CLIMA COOL®

A NIBE GROUP MEMBER

WATER-SOURCE MODULAR CHILLERS

PRODUCT CATALOG

Part#: C97B0004N04 | Revised: March 13, 2025

Chillers, Heat Pumps, Heat Recovery, and SHC Heat Pumps & Heat Recovery

UW Models: 30-80 Tons | 60 Hz – R-454B

SHC on DEMAND® SIMULTANEOUS HEATING AND COOLING

CoolLogic Touch™

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WIDE VARIETY

of products and configurations to fulfill your application demands.

ClimaCool® is dedicated to providing flexible configurations to meet all your application needs, no compromises. These modular chillers are utilized in a wide variety of heating, cooling, and simultaneous heating and cooling applications in both commercial and industrial buildings. Whether the need is a dedicated chiller for off peak loads, comfort cooling, or a truly redundant simultaneous heating and cooling plant, the following fundamental design features are integral to providing a complete climate control solution.

No compromises!

Compact

Small footprint reduces installation cost and restrictions on placement.

CoolLogic Touch™ Control System

The CoolLogic Touch Control System provides complete system integration for ultimate chiller performance. It allows for control of modules via Ethernet cable and interfaces with native BACnet® communication. The CoolLogic Touch Control System governs all top level events, timing and compressor staging and allows operator interface for all levels of setting and retrieving data. It maintains precise temperature control for cooling, heating, and simultaneous heating and cooling applications to ensure the highest building comfort for occupants.

ELECTRIC HEATING TO MEET YOUR BUILDINGS' DECARBONIZATION & ELECTRIFICATION REQUIREMENTS

Energy Efficient

All ClimaCool modules are designed to meet or exceed ASHRAE 90.1 minimum efficiency requirements.

Environmentally Friendly

A micro charge of low GWP R-454B refrigerant offers better efficiency and minimal performance derate. With a GWP of 466, it fits well within current requirements.

Expandable

Modular design allows for incremental system capacity to accommodate future growth.

Service Friendly

Design allows easy access to major components making the models fully serviceable and maintainable without removal of a module from the chiller bank or disassembly of headers.

Simple

Easy connect design simplifies installation, service and controls.

Sustainable

Based on application, ClimaCool chillers can help meet LEED® prerequisites and contribute significant system points toward LEED building certification.

True Redundancy

Separate module electrical feeds and dual independent refrigeration circuits provide true system redundancy.

LEED® CATEGORIES SATISFIED BY CLIMACOOL SYSTEMS:

Enhanced Commissioning and Measurement and Verification

CoolLogic Touch Control System provides maximum flexibility with BAS interface.

Enhanced Refrigerant Management

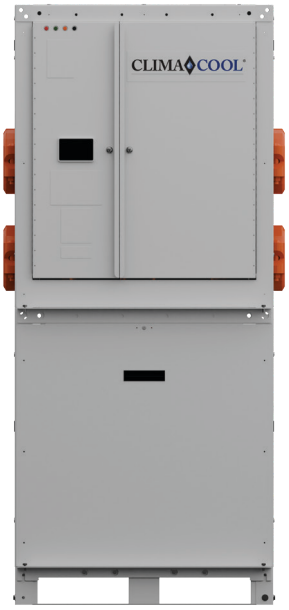
Micro charge of chlorine-free and non-ozone depleting refrigerant.

Optimized Energy Performance

Meets or exceeds ASHRAE 90.1 minimum efficiency requirements.

Thermal Comfort

Precise required heating and cooling ensures the highest comfort for building occupants.



CHILLERS (UWC)

Designed for major application flexibility and expandability to accommodate current and future needs. This system grows with the building requirements and offers a simple design for easy initial and future installation.

- **Tonnages:** 30, 50, 70, & 80
- **Configurations:** From 30–960 tons per bank
- **Voltages:** 208-230, 460, 575
- **Dimensions:**
  - 30, 50, 70 tons:
    - 34.4" w x 79.1" h x 68.7" d
    - (87.38 cm x 200.91 cm x 174.50 cm)
  - 80 tons:
    - 34.4" w x 84.0" h x 68.7" d
    - (87.38 cm x 213.36 cm x 174.50 cm)

HEAT PUMPS (UWT)

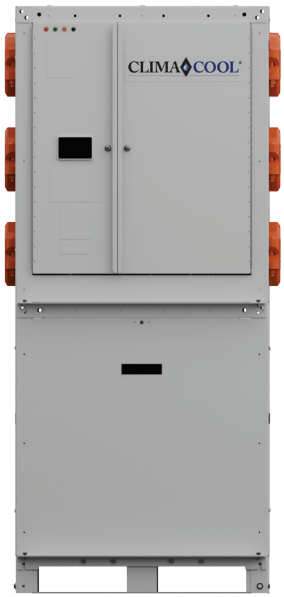
Designed to provide a quiet, serviceable and extremely efficient system that will offer years of reliable operation. Modules can be configured to provide project turndown and capacity requirements from 30–960 tons.

- **Tonnages:** 30, 50, 70, & 80
- **Configurations:** From 30–960 tons per bank
- **Voltages:** 208-230, 460, 575
- **Dimensions:**
  - 30, 50, 70 tons:
    - 34.4" w x 79.1" h x 68.7" d
    - (87.38 cm x 200.91 cm x 174.50 cm)
  - 80 tons:
    - 34.4" w x 84.0" h x 68.7" d
    - (87.38 cm x 213.36 cm x 174.50 cm)

HEAT RECOVERY (UWH)

The high-temperature heat recovery can be utilized for heating and cooling operations and is compatible with boiler/tower and geothermal systems. Heat recovery can provide hot water, while simultaneously producing chilled water. he UWH model is typically used for building efficiency upgrades dedicated to the constant base cooling & heating loads.

- **Tonnages:** 30, 50, 70, & 80
- **Configurations:** From 30–960 tons per bank
- **Voltages:** 208-230, 460, 575
- **Dimensions:**
  - 30, 50, 70 tons:
    - 34.4" w x 79.1" h x 68.7" d
    - (87.38 cm x 200.91 cm x 174.50 cm)
  - 80 tons:
    - 34.4" w x 84.0" h x 68.7" d
    - (87.38 cm x 213.36 cm x 174.50 cm)



SHC on DEMAND®
SIMULTANEOUS HEATING AND COOLING

SHC on DEMAND®
SIMULTANEOUS HEATING AND COOLING

SHC HEAT PUMPS (UWU)

The SHC onDEMAND system eliminates the need to have separate equipment for heating and cooling while saving installation costs, reducing the physical footprint and overall operating costs.

- **Tonnages:** 30, 50, 70, & 80
- **Configurations:** From 30–960 tons per bank
- **Voltages:** 208-230, 460, 575
- **Dimensions:**
  - 30, 50, 70 tons:
    - 34.4" w x 79.1" h x 68.7" d
    - (87.38 cm x 200.91 cm x 174.50 cm)
  - 80 tons:
    - 34.4" w x 84.0" h x 68.7" d
    - (87.38 cm x 213.36 cm x 174.50 cm)

SHC HEAT RECOVERY (UWW)

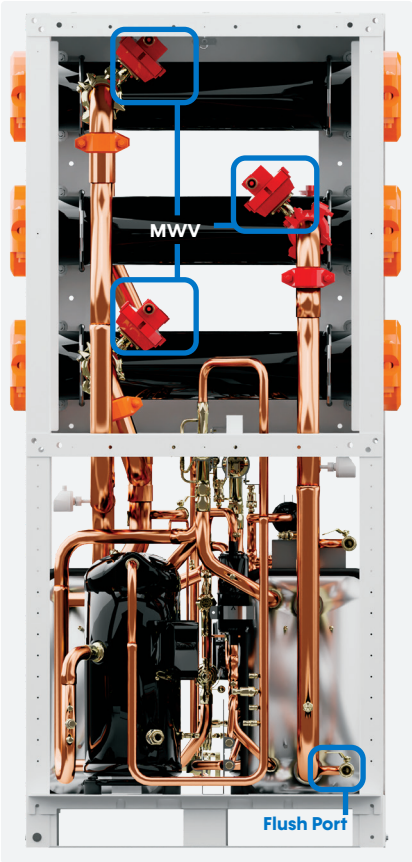
Reduce energy consumption and the environmental impact of your heating and cooling equipment by harnessing energy that is already being produced but not used. Innovative engineering simplifies the simultaneous heating and cooling process, taking multitasking to a whole new level.

- **Tonnages:** 30, 50, 70, & 80
- **Configurations:** From 30–960 tons per bank
- **Voltages:** 208-230, 460, 575
- **Dimensions:**
  - 30, 50, 70 tons:
    - 34.4" w x 79.1" h x 68.7" d
    - (87.38 cm x 200.91 cm x 174.50 cm)
  - 80 tons:
    - 34.4" w x 84.0" h x 68.7" d
    - (87.38 cm x 213.36 cm x 174.50 cm)

WATER ISOLATION VALVES AND INDIVIDUAL HEAT EXCHANGER FLUSH PORTS

Factory installed, providing module isolation for maintenance and individual cleaning of evaporator and/or condenser heat exchangers. This is accomplished without increasing unit or bank dimensions. Individual heat exchangers can be backflushed/cleaned while adjacent modules continue normal operation. Motorized valves include 3/4-inch (19.05 mm) fill and flush valves.

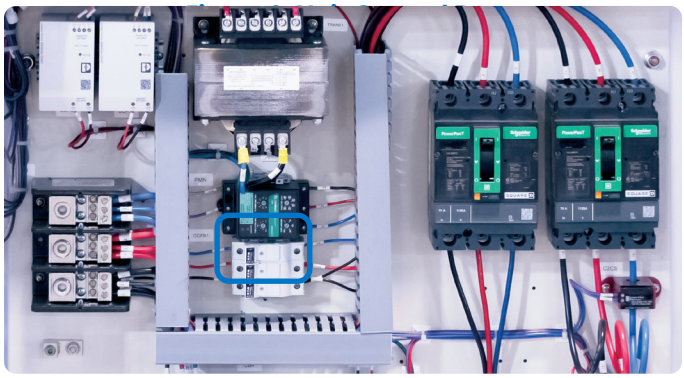
Figure 1: Motorized Valves and Flush Ports



VOLTAGE/PHASE MONITOR

Voltage/phase monitors are factory supplied with each unit. The voltage/phase monitor helps guard the chiller bank against voltage fluctuations, phase failure or phase reversal conditions which could void your warranty.

Figure 2: Unit Control Box



WATER HEADER BYPASS

A field installed water header bypass may be utilized to prevent deadheading the pump. The external bypass allows the chiller leaving water temperature sensor to monitor loop water temperature passing the chiller and reduces the wear on heat exchangers when they are not operating. The valve is controlled by the CoolLogic Touch Control System and is always open when the modules are not in operation. The bypass valve closes when modules begin to stage on.

Header bypass kits can be installed on either end of the bank for any return configuration. The same kit is used for all 3 loops and can be installed with the flex hose running above or below the headers. It is recommended to install the bypass for the Load/Chilled Water headers (bottom set of pipes) with the flex hose above the headers so service access is not impeded.

Figure 4: Water Header Bypass Assembly

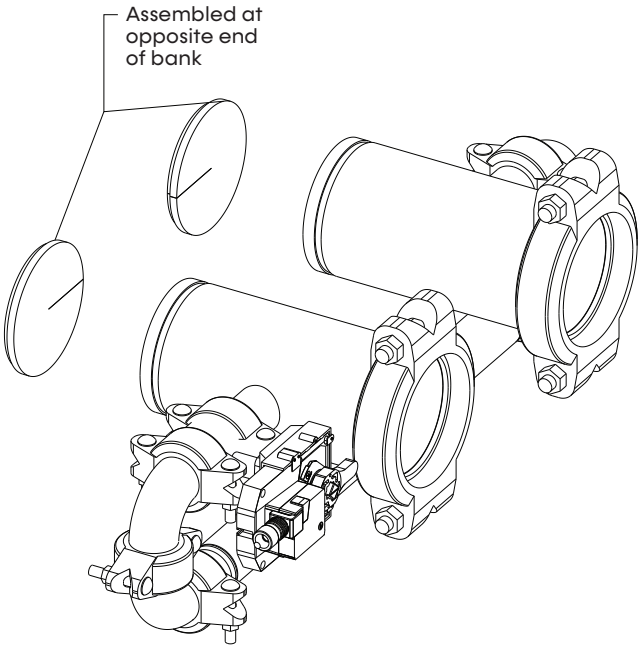


Figure 5: Water Header Bypass Arrangement

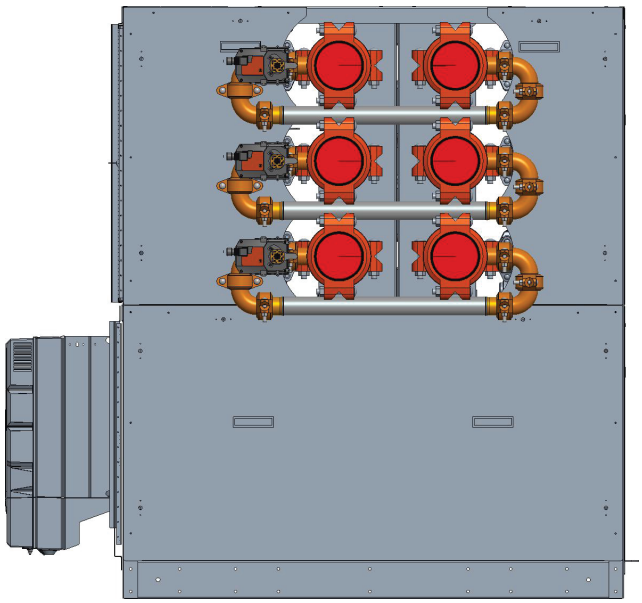


Figure 6: Bank with modules ON and header bypass CLOSED

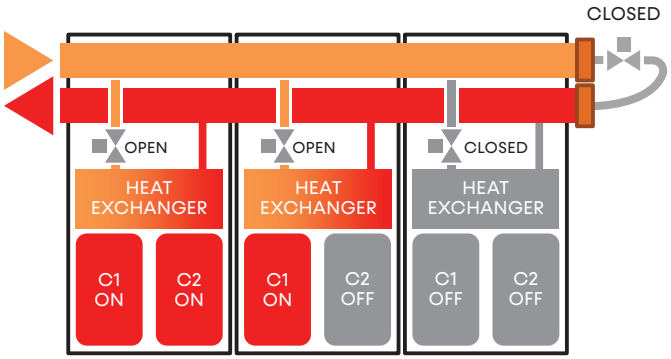
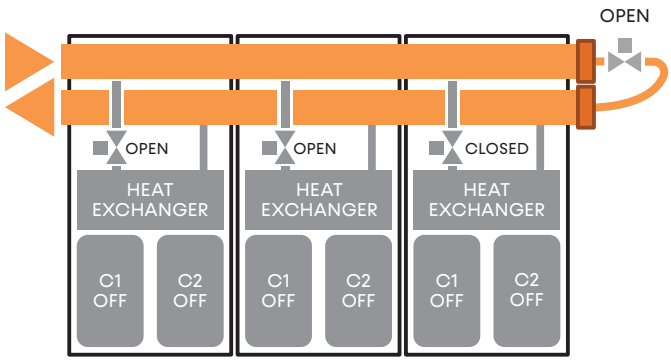


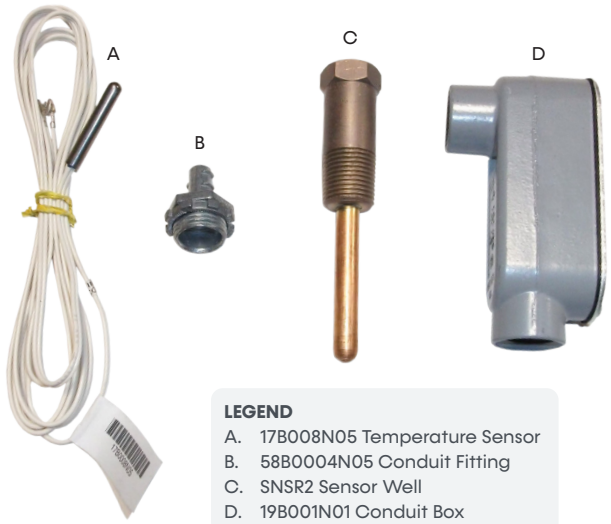
Figure 7: Bank with modules OFF and header bypass OPEN



TEMPERATURE SENSORS

Two temperature sensor kits shipped per water loop – one for the inlet stream and one for the outlet stream.

Figure 8: Well Temperature Sensor Kit

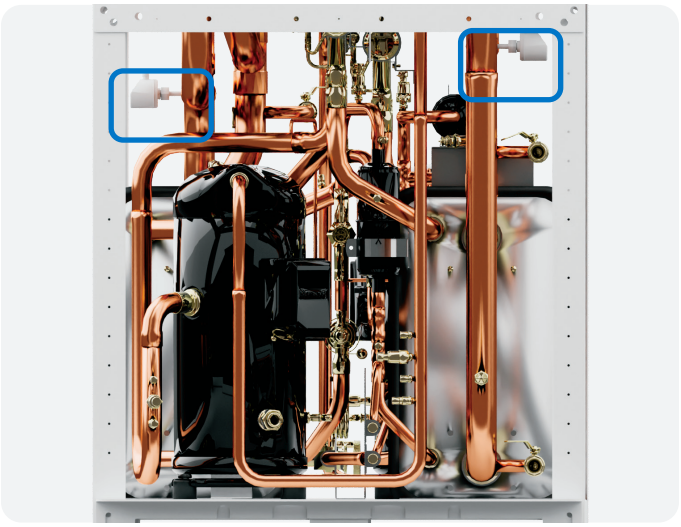


LEGEND
A. 17B008N05 Temperature Sensor
B. 58B0004N05 Conduit Fitting
C. SNSR2 Sensor Well
D. 19B001N01 Conduit Box

PRESSURE DIFFERENTIAL FLOW SENSOR

Field installed to prevent operation of the chiller without sufficient water flow to the evaporator and/or condenser.

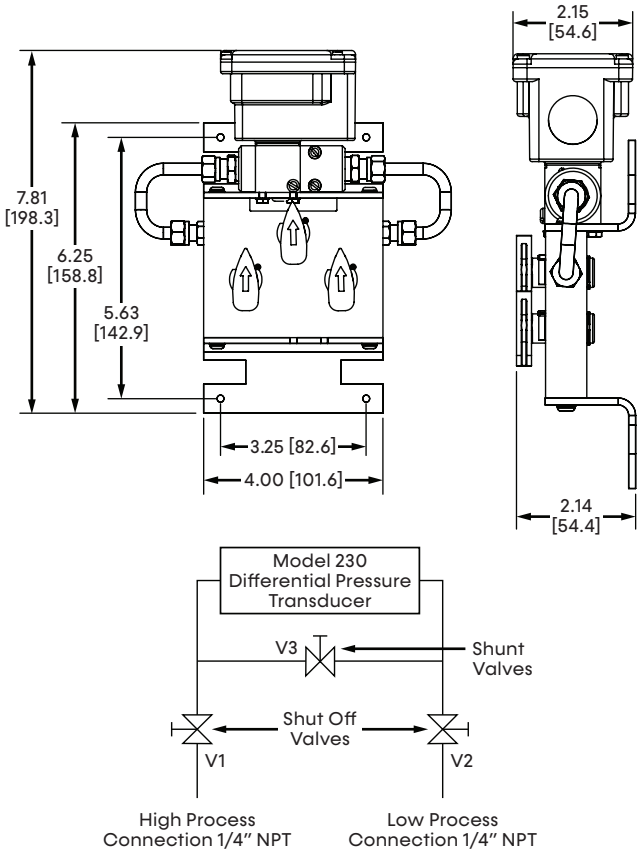
Figure 9: Flow Switches



DIFFERENTIAL PRESSURE TRANSDUCER

Field installed to prevent operation of the chiller without sufficient water flow to the evaporator and/or condenser.

Figure 10: True Wet-to-Wet Differential Pressure Transducer: With 3-Valve Manifold Assembly



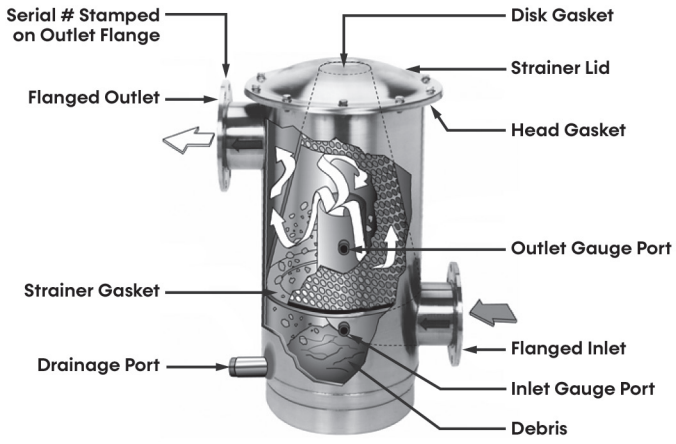
NOTE: Measurements are shown as inch [mm].

NOTE:
For differential pressure measurements at high line pressure (350 PSIG (2413.17 kPa) max), it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown.

Automatic CS Series Strainer Package

Field installed, high quality, low maintenance stainless steel filtration systems with 60- or 80- mesh (minimum 40-mesh required) stainless-steel screens will reduce operating costs and prevent nuisance condenser issues. Strainer package can be equipped with optional pressure differential alarm and automatic time flush.

Figure 11: Stainless Steel Strainer



Automatic Timer Flush (ATF) Package Option

The ATF-EA-1.5 flush valve package provides an automatic method for flushing away the debris collected in the strainer's reservoir. The power supply and timer controls for the valve package are housed inside the ATF control box. The ATF controls can be pre-programmed to set the flushing duration and the time interval between flushes.

System Components

1. Timer based valve controller: sets the flush duration (length of the flush) and the flush interval (time between flushes).
2. Electric Ball Valve: designed for dirty water use.

Figure 12: Timer Based Valve Controller

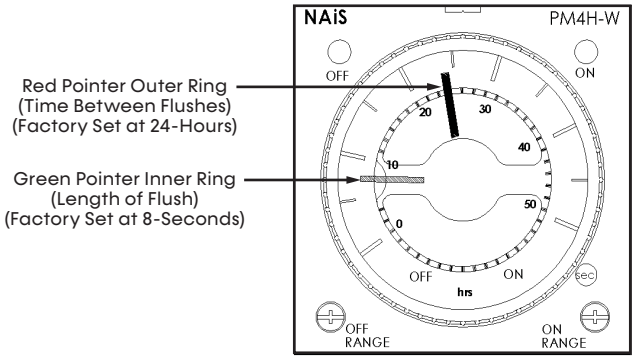


Figure 13: Electric Ball Valve

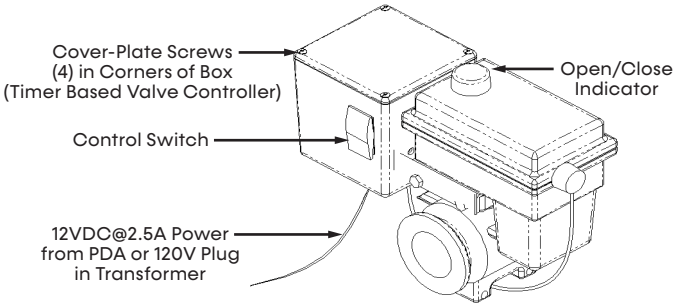
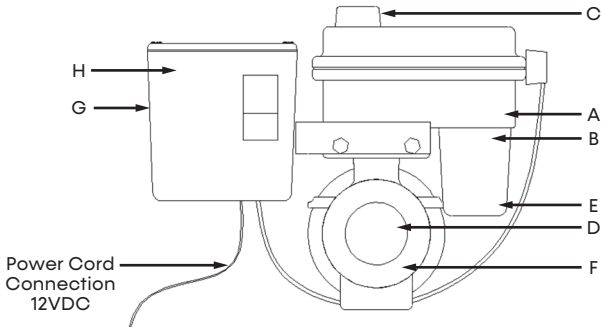


Figure 14: Valve Specifications



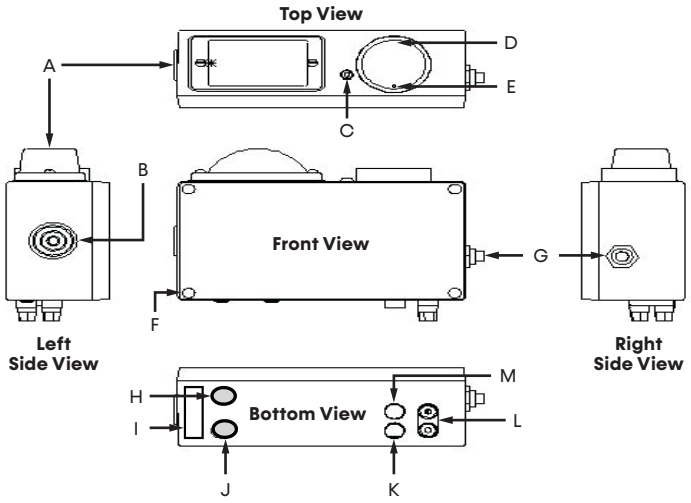
LEGEND

A. Water-resistant polypropylene motor case
B. High torque motors with perma-lub gears
C. Open and close indicator
D. Stainless steel ball valve and hardware
E. Auto reset circuit breaker
F. 90° bi-directional rotation
G. Controller case

Pressure Differential Alarm Package Option

The pressure differential alarm (PDA) option continually monitors and displays the strainer's inlet and outlet differential pressure. When the strainer element (conical strainer basket) becomes significantly clogged, the pressure differential switch-gauge will trigger an audible siren and a visual flashing alarm light. These alarms are intended to alert maintenance personnel that the strainer element must be removed and cleaned (see *Strainer Element Cleaning* section).

Figure 15: Pressure Differential Alarm (PDA) Option



LEGEND

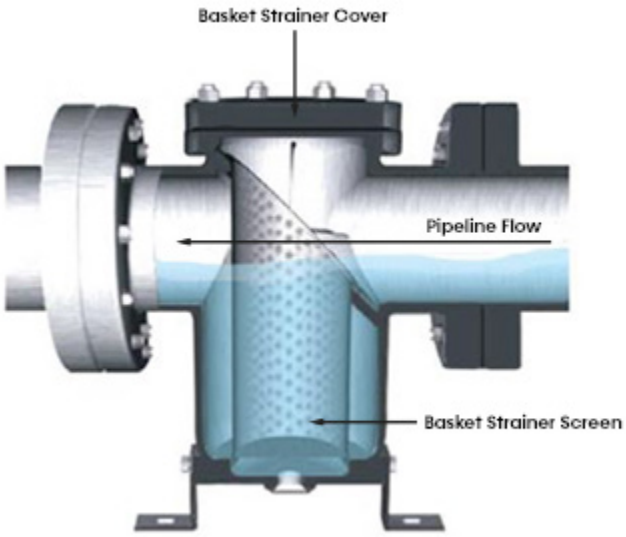
A. Visual Alarm
B. Audible Alarm
C. LED Power Indicator
D. Pressure Differential Switch-Gauge
E. Differential Setpoint Contact
F. Cover-Plate (4) in Corners of Box (DO NOT REMOVE)
G. Alarm Reset Button
H. Power to ATF
I. Cable Retainer
J. 110 Volt/12 Vold DC Wall Transformer
K. PSID Low
L. AUX Contacts (On or Off with Alarm Red & Black)
M. PSID High

Manual Strainers

Field installed to utilize Y-style and basket strainers of cast iron 200 psi or carbon 275 psi with 40-mesh stainless-steel screens to increase efficiency and ensure long equipment life. All strainers are field installed external to the chiller bank for ease of service.

Figure 16: WYE Strainer - Flanged Ends

Figure 17: Installed Basket Strainer with Bolted Cover



SHC Operation

Water-Source SHC models include six (6) headers and integral motorized valves for indexing any module for heating and/or cooling operation.

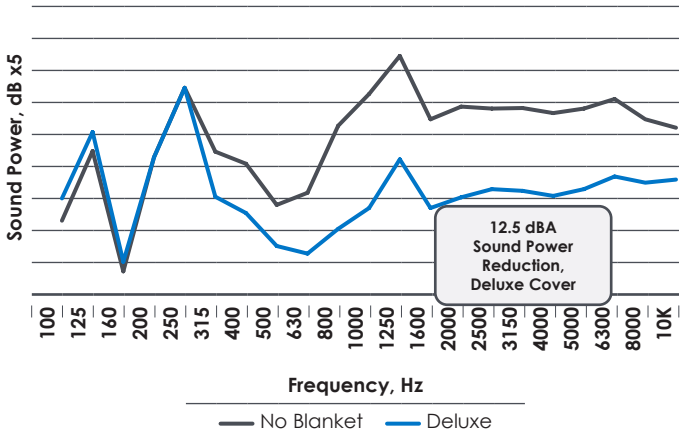
VFDs

Factory installed to allow unit operation below the minimum step of unloading to 45 Hz.

Sound Blankets

Reinforced vinyl envelope wrapped around a fiberglass blanket. Includes an extra layer of sound barrier material for additional noise absorption.

Table 1: Sound Reduction



ELECTRICAL

65 KA SCCR Electrical

The SCCR is the maximum short-circuit current an electrical component can safely withstand without causing a shock or fire hazard. ClimaCool module electrical panels have a default value of 5 KA SCCR. The SCCR for the control system is determined the lowest SCCR value for any component or branch circuit. This option increases each electrical components' SCCR rating for the module's panel to 65 KA SCCR.

Power Distribution Panel

The ship loose bank power distribution panel (PDP) can be provided with 5 or 65 KA SCCR. The PDP is rated for outdoor install and includes a main disconnect shutoff with lock out tag out (LOTO) capabilities. Each branch contains circuit breakers for individual branch circuit protection. The PDP option also includes a single phase 120V transformer for the CoolLogic Touch Control System.

Figure 18: Power Distribution Panel

Model Nomenclature Digits 1-15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
U	W	T	S	3	0	A	F	S	6	0	1	S	0	0

PRODUCT LINE
U = Ultimate Chiller

SOURCE
W = Water

APPLICATION
C = Cooling Only
H = Heat Recovery
T = Heat Pump
U = SHC Heat Pump
W = SHC Heat Recovery

OPTIONS
S = Standard

TONNAGE
30 = 30 Tons
50 = 50 Tons
70 = 70 Tons
80 = 80 Tons

REVISION LEVEL
A = Current

VOLTAGE - PHASE - FREQUENCY
H = 208/230-3-60[1]
F = 460-3-60
N = 575-3-60

COMPRESSOR
S = Standard
T = VFD Lead

WATER HEADER PIPE DIAMETER
6 = 6-inch[1]
8 = 8-inch

MODULE PASS THROUGH HEADERS
0 = No

REFRIGERANT DETECTION SENSOR
1 = Yes

CONTROL OPTIONS
S = Standard
1 = Single Module Controls[2]
2 = Auto Stand Alone
3 = Module HMI Only

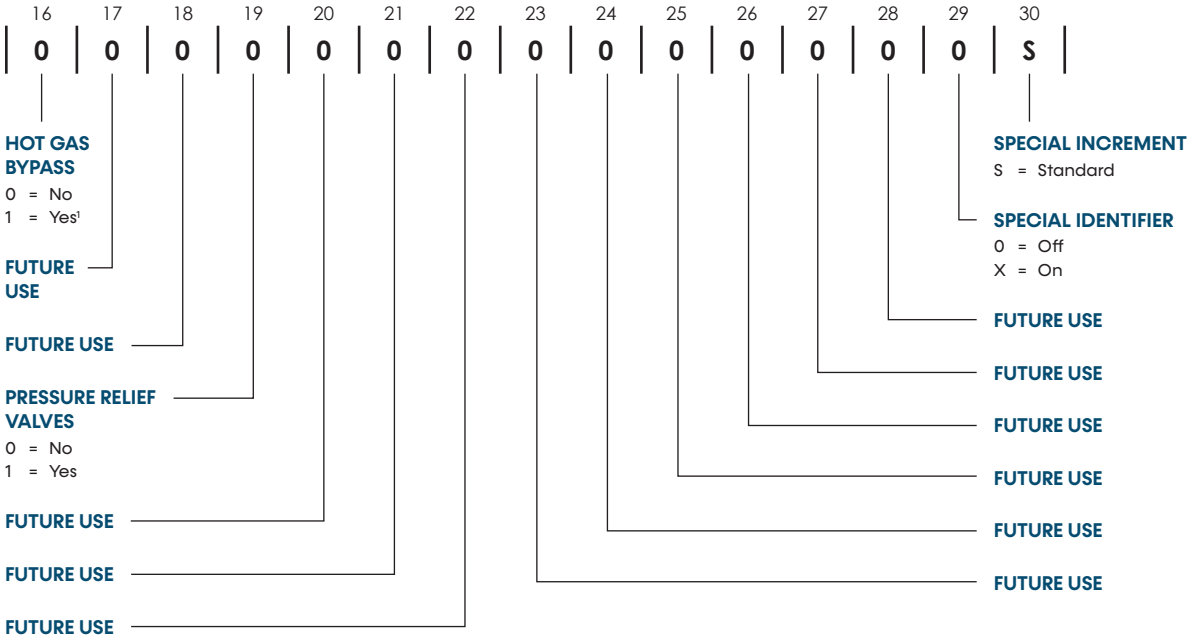
SCCR
0 = 5 kAIC
1 = 65 kAIC[3]

COMPRESSOR SOUND BLANKETS
0 = No
1 = Yes

1. Option not available for Size 80 modules
2. Option not available for SHC applications
3. Option not available in 575V-3P-60Hz

Continued on next page.

Model Nomenclature Digits 16-30



1. Option not available on Heat Pumps or SHC Heat Pumps

Table 2: UW Series (Imperial Units)

Model UW	Chillers UWC				Heat Pumps UWT				Heat Recovery UWH			
	30	50	70	80	30	50	70	80	30	50	70	80
Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Compressor Type	Scroll				Scroll				Scroll			
Compressor Quantity	2	2	2	2	2	2	2	2	2	2	2	2
Compressor Nominal Hp (per circuit)	15	25	30	40	15	25	30	40	15	25	30	40
Total Refrigerant Charge R-454B (lbs)	27.8	48.2	59.4	80.0	27.8	48.2	59.4	80.0	27.8	48.2	59.4	80.0
Module Operating Weight w/Water (lbs)[2]	2,274	2,886	3,018	3,690	2,274	2,886	3,018	3,690	2,274	2,886	3,018	3,690
Module Shipping Weight (lbs)[3]	1,650	2,502	2,634	3,132	1,650	2,502	2,634	3,132	1,650	2,502	2,634	3,132
Condenser	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (gals per HX)	4.80	7.35	9.30	18.00	4.80	7.30	9.00	18.00	4.80	7.35	9.30	18.00
Water Storage Volume HX and Module Piping & Headers (gals per HX)	22.1	25.9	27.6	37.4	22.1	25.9	27.6	37.4	22.1	25.9	27.6	37.4
Min. System Volume (gal)[4]	180	300	420	480	180	300	420	480	180	300	420	480
Max. Design Working Pressure - Water Side (psi)	300	300	300	300	300	300	300	300	300	300	300	300
Header Water Connections - Inlet/Outlet (in.)	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	6 or 8	8
Evaporator	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (gal per HX)	4.10	6.20	7.90	15.25	4.80	7.30	9.00	18.00	4.10	6.20	7.90	15.25
Water Storage Volume HX and Module Piping & Headers (gal per HX)	21.6	24.6	26.2	35.0	22.1	25.9	27.6	37.4	21.6	24.6	26.2	35.0
Min. System Volume (gal)[4]	180	300	420	480	180	300	420	480	180	300	420	480
Max. Design Working Pressure - Water Side (psi)	300	300	300	300	300	300	300	300	300	300	300	300
Header Water Connections - Inlet/Outlet (in.)	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	8

NOTES:
1. SHC = Simultaneous Heating and Cooling
2. Module operational weight includes water, compressor oil, and refrigerant charge. Multiply times the number of modules for a total system operational weight.
3. Unit shipping weight includes refrigerant charge, compressor oil and packaging.
4. Required to provide stable operation. Storage/buffer tanks may be utilized in return piping to meet the minimum volume requirements.

Table Continued on Next Page

Table Continued from Previous Page

Model UW	SHC[1] Heat Pumps UWU				SHC[1] Heat Recovery UWW			
	30	50	70	80	30	50	70	80
Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Compressor Type	Scroll				Scroll			
Compressor Quantity	2	2	2	2	2	2	2	2
Compressor Nominal Hp (per circuit)	15	25	30	40	15	25	30	40
Total Refrigerant Charge R-454B (lbs)	27.8	48.2	59.4	80.0	27.8	48.2	59.4	80.0
Module Operating Weight w/Water (lbs)[2]	2,340	3,072	3,372	4,176	2,418	3,324	3,492	4,260
Module Shipping Weight (lbs)[3]	1,956	2,700	3,000	3,576	2,034	3,952	3,120	3,660
Condenser	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (gals per HX)	4.8	7.3	9.0	18.0	4.8	7.3	9.0	18.0
Water Storage Volume HX and Module Piping & Headers (gals per HX)	22.1	25.9	27.6	45.0	22.1	25.9	27.6	45.0
Min. System Volume (gal)[4]	180	300	420	480	180	300	420	480
Max. Design Working Pressure - Water Side (psi)	300	300	300	300	300	300	300	300
Header Water Connections - Inlet/Outlet (in.)	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	6 or 8	8
Evaporator	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (gal per HX)	4.80	7.30	9.00	18.00	4.80	7.30	9.00	15.25
Water Storage Volume HX and Module Piping & Headers (gal per HX)	22.1	25.9	27.6	45.0	22.6	25.6	27.2	36.0
Min. System Volume (gal)[4]	180	300	420	480	180	300	420	480
Max. Design Working Pressure - Water Side (psi)	300	300	300	300	300	300	300	300
Header Water Connections - Inlet/Outlet (in.)	6 or 8	6 or 8	6 or 8	8	6 or 8	6 or 8	6 or 8	8

NOTES:
1. SHC = Simultaneous Heating and Cooling.
2. Module operational weight includes water, compressor oil, and refrigerant charge. Multiply times the number of modules for a total system operational weight.
3. Unit shipping weight includes refrigerant charge, compressor oil and packaging.
4. Required to provide stable operation. Storage/buffer tanks may be utilized in return piping to meet the minimum volume requirements.

Table 3: UW Series (Metric Units)

Model UW	Chillers UWC				Heat Pumps UWT				Heat Recovery UWH			
	30	50	70	80	30	50	70	80	30	50	70	80
Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Compressor Type	Scroll				Scroll				Scroll			
Compressor Quantity	2	2	2	2	2	2	2	2	2	2	2	2
Compressor Nominal kW (per circuit)	11.19	18.65	22.38	29.84	11.19	18.65	22.38	29.84	11.19	18.65	22.38	29.84
Total Refrigerant Charge R-454B (kg)	12.59	21.86	26.93	36.29	12.59	21.86	26.93	36.29	12.59	21.86	26.93	36.29
Module Operating Weight w/Water (kg)[2]	1,031	1,309	1,369	1,674	1,031	1,309	1,369	1,674	1,031	1,309	1,369	1,674
Module Shipping Weight (kg)[3]	748	1,135	1,195	1,421	748	1,135	1,195	1,421	748	1,135	1,195	1,421
Condenser	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (L per HX)	18.17	27.82	35.20	68.14	18.17	27.63	34.07	68.14	18.06	27.82	35.20	68.14
Water Storage Volume HX and Module Piping & Headers (L per HX)	83.66	98.04	104.48	141.57	83.66	98.04	104.48	141.57	83.66	98.04	104.48	141.57
Min. System Volume (L)[4]	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00
Max. Design Working Pressure - Water Side (kPa)	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43	2,068.43
Header Water Connections - Inlet/Outlet (cm)	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32
Evaporator	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (L per HX)	15.52	23.47	29.90	57.73	18.17	27.63	34.07	68.14	15.52	23.47	29.90	57.73
Water Storage Volume HX and Module Piping & Headers (L per HX)	81.76	93.12	99.18	132.49	83.66	98.04	104.48	141.57	81.76	93.12	99.18	132.49
Min. System Volume (L)[4]	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00
Max. Design Working Pressure - Water Side (kPa)	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50	2068.50
Header Water Connections - Inlet/Outlet (cm)	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32

NOTES:
1. SHC = Simultaneous Heating and Cooling.
2. Module operational weight includes water, compressor oil, and refrigerant charge. Multiply times the number of modules for a total system operational weight.
3. Unit shipping weight includes refrigerant charge, compressor oil and packaging.
4. Required to provide stable operation. Storage/buffer tanks may be utilized in return piping to meet the minimum volume requirements.

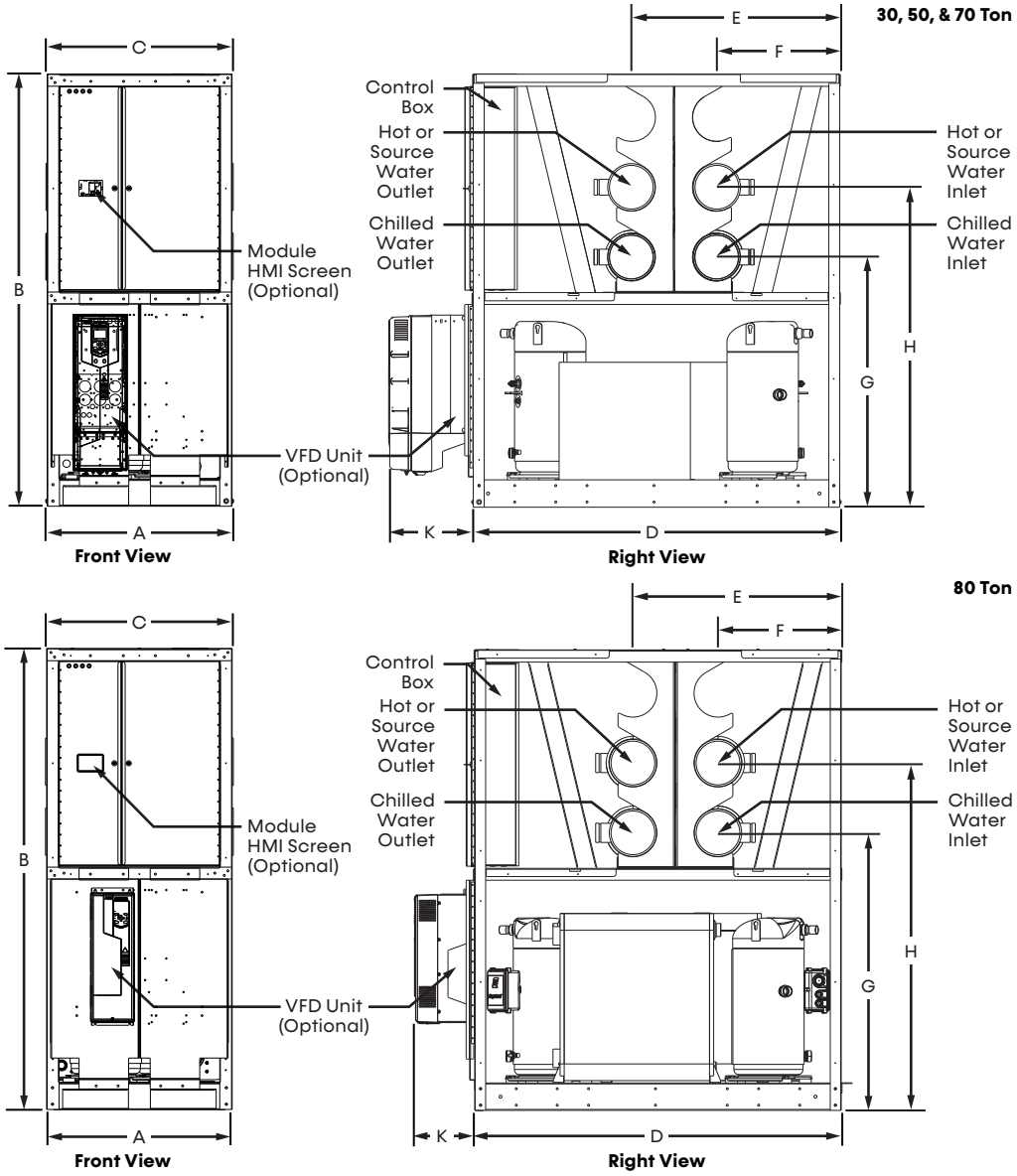
Table Continued on Next Page

Table Continued from Previous Page

Model UW	SHC[1] Heat Pumps UWU				SHC[1] Heat Recovery UWW			
	30	50	70	80	30	50	70	80
Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Compressor Type	Scroll				Scroll			
Compressor Quantity	2	2	2	2	2	2	2	2
Compressor Nominal kW (per circuit)	11.19	18.65	22.38	29.84	11.19	18.65	22.38	29.84
Total Refrigerant Charge R-454B (kg)	12.59	21.86	26.93	36.29	12.59	21.86	26.93	36.29
Module Operating Weight w/Water (kg)[2]	1,061	1,393	1,530	1,894	1,094	1,508	1,584	1,932
Module Shipping Weight (kg)[3]	887	1,225	1,361	1,622	923	1,339	1,415	1,660
Condenser	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (L per HX)	18.17	27.63	34.07	68.14	18.06	27.82	35.20	68.14
Water Storage Volume HX and Module Piping & Headers (L per HX)	83.66	98.04	104.48	170.34	83.66	98.04	104.48	136.28
Min. System Volume (L)[4]	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00
Max. Design Working Pressure - Water Side (kPa)	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5
Header Water Connections - Inlet/Outlet (cm)	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32
Evaporator	**30**	**50**	**70**	**80**	**30**	**50**	**70**	**80**
Heat Exchanger (type)	Brazed Plate				Brazed Plate			
Independent Refrigerant Circuits (quantity)	2	2	2	2	2	2	2	2
Water Storage Volume HX Only (L per HX)	18.17	27.63	34.07	68.14	15.52	23.47	29.90	57.73
Water Storage Volume HX and Module Piping & Headers (L per HX)	83.66	98.04	104.48	170.34	85.55	96.91	104.48	136.28
Min. System Volume (L)[4]	681.37	1,135.62	1,589.87	1,817.00	681.37	1,135.62	1,589.87	1,817.00
Max. Design Working Pressure - Water Side (kPa)	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5	2068.5
Header Water Connections - Inlet/Outlet (cm)	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32	15.24 or 20.32	15.24 or 20.32	15.24 or 20.32	20.32

NOTES:
1. SHC = Simultaneous Heating and Cooling.
2. Module operational weight includes water, compressor oil, and refrigerant charge. Multiply times the number of modules for a total system operational weight.
3. Unit shipping weight includes refrigerant charge, compressor oil and packaging.
4. Required to provide stable operation. Storage/buffer tanks may be utilized in return piping to meet the minimum volume requirements.

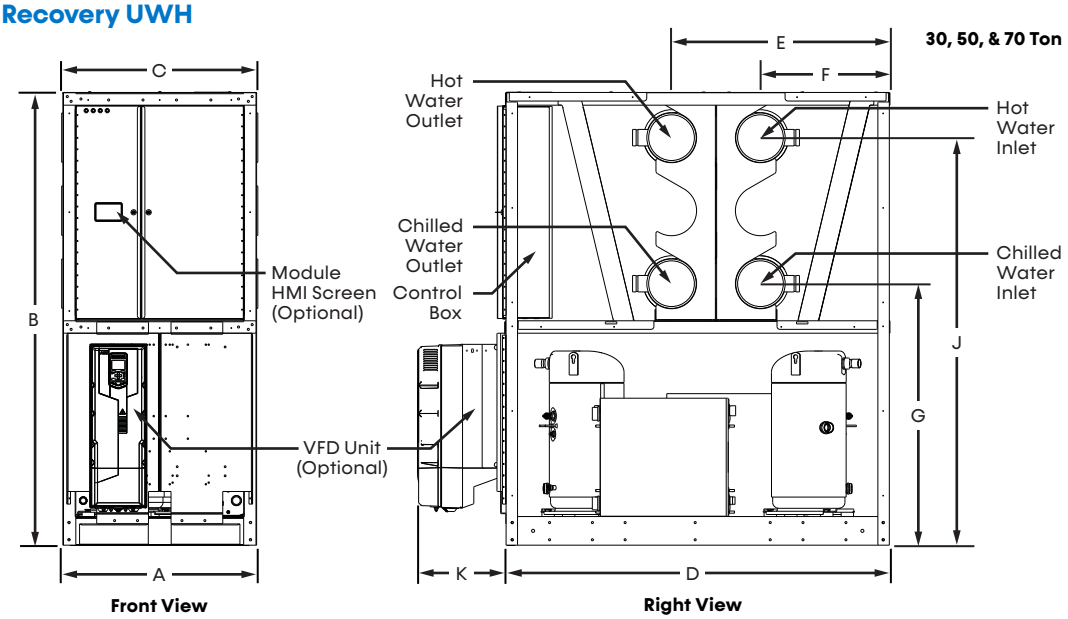
4-Pipe Chillers UWC & Heat Pumps UWT

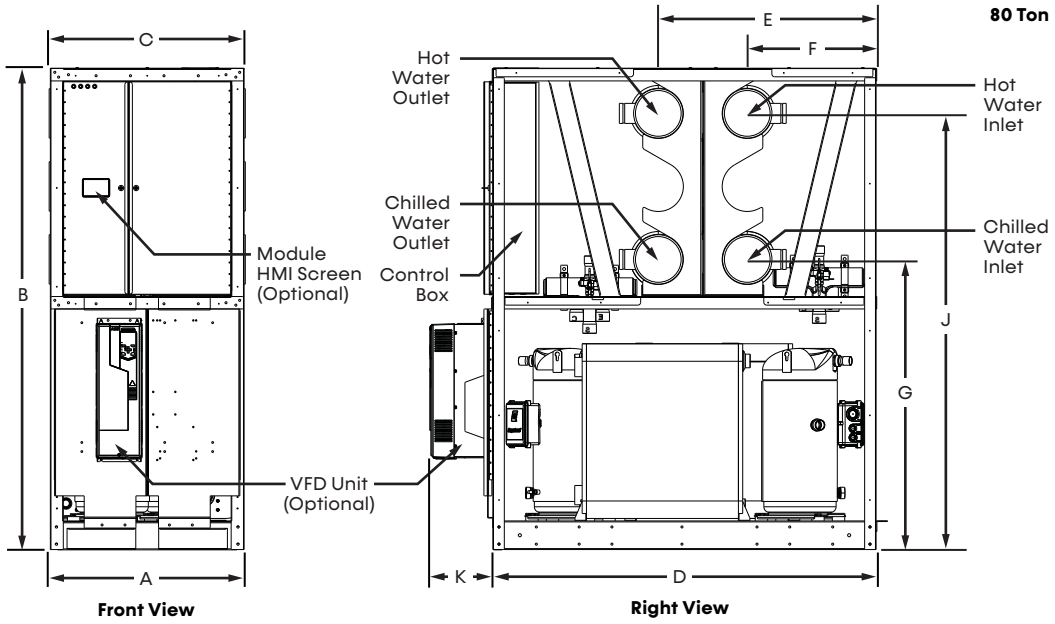


UWT & UWC with optional VFD	Voltage	A Outermost Bolt Width	B Base Pan to Top Panel	C Header Length	D Front Corner Post to Rear Corner Post	E Header Location	F Header Location	G Header Location	H Header Location	K Depth of VFD Unit[2]	Header Connection Size
030	208-3-60 460-3-60 575-3-60	33.83 [85.93]	79.05 [200.79]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	45.66 [115.98]	58.41 [148.36]	15.45 [39.12]	6.00 or 8.00 [15.27 or 20.32]
050											
070											
080	460-3-60 575-3-60	33.83 [85.93]	84.05 [200.79]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	50.66 [115.98]	63.41 [148.36]	15.44 [39.12]	8.00 [20.32]

NOTES:
1. Dimensions shown in inches [centimeters].
2. Only present on units with VFD.

4-Pipe Heat Recovery UWH



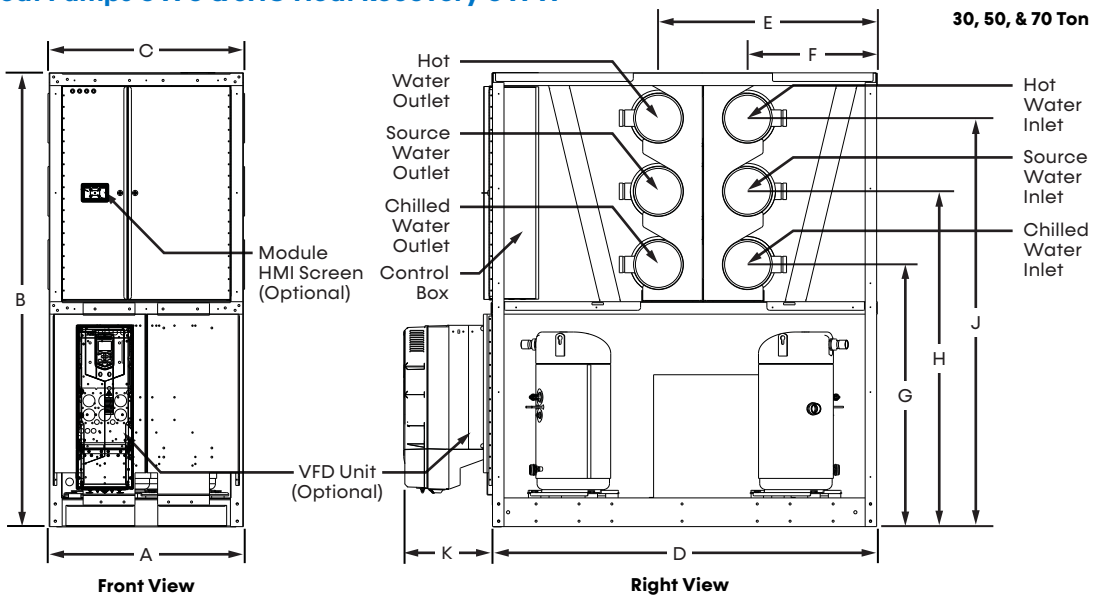


UWH with optional VFD	Voltage	A Outermost Bolt Width	B Base Pan to Top Panel	C Header Length	D Front Corner Post to Rear Corner Post	E Header Location	F Header Location	G Header Location	J Header Location	K Depth of VFD Unit[2]	Header Connection Size
030	208-3-60 460-3-60 575-3-60	33.83 [85.93]	79.05 [200.79]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	45.66 [115.98]	71.16 [183.29]	15.45 [39.12]	6.00 or 8.00 [15.27 or 20.32]
050											
070											
080	460-3-60 575-3-60	33.83 [85.93]	84.05 [200.79]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	50.66 [115.98]	76.16 [193.45]	15.44 [39.12]	8.00 [20.32]

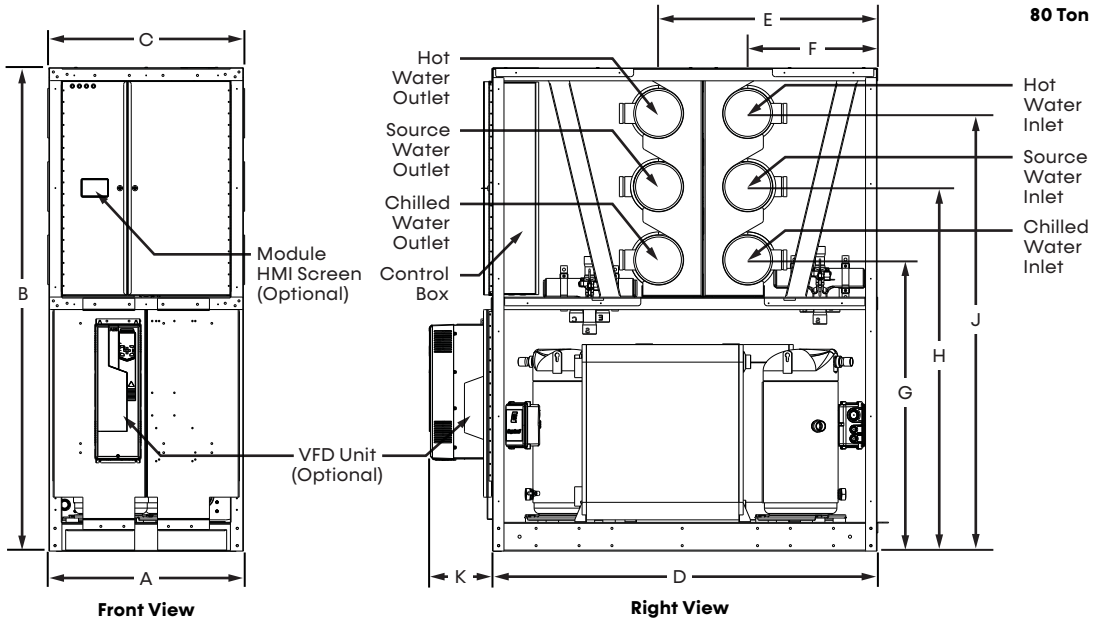
NOTES:
1. Dimensions shown in inches [centimeters].
2. Only present on units with VFD.

6-Pipe SHC Heat Pumps UWU & SHC Heat Recovery UWW

30, 50, & 70 Ton



80 Ton



UWU & UWW with optional VFD	Voltage	A Outermost Bolt Width	B Base Pan to Top Panel	C Header Length	D Front Corner Post to Rear Corner Post	E Header Location	F Header Location	G Header Location	H Header Location	J Header Location	K Depth of VFD Unit[2]	Header Connection Size
030	208-3-60 460-3-60 575-3-60	33.83 [85.93]	79.05 [200.79]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	45.66 [115.98]	58.41 [148.36]	71.16 [183.29]	15.45 [39.12]	6.00 or 8.00 [15.27 or 20.32]
050												
070												
080	460-3-60 575-3-60	33.83 [85.93]	84.05 [213.49]	34.25 [86.00]	66.92 [169.98]	38.03 [96.60]	22.50 [57.15]	50.66 [115.98]	63.41 [148.36]	76.16 [193.45]	15.44 [39.12]	8.00 [20.32]

NOTES:
1. Dimensions shown in inches [centimeters].
2. Only present on units with VFD.

Figure 19: Field Piping Direct Return – 1 to 5 Modules

LEGEND

A. Sensor Location
B. Temp Sensor Well
C. Isolation Valve
D. Pump
E. Strainer
F. Header Bypass Valve
G. Pressure Taps with Shut-Off Valves & Gauges (Optional)
H. Pressure Differential Flow Sensor
I. End Caps

Figure 20: Field Piping Reverse Return – Preferred Piping Arrangement

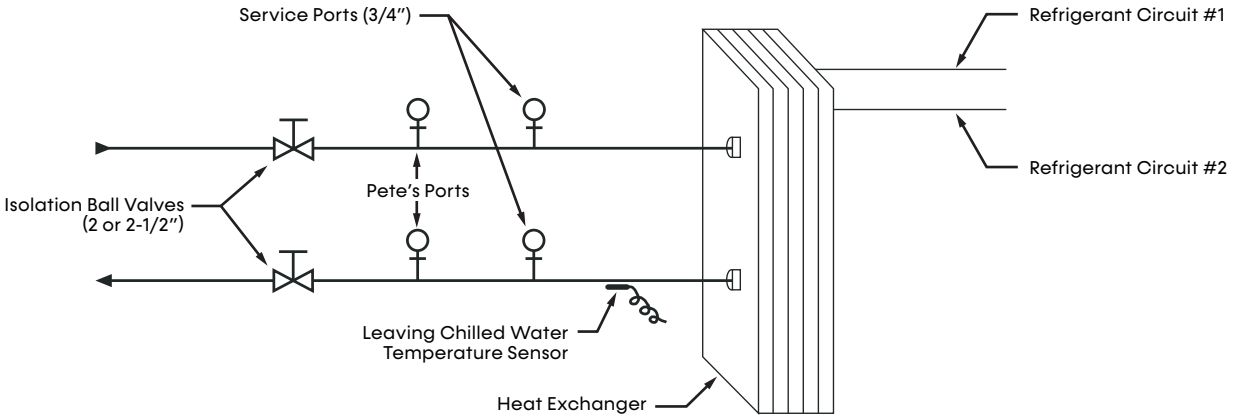
LEGEND

A. Sensor Location
B. Temp Sensor Well
C. Isolation Valve
D. Pump
E. Strainer
F. End Caps
G. Header Bypass Valve
H. Pressure Taps with Shut-Off Valves & Gauges (Optional)
I. Pressure Differential Flow Sensor

NOTES:

1. The above are required piping for proper water regulation and distribution through ClimaCool modular chillers.
2. ClimaCool Standard Bank Package includes shipped-loose items to be installed in the field: strainer, temp sensors and wells, DP proof-of-flow sensors, bypass header kit, end caps and couplings for all water loops. The shown pump, isolation valves, and pressure taps with shut-off valves, and gauges are provided by others/NOT included.
3. Module order and incoming/outgoing water flow, as shown above, can be set up as either a left-to-right or right-to-left configuration.
4. Source Hydronic Circuit shown. Piping configurations are identical for chilled- and hot-water hydronic circuits.
5. Refer to *Dimensional Data and Drawings* for water header inlet/outlet dimensions.
6. The differential-flow sensor provided as part of the ClimaCool Bank Package is a required proof-of-flow safety device on all water loops. Install the DP Sensor between the strainer and the entering side of the chiller as well as before the first water take off on the leaving side of the chiller. **This sensor is NOT for pump control. The BAS should provide their own DP for VFD/pump control.**
7. A minimum first-pass, 40-mesh strainer is required on each water loop. The 40-mesh strainer must be installed at time of start-up for valid warranty commencement. Installing dual strainers per water loop avoids bank shut down and is recommended for better redundancy.
8. Maximum water flow rates per bank with 6-inch (15.24 cm) headers is 1,100 gpm and 2,400 gpm per bank with 8-inch (20.32 cm) headers.
9. Bank-level bypass header kits are available and controlled for each water loop for all applications with motorized valves. System bypasses are provided and controlled by others.
10. Header bypass valve may be installed at either end of the bank.
11. For over twelve (12) modules, two (2) CoolLogic Touch control systems are required. Please consult the factory.

Figure 21: Chilled Water Circuit



NOTE: The figure above depicts hydronic piping in each ClimaCool chiller module and is shown with water isolation valves.

WHAT IS WATER HAMMER?

Water hammer is a phenomenon that can occur in fluid systems with long pipes. Water hammer is a rapid change of pressure caused by a rapid change in velocity. If the flow has been abruptly shut off downstream, the pressure in the entire system is raised very quickly.

What Causes Water Hammer?

Any action that can cause a rapid change in the velocity of the flow can set off a water hammer, such as closing a downstream valve, pump stoppage, etc. Typically, for short lengths of pipe (below 500 feet) downstream valves that are closed within 1/10 of a second can generate water hammer.

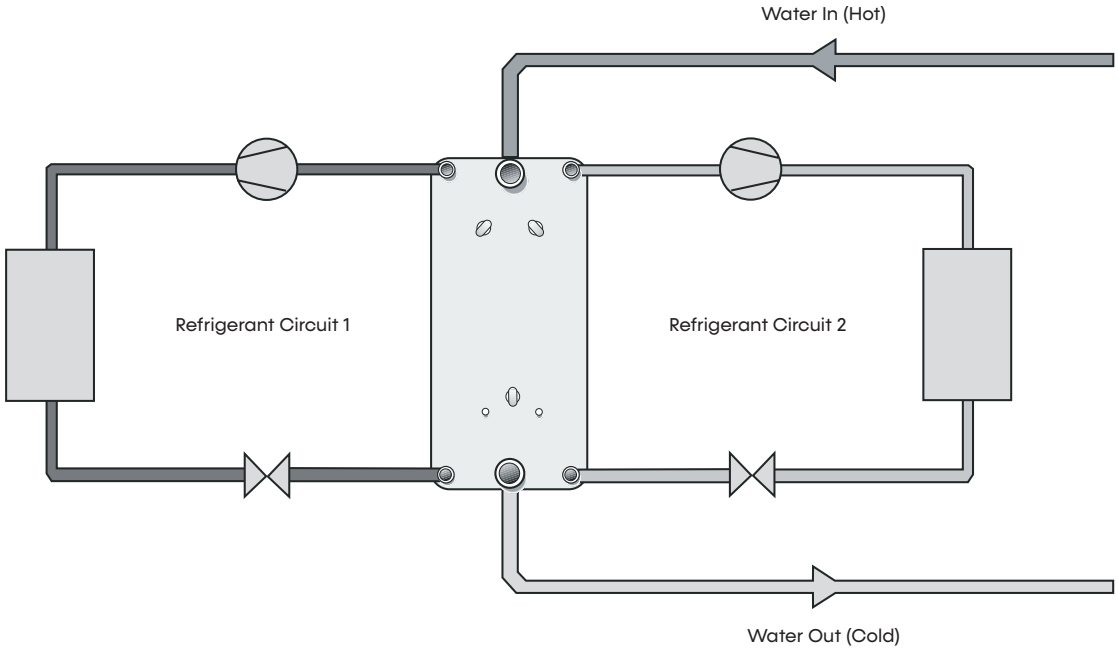
What Can Water Hammer Do?

Pressure spikes from water hammer can raise fluid pressures to dangerously high values. These pressure spikes can cause serious damage to valves, pipes, strainers, joints, etc. The CS strainer is rated to an absolute maximum pressure of 150 psi for bolted lid models, and 125 psi for clamped lid models. A water hammer pressure spike that raises the pressure higher than the maximum rated pressure may result in strainer damage, voiding the manufacturer's warranty.

What Can I Do to Prevent Water Hammer?

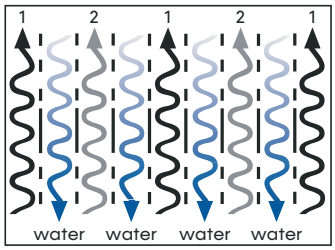
There are certain precautions that can be taken to prevent or decrease the effect of water hammer. The addition of a surge tank or accumulator fitted with a suitable pressure-relief valve strategically located within the water system may provide adequate protection against the effects from water hammer. Careful attention should be given to the design and control strategy for valves and pumps so their actions do not invite a water hammer.

ClimaCool modular chillers employ reliable and highly efficient brazed-plate heat exchangers. These compact exchangers are true dual-circuit heat exchangers in which each water channel is flanked by two refrigerant circuits. This design gives maximum performance, even at part-load.



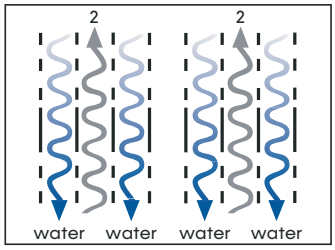
Coil design provides optimum performance in both Full and Partial Load.

Figure 22: Refrigerant Circuits 1 and 2



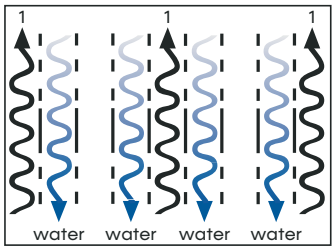
Of course, full performance is attained when the dual-circuit heat exchangers are run to full-load (i.e. with both refrigerant circuits).

Figure 23: Refrigerant Circuit 2 Only



If circuit 1 is cut, the unique design allows each water channel to remain in contact with refrigerant circuit 2, providing optimum heat transfer.

Figure 24: Refrigerant Circuit 1 Only



The same results are achieved if circuit 1 is ran and circuit 2 cut out; optimum heat transfer, even at part-load.

Water quality is of the utmost importance for the proper care and maintenance of the modular chiller system. Proper water treatment is a specialized industry and it is recommended to consult an expert in this field to analyze the water for compliance with the water quality parameters listed. The materials used in the ClimaCool chiller exposed to the water are type 316 stainless steel, pure copper and carbon steel. Other materials may exist external to the ClimaCool chiller. It is the user's responsibility to ensure these materials are compatible with the treated water. Regular treatment of the water will increase longevity of your system. **Failure to provide adequate filtration or treatment of brazed-plate heat exchanger water will void the ClimaCool module's warranty.**

HEAVILY CONTAMINATED WATER

In such instances whereby the particulates in the water are excessive, it is recommended to install an intermediate plate and frame heat exchanger to isolate the ClimaCool chiller from the building water system.

Table 4: Water Quality Parameters

Water Containing	Concentration
Ammonia	Less than 2.0 mg/l
$CaCO_3$ Alkalinity	30 - 500 mg/l
$CaCO_3$ Hardness	30 - 500 mg/l
Chlorides	Less than 200 mg/l
Chlorine (free)	Less than 0.5 mg/l
Dissolved Solids	Less than 1000 mg/l
Iron	Less than 5.0 mg/l
Manganese	Less than 0.4 mg/l
Nitrate	Less than 100 mg/l
pH	7.0 - 9.0
Sulphate	Less than 200 mg/l

Table 5: Water Temperature Requirements

Load Loops	Minimum LWT[4]	Maximum LWT[4]
Chilled Water	20°F [-6.67°C][1]	65°F [18.33°C]
Hot Water	65°F [18.33°C]	140°F [60.00°C]

NOTES:
1. Operating with water temperatures below 40°F (4.44°F) requires a suitable antifreeze solution.
2. All modules can operate in this range without the need of special controls.
3. A glycol solution additive is required at a lower operating suction temperatures (water temperatures below 40°F [4.44°C]) in order to protect the heat exchanger from freeze-ups.
4. LWT: Leaving Water Temperature.
5. The max leaving hot water temperature is limited to a 115°F rise over the leaving source water temperature.

⚠ CAUTION

Excessive chlorine, undissolved solids and other improper water conditions **WILL DAMAGE** the internal heat exchanger and **WILL VOID YOUR WARRANTY!**

⚠ ATTENTION

This chiller is configured for brine duty with a minimum LWT of 20°F (6.7 C).

It is the facility's responsibility to maintain the brine freeze-point adequately below the lowest water and ambient temperatures that the chiller will see.

Table 6: Flow and Water Temperature Data – UW 4- & 6-Pipe Heat Pumps & Heat Recovery

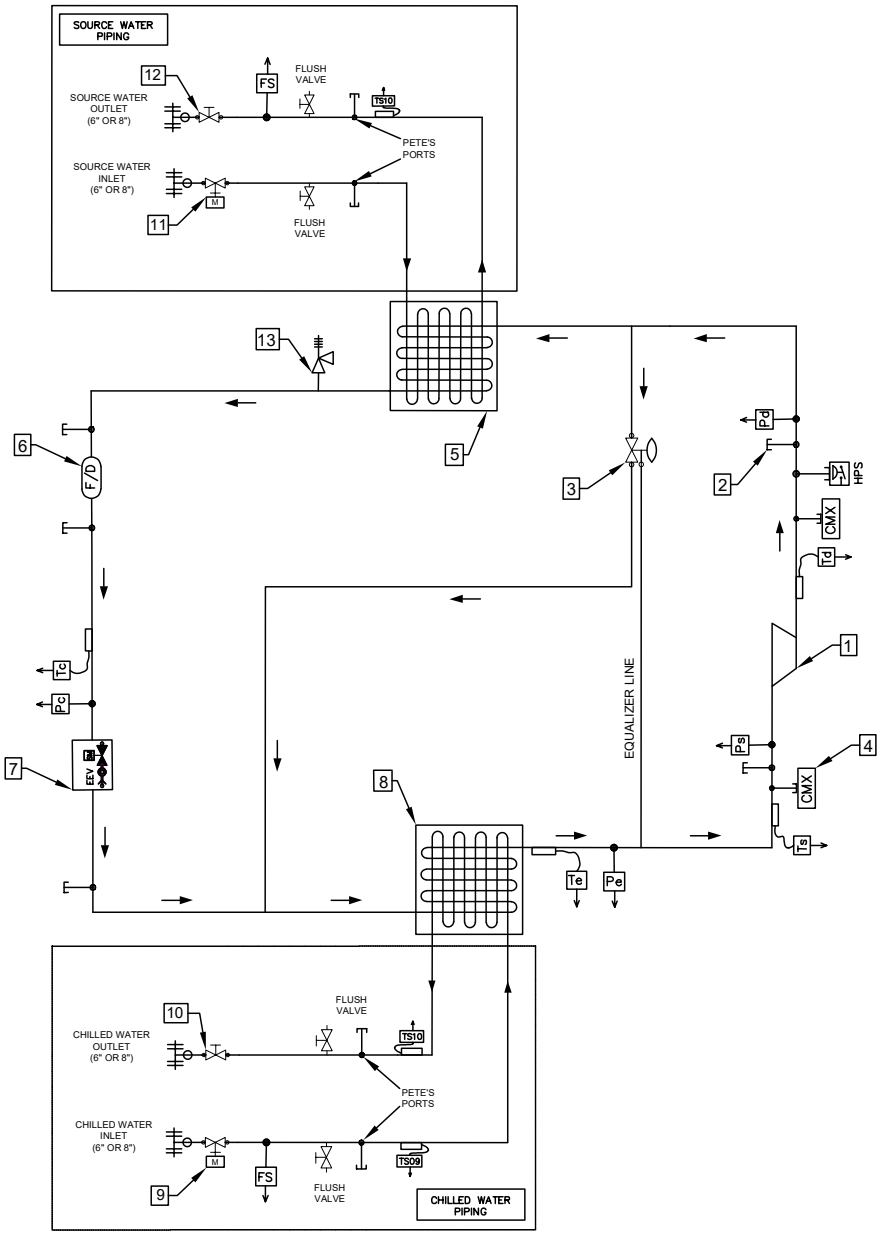
Cooling Mode	30	50	70	80
Minimum Load Water Flow – gpm [m^3/min] [1]	21.0 [0.08]	35.0 [0.13]	45.0 [0.17]	59.0 [0.22]
Maximum Load Water Flow – gpm [m^3/min] [1]	149.0 [0.56]	235.0 [0.89]	296.0 [1.12]	375.0 [1.42]
Minimum Entering Evaporator Water Temperature – °F [°C]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]
Maximum Entering Evaporator Water Temperature – °F [°C]	88.0 [31.70]	88.0 [31.70]	88.0 [31.70]	88.0 [31.70]
Minimum Leaving Chilled Water Temperature (No Glycol) – °F [°C]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]
Minimum Leaving Chilled Water Temperature (with Glycol) – °F [°C]	20.0 [-6.67]	20.0 [-6.67]	20.0 [-6.67]	20.0 [-6.67]
Maximum Leaving Chilled Water Temperature – °F [°C]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]
Minimum Chilled Water Differential Temperature – °F [°C] [2]	5.0 [2.78]	5.0 [2.78]	6.0 [3.33]	6.0 [3.33]
Maximum Chilled Water Differential Temperature – °F [°C]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]
Minimum Source Water Flow – gpm [m^3/min] 1	24.2 [0.09]	37.7 [0.14]	48.5 [0.18]	61.6 [0.23]
Maximum Source Water Flow – gpm [m^3/min] 1	118.7 [0.45]	190.0 [0.72]	246.0 [0.937]	309.0 [1.17]
Minimum Leaving Source Water Temperature – °F [°C]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]
Maximum Leaving Source Water Temperature – °F [°C]	140.0 [60.00]	140.0 [60.00]	140.0 [60.00]	140.0 [60.00]
Minimum Source Water Differential Temperature – °F [°C] [2]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]
Maximum Source Water Differential Temperature – °F [°C]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]
Heating Mode	**30**	**50**	**70**	**80**
Minimum Load Water Flow – gpm [m^3/min] [1]	25.0 [0.095]	39.0 [0.15]	50.0 [0.19]	64.0 [0.24]
Maximum Load Water Flow – gpm [m^3/min] [1]	123.0 [0.47]	181.0 [0.69]	239.0 [0.91]	302.0 [1.14]
Minimum Entering Hot Water Temperature – °F [°C]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]
Minimum Leaving Hot Water Temperature – °F [°C]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]
Maximum Entering Hot Water Temperature – °F [°C]	130.0 [54.44]	130.0 [54.44]	130.0 [54.44]	130.0 [54.44]
Maximum Leaving Hot Water Temperature – °F [°C]	140.0 [60.00]	140.0 [60.00]	140.0 [60.00]	140.0 [60.00]
Minimum Hot Water Differential Temperature – °F [°C] [2]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]
Maximum Hot Water Differential Temperature – °F [°C]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]
Minimum Source Water Flow – gpm [m^3/min] 1	22.9 [0.09]	36.2 [0.14]	46.5 [0.18]	59.0 [0.22]
Maximum Source Water Flow – gpm [m^3/min] 1	208.0 [0.79]	227.0 [0.86]	294.0 [1.11]	373.0 [1.41]
Minimum Leaving Source Water Temperature – °F [°C] [2]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]
Maximum Leaving Source Water Temperature – °F [°C]	70.0 [21.11]	70.0 [21.11]	65.0 [18.33]	65.0 [18.33]
Minimum Source Water Differential Temperature – °F [°C]	5.0 [2.78]	5.0 [2.78]	6.0 [3.33]	6.0 [3.33]
Maximum Source Water Differential Temperature – °F [°C]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]

NOTES:
1. Minimum flows are based on maximum ΔT's and Maximum flows are based on minimum ΔT's.
2. Minimum ΔT's are based on minimum ΔP's (0.5 PSI)
3. Water temperatures below 40°F (4.44°C) require a suitable antifreeze solution.
4. If project operating parameters are needed outside of the above values, please contact your local sales representative.

Table 7: Flow and Water Temperature Data – UW 4-Pipe Chillers

Evaporator	30	50	70	80
Minimum Chilled Water Flow – gpm [m³/min] [1]	21.5 [0.08]	35.1 [0.13]	45.0 [0.17]	59.2 [0.22]
Maximum Chilled Water Flow – gpm [m³/min] [1]	149.0 [0.56]	235.0 [0.89]	296.0 [1.12]	375.0 [1.42]
Minimum Entering Chilled Water Temperature – °F [°C]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]
Maximum Entering Chilled Water Temperature – °F [°C]	88.0 [31.7]	88.0 [31.7]	88.0 [31.7]	88.0 [31.7]
Minimum Leaving Chilled Water Temperature (No Glycol) – °F [°C]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]	40.0 [4.44]
Minimum Leaving Chilled Water Temperature (with Glycol) – °F [°C]	20.0 [-6.67]	20.0 [-6.67]	20.0 [-6.67]	20.0 [-6.67]
Maximum Leaving Chilled Water Temperature – °F [°C]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]
Minimum Chilled Water Differential Temperature – °F [°C] [2]	5.0 [2.78]	5.0 [2.78]	5.0 [2.78]	5.0 [2.78]
Maximum Chilled Water Differential Temperature – °F [°C]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]	23.0 [12.78]
Condenser	**30**	**50**	**70**	**80**
Minimum Source Water Flow – gpm [m³/min] [1]	24.2 [0.092]	37.7 [0.143]	48.5 [0.184]	61.6 [0.233]
Maximum Source Water Flow – gpm [m³/min] [1]	118.7 [0.45]	190.0 [0.72]	246.0 [0.937]	309.0 [1.17]
Minimum Entering Source Water Temperature – °F [°C]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]	45.0 [7.22]
Maximum Entering Source Water Temperature – °F [°C]	130.0 [54.44]	130.0 [54.44]	130.0 [54.44]	130.0 [54.44]
Minimum Leaving Source Water Temperature – °F [°C]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]	65.0 [18.33]
Maximum Leaving Source Water Temperature – °F [°C]	140.0 [60.0]	140.0 [60.0]	140.0 [60.0]	140.0 [60.0]
Minimum Source Water Differential Temperature – °F [°C] [2]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]	10.0 [5.56]
Maximum Source Water Differential Temperature – °F [°C]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]	30.0 [16.67]

5. Minimum flows are based on maximum ΔT's and Maximum flows are based on minimum ΔT's.
6. Minimum ΔT's are based on minimum ΔP's (0.5 PSI)
7. Water temperatures below 40°F (4.44°C) require a suitable antifreeze solution.
8. If project operating parameters are needed outside of the above values, please contact your local sales representative.



COMPONENT LEGEND

1. COMPRESSOR
2. PRESSURE ACCESS FITTING
3. HOT GAS BYPASS VALVE (IF USED)
4. COREMAX VALVE
5. BRAZED PLATE HEAT EXCHANGER - SOURCE
6. FILTER DRIER
7. ELECTRONIC EXPANSION VALVE
8. BRAZED PLATE HEAT EXCHANGER - LOAD
9. MOTORIZED CHILLER WATER INLET VALVE
10. CHILLER WATER OUTLET VALVE
11. MOTORIZED CONDENSER WATER INLET VALVE
12. CONDENSER WATER OUTLET VALVE
13. PRESSURE RELIEF VALVE

ABBREVIATIONS

PRESSURE TRANSDUCER

Pe = ELECTRONIC EXPANSION VALVE
Ps = SUCTION
Pd = DISCHARGE
Pc = COOLING

TEMPERATURE SENSOR

Te = ELECTRONIC EXPANSION VALVE
Ts = SUCTION
Td = DISCHARGE
Tc = COOLING

TS09 = INLET
TS10 = OUTLET

OTHERS

HPS = HIGH PRESSURE SWITCH
FS = FLOW SWITCH

← = COOLING

CLIMACOOL®

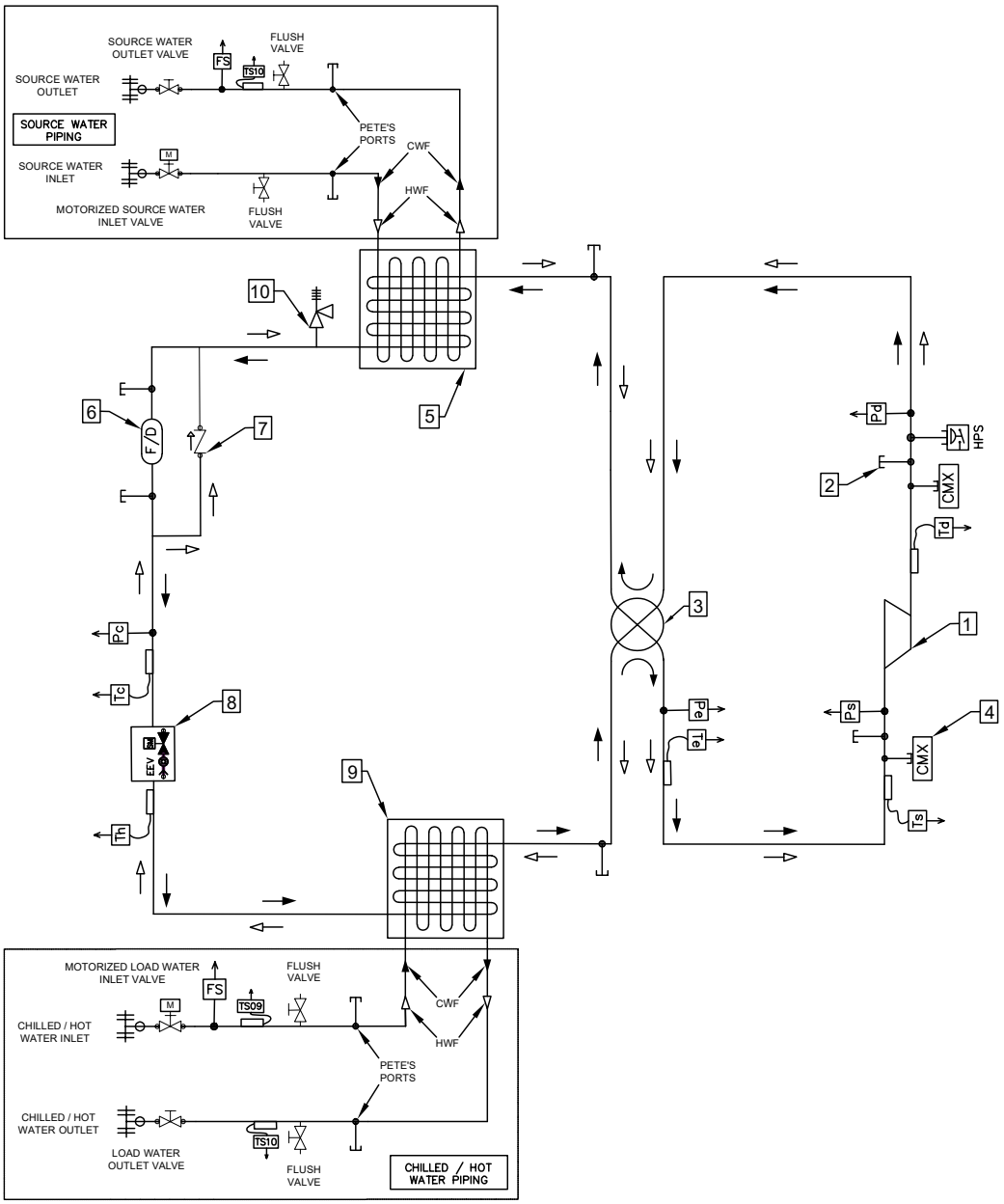
TITLE: REFRIGERATION CIRCUIT DIAGRAM (CIRCUIT #1 SHOWN)

DESCRIPTION: WATER COOLED MODULAR COOLING ONLY (4-PIPE) CLIMACOOL MODEL # UWC (030/050/070/085)

SIZE: A
SCALE: -
DRAWN BY: CCC-ENG

REVISION BY: EA
DATE: JUN-2024
SHEET: 1 OF 1

REV: B



COMPONENT LEGEND

1. COMPRESSOR
2. PRESSURE ACCESS FITTING
3. REVERSING VALVE
4. COREMAX VALVE
5. BRAZED PLATE HEAT EXCHANGER - SOURCE
6. FILTER DRIER
7. CHECK VALVE
8. ELECTRONIC EXPANSION VALVE
9. BRAZED PLATE HEAT EXCHANGER - LOAD
10. PRESSURE RELIEF VALVE

ABBREVIATIONS

PRESSURE TRANSDUCER

Pe = ELECTRONIC EXPANSION VALVE
Ps = SUCTION
Pd = DISCHARGE
Pc = COOLING

TEMPERATURE SENSOR

Te = ELECTRONIC EXPANSION VALVE
Ts = SUCTION
Td = DISCHARGE
Tc = COOLING
Th = HEATING

TS09 = INLET
TS10 = OUTLET

OTHERS

HPS = HIGH PRESSURE SWITCH
FS = FLOW SWITCH
CWF = CHILLED WATER FLOW
HWF = HOT WATER FLOW

= HEATING
= COOLING

CLIMACOOL®

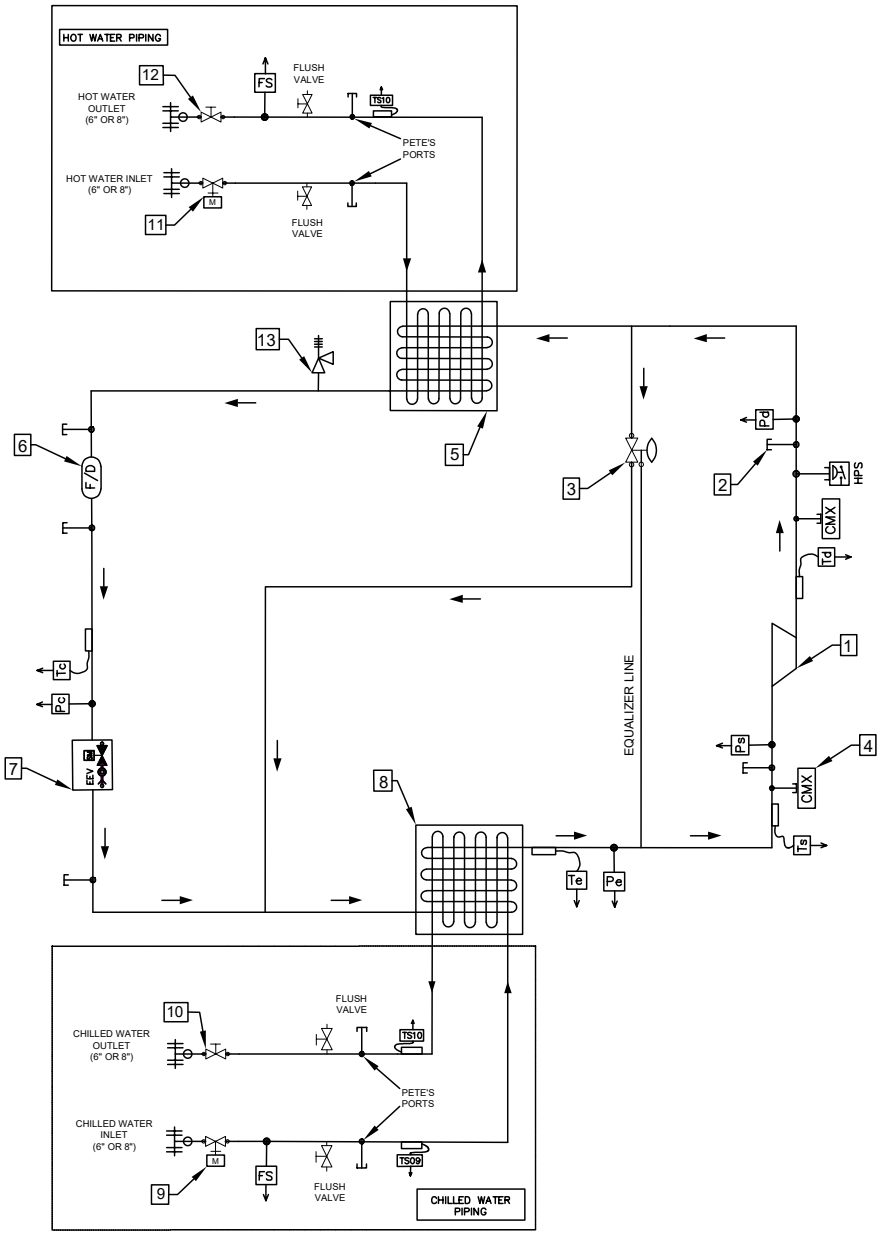
TITLE: REFRIGERATION CIRCUIT DIAGRAM (CIRCUIT #1 SHOWN)

DESCRIPTION: WATER COOLED MODULAR HEAT PUMP CHILLER (4-PIPE)
CLIMACOOL MODEL UWT(030/050/070/080)-HP

SIZE: A
SCALE: -
DRAWN BY: CCC-ENG

REVISION BY: EA
DATE: AUG-2024
SHEET: 1 OF 1

REV: C



COMPONENT LEGEND

1. COMPRESSOR
2. PRESSURE ACCESS FITTING
3. HOT GAS BYPASS VALVE (IF USED)
4. COREMAX VALVE
5. BRAZED PLATE HEAT EXCHANGER - SOURCE
6. FILTER DRIER
7. ELECTRONIC EXPANSION VALVE
8. BRAZED PLATE HEAT EXCHANGER - LOAD
9. MOTORIZED CHILLER WATER INLET VALVE
10. CHILLER WATER OUTLET VALVE
11. MOTORIZED CONDENSER WATER INLET VALVE
12. CONDENSER WATER OUTLET VALVE
13. PRESSURE RELIEF VALVE

ABBREVIATIONS

PRESSURE TRANSDUCER

Pe = ELECTRONIC EXPANSION VALVE
Ps = SUCTION
Pd = DISCHARGE
Pc = COOLING

TEMPERATURE SENSOR

Te = ELECTRONIC EXPANSION VALVE
Ts = SUCTION
Td = DISCHARGE
Tc = COOLING

TS09 = INLET
TS10 = OUTLET

OTHERS

HPS = HIGH PRESSURE SWITCH
FS = FLOW SWITCH

← = COOLING

CLIMACOOL®

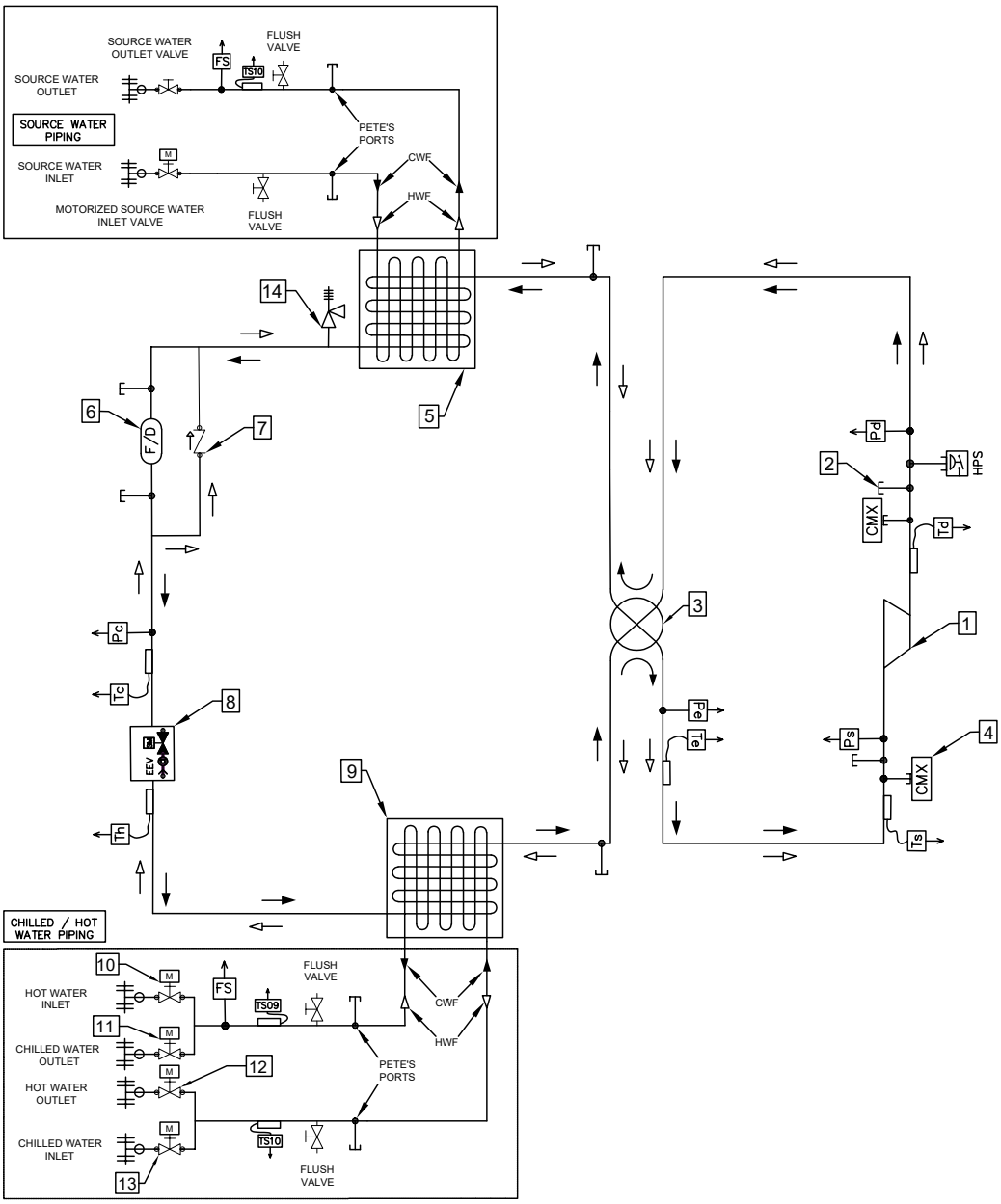
TITLE: REFRIGERATION CIRCUIT DIAGRAM (CIRCUIT #1 SHOWN)

DESCRIPTION: WATER COOLED MODULAR HEAT RECOVERY (4-PIPE) CLIMACOOL MODEL # UWH (030/050/070/085) - HR

SIZE: A
SCALE: -
DRAWN BY: CCC-ENG

REVISION BY: EA
DATE: JUN-2024
SHEET: 1 OF 1

REV: B



COMPONENT LEGEND

1. COMPRESSOR
2. PRESSURE ACCESS FITTING
3. REVERSING VALVE
4. COREMAX VALVE
5. BRAZED PLATE HEAT EXCHANGER - SOURCE
6. FILTER DRIER
7. CHECK VALVE
8. ELECTRONIC EXPANSION VALVE
9. BRAZED PLATE HEAT EXCHANGER - LOAD
10. MOTORIZED HOT WATER INLET VALVE
11. MOTORIZED CHILLED WATER OUTLET VALVE
12. MOTORIZED HOT WATER OUTLET VALVE
13. MOTORIZED CHILLED WATER INLET VALVE
14. PRESSURE RELIEF VALVE

ABBREVIATIONS

PRESSURE TRANSDUCER

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Ps = SUCTION
Pd = DISCHARGE
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TEMPERATURE SENSOR

Te = ELECTRONIC EXPANSION VALVE
Ts = SUCTION
Td = DISCHARGE
Tc = COOLING
Th = HEATING
TS09 = INLET
TS10 = OUTLET

OTHERS

HPS = HIGH PRESSURE SWITCH
FS = FLOW SWITCH
CWF = CHILLED WATER FLOW
HWF = HOT WATER FLOW

= HEATING
= COOLING

CLIMACOOL®

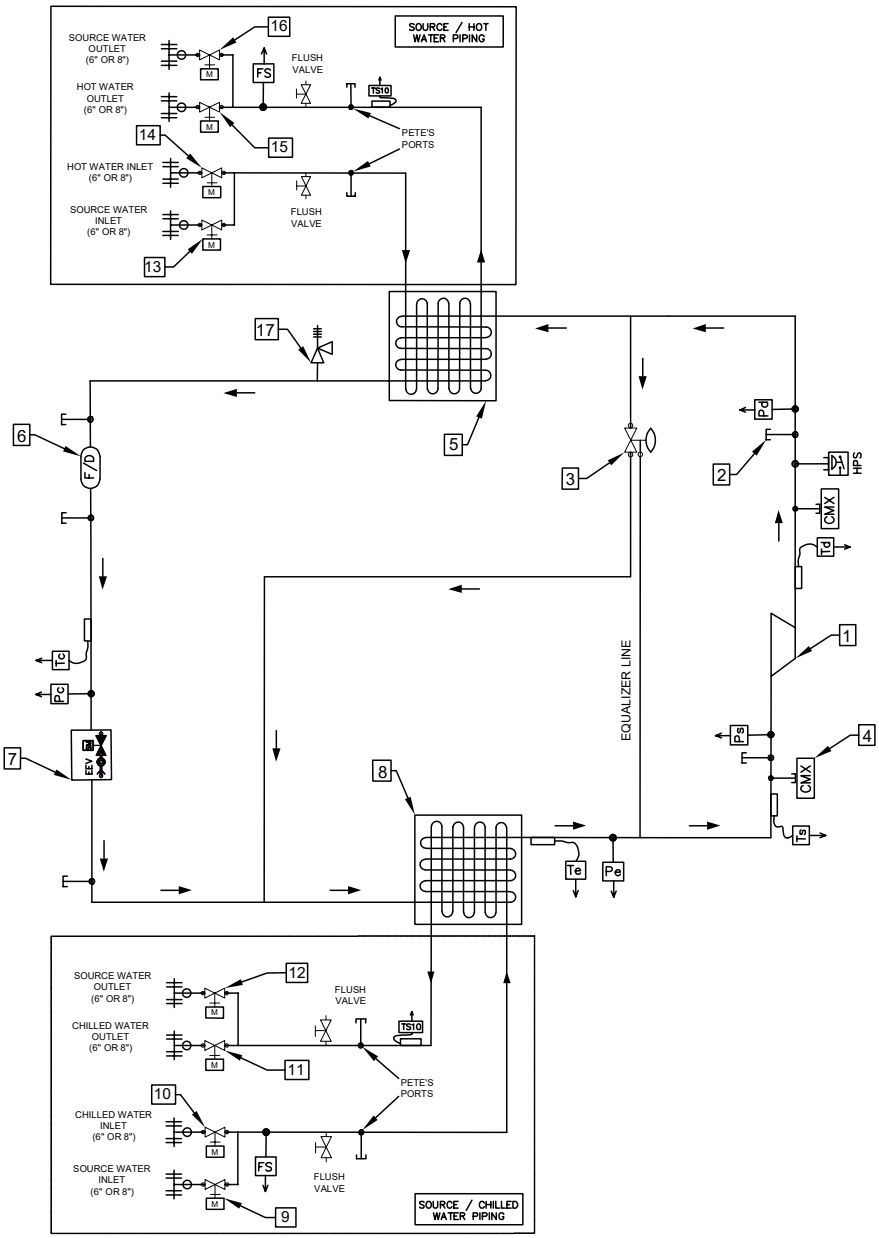
TITLE: REFRIGERATION CIRCUIT DIAGRAM (CIRCUIT #1 SHOWN)

DESCRIPTION: WATER COOLED MODULAR SHC HEAT PUMP CHILLER (6-PIPE) CLIMACOOL MODEL UWU(030/050/070/080)-SHC HP

SIZE: A
SCALE: -
DRAWN BY: CCC-ENG

REVISION BY: EA
DATE: AUG-2024
SHEET: 1 OF 1

REV: C



COMPONENT LEGEND

1. COMPRESSOR
2. PRESSURE ACCESS FITTING
3. HOT GAS BYPASS VALVE (IF USED)
4. COREMAX VALVE
5. BRAZED PLATE HEAT EXCHANGER - SOURCE
6. FILTER DRIER
7. ELECTRONIC EXPANSION VALVE
8. BRAZED PLATE HEAT EXCHANGER - LOAD
9. MOTORIZED SOURCE WATER INLET VALVE
10. MOTORIZED CHILLER WATER INLET VALVE
11. MOTORIZED CHILLER WATER OUTLET VALVE
12. MOTORIZED SOURCE WATER OUTLET VALVE
13. MOTORIZED SOURCE WATER INLET VALVE
14. MOTORIZED HOT WATER INLET VALVE
15. MOTORIZED HOT WATER OUTLET VALVE
16. MOTORIZED SOURCE WATER OUTLET VALVE
17. PRESSURE RELIEF VALVE

ABBREVIATIONS

PRESSURE TRANSDUCER

Pe = ELECTRONIC EXPANSION VALVE
Ps = SUCTION
Pd = DISCHARGE
Pc = COOLING

TEMPERATURE SENSOR

Te = ELECTRONIC EXPANSION VALVE
Ts = SUCTION
Td = DISCHARGE
Tc = COOLING

TS10 = OUTLET

OTHERS

HPS = HIGH PRESSURE SWITCH
FS = FLOW SWITCH

← = COOLING

CLIMACOOL®

TITLE: REFRIGERATION CIRCUIT DIAGRAM (CIRCUIT #1 SHOWN)

DESCRIPTION: WATER COOLED MODULAR SHC HEAT RECOVERY CHILLER (6-PIPE) CLIMACOOL MODEL # UWW (030/050/070/080) - SHC HR

SIZE: A
SCALE: -
DRAWN BY: CCC-ENG

REVISION BY: EA
DATE: AUG-2024
SHEET: 1 OF 1

REV: C

GENERAL

Furnish ClimaCool UW Water-Source Modular Chillers, as indicated on the plans. Equipment shall be completely assembled, piped, and internally wired—capacities and characteristics as listed in the schedule and the following specifications.

Units shall be supplied entirely factory-built and capable of operating over an indoor air temperature range from 55° to 104°F (12.8°C to 40°C) as standard. All equipment listed in this section must be rated and certified per Air-Conditioning, Heating, and Refrigeration Institute (AHRI 550/590) regulations. All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL 60335-2-40 4th Edition, UL 60335-1 6th Edition for the United States and Can/CSA C22.2 No. 60335-2-40:22, CAN/CSA C22.2 No 60335-1:16 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI and ETL-US-C labels.

All units shall pass a factory acceptance test. The quality control system shall automatically perform the factory acceptance test on a computer.

Note: If a unit fails the factory acceptance test, it shall not be allowed to ship.

UNIT DESCRIPTION

Factory-assembled and wired water-cooled water chiller. The chiller shall incorporate scroll compressors and consist of multiple refrigerant circuits. Each module contains a high-efficiency, dual-circuited, type 316 stainless-steel brazed-plate evaporator. Each refrigerant circuit includes a scroll compressor, reversing valve (applicable for UWT and UWU modules only), electronic expansion valve, sight glass, filter drier, crankcase heater, and operating and safety controls. Each circuit is independent from other circuits in terms of both refrigeration and electrical redundancy. The evaporator, chilled water piping, chilled water headers, hot water headers, and all low-temperature refrigerant tubing shall be wrapped with closed-cell insulation (NBR closed cell foam, ¾-inch thick (1.9 cm), and 3.06 R-value) to prevent condensation. All operating components for each module, including compressors, heat exchangers, piping, and controls, shall be securely fastened to a unitized heavy gauge steel frame with an electro-statically applied powder and oven-baked enamel finish (1000 hr. rating per ASTM B117-97). Compressor motor contactors, control transformer, and primary and secondary fuses are in the control panel. Each chiller module has two (2) equal steps of control (100%, 50%, and off) by cycling off the equally sized compressors. All electrical controls, contactors, and relays for each module shall be mounted within that module and be of the low-voltage type.

Headers—Each module shall include supply and return mains for chilled and hot water (source water included for SHC applications). For interconnection to 6-inch standard piping (8-inch standard piping for 80-ton modules) with grooved couplings and end caps, grooved end connections are provided.

The multiple-module chiller shall produce chilled and/or hot water even if one or more refrigerant circuits fail.

OPERATION

Straight Cool (UWC)

Each refrigerant circuit shall use R-454B and include an electronic expansion valve and an accumulator. Four (4) headers shall be provided – supply/return for the chilled water loop and supply/return for the source loop. Motorized isolation valves shall be provided with ¾-inch flush port connections – four (4) motorized proportional valves shall be provided, one on each header. The whole bank is in cooling mode.

Heat Recovery (UWH)

Each refrigerant circuit shall use R-454B and include an electronic expansion valve and an accumulator. Four (4) headers shall be provided – supply/return for the chilled water loop and supply/return for the hot water loop. Motorized isolation valves shall be provided with ¾-inch flush port connections – four (4) motorized proportional valves shall be provided, one on each header. The whole bank is in heat recovery.

Water Source Heat Pump (UWT)

Each refrigerant circuit shall use R-454B and include a reversing valve, an electronic expansion valve, and an accumulator. Four (4) headers shall be provided – supply/return for the load loop and supply/return for the source loop. Motorized isolation valves shall be provided with ¾-inch flush port connections – four (4) motorized proportional valves shall be provided, one on each header. The whole bank is either in cooling or heating mode.

SHC Heat Pump Operation (UWU)

Each refrigerant circuit shall use R-454B and include a reversing valve, an electronic expansion valve, and an accumulator. The six-header module design enables the modular chiller bank to supply the required chilled water and/or hot water and/or utilize the source water as a sink. Internal proportional motorized valves are provided for cooling, heating, and source, allowing for variable pumping and internal head pressure control.

Heat pumps shall operate as a simultaneous heating and cooling bank utilizing six headers in each module. The bank control panel shall enable the bank to produce chilled and hot water. The six-header module design allows the operation of any module to provide hot water or chilled water, equalizing run hours on all modules contained in the bank. Any module in the bank may be selected for cooling or heating operation at any time. In heating operation, the module's motorized valves to and from the hot water load header will open, and the motorized valves to and from the chilled water header will close. In cooling operation, the module's motorized valves to and from the chilled water load header will open, and the motorized valves to and from the hot water header will close.

SHC Heat Recovery Operation (UWW)

Each refrigerant circuit shall use R-454B and include an electronic expansion valve and an accumulator. The six-header module design enables the modular chiller bank to supply the required chilled water and/or hot water and/or utilize the source water as a sink. Internal proportional motorized valves are provided for cooling, heating, and source, allowing for variable pumping and internal head pressure control.

Three distinct module modes of operation are provided – heat recovery (heating and cooling), cooling, and heating. The modular chiller bank controller shall enable the operation of any module in any position in the bank to provide hot water and/or chilled water and automatically equalize run time compressor hours for all modules and compressors in the bank. If the chilled water (evaporator) or hot water (condenser) is not required for the building load, then it will be diverted within the module and sent to the source (sink).

BASIC CONSTRUCTION

The frame design shall consist of heavy gauge galvanized steel with a 3 mm powder-coat paint finish baked at 350°F for resilience in transport and installation. The module must have a low center of gravity, schedule-40 carbon-steel pipe water headers, each insulated with ¾-inch closed cell insulation, designed to connect to adjacent modules with 300-psi-rated grooved couplings, base with cutouts for forklift or pallet jack and the frame must be designed to fit through a standard 36-inch doorway.

EVAPORATORS AND CONDENSERS

Each evaporator and condenser shall be dual-circuited, brazed plate heat exchangers constructed of stainless steel; UL listed & labeled.

Each evaporator and condenser brazed-plate heat exchanger shall have a waterside flush connection with a ball valve on each module to permit back flushing or cleaning of heat exchangers without removing chiller headers or other in-place components.

COMPRESSORS

The unit shall contain two hermetic scroll compressors independently circuited with internal isolation mounted with rubber-in-shear isolators. Each compressor system includes high discharge pressure manual reset safety cut-outs. Each system also contains low suction pressure safety cut-outs. The compressors are direct-drive, hermetic, 3600 rpm (@ 60 Hz), fixed-compression scroll compressors. Each compressor has an integral centrifugal oil pump, oil level sight glass, oil charging valve, and an internal check valve on the scroll discharge port. The motor is suction gas-cooled, hermetically sealed, two-pole, squirrel cage induction type.

FACTORY INSULATED SURFACES

All internal water piping and refrigeration piping (except discharge line), cooling and heating headers, and load heat exchangers are factory insulated with NBR closed cell foam, ¾-inch-thick (1.9 cm), and 3.06 R-value.

STARTER/CONTROL PANEL

Module controls shall be provided for individual control as well as system integration. Field-provided & installed home run Shielded Twisted Pair (STP) Cat 6 cabling connections will allow communication between modules and the CoolLogic Touch Control System. The NEMA Type 1 enclosure panel shall consist of a power distribution block, control transformer, compressor contactors and fusing, isolation relays, microprocessor control, and two toggle switches to turn off each compressor during startup or troubleshooting. The panel shall swing out for complete access to internal components for servicing.

REFRIGERANT DETECTION SYSTEM (RDS)

The unit shall be supplied with a Refrigerant Detection System (RDS) with sensors to be strategically placed within the cabinet. In the event of a refrigerant leak, the RDS disables compressor operation in compliance with UL 60335-2-40 safety standards for flammable refrigerants.

BANK CONTROL PANEL

1. The Bank Control System (CoolLogic Touch) shall be fully compatible with the Building Automation System via native BACnet communication. The control system provides advanced algorithms for maintaining precise chilled and hot water temperatures. The bank microprocessor-based controller shall schedule the various compressors. A module/compressor run time equalization sequence ensures an even distribution of module/compressor run time. A load limit control shall be available to limit the number of compressors that can be energized at any time.
2. Multiple Module Chillers
   - Each chiller shall be equipped with a dedicated standalone direct digital control (DDC) system, including a bank controller and display, which shall perform the numerous functions discussed in this section. The LCD shall access all chiller operations and computer features. A BAS interface shall be provided for BACnet communication.
   - An RS485 port shall be provided for optional remote Windows-based monitoring and control software via hardwire or telephone modem.
   - Each module control panel shall communicate with the bank controller via STP Cat 6 or higher ethernet cable connected via home run back to the bank control panel. The module control panel shall monitor and control each refrigeration system in response to commands by the bank controller. The bank controller shall have a terminal strip to accept field-wired low-voltage system interlocks such as flow switches, remote start/stop, standard alarm output, etc. The unit manufacturer shall provide the bank controller and field mounted in the equipment room by others.
3. Safeguarding Operation of Refrigeration System
   - Each module is equipped to control all alarm and fault conditions, protect the compressor, and provide feedback input and output conditions to the bank controller to monitor individual chiller module status.

The bank controller shall continually monitor all the following areas for each module's refrigeration circuit, including:

- High discharge pressure cutout.
- Low suction pressure cutout.
- Suction pressure via pressure transducers.
- Discharge pressure via pressure transducers.
- Solid-state compressor motor protection.
- Leaving chilled water temperature (for module freeze protection).
- Leaving hot water temperature (for module protection).
- Phase loss (each phase), phase imbalance, phase reversal, and over-/ under voltage protection.

- The bank controller shall additionally monitor the following bank-level inputs:
  - Leaving chilled water temperature (for capacity control).
  - Entering chilled water temperature.
  - Leaving hot water temperature (for capacity control).
  - Entering hot water temperature.
  - Entering source temperature.
  - Leaving source temperature.
  - Chilled water flow status.
  - Heating water flow status.
  - Source water flow status.
- A potentially unsafe (out of tolerance) condition from any of these controls or sensors shall cause a "fault" shutdown of that compressor with an automatic transfer of load requirements to another available compressor. A running history of the complete fault occurrence conditions shall be automatically maintained. All details will be retained for the last 10 failures, should they be needed for troubleshooting.
- Continuous individual monitoring of leaving chilled water temperature from each module's refrigeration system shall protect against freeze-up in the event of unusual, unexpected operating conditions.

4. The bank controller must lead/lag the dual scroll compressors, balance the run time, prevent short cycling of compressors, and register all failure occurrences in the last 30 days. Fault conditions must alarm so the compressor can be taken offline. Alarmed and failed conditions must be displayed on a digital display on the front of the bank control panel. An alarm relay must be supplied to indicate faults remotely and failed conditions with a normally open and normally closed dry contact. The CoolLogic Touch Control System must be able to be controlled by and monitored by the central BAS. The chilled and hot water temperature operating control must be reset remotely with a 4-20ma input signal. Staging of the scroll compressors, lead/lag of the compressors, equalizing the runtime of compressors, and preventing compressor short cycling will be done by the bank controller. Compressor staging is accomplished through PID control logic, which adjusts response times and settings for chilled and hot water control. The system shall provide for variable time between compressor sequencing and temperature sensing. Inputs/Outputs to the Bank controller include:
   - Remote Start/Stop.
   - Chiller Failure Output - Each module will indicate its failure at the chiller. The "Chiller Failure" indication is a remote signal that the chiller has had sufficient modules fail that operation of the chiller will not be beneficial. This failure signal shall be capable of adjusting to provide a failure signal according to the percentage of failed capacity.
   - Chilled Water Flow Status (via differential pressure transducer, provided by chiller manufacturer and field installed by others).
   - Hot Water Flow Status (via differential pressure transducer, provided by chiller manufacturer and field installed by others).

- Source Water Flow Status (via differential pressure transducer, provided by chiller manufacturer and field installed by others)
- Four (4) temperature sensors and thermal wells shall be provided with the chiller for others to field install and wire to the bank control panel. These sensors monitor the load's entering and leaving water temperatures and source water connected to the chiller bank.
- BAS Interface – BACnet interface shall be provided for communication to the Building Automation System

POWER CONNECTIONS

Each module shall have its electrical power panel mounted to the unit frame. Each module will be independently powered by a field-installed fused disconnect switch or equivalent module circuit breaker (supplied by others) so that any module can be shut down for repair without interrupting the remaining chiller modules' operation. The panel shall swing out for complete access to internal components for servicing. The power panel for each module shall contain:

1. Main input terminal block
2. Compressor motor contractors
3. Motor overload protection per compressor
4. Individual compressor motor fusing or breakers
5. Local manual "ON" / "OFF" compressor switch to allow service or repair to individual modules and compressors without interrupting service of the entire chiller.
6. Power Phase Monitor:
   Factory installed on each module
   - Power Phase Monitor shall protect against low voltage, phase rotation, loss of phase, and phase imbalance.

WATER ISOLATION VALVES

Motorized Water Isolation/Regulating Valves for Evaporator and Condenser

Each chiller module shall include standard factory-installed motorized isolation valves in the chilled water branch line to the module's evaporator and a manual valve from the evaporator for heat exchanger isolation.

Modulating valves shall have built-in water regulation and control to maintain proper module head pressure.

MODEL CONFIGURATION OPTIONS

Option: **Sound Blankets for compressors to reduce noise levels.**

Option: **65 kA SCCR: The maximum short-circuit current level the chiller can withstand is 65 kA. An external, field-installed circuit breaker or fuse must be installed upstream of the chiller.**

Option: **'Auto Stand Alone': The chiller module will continue to operate if the Bank Control System loses communication with it or if a critical sensor fails. Auto Stand Alone allows the chiller module to be switched into manual mode, automatically keeping the chiller online until the errors of the Bank Control System can be resolved.**

Option: **Header End Caps: Header Bank End Cap Kit – 4 per standard bank, 6 per SHC bank**

Option: **8-inch Headers: 6-inch Headers are standard for all models through 70-ton. 8-inch headers are standard for the 80-ton model and optional for most other sizes.**

Option: **Module Touchscreen: Each chiller module has a smaller touchscreen installed in addition to standard CoolLogic Touch Control System controls.**

FIELD-INSTALLED OPTIONS

Option: **Strainers: Strainers shall be installed on the chiller bank's inlet headers. For ease of service, they must be field-installed externally to the chiller. Strainers inside headers, which require disassembly for cleaning, are not recommended. Strainers are 40-mesh, "Y" or "Basket" style and 125 or 300 psig rated.**

Option: **Bypass Header Kit (BHK): The bypass header kit (BHK) is shipped loose for field installation and wiring by others. The CoolLogic Touch Control System controls the BHK and acts as the chiller bank and pump bypass when the internal module's water valves are closed—one per water loop.**

WARRANTY

ClimaCool shall warranty equipment for 12 months from the date of unit start-up or 18 months from the date of shipment, whichever occurs first.

Option: **Extended Parts Only Warranty Extension (1–4-year extension, for 2-5 years total). The warranty covers all parts except for the compressors and refrigerant. Labor is not included.**

Option: **Extended 4-year compressor warranty covers the compressor for 5 years.**

Voltage Limitations		
The following voltage limitations are absolute and operation beyond these limitations may cause serious damage to the compressor.		
Nominal Voltage	**Minimum Voltage**	**Maximum Voltage**
208/230-3-60	187	253
460-3-60	414	506
575-3-60	518	632

ClimaCool Base Model	Voltage	Power Wiring per Module		
		Rated Load Amps	Min. Circuit Amps (MCA)	Max Fuse Size (MOP)
UWCS30	208/230V-3PH-60Hz	100.4	112.7	150
	460V-3PH-60HZ	49.1	55.1	70
	575V-3PH-60Hz	39.3	44.1	60
UWHS30 UWWS30	208/230V-3PH-60Hz	100.4	112.7	150
	460V-3PH-60HZ	49.1	55.1	70
	575V-3PH-60Hz	39.3	44.1	60
UWTS30 UWUS30	208/230V-3PH-60Hz	100.4	112.7	150
	460V-3PH-60HZ	49.1	55.1	70
	575V-3PH-60Hz	39.3	44.1	60
UWCS50	208/230V-3PH-60Hz	151.2	169.8	225
	460V-3PH-60HZ	78.8	88.4	125
	575V-3PH-60Hz	57.7	64.8	90
UWHS50 UWWS50	208/230V-3PH-60Hz	151.2	169.8	225
	460V-3PH-60HZ	78.8	88.4	125
	575V-3PH-60Hz	57.7	64.8	90
UWTS50 UWUS50	208/230V-3PH-60Hz	151.2	169.8	225
	460V-3PH-60HZ	78.8	88.4	125
	575V-3PH-60Hz	57.7	64.8	90
UWCS70	208/230V-3PH-60Hz	208.0	233.7	300
	460V-3PH-60HZ	97.1	109.1	150
	575V-3PH-60Hz	87.1	97.8	125
UWHS70 UWWS70	208/230V-3PH-60Hz	208.0	233.7	300
	460V-3PH-60HZ	97.1	109.1	150
	575V-3PH-60Hz	87.1	97.8	125
UWTS70 UWUS70	208/230V-3PH-60Hz	208.0	233.7	300
	460V-3PH-60HZ	97.1	109.1	150
	575V-3PH-60Hz	87.1	97.8	125
UWCS80	460V-3PH-60HZ	136.1	153.0	200
	575V-3PH-60Hz	91.3	102.6	125
UWHS80 UWWS80	460V-3PH-60HZ	136.1	153.0	200
	575V-3PH-60Hz	91.3	102.6	125
UWTS80 UWUS80	460V-3PH-60HZ	136.1	153.0	200
	575V-3PH-60Hz	91.3	102.6	125

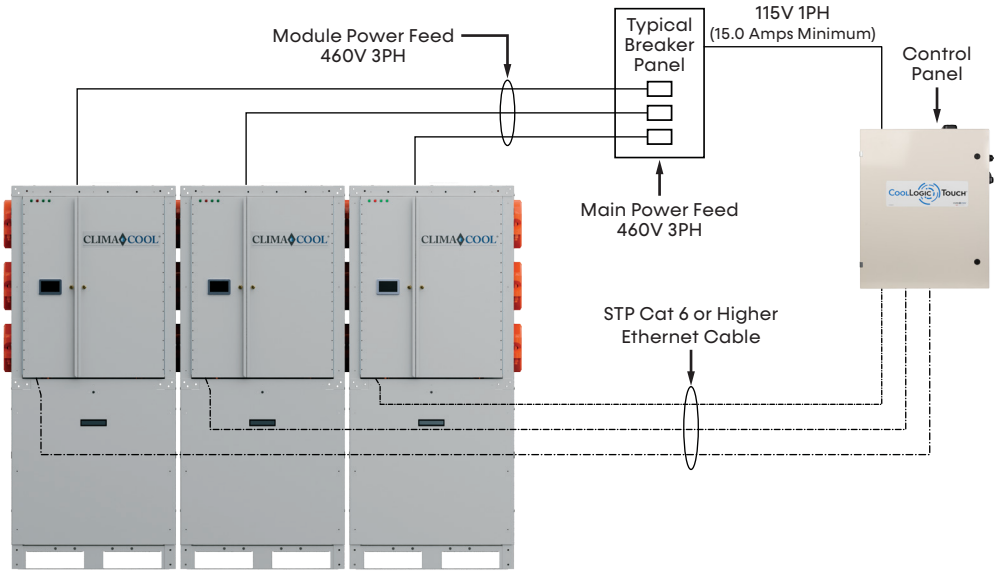
Notes:
1. RLA - Rated Load Amps are calculated as per UL 60335-2-40
2. MCA - Minimum Circuit Ampacity is: 125% of the RLA of the largest compressor motor plus 100% of the RLA of all other concurrent motors and/or electrical loads.
3. MOP - Maximum Overcurrent Protection or Max. Fuse Size is rounded down from: 225% of the RLA of the largest compressor motor plus 100% of the RLA of all other concurrent electrical loads.
4. Max Breaker Size is equivalent to MOP.
5. MOP Device or Recommended Fusing Device (Disconnect Switch) for Module Power Wiring supplied by others. These are recommended values for electrical power protection of modules selected.

Voltage Limitations		
The following voltage limitations are absolute and operation beyond these limitations may cause serious damage to the compressor.		
Nominal Voltage	**Minimum Voltage**	**Maximum Voltage**
208/230-3-60	187	253
460-3-60	414	506
575-3-60	518	632

ClimaCool Base Model	Voltage	Power Wiring per Module		
		Rated Load Amps	Min. Circuit Amps (MCA)	Max Fuse Size (MOP)
UWCS30	208/230V-3PH-60Hz	110.4	125.2	175
	460V-3PH-60HZ	52.1	58.8	80
	575V-3PH-60Hz	42.1	47.6	60
UWHS30 UWWS30	208/230V-3PH-60Hz	139.4	161.4	225
	460V-3PH-60HZ	69.1	80.1	110
	575V-3PH-60Hz	52.1	60.1	90
UWTS30 UWUS30	208/230V-3PH-60Hz	139.4	161.4	225
	460V-3PH-60HZ	69.1	80.1	110
	575V-3PH-60Hz	52.1	60.1	90
UWCS50	208/230V-3PH-60Hz	151.6	170.3	225
	460V-3PH-60HZ	73.9	83.6	110
	575V-3PH-60Hz	61.3	69.3	100
UWHS50 UWWS50	208/230V-3PH-60Hz	219.8	255.5	350
	460V-3PH-60HZ	104.9	121.1	175
	575V-3PH-60Hz	70.3	80.5	110
UWTS50 UWUS50	208/230V-3PH-60Hz	219.8	255.5	350
	460V-3PH-60HZ	104.9	121.1	175
	575V-3PH-60Hz	70.3	80.5	110
UWCS70	208/230V-3PH-60Hz	193.2	218.9	300
	460V-3PH-60HZ	93.1	105.1	150
	575V-3PH-60Hz	85.0	95.7	125
UWHS70 UWWS70	208/230V-3PH-60Hz	248.2	283.9	400
	460V-3PH-60HZ	114.1	130.3	175
	575V-3PH-60Hz	96.0	109.0	150
UWTS70 UWUS70	208/230V-3PH-60Hz	248.2	283.9	400
	460V-3PH-60HZ	114.1	130.3	175
	575V-3PH-60Hz	96.0	109.0	150
UWCS80	460V-3PH-60HZ	133.6	150.5	200
	575V-3PH-60Hz	98.1	111.1	150
UWHS80 UWWS80	460V-3PH-60HZ	164.6	188.6	250
	575V-3PH-60Hz	123.1	142.3	200
UWTS80 UWUS80	460V-3PH-60HZ	164.6	188.6	250
	575V-3PH-60Hz	123.1	142.3	200

Notes:
1. RLA - Rated Load Amps are calculated as per UL 60335-2-40
2. MCA - Minimum Circuit Ampacity is: 125% of the RLA of the largest compressor motor plus 100% of the RLA of all other concurrent motors and/or electrical loads.
3. MOP - Maximum Overcurrent Protection or Max. Fuse Size is rounded down from: 225% of the RLA of the largest compressor motor plus 100% of the RLA of all other concurrent electrical loads.
4. Max Breaker Size is equivalent to MOP.
5. MOP Device or Recommended Fusing Device (Disconnect Switch) for Module Power Wiring supplied by others. These are recommended values for electrical power protection of modules selected.

Figure 25: Power Distribution Drawing



NOTES:

1. Communication wiring is home run set up with STP Cat 6 or higher Ethernet cable.
2. ClimaCool Standard Bank Package includes ship-loose items: 1–CoolLogic Touch Control System per bank and 2–temperature sensors and wells, 1–DP proof of flow sensor and 1–bypass header kit for each water loop. These items are to be installed, powered, and control-wired in the field by others.
3. The shown breaker panel may be purchased through ClimaCool Corp, but is typically provided by the project electrical contractor.
4. Breaker panel represents field power supply and is to be installed by others. Not provided as part of the ClimaCool modular chiller system.
5. Control wiring by others.
6. Disconnects are NOT Included.
7. All voltages available, 460V used as example only.

Date	Section	Action
03/13/25	Electrical Data	Updated table structure and notes. Updated data for UWC with Lead VFD modules.
	Features and Benefits	Updated product descriptions
02/10/25	All	Updated requirements for Cat 5e to shielded, twisted pair (STP) Cat 6. Updated requirement for 60-mesh strainers to 40-mesh strainers.
	Features and Benefits	Updated product descriptions
	Module Nomenclature	Added RDS offerings. Removed unused offerings.
	Components	Updated Header Bypass kit design and accompanying graphics and installation instructions.
	Additional Options	Updated Bank Breaker Panel to Power Distribution Panel
	Physical Data	Updated data for sizes 30 and 70 tons. Updated Notes. Removed Capacity, EER, and COP data.
	Water Piping Configurations	Updated applicability of Field Piping Reverse Return configuration
	Water Treatment & Temperature Requirements	Added Chlorine Water Quality Parameters
	Engineering Specifications	Updated and expanded Engineering Specifications
	Refrigeration Circuit Diagrams	Updated Refrigeration Circuit Diagrams
	Electrical Data	Updated data. Added new table for units with Lead VFD.
10/07/24	All	Updated naming conventions for units and the CoolLogic Touch Control System
09/01/24	Created	

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