COMMERCIAL | WATER2AIR | EC SERIES

Reinventing Energy Efficiency

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"Environmental stewardship is a core philosophy for FHP Manufacturing from design to production to the reduction in our customers' energy bills. At FHP, we are working on a better future every day."

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FHP Manufacturing. Top quality products to improve your savings and help create a better world.

Specializing in efficient green technology for commercial heating and cooling products, FHP is one of the leading manufacturers of Geothermal and Water Source heat pumps, which assures you that you are buying a unit that you can trust. We are part of Bosch Thermotechnology Ltd., a Robert Bosch Group unit dedicated to providing highly efficient heating and cooling solutions to the private and public sector.

FHP has always been on the forefront of product development and innovative design to optimize the performance of our units. Our products are designed and manufactured to the highest quality, reflecting the no-compromise standards for which FHP and Bosch are renowned which provides our customers with the highest level of satisfaction and comfort. The variety of options, energy efficiency and uncompromising quality of all FHP units makes them the ideal choice for either new construction or retrofit commercial projects.

FHP's engineering efforts have been focused on providing a greener world for future generations. Faced with today's tough environmental challenges and with global warming, we are more committed than ever to develop solutions which utilize sustainable energy sources in order to conserve our planet's nonrenewable reserves of fossil fuels. With our heat pumps, you not only will save money on energy bills but also help to create a better world.

What Is A Geothermal Heat Pump?

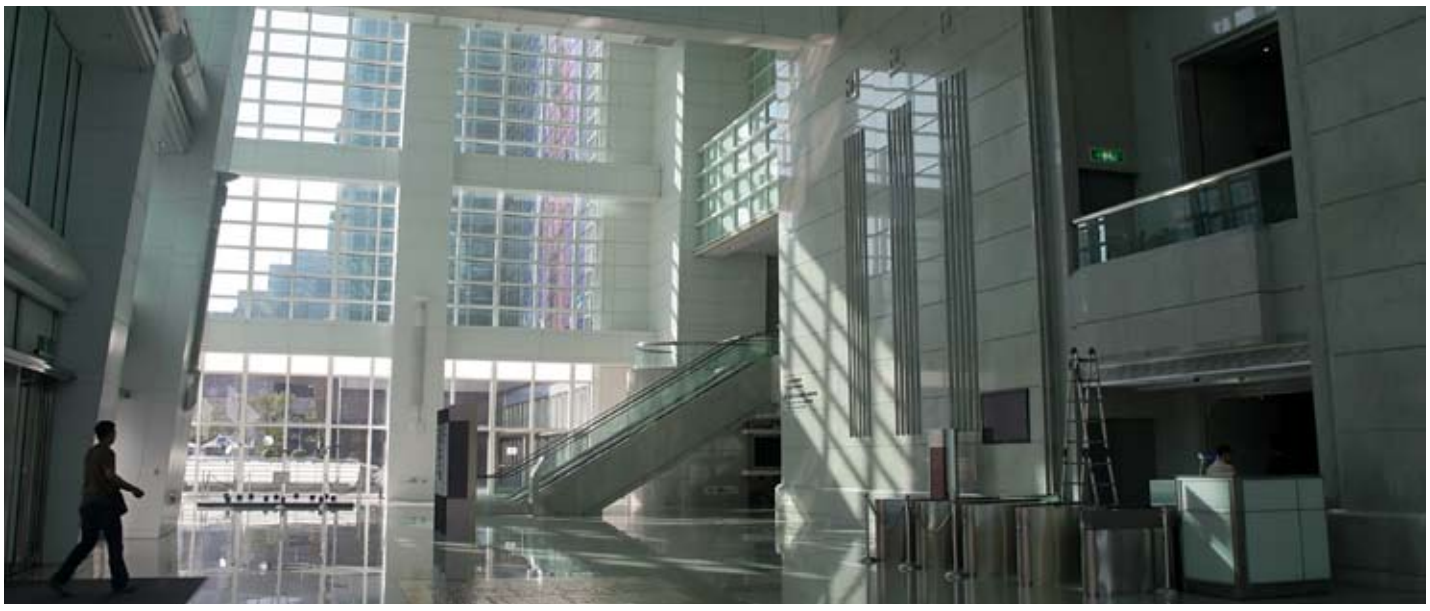
Geothermal heat pump technology collects the natural energy of the earth to provide heating in the winter and cooling in the summer. At the depth of 6 feet the earth's temperature remains relatively constant all year long, which is the perfect vehicle to keep buildings at a more consistent, moderate temperature.

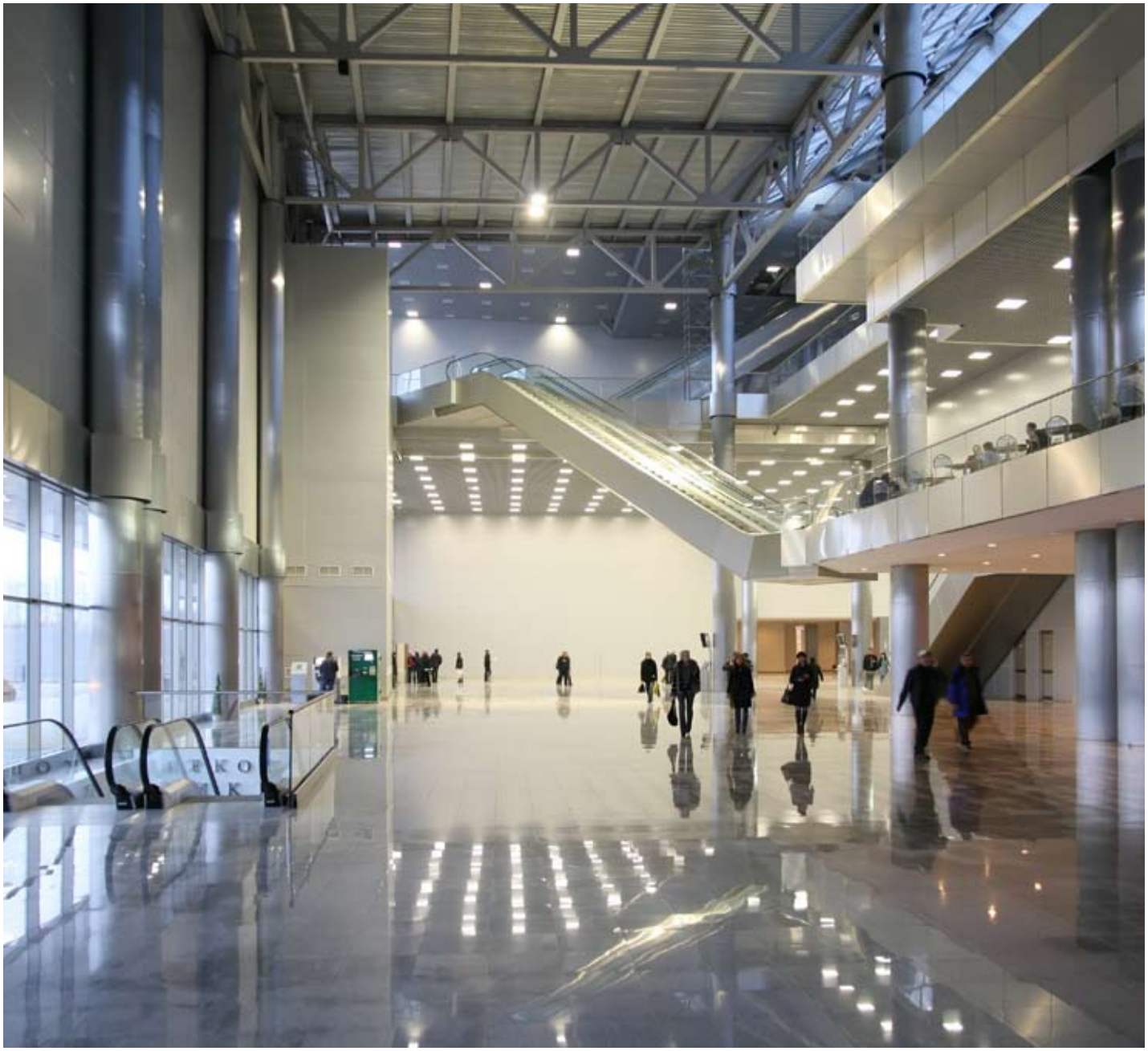
A geothermal energy system circulates water or another fluid into the ground through a series of non corrosive pipes, where it is warmed or cooled by the ambient temperature of the ground. The fluid is then brought back to the heat pump which then provides heating or cooling for your home or business as needed — efficiently and without any negative impact on the environment.

A Pleasant Living And Working Environment

Geothermal heat pumps remove many of the negative factors that are associated with traditional dirty energy sources. Not only will the general environment of the building be improved, but you will also be able to remove bulky and loud boiler room equipment, improving the aesthetics of your building.

- Natural and increased indoor air quality
- No rooftop or ground mounted equipment to be damaged by the weather, vandalism or roof leaks
- When installed properly, geothermal equipment is as quiet as a refrigerator
- With no boilers, smoke stacks or fuel tank, they use about one-third of the space of a traditional boiler room
- Unlimited architectural creativity for attractive exterior and roof designs





Cost And Payback

Geothermal heat pumps not only provide dependable, natural heat, they also provide commercial buildings with more financial independence through the money the heat pumps can save.

- Geothermal heat pumps have the lowest life cycle cost today — 25% to 50% less than a conventional system
- Savings depend on location and which GSHPS you use
- Will normally cost more than a roof top or split system, but will pay back that cost difference in approximately two years
- Considered the technology of choice by the Department of Energy and the Environmental Protection Agency

EC Series - High Efficiency

FHP's one stage EC Series with high efficiency brings geothermal technology into your commercial project. From ½ through 6 tons in various configurations there is a unit for you. When equipped with the "extended range option," the unit is suitable for geothermal applications.

Quiet Operation

The EC Series comes with a unique sound package and the floating compressor base pan keeps sound to an absolute minimum.

Environmentally Friendly

These highly efficient units not only will reduce your operating costs but play their part in reducing carbon dioxide emissions, a leading cause of global warming.

Quality

Rigorous factory testing virtually guarantees no hassle from the start while FHP's almost 40 years of experience in designing Heat Pumps for commercial applications are your assurance of a state of the art quality product. FHP's ISO 9001:2000 certified facilities provide consistent quality in every unit we build.

Key Features

Standard

- Coated Air Coils
- Stainless Steel Drain Pan
- Filter Drier
- Floating Base
- Service Connections
- R410-A Refrigerant
- PSC Motor
- Coaxial Heat Exchanger Copper
- 4-Way Reversing Valve
- Blower Housing
- Unit Protection Module 1

Optional

- Four Sided Filter Rack
- Hot Gas Bypass
- Hot Gas Reheat
- TXV Valve
- Coaxial Heat Exchanger Cupronickel
- Desuperheater
- DDC Controls
- Geothermal
- Compressor Blanket
- Comfort Alert Diagnostics Module

Geothermal

A geothermal extended range option is available for the EC series consisting of a TXV metering device and a wrapped condenser coil.

Coated Air Coils

All FHP Evaporator coils are baked enamel coated with a corrosion resistant material. This coating protects against most airborne chemicals that can lead to accelerated corrosion and premature failure of the coil. All coatings are factory applied for total coil coverage and must pass the equivalent of a 1000-hour salt spray test.

Four Sided Filter Rack

FHP units include either a 1” or 2” air filter. Four sided filter racks minimize unfiltered air from entering the unit. Filter doors allow for easy routine maintenance and changing of the air filter. MERV 11 high efficiency filters are available on most units.

Stainless Steel Drain Pan

All FHP units utilize stainless steel drain pans. A stainless steel drain pan prevents corrosion and allows for easier cleaning. It will not deteriorate over the life of the unit.

TXV Valve

FHP’s EC series utilize a high quality thermal expansion valve (TXV). A TXV allows for greater flexibility in operation over a wider range of conditions allowing them to closely match the demand of the unit and run at optimal efficiency. The TXV is installed in the compressor section for easy access and servicing.

Floating Base

The floating base pan is a feature that isolates the compressor from the surrounding cabinet. Even under normal operating conditions vibration may be transmitted to the building and introduced into the space as noise. The floating base pan isolates the compressor from the cabinet and absorbs the vibration energy so that it does not get transmitted to the space. Even under normal operating conditions vibration may be transmitted to the building and introduced into the space as noise. This feature, unique to FHP is standard in all of our units to ensure quite operation.

Coaxial Heat Exchanger

Oversized coaxial refrigerant to water heat exchangers are standard in all units. The customer can choose between Cupronickel or Copper coils. These coils are designed to allow optimal heat transfer while offering extremely low pressure drop. This unique low pressure flow design reduces the amount of pumping power necessary to achieve optimum water flow in order to maintain the efficiency of the unit. Coaxial heat exchangers are not as susceptible to clogging and freezing as are plate heat exchangers. All geothermal units come standard with a wrapped insulated coaxial heat exchanger. The insulation wrap prevents condensation from forming in low temperature operations.

Unit Protection Module UPM1

The Unit Protection Module UPM 1 is standard on most single compressor FHP units and was developed to enhance their operation. The (optional) freeze protection will prevent unit operation below 35°F (1.7°C) leaving fluid temperature. The condensate overflow option prevents unit operation in the event the drain pan clogs and there is a potential for condensate overflow. Each controller has a random start feature programmed into its microprocessor ranging from 270 - 300 seconds preventing the simultaneous starting of multiple units. An anti-short cycle timer allows 5 minute delay on break timer to prevent compressor short cycling. A low pressure bypass timer switch prevents nuisance lockouts during cold start up. The high pressure switch delay of one (1) second provides switch stabilization on start up to prevent nuisance lockouts.

The Unit Protection Modules monitor the operating condition of the unit by providing:

- A Brownout / Surge / Power Interruption Protection - This allows for the water pumps to restart and establish water flow to prevent nuisance lockouts during brief power interruptions.
- Malfunction Output - The controller has a set of 24 volt contacts for remote fault indication.
- Test / Service pin - A jumper is provided to reduce all time delay settings to 6 seconds during troubleshooting or operation verification.
- L.E.D. Indicators
- Intelligent Reset

DDC Controls

The FHP factory mounted DDC Controller is preprogrammed and installed in the unit to be jobsite ready to run. The unit will operate in a 100% stand-alone control mode or connect to a Building Automation System (BAS) using open protocols BACnet, Modbus, N2 or LonWorks. Zone temperatures, leaving air temperatures and water temperatures can be monitored from the central control computer and unit fault indication displayed. An attractive wall sensor is available in three configurations. A Back view hand held diagnostic tool is available to allow local access to display and modify user defined properties without any computer software.

Compressor Blanket

A high density compressor blanket is an available option on all EC units. This together with the unique floating base pan can reduce sound levels by up to 60 percent.

Hot Gas Reheat - Dehumidification

Hot Gas Reheat (HGR) is an available option on all FHP units. This option allows the user to not only control space temperature, but also space humidity levels. An excess of moisture in the space can allow mold growth, leading to damage to the structure or interior surfaces, as well as reducing the air quality and creating an unhealthy environment.
By utilizing a humidistat the unit is able to monitor the humidity levels in the space. The HGR option allows cooling and dehumidification to satisfy both the thermostat and humidistat. Once the thermostat reaches set point and the humidity is above set point the unit will cool and dehumidify the air then be reheated by hot refrigerant gas and delivered to the space at around room temperature. The unit is operating as a dehumidifier. This option offers significant energy savings over the traditional means of reheating air with electric heating coils.

Desuperheater

A desuperheater or HRP (Hot Water Heat Recovery Package) is a feature that takes advantage of waste heat of the compressor and uses it to heat domestic water. Heating your water with FREE waste heat will reduce the use of your inefficient water storage tank heating elements. Hot water is produced by using a double wall coaxial heat exchanger coil: the hot refrigerant gas flows in the outer tubing while the domestic water flows in the inner pipe being heated by the hot refrigerant. The HRP heats water with superheated gas that is being produced by the compressor as you heat or cool your space, thus saving you money in your hot water production.

MODEL	EC Series | Voltage					
EC 007	115/1/60	208-230/1/60				
EC 009	115/1/60	208-230/1/60	265/1/60			
EC 012	115/1/60	208-230/1/60	265/1/60			
EC 015		208-230/1/60	265/1/60			
EC 018		208-230/1/60	265/1/60			
EC 024		208-230/1/60	265/1/60	208-230/3/60	460/3/60	
EC 030		208-230/1/60	265/1/60	208-230/3/60	460/3/60	
EC 036		208-230/1/60	265/1/60	208-230/3/60	460/3/60	
EC 041		208-230/1/60	265/1/60	208-230/3/60	460/3/60	
EC 042		208-230/1/60	265/1/60	208-230/3/60	460/3/60	
EC 048		208-230/1/60		208-230/3/60	460/3/60	575/3/60
EC 051		208-230/1/60		208-230/3/60	460/3/60	
EC 060		208-230/1/60		208-230/3/60	460/3/60	575/3/60
EC 061		208-230/1/60		208-230/3/60	460/3/60	
EC 070		208-230/1/60		208-230/3/60	460/3/60	

EC SERIES

Performance Data

- Horizontal
- Vertical
- Counter-Flow
- Split Systems

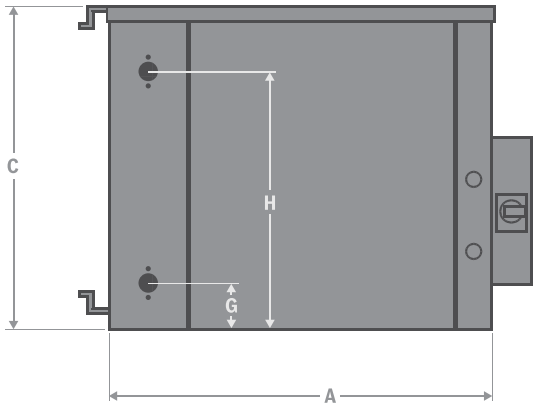
MODEL	ARI / ISO 13256-1 PERFORMANCE DATA											
	ENTERING WATER TEMPERATURES											
	Water Loop (WLHP)				Ground Water (GWHP)				Ground Loop (GLHP)			
	86°F		68°F		59°F		50°F		77°F		32°F	
	CAPACITY AND EFFICIENCY DATA											
	COOLING CAPACITY	EER	HEATING CAPACITY	COP	COOLING CAPACITY	EER	HEATING CAPACITY	COP	COOLING CAPACITY	EER	HEATING CAPACITY	COP
EC 007	6,200	12.5	8,000	5.1	7,200	20.0	6,000	4.0	6,500	15.0	4,500	3.2
EC 009	7,800	13.7	11,400	4.7	9,000	20.0	8,600	3.8	8,100	14.8	6,400	3.2
EC 012	11,000	13.0	14,500	4.5	12,400	19.0	11,500	3.6	11,500	14.5	8,700	3.1
EC 015	14,000	13.0	18,000	4.6	15,800	19.0	13,500	3.8	14,500	15.0	10,100	3.3
EC 018	18,500	13.0	24,000	4.4	21,400	19.0	18,000	3.8	19,800	14.1	13,400	3.3
EC 024	25,000	13.8	30,000	4.5	28,200	20.6	23,800	3.8	26 ,500	15.2	17,900	3.3
EC 030	29,000	13.0	35,000	4.3	33,000	18.6	28,400	3.8	31,000	14.4	21,000	3.3
EC 036	36,000	13.8	46,000	4.5	40,200	19.5	36,200	4.0	37,800	15.5	27,400	3.3
EC 041	38,000	12.5	49,000	4.2	40,400	16.1	39,000	3.7	39,200	14.1	28,500	3.1
EC 042	42,000	13.0	53,000	4.2	44,500	18.5	42,000	3.8	43,800	14.2	32,200	3.3
EC 048	48,000	14.0	58,000	4.8	58,000	20.6	46,600	4.2	52,000	15.4	36,800	3.5
EC 051	47,500	13.8	53,500	4.7	58,000	20.6	46,600	4.2	51,000	15.5	37,800	3.6
EC 060	62,000	13.2	79,000	4.4	67,000	18.3	61,500	3.9	63,600	14.7	50,000	3.3
EC 061	59,000	13.9	68,000	4.6	63,000	19.7	55,400	4.1	61,000	15.8	44,600	3.5
EC 070	68,000	13.5	80,000	4.5	76,000	19.8	68,000	4.0	70,000	15.2	53,000	3.3

Energy Star Rated Products.

EC 007 - 070 SERIES | HORIZONTAL DIMENSIONS

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height		R/A Duct Flg Width								Filter Rack Height	R/A Duct Flg Height		
EC007,009	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.25	11.75	1.25	7.75	10.00	8.00	3/4"F.P.T.	10X16X1
EC012	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.25	11.75	1.25	7.75	10.00	8.00	3/4"F.P.T.	10X16X1
EC015	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	4.00	11.75	1.25	9.75	16.00	14.00	3/4"F.P.T.	16X20X1
EC018	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	3.50	11.75	1.25	13.75	16.00	14.00	3/4"F.P.T.	16X20X1
EC024	21.50	43.00	19.00	2.00	17.50	23.50	2.38	12.50	3.25	11.75	3.25	13.75	18.00	16.00	3/4"F.P.T.	18X20X1
EC030	22.00	45.00	19.00	2.00	19.50	23.50	2.38	12.50	2.50	13.75	1.50	15.75	18.00	16.00	3/4"F.P.T.	18X20X1
EC036	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	18.00	16.00	3/4"F.P.T.	18X30X1
EC041	21.50	43.00	22.00	2.00	17.50	23.50	2.38	14.75	2.50	13.75	3.00	15.75	20.00	18.00	3/4"F.P.T.	20X20X1
EC042	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	18.00	16.00	3/4"F.P.T.	18X30X1
EC048	36.00	43.00	21.00	2.50	33.75	7.00	2.63	14.75	10.13	15.75	2.50	15.75	20.00	18.00	1"F.P.T.	18X20X1(2)
EC060	36.00	43.00	21.00	2.50	33.75	7.00	3.00	16.63	10.13	15.75	1.50	17.75	20.00	18.00	1"F.P.T.	18X20X1(2)
EC070	26.00	78.00	21.00	2.50	44.00	31.50	3.12	18.50	2.75	17.75	2.75	17.75	20.50	18.50	1"F.P.T.	18X20X1(2)

UNIT FRONT



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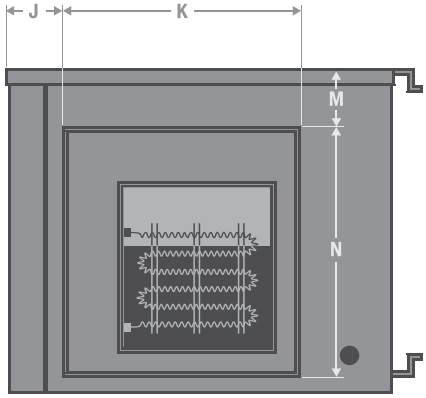

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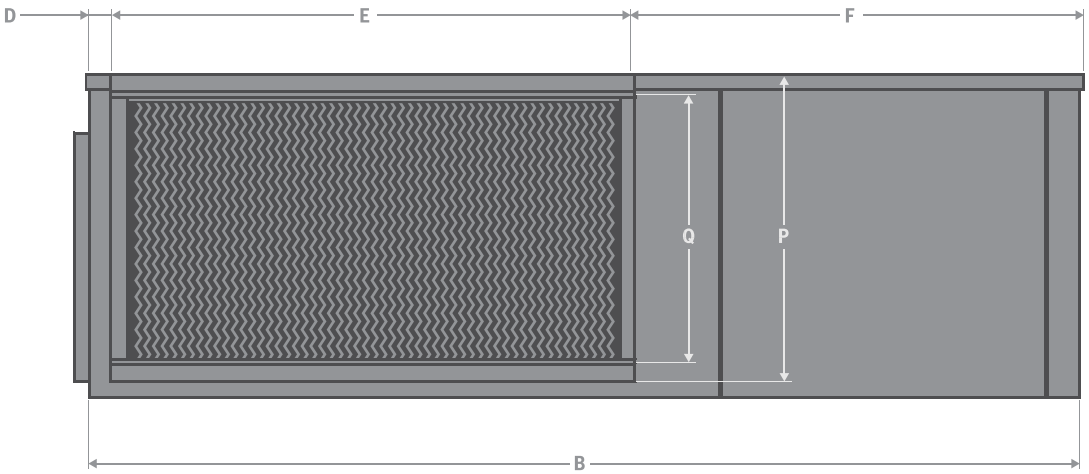
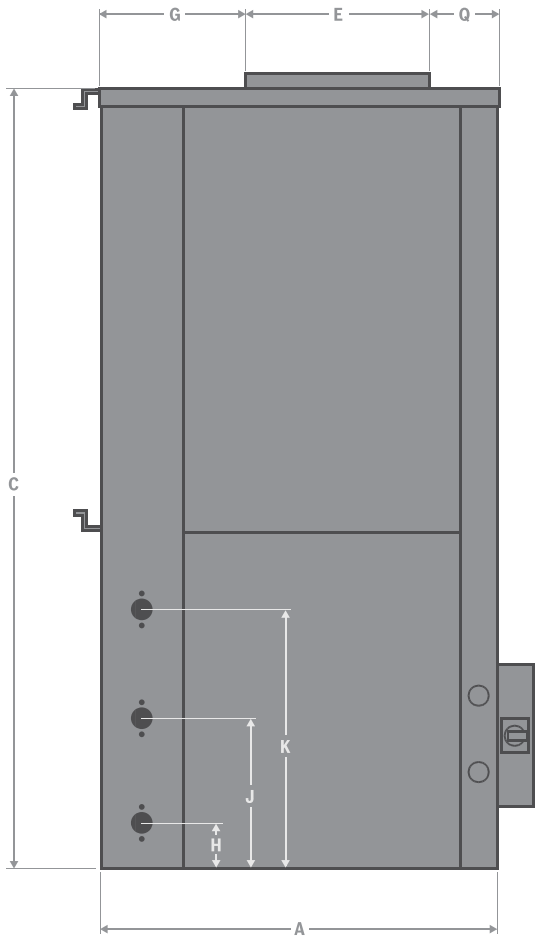


NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT.
Specifications subject to change without notice. EC015-070 can be field converted between end blow and straight through supply air configurations

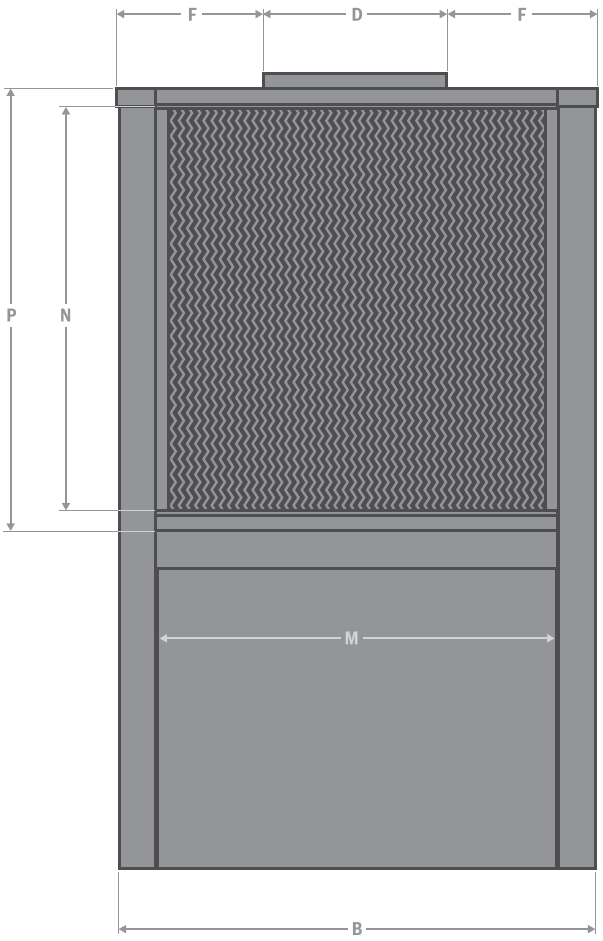
EC 007 - 070 SERIES | VERTICAL DIMENSIONS

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height								R/A Duct Flg Width	R/A Duct Flg Height	Filter Rack Height			
EC007,009	19.00	19.00	24.25	11.75	7.75	3.50	8.25	2.38	4.88	7.38	15.00	8.00	10.00	8.25	3/4" F.P.T.	10X16X1
EC012	19.00	19.00	24.25	11.75	7.75	3.50	9.75	2.38	4.88	7.38	15.00	8.00	10.00	5.00	3/4" F.P.T.	10X16X1
EC015	21.50	21.50	32.25	11.75	9.75	5.88	7.88	2.38	7.38	13.25	17.50	14.00	16.00	7.88	3/4" F.P.T.	16X20X1
EC018	21.50	21.50	32.25	16.25	13.75	1.75	5.62	2.38	7.38	13.25	17.50	14.00	16.00	5.62	3/4" F.P.T.	16X20X1
EC024	21.50	21.50	36.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	16.00	18.00	5.62	3/4" F.P.T.	18X20X1
EC030	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	18.00	20.00	5.62	3/4" F.P.T.	20X20X1
EC036	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24X24X1
EC041	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	8.38	14.75	17.50	18.00	20.00	5.62	3/4" F.P.T.	20X20X1
EC042	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24X24X1
EC048	24.00	32.00	45.25	17.75	17.75	7.38	5.12	2.63	8.38	14.75	28.00	22.00	24.00	5.12	1" F.P.T.	24X30X1
EC051	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24X30X1
EC060	24.00	32.00	45.25	17.75	17.75	7.38	5.12	3.00	9.63	16.63	28.00	22.00	24.00	5.12	1" F.P.T.	24X30X1
EC061	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24X30X1
EC070	26.00	33.25	58.25	17.75	17.75	9.50	6.50	3.38	8.38	17.38	28.00	30.00	32.00	6.50	1" F.P.T.	16X30X1 (2)

UNIT FRONT



LEFT SIDE

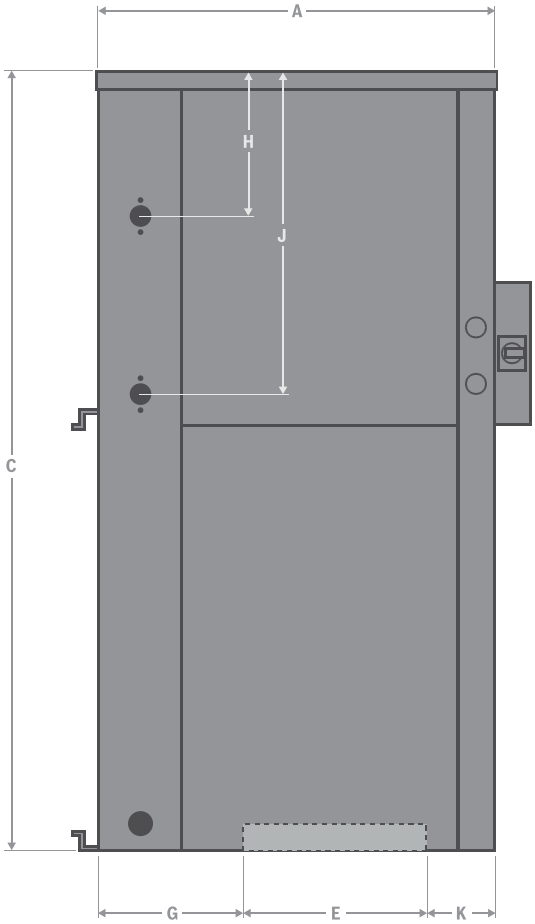


NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT.
EC051 and 061 only available in vertical configuration. Specifications subject to change without notice.

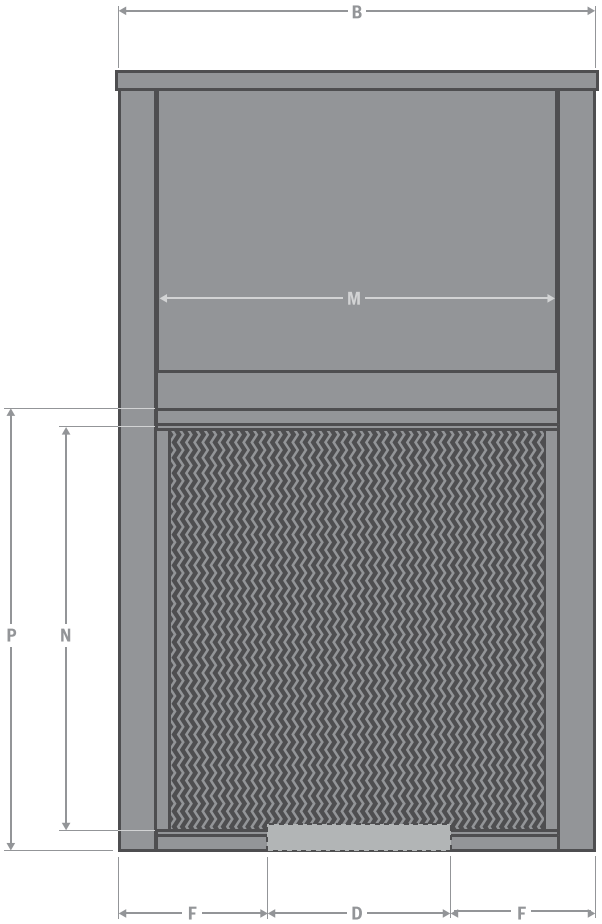
EC 007 - 070 SERIES | COUNTERFLOW DIMENSIONS

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height	Blower Opening	Blower Opening						R/A Duct Flg Width	R/A Duct Flg Height	Filter Rack Height		
EC007,009	19.00	19.00	24.25	6.25	4.25	6.00	10.25	5.00	10.00	10.25	15.00	8.00	10.00	3/4"F.P.T.	10X16X1
EC012	19.00	19.00	24.25	5.25	4.00	7.00	12.38	5.00	10.00	7.75	15.00	8.00	10.00	3/4"F.P.T.	10X16X1
EC015	21.50	21.50	32.25	6.25	4.25	6.50	12.00	5.88	16.75	12.00	17.50	14.00	16.00	3/4"F.P.T.	16X20X1
EC018	21.50	21.50	32.25	9.63	9.25	8.13	8.00	5.88	16.75	8.00	17.50	14.00	16.00	3/4"F.P.T.	16X20X1
EC024	21.50	21.50	36.25	9.63	9.25	8.13	8.00	5.88	16.00	8.00	17.50	16.00	18.00	3/4"F.P.T.	18X20X1
EC030	21.50	21.50	39.25	9.63	9.25	8.13	8.00	5.88	16.00	8.00	17.50	18.00	20.00	3/4"F.P.T.	20X20X1
EC036	21.50	26.00	43.25	10.25	9.25	10.00	8.75	4.38	16.75	8.75	22.00	22.00	24.00	3/4"F.P.T.	24X24X1
EC041	21.50	21.50	39.25	10.25	9.25	7.25	7.75	4.38	16.75	7.75	17.50	18.00	20.00	3/4"F.P.T.	20X20X1
EC042	21.50	26.00	43.25	10.25	9.25	10.00	8.75	4.38	16.75	8.75	22.00	22.00	24.00	3/4"F.P.T.	24X24X1
EC048	24.00	32.50	45.25	11.75	10.75	9.25	9.00	6.00	18.25	9.00	28.00	22.00	24.00	1"F.P.T.	24X30X1
EC060	24.00	32.50	45.25	12.50	12.00	9.00	8.00	4.25	17.75	8.00	28.00	22.00	24.00	1"F.P.T.	24X30X1
EC070	26.00	33.20	58.25	12.00	12.50	10.63	9.00	3.00	18.50	9.00	28.00	30.00	32.00	1"F.P.T.	16X30X1(2)

UNIT FRONT



LEFT SIDE



NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT.
Specifications subject to change without notice.

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