



Product Data

EVERGREEN® 19XR,XRV High-Efficiency Hermetic Centrifugal Liquid Chiller 50/60 Hz HFC-134a

19XR — 200 to 1500 Nominal Tons (703 to 5275 kW)
19XRV — 200 to 1450 Nominal Tons (703 to 5100 kW)

Evergreen® CHILLERS

MODEL #: 19XRV4242343CLH64-

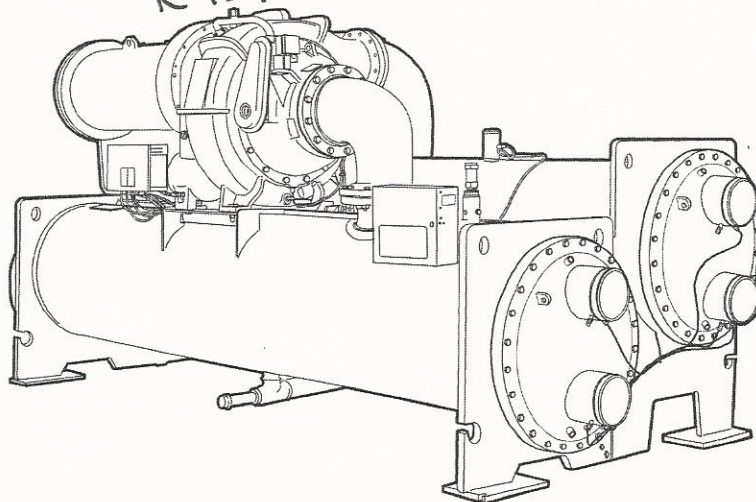
SIN: 71169 + 71168

YR: 2005

400 TONS

480-3-60

R-134A



19XR,XRV

Carrier's Evergreen® centrifugal chillers offer:

- The use of non-ozone depleting refrigerant HFC-134a, which is not affected by scheduled refrigerant phaseouts
- An annual leak rate of 0.1%, the lowest published in the industry
- The ability to store the entire charge of refrigerant inside the chiller, minimizing the chance of leaks during refrigerant transfer for maintenance
- Hermetic compression
- Refrigerant-cooled VFD (19XRV)
- Modular construction
- Positive pressure design

Features/Benefits

The Carrier-designed Evergreen family of chillers achieve superior efficiencies without compromising the environment.

The Evergreen chillers superior efficiencies are obtained at true operating conditions. Therefore, the effects of potential direct or indirect global warming are greatly diminished.

High efficiency

Today's owners of chilled water plants demand high efficiency from their chillers. Per ARI 550/590, chillers operate at design conditions less than one percent of the time. As a result, superior part-load efficiency is required for today's chilled water applications.



02/26/2005 05:22 PM

SALES VINCE: WASHINGTON AND APO

[illegible]

Messages:

(1) For information only at 100%, 90%, 80%.
(1) Outside the scope of ARI Standard 550/550-2003 at 70%, 60%, 50%, 40%, 30%, 20%, 10%.



Evergreen Chiller Performance Outputs

02/26/2005
05:22 PM

CHILLER - EVERGREEN CHILLER

Tag Name: CH-1, CH-2 Load Line

Chiller Model 19XR4242343CLH64
Starter / VFD VFD - Unit Mounted (w/ filter)
Refrigerant Type R-134a
Cooler
Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 3
Tubing Turbo-EDE (TBE), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00010
Compressor
Size 343
Flow Controls
Float Valve Size 5
Flare Orifice 24

Weights
Total Rigging Weight 18704 lb
Total Operating Weight 20651 lb
Refrigerant Weight 970 lb
Condenser
Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 2
Tubing Spike Fin III (SPK3), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00025
Motor
Size CLH
Line Voltage/Hertz 480-3-60

Output Type	Full Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load
Percent Load	100.00	90.00	80.00	70.00	60.00	50.00	40.00	30.00	20.00	10.00	
Chiller Capacity	400 Tons	360 Tons	320 Tons	280 Tons	240 Tons	200 Tons	160 Tons	120 Tons	80 Tons	40 Tons	
Chiller Input kW	239 kW	174 kW	126 kW	86 kW	59 kW	41 kW	35 kW	30 kW	25 kW	19 kW	
Chiller Input Power	0.597 kW/Ton	0.484 kW/Ton	0.395 kW/Ton	0.308 kW/Ton	0.245 kW/Ton	0.206 kW/Ton	0.220 kW/Ton	0.250 kW/Ton	0.309 kW/Ton	0.479 kW/Ton	
Cooler											
Entering Temp.	52.9 F	52.4 F	51.9 F	51.2 F	50.5 F	49.7 F	48.7 F	47.5 F	46.0 F	44.3 F	
Leaving Temp.	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	42.0 F	
Flow Rate	875.0 gpm	825.0 gpm	775.0 gpm	725.0 gpm	675.0 gpm	625.0 gpm	575.0 gpm	525.0 gpm	475.0 gpm	425.0 gpm	
Pressure Drop	31.9 ft wg	28.7 ft wg	25.6 ft wg	22.8 ft wg	20.0 ft wg	17.5 ft wg	15.1 ft wg	12.8 ft wg	10.8 ft wg	8.8 ft wg	
Condenser											
Leaving Temp.	92.0 F	84.1 F	76.3 F	68.5 F	60.8 F	53.1 F	52.5 F	51.9 F	51.3 F	50.7 F	
Entering Temp.	85.0 F	78.0 F	71.0 F	64.0 F	57.0 F	50.0 F	50.0 F	50.0 F	50.0 F	50.0 F	
Flow Rate	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm	
Pressure Drop	22.7 ft wg	23.0 ft wg	23.4 ft wg	23.8 ft wg	24.2 ft wg	24.7 ft wg	24.7 ft wg	24.7 ft wg	24.8 ft wg	24.8 ft wg	
Motor											
Motor Input Power	229 kW	164 kW	117 kW	78 kW	52 kW	36 kW	30 kW	25 kW	21 kW	16 kW	
Motor RLA	342	274	220	172	136	108	99	91	83	75	



Evergreen Chiller Performance Outputs

02/26/2005
05:20 PM

Carrier Chiller, Washington Air Works

Tag Name: CH-1, CH-2 IPLV

Chiller
Chiller Model 19XRV4242343CLH64
Starter / VFD VFD - Unit Mounted (w/ filter)
Refrigerant Type R-134a
Cooler
Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 3
Tubing Turbo-EDE (TBE), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00010
Compressor
Size 343
Flow Controls
Float Valve Size 5
Flasc Orifice 24

Weights
Total Rigging Weight 18704 lb
Total Operating Weight 20651 lb
Refrigerant Weight 970 lb
Condenser
Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 2
Tubing Spike Fin III (SPK3), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00025
Motor
Size CLH
Line Voltage/Hertz 480-3-60

Output Type	Full Load	Part Load	Part Load	Part Load
Percent Load	100.00	75.00	50.00	25.00
Chiller Capacity	400 Tons	300 Tons	200 Tons	100 Tons
Chiller Input kW	233 kW	126 kW	61 kW	41 kW
Chiller Input Power	0.583 kW/Ton	0.422 kW/Ton	0.306 kW/Ton	0.409 kW/Ton
IPLV	0.360 kW/Ton			
Cooler				
Entering Temp.	54.0 F	51.5 F	49.0 F	46.5 F
Leaving Temp.	44.0 F	44.0 F	44.0 F	44.0 F
Flow Rate	960.0 gpm	960.0 gpm	960.0 gpm	960.0 gpm
Pressure Drop	37.5 ft wg	37.6 ft wg	37.8 ft wg	37.9 ft wg
Condenser				
Leaving Temp.	94.3 F	81.7 F	69.3 F	67.2 F
Entering Temp.	85.0 F	75.0 F	65.0 F	65.0 F
Flow Rate	1200.0 gpm	1200.0 gpm	1200.0 gpm	1200.0 gpm
Pressure Drop	13.4 ft wg	13.7 ft wg	14.1 ft wg	14.1 ft wg
Motor				
Motor Input Power	223 kW	117 kW	55 kW	36 kW
Motor RLA	338	215	133	104
Motor OLTA	365			
Motor LRDA	3369			
Chiller RLA	293	175	99	72
Chiller Inrush Amps	293			
Max Fuse/CB Amps	600			
Min Circuit Ampacity	366			

Messages:

- (1) Certified in accordance with the ARI Water-Chilling Packages using the Vapor Compression Cycle Certification Program, which is based on ARI Standard 550/590-2003.



Evergreen Chiller Performance Outputs

02/26/2005
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Sales Office: Washington and Meigs

Tag Name: CH-1, CH-2

Chiller

Chiller Model 19XRV4242343CLH64
Starter / VFD VFD - Unit Mounted (w/ filter)
Refrigerant Type R-134a

Cooler

Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 3
Tubing Turbo-EDE (TBE), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00010

Compressor

Size 343

Flow Controls

Float Valve Size 5
Flasc Orifice 24

Weights

Total Rigging Weight 18704 lb
Total Operating Weight 20651 lb
Refrigerant Weight 970 lb

Condenser

Size 42
Waterbox Type Nozzle-in-Head, 150 psi
Passes 2
Tubing Spike Fin III (SPK3), .025 in, Copper
Fluid Type Fresh Water
Fouling Factor (hr-sqft-F)/BTU 0.00025

Motor

Size CLH
Line Voltage/Hertz 480-3-60

Output Type	Full Load	Part Load	Part Load	Part Load
Percent Load	100.00	75.00	50.00	25.00
Chiller Capacity	400 Tons	300 Tons	200 Tons	100 Tons
Chiller Input kW	239 kW	129 kW	63 kW	44 kW
Chiller Input Power	0.597 kW/Ton	0.429 kW/Ton	0.316 kW/Ton	0.437 kW/Ton
NPLV	0.371 kW/Ton			
Cooler				
Entering Temp.	52.9 F	50.2 F	47.5 F	44.7 F
Leaving Temp.	42.0 F	42.0 F	42.0 F	42.0 F
Flow Rate	875.0 gpm	875.0 gpm	875.0 gpm	875.0 gpm
Pressure Drop	31.9 ft wg	32.0 ft wg	32.1 ft wg	32.3 ft wg
Condenser				
Leaving Temp.	92.0 F	80.0 F	68.2 F	66.7 F
Entering Temp.	85.0 F	75.0 F	65.0 F	65.0 F
Flow Rate	1600.0 gpm	1600.0 gpm	1600.0 gpm	1600.0 gpm
Pressure Drop	22.7 ft wg	23.2 ft wg	23.8 ft wg	23.8 ft wg
Motor				
Motor Input Power	229 kW	119 kW	57 kW	38 kW
Motor RLA	342	217	134	107
Motor OLTA	369			
Motor LRDA	3369			
Chiller RLA	299	177	101	76
Chiller Inrush Amps	299			
Max Fuse/CB Amps	600			
Min Circuit Ampacity	374			

Messages:

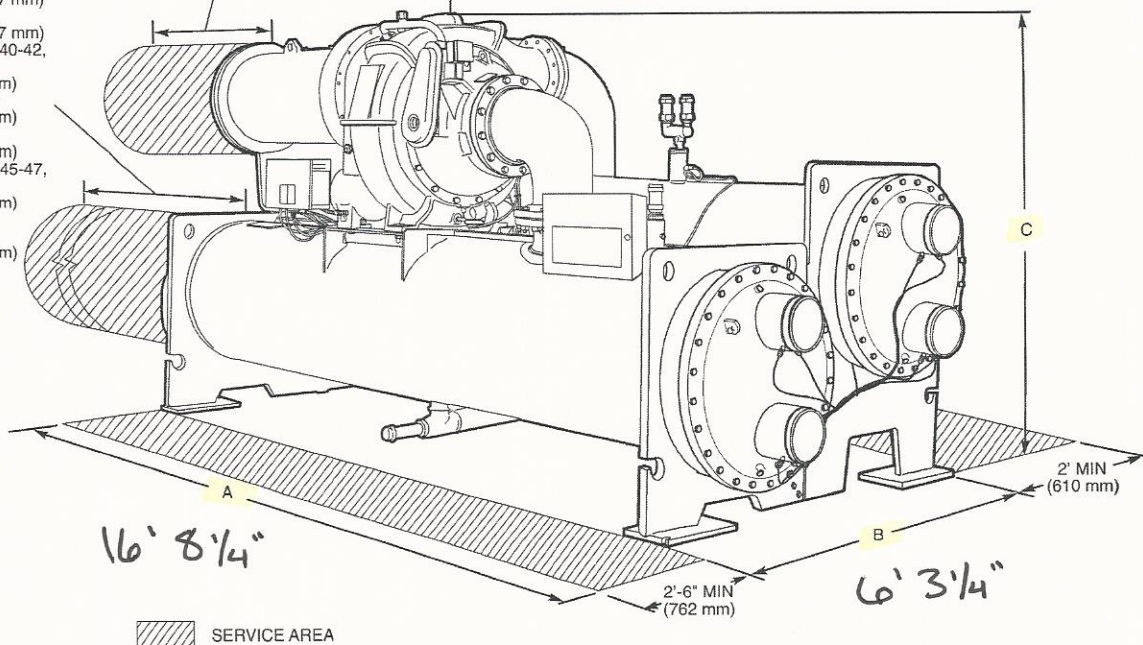
- (1) Certified in accordance with the ARI Water-Chilling Packages using the Vapor Compression Cycle Certification Program, which is based on ARI Standard 550/590-2003.

19XR DIMENSIONS

TUBE REMOVAL
SPACE FOR
EITHER END
10'-0" (3048 mm)
(SIZES 10-12, 20-22)
12'-3 1/2" (3747 mm)
(SIZES 15-17)
12'-3 1/2" (3747 mm)
(SIZES 30-32, 40-42,
50-52, 60-62)
12'-3" (3747 mm)
(SIZES 5A-5C)
14'-3" (4343 mm)
(SIZES 5F-5H)
14'-3" (4343 mm)
(SIZES 35-37, 45-47,
55-57, 65-67)
14'-0" (4267 mm)
(SIZES 70-72,
80-82)
16'-0" (4877 mm)
(SIZES 75-77,
85-87)

MOTOR SERVICE
CLEARANCE
4'-0" (1219 mm)

FRAME 2-4 COMPRESSOR 3'-0" (915 mm)
RECOMMENDED OVERHEAD SERVICE CLEARANCE
FRAME 5 COMPRESSOR 5'-0" (1524 mm)
RECOMMENDED OVERHEAD SERVICE CLEARANCE



19XR DIMENSIONS (Marine Waterbox)

HEAT EXCHANGER SIZE	A (Length, Marine Waterbox)				19XR B WIDTH		19XRV B WIDTH		19XR,XRV C HEIGHT
	2-Pass*		1 or 3-Pass†						
	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	
10 to 12	NA	NA	NA	NA	NA	NA	NA	NA	See Note 6
15 to 17	NA	NA	NA	NA	NA	NA	NA	NA	
20 to 22	12- 5 1/2	3797	14- 1 1/4	4299	6- 1 1/16	1856	6- 1 1/16	1856	
30 to 32	14- 9	4496	16- 4 3/4	4997	6- 1 1/16	1856	6- 1 1/16	1856	
35 to 37	16- 5 1/2	5017	18- 1 1/4	5518	6- 1 1/16	1856	6- 1 1/16	1856	
40 to 42	15- 2 3/4	4642	16- 8 1/4	5086	6- 3 1/4	1911	6- 3 1/4	1911	
45 to 47	16-11 1/4	5163	18- 4 3/4	5607	6- 3 1/4	1911	6- 3 1/4	1911	
50 to 52	15- 3 1/2	4661	16- 8 1/2	5093	6- 8 7/8	2054	6- 8 7/8	2054	
5A to 5C	15- 3 1/2	4661	16- 8 1/2	5093	6- 8 7/8	2054	6- 8 7/8	2054	
55 to 57	17- 0	5182	18- 5	5613	6- 8 7/8	2054	6- 8 7/8	2054	
5F to 5H	17- 0	5182	18- 5	5613	6- 8 7/8	2054	6- 8 7/8	2054	
60 to 62	15- 4 1/8	4677	16- 8 3/4	5099	6-11 3/4	2127	6- 11 3/4	2127	
65 to 67	17- 0 5/8	5197	18- 5 1/4	5620	6-11 3/4	2127	6- 11 3/4	2127	
70 to 72	17- 10 3/4	5455	19- 9 3/4	6039	8- 8 1/8	2645	9- 5 7/8	2778	
70 to 72	17- 10 3/4	5455	19- 9 3/4	6039	8- 8 1/8	2645	9- 6 3/8	2905	
75 to 77	19- 10 3/4	6188	21- 9 3/4	6648	8- 8 1/8	2645	9- 6 3/8	2905	
80 to 82	18- 0 5/8	5502	19-10 1/2	6058	9- 6	2896	10- 5	3175	
85 to 87	20- 0 5/8	6112	21-10 1/2	6668	9- 6	2896	10- 5	3175	

*Assumes both cooler and condenser nozzles on same end of chiller.

†1 or 3-pass length applies if cooler is a 1 or 3-pass design.

NOTES:

- Service access should be provided per American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
- Allow at least 3 ft (915 mm) overhead clearance for service rigging for frame 2-4 compressor. Overhead clearance for service rigging frame 5 compressor should be 5 ft (1524 mm).
- Dimensions are approximate. Certified drawings available upon request.

4. Marine waterboxes may add 6 in., to the width of the machine. See certified drawings for details.

5. 'A' length dimensions shown are for standard 150 psig design and victaulic connections. The 300 psig design and/or flanges will add length. See certified drawings.

6. 19XR,XRV height — check certified drawings.

7. Not all waterbox/pass combinations are available with unit-mounted VFD. Check selection program for availability.

Description

Qty	Description
2	Carrier model 19XRV4242343CLH nominal 400 ton variable speed centrifugal water chiller including centrifugal compressor, semi-hermetic motor, evaporator, condenser, refrigerant cooled oil cooler, oil pump and DDC control panel.

Among the items included with these chillers:

1. Initial charge of R-134a refrigerant and oil
2. Victaulic grooved water nozzle connections
3. Thermal insulation of chiller cold surfaces (excluding water boxes)
4. Auto-resetting refrigerant relief valves
5. Remote chilled water reset and demand limit reset
6. Unit mounted variable frequency drive with the following options:
 - a. Harmonic filter
 - b. 3-phase meter package
 - c. Shunt-trip circuit breaker (65,000 AIC)
7. LON interface card for each chiller, installed and programmed by Carrier
8. Factory performance test with travel allowance for two people to travel to the factory in Charlotte, NC to witness the testing
9. Neoprene isolator pads
10. Factory start-up service and owner training
11. One year parts and labor warranty on the chiller and the VFD
12. Five year parts and labor warranty on the compressor/motor assembly
13. Five year refrigerant warranty

Among the items *not* included by Carrier or to be provided by others:

1. Rigging, carting or painting
2. Mounting external control devices
3. Control interlock wiring to external control devices
4. Installation labor
5. Equipment base or pad
6. Thermal insulation of evaporator waterbox heads
7. Any piping or accessories except as noted above
8. Refrigerant other than initial charge
9. Electrical work including power and control wiring
10. All instrumentation mounted in field piping
11. Relief valve piping to outdoors

Specification Compliance

Section 15610 – Water Chillers

Although we have made every attempt to meet or exceed the specification, we would like to offer the following comments and clarifications that pertain to this equipment.

Paragraph	Comment																				
2.1.E.8	The Belzona epoxy coating has been deleted in accordance with the engineer's direction.																				
2.1.F.2	The chillers shall be provided with a LON read/write interface in lieu of an RS-232 read-only interface per the engineer's direction.																				
2.1.I	The design operating parameters have been modified per the engineer's direction and are based on the following: - Cooler: 875 GPM from 52.9°F to 42.0°F with variable chilled water flow through the evaporator. - Condenser: 1,600 GPM from 85.0°F to 92.0°F.																				
2.2.J	The performance test shall be done on one chiller only since both chillers are identical. The performance test shall include a 4-point test in accordance with ARI Standard 550/590-2003 as follows: <table><tr><th>% Load</th><th>Tons</th><th>ECWT (°F)</th><th>Tolerance (%)</th></tr><tr><td>100</td><td>400</td><td>85.0</td><td>4.87</td></tr><tr><td>75</td><td>300</td><td>75.0</td><td>7.08</td></tr><tr><td>50</td><td>200</td><td>65.0</td><td>9.74</td></tr><tr><td>25</td><td>100</td><td>65.0</td><td>14.24</td></tr></table>	% Load	Tons	ECWT (°F)	Tolerance (%)	100	400	85.0	4.87	75	300	75.0	7.08	50	200	65.0	9.74	25	100	65.0	14.24
% Load	Tons	ECWT (°F)	Tolerance (%)																		
100	400	85.0	4.87																		
75	300	75.0	7.08																		
50	200	65.0	9.74																		
25	100	65.0	14.24																		
2.2.A	The chillers shall be provided with refrigerant isolation valves to allow the entire charge to be isolated in the cooler or the condenser during service.																				
2.2.C	The 19XRV chiller has factory installed safety circuits to protect the chiller upon loss of condenser water flow. A field installed flow switch is not required.																				
2.2.D	The 19XRV chiller has factory installed safety circuits to protect the chiller upon loss of chilled water flow. A field installed flow switch is not required.																				
Part 4	The design operating parameters have been modified per the engineer's direction as described for paragraph 2.1.I above.																				

**Carrier Rotary Chiller
Model 19XRV**



JOB N. _____ CUSTOMER P.O. NO.: F010-001
 JOB LOCATION: SEATTLE, WA AIR REPS W/O NO. 02-009-05
 BUYER: _____ PREPARED BY: _____ OFFICE: _____
 ENGINEER: _____ SALESPERSON: _____ DATE: 02/24/05

QTY. 2	MODEL AND SIZE 19XRV4242343CLH64-	REFRIGERANT ☐ SHIP SEPARATELY TYPE: <u>HFC-134a</u> ☒ SHIPPED IN MACHINE LBS.: <u>970</u> ☐ NOT BY CARRIER	REFRIGERANT TEMPERATURES SUCTION TEMP °F: <u>41.6</u> COND. TEMP °F: <u>93.5</u>
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MACHINE OPTIONS & ACCESSORIES:

- ☒ THERMAL INSULATION ☐ PARTIAL ☒ FULL
☒ NEOPRENE ISOLATION PADS
 WATERBOXES: CLR. ☒ N.I.H. ☐ MWB 150 PSIG
 COND ☒ N.I.H. ☐ MWB 150 PSIG
☒ VICTAULIC CONNECTIONS ☒ CLR. ☒ CND.
☒ REFRIGERANT ISOLATION VALVES
☒ AUTO RESETTING RELIEF VALVES
☒ WARRANTY TERMS: 1 YEAR PARTS AND LABOR
☒ SPECIALS: LON CONTROL INTERFACE

- ☒ UNIT MOUNTED STARTER - VFD
☐ SOLEPLATE ISOLATION PACKAGE
☒ CIRCUIT BREAKER
☒ 3-PHASE AMMETER/VOLTMETER PACKAGE
☒ HARMONIC FILTER
☒ FACTORY PERFORMANCE TEST QTY. 1
 NUMBER OF TEST POINTS = 4: 100%, 75%, 50%, 25%

PERFORMANCE DATA	CAPACITY TONS	EWT °F	LWT °F	FLOW GPM	PRESS. DROP	# OF PASSES	NOZZLE ARRGT.	DESIGN PRESS	FOULING FACTOR	FLUID TYPE	CONC.
COOLER	400	52.9	42.0	875	31.9	3	E	150	0.00010	FW	
CONDENSER		85.0	92.0	1600	22.7	2	R	150	0.00025	FW	
ELECTRICAL DATA	TOTAL KW	RLA	OLTA	MCA	LRDA	MOTOR		VOLTS - PH - HZ		ORIFICE (MAIN/FLASC)	
	239	342	369	374	3369	HERMETIC		480-3-60		5 / 24	
TUBING DATA	MATERIAL		TYPE		WALL		PHYSICAL DATA				
COOLER	Copper		TBE		.025		RIGGING WEIGHT: 18,704 LBS				
CONDENSER	Copper		SPK3		.025		OPERATING WEIGHT: 20,651 LBS				

MARK FOR:

CH-1, CH-2

MARKET TYPE: ☐ NEW CONSTRUCTION ☒ REPLACEMENT

INSTALLING SERVICE OFFICE: CARRIER COMMERCIAL SERVICE, TUKWILA, WA