KAORI

Brazed Plate Heat Exchanger

CE 0496 c UL us

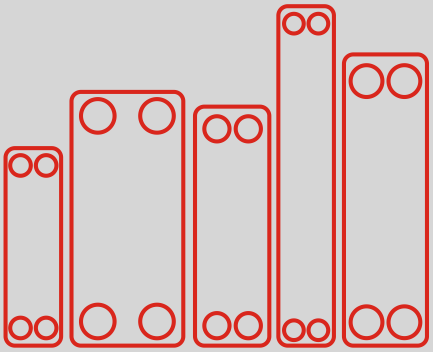
KHK
Japan

KRAIA
Korea

www.kaori.com.tw

KAORI

Innovation、Quality、Responsibility、Honor



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Company Profile

KAORI was established in 1970, insisting on pursuing innovative technology and manufacturing world-class products as its main goal. Consistently improving, researching, and importing new technology, KAORI launched the brazed plate heat exchanger division in 1994, and the quality system was ISO9001 certified in 1995; afterward KAORI brazed plate heat exchanger obtained numerous patents and certificates. In order to fulfill the increasing demand from the worldwide market, Kaohsiung plant and Ningbo plant were built in 2002 and 2005 to provide larger production capacity. KAORI brazed plate heat exchanger is the No.1 brand in Taiwan and has been exported to more than 50 countries.

KAORI Brazed Plate Heat Exchanger Plants

• Chung-Li Taiwan Plant

• Kaohsiung Taiwan Plant

• Ningbo China Plant

Facility and Test Equipment

High Quality U.S.-Made Vacuum Furnace

Continuous Pressing Machine

CNC Lathe

CO_2 High Pressure Test Machine

Helium Leak Test Machine

CNC Milling Machine

BPHE Capacity Test Equipment

Cycle Test Equipment

Burst Test Machine

High Quality from Taiwan

Certificate

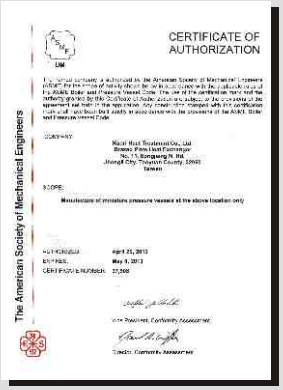
· UL

· CE/PED

· JAPAN KHK

· ISO 9001:2008

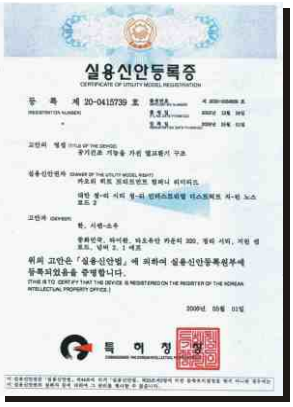
· ASME U

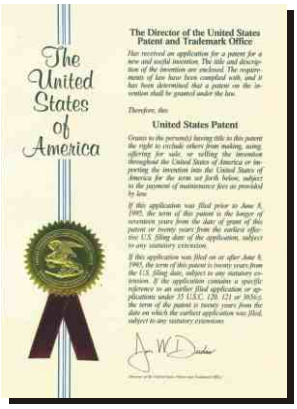


· ASME UM

Patent

· High Pressure Brazed Plate Heat Exchanger Patents in Taiwan, China, Japan and Germany





· Air Dryer Brazed Plate Heat Exchanger Patents in Taiwan, Japan, Korea, and USA

High Quality from Taiwan

All Series of Brazed Plate Heat Exchanger

Series		K Series	R Series	Z Series	C Series	E/F Series	H Series
		Standard	High Heat Transfer Performance	Big Diagonal Flow	Super High Pressure	Low Pressure	High Temperature
Photo							
Max. Working Pressure		45bar	45bar	45bar	140bar	10bar	10bar
Feature		Standard	R410A	Large Heat Capacity High Flow Rate	R744 (CO_2) Up to 140 bar	Low Flow Rate Water-to-Water	High Temperature Fluid
Brazing Material		Copper /Nickel	Copper	Copper	Copper	Copper	Nickel
Industry	HVAC	●	●	●	●		
	Refrigeration Storage System	●	●	●	●		
	Heat Pump	●	●	●	●		
	Chiller	●	●	●			
	Semiconductor Cooling	●				●	
	Air Dryer						
	Processing Cooling	●				●	
	Swimming Pool						
	Waste Heat Recovery	●		●			
	Injection Molding Machine	●					
	Pasteurizer	●					
	Laser Cutting/Welding Machine	●		●			
	Hydraulic System	●					
	Wind Power-Gear Box	●					
	Boiler	●				●	
	Food Processing						●
	Fuel Cell						●
Application	Evaporator/ Condenser	●	●	●	●		
	De-superheater/Subcooler	●	●	●	●		
	Economizer	●	●	●	●		
	Oil Cooler	●					
	Pre-cooler/ Pre-heater	●	●	●	●		

M Series	I Series	A Series
Corrosion Resistance	Impact Resistance	Air Dryer
		
30bar	30bar	16bar
Corrosion Resistant Material	Pressure and Thermal Shock Endurable	Evaporator, Separator and Precooler all in 1
Nickel	Copper	Copper
●		
	●	
		●
●		
	●	
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	●	
	●	
	●	
	●	
	●	

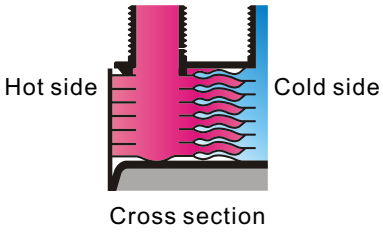
Product Introduction

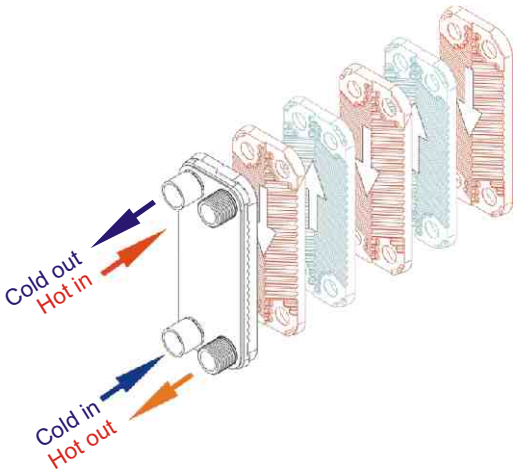
KAORI brazed plate heat exchanger consists of corrugated chevron plates and different brazing materials are available for different working conditions. The high quality of KAORI brazed plate heat exchanger ensures that it is capable of working in high-pressure and high-temperature working environments.

Advantage

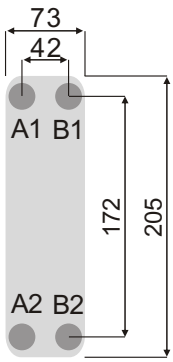
- Long life time durability
- Corrosion-resistance
- High thermal transfer efficiency
- Compact, easy installation
- Proven and reliable quality
- Flexible flows and temp. monitor option

Working Principle





Brazed Plate Heat Exchanger Dimension



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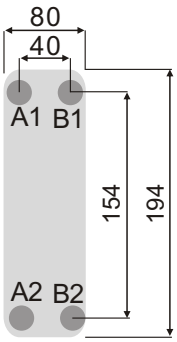

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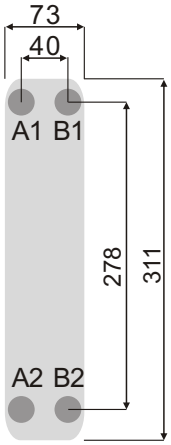

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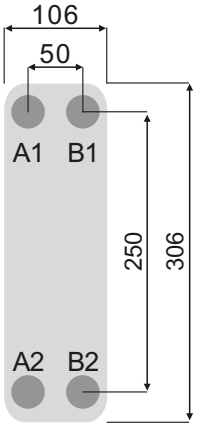

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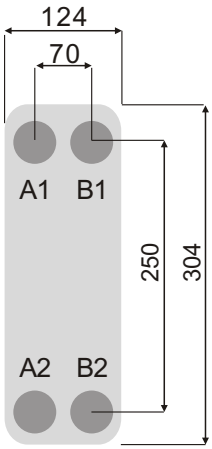

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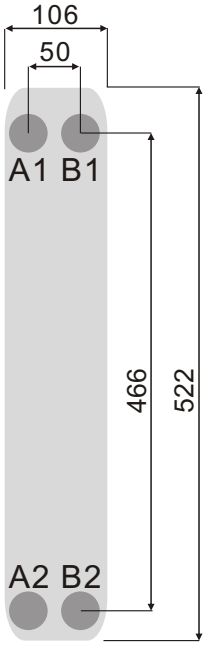

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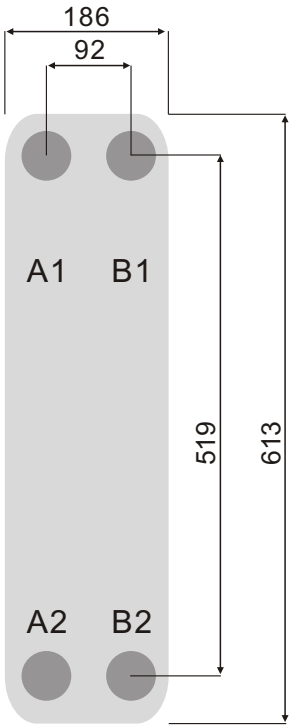

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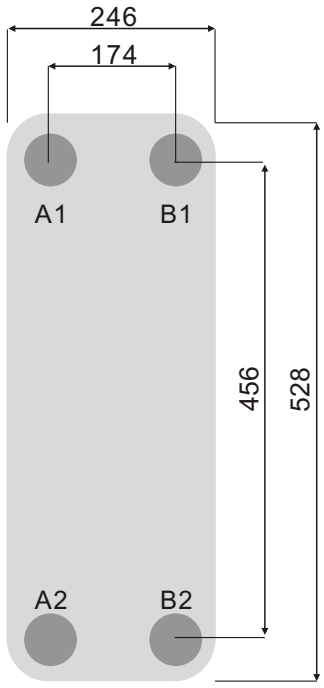

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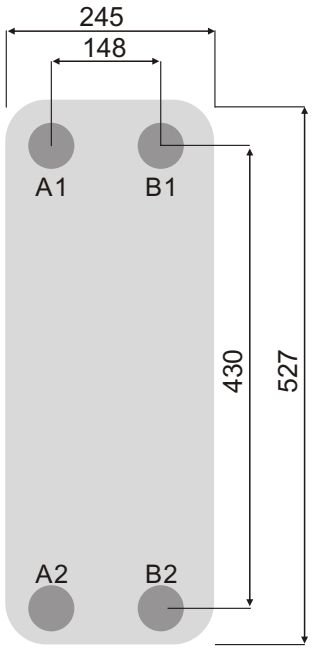

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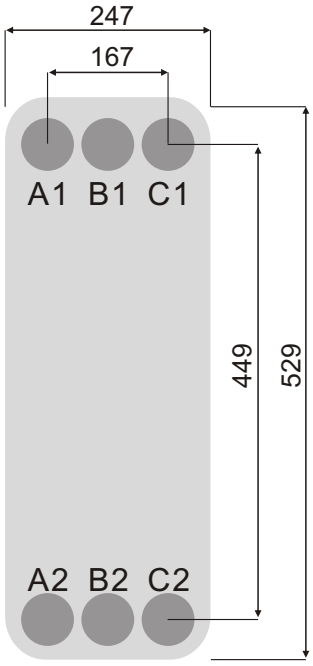

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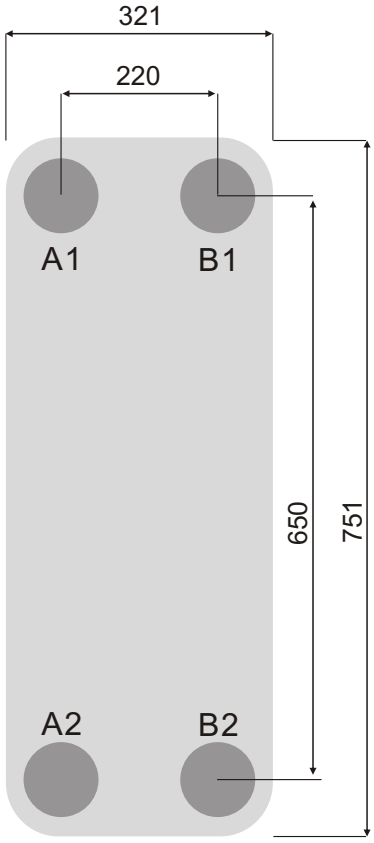

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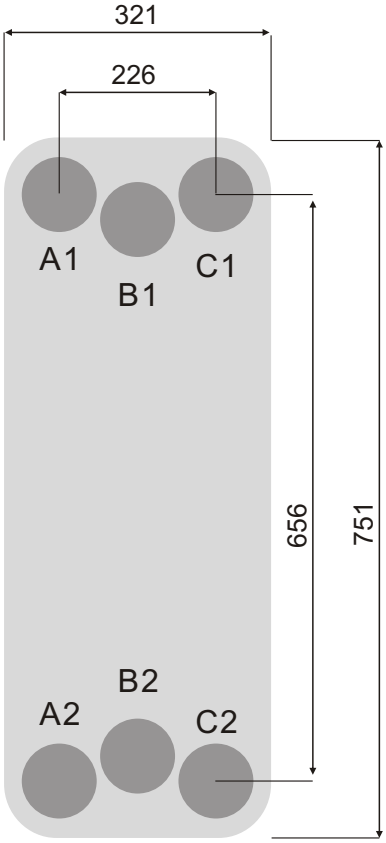

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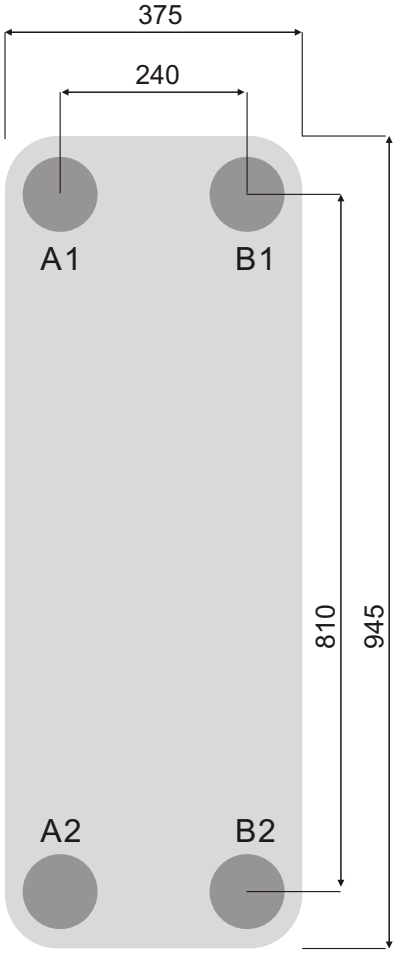


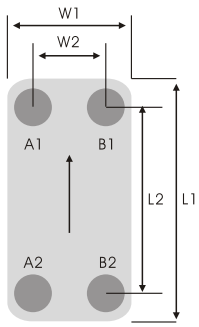
600

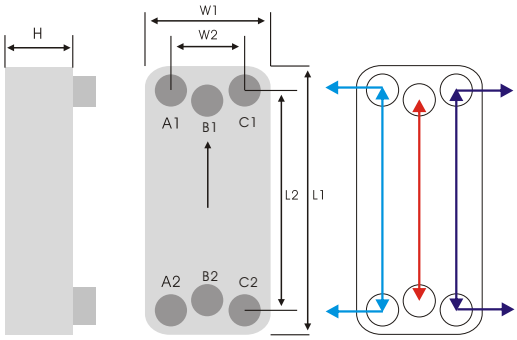
Unit：mm

※Due to different patterns of each series, precise dimension details will be specified in respective pages.

K Series-Standard Brazed Plate Heat Exchanger

K series is the series with the most complete range in sizes and widely used in various applications.
(Note: K***S: 45 bar, K215: Dual Circuit- 6 connections)
Main application: HVAC, heat pump, chiller, oil cooler, processing cooling and heating.





K215: Dual Circuit- 6 Connections

Brazing Material	Copper	Copper (Extra Strength)	Nickel
		(A1,A2/B1,B2)	
Max. Working Pressure (bar)	30/30	45/30	10/10
Min. Test Pressure (bar)	43/43	65/43	15/15
Max. Working Temperature (°C)	200 °C		

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
K025	205	172	73	42	6.70+2.27*N	0.73+0.040*N	0.0120	(N-2)*0.0120	0.025	(N-1)*0.025
K030	194	154	80	40	9.00+2.20*N	0.67+0.047*N	0.0117	(N-2)*0.0117	0.025	(N-1)*0.025
K040	311	278	73	40	9.00+2.30*N	0.95+0.070*N	0.0195	(N-2)*0.0195	0.040	(N-1)*0.040
K050	306	250	106	50	10.0 +2.38*N	1.48+0.116*N	0.0255	(N-2)*0.0255	0.055	(N-1)*0.055
K060	466	432	74	40	10.0+2.30*N	1.39+0.100*N	0.0302	(N-2)*0.0302	0.064	(N-1)*0.064
K070	304	250	124	70	10.0+2.38*N	1.65+0.134*N	0.0300	(N-2)*0.0300	0.065	(N-1)*0.065
K095	522	466	106	50	11.0+2.38*N	3.09+0.204*N	0.0475	(N-2)*0.0475	0.095	(N-1)*0.095
K105	504	444	124	64	11.0+2.38*N	3.80+0.230*N	0.0533	(N-2)*0.0533	0.107	(N-1)*0.107
K200	613	519	186	92	14.0+2.40*N	8.04+0.404*N	0.0945	(N-2)*0.0945	0.206	(N-1)*0.206
K205	528	456	246	174	14.0+2.40*N	8.01+0.480*N	0.1099	(N-2)*0.1099	0.232	(N-1)*0.232
K210	527	430	245	148	11.5+2.85*N	7.33+0.465*N	0.1036	(N-2)*0.1036	0.289	(N-1)*0.289
K215	529	449	247	167	13.0+2.40*N	8.31+0.473*N	0.1103	(N-2)*0.1103	0.220	(N-1)*0.220

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
K025S	205	172	73	42	7.30+2.27*N	0.79+0.040*N	0.0120	(N-2)*0.0120	0.025	(N-1)*0.025
K030S	194	154	80	40	11.0+2.20*N	1.13+0.047*N	0.0117	(N-2)*0.0117	0.025	(N-1)*0.025
K040S	311	278	73	40	9.00+2.30*N	0.80+0.070*N	0.0195	(N-2)*0.0195	0.040	(N-1)*0.040
K050S	306	250	106	50	12.0+2.38*N	2.39+0.116*N	0.0255	(N-2)*0.0255	0.055	(N-1)*0.055
K060S	466	432	74	40	10.0+2.30*N	1.27+0.100*N	0.0302	(N-2)*0.0302	0.064	(N-1)*0.064
K070S	304	250	124	70	12.0+2.38*N	2.78+0.134*N	0.0300	(N-2)*0.0300	0.065	(N-1)*0.065
K095S	522	466	106	50	13.0+2.38*N	5.74+0.204*N	0.0475	(N-2)*0.0475	0.095	(N-1)*0.095
K105S	504	444	124	64	13.0+2.38*N	6.32+0.237*N	0.0533	(N-2)*0.0533	0.107	(N-1)*0.107
K200S	613	519	186	92	17.0+2.40*N	13.03+0.404*N	0.0945	(N-2)*0.0945	0.206	(N-1)*0.206
K205S	528	456	246	174	16.5+2.40*N	14.25+0.480*N	0.1099	(N-2)*0.1099	0.232	(N-1)*0.232
K215S	529	449	247	167	16.0+2.40*N	13.80+0.567*N	0.1103	(N-2)*0.1103	0.220	(N-1)*0.220

N: number of plates

Model Selection Chart

R410A vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K025S	K030S	K040S	K050S	K060S	K070S
0.2	0.70	2400	K025Sx8	K030Sx8				
0.5	1.76	6000	K025Sx16	K030Sx16	K040Sx10			
1.0	3.52	12000	K025Sx28	K030Sx28	K040Sx16	K050Sx12	K060Sx10	K070Sx12
1.5	5.27	18000			K040Sx20	K050Sx16	K060Sx14	K070Sx16
2.0	7.03	24000			K040Sx24	K050Sx20	K060Sx18	K070Sx20
2.5	8.79	30000				K050Sx26	K060Sx22	K070Sx26
3.0	10.55	36000				K050Sx32	K060Sx28	K070Sx32
4.0	14.06	58000				K050Sx42	K060Sx38	K070Sx42
5.0	17.58	60000				K050Sx52	K060Sx46	K070Sx52

R410A vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K095S	K105S	K200S	K205S	K215S
2.0	7.03	24000	K095Sx10	K105Sx10			
2.5	8.79	30000	K095Sx12	K105Sx12			
3.0	10.55	36000	K095Sx14	K105Sx14			
4.0	14.06	48000	K095Sx20	K105Sx20			
5.0	17.58	60000	K095Sx24	K105Sx24	K200Sx12	K205Sx12	
7.5	26.37	90000	K095Sx36	K105Sx36	K200Sx16	K205Sx16	
10.0	35.16	120000	K095Sx48	K105Sx48	K200Sx20	K205Sx20	K215SxD22
12.5	43.95	150000			K200Sx26	K205Sx26	
15.0	52.74	180000			K200Sx30	K205Sx30	K215SxD30
20.0	70.32	240000			K200Sx40	K205Sx42	K215SxD38
25.0	87.90	300000			K200Sx52	K205Sx54	K215SxD50
30.0	105.48	360000			K200Sx64	K205Sx66	K215SxD58
40.0	140.64	480000			K200Sx96	K205Sx98	K215SxD82
50.0	175.80	600000				K205Sx170	

R410A vs. Water Evaporator

Based on ARI -480 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x12	K030x12				
0.5	1.76	6000	K025x20	K030x20	K040x12			
1.0	3.52	12000	K025x34	K030x34	K040x20	K050x12	K060Hx10	K070x12
1.5	5.27	18000			K040x30	K050x18	K060Hx16	K070x16
2.0	7.03	24000			K040x40	K050x22	K060Hx20	K070x20
2.5	8.79	30000				K050x26	K060Hx22	K070x24
3.0	10.55	36000				K050x36	K060Hx32	K070x34
4.0	14.06	48000				K050x46	K060Hx40	K070x44
5.0	17.58	60000				K050x54	K060Hx48	K070x52

R410A vs. Water Evaporator

Based on ARI -480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215S
2.0	7.03	24000	K095x10	K105x14			
2.5	8.79	30000	K095x12	K105x16			
3.0	10.55	36000	K095x16	K105x18			
4.0	14.06	48000	K095x20	K105x24			
5.0	17.58	60000	K095x24	K105x30	K200Hx14	K205x12	
7.5	26.37	90000	K095x38	K105x44	K200Hx18	K205x16	
10.0	35.16	120000	K095x50	K105x56	K200Hx24	K205x22	K215SxD26
12.5	43.95	150000			K200Hx30	K205x28	
15.0	52.74	180000			K200Hx36	K205x32	K215SxD34
20.0	70.32	240000			K200Hx48	K205x44	K215SxD42
25.0	87.90	300000			K200Hx60	K205x56	K215SxD54
30.0	105.48	360000				K205x70V	K215SxD62
40.0	140.64	480000				K205x108V	K215SxD86

※The above information is for reference only; the data will be different under various working conditions and specifications.

Model Selection Chart

R134a vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x8	K030x8				
0.5	1.76	6000	K025x16	K030x16	K040x10			
1.0	3.52	12000	K025x30	K030x30	K040x18	K050x16	K060Hx14	K070x16
1.5	5.27	18000			K040x24	K050x22	K060Hx20	K070x22
2.0	7.03	24000			K040x32	K050x28	K060Hx24	K070x26
2.5	8.79	30000				K050x34	K060Hx30	K070x32
3.0	10.55	36000				K050x42	K060Hx38	K070x40
4.0	14.06	48000				K050x56	K060Hx50	K070x54
5.0	17.58	60000				K050x68	K060Hx60	K070x66

R134a vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x14	K105x14			
2.5	8.79	30000	K095x16	K105x16			
3.0	10.55	36000	K095x18	K105x18			
4.0	14.06	48000	K095x24	K105x24			
5.0	17.58	60000	K095x28	K105x28	K200Hx18	K205x12	
7.5	26.37	90000	K095x42	K105x42	K200Hx24	K205x18	
10.0	35.16	120000	K095x56	K105x56	K200Hx30	K205x20	K215Dx18
12.5	43.95	150000			K200Hx38	K205x26	
15.0	52.74	180000			K200Hx46	K205x30	K215Dx30
20.0	70.32	240000			K200Hx60	K205x42	K215Dx38
25.0	87.90	300000			K200Hx76	K205x54	K215Dx50
30.0	105.48	360000			K200Hx90	K205x66	K215Dx58
40.0	140.64	480000			K200Hx120	K205x98	K215Dx82
50.0	175.80	600000				K205x138	

R134a vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x12	K030x12				
0.5	1.76	6000	K025x20	K030x20	K040x12			
1.0	3.52	12000	K025x36	K030x36	K040x20	K050x14	K060Mx14	K070x14
1.5	5.27	18000			K040x32	K050x18	K060Mx18	K070x18
2.0	7.03	24000			K040x40	K050x22	K060Mx22	K070x20
2.5	8.79	30000				K050x28	K060Mx28	K070x26
3.0	10.55	36000				K050x36	K060Mx36	K070x34
4.0	14.06	48000				K050x44	K060Mx44	K070x42
5.0	17.58	60000				K050x56	K060Mx56	K070x54

R134a vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x14	K105x16			
2.5	8.79	30000	K095x16	K105x20			
3.0	10.55	36000	K095x20	K105x24			
4.0	14.06	48000	K095x24	K105x30			
5.0	17.58	60000	K095x30	K105x36	K200Hx16	K205x16	
7.5	26.37	90000	K095x46	K105x54	K200Hx24	K205x24	
10.0	35.16	120000	K095x64	K105x84	K200Hx32	K205x32	K215Dx34
12.5	43.95	150000			K200Hx38	K205x40	
15.0	52.74	180000			K200Hx46	K205x48	K215Dx46
20.0	70.32	240000			K200Hx60	K205x64V	K215Dx62
25.0	87.90	300000				K205x84V	K215Dx78
30.0	105.48	360000				K205x108V	K215Dx94
40.0	140.64	480000				K205x180V	K215Dx126V

※The above information is for reference only; the data will be different under various working conditions and specifications.

Model Selection Chart

R407C vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x12	K030x12				
0.5	1.76	6000	K025x26	K030x26	K040x14			
1.0	3.52	12000	K025x44	K030x44	K040x24	K050x20	K060Hx18	K070x18
1.5	5.27	18000			K040x32	K050x30	K060Hx26	K070x28
2.0	7.03	24000			K040x42	K050x38	K060Hx34	K070x36
2.5	8.79	30000				K050x50	K060Hx44	K070x48
3.0	10.55	36000				K050x60	K060Hx54	K070x58
4.0	14.06	48000				K050x76	K060Hx68	K070x74

R407C vs. Water Condenser

Based on ARI -450 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x18	K105x18			
2.5	8.79	30000	K095x20	K105x20			
3.0	10.55	36000	K095x26	K105x28			
4.0	14.06	48000	K095x36	K105x38			
5.0	17.58	60000	K095x44	K105x48	K200Hx24	K205x22	
7.5	26.37	90000	K095x66	K105x72	K200Hx36	K205x34	
10.0	35.16	120000	K095x88	K105x96	K200Hx46	K205x42	K215Dx42
12.5	43.95	150000			K200Hx58	K205x54	
15.0	52.74	180000			K200Hx70	K205x64	K215Dx66
20.0	70.32	240000			K200Hx94	K205x86	K215Dx82
25.0	87.90	300000			K200Hx118	K205x108	K215Dx106
30.0	105.48	360000			K200Hx140	K205x128	K215Dx126
40.0	140.64	480000				K205x176	K215Dx170

R407C vs. Water Evaporator

Based on ARI -480 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x10	K030x10				
0.5	1.76	6000	K025x16	K030x16	K040x10			
1.0	3.52	12000	K025x28	K030x28	K040x14	K050x10	K060Mx10	K070x10
1.5	5.27	18000			K040x20	K050x14	K060Mx14	K070x14
2.0	7.03	24000			K040x26	K050x16	K060Mx16	K070x16
2.5	8.79	30000				K050x18	K060Mx18	K070x18
3.0	10.55	36000				K050x22	K060Mx22	K070x22
4.0	14.06	48000				K050x28	K060Mx30	K070x28
5.0	17.58	60000				K050x36	K060Mx40	K070x36

R407C vs. Water Evaporator

Based on ARI -480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x10	K105x10			
2.5	8.79	30000	K095x12	K105x12			
3.0	10.55	36000	K095x16	K105x14			
4.0	14.06	48000	K095x20	K105x18			
5.0	17.58	60000	K095x24	K105x22	K200Hx12	K205x12	
7.5	26.37	90000	K095x38	K105x38	K200Hx16	K205x16	
10.0	35.16	120000	K095x50	K105x50	K200Hx22	K205x22	K215Dx22
12.5	43.95	150000			K200Hx28	K205x28	
15.0	52.74	180000			K200Hx34	K205x34	K215Dx30
20.0	70.32	240000			K200Hx44	K205x44	K215Dx42
25.0	87.90	300000			K200Hx56	K205x58	K215Dx54
30.0	105.48	360000				K205x72V	K215Dx66
40.0	140.64	480000				K205x110V	K215Dx86

※The above information is for reference only; the data will be different under various working conditions and specifications.

Model Selection Chart

R22 vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x10	K030x10				
0.5	1.76	6000	K025x18	K030x18	K040x14			
1.0	3.52	12000	K025x32	K030x32	K040x22	K050x14	K060Hx12	K070x14
1.5	5.27	18000			K040x36	K050x20	K060Hx18	K070x20
2.0	7.03	24000			K040x40	K050x24	K060Hx22	K070x24
2.5	8.79	30000				K050x30	K060Hx26	K070x30
3.0	10.55	36000				K050x36	K060Hx32	K070x36
4.0	14.06	48000				K050x48	K060Hx42	K070x48
5.0	17.58	60000				K050x60	K060Hx54	K070x60

R22 vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x12	K105x12			
2.5	8.79	30000	K095x16	K105x16			
3.0	10.55	36000	K095x18	K105x18			
4.0	14.06	48000	K095x22	K105x22			
5.0	17.58	60000	K095x30	K105x30	K200Hx18	K205x16	
7.5	26.37	90000	K095x40	K105x40	K200Hx24	K205x22	
10.0	35.16	120000	K095x60	K105x60	K200Hx32	K205x30	K215Dx30
12.5	43.95	150000			K200Hx38	K205x36	
15.0	52.74	180000			K200Hx44	K205x42	K215Dx42
20.0	70.32	240000			K200Hx60	K205x60	K215Dx54
25.0	87.90	300000			K200Hx76	K205x76	K215Dx70
30.0	105.48	360000			K200Hx100	K205x100	K215Dx82
40.0	140.64	480000			K200Hx130	K205x130	K215Dx110
50.0	175.80	600000				K205x150	

R22 vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x12	K030x12				
0.5	1.76	6000	K025x24	K030x24	K040x14			
1.0	3.52	12000	K025x44	K030x44	K040x22	K050x14	K060Hx12	K070x14
1.5	5.27	18000			K040x36	K050x20	K060Hx18	K070x20
2.0	7.03	24000			K040x40	K050x24	K060Hx22	K070x24
2.5	8.79	30000				K050x30	K060Hx26	K070x30
3.0	10.55	36000				K050x36	K060Hx32	K070x36
4.0	14.06	48000				K050x48	K060Hx42	K070x48
5.0	17.58	60000				K050x60	K060Hx54	K070x60

R22 vs. Water Evaporator

Based on ARI-480 Standard

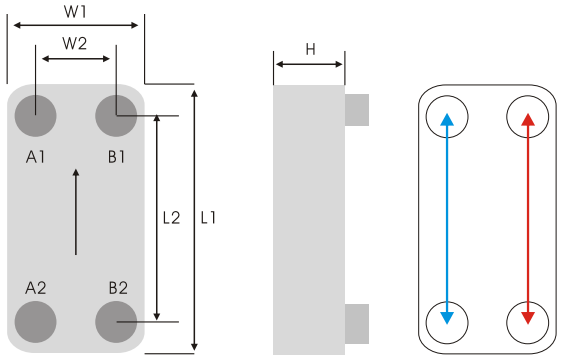
RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.0	7.03	24000	K095x12				
2.5	8.79	30000	K095x16				
3.0	10.55	36000	K095x18	K105x18			
4.0	14.06	48000	K095x24	K105x26			
5.0	17.58	60000	K095x30	K105x30	K200Hx18	K205x16	
7.5	26.37	90000	K095x40	K105x40	K200Hx24	K205x22	
10.0	35.16	120000	K095x60	K105x60	K200Hx32	K205x30	K215Dx30
12.5	43.95	150000			K200Hx38	K205x36	
15.0	52.74	180000			K200Hx44	K205x42	K215Dx42
20.0	70.32	240000			K200Hx60	K205x60	K215Dx54
25.0	87.90	300000				K205x76V	K215Dx70
30.0	105.48	360000				K205x100V	K215Dx82
40.0	140.64	480000				K205x130V	K215Dx110

※The above information is for reference only; the data will be different under various working conditions and specifications.

R Series-High Heat Transfer Performance Brazed Plate Heat Exchanger

R series represents the upgrade version of the K series, and it is specially designed for R410A system, the heat transfer efficiency is 10 % more than the K series. Also, R series is perfectly suitable for those applications where the pressure drop is not the main concern.
R series is very suitalbe for Heat Pump and HVAC system

Brazing Material	Copper		Copper (Extra Strength)	
Model	R050	R095	R051	R096
	(A1,A2/B1,B2)			
Max. Working Pressure (bar)	30/30	30/30	45/30	45/30
Min. Test Pressure (bar)	43/43	43/43	65/43	65/43
Max. Working Temperature (°C)	200℃			



Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
R050	306	250	106	50	10.0+1.80*N	1.38+0.089*N	0.0255	(N-2)*0.0255	0.038	(N-1)*0.038
R095	522	466	106	50	10.0+1.85*N	2.98+0.154*N	0.0475	(N-2)*0.0475	0.076	(N-1)*0.076

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
R051	306	250	106	50	12.0+1.80*N	2.32+0.089*N	0.0255	(N-2)*0.0255	0.038	(N-1)*0.038
R096	522	466	106	50	10.0+1.85*N	3.07+0.154*N	0.0475	(N-2)*0.0475	0.076	(N-1)*0.076

N: number of plates

Model Selection Chart

R410A vs. Water Condenser — Based on ARI -450 Standard

RT	kW	BTU/H	R051	R096
1.0	3.52	12000	R051x10	R096Mx6
2.0	7.03	24000	R051x16	R096Mx10
2.5	8.79	30000	R051x20	R096Mx12
3.0	10.55	36000	R051x24	R096Mx14
4.0	14.06	48000	R051x30	R096Mx18
5.0	17.58	60000	R051x38	R096Mx24
7.5	26.37	90000	R051x56	R096Mx34
10.0	35.16	120000	R051x74	R096Mx46
12.5	43.95	150000		R096Mx58
15.0	52.74	180000		R096Mx72
20.0	70.32	240000		R096Mx100

R410A vs. Water Evaporator — Based on ARI -480 Standard

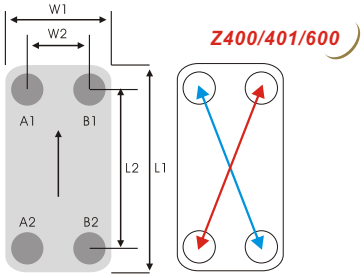
RT	KW	BTU/H	R051	R096
1.0	3.52	12000	R051x10	R096Mx6
2.0	7.03	24000	R051x18	R096Mx10
2.5	8.79	30000	R051x20	R096Mx12
3.0	10.55	36000	R051x24	R096Mx14
4.0	14.06	48000	R051x32	R096Mx20
5.0	17.58	60000	R051x40	R096Mx24
7.5	26.37	90000	R051x62	R096Mx36
10.0	35.16	120000	R051x90	R096Mx48
12.5	43.95	150000		R096Mx62
15.0	52.74	180000		R096Mx76
20.0	70.32	240000		R096Mx108

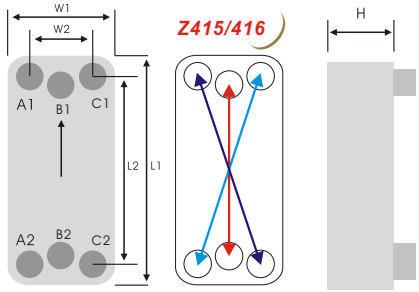
※The above information is for reference only; the data will be different under various working conditions and specifications.

Z Series-Large Diagonal Flow Brazed Plate Heat Exchanger

New

The newly innovative Z series is designed with a diagonal flow pattern, providing higher efficiency to replace other traditional shell and tube, double tube or multi-tube heat exchangers in various applications. The advantage of Z series dual circuit is providing the best performance in both full load and part load conditions. Z series single circuit is specially designed for large volume and high heat transfer efficiency requirement. (Note: 400/401/Z600: 4 connections, 415/416: Dual Circuit -6 connections)





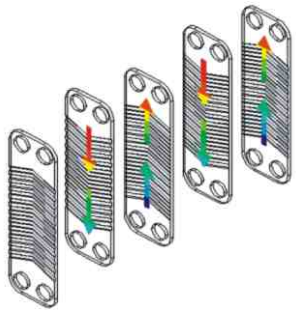
Brazing Material	Copper		Copper (Extra Strength)	
Model	Z400/Z600	Z415	Z401	Z416
	(A2,B1/A1,B2)	(A2,C1/A1,C2/B1,B2)	(A2,B1/A1,B2)	(A2,C1/A1,C2/B1,B2)
Max. Working Pressure (bar)	30/30	30/30/30	45/30	45/45/30
Min. Test Pressure (bar)	43/43	43/43/43	65/43	65/65/43
Max. Working Temperature (°C)	200 °C			

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
Z400	751	650	321	220	14.0+2.38*N	33.64+0.89*N	0.2074	(N-2)*0.2074	0.423	(N-1)*0.423
Z415	751	656	321	226	14.0+2.40*N	33.82+0.87*N	0.2074	(N-2)*0.2074	0.414	(N-2)*0.414
Z600	945	810	375	240	14.0+2.38*N	45.94+1.23*N	0.3	(N-2)*0.3	0.62	(N-1)*0.62

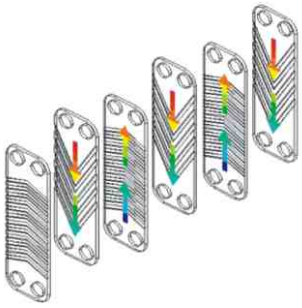
Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
Z401	751	650	321	220	23.0+2.38*N	39.02+1.03*N	0.2074	(N-2)*0.2074	0.423	(N-1)*0.423
Z416	751	656	321	226	23.0+2.40*N	39.60+1.01*N	0.2074	(N-2)*0.2074	0.414	(N-2)*0.414

N: number of plates

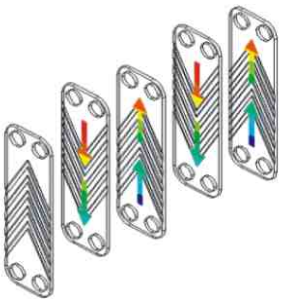
Z series is designed with 3 different types of plates which satisfy various working conditions.



High Heat Transfer Performance



Standard



Low Pressure Drop

Model Selection Chart

R22 vs. Water Condenser — Based on ARI-450 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400Mx48	Z415x50	
50	175.80	600	Z400Mx60	Z415x62	
60	210.96	720	Z400Mx72	Z415x74	
75	263.70	900	Z400Mx90	Z415x90	
100	351.60	1200	Z400Mx124	Z415x126	
125	439.50	1500	Z400Mx162	Z415x162	
150	527.40	1800	Z400Mx208	Z415x210	
175	615.30	2100			Z600Mx166
200	703.20	2400			Z600Mx194
225	791.10	2700			Z600Mx218

R22 vs. Water Evaporator — Based on ARI-480 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400Hx60	Z415x62	
50	175.80	600	Z400Hx74	Z415x74	
60	210.96	720	Z400Hx90	Z415x90	
75	263.70	900	Z400Hx114	Z415x114	
100	351.60	1200	Z400Hx158	Z415x158	
125	439.50	1500			Z600Hx188
150	527.40	1800			Z600Hx230

R134A vs. Water Condenser — Based on ARI-450 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	720	Z400Mx58	Z415x58	
50	175.80	900	Z400Mx72	Z415x74	
60	210.96	1200	Z400Mx84	Z415x86	
75	263.70	1500	Z400Mx106	Z415x106	
100	351.60	1800	Z400Mx140	Z415x142	
125	439.50	2100	Z400Mx176	Z415x178	
150	527.40	2400			Z600Mx190
175	615.30				Z600Mx224
200	703.20				Z600Mx254

R134A vs. Water Evaporator — Based on ARI-480 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400Hx64	Z415x66	
50	175.80	600	Z400Hx80	Z415x82	
60	210.96	720	Z400Hx98V	Z415x98V	
75	263.70	900	Z400Hx126V	Z415x126V	
100	351.60	1200	Z400Hx202V	Z415x202V	
125	439.50	1500			Z600Hx206
150	527.40	1800			Z600H-254

R410A vs. Water Condenser — Based on ARI-450 Standard

RT	kW	kBTU/H	Z401	Z416
40	140.64	480	Z401Mx48	Z416x50
50	175.80	600	Z401Mx60	Z416x62
60	210.96	720	Z401Mx72	Z416x74
75	263.70	900	Z401Mx90	Z416x90
100	351.60	1200	Z401Mx124	Z416x126
125	439.50	1500	Z401Mx162	Z416x162
150	527.40	1800	Z401Mx208	Z416x210

R410A vs. Water Evaporator — Based on ARI-480 Standard

RT	kW	kBTU/H	Z401	Z416	Z600
40	140.64	480	Z401Mx50	Z416x50	
50	175.80	600	Z401Mx62	Z416x62	
60	210.96	720	Z401Mx76	Z416x78	
75	263.70	900	Z401Mx96	Z416x98	
100	351.60	1200	Z401Mx130v	Z416x130	
125	439.50	1500	Z401Mx172v	Z416x174v	
150	527.40	1800			Z600Mx200
175	615.30	2100			Z600Mx244

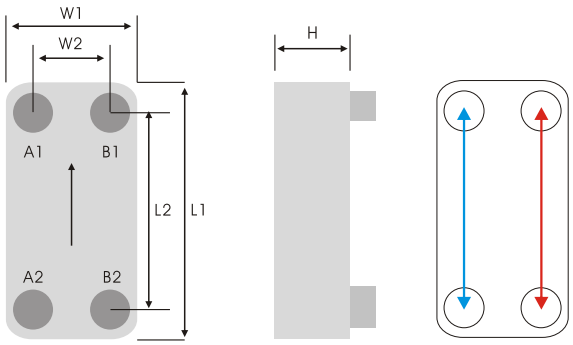
※The above information is for reference only; the data will be different under various working conditions and specifications.
※1kBTU/H=1000* BTU/H

C Series- Super High Pressure Brazed Plate Heat Exchanger

C series is specially designed for the evaporator, condenser, economizer and oil cooler in R744 (CO_2) heat pump and refrigeration system. Different designs with max. working pressure 70 bar, 100 bar and 140 bar are available for various duties and performance specifications. Compact size, outstanding heat transfer performance and low pressure drop are the three key features. The quality and the durability of C series is proved by thorough inspection, achieving the burst test pressure up to 650 bar and cycle test over 100,000 cycles.

Brazing Material	Copper		
Model	C040 C095 C200	C041 C096 C201	C042 C097 C202
	(A1,A2/B1,B2)		
Max. Working Pressure (bar)	70/30*	100/30*	140/30*
Min. Test Pressure (bar)	100/43*	143/43*	200/43*
Max. Working Temperature (°C)	200 °C		

※For higher working pressure request on B1/B2, please contact KAORI representative.



Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
C040	314	275	76	40	13.0+2.00*N	1.93+0.145*N	0.0193	(N-2)*0.0193	0.030	(N-1)*0.03
C095	524	466	108	50	13.2+2.16*N	5.70+0.32*N	0.0475	(N-2)*0.0475	0.071	(N-1)*0.071
C200	616	519	189	92	14.0+2.15*N	13.0+0.603*N	0.0950	(N-2)*0.0950	0.156	(N-1)*0.156

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
C041	314	275	76	40	13.0+2.00*N	2.01+0.145*N	0.0193	(N-2)*0.0193	0.030	(N-1)*0.030
C096	524	466	108	50	13.2+2.16*N	6.10+0.320*N	0.0475	(N-2)*0.0475	0.071	(N-1)*0.071
C201	616	519	189	92	14.0+2.15*N	12.6+0.631*N	0.0950	(N-2)*0.0950	0.156	(N-1)*0.156

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
C042	314	275	76	40	13.0+2.0*N	1.95+0.152*N	0.0193	(N-2)*0.0193	0.030	(N-1)*0.030
C097	524	466	108	50	13.2+2.16*N	5.80+0.346*N	0.0475	(N-2)*0.0475	0.071	(N-1)*0.071
C202	616	519	189	92	14.0+2.15*N	12.4+0.755*N	0.0950	(N-2)*0.0950	0.156	(N-1)*0.156

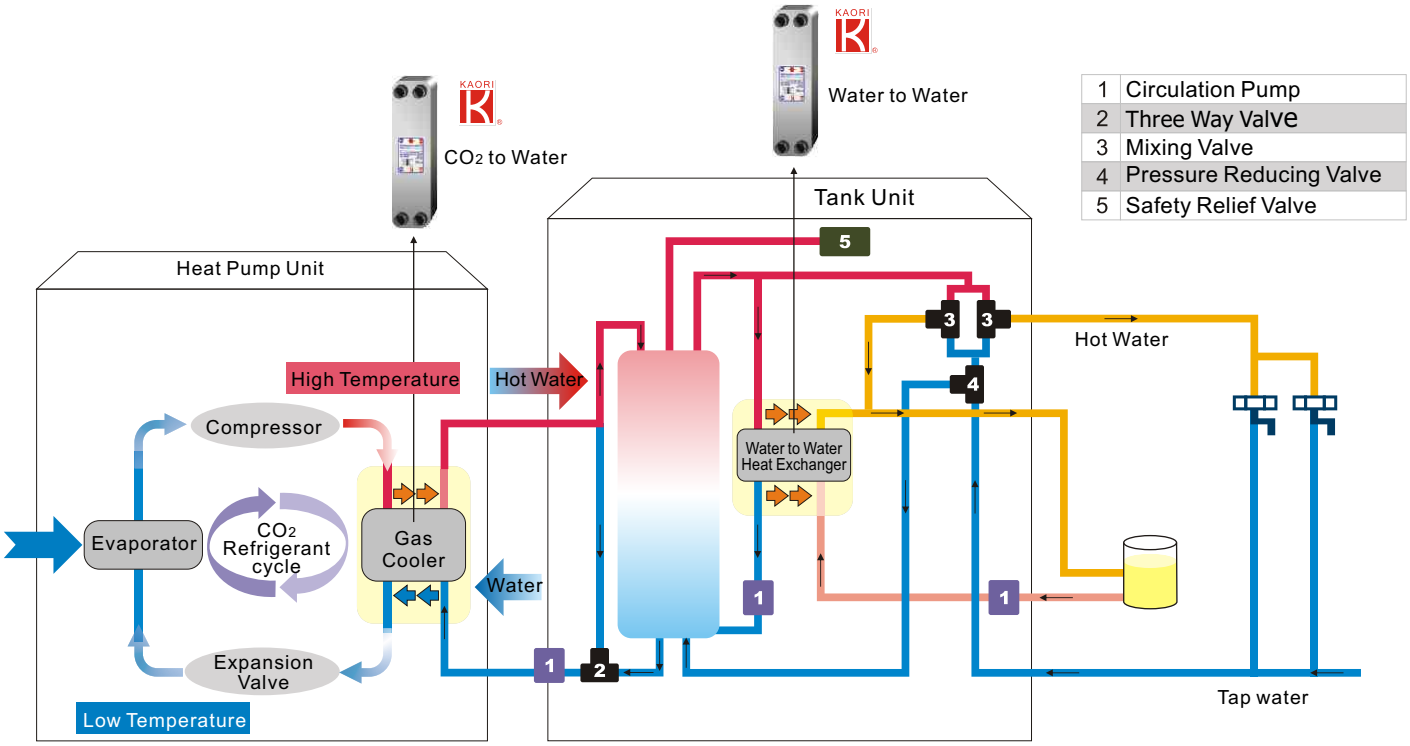
N: number of plates

Model Selection Chart

R744 vs. Water Gas Cooler (Max. Working Pressure : 140bar)

RT	kW	BTU/H	C040/C041/C042	C095/C096/C097	C200/C201/C202
1.0	3.52	12000	C042x24(4 Pass)		
1.5	5.27	18000	C042x32(4 Pass)		
2.0	7.03	24000	C042x40(4 Pass)	C097x24(4 Pass)	
3.0	10.55	36000		C097x24(4 Pass)	
4.0	14.06	48000		C097x32(4 Pass)	
5.0	17.58	60000		C097x40(4 Pass)	C202x24(3 Pass)
7.5	26.37	90000		C097x48(4 Pass)	C202x30(3 Pass)
10.0	35.16	120000		C097x64(4 Pass)	C202x36(3 Pass)
12.5	43.95	150000		C097x72(4 Pass)	C202x48(3 Pass)
15.0	52.74	180000		C097x88(4 Pass)	C202x54(3 Pass)
20.0	70.32	240000			C202x66(3 Pass)
25.0	87.90	300000			C202x84(3 Pass)
30.0	105.48	360000			C202x102(3 Pass)
35.0	123.06	420000			C200x114(3 Pass)
40.0	140.64	480000			C200x132(3 Pass)

※The above information is for reference only; the data will be different under various working conditions and specifications.



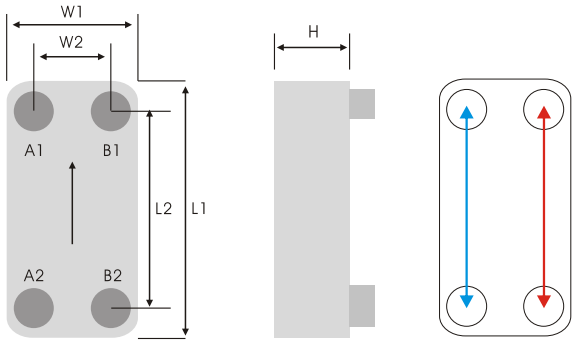
E/ F Series-Low Pressure Brazed Plate Heat Exchanger

E Series F Series

E/ F series is aiming at the specification of small volume water to water application. E series is flat cover plate design and F series is economical design (without flat cover plate); also, multi-pass pattern are available upon different working conditions and requests.

Main application: residential gas boiler, district heating, solar heating system.

Brazing Material	Copper			
Model	F025	E030	E040	E060
	(A1,A2/B1,B2)			
Max. Working Pressure (bar)	10/10			
Min. Test Pressure (bar)	15/15			
Max. Working Temperature (°C)	200 °C			



Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
F025	206.2	172	74.2	40 / 42	6.5+2.27*N	0.38+0.040*N	0.0120	(N-2)*0.0120	0.025	(N-1)*0.025
E030	194.5	154	80.5	40	7.0+2.25*N	0.47+0.047*N	0.0117	(N-2)*0.0117	0.025	(N-1)*0.025
E040	311	278	73	40	9.0+2.30*N	0.80+0.070*N	0.0195	(N-2)*0.0195	0.040	(N-1)*0.040
E060	466	432	74	40	9.0+2.30*N	0.80+0.10*N	0.0302	(N-2)*0.0302	0.064	(N-1)*0.064

N: number of plates

Model Selection Chart

RT	kW	BTU/H	Hot Water Temp.	Cold Water Temp.	F025	E030	E040	E060
1.0	3.5160	12000	70°C --> 50°C	10°C --> 60°C	F025x12	E030x12		
2.0	7.0320	24000	70°C --> 50°C	10°C --> 60°C	F025x16	E030x16		
3.0	10.5480	36000	70°C --> 50°C	10°C --> 60°C	F025x22	E030x22		
4.0	14.0640	48000	70°C --> 50°C	10°C --> 60°C	F025x26	E030x26		
5.0	17.5800	60000	70°C --> 50°C	10°C --> 60°C	F025x32	E030x32	E040x10	
7.5	26.3700	90000	70°C --> 50°C	10°C --> 60°C	F025x44	E030x44	E040x14	E060x10
10.0	35.1600	120000	70°C --> 50°C	10°C --> 60°C	F025x56	E030x56	E040x18	E060x12
15.0	52.7400	180000	70°C --> 50°C	10°C --> 60°C			E040x26	E060x18
20.0	70.3200	240000	70°C --> 50°C	10°C --> 60°C			E040x36	E060x24
25.0	87.9000	300000	70°C --> 50°C	10°C --> 60°C			E040x50	E060x30
30.0	105.480	360000	70°C --> 50°C	10°C --> 60°C				E060x40

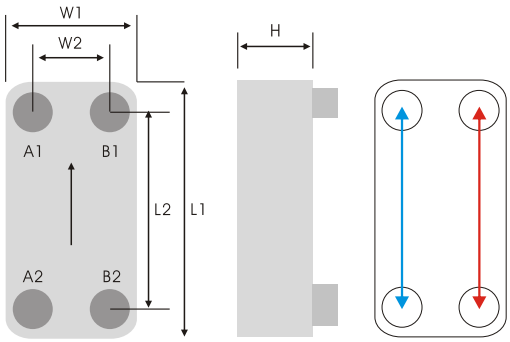
※The above information is for reference only; the data will be different under various working conditions and specifications.

H Series-High Temperature Brazed Plate Heat Exchanger

New

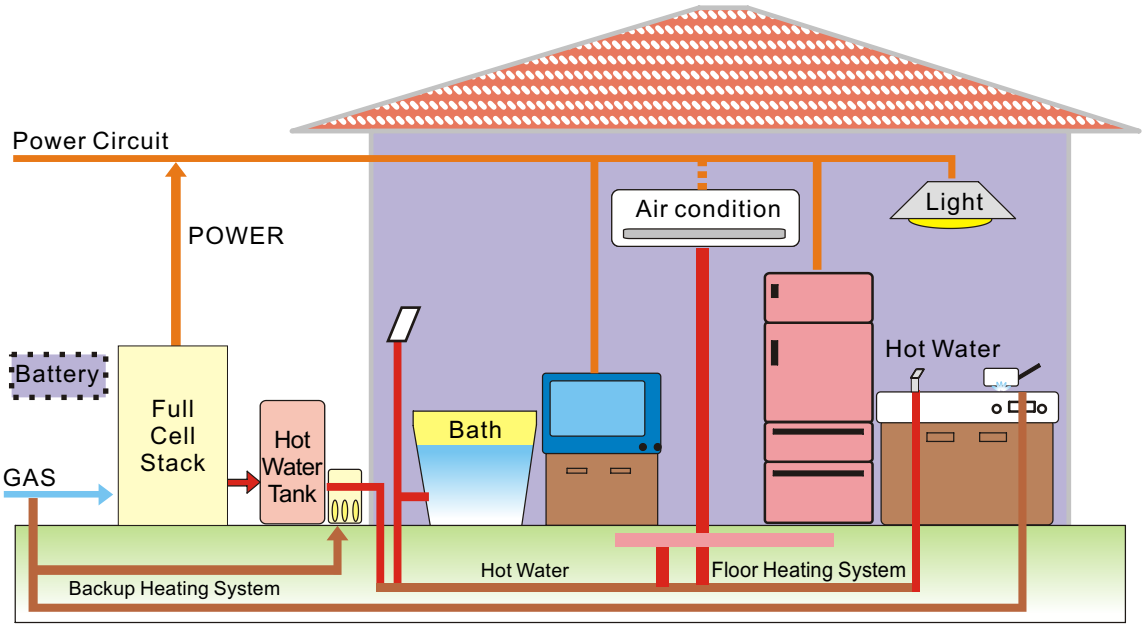
H series is made of high temperature resistant material, the max. working temperature is up to 900°C, which is perfectly suitable to serve as gas heating or cooling heat exchanger in the clean energy technology- Fuel Cell and waste heat recovery system.

Brazing Material	Nickel				
Model	H050,H095,H205				H051,H096,H206
	(A1,A2/B1,B2)				(A1,A2/B1,B2)
Max. Working Pressure (bar)	10/10	7/7	3/3	2/2	10/10
Max. Working Temperature (°C)	0~650	~700	~800	~900	~550
Min. Test Pressure (bar)	15/15				15/15



Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Volume/ Channel (liter)
H050/H051	306	250	106	50	10.0+2.40*N	1.64+0.137*N	0.0255	0.055
H095/H096	522	466	106	50	10.0+2.40*N	3.32+0.240*N	0.0475	0.095
H205/H206	528	456	246	174	11.5+2.40*N	8.00+0.514*N	0.1099	0.232

N: number of plates

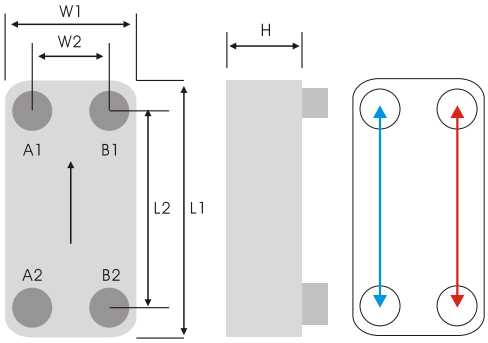


M Series-Corrosion Resistant Brazed Plate Heat Exchanger

M/ series is specially designed for higher chlorine content applications.

M series is made of corrosion resistant stainless steel(equivalent to SMO254).

Brazing Material	Nickel
Model	M050,M095,M205
Plate Material	Equivalent to SMO254
	(A1,A2/B1,B2)
Max. Working Pressure (bar)	10/10
Min. Test Pressure (bar)	15/15
Max. Working Temperature (°C)	200 °C



Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)
M050	306	250	106	50	10.0+2.40*N	1.54+0.136*N	0.0255	0.055
M095	522	466	106	50	10.0+2.40*N	3.12+0.240*N	0.0475	0.095
M205	528	456	246	174	11.5+2.40*N	7.91+0.544*N	0.1099	0.232

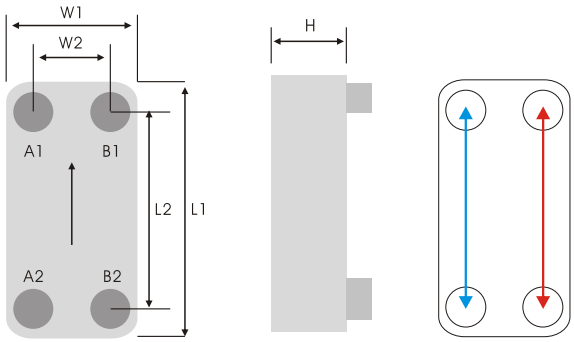
N: number of plates

I Series-Impact Resistant Brazed Plate Heat Exchanger

I series is suitable for those applications with the possibilities of encountering thermal shocks or pressure shocks.

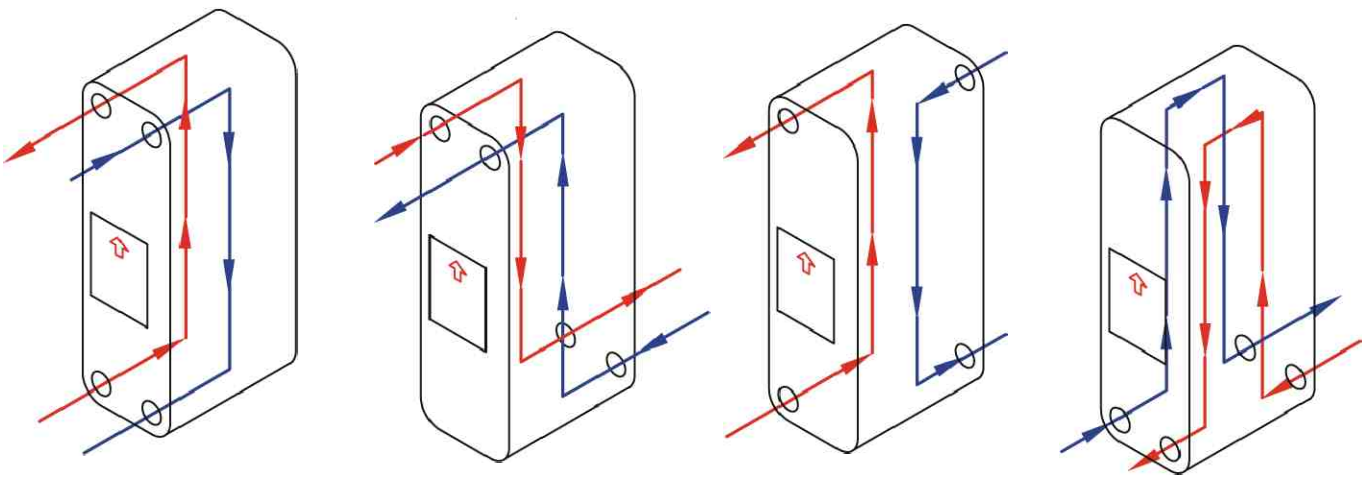
I series is particularly designed for hydraulic system, boiler system.

Brazing Material	Copper			
Model	I030	I070	I105	I205
	(A1,A2/B1,B2)			
Max. Working Pressure (bar)	30/30	30/30	30/30	30/30
Min. Test Pressure (bar)	43/43	43/43	43/43	43/43
Max. Working Temperature (°C)	200 °C			



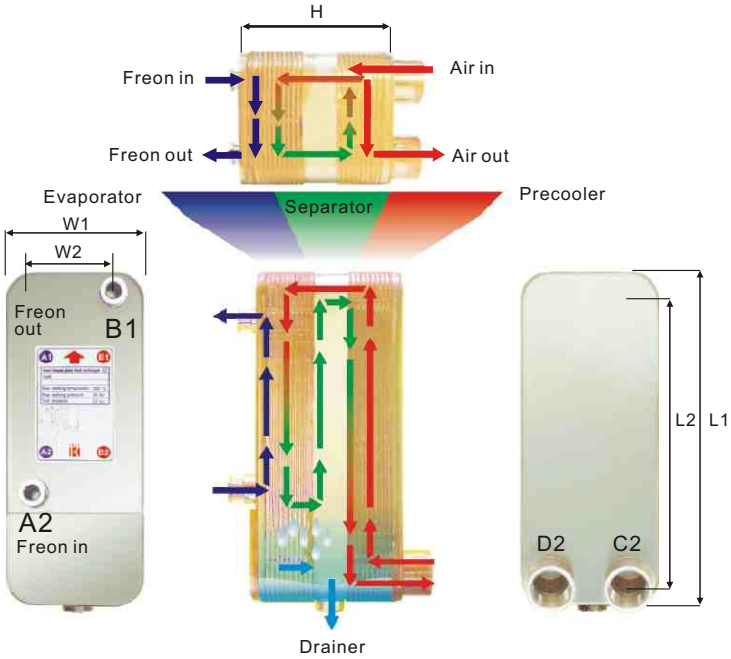
Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight (kg)	Heat Transfer Area/ plate (m^2)	Total Heat Transfer Area (m^2)	Volume/ Channel (liter)	Total Volume (liter)
I030	194	154	80	40	10.0+2.25*N	0.90+0.047*N	0.0117	(N-6)*0.0117	0.025	(N-5)*0.025
I070	304	250	124	70	10.0+2.40*N	1.96+0.131*N	0.0300	(N-6)*0.0300	0.065	(N-5)*0.065
I105	504	444	124	64	10.0+2.40*N	4.06+0.237*N	0.0533	(N-6)*0.0533	0.107	(N-5)*0.107
I205	528	456	246	174	11.5+2.40*N	8.12+0.438*N	0.1099	(N-6)*0.1099	0.232	(N-5)*0.232

N: number of plates



A Series- Air Dryer Brazed Plate Heat Exchanger

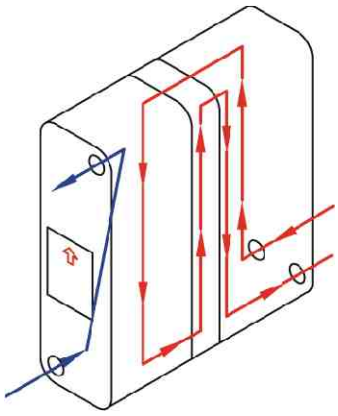
A series is the innovative design for air dryer. Combining precooler, evaporator and separator, it provides compact size and high thermal transfer performance. The patented design separator can perfectly dehumidify compressed air and eliminate the need for a filter to avoid clogging problem.



Brazing Material	Copper	
Model	A070	A210
	(A2,B1/C2,D2)	
Max. Working Pressure (bar)	30/16	30/10
Min. Test Pressure (bar)	43/23	43/15
Max. Working Temperature (°C)	200 °C	

Model	Air Flow Rate @7 bar (m^3/min)	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	Weight (kg)	H Thickness (mm)	Air Connection (Inch)
A070*20*26	2.4	304	250	124	70	11.2	158.3	1"
A070*32*40	4.2	304	250	124	70	14.9	232.7	1-1/4"
A070*46*66	7	304	250	124	70	21.3	356.6	1-1/2"
A210*20*26	11	527	430	245	148	47.8	180.6	2"
A210*26*32	14	527	430	245	148	57.4	248.9	2"
A210*40*50	22	527	430	245	148	77.6	394.4	2-1/2"
A210*50*64	28	527	430	245	148	95.9	501.0	3”

E.g. A070*20*26, 20 is the number of plates of the evaporator on air-freon side, 26 is the number of plates of the precooler on air-air side.



Standard Connections

Model	Male/Female Thread Connections								Solder Connections											Height (mm)
	PT/NPT/GB								Ø6.6 mm	Ø9.73 mm	Ø12.9 mm	Ø16.15 mm	Ø19.25 mm	Ø22.36 mm	Ø25.6 mm	Ø28.8 mm	Ø35.25 mm	Ø41.5 mm	Ø54.3 mm	
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 3/8"	1 5/8"	2 1/8"	
025	◎								△	△	△	△	△							20
030	◎	◎							△	△	△	△	△	△						20
040/041/042	◎	◎							△	△	△	△	△							20
050/051	◎	◎	◎						△	△	△	△	△	△	△	△				27
060	◎	◎							△	△	△	△	△							27
070	◎	◎	◎	●	●				△	△	△	△	△	△	△	△	△			27
095/096/097	◎	◎	◎						△	△	△	△	△	△	△	△	△			27
105	◎	◎	◎	◎	●				△	△	△	△	△	△	△	△	△			27
200/201/202	○		◎	◎	◎	●	●				△	△	△	△		△	△	△	△	27/54
205/206	○		◎	◎	◎	●					△	△	△	△		△	△	△	△	27/54
210	○				◎	◎	◎	●						△		△	△	△		27/54
215	○		○	○	◎	◎	◎				△	△	△	△		△	△	△	△	27/54
400/401/415/416	○				◎	◎	◎	●			△	△	△	△		△	△	△	△	27/54

Available : ◎Male/Female Thread ○Female Thread ●Male Thread △ Solder

Model	Flange/Thread Connections						Solder Connections					Height (mm)
	◎Thread Connections/Flange ○Thread Connections						△ Solder					
	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	2 1/8"	2 3/8"	3 1/8"	3 3/8"	4"	
600/601	○	◎	◎	◎	◎	◎	△	△	△	△	△	54/81

※The availability of the connectors are subject to the actual model type and working conditions.

Various connection designs fulfill different specifications.

Connection types include: soldered type for copper tube, female/male thread, hydraulic design, nickel brazed design, temperature control, opposite side…etc.

*KAORI can customize connections according to specific demands. Please contact KAORI for more information.

Soldering Connections

In HVAC system, the refrigerant side is usually soldered with the copper pipe. The connection of brazed plate heat exchanger is stainless steel, thus, it is necessary to use high containing silver solder to solder with. Please follow the guides below:

1. Before starting soldering, the copper pipe and the connections should be perfectly cleaned.
2. During the soldering process, applying soldering flux is recommended in order to protect the pipe and heat exchanger from oxidizing and also help cool down the temperature.
3. The brazed plate heat exchanger should be placed in a horizontal position during the entire process, and place wet cloth around the connection base to protect the heat from conducting to the plates.
4. Silver solder containing at least 45% of silver should be used for soldering. The soldering temperature must not exceed 800℃.
5. When the soldering temperature is too high or the duration is too long, potential consequences include the melting of brazing points or damage of the plates which will cause leakages.

Caution

1 Installation and Mounting Advice

1.The brazed plate heat exchanger should be installed vertically as the instruction mark shown on the label (↑) demonstration as below:

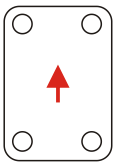
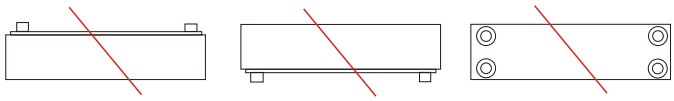


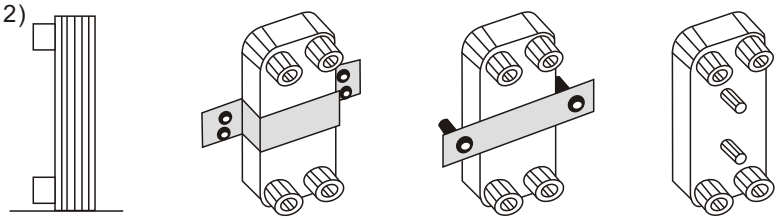
Fig. 1 Installation of the brazed plate heat exchanger



Improper Installation Position

2.Recommended installation position(Fig.2)
a. Bottom Support
b. Sheet Metal Bracket
c. Crossbar& Bolts
d. Stud Bolts

∗Vibration dampener or other absorbing devices are also recommended.



a. Bottom Support b. Sheet Metal Bracket c. Crossbar& Bolts d. Stud Bolts

Fig. 2 Recommended Installation Position

2 Softening Treatment of Cooling Tower Water

Softening treatment and regular maintenance for cooling tower can reduce the scale clogging problem. While using chemical additives to do the cleaning, the concentration of the additive should be carefully controlled. Avoid using corrosive additives. If stainless steel and copper react to the corrosive content, it will reduce the pressure resistance on the brazing joints and possibly lead to internal or external leakages. To avoid the problem mentioned above, please refer to the below data for proper chemical additives:

pH:6~8 SO_4^{-2}<30mg/L
Cl^-< 50ppm (<100°C) NH_4^+ <0.1mg/L

3 Prevention of Water Hammer

Water hammer occurs when the pipes carry incompressible fluids and the flow suddenly changes its velocity. The most common case occurs when one rapidly closes the solenoid valve and thus, causes instant pressure in the pipes. This will damage the valve, heat exchanger and other equipment. In order to avoid the problem mentioned above, installation of pressure suction pipe,water hammer arrestor, air chamber…etc is highly recommended.

4 Cleaning

To clean the brazed plate heat exchanger, it is recommended to use weak acid (5% phosphoric acid, nitric or oxalic acid…etc.) back flushing to remove soft debris inside. (as Fig. 3). The flow rate of the cleaning solution should be at least 1.5-2 times of the normal flow rate and the duration should be 30 minutes.After cleaning, the heat exchanger should be rinsed carefully with large amounts of clean water to purge any remaining acid solution before re-starting the system.

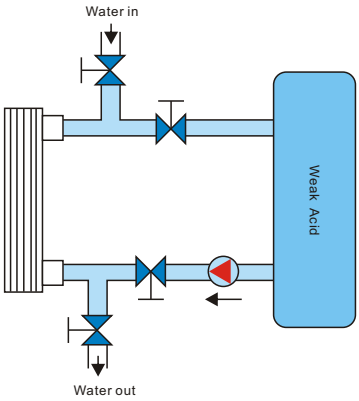
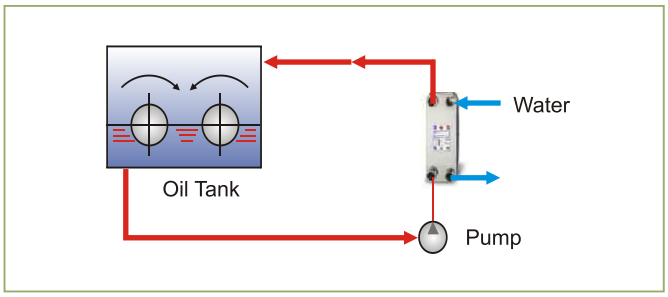


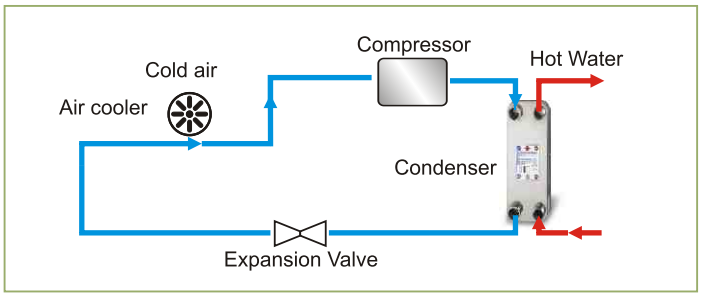
Fig. 3

BPHE for Industrial application

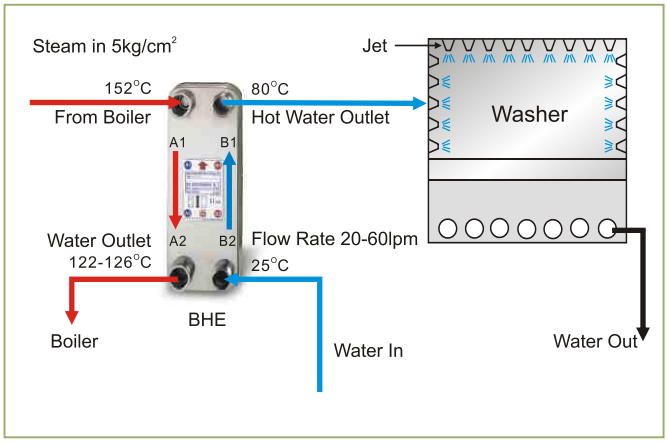
Oil Cooler System



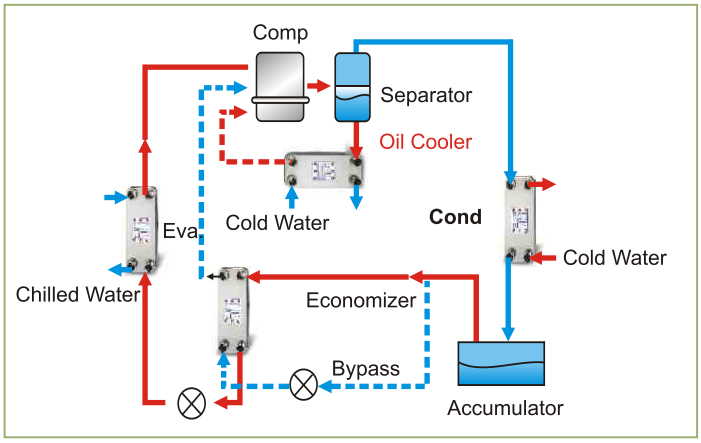
Heat Pump System



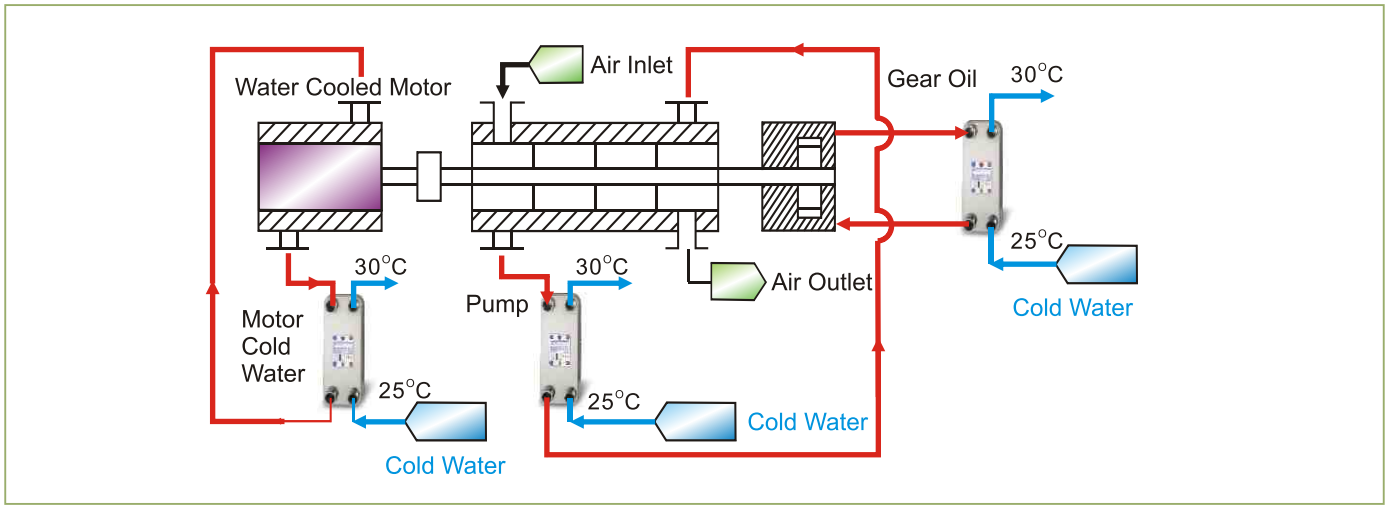
Washer System(Boiler Heat Recycle)

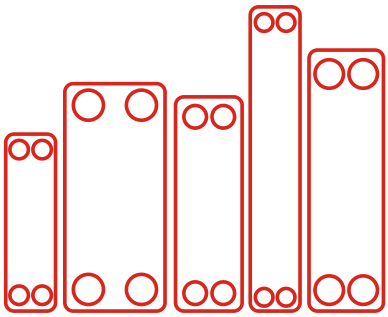


Chiller



Vacuum Pump Cooling System





KAORI

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