TRANE

Series R™ Helical Rotary Liquid Chiller

Model RTHC
Water-Cooled
550-1600 kW

B21 SD 001 E4

Introduction

RTHC: the next generation

The Trane Company introduces the next generation of water-cooled helical-rotary compressor chiller, the RTHC.
With more than 10 years of screw compressor development and manufacturing experience, The Trane Company presents a new chiller with a higher efficiency and reliability than the units available on today's market.
The main characteristics of the RTHC are:

- High energy efficiency
- High reliability
- Low sound level
- Bolt together construction
- R-134a refrigerant
- "Adaptive Control™"

Contents

Features and Benefits

The Trane Helical-Rotary Compressor

- Direct-drive, low-speed compressor for high efficiency and reliability.
- Simple design–only three moving parts–for high reliability and low maintenance.
- Optimized compressor components designed to ensure maximum performance and efficiency.
- Precise rotor-tip clearance for optimal compressor efficiency.
- Suction-gas-cooled motor The motor stays uniformly cooled for longer motor life.
- Years of research and testing. The Trane helical-rotary compressor has undergone thousands of hours of testing, much of it at severe operating conditions beyond normal operation air-conditioning applications.
- Proven track record. The Trane Company is the world's largest manufacturer of large helical-rotary compressors. Tens of thousands of commercial and industrial installations, worldwide, have proven that the Trane helical-rotary compressor has a reliability rate greater than 99.7 percent during the first year of operation.

Microprocessor Control

- Microprocessor-based unit control (UCP2™) monitors and controls chiller operation and associated sensors, relays, and switches, which are all factory-assembled and tested.
- Proportional Integral Derivative (PID) control strategy for stable and efficient chilled-water temperature control.
- "Adaptive Control™" design provides internal control logic to monitor chiller operation and keep it running during extreme operating conditions. While controls on other chillers will shut down machine operation, the Trane Series R™ chiller will modulate system components to keep the chiller on line, producing chilled water.
- Standard electrical demand limiting.
- Chilled-water reset for energy saving.
- Complete range of chiller safety.
- Easy-to-use operator interface. Panel displays all operating and safety messages with complete diagnostic information.
- Clear Language Display is easy to read. Seven languages are available.
- Generic building automation system points available.
- Over 120 diagnostics and operating points, including chiller current draw, condenser pressure, and evaporator pressure.

Electronic Expansion Valve

- Better part-load efficiency.
- Extended operating range.
- Optimized refrigerant metering for more efficient control.

Advanced Heat-Transfer Surface

- The condenser and the evaporator tubes use the latest heat-transfer technology for increased efficiency.

Compact Size

- Fits through standard double-width doors.
- Bolt together construction for easy unit disassembly.

Simple Installation

- Simplified piping. The only water piping required is for the evaporator and condenser victaulic connections.
- Simple power connection.
- Standard unit-mounted starter eliminates additional jobsite labor requirements.
- Extensive factory testing.
- Full factory refrigerant and oil charge, reducing field labor, materials, and installation cost.

Integrated Comfort™ System Interface

- Microprocessor UCP2™ easily interfaces with Trane Tracer Summit® building automation/energy management computer for Integrated Comfort systems benefits, all with a single twisted-pair wire.

Application Considerations

Condenser Water Limitation

Trane Series R™ chillers start and operate satisfactorily over a range of load conditions with controlled entering-condenser water temperature. Reducing the condenser water temperature is an effective method of lowering the required power input. The leaving chilled-water temperature and the percent of load have the most direct impact on the optimum condenser water temperature. In general, continuous machine operation with entering-condenser water temperature below 13°C is not recommended.

The minimum acceptable refrigerant pressure differential between condenser and evaporator is two bars. In general, this translates to a water temperature entering the condenser that is 8°C above the temperature leaving the evaporator. When the entering-condenser water temperature is expected to drop below 13°C , even at start-up, it is required that some form of condenser water-temperature control be used to satisfy compressor safeties and to assure optimum machine performance. From a system perspective, improved chiller efficiency may be offset by increased tower fan and pumping costs. In order to achieve system optimization, each subsystem must be operated in the most efficient manner possible while continuing to satisfy the current building load.

Short Evaporator-Water Loops

The proper location of the chilled-water temperature-control sensor is in the supply (outlet) water. This location allows the building to act as a buffer and ensures a slowly-changing return-water temperature. If there is not a sufficient volume of water in the system to provide an adequate buffer, temperature control can be lost, resulting in erratic system operation and excessive compressor cycling. A short water loop has the same effect as attempting to control from the building return water.

To prevent the effect of a short water loop, the following item should be considered:
a storage tank or larger header pipe to increase the volume of water in the system and, therefore, reduce the rate of change of the return-water temperature.

Water Treatment

The use of untreated or improperly treated water in chillers may result in scaling, erosion, corrosion, and algae or slime build up. It is recommended that the services of a qualified water treatment specialist be engaged to determine what treatment, if any, is advisable. The Trane Company assumes no responsibility for the results of untreated or improperly treated water.

Selection Procedure

Chiller selections and performance information can be obtained through the use of the Series R™ chiller selection program.

Performance

The computer selection program provides performance data for each chiller selection.

Dimensional Drawings

The dimensional drawings illustrate overall measurements of the unit. Also shown are the service clearances required to easily service the RTHC chiller.

All catalog dimensional drawings are subject to change. Current submittal drawings should be referred to for detailed dimensional information. Contact the local Trane sales office for submittal information.

Electrical Data Tables

Compressor motor electrical data is shown in the data section for each compressor size. Rated load amperes (RLA), locked rotor Wye delta amperes (LRAY), locked rotor delta amperes (LRAD), and the power factor for standard voltages for all 50 Hz, 3- phase motorsare shown. The RLA is based on the performance of the motor when developing full rated horsepower.
A voltage utilization range is tabulated for each voltage listed.

Evaporator and Condenser Pressure Drop

Pressure drop data is determined by the RTHC selection program.

Model number description

Digit1-2-3-4-5: Chiller series
ERTHC: Epinal RTHC

Digit 6-7: Unit size
B1 - B2 - C1 - C2 - D1 - D2 - D3 - E3 -

Digit 11: Pressure vessel approval
B: Sweden
E: Spain
F: Finland
H: Netherlands
I: Italy
K: Austria
L: China
M: France
N: Denmark
P: Czech Republic
R: Vietnam
T: Germany
V: Poland
Z: Switzerland
S: Special

Digit 12: Language
F: French
D: German
E: English
G: Chinese
I: Italian
H: Dutch
C: Spanish

Digit 23: Main power voltage
C: 380/50/3 +/-5%
D: 400/50/3 +/-5%
E: 415/50/3 +/-5%
S: Special

Digit 25: Electrical codes
A: IEC
S: Special

Digit 26: Compressor starter
H: Unit mounted star-delta
S: Special

Digit 28: Main electrical disconnect device
X: Terminal block
A: Circuit breaker
B: Fused disconnect switch
C: Non-fused disconnect switch
S: Special

Digit 31-32: Evaporator size
1A -1B - 1C - 2A - 2B - 3A - 3B - 3C - 3D
4A - 4B - 5A - 5B - 6A - 6C - 7A - 7B - 8A - 8B -

Digit 35: Evaporator water pass
B: 2 pass right hand
C: 2 pass left hand
D: 3 pass right hand
E: 3 pass left hand
F: 4 pass right hand
G: 4 pass left hand
H: 5 pass right hand
J: 5 pass left hand
S: Special

Digit 37-38: Condenser size
1A - 1B - 1C - 1D - 2A - 2B - 2C - 2D - 2E - 2F - 3B - 3C - 4A - 4B - 5B - 5C - 6A - 6B -

Digit 39: Oil cooler
X: Without
1: With

Digit 41: Condenser tubes
2: Gewa K
4: Gewa CLF
5: Gewa C
S: Special

Digit 42: Condenser water pass
B: 2 pass right hand
C: 2 pass left hand
D: 3 pass right hand
E: 3 pass left hand
S: Special

Digit 49: Waterside pressure
1: EVP 10.5 bar / CDS 10.5 bar
2: EVP 21 bar / CDS 21 bar
3: EVP 10.5 bar / CDS 21bar
4: EVP 21 bar / CDS 10.5 bar
S: Special

Digit 50: Water connections
B: Victaulic
G: Victaulic + coupling
S: Special

Digit 52: Communication card
X: Without
2: Tracer Summit®

Digit 53: UCP2 options
X: Without
1: Option module
2: Outside air temperature sensor
3: 1+2

Digit 58: Additional protection
X: Without
1: Under and over voltage
4: IP 20 protection
5: 1+4

Digit 60: Thermal insulation
X: Without
1: Cold parts

Digit 61: Unit option
X: Without
1: Isolating valve

Digit 64: Option RLK
X: Without
1: Standard RLK STEK

Digit 66: Packing
1: Domestic
2: SEI class 3
3: SEI class 4a
4: SEI class 4c
6: Domestic + skid
S: special

Digit 68: Flow switch
X: Without
1:Evaporator
2: Evaporator and condenser

Digit 71: Refrigerant charge
X: Without (nitrogen)
1: Holding charge
2: Delivered in unit

Digit 74: Factory test
A - B - C - E
S: Special

Digit 75: Other special requirement(s)
X: No
S: Yes

General Data

General Data

Compressor Code	Evaporator Code	Condenser Code	Evaporator Water storage Litre	Condenser Water storage Litre	Refrigerant	Refrigerant Charge kg	Oil Charge litre
B1	1A	1A	123	92	R134a	130	27
B1	1B	1C	135	103	R134a	130	27
B2	1B	1B	135	97	R134a	130	27
B2	1C	1D	147	116	R134a	130	27
C1	3A	2A	175	148	R134a	200	33
C1	3C	2B	211	166	R134a	200	33
C2	2A	2A	173	148	R134a	200	31
C2	3B	2B	193	166	R134a	200	33
C2	3D	2E	241	196	R134a	200	33
D1	2A	2B	173	166	R134a	215	25
D1	4A	2D	257	192	R134a	240	30
D1	5A	3B	266	262	R134a	260	35
D1	7A	5B	439	390	R134a	260	35
D2	2B	2C	203	174	R134a	215	25
D2	4B	2F	274	208	R134a	240	30
D2	5B	3C	296	272	R134a	260	35
D2	7B	5C	465	415	R134a	260	35
D3	2B	2C	203	174	R134a	215	25
D3	4B	2F	274	208	R134a	240	30
D3	5B	3C	296	272	R134a	260	35
D3	7B	5C	465	415	R134a	260	35
E3	6C	4B	255	235	R134a	325	43
E3	6A	4A	348	263	R134a	325	43
E3	8B	6B	358	372	R134a	420	61
E3	8A	6A	672	630	R134a	420	61

Minimum / Maximum Evaporator Flow Rates (litre/s)

Evaporator Code	Two pass			Three pass			Four pass		
	Min.	Max.	Nominal Conn. Size (in)	Min.	Max.	Nominal Conn. Size (in)	Min.	Max.	Nominal Conn. Size (in)
1A	16.0	56.0	5	11.0	37.0	5	8.0	28.0	5
1B	18.0	64.0	5	12.0	43.0	5	9.0	32.0	5
1C	20.0	72.0	5	14.0	48.0	5	10.0	36.0	5
2A	25.0	90.0	6	17.0	60.0	6	13.0	45.0	6
2B	31.0	112.0	6	21.0	75.0	6	16.0	56.0	6
3A	22.0	78.0	6	15.0	52.0	6	11.0	39.0	6
3B	25.0	90.0	6	17.0	60.0	6	13.0	45.0	6
3C	28.0	102.0	6	19.0	68.0	6	14.0	51.0	6
3D	34.0	122.0	6	23.0	81.0	6	17.0	61.0	6
4A	31.0	112.0	6	21.0	75.0	6	16.0	56.0	6
4B	34.0	122.0	6	23.0	81.0	6	17.0	61.0	6
5A	31.0	112.0	6	21.0	75.0	6	16.0	56.0	6
5B	36.0	128.0	6	24.0	85.0	6	18.0	64.0	6
6A	45.0	164.0	6	30.0	109.0	6	23.0	82.0	6
6C	34.0	122.0	6	23.0	81.0	6	17.0	61.0	6
8B	38.0	139.0	6	26.0	92.0	6	19.0	69.0	6

Minimum / Maximum Evaporator Flow Rates (litre/s)

Evaporator Code	Three pass			Four pass			Five pass		
	Min.	Max.	Nominal Conn. Size (in)	Min.	Max.	Nominal Conn. Size (in)	Min.	Max.	Nominal Conn. Size (in)
7A	36.0	130.0	6	27.0	98.0	6	22.0	78.0	6
7B	39.0	140.0	6	29.0	105.0	6	23.0	84.0	6
8A	49.0	177.0	6	37.0	132.0	6	29.0	106.0	6

Minimum / Maximum Condenser Flow Rates (litre/s)

Condenser Code	Two pass			Three pass		
	Min.	Max.	Nominal Conn. Size (in)	Min.	Max.	Nominal Conn. Size (in)
1A	12.0	41.0	6	—	—	—
1B	13.0	45.0	6	—	—	—
1C	14.0	49.0	6	—	—	—
1D	17.0	59.0	6	—	—	—
2A	15.0	52.0	8	—	—	—
2B	18.0	66.0	8	—	—	—
2C	20.0	71.0	8	—	—	—
2D	23.0	84.0	8	—	—	—
2E	24.0	88.0	8	—	—	—
2F	27.0	96.0	8	—	—	—
3B	26.0	93.0	8	—	—	—
3C	27.0	98.0	8	—	—	—
4A	29.0	103.0	8	—	—	—
4B	24.0	86.0	8	—	—	—
5B	—	—	—	31.0	111.0	8
5C	—	—	—	34.0	121.0	8
6A	—	—	—	45.0	162.0	8
6B	32.0	115.0	8	—	—	—

Evaporator Water Pressure Drop (kPa)

Evap.	Pass	waterflow (l/s)												
		15	20	25	30	35	40	45	50	55	60	65	70	75
1A	3	18	32	49	69	91								
1B	3	14	25	38	54	72	92							
1C	3	11	20	31	43	58	74	92						
2A	3		11	17	25	34	43	54	66	79				
2B	3			11	16	22	29	36	44	52	61	71	82	
3A	3	10	17	26	37	50	64	80	97					
3B	3		13	20	29	38	49	61	74	89				
3C	3		10	16	23	31	39	49	59	71	83	96		
3D	3			11	16	22	28	35	43	52	61	70	80	91
4A	3			15	21	29	37	46	57	68	79	92	105	
4B	3				18	25	31	40	49	58	69	80	91	104
5A	3			15	22	30	39	48	59	70	82	95	109	
5B	3				17	23	30	38	46	55	64	75	86	98
6A	3				9	12	16	20	24	29	34	40	46	52
6C	3			11	16	22	28	35	42	51	60	69	80	90
7A	4						30	37	46	55	65	75	86	98
7B	4					20	26	33	40	48	57	66	76	86
8A	4						19	23	29	35	41	48	55	63
8B	3				16	22	28	35	43	52	61	70	81	92

Condenser Water Pressure Drop (kPa)

Evap.	Pass	waterflow (l/s)												
		15	20	25	30	35	40	45	50	55	60	65	70	75
1A	2	15	25	37	51	66	84							
1B	2	13	21	31	42	55	69	85						
1C	2	11	19	27	38	49	62	76						
1D	2		13	20	27	35	44	54	65	77				
2A	2	10	17	25	34	45	56	69	83					
2B	2		11	16	23	30	38	47	57					
2C	2			14	20	26	33	41	49	58	68			
2D	2				15	20	26	32	38	45				
2E	2			11	15	19	24	30	36	40	49	56	64	73
2F	2				13	17	21	26	31	37	43	49	56	63
3B	2				18	24	30	37	45	53	62			
3C	2				17	22	28	34	41	48	56	64	73	82
4A	2				14	18	22	27	32	38	44	50	57	64
4B	2			13	18	24	29	36	43	51	59	67	76	86
5B	3					22	28	34	41	49	57			
5C	3					19	24	30	36	42	49	57	65	73
6A	3							23	28	32	38	43	49	55
6B	2					18	22	27	32	38	44	51	57	65

Electrical Data and Connections

Compressor Motor Electrical Data - 50 Hz

Compressor Code	Nominal Voltage / Voltage Utilization Range	380	400	415
	Nominal Voltage	380	400	415
	Voltage Utilization Range	361-399	380-420	394-436
B1 – B2	Max motor kW	139	145	148
	Max. RLA	233	233	233
	LRA Star	391	412	428
	Power factor	0.910	0.900	0.880
C1 – C2	Max motor kW	201	209	213
	Max. RLA	349	349	349
	LRA Star	456	480	498
	Power factor	0.875	0.865	0.850
D1 - D2 - D3	Max motor kW	271	280	284
	Max. RLA	455	455	455
	LRA Star	711	748	776
	Power factor	0.905	0.890	0.870
E3	Max motor kW	288	301	306
	Max. RLA	488	488	488
	LRA Star	711	748	776
	Power factor	0.900	0.890	0.870

Electrical Connections

Compressor size	B1 – B2
Fuse size (A) (1)	250
Disconnect switch size (A) (1)	250
Minimum power cable cross section (1) (2)	95
Maximum power cable cross section (1) (2)	240
Compressor size	C1 – C2
Fuse size (A) (1)	400
Disconnect switch size (A) (1)	400
Minimum power cable cross section (1) (2)	185
Maximum power cable cross section (1) (2)	240
Compressor size	D1 – D2 – D3 – E3
Fuse size (A) (1)	500
Disconnect switch size (A) (1)	630
Minimum power cable cross section (1) (2)	2 * 150
Maximum power cable cross section (1) (2)	2 * 300

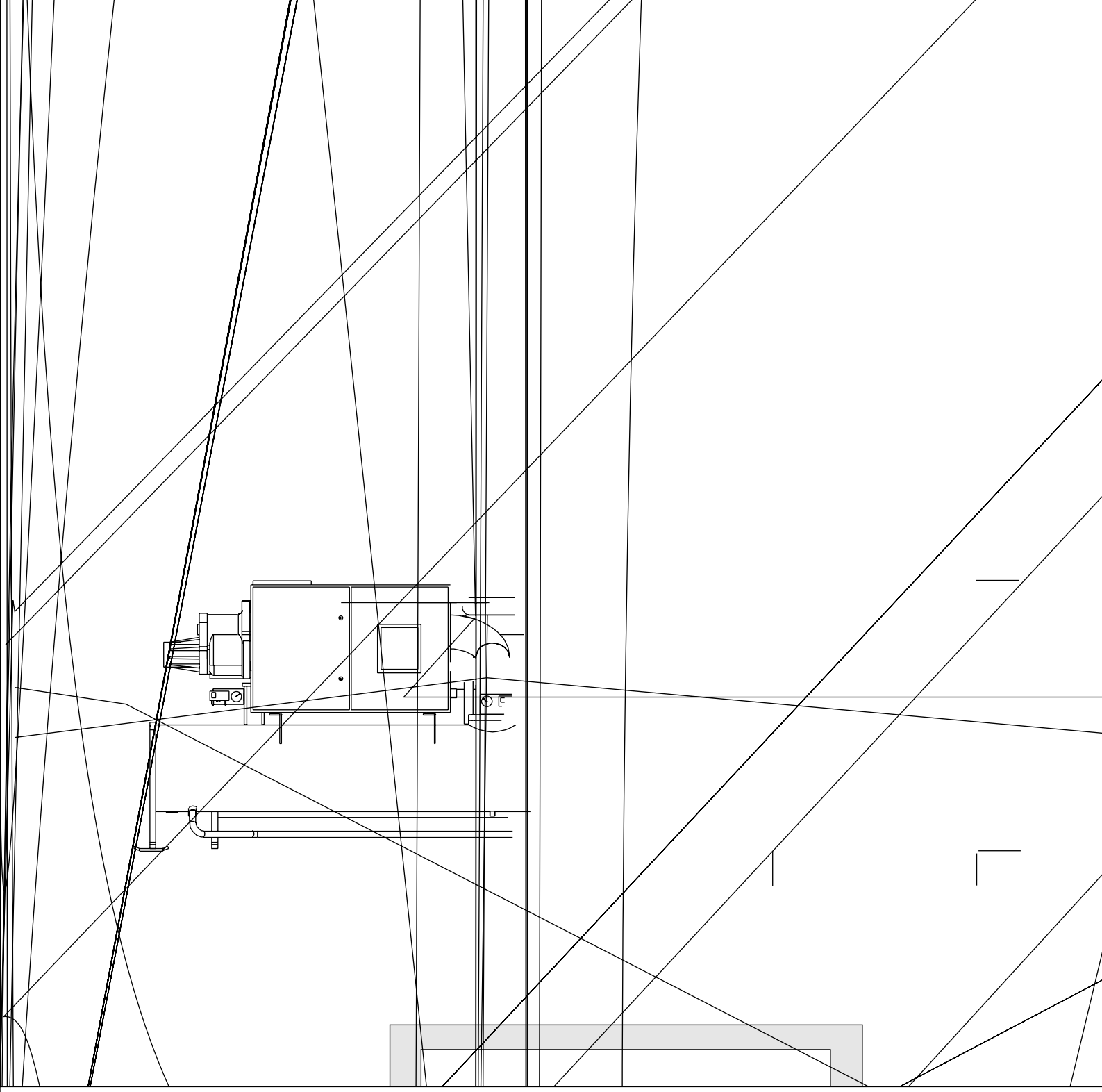
(1) Information for fused disconnect switch option only.

(2) mm^2/phase.

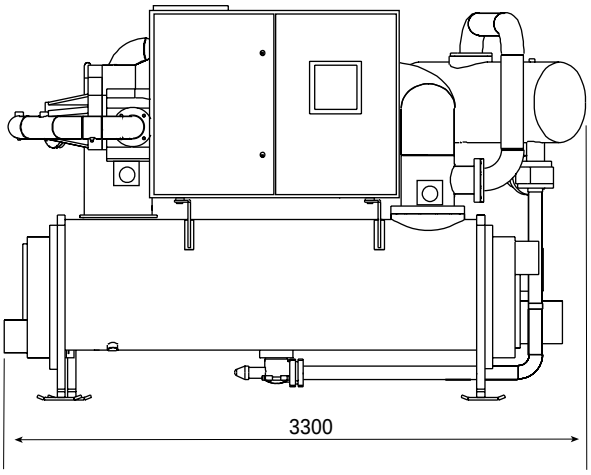
Dimensions and Weight

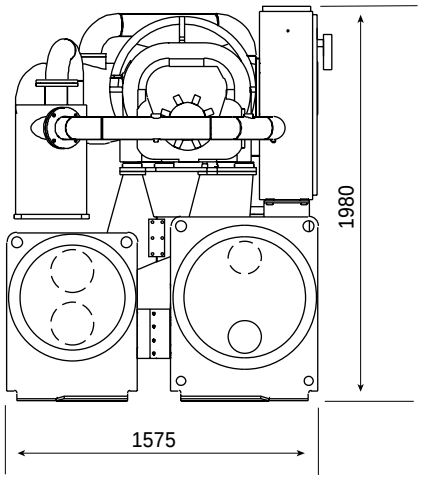
Shipping and Operating Weights

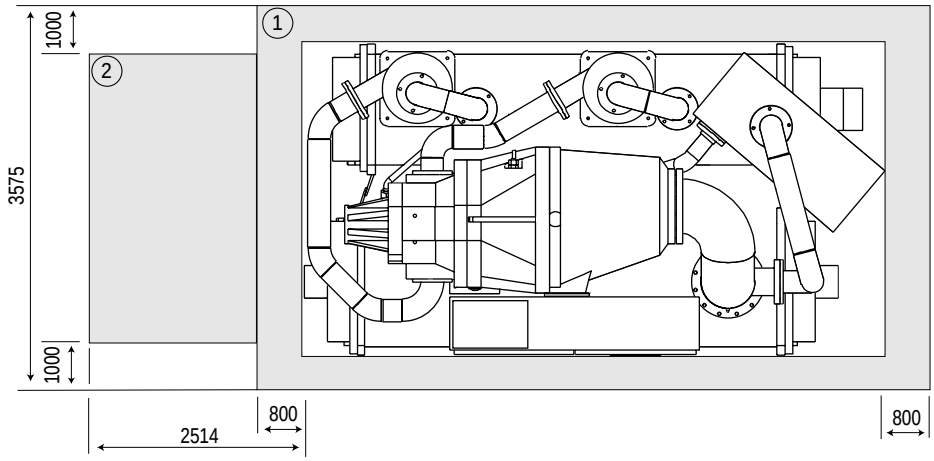
Compressor Code	Evaporator Code	Condenser Code	Operating Weight (kg)	Shipping Weight (kg)
B1	1A	1A	4260	4290
B1	1B	1C	4340	4340
B2	1B	1B	4315	4325
B2	1C	1D	4425	4400
C1	3A	2A	6135	6050
C1	3C	2B	6310	6170
C2	2A	2A	6045	5965
C2	3B	2B	6255	6135
C2	3D	2E	6510	6315
D1	2A	2B	6710	6610
D1	4A	2D	7220	7050
D1	5A	3B	7735	7485
D1	7A	5B	9420	8600
D2	2B	2C	6825	6690
D2	4B	2F	7330	7130
D2	5B	3C	7865	7575
D2	7B	5C	9597	8715
D3	2B	2C	6825	6690
D3	4B	2F	7330	7130
D3	5B	3C	7865	7575
D3	7B	5C	9597	8715
E3	6C	4B	8070	7580
E3	6A	4A	8560	7950
E3	8B	6B	10230	9500
E3	8A	6A	12390	11080



RTHC C1 3A 2A
RTHC C1 3C 2B
RTHC C2 3B 2B
RTHC C2 3D 2E
Evaporator three pass
Condenser two pass



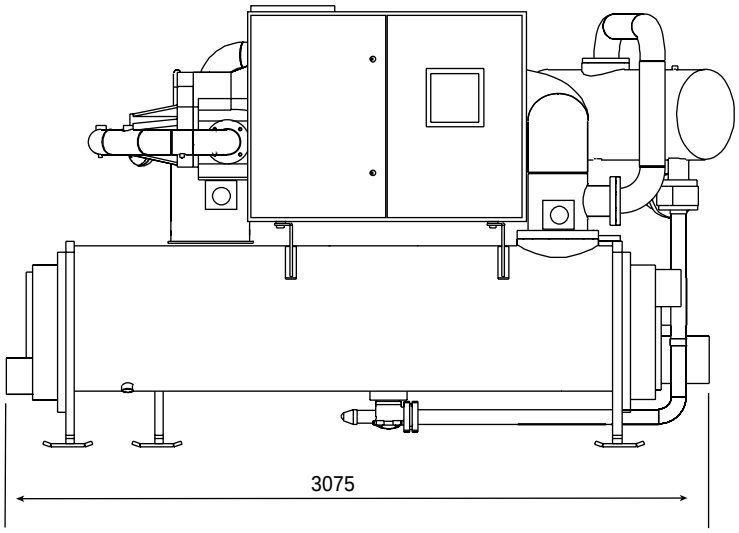


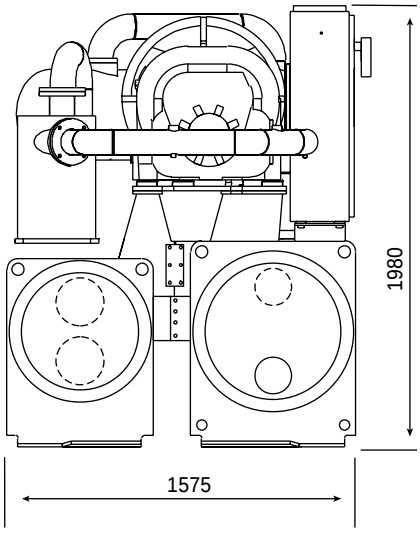


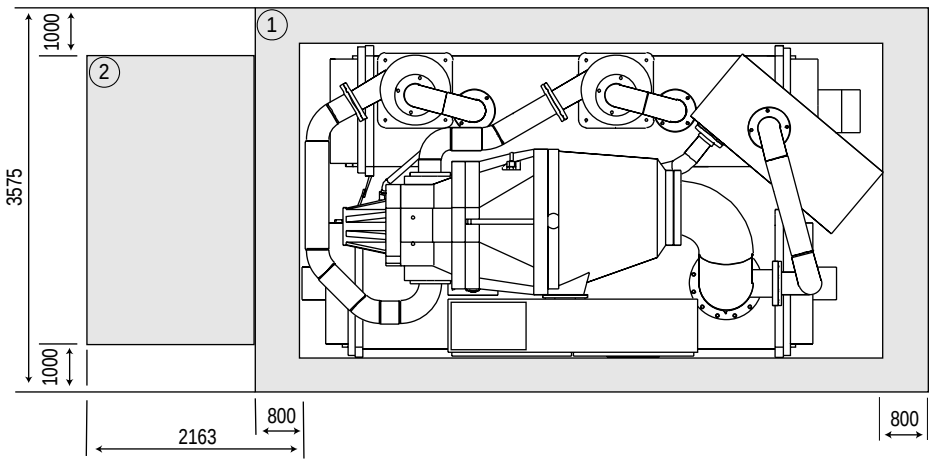
(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

RTHC C2 2A 2A
Evaporator three pass
Condenser two pass



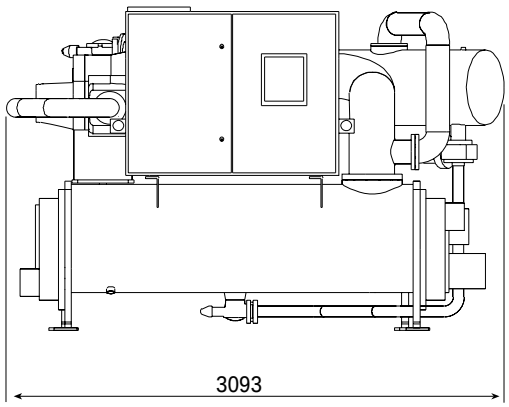


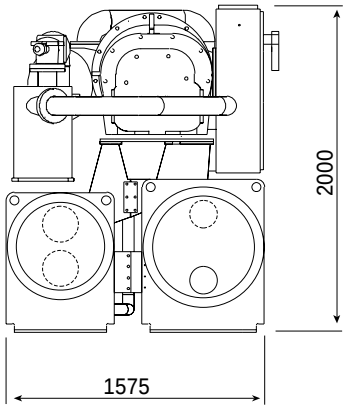


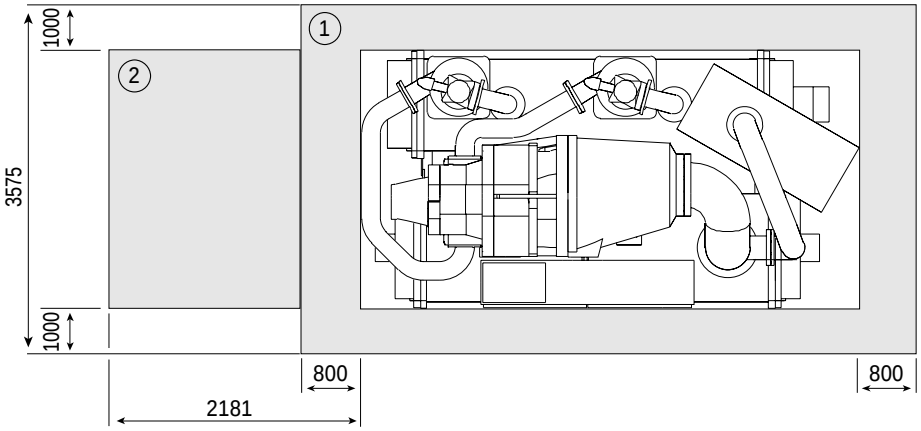
(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

RTHC D1 2A 2B
RTHC D2 2B 2C
RTHC D3 2B 2C
Evaporator three pass
Condenser two pass



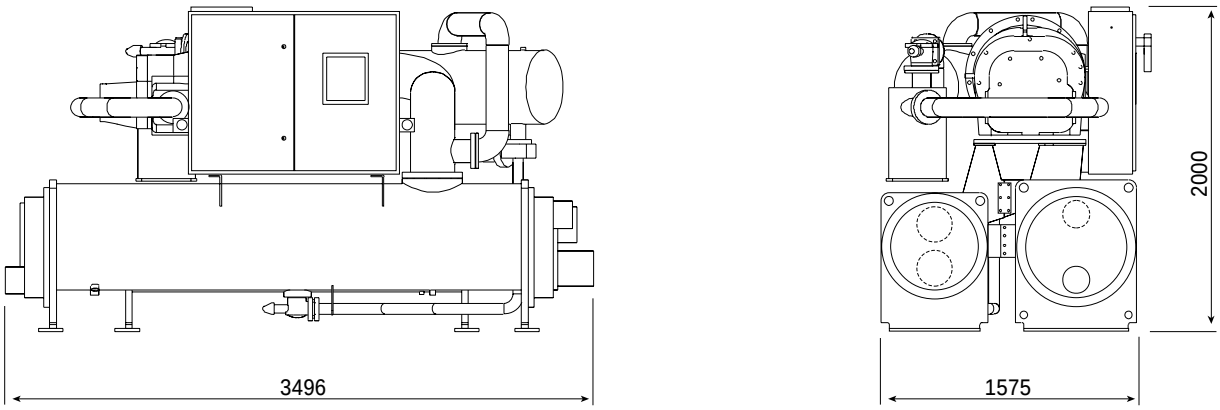


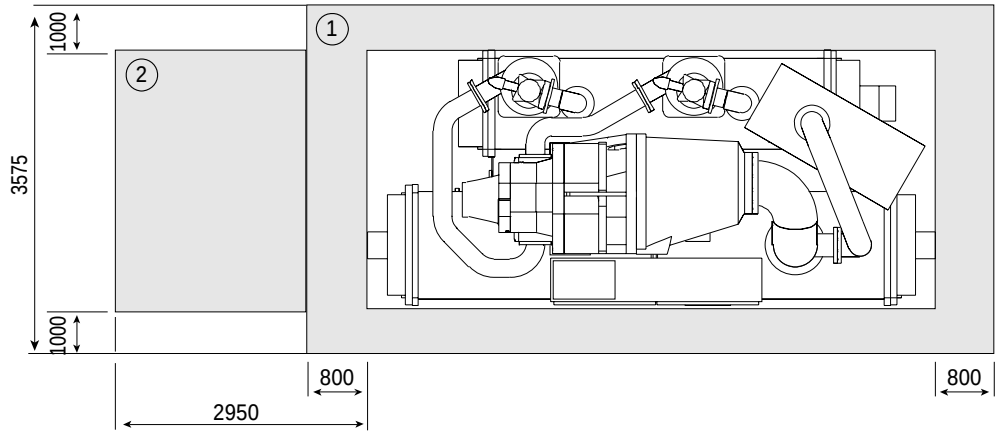


(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

RTHC D1 4A 2D
RTHC D2 4B 2F
RTHC D3 4B 2F
Evaporator three pass
Condenser two pass

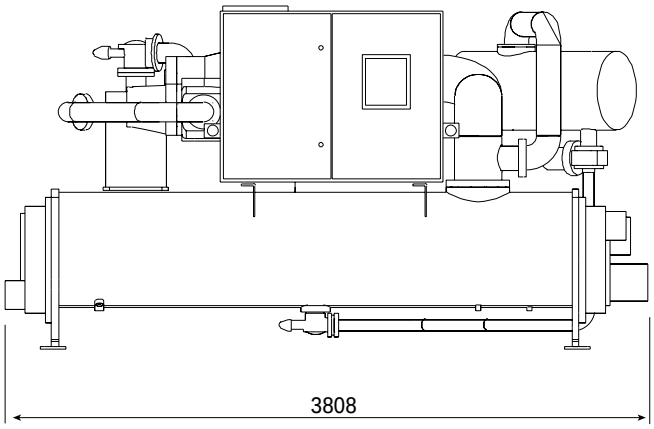


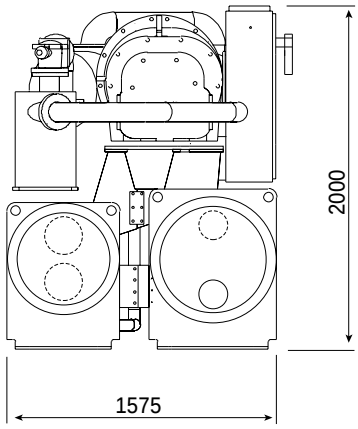


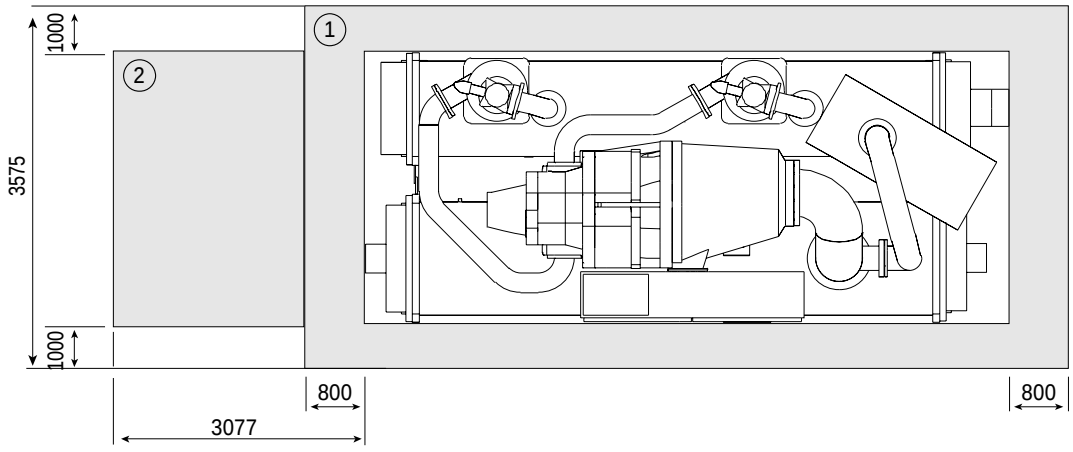
(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

RTHC D1 5A 3B
RTHC D2 5B 3C
RTHC D3 5B 3C
Evaporator three pass
Condenser two pass

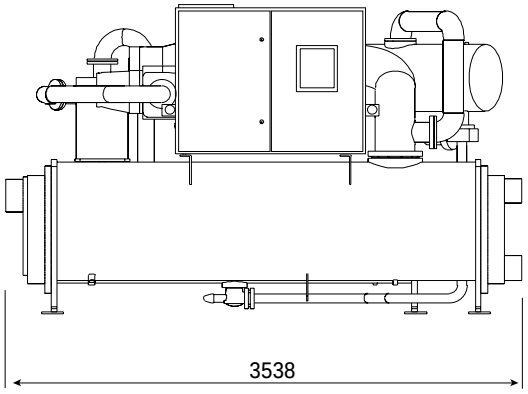


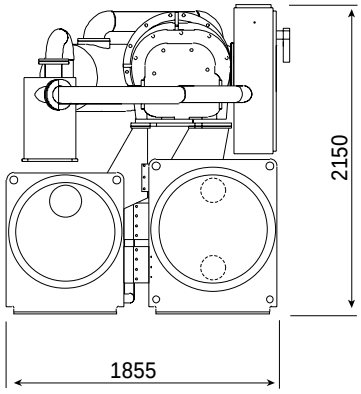


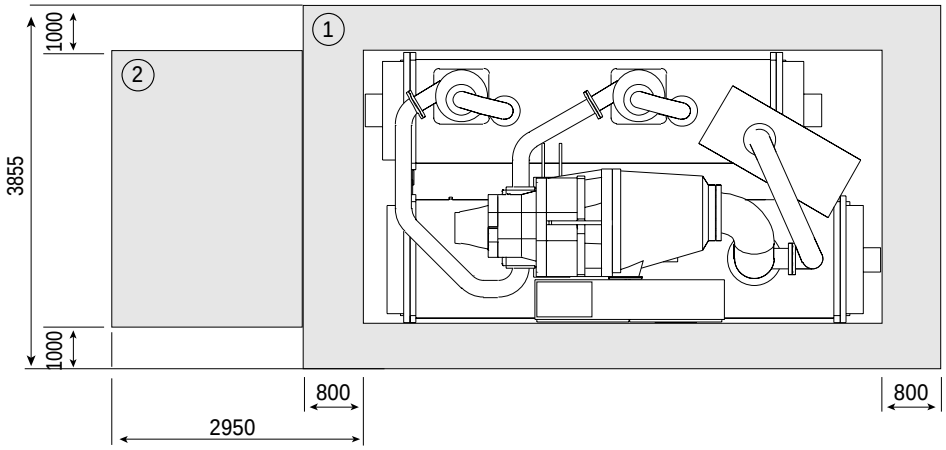


(1) *Minimum clearance for maintenance*
(2) *Minimum clearance for tube removal*

RTHC D1 7A 5B
RTHC D2 7B 5C
RTHC D3 7B 5C
Evaporator three pass
Condenser two pass



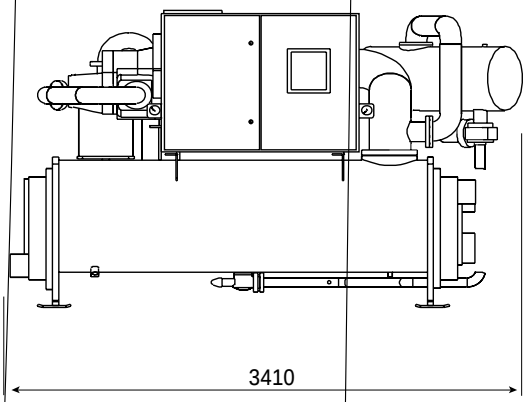


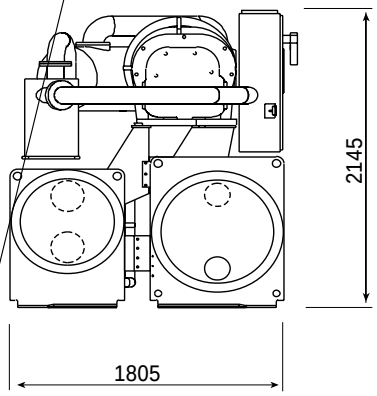


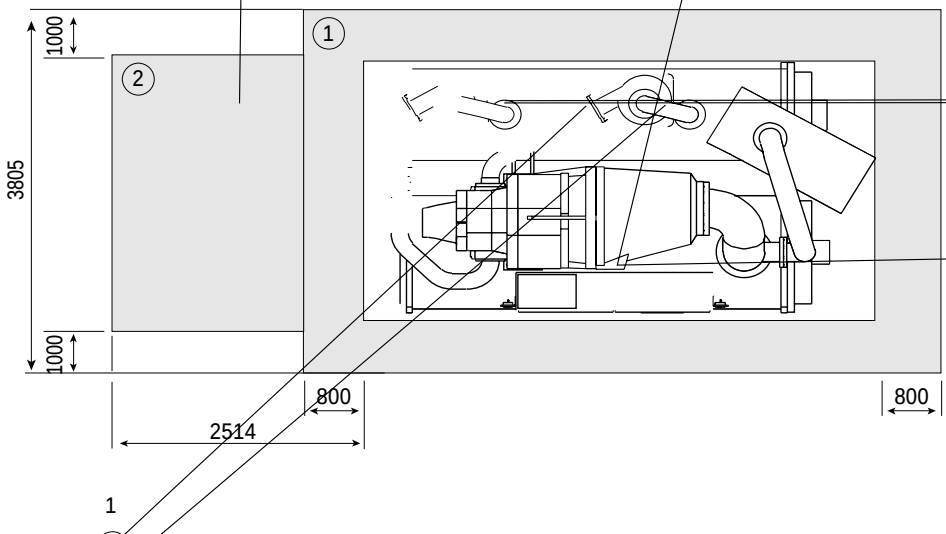
(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

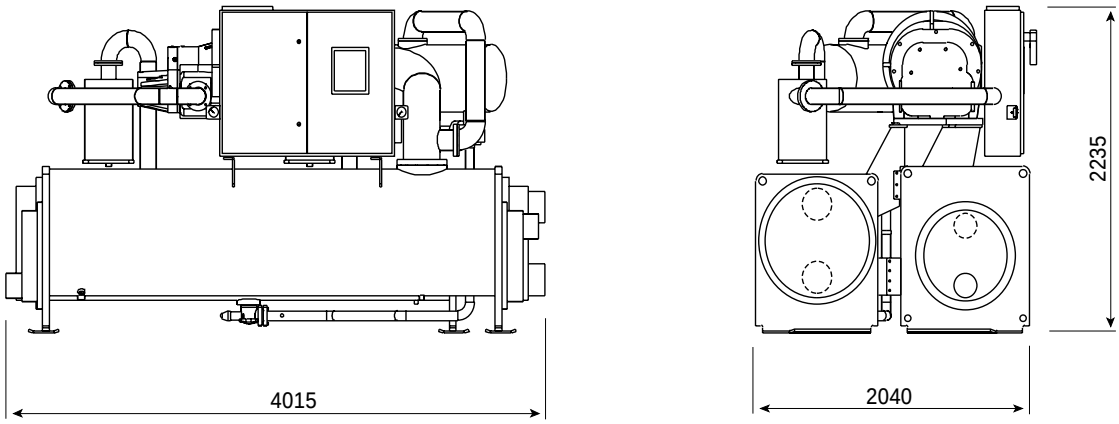
RTHC E3 6C 4B
RTHC E3 6A 4A

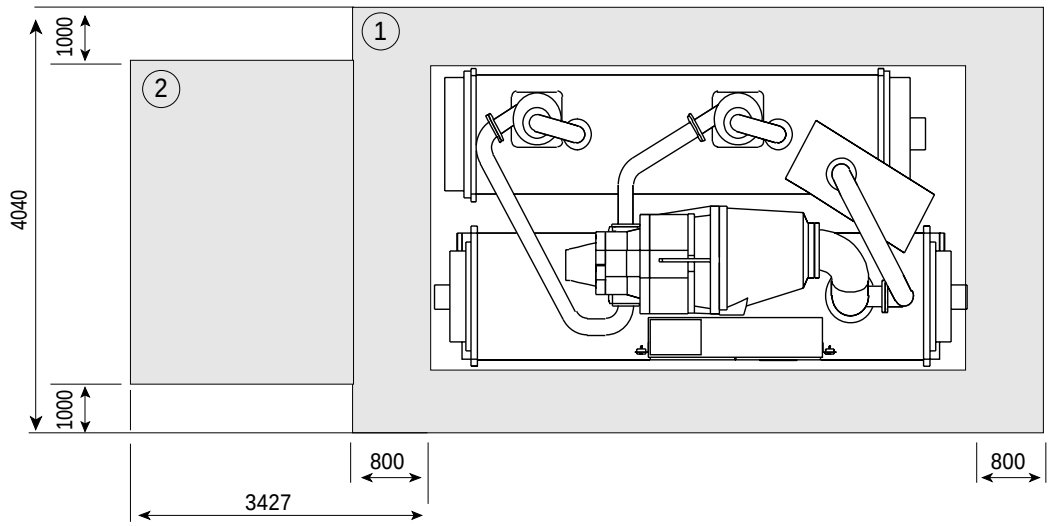






RTHC E3 8B 6B
Evaporator three pass
Condenser two pass

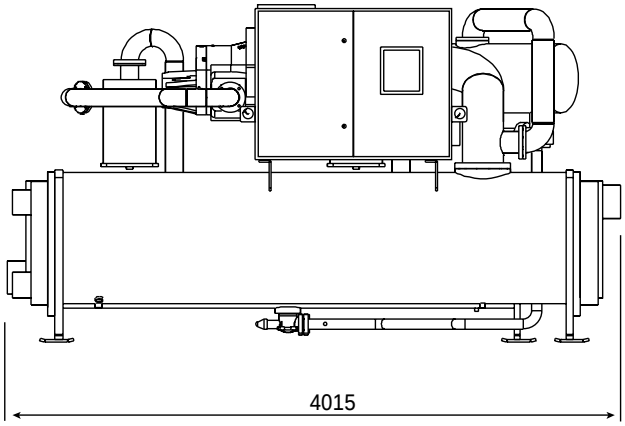


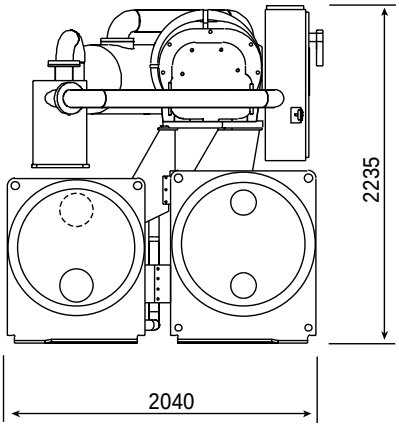


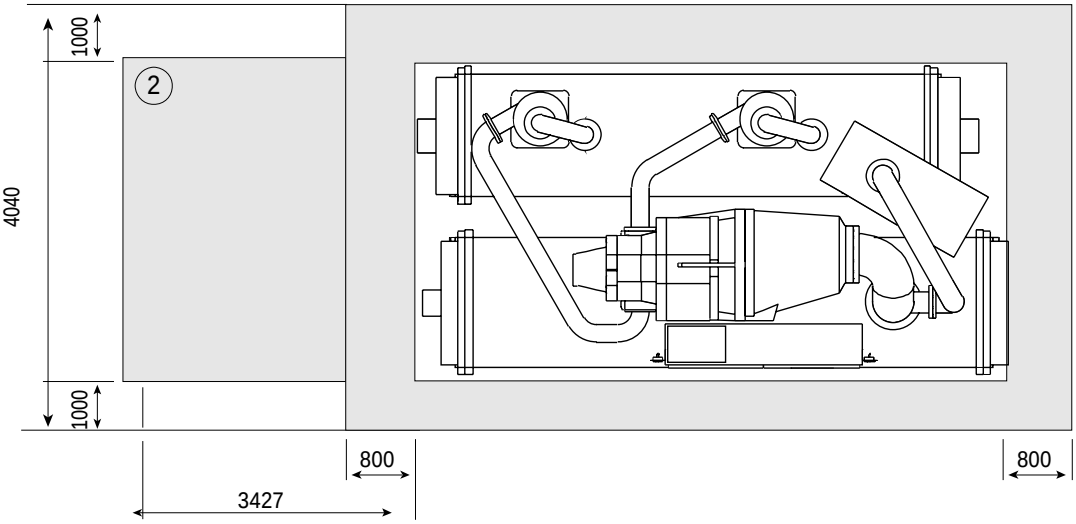
(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

RTHC E3 8A 6A
Evaporator four pass
Condenser three pass







(1) *Minimum clearance for maintenance*

(2) *Minimum clearance for tube removal*

Mechanical Specifications

General

Exposed metal surfaces shall be painted with an air-dry beige paint prior to shipment. Each unit shall ship with a full operating charge of refrigerant and oil. Molded neoprene isolation pads shall be supplied for placement under all support points.

Compressor Motor

The unit shall have a semihermetic, direct-drive, 3000 rpm, rotary compressor with capacity-control slide valve, oil sump heater, and differential-pressure refrigerant oil-flow system. Four pressure-lubricated rolling-element bearing groups shall support the rotating assembly.
Motor shall be a suction-gas-cooled, hermetically-sealed, two-pole, squirrel-cage induction type.

Evaporator-Condenser

All tube sheets shall be carbon steel plate. Evaporator and condenser tubes should be individually replaceable. Standard tubes shall be externally finned, internally enhanced seamless copper with lands at all tube sheets. Evaporator tubes shall be 1.0 inch diameter. Condenser tubes shall be 3/4 inch diameter. Tubes shall be mechanically expanded into tube sheets. Condenser and evaporator tubes shall be mechanically fastened to tube supports. The water boxes shall be cast iron or fabricated steel, available with victaulic connections.

Refrigerant Circuit

An electronically-controlled expansion valve shall be provided to maintain proper refrigerant flow.

Unit Control Panel (UCP2™)

The microprocessor-based control panel shall be factory installed and tested. The control system shall be powered by a control transformer. The controller will load and unload the chiller via control of the compressor slide-valve.

The UCP2™ utilizing the "Adaptive Control™" microprocessor shall automatically take action to prevent unit shutdown due to abnormal operating conditions associated with low evaporator-refrigerant temperature, high condensing temperature, and motor current overload. If the abnormal operating condition continues and the protective limit is reached, the machine will be shut down.
The panel shall include machine protection shutdown requiring manual reset for:

- Low evaporator-refrigerant temperature and pressure
- High condenser-refrigerant pressure
- Low oil flow
- Critical sensor or detection circuit fault
- Motor current overload
- High compressor discharge temperature
- Communications lost between modules
- Electrical distribution faults: phase loss, phase imbalance, phase reversal
- External and local emergency stop
- Starter transition failure.

The panel shall include machine-protection shutdown with automatic reset when the condition is corrected for:

- Momentary power loss
- Over / under voltage
- Loss of evaporator or condenser waterflow.

Over 100 diagnostic checks shall be made and displayed when a fault is detected. The display shall indicate the fault, the type of reset required, the time and date the diagnostic occurred, the mode in which the machine was operating at the time of the diagnostic, and a help message. A diagnostic history shall display the last 20 diagnostics with the time and date of their occurrence.

Clear Language Display Panel (CLD)

Factory mounted to the door of the control panel, the operator interface shall have a 16-button keypad for operator input and a 2-line by 40-character display screen. A chiller report, refrigerant report, compressor report, an operator configurable custom report, operator settings, service settings, service tests, and diagnostics may be accessed.
All diagnostics and messages shall be displayed in "clear language."
The data contained in the Chiller report, Refrigerant report, and Compressor report shall include:

- All water temperatures and set points
- Current chiller operating mode
- Diagnostic history
- Control source (that is,local panel, external source, remote BAS)
- Current limit set point
- Outdoor air temperature (optional)
- Saturated refrigerant temperatures and pressures
- Compressor starts and hours running
- Line currents
- Line voltages (optional)
- Approach temperatures.

All necessary settings and set points shall be programmed into the microprocessor controller via the keypad of the operator interface. The control shall be capable of receiving signals from a variety of control sources (which shall not be mutually exclusive, that is, any combination of control sources can coexist simultaneously) and shall be capable of being programmed at the keypad as to which control source has priority.
Control sources can be:

- The local operator interface (standard).
- A 4-20 mA or 2-10 VDC signal from an external source (interface optional) (control source not supplied by chiller manufacturer)
- Tracer™ or Tracer Summit™ (interface optional) (Tracer or Tracer Summit supplied by Trane)
- Generic BAS (interface optional) (control not supplied by chiller manufacturer).

Unit-Mounted Starter

A starter enclosure shall be IP55 type with top power-wiring access. Starter shall be available in Wye-Delta closed-transition configuration.The starter shall be factory mounted and completely prewired to the compressor motor and the control panel. A factory-installed, 1200 VA, control-power transformer provides all unit control power as well as UCP2™ module power. Optional starter features include circuit breaker, fused disconnect switch, and non-fused disconnect switch.

Options

Insulation
All low temperature surfaces are covered with 19 mm of armaflex (K=0.28), including the evaporator and water boxes, suction line, motor housing and liquid/vapor separator.

Cupronickel condenser tubes
Cupronickel condenser tubes are available for special applications. 90/10 cupronickel tubes are 3/4 in. diameter and 0.035 wall thickness.

Standard Ice-making
Control and safeties to allow operation with brine temperatures greater than or equal to -6.5°C. Includes dual set points for ice-making capability and daytime comfort cooling.

Options module
Accepts generic building automation system (BAS) inputs for current-limit set point and chiller-water set point via 2-10 VDC or 4-20 mA signal. Outputs a 2-10 VDC or 4-20 mA signal to a generic BAS to monitor compressor % RLA. Outputs a binary signal to a generic BAS for use with condenser limit control. Allows remote enable/disable of ice-making operation.

Disconnect switch
Standard fused-disconnect switch is available. The disconnect switch is also mechanically interlocked to disconnect line power from the starter before the starter door is opened.

Quality Management System Approval

Literature Order Number:	B21 SD 001 E4
Date:	23 February 2000
Supersedes:	B21 SD 001E - 0299
Stocking Location:	La Crosse

The Trane Company
An American Standard Company
www.trane.com

For more information contact
Your local sales office or
e-mail us at comfort@trane.com