

# HACE

Heating & Air Conditioning Ent.



**Air Cooled Chiller**

**HACMa Series (60 Hz)**

**Semi Hermetic Screw Compressor**

**R134a Refrigerant**

**(50 - 600) TR**

*Tailor Your Atmosphere*

## About Us

Heating & Air Conditioning Enterprises have recently grouped the names of its divisions (HACE – Royal Temp – Golden Star) into (HACE), while preserving the company's good reputation and expertise acquired in the past 30 years for providing high quality HVAC products, supplies and services.

HACE took the advantage of the strongly increasing demand on its high quality products and launched numerous expansion plans to increase the production capacity by double, increase the working staff by 30%, provide totally new products with wider range of choice, release new HVAC products series with new specifications and develop the existing products and services. HACE is based on a production facility of 30'000 m<sup>2</sup> along with a storage area of 5'750 m<sup>2</sup>. HACE team consists of more than 500 highly skillful technical and senior engineers.

In 1976 HACE started the manufacturing of HVAC products and supplies in the Kingdom of Saudi Arabia. In 1980, the primary manufacturing plant was built in the Second Industrial City in Riyadh and from that point, HACE started the manufacture of air conditioning equipment, air devices, heavy duty centrifugal blowers, and pre-insulated pipes under the trade name "Goldenstar". In 2004, the company trade name was changed to "Royal Temp" and to be used for all products. In 2012, the name HACE was chosen to replace the old trade names and declare a new milestone in the company's history.

In continuation of its growth pursuit, HACE is eagerly following the recent HVAC technologies and developments by providing its employees with the best training sessions coupled with its wide knowledge of HVAC sciences and products. HACE high quality equipment has acquired various international certifications like AHRI, ETL, UL, CE, and ISO 9001 along with many vendor approvals from the governmental sector, semi-governmental and leading private companies.

Today, HACE is producing a huge variety of HVAC products, supplies and services that will grant all of its customer's air comfort requirements to the least detail, "Tailor Your Atmosphere".

### **Our Vision**

Become customer's first choice regionally and be recognized globally for providing high quality air comfort solutions.

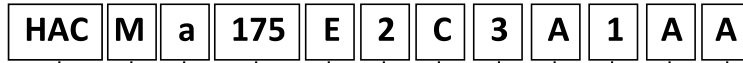
### **Our Mission**

Ensure total customer satisfaction for Air Comfort requirements by providing high quality, tailored, affordable, energy efficient and eco-friendly products and services.

# Contents

<b>NOMENCLATURE</b> .....	<b>2</b>
<b>BENEFITS</b> .....	<b>3</b>
<b>GENERAL FEATURES</b> .....	<b>4</b>
<b>STANDARD FEATURES</b> .....	<b>6</b>
<b>OPTIONAL FEATURES</b> .....	<b>7</b>
<b>GENERAL DATA TABLES</b> .....	<b>8</b>
<b>PERFORMANCE DATA TABLES</b> .....	<b>10</b>
<b>ELECTRICAL DATA TABLES</b> .....	<b>17</b>
<b>COOLER PRESSURE DROP CURVES</b> .....	<b>21</b>
<b>DIMENSIONAL DRAWINGS</b> .....	<b>22</b>

NOMENCLATURE



**(1) PRODUCTION SERIES**  
 HAC: HACE Air Cooled Chiller

**(2) DESIGN SPECIFICATION**  
 M: MARKET STANDARD  
 H: HACE STANDARD  
 T: TAILOR  
 S: SPECIAL

**(3) REFRIGERANT**  
 x: R22  
 c: R407c  
 a: R134a

**(4) MODEL**

050	235
055	250
060	260
070	275
075	285
080	295
090	300
095	310
100	320
110	330
120	350
130	360
140	375
145	390
150	400
160	420
170	430
175	450
180	460
190	475
200	490
210	540
220	570
225	600

**(5) COMPRESSOR TYPE**  
 S: Semi Hermetic Reciprocating  
 E: Semi Hermetic Screw  
 F: Hermetic Scroll

**(12) ELECTRICAL OPTIONS**  
 A: Standard  
 B: Compressor Overload  
 C: Cond. Fan Circuit Breaker  
 D: Cond. Fan Overload  
 E: Ground Current Protection  
 F: Non fused Unit Disconnect Switch  
 G: BMS

**(11) MECHANICAL OPTIONS**  
 A: Standard  
 B: Unit Protection Guard  
 C: Condenser Protection Guard  
 D: Compressor Protection Guard  
 E: Water Flow Switch (loose Item)  
 F: Unit Spring Isolator (loose Item)  
 G: Compressor Enclosure  
 H: Pressure Gauges (Hi&Low)  
 I: Cooler Heater Tape  
 J: Cooler Double insulation

**(10) Cooler Options**  
 1: STD. Victaulic Connection  
 2: Flange Connection  
 3: ASME Victaulic Connection  
 4: ASME Flange Connection

**(9) CONDENSER COIL OPTIONS**  
 A: Aluminum Fins  
 P: Pre-Coated AL. Fins  
 C: Copper Fins  
 O: Post Coated Aluminum Fins

**(8) POWER SUPPLY**  
 1: 460/3/60  
 2: 230/3/60  
 3: 380/3/60  
 4: 380-415/3/50  
 5: 208-230/3/60

**(7) MODE**  
 C: Cooling Only

**(6) NUMBER OF CIRCUITS**  
 1,2..etc.

## BENEFITS

### EASY INSTALLATION

The HACMa unit has a compact footprint design comparable to other similar chillers. Unit compact size reduces the structural steel, concrete, and fencing cost. Each HACMa unit is completely charged and factory tested and released from factory as a complete packaged for easy installation and start-up.

### EASY START-UP AND OPERATION

Start-up and operation utilizes simple-to-use microcomputer direct digital control that allows fingertip user interaction. A keypad with Liquid Crystal Display (LCD) and menu driven software provides access to operating conditions, control set points, and alarms history. All controls are fully automatic. Load changes are continuously monitored by fluid temperature sensor to adjust and control the compressor capacity loading.

### QUIET OPERATION

Due to its quiet operation, the units are suitable for applications such as schools, offices, hospitals, hotels and other places nearby residential areas. HACMa will be quieter during part load operation especially at night time where there are only few fans running.

### OPERATOR FRIENDLY AND EASY TO USE CONTROLLER

HACMa controller allows fingertip user interaction. It has simple-to-use keypad and menu driven software providing access to operating conditions, control set points and alarm history clearly displayed on a 4 line 20 character Liquid Crystal Display (LCD). The attractive polycarbonate keypad, large and easy to read, Liquid Crystal Display and menu driven simple to use software allow for fast, easy retrieval of systems operating information.

### QUALITY

All HACMa units are manufactured under ISO 9001 (2000) facility which ensures quality of the product.

### RELIABILITY

HACMa Screw chillers are designed to operate year-round by utilizing the following:

- Compact high efficient compressor.
- Shell and tube cooler which is less susceptible to water freeze-up and lubricant rapidly returns to the compressor.
- Controls and devices to operate the unit year-round.
- Durable condenser fans made of high grade resin which maintains the airflow in the condenser to continuously reject heat added to the system.
- Single and Multiple independent refrigerant circuits providing flexibility and unsurpassed backup.

## GENERAL FEATURES

### CHILLER STRUCTURE

Chiller structure is made up of heavy gauge steel, starting from a cabinet offering unsurpassed corrosion protection. Frames and panels are coated with 2 coats of epoxy primer and 2 coats of polyurethane based paint finish after assembly. HACMa offers far more superior chiller construction to defeat the hazardous salty sea wind and desert ambient temperature.

### COMPRESSOR

The semi-hermetic screw compressor is developed especially for applications in air-conditioning and refrigeration with high operating load design. The advantage of screw compressor is the high efficiency and reliability in all operating conditions, low noise and vibration levels. The compressor has the latest and advanced five to six patented screw rotor profile designed to ensure high capacity and efficiency in all operating conditions and equipped with separated radial and axial bearings, slider control valve for infinite capacity control, liquid injection and economizer connection, PTC motor temperature thermistors and discharge temperature thermistors, motor protector, oil level switch , oil pressure differential switch connector and other accessories. The complete accessories and their new designs guarantee the compressor has the best reliability, longest bearing life during heavy duty running and strict operating conditions.



HACMa models with semi Hermetic screw compressors are available with Refrigerant R-134a with nominal capacity 50 to 600 TR.

### SHELL AND TUBE COOLER

- Dry expansion cooler.
- The tube bundle made of enhanced copper tubes expanded into a steel tubular sheet, with brass baffles, located in a steel shell.
- The cooler is circuited so that each refrigerant circuit is completely isolated.
- Water connections are equipped with slot end with groove. Coupling connectors (vactaulic) are standard for connection 4" and above, while for connection 3" are thread.
- Steel support legs.
- Air vent and water drain.
- Working pressure - Refrigerant side: 25 Bar (362 Psi), Water side: 10 Bar (150 Psi).
- Complete cooler is insulated with 3/4" (19mm) closed cell elastomeric thermal insulation.
- Gaskets are made of an asbestos free compound.
- Reduced refrigerant charge
- Low water pressure drop.





### AIR COOLED CONDENSER COIL

High efficiency condenser coils designed for high ambient temperature are constructed of copper tubes mechanically bonded to die formed aluminum fins having self-spacing collars. Condenser coils are designed to keep low condensing temperature at high ambient temperature resulting to high compressor efficiency and low energy consumption. Long life solution can be order with coils having copper tube & copper fins electro-tinned after fabrication. See Optional features for corrosion protection options that add life to the condenser coil.



### CHILLER CONTROLLER

HACMa controller supporting the following functions:

1. Mode: Cooling only
2. Hot water valve control (optional)
3. Heating cycle configurations such as:
  - a. Reverse cycle
  - b. Hot water
4. Sleep mode
5. Compressor protections such as:
  - a. Compressor 3 minutes restart protection
  - b. Compressor overload
  - c. Insufficient of refrigerant
  - d. Low pressure trip
  - e. High pressure trip
6. Nonvolatile memory – keep system settings
7. Outdoor coil defrost termination temperature can be changed: 10 °C-15 °C
8. Programmable On/Off timer
9. Random restart to minimize voltage dip during compressor first cut in cycle upon power up.



### STANDARD FEATURES

#### CONSTRUCTION

- Heavy duty mounting chassis for HACMa models
- Compact unit design with minimum footprint area
- HACMa models are designed to enable easy access for components
- W-shaped air cooled condenser
- Anti-vibration pads under each compressor
- Weather proof oven-backed epoxy powder electrostatic paint for sheets and the base frame is painted

#### REFRIGERATION

- Electronic expansion valve
- Discharge and Suction valves
- Liquid line Solenoid valve
- Independent refrigeration circuit per compressor
- Replacible core filter drier
- High pressure safety switch
- Low pressure safety switch
- Liquid line shut off valve
- Liquid line moisture indecator (sight glass)

#### ELECTRICAL

- Control voltage is 220V-230V for all components
- Inherent motor protection for each compressor
- Inherent motor protection for each condenser fan motor
- Terminal for remote On/Off
- Circuit breaker for compressors
- Terminal for general alarm signal
- Phase failure relay
- Compressors short cycling protection
- On/Off low ambient control
- Compressors smart lead-lag operation



## OPTIONAL FEATURES

### CONSTRUCTION

- Coil protection using: pre-coated Aluminum fins, Copper fins or Post-coated aluminum fins
- Wire mesh guard around chiller
- 1 inch or 2 inch spring isolators under chiller (loose item)
- Compressor compartment to enhance chiller sound pressure level
- Extra cooler insulation with closed cell foam

### REFRIGERATION

- Pressure gauges (high and low)
- Water flow switch (loose item)

### ELECTRICAL

- External overload for compressors
- External overload for condenser fans
- High ambient kit through compressor unloading
- Low ambient Head Pressure Control
- Circuit breaker for condenser fans
- Non fused disconnect switch with external handle for service purposes
- Earth leakage relay for compressors
- Earth Leakage relay for HACMa whole unit
- Heater to protect cooler from freezing up at low ambient

GENERAL DATA TABLES

HACMa	Model	050	055	060	070	075	080	090	095	100	110	120	130	140	145
Power Supply	V/Ph/Hz	See Electrical Data Tables													
Compressor		Semi Hermetic Screw													
No.		1	1	1	1	1	1	1	2	1 + 1	2	2	2	2	1 + 1
Grade Of Oil		CPI Solest 170													
Oil Charge	Liter (Each)	14	16	16	16	16	15	18	14	16 + 14	16	16	16	16	15 + 16
Refrigerant		R-134a													
Total Refrigerant Charge	kg	37	42	46	53	56	59	67	71	78	83	91	98	106	111
Condenser Side		Copper Tubes - Aluminum Fins													
Rows No.		3	3	4	4	4	4	3	4	4	4	3	4	4	4
FPI		14	14	14	14	14	14	14	14	14	14	14	14	14	14
Total Face Area	Ft2	73	73	73	88	88	88	106	106	111	111	164	164	164	164
Propeller Fans	No.	4	4	4	4	4	4	6	6	6	6	8	8	8	8
Total Air Flow Rate	CFM	60000	60000	60000	60000	60000	60000	90000	90000	90000	90000	120000	120000	120000	120000
Cooler	Type	Shell and Tube													
No.		1	1	1	1	1	1	1	1	1	1	1	1	1	1

HACMa	Model	150	160	170	175	180	190	200	210	220	225	235	250	260	275
Power Supply	V/Ph/Hz	See Electrical Data Tables													
Compressor		Semi Hermetic Screw													
No.		2	2	1 + 1	1 + 1	2	1 + 1	2	2	2	1 + 2	3	1 + 2	2 + 1	1 + 2
Grade Of Oil		CPI Solest 170													
Oil Charge	Liter (Each)	15	15	18 + 15	18 + 15	18	20 + 18	20	23	23	15 + 16	15	18 + 15	18 + 15	20 + 18
Refrigerant		R-134a													
Total Refrigerant Charge	kg	114	120	126	132	134	143	148	158	166	168	177	188	196	207
Condenser Side		Copper Tubes - Aluminum Fins													
Rows No.		4	4	4	4	4	4	4	4	4	4	4	4	4	4
FPI		14	14	14	14	14	14	14	14	14	14	14	14	14	14
Total Face Area	Ft2	164	176	176	176	176	222	222	222	222	264	264	333	333	333
Propeller Fans	No.	8	10	10	10	10	12	12	12	12	12	12	16	16	16
Total Air Flow Rate	CFM	120000	150000	150000	150000	150000	180000	180000	180000	180000	180000	180000	240000	240000	240000
Cooler	Type	Shell and Tube													
No.		1	1	1	1	1	1	1	1	1	1	1	1	1	1

Note:

All specifications and data are subject to change without notice in accordance with our policy of continuous researches and products development.

GENERAL DATA TABLES

HACMa	Model	285	295	300	310	320	330	350	360	375	390	400	420	430
Power Supply	V/Ph/Hz	See Electrical Data Tables												
Compressor		Semi Hermetic Screw												
No.		2 + 1	3	2 + 1	3	4	1 + 3	2 + 2	4	2 + 2	1 + 3	3 + 1	1 + 3	3 + 1
Grade Of Oil		CPI Solest 170												
Oil Charge	Liter (Each)	20 + 18	20	23 + 20	23	15	18 + 15	18 + 15	18	20 + 18	23 + 20	23 + 20	23 + 23	23 + 23
Refrigerant		R-134a												
Total Refrigerant Charge	kg	214	218	227	232	243	250	260	271	282	294	302	314	323
Condenser Side		Copper Tubes - Aluminum Fins												
Rows No.		4	4	4	4	4	3	4	4	4	4	4	4	4
FPI		14	14	14	14	14	14	14	14	14	14	14	14	14
Total Face Area	Ft2	333	333	333	333	444	444	444	444	444	444	444	444	444
Propeller Fans	No.	16	16	16	16	22	22	22	22	22	22	22	22	22
Total Air Flow Rate	CFM	240000	240000	240000	240000	330000	330000	330000	330000	330000	330000	330000	330000	330000
Cooler	Type	Shell and Tube												
No.		1	1	1	1	2	2	2	2	2	2	2	2	2

HACMa	Model	450	460	475	490	540	570	600
Power Supply	V/Ph/Hz	See electrical data tables						
Compressor		Semi Hermetic Screw						
No.		3 + 3	5 + 1	6	2 + 4	6	4 + 2	4 + 2
Grade Of Oil		CPI Solest 170						
Oil Charge	Liter (Each)	15 + 16	15 + 16	15	18 + 15	18	20 + 18	23 + 20
Refrigerant		R-134a						
Total Refrigerant Charge	kg	337	346	355	366	406	428	451
Condenser Side		Copper Tubes - Aluminum fins						
Rows No.		4	4	4	4	4	4	4
FPI		14	14	14	14	14	14	14
Total Face Area	Ft2	491	491	491	491	667	667	667
Propeller Fans	No.	22	22	22	22	32	32	32
Total Air Flow Rate	CFM	330000	330000	330000	330000	480000	480000	480000
Cooler	Type	Shell and Tube						
No.		2	2	2	2	2	2	2

Note:

All specifications and data are subject to change without notice in accordance with our policy of continuous researches and products development.

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
050	50	57.6	45.6	138	54.2	51.8	130	50.8	57.9	122	47.4	64.1	114	43.9	70.2	105	42.2	73.3	101
	48	55.9	44.8	134	52.5	51.0	126	49.1	57.1	118	45.7	63.2	110	42.3	69.4	101	40.5	72.5	97
	46	54.3	44.0	130	50.8	50.1	122	47.4	56.3	114	44.0	62.4	106	40.6	68.6	97	38.9	71.7	93
	44	52.6	43.2	126	49.2	49.3	118	45.7	55.5	110	42.3	61.6	102	38.9	67.8	93	37.2	70.8	89
	42	50.9	42.4	122	47.5	48.5	114	44.1	54.7	106	40.6	60.8	98	37.2	67.0	89	35.5	70.0	85
	40	49.2	41.6	118	45.8	47.7	110	42.4	53.9	102	39.0	60.0	93	35.5	66.2	85	33.8	69.2	81
055	50	65.2	53.8	156	61.3	61.4	147	57.5	69.1	138	53.7	76.7	129	49.9	84.4	120	48.0	88.2	115
	48	63.1	52.8	152	59.3	60.4	142	55.5	68.1	133	51.7	75.7	124	47.9	83.4	115	45.9	87.2	110
	46	61.1	51.8	147	57.3	59.5	137	53.5	67.1	128	49.6	74.8	119	45.8	82.4	110	43.9	86.2	105
	44	59.1	50.8	142	55.2	58.5	133	51.4	66.1	123	47.6	73.8	114	43.8	81.4	105	41.9	85.2	101
	42	57.0	49.9	137	53.2	57.5	128	49.4	65.2	119	45.6	72.8	109	41.8	80.4	100	39.9	84.3	96
	40	55.0	48.9	132	51.2	56.5	123	47.4	64.2	114	43.6	71.8	105	39.7	79.5	95	37.8	83.3	91
060	50	72.3	56.0	174	68.2	64.4	164	64.0	72.8	154	59.8	81.2	144	55.6	89.6	133	53.5	93.8	128
	48	69.9	54.9	168	65.8	63.3	158	61.6	71.7	148	57.4	80.1	138	53.2	88.5	128	51.1	92.7	123
	46	67.5	53.9	162	63.4	62.3	152	59.2	70.7	142	55.0	79.1	132	50.8	87.5	122	48.7	91.7	117
	44	65.1	52.9	156	61.0	61.2	146	56.8	69.6	136	52.6	78.0	126	48.4	86.4	116	46.3	90.6	111
	42	62.7	51.8	151	58.6	60.2	141	54.4	68.6	131	50.2	77.0	120	46.0	85.4	110	43.9	89.6	105
	40	60.3	50.8	145	56.2	59.2	135	52.0	67.6	125	47.8	76.0	115	43.6	84.4	105	41.5	88.6	100
070	50	83.3	68.3	200	78.4	77.1	188	73.5	85.8	176	68.6	94.6	165	63.7	103.4	153	61.2	107.7	147
	48	80.4	67.0	193	75.5	75.7	181	70.6	84.5	169	65.7	93.3	158	60.8	102.0	146	58.3	106.4	140
	46	77.5	65.7	186	72.6	74.4	174	67.7	83.2	162	62.8	92.0	151	57.8	100.7	139	55.4	105.1	133
	44	74.6	64.3	179	69.7	73.1	167	64.8	81.9	155	59.9	90.6	144	54.9	99.4	132	52.5	103.8	126
	42	71.7	63.0	172	66.8	71.8	160	61.9	80.6	149	57.0	89.3	137	52.0	98.1	125	49.6	102.5	119
	40	68.8	61.7	165	63.9	70.5	153	59.0	79.2	142	54.1	88.0	130	49.1	96.8	118	46.7	101.2	112
075	50	87.3	72.4	209	82.3	82.0	198	77.3	91.6	186	72.4	101.2	174	67.4	110.8	162	64.9	115.6	156
	48	84.2	71.0	202	79.2	80.6	190	74.2	90.2	178	69.3	99.8	166	64.3	109.4	154	61.8	114.2	148
	46	81.1	69.5	195	76.1	79.1	183	71.2	88.7	171	66.2	98.3	159	61.2	107.9	147	58.7	112.7	141
	44	78.0	68.1	187	73.0	77.7	175	68.1	87.3	163	63.1	96.9	151	58.1	106.5	140	55.7	111.3	134
	42	74.9	66.6	180	69.9	76.2	168	65.0	85.8	156	60.0	95.4	144	55.0	105.1	132	52.6	109.9	126
	40	71.8	65.2	172	66.9	74.8	160	61.9	84.4	149	56.9	94.0	137	52.0	103.6	125	49.5	108.4	119
080	50	92.6	79.2	222	87.5	90.0	210	82.4	100.9	198	77.4	111.7	186	72.3	122.6	173	69.8	128.0	167
	48	89.2	77.5	214	84.2	88.4	202	79.1	99.2	190	74.0	110.1	178	69.0	120.9	166	66.4	126.4	159
	46	85.9	75.9	206	80.8	86.7	194	75.8	97.6	182	70.7	108.4	170	65.6	119.3	158	63.1	124.7	151
	44	82.6	74.3	198	77.5	85.1	186	72.5	96.0	174	67.4	106.8	162	62.3	117.7	150	59.8	123.1	143
	42	79.3	72.6	190	74.2	83.5	178	69.1	94.3	166	64.1	105.2	154	59.0	116.0	142	56.5	121.5	136
	40	75.9	71.0	182	70.9	81.9	170	65.8	92.7	158	60.7	103.6	146	55.7	114.4	134	53.1	119.8	128
090	50	104.4	86.5	251	98.4	98.7	236	92.5	110.8	222	86.5	123.0	208	80.5	135.1	193	77.5	141.2	186
	48	101.8	85.2	244	95.8	97.3	230	89.8	109.5	215	83.8	121.6	201	77.8	133.8	187	74.8	139.8	180
	46	99.1	83.9	238	93.1	96.0	223	87.1	108.1	209	81.1	120.3	195	75.2	132.4	180	72.2	138.5	173
	44	96.4	82.5	231	90.4	94.7	217	84.4	106.8	203	78.5	119.0	188	72.5	131.1	174	69.5	137.2	167
	42	93.7	81.2	225	87.8	93.3	211	81.8	105.5	196	75.8	117.6	182	69.8	129.8	168	66.8	135.8	160
	40	91.1	79.9	219	85.1	92.0	204	79.1	104.1	190	73.1	116.3	175	67.1	128.4	161	64.1	134.5	154

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
095	50	109.5	91.9	263	103.8	106.7	249	98.1	121.6	235	92.4	136.4	222	86.7	151.3	208	83.9	158.7	201
	48	106.8	90.6	256	101.1	105.4	243	95.4	120.3	229	89.7	135.1	215	84.0	150.0	202	81.2	157.4	195
	46	104.1	89.2	250	98.4	104.1	236	92.8	118.9	223	87.1	133.8	209	81.4	148.6	195	78.5	156.1	188
	44	101.5	87.9	244	95.8	102.8	230	90.1	117.6	216	84.4	132.5	203	78.7	147.3	189	75.9	154.8	182
	42	98.8	86.6	237	93.1	101.5	223	87.4	116.3	210	81.7	131.2	196	76.0	146.0	183	73.2	153.4	176
	40	96.1	85.3	231	90.4	100.1	217	84.8	115.0	203	79.1	129.8	190	73.4	144.7	176	70.5	152.1	169
100	50	116.3	98.3	279	110.9	116.4	266	105.5	134.5	253	100.1	152.6	240	94.7	170.7	227	92.0	179.8	221
	48	113.6	97.1	273	108.2	115.2	260	102.8	133.3	247	97.4	151.4	234	92.0	169.4	221	89.3	178.5	214
	46	110.9	95.8	266	105.5	113.9	253	100.1	132.0	240	94.7	150.1	227	89.3	168.2	214	86.6	177.2	208
	44	108.3	94.5	260	102.8	112.6	247	97.4	130.7	234	92.0	148.8	221	86.6	166.9	208	83.9	175.9	201
	42	105.6	93.2	253	100.2	111.3	240	94.7	129.4	227	89.3	147.5	214	83.9	165.6	201	81.2	174.6	195
	40	102.9	91.9	247	97.5	110.0	234	92.1	128.1	221	86.6	146.2	208	81.2	164.3	195	78.5	173.3	188
110	50	127.6	106.7	306	121.0	127.4	291	114.5	148.1	275	108.0	168.7	259	101.4	189.4	243	98.1	199.8	236
	48	124.5	105.2	299	118.0	125.8	283	111.4	146.5	267	104.9	167.2	252	98.4	187.9	236	95.1	198.2	228
	46	121.5	103.6	292	114.9	124.3	276	108.4	145.0	260	101.8	165.6	244	95.3	186.3	229	92.0	196.6	221
	44	118.4	102.0	284	111.9	122.7	269	105.3	143.4	253	98.8	164.1	237	92.2	184.7	221	89.0	195.1	214
	42	115.4	100.5	277	108.8	121.2	261	102.3	141.8	245	95.7	162.5	230	89.2	183.2	214	85.9	193.5	206
	40	112.3	98.9	270	105.8	119.6	254	99.2	140.3	238	92.7	160.9	222	86.1	181.6	207	82.9	192.0	199
120	50	140.2	114.5	336	132.3	132.3	318	124.5	150.1	299	116.6	168.0	280	108.8	185.8	261	104.9	194.7	252
	48	136.7	112.9	328	128.8	130.7	309	121.0	148.5	290	113.2	166.3	272	105.3	184.1	253	101.4	193.0	243
	46	133.2	111.2	320	125.4	129.1	301	117.5	146.9	282	109.7	164.7	263	101.8	182.5	244	97.9	191.4	235
	44	129.7	109.6	311	121.9	127.4	293	114.1	145.2	274	106.2	163.0	255	98.4	180.8	236	94.4	189.7	227
	42	126.3	108.0	303	118.4	125.8	284	110.6	143.6	265	102.7	161.4	247	94.9	179.2	228	91.0	188.1	218
	40	122.8	106.3	295	115.0	124.1	276	107.1	141.9	257	99.3	159.7	238	91.4	177.5	219	87.5	186.4	210
130	50	150.6	122.2	361	141.7	138.5	340	132.8	154.8	319	123.9	171.1	297	115.0	187.4	276	110.5	195.5	265
	48	147.3	120.6	353	138.4	136.9	332	129.5	153.2	311	120.6	169.5	289	111.7	185.8	268	107.2	193.9	257
	46	143.9	119.0	345	135.0	135.3	324	126.1	151.6	303	117.3	167.9	281	108.4	184.2	260	103.9	192.3	249
	44	140.6	117.4	338	131.7	133.7	316	122.8	150.0	295	113.9	166.3	273	105.0	182.6	252	100.6	190.7	241
	42	137.3	115.7	330	128.4	132.0	308	119.5	148.3	287	110.6	164.7	266	101.7	181.0	244	97.3	189.1	233
	40	134.0	114.1	322	125.1	130.4	300	116.2	146.7	279	107.3	163.0	258	98.4	179.3	236	94.0	187.5	226
140	50	158.7	127.1	381	150.6	152.8	361	142.5	178.4	342	134.3	204.1	322	126.2	229.7	303	122.1	242.5	293
	48	155.9	125.6	374	147.7	151.3	355	139.6	176.9	335	131.4	202.6	315	123.3	228.2	296	119.2	241.0	286
	46	153.0	124.1	367	144.8	149.8	348	136.7	175.4	328	128.5	201.1	309	120.4	226.7	289	116.3	239.5	279
	44	150.1	122.7	360	141.9	148.3	341	133.8	173.9	321	125.7	199.6	302	117.5	225.2	282	113.5	238.1	272
	42	147.2	121.2	353	139.0	146.8	334	130.9	172.4	314	122.8	198.1	295	114.6	223.7	275	110.6	236.6	265
	40	144.3	119.7	346	136.1	145.3	327	128.0	171.0	307	119.9	196.6	288	111.7	222.2	268	107.7	235.1	258
145	50	168.7	138.3	405	160.0	165.6	384	151.3	193.0	363	142.6	220.3	342	133.9	247.7	321	129.6	261.3	311
	48	165.1	136.5	396	156.4	163.8	375	147.7	191.2	355	139.0	218.5	334	130.3	245.8	313	126.0	259.5	302
	46	161.5	134.7	388	152.8	162.0	367	144.1	189.3	346	135.4	216.7	325	126.8	244.0	304	122.4	257.7	294
	44	157.9	132.8	379	149.2	160.2	358	140.5	187.5	337	131.8	214.8	316	123.2	242.2	296	118.8	255.9	285
	42	154.3	131.0	370	145.6	158.3	349	136.9	185.7	329	128.2	213.0	308	119.6	240.4	287	115.2	254.0	277
	40	150.7	129.2	362	142.0	156.5	341	133.3	183.9	320	124.6	211.2	299	116.0	238.5	278	111.6	252.2	268

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
150	50	175.5	145.9	421	166.4	174.1	399	157.4	202.4	378	148.3	230.7	356	139.2	258.9	334	134.7	273.0	323
	48	171.2	143.8	411	162.2	172.0	389	153.1	200.3	367	144.0	228.5	346	134.9	256.8	324	130.4	270.9	313
	46	167.0	141.6	401	157.9	169.9	379	148.8	198.1	357	139.7	226.4	335	130.6	254.7	314	126.1	268.8	303
	44	162.7	139.5	390	153.6	167.7	369	144.5	196.0	347	135.5	224.3	325	126.4	252.5	303	121.8	266.7	292
	42	158.4	137.4	380	149.3	165.6	358	140.3	193.9	337	131.2	222.1	315	122.1	250.4	293	117.6	264.5	282
	40	154.2	135.2	370	145.1	163.5	348	136.0	191.7	326	126.9	220.0	305	117.8	248.3	283	113.3	262.4	272
160	50	184.9	147.4	444	174.5	175.9	419	164.1	204.3	394	153.7	232.8	369	143.3	261.3	344	138.1	275.5	331
	48	180.3	145.1	433	169.9	173.6	408	159.4	202.0	383	149.0	230.5	358	138.6	259.0	333	133.4	273.2	320
	46	175.6	142.8	421	165.2	171.3	396	154.8	199.8	371	144.3	228.2	346	133.9	256.7	321	128.7	271.0	309
	44	170.9	140.5	410	160.5	169.0	385	150.1	197.5	360	139.7	226.0	335	129.3	254.4	310	124.0	268.7	298
	42	166.3	138.2	399	155.8	166.7	374	145.4	195.2	349	135.0	223.7	324	124.6	252.1	299	119.4	266.4	287
	40	161.6	135.9	388	151.2	164.4	363	140.8	192.9	338	130.3	221.4	313	119.9	249.9	288	114.7	264.1	275
170	50	190.9	154.5	458	182.6	182.5	438	174.4	210.5	419	166.1	238.6	399	157.9	266.6	379	153.8	280.6	369
	48	186.5	152.6	448	178.2	180.6	428	170.0	208.7	408	161.7	236.7	388	153.5	264.7	368	149.4	278.7	358
	46	182.1	150.7	437	173.8	178.8	417	165.6	206.8	397	157.3	234.8	378	149.1	262.8	358	144.9	276.8	348
	44	177.7	148.9	426	169.4	176.9	407	161.2	204.9	387	152.9	232.9	367	144.7	261.0	347	140.5	275.0	337
	42	173.2	147.0	416	165.0	175.0	396	156.7	203.0	376	148.5	231.1	356	140.2	259.1	337	136.1	273.1	327
	40	168.8	145.1	405	160.6	173.1	385	152.3	201.2	366	144.1	229.2	346	135.8	257.2	326	131.7	271.2	316
175	50	201.8	168.8	484	191.9	196.9	460	181.9	225.0	436	171.9	253.1	412	161.9	281.2	389	156.9	295.3	377
	48	196.8	166.4	472	186.8	194.5	448	176.9	222.6	424	166.9	250.7	400	156.9	278.8	376	151.9	292.8	365
	46	191.8	163.9	460	181.8	192.0	436	171.8	220.1	412	161.9	248.3	388	151.9	276.4	364	146.9	290.4	352
	44	186.8	161.5	448	176.8	189.6	424	166.8	217.7	400	156.9	245.8	376	146.9	273.9	352	141.9	288.0	340
	42	181.8	159.1	436	171.8	187.2	412	161.8	215.3	388	151.8	243.4	364	141.9	271.5	340	136.9	285.5	328
	40	176.8	156.6	424	166.8	184.7	400	156.8	212.8	376	146.8	240.9	352	136.8	269.0	328	131.9	283.1	316
180	50	206.6	172.1	496	196.3	200.4	471	186.0	228.7	446	175.7	256.9	422	165.4	285.2	397	160.3	299.3	385
	48	200.9	169.2	482	190.7	197.5	458	180.4	225.7	433	170.1	254.0	408	159.8	282.2	383	154.6	296.3	371
	46	195.3	166.3	469	185.0	194.5	444	174.7	222.8	419	164.4	251.0	395	154.1	279.3	370	149.0	293.4	358
	44	189.6	163.3	455	179.3	191.6	430	169.1	219.8	406	158.8	248.1	381	148.5	276.3	356	143.3	290.5	344
	42	184.0	160.4	442	173.7	188.7	417	163.4	216.9	392	153.1	245.2	367	142.8	273.4	343	137.7	287.5	330
	40	178.3	157.5	428	168.0	185.7	403	157.8	214.0	379	147.5	242.2	354	137.2	270.5	329	132.0	284.6	317
190	50	217.9	168.8	523	208.1	201.0	499	198.2	233.1	476	188.3	265.3	452	178.5	297.5	428	173.5	313.6	416
	48	211.8	166.4	508	202.0	198.6	485	192.1	230.7	461	182.2	262.9	437	172.4	295.1	414	167.4	311.2	402
	46	205.8	164.0	494	195.9	196.2	470	186.0	228.3	446	176.2	260.5	423	166.3	292.7	399	161.4	308.8	387
	44	199.7	161.6	479	189.8	193.8	456	179.9	225.9	432	170.1	258.1	408	160.2	290.3	385	155.3	306.4	373
	42	193.6	159.2	465	183.7	191.3	441	173.9	223.5	417	164.0	255.7	394	154.1	287.9	370	149.2	304.0	358
	40	187.5	156.8	450	177.6	188.9	426	167.8	221.1	403	157.9	253.3	379	148.0	285.5	355	143.1	301.6	343
200	50	224.4	174.3	539	215.4	210.9	517	206.4	247.5	495	197.5	284.1	474	188.5	320.7	452	184.0	339.0	442
	48	218.2	171.4	524	209.2	208.0	502	200.2	244.6	481	191.2	281.1	459	182.3	317.7	437	177.8	336.0	427
	46	212.0	168.4	509	203.0	205.0	487	194.0	241.6	466	185.0	278.2	444	176.1	314.8	423	171.6	333.1	412
	44	205.8	165.5	494	196.8	202.1	472	187.8	238.7	451	178.8	275.2	429	169.9	311.8	408	165.4	330.1	397
	42	199.6	162.5	479	190.6	199.1	457	181.6	235.7	436	172.6	272.3	414	163.7	308.9	393	159.2	327.2	382
	40	193.4	159.6	464	184.4	196.2	443	175.4	232.8	421	166.4	269.3	399	157.4	305.9	378	153.0	324.2	367



PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
210	50	240.6	193.6	577	229.0	227.6	550	217.5	261.6	522	205.9	295.6	494	194.3	329.6	466	188.5	346.6	453
	48	234.5	190.8	563	222.9	224.8	535	211.4	258.8	507	199.8	292.8	480	188.2	326.8	452	182.4	343.8	438
	46	228.4	187.9	548	216.8	221.9	520	205.3	255.9	493	193.7	289.9	465	182.1	323.9	437	176.3	340.9	423
	44	222.3	185.0	534	210.7	219.0	506	199.2	253.0	478	187.6	287.0	450	176.0	321.1	422	170.2	338.1	409
	42	216.2	182.2	519	204.6	216.2	491	193.1	250.2	463	181.5	284.2	436	169.9	318.2	408	164.1	335.2	394
	40	210.1	179.3	504	198.5	213.3	476	187.0	247.3	449	175.4	281.3	421	163.8	315.3	393	158.0	332.3	379
220	50	254.5	208.5	611	240.2	241.9	577	225.9	275.3	542	211.7	308.6	508	197.4	342.0	474	190.2	358.7	457
	48	248.6	205.5	597	234.3	238.9	562	220.1	272.2	528	205.8	305.6	494	191.5	339.0	460	184.3	355.7	442
	46	242.7	202.4	583	228.4	235.8	548	214.2	269.2	514	199.9	302.6	480	185.6	335.9	445	178.4	352.6	428
	44	236.8	199.4	568	222.5	232.8	534	208.3	266.1	500	194.0	299.5	466	179.7	332.9	431	172.5	349.6	414
	42	230.9	196.4	554	216.6	229.7	520	202.4	263.1	486	188.1	296.5	451	173.8	329.8	417	166.6	346.5	400
	40	225.0	193.3	540	210.8	226.7	506	196.5	260.0	472	182.2	293.4	437	167.9	326.8	403	160.8	343.5	386
225	50	255.9	212.8	614	242.3	247.7	581	228.6	282.6	549	214.9	317.5	516	201.2	352.3	483	194.4	369.8	467
	48	250.2	209.9	601	236.5	244.8	568	222.9	279.7	535	209.2	314.5	502	195.5	349.4	469	188.7	366.9	453
	46	244.5	207.0	587	230.8	241.9	554	217.2	276.7	521	203.5	311.6	488	189.8	346.5	456	183.0	363.9	439
	44	238.8	204.1	573	225.1	238.9	540	211.4	273.8	507	197.8	308.7	475	184.1	343.6	442	177.3	361.0	425
	42	233.1	201.1	559	219.4	236.0	527	205.7	270.9	494	192.1	305.8	461	178.4	340.6	428	171.5	358.1	412
	40	227.4	198.2	546	213.7	233.1	513	200.0	268.0	480	186.3	302.8	447	172.7	337.7	414	165.8	355.2	398
235	50	268.5	229.6	644	254.9	265.1	612	241.3	300.6	579	227.7	336.1	546	214.1	371.6	514	207.3	389.3	497
	48	262.7	226.6	631	249.1	262.1	598	235.5	297.6	565	221.9	333.1	533	208.3	368.6	500	201.5	386.3	484
	46	257.0	223.6	617	243.4	259.1	584	229.8	294.6	551	216.2	330.1	519	202.5	365.6	486	195.7	383.4	470
	44	251.2	220.7	603	237.6	256.2	570	224.0	291.7	538	210.4	327.2	505	196.8	362.7	472	190.0	380.4	456
	42	245.5	217.7	589	231.8	253.2	556	218.2	288.7	524	204.6	324.2	491	191.0	359.7	458	184.2	377.5	442
	40	239.7	214.7	575	226.1	250.2	543	212.5	285.7	510	198.9	321.2	477	185.3	356.7	445	178.5	374.5	428
250	50	294.9	237.1	708	278.1	272.1	667	261.2	307.1	627	244.4	342.2	587	227.5	377.2	546	219.1	394.7	526
	48	286.6	233.1	688	269.7	268.1	647	252.9	303.1	607	236.0	338.1	566	219.2	373.1	526	210.8	390.6	506
	46	278.2	229.0	668	261.4	264.0	627	244.5	299.0	587	227.7	334.0	546	210.9	369.1	506	202.4	386.6	486
	44	269.9	224.9	648	253.0	260.0	607	236.2	295.0	567	219.3	330.0	526	202.5	365.0	486	194.1	382.5	466
	42	261.5	220.9	628	244.7	255.9	587	227.8	290.9	547	211.0	325.9	506	194.2	360.9	466	185.7	378.4	446
	40	253.2	216.8	608	236.3	251.8	567	219.5	286.9	527	202.7	321.9	486	185.8	356.9	446	177.4	374.4	426
260	50	307.4	243.4	738	289.0	277.9	694	270.6	312.4	649	252.2	347.0	605	233.8	381.5	561	224.6	398.7	539
	48	298.9	239.3	717	280.5	273.9	673	262.2	308.4	629	243.8	342.9	585	225.4	377.4	541	216.2	394.7	519
	46	290.5	235.3	697	272.1	269.8	653	253.7	304.3	609	235.3	338.9	565	216.9	373.4	521	207.7	390.6	499
	44	282.0	231.2	677	263.6	265.8	633	245.3	300.3	589	226.9	334.8	544	208.5	369.3	500	199.3	386.6	478
	42	273.6	227.2	657	255.2	261.7	612	236.8	296.2	568	218.4	330.8	524	200.0	365.3	480	190.8	382.5	458
	40	265.1	223.1	636	246.7	257.7	592	228.4	292.2	548	210.0	326.7	504	191.6	361.2	460	182.4	378.5	438
275	50	325.2	269.1	781	304.9	302.6	732	284.5	336.0	683	264.2	369.4	634	243.8	402.9	585	233.6	419.6	561
	48	316.5	264.4	760	296.2	297.9	711	275.8	331.3	662	255.5	364.7	613	235.1	398.1	564	225.0	414.8	540
	46	307.8	259.7	739	287.5	293.1	690	267.1	326.6	641	246.8	360.0	592	226.4	393.4	543	216.3	410.1	519
	44	299.1	255.0	718	278.8	288.4	669	258.4	321.8	620	238.1	355.3	571	217.7	388.7	523	207.6	405.4	498
	42	290.4	250.3	697	270.1	283.7	648	249.7	317.1	599	229.4	350.6	551	209.0	384.0	502	198.9	400.7	477
	40	281.7	245.6	676	261.4	279.0	627	241.0	312.4	579	220.7	345.8	530	200.3	379.3	481	190.2	396.0	456

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
285	50	334.3	277.1	802	313.9	312.6	753	293.6	348.2	705	273.2	383.7	656	252.9	419.3	607	242.7	437.1	583
	48	325.4	272.4	781	305.0	308.0	732	284.7	343.5	683	264.3	379.1	634	244.0	414.6	586	233.8	432.4	561
	46	316.5	267.8	760	296.1	303.3	711	275.8	338.9	662	255.4	374.4	613	235.1	409.9	564	224.9	427.7	540
	44	307.6	263.1	738	287.2	298.6	689	266.8	334.2	640	246.5	369.7	592	226.1	405.3	543	216.0	423.1	518
	42	298.6	258.4	717	278.3	294.0	668	257.9	329.5	619	237.6	365.1	570	217.2	400.6	521	207.1	418.4	497
	40	289.7	253.8	695	269.4	289.3	646	249.0	324.9	598	228.7	360.4	549	208.3	396.0	500	198.1	413.7	476
295	50	339.7	284.9	815	319.7	322.7	767	299.7	360.4	719	279.7	398.1	671	259.7	435.8	623	249.7	454.7	599
	48	330.8	280.3	794	310.8	318.1	746	290.8	355.8	698	270.8	393.5	650	250.8	431.2	602	240.8	450.1	578
	46	321.9	275.7	772	301.9	313.5	724	281.9	351.2	676	261.9	388.9	628	241.9	426.6	580	231.9	445.5	556
	44	312.9	271.1	751	292.9	308.9	703	272.9	346.6	655	252.9	384.3	607	232.9	422.1	559	222.9	440.9	535
	42	304.0	266.6	730	284.0	304.3	682	264.0	342.0	634	244.0	379.7	586	224.0	417.5	538	214.0	436.3	514
	40	295.1	262.0	708	275.1	299.7	660	255.1	337.4	612	235.1	375.1	564	215.1	412.9	516	205.1	431.7	492
300	50	351.8	301.4	844	331.4	342.0	795	311.0	382.6	746	290.6	423.1	697	270.2	463.7	649	260.0	484.0	624
	48	342.8	296.6	823	322.4	337.1	774	302.0	377.7	725	281.6	418.3	676	261.2	458.9	627	251.0	479.1	602
	46	333.7	291.7	801	313.3	332.3	752	292.9	372.9	703	272.5	413.4	654	252.1	454.0	605	241.9	474.3	581
	44	324.7	286.9	779	304.3	327.5	730	283.9	368.0	681	263.5	408.6	632	243.1	449.2	583	232.9	469.5	559
	42	315.6	282.1	758	295.2	322.6	709	274.9	363.2	660	254.5	403.8	611	234.1	444.3	562	223.9	464.6	537
	40	306.6	277.2	736	286.2	317.8	687	265.8	358.4	638	245.4	398.9	589	225.0	439.5	540	214.8	459.8	516
310	50	359.9	309.2	864	339.3	351.6	814	318.8	393.9	765	298.2	436.2	716	277.7	478.5	666	267.4	499.6	642
	48	350.8	304.3	842	330.3	346.6	793	309.7	388.9	743	289.2	431.2	694	268.6	473.5	645	258.4	494.7	620
	46	341.7	299.4	820	321.2	341.7	771	300.7	384.0	722	280.1	426.3	672	259.6	468.6	623	249.3	489.8	598
	44	332.7	294.4	798	312.1	336.7	749	291.6	379.0	700	271.1	421.3	651	250.5	463.7	601	240.3	484.8	577
	42	323.6	289.5	777	303.1	331.8	727	282.6	374.1	678	262.0	416.4	629	241.5	458.7	580	231.2	479.9	555
	40	314.6	284.5	755	294.0	326.8	706	273.5	369.1	656	253.0	411.5	607	232.4	453.8	558	222.2	474.9	533
320	50	375.7	292.7	902	354.3	334.7	850	333.0	376.7	799	311.6	418.7	748	290.3	460.7	697	279.6	481.7	671
	48	366.1	288.2	879	344.8	330.2	827	323.4	372.2	776	302.1	414.2	725	280.7	456.2	674	270.0	477.2	648
	46	356.6	283.7	856	335.2	325.7	805	313.9	367.7	753	292.5	409.7	702	271.2	451.7	651	260.5	472.7	625
	44	347.0	279.2	833	325.7	321.2	782	304.3	363.2	730	283.0	405.3	679	261.6	447.3	628	250.9	468.3	602
	42	337.5	274.8	810	316.1	316.8	759	294.8	358.8	707	273.4	400.8	656	252.1	442.8	605	241.4	463.8	579
	40	327.9	270.3	787	306.6	312.3	736	285.2	354.3	685	263.9	396.3	633	242.5	438.3	582	231.8	459.3	556
330	50	386.7	301.7	928	364.8	347.0	875	342.9	392.3	823	321.0	437.7	770	299.1	483.0	718	288.2	505.7	692
	48	376.8	297.2	904	354.9	342.6	852	333.0	387.9	799	311.1	433.3	747	289.2	478.6	694	278.2	501.3	668
	46	366.8	292.8	880	344.9	338.2	828	323.0	383.5	775	301.1	428.8	723	279.3	474.2	670	268.3	496.8	644
	44	356.9	288.4	857	335.0	333.7	804	313.1	379.1	751	291.2	424.4	699	269.3	469.8	646	258.4	492.4	620
	42	347.0	284.0	833	325.1	329.3	780	303.2	374.6	728	281.3	420.0	675	259.4	465.3	623	248.5	488.0	596
	40	337.0	279.5	809	315.1	324.9	756	293.3	370.2	704	271.4	415.6	651	249.5	460.9	599	238.5	483.6	572
350	50	402.7	311.0	966	379.8	359.3	911	356.9	407.6	856	334.0	455.9	802	311.1	504.2	747	299.6	528.4	719
	48	392.5	306.6	942	369.6	354.9	887	346.7	403.2	832	323.8	451.5	777	300.9	499.8	722	289.5	523.9	695
	46	382.4	302.1	918	359.5	350.5	863	336.6	398.8	808	313.7	447.1	753	290.8	495.4	698	279.3	519.5	670
	44	372.2	297.7	893	349.3	346.0	838	326.4	394.3	783	303.5	442.6	728	280.6	490.9	673	269.2	515.1	646
	42	362.1	293.3	869	339.2	341.6	814	316.3	389.9	759	293.4	438.2	704	270.5	486.5	649	259.0	510.7	622
	40	351.9	288.9	845	329.0	337.2	790	306.1	385.5	735	283.2	433.8	680	260.3	482.1	625	248.9	506.2	597

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
360	50	418.3	337.0	1004	393.5	385.2	944	368.6	433.3	885	343.8	481.5	825	318.9	529.7	765	306.5	553.8	736
	48	408.2	332.1	980	383.4	380.3	920	358.5	428.5	860	333.7	476.6	801	308.8	524.8	741	296.4	548.9	711
	46	398.1	327.2	955	373.2	375.4	896	348.4	423.6	836	323.5	471.8	776	298.7	520.0	717	286.2	544.0	687
	44	387.9	322.4	931	363.1	370.5	871	338.2	418.7	812	313.4	466.9	752	288.5	515.1	692	276.1	539.2	663
	42	377.8	317.5	907	353.0	365.7	847	328.1	413.9	787	303.3	462.0	728	278.4	510.2	668	266.0	534.3	638
	40	367.7	312.6	882	342.8	360.8	823	318.0	409.0	763	293.1	457.2	703	268.3	505.3	644	255.8	529.4	614
375	50	436.7	358.8	1048	411.6	407.4	988	386.5	456.1	928	361.5	504.7	868	336.4	553.3	807	323.8	577.6	777
	48	424.8	353.0	1020	399.7	401.6	959	374.7	450.2	899	349.6	498.8	839	324.5	547.4	779	312.0	571.7	749
	46	412.9	347.1	991	387.9	395.7	931	362.8	444.3	871	337.7	493.0	810	312.6	541.6	750	300.1	565.9	720
	44	401.1	341.3	963	376.0	389.9	902	350.9	438.5	842	325.8	487.1	782	300.7	535.7	722	288.2	560.0	692
	42	389.2	335.4	934	364.1	384.0	874	339.0	432.6	814	313.9	481.2	753	288.9	529.9	693	276.3	554.2	663
	40	377.3	329.6	906	352.2	378.2	845	327.1	426.8	785	302.0	475.4	725	277.0	524.0	665	264.4	548.3	635
390	50	455.9	388.3	1094	428.0	438.9	1027	400.0	489.4	960	372.1	539.9	893	344.1	590.4	826	330.2	615.6	792
	48	444.3	382.2	1066	416.4	432.7	999	388.5	483.3	932	360.5	533.8	865	332.6	584.3	798	318.6	609.5	765
	46	432.8	376.1	1039	404.8	426.6	972	376.9	477.1	904	348.9	527.6	837	321.0	578.2	770	307.0	603.4	737
	44	421.2	370.0	1011	393.2	420.5	944	365.3	471.0	877	337.3	521.5	810	309.4	572.0	743	295.4	597.3	709
	42	409.6	363.9	983	381.7	414.4	916	353.7	464.9	849	325.8	515.4	782	297.8	565.9	715	283.8	591.2	681
	40	398.0	357.8	955	370.1	408.3	888	342.1	458.8	821	314.2	509.3	754	286.2	559.8	687	272.3	585.1	653
400	50	470.3	406.6	1129	441.8	459.1	1060	413.3	511.7	992	384.7	564.2	923	356.2	616.8	855	341.9	643.0	821
	48	457.4	399.7	1098	428.8	452.3	1029	400.3	504.8	961	371.8	557.4	892	343.2	609.9	824	329.0	636.2	790
	46	444.4	392.9	1067	415.9	445.4	998	387.4	498.0	930	358.8	550.5	861	330.3	603.1	793	316.0	629.4	758
	44	431.5	386.1	1036	402.9	438.6	967	374.4	491.1	899	345.9	543.7	830	317.3	596.2	762	303.1	622.5	727
	42	418.5	379.2	1004	390.0	431.8	936	361.4	484.3	867	332.9	536.8	799	304.4	589.4	731	290.1	615.7	696
	40	405.6	372.4	973	377.0	424.9	905	348.5	477.5	836	320.0	530.0	768	291.4	582.5	699	277.2	608.8	665
420	50	486.0	419.3	1166	458.1	476.2	1099	430.2	533.0	1032	402.2	589.8	965	374.3	646.6	898	360.4	675.0	865
	48	472.8	412.5	1135	444.8	469.3	1068	416.9	526.1	1001	389.0	582.9	934	361.1	639.7	867	347.2	668.1	833
	46	459.5	405.7	1103	431.6	462.5	1036	403.7	519.3	969	375.8	576.1	902	347.9	632.9	835	333.9	661.3	801
	44	446.3	398.8	1071	418.4	455.6	1004	390.5	512.4	937	362.6	569.2	870	334.7	626.1	803	320.7	654.5	770
	42	433.1	392.0	1039	405.2	448.8	972	377.3	505.6	905	349.3	562.4	838	321.4	619.2	771	307.5	647.6	738
	40	419.9	385.1	1008	391.9	441.9	941	364.0	498.8	874	336.1	555.6	807	308.2	612.4	740	294.3	640.8	706
430	50	506.4	433.5	1215	477.9	492.5	1147	449.3	551.5	1078	420.8	610.5	1010	392.2	669.5	941	378.0	699.0	907
	48	493.6	426.8	1185	465.1	485.8	1116	436.5	544.8	1048	408.0	603.8	979	379.5	662.8	911	365.2	692.3	876
	46	480.9	420.1	1154	452.3	479.1	1086	423.8	538.1	1017	395.2	597.1	949	366.7	656.1	880	352.4	685.6	846
	44	468.1	413.4	1123	439.5	472.4	1055	411.0	531.4	986	382.5	590.4	918	353.9	649.4	849	339.7	678.9	815
	42	455.3	406.8	1093	426.8	465.8	1024	398.2	524.8	956	369.7	583.8	887	341.2	642.8	819	326.9	672.3	785
	40	442.5	400.1	1062	414.0	459.1	994	385.5	518.1	925	356.9	577.1	857	328.4	636.1	788	314.1	665.6	754
450	50	519.8	441.6	1247	490.3	501.9	1177	460.8	562.3	1106	431.3	622.7	1035	401.8	683.1	964	387.0	713.3	929
	48	507.4	435.2	1218	477.9	495.6	1147	448.4	556.0	1076	418.9	616.3	1005	389.3	676.7	934	374.6	706.9	899
	46	494.9	428.8	1188	465.4	489.2	1117	435.9	549.6	1046	406.4	610.0	975	376.9	670.3	905	362.2	700.5	869
	44	482.5	422.4	1158	453.0	482.8	1087	423.5	543.2	1016	394.0	603.6	946	364.5	664.0	875	349.8	694.2	839
	42	470.1	416.0	1128	440.6	476.4	1057	411.1	536.8	987	381.6	597.2	916	352.1	657.6	845	337.4	687.8	810
	40	457.7	409.6	1099	428.2	470.0	1028	398.7	530.4	957	369.2	590.8	886	339.7	651.2	815	325.0	681.4	780

PERFORMANCE DATA TABLES

MODEL HACMa	Leaving Chilled Water Temperature (LCWT)	85			95			105			115			125			130		
		CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)	CAP. (Tons)	COMP. (kW)	WATER FLOW (GPM)
460	50	528.4	457.7	1268	500.1	525.4	1200	471.8	593.1	1132	443.5	660.8	1064	415.2	728.5	997	401.1	762.3	963
	48	516.5	451.4	1240	488.2	519.1	1172	459.9	586.8	1104	431.6	654.5	1036	403.3	722.2	968	389.1	756.1	934
	46	504.5	445.1	1211	476.2	512.8	1143	447.9	580.5	1075	419.6	648.2	1007	391.3	715.9	939	377.2	749.8	905
	44	492.6	438.8	1182	464.3	506.5	1114	436.0	574.2	1046	407.7	641.9	978	379.4	709.6	911	365.2	743.5	877
	42	480.7	432.5	1154	452.4	500.2	1086	424.1	567.9	1018	395.8	635.6	950	367.5	703.3	882	353.3	737.2	848
	40	468.7	426.2	1125	440.4	493.9	1057	412.1	561.6	989	383.8	629.3	921	355.5	697.0	853	341.4	730.9	819
475	50	538.0	490.5	1291	511.0	564.2	1226	483.9	638.0	1161	456.8	711.7	1096	429.8	785.4	1031	416.2	822.3	999
	48	526.6	484.5	1264	499.5	558.2	1199	472.4	632.0	1134	445.4	705.7	1069	418.3	779.4	1004	404.8	816.3	971
	46	515.1	478.5	1236	488.1	552.2	1171	461.0	625.9	1106	433.9	699.7	1041	406.9	773.4	976	393.3	810.2	944
	44	503.7	472.5	1209	476.6	546.2	1144	449.6	619.9	1079	422.5	693.6	1014	395.4	767.4	949	381.9	804.2	917
	42	492.2	466.5	1181	465.2	540.2	1116	438.1	613.9	1051	411.0	687.6	986	384.0	761.3	922	370.4	798.2	889
	40	480.8	460.5	1154	453.7	534.2	1089	426.7	607.9	1024	399.6	681.6	959	372.5	755.3	894	359.0	792.2	862
490	50	548.9	476.8	1317	524.1	562.7	1258	499.4	648.6	1199	474.7	734.5	1139	449.9	820.4	1080	437.6	863.4	1050
	48	538.0	471.1	1291	513.3	557.0	1232	488.6	642.9	1173	463.8	728.8	1113	439.1	814.7	1054	426.7	857.7	1024
	46	527.2	465.4	1265	502.5	551.3	1206	477.7	637.2	1147	453.0	723.1	1087	428.3	809.0	1028	415.9	852.0	998
	44	516.4	459.7	1239	491.6	545.6	1180	466.9	631.5	1121	442.2	717.4	1061	417.5	803.3	1002	405.1	846.3	972
	42	505.5	454.0	1213	480.8	539.9	1154	456.1	625.8	1095	431.4	711.7	1035	406.6	797.6	976	394.3	840.6	946
	40	494.7	448.3	1187	470.0	534.2	1128	445.3	620.1	1069	420.5	706.0	1009	395.8	791.9	950	383.4	834.9	920
540	50	636.6	499.6	1528	599.5	586.5	1439	562.3	673.4	1350	525.2	760.3	1260	488.0	847.2	1171	469.4	890.6	1127
	48	618.8	489.6	1485	581.7	576.5	1396	544.5	663.4	1307	507.3	750.3	1218	470.2	837.2	1128	451.6	880.7	1084
	46	601.0	479.7	1442	563.8	566.6	1353	526.7	653.5	1264	489.5	740.4	1175	452.4	827.3	1086	433.8	870.7	1041
	44	583.2	469.8	1400	546.0	556.7	1310	508.9	643.6	1221	471.7	730.5	1132	434.5	817.4	1043	416.0	860.8	998
	42	565.4	459.8	1357	528.2	546.7	1268	491.0	633.6	1178	453.9	720.5	1089	416.7	807.4	1000	398.1	850.9	956
	40	547.5	449.9	1314	510.4	536.8	1225	473.2	623.7	1136	436.1	710.6	1047	398.9	797.5	957	380.3	840.9	913
570	50	670.2	537.1	1608	629.4	626.8	1511	588.7	716.6	1413	548.0	806.3	1315	507.2	896.0	1217	486.9	940.9	1168
	48	651.8	526.8	1564	611.1	616.5	1467	570.4	706.2	1369	529.6	796.0	1271	488.9	885.7	1173	468.5	930.6	1124
	46	633.5	516.4	1520	592.8	606.2	1423	552.0	695.9	1325	511.3	785.6	1227	470.6	875.4	1129	450.2	920.2	1080
	44	615.2	506.1	1476	574.5	595.8	1379	533.7	685.6	1281	493.0	775.3	1183	452.2	865.0	1085	431.9	909.9	1037
	42	596.9	495.8	1432	556.1	585.5	1335	515.4	675.2	1237	474.7	765.0	1139	433.9	854.7	1041	413.6	899.5	993
	40	578.5	485.4	1389	537.8	575.2	1291	497.1	664.9	1193	456.3	754.6	1095	415.6	844.3	997	395.2	889.2	949
600	50	702.4	607.2	1686	661.0	689.4	1586	619.6	771.5	1487	578.3	853.6	1388	536.9	935.7	1289	516.2	976.8	1239
	48	684.0	595.3	1641	642.6	677.4	1542	601.2	759.5	1443	559.9	841.7	1344	518.5	923.8	1244	497.8	964.8	1195
	46	665.5	583.3	1597	624.2	665.5	1498	582.8	747.6	1399	541.5	829.7	1299	500.1	911.8	1200	479.4	952.9	1151
	44	647.1	571.4	1553	605.8	653.5	1454	564.4	735.6	1355	523.0	817.7	1255	481.7	899.9	1156	461.0	940.9	1106
	42	628.7	559.4	1509	587.4	641.5	1410	546.0	723.7	1310	504.6	805.8	1211	463.3	887.9	1112	442.6	929.0	1062
	40	610.3	547.5	1465	568.9	629.6	1365	527.6	711.7	1266	486.2	793.8	1167	444.9	875.9	1068	424.2	917.0	1018

## ELECTRICAL DATA TABLES

MODEL HACMa	POWER SUPPLY	COMPRESSOR 1			COMPRESSOR 2			CONDENSER FAN MOTORS			MCA	MOCP	MDS
		Qty	RLA	LRA	Qty	RLA	LRA	Qty	Fan motor kw	FLA			
050	208-230/3/60	1	180.1	460				4	2.0	6.5	251	400	315
	380/3/60	1	104.2	270				4	2.0	3.8	145	200	160
	460/3/60	1	86.1	240				4	2.2	3.8	123	200	125
055	208-230/3/60	1	205.9	1121				4	2.0	6.5	283	450	315
	380/3/60	1	119.2	614				4	2.0	3.8	164	250	200
	460/3/60	1	98.5	497				4	2.2	3.8	138	200	160
060	208-230/3/60	1	220.4	520				4	2.0	6.5	302	500	315
	380/3/60	1	127.6	343				4	2.0	3.8	175	300	200
	460/3/60	1	105.4	272				4	2.2	3.8	147	250	160
070	208-230/3/60	1	252.2	1342				4	2.0	6.5	341	500	400
	380/3/60	1	146.0	777				4	2.0	3.8	198	300	200
	460/3/60	1	120.6	640				4	2.2	3.8	166	250	200
075	208-230/3/60	1	236.0	1342				4	2.0	6.5	321	500	315
	380/3/60	1	136.7	777				4	2.0	3.8	186	300	200
	460/3/60	1	112.9	640				4	2.2	3.8	156	250	160
080	380/3/60	1	162.1	779				4	2.0	3.8	218	350	250
	460/3/60	1	133.9	646				4	2.2	3.8	183	300	200
090	380/3/60	1	181.6	1030				6	2.0	3.8	250	400	250
	460/3/60	1	150.1	916				6	2.2	3.8	210	350	250
095	208-230/3/60	2	180.1	460				6	2.0	6.5	444	600	630
	380/3/60	2	104.2	270				6	2.0	3.8	257	350	315
	460/3/60	2	86.1	240				6	2.2	3.8	217	300	250
100	208-230/3/60	1	205.9	1121	1	180.1	460	6	2.0	6.5	476	600	630
	380/3/60	1	119.2	614	1	104.2	270	6	2.0	3.8	276	350	315
	460/3/60	1	98.5	497	1	86.1	240	6	2.2	3.8	232	300	250
110	208-230/3/60	2	205.9	1121				6	2.0	6.5	502	600	630
	380/3/60	2	119.2	614				6	2.0	3.8	291	400	315
	460/3/60	2	98.5	497				6	2.2	3.8	244	300	315

## LEGENDS:

RLA	Rated Load Amps
LRA	Locked Rotor Amps
FLA	Full Load Amps
kW	Kilowatt
MCA	Minimum Circuit Ampacity per NEC 430-24
MOCP	Maximum Over Current Protection
MDS	Main Disconnect switch

**ELECTRICAL DATA TABLES**

MODEL HACMa	POWER SUPPLY	COMPRESSOR 1			COMPRESSOR 2			CONDENSER FAN MOTORS			MCA	MOCP	MDS
		Qty	RLA	LRA	Qty	RLA	LRA	Qty	Fan motor kw	FLA			
120	208-230/3/60	2	220.4	520				8	2.0	6.5	548	700	630
	380/3/60	2	127.6	343				8	2.0	3.8	317	400	400
	460/3/60	2	105.4	272				8	2.2	3.8	268	350	315
130	208-230/3/60	2	236.0	1342				8	2.0	6.5	583	800	630
	380/3/60	2	136.7	777				8	2.0	3.8	338	400	400
	460/3/60	2	112.9	640				8	2.2	3.8	284	350	315
140	208-230/3/60	2	252.2	1342				8	2.0	6.5	619	800	630
	380/3/60	2	146.0	777				8	2.0	3.8	359	500	400
	460/3/60	2	120.6	640				8	2.2	3.8	302	400	315
145	380/3/60	1	162.1	779	1	146.0	777	8	2.0	3.8	379	500	400
	460/3/60	1	133.9	646	1	120.6	640	8	2.2	3.8	318	400	400
150	380/3/60	2	162.1	779				8	2.0	3.8	395	500	630
	460/3/60	2	133.9	646				8	2.2	3.8	332	400	400
160	380/3/60	2	162.1	779				10	2.0	3.8	403	500	630
	460/3/60	2	133.9	646				10	2.2	3.8	339	400	400
170	380/3/60	1	181.6	1030	1	162.1	779	10	2.0	3.8	427	600	630
	460/3/60	1	150.1	916	1	133.9	646	10	2.2	3.8	360	500	400
175	380/3/60	1	181.6	1030	1	162.1	779	10	2.0	3.8	427	600	630
	460/3/60	1	150.1	916	1	133.9	646	10	2.2	3.8	360	500	400
180	380/3/60	2	181.6	1030				10	2.0	3.8	446	600	630
	460/3/60	2	150.1	916				10	2.2	3.8	376	500	400
190	380/3/60	1	202.5	1142	1	181.6	1030	12	2.0	3.8	480	600	630
	460/3/60	1	167.3	996	1	150.1	916	12	2.2	3.8	405	500	630
200	380/3/60	2	202.5	1142				12	2.0	3.8	501	700	630
	460/3/60	2	167.3	996				12	2.2	3.8	422	500	630
210	380/3/60	2	217.3	1142				12	2.0	3.8	534	700	630
	460/3/60	2	179.5	996				12	2.2	3.8	449	600	630

LEGENDS:

- RLA Rated Load Amps
- LRA Locked Rotor Amps
- FLA Full Load Amps
- kw Kilowatt
- MCA Minimum Circuit Ampacity per NEC 430-24
- MOCP Maximum Over Current Protection
- MDS Main Disconnect switch



## ELECTRICAL DATA TABLES

MODEL HACMa	POWER SUPPLY	COMPRESSOR 1			COMPRESSOR 2			CONDENSER FAN MOTORS			MCA	MOCP	MDS
		Qty	RLA	LRA	Qty	RLA	LRA	Qty	Fan motor kw	FLA			
220	380/3/60	2	227.9	1142				12	2.0	3.8	558	700	630
	460/3/60	2	188.2	996				12	2.2	3.8	469	600	630
225	380/3/60	2	162.1	779	1	136.7	777	12	2.0	3.8	547	700	630
	460/3/60	2	133.9	646	1	112.9	640	12	2.2	3.8	460	500	630
235	380/3/60	3	162.1	779				12	2.0	3.8	572	700	630
	460/3/60	3	133.9	646				12	2.2	3.8	481	600	630
250	380/3/60	1	181.6	1030	2	162.1	779	16	2.0	3.8	612	700	800
	460/3/60	1	150.1	916	2	133.9	646	16	2.2	3.8	516	600	630
260	380/3/60	2	181.6	1030	1	162.1	779	16	2.0	3.8	631	800	800
	460/3/60	2	150.1	916	1	133.9	646	16	2.2	3.8	532	600	630
275	380/3/60	1	202.5	1142	2	181.6	1030	16	2.0	3.8	677	800	800
	460/3/60	1	167.3	996	2	150.1	916	16	2.2	3.8	570	700	630
285	380/3/60	2	202.5	1142	1	181.6	1030	16	2.0	3.8	698	800	800
	460/3/60	2	167.3	996	1	150.1	916	16	2.2	3.8	587	700	630
295	380/3/60	3	202.5	1142				16	2.0	3.8	719	900	800
	460/3/60	3	167.3	996				16	2.2	3.8	605	700	800
300	380/3/60	2	217.3	1142	1	202.5	1142	16	2.0	3.8	752	900	800
	460/3/60	2	179.5	996	1	167.3	996	16	2.2	3.8	632	800	800
310	380/3/60	3	217.3	1142				16	2.0	3.8	767	900	1000
	460/3/60	3	179.5	996				16	2.2	3.8	644	800	800
320	380/3/60	4	162.1	779				16	2.0	3.8	749	900	1000
	460/3/60	4	133.9	646				16	2.2	3.8	630	700	800
330	380/3/60	1	181.6	1030	3	162.1	779	16	2.0	3.8	774	900	1000
	460/3/60	1	150.1	916	3	133.9	646	16	2.2	3.8	650	700	800
350	380/3/60	2	181.6	1030	2	162.1	779	22	2.0	3.8	816	900	1000
	460/3/60	2	150.1	916	2	133.9	646	22	2.2	3.8	689	800	800

## LEGENDS:

RLA	Rated Load Amps
LRA	Locked Rotor Amps
FLA	Full Load Amps
kw	Kilowatt
MCA	Minimum Circuit Ampacity per NEC 430-24
MOCP	Maximum Over Current Protection
MDS	Main Disconnect switch

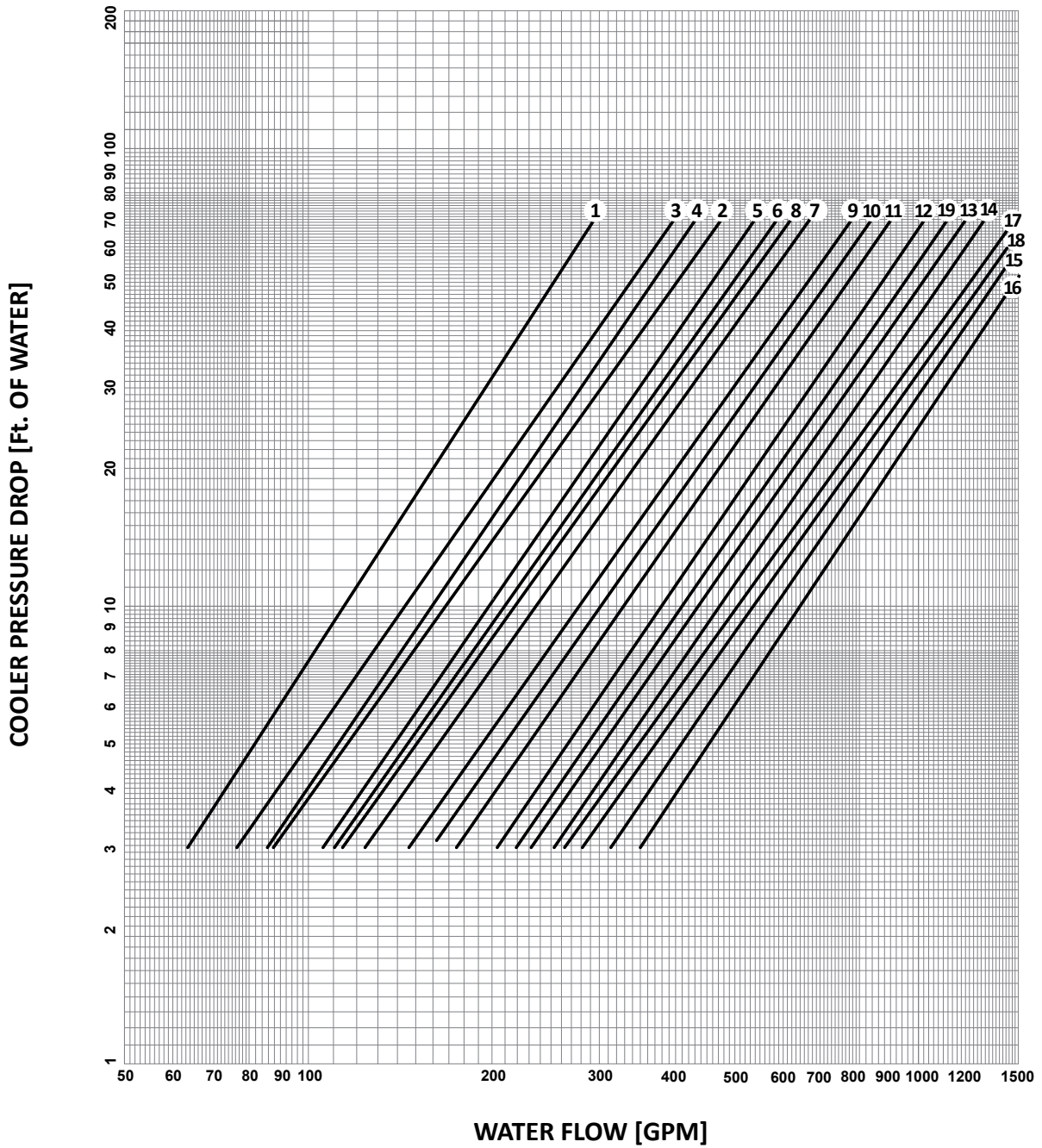
**ELECTRICAL DATA TABLES**

MODEL HACMa	POWER SUPPLY	COMPRESSOR 1			COMPRESSOR 2			CONDENSER FAN MOTORS			MCA	MOCP	MDS
		Qty	RLA	LRA	Qty	RLA	LRA	Qty	Fan motor kw	FLA			
360	380/3/60	4	181.6	1030				22	2.0	3.8	855	1000	1000
	460/3/60	4	150.1	916				22	2.2	3.8	722	800	800
375	380/3/60	2	202.5	1142	2	181.6	1030	22	2.0	3.8	902	1100	1000
	460/3/60	2	167.3	996	2	150.1	916	22	2.2	3.8	760	900	1000
390	380/3/60	1	217.3	1142	3	202.5	1142	22	2.0	3.8	962	1100	1250
	460/3/60	1	179.5	996	3	167.3	996	22	2.2	3.8	810	900	1000
400	380/3/60	3	217.3	1142	1	202.5	1142	22	2.0	3.8	992	1100	1250
	460/3/60	3	179.5	996	1	167.3	996	22	2.2	3.8	834	1000	1000
420	380/3/60	1	227.9	1142	3	217.3	1142	22	2.0	3.8	1020	1250	1250
	460/3/60	1	188.2	996	3	179.5	996	22	2.2	3.8	857	1000	1000
430	380/3/60	3	227.9	1142	1	217.3	1142	22	2.0	3.8	1041	1250	1250
	460/3/60	3	188.2	996	1	179.5	996	22	2.2	3.8	875	1000	1000
450	380/3/60	3	162.1	779	3	146.0	777	22	2.0	3.8	1048	1100	1250
	460/3/60	3	133.9	646	3	120.6	640	22	2.2	3.8	881	1000	1000
460	380/3/60	5	162.1	779	1	146.0	777	22	2.0	3.8	1080	1250	1250
	460/3/60	5	133.9	646	1	120.6	640	22	2.2	3.8	907	1000	1250
475	380/3/60	6	162.1	779				22	2.0	3.8	1096	1250	1250
	460/3/60	6	133.9	646				22	2.2	3.8	920	1000	1250
490	380/3/60	2	181.6	1030	4	162.1	779	22	2.0	3.8	1140	1250	1600
	460/3/60	2	150.1	916	4	133.9	646	22	2.2	3.8	957	1100	1250
540	380/3/60	6	181.6	1030				32	2.0	3.8	1256	1500	1600
	460/3/60	6	150.1	916				32	2.2	3.8	1060	1100	1250
570	380/3/60	4	202.5	1142	2	181.6	1030	32	2.0	3.8	1345	1500	1600
	460/3/60	4	167.3	996	2	150.1	916	32	2.2	3.8	1133	1250	1250
600	380/3/60	4	217.3	1142	2	202.5	1142	32	2.0	3.8	1449	1500	1600
	460/3/60	4	179.5	996	2	167.3	996	32	2.2	3.8	1219	1250	1600

LEGENDS:

- RLA Rated Load Amps
- LRA Locked Rotor Amps
- FLA Full Load Amps
- kW Kilowatt
- MCA Minimum Circuit Ampacity per NEC 430-24
- MOCP Maximum Over Current Protection
- MDS Main Disconnect switch

COOLER PRESSURE DROP CURVES



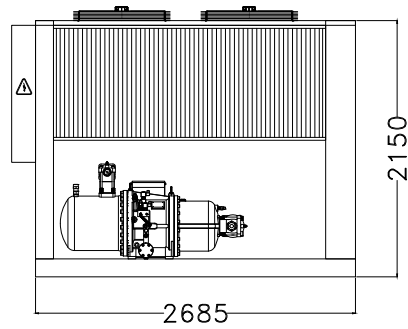
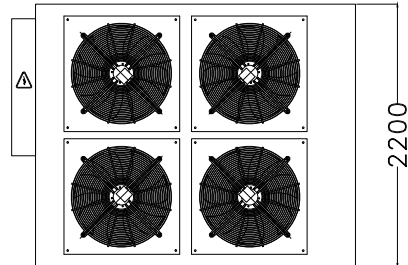
Model HACMa	050	055	060	070	075	080	090	095	100	110	120	130	140	145	150	160
Curve No.	1	2	3	4	5	6	7	8	7	9	10	10	10	10	10	11
Model HACMa	170	175	180	190	200	210	220	225	235	250	260	275	285	295	300	310
Curve No.	11	12	12	13	13	14	14	15	16	16	17	18	16	15	16	18
Model HACMa	320*	330*	350*	360*	375*	390*	400*	420*	430*	450*	460*	475*	490*	540*	570*	600*
Curve No.	11	10	10	16	13	19	14	14	14	15	15	17	17	16	15	15

\* Note:

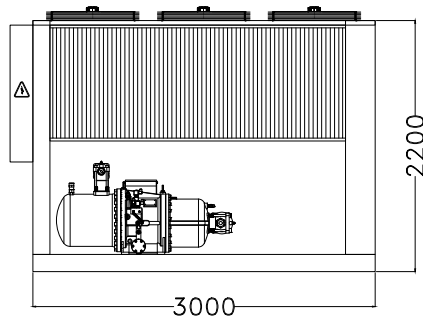
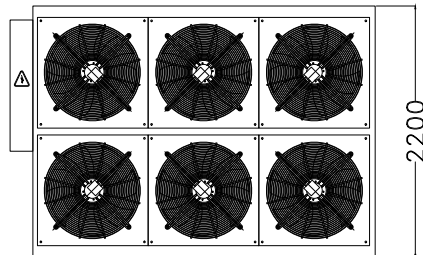
For models from HACMa320 and above; the total water flow rate should be divide by 2 to find out each cooler pressure drop value

DIMENSIONAL DRAWINGS

MODEL	HACMa 050	HACMa 055	HACMa 060	HACMa 070	HACMa 075	HACMa 080
-------	-----------	-----------	-----------	-----------	-----------	-----------



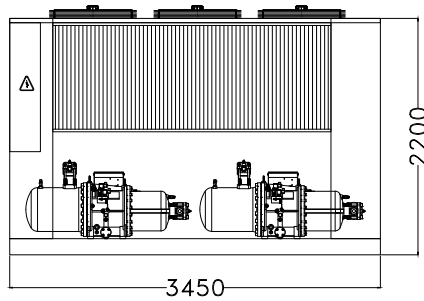
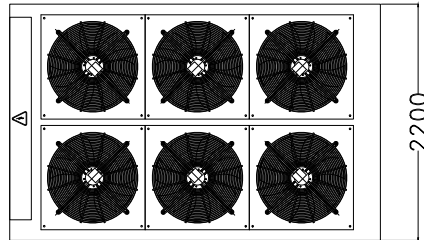
MODEL	HACMa 090
-------	-----------



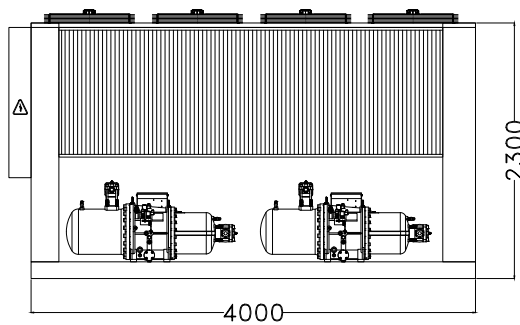
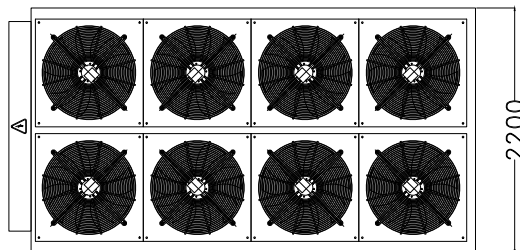
Note:  
All Dimensions are in mm.

DIMENSIONAL DRAWINGS

MODEL	HACMa 095	HACMa 100	HACMa 110
-------	-----------	-----------	-----------



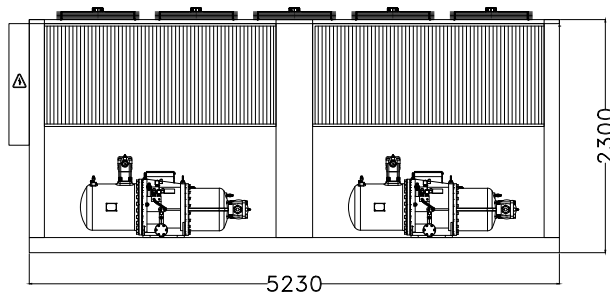
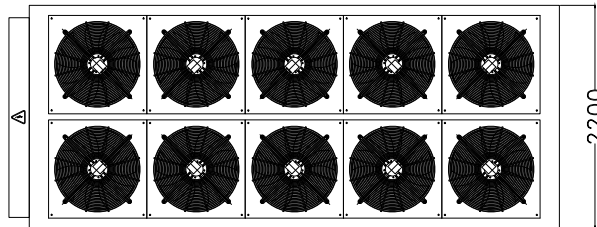
MODEL	HACMa 120	HACMa 130	HACMa 140	HACMa 145	HACMa 150
-------	-----------	-----------	-----------	-----------	-----------



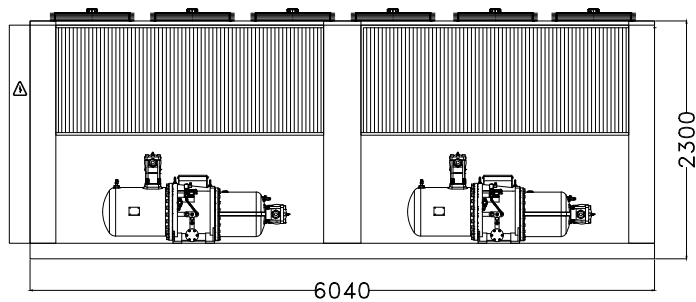
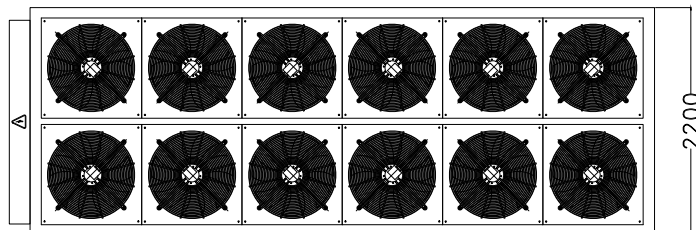
Note:  
All Dimentions are in mm.

DIMENSIONAL DRAWINGS

MODEL	HACMa 160	HACMa 170	HACMa 175	HACMa 180
-------	-----------	-----------	-----------	-----------



MODEL	HACMa 190	HACMa 200	HACMa 210	HACMa 220
-------	-----------	-----------	-----------	-----------

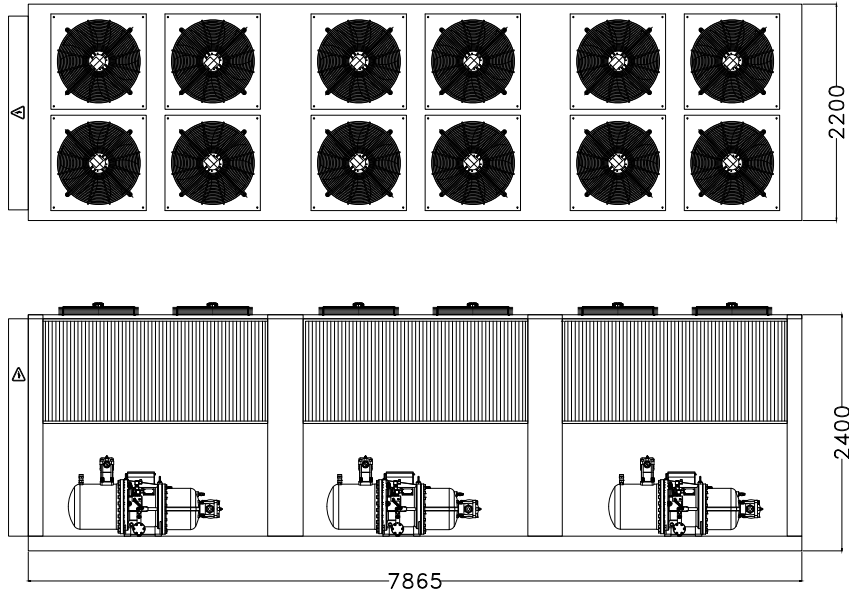


Note:  
All Dimention are in mm.

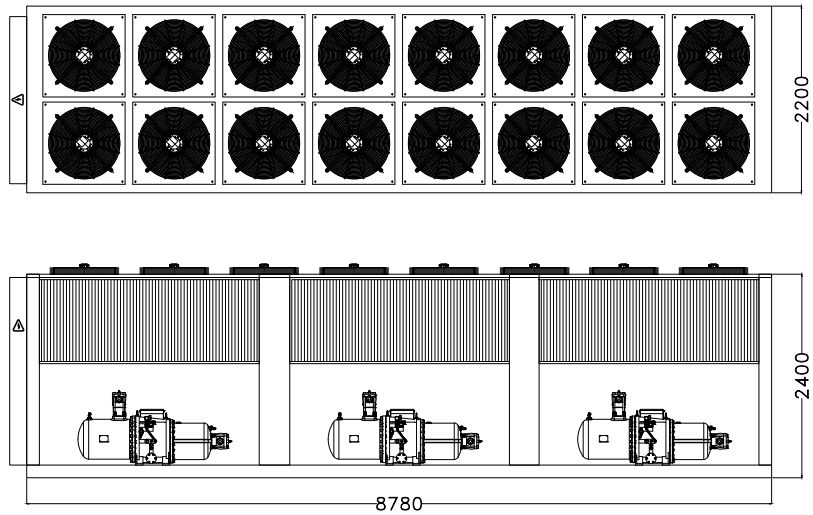


DIMENSIONAL DRAWINGS

MODEL	HACMa 225	HACMa 235
-------	-----------	-----------



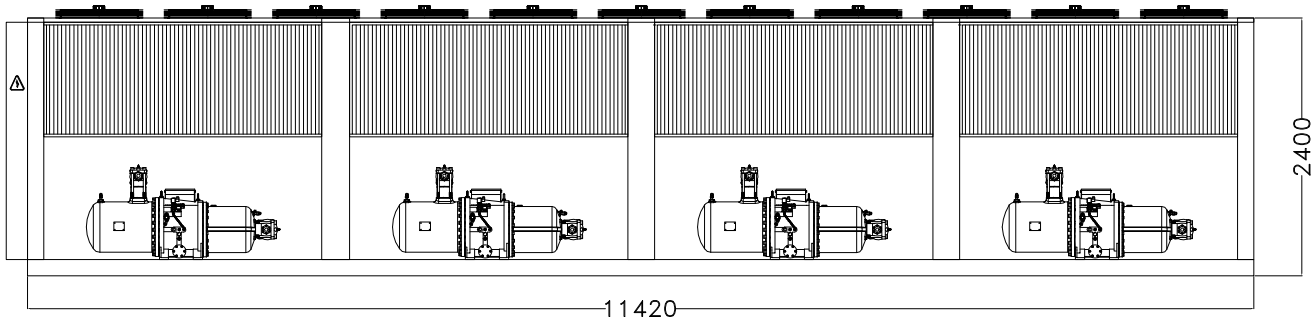
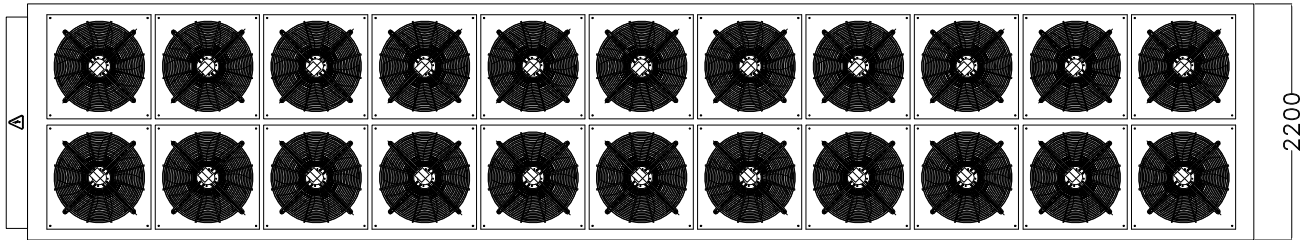
MODEL	HACMa 250	HACMa 260	HACMa 275	HACMa 285	HACMa 295	HACMa 300	HACMa 310
-------	-----------	-----------	-----------	-----------	-----------	-----------	-----------



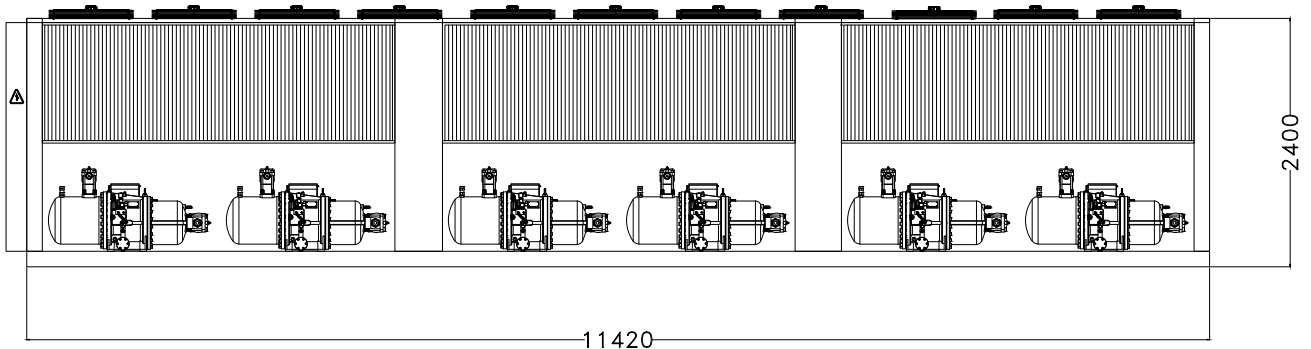
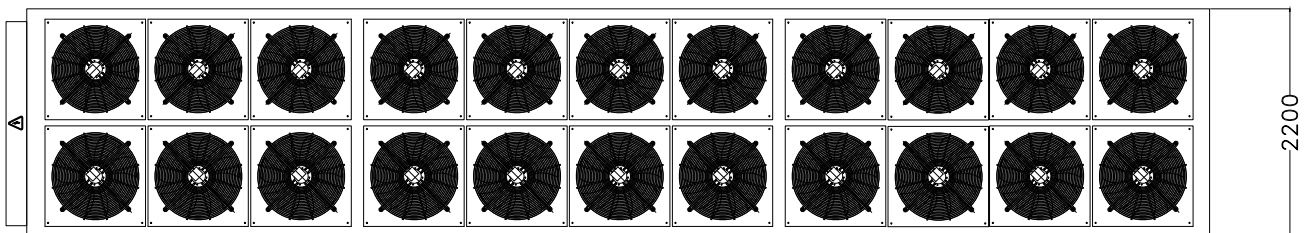
Note:  
All Dimentions are in mm.

DIMENSIONAL DRAWINGS

MODEL	HACMa 320	HACMa 330	HACMa 350	HACMa 360	HACMa 375	HACMa 390	HACMa 400	HACMa 420	HACMa 430
-------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------



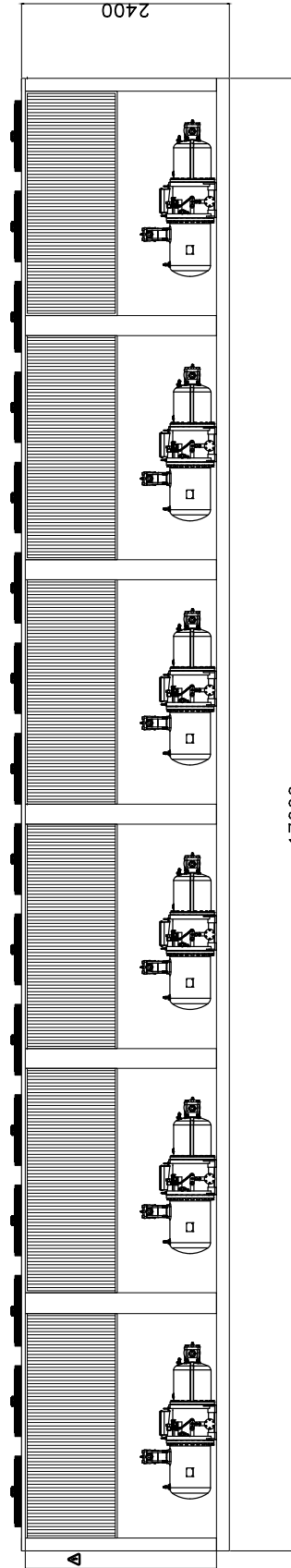
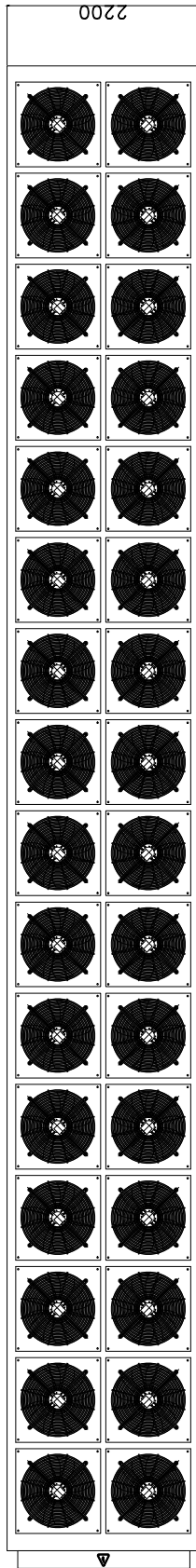
MODEL	HACMa 450	HACMa 460	HACMa 475	HACMa 490
-------	-----------	-----------	-----------	-----------



Note:  
All Dimentions are in mm.

DIMENSIONAL DRAWINGS

MODEL	HACMa 540	HACMa 570	HACMa 600
-------	-----------	-----------	-----------



Note:  
All Dimensions are in mm.



# Products Range



AIR COOLED WATER CHILLER 48 - 600 TR  
Screw-Reciprocating



AIR HANDLING UNIT  
(SINGLE & DOUBLE SKIN)  
300 - 200,000 CFM



PACKAGED AIR CONDITIONING UNIT  
2 - 100 TR



SLIM DUCTED CEILING  
FAN COIL UNITS



HIGH PRESSURE FAN COIL UNIT



AIR COOLED CONDENSING UNITS  
2 - 160 TR



FAN COIL UNITS  
200 - 1,300 CFM



CASSETTE TYPE  
AIR-CONDITIONER



MINI SPLIT UNIT  
9,000 - 32,000 Btu/hr



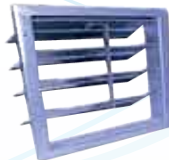
ROOM A/C UNITS  
WINDOW SERIES



PRE-INSULATED PIPE



Ceiling/Side wall Diffusers



Back Draft Damper



Duct Heater  
HF Series



Duct Heater  
CHMS Series



Variable Air Volume (VAV)  
MODEL S



Variable Air Volume (VAV)  
MODEL SX



Variable Air Volume (VAV)  
MODEL V



Variable Air Volume (VAV)  
MODEL MSR



AIRFOIL FANS  
225 - 340,000 CFM



VANE AXIAL FAN  
3,000 - 250,000 CFM



Sound Attenuator  
Round Type



Sound Attenuator  
Rectangular Type

## Contact us

### FACTORY

T | 966 11 265 1500

F | 966 11 265 1521

@ | [mkt@hace.com.sa](mailto:mkt@hace.com.sa)

### RIYADH OFFICE

T | 966 11 478 5147 - 477 2515

F | 966 11 477 1740

@ | [riyadh@hace.com.sa](mailto:riyadh@hace.com.sa)

### AL - KHOBAR OFFICE

T | 966 13 894 3337

F | 966 13 894 1478

@ | [hace.kho@hace.com.sa](mailto:hace.kho@hace.com.sa)

### JEDDAH OFFICE

T | 966 12 665 5595

F | 966 12 665 5642

@ | [hace.jed@hace.com.sa](mailto:hace.jed@hace.com.sa)

### AMMAN OFFICE

T | 962 6 554 0353

F | 962 6 554 0352

@ | [hace.jordan@hace.com.sa](mailto:hace.jordan@hace.com.sa)