

# EVAPORATOR - RATING

## HEAT EXCHANGER: V80Hx34/1P

SWEP DThermX

Date: 31/01/2023

SSP Alias: V80

DUTY REQUIREMENTS		Side 1		Side 2
Fluid		R22		Water
Flow type			Counter-Current	
Circuit		Inner		Outer
Heat load	kW		25.00	
Subcooled liq. temp.	°C	43.00		
Inlet vapor quality		0.248		
Outlet vapor quality		1.000		
Inlet temperature	°C	3.26		12.00
Evaporation temperature (dew)	°C	2.00		
Superheating	K	5.00		
Outlet temperature	°C	7.00		7.00
Flow rate	kg/s	0.1602		1.192
• Inlet vapor	kg/s	0.03978		
Fluid vaporized	kg/s	0.1204		

PLATE HEAT EXCHANGER		Side 1		Side 2
Total heat transfer area	m <sup>2</sup>		1.92	
Heat flux	kW/m <sup>2</sup>		13.0	
Mean temperature difference	K		7.23	
O.H.T.C. (available/required)	W/m <sup>2</sup> ,°C		1860/1800	
Pressure drop - total*	kPa	23.5		32.6
- in ports (Inlet/Outlet)	kPa	-0.839/0.997		0.920
Pressure drop in fluid distribution	kPa	96.3 - 148		
Operating pressure (outlet)	kPa	531		
Number of channels per pass		16		17
Number of plates			34	
Oversurfacing	%		3	
Fouling factor	m <sup>2</sup> ,°C/kW		0.017	
Port diameter (up/down)	mm	33.0/20.0		33.0/33.0
Recommended inlet connection diameter	mm	8.10 - 12.8		
Recommended outlet connection diameter	mm	19.0 - 42.4		
Reynolds number				934.6
Outlet port velocity	m/s	8.51		1.39
Channel velocity	m/s	2.01		0.310
Shear stress	kPa			0.0674
Largest wall temperature difference	K		0.50	
Min./Max. wall temperature	°C	5.69/11.33		5.89/11.42

\*Excluding pressure drop in connections.

### NOTES

i Pressure drop in distribution device is 1.0 - 1.5 bar .

PHYSICAL PROPERTIES		Side 1		Side 2
Reference temperature	°C	2.91		9.44
Liquid • Dynamic viscosity	cP	0.210		1.33
• Density	kg/m <sup>3</sup>	1271		999.7
• Heat capacity	kJ/kg,°C	1.187		4.194
• Thermal conductivity	W/m,°C	0.09401		0.5789
Vapor • Dynamic viscosity	cP	0.0117		
• Density	kg/m <sup>3</sup>	22.69		



**PHYSICAL PROPERTIES**

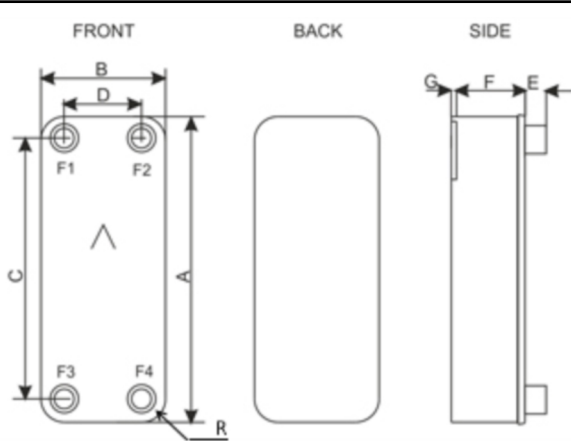
		Side 1	Side 2
• Heat capacity	kJ/kg, °C	0.7167	
• Thermal conductivity	W/m, °C	9.279e-3	
• Latent heat	kJ/kg	202.0	
Film coefficient	W/m <sup>2</sup> , °C	6820	11600

**TOTALS**

		Side 1	Side 2
Total weight (no connections)*	kg	7.67 - 12.17	
Hold-up volume (Inner Circuit)	dm <sup>3</sup>	1.71	
Hold-up volume (Outer Circuit)	dm <sup>3</sup>	1.82	
Port size F1/P1	mm	33	
Port size F2/P2	mm	33	
Port size F3/P3	mm	33	
Port size F4/P4	mm	33	
Carbon footprint	kg	53.89	

\*Weight depends on the selected product.

**DIMENSIONS**



A	mm	526 ±2
B	mm	119 ±1
C	mm	470 ±1
D	mm	63 ±1
E	mm	27 (opt. 45) ±1
F*	mm	80.16 - 88.16 ±2.5%
G*	mm	2 - 6 ±1
O	mm	4
R	mm	23

\*Dimensions depend on the selected product.

\*This is a schematic sketch. For correct drawings please use the order drawing function or contact your SWEP representative.

**Disclaimer:**

Data used in this calculation is subject to change without notice. SWEP strives to use "best practice" for the calculations leading to the above results. Calculation is intended to show thermal and hydraulic performance, no consideration has been taken to mechanical strength of the product. Product restrictions - such as pressure, temperatures and corrosion resistance- can be found in SWEP product sheets and other technical documentation. SWEP may have patents, trademarks, copyrights or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from SWEP, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property. To the maximum extent permitted by applicable law, the software, the calculations and the results are provided without warranties of any kind, whether express or implied. No advice or information obtained through use of the software (including information provided in the results), will create any warranty not expressly stated in the applicable license terms. Without limiting the foregoing, SWEP does not warrant that the content (including the calculations and the results) is accurate, reliable or correct. SWEP does not warrant that any system comprising heat exchanger and other components, installed on the basis of calculations in this software, will meet your requirements or function to your satisfaction or expectations.

