Brazed plate heat exchangers

Greater efficiency. Longer lifecycle.

Compact condensers, evaporators, economizers/ subcoolers, desuperheaters and oil coolers

2022

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About Alfa Laval

Global strength. Local commitment.

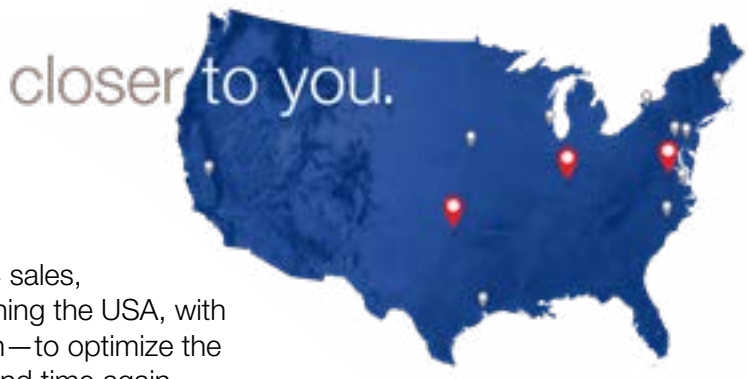
Alfa Laval is the world leader in heat transfer, separation and fluid handling. Since 1883, we've been committed to serving our customers with product innovations that create better everyday conditions for people.

- 17,000 employees
- More than 40 major production units
- Supporting customers in nearly 100 countries

Alfa Laval in the USA

For more than 130 years, Alfa Laval in the USA has been dedicated to bringing our global innovations to the local market.

- Separation technology since 1885
- Heat transfer technology added in the 1930's
- Fluid handling technology included in the 1960's



Today, Alfa Laval is closer to you than ever with 14 sales, manufacturing, service and distribution sites spanning the USA, with 1,055 employees dedicated to fulfilling our mission—to optimize the performance of our customers' processes. Time and time again.

Brazed plate heat exchangers

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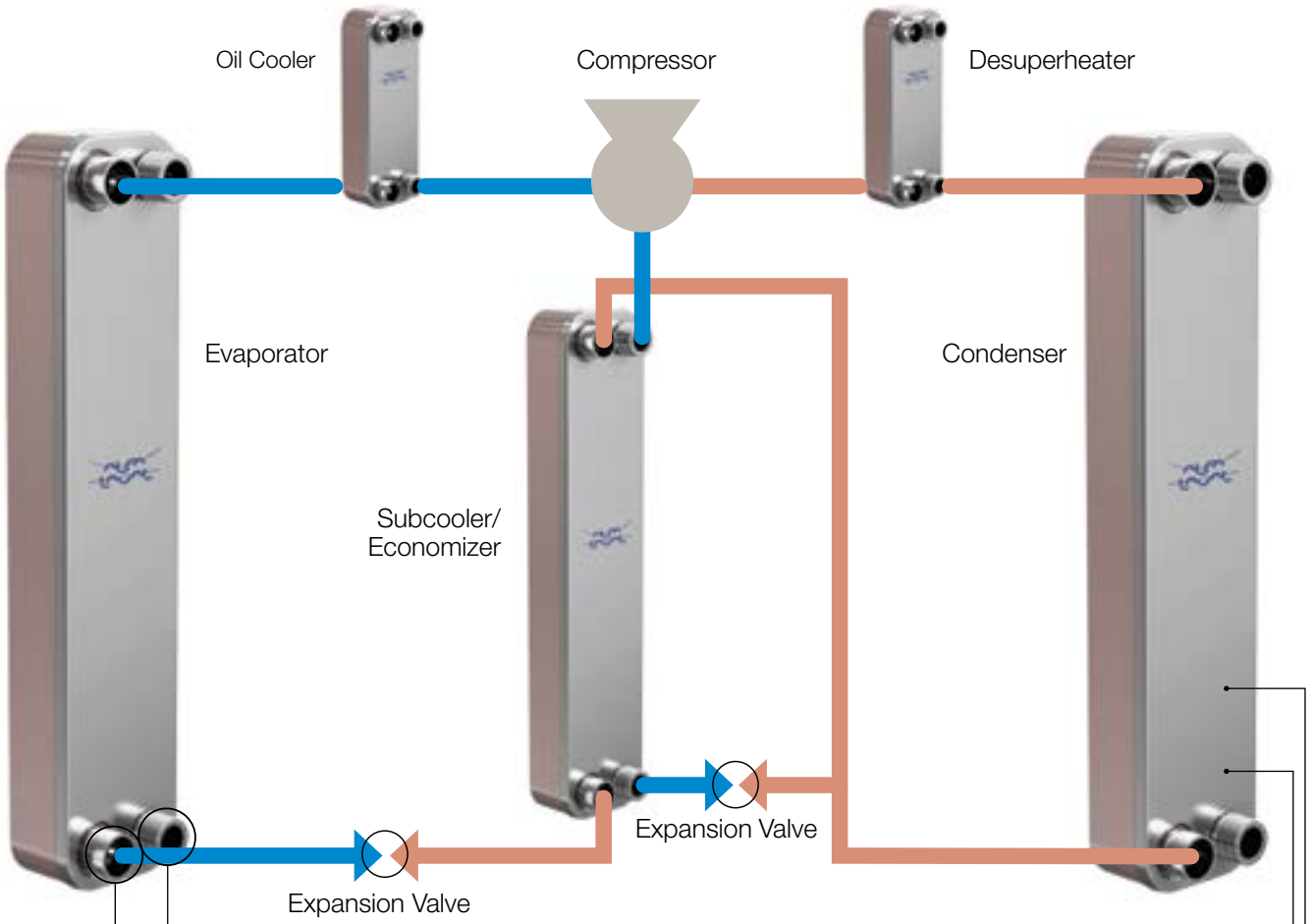


DynaStatic™
Flexible refrigerant distribution

IceSafe
Controlled, non-destructive freezing

REFuture™
A future-proof investment for tomorrow's refrigerants

AlfaNova®
100% stainless steel units available

PressureSecure
Unparalleled strength for demanding duties

FlexFlow™
Superior thermal performance

Construction of a brazed plate heat exchanger

The first Alfa Laval brazed plate heat exchangers (BHEs) were developed in the seventies. Today they are well-established components in refrigeration systems due to their compactness, durable designs, ease of installation and cost efficient operation.

Material

The brazed plate heat exchanger (BHE) consists of thin corrugated stainless steel plates vacuum brazed together using copper as the brazing material.

Design

Brazing the stainless steel plates together eliminates the need for sealing gaskets and thick frame plates. As well as holding the plates together at their contact points, the brazing material seals the package. Alfa Laval's BHEs are brazed at all contact points, ensuring optimal heat transfer efficiency and pressure resistance. The plates are designed to provide the longest possible lifetime.

Since virtually all surfaces of the brazed plate heat exchanger actively contribute to heat transfer, the BHE is very compact in size, and it has a low weight and a low hold-up volume.

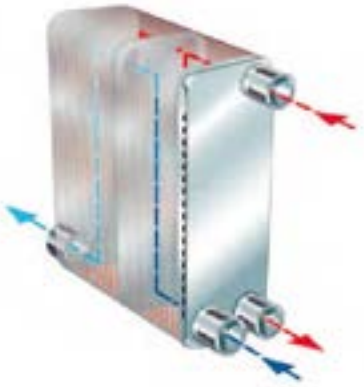
Alfa Laval offers a wide range of standard heat exchanger models and sizes, tailor-made for a wide scope including refrigeration applications. Standard configurations are available from stock and customer-specific designs are available on request.

Flow principle

The basic flow principle in a brazed plate heat exchanger for refrigeration applications is parallel or diagonal flow to achieve the most efficient heat transfer process.

In a single pass design, all connections are located on one side of the heat exchanger, making installation very easy.

Multipass design and different types of connections are available. Optionally, the location of connections can be chosen.



Evaporator, showing flow principle.

Flow principle in Evaporator design The channels formed between the corrugated plates and corners are arranged so that the two media flow through alternate channels, always in opposite directions (counter current flow).

The two phase refrigerant (vapour and liquid) enters the bottom left of the exchanger with a vapour quality depending on the operating condition of the plant. Evaporation of the liquid phase takes place inside the channels and some degrees of superheat are always requested, which is the reason why the process is called "dry expansion".

In the illustration of an evaporator the dark and light blue arrows show the location of the refrigerant connections. The water (brine) to be cooled flows counter current in the opposite channel; the dark and light red arrows show the location of the water (brine) connections.

Flow principle in Condenser design

The main components are the same as for the evaporator. The refrigerant enters at top left of the exchanger as hot gas and starts to condense on the surface of the channels until fully condensed, and is then slightly subcooled. The process is called "free condensation".

In the illustration of a condenser the light and dark blue arrows show the location of the brine connections.

The refrigerant flows counter current in the opposite channel and is cooled. The light and dark red arrows indicate the locations of the refrigerant connections.

The brazed heat exchanger – less is more

The brazed plate heat exchanger is the most compact heat exchanger on the market today. Its high heat transfer efficiency in combination with its compact design equals a compact heat exchanger for a wide range of heating, cooling, evaporating and condensing duties.

The brazed heat exchanger consists of thin corrugated stainless steel plates brazed together with copper to form a self-contained unit. Brazing the plates together eliminates the need for a frame, gaskets, bolts and the carrying bar. The result is a heat exchanger that costs less, weighs less, holds less refrigerant and takes up less space.

Product nomenclature

- Brazed, Fusion-bonded and Gas-to-Liquid plate heat exchangers

Generally, but not necessarily:
AC: Capacity (kW)
Other products:
Heat transfer area

Only for AC:
6 hole units:
DQ or EQ=Double or Single ref circuit
4 hole units:
EQ or X=Integrated ref distributor
Note! The unit may include a ref distributor even if without EQ or X.

Brazed plate heat exchangers (BHE)
AC=AlfaChill
AXP=Alfa X-treme Pressure
CB=Copper brazed for general purpose
CBAQ= AHRI certified
CBDW=Double wall
Fusion-bonded plate heat exchangers (FHE)
AlfaNova=Fusion-bonded for general purpose
AXP AN=Alfa X-treme pressure AlfaNova

AC232 DQ-54H
CBH60-80AH

Number of plates

H or HP = High Pressure
K = High pressure, dedicated to R32
P = "Plus" Pressure, dedicated to CO_2
XP = Extra high pressure, dedicated to CO_2

Channel type:
H, L, M – Symmetric channels
A, AH, AM – Asymmetric channels

Basic refrigeration cycle

The function of the refrigeration plant is to remove heat from a process fluid or air at a low temperature and transfer to a recipient fluid such as water or air.

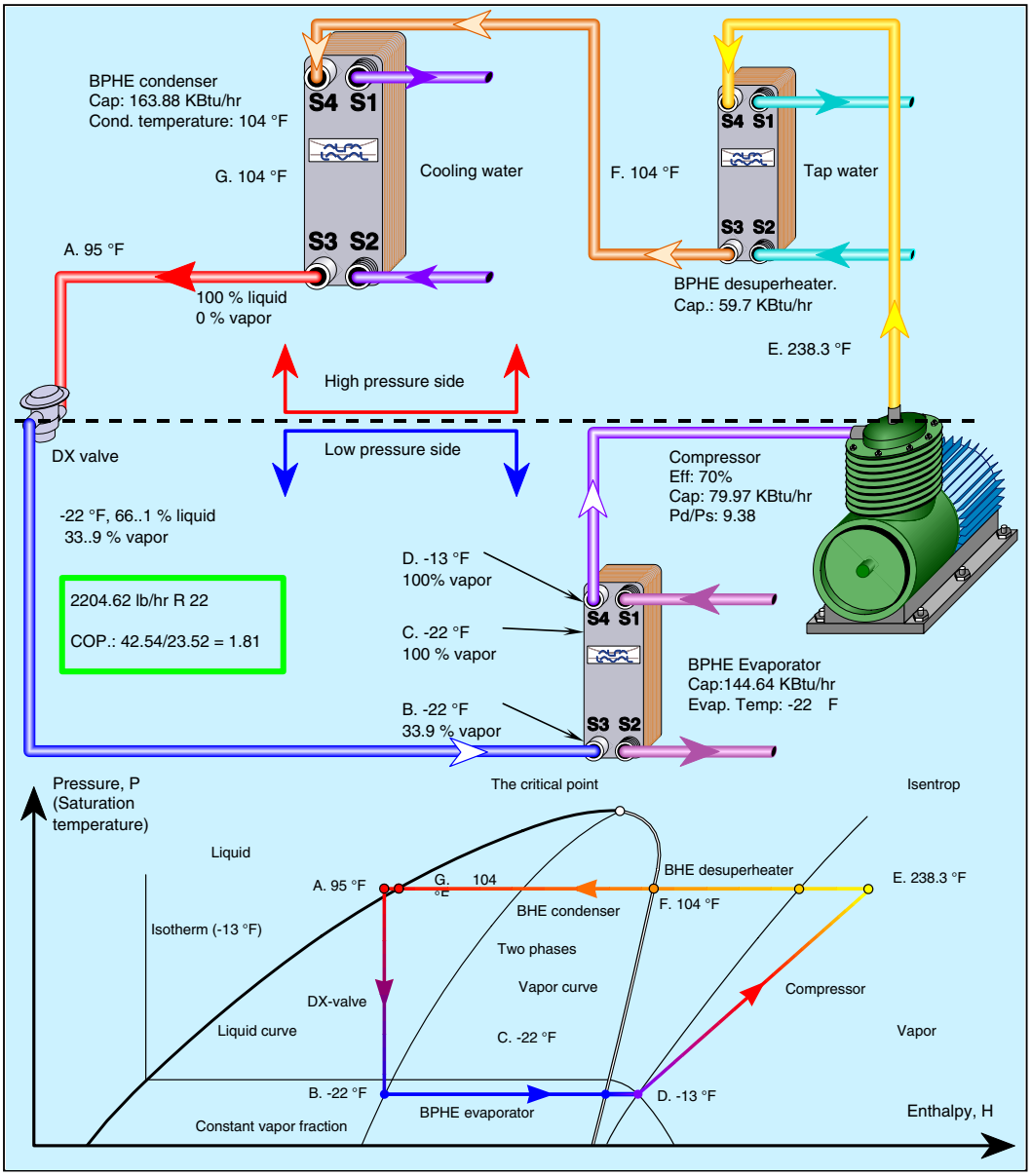
The figure shows a schematic cooling plant, composed of an evaporator, a compressor, a condenser, an expansion device and connecting pipes. These are the minimum components necessary in the basic compression refrigeration cycle.

The pressure is shown as a function of the enthalpies of liquid and vapor. To the left of the liquid line is liquid and to the right of the vapor line, vapor. Between the two lines is a two-phase area. The lines meet at the critical point.

Other properties can then be plotted as parameters, e.g. isotherms, lines of constant temperature. In the figure, the -13 °F isotherm is shown. It is almost vertical in the liquid area, mirroring the fact that the liquid specific heat is little pressure dependent. In the vapor area it is curved and inclined, i.e. the vapor specific heat is strongly pressure (and temperature) dependent.

The figure also shows an isentrop, a line expressing a change of state, but where no heat energy is exchanged between the fluid and the surroundings. An ideal compression would follow this line (D - E'), but because of the inevitably released friction energy, a real compression is (D - E), i.e. to a higher final temperature.

DX Evaporators/Chillers



DX Evaporators/Chillers - single circuit

Agency Code Approval: UL, CRN
Product Specification: Refer to Product Data Sheet section for details
Construction: Stainless Steel Plates & Connections
Selection Notes: Units sized based on the following conditions of service

- Nominal tons: 12,000 BTUH/ton
- 54°F Entering Water Temperature (EWT)
- 44°F Leaving Water Temperature (LWT)
- 35°F Evaporating Temperature
- 104°F Condensing Temperature
- 9°F Subcooling Termperature
- 8°F Superheat
- 2.4 GPM/ton

Nominal Tons (R410A)	Nominal Tons (R22)	Denomination	Part Number	Ref Inlet/Outlet (S3,S4)		Fluid Inlet/Outlet (S1,S2)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
0.75	0.5	ACH18-10H-F	3287130117	3/8" Sweat	5/8" Sweat	5/8" Sweat	2.89	12.4	0.85	Stud bolts
1	1	ACH-30EQ-10H-F	3287084893	3/8" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	0.95	Stud bolts
2	2	ACH-30EQ-20H-F	3287084894	3/8" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	1.55	Stud bolts
4	3.5	ACH-30EQ-30H-F	3287084895	1/2" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	2.1	Stud bolts
5	5	ACH-30EQ-40H-F	3287084896	1/2" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	2.7	Stud bolts
6	6	ACH-30EQ-50H-F	3287084897	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	3.7	12.8	3.3	Stud bolts
7.5	7	ACH-30EQ-60H-F	3287084898	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	3.7	12.8	3.9	Stud bolts
3.5	3	ACH-70X-14M-F	3287126488	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	1.7	Stud bolts
5	4	ACH-70X-18M-F	3287126487	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.1	Stud bolts
6	5	ACH-70X-22M-F	3287083717	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.4	Stud bolts
7	6	ACH-70X-26M-F	3287083718	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.8	Stud bolts
8	7	ACH-70X-32M-F	3287083719	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	3.3	Stud bolts
10	9	ACH-70X-42M-F	3287083720	5/8" Sweat	1-3/8" Sweat	1-1/8" Sweat	4.4	20.7	4.2	Stud bolts
12	10	ACH-70X-50M-F	3287083721	5/8" Sweat	1-3/8" Sweat	1-1/8" Sweat	4.4	20.7	5	Stud bolts
15	12.5	ACH-70X-62M-F	3287083723	5/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	6.1	Stud bolts
15	12.5	ACH-70X-62M-F	3287141326	5/8" Sweat	1-5/8" Sweat	1-5/8" Sweat	4.4	20.7	6.1	Stud bolts
18	15	ACH-70X-78M-F	3287083725	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	7.5	Stud bolts
22	16.5	ACH-70X-90M-F	3287083726	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	8.6	Stud bolts
25	18	ACH-70X-100M-F	3287083727	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	10.4	Stud bolts
25	18	ACH-70X-100M-F	3287141327	7/8" Sweat	1-5/8" Sweat	1-5/8" Sweat	4.4	20.7	10.4	Stud bolts
16	10.5	ACH220EQ-30AM-F	3287155302	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	3.06	Stud bolts
30	20	ACH220EQ-56AM-F	3287156485	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	5.17	Stud bolts
40	25	ACH220EQ-70AM-F	3287155309	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	6.31	Stud bolts
50	30	ACH220EQ-86AM-F	3287155310	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	7.61	Stud bolts
55	35	ACH220EQ-100AM-F	3287155311	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	8.74	Stud bolts
65	42	ACH220EQ-116AM-F	3287155312	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	10	Stud bolts
75	50	ACH220EQ-140AM-F	3287155313	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	11.98	Stud bolts
80	55	ACH220EQ-168AM-F	3287155314	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	14.25	Stud bolts
50	50	ACH-500EQ-70H-F	3287084411	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	7.7	Feet
60	60	ACH-500EQ-80H-F	3287084412	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	8.7	Feet
75	75	ACH-500EQ-100H-F	3287084414	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	10.8	Feet
100	80	ACH-500EQ-130H-F	3287084415	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	13.8	Feet

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

DX Evaporators/Chillers - dual circuit

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service except for model ***ACH24D0DQ-"X-"AH-F*** which was rated at 39°F Evaporating Temperature

- Nominal tons: 12,000 BTUH/ton
- 54°F Entering Water Temperature (EWT)
- 44°F Leaving Water Temperature (LWT)
- 35°F Evaporating Temperature
- 104°F Condensing Temperature
- 9°F Subcooling Termperature
- 8°F Superheat
- 2.4 GPM/ton

Nominal Tons (R410A)	Nominal Tons (R22)	Denomination	Part Number	Ref Inlet/Outlet (S3,S4)		Fluid Inlet/Outlet (S1,S2)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
15	8	ACH232DQ-30H-F	3075019821	7/8" Sweat	1-1/8" Sweat	2" Victualic Clamp	9.8	19.3	3.04	Stud bolts
25	15	ACH232DQ-50H-F	3075019823	7/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	9.8	19.3	4.72	Stud bolts
40	25	ACH232DQ-70H-F	3075019824	7/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	9.8	19.3	6.4	Stud bolts
50	33	ACH232DQ-90H-F	3075019820	7/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	9.8	19.3	8	Stud bolts
60	40	ACH232DQ-110H-F	3075019825	1-1/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	9.8	19.3	9.77	Stud bolts
70	55	ACH232DQ-138H-F	3075019826	1-1/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	9.8	19.3	12.1	Stud bolts
80	68	ACH232DQ-170H-F	3075019827	1-1/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	9.8	19.3	14.8	Stud bolts
85	80	ACH232DQ-202H-F	3075019828	1-1/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	9.8	19.3	17.5	Stud bolts
15	N/A	***ACH-240DQ-42AH-F***	3075004364	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	4	Stud bolts
20	N/A	***ACH-240DQ-50AH-F***	3075004365	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	4.68	Stud bolts
30	N/A	***ACH-240DQ-70AH-F***	3075004366	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	6.36	Stud bolts
38	N/A	***ACH-240DQ-90AH-F***	3075004368	5/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	11.3	20.7	8	Stud bolts
45	N/A	***ACH-240DQ-110AH-F***	3075004369	5/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	11.3	20.7	9.72	Stud bolts
55	N/A	***ACH-240DQ-138AH-F***	3075004370	5/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	11.3	20.7	12	Stud bolts
70	N/A	***ACH-240DQ-170AH-F***	3075004371	5/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	11.3	20.7	14.75	Stud bolts
85	N/A	***ACH-240DQ-202AH-F***	3075004372	5/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	11.3	20.7	17.4	Stud bolts
115	65	ACH502DQ-102AH-F	3075015516	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	10.59	Feet
140	80	ACH502DQ-126AH-F	3075015517	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	12.97	Feet
165	100	ACH502DQ-150AH-F	3075015518	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	15.35	Feet
185	115	ACH502DQ-170AH-F	3075015519	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	17.3	Feet
200	130	ACH502DQ-190AH-F	3075015522	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	19.3	Feet
210	145	ACH502DQ-222AH-F	3075015521	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	22.5	Feet
140	80	ACH502DQ-126AH-F	3075015517	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	12.97	Feet
165	100	ACH502DQ-150AH-F	3075015518	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	15.35	Feet
185	115	ACH502DQ-170AH-F	3075015519	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	17.3	Feet
200	130	ACH502DQ-190AH-F	3075015522	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	19.3	Feet
210	145	ACH502DQ-222AH-F	3075015521	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	22.5	Feet

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Basic refrigeration cycle

The function of the refrigeration plant is to remove heat from a process fluid or air at a low temperature and transfer to a recipient fluid such as water or air.

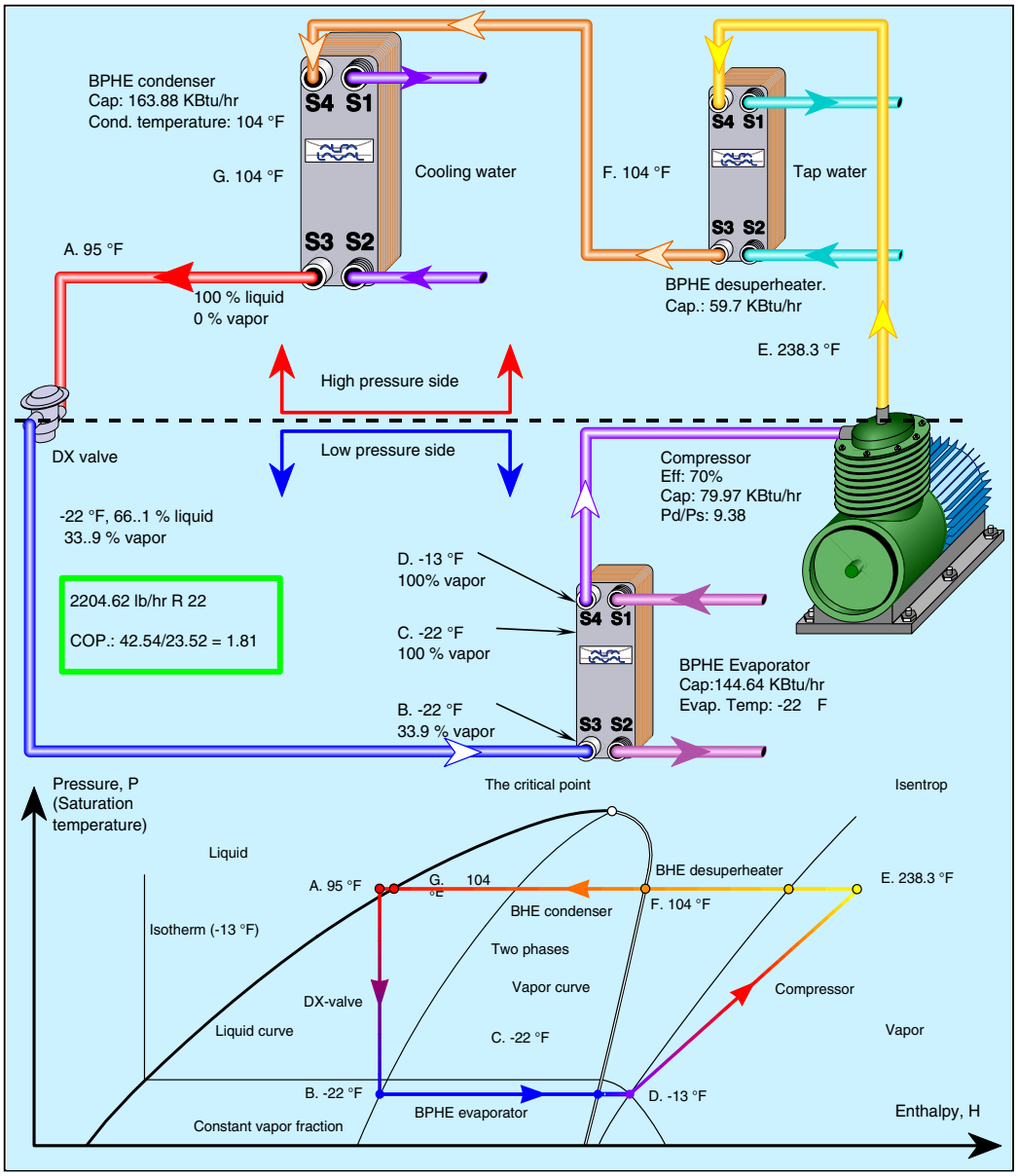
The figure shows a schematic cooling plant, composed of an evaporator, a compressor, a condenser, an expansion device and connecting pipes. These are the minimum components necessary in the basic compression refrigeration cycle.

The pressure is shown as a function of the enthalpies of liquid and vapor. To the left of the liquid line is liquid and to the right of the vapor line, vapor. Between the two lines is a two-phase area. The lines meet at the critical point.

Other properties can then be plotted as parameters, e.g. isotherms, lines of constant temperature. In the figure, the -13 °F isotherm is shown. It is almost vertical in the liquid area, mirroring the fact that the liquid specific heat is little pressure dependent. In the vapor area it is curved and inclined, i.e. the vapor specific heat is strongly pressure (and temperature) dependent.

The figure also shows an isentrop, a line expressing a change of state, but where no heat energy is exchanged between the fluid and the surroundings. An ideal compression would follow this line (D - E´), but because of the inevitably released friction energy, a real compression is (D - E), i.e. to a higher final temperature.

Water-cooled condensers



Water-cooled condensers - single circuit

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Nominal tons: 15,000 BTUH/ton
- 85°F Entering Water Temperature (EWT) If EWT is 75°F, multiply the capacity of the selected unit
- 95°F Leaving Water Temperature (LWT)
- 150°F Inlet Vapor Temperature
- 115°F Condensing Temperature
- 3 gpm/ton

Nominal Tons (R410A)	Nominal Tons (R22)	Denomination	Part Number	Ref Inlet/Outlet (S3,S4)		Fluid Inlet/Outlet (S1,S2)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
1	0.5	ACH18-10H-F	3287130117	3/8" Sweat	5/8" Sweat	5/8" Sweat	2.89	12.4	0.85	Stud bolts
1	0.75	CBH30-12H	3075018618	5/8" Sweat	5/8" Sweat	5/8" Sweat	4.4	12.3	1.6	Stud bolts
1.5	1.5	CBH30-18H	3075018619	7/8" Sweat	7/8" Sweat	7/8" Sweat	4.4	12.3	2.14	Stud bolts
3	2.5	CBH30-24H	3075018620	7/8" Sweat	7/8" Sweat	7/8" Sweat	4.4	12.3	2.69	Stud bolts
4.5	4	CBH30-34H	3287144642	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	12.3	3.6	Stud bolts
5	5	CBH30-44H	3287144643	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	12.3	4.51	Stud bolts
7	6	CBH30-54H	3287144644	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	12.3	5.42	Stud bolts
8	6.5	CBH30-64H	3287144645	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	12.3	6.33	Stud bolts
4	4	CBH60-16H-F	3287103910	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	1.97	Stud bolts
6	6	CBH60-24H-F	3287103911	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.7	Stud bolts
7	7	CBH60-30H-F	3287103912	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	3.25	Stud bolts
9	9	CBH60-40H-F	3287103913	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	4.17	Stud bolts
11	11	CBH60-48H-F	3287103914	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	4.9	Stud bolts
13	13	CBH60-62H-F	3287103915	1-1/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	6.17	Stud bolts
13	10	CBH110-24H	3287133774	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	3	Stud bolts
18	15	CBH110-34H	3287133775	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	4.02	Stud bolts
24	20	CBH110-44H	3287133776	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	5.02	Stud bolts
31	25	CBH110-56H	3287133777	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	6.24	Stud bolts
36	30	CBH110-66H	3287133778	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	7.24	Stud bolts
45	42	CBH110-84H	3287133779	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	9.06	Stud bolts
54	54	CBH110-104H	3287133780	2-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	11.1	Stud bolts
65	50	ACH-500EQ-70H-F	3287084411	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	7.7	Feet
70	60	ACH-500EQ-80H-F	3287084412	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	8.7	Feet
90	75	ACH-500EQ-100H-F	3287084414	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	10.8	Feet
110	100	ACH-500EQ-130H-F	3287084415	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	13.8	Feet

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Water-cooled condensers - dual circuit

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Nominal tons: 15,000 BTUH/ton
- 85°F Entering Water Temperature (EWT) If EWT is 75°F, multiply the capacity of the selected unit
- 95°F Leaving Water Temperature (LWT)
- 150°F Inlet Vapor Temperature
- 115°F Condensing Temperature
- 3 gpm/ton

Nominal Tons (R410A)	Nominal Tons (R22)	Denomination	Part Number	Ref Inlet/Outlet (S3,S4)		Fluid Inlet/Outlet (S1,S2)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
40	N/A	ACH240DQ-42AH-F	3075004364	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	4	Stud bolts
45	N/A	ACH240DQ-50AH-F	3075004365	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	4.68	Stud bolts
50	N/A	ACH240DQ-70AH-F	3075004366	5/8" Sweat	1-3/8" Sweat	2" Victualic Clamp	11.3	20.7	6.36	Stud bolts
65	N/A	ACH240DQ-90AH-F	3075004368	5/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	11.3	20.7	8	Stud bolts
85	N/A	ACH240DQ-110AH-F	3075004369	5/8" Sweat	1-5/8" Sweat	2-½" Victualic Clamp	11.3	20.7	9.72	Stud bolts
90	N/A	ACH240DQ-138AH-F	3075004370	5/8" Sweat	2-1/8" Sweat	2-½" Victualic Clamp	11.3	20.7	12	Stud bolts
120	120	ACH502DQ-126AH-F	3075015517	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	12.97	Feet
140	140	ACH502DQ-150AH-F	3075015518	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	15.35	Feet
150	150	ACH502DQ-170AH-F	3075015519	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	17.3	Feet
160	160	ACH502DQ-190AH-F	3075015522	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	19.3	Feet
170	170	ACH502DQ-222AH-F	3075015521	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	22.5	Feet
160	160	ACH502DQ-190AH-F	3075015522	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	19.3	Feet
170	170	ACH502DQ-222AH-F	3075015521	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.68	29.09	22.5	Feet

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

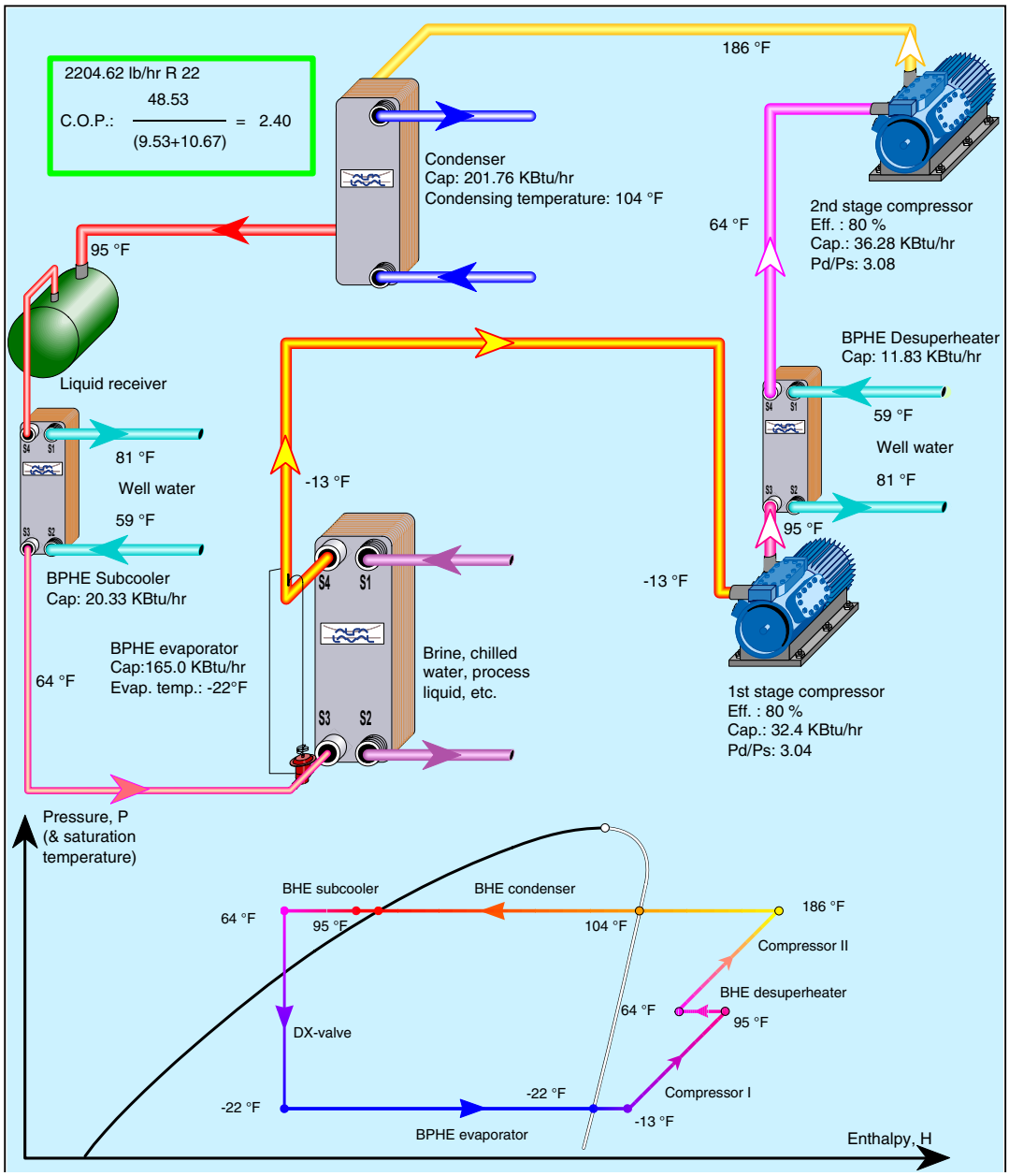
The Economizer/Sub-Cooler refrigeration cycle

This is principally the basic refrigeration cycle, but with a sub-cooler added to the main condenser.

A BPHE condenser is used to de-superheat and condense the refrigerant. The refrigerant leaves condenser at 95°F. It is then further subcooled to 64°F with well water of 59°F in the BPHE. Furthermore, the system efficiency and capacity are enhanced due to these effects.

- The lower temperature to the expansion valve means that less refrigerant has to evaporate in order to reach the evaporation temperature.
- Consequently, more liquid refrigerant is available in the evaporator, and its capacity increases. The increased efficiency of the compressor means that less compressor power is necessary.

The actual performance of the cycle obviously depends on the total required capacity, the efficiency of the compressor for the actual operating conditions, type of condenser and evaporator, availability of water, available space, etc. This kind of refrigeration cycle layout is very useful for low temperature applications such as supermarket and food processing.



Economizer/Sub-Cooler

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Nominal tons: 12,000 BTUH/ton
- Liquid refrigerant subcooled from 100°F to 50°F
- 8°F Superheat
- 35°F Evaporating Temperature
- 104°F Condensing Temperature
- 9°F Subcooling Termperature

Nominal Tons (R22)	Denomination	Part Number	Ref Inlet/Outlet (S3,S4)		Fluid Inlet/Outlet (S1,S2)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
1	ACH-30EQ-10H-F	3287084893	3/8" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	0.95	Stud bolts
2	ACH-30EQ-20H-F	3287084894	3/8" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	1.55	Stud bolts
4	ACH-30EQ-30H-F	3287084895	1/2" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	2.1	Stud bolts
6	ACH-30EQ-40H-F	3287084896	1/2" Sweat	7/8" Sweat	7/8" Sweat	3.7	12.8	2.7	Stud bolts
7	ACH-30EQ-50H-F	3287084897	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	3.7	12.8	3.3	Stud bolts
8	ACH-30EQ-60H-F	3287084898	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	3.7	12.8	3.9	Stud bolts
4	ACH-70X-14M-F	3287126488	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	1.7	Stud bolts
5	ACH-70X-18M-F	3287126487	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.1	Stud bolts
6	ACH-70X-22M-F	3287083717	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.4	Stud bolts
8	ACH-70X-26M-F	3287083718	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.8	Stud bolts
10	ACH-70X-32M-F	3287083719	5/8" Sweat	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	3.3	Stud bolts
12	ACH-70X-42M-F	3287083720	5/8" Sweat	1-3/8" Sweat	1-1/8" Sweat	4.4	20.7	4.2	Stud bolts
15	ACH-70X-50M-F	3287083721	5/8" Sweat	1-3/8" Sweat	1-1/8" Sweat	4.4	20.7	5	Stud bolts
20	ACH-70X-62M-F	3287083723	5/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	6.1	Stud bolts
20	ACH-70X-62M-F	3287141326	5/8" Sweat	1-5/8" Sweat	1-5/8" Sweat	4.4	20.7	6.1	Stud bolts
21	ACH-70X-78M-F	3287083725	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	7.5	Stud bolts
26	ACH-70X-90M-F	3287083726	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	8.6	Stud bolts
30	ACH-70X-100M-F	3287083727	7/8" Sweat	1-3/8" Sweat	1-3/8" Sweat	4.4	20.7	10.4	Stud bolts
30	ACH-70X-100M-F	3287141327	7/8" Sweat	1-5/8" Sweat	1-5/8" Sweat	4.4	20.7	10.4	Stud bolts
15	ACH220EQ-30AM-F	3287155302	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	3.06	Stud bolts
25	ACH220EQ-44AM-F	3287155306	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	4.2	Stud bolts
40	ACH220EQ-70AM-F	3287155309	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	6.31	Stud bolts
45	ACH220EQ-86AM-F	3287155310	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	7.61	Stud bolts
50	ACH220EQ-100AM-F	3287155311	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	8.74	Stud bolts
60	ACH220EQ-116AM-F	3287155312	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	10	Stud bolts
75	ACH220EQ-140AM-F	3287155313	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	11.98	Stud bolts
85	ACH220EQ-168AM-F	3287155314	1-1/8" Sweat	2-1/8" Sweat	2-1/8" Sweat	7.5	24.3	14.25	Stud bolts
50	ACH-500EQ-70H-F	3287084411	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	7.7	Feet
60	ACH-500EQ-80H-F	3287084412	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	8.7	Feet
70	ACH-500EQ-100H-F	3287084414	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	10.8	Feet
90	ACH-500EQ-130H-F	3287084415	1-3/8" Sweat	2-5/8" Sweat	3" Victualic Clamp	12.7	29.1	13.8	Feet

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

General purpose - liquid to liquid cooling

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Side A media: 40% Propylene Glycol
- 35°F Side A Entering Temperature
- 45°F Side A Leaving Temperature
- Side B Media: Water
- 60°F Side B Entering Temperature
- 50°F Side B Leaving Temperature

Cooling Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
9	CBH16-11H	3287120469	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.17	no
12	CBH16-13H	3287119753	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.34	no
17	CBH16-17H	3287119754	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.68	no
18	CB30-10H	3287099216	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
27	CBH16-25H	3287119755	3/4" Male NPT	3/4" Male NPT	2.9	8.2	2.36	no
40	CB30-18H	3287099217	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
55	CB60-20H	3287102155	1" Male NPT	1" Male NPT	4.4	20.7	2.34	Stud bolts
60	CB30-24H	3287099218	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
70	CB110-16L	3287133291	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
85	CB60-30H	3287102156	1" Male NPT	1" Male NPT	4.4	20.7	3.25	Stud bolts
90	CB30-34H	3287099219	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
90	CB110-20L	3287133286	2" Male NPT	2" Male NPT	7.5	24.3	2.61	Stud bolts
105	CB110-16H	3287133276	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
110	CB60-40H	3287102157	1" Male NPT	1" Male NPT	4.4	20.7	4.17	Stud bolts
110	CB110-24L	3287133287	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
120	CB30-44H	3287099220	1" Male NPT	1" Male NPT	4.4	12.3	4.51	Stud bolts
130	CB60-50H	3287102158	1" Male NPT	1" Male NPT	4.4	20.7	5.08	Stud bolts
140	CB30-50H	3287099211	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
155	CB60-60H	3287102159	1" Male NPT	1" Male NPT	4.4	20.7	5.99	Stud bolts
155	CB110-24H	3287133277	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
155	CB110-32L	3287133288	2" Male NPT	2" Male NPT	7.5	24.3	3.81	Stud bolts
160	CB30-60H	3287099210	1" Male NPT	1" Male NPT	4.4	12.3	5.97	Stud bolts
190	CB110-30H	3287133278	2" Male NPT	2" Male NPT	7.5	24.3	3.61	Stud bolts
195	CB60-80H	3287102160	1" Male NPT	1" Male NPT	4.4	20.7	7.82	Stud bolts
215	CB60-100H	3287102161	1" Male NPT	1" Male NPT	4.4	20.7	9.65	Stud bolts
230	CB110-46L	3287133289	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
240	CB110-38H	3287133279	2" Male NPT	2" Male NPT	7.5	24.3	4.42	Stud bolts
300	CB110-46H	3287133280	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
300	CB110-58L	3287133290	2" Male NPT	2" Male NPT	7.5	24.3	6.44	Stud bolts
350	CB110-54H	3287133281	2" Male NPT	2" Male NPT	7.5	24.3	6.03	Stud bolts
390	CB110-76L	3287141403	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
400	CB110-64H	3287133282	2" Male NPT	2" Male NPT	7.5	24.3	7.04	Stud bolts
480	CB110-76H	3287133283	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
540	CB110-90H	3287133284	2" Male NPT	2" Male NPT	7.5	24.3	9.66	Stud bolts
670	CB110-110H	3287133285	2" Male NPT	2" Male NPT	7.5	24.3	11.7	Stud bolts
740	CB110-124H	3287144762	2" Male NPT	2" Male NPT	7.5	24.3	13.1	Stud bolts

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

General purpose - liquid to liquid heating

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- 180°F Side A Entering Temperature
- 160°F Side A Leaving Temperature
- 140°F Side B Entering Temperature
- 160°F Leaving Temperature

Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
10	CB30-10L	3287099365	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
22	CB30-18L	3287099366	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
33	CB30-24L	3287099367	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
50	CB30-34L	3287138993	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
55	CBH16-11H	3287120469	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.17	no
70	CBH16-13H	3287119753	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.34	no
80	CB30-10H	3287099216	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
90	CBH16-17H	3287119754	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.68	no
135	CB60-20H	3287102155	1" Male NPT	1" Male NPT	4.4	20.7	2.34	Stud bolts
160	CB30-18H	3287099217	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
200	CB60-30H	3287102156	1" Male NPT	1" Male NPT	4.4	20.7	3.25	Stud bolts
220	CB30-24H	3287099218	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
240	CB110-16H	3287133276	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
270	CB60-40H	3287102157	1" Male NPT	1" Male NPT	4.4	20.7	4.17	Stud bolts
300	CB30-34H	3287099219	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
300	CB110-16L	3287133291	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
330	CB60-50H	3287102158	1" Male NPT	1" Male NPT	4.4	20.7	5.08	Stud bolts
380	CB30-44H	3287099220	1" Male NPT	1" Male NPT	4.4	12.3	4.51	Stud bolts
380	CB60-60H	3287102159	1" Male NPT	1" Male NPT	4.4	20.7	5.99	Stud bolts
380	CB110-24H	3287133277	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
400	CB110-20L	3287133286	2" Male NPT	2" Male NPT	7.5	24.3	2.61	Stud bolts
430	CB30-50H	3287099211	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
450	CB30-60H	3287099210	1" Male NPT	1" Male NPT	4.4	12.3	5.97	Stud bolts
450	CB30-60H	3287102160	1" Male NPT	1" Male NPT	4.4	20.7	7.82	Stud bolts
480	CB110-30H	3287133278	2" Male NPT	2" Male NPT	7.5	24.3	3.61	Stud bolts
500	CB110-24L	3287133287	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
620	CB110-38H	3287133279	2" Male NPT	2" Male NPT	7.5	24.3	4.42	Stud bolts
700	CB110-32L	3287133288	2" Male NPT	2" Male NPT	7.5	24.3	3.81	Stud bolts
730	CB110-46H	3287133280	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
860	CB110-54H	3287133281	2" Male NPT	2" Male NPT	7.5	24.3	6.03	Stud bolts
1000	CB110-64H	3287133282	2" Male NPT	2" Male NPT	7.5	24.3	7.04	Stud bolts
1000	CB110-46L	3287133289	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
1200	CB110-76H	3287133283	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
1200	CB110-58L	3287133290	2" Male NPT	2" Male NPT	7.5	24.3	6.44	Stud bolts
1400	CB110-90H	3287133284	2" Male NPT	2" Male NPT	7.5	24.3	9.66	Stud bolts
1400	CB110-76L	3287141403	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
1700	CB110-110H	3287133285	2" Male NPT	2" Male NPT	7.5	24.3	11.7	Stud bolts
1800	CB110-124H	3287144762	2" Male NPT	2" Male NPT	7.5	24.3	13.1	Stud bolts

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Domestic heating

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Boiler: 180°F Supply, 150°F Return
- Domestic: 50°F Return, 140°F Supply

Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
110	CBH16-11H	3287120469	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.17	no
130	CBH16-13H	3287119753	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.34	no
170	CBH16-17H	3287119754	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.68	no
240	CBH16-25H	3287119755	3/4" Male NPT	3/4" Male NPT	2.9	8.2	2.36	no
120	CB30-10H	3287099216	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
240	CB30-18H	3287099217	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
330	CB30-24H	3287099218	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
460	CB30-34H	3287099219	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
580	CB30-44H	3287099220	1" Male NPT	1" Male NPT	4.4	12.3	4.51	Stud bolts
650	CB30-50H	3287099211	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
720	CB30-60H	3287099210	1" Male NPT	1" Male NPT	4.4	12.3	5.97	Stud bolts
45	CB30-10L	3287099365	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
100	CB30-18L	3287099366	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
140	CB30-24L	3287099367	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
200	CB30-34L	3287099368	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
300	CB30-50L	3287099369	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
200	CB60-20H	3287102155	1" Male NPT	1" Male NPT	4.4	20.7	2.34	Stud bolts
300	CB60-30H	3287102156	1" Male NPT	1" Male NPT	4.4	20.7	3.25	Stud bolts
400	CB60-40H	3287102157	1" Male NPT	1" Male NPT	4.4	20.7	4.17	Stud bolts
500	CB60-50H	3287102158	1" Male NPT	1" Male NPT	4.4	20.7	5.08	Stud bolts
580	CB60-60H	3287102159	1" Male NPT	1" Male NPT	4.4	20.7	5.99	Stud bolts
670	CB60-80H	3287102160	1" Male NPT	1" Male NPT	4.4	20.7	7.82	Stud bolts
360	CB110-16H	3287133276	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
570	CB110-24H	3287133277	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
700	CB110-30H	3287133278	2" Male NPT	2" Male NPT	7.5	24.3	3.61	Stud bolts
900	CB110-38H	3287133279	2" Male NPT	2" Male NPT	7.5	24.3	4.42	Stud bolts
1100	CB110-46H	3287133280	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
1300	CB110-54H	3287133281	2" Male NPT	2" Male NPT	7.5	24.3	6.03	Stud bolts
1500	CB110-64H	3287133282	2" Male NPT	2" Male NPT	7.5	24.3	7.04	Stud bolts
1800	CB110-76H	3287133283	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
2100	CB110-90H	3287133284	2" Male NPT	2" Male NPT	7.5	24.3	9.66	Stud bolts
2500	CB110-110H	3287133285	2" Male NPT	2" Male NPT	7.5	24.3	11.7	Stud bolts
2800	CB110-124H	3287144762	2" Male NPT	2" Male NPT	7.5	24.3	13.1	Stud bolts
900	CB110-16L	3287133291	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
1200	CB110-20L	3287133286	2" Male NPT	2" Male NPT	7.5	24.3	2.61	Stud bolts
1500	CB110-24L	3287133287	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
2000	CB110-32L	3287133288	2" Male NPT	2" Male NPT	7.5	24.3	3.81	Stud bolts
2700	CB110-46L	3287133289	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
3000	CB110-58L	3287133290	2" Male NPT	2" Male NPT	7.5	24.3	6.44	Stud bolts

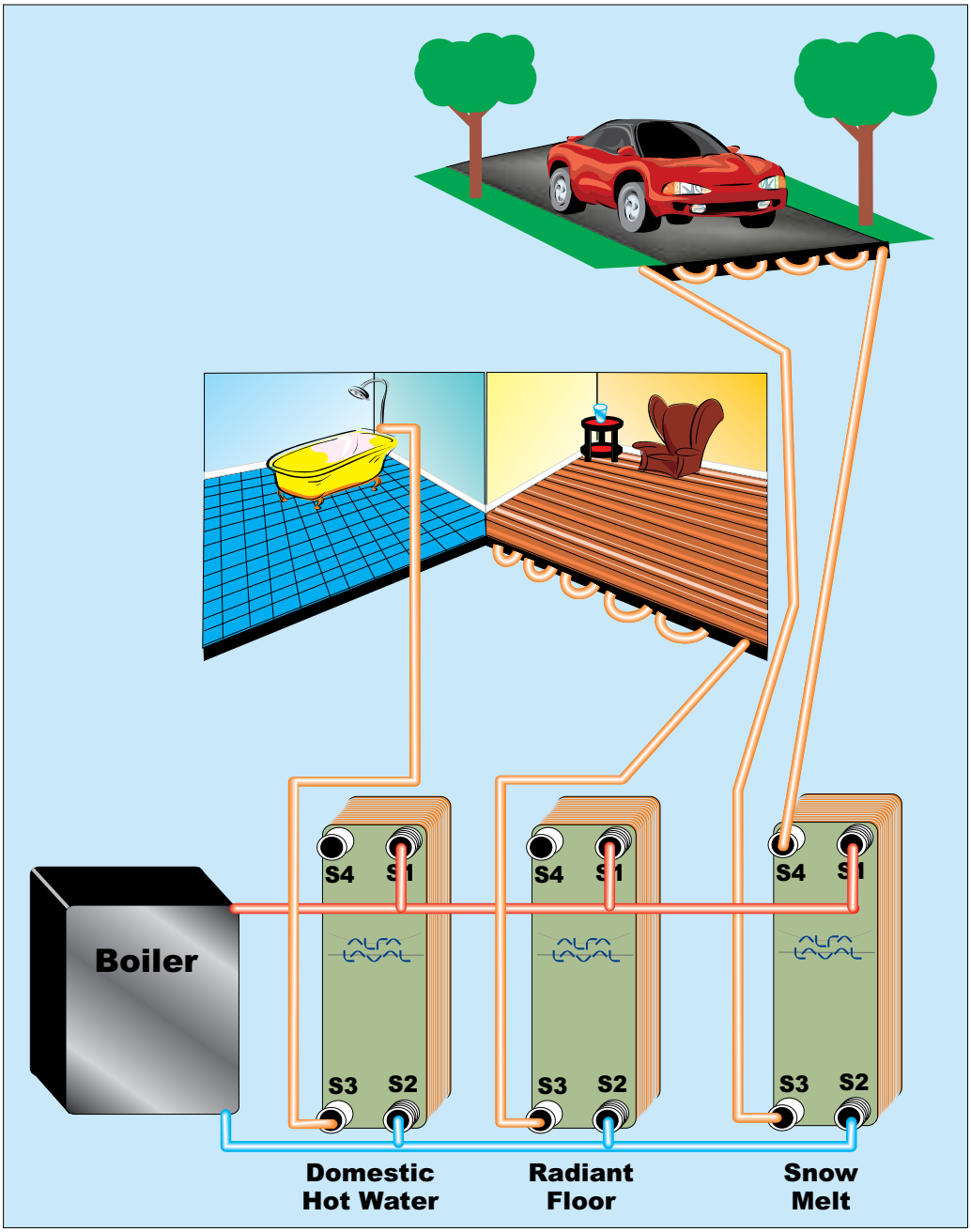
***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Radiant heat & snow melt

The basic heating system illustrated here includes various brazed heat exchanger applications including domestic hot water supply, radiant floor heating, snow melt for outdoor parking areas and walkways. This system offers one of the newest and most efficient methods to provide comfort heating. This heating system is very popular in Northern Europe but is quickly catching on in colder climates in North America.

Boiler water at 180°F is used to heat the water that is pumped to the various applications. Due to safety concerns, many hospitals and commercial building pump warm glycol to heat the sidewalks and entryway rather than utilize water to melt snow and ice.

Radiant floor/snow melt heat exchangers



Radiant floor heating

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Radiant Floor: 120°F Supply, 100°F Return
- Boiler: 180°F Supply, 160°F Return

Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
70	CBH16-11H	3287120469	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.17	no
80	CB30-10H	3287099216	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
85	CBH16-13H	3287119753	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.34	no
115	CBH16-17H	3287119754	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.68	no
135	CB60-20H	3287102155	1" Male NPT	1" Male NPT	4.4	20.7	2.34	Stud bolts
160	CBH16-25H	3287119755	3/4" Male NPT	3/4" Male NPT	2.9	8.2	2.36	no
160	CB30-18H	3287099217	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
180	CB30-10L	3287099365	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
200	CB60-30H	3287102156	1" Male NPT	1" Male NPT	4.4	20.7	3.25	Stud bolts
220	CB30-24H	3287099218	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
240	CB110-16H	3287133276	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
270	CB60-40H	3287102157	1" Male NPT	1" Male NPT	4.4	20.7	4.17	Stud bolts
300	CB30-34H	3287099219	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
330	CB60-50H	3287102158	1" Male NPT	1" Male NPT	4.4	20.7	5.08	Stud bolts
380	CB30-44H	3287099220	1" Male NPT	1" Male NPT	4.4	12.3	4.51	Stud bolts
380	CB30-18L	3287099366	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
380	CB110-24H	3287133277	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
390	CB60-60H	3287102159	1" Male NPT	1" Male NPT	4.4	20.7	5.99	Stud bolts
430	CB30-50H	3287099211	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
450	CB60-80H	3287102160	1" Male NPT	1" Male NPT	4.4	20.7	7.82	Stud bolts
470	CB30-60H	3287099210	1" Male NPT	1" Male NPT	4.4	12.3	5.97	Stud bolts
470	CB110-30H	3287133278	2" Male NPT	2" Male NPT	7.5	24.3	3.61	Stud bolts
620	CB110-38H	3287133279	2" Male NPT	2" Male NPT	7.5	24.3	4.42	Stud bolts
650	CB110-16L	3287133291	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
750	CB110-46H	3287133280	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
850	CB110-20L	3287133286	2" Male NPT	2" Male NPT	7.5	24.3	2.61	Stud bolts
880	CB110-54H	3287133281	2" Male NPT	2" Male NPT	7.5	24.3	6.03	Stud bolts
1000	CB110-64H	3287133282	2" Male NPT	2" Male NPT	7.5	24.3	7.04	Stud bolts
1000	CB110-24L	3287133287	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
1200	CB110-76H	3287133283	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
1350	CB110-32L	3287133288	2" Male NPT	2" Male NPT	7.5	24.3	3.81	Stud bolts
1400	CB110-90H	3287133284	2" Male NPT	2" Male NPT	7.5	24.3	9.66	Stud bolts
1600	CB110-110H	3287133285	2" Male NPT	2" Male NPT	7.5	24.3	11.7	Stud bolts
1800	CB110-124H	3287144762	2" Male NPT	2" Male NPT	7.5	24.3	13.1	Stud bolts
1800	CB110-46L	3287133289	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
2200	CB110-58L	3287133290	2" Male NPT	2" Male NPT	7.5	24.3	6.44	Stud bolts

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Snow melt

Agency Code Approval: UL, CRN

Product Specification: Refer to Product Data Sheet section for details

Construction: Stainless Steel Plates & Connections

Selection Notes:

Units sized based on the following conditions of service

- Snow Melt: 100°F Return, 120°F Supply (40% Propylene Glycol)
- Boiler: 180°F Supply, 150°F Return

Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
50	CB30-10L	3287099365	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
65	CBH16-11H	3287120469	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.17	no
75	CBH16-13H	3287119753	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.34	no
90	CB30-10H	3287099216	1" Male NPT	1" Male NPT	4.4	12.3	1.42	Stud bolts
100	CBH16-17H	3287119754	3/4" Male NPT	3/4" Male NPT	2.9	8.2	1.68	no
120	CB30-18L	3287099366	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
130	CB60-20H	3287102155	1" Male NPT	1" Male NPT	4.4	20.7	2.34	Stud bolts
140	CBH16-25H	3287119755	3/4" Male NPT	3/4" Male NPT	2.9	8.2	2.36	no
165	CB30-18H	3287099217	1" Male NPT	1" Male NPT	4.4	12.3	2.15	Stud bolts
170	CB30-24L	3287099367	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
190	CB60-30H	3287102156	1" Male NPT	1" Male NPT	4.4	20.7	3.25	Stud bolts
210	CB30-24H	3287099218	1" Male NPT	1" Male NPT	4.4	12.3	2.69	Stud bolts
240	CB110-16H	3287133276	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
250	CB30-34L	3287099368	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
250	CB60-40H	3287102157	1" Male NPT	1" Male NPT	4.4	20.7	4.17	Stud bolts
295	CB30-34H	3287099219	1" Male NPT	1" Male NPT	4.4	12.3	3.6	Stud bolts
300	CB60-50H	3287102158	1" Male NPT	1" Male NPT	4.4	20.7	5.08	Stud bolts
350	CB30-44H	3287099220	1" Male NPT	1" Male NPT	4.4	12.3	4.51	Stud bolts
350	CB60-60H	3287102159	1" Male NPT	1" Male NPT	4.4	20.7	5.99	Stud bolts
350	CB110-24H	3287133277	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
400	CB30-50H	3287099211	1" Male NPT	1" Male NPT	4.4	12.3	5.06	Stud bolts
420	CB60-80H	3287102160	1" Male NPT	1" Male NPT	4.4	20.7	7.82	Stud bolts
450	CB30-60H	3287099210	1" Male NPT	1" Male NPT	4.4	12.3	5.97	Stud bolts
450	CB110-30H	3287133278	2" Male NPT	2" Male NPT	7.5	24.3	3.61	Stud bolts
550	CB110-38H	3287133279	2" Male NPT	2" Male NPT	7.5	24.3	4.42	Stud bolts
630	CB110-16L	3287133291	2" Male NPT	2" Male NPT	7.5	24.3	2.2	Stud bolts
680	CB110-46H	3287133280	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
780	CB110-20L	3287133286	2" Male NPT	2" Male NPT	7.5	24.3	2.61	Stud bolts
800	CB110-54H	3287133281	2" Male NPT	2" Male NPT	7.5	24.3	6.03	Stud bolts
900	CB110-64H	3287133282	2" Male NPT	2" Male NPT	7.5	24.3	7.04	Stud bolts
940	CB110-24L	3287133287	2" Male NPT	2" Male NPT	7.5	24.3	3.01	Stud bolts
1100	CB110-76H	3287133283	2" Male NPT	2" Male NPT	7.5	24.3	8.25	Stud bolts
1200	CB110-32L	3287133288	2" Male NPT	2" Male NPT	7.5	24.3	3.81	Stud bolts
1250	CB110-90H	3287133284	2" Male NPT	2" Male NPT	7.5	24.3	9.66	Stud bolts
1500	CB110-110H	3287133285	2" Male NPT	2" Male NPT	7.5	24.3	11.7	Stud bolts
1600	CB110-46L	3287133289	2" Male NPT	2" Male NPT	7.5	24.3	5.23	Stud bolts
1650	CB110-124H	3287144762	2" Male NPT	2" Male NPT	7.5	24.3	13.1	Stud bolts
1900	CB110-58L	3287133290	2" Male NPT	2" Male NPT	7.5	24.3	6.44	Stud bolts

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

Double wall

Introduction

Alfa Laval CBAQ is AHRI Certified® through the Liquid to Liquid Brazed & Fusion-bonded Plate Heat Exchangers (LLBF) Certification Program which ensures thermal performance in accordance with the product specifications.

Alfa Laval CB brazed plate heat exchangers provide efficient heat transfer with a small footprint.

Double wall plates are used as an extra precaution to avoid intermixing of fluids.

Agency Code Approval: UL/CUL, CRN
Product Specification: Refer to Product Data Sheet section for details
Construction: Stainless Steel Plates & Connections
Application: HVAC heating and cooling
Selection Notes: Units sized based on the following conditions of service

- 180°F > 140°F primary side; 60°F secondary side

Benefits:

- Compact
- Easy to install
- Self-cleaning
- Low level of service and maintenance is required
- All units are pressure and leak tested
- Gasket free
- Leak detection
- No fluid contamination

Design

The brazing material seals and holds the plates together at the contact points ensuring optimal heat transfer efficiency and pressure resistance. Using advanced design technologies and extensive verification guarantees the highest performance and longest possible service life.

The double wall construction provides external leak detection and minimizes the risk of mixing the fluids. The thermal performance is similar to single wall heat exchanger.

Capacity (kBtu/hr)	Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
74	CBH18DWAQ-10H-F	3075012707	3/4" Male NPT	3/4" Male NPT	3	12.4	1.37	no
101	CBH18DWAQ-14H-F	3075012708	3/4" Male NPT	3/4" Male NPT	3	12.4	1.73	no
142	CBH18DWAQ-20H-F	3075012709	3/4" Male NPT	3/4" Male NPT	3	12.4	2.26	no
168	CBH18DWAQ-24H-F	3075012710	3/4" Male NPT	3/4" Male NPT	3	12.4	2.62	no
206	CBH18DWAQ-30H-F	3075012711	3/4" Male NPT	3/4" Male NPT	3	12.4	3.16	no
263	CBH18DWAQ-40H-F	3075012712	3/4" Male NPT	3/4" Male NPT	3	12.4	4	no
318	CBH18DWAQ-52H-F	3075012713	3/4" Male NPT	3/4" Male NPT	3	12.4	5.12	no

***** If your conditions vary significantly from these listed above, please consult factory for product sizing and selection. *****

100% Stainless Steel AlfaNova

Alfa Laval AlfaNova fusion-bonded plate heat exchangers are made of 100% stainless steel. They are suitable for applications which place high demand on cleanliness, applications where aggressive media like ammonia are used or where copper and nickel contamination is unaccepted.

AlfaNova provides efficient heat transfer with a small footprint, has an extreme pressure fatigue resistance and covers high temperature ranges.

Application:
Suitable for a wide range of applications, such as:

- HVAC heating and cooling
- Refrigeration
- Oil cooling
- Industrial heating and cooling
- Process heating and cooling

Benefits:

- Compact
- Easy to install
- Self-cleaning
- Low level of service and maintenance is required
- All units are pressure and leak tested
- Gasket free
- Copper free

Agency Code Approval: Varies by model, consult factory or refer to product leaflet
Product Specification: Refer to Product Data Sheet section for details
Construction: Stainless Steel Plates & Connections

Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
AlfaNova 14-10H	3287050860	3/4" Male NPT	3/4" Male NPT	3	8.2	1.29	no
AlfaNova 14-20H	3287050861	3/4" Male NPT	3/4" Male NPT	3	8.2	2.27	no
AlfaNova 14-30H	3287050862	3/4" Male NPT	3/4" Male NPT	3	8.2	3.24	no
AlfaNova 14-40H	3287050863	3/4" Male NPT	3/4" Male NPT	3	8.2	4.22	no
AlfaNova 27-20H	3287000874	1" Male NPT	1" Male NPT	4.4	12.2	2.34	no
AlfaNova 27-30H	3287000875	1" Male NPT	1" Male NPT	4.4	12.2	3.29	no
AlfaNova 27-40H	3287000876	1" Male NPT	1" Male NPT	4.4	12.2	4.24	no
AlfaNova 27-50H	3287000877	1" Male NPT	1" Male NPT	4.4	12.2	5.2	no
AlfaNova 27-70H	3287000878	1" Male NPT	1" Male NPT	4.4	12.2	7.1	no
AlfaNova 27-100H	3287000879	1" Male NPT	1" Male NPT	4.4	12.2	9.96	no
AlfaNova 27-20H	3287000880	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	2.34	no
AlfaNova 27-30H	3287000882	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	3.29	no
AlfaNova 27-40H	3287000884	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	4.24	no

***** Please consult factory for product sizing and selection. *****

100% Stainless Steel AlfaNova Continued

Denomination	Part Number	Inlet/Outlet (S1,S2)	Inlet/Outlet (S3,S4)	Plate Width (in.)	Plate Height (in.)	Plate Pack Depth (in.)	Stud Bolt / Mtg Feet
AlfaNova 27-50H	3287000885	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	5.2	no
AlfaNova 27-60H	3287000998	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	6.15	no
AlfaNova 27-70H	3287000999	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	7.1	no
AlfaNova 27-80H	3287001000	1-1/8" Sweat	1-1/8" Sweat	4.4	12.2	8.06	no
AlfaNova 52-20H	3287000896	1" Male NPT	1" Male NPT	4.4	20.7	2.39	no
AlfaNova 52-30H	3287000897	1" Male NPT	1" Male NPT	4.4	20.7	3.36	no
AlfaNova 52-40H	3287000898	1" Male NPT	1" Male NPT	4.4	20.7	4.34	no
AlfaNova 52-50H	3287000899	1" Male NPT	1" Male NPT	4.4	20.7	5.31	no
AlfaNova 52-70H	3287000900	1" Male NPT	1" Male NPT	4.4	20.7	7.27	no
AlfaNova 52-100H	3287000901	1" Male NPT	1" Male NPT	4.4	20.7	10.2	no
AlfaNova 52-20H	3287000902	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	2.39	no
AlfaNova 52-30H	3287000904	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	3.36	no
AlfaNova 52-40H	3287000906	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	4.34	no
AlfaNova 52-50H	3287000907	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	5.31	no
AlfaNova 52-60H	3287001003	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	6.29	no
AlfaNova 52-70H	3287001004	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	7.27	no
AlfaNova 52-80H	3287001005	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	8.24	no
AlfaNova 52-90H	3287001006	1-1/8" Sweat	1-1/8" Sweat	4.4	20.7	9.22	no
AlfaNova 76-20H	3287000886	2" Male NPT	2" Male NPT	7.5	24.3	2.68	**Mtg Studs for feet
AlfaNova 76-30H	3287000887	2" Male NPT	2" Male NPT	7.5	24.3	3.8	**Mtg Studs for feet
AlfaNova 76-40H	3287000888	2" Male NPT	2" Male NPT	7.5	24.3	4.92	**Mtg Studs for feet
AlfaNova 76-50H	3287000889	2" Male NPT	2" Male NPT	7.5	24.3	6.04	**Mtg Studs for feet
AlfaNova 76-60H	3287000890	2" Male NPT	2" Male NPT	7.5	24.3	7.17	**Mtg Studs for feet
AlfaNova 76-70H	3287000891	2" Male NPT	2" Male NPT	7.5	24.3	8.29	**Mtg Studs for feet
AlfaNova 76-80H	3287000892	2" Male NPT	2" Male NPT	7.5	24.3	9.41	**Mtg Studs for feet
AlfaNova 76-90H	3287000893	2" Male NPT	2" Male NPT	7.5	24.3	10.5	**Mtg Studs for feet
AlfaNova 76-100H	3287000894	2" Male NPT	2" Male NPT	7.5	24.3	11.7	**Mtg Studs for feet
AlfaNova HP 76-30H	3287000916	2" Welded	2" Welded	7.5	24.3	3.96	**Mtg Studs for feet
AlfaNova HP 76-40H	3287000917	2" Welded	2" Welded	7.5	24.3	5.08	**Mtg Studs for feet
AlfaNova HP 76-50H	3287000918	2" Welded	2" Welded	7.5	24.3	6.2	**Mtg Studs for feet
AlfaNova HP 76-60H	3287000919	2" Welded	2" Welded	7.5	24.3	7.32	**Mtg Studs for feet
AlfaNova HP 76-80H	3287000921	2" Welded	2" Welded	7.5	24.3	9.57	**Mtg Studs for feet
AlfaNova HP 76-90H	3287000922	2" Welded	2" Welded	7.5	24.3	10.7	**Mtg Studs for feet
AlfaNova HP 76-100H	3287000923	2" Welded	2" Welded	7.5	24.3	11.8	**Mtg Studs for feet
AlfaNova 76L-40L	3287082938	2" Welded	2" Welded	7.5	24.3	5	**Mtg Studs for feet
AlfaNova 76L-60L	3287082939	2" Welded	2" Welded	7.5	24.3	7.24	**Mtg Studs for feet
AlfaNova HP 76-20H	3287132651	2" Welded	2" Welded	7.5	24.3	2.83	**Mtg Studs for feet
AlfaNova HP 76-40H	3287132652	2" Welded	2" Welded	7.5	24.3	5.07	**Mtg Studs for feet
AlfaNova HP 76-60H	3287132653	2" Welded	2" Welded	7.5	24.3	7.32	**Mtg Studs for feet
AlfaNova HP 76-80H	3287132654	2" Welded	2" Welded	7.5	24.3	9.56	**Mtg Studs for feet
AlfaNova HP 76-100H	3287132655	2" Welded	2" Welded	7.5	24.3	11.8	**Mtg Studs for feet
AlfaNova HP 76-120H	3287132656	2" Welded	2" Welded	7.5	24.3	14	**Mtg Studs for feet
AlfaNova HP 76-140H	3287132657	2" Welded	2" Welded	7.5	24.3	16.2	**Mtg Studs for feet

***** Please consult factory for product sizing and selection. *****

This is Alfa Laval

Alfa Laval is active in the areas of Energy, Marine, and Food & Water, offering its expertise, products, and service to a wide range of industries in some 100 countries. The company is committed to optimizing processes, creating responsible growth, and driving progress – always going the extra mile to support customers in achieving their business goals and sustainability targets.

Alfa Laval's innovative technologies are dedicated to purifying, refining, and reusing materials, promoting more responsible use of natural resources. They contribute to improved energy efficiency and heat recovery, better water treatment, and reduced emissions. Thereby, Alfa Laval is not only accelerating success for its customers, but also for people and the planet. Making the world better, every day. It's all about Advancing better™.

How to contact Alfa Laval

Contact details for all countries are continually updated on our web site. Please visit www.alfalaval.us to access the information.

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