KAORI

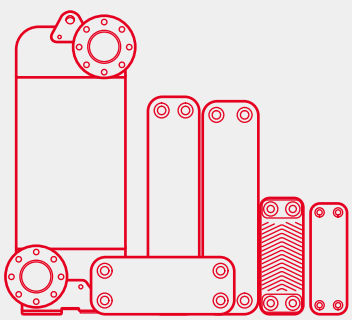
Brazed Plate Heat Exchanger

ASME Certified CE UL CERTIFIED KHK Japan KRAIA Korea CRN Certified

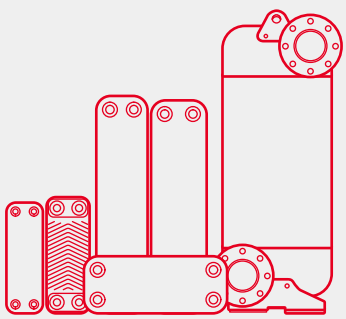
www.kaori.com.tw

KAORI

Innovation · Quality · Responsibility · Honor



Index



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 70 countries.

KAORI Brazed Plate Heat Exchanger Plants

Headquarter

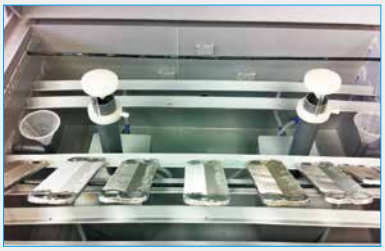
Kaohsiung Taiwan Plant

Ningbo China Plant

Facility and Test Equipment

Vacuum Furnace

Continuous Pressing



Salt Spray Test

CO_2 High Pressure Test

Helium Leakage Test

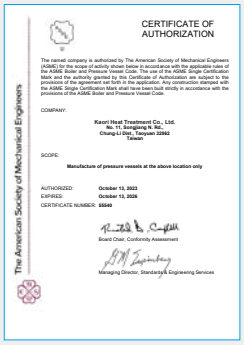
Thermal Shock Tester

Performance Test

Pressure Leakage Test

Burst Test

Certificate



ASME

UL

CRN

Japan KHK

ISO9001:2015

ISO14064-1

ISO14067

ISO45001

CE/ PED

Patent

CO_2 High Pressure BPHE Patents in Taiwan, China, Japan and Germany

Air Dryer BPHE Patents in Taiwan, Japan, Korea, and USA

Double Wall BPHE Patents in Taiwan, Germany and China

Series

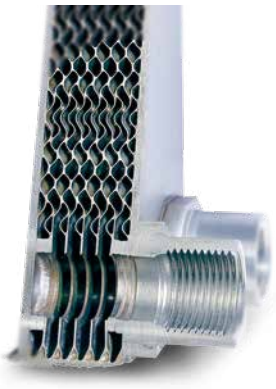
Range	K Series	R Series	Z Series	C Series	B Series	A Series	D Series	E/F Series
	Standard	High Heat Transfer Performance	Large Diagonal Flow	Super High Pressure	Asymmetric	Air Dryer	Double Wall	Boilers
Solutions								
Max. Working Pressure	652.7 psi	652.7 psi	652.7 psi	2030.5 psi	652.7 psi	232.1 psi	652.7 psi	145 psi
Characteristic	Standard Dual Circuits	Micro Channel Design	Large Heat Capacity High Flow Rate	R744(CO_2)	Reduction in refrigerant filling and pressure drop	Evaporator, Separator and Precooler all in one	Prevent Fluid Contamination	Low Pressure
Brazing Material	Copper/Nickel	Copper	Copper	Copper	Copper	Copper	Copper	Copper
HVAC	●	●	●	●	●		●	
Refrigeration	●	●	●	●	●			
Heat Pump	●	●	●	●	●		●	
Chiller	●	●	●	●	●			
District Heating & Cooling	●	●	●		●			
Solar Heating	●	●	●		●			
Swimming Pool								
Air Dryer						●		
Process Cooling	●		●		●		●	●
Heat Recovery	●		●		●			
Temperature Controller	●				●			●
Laser Cutting/ Welding Machine	●				●			
Hydraulic Cooling	●		●		●			
Energy Industry	●		●		●			
ORC	●		●		●			
Fuel Cell, CHP	●				●			●
Wind Power-Gear Box	●		●		●			
Marine & Transport	●		●		●			
Evaporator	●	●	●	●	●			
Condenser	●	●	●	●	●		●	
De-superheater/Subcooler	●	●	●	●	●		●	
Economizer	●	●	●	●	●		●	
Oil Cooler	●				●		●	
Pre-cooler/ Pre-heater	●	●	●	●	●		●	
Air Cooler	●		●	●	●	●		

I Series	Q Series	T Series	M Series
Impact Resistance	Oil Cooler	Fuel Cell	Corrosion Resistance
			
435.1 psi	435.1 psi	145 psi	145 psi
Pressure and Thermal Shock Endurable	Shell & Tube Replacement	High Temperature	Corrosion Resistant Material
Copper	Copper	Nickel	Nickel
			●
	●		
		●	
●	●		
		●	
			●
●			
●	●		
●		●	

Why KAORI ?

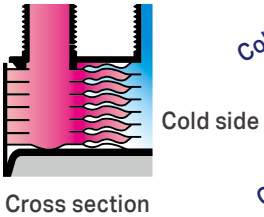
Kaori professionals in heat transfer solution are constantly developing high quality brazed plate heat exchanger. We select high grade stainless steel and brazing material to design corrugated chevron plates, and braze perfectly to provide the best fit customizable heat transfer solutions to each client who results in lower energy usage and costs. Our innovative thermal solutions heat exchanger provides high performance, comprehensive quality, reliable, cost-competitive products to remain the heating and cooling industry's trusted partner.

Advantage

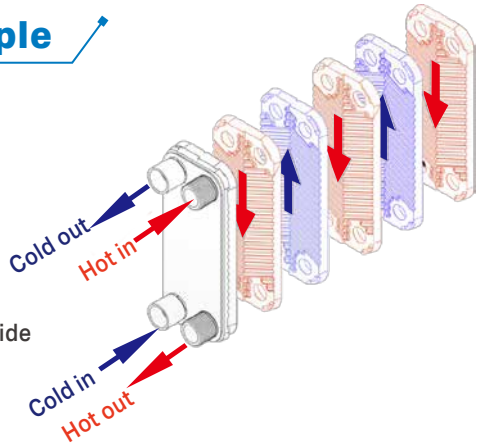


- Optimize Heating and Cooling System
- Reduce Life Cycle Cost
- Compact, Easy Installation
- Corrosion-Resistance
- High Thermal Transfer Efficiency
- Proven and Reliable Quality

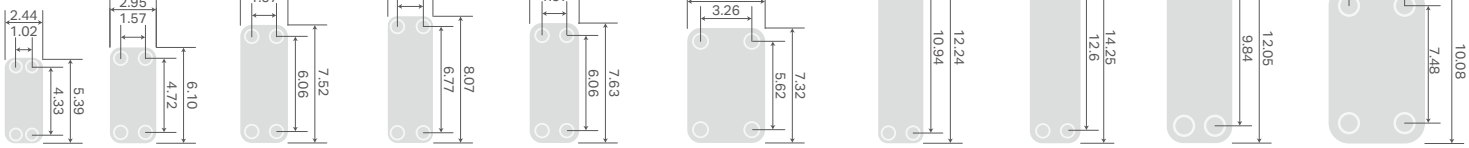
Working Principle



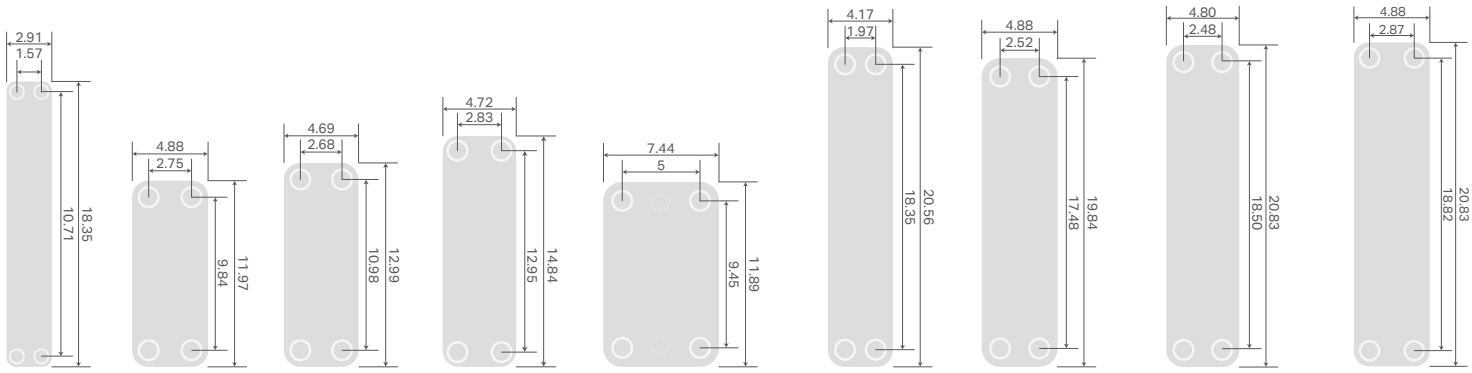
Cross section



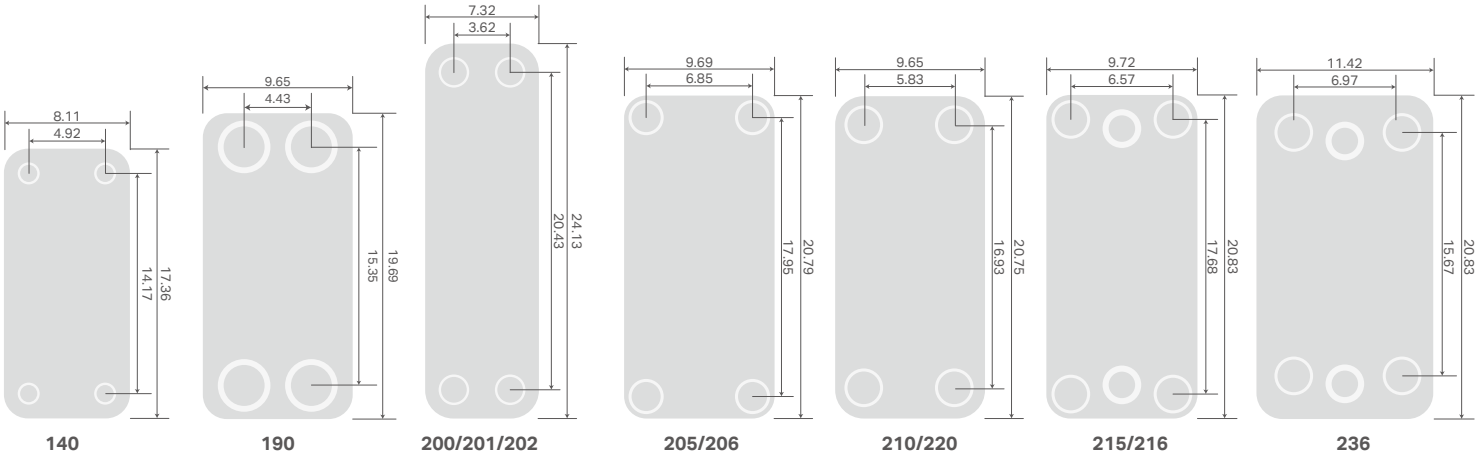
Brazed Plate Heat Exchanger Dimension

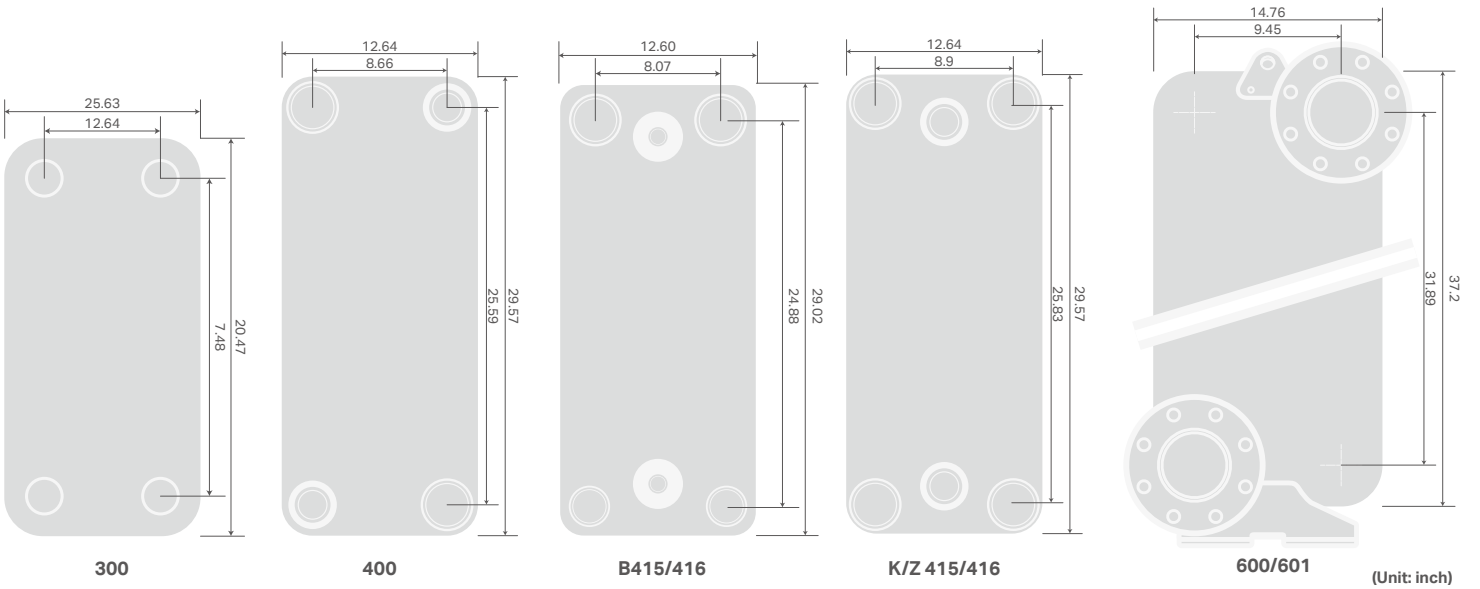


010 015 020/021/022 025 030/031/032 035/036/037 040/041/042 045/046 050/051 055



060 070/071 075/076 080/081 085/086/087 095/096/097 105 110/111 115





(Unit: inch)

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

K Series-Standard Brazed Plate Heat Exchanger

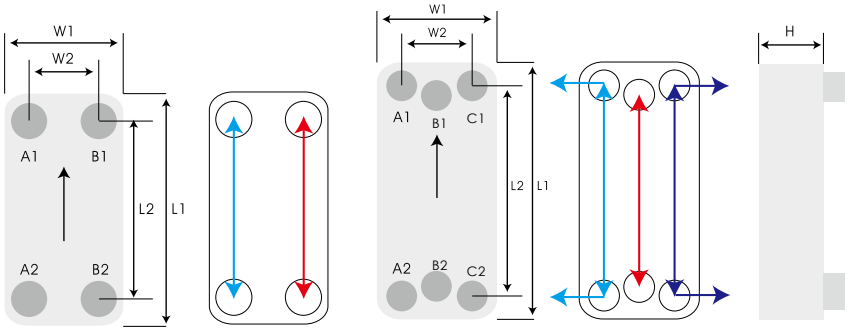
K series is the series with the most complete range in sizes and widely used in heating and cooling applications.

Main application: HVAC, heat pump, chiller, oil cooler, district heating and cooling.

K-S Extra Strength: Kaori "S" type BPHE is designed to withstand max. working pressure 435.1 psi for R410A Application.

K-D True Dual Circuits: Kaori "D" type BPHE is designed to handle two compressors with true dual refrigerant circuits pattern; perfect choice for both full and half load operation.

Brazing Material	Copper	Copper (Extra Strength)	Nickel
		(A1,A2/B1,B2)	
Max. Working Pressure (psi)	435.1/435.1	652.7/435.1	145.0/145.0
Max. Working Temperature (°F)	392°F		



K415/K215D: True Dual Circuits- 6 Connections

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
K010	5.39	4.33	2.44	1.02	0.256+0.067*N	0.331+0.055*N	0.003	(N-1)*0.003
K015	6.10	4.72	2.95	1.57	0.315+0.069*N	0.450+0.075*N	0.004	(N-1)*0.004
K025	8.07	6.77	2.87	1.65	0.264+0.089*N	1.058+0.088*N	0.007	(N-1)*0.007
K030	7.64	6.06	3.15	1.57	0.354+0.087*N	1.102+0.104*N	0.007	(N-1)*0.007
K040	12.24	10.94	2.87	1.57	0.354+0.091*N	1.742+0.154*N	0.011	(N-1)*0.011
K050	12.05	9.84	4.17	1.97	0.394+0.094*N	2.623+0.256*N	0.015	(N-1)*0.015
K060	18.35	17.01	2.91	1.57	0.394+0.091*N	2.623+0.220*N	0.017	(N-1)*0.017
K070	11.97	9.84	4.88	2.76	0.394+0.094*N	3.042+0.295*N	0.017	(N-1)*0.017
K095	20.55	18.35	4.17	1.97	0.433+0.094*N	6.239+0.450*N	0.025	(N-1)*0.025
K105	19.84	17.48	4.88	2.52	0.433+0.094*N	7.121+0.507*N	0.028	(N-1)*0.028
K200	24.13	20.43	7.32	3.62	0.551+0.094*N	15.190+0.915*N	0.054	(N-1)*0.054
K205	20.79	17.95	9.69	6.85	0.551+0.094*N	16.094+1.058*N	0.061	(N-1)*0.061
K210*	20.75	16.93	9.65	5.83	0.453+0.112*N	14.727+1.025*N	0.076	(N-1)*0.076
K220	20.75	16.93	9.65	5.83	0.551+0.094*N	17.468+0.968*N	0.076	(N-1)*0.076
K215	20.83	17.68	9.72	6.57	0.512+0.094*N	18.320+1.058*N	0.058	(N-1)*0.058
K415	29.57	25.83	12.64	8.90	0.551+0.094*N	65.654+1.918*N	0.109	(N-1)*0.109

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
K025S	8.07	6.77	2.87	1.65	0.264+0.089*N	1.124+0.088*N	0.007	(N-1)*0.007
K030S	7.64	6.06	3.15	1.57	0.433+0.087*N	2.116+0.104*N	0.007	(N-1)*0.007
K040S	12.24	10.94	2.87	1.57	0.354+0.091*N	1.852+0.154*N	0.011	(N-1)*0.011
K050S	12.05	9.84	4.17	1.97	0.472+0.094*N	5.269+0.256*N	0.015	(N-1)*0.015
K060S	18.35	17.01	2.91	1.57	0.394+0.091*N	2.712+0.220*N	0.017	(N-1)*0.017
K070S	11.97	9.84	4.88	2.76	0.472+0.094*N	5.556+0.295*N	0.017	(N-1)*0.017
K095S	20.55	18.35	4.17	1.97	0.457+0.094*N	8.311+0.450*N	0.025	(N-1)*0.025
K105S	19.84	17.48	4.88	2.52	0.591+0.094*N	12.059+0.522*N	0.028	(N-1)*0.028
K200S	24.13	20.43	7.32	3.62	0.669+0.094*N	26.720+0.915*N	0.054	(N-1)*0.054
K205S	20.79	17.95	9.69	6.85	0.650+0.094*N	29.454+1.058*N	0.061	(N-1)*0.061
K210S*	20.75	16.93	9.65	5.83	0.606+0.112*N	26.654+1.025*N	0.076	(N-1)*0.076
K215S	20.83	17.68	9.72	6.57	0.630+0.094*N	30.424+1.058*N	0.058	(N-1)*0.058

N: number of plates

* Working pressure for K210: 232.1psi. Working pressure for K210S: 435.1psi.

Model Selection Chart

R32 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	K040Sx8			
1	3.52	12000	K025Sx28	K030Sx28	K040Sx14	K050Sx10	K060SxH10	
1.5	5.27	18000			K040Sx18	K050Sx14	K060SxH12	K070Sx14
2	7.03	24000			K040Sx20	K050Sx18	K060SxH16	K070Sx18
2.5	8.79	30000				K050Sx22	K060SxH18	K070Sx22
3	10.55	36000				K050Sx26	K060SxH22	K070Sx26
4	14.06	48000				K050Sx34	K060SxH30	K070Sx34
5	17.58	60000				K050Sx42	K060SxH38	K070Sx42

R32 vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K095S	K105S	K200S	K205S	K215SD
4	14.06	48000	K095Sx18	K105Sx18			
5	17.58	60000	K095Sx22	K105Sx22			
7.5	26.37	90000	K095Sx32	K105Sx32			
10	35.16	120000	K095Sx42	K105Sx42			K215SxD22
12.5	43.95	150000	K095Sx54	K105Sx54	K200SxH26	K205Sx26	
15	52.74	180000	K095Sx64	K105Sx64	K200SxH30	K205Sx30	K215SxD30
20	70.32	240000			K200SxH40	K205Sx42	K215SxD38
25	87.9	300000			K200SxH52	K205Sx54	K215SxD50
30	105.48	360000			K200SxH62	K205Sx66	K215SxD58
40	140.64	480000			K200SxH90	K205Sx98	K215SxD82

R32 vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K025	K030	K040	K050	K060	K070
0.2	0.70	2400	K025x14	K030x14				
0.5	1.76	6000	K025x24	K030x24	K040x14			
1	3.52	12000	K025x44	K030x44	K040x22	K050x14	K060xH12	
1.5	5.27	18000			K040x32	K050x22	K060xH18	K070x20
2	7.03	24000				K050x28	K060xH24	K070x26
2.5	8.79	30000				K050x32	K060xH26	K070x30
3	10.55	36000				K050x44	K060xH40	K070x42
4	14.06	48000					K060xH50	K070x54
5	17.58	60000						K070x64

R32 vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
3	10.55	36000	K095x18	K105x20			
4	14.06	48000	K095x22	k105x26			
5	17.58	60000	K095x26	K105x34			
7.5	26.37	90000	K095x40	K105x50			
10	35.16	120000	K095x54	K105x68			K215Dx30
12	43.95	150000			K200xH32	K205x30	
15	52.74	180000			K200xH40	K205x38	K215Dx38
20	70.32	240000			K200xH52	K205x48	K215Dx46
25	87.9	300000			K200xH64	K205x60	K215Dx58
30	105.48	360000				K205x74	K215Dx66
40	140.64	480000				K205x114	K215Dx90

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

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	3.52	12000	K025Sx28	K030Sx28	K040Sx16	K050Sx12	K060Sx10	K070Sx12
1.5	5.27	18000			K040Sx20	K050Sx16	K060Sx14	K070Sx16
2	7.03	24000			K040Sx24	K050Sx20	K060Sx18	K070Sx20
2.5	8.79	30000				K050Sx26	K060Sx22	K070Sx26
3	10.55	36000				K050Sx32	K060Sx28	K070Sx32
4	14.06	48000				K050Sx42	K060Sx38	K070Sx42
5	17.58	60000				K050Sx52	K060Sx46	K070Sx52

R410A vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K095S	K105S	K200S	K205S	K215S
4	14.06	48000	K095Sx20	K105Sx20			
5	17.58	60000	K095Sx24	K105Sx24			
7.5	26.37	90000	K095Sx36	K105Sx36			
10	35.16	120000	K095Sx48	K105Sx48			K215SxD22
12.5	43.95	150000			K200Sx26	K205Sx26	
15	52.74	180000			K200Sx30	K205Sx30	K215SxD30
20	70.32	240000			K200Sx40	K205Sx42	K215SxD38
25	87.90	300000			K200Sx52	K205Sx54	K215SxD50
30	105.48	360000			K200Sx64	K205Sx66	K215SxD58
40	140.64	480000			K200Sx96	K205Sx98	K215SxD82
50	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	3.52	12000	K025x34	K030x34	K040x20	K050x12	K060Hx10	K070x12
1.5	5.27	18000			K040x30	K050x18	K060Hx16	K070x16
2	7.03	24000			K040x40	K050x22	K060Hx20	K070x20
2.5	8.79	30000				K050x26	K060Hx22	K070x24
3	10.55	36000				K050x36	K060Hx32	K070x34
4	14.06	48000				K050x46	K060Hx40	K070x44
5	17.58	60000				K050x54	K060Hx48	K070x52

R410A vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215S
3	10.55	36000	K095x16	K105x18			
4	14.06	48000	K095x20	K105x24			
5	17.58	60000	K095x24	K105x30			
7.5	26.37	90000	K095x38	K105x44			
10	35.16	120000	K095x50	K105x56			K215SxD26
12.5	43.95	150000			K200Hx30	K205x28	
15	52.74	180000			K200Hx36	K205x32	K215SxD34
20	70.32	240000			K200Hx48	K205x44	K215SxD42
25	87.90	300000			K200Hx60	K205x56	K215SxD54
30	105.48	360000				K205x70V	K215SxD62
40	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	3.52	12000	K025x30	K030x30	K040x18	K050x16	K060Hx14	K070x16
1.5	5.27	18000			K040x24	K050x22	K060Hx20	K070x22
2	7.03	24000			K040x32	K050x28	K060Hx24	K070x26
2.5	8.79	30000				K050x34	K060Hx30	K070x32
3	10.55	36000				K050x42	K060Hx38	K070x40
4	14.06	48000				K050x56	K060Hx50	K070x54
5	17.58	60000				K050x68	K060Hx60	K070x66

R134a vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
3	10.55	36000	K095x18	K105x18			
4	14.06	48000	K095x24	K105x24			
5	17.58	60000	K095x28	K105x28			
7.5	26.37	90000	K095x42	K105x42			
10	35.16	120000	K095x56	K105x56	K200Hx30	K205x20	K215Dx18
12.5	43.95	150000			K200Hx38	K205x26	
15	52.74	180000			K200Hx46	K205x30	K215Dx30
20	70.32	240000			K200Hx60	K205x42	K215Dx38
25	87.90	300000			K200Hx76	K205x54	K215Dx50
30	105.48	360000			K200Hx90	K205x66	K215Dx58
40	140.64	480000			K200Hx120	K205x98	K215Dx82
50	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	3.52	12000	K025x36	K030x36	K040x20	K050x14	K060Mx14	K070x14
1.5	5.27	18000			K040x32	K050x18	K060Mx18	K070x18
2	7.03	24000			K040x40	K050x22	K060Mx22	K070x20
2.5	8.79	30000				K050x28	K060Mx28	K070x26
3	10.55	36000				K050x36	K060Mx36	K070x34
4	14.06	48000				K050x44	K060Mx44	K070x42
5	17.58	60000				K050x56	K060Mx56	K070x54

R134a vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.5	8.79	30000	K095x16	K105x20			
3	10.55	36000	K095x20	K105x24			
4	14.06	48000	K095x24	K105x30			
5	17.58	60000	K095x30	K105x36			
7.5	26.37	90000	K095x46	K105x54			
10	35.16	120000	K095x64	K105x84	K200Hx32	K205x32	K215Dx34
12.5	43.95	150000			K200Hx38	K205x40	
15	52.74	180000			K200Hx46	K205x48	K215Dx46
20	70.32	240000			K200Hx60	K205x64V	K215Dx62
25	87.90	300000				K205x84V	K215Dx78
30	105.48	360000				K205x108V	K215Dx94
40	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	3.52	12000	K025x44	K030x44	K040x24	K050x20	K060Hx18	K070x18
1.5	5.27	18000			K040x32	K050x30	K060Hx26	K070x28
2	7.03	24000			K040x42	K050x38	K060Hx34	K070x36
2.5	8.79	30000				K050x50	K060Hx44	K070x48
3	10.55	36000				K050x60	K060Hx54	K070x58
4	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	7.03	24000	K095x18	K105x18			
2.5	8.79	30000	K095x20	K105x20			
3	10.55	36000	K095x26	K105x28			
4	14.06	48000	K095x36	K105x38			
5	17.58	60000	K095x44	K105x48			
7.5	26.37	90000	K095x66	K105x72	K200Hx36	K205x34	
10	35.16	120000	K095x88	K105x96	K200Hx46	K205x42	K215Dx42
12.5	43.95	150000			K200Hx58	K205x54	
15	52.74	180000			K200Hx70	K205x64	K215Dx66
20	70.32	240000			K200Hx94	K205x86	K215Dx82
25	87.90	300000			K200Hx118	K205x108	K215Dx106
30	105.48	360000			K200Hx140	K205x128	K215Dx126
40	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	3.52	12000	K025x28	K030x28	K040x14	K050x10	K060Mx10	K070x10
1.5	5.27	18000			K040x20	K050x14	K060Mx14	K070x14
2	7.03	24000			K040x26	K050x16	K060Mx16	K070x16
2.5	8.79	30000				K050x18	K060Mx18	K070x18
3	10.55	36000				K050x22	K060Mx22	K070x22
4	14.06	48000				K050x28	K060Mx30	K070x28
5	17.58	60000				K050x36	K060Mx40	K070x36

R407C vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
4	14.06	48000	K095x20	K105x18			
5	17.58	60000	K095x24	K105x22			
7.5	26.37	90000	K095x38	K105x38			
10	35.16	120000	K095x50	K105x50			K215Dx22
12.5	43.95	150000			K200Hx28	K205x28	
15	52.74	180000			K200Hx34	K205x34	K215Dx30
20	70.32	240000			K200Hx44	K205x44	K215Dx42
25	87.90	300000			K200Hx56	K205x58	K215Dx54
30	105.48	360000				K205x72V	K215Dx66
40	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

R404A 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	K040x10			
1	3.52	12000	K025x32	K030x32	K040x16	K050x16	K060xH12	K070x14
1.5	5.27	18000			K040x22	K050x22	K060xH18	K070x20
2	7.03	24000			K040x28	K050x28	K060xH22	K070x26
2.5	8.79	30000				K050x34	K060xH26	K070x32
3	10.55	36000				K050x40	K060xH30	K070x38
4	14.06	48000				K050x54	K060xH40	K070x52
5	17.58	60000				K050x66	K060xH50	K070x64

R404A vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
4	14.06	48000	K095x24	K105x24			
5	17.58	60000	K095x28	K105x30			
7.5	26.37	90000	K095x42	K105x44			
10	35.16	120000	K095x56	K105x58	K200xH30	K205x28	K215Dx26
12.5	43.95	150000	K095x70	K105x72	K200xH38	K205x34	
15	52.74	180000			K200xH48	K205x42	K215Dx42
20	70.32	240000			K200xH62	K205x54	K215Dx54
25	87.9	300000			K200xH78	K205x68	K215Dx66
30	105.48	360000			K200xH94	K205x82	K215Dx82
40	140.64	480000			K200xH124	K205x110	K215Dx110
50	175.8	600000			K200xH154	K205x140	K215Dx138

R404A 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	K040x12			
1	3.52	12000	K025x46	K030x46	K040x22	K050x14	K060xH12	K070x14
1.5	5.27	18000			K040x32	K050x20	K060xH16	K070x18
2	7.03	24000			K040x40	K050x26	K060xH20	K070x24
2.5	8.79	30000				K050x34	K060xH24	K070x32
3	10.55	36000				K050x44	K060xH30	K070x40
4	14.06	48000				K050x56	K060xH38	K070x52
5	17.58	60000				K050x70	K060xH48	K070x64

R404A vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	K095	K105	K200	K205	K215D
2.5	8.79	30000	K095x14	K105x16			
3	10.55	36000	K095x16	K105x18			
4	14.06	48000	K095x20	K105x24			
5	17.58	60000	K095x26	K105x30			
7.5	26.37	90000	K095x40	K105x46			
10	35.16	120000	K095x54	K105x62	K200xH30	K205x26	K215Dx26
12.5	43.95	150000	K095x70	K105x80	K200xH36	K205x32	
15	52.74	180000			K200xH42	K205x38	K215Dx38
20	70.32	240000			K200xH54	K205x50	K215Dx50
25	87.9	300000			K200xH68	K205x62	K215Dx62
30	105.48	360000			K200xH82	K205x76	K215Dx74
40	140.64	480000			K200xH114	K205x108	K215Dx106

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

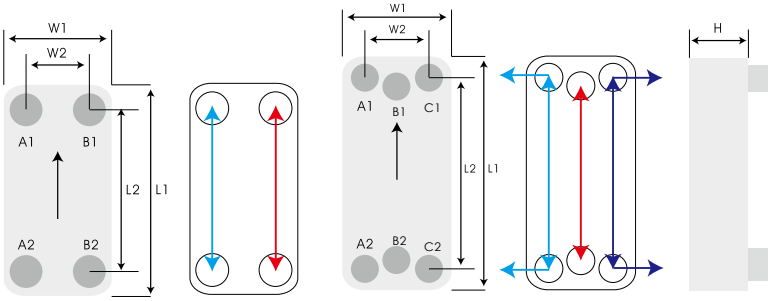
R Series-High Heat Transfer Performance Brazed Plate Heat Exchanger

R Series high heat transfer BPHE is designed with micro channel pattern, it is specially designed for high enthalpy refrigerant. This makes R series to perform better than K series. Compact design also reduce the thickness, weight and internal volume of the BPHE, making the installation easier.

Applicable refrigerants: R32, R290, R445B, R410A new generation eco-friendly refrigerants.

Main Application: Heat pump, chiller and HVAC system.

Brazing Material	Copper	Copper (Extra Strength)
Model	R020, R040, R050, R095, R200, R215	R021, R041, R051, R096, R201, R216
	(A1,A2/B1,B2)	
Max. Working Pressure (psi)	435.1/435.1	652.7/435.1
Max. Working Temperature (°F)	392°F	



R215D/R216D: Dual Circuits- 6 Connections

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
R020	7.52	6.06	3.03	1.57	0.276+0.045*N	1.367+0.093*N	0.002	(N-1)*0.002
R040	12.24	10.94	2.87	1.57	0.295+0.051*N	1.389+0.154*N	0.004	(N-1)*0.004
R050	12.05	9.84	4.17	1.97	0.366+0.071*N	2.646+0.196*N	0.010	(N-1)*0.010
R095	20.55	18.35	4.17	1.97	0.394+0.073*N	6.064+0.335*N	0.020	(N-1)*0.020
R200	24.13	20.43	7.32	3.62	0.551+0.081*N	15.300+0.849*N	0.046	(N-1)*0.046
R215	20.83	17.68	9.72	6.57	0.512+0.073*N	17.461+0.948*N	0.049	(N-1)*0.049

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
R021	7.52	6.06	3.03	1.57	0.276+0.045*N	1.367+0.093*N	0.002	(N-1)*0.002
R041	12.24	10.94	2.87	1.57	0.295+0.051*N	1.389+0.154*N	0.004	(N-1)*0.004
R051	12.05	9.84	4.17	1.97	0.445+0.071*N	4.894+0.196*N	0.010	(N-1)*0.010
R096	20.55	18.35	4.17	1.97	0.394+0.073*N	6.240+0.340*N	0.020	(N-1)*0.020
R201	24.13	20.43	7.32	3.62	0.669+0.081*N	26.081+0.849*N	0.046	(N-1)*0.046
R216	20.83	17.68	9.72	6.57	0.630+0.073*N	29.784+0.948*N	0.049	(N-1)*0.049

N: number of plates

Model Selection Chart

R290 vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	R020	R040	R050	R095
0.2	0.7	2400	R020Hx8			
0.5	1.76	6000	R020Hx14			
1	3.52	12000	R020Hx22		R050x10	
1.5	5.27	18000	R020Hx32	R040x18	R050x14	
2	7.03	24000	R020Hx42	R040x24	R050x18	
2.5	8.79	30000		R040x30	R050x22	

RT	kW	BTU/H	R020	R040	R050	R095
3	10.55	36000		R040x38	R050x26	
4	14.06	48000			R050x34	R095Mx20
5	17.58	60000			R050x42	R095Mx24
7.5	26.37	90000			R050x60	R095Mx36
10	35.16	120000			R050x80	R095Mx46
12.5	43.95	150000				R095Mx58
15	52.74	180000				R095Mx70

Model Selection Chart

R410A vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	R021	R051	R096	R201
0.2	0.7	2400	R021xH6			
0.5	1.76	6000	R021xH12			
1	3.52	12000	R021xH22	R051x10		
1.5	5.27	18000	R021xH32	R051x14		
2	7.03	24000	R021xH42	R051x16		
2.5	8.79	30000	R021xH52	R051x20		
3	10.55	36000		R051x24		
4	14.06	48000		R051x30	R096xM18	
5	17.58	60000		R051x38	R096xM24	
7.5	26.37	90000		R051x56	R096xM34	
10	35.16	120000		R051x74	R096xM46	R201x24
12.5	43.95	150000			R096xM58	R201x30
15	52.74	180000			R096xM72	R201x36
20	70.32	240000			R096xM100	R201x48
25	87.90	300000				R201x60
30	105.8	360000				R201x74
40	140.64	480000				R201x106
50	175.80	600000				R201x150

R410A vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	R020	R050	R095	R200
0.2	0.7	2400	R020xH8			
0.5	1.76	6000	R020xH16			
1	3.52	12000	R020xH26	R050x10		
1.5	5.27	18000	R020xH38	R050x14		
2	7.03	24000	R020xH50	R050x18		
3	10.55	36000		R050x20		
4	14.06	48000		R050x24	R095xM20	
5	17.58	60000		R050x32	R095xM24	
7.5	26.37	90000		R050x40	R095xM36	
10	35.16	120000		R050x62	R095xM48	R200x24
12.5	43.95	150000		R050x90	R095xM62	R200x30
15	52.74	180000			R095xM76	R200x36
20	70.32	240000			R095xM108	R200x48
25	87.90	300000				R200x60
30	105.8	360000				R200x74
40	140.64	480000				R200x106
50	175.80	600000				R200x150

R134a vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	R020	R050	R095	R200
0.2	0.7	2400	R020xH6			
0.5	1.76	6000	R020xH14			
1	3.52	12000	R020xH26	R050x12		
1.5	5.27	18000	R020xH38	R050x18		
2	7.03	24000	R020xH50	R050x22		
2.5	8.79	30000		R050x28		
3	10.55	36000		R050x34	R095xH14	
4	14.06	48000		R050x44	R095xH20	
5	17.58	60000		R050x54	R095xH24	
7.5	26.37	90000		R050x80	R095xH36	
10	35.16	120000			R095xH50	R200x24
12.5	43.95	150000			R095xH64	R200x30
15	52.74	180000			R095xH80	R200x36
20	70.32	240000				R200x48
25	87.90	300000				R200x60
30	105.48	360000				R200x74
40	140.64	480000				R200x106
50	175.80	600000				R200x150

R134a vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	R020	R050	R095	R200
0.2	0.7	2400	R020xH8			
0.5	1.76	6000	R020xH16			
1	3.52	12000	R020xH26	R050x12		
1.5	5.27	18000	R020xH38	R050x16		
2	7.03	24000	R020xH50	R050x20		
2.5	8.79	30000		R050x24		
3	10.55	36000		R050x30	R095xH18	
4	14.06	48000		R050x38	R095xH22	
5	17.58	60000		R050x50	R095xH28	
7.5	26.37	90000		R050x76	R095xH44	
10	35.16	120000			R095xH60	R200x30
12.5	43.95	150000			R095xH80	R200x36
15	52.74	180000			R095xH110	R200x44
20	70.32	240000				R200x58
25	87.90	300000				R200x74
30	105.48	360000				R200x88
40	140.64	480000				R200x120
50	175.80	600000				R200x160

R32 vs. Water Condenser

Based on ARI-450 Standard

RT	kW	BTU/H	R021	R051	R096	R201
0.2	0.7	2400	R021xH6			
0.5	1.76	6000	R021xH10			
1	3.52	12000	R021xH18	R051x10		
1.5	5.27	18000	R021xH26	R051x12		
2	7.03	24000	R021xH36	R051x14		
2.5	8.79	30000	R021xH44	R051x18		
3	10.55	36000		R051x20		
4	14.06	48000		R051x26	R096xM16	
5	17.58	60000		R051x32	R096xM20	
7.5	26.37	90000		R051x48	R096xM30	
10	35.16	120000		R051x64	R096xM40	R201x24
12.5	43.95	150000			R096xM50	R201x30
15	52.74	180000			R096xM62	R201x36
20	70.32	240000			R096xM86	R201x48
25	87.90	300000				R201x60
30	105.48	360000				R201x74
40	140.64	480000				R201x106
50	175.80	600000				R201x150

R32 vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	BTU/H	R020	R050	R095	R200
0.2	0.7	2400	R020xH10			
0.5	1.76	6000	R020xH18			
1	3.52	12000	R020xH30	R050x10		
1.5	5.27	18000	R020xH42	R050x14		
2	7.03	24000	R020xH54	R050x18		
2.5	8.79	30000		R050x22		
3	10.55	36000		R050x26		
4	14.06	48000		R050x36	R095xH22	
5	17.58	60000		R050x48	R095xH26	
7.5	26.37	90000		R050x72	R095xH38	
10	35.16	120000		R050x102	R095xH52	R200x24
12.5	43.95	150000			R095xH66	R200x30
15	52.74	180000			R095xH80	R200x36
20	70.32	240000			R095xH112	R200x48
25	87.90	300000				R200x60
30	105.48	360000				R200x74
40	140.64	480000				R200x106
50	175.80	600000				R200x150

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

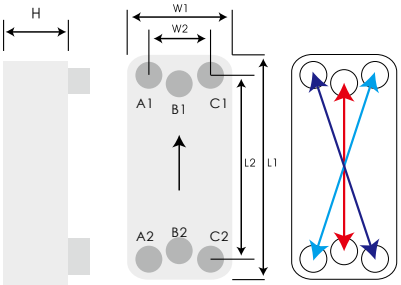
Z Series-Large Diagonal Flow Brazed Plate Heat Exchanger

The newly innovative Z series is designed with a diagonal flow pattern, providing higher efficiency to replace traditional shell and tube, double tube or multi-tube heat exchangers in various applications. The advantage of Z series dual circuits is to provide the best performance in both full load and part load conditions. Z series single circuit is specially designed for large flow rate meeting high heat transfer efficiency requirement.

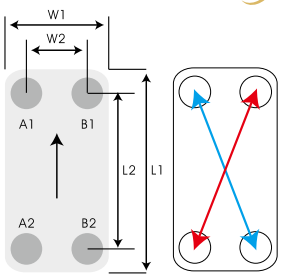
Main Application:
Refrigeration, Process Cooling, ORC

Z140/300/400/401/600/601:
Single Circuit , 4 Connections.

Z085D/086D/415/416:
Dual Circuits, 6 Connections.



Z085D/086D/415/416



Z400/401/600/601

Brazing Material	Copper		Copper(Extra Strength)	
Model	Z400, Z600	Z085D, Z415	Z401, Z601	Z086D, Z416
	(A2,B1/A1,B2)	(A2,C1/A1,C2/B1,B2)	(A2,B1/A1,B2)	(A2,C1/A1,C2/B1,B2)
Max. Working Pressure (psi)	435.1/ 435.1	435.1/ 435.1/ 435.1	652.7/435.1	652.7/ 652.7/ 435.1
Max. Working Temperature (°F)	392°F			

* For nickel brazing requirement of Z Series, please contact KAORI representative.

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
Z085	12.09	9.61	7.48	5.00	0.390+0.061*N	14.921+0.834*N	(A1-C2): 0.0181 (A2-C1): 0.0181 (B1-B2): 0.0128	(A1-C2): (N/2-1)*0.0181 (A2-C1): (N/2-1)*0.0181 (B1-B2): (N/2)*0.0128
Z400	29.57	25.59	12.64	8.66	0.551+0.094*N	66.183+1.962*N	0.112	(N-1)*0.112
Z415	29.57	25.83	12.64	8.90	0.551+0.094*N	65.654+1.918*N	0.109	(N-1)*0.109
Z600	37.20	31.89	14.76	9.45	0.551+0.094*N	116.823+2.712*N	0.164	(N-1)*0.164

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
Z086	12.09	9.61	7.48	5.00	0.390+0.061*N	14.921+0.834*N	(A1-C2): 0.0181 (A2-C1): 0.0181 (B1-B2): 0.0128	(A1-C2): (N/2-1)*0.0181 (A2-C1): (N/2-1)*0.0181 (B1-B2): (N/2)*0.0128
Z401	29.57	25.59	12.64	8.66	0.906+0.094*N	80.557+1.962*N	0.112	(N-1)*0.112
Z416	29.57	25.83	12.64	8.90	0.906+0.094*N	79.940+1.918*N	0.109	(N-1)*0.109
Z601	37.20	31.89	14.76	9.45	1.471+0.094*N	117.528+2.712*N	0.164	(N-1)*0.164

N: number of plates

Model Selection Chart

R134a vs. Water Condenser

Based on ARI-450 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400xM58	Z415x58	
50	175.80	600	Z400xM72	Z415x74	
60	210.96	720	Z400xM84	Z415x86	
75	263.70	900	Z400xM106	Z415x106	
100	351.60	1200	Z400xM140	Z415x142	Z600xM124
125	439.50	1500	Z400xM176	Z415x178	Z600xM156
150	527.40	1800			Z600xM190

R134a vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400xH64	Z415x66	
50	175.80	600	Z400xH80	Z415x82	
60	210.96	720	Z400xH98	Z415x98	
75	263.70	900	Z400xH126	Z415x126	
100	351.60	1200	Z400xH170	Z415x170	Z600xH152
125	439.50	1500	Z400xH220	Z415x222	Z600xH196
150	527.40	1800			Z600xH240

R407C vs. Water Condenser

Based on ARI-450 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400xH82	Z415x82	
50	175.80	600	Z400xH102	Z415x102	
60	210.96	720	Z400xH122	Z415x122	
75	263.70	900	Z400xH152	Z415x154	
100	351.60	1200	Z400xH206	Z415x206	Z600xH144
125	439.50	1500			Z600xH180
150	527.40	1800			Z600xH218

R407C vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400xM50	Z415x50	
50	175.80	600	Z400xM62	Z415x62	
60	210.96	720	Z400xM76	Z415x78	
75	263.70	900	Z400xM96	Z415x98	
100	351.60	1200	Z400xM130	Z415x130	Z600xM106
125	439.50	1500	Z400xM172	Z415x174	Z600xM140
150	527.40	1800			Z600xM180

R410A vs. Water Condenser

Based on ARI-450 Standard

RT	kW	kBTU/H	Z401	Z416	Z601
40	140.64	480	Z401xM48	Z416x50	
50	175.80	600	Z401xM60	Z416x62	
60	210.96	720	Z401xM72	Z416x74	
75	263.70	900	Z401xM90	Z416x90	
100	351.60	1200	Z401xM120	Z416x126	Z601xM72
125	439.50	1500	Z401xM150	Z416x162	Z601xM90
150	527.40	1800			Z601xM110
175	615.30	2100			Z601xM128
200	703.20	2400			Z601xM146
225	791.10	2700			Z601xM164

R410A vs. Water Evaporator

Based on ARI-480 Standard

RT	kW	kBTU/H	Z400	Z415	Z600
40	140.64	480	Z400xH50	Z415x50	
50	175.80	600	Z400xH62	Z415x62	
60	210.96	720	Z400xH76	Z415x78	
75	263.70	900	Z400xH96	Z415x98	
100	351.60	1200	Z400xH130	Z415x130	Z600xM126
125	439.50	1500	Z400xH172	Z415x174	Z600xM160
150	527.40	1800			Z600xM200

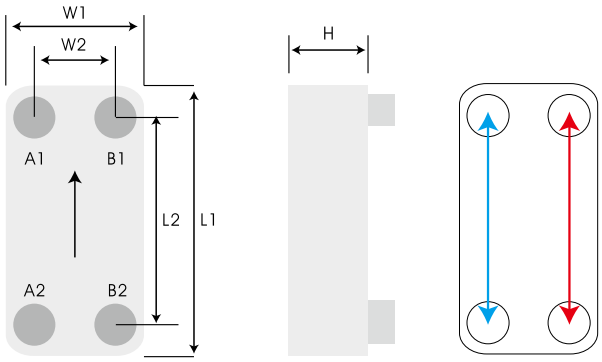
The above information is for reference only; the data will be different under various working conditions and specifications.

C Series-CO_2 Super High Pressure Brazed Plate Heat Exchanger

KAORI patented solution with C series is specially designed for Gas cooler, condenser, evaporator and economizer in R744 (CO_2) heat pump and refrigeration system. Different designs with max. working pressure 2030.5 psi, 1450.4 psi and 1015.3 psi are available for Supercritical, Transcritical and Subcritical CO_2 heating and cooling systems.

Compact size, outstanding heat transfer performance and low pressure drop are the three key features. The quality and the durability of C series is proven by thorough inspection, achieving the burst test pressure up to 2074 psi and cycle test over 100,000 cycles.

Brazing Material	Copper		
Model	C020,C040 C095,C200	C021,C041 C096,C201	C022,C042 C097,C202
	(A1,A2/B1,B2)		
Max. Working Pressure (psi)	1015.3/435.1*	1450.4/435.1*	2030.5/435.1*
Max. Working Temperature (°F)	392°F		



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

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
C020	7.52	6.06	3.03	1.57	0.374+0.043*N	2.469+0.093*N	0.002	(N-1)*0.002
C040	12.36	10.83	2.99	1.57	0.512+0.079*N	3.836+0.320*N	0.008	(N-1)*0.008
C095	20.63	18.35	4.25	1.97	0.520+0.085*N	12.170+0.705*N	0.019	(N-1)*0.019
C200	24.25	20.43	7.44	3.62	0.551+0.085*N	27.315+1.329*N	0.041	(N-1)*0.041

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
C021	7.52	6.06	3.03	1.57	0.374+0.043*N	2.513+0.093*N	0.002	(N-3)*0.002
C041	12.36	10.83	2.99	1.57	0.512+0.079*N	4.034+0.320*N	0.008	(N-1)*0.008
C096	20.63	18.35	4.25	1.97	0.520+0.085*N	12.522+0.705*N	0.019	(N-1)*0.019
C201	24.25	20.43	7.44	3.62	0.551+0.085*N	27.690+1.391*N	0.041	(N-1)*0.041

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
C022	7.52	6.06	3.03	1.57	0.374+0.043*N	2.482+0.093*N	0.002	(N-5)*0.002
C042	12.36	10.83	2.99	1.57	0.512+0.079*N	3.858+0.335*N	0.008	(N-1)*0.008
C097	20.63	18.35	4.25	1.97	0.520+0.085*N	13.007+0.763*N	0.019	(N-1)*0.019
C202	24.25	20.43	7.44	3.62	0.551+0.085*N	27.359+1.664*N	0.041	(N-1)*0.041

N: number of plates

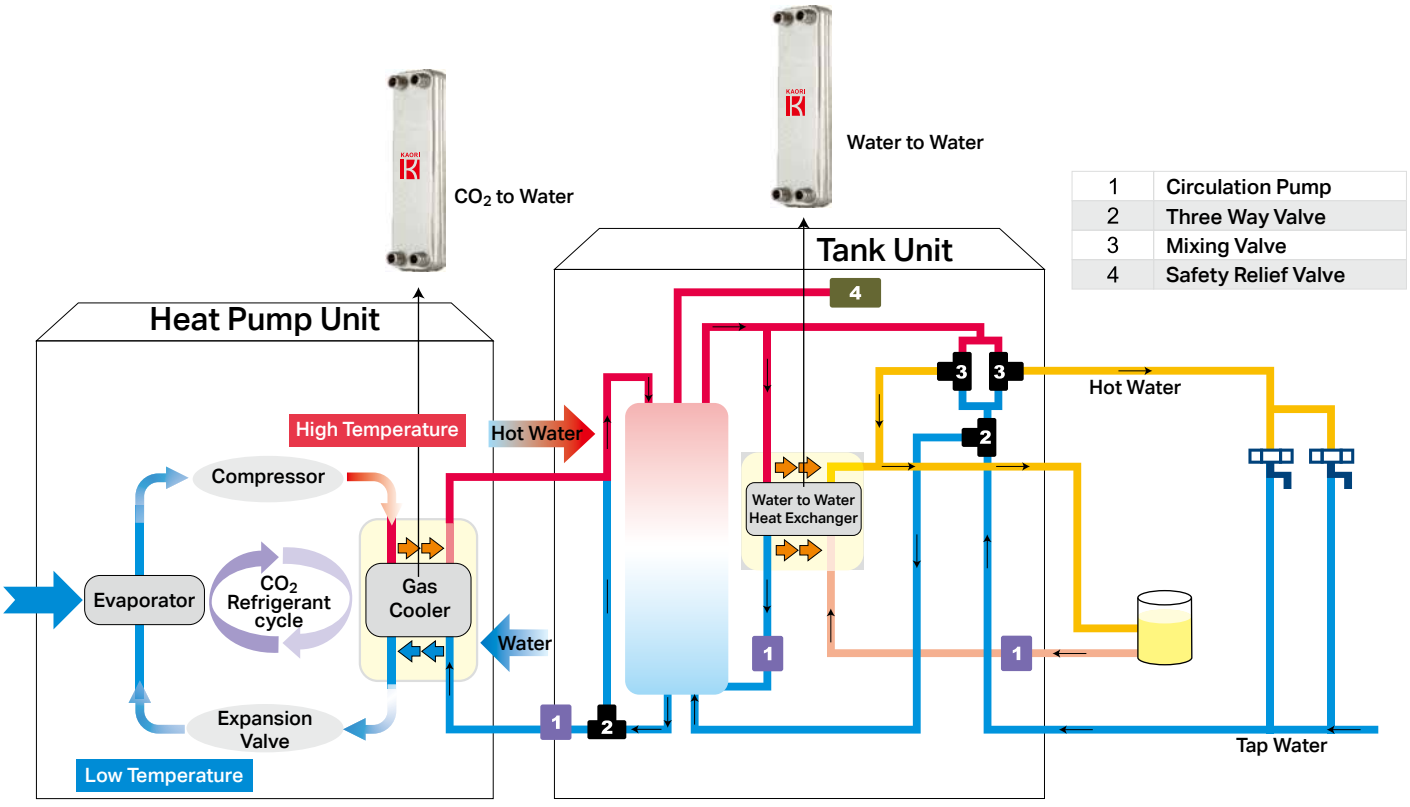
Model Selection Chart

R744 vs. Water Gas Cooler (Max. Working Pressure : 2030.5 psi)

RT	kW	BTU/H	C020/C021/C022	C040/C041/C042	C095/C096/C097	C200/C201/C202
1	3.52	12000	C022x36 (4 Pass)	C042x24 (4 Pass)		
1.5	5.27	18000	C022x44 (4 Pass)	C042x32 (4 Pass)		
2	7.03	24000	C022x52 (4 Pass)	C042x40 (4 Pass)	C097x24 (4 Pass)	
3	10.55	36000			C097x24 (4 Pass)	
4	14.06	48000			C097x32 (4 Pass)	
5	17.58	60000			C097x40 (4 Pass)	C0202x24 (3 Pass)
7.5	26.37	90000			C097x48 (4 Pass)	C0202x30 (3 Pass)
10	35.16	120000			C097x64 (4 Pass)	C0202x36 (3 Pass)
12.5	43.95	150000			C097x72 (4 Pass)	C0202x48 (3 Pass)
15	52.74	180000			C097x88 (4 Pass)	C0202x54 (3 Pass)
20	70.32	240000				C0202x66 (3 Pass)
25	87.90	300000				C0202x84 (3 Pass)
30	105.48	360000				C0202x102 (3 Pass)
35	123.06	420000				C0202x114 (3 Pass)
40	140.64	480000				C0202x132 (3 Pass)

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

CO_2 Heat Pump System

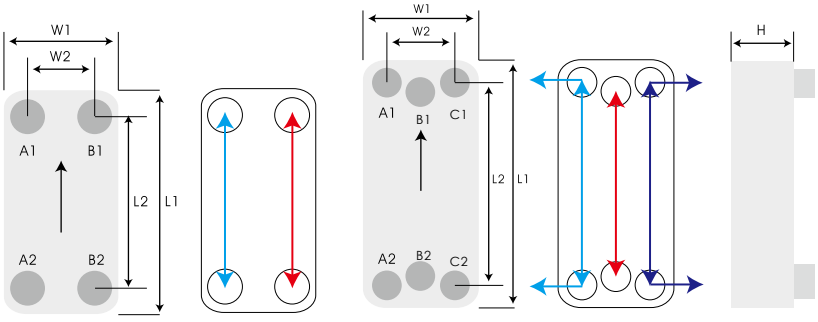


B Series-Asymmetric Brazed Plate Heat Exchanger

The new KAORI B Series delivers an effective operating range up to 100kW for heat pumps, heating, cooling and refrigeration systems with efficiency and reliability benefits.

The B Series design effectively helps to lower pressure drop by 25%, reduce refrigerant filling volume by 44%, increase water flow rate by 19% and cut the weight by up to 48%, these overcome common impact on water-side pressure drop while maximizing system performance, energy efficiency and reliability.

Brazing Material	Copper			
Model	B110	B076, B081, B111	B236D, B416D	B415D
	(A1,A2/B1,B2)		(A1,A2/B1,B2/C1,C2)	
Max. Working Pressure (psi)	464.1/363	652.7/435.1	652.7/290	464.1/290
Max. Working Temperature (°F)	392°F			



B236D/B415D/B416D: Dual Circuits- 6 Connections

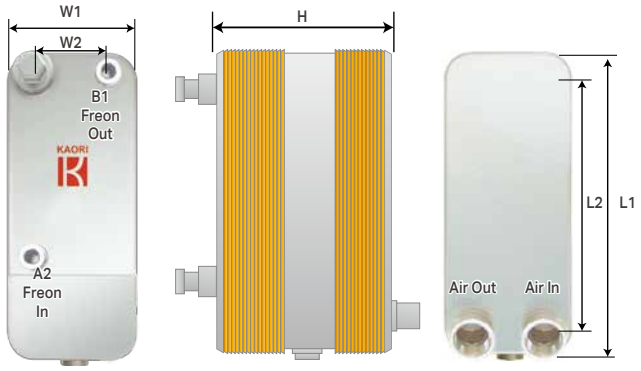
Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
B110	20.83	18.50	4.80	2.48	0.413+0.073*N	5.005+0.375*N	(A1-A2):0.018 (B1-B2):0.026	(N/2-1)*0.018 (N/2)*0.026
B415D	29.02	24.88	12.60	8.07	0.433+0.098*N	31.973+1.892*N	(A1-A2)/(C1-C2): 0.137 (B1-B2): 0.119	(N/2-1)/2*0.137 (N/2)*0.119

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
B076	12.99	10.98	4.69	2.68	0.370+0.059*N	3.352+0.245*N	(A1-A2):0.010 (B1-B2):0.012	(N/2-1)*0.010 (N/2)*0.012
B081	14.84	12.95	4.72	2.83	0.370+0.067*N	3.704+0.273*N	(A1-A2):0.013 (B1-B2):0.016	(N/2-1)*0.013 (N/2)*0.016
B111	20.83	18.50	4.80	2.48	0.492+0.073*N	9.107+0.375*N	(A1-A2):0.018 (B1-B2):0.026	(N/2-1)*0.018 (N/2)*0.026
B236D	20.83	15.67	11.42	6.97	0.433+0.083*N	36.603+0.988*N	(A1-A2)/(C1-C2): 0.071 (B1-B2): 0.063	(N/2-1)/2*0.071 (N/2)*0.063
B416D	29.02	24.88	12.60	8.07	0.551+0.098*N	40.352+1.892*N	(A1-A2)/(C1-C2): 0.137 (B1-B2): 0.119	(N/2-1)/2*0.137 (N/2)*0.119

N: number of plates

A Series-Air Dryer Brazed Plate Heat Exchanger

A series is KAORI's innovative patent design for refrigerated air dryer. Combining precooler, evaporator and separator. A series provides compact size and high thermal transfer performance for your system. The patented design separator can perfectly dehumidify compressed air and eliminate the need for demister to avoid clogging problem.



Brazing Material	Copper	
Model	A030, A070, A140	A210, A300
	(A2,B1/C2,D2)	
Max. Working Pressure (psi)	435.1/ 232.1	435.1/145.0
Max. Working Temperature (°F)	392°F	

Model	Air Flow Rate @101.5psi			L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	Weight (lb)	H Thickness (inch)	Air Connection (inch)
	Nm^3/min	Nm^3/hr	sCFM							
A030-14-8	0.58	34.8	20.57	7.56	6.06	3.07	1.57	6.48	3.82	3/4"
A030-20-10	0.83	49.8	29.43	7.56	6.06	3.07	1.57	7.21	4.49	3/4"
A030-22-12	1.00	60.0	35.46	7.56	6.06	3.07	1.57	7.58	4.80	3/4"
A030-24-16	1.33	79.8	47.16	7.56	6.06	3.07	1.57	10.08	5.31	3/4"
A030-40-24	1.67	100.2	59.22	7.56	6.06	3.07	1.57	10.43	7.28	3/4"
A070-20-26	2.40	144.0	85.11	11.97	9.84	4.88	2.76	24.69	6.23	1"
A070-32-40	4.20	252.0	148.94	11.97	9.84	4.88	2.76	32.85	9.16	1-1/4"
A070-46-66	7.00	420.0	248.23	11.97	9.84	4.88	2.76	46.96	14.04	1-1/2"
A140-24-36	11.00	660.0	390.07	17.36	14.17	8.11	4.92	67.68	8.97	2"
A140-32-44	14.00	840.0	496.45	17.36	14.17	8.11	4.92	79.81	11.21	2"
A210-40-50	22.00	1320.0	780.14	20.75	16.93	9.65	5.83	171.08	15.53	2-1/2"
A210-50-64	28.00	1680.0	992.91	20.75	16.93	9.65	5.83	211.42	19.72	3"
A300-41-46	35.00	2100.0	1235.5	25.63	20.47	12.64	7.48	305.17	18.58	4"
A300-47-54	40.00	2400.0	1412.0	25.63	20.47	12.64	7.48	325.02	19.88	4"
A300-55-60	45.00	2700.0	1588.5	25.63	20.47	12.64	7.48	343.98	21.18	4"
A300-61-70	50.00	3000.0	1765.5	25.63	20.47	12.64	7.48	366.91	22.68	4"

E.g. A030-14-8, 14 is the number of plates of the evaporator on air-freon side, 8 is the number of plates of the precooler on air-air side.

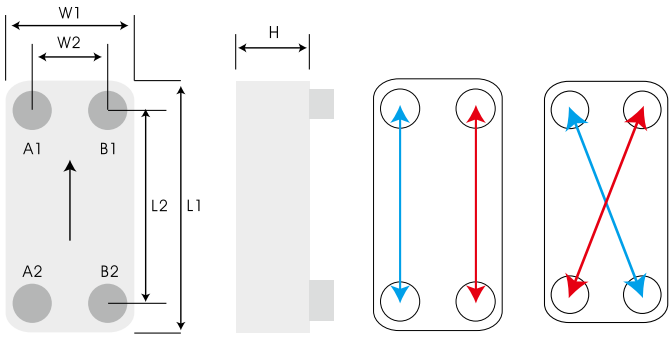
* The flow direction might be changed according to different models, please refer to the drawing and user manual for detail.

* This table only lists the standard A series products. If there is a selection requirement of special type A series on the right page, please refer to the KAORI A series catalogue.

D Series-Double Wall Brazed Plate Heat Exchanger

To prevent two different kinds of fluid from intermixing caused by internal leakage, KAORI precisely designed D Series solution with the double-stacked plates, eliminating the possibility of cross contamination.

The unique air gap is created between the two plates. Once internal leakage occurs, the 2nd plate becomes a shield to keep fluid stay and flow on the same channel through the air gap. Meanwhile, vent holes outside the plate will seep out fluid as an indication of leakage.



D045/046

Brazing Material	Copper	
Model	D030, D045, D070	D031,D046, D071, D206
	(A1,A2/B1,B2)	
Max. Working Pressure (psi)	435.1/435.1	652.7/435.1
Max. Working Temperature (°F)	392°F	

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
D030	7.95	6.14	3.62	1.81	0.315+0.094*N	0.992+0.229*N	0.007	(N-1)*0.007
D045*	14.29	12.60	3.23	1.57	0.327+0.080*N	2.205+0.366*N	0.008	(N-1)*0.008
D070	12.05	9.84	4.96	2.76	0.366+0.102*N	3.373+0.448*N	0.016	(N-1)*0.016

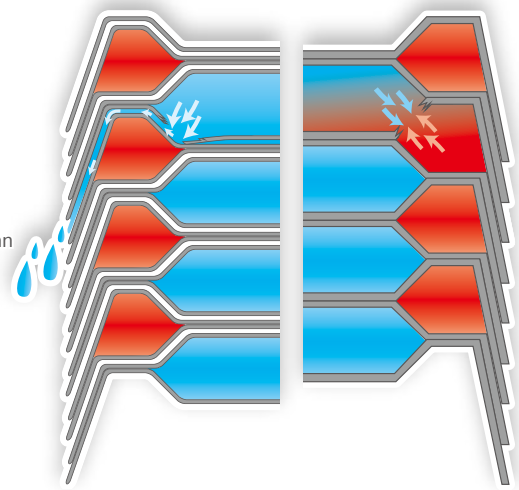
Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
D031	7.95	6.14	3.62	1.81	0.354+0.094*N	1.565+0.229*N	0.007	(N-1)*0.007
D046*	14.29	12.60	3.23	1.57	0.327+0.080*N	2.601+0.366*N	0.008	(N-1)*0.008
D071	12.05	9.84	4.96	2.76	0.445+0.102*N	5.842+0.481*N	0.016	(N-1)*0.016
D206	20.79	17.95	9.69	6.85	0.650+0.102*N	30.517+1.702*N	0.059	(N-1)*0.059

N: number of plates
* D045/ D046: diagonal design.

Double Wall Vs. Regular BPHE

KAORI Double Wall

The cracks on plates doesn't lead to internal leakage between fluids, which can be distinguished from outer appearance.



Regular BPHE

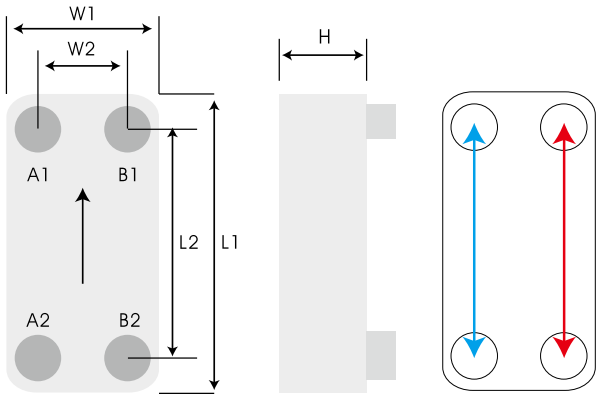
The cracks on plates result in internal leakage between fluids, which can't be distinguished from outer surface

E/F Series-Low Pressure Brazed Plate Heat Exchanger

E Series　　F Series

E/ F series is designed for 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	E010, E015, F025, E030, E040, E050, E060
	(A1,A2/B1,B2)
Max. Working Pressure (psi)	145.0/145.0
Max. Working Temperature (°F)	392°F

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
E010	5.39	4.33	2.44	1.02	0.256+0.067*N	0.314+0.053*N	0.003	(N-1)*0.003
E015	6.10	4.72	2.95	1.57	0.354+0.071*N	0.463+0.079*N	0.004	(N-1)*0.004
F025	8.11	6.77	2.87	1.57/1.65	0.256+0.089*(N-2)	0.419+0.088*(N-2)	0.007	(N-1)*0.007
E030	7.68	6.06	3.15	1.57	0.276+0.089*N	0.639+0.104*N	0.007	(N-1)*0.007
E040	12.24	10.94	2.87	1.57	0.354+0.091*N	1.367+0.154*N	0.011	(N-1)*0.011
E050	12.05	9.84	4.17	1.97	0.354+0.094*N	2.535+0.256*N	0.015	(N-1)*0.015
E060	18.35	17.01	2.91	1.57	0.354+0.091*N	1.455+0.220*N	0.017	(N-1)*0.017

N: number of plates

Model Selection Chart

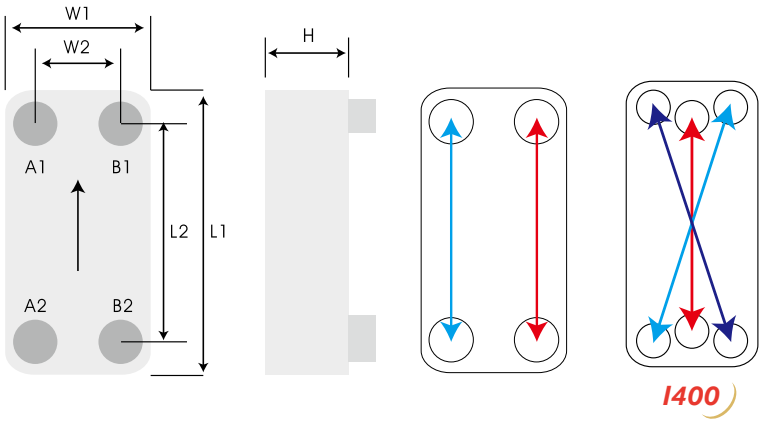
RT	kW	BTU/H	Hot Water Temp.	Cold Water Temp.	E015	F025	E030	E040	E060
1	3.5160	12000	158°F --> 122°F	50°F --> 140°F	E015x14	F025x12	E030x12		
2	7.0320	24000	158°F --> 122°F	50°F --> 140°F	E015x18	F025x16	E030x16		
3	10.5480	36000	158°F --> 122°F	50°F --> 140°F	E015x26	F025x22	E030x22		
4	14.0640	48000	158°F --> 122°F	50°F --> 140°F	E015x30	F025x26	E030x26		
5	17.5800	60000	158°F --> 122°F	50°F --> 140°F		F025x32	E030x32	E040x10	
7.5	26.3700	90000	158°F --> 122°F	50°F --> 140°F		F025x44	E030x44	E040x14	E060x10
10	35.1600	120000	158°F --> 122°F	50°F --> 140°F		F025x56	E030x56	E040x18	E060x12
15	52.7400	180000	158°F --> 122°F	50°F --> 140°F				E040x26	E060x18
20	70.3200	240000	158°F --> 122°F	50°F --> 140°F				E040x36	E060x24
25	87.9000	300000	158°F --> 122°F	50°F --> 140°F				E040x50	E060x30
30	105.480	360000	158°F --> 122°F	50°F --> 140°F					E060x40

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

Series-Impact Resistant Brazed Plate Heat Exchanger

I series is suitable for those applications with the possibilities of encountering thermal shocks or pressure shocks. The optimal heat transfer efficiency and pressure resistance that can withstand tough operation conditions like Hydraulic System, Injection Molding System and Boiler System.

Brazing Material	Copper	
Model	I030, I050, I070, I095, I105, I200, I205, I400	I210
	(A1,A2/B1,B2)	
Max. Working Pressure (psi)	435.1/435.1	232.1/232.1
Max. Working Temperature (°F)	392°F	



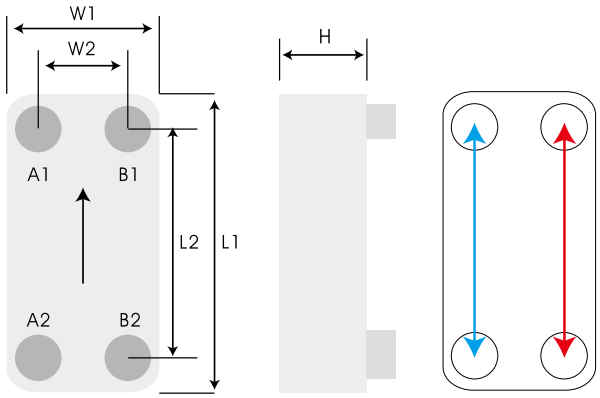
Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)	Total Volume (gal)
I030	7.64	6.06	3.15	1.57	0.394+0.087*N	1.301+0.104*N	0.007	(N-5)*0.007
I050	12.05	9.84	4.17	1.97	0.394+0.094*N	2.623+0.256*N	0.015	(N-5)*0.015
I070	11.97	9.84	4.88	2.76	0.394+0.094*N	3.219+0.289*N	0.017	(N-5)*0.017
I095	20.55	18.35	4.17	1.97	0.433+0.094*N	6.239+0.450*N	0.025	(N-5)*0.025
I105	19.84	17.48	4.88	2.52	0.433+0.094*N	7.584+0.522*N	0.028	(N-5)*0.028
I200	24.13	20.43	7.32	3.62	0.551+0.094*N	15.190+0.891*N	0.054	(N-5)*0.054
I205	20.79	17.95	9.69	6.85	0.551+0.094*N	16.557+0.966*N	0.061	(N-5)*0.061
I210	20.75	16.93	9.65	5.83	0.453+0.112*N	14.528+1.080*N	0.076	(N-5)*0.076
I400*	29.57	25.59	12.64	8.66	0.551+0.094*N	68.564+1.962*N	0.112	(N-5)*0.112

N: number of plates
* I400: diagonal design.

Q Series–Oil Cooler Brazed Plate Heat Exchanger

The Q Series is excellent for both shell &tube replacement and hydraulic applications. Q series is set to increase cooling performance, significantly reduce downtime and increase production efficiency. Q series can save time and money for the amount of cooling water required for heat transfer which will result in lower operating costs and maintenance.

Application:
Extruder, Injection Molding Machine, Gearbox, High Frequency Equipment, Press Machine, Lathe, Milling Machine And Punch.



Brazing Material	Copper
Model	Q035, Q055, Q085
	(A1,A2/B1,B2)
Max. Working Pressure (psi)	435.1/435.1
Max. Working Temperature (°F)	392°F

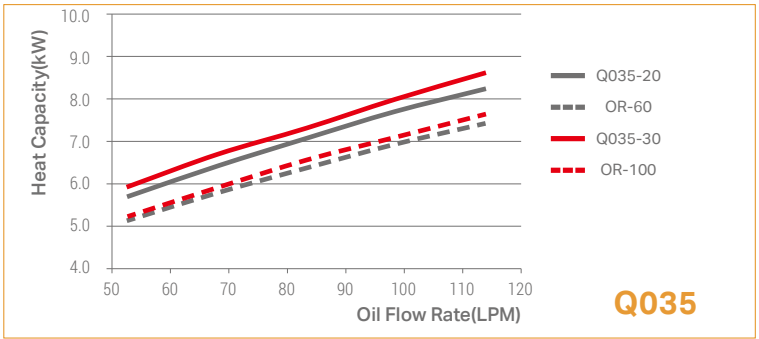
Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)
Q035	7.32	5.63	4.96	3.27	0.354+0.094*N	2.249+0.185*N	0.011
Q055	10.08	7.48	6.14	3.54	0.472+0.112*N	5.115+0.342*N	0.022
Q085	11.91	9.45	7.46	5.00	0.433+0.094*N	5.776+0.439*N	0.028

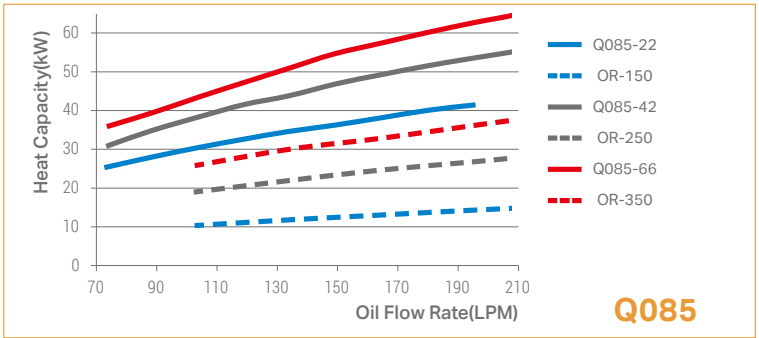
N: number of plates

Model Selection Chart

Fuel Tank Capacity (gal)	Applicable Models
15.9	Q035 x 20
26.4	Q035 x 30
39.6	Q085 x 22
66.0	Q085 x 42
92.5	Q085 x 66

Heat Transfer Performance Comparison Q Series Vs. Shell & Tube





Applicable fluids

Water、E.G.、P.G.、ATF、
SAE10~SAE70、VG22~VG68、
R134a、R404A、R407C

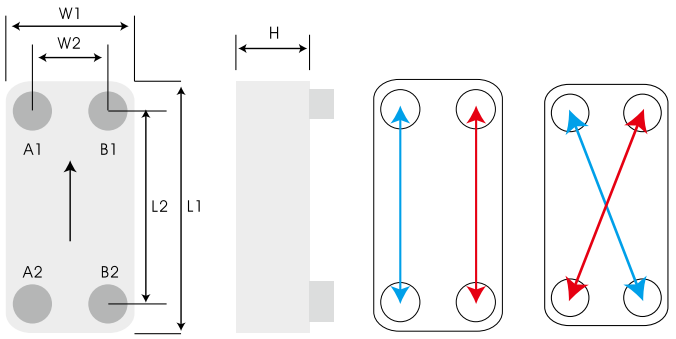
Stud Bolts

T Series-High Temperature Brazed Plate Heat Exchanger

T series uses heat resistant materials to construct BPHE for high temperature applications, maximum working temperature can go up to 1652°F. In green energy application such as fuel cells is using such high temperature BPHE for its heating and cooling.

Main application: Fuel cell, Cogeneration, combined heat and power, waste heat recovery.

Brazing Material	Nickel				
Model	T030, T050, T095, T190, T200, T205				T031, T051, T096, T201, T206
	(A1,A2/B1,B2)				
Max. Working Pressure (psi)	145.0/145.0	101.5/101.5	43.5/43.5	29.0/29.0	145.0/145.0
Max. Working Temperature (°F)	32~1202	~1292	~1472	~1652	~1022



T190

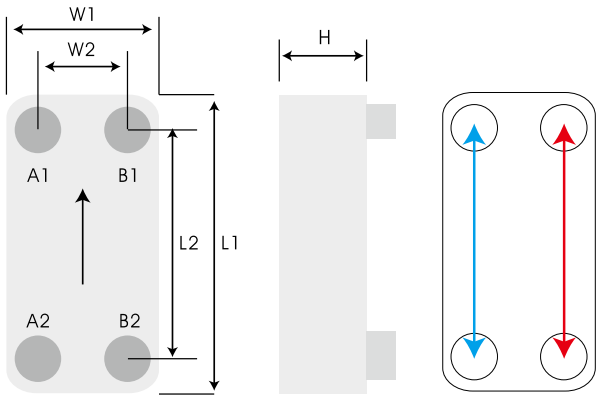
Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight*(kg) (Without Connection)	Volume/ Channel (liter)
T030	7.64	6.06	3.15	1.57	0.354+0.091*N	1.609+0.150*N	0.007
T050	12.05	9.84	4.17	1.97	0.394+0.094*N	5.247+0.302*N	0.015
T095	20.55	18.35	4.17	1.97	0.394+0.094*N	7.319+0.476*N	0.025
T190	19.69	15.35	9.65	4.33	0.512+0.098*N	22.050+0.988*N	0.058
T200	24.13	20.43	7.32	3.62	0.551+0.094*N	15.190+0.941*N	0.054
T205	20.79	17.95	9.69	6.85	0.453+0.094*N	19.445+1.204*N	0.061

Model	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H Thickness (mm)	Weight*(kg) (Without Connection)	Volume/ Channel (liter)
T031	7.64	6.06	3.15	1.57	0.354+0.091*N	1.521+0.141*N	0.007
T051	12.05	9.84	4.17	1.97	0.394+0.094*N	4.960+0.284*N	0.015
T096	20.55	18.35	4.17	1.97	0.394+0.094*N	6.945+0.450*N	0.025
T201	24.13	20.43	7.32	3.62	0.551+0.094*N	15.190+0.891*N	0.054
T206	20.79	17.95	9.69	6.85	0.453+0.094*N	19.158+1.248*N	0.061

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).

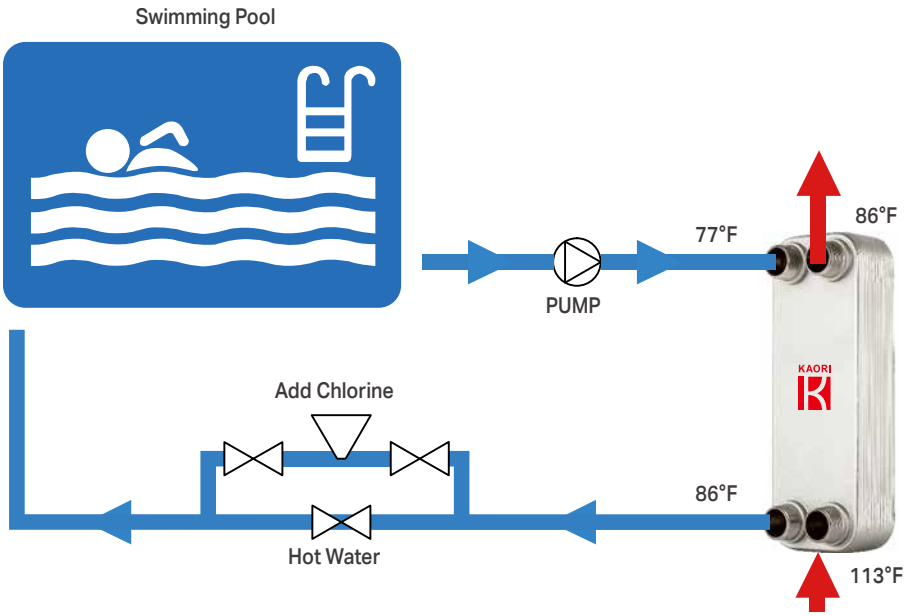


Brazing Material	Nickel
Model	M050, M095, M205
Plate Material	Equivalent to SMO254
	(A1,A2/B1,B2)
Max. Working Pressure (psi)	145.0/145.0
Max. Working Temperature (°F)	392°F

Model	L1 (inch)	L2 (inch)	W1 (inch)	W2 (inch)	H Thickness (inch)	Weight*(lb) (Without Connection)	Volume/ Channel (gal)
M050	12.05	9.84	4.17	1.97	0.394+0.094*N	2.293+0.300*N	0.015
M095	20.55	18.35	4.17	1.97	0.394+0.094*N	5.820+0.529*N	0.025
M205	20.79	17.95	9.69	6.85	0.453+0.094*N	13.823+1.199*N	0.061

N: number of plates

Swimming Pool Heating



Standard Connections

Model	Thread Connections PT/ NPT/ GB											Height (inch)
	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	
010	◎	●										0.51/0.59/0.79
015/025	◎	◎	●									0.51/0.59/0.79
020/021/022	◎	◎	◎									0.79
030/031/032	◎	◎	◎									0.79
035/036/037			○	○								0.79
040/041/042		◎	◎									0.79
045/046		◎	●									0.79
050/051/052	◎	◎	◎	◎								1.06
060		◎	◎									0.79
070/071	◎	◎	◎	◎	◎	●						0.79
085/086/087		◎	◎	◎	◎	◎						1.06
095/096/097	◎	◎	◎	◎	●							1.06
105	◎	◎	◎	◎	◎	●						1.06
110/111	◎	◎	◎	◎	●							1.06
140		●	●	◎	◎	◎	◎					1.06/2.13
200/201/202				◎	◎	◎	◎	◎				1.06/2.13
205/206				◎	◎	◎★	◎★					1.06/2.13
210/211/212				◎	◎	◎★	◎★	◎	●			1.06/1.65
215/216				◎	◎	◎	◎	●				1.06/2.13
300								◎	◎	◎	◎	2.13/3.19
400/401						◎	◎★	◎★	◎★			2.13/3.19
415/416						◎	◎★	◎★	●★			2.13/3.19
600/601						◎	◎★	◎★	◎★	◎★	◎★	2.13/3.19

◎ Male/Female Thread ○ Female Thread ● Male Thread ★ Flange

Model	Solder Connections														Height (inch)
inch	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"	2 1/2"	2 5/8"	3 1/8"	4"	
mm	6.6	9.73	12.9	16.15	19.25	22.36	25.6	28.8	35.25	41.5	54.3	63.5	67	79.4	105	
010	▲	▲														0.51/0.59/0.79
015	▲	▲	▲	▲												0.51/0.59/0.79
020/021/022	▲	▲	▲	▲												0.79
025/030/031/032	▲	▲	▲	▲	▲	▲										0.79
040/041/042	▲	▲	▲	▲	▲	▲										0.79
045/046	▲	▲	▲	▲	▲	▲										0.79
050/051/052	▲	▲	▲	▲	▲	▲	▲	▲								1.06
060	▲	▲	▲	▲	▲	▲										0.79
070/071/085	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲						1.06
095/096/097	▲	▲	▲	▲	▲	▲	▲	▲								1.06
105	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲						1.06
110/111	▲	▲	▲	▲	▲	▲	▲	▲								1.06
140		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲					1.06/2.13
200/201/202			▲	▲	▲	▲	▲	▲	▲	▲	▲					1.06/2.13
205/206			▲	▲	▲	▲	▲	▲	▲	▲	▲					1.06/2.13
210/211/212						▲	▲	▲	▲	▲	▲	▲	▲	▲		1.06/1.65
215/216			▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲			1.06/2.13
300														▲	▲	2.13/3.19
400/401						▲	▲	▲	▲	▲	▲	▲	▲	▲		2.13/3.19
415/416						▲	▲	▲	▲	▲	▲	▲	▲			2.13/3.19
600/601						▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	2.13/3.19

*The above table is for reference only. Please contact KAORI representative for more information.

Various connection designs fulfill different specifications

Connection types include: soldering (sweat), female/ male threaded, flange, combo, hydraulic, victaulic, quick, temperature control, opposite side...etc.
KAORI offers customize connections to fit your specific demand.

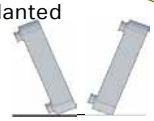
Welding Procedure

Cleaning and degreasing the surface of copper pipes and BPHE connection before welding. To avoid oxidation in the copper pipes and BPHE, protect the inside with N2-gas. Place the BPHE on a flat surface and wrap a wet rag around the connection to protect the BPHE from excessive heating. Use a 40~45% silver alloy soldering rod to weld the copper pipe into the connection at a maximum temperature of 1472°F. After soldering, clean and dry the connection and BPHE.

Installation

1 Mounting

The BPHE should be mounted as below:

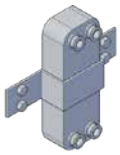
Setting / flow direction of product	Vertical 	Horizontal 	Lying back 	Slanted 	Slanted 
Counter flow 	Evaporator: ○ Condenser: ○ Cooler: ○	Evaporator: × Condenser: × Cooler: ○	Evaporator: × Condenser: × Cooler: ○	Evaporator: × Condenser: × Cooler: ○	Evaporator: × Condenser: × Cooler: ○
Diagonal flow 	Evaporator: ○ Condenser: ○ Cooler: ○	Evaporator: ○* Condenser: ○* Cooler: ○	Evaporator: × Condenser: × Cooler: ○	Evaporator: × Condenser: × Cooler: ○	Evaporator: × Condenser: × Cooler: ○

* Performance may be affected. For further information, please contact KAORI representative.

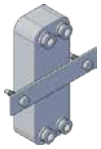
Fig. 1

* Vibration dampener or other absorbing devices are also recommended.

a. Stud Bolts



b. Sheet Metal Bracket



c. Crossbar & Bolts

d. Floor Stand

* The installation fixture of the diagram is for reference only. The product itself does not include the above accessories. If you have related requirements, please contact KAORI representative.

Fig. 2

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 (<212°F) 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

While fouling in the BPHE, back flushing is always possible to remove most of the soft debris that is blocking the inside. Weak acids with concentration less than 5%; for example: citric acid, oxalic acid add in a tank. Circulate the cleaning solution. Before restarting the system, flush the BPHE with large amounts of fresh water to purge any remaining acid solution. If the acidity is too high, the copper and stainless steel inside the BPHE may be etched or corroded.

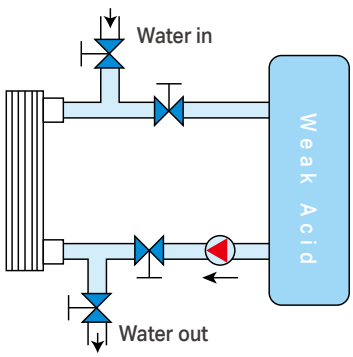


Fig. 3 Cleaning

KAORI

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