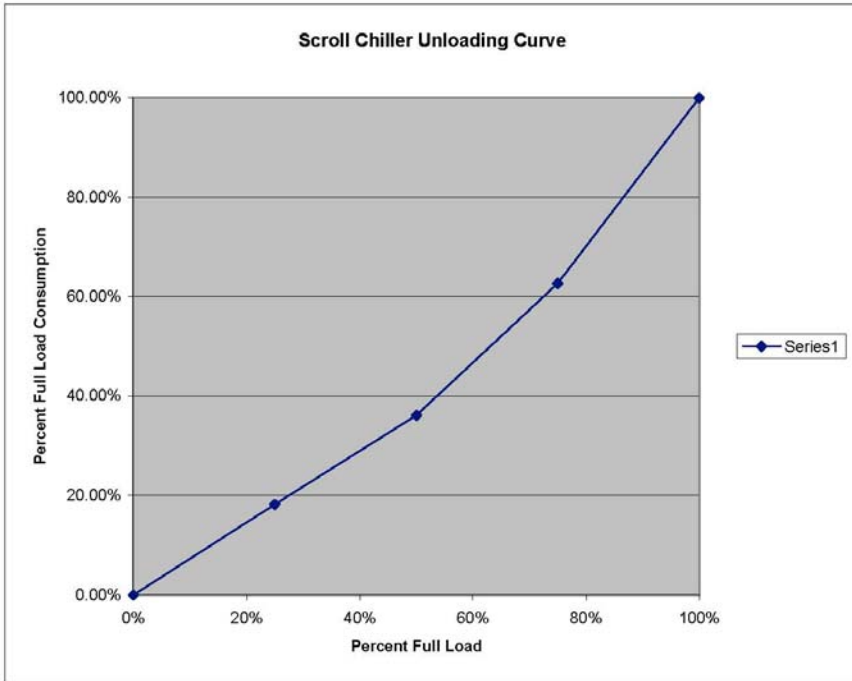


# E-I Buro Happold Model Equipment

## E-Ia: Scroll Chiller

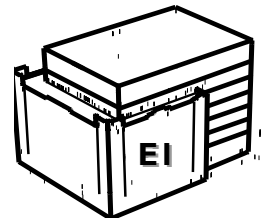
### Scroll Chiller Operating Characteristics and Specifications



Percent Load	tons	kw	eer	Percent Consumption
100%	106.2	83.3	15.3	100.00%
75%	79.7	52.2	18.3	62.67%
50%	53.1	30.1	21.2	36.13%
25%	26.6	15.2	21	18.25%
0%	0	0		0.00%

Return Temp

Return Temp	75					80					85					90					95				
	wt	tons	kw	eer	tons	kw	eer	tons	kw	eer	tons	kw	eer	tons	kw	eer	tons	kw	eer	tons	kw	eer			
40	103	16.3	75.7	100.6	15.3	98.3	82	14.4	96	85.7	13.4	93.8	89.7	12.6	90.3	87	14.3	101.3	105.1	14.7	109.1	92.6	14.1		
42	107.1	16.8	76.3	104.6	15.8	102.3	82.6	14.9	99.8	86.3	13.9	97.6	90.3	13											
44	111.2	17.3	76.97	108.6	16.3	106.2	83.3	15.3	103.7	87	14.3	101.3	91.1	13.3											
46	115.3	17.8	77.58	112.7	16.8	110.2	84	15.7	107.5	87.7	14.7	105.1	91.9	13.7											
48	119.7	18.4	78.2	117	17.3	114.4	84.6	16.2	111.6	88.4	15.1	109.1	92.6	14.1											
50	124.2	18.9	78.97	121.4	17.7	118.6	85.5	16.7	115.8	89.3	15.6	113.2	93.5	14.5											



Water-Cooled Chillers

Scroll Compressor Chillers—30 to 120 Tons

- Meets or exceeds ASHRAE Standard 90.1-2004—15.2 EER at full load, up to 20.6 EER at part load (IPLV)
- Scroll compressor technology is quiet for installation in sound sensitive environments
- Available for water-cooled or remote air-cooled condenser applications
- Controls flexibility—MicroTech II<sup>®</sup> controls with our Protocol Selectability™ feature for easy, low cost integration with the BAS of your choice
- Designed for easy retrofit-fits through a standard three ft. door

For more detail, refer to Catalog WGZ.  
For the most current information, refer to [www.mcquay.com](http://www.mcquay.com).

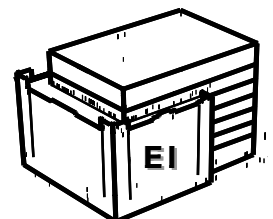
Water-Cooled Chillers



Model WGZ scroll compressor chiller—30 to 120 tons



Available LONMARK certified



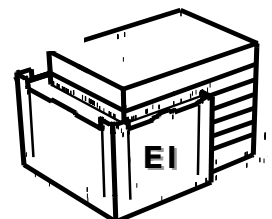
**Water-Cooled Chillers**

**WGZ 060AW through WGZ 120 AW**

WGZ unit size	060		070		080		090		100		110		120	
Unit capacity @ ARI conditions tons, (kw) <sup>1</sup>	60.3 (212)		68.0 (239)		75.6 (266)		84.4 (297)		93.7 (330)		106.2 (373)		117.2 (411)	
Number of circuits	2		2		2		2		2		2		2	
<b>Compressors<sup>2</sup></b>														
Nominal horsepower	15	15	15	20	20	20	25	25	25	25	25	30	30	30
Number <sup>2</sup>	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Unloading steps	25/50/75		28/50/78		25/50/75		27/50/77		25/50/75		27/50/77		25/50/75	
Oil charge, per compressor, oz (L)	140 (4.1)		140 (4.1)		148 (4.3)		148 (4.3) 200 (5.9)		200 (5.9) 200 (5.9)		200 (5.9) 200 (5.9)		200 (5.9) 200 (5.9)	
<b>Condenser</b>														
Number	1		1		1		1		1		1		1	
No. refrigerant circuits	2		2		2		2		2		2		2	
Diameter, in (mm)	14 (356)		14 (356)		14 (356)		14 (356)		14 (356)		14 (356)		14 (356)	
Tube length, in (mm)	120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)	
Design W.P., psig (kPa)														
Refrigerant side	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water side	232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)	
No. of passes	2		2		2		2		2		2		2	
Pump-out capacity, lb (kg) <sup>3</sup>	481 (218.2)		462 (209.6)		449 (203.7)		429 (194.6)		409 (185.5)		409 (185.5)		409 (185.5)	
<b>Connections</b>														
Water in and out, in (mm) <sup>4</sup>	5 (127)		5 (127)		5 (127)		5 (127)		5 (127)		5 (127)		5 (127)	
Relief valve, flare, in (mm)	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Purge valve, flare, in (mm)	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Vent and drain, in (mm) FPT	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Liquid subcooling	Integral		Integral		Integral		Integral		Integral		Integral		Integral	
<b>Evaporator</b>														
Number	1		1		1		1		1		1		1	
No. refrigerant circuits	2		2		2		2		2		2		2	
Water volume, gallons (L)	8.1 (30.7)		9.2 (34.9)		10.8 (40.7)		12.8 (48.3)		13.9 (52.5)		13.9 (52.5)		13.9 (52.5)	
Refrig. side D.W.P., psig, (kPa)	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water side D.W.P., psig, (kPa)	363 (2503)		363 (2503)		363 (2503)		363 (2503)		363 (2503)		363 (2503)		363 (2503)	
<b>Water connections:</b>														
In and out, in (mm) <sup>4</sup>	3 (76)		3 (76)		3 (76)		3 (76)		3 (76)		3 (76)		3 (76)	
Drain and vent,	Field		Field		Field		Field		Field		Field		Field	
<b>Unit dimensions</b>														
Length, in (mm)	144.2 (3663)		146.7 (3726)		146.7 (3726)		149 (3784)		149 (3784)		149 (3784)		149 (3784)	
Width, in (mm)	32 (813)		32 (813)		32 (813)		32 (813)		32 (813)		32 (813)		32 (813)	
Height, in (mm)	66 (1676)		66 (1676)		66 (1676)		66 (1676)		66 (1676)		66 (1676)		66 (1676)	
<b>Unit weights</b>														
Operating wt. lb (kg)	3809 (1728)		4025 (1826)		4289 (1945)		4478 (2031)		4627 (2099)		4828 (2190)		5010 (2273)	
Shipping wt. lb (kg)	3590 (1628)		3806 (1726)		4037 (1831)		4178 (1895)		4287 (1945)		4488 (2036)		4670 (2118)	
Cir # 1, operating charge, lb (kg) R-22	87 (39.3)		84 (37.9)		82 (37.0)		76 (34.3)		76 (34.3)		85 (39)		85 (39)	
Cir # 2, operating charge, lb (kg) R-22	87 (39.3)		84 (37.9)		82 (37.0)		76 (34.3)		76 (34.3)		85 (39)		85 (39)	

1. Certified in accordance with ARI Standard 550/590-98.  
 2. All units have two compressors per circuit in parallel.  
 3. 80% full R-22 at 90°F (32°C) per refrigerant circuit.  
 4. Victaulic connections.

Water-Cooled Chillers



**E-1b: Boiler**  
**Vessiman Model VSB- 57**

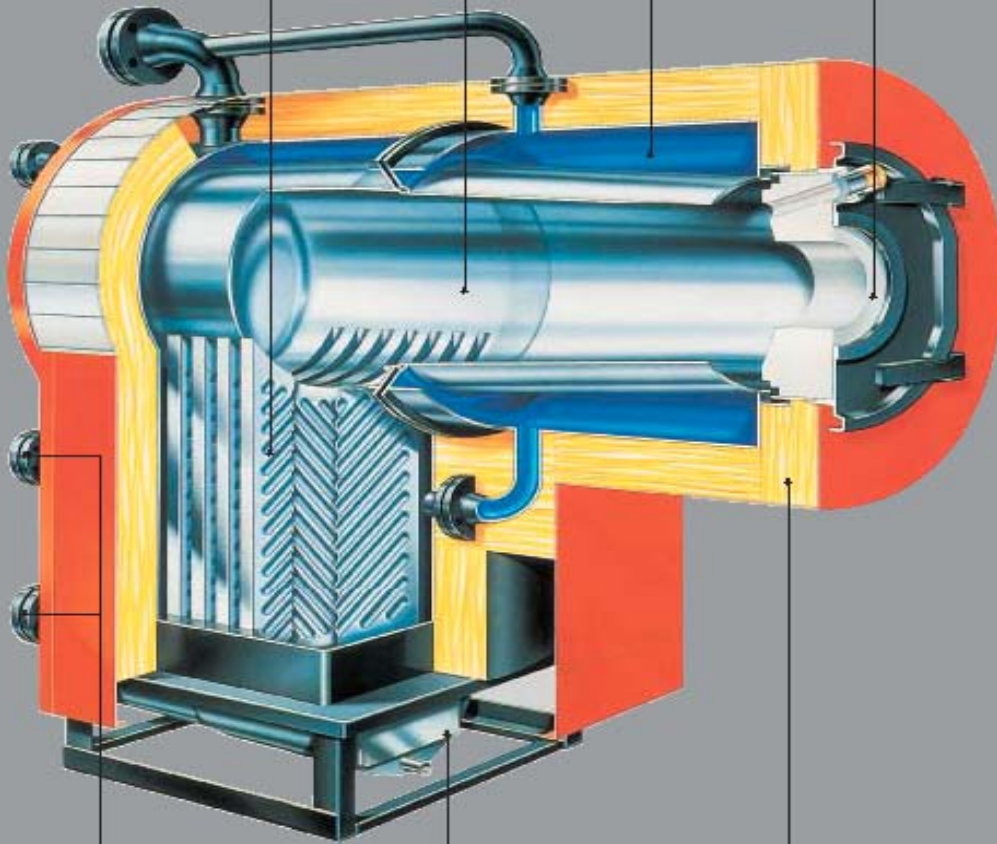
**Vertomat gas-fired condensing boiler –  
 Flue gas temperature only approx. 10°C/  
 18°F above boiler return temperature**

Highly efficient, counter-crosswise indented Innox-Crossal water heating surfaces of corrosion-resistant stainless steel

Stainless steel water-cooled combustion chamber, front removable for handling

Wide diameter water walls – proper gravity circulation

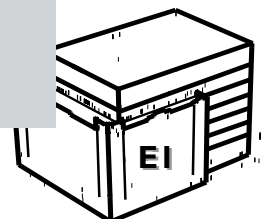
Small boiler door with highly efficient Fiberfrax insulation – low heat losses



The heating return with the lower temperature can be connected to the lower boiler return connection to increase condensation of the flue gases.

Stainless steel flue gas collector with condensate drain

4" wrap-around insulation of mineral fibres with woven glass fibre backing – environmentally harmless – effective protection against stand-by heat loss.



## Innovative heating technology – minimized harmful emissions

### Minimum nitrous oxide emissions

Due to its low emission levels, the Viessmann Vertomat takes the top position among its competitors. The unique design of the water-cooled combustion chamber provides for extremely low nitrous oxide emissions during combustion.

### Highly efficient heat transfer

The Vertomat boiler has two return connections, one in the upper part of the boiler in the area of the combustion chamber, and the other at the end of the condensing heat exchanger surface. Heating zones with higher return temperatures are connected to the upper connection, those with lower return temperatures to the lower connection. This results in increased condensation of the flue gases; the boiler water within the boiler is in counterflow direction to the flue gases, and a highly efficient heat transfer is achieved.



Flue gas passage within the gas-fired condensing boiler Vertomat

### Long burner cycles – low stand-by losses

With modulating burners, the heat output of a Vertomat in a wide operating range can be modulated according to the heat requirement at any given time. The burner is operating almost continuously, except when interrupted by the programmed control for safety checks. Due to the long burner operating cycles, stand-by losses are reduced to a minimum.

### Flue gas venting required

Even with gas-fired condensing boilers, the flue gases still contain a certain amount of residual moisture. Furthermore, they are cooled to the point where their natural updraft is no longer sufficient. Therefore, the flue gas vents must be suitable for positive draft and withstand condensate.

Conventional chimneys are not suitable in this application.

Because of the low flue gas temperature and the resulting low vent draft, as well as the further condensation of the flue gases in the flue gas venting system, the flue vent must be properly calculated by the chimney supplier and constructed of suitable materials such as stainless steel.

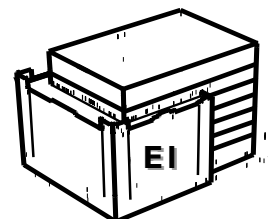
#### Technical Data Vertomat – angled boiler version, single vessel

Boiler model		VSB-10	VSB-13
Input	MBH	396	488
	KW	116	143
Output	MBH	381	469
	KW	112	137
<b>Dimensions</b>			
Length	mm	1084	1275
	inches	42 $\frac{3}{4}$	50 $\frac{1}{4}$
Width	mm	686	686
	inches	27	27
Height	mm	1663	1712
	inches	65 $\frac{1}{2}$	67 $\frac{1}{2}$
Overall weight	kg	319	356
	lbs	702	783

#### Technical Data Vertomat – straight boiler version, sectional vessel

Boiler model		VSB-17	VSB-22	VSB-28	VSB-37	VSB-46	VSB-57	VSB-72	VSB-89
Input	MBH	638	846	1071	1389	1726	2160	2702	3361
	KW	187	248	314	407	506	633	792	985
Output	MBH	614	814	1030	1336	1660	2078	2599	3233
	KW	180	238	302	391	486	609	761	947
<b>Dimensions</b>									
Length	mm	1593	1671	1752	1828	1906	2062	2172	2366
	inches	62 $\frac{3}{4}$	65 $\frac{3}{4}$	69	72	75	81 $\frac{1}{4}$	85 $\frac{1}{2}$	93 $\frac{3}{4}$
Width	mm	799	799	799	916	916	916	990	990
	inches	31 $\frac{1}{2}$	31 $\frac{1}{2}$	31 $\frac{1}{2}$	36	36	36	39	39
Height	mm	1943	1993	2032	2280	2280	2280	2537	2537
	inches	76 $\frac{1}{2}$	78 $\frac{1}{2}$	80	89 $\frac{3}{4}$	89 $\frac{3}{4}$	89 $\frac{3}{4}$	100	100
Overall weight	kg	505	615	680	780	905	965	1370	1520
	lbs	1111	1353	1496	1716	1991	2123	3014	3344

Outputs are based on a 96.2% thermal efficiency rating as per ANSI Z21.13, and CSA 4.9 - 2000.



# E-1c: Domestic Hot Water Heater Model LW-500

## A. O. SMITH



HOT WATER SUPPLY BOILER  
MODEL LW-500, 750 and 1000

**FEATURES**

**ADVANCED COMBUSTION TECHNOLOGY WITH LOW NO<sub>x</sub>** — Features the very latest in pre-mix burner technology. Gas and air are precisely mixed for optimum burner performance—assures 90% thermal efficiency.

**HIGH EFFICIENCY SEALED COMBUSTION** — Increases efficiency while reducing NO<sub>x</sub>. Environmentally friendly.

**EXCLUSIVE HEAT EXCHANGER DESIGN** — A new, extruded copper design exposes more surface area to the combustion system. This increases the transfer of heat for maximum efficiency. This unique self-baffling design (patent pending) is a dramatic improvement over existing heat exchanger. No baffles.

**BUILT FOR YEARS OF RELIABILITY** — All waterways are 100% copper, brass or bronze for long life. These quality metals, with similar metallurgical characteristics, greatly reduce stress on connectors and minimize the possibility of leaks. Impervious to thermal shock.

**GASKET-LESS A.S.M.E. HEAT EXCHANGER** — This superior design assures reliability and longevity. No deterioration of gaskets exposed to heat and pressure.

**FACTORY TESTED** — Every Legend boiler is water and fire-tested to assure proper operation.

**HOT SURFACE IGNITION** — Provides reliable 120 volt ignition. Ignitor can be inspected without removing the burner. Easily serviceable.

**CIRCULATING PUMP - standard** — This enclosed circulating pump is mounted in front of the unit. For cooler operation away from venting and easier to maintain.

**ALL STAINLESS STEEL BURNER** — Radial fired design. Laser-welded, corrosion resistant Inconel™ 625 superalloy for years of reliable performance. No moving parts. 5 year warranty on burner.

**COMPACT DESIGN** — Saves valuable space. Allows ease of entry and modular installations. Zero clearance, on sides, for maximum adaptability. Ideal for retrofits!

**DIA-SCAN™ SELF-DIAGNOSTIC SYSTEM** — Exclusive solid state system monitors 15 operating and safety control functions. LED indicators continuously display operating temperatures. Helps keep operation and trouble-shooting simple and easy.

**VENTING FLEXIBILITY** — Multiple venting options to choose from. They allow for direct/sealed vent with protection from flue recirculation.

**MODELS FOR EVERY NEED** — The Legend 2000 boiler is available in 500,000, 750,000 and 1,000,000 BTU models.

**EASY ACCESS DOOR** — Just lift up and out. Permits optimum access to components and controls. Total jacket cabinetry can be removed while unit is running. No pressurized jacket or gaskets.

**OTHER FEATURES**

ASME #160 W.P. • ASME Pressure Relief Valve • Pump and flow switch mounted • Brass Drain Valve • Pre-wired for Building Management Control • Low Gas Pressure Switch • Low Air Pressure Switch • Digital Thermometers • Manual Reset -Hi Limit

**OPTIONS**

CSD-1 • Illinois School Code • IRI • Sequencing Panel • Control Packages • Through-the-wall-venting • Direct/Sealed Vent Kit • Skid Mounted Systems

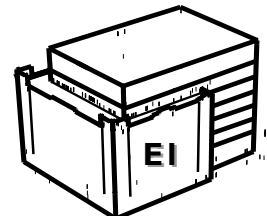


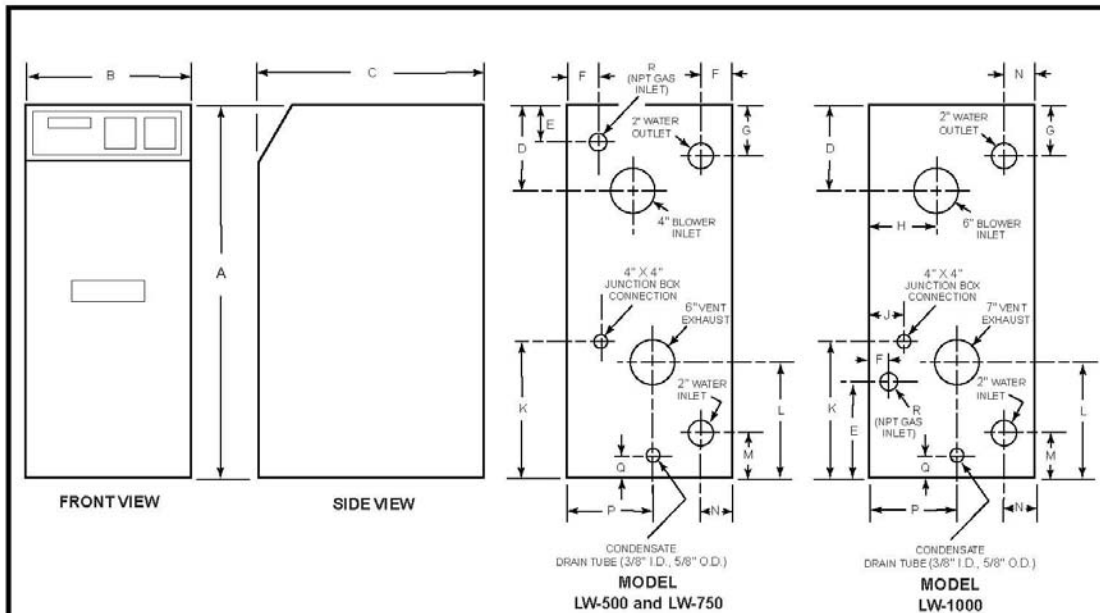
**LIMITED WARRANTY OUTLINE**

If the heat exchanger modules should fail within 5 years, under the terms of the warranty, A. O. Smith will furnish a replacement part; installation, labor, handling and local delivery extra. **THIS OUTLINE IS NOT A WARRANTY.** For complete information, consult the written warranty or A. O. Smith Water Products Company.

Warranty does not apply to product installed outside of the United States of America or its territorial possessions and Canada.

**PROFESSIONAL START-UP SERVICE FURNISHED TO ASSURE OPTIMUM PERFORMANCE FOR EACH INSTALLATION. ALL UNITS ARE 100% TESTED AND ADJUSTED AT FACTORY.**





All Dimensions In Inches

Models	BTU Input Per Hr. Nat. Only	Vent Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	Approx. Ship. Wt. (Lbs.)
LW-500	500,000	6	53	23	32	13 1/2	4 3/8	3 1/4	6 3/8	7 1/2	3 1/2	19	16 1/4	5	5 1/4	11 1/2	2	1	425
LW-750	750,000	6	53	23	32	13 1/2	4 3/8	3 1/4	6 3/8	7 1/2	3 1/2	19	12 1/4	5	5 1/4	11 1/2	2	1	528
LW-1000	1,000,000	7	60 1/2	27 1/8	38 3/16	13 3/4	15 1/2	3 1/2	8 1/8	8 1/4	3 1/2	21	12 1/2	6 3/4	4 1/8	13 3/8	2 1/4	1 1/4	934

RECOVERY CAPACITIES

Model	Input Rating BTU/Hr.	Thermal Efficiency %	Temperature Rise - Degrees F - Gallons Per Hour											
			40	50	60	70	80	90	100	110	120	130	140	
LW-500	500,000 Natural	90%	GPH	1364	1091	909	779	682	606	545	496	455	420	390
	450,000 Propane		GPH	1227	982	818	701	614	545	491	446	409	378	351
LW-750	750,000 Natural	90%	GPH	2045	1636	1364	1169	1023	909	818	744	682	629	584
	675,000 Propane		GPH	1841	1473	1227	1052	920	818	736	669	614	566	526
LW-1000	1,000,000 Natural	90%	GPH	2727	2182	1818	1558	1364	1212	1091	992	909	839	779
	860,000 Propane		GPH	2345	1876	1564	1340	1173	1042	938	853	782	722	670

The boiler is approved for installation on combustible flooring in an alcove with minimum clearances to combustibles of:

4" Rear ; 0" Top and Sides ; 6" Vent

Sufficient area should be provided at the front and rear of the unit for proper servicing.

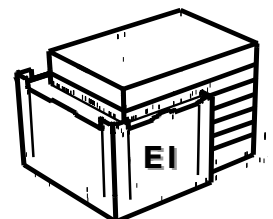
Complete installation and operating instructions are contained in the manual provided with each unit.

This boiler is not recommended for use as an instantaneous heater.

Gas supply pressure 13.8" W.C. maximum natural and propane; 7.0" W.C. minimum natural, 11.0" W.C. minimum propane.

The LEGEND 2000 must be connected to a single phase line source that is: 120 Volt, 60 Hertz, 30 Amps.

A 013.2



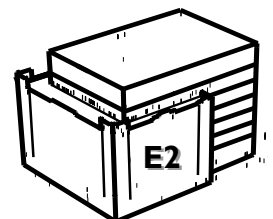
## E-2: Domestic Geothermal Equipment

### E-2a: GT Selections and Modeling Breakdown

Apartment		Design Cooling Capacity		Design Heating Capacity		GPM	Group*
		Sizing Total MBH	Sizing Sensible MBH	Sizing Sensible MBH	Geo Unit Selection		
2C	c	13.2	10.1	5.9	18.0	4.0	18 N
3C	c	13.1	10	6.0	18.0	4.0	18 N
4C	c	13	9.9	5.5	18.0	4.0	18 N
5C	c	14.7	11.3	7.0	18.0	4.0	18 N
2D	d	14.8	11.5	5.2	18.0	4.0	18
3D	d	14.3	11.1	4.8	18.0	4.0	18
4D	d	14.4	11.1	4.8	18.0	4.0	18
2E	e	18.3	14.2	8.7	24.0	5.0	24 N
3E	e	16.6	12.8	7.8	24.0	5.0	24 N
4E	e	16.9	13	8.7	24.0	5.0	24 N
5E	e	16.8	13	8.5	24.0	5.0	24 N
5D	d	16	12.6	6.5	24.0	5.0	24
3F	f	23.1	18.4	8.3	24.0	5.0	24
2F	f	26	21.1	9.1	30.0	7.5	30
4F	f	24.7	19.8	9.0	30.0	7.5	30
5F	f	25.3	20.4	9.1	30.0	7.5	30
2A	a	32.8	26.9	12.5	18/24	9.0	18/24 N
3A	a	31.5	25.7	11.6	18/24	9.0	18/24 N
4A	a	31.5	25.6	11.6	18/24	9.0	18/24 N
5A	a	34.1	28.1	14.9	18/24	9.0	18/24 N
6A7A	a	29.3	23.7	17.3	18/24	9.0	18/24 N
6C	c	24.4	19.4	13.0	18/24	9.0	18/24 N
7C	c	28.9	23.4	18.1	18/24	9.0	18/24 N
2B	b	35.4	29.3	13.0	18/24	9.0	18/24
3B	b	35.1	29.1	12.6	18/24	9.0	18/24
4B	b	33.1	27.2	11.8	18/24	9.0	18/24
5B	b	36.4	30.3	15.2	18/24	9.0	18/24
6D	d	28	22.2	9.8	18/24	9.0	18/24
7D	d	30.1	24.9	12.9	18/24	9.0	18/24
6B7B	b	49.6	42.7	26.2	24/30	12.5	24/30
Shared					30 x6	45	Basement and Shared

total gpm: 255

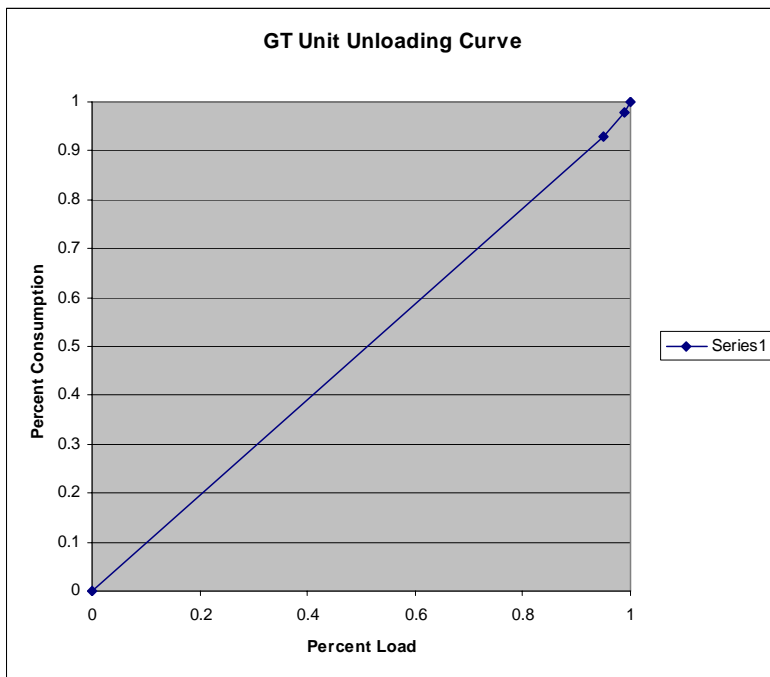
\* To simplify the TRACE model and still maintain the correct utility costs per apartment, apartments were modeled in groups that have the most similar load profiles. If the group label is indicated in this document as such, it represents all the apartments in that group.





# of units in group	Group	Cooling	EER	COP	Heating	COP
3	18	48.333	18.78	5.50	43.038	4.14
4	18 N	64.444	18.78	5.50	57.384	4.14
2	24	46.962	17.03	4.99	46.48	3.75
4	24 N	93.924	17.03	4.99	92.96	3.75
3	30	81.279	19.11	5.60	79.26	4.43
6	18/24	237.552	18.1	5.30	225.516	4.0
7	18/24 N	277.144	18.1	5.30	263.102	4.0
1	24/30	50.574	18.0	5.27	49.66	4.1
6	30 B H	162.558	19.11	5.60	158.52	4.43

### E-2b: GT operating Characteristics



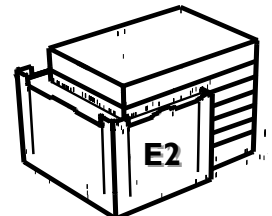
fan:	high	med	low	
cool	16.08	15.885	15.254	
	18.72	18.91	19.14	eer
heat	14.316	14.004	13.386	
	4.12	4.09	3.98	cop

Unit	cfm		
18	720		
	clg	16.111	Mbtuh
	eer	18.78	
	htg	14.346	Mbtuh
	cop	4.14	

Unit	cfm		
24	715		
	clg	23.481	Mbtuh
	eer	17.03	
	htg	23.24	Mbtuh
	cop	3.75	

Unit	cfm		
30	970		
	clg	27.093	Mbtuh
	eer	19.11	
	htg	26.42	Mbtuh
	cop	4.43	

Calculated from Florida Heat pump software for .5 in wg, 3 fan speed, 60 deg source water cooling, 50 deg source heating 75, deg inlet air cooling, 70 air inlet heating





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Our **Geo-Thermal** units are recognized as the most efficient way to meet all your Heating and Cooling needs. Available in Vertical and Horizontal models from 3/4 to 6 tons, Split models from 2 to 6 tons and Counterflow models 1/2 to 6 tons. Unlike air-to-air units, FHP's **GT Series** utilize the earth's ability to conserve energy. At a depth of 30 feet, ground water maintains a constant temperature within a single degree throughout the year. Even during temperature extremes, this system maintains its superior efficiencies. This temperature stability can be utilized by Well Water and Geothermal (Geoexchange) systems. Our **GT Series** is specifically designed for applications with fluid temperatures from 25°F to 110°F.

## GT SERIES "Geo-Thermal"



- **ENVIRONMENTALLY SAFE** The Earth Coupled Systems emit no discharges or pollution. The ground water in the Well Water System is never exposed to the atmosphere and also causes no pollution.
- **REAL COST SAVINGS** Savings from 50% to 70% in heating bills and up to 40% in cooling costs... Plus you can get HOT WATER during the summer months with a Waste Recovery Unit.
- **RELIABILITY** With over 30 years of experience in heat pump technology behind every FHP unit, you can be sure of a quality product that will give you many years of trouble free service.

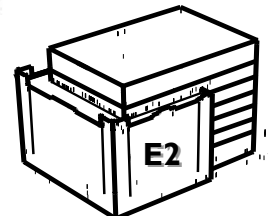
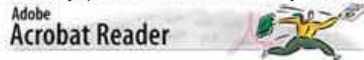


### Download Complete GT Series Catalog Specifications and Drawings

Click "GT Series Specifications" below to start download  
[GT Series Specifications](#)

Click "GT Series Installation and Maintenance" below to start download of Installation and Maintenance manual  
[GT Series Installation and Maintenance](#)

You will need to have Acrobat Reader 5.0 or later in order to view the catalog specifications. Click on the image below to go get it.



MODEL		ARI / ISO 13256-1 PERFORMANCE DATA											
		ENTERING WATER TEMPERATURES											
		Water Loop				Ground Water				Ground Loop			
		86° F	68° F	59° F	50° F	77° F	32° F						
CFM		CAPACITY AND EFFICIENCY DATA											
		COOLING CAPACITY (WLHP)	EER (WLHP)	HEATING CAPACITY (WLHP)	COP (WLHP)	COOLING CAPACITY (GWHP)	EER (GWHP)	HEATING CAPACITY (GWHP)	COP (GWHP)	COOLING CAPACITY (GLHP)	EER (GLHP)	HEATING CAPACITY (GLHP)	COP (GLHP)
GT010	350	10,500	14.0	13,000	4.7	12,000	21.2	10,500	4.1	11,000	16.1	8,300	3.4
GT018	550	15,500	16.0	16,300	5.0	17,200	24.0	13,200	4.4	16,000	18.3	10,600	3.7
GT024	800	23,500	14.2	28,500	4.6	26,400	21.0	23,200	4.1	24,500	16.2	18,200	3.5
GT030	1000	28,000	16.0	33,200	5.7	30,000	24.0	26,000	4.7	29,000	18.5	19,000	4.0
GT036	1200	34,000	14.6	40,500	5.1	37,800	21.5	32,400	4.4	35,000	17.0	24,500	3.5
GT042	1400	39,600	14.8	48,500	5.3	44,000	21.2	39,000	4.5	41,000	16.6	30,000	3.7
GT048	1600	47,000	13.8	58,000	5.0	52,000	20.1	47,000	4.2	49,000	15.8	36,500	3.5
GT054	1800	51,000	13.3	62,000	4.4	57,000	18.8	52,000	4.0	52,000	14.6	41,000	3.4
GT062	2000	60,000	12.5	77,000	4.5	65,000	17.5	60,000	4.0	60,500	14.0	48,000	3.2
GT070	2200	68,000	12.5	82,000	4.6	76,000	18.7	66,000	3.8	69,000	13.9	53,000	3.4

Tabulated performance data is at noted entering water temperatures and entering air condition of 80.6° F DB / 66.2° F WB at ARI / ISO 13256-1 rated CFM.

DIMENSIONS						
MODEL	VERTICAL/C. FLOW			HORIZONTAL		
	W	D	H	W	D	H
<b>GT010</b>	21.50	21.50	32.25	25.50	43.00	21.75
<b>GT018</b>	21.50	21.50	40.25	25.50	45.00	21.75
<b>GT024</b>	21.50	21.50	39.25	25.50	43.00	21.75
<b>GT030, 036</b>	21.50	26.00	47.25	26.00	54.50	21.75
<b>GT042, 048</b>	24.00	32.75	47.25	30.00	68.00	21.75
<b>GT054, 062</b>	26.00	33.25	51.25	30.00	68.00	21.75
<b>GT070</b>	26.00	33.25	58.25	30.00	78.00	21.75

Water connection side of all models is considered front in order to properly determine width (W), depth (D), and height (H).

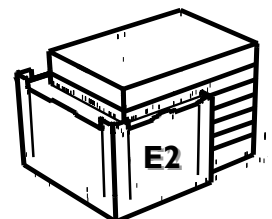
Due to continued technological advancements all specifications are subject to change without notice

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**Energy Wise Heating and Air Conditioning Equipment**

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This page last updated on October 18, 2005



## E-2d: Rooftop Unit

**ROOFTOP PACKAGE UNITS**  
**DWY/DWC/DGY SERIES**  
**WATER SOURCE HEAT PUMPS**



### HIGH EFFICIENCY ROOFTOP UNITS

**DWY – WATER LOOP HEAT PUMP**

**DWC – WATER LOOP COOLING ONLY**

**DGY – GROUND LOOP HEAT PUMP**

FHP packaged down-flow rooftop units are adaptable to a wide variety of applications including offices, schools, hotels, shopping centers and retirement communities.

The units are available in three configurations, water loop, geothermal and cooling only to meet your requirements.

- High efficiency in the cooling and heating modes
- Factory supplied roof curbs allow positioning on the roof above the conditioned space minimizing duct work
- All units are fully charged and run tested in both cooling and heating modes for trouble free startup
- Units designed to conform to appropriate UL/ANSI Standards by ETL or other nationally recognized testing laboratory.



#### Unit Performance

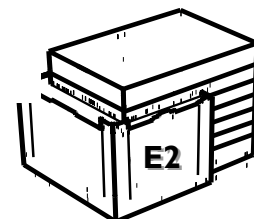
Model	DWY & DWC – Water Loop				DGY – Ground Loop			
	Btuh Cooling	EER	Btuh Heating	COP	Btuh Cooling	EER	Btuh Heating	COP
036	34,500	14.1	42,900	4.4	35,800	14.9	24,100	3.5
048	49,600	13.0	59,600	4.5	52,000	14.9	35,000	3.5
060	60,600	12.8	73,000	4.6	60,200	14.1	47,000	3.2
072	75,200	12.8	83,300	4.6	76,300	15.9	55,400	3.7
096	95,000	12.5	113,000	4.2	96,000	13.5	71,400	3.2
120	119,000	12.0	140,000	4.0	120,000	13.4	93,100	3.2
150	150,700	12.5	185,000	4.3	154,000	13.6	120,500	3.2
180	171,900	13.9	208,000	4.6	178,200	15.7	133,600	3.5
240	229,800	12.5	287,100	4.3	236,900	14.5	180,600	3.4
300	276,400	13.6	343,100	4.6	285,000	14.8	230,000	3.6
360	376,500	12.4	459,100	4.2	383,100	14.0	304,100	3.2
420	426,700	12.1	550,000	4.2	440,000	13.4	369,600	3.2

Rating in accordance with ISO Standard 13256-1

#### Application Range

DWY heat pumps and DWC cooling only units are designed to operate on a cooling tower/boiler system with loop entering fluid temperatures between 55 °F and 95 °F.

DGY ground loop units are designed to operate with ground loop fluid temperatures between 30 °F and 100 °F.



# E-2e: Brazed Plate Heat Exchanger

User: JennyHamp  
 Email: jeh305@psu.edu  
 Date: 03 / 16 /06

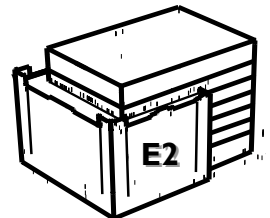


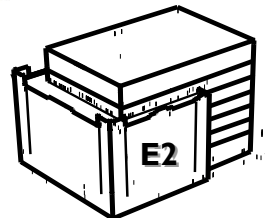
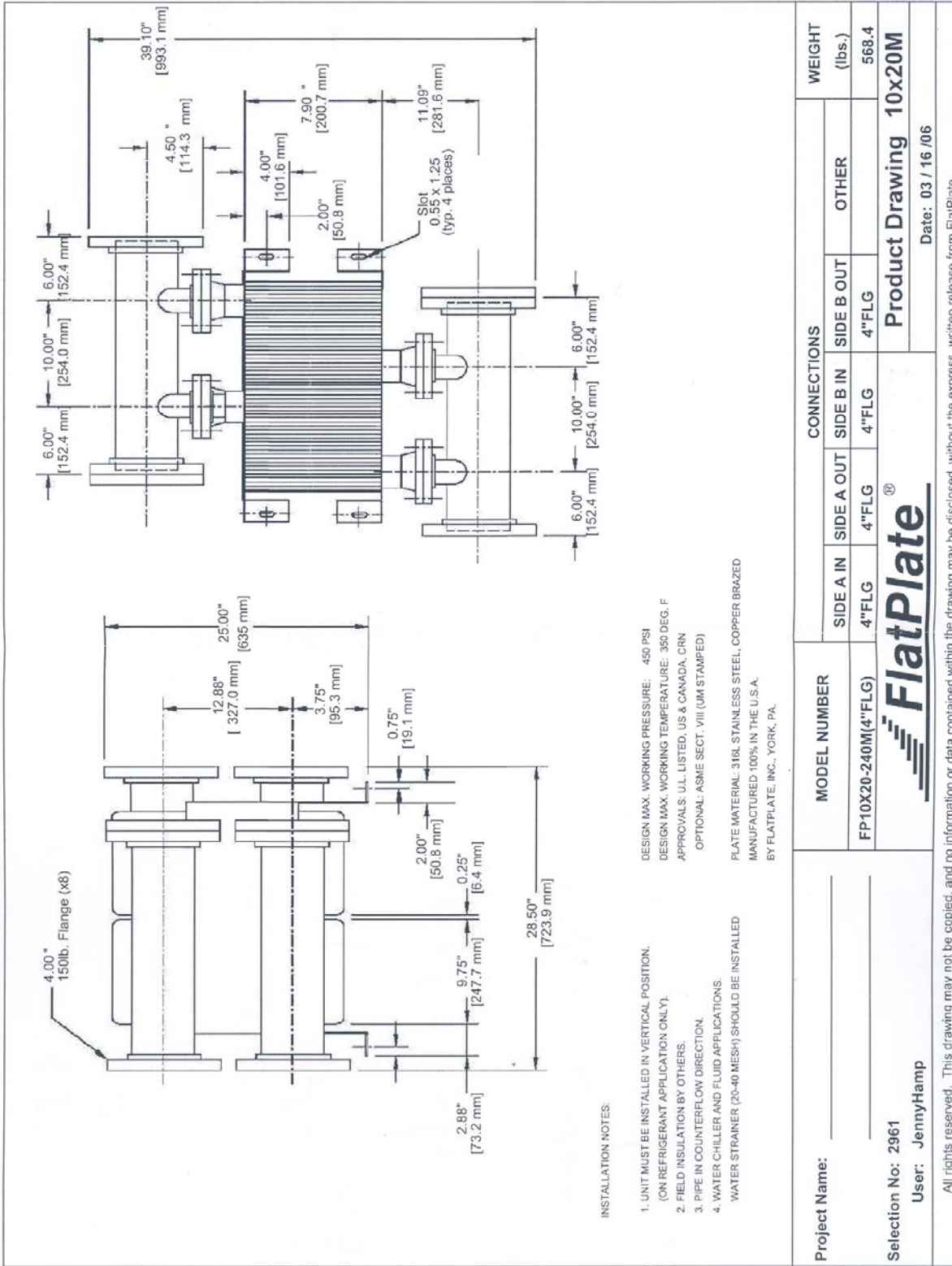
Cytec Building, 2161 Pennsylvania Avenue, York, Pennsylvania 17404  
 800-774-0474 - (717) 767-9060 - Fax (717) 767-9160 - apps@flatplate.com

Project Name: \_\_\_\_\_

Selection No: 2961

Design Conditions		
	Side A (HOT)	Side B (COLD)
Fluid Type:	Water	Water
Mass Flow Rate:	1941.5 lbs/min	2501.4 lbs/min
Entering Fluid Temp:	71.0 °F	55.4 °F
Leaving Fluid Temp:	60.0 °F	63.9 °F
Flow rate:	233.0 GPM	300.0 GPM
Fouling Factor:	0.0001 °F-SqFt-H/BTU	0.0001 °F-SqFt-H/BTU
Pressure Drop:	5.1 PSI	8.2 PSI
<b>Model Parameters:</b>		
Number of Channels:	59	60
Velocity:	0.91 ft/sec	1.15 ft/sec
Heat Transfer Coefficient:	1994	2288
Internal Volume:	1.213 cu.ft.	1.234 cu.ft.
Heat Transfer Rate:	1,280,406 BTUH	Nominal Surface: 309.7 sq.ft.
LMTD:	5.7 °F	Over-Surface: 22.1 %
Overall Uo:	878	Net Weight: 568.4 lbs
Model No:	FP10X20-240M(4"FLG)	
Notes:	Dimensions: See Page 2	





Log Mean Temp Difference of Heat Exchanger used to calculate pump energy

$$Q = W1 \cdot [t1i - t1o]$$

$$Q = ua \cdot \left[ \frac{t1i - t2o - (t1o - t2i)}{\ln \left( \frac{t1i - t2o}{t1o - t2i} \right)} \right]$$

$$Q = W2 \cdot [t2o - t2i]$$

$$W1 = 233$$

$$W2 = 300$$

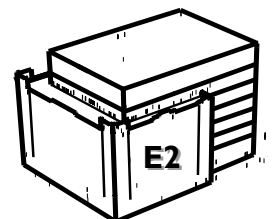
$$t1i = 71$$

$$t1o = 60$$

$$t2i = 55.4$$

$$t2o=63.9$$

$$ua = 446$$



# E-3 – Central Geothermal System Equipment

## E-3a – Water to Water HP

### Water Furnace Water-to-Water EW-540 Geothermal Characteristics

Interpolation Calculation

**Cooling part load**

ELT	EST	LGPM	LWPD		Source 108 gpm					swpd					source 135 gpm					swpd	
			PSI	FT HD	LLT	TC	KW	HR	EER	LST	PSI	FT HD	LLT	TC	KW	HR	EER	LST	PSI	FT HD	
30	50	108	3.4	7.9	25.8	217.4	12.5	259.9	17.4	55	3.2	7.4	25.8	219	12.2	260.5	18	54	4.7	11	
	50	135	5	11.5	26.6	222.7	12.5	265.5	17.8	55.1	3.2	7.4	26.6	224.8	12.2	266.4	18.4	54.1	4.7	11	
	70	108	3.4	7.9	26.3	196.2	15.4	248.9	12.7	74.8	3	6.9	26.2	197.6	15.1	249.1	13.1	73.8	4.5	10.3	
	70	135	5	11.5	26.9	200.9	15.5	253.9	12.9	74.8	3	6.9	26.9	202.8	15.1	254.4	13.4	73.9	4.5	10.3	
	80	108	3.4	7.9	26.7	170.9	18.6	234.3	9.2	94.5	2.8	6.4	26.7	172.1	18.2	234.1	9.5	93.6	4.2	9.8	
	80	135	5	11.5	27.3	175	18.7	238.8	9.4	94.6	2.8	6.4	27.3	176.6	18.2	238.8	9.7	93.6	4.2	9.8	
50	50	108	3.2	7.4	44.3	300.5	13.7	347.2	21.9	56.6	3.2	7.4	44.2	302.7	13.4	348.3	22.6	55.3	4.7	11	
	50	135	4.7	11	45.3	307.8	13.8	354.8	22.3	56.8	3.2	7.4	45.3	310.6	13.4	356.4	23.1	55.4	4.7	11	
	70	108	3.2	7.4	44.7	276.2	16.7	333.2	16.5	76.4	3	6.9	44.7	278.2	16.3	333.9	17	75.1	4.5	10.3	
	70	135	4.7	11	45.7	282.9	16.8	340.3	16.8	76.5	3	6.9	45.6	285.5	16.4	341.4	17.4	75.2	4.5	10.3	
	80	108	3.2	7.4	45.3	248.8	19.9	316.8	12.5	96	2.8	6.4	45.2	250.6	19.5	317.1	12.9	94.8	4.2	9.8	
	80	135	4.7	11	46.1	254.9	20	323.3	12.7	96.2	2.8	6.4	46.1	257.2	19.5	323.9	13.2	94.9	4.2	9.8	
30	60	135	5	11.5	26.75	211.8	14	259.7	15.35	64.95	3.1	7.15	26.75	213.8	13.65	260.4	15.9	64	4.6	10.65	
50	60	135	4.7	11	45.5	295.35	15.3	347.55	19.55	66.65	3.1	7.15	45.45	298.05	14.9	348.9	20.25	65.3	4.6	10.65	
48.4492	60	135	4.723262	11.03877	44.04612	288.8715	15.1992	340.7381	19.22433	66.51818	3.1	7.15	44	291.5172	14.80307	342.0377	19.9127	65.1992	4.6	10.65	

Four Units, 50 Tons Each  
 Full Cooling Load  
 19.7 EER  
 Part Cooling Load  
 19.9 EER

Tons	Mbtuh	kW	Cons	Load
24.2931	291.51725	14.80307	12.08%	12.21%
49.75294	597.03527	30.63173	25.00%	25.00%
74.04604	888.55252	45.4348	37.08%	37.21%
99.50588	1194.0705	61.26346	50.00%	50.00%
123.799	1485.5878	76.06653	62.08%	62.21%
149.2588	1791.1058	91.89518	75.00%	75.00%
173.5519	2082.6231	106.6983	87.08%	87.21%
199.0118	2388.1411	122.5269	100.00%	100.00%

**Cooling full load**

50	50	108	3.2	7.4	39	577.8	27.8	672.6	20.8	62.8	3.2	7.4	38.9	582.1	27.1	674.7	21.4	60.3	4.7	11
	50	135	4.7	11	41	591.9	27.9	687.2	21.2	63.1	3.2	7.4	40.9	597.3	27.2	690.3	21.9	60.5	4.7	11
	70	108	3.2	7.4	39.9	531.1	33.9	646.8	15.7	82.3	3	6.9	39.8	535	33.1	648.1	16.1	79.9	4.5	10.3
	70	135	4.7	11	41.7	544	34.1	660.4	15.9	82.6	3	6.9	41.6	549	33.3	662.5	16.5	80.1	4.5	10.3
	80	108	3.2	7.4	40.9	478.5	40.4	616.5	11.8	101.8	2.8	6.4	40.8	482	39.5	616.8	12.2	99.4	4.2	9.8
	80	135	4.7	11	42.5	490.1	40.7	628.9	12.1	102	2.8	6.4	42.4	494.6	39.7	629.9	12.5	99.6	4.2	9.8
70	50	108	3	6.9	56.1	725.5	30.2	828.6	24	65.8	3.2	7.4	56	730.9	29.5	831.6	24.8	62.7	4.7	11
	50	135	4.5	10.3	58.6	743.2	30.4	846.8	24.5	66.2	3.2	7.4	58.5	750	29.6	851.1	25.3	63	4.7	11
	70	108	3	6.9	57	680	36.5	804.6	18.6	85.4	3	6.9	56.9	685	35.7	806.7	19.2	82.3	4.5	10.3
	70	135	4.5	10.3	59.4	696.5	36.7	821.8	19	85.7	3	6.9	59.3	702.9	35.8	825.1	19.6	82.6	4.5	10.3
	80	108	3	6.9	58.1	621.4	42.7	767.1	14.6	104.6	2.8	6.4	58	626	41.7	768.3	15	101.7	4.2	9.8
	80	135	4.5	10.3	60.3	636.5	42.9	783	14.8	104.9	2.8	6.4	60.2	642.4	41.9	785.2	15.3	102	4.2	9.8
50	60	135	4.7	11	41.35	567.95	31	673.8	18.55	72.85	3.1	7.15	41.25	573.15	30.25	676.4	19.2	70.3	4.6	10.65
70	60	135	4.5	10.3	59	719.85	33.55	834.3	21.75	75.95	3.1	7.15	58.9	726.45	32.7	838.1	22.45	72.8	4.6	10.65
53.11615	60	135	4.668839	10.89093	44.1	591.6171	31.39731	698.8071	19.04858	73.333	3.1	7.15	44	597.0353	30.63173	701.5941	19.70637	70.68952	4.6	10.65

**Heating full load**

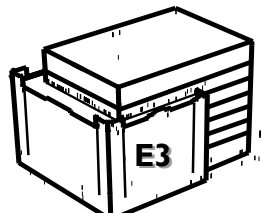
ELT	EST	LGPM	LWPD		Source 108 gpm					swpd					source 135 gpm					swpd	
			PSI	FT HD	LLT	HC	KW	HE	COP	LST	PSI	FT HD	LLT	HC	KW	HE	COP	LST	PSI	FT HD	
100	50	108	2.7	6.2	111.2	584.1	47	423.6	3.6	41.9	3.2	7.4	111.2	588.4	45.9	431.8	3.8	43.4	4.8	11	
100	50	135	4.1	9.5	109.1	598.3	47.3	437	3.7	41.7	3.2	7.4	109.2	603.8	46.2	446.1	3.8	43.2	4.8	11	
120	50	108	2.5	5.8	130.5	548.5	57.8	351.4	2.8	43.3	3.2	7.4	130.5	552.6	56.4	360.2	2.9	44.5	4.8	11	
120	50	135	3.8	8.9	128.6	561.9	58.1	363.7	2.8	43.1	3.2	7.4	128.7	567.1	56.8	373.3	2.9	44.3	4.8	11	
100.8205	50	135	4.087692	9.475385	109.9	596.8067	47.74308	433.9928	3.663077	41.75744	3.2	7.4	110	602.2944	46.63487	443.1133	3.763077	43.24513	4.8	11	

Four Units, 50 Tons Each  
 Full Heating Load  
 3.76 COP  
 Part Heating Load  
 3.84 COP

**Heating part load**

100	50	108	2.7	6.2	105.7	301	22.6	223.9	3.9	45.7	3.2	7.4	105.8	303.2	22	228	4	46.5	4.8	11
100	50	135	4.1	9.5	104.7	308.3	22.7	230.9	4	45.6	3.2	7.4	104.8	311.1	22.2	235.4	4.1	46.4	4.8	11
120	50	108	2.5	5.8	125.4	282.7	27.7	188	3	46.4	3.2	7.4	125.4	284.8	27.1	192.4	3.1	47.1	4.8	11
120	50	135	3.8	8.9	124.4	289.6	27.9	194.4	3	46.3	3.2	7.4	124.5	292.2	27.3	199.2	3.1	47	4.8	11
105.2792	50	135	4.020812	9.341624	109.9	303.364	24.07259	221.2655	3.736041	45.78477	3.2	7.4	110	306.1112	23.54619	225.8447	3.836041	46.55838	4.8	11

Tons	Mbtuh	kW	Cons	Load
25.50926	306.11117	23.54619	12.62%	12.71%
50.1912	602.29436	46.63487	25.00%	25.00%
75.70046	908.40553	70.18106	37.62%	37.71%
100.3824	1204.5887	93.26974	50.00%	50.00%
125.8917	1510.6999	116.8159	62.62%	62.71%
150.5736	1806.8831	139.9046	75.00%	75.00%
176.0829	2112.9942	163.4508	87.62%	87.71%
200.7648	2409.1774	186.5395	100.00%	100.00%





# E SERIES

## EW Reversible Chiller

# Submittal Data

## Models EW360 & EW540

### 60Hz - R410a

### English Language/IP Units

REVISION: 03/06



**SD1480**

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Page \_\_\_\_\_ of \_\_\_\_\_

**E-3b – Domestic hot Water Heater, same as E-1c**  
**E-3c – Heat Exchanger, same as E-2e**

### EW Reversible Chiller 60Hz Submittal Data



Contractor: _____	P.O.: _____
Engineer: _____	
Project Name: _____	Unit Tag: _____

#### ARI/ASHRAE/ISO 13256-2 WATER TO WATER RATINGS

##### English (IP) Units

Model	Capacity	Load Liquid Flow (gpm)	Source Liquid Flow (gpm)	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump					
				Cooling		Heating		Cooling		Heating		Cooling			Heating		
				Load 53.6°F Source 86°F		Load 104°F Source 68°F		Load 53.6°F Source 59°F		Load 104°F Source 50°F		Source °F	Load 53.6°F		Source °F	Load 104°F	
				Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP		Capacity Btuh	EER Btuh/W		Capacity Btuh	COP
EW360	Full	86.0	86.0	335,000	13.6	452,600	4.1	-	-	-	-	77	351,000	15.4	32	296,500	3.0
	Part	86.0	86.0	175,000	14.4	237,600	4.4	-	-	-	-	68	191,500	18.7	41	170,000	3.3
EW540	Full	135.0	135.0	533,400	13.8	691,200	4.1	-	-	-	-	77	558,500	15.6	32	485,800	3.1
	Part	135.0	135.0	277,300	14.5	359,400	4.3	-	-	-	-	68	302,800	18.6	41	282,600	3.5

Notes: All ratings based upon lower Voltage operation of dual voltage rated units. Load coil also called "Indoor" and Source coil also called "Outdoor". "-" not rated.

##### Metric (SI) Units

Model	Capacity	Load Liquid Flow (lps)	Source Liquid Flow (lps)	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump					
				Cooling		Heating		Cooling		Heating		Cooling			Heating		
				Load 12°C Source 30°C		Load 40°C Source 20°C		Load 12°C Source 15°C		Load 40°C Source 10°C		Source °C	Load 12°C		Source °C	Load 40°C	
				Capacity Watts	EER (W/W)	Capacity Watts	COP	Capacity Watts	EER (W/W)	Capacity Watts	COP		Capacity Watts	EER (W/W)		Capacity Watts	COP
EW360	Full	5.43	5.43	98,183	4.0	132,649	4.1	-	-	-	-	25	102,872	4.5	0	86,899	3.0
	Part	5.43	5.43	51,290	4.2	69,637	4.4	-	-	-	-	20	56,125	5.5	5	49,824	3.3
EW540	Full	8.52	8.52	156,331	4.0	202,579	4.1	-	-	-	-	25	163,687	4.6	0	142,380	3.1
	Part	8.52	8.52	81,272	4.2	105,334	4.3	-	-	-	-	20	88,746	5.5	5	82,825	3.5

Notes: All ratings based upon lower Voltage operation of dual voltage rated units. Load coil also called "Indoor" and Source coil also called "Outdoor". "-" not rated.

#### ARI 550 CHILLER RATINGS

##### English (IP) Units

Model	Capacity	Load Liquid Flow (gpm)	Source Liquid Flow (gpm)	Cooling	
				Leaving Load 44°F Ent Source 85 °F	
				Capacity Btuh	EER Btuh/W
EW360	Full	69.0	86.0	345,000	14.0
	Part	69.0	86.0	179,400	14.8
EW540	Full	108.0	135.0	540,000	14.3
	Part	108.0	135.0	280,800	15.0

Notes: All ratings based upon lower Voltage operation of dual voltage rated units. Load coil also called "Indoor" and Source coil also called "Outdoor".

##### Metric (SI) Units

Model	Capacity	Load Liquid Flow (lps)	Source Liquid Flow (lps)	Cooling	
				Leaving Load 12°C Ent Source 30°C	
				Capacity Watts	EER (W/W)
EW360	Full	4.35	5.43	101,114	4.1
	Part	4.35	5.43	52,579	4.3
EW540	Full	6.81	8.52	158,265	4.2
	Part	6.81	8.52	82,298	4.4

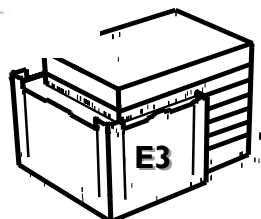
Notes: All ratings based upon lower Voltage operation of dual voltage rated units. Load coil also called "Indoor" and Source coil also called "Outdoor".

**SD1480**

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Revision: 03/06

Page \_\_\_\_\_ of \_\_\_\_\_



# E-4: Base Case Model Equipment

52C Packaged Terminal Air Conditioner - Specifications

Page 1 of 4



52C

Comfort Series  
Packaged Terminal Air Conditioner (PTAC)  
7,200 to 15,000 Nominal Btuh



Performance & Sizing Information Heat/Cool Units

Model	Cooling (Btuh)	EER	Electric Heat (Btuh)	COP	Reverse Cycle Heat (Btuh)	Evaporator Fan CFM (Hi-Speed)	Approx Ship Weight (Lbs)	1- PH.60Hz Volts	Current (AMPS)		Input Power (Watts)		Branch Circuit Fuse (AMPS)
									Cooling	Electric Heat	Cooling	Electric Heat	
52CE-207--3	7000/6900	11.1/11.1	7800/6400	-	-	260/250	125	230/208	2.7/2.9	10.4/9.5	631/622	2393/1985	15
52CE-307--3	7000/6900	11.1/11.1	11600/9700	-	-	260/250	125	230/208	2.7/2.9	15.2/14.1	631/622	3493/2935	20
52CE-209--3	9000/8900	10.7/10.7	7800/6400	-	-	260/250	125	230/208	3.7/3.8	10.4/9.5	841/832	2393/1985	15
52CE-309--3	9000/8900	10.7/10.7	11600/9700	-	-	260/250	125	230/208	3.7/3.8	15.2/14.1	841/832	3493/2935	20
52CE-212--3	12000/11900	10.1/10.1	7800/6400	-	-	350/320	140	230/208	5.2/5.6	10.8/9.9	1188/1178	2470/2047	15
52CE-312--3	12000/11900	10.1/10.1	11600/9700	-	-	350/320	140	230/208	5.2/5.6	15.6/14.5	1188/1178	3570/2997	20
52CE-512--3	12000/11900	10.1/10.1	17000/13800	-	-	350/320	140	230/208	5.2/5.6	22.5/20.0	1188/1178	5170/4147	30
52CE-215--3	14500/14000	9.4/9.5	7800/6400	-	-	290/270	150	230/208	6.8/7.6	10.9/10.0	1543/1473	2517/2117	15
52CE-315--3	14500/14000	9.4/9.5	11600/9700	-	-	290/270	150	230/208	6.8/7.6	15.7/14.6	1543/1473	3617/3067	20

[http://www.commercial.carrier.com/commercial/hvac/product\\_physical\\_data\\_printable/0.3077,CL11\\_DIV12\\_ETI440\\_PRD184,00.html](http://www.commercial.carrier.com/commercial/hvac/product_physical_data_printable/0.3077,CL11_DIV12_ETI440_PRD184,00.html)  
52C Packaged Terminal Air Conditioner - Specifications

4/5/2006  
Page 2 of 4

52CE-515--3	14500/14000	9.4/9.5	17000/13800	-	-	290/270	150	230/208	6.8/7.6	22.6/20.1	1543/1473	5217/4217	30
52CE-207--4	7000	11.1	7800	-	-	260	125	265	2.4	9.2	631	2396	15
52CE-307--4	7000	11.1	11600	-	-	260	125	265	2.4	13.3	631	3496	20
52CE-209--4	8900	10.7	7800	-	-	260	125	265	3.1	9.2	832	2396	15
52CE-309--4	8900	10.7	11600	-	-	260	125	265	3.1	13.3	832	3496	20
52CE-212--4	12000	10.1	7800	-	-	340	140	265	4.6	9.4	1188	2470	15
52CE-312--4	12000	10.1	11600	-	-	340	140	265	4.6	13.5	1188	3570	20
52CE-512--4	12000	10.1	17000	-	-	340	140	265	4.6	19.6	1188	5170	25
52CE-215--4	14500	9.4	7800	-	-	290	150	265	6.0	9.7	1543	2517	15
52CE-315--4	14500	9.4	11600	-	-	290	150	265	6.0	13.8	1543	3617	20
52CE-515--4	14500	9.4	17000	-	-	290	150	265	6.0	19.9	1543	5217	25

Heat Pump

Model	Cooling (Btuh)	EER	Electric Heat (Btuh)	COP	Reverse Cycle Heat (Btuh)	Evaporator Fan CFM (Hi-Speed)	Approx Ship Weight (Lbs)	1- PH.60Hz Volts	Current (AMPS)		Input Power (Watts)		Branch Circuit Fuse (AMPS)
									Cooling	Electric Heat	Cooling	Electric Heat	
52CQ-207--3	7000/6900	11.1/11.1	7800/6400	3.1/3.1	6100/6000	260/250	125	230/208	2.7/2.9	10.4/9.5	631/622	2393/1985	15
52CQ-307--3	7000/6900	11.1/11.1	11600/9700	3.1/3.1	6100/6000	260/250	125	230/208	2.7/2.9	15.2/14.1	631/622	3493/2935	20
52CQ-209--3	9000/8900	10.7/10.7	7800/6400	3.1/3.1	7900/7800	260/250	125	230/208	3.7/3.8	10.4/9.5	841/832	2393/1985	15
52CQ-309--3	9000/8900	10.7/10.7	11600/9700	3.1/3.1	7900/7800	260/250	125	230/208	3.7/3.8	15.2/14.1	841/832	3493/2935	20
52CQ-212--3	12000/11900	10.1/10.1	7800/6400	3.0/3.0	10800/10700	350/320	140	230/208	4.7/5.2	10.8/9.9	1188/1178	2470/2047	15
52CQ-312--3	12000/11900	10.1/10.1	11600/9700	3.0/3.0	10800/10700	350/320	140	230/208	4.7/5.2	15.6/14.5	1188/1178	3570/2997	20

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