

## EVAPORATOR - Rating

### Heat Exchanger : V200THx50/1P

Fluid Side 1 : R507A  
 Fluid Side 2 : Water

Side 1 : Inner circuit  
 Side 2 : Outer circuit

Flow Type : Counter-Current  
 SSP Alias : V200T

#### DUTY REQUIREMENTS

|                               |      | Side 1 | Side 2 |
|-------------------------------|------|--------|--------|
| Heat load                     | kW   | 85,00  |        |
| Inlet vapor quality           |      | 0,389  |        |
| Outlet vapor quality          |      | 1,000  |        |
| Inlet temperature             | °C   | 3,63   | 12,00  |
| Evaporation temperature (dew) | °C   | 2,00   |        |
| Superheating                  | K    | 5,00   |        |
| Outlet temperature            | °C   | 7,00   | 7,00   |
| Flow rate                     | kg/s | 0,8311 | 4,053  |
| - inlet vapor                 | kg/s | 0,3233 |        |
| Fluid vaporized               | kg/s | 0,5079 |        |

#### PLATE HEAT EXCHANGER

|                                        |                        | Side 1                 | Side 2                 |
|----------------------------------------|------------------------|------------------------|------------------------|
| Total heat transfer area               | m <sup>2</sup>         | 6,19                   |                        |
| Heat flux                              | kW/m <sup>2</sup>      | 13,7                   |                        |
| Mean temperature difference            | K                      | 6,54                   |                        |
| O.H.T.C. (available/required)          | W/m <sup>2</sup> , °C  | 2050/2100              |                        |
| Pressure drop -total*                  | kPa                    | 38,8                   | 40,3                   |
| - in ports                             | kPa                    | -1,20                  | 1,60                   |
| Pressure drop in fluid distribution    | kPa                    | 256 - 341              |                        |
| Operating pressure - outlet            | kPa                    | 669                    |                        |
| Number of channels per pass            |                        | 24                     | 25                     |
| Number of plates                       |                        | 50                     |                        |
| Oversurfacing                          | %                      | -2                     |                        |
| Fouling factor                         | m <sup>2</sup> , °C/kW | -0,012                 |                        |
| Port diameter                          | mm                     | 60,0/34,0<br>(up/down) | 53,0/53,0<br>(up/down) |
| Recommended inlet connection diameter  | mm                     | From 16,5 to 26,1      |                        |
| Recommended outlet connection diameter | mm                     | From 35,1 to 78,5      |                        |
| Reynolds number                        |                        |                        | 1024                   |
| Outlet port velocity                   | m/s                    | 8,87                   | 1,84                   |

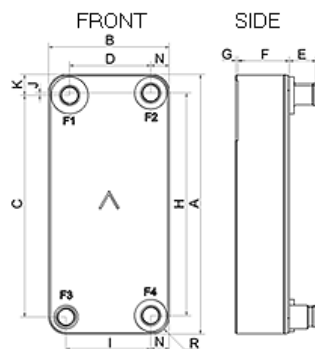
**PHYSICAL PROPERTIES**

|                                     |           | Side 1  | Side 2 |
|-------------------------------------|-----------|---------|--------|
| Reference temperature               | °C        | 3,14    | 9,38   |
| Liquid - Dynamic viscosity          | cP        | 0,168   | 1,33   |
| - Density                           | kg/m³     | 1144    | 999,7  |
| - Heat capacity                     | kJ/kg, °C | 1,413   | 4,194  |
| - Thermal conductivity              | W/m, °C   | 0,07551 | 0,5788 |
| Vapor - Dynamic viscosity           | cP        | 0,0112  |        |
| - Density                           | kg/m³     | 34,32   |        |
| - Heat capacity                     | kJ/kg, °C | 0,9480  |        |
| - Thermal conductivity              | W/m, °C   | 0,01264 |        |
| - Latent heat                       | kJ/kg     | 158,6   |        |
| Film coefficient                    | W/m², °C  | 5720    | 10700  |
| Minimum wall temperature            | °C        | 5,87    | 6,05   |
| Maximum wall temperature            | °C        | 10,73   | 10,90  |
| Largest wall temperature difference | K         |         | 0,44   |
| Channel velocity                    | m/s       | 2,20    | 0,341  |
| Shear stress                        | Pa        |         | 84,8   |

**TOTALS**

|                               |     |             |
|-------------------------------|-----|-------------|
| Total weight                  | kg  | 30,4 - 41,6 |
| Hold-up volume, inner circuit | dm³ | 5,78        |
| Hold-up volume, outer circuit | dm³ | 6,02        |
| Port size F1/P1               | mm  | 60,0        |
| Port size F2/P2               | mm  | 53,0        |
| Port size F3/P3               | mm  | 34,0        |
| Port size F4/P4               | mm  | 53,0        |
| NND F1/P1                     | mm  | 65,0        |
| NND F2/P2                     | mm  | 58,0        |
| NND F3/P3                     | mm  | 42,0        |
| NND F4/P4                     | mm  | 58,0        |
| Carbon footprint              | kg  | 224         |

**DIMENSIONS**



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

|   |    |                            |
|---|----|----------------------------|
| A | mm | 525 +/-2                   |
| B | mm | 243 +/-1                   |
| C | mm | 448,50 +/-1                |
| D | mm | 163,50 +/-1                |
| E | mm | 54 (opt. 27) +/-1          |
| F | mm | 124,50 to 136,50 +2%/-1,5% |
| G | mm | 0,0 to 4 +/-1              |
| H | mm | 450 +/-1                   |
| I | mm | 171 +/-1                   |
| J | mm | 4,50                       |
| K | mm | 42                         |
| N | mm | 37,50                      |
| R | mm | 35                         |

Note :

Pressure drop in V-ring is 2,6 - 3,4 bar .

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.

\*Excluding pressure drop in connections.



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