KAORI

KAORI Brazed Plate Heat Exchanger

Application for Refrigerated Air Dryer and Air Compressors

ASME Certified CE UL Certified KHK Japan KRAIA Korea CRN Certified

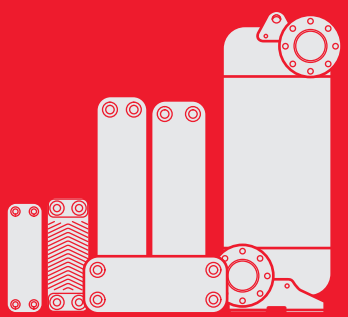
www.kaori-bphe.com

High Quality from Taiwan

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. Afterwards, 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.

Chungli Taiwan Plant

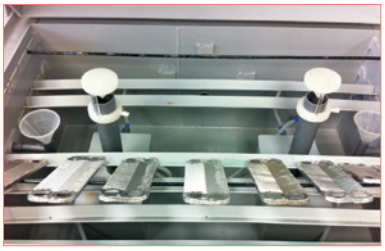
Kaohsiung Taiwan Plant

Ningbo China Plant

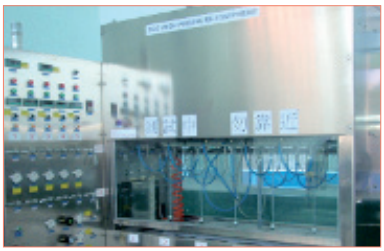
Facility and Test Equipment

Vacuum Furnace

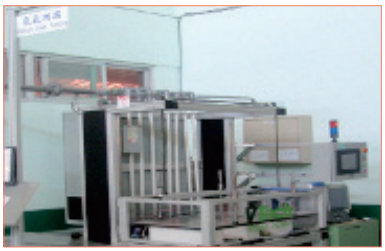
Continuous Pressing



Salt Spray Test



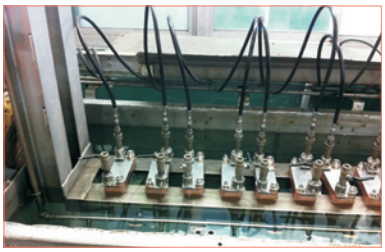
CO_2 High Pressure Test



Helium Leakage Test

Thermal Shock Tester

Performance Test



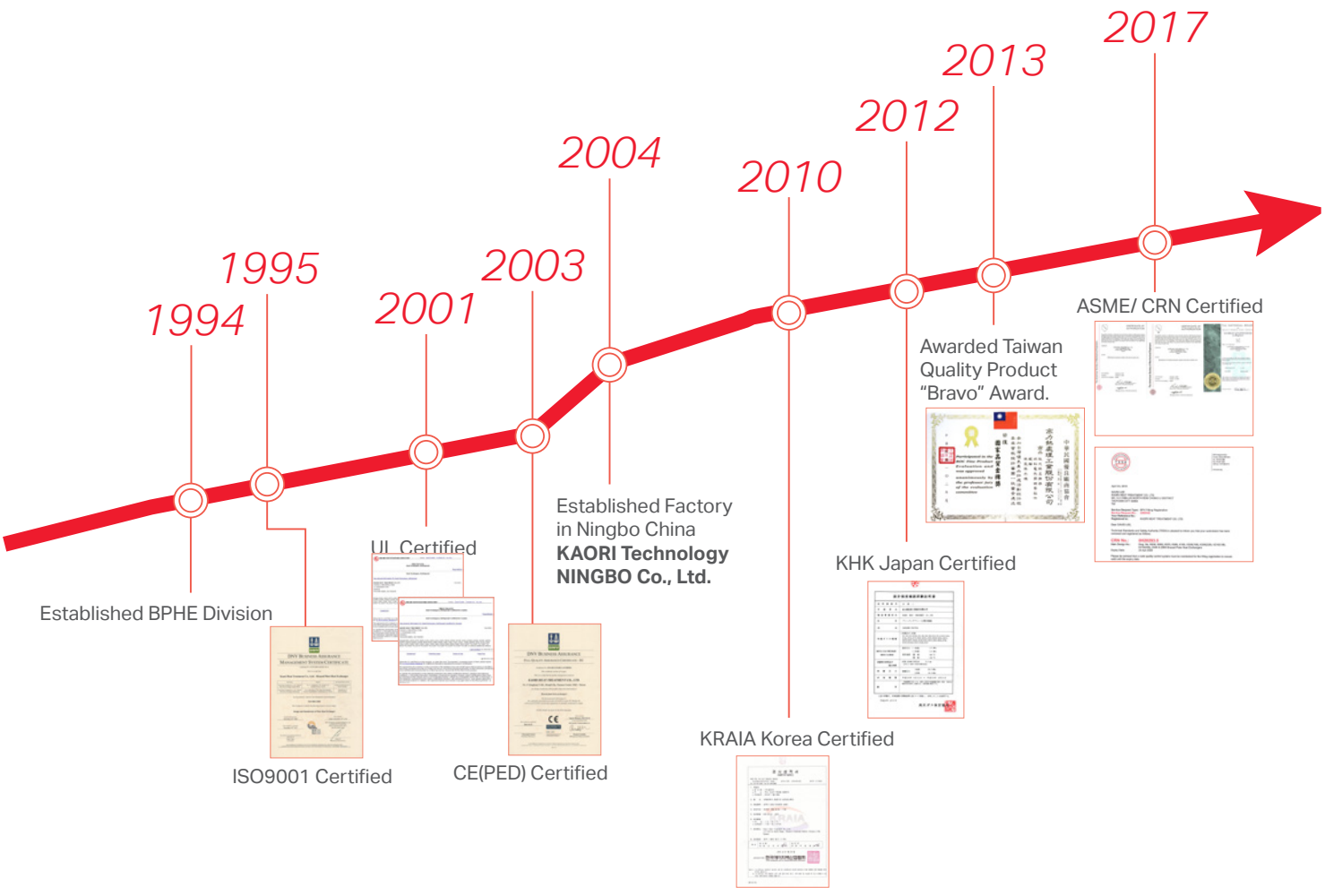
Pressure Leakage Test

Burst Test

KAORI History

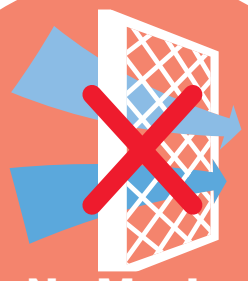
1970	KAORI Heat Treatment Co., Ltd. was established in Taipei, Taiwan.
1994	KAORI founded the brazed plate heat exchanger department.
2001	KAORI's second brazed plate heat exchanger manufacturing plant was established in Kaohsiung, Taiwan.
2004	KAORI's third brazed plate heat exchanger manufacturing plant was established in Ningbo, China.
2006	KAORI became a share holding company in Taiwan's stock exchange.
2006	KAORI launched several new BPHE for refrigerated air dryer - A070、A210.
2011	KAORI Heat Exchange Japanese branch office was established.
2014	KAORI launched several new BPHE product- A030 in Chillventa Expo.
2015	KAORI launched the new product - Double wall D070 model.
2016	KAORI launched several new BPHE for refrigerated air dryer - A140.
2017	KAORI launched the high-pressure 3-in-1 refrigerated air dryer heat exchanger - A032、A072

KAORI Milestone



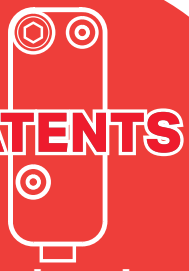
High Efficiency 3-In-1 Heat Exchanger for Refrigerated Air Dryer (A Series)

3 Years Warranty



No Mesh, No Clogging Problems

Working Pressure Up to 653PSI



Equipped With Patented Leakage Testing Connector

Size Reduced by 50%

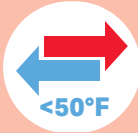
With high heat transfer area design, heat exchanger size can be reduced by 50% compared to others.

Most Complete Models Capacity Up to 200HP

Most complete models, KAORI' s 3-in-1 heat exchanger has the capacity from 5 HP to 200 HP.

Stainless Steel, Anti-corrosion

Patented plate design of evaporator, shorten the flow path of refrigerant by 30%, with the smooth surface of SUS 304, KAORI can prevent lubricant oil residual which happens frequently in aluminum plate fin heat exchangers.



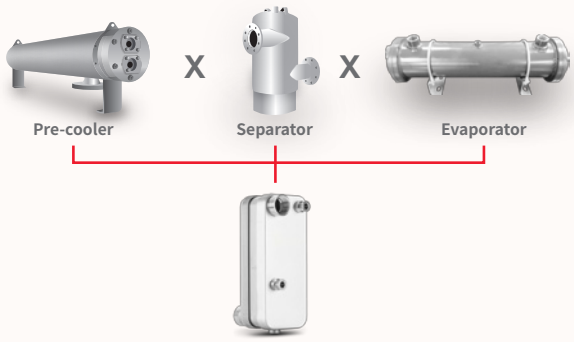
Inlet/Outlet Temp. Difference < 50°F

With high efficiency heat recovery from the inlet and treated outlet air, capacity of refrigerant compressor can be smaller, and the treated outlet air could be used directly.

The Workings of a 3-In-1 Heat Exchanger

3-in-1 heat exchanger - include evaporator, Separator, pre-cooler/heater

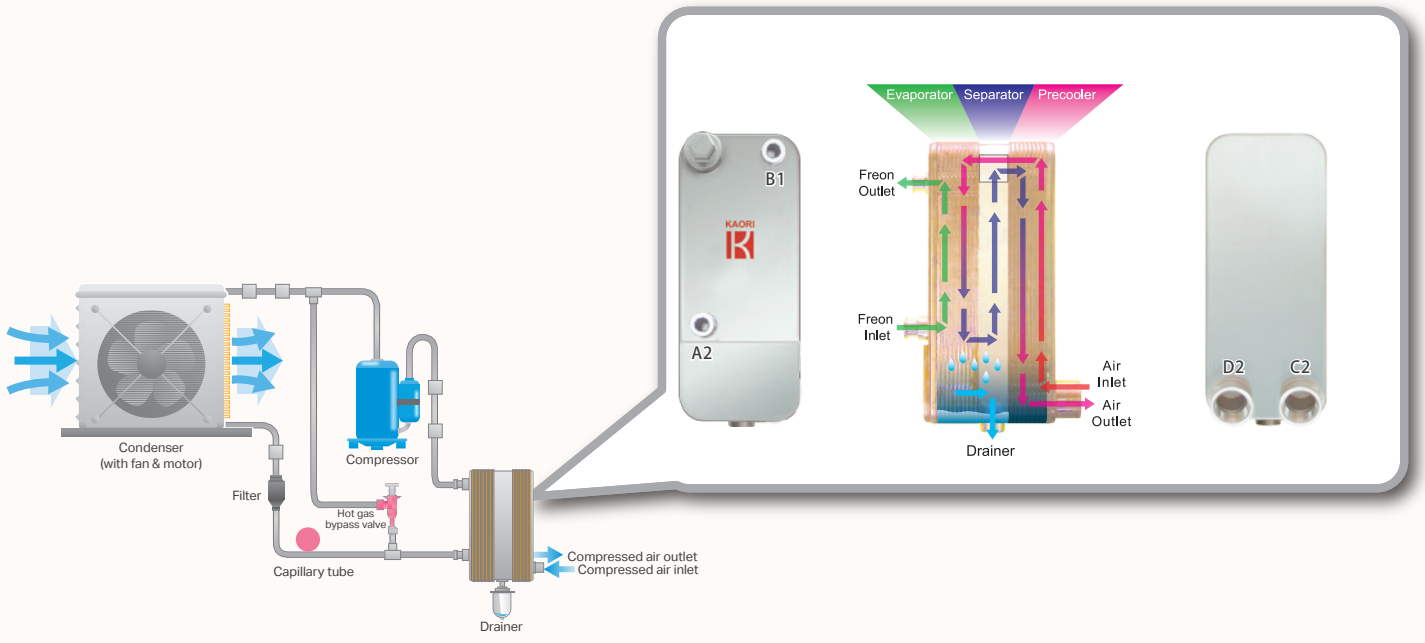
Air compressor compresses hot and moist air to the pre-cooler of a 3-in- 1 heat exchanger, then the hot & moist air exchanges heat with treated cold air.
This chilled moist air enters the evaporator, lower down temperature and condensate water out by evaporation. After, the air moves to the separator, with centrifugal force and gravity, the condensate water can be separated from air. Finally, the cool & dry air goes back to preheater to be heated to the working temperature.



A Series - 3-in-1 Heat Exchanger

- **Evaporator**:
  - Condense out moisture from air through our high efficiency heat exchanger.
  - High efficiency, low dew point, and low pressure drop.
- **Separator**:
  - Centrifugal force and gravity separate moistures from air.
  - No mesh designed, clogging free, easy to maintain.
- **Pre-cooler/ heater**:
  - Save energy by exchanging heat from inlet and outlet air temperature.
  - Outlet air can be used directly. It is preheated to the working temperature.

System Diagram of 3-in-1 Heat Exchanger for Refrigerated Air Dryer



Guides to Kaori's A Series Brazed Plate Heat Exchangers

A Series Model and Product Code Illustrations

A070-20-26A-G

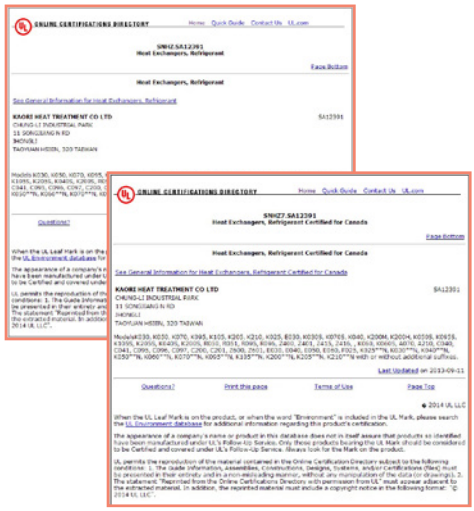
- Series
- Model
- Air Side Pressure — 0:Standard 232.1 psi; 2:High Pressure 653 psi
- Plates of Evaporator
- Plates of Pre-cooler
- Size of Separator
- Type — Ex :G Type-High-Pressure Refrigerant

Types	Standard	High-Pressure Air Type	T Type Chilled Outlet Air	G Type High-Pressure Refrigerant	D Type Desiccant/ Refrigerated Combination	R Type Refrigerant Heat Recovery
Characteristic	Standard 3-in-1 Heat Exchangers	Suitable for High-pressure Air up to 653 psi	Chilled Dry Compressed Air 2-in-1 Heat Exchanger	Suitable for High-pressure Refrigerant up to 653 psi	For Combined Dryers Systems Downsized by 50%	Heat-pump-integrated Refrigerated Air Dryers of Energy Conservations
Applications	Refrigerated Air Dryers	PET, Blowing Molding, Pharmaceutical Packaging, and Injection Molding Machines	Semiconductor Related Manufacturing, Food Processing, Coating, Air Bearing, and Injection Molding Machines	For Refrigerated Air Dryer Applications under High Ambient Temperature	Semiconductor and Precision Manufacturing Related Industries	Machines with Compact Compressed Air Temperature Control Equipments
Connectors	Stainless Steel SUS 304					
Plates、Separators	Stainless Steel SUS 304					
Welding materials	99.9% Copper					
A030	●	●	●		●	●
A070	●	●	●	●	●	●
A140	●		●	●		
A210	●			●	●	

Standard A Series Connectors

Model	Thread Connectors PT/ NPT/ GB								Solder Connectors							Height (inch)
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	Φ9.73mm 3/8"	Φ12.9mm 1/2"	Φ16.15mm 5/8"	Φ19.25mm 3/4"	Φ22.36mm 7/8"	Φ25.6mm 1"	Φ28.8mm 1 1/8"	
A030	◎	◎							◎	○						0.59
A070		○	◎	◎	◎				◎	◎	○	○				1.06
A140					◎	◎				◎	◎	◎	○	○	○	1.06
A210					○	◎	◎	◎		○	◎	◎	◎	○	○	1.06

◎ : Standard Connector ○ : Available Connector



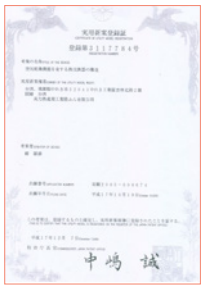
UL

CE/PED

Patents

2006 Acquired Patent of "**Heat Exchanger Having Air Drying Device**" – Patent 3-in-1 heat exchanger. Reducing size, increase efficiency.


China


Japan


Taiwan


Korea

USA

2013 Acquire " **Air Side Leak Test** " Patent – Industry leading. Ensure 100% high quality.


Japan

Germany

2013 Acquire "**Air Dryer Heat Exchanger Having Oil Return Device**" Patent- Designed oil return hole, compressors without losing oil.


Taiwan


Japan

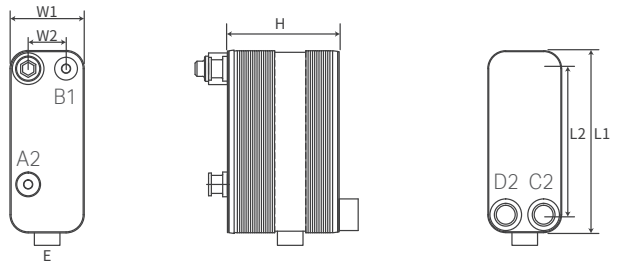
Germany

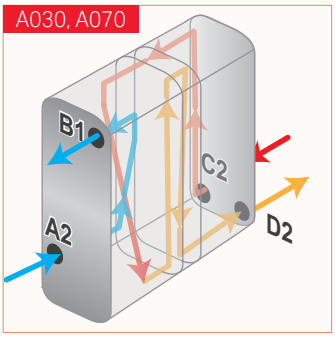
2017 Acquire "**Combined Dryer Device**" Patent - the multi-functional 3-in-1 design that cascades desiccant and refrigerated dryer applications.

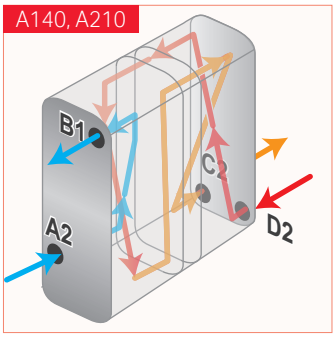

Taiwan

Germany

A series Standard BPHE







Specification					
Model		A030	A070	A140	A210
MAX. Working Temperature		392°F			
L1 (inch)		7.56	11.97	17.36	20.75
L2 (inch)		6.06	9.84	14.17	16.93
W1 (inch)		3.07	4.88	8.11	9.65
W2 (inch)		1.57	2.76	4.92	5.83
Max Working Pressure (psi)	Air Side	232.1	232.1	232.1	145.0
	Ref. Side	435.1	435.1	435.1	435.1
Max Testing Pressure (psi)	Air Side	333.6	333.6	333.6	217.6
	Ref. Side	623.7	623.7	623.7	623.7
Air Inlet		C2		D2	
Air Outlet		D2		C2	
Ref. In		A2			
Ref. Out		B1			
Drainer		E			

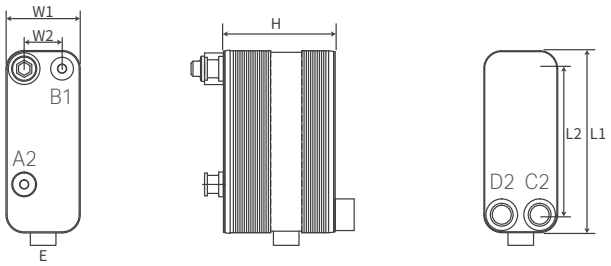
A series is KAORI's innovative patent design for refrigerated air dryer. Combining precooler, evaporator and separator. A series provides compact size and high thermal transfer performance for your system. The patented design separator can perfectly dehumidify compressed air and eliminate the need for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

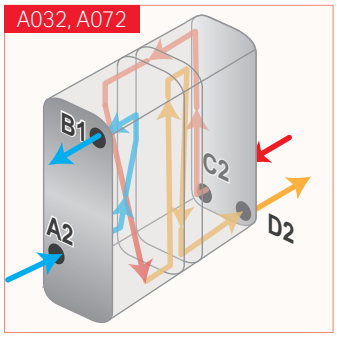
A Series Standard BPHE Model Selection Chart

Air Compressor Power	Air Flow Rate @ 101.5psiG			Model	Length	Width	Height	Weight	Separator Height	Ref. Side Connector	Air Side Connector	Drainer	Compressor Power	Pressure
HP	Nm^3/min	Nm^3/hr	SCFM		inch	inch	inch	lb	inch		inch	inch	HP	psi
5	0.58	35	21	**A030-14-8A**	7.56	3.07	3.90	6.17	1.73	S3	3/4	1/2	1/4	≦ 2.9
8	0.83	50	29	**A030-20-10A**	7.56	3.07	4.61	6.83	1.73	S3	3/4	1/2	1/4	
10	1.00	60	35	**A030-22-12A**	7.56	3.07	4.96	7.28	1.73	S3	3/4	1/2	1/4	
12	1.33	80	47	**A030-24-16A**	7.56	3.07	5.47	7.94	1.73	S3	3/4	1/2	1/2	
15	1.67	100	59	**A030-40-24A**	7.56	3.07	7.64	10.14	1.73	S3	3/4	1/2	1/2	
20	2.40	144	85	**A070-20-26A**	11.97	4.88	6.14	23.59	1.77	S4	1	1/2	1	
30	4.20	252	148.	**A070-32-40B**	11.97	4.88	9.02	30.64	2.36	S4	1-1/4	1/2	1	
50	7.00	420	247	**A070-46-66C**	11.97	4.88	13.7	43.65	3.54	S4	1-1/2	1/2	1.5	
75	11.00	660	388	**A140-24-36A**	17.36	8.11	8.82	67.9	3.11	S5	2	1/2	2	
100	14.00	840	494	**A140-32-44B**	17.36	8.11	11.02	80.25	3.90	S5	2	1/2	3	
150	22.00	1320	777	**A210-40-50C**	20.75	9.65	15.51	172.4	6.54	S7	2-1/2	1/2	4	
200	28.00	1680	989	**A210-50-64D**	20.75	9.65	19.72	212.3	8.50	S9	3	1/2	5	

* Connectors and stub bolts can be cumstomized. Please contact KAORI for further information.

A series High Pressure BPHE





Specification			
Model		A032	A072
MAX. Working Temperature		392°F	
L1 (inch)		7.56	11.97
L2 (inch)		6.06	9.84
W1 (inch)		3.07	4.88
W2 (inch)		1.57	2.76
Max Working Pressure (psi)	Air Side	232.1	232.1
	Ref. Side	653	653
Max Testing Pressure (psi)	Air Side	333.6	333.6
	Ref. Side	942.7	942.7
Air Inlet		C2	
Air Outlet		D2	
Ref. In		A2	
Ref. Out		B1	
Drainer		E	

KAORI's High Pressure Air Dryer Series are available in operating up to 45 bar (653 PSI).

The best component for high pressure refrigerated air dryer, it is combined with a pre-cooler/ heater, separator, and an evaporator, eliminating water vapor from high pressure compressed air with dew points from 37.4°F to 50°F.

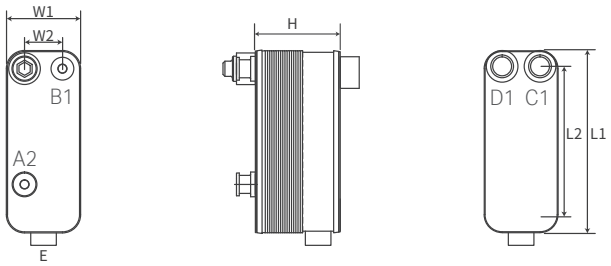
With reliable stainless steel and optimized efficiency design, KAORI Air Dryer Series have the advantages of size reducing, clogging free, easy to maintain, and anti-corrosion, providing perfect solutions for refrigerated air dryers applying in PET blow molding, pharmaceutical packaging, injection molding and other applications that require high pressure heat exchangers.

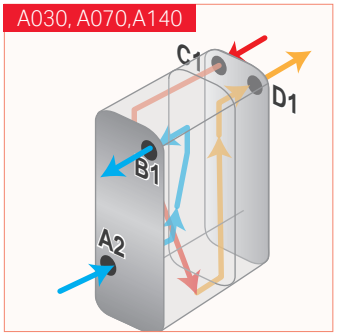
A Series High Pressure BPHE Model Selection Chart

Air Flow Rate @ 101.5psiG			Model	Length	Width	Height	Weight	Separator Height	Ref. Side Connector	Air Side Connector	Drainer	Compressor Power	Pressure
Nm^3/min	Nm^3/hr	SCFM		inch	inch	inch	lb	inch		inch	inch	HP	psi
1.45	87	51	**A032-20-10A**	7.56	3.07	4.59	6.83	1.73	S3	3/4	1/2	1/4	≦ 2.9
2	120	71	**A032-22-12A**	7.56	3.07	4.95	7.28	1.73	S3	3/4	1/2	1/4	
2.5	150	88	**A032-26-14A**	7.56	3.07	5.48	7.94	1.73	S3	3/4	1/2	1/4	
3.3	198	117	**A032-38-24A**	7.56	3.07	7.44	9.92	1.73	S3	3/4	1/2	1/2	
4.2	252	148	**A032-44-30A**	7.56	3.07	8.51	11.02	1.73	S3	3/4	1/2	1/2	
6	360	212	**A072-28-30A**	11.97	4.88	7.18	25.35	1.77	S4	1	1/2	1	
10.5	630	371	**A072-40-46A**	11.97	4.88	9.65	31.75	1.77	S4	1	1/2	1	
16	960	565	**A072-52-68A**	11.97	4.88	13.16	41.89	1.77	S4	1	1/2	1.5	

* Connectors and stub bolts can be cumstomized. Please contact KAORI for further information.

T Type-A Series Chilled Outlet Air BPHE





Specification				
Model		A030	A070	A140
MAX. Working Temperature		392°F		
L1 (inch)		7.56	11.97	17.36
L2 (inch)		6.06	9.84	14.17
W1 (inch)		3.07	4.88	8.11
W2 (inch)		1.57	2.76	4.92
Max Working Pressure (psi)	Air Side	232.1	232.1	232.1
	Ref. Side	435.1	435.1	435.1
Max Testing Pressure (psi)	Air Side	333.6	333.6	333.6
	Ref. Side	623.7	623.7	623.7
Air Inlet		C1		
Air Outlet		D1		
Ref. In		A2		
Ref. Out		B1		
Drainer		E		

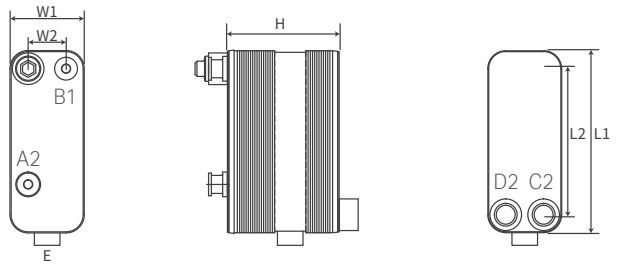
Chilled outlet air dryers are designed for dry and chilled compressed air in certain manufacturing processes, and the outlet air temperature can be close to the dew point temperature. The chilled outlet air T type A series heat exchangers are designed for chilled and dry compressed air. A unique 2-in-1 design consisting of an evaporator and a gas-water separator allows adjustable dew point temperatures as low as 37.4 °F. Air flow ranges from 0.3 m^3/min to 14 m^3/min. The gas-water separator employs no internal filter, and is free of clogging.

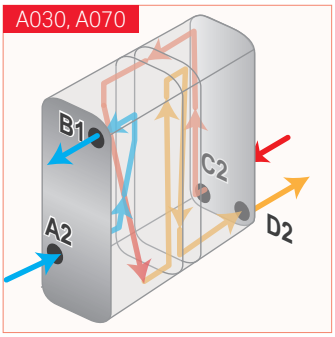
T Type-A Series Chilled Outlet Air BPHE Model Selection Chart

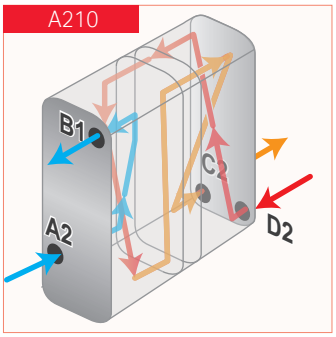
Air Compressor Power	Air Flow Rate @ 101.5psiG			Model	Length	Width	Height	Weight	Separator Height	Ref. Side Connector	Air Side Connector	Drainer	Compressor Power	Pressure
HP	Nm^3/min	Nm^3/hr	SCFM		inch	inch	inch	lb	inch		inch	inch	HP	psi
5	0.58	35	21	**A030-28A-T**	7.56	3.07	4.41	6.61	1.73	S3	3/4	1/2	1/4	≦ 2.9
10	1.00	60	35	**A030-44A-T**	7.56	3.07	5.83	8.82	1.73	S3	3/4	1/2	1/4	
15	1.67	100	59	**A030-80A-T**	7.56	3.07	9.06	13.23	1.73	S3	3/4	1/2	1/2	
20	2.40	144	85	**A070-40A-T**	11.97	4.88	5.67	24.25	1.77	S4	1	1/2	1	
30	4.20	252	148	**A070-64B-T**	11.97	4.88	8.35	30.86	2.36	S4	1-1/4	1/2	1	
50	7.00	420	247	**A070-92C-T**	11.97	4.88	11.97	39.68	3.54	S4	1-1/2	1/2	1.5	
75	11.00	660	388	**A140-48A-T**	17.36	8.11	7.83	61.73	3.11	S5	2	1/2	2	
100	14.00	840	494	**A140-64B-T**	17.36	8.11	10.08	74.96	3.90	S5	2	1/2	3	

* Connectors and stub bolts can be cumstomized. Please contact KAORI for further information.

G Type-A Series High-Pressure Refrigerant BPHE







Specification				
Model		A030	A070	A210
MAX. Working Temperature		392°F		
L1 (inch)		7.56	11.97	20.75
L2 (inch)		6.06	9.84	16.93
W1 (inch)		3.07	4.88	9.65
W2 (inch)		1.57	2.76	5.83
Max Working Pressure (psi)	Air Side	232.1	232.1	145.0
	Ref. Side	653	653	653
Max Testing Pressure (psi)	Air Side	333.6	333.6	217.6
	Ref. Side	942.7	942.7	942.7
Air Inlet		C2		D2
Air Outlet		D2		C2
Ref. In		A2		
Ref. Out		B1		
Drainer		E		

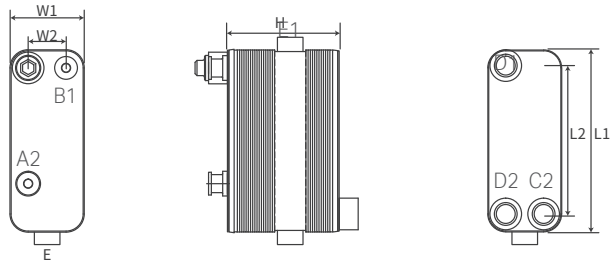
The high-pressure refrigerant G type air dryer plate heat exchanger is specifically designed for systems with a pressure requirement of 653 psi for refrigerant. The refrigerant side allows a maximum working pressure up to 653 psi, which is suitable for R410A, and high ambient temperature environments.

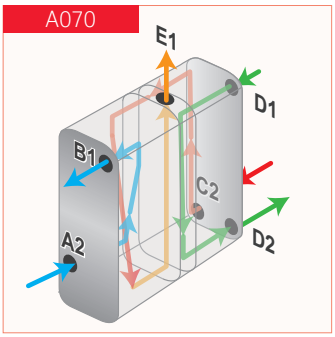
G Type-A Series High-Pressure Refrigerant BPHE Model Selection Chart

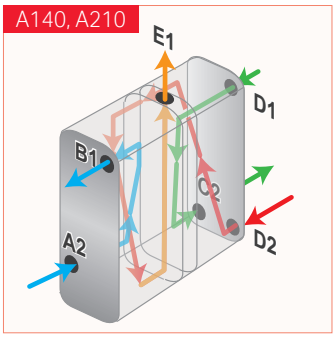
Air Compressor Power	Air Flow Rate @			Model	Length	Width	Height	Weight	Separator Height	Ref. Side Connector	Air Side Connector	Drainer	Compressor Power	Pressure
HP	Nm^3/min	Nm^3/hr	SCFM		inch	inch	inch	lb	inch		inch	inch	HP	psi
5	0.58	35	21	**A030-14-8A-G**	7.56	3.07	3.90	6.17	1.73	S3	3/4	1/2	1/4	
8	0.83	50	29	**A030-20-10A-G**	7.56	3.07	4.61	6.83	1.73	S3	3/4	1/2	1/4	
10	1.00	60	35	**A030-22-12A-G**	7.56	3.07	4.96	7.28	1.73	S3	3/4	1/2	1/4	
12	1.33	80	47	**A030-24-16A-G**	7.56	3.07	5.47	7.94	1.73	S3	3/4	1/2	1/2	
15	1.67	100	59	**A030-40-24A-G**	7.56	3.07	7.64	10.14	1.73	S3	3/4	1/2	1/2	≦ 2.9
20	2.40	144	85	**A070-20-26A-G**	11.97	4.88	6.14	23.59	1.77	S4	1	1/2	1	
30	4.20	252	148	**A070-32-40B-G**	11.97	4.88	9.02	30.64	2.36	S4	1-1/4	1/2	1	
150	22.00	1320	777	**A210-40-50C-G**	20.75	9.65	15.51	172.40	6.54	S7	2-1/2	1/2	4	
200	28.00	1680	989	**A210-50-64D-G**	20.75	9.65	19.72	212.30	8.50	S9	3	1/2	5	

* Connectors and stub bolts can be cumstomized. Please contact KAORI for further information.

D Type-A Series Desiccant/Refrigerated Combination BPHE







Specification				
Model		A070	A140	A210
MAX. Working Temperature		392°F		
L1 (inch)		11.97	17.36	20.75
L2 (inch)		9.84	14.17	16.93
W1 (inch)		4.88	8.11	9.65
W2 (inch)		2.76	4.92	5.83
Max Working Pressure (psi)	Air Side	232.1	232.1	145.0
	Ref. Side	435.1	435.1	435.1
Max Testing Pressure (psi)	Air Side	333.6	333.6	217.6
	Ref. Side	623.7	623.7	623.7
Air Inlet		C2	D2	
Before-desiccant Air Outlet		E1		
After-desiccant Air Inlet		D1		
Processed Air Outlet		D2	C2	
Ref. In		A2		
Ref. Out		B1		
Drainer		E		

For the application using cascading refrigerated and desiccant dryers, Kaori's D Type adopts a new flow path design that directs the chilled dry air from the gas-water separator into the desiccant dryer for deep dehumidifications. After reaching the dew point temperature of -40~-94 °F, the air then returns to the D Type for use after preheating.

D Type-A Series Desiccant/Refrigerated Combination BPHE Model Selection Chart

Air Compressor Power	Air Flow Rate @ 101.5psiG			Model	Length	Width	Height	Weight	Separator Height	Ref. Side Connector	Air Side Connector	Drainer	Compressor Power	Pressure
HP	Nm^3/min	Nm^3/hr	SCFM		inch	inch	inch	lb	inch		inch	inch	HP	psi
30	4.20	252	148	**A070-32-40B-D**	11.97	4.88	9.02	30.64	2.36	S4	1-1/4	1/2	1	≦ 2.9
50	7.00	420	247	**A070-46-66C-D**	11.97	4.88	13.70	43.65	3.54	S4	1-1/2	1/2	1.5	
75	11.00	660	388	**A140-24-36A-D**	17.36	8.11	8.82	67.90	3.11	S5	2	1/2	2	
100	14.00	840	494	**A140-32-44B-D**	17.36	8.11	11.02	80.25	3.90	S5	2	1/2	3	
150	22.00	1320	777	**A210-40-50C-D**	20.75	9.65	15.51	172.40	6.54	S7	2-1/2	1/2	4	
200	28.00	1680	989	**A210-50-64D-D**	20.75	9.65	19.72	212.30	8.50	S9	3	1/2	5	

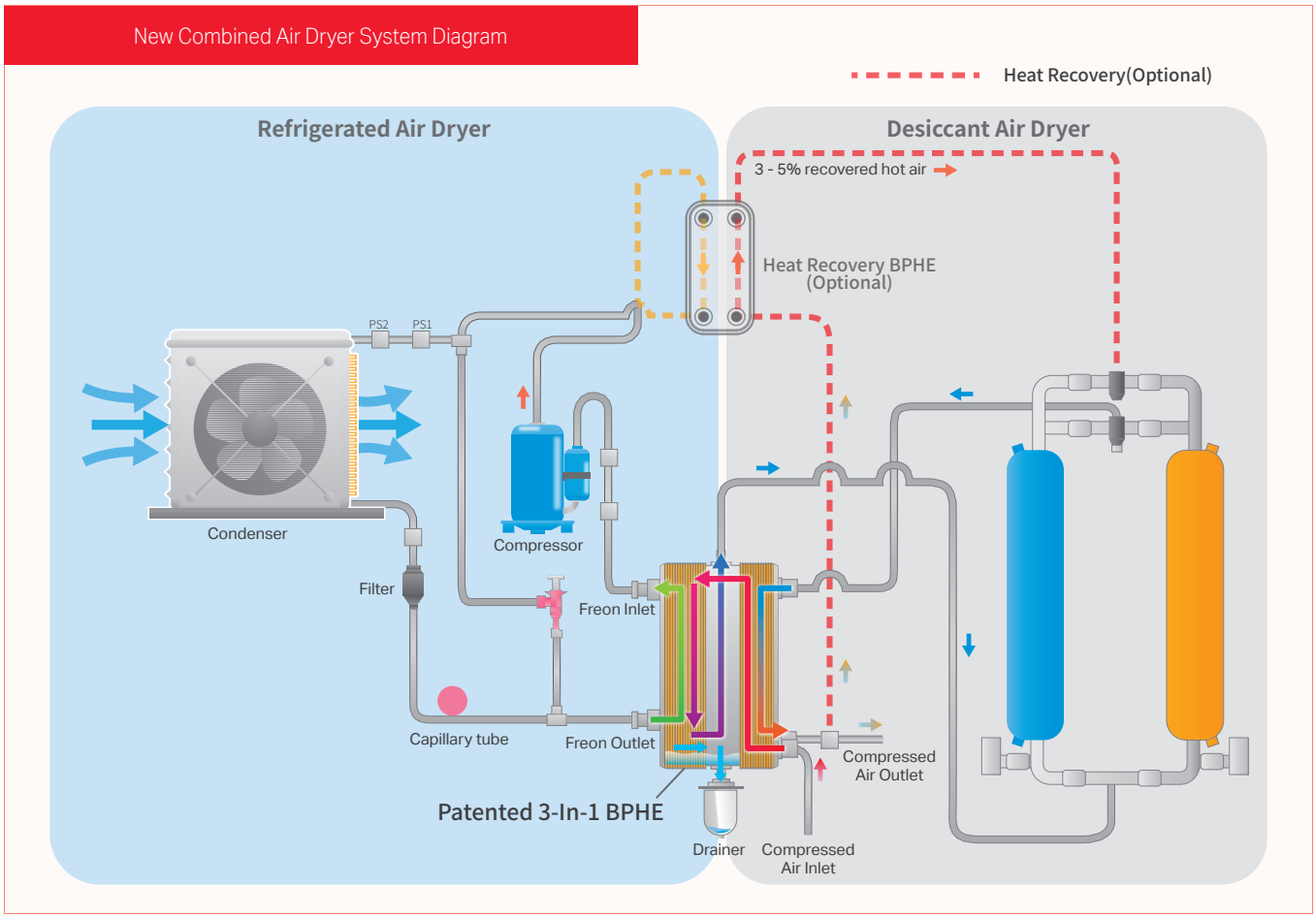
* Connectors and stub bolts can be cumstomized. Please contact KAORI for further information.

D Type-A Series Desiccant/ Refrigerated Combination BPHE

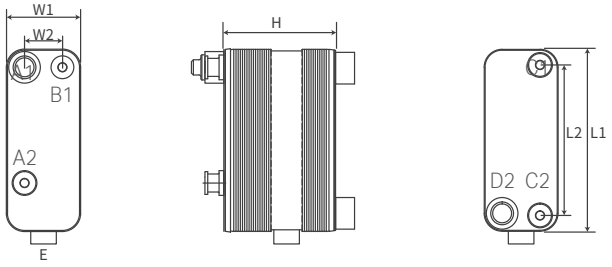
- Enhance the drying capacity of adsorption dryer, and extend the cycle time of adsorption.
- With KAORI A series advantage of low dew point, higher moisture removal capacity, controllable dew point(37.4~50°F), not only increase the capacity of desiccant air dryer but also reduce the cycle time of regeneration.
- The special design of KAORI A series can improve the performance of desiccant dryer, reduce the installation space, and high efficiency vapor removal can reduce the usage amount of adsorbent.
- Easy installation, save the cost of piping.
- Save cost on operation and maintenance.

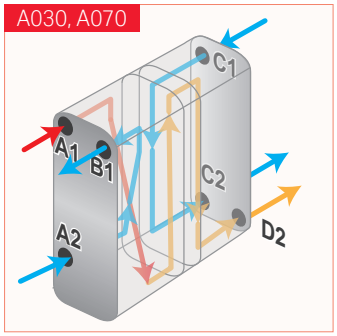
***Could combine with additional KAORI heat recovery BPHE, the heat of high temperature refrigerant could be recovered by air, and the heated hot air could be used for the regeneration cycle of desiccant air dryer, by only consuming 3 to 5% of the purge air, which is more energy saving and environment friendly.**

New Combined Air Dryer System Diagram



R Type-A Series Refrigerant Heat Recovery BPHE



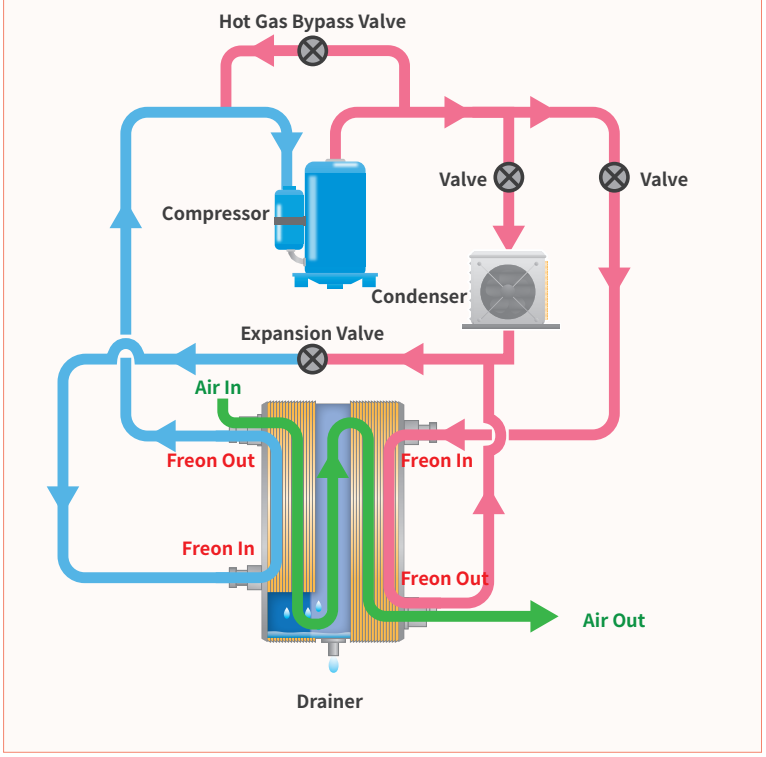


Specification			
Model		A030	A070
MAX. Working Temperature		392°F	
L1 (inch)		7.56	11.97
L2 (inch)		6.06	9.84
W1 (inch)		3.07	4.88
W2 (inch)		1.57	2.76
Max Working Pressure (psi)	Air Side	232.1	232.1
	Ref. Side	653	653
Max Testing Pressure (psi)	Air Side	333.6	333.6
	Ref. Side	942.7	942.7
Air Inlet		A1	
Air Outlet		D2	
Condenser Ref. In		C1	
Condenser Ref. Out		C2	
Evaporator Ref. In		A2	
Evaporator Ref. Out		B1	
Drainer		E	

R Type is designed for equipments in specific industries that require precise control of dry compressed air temperatures. R Type is a three-in-one heat exchanger with a condenser, an evaporator, and a gas-water separator.

The compressed air that has reached the dew point temperature can be separated from the high-temperature refrigerant by the gas-water separation, and the heat of the refrigerant can be recovered to preheat. The R Type non-electric heating type utilizes principles of heat pumps, and the flow direction of the condenser can adjusted to increase the stability of the system. It is suitable for cold-drying machines in precision processing equipments, semiconductor equipments, precision coating, 3D measurement and other equipments.

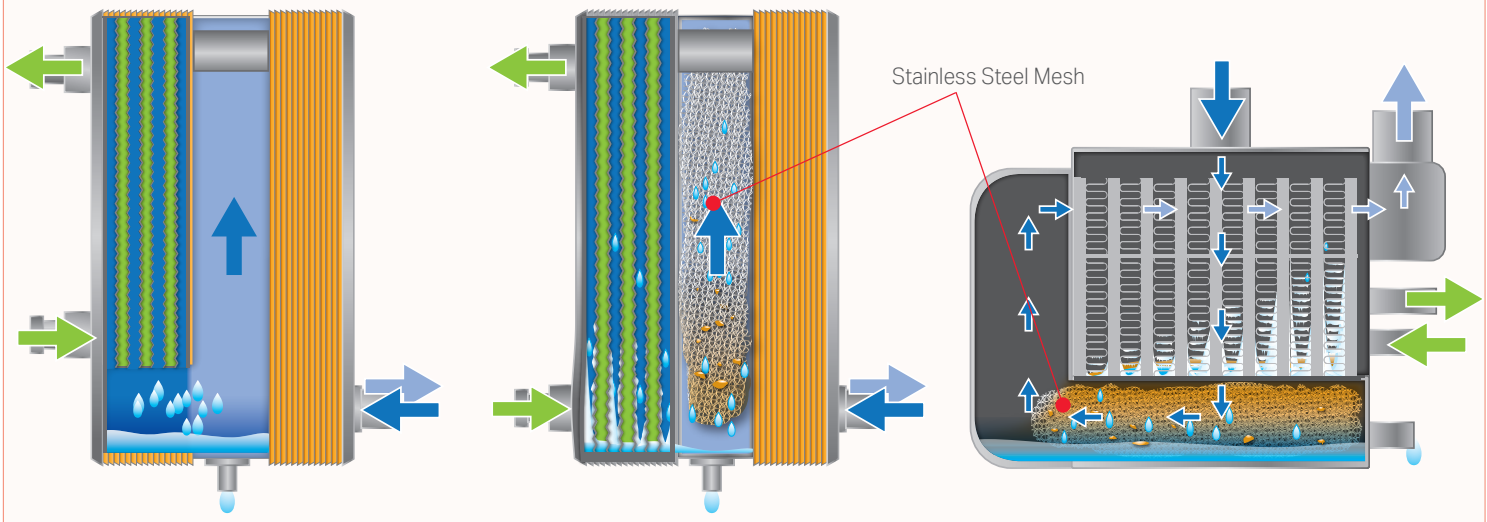
R Type Refrigerant Heat Recovery A Series Heat Exchanger System Diagram



KAORI A series Compared with Other 3-In-1 Heat Exchangers

	KAORI A series	Other brand 3-in-1	Aluminum Heat Exchanger
Size	**Small**	Small	Large
Material	**Stainless Steel**	Stainless Steel	Aluminum
Life	**Longer**	Shorter	Short
Pressure	**High**	High	Low
Air Inlet Temp.	**High**	High	Low
Air Compressor Power	**200HP**	50HP	Under 500HP (Complicated Structure)
Separating Methods	**Combined Separator, No Clogging**	With Mesh, Easy Clog	With Mesh, Easy Clog
Built-In Mesh	**None**	Yes	Yes
Clogging Potential	**None**	High	High
Internal Air Leakage Test	**Yes**	None	None

Structure Comparison Diagram



KAORI A series | Other brand 3-in-1 Heat Exchanger | Aluminum 3-in-1 Heat Exchanger

With KAORI exclusive designed separator, moisture and compressed air are effectively separated by gravity and centrifugal force, with exclusive non-mesh design could efficiently avoid the ice or oil clogging problems and extend the usage life.

Other brand 3-in-1 BPHE, and aluminum heat exchangers are built with a mesh to separate water vapor from compressed air. Although high density mesh could reduce the size of separator, but the built-in mesh have a high-potential clogging problems (oil or foreign objects), as a result, air drying capacity will decrease as the usage time increases.

- **Unique Design Separator**

  KAORI's distinct non-mesh design separator has advantages of lower pressure drop, clogging free, maintenance free, and longer service life than other heat exchangers.
- **Oil Blockage Free**

  Patented plate design of evaporator, shorten the flow path of refrigerant by 30%, with the smooth surface of SUS 304, KAORI can prevent lubricant oil residual which happens frequently in aluminum plate fin heat exchangers.
- **No Ice Blockage**

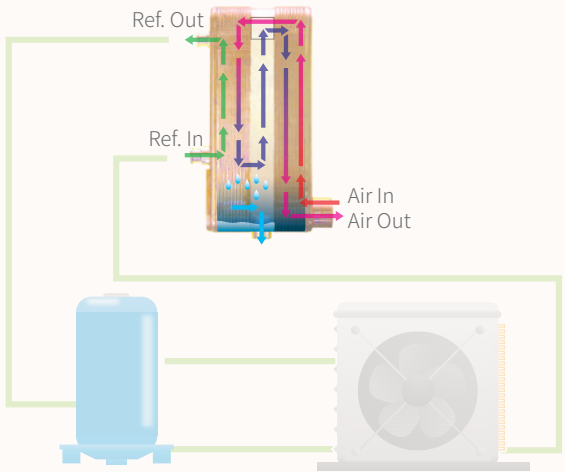
  With KAORI patented plate design of evaporator, condensed water will not remain on the plates, but directly enters to a separation space of the evaporator, which effectively reduce the risk of ice blockage.
- **Equipped with Patented Leakage Testing Connector**

  Leading and multinational patent technology, exclusively ensures excellent quality of KAORI 3-in-1 brazed plate heat exchanger.

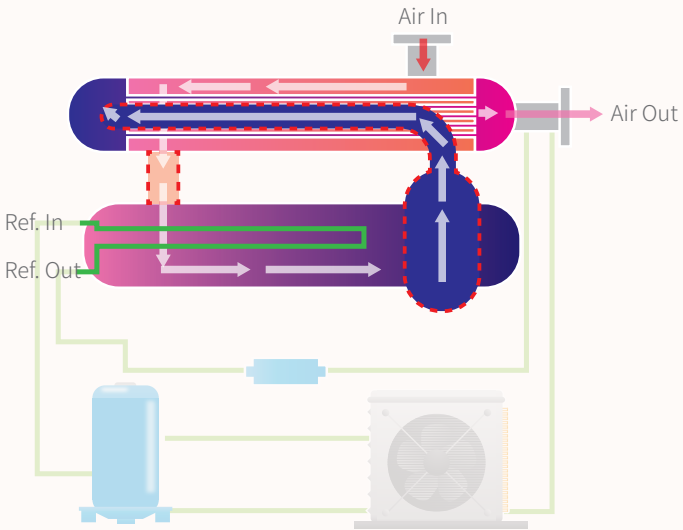
KAORI A Series Compared with Shell & Tube Heat Exchangers

	KAORI A series	Shell & Tube
Size	Smaller	2 Times Bigger Than A Series
Weight	Light	Heavy
Tubing	Easy	Complicated
Labor Cost	Low	High
Material	Stainless Steel	Iron / Stainless Steel
Life	Long	Short / Long
Working Pressure	High	High
Inlet Air Temp.	High	Low
Dew Point Temp.	Low	High
Internal Air Leakage Test	Yes	None

KAORI A Series



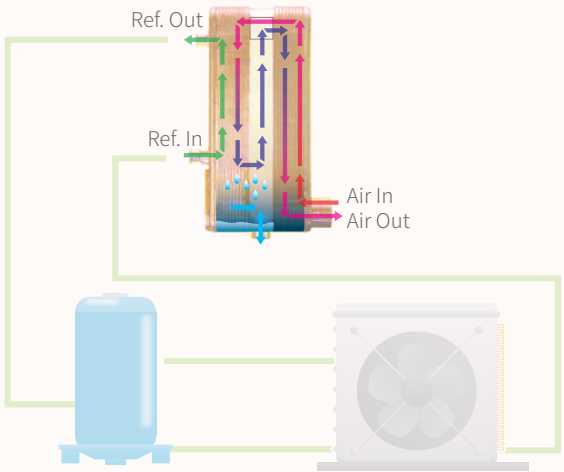
Shell & Tube Heat Exchanger



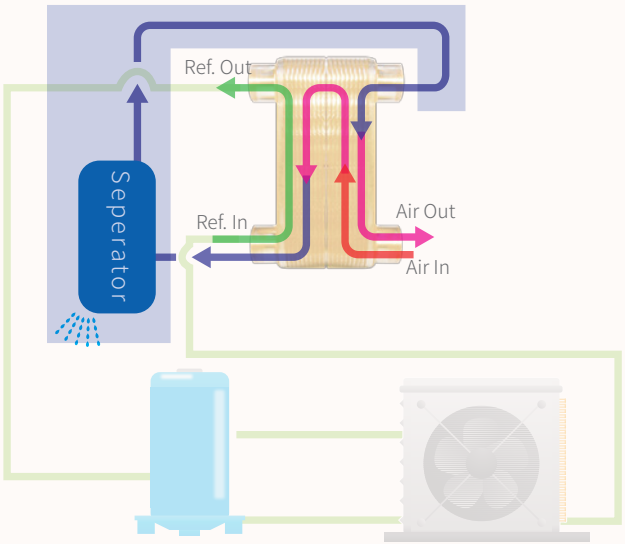
KAORI A Series Compared with Other 2-In-1 Heat Exchangers

	KAORI A series	2-in-1 heat exchangers
Size	**Small**	Larger
Weight	**Light**	Light
Piping	**Easy**	Complicated
Labor Cost	**Low**	High
Material	**Stainless Steel**	Stainless Steel
Life	**Long**	Long
Pressure	**High**	High
Air Inlet Temp.	**High**	High
Pressure Drop	**Lower**	Higher
Dew Point Temp.	**Low**	Low
Air Compressor Horse Power	**200HP**	200HP
Separating Method	**Combined Separator No Clogging**	External Demand
Internal Air Leakage Test	**Yes**	None

KAORI A Series



2-In-1 Heat Exchanger



KAORI A series is an easy tubing heat exchanger which combined with a separator, as long as you connect the air inlet/outlet connectors, it's ready for use in your operation.

2-in-1 heat exchanger need to connect with an external separator, more complicated tubing, and expend more on labor cost.

Air Compressor Heat Recovery System BPHE (K200)

High Efficiency Heat Recovery

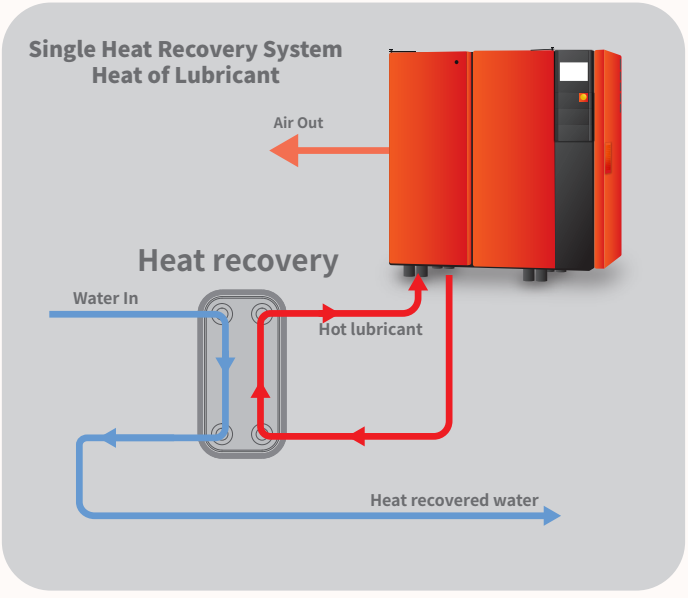
Recovery Hot Water Up to 149°F

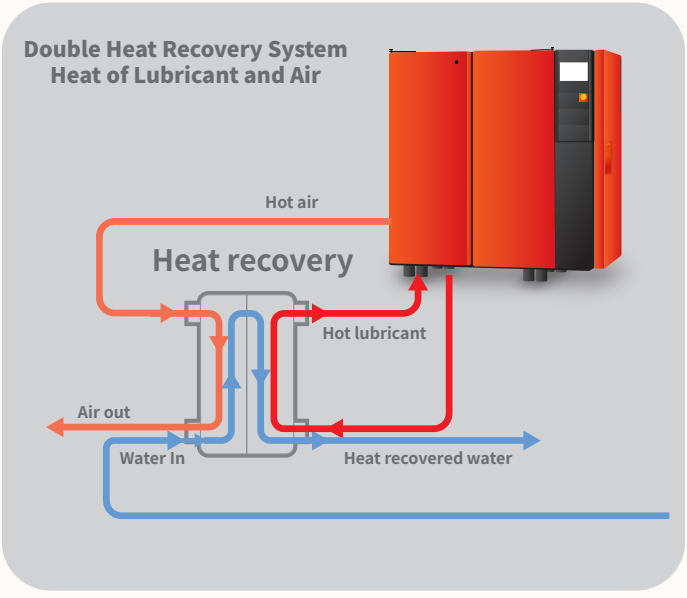
Special Designed Loop Small Size, Easy Installation

Saving Air Compressor Life, Environmental Friendly

During the compressing process of air compressor, it discharges high temperature air and high temperature lube oil. With the special loop of KAORI K200, hot air and lube oil can efficiently exchange temperature with water. As a result, the heat of compression can be recovered for hot water use in your application.

Air Dryer's Heat Recovery System Drawing

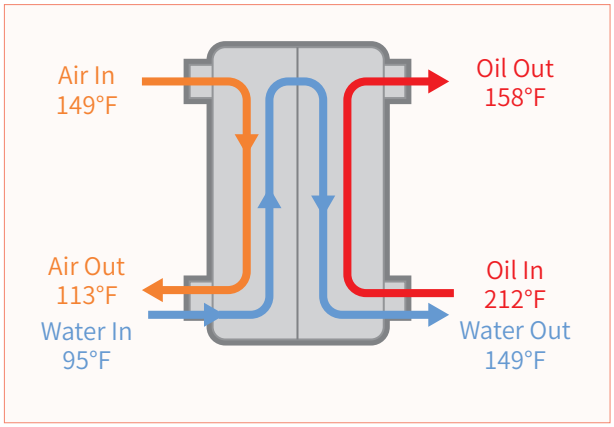




Air Compressor Double Heat Recovery System Selection Table (Air + Oil)

During the compression process of an air compressor, the shaft power will be converted to thermal energy, then this heat energy will be taken away by circulating oil and compressed air. In general, the recyclable heat from air compressor is about 75%, while the remaining will be discharged into atmosphere.

In the oil-flooded compressor, the circulating oil accounts 80~90% of heat energy, and the compressed air accounts about 10~20%, in addition, the circulating oil can reach up to 212°F. By the advantage of KAORI multi-pass plate heat exchanger, the application water can be recovered to 149°F, it can be applied directly to your operations .



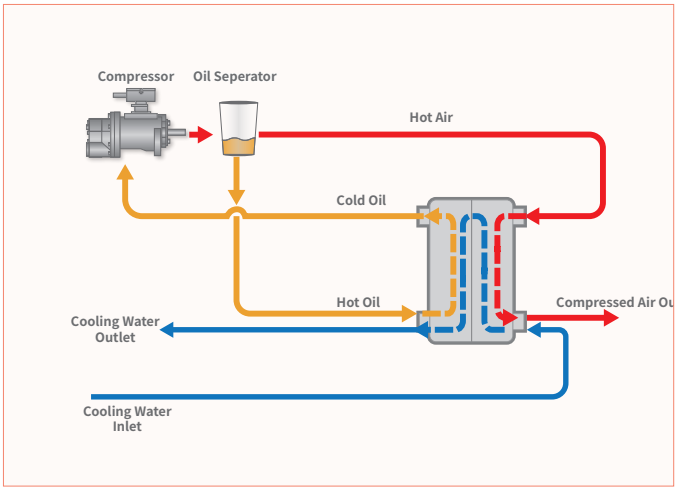
Specification	Unit	Capacity					
Air Compressor	HP	150	200	250	300	400	500
Power	kW	112.5	150	187.5	225	300	375
Heat Recovery	%	75	75	75	75	75	75
Efficacy	kW	84.4	112.5	140.6	168.8	225.0	281.3
Model		**K200-44-24**	**K200-60-32**	**K200-80-40**	**K200-110-50**	**K210-150* K200-64 ***	**K210-210* K200-80 ***
Water Inlet Temp.	°F	95	95	95	95	95	95
Water Outlet Temp.	°F	149	149	149	149	149	149
Flow Rate	GPM	10.62	14.16	17.70	21.24	28.30	35.38
Air Cooler Plates		**44**	**60**	**80**	**110**	**K210-150**	**K210-210**
Air Pressure	psiG	101.5	101.5	101.5	101.5	101.5	101.5
Air Inlet Temp.	°F	149	149	149	149	149	149
Air Outlet Temp.	°F	113	113	113	113	113	113
Air Recovery Rate	kW	8.4	11.3	14.1	16.9	22.5	28.1
Air Side Pressure Drop	psi	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
Oil Condenser Plates		**24**	**32**	**40**	**50**	**K200-64**	**K200-80**
Oil Type		VG68	VG68	VG68	VG68	VG68	VG68
Oil Inlet Temp	°F	212	212	212	212	212	212
Oil Outlet Temp	°F	158	158	158	158	158	158
Oil Recovery Rate	kW	75.9	101.3	126.6	151.9	202.5	253.1

* Models above 400HP have different oil/ air condenser.
* Single heat recovery heat exchanger model could be selected base on different working conditions.

Oil Cooler/ After Cooler Application for Air Compressor

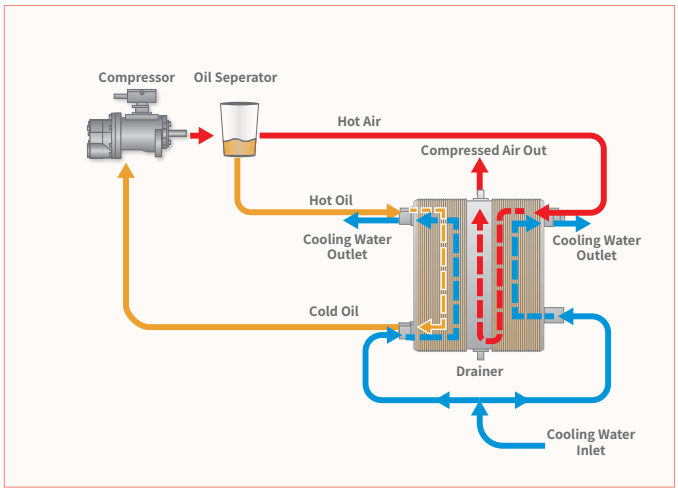
Oil Injection Screw Compressor Cooling System

During the compressing process of oil injection screw compressor, it discharges hot air & hot lube oil to the oil separator, the hot air and hot lube oil separately enter into different inlet of plate heat exchanger to exchange heat with water, by recovering heat from the compression, water becomes hot, and ready for use.



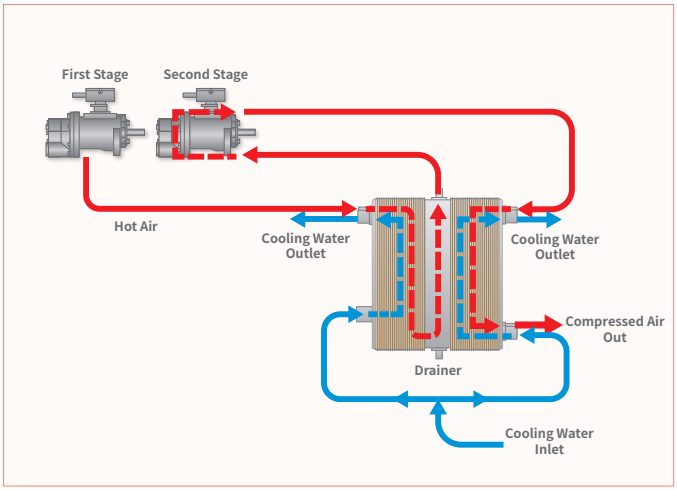
Oil Injection Screw Compressor Cooling System (Include Drain Separator)

During the compressing process of oil injection screw compressor, it discharges hot air & hot lube oil to the oil separator, the hot air and hot lube oil separately enter into different inlet of plate heat exchanger to exchange heat with water. Next, while lube oil goes back to air compressor, the compressed air keeps moving to the separator to remove moisture from it. After all, you can cool down the circulating oil, the compressed air, and separate moistures from air with KAORI single 3-in-1 heat exchanger



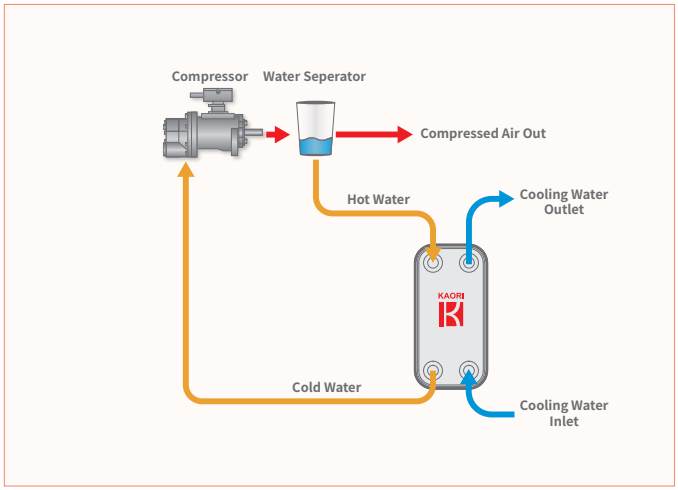
Oil Free Screw Cooling System Intercooler Include Drain

To achieve higher capacity, oil free screw compressor uses two stages to compress air. After the first compressing stage, air enters plate heat exchanger to process the first cooling and moisture separation, then goes back to air compressor for the second stage. After the second compressing stage, it re-enters into plate heat exchanger to be cooled down to the applicable temperature.



Water Lubricated Screw Compressor Cooling System

Water cycle oil less compressor transfers heat to its internal lubricate water during the compression. To prevent temperature of water goes too high, and to extend compressor's life, plate heat exchanger can cool the internal circulating water through external low temperature water with higher efficiency and we ensure that these won't mix with each other.



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