

Data sheet

Brazed heat exchanger XB

Description / application



The XB is a copper brazed plate heat exchanger designed for use with district heating systems (i.e. air conditioning, heating, domestic hot water). XB brazed plate heat exchangers are made with several differently sized heat exchange plates.

Approvals:

- CE certificate according (PED) 97/23/EC
- GOST/ Russia
- SVGW/Switzerland
- VA/Denmark

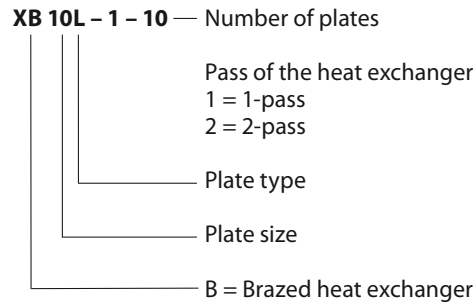
Main data:

- Min. temperature -10 °C
- Max. temperature +180 °C
- Max. working pressure 25 bar
- Circulation water / glycolic water up to 50%
- Connection size DN (threaded or flanged) 20...100

Ordering

Explanation, XB type

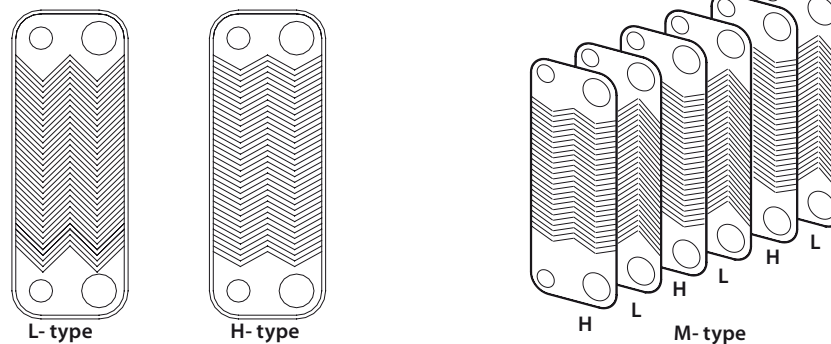
The heat exchanger can consist of plates type L or plates type H.



The H- type plate has larger herring bone angle than the L- type plate. H- type plate fits better for certain temperatures than L- type. H- type heat exchangers have better heating capacity, but they also have higher pressure loss.

The plate set can also be a combination of these two types. If every other plate is H-type plate and every other plate is L-type plate, the combination is called type M.

Plate types H - M - L



The same principal difference can be obtained with other plate patterns as well.

1-pass brazed heat exchangers type XB

Type	XB 04-1	XB 06L-1	XB 06H-1	XB 10-1	XB 20-1	XB 24-1	XB 30-1	XB 37L-1	XB 37M-1	XB 37H-1	XB 40-1
Connec- tion	Thread	Thread	Thread	Thread	Thread	Thread	Thread	Thread	Thread	Thread	Thread
	G ¾ A	G ¾ A	G ¾ A	G 1 A	G 1 A	G ¾ A	G 1 A	G 1 A	G 1 A	G 1 A	G 1 A
No of plates, n											
8	004B1011	004B2024	004B2036	004B1004	-	-	-	-	-	-	-
10	004B1012	004B2025	004B2037	004B1005	004B1205	004B1027	004B1405	004B1675	004B1690	004B1705	004B1605
16	004B1014	004B2026	004B2038	004B1008	004B1208	004B1028	004B1408	004B1676	004B1691	004B1706	004B1608
20	004B1016	004B2027	004B2039	004B1010	004B1210	004B1029	004B1410	004B1677	004B1692	004B1707	004B1610
26	004B1017	004B2028	004B2041	004B1013	004B1213	004B1031	004B1413	004B1678	004B1693	004B1708	004B1613
30	004B1019	004B2029	004B2042	004B1015	004B1215	004B1032	004B1415	004B1679	004B1694	004B1709	004B1615
36	004B1021	004B2030	004B2043	004B1018	004B1218	004B1033	004B1418	004B1680	004B1695	004B1710	004B1618
40	004B1023	004B2031	004B2044	004B1020	004B1220	004B1034	004B1420	004B1681	004B1696	004B1711	004B1620
50	004B1024	004B2032	004B2046	004B1025	004B1225	004B1067	004B1425	004B1682	004B1697	004B1712	004B1625
60	004B1026	004B2033	004B2047	004B1030	004B1230	004B1068	004B1430	004B1683	004B1698	004B1714	004B1630
70	-	004B2034	004B2048	004B1035	004B1235	004B1069	004B1435	004B1684	004B1699	004B1715	004B1635
80	-	-	-	-	-	-	004B1440	004B1685	004B1700	004B1716	004B1640
90	-	-	-	-	-	-	004B1445	004B1686	004B1701	004B1717	004B1645
100	-	-	-	-	-	-	004B1450	004B1687	004B1702	004B1718	004B1650
110	-	-	-	-	-	-	-	004B1688	004B1703	004B1719	-
120	-	-	-	-	-	-	-	004B1689	004B1704	004B1720	-
140	-	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-	-

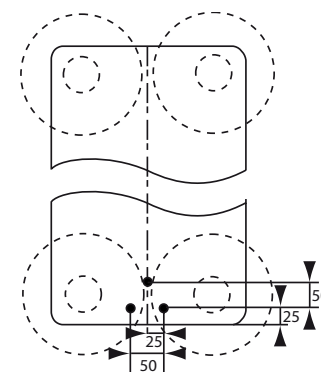
Ordering, continued

1-pass brazed heat exchangers type XB

Type	XB 51H-1	XB 51L-1	*XB 51H-1 SB	*XB 51H-1 SB	*XB 51L-1 SB	*XB 51L-1 SB	XB 60-1 ²⁾	*XB 60-1 SB	XB 70L-1 ²⁾	XB 70M-1 ²⁾	XB 70H-1 ²⁾
Connection	Thread	Thread	Thread	Flange	Thread	Flange	Flange	Flange	Flange	Flange	Flange
	G2A	G2A	G2A	DN50	G2A	DN50	DN 65	DN 65	DN 65/100 ¹⁾	DN 65/100 ¹⁾	DN 65/100 ¹⁾
No of plates, n											
8	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-
30	004B1815	004B1194	004B1103	-	004B1345	-	-	-	-	-	-
36	004B1818	004B1195	004B1104	-	004B1346	-	-	-	-	-	-
40	004B1820	004B1196	004B1105	-	004B1347	-	-	-	-	-	-
50	004B1825	004B1197	004B1106	-	004B1348	-	-	-	004B2425	004B2000	004B2012
60	004B1830	004B1198	-	004B1107	-	004B1350	-	-	004B2430	004B2001	004B2013
70	004B1835	004B1199	-	004B1108	-	004B1351	004B2035	004B1136	004B2435	004B2002	004B2014
80	004B1840	004B1200	-	004B1109	-	004B1352	004B2040	004B1138	004B2440	004B2003	004B2015
90	004B1845	004B1201	-	004B1110	-	004B1353	004B2045	004B1115	004B2445	004B2004	004B2016
100	004B1850	004B1202	-	004B1111	-	004B1355	004B2050	004B1116	004B2450	004B2005	004B2017
110	004B1855	004B1203	-	004B1112	-	004B1356	004B2055	004B1117	004B2455	004B2006	004B2018
120	004B1860	004B1204	-	004B1114	-	004B1357	004B2060	004B1118	004B2460	004B2007	004B2019
140	-	-	-	-	-	-	004B2070	004B1119	004B2470	004B2008	004B2020
160	-	-	-	-	-	-	004B2080	004B1120	004B2480	004B2009	004B2021
180	-	-	-	-	-	-	-	-	004B2490	004B2010	004B2022
200	-	-	-	-	-	-	-	-	004B2499	004B2011	004B2023

¹⁾ primary side (PN 25) / secondary side (PN 16)
²⁾ delivered with mounting brackets ex factory

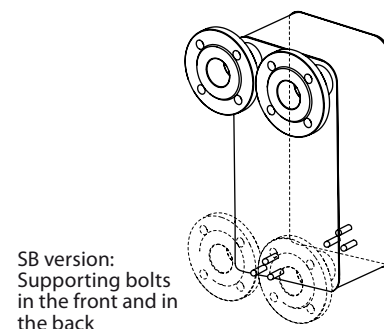
*
Special versions; SB
 This version includes 3 supporting bolts in the front and in the back, M12x20



2-pass brazed heat exchangers type XB

Type	XB 04-2	XB 10-2	XB 20-2	XB 30-2	XB 51H-2	XB 51L-2
Connection	Thread	Thread	Thread	Thread	Thread	Thread
	G ¾ A	G 1 A	G 1 A	G 1 A	G 2 A	G 2 A
No of plates ¹⁾ , n						
20/20	00BB1036	004B3010	-	004B3410	-	-
26/26	004B1037	004B3013	-	004B3413	-	-
30/30	00BB1038	004B3015	-	004B3415	004B3615	004B1292
36/36	004B1039	004B3018	-	004B3418	004B3618	004B1293
40/40	00BB1040	004B3020	004B3220	004B3420	004B3620	004B1294
46/46	004B1041	004B3023	004B3223	004B3423	004B3623	004B1295
50/50	004B1042	004B3025	004B3225	004B3425	004B3625	004B1296
56/56	004B1043	004B3028	004B3228	-	004B3628	004B1297
60/60	004B1044	004B3030	004B3230	-	004B3630	004B1298
66/66	-	-	-	-	004B3633	004B1299
70/70	-	-	-	-	004B3635	004B1300

¹⁾ afterheating / preheating



SB version:
 Supporting bolts in the front and in the back

Special versions

Special versions for different mediums, connections / couplings, max. operating pressures, materials and capacities are available on request. Please contact the local sales representative for details.

Accessories

Tailpieces for brazed heat exchanger type XB

	Description	Suitable for	Connection	Code No. ¹⁾		
	Solder tailpieces	XB 04, XB 06 XB 24	G ¾ A / 15 mm	004B2945		
			G ¾ A / 18 mm	004B2946		
		XB 10, XB 20 XB 30, XB 37, XB 40	G 1 A / 15 mm	004B2904		
			G 1 A / 18 mm	004B2905		
			G 1 A / 22 mm	004B2906		
		XB 51	G 2 A / 28 mm	004B2910		
			G 2 A / 35 mm	004B2911		
			G 2 A / 42 mm	004B2912		
			Weld-on tailpieces	XB 04, XB 06 XB 24	G ¾ A / DN 20	004B2944
XB 10, XB 20 XB 30, XB 37, XB 40	G 1 A / DN 15				004B2901	
	G 1 A / DN 20			003H6909		
	G 1 A / DN 25			004B2903		
XB 51	G 2 A / DN 32			004B2907		
	G 2 A / DN 40			004B2908		
	G 2 A / DN 50			004B2909		
	Threaded tailpieces			XB 04, XB 06 XB 24	G ¾ A / G ¾ A	004B2947
					G ¾ A / G 1 A	004B2953
		XB 10, XB 20 XB 30, XB 37, XB 40	G 1 A / G ¾ A	004B2913		
			-	-		
			-	-		

n - number of plates

¹⁾ One set contains 2 tailpieces with unionnuts and gaskets

Mounting brackets for brazed heat exchanger type XB

				Suitable for	Code No.
 XB 04...XB 40	 XB 51	 XB 60	 XB 70	XB 04, 06, XB 24 <50 plates	004B2948
				XB 37	004B1728
				XB 10, 20, 30, 40	004B2919
				XB 51	004B2923
				XB 60	004B2924¹⁾
				XB 70	004B2925¹⁾

¹⁾ Factory assembled. Only to be ordered separately for service purposes.

Accessories continued
Insulation for 1-pass brazed heat exchangers type XB

Type	XB 06-1	XB 10-1	XB 20-1	XB 30-1	XB 37-1L	XB 37-1M	XB 37-1H	XB 40-1	XB 51-1	XB 60-1	XB 70-1	
No of plates												
8			-	-	-	-	-	-	-	-	-	
10									-	-	-	
16	004B1191	004B1113	004B1313	004B1513	004B1721	004B1721	004B1721	004B1713	-	-	-	
20									-	-	-	
26									-	-	-	
30									-	-	-	
36	004B1192	004B1124	004B1324	004B1524	004B1722	004B1722	004B1722	004B1724	004B1924	-	-	
40										-	-	-
50										-	-	-
60	004B1193	004B1135	004B1335	004B1535	004B1725	004B1723	004B1723	004B1735	004B1935	-	004B2535	
70										-		
80										-		
90										-		
100	-	-	-	004B1550	004B1726	004B1725	004B1725	004B1750	004B1950	004B2145	004B2550	
110	-	-	-									
120	-	-	-	-	004B1727	004B1726	004B1725	-	004B1960	004B2160	004B2570	
140	-	-	-	-				-				-
160	-	-	-	-	-	-	-	-	-	004B2180	004B2599	
180	-	-	-	-	-	-	-	-	-			
200	-	-	-	-	-	-	-	-	-	-	-	

Insulation for 2-pass brazed heat exchangers type XB

Type	XB 10-2	XB 20-2	XB 30-2	XB 51-2
No of plates ¹⁾				
20/20		-		-
26/26	004B3115	-	004B3515	-
30/30		-		
36/36	004B3120	-	004B3520	004B3720
40/40		-		
46/46	004B3125	004B3325	004B3525	004B3725
50/50				
56/56	004B3130	004B3330	-	004B3730
60/60			-	
66/66	-	-	-	004B3735
70/70	-	-	-	

¹⁾ afterheating / preheating

Insulation properties

Type	PU (Polyurethane) see page 8 for XB 06-XB 51	Coated steel sheet and polyester insulation, see page 8 for XB 60-XB 70
Heatconductivity, λ [W/mK]	0.027	0.042
Max temperature, °C		
-Permanent, °C	130	150
-Short term peak, °C	160	180
Wall thickness, mm	20	30

Technical data

1-pass brazed heat exchangers type XB

Type	XB 04-1	XB 06L-1	XB06 H-1	XB 10-1	XB 20-1	XB 24-1	XB 30-1	XB 37L-1	XB 37M-1	XB 37H-1	XB 40-1	XB 51L-1 XB51H-1	XB 60-1	XB 70L-1 XB 70M-1 XB 70H-1
Max. working pressure (bar)	25 (16) ¹⁾													
Max. operating temp. (°C)	180													
Min. operating temp. ²⁾ (°C)	-10													
Flow medium	Circulation water / glycolic water up to 50%													
Volume/channel (litres)	0.060	0.025	0.017	0.050	0.060	0.100	0.075	0.102	0.070	0.057	0.120	0.210	0.260	0.55/0.70 ³⁾
Heat surface, m ² /plate	0.020	0.023	0.023	0.023	0.029	0.037	0.041	0.054	0.051	0.051	0.062	0.081	0.099	0.256
Connection type	Cylindrical external thread acc. to DIN ISO 228/1												Flange, DN	
Connection size	G ¾ A			G 1 A		G ¾ A		G 1 A			G 2 A		65 ⁴⁾	65 ⁴⁾ /100 ⁵⁾
Plate material	Stainless steel, mat. no. 1.4404													
Brazing material	Copper													

¹⁾ 16 bar versions are available on enquiry (all types except XB 04-1, 24-1). XB 70-1 secondary side: max. working pressure 16 bar

²⁾ At flow temperatures below 2 °C glycolic water must be used

³⁾ Primary side / secondary side

⁴⁾ Flanges PN 25 acc. to EN 1092, facing type B (B1)

⁵⁾ Flanges PN 16 acc. to EN 1092, facing type B (B1)

Heat exchanger heat surface

$$(n-2) * \text{heat surface/plate}$$

n = number of plates

Heat exchanger water volume

Primary side	Secondary side
$(n/2-1) * \text{volume/channel}$	$n/2 * \text{volume/channel}$

n = number of plates

2-pass brazed heat exchangers type XB

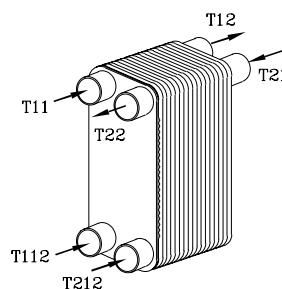
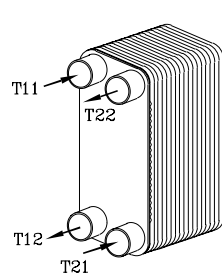
Type	XB 04-2	XB 10-2	XB 20-2	XB 30-2	XB 51L-2, XB 51H-2
Max. working pressure (bar)	25 (16) ¹⁾				
Max. operating temp. (°C)	180				
Min. operating temp. ²⁾ (°C)	-10				
Flow medium	Circulation water / glycolic water up to 50%				
Volume/channel (litres)	0.060	0.050	0.060	0.075	0.210
Heat surface, m ² /plate	0.020	0.023	0.029	0.041	0.081
Connection type	Cylindrical external thread acc. to DIN ISO 228/1				
Connection size	G ¾ A	G 1 A			G 2 A
Plate material	Stainless steel, mat. no. 1.4404				
Brazing material	Copper				

¹⁾ 16 bar versions are available on enquiry (all types except XB 04-2).

²⁾ At flow temperatures below 2 °C glycolic water must be used

To avoid corrosion and leakage in the copper brazed plate heat exchangers please observe Danfoss recommendations for the water quality in the guideline on www.heating.danfoss.com (Documentation).

Design and function



- T11 - Primary side in
- T12 - Primary side out
- T112 - Primary side second inlet (2-pass)
- T21 - Secondary side in
- T22 - Secondary side out
- T212 - Secondary side second inlet (2-pass)

The heat exchangers are made of shape-pressed and brazed heat exchange plates, between which the flow channels are created. The heavy turbulence and counterflow principle enable efficient heat transfer. The task of the heat exchanger is to transfer heat from the primary to secondary flow through a heat transfer plate thus preventing the flows from mixing with each other.

The choice of heat exchanger is determined by the desired heat output, required temperatures

and the permitted pressure losses.

The 2-pass heat exchanger should be chosen for domestic hot water. The 2-pass heat exchanger will often cool the district heating water to below 25 °C. This capacity can be achieved by using a larger temperature difference, a smaller water flow and a heat exchanger with an optimum heat transfer area. This will affect the choice of motorized control valve, for instance.

Sizing

Dimensioning and selection of heat exchangers should be carried out with the support of the Danfoss dimensioning program for heat exchangers.

Mounting

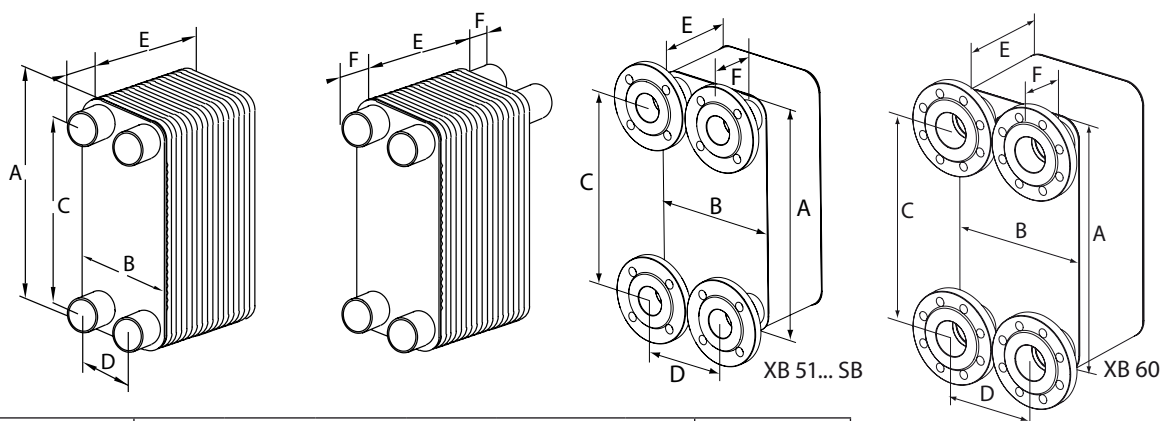
It is recommended to mount heat exchangers on their base in vertical position. This will assure the best venting and the least fouling. It is recommended that all pipes connected to the heat exchanger are equipped with shut-off valves for maintenance purposes.

The pipes must be equipped with brackets to prevent any torsional stress concentration at the heat exchanger's pipe connections.

It is recommended that the heat exchanger is equipped with insulation.

The pipes to be connected must be mounted so that the strain caused by the thermal expansion, for instance, does not harm the heat exchanger.

Use a safety valve between a heat exchanger and a shut off valve on the secondary side to avoid breaking of the heat exchanger due to thermal expansion of liquid.

Dimensions


Type	Connection	External dimensions [mm]						Weight empty [kg]
		A	B	C/C1	D	E	F	
XB 04-1-...	G ¾ A ¹⁾	296	93	248	45	11 + 2.25 x n	20	0.9 + n x 0.085
XB 04-2-...	G ¾ A ¹⁾	296	93	248	45	11 + 2.25 x n	20	1.13 + n x 0.085
XB 06 L-...	G ¾ A ¹⁾	320	95	270	45	8.5 + n x 1.7	20	0.67 + n x 0.08
XB 06 H-...	G ¾ A ¹⁾	320	95	270	45	8.5 + n x 1.3	20	0.67 + n x 0.08
XB 10-...	G 1 A ¹⁾	288	118	235	65	7 + 2.6 x n	50	1.5 + n x 0.12
XB 20-...	G 1 A ¹⁾	338	118	285	65	7 + 2.6 x n	50	1.6 + n x 0.14
XB 24-...	G ¾ A ¹⁾	490	93	442	45	11 + 2.25 x n	20	1.4 + n x 0.15
XB 30-...	G 1 A ¹⁾	438	118	385	65	7 + 2.6 x n	50	2 + n x 0.18
XB 37L-...	G 1 A ¹⁾	525	119	479	72	10 + 2.25 x n	50	2.6 + n x 0.16
XB 37M-...						10 + 1.73 x n		
XB 37H-...						10 + 1.45 x n		
XB 40-...	G 1 A ¹⁾	630	118	571	65	7 + 2.3 x n	50	3 + n x 0.25
XB 51L-... XB 51H-... XB 51... SB ⁵⁾	G 2 A ¹⁾	462	253	380	170	7 + 2.6 x n	50	6 + n x 0.38
XB 51... SB ⁶⁾	DN 50 ²⁾	462	253	380	170	7 + 2.6 x n	90	6 + n x 0.38
XB 60-... XB 60...SB	DN 65 ²⁾	520	280	424	184	10 + 2.7 x n	90	12 + n x 0.64
XB 70L-... XB 70M-... XB 70H-...	DN 65 ²⁾ / 100 ^{4) 3)}	990	365	861/816	214	10 + 2.7 x n	90	40 + n x 1.50

n = number of plates (for 2-pass heat exchangers the sum of afterheating and preheating plates)

¹⁾ Cylindrical external thread acc. to DIN ISO 228/1

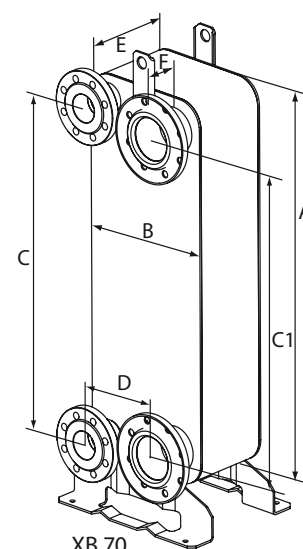
²⁾ Flanges PN 25 acc. to EN 1092, facing type B (B1)

³⁾ Primary side / secondary side

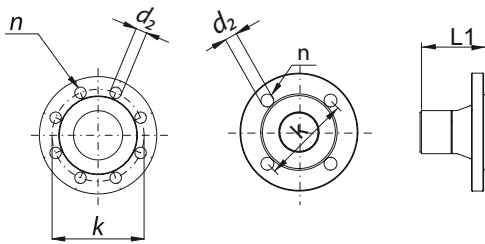
⁴⁾ Flanges PN 16 acc. to EN 1092, facing type B (B1)

⁵⁾ For number of plates n < 60

⁶⁾ For number of plates n ≥ 60



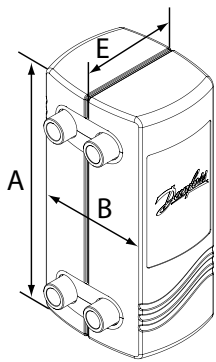
Dimensions continued



Type	DN	L1	k	n	d ₂	PN
XB 51... SB	50	90	125	4	18	25
XB 60	65	90	145	8	18	25
XB 70	65/100 ¹⁾	90	145/180 ¹⁾	8	18	25/16 ¹⁾

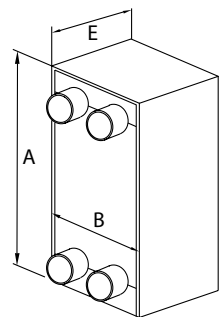
¹⁾ Primary side/ secondary side

Insulation program (polyurethane) for brazed heat exchangers type XB



XB 06,10, 20, 30, 37, 40, 51

Type	06-1	06-1	06-1	10-1	20-1	30-1	37L-1	37M-1	37H-1	40-1	51-1	60-1	70-1
A (mm)	368	368	368	328	378	478	572			670	502	580	1202
B (mm)	140	145	150	158			150			158	293	360	445
No of plates	E [mm]												
8	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-
16	98	-	-	117			117	117	117	117	-	-	-
20		-	-								-	-	
26		-	-								-	-	
30		-	-								-	-	
36	-	138	-	155			155	155	155	155	177	-	-
40	-		-									-	
50	-	-	-	236			200	155	155	236	237	-	-
60	-	-	-									-	
70	-	-	168	236			250	200	200	236	237	313	259
80	-	-											
90	-	-	-	-	-	317	305	250	250	317		313	340
100	-	-	-	-									
110	-	-	-	-	-	-	350	305	250	250	371	394	448
120	-	-	-	-									
140	-	-	-	-	-	-	-	-	-	-	-	502	610
160	-	-	-	-	-	-	-	-	-	-	-		
180	-	-	-	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	-	-	-	-	-	-



XB 60,70

Type	10-2	20-2	30-2	51-2
A (mm)	328	378	478	502
B (mm)	158			293
No of plates ¹⁾	E [mm]			
20/20	-	-	-	-
26/26	128	-	128	-
30/30		-		-
36/36	155	-	155	155
40/40		-		
46/46	282	182	182	182
50/50				
56/56	209	209	-	209
60/60			-	
66/66	-	-	-	236
70/70	-	-	-	

¹⁾ afterheating / preheating