

Data sheet

SONDEX® Plate and shell heat exchanger (SPS)

Description



SONDEX® plate and shell heat exchangers (SPS) combine the strengths of both shell and tube heat exchangers and plate heat exchangers, retaining the high working pressure and temperatures of the former coupled with the high efficiency of the latter. A “best of both worlds” solution, our plate and shell heat exchangers provide unmatched performance for a wide range of applications, particularly vapor condensation duties.

Benefits:

- Very adaptable heat exchanger. An excellent choice for handling condensation duties, especially duties without condensate sub-cooling. They are also perfect steam heaters of clean fluids, demineralized water, and clean thermal oils.
- The heat exchanger is designed to be highly resistant to thermal shocks as well as thermal and pressure fatigue making it very well-suited for cyclic duties and other duties with sudden, large fluctuations in temperature.
- Available in both bolted and fully-welded designs. The fully-welded types can handle higher temperatures and pressure levels than the bolted types but cannot be opened for cleaning. This can instead be done with CIP (Cleaning in Place) systems.

Common industries:

- HVAC
- Power industry
- Heavy industry
- General industry
- Petrochemical industry
- Chemical industry

Typical processes:

- Condensation
- Steam heating
- Oil coolers
- Gas heaters/coolers

Main data:

- Min. temperature –10 °C (14 °F)
- Max. temperature
250 °C (482 °F) - bolted version FL
400 °C (752 °F) - fully-welded version FW
- Max. working pressure
25 bar (360 psi) - bolted version FL
40 bar (580 psi) - fully-welded version FW
- Clean fluids, steam, vapors, gases
- Connections from DN25 to DN300 (1" to 12")

Approvals:

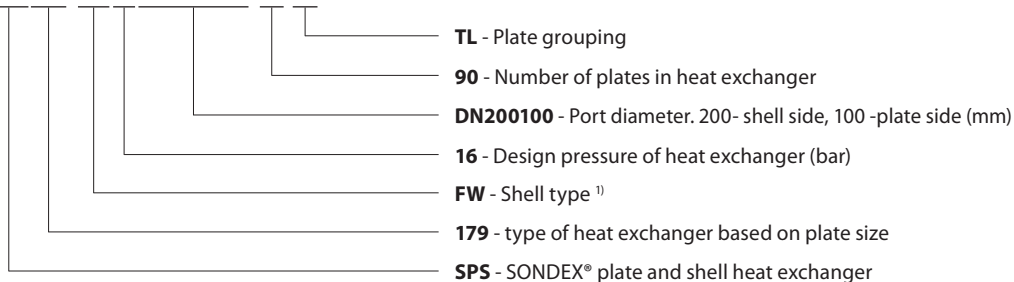
- Please contact your local Danfoss/Sondex sales representative to provide you with the exact approvals available on your region

Pressure vessel code:

- EN13445 (PED 2014/68/EU)
- ASME sec VIII, Div. 1
- Other standards available on request

Naming of units

SPS179-FW16DN200100-90-TL



¹⁾ Shell types description:

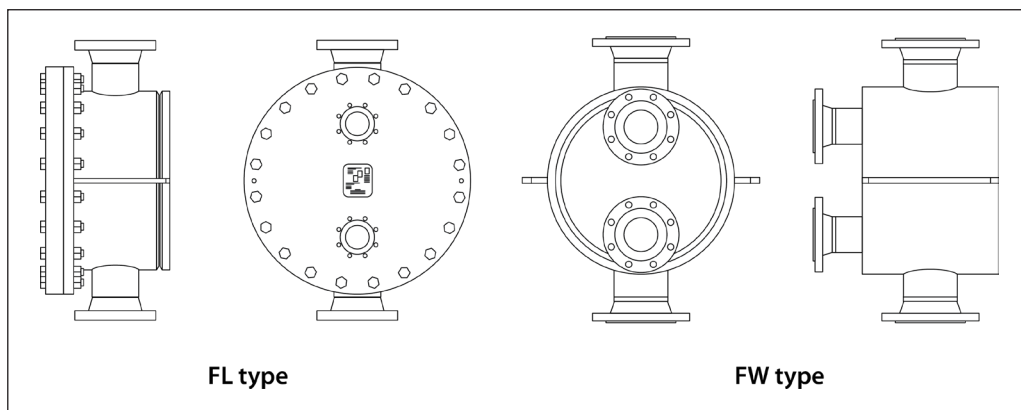
There are two shell types which can be offered for different applications and duties.

FW – Fully-welded version,

FL – Bolted version with removable plate pack

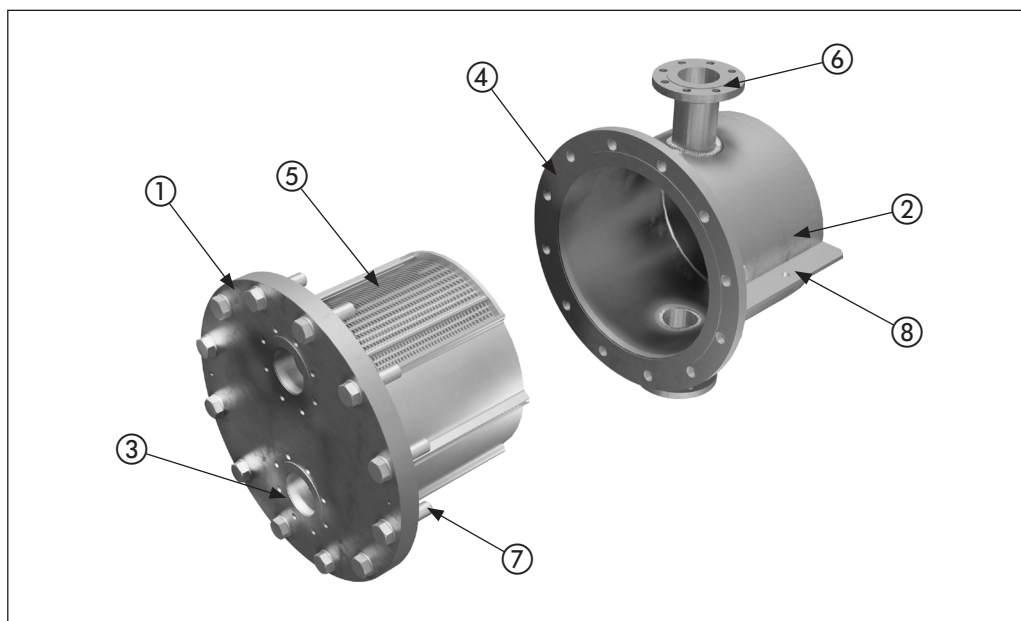
Heat exchanger design

SONDEX® plate and shell heat exchangers (SPS) are available in bolted versions - FL (on the left) with removable plate pack and fully-welded versions - FW (on the right)



A SONDEX® plate and shell heat exchanger (SPS) consist of

- 1. Removable core (cover + plate pack) - only for bolted FL version
- 2. Shell
- 3. Plate side connections
- 4. Shell body flange (only for bolted version FL)
- 5. Plate pack
- 6. Shell side connections
- 7. Bolts+nuts (only for bolted version FL)
- 8. Mounting bracket



Multi - pass design

For higher thermal requirements, the SONDEX® plate and shell heat exchanger can be designed as a multi-pass solution.

Connections

Connections can be provided according to all known standards. Positioning of the inlet and outlet connections will be specified during the construction phase based on application and duty.

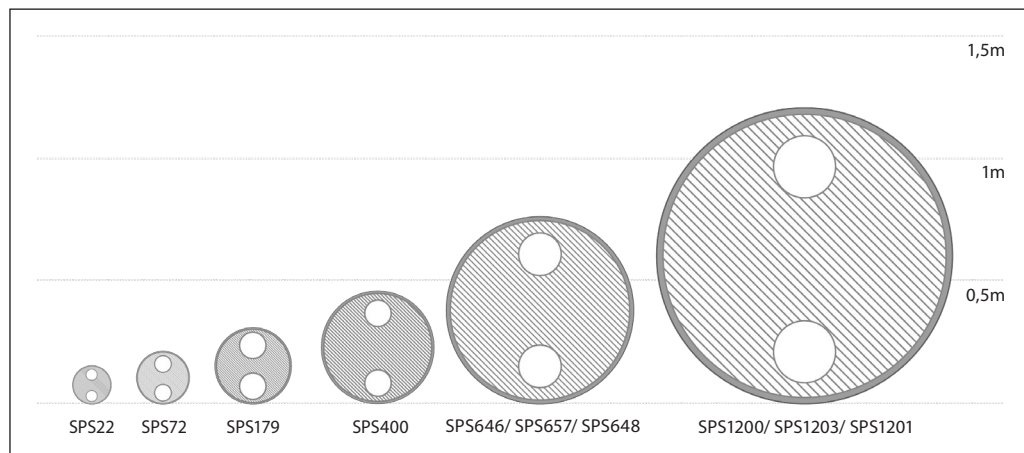
Please contact your local Danfoss or Sondex sales representative to provide you with the design for SONDEX® plate and shell heat exchangers.

Technical data

SONDEX® plate and shell heat exchanger (SPS)

| SPS Type | | SPS22 | SPS72 | SPS179 | SPS 400 | SPS 646 | SPS657 | SPS648 | SPS1200 | SPS1201 | SPS1203 |
|------------------------------|-----------------|--|-------------------|-------------------|----------------------|---------------------|--------|--------|---------------------|-----------------------|------------|
| Max. working pressure | PN bar / psi | 25 / 360 (bolted FL version), 40 / 580 (fully-welded FW version) | | | | | | | | | |
| Max. operating temperature | °C / °F | 250 / 482 (bolted FL version), 400 / 582 (fully - welded FW version) | | | | | | | | | |
| Min. operating temperature | | -10 / 14 | | | | | | | | | |
| Plate side connection | DN | 25 1" | 50 2" | 100 4" | 100 4" | 150 6" | | | 300 12" | 400 / 150 16" / 6" | 250 10" |
| Shell side connection | | 25-50 1" - 2" | 50-100 2" - 4" | 50-200 2" - 8" | 65-250 2 ½" - 10" | 100-250 4" - 10" | | | 100-300 4" - 12" | | |
| Connection type | | According to all known standards | | | | | | | | | |
| Plate material | | Stainless steel EN 1.4404 (AISI 316L), Stainless steel EN 1.4301 (AISI 304), Titanium Other materials available on request | | | | | | | | | |
| Shell material | | Carbon steel P355GH, Stainless steel EN 1.4301 (AISI 304), Stainless steel EN 1.4404 (AISI 316L) Other materials available on request | | | | | | | | | |
| Frame painting specification | | Painting available for corrosion categories C2L, C4M, C5M | | | | | | | | | |

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 area 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**

The insulation jacket for SONDEX® plate and shell heat exchangers is used in different applications with high temperatures and cooling systems.

Floor mounting bracket

Connection to frame mounting flange.

**Spare parts**

Spare parts for SONDEX® plate and shell heat exchangers, such as plate pack, gaskets, frame parts can be ordered for maintenance, repair, etc.

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

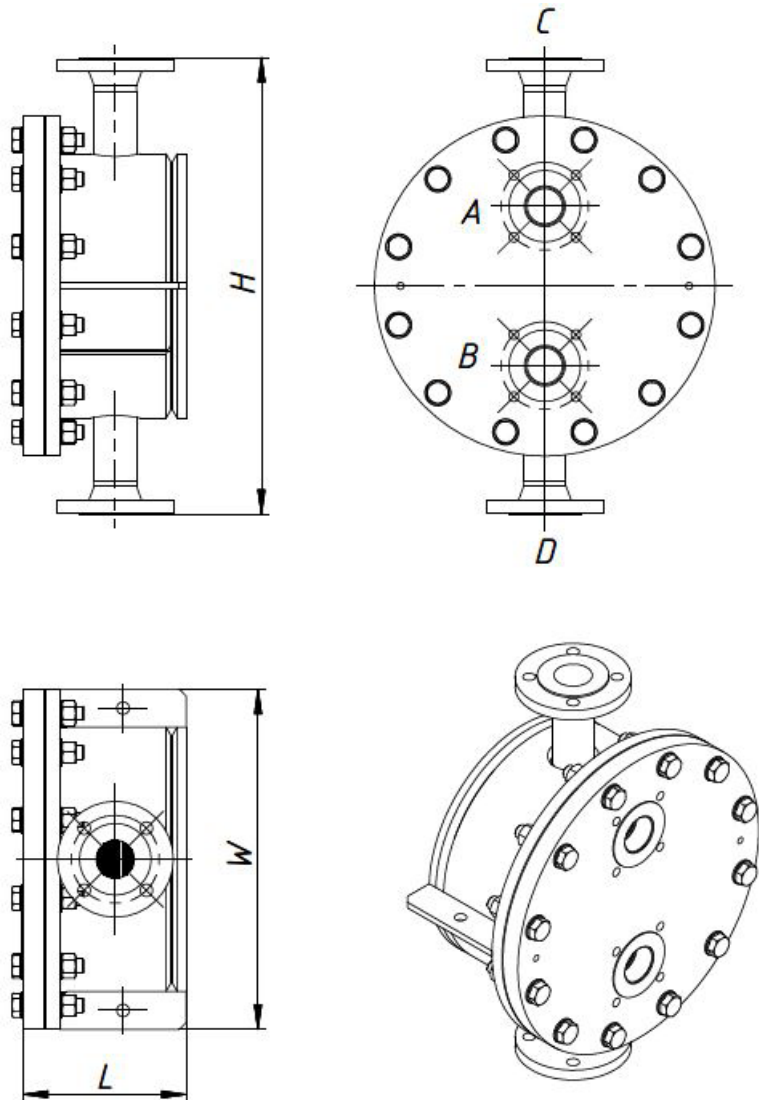
Selection and ordering

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

FL models



| Model | Dimensions |
|------------|--|
| SPS22-FL | For the exact dimensions of SONDEX® plate and shell heat exchangers (SPS) please contact your local Danfoss or Sondex sales representative |
| SPS72-FL | |
| SPS179-FL | |
| SPS400-FL | |
| SPS646-FL | |
| SPS657-FL | |
| SPS648-FL | |
| SPS1200-FL | |
| SPS1201-FL | |
| SPS1203-FL | |

Dimensions (continued)

FW models

The technical drawings illustrate the FW models of the SONDEX® plate and shell heat exchanger. The top-left drawing is a side view showing the height dimension H . The top-right drawing is a front view showing dimensions C (top flange diameter), A (top flange thickness), B (shell diameter), and D (bottom flange diameter). The bottom-left drawing is a front view showing dimensions M (height) and L (width). The bottom-right drawing is an isometric view of the heat exchanger.

| Model | Dimensions |
|------------|--|
| SPS22-FW | For the exact dimensions of SONDEX® plate and shell heat exchangers (SPS) please contact your local Danfoss or Sondex sales representative |
| SPS72-FW | |
| SPS179-FW | |
| SPS400-FW | |
| SPS646-FW | |
| SPS657-FW | |
| SPS-648-FW | |
| SPS1200-FW | |
| SPS1201-FW | |
| SPS1203-FW | |