

MAKING MODERN LIVING POSSIBLE

*Danfoss*



## Danfoss brazed plate heat exchanger BPHE

**The compact and  
flexible solution**

HEATING SOLUTIONS DIVISION

**Catalog**

## **DANFOSS BPHE HEAT EXCHANGERS**

Danfoss has especially designed our new heat exchangers for all types of commercial and residential heating applications. Our new range of brazed plate heat exchangers offers you a whole new level of performance and cost-effectiveness.

### **Product advantages:**

- Compact size
- Wide range of sizes and capacities
- High heat transfer efficiency
- High performance
- Lower cost
- High quality

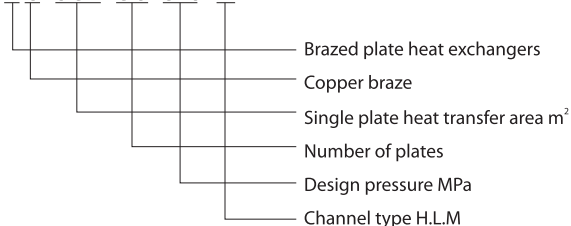
### **Typical Applications include:**

- Radiant Floor Heating
- Domestic Water Heating
- Snow Melting
- Steam
- Close Approach
- High Pressure Systems
- Multi-Purpose
- Shell and Tube Replacements
- Solar heating and air-conditioning units
- Heat pumps and heat recovery units

## Danfoss Brazed Plate Heat Exchanger

### ● Nomenclature of BPHE

**B3-052-50-3.0-H**



### ● Heat Exchanger Channels

PHE type B is available with 2 different types of plates and 3 types of channels, that are responsible for the thermal characteristics of the heat exchanger.

**The H type** plate has obtuse angles that result in higher heat transfer efficiency by increasing the turbulence of the fluid.

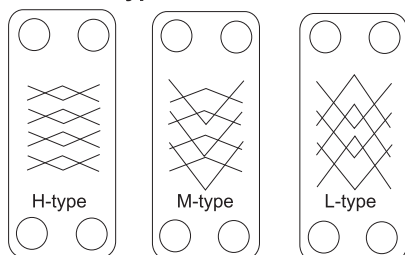
**The L type** plate has acute angles. This reduces the pressure drop and reduces the turbulence and lowers heat transfer efficiency.

**The H channel** is made by two H plates, with high heat transfer coefficient and high pressure drop

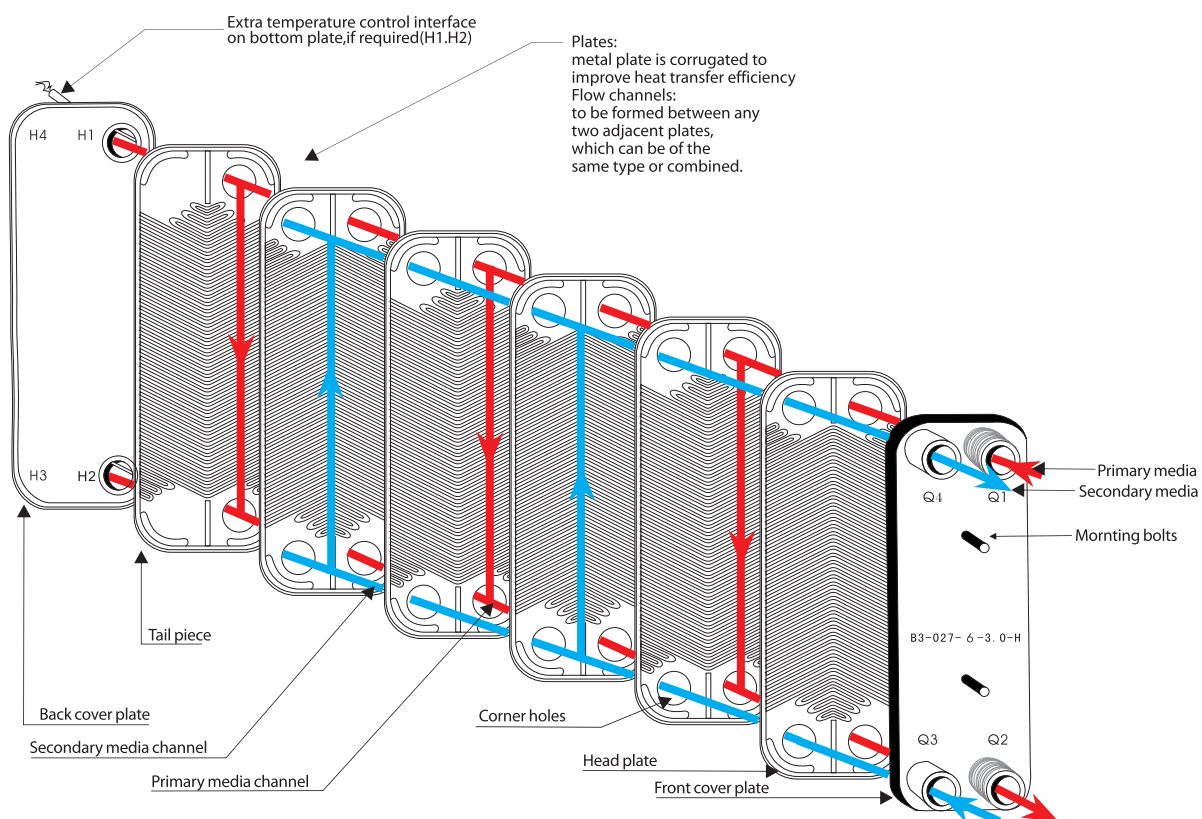
**The L channel** is made by two L plates, with high heat transfer coefficient and high pressure drop

**The M channel** is made by one H plate and one L plate, with both medium of pressure drop and heat transfer coefficient

### Channel Type H-M-L



### ● Structure of BPHE



## Technical Data



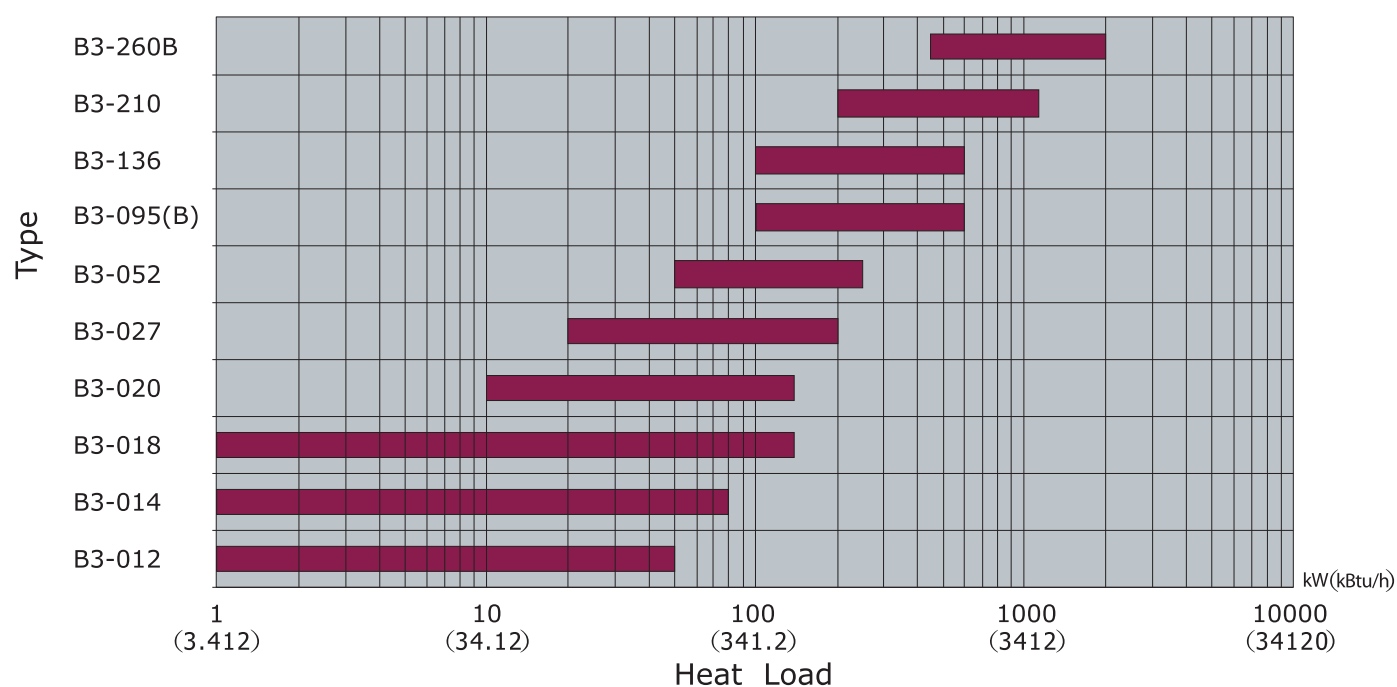
Technical data-Select the type that fits your application

BPHE data	B3-012	B3-014	B3-018	B3-020
Heat Load ( kBtu/h )	~170.6	~273.0	~511.8	34.1~273.0
Heat exchanger area (ft <sup>2</sup> ) (n=number of plates)	(n-2)×0.13	(n-2)×0.15	(n-2)×0.19	(n-2)×0.24
Design temperature (°F)	- 321~ + 392	- 321~ + 392	- 321~ + 392	- 321~ + 392
Standard Design pressure Q1-Q2/Q3-Q4 ( psi )	145	435	435	435
Hign Design pressrue Q1-Q2/Q3-Q4 ( psi )	435	653	653	580
Test pressure standard ( psi )	218/653	653/979	653/979	653/870
Channel pattern	H	H、 L、 M	H	H、 L、 M
Max. number of plates	50	60	60	60
Height/width (inch) <sup>1)</sup>	7.3/2.8	8.1/3.0	9.1/3.5	12.4/2.8
Weight ( lb ) , empty (n=number of plates)	1.32+0.10n	1.54+0.132n	2.43+0.12n	0.97+0.17n
Max. size of thread connection	3/4"	3/4"	3/4"	3/4"
Standard plate material <sup>2)</sup>	AISI 316L	AISI 316L	AISI 316L	AISI 316L
Brazing material	Copper or Nickel	Copper or Nickel	Copper or Nickel	Copper or Nickel

1) Look for all dimensions and drawings in data sheet

2) SMO 254 or AISI 304 steel plates on demand

## Product range



	<b>B3-027</b>	<b>B3-052</b>	<b>B3-095</b>	<b>B3-095B</b>	<b>B3-136</b>	<b>B3-260B</b>
	68.2~682.4	170.6~853.0	341.2~2047.2	341.2~2047.2	682.4~4094.4	1535.4~6824.0
	$(n-2) \times 0.28$	$(n-2) \times 0.54$	$(n-2) \times 1.02$	$(n-2) \times 1.02$	$(n-2) \times 0.99$	$(n-2) \times 2.55$
	-321~+392	-321~+392	-321~+392	-321~+392	-321~+392	-321~+392
	435	435	435	435	435	290
	653	653	653	653	580	
	653/979	653/979	653/979	653/979	653/870	435
	H, L, M	H, L, M	H, L, M	H, L, M	H	H
	150	150	250	250	200	250
	12.2/4.4	20.7/4.4	24.2/7.4	24.2/7.4	19.4/9.9	31.3/14.3
	$2.65+0.29n$	$3.97+0.51n$	$12.43+0.9n$	$12.43+0.9n$	$14.33+0.84n$	$29.76+2.14n$
	1 1/4"	1 1/4"	2"	2"	3"	5" clamp
	AISI 316L	AISI 316L	AISI 316L	AISI 316L	AISI 316L	AISI 316L
	Copper or Nickel	Copper or Nickel	Copper	Copper	Copper	Copper

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## Application

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### Product Options



#### **Adapter/Temperature Monitoring**

The temperature sensor ports can be installed at back or front of the BPHE. The port is concentric with connection, and enable easy installation of temperature sensor for accurate system control. The port is brazed together with cover plate, and can withstand the pressure of medium.



#### **High Pressure**

Danfoss can offer a wide "High Pressure" range to meet the design requirements of many high pressure application such as hydraulic and fuel coolers. "HP" BPHE are designed to withstand up to 45 bar of design pressure.



#### **Nickel Brazed**

For deionized water, ammonia, solvents and other fluids not compatible with copper



#### **Dual Circuit**

The real dual circuit makes it possible to cool or heat two independent secondary media with one primer media. This can replace 2 separate heat exchangers in some applications. The "BB" symbol allows the same but with some limitations on where the connection can be placed.



#### **Back to Back**

Danfoss "BB" type BPHE makes it possible like "DC" to run with 3 different media in the same heat exchanger.

**Please Contact Local Sales Office For Product Options Above.**

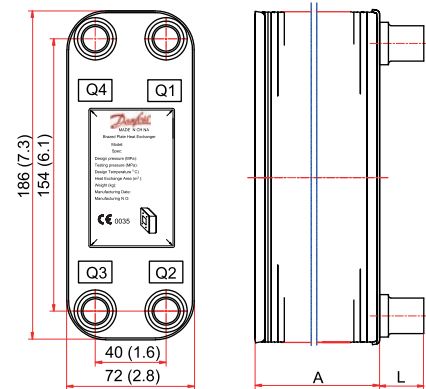
## Product Introduction

### ● Brazen Plate Heat Exchanger **PHE B3-012** A Ni

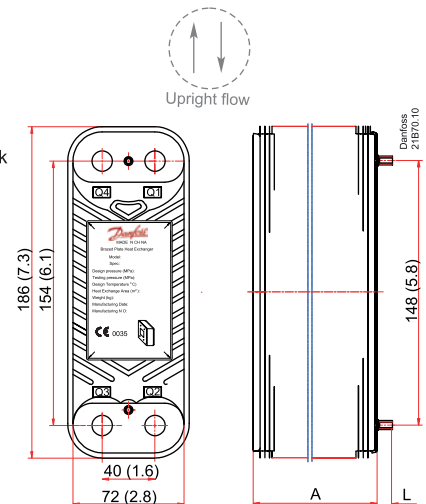


The standard plate material is stainless steel AISI 316L. For other plate material ( AISI 304 , SMO 254 ) please contact local sales organization.  
Approvals: UL, CE

Flat front / back cover plate



Corrugated front / back cover plate



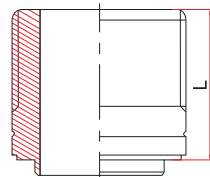
### PHE B3-012 Dimensional Data

Number of plates	A (in)	Weight (lbs)	Channel volume ( g x 10 <sup>-3</sup> ) Q1Q2 side/ Q3Q4 side	Heat transfer area ( ft <sup>2</sup> )
n	0.28+0.09n	1.32+0.10n	4.8xn/2 / 4.8x(n-2)/2	(n-2) 0.13

### Technical Data

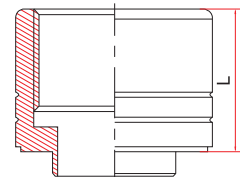
Design pressure	145 psi(A type)
	435 psi(B type)
Testing pressure	218 psi(A type)
	653 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H
Heat load	~170.6kBtu/h
Number of max plates	50

Male thread



The max size of male thread connection 3/4"

Female thread



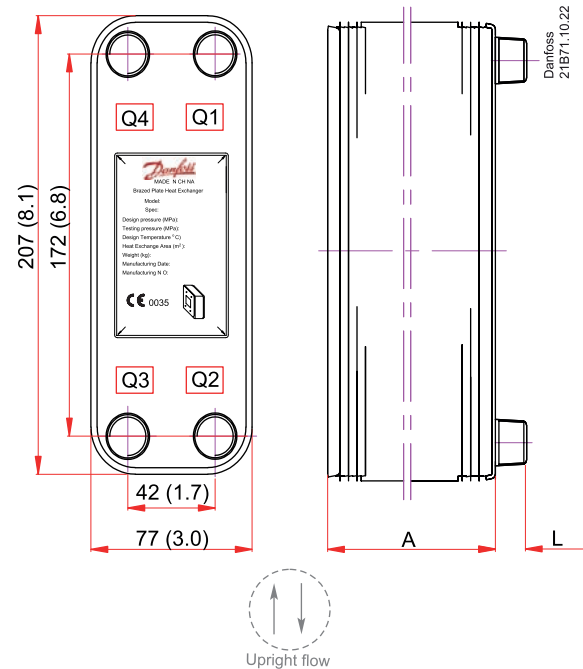
The max size of female thread connection 1/2"

Danfoss provides customers with various thread connections. Please contact local sales organization.



## Product Introduction

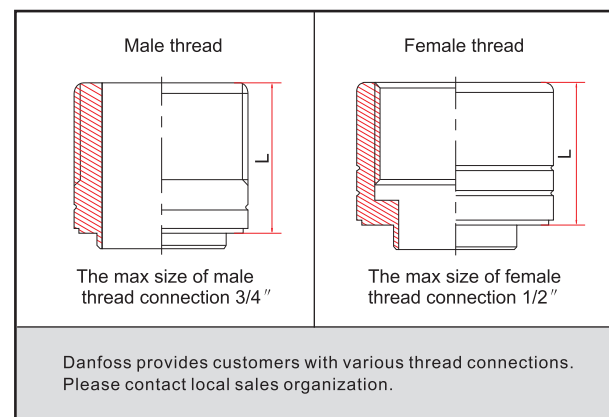
### ● Brazed Plate Heat Exchanger PHE B3-014



The standard plate material is stainless steel AISI 316L. For other plate material (AISI 304, SMO 254) please contact local sales organization.  
Approvals: UL, CE

PHE B3-014 Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume (g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.28+0.09n	1.54+0.132n	5.3 × n/2 / 5.3 × (n-2)/2	(n-2) 0.15

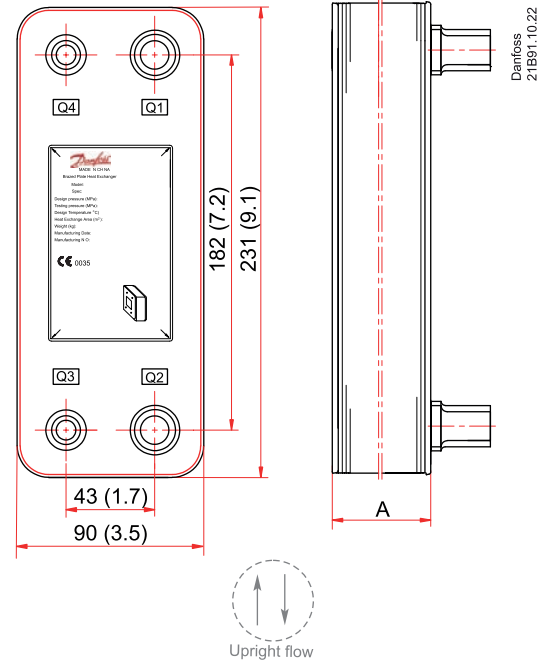
Technical Data	
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H, L, M
Heat load	~273.0kBtu/h
Number of max plates	60





## Product Introduction

### ● Brazed Plate Heat Exchanger PHE B3-018



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The standard plate material is stainless steel AISI 316L, For other plate material ( SMO 254 ) please contact local sales organization.  
Approvals: UL, CE

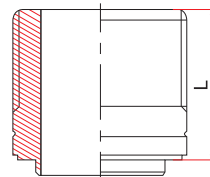
### PHE B3-018 Dimensional Data

Number of plates	A (in)	Weight (lbs)	Channel volume ( g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4side	Heat transfer area ( ft <sup>2</sup> )
n	0.39+0.09n	2.43+0.12n	9.5 × n/2 / 9.5 × (n-2)/2	(n-2) 0.19

### Technical Data

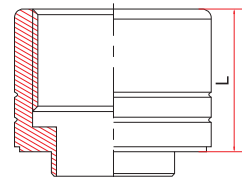
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H
Heat load	~511.8kBtu/h
Number of max plates	60

### Male thread



The max size of male thread connection 3/4 "

### Female thread



The max size of female thread connection 1/2 "

Danfoss provides customers with various thread connections. Please contact local sales organization.

## Product Introduction

### ● Brazed Plate Heat Exchanger PHE B3-020



PHE B3-020 Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume (g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.28+0.09n	0.97+0.17n	10.6 × n/2 10.6 × (n-2)/2	(n-2) 0.24

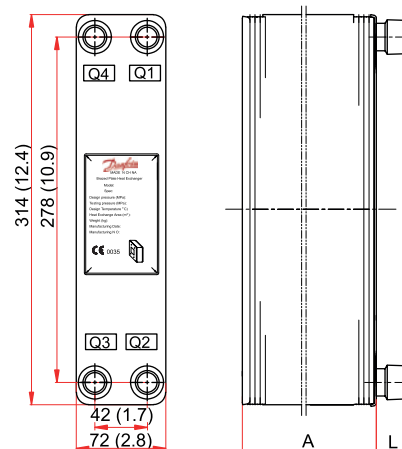
Technical Data	
Design pressure	435 psi(A type)
	580 psi(B type)
Testing pressure	653 psi(A type)
	870 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H、L、M
Heat load	34.1~273.0kBtu/h
Number of max plates	60

The standard plate material is stainless steel AISI 316L . For other plate material ( AISI 304 , SMO 254 ) please contact local sales organization.

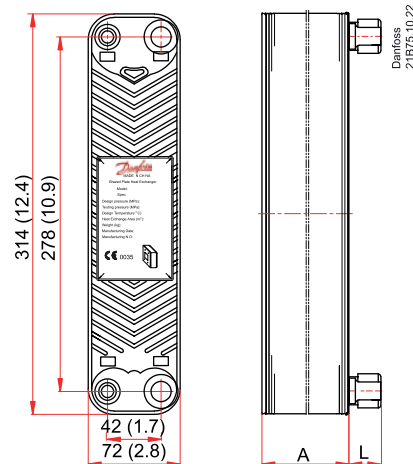
Approvals: UL, CE



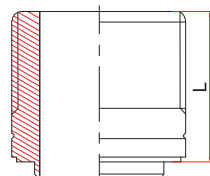
Flat front / back cover plate



Corrugated front / back cover plate

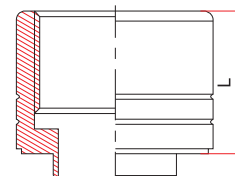


Male thread



The max size of male thread connection 3/4"

Female thread

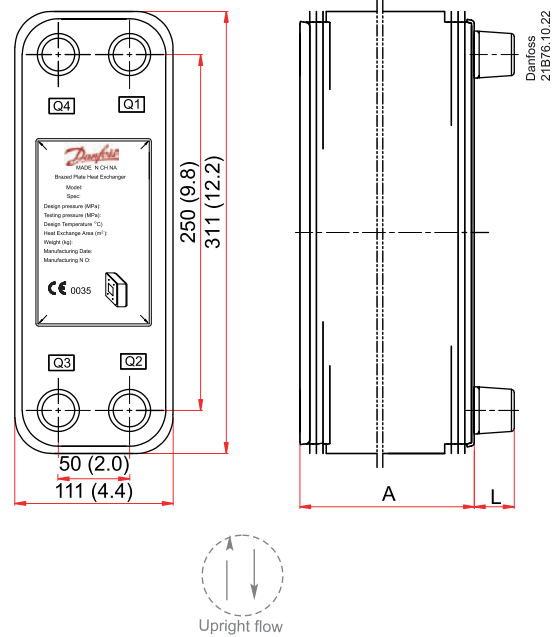


The max size of female thread connection 1/2"

Danfoss provides customers with various thread connections. Please contact local sales organization.

## Product Introduction

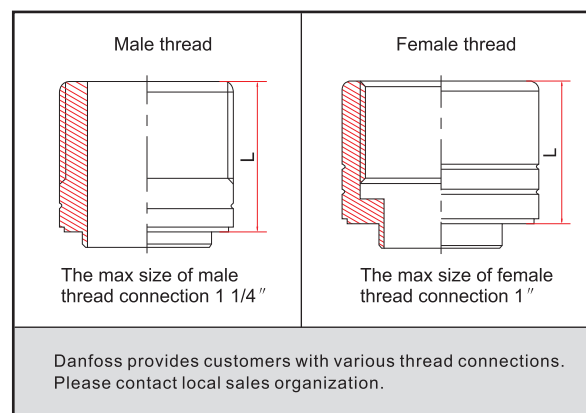
### ● Brazed Plate Heat Exchanger PHE B3-027



The standard plate material is stainless steel AISI 316L. For other plate material ( AISI 304L , SMO 254 ) please contact local sales organization.  
Approvals: UL, CE

PHE B3-027 Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume (g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4side	Heat transfer area ( ft <sup>2</sup> )
n	0.35+0.09n	2.65+0.29n	13.2×n/2/13.2×(n-2)/2	(n-2) 0.28

Technical Data	
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H、L、M
Heat load	68.2~682.4kBtu/h
Number of max plates	150



## Product Introduction

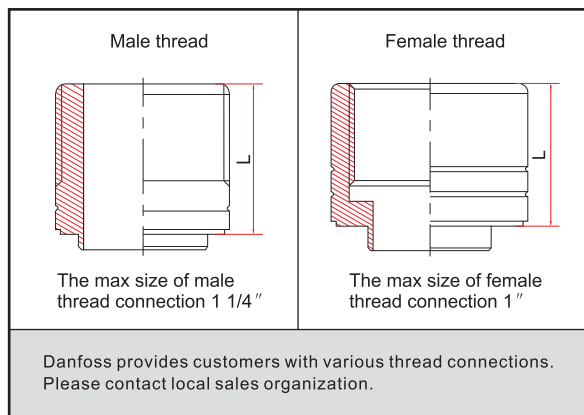
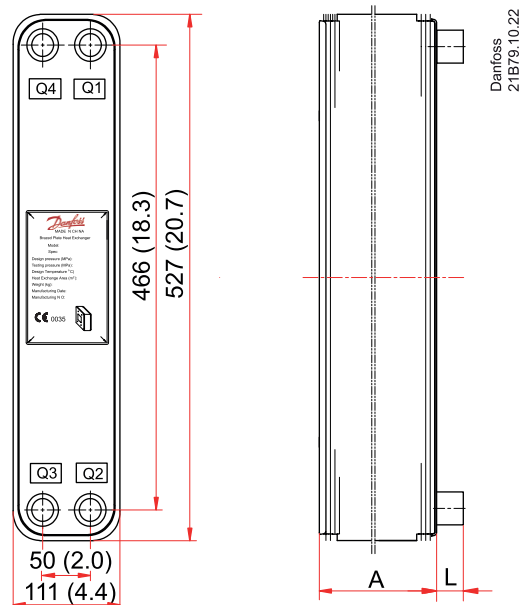
### ● Brazed Plate Heat Exchanger PHE B3-052



The standard plate material is stainless steel AISI 316L. For other plate material ( AISI 304L 、 SMO 254 ) please contact local sales organization.  
Approvals: UL, CE

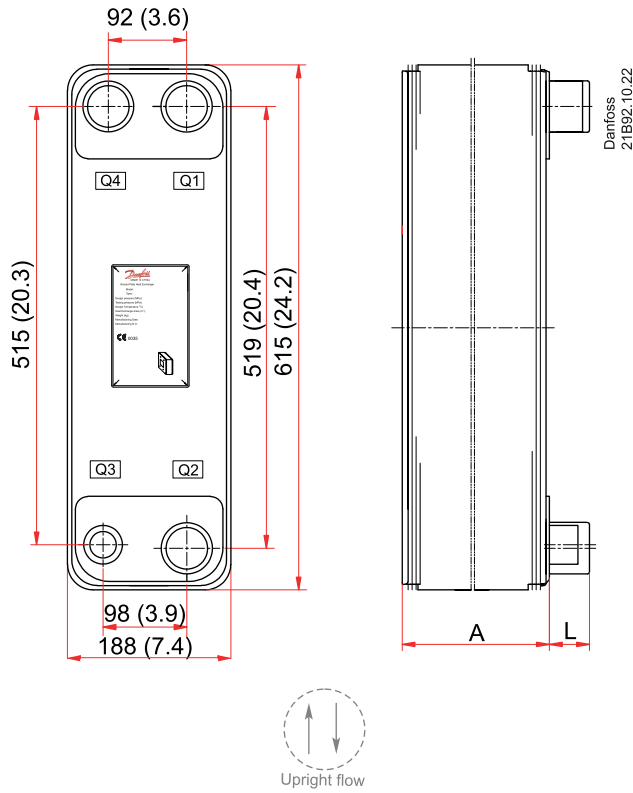
PHE B3-052 Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume (g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.35+0.09n	3.97+0.51n	24.8 × n/2 24.8 × (n-2)/2	(n-2) 0.54

Technical Data	
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 °F
Plate type	H、L、M
Heat load	170.6~853.0kBtu/h
Number of max plates	150



## Product Introduction

### ● Brazed Plate Heat Exchanger **PHE B3-095**



The standard plate material is stainless steel AISI 316L. For other plate material (AISI 304L, SMO 254) please contact local sales organization. Approvals: UL, CE

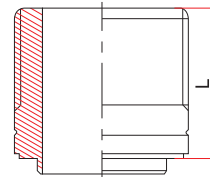
**PHE B3-095 Dimensional Data**

Number of plates	A (in)	Weight (lbs)	Channel volume (gx 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.47+0.09n	12.43+0.9n	53.1 × n/2 53.1 × (n-2)/2	(n-2) 1.02

**Technical Data**

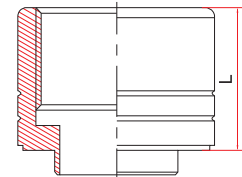
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H、L、M
Heat load	341.2~2047.2kBtu/h
Number of max plates	250

Male thread



The max size of male thread connection 2"

Female thread

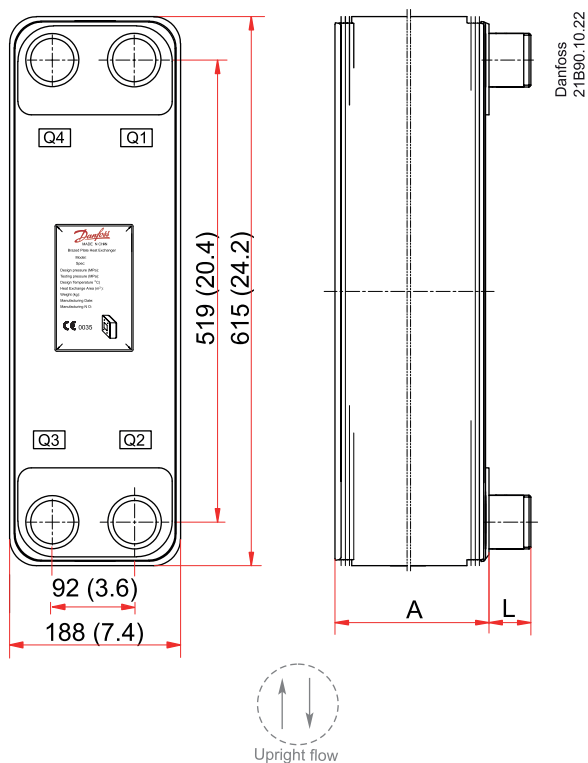


The max size of female thread connection 1 1/2"

Danfoss provides customers with various thread connections. Please contact local sales organization.

## Product Introduction

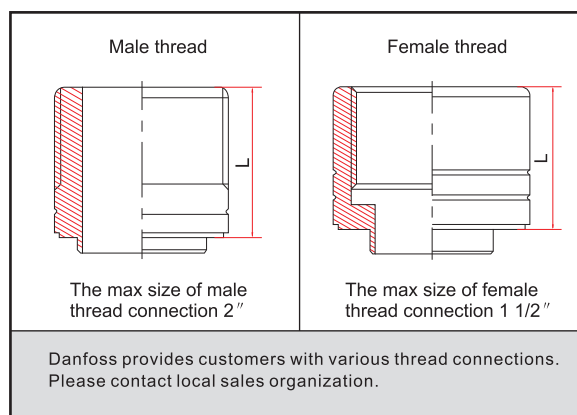
### ● Brazed Plate Heat Exchanger **PHE B3-095B**



PHE B3-095B Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume (g x 10 <sup>-3</sup> ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.47+0.11n	12.43+0.9n	66.1 × n/2 66.1 × (n-2)/2	(n-2) 1.02

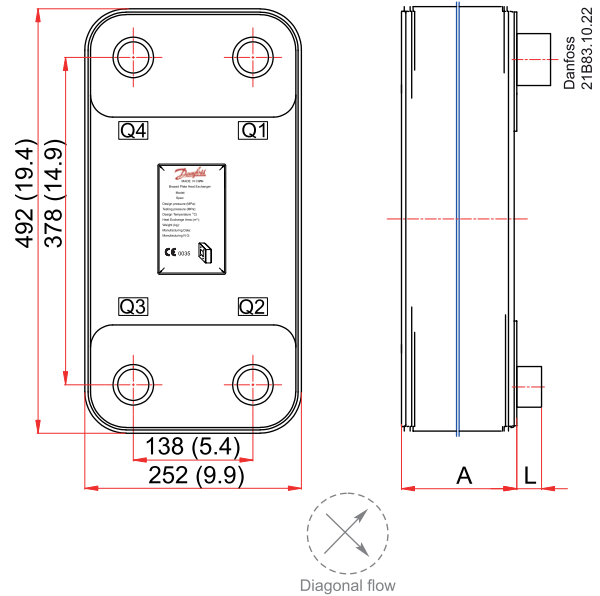
The standard plate material is stainless steel AISI 316L. For other plate material (AISI 304L, SMO 254) please contact local sales organization.  
Approvals: CE

Technical Data	
Design pressure	435 psi(A type)
	653 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H, L, M
Heat load	341.2~2047.2kBtu/h
Number of max plates	250



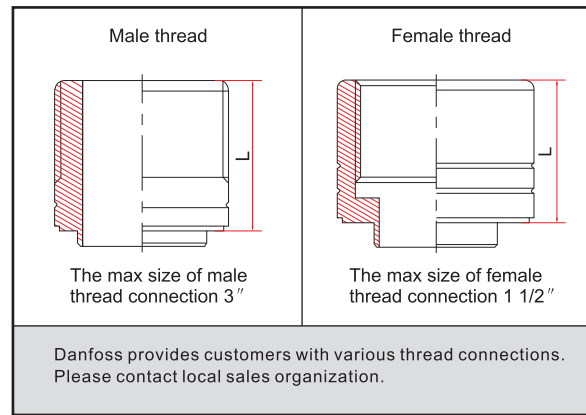
## Product Introduction

● Brazed Plate Heat Exchanger **PHE B3-136** A HP BB



The standard plate material is stainless steel AISI 316L. For other plate material (SMO 254 ) please contact local sales organization.  
Approvals: CE

Technical Data	
Design pressure	435 psi(A type)
	580 psi(B type)
Testing pressure	653 psi(A type)
	979 psi(B type)
Design temperature	- 321 ~ + 392 F
Plate type	H
Heat load	682.4~4094.4kBtu/h
Number of max plates	200



PHE B3-136 Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume( $g \times 10^{-3}$ ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area ( $ft^2$ )
n	$0.39+0.11n$	$14.33+0.84n$	$51.3 \times n/2$ $51.3 \times (n-2)/2$	$(n-2) 0.99$



## Product Introduction

### ● Brazed Plate Heat Exchanger **PHE B3-260B** A

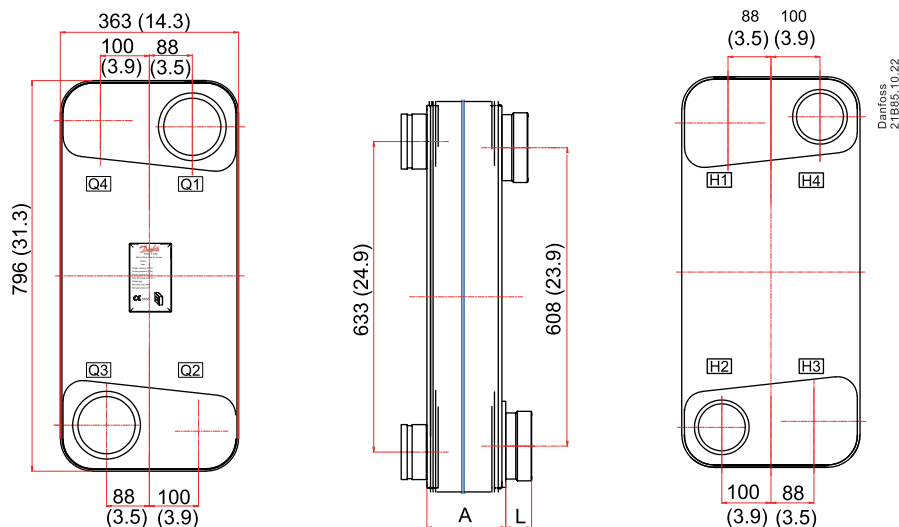


Technical Data	
Design pressure	290 psi(A type)
Testing pressure	435 psi(A type)
Design temperature	- 321 ~ + 392 F
Plate type	H
Heat load	1535.4~6824.0kBtu/h
Number of max plates	250

Clamp connection	Thread connection
<p>The max size of clamp connection 5"</p>	<p>The max size of thread connection 3"</p>
<p>Danfoss provides customers with various thread connections. Please contact local sales organization.</p>	

PHE B3-260B Dimensional Data				
Number of plates	A (in)	Weight (lbs)	Channel volume( $g \times 10^{-3}$ ) Q1 Q2 side/ Q3 Q4 side	Heat transfer area (ft <sup>2</sup> )
n	0.51+0.11n	29.76+2.14n	158.5×n/2 158.5×(n-2)/2	(n-2) 2.55

The standard plate material is stainless steel AISI 316L. For other plate material(SMO 254 ) please contact local sales organization.  
Approvals: CE

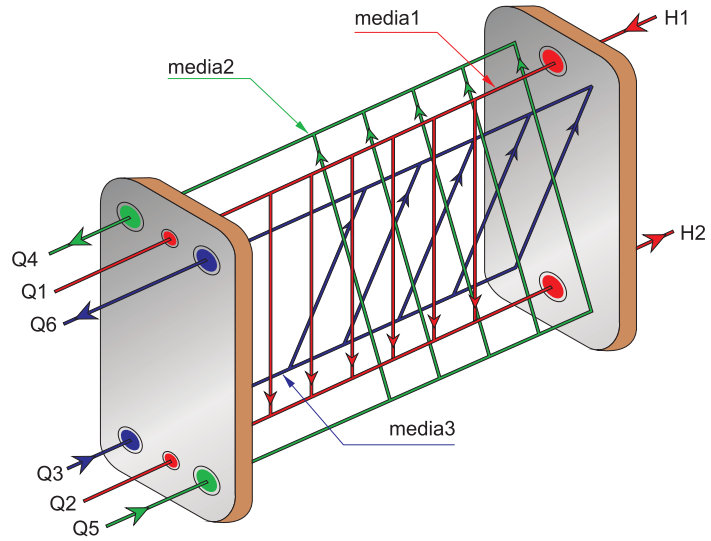


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Product Introduction

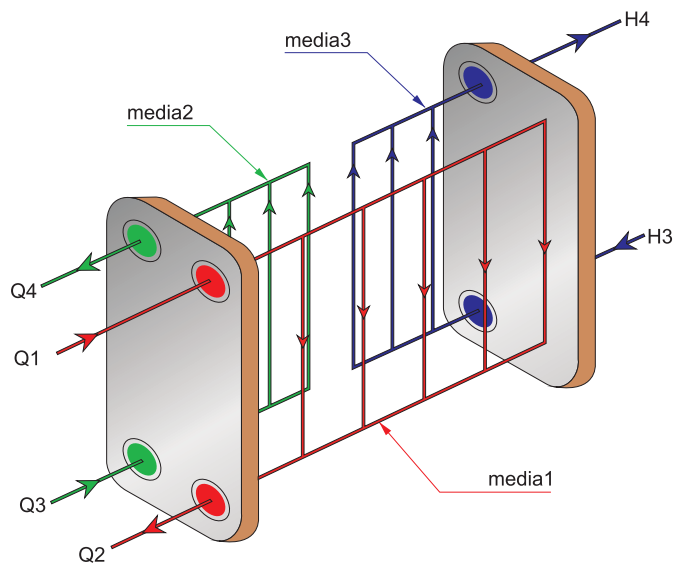
- Danfoss provides customers with some special types, which can run with 3 different media.

- Dual Circuit system DC



Danfoss type B3-113 and B3-210 are Dual Circuit system.

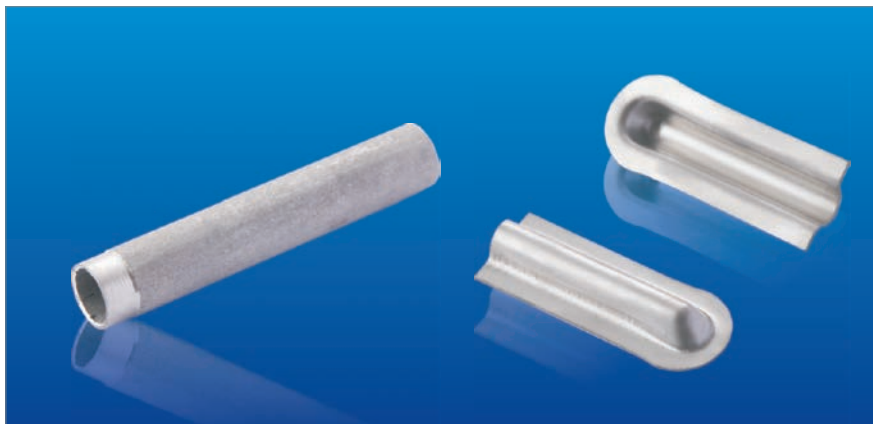
- Back to Back system BB



The back to back system can be utilized in most of our products, find "BB" symbol in the product introduction.

Accessory

Adapter



Stud Bolt



Lift Ring



Insulation



Bracket



**Other accessories can be made according to customer's request, please contact local sales organization.**





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**Danfoss Inc.**  
6711 Mississauga Road, Suite 410  
Toronto, ON, L5N 2W3  
Tel.: 905-285-2050, Fax: 905- 285-2055  
[www.na.heating.danfoss.com](http://www.na.heating.danfoss.com)

**Danfoss Inc.**  
Baltimore, MD  
USA  
Tel.: 443-512-0266, Fax: 443-512-0270  
[www.na.heating.danfoss.com](http://www.na.heating.danfoss.com)

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