

# Optimal heat transfer

– EnFusion™ PHE B3-052 brazed plate heat exchanger



**Introduction**

PHE B3-052 brazed plate heat exchanger is the ideal choice for chillers, heat pumps, economizers, desuperheaters and can be used for numerous other applications. The heat exchanger is designed to combine high thermal efficiency with energy savings.  
Capacity: 10 - 60 kW



**Features**

- Compact design
- High efficiency
- Flexible in size
- Connection in solder or flare
- Flexible connection programme
- 100 % inspected

Design pressure	30 bar ( A type )	Design temperature	-196 ~ + 200°C
	45 bar ( B type )		Plate type
Testing pressure	45 bar ( A type )	Heat load	10-60 kW
	67,5 bar ( B type )	Number of max plates	150

**Approvals**

- CE<sub>0035</sub> certificate according (PED) 97/23/EC
- UL
- ISO 9000 1: 2000

**Product Options**

- Distributor
- Adapter / Temperature
- High Pressure
- Nickel Brazed
- Back to Back

**Material Specification**

The standard plate material is stainless steel AISI 316. For other material (SMO 254, Titanium) please contact your local sales organization.

**Ordering**

No. of plates	Connections		Without distributor Code no.	With distributor Code no
	Q1, Q2	Q3, Q4		
30	G1" External Thread	H 3/4"A Solder	<b>021B3957</b>	<b>021B3966</b>
34	G1" External Thread	H 3/4"A Solder	<b>021B3958</b>	<b>021B3967</b>
40	G1" External Thread	H 3/4"A Solder	<b>021B3959</b>	<b>021B3968</b>
44	G1" External Thread	H 3/4"A Solder	<b>021B5960</b>	<b>021B3969</b>
50	G1" External Thread	H 3/4"A Solder	<b>021B5961</b>	<b>021B3970</b>
60	G1" External Thread	H 3/4"A Solder	<b>021B5962</b>	<b>021B3971</b>
70	G1" External Thread	H 3/4"A Solder	<b>021B5963</b>	<b>021B3872</b>
80	G1" External Thread	H 3/4"A Solder	<b>021B5964</b>	<b>021B3973</b>
90	G1" External Thread	H 3/4"A Solder	<b>021B5965</b>	<b>021B3974</b>

**Capacity**

## R22

No. of plates	Evaporator		Condenser	
	Heat load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa
30	11.0	33	6.2	0.5
34	12.0	33	7.0	0.5
40	14.5	34	8.5	0.5
44	15,5	34	9.3	0.5
50	17.5	32	10.5	0.5
60	21.0	32	12.5	0.5
70	23.5	33	14.5	0.5
80	26.0	30	16.5	0.5
90	28.5	30	18.5	0.5

Capacity without distributor correction factor: multiply by 0,95

**Conditions**

	<b>Evap</b>			
	Te	-14 °C	Tc	40 °C
	Tc	40 °C	1) T inlet	32 °C
	SH	5 K	1) T outlet	38 °C
	1) T inlet	-4 °C		
	1) T outlet	-8 °C		

1) 30% propylen glycol

## Capacity

# R407C

No. of plates	Evaporator		Condenser		Condenser		Evaporator	
	Heat load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa
30	26	79	10.0	12.0	5.0	3.1	10.5	48
34	29	77	11.5	12.5	5.8	3.3	12.0	49
40	36	86	13.5	12.5	6.8	3.3	14.0	49
44	39	84	15.0	12.86	7.5	3.3	15.5	50
50	45	87	17.0	12.92	8.5	3.3	17.0	47
60	52	83	20.5	13.0	10.2	3.4	20.5	48
70	58	77	24.0	14.0	12.0	3.5	24.0	49
80	65	77	27.0	13.6	13.8	3.6	27.0	49
90	71	74	30.5	14.0	15.5	3.7	30.0	49

Capacity without distributor correction factor: multiply by 0,95

**Conditions**

Te	3 °C	Tc	50 °C	Tc	40 °C	Te	-7 °C
Tc	40 °C	water in	40 °C	water in	32 °C	Tc	40 °C
SH	5 K	water out	45 °C	water out	37 °C	SH	5 °C
Water T inlet	12 °C					30% ethanol	0 °C
Water T outlet	7 °C					30% ethanol Tinlet	-3 °C

## Capacity

# R134a

No. of plates	Evaporator		Condenser		Condenser		Condenser		Evaporator		Condenser	
	Heat load kW	Pressure drop kPa/bar	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa
30	17	34	15.0	27	8.5	8.8	5.5	1	9.5	27	4.8	1.6
34	19	34	17.0	27	9.5	8.6	6.3	1	11.0	28	5.5	2.6
40	22	33	19.5	26	11.0	8.4	7.2	1	12.5	25	6.5	2.6
44	25	35	21.5	26	12.5	8.9	8.0	1	14.0	26	7.0	2.6
50	28	35	24.0	25	14.0	8.8	9.0	1	15.0	25	8.0	2.6
60	33	34	29.0	26	17.0	9.11	11.0	1	18.0	25	9.5	2.6
70	37	32	34.0	27	19.5	9.0	12.8	1	21.0	25	11.0	2.6
80	41	32	38.5	27	22.5	9.4	14.4	1	23.5	26	13.0	2.0
90	45	30	43.0	28	25.0	9.3	16.4	1	25.5	24	14.5	2.0

Capacity without distributor correction factor: multiply by 0,95

**Conditions**

Te	2 °C	Tc	50 °C	Tc	40 °C	Tc	46 °C	Te	-14 °C	Tc	40 °C
Tc	40 °C	water in	40 °C	water in	32 °C	water in	35 °C	Tc	40 °C	1) T inlet	-32 °C
SH	5 K	water out	45 °C	water out	37 °C	water out	45 °C	SH	5 K	1) T inlet	-38 °C
Water T inlet	12 °C							1) T inlet	-4 °C		
Water T outlet	7 °C							1) T inlet	-8 °C		

1) 30% propylen glycol

## Capacity

## R404A

No. of plates	Evaporator		Condenser	
	Heat load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa
30	13.0	47	5,8	4,1
34	15.0	49	6,5	3,6
40	17.5	48	8.0	3,9
44	19.0	48	8,8	3,9
50	22.0	50	9,8	3,8
60	26.0	49	11,5	3,7
70	30.0	48	13,8	3,9
80	34.0	50	15,5	3,9
90	38.0	49	17,5	4.0

Capacity without distributor correction factor: multiply by 0,95

**Conditions**

Te	-14 °C	Tc	40 °C
Tc	40 °C	1) T inlet	32 °C
SH	5 K	1) T outlet	38 °C
1) T inlet	-4 °C		
1) T outlet	-8 °C		

1) 30% propylen glycol

## Capacity

## R410A

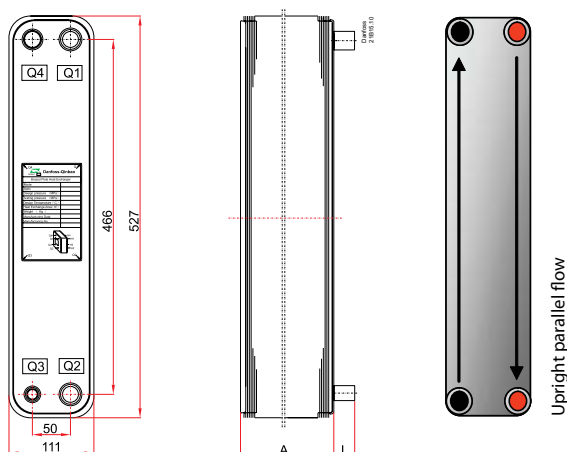
No. of plates	Evaporator		Condenser		Condenser	
	Heat load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa	Heat Load kW	Pressure drop kPa
30	26	79	25	73	13.5	22
34	29	77	28	72	15.5	22
40	36	86	33	73	18.0	22
44	39	84	37	76	20.0	22
50	45	87	42	76	23.0	23
60	52	83	50	77	27.0	23
70	58	77	58	77	31.5	23
80	65	77	66	79	36.0	23
90	71	74	73	78	40.5	24

Capacity without distributor correction factor: multiply by 0,95

**Conditions**

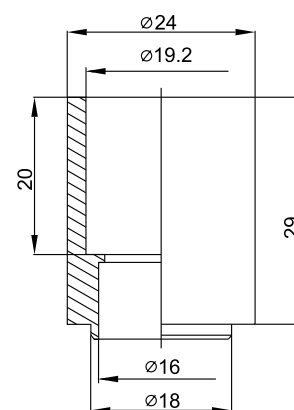
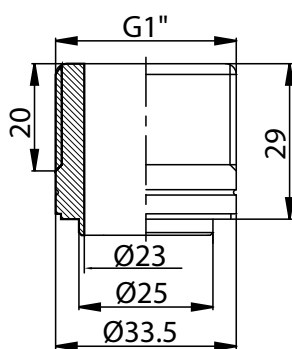
Te	2 °C	Tc	50 °C	Tc	40 °C
Tc	40 °C	water in	40 °C	water in	32 °C
SH	5 K	water out	45 °C	water out	37 °C
Water T inlet	12 °C				
Water T outlet	7 °C				

Dimensional Data



Dimensions and weight

Number of plates	A (mm)	Weight (kg)	Channel volume (L) Q1 Q2 side/ Q3 Q4side	Heat transfer area (m <sup>2</sup> )
30	80	8.70	1.41 / 1.32	0.392
34	89	9.62	1.60 / 1.50	0.448
40	103	11.00	1.88 / 1.79	0.532
44	113	11.92	2.07 / 1.97	0.588
50	127	13.30	2.35 / 2.26	0.672
60	151	15.60	2.82 / 2.73	0.812
70	174	17.90	3.29 / 3.20	0.952
80	198	20.20	3.76 / 3.67	1.092
90	221	22.50	4.23 / 4.14	1.232





## The Danfoss product range for the refrigeration and air conditioning industry

Danfoss Refrigeration & Air Conditioning is a worldwide manufacturer with a leading position in industrial, commercial and supermarket refrigeration as well as air conditioning and climate solutions.

We focus on our core business of making quality products, components and systems that enhance performance and reduce total life cycle costs – the key to major savings.



*Controls for Commercial Refrigeration*



*Controls for Industrial Refrigeration*



*Electronic Controls & Sensors*



*Industrial Automation*



*Household Compressors*



*Commercial Compressors*



*Sub-Assemblies*



*Thermostats*



*Brazen plate heat exchangers*

We offer a single source for one of the widest ranges of innovative refrigeration and air conditioning components and systems in the world. And, we back technical solutions with business solutions to help your company reduce costs, streamline processes and achieve your business goals.

**Danfoss A/S · [www.danfoss.com](http://www.danfoss.com)**