applications

S64 frames



Number of plates ¹⁾	L (frame length) (mm)	W (mm)	H (mm)	Weight max. empty ²⁾ (kg)	Connection type
S64 IG16					
7 - 41	434	480 (18.89")	2121 (83.50")	670	DN 100 flange or 4"
42 - 60	534			741	
61 - 78	634			810	
79 - 150	1034			1082	
S64 IS16					
7 - 70 ³⁾	680	480 (18.89")	2232 (87.87")	1068	DN 100 flange or 4"
71 - 143 ³⁾	1080			1358	
144 - 198 ³⁾	1380			1576	
199 - 234 ³⁾	1580			1719	
235 - 325 ³⁾	2080			2082	
S64 IS25					
7 - 68 ³⁾	705	480 (18.89")	2232 (87.87")	1102	DN 100 flange or 4"
69 - 140 ³⁾	1105			1432	
141 - 193 ³⁾	1405			1676	
194 - 229 ³⁾	1605			1841	
230 - 318 ³⁾	2105			2251	

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

²⁾ the maximum weight of the empty unit with the maximum allowable number of plates;

³⁾ the indicated maximum number of plates is for units without intermediate frames. Adding an intermediate frame reduces the maximum allowable number of plates in the unit;

⁴⁾ PNclass 10 bar is available on request

