



RESIDENTIAL | WATER2AIR | AP SERIES

Reinventing Energy Efficiency



LUXURIOUS



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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 residential heating and cooling products, FHP is one of the leading manufacturers of Geothermal and Water Source heat pumps, which assures that you are buying a unit that you can trust. We are part of Bosch Thermotechnology Ltd., a Robert Bosch Group unit dedicated to provide highly efficient heating and cooling solutions to the private and public sectors.

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 in order to provide 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 homes or retrofit residential buildings.

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 non-renewable reserves of fossil fuels. With our heat pumps, you not only will save money on energy bills but also help 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 homes 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.

Cost And Payback

Geothermal heat pumps not only provide dependable, natural heat, they also provide you 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 up to 70% in your energy bill depend on location and which GSHPs you use
- Will normally cost more than a conventional system, but will pay back that cost difference in a short period of time
- Local and Federal tax credits and rebates decrease your installation cost, which decreases the payback period
- Extra money to invest on quality family time
- Considered the technology of choice by the Department of Energy and the Environmental Protection Agency



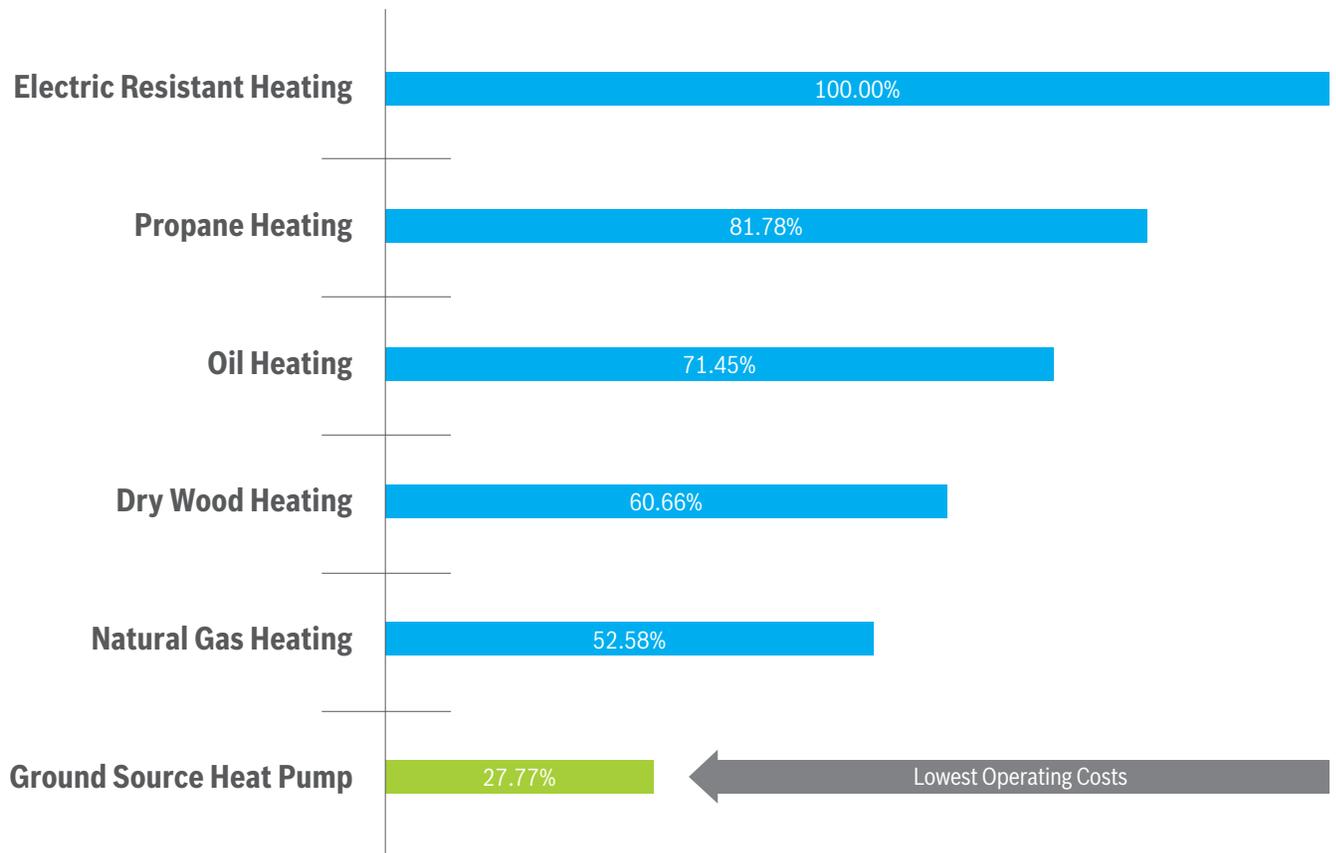
Heating Operating Cost Estimate

Estimated heating costs of operation for a building with 54,000 Btu/hr Design Heat Loss at -3 F.

Estimates based on the following energy costs:

Electricity - 9.5 cents per kilowatt hour; Natural Gas - \$1.20 per therm; Propane - \$1.75 per gallon; Oil - \$2.25 per gallon; Dry Wood - \$230 per full cord.

Source: Phoenix Energy Supply; FHP Manufacturing



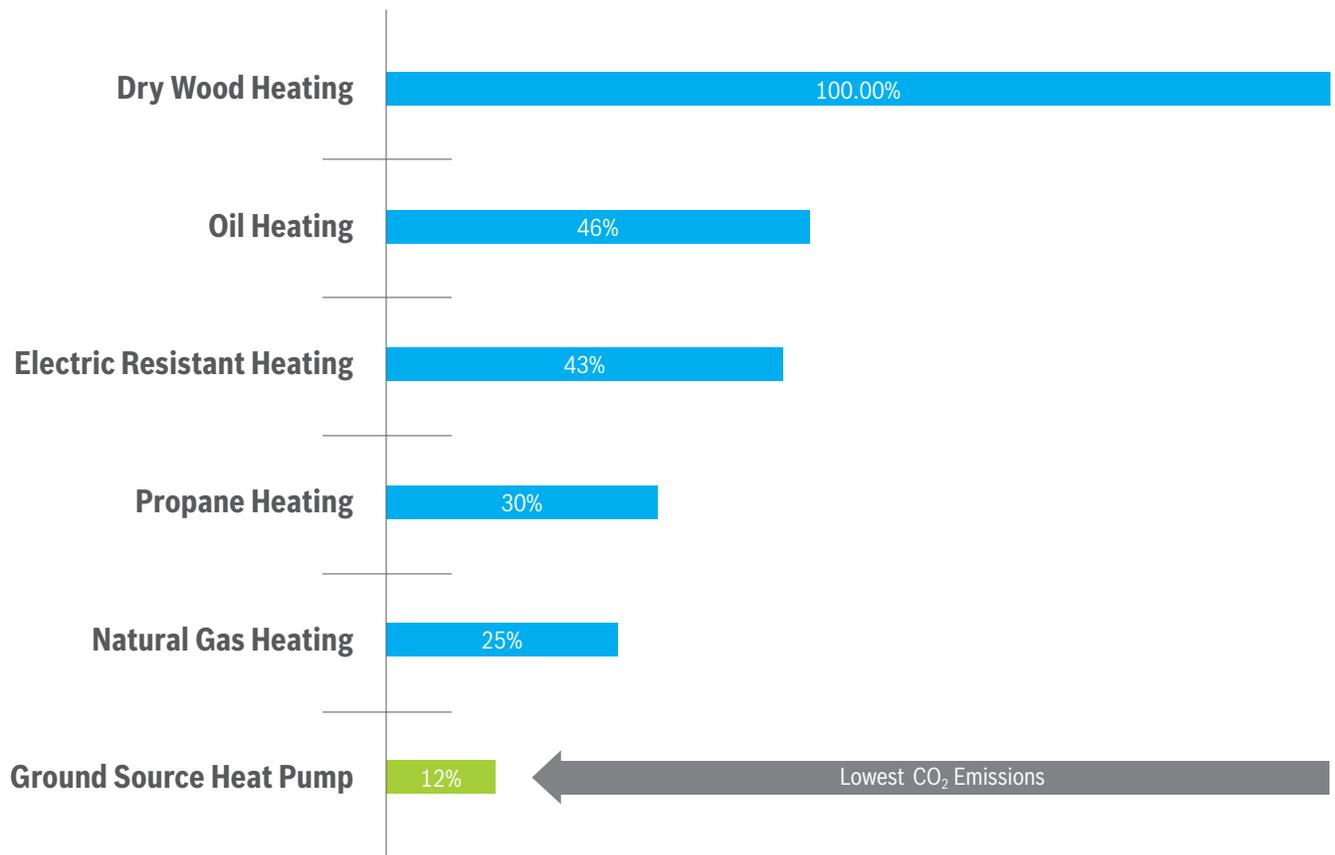
CO₂ Emissions Estimate

Estimated CO₂ emissions for a building with 54,000 Btu/hr Design Heat Loss at -3 F.

Estimates based on the following CO₂ emission rates:

Electricity - 0.76 CO₂/KWH; Natural Gas - 110 lb CO₂/MBTU; Propane - 126.7 lb CO₂/MBTU; Oil - 188.6 lb CO₂/MBTU; Dry Wood - 323.8 lb CO₂/MBTU.

Source: Phoenix Energy Supply; FHP Manufacturing



AP Series - Luxurious

The FHP's AP Series water to air heat pump is the result of almost 40 years research and development experience in the US Geothermal market. The AP Series is an incredibly energy efficient heat pump that can lower your bills and provide your home with the cost savings and with the luxury you expect from FHP.

Rated as the most efficient product on the market today, the AP Series unit features a state of the art two-stage unloading scroll compressor. When controlled by a multistage thermostat, this compressor matches the demand for heating and cooling. This can mean up to a staggering 70% savings in your energy bill, while improving humidity control and the overall comfort throughout your home.

Available in Vertical, Horizontal, Counter flow and Split system configurations from 2 through 6 tons there is a unit to meet your every need.

Quiet Operation

The unique floating compressor base pan and compressor blanket keep sound levels to an absolute minimum. The ECM (Electronically Commutated Motor) motors are whisper quiet and maintain rated air flow as the unit filters load up with dirt. The air flow can be adjusted to provide proper airflow to ensure your highest level of comfort.

Quality

The AP Series features coated evaporator coils, stainless steel drain pans and a black vinyl coated cabinet as standard equipment to ensure a long and trouble-free life. 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 is your assurance of the highest quality product. FHP's ISO 9001:2000 certified facilities provide consistent quality in every unit we build.





Key Features

Standard

-  Coated Air Coils
-  Four Sided Filter Rack
-  Stainless Steel Drain Pan
-  Filter Drier
-  Foil Faced Insulation
-  Floating Base
-  TXV Valve
-  R410-A Refrigerant

-  ECM Motor
-  Coaxial Heat Exchanger Copper
-  Geothermal
-  Compressor Blanket
-  Scroll Compressor 2 Stage
-  Unit Protection Module 1
-  Motor Control Interface
-  Comfort Alert Diagnostics Module

Optional

-  Electrical Heater
-  Coaxial Heat Exchanger Cupronickel
-  Desuperheater



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.



Floating Base

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 quiet operation.



ECM Motor

FHP's premium AP series offers a standard variable speed GE / Regal-Beloit 2.3 ECM blower motor. This programmable motor has 80% mechanical efficiency and will maintain constant airflow even if there are changes in the air distribution system.



Scroll 2 Stage Compressor

FHP's water source heat pumps employ the industry's most reliable and efficient compressors on the market. Two stage scroll compressors give units up to 60% greater efficiency when compared to a 10 SEER system and will reduce your energy bills. Two stage units improve temperature and humidity control by over 50% giving a higher level of comfort and lower operating costs. An additional advantage of two stage compressors is that they are up to 4 times quieter than a traditional compressor.





Comfort Alert Diagnostics Module

The Alert Diagnostics module is installed in the electrical box of our units. It is an available option on almost all FHP units. The tool monitors data from the thermostat and compressor and records any malfunction of the system. LED lights provide the alert code and lead the service technician to the cause of the malfunction. The Alert Diagnostics module can significantly reduce maintenance by improving system technician by up to 75% over systems without this feature.



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.



Warranty Information

FHP's limited warranty includes the following components:

- Compressor: 10 years
- Refrigerant Circuit: 10 years
- All other parts: 5 years

FHP's limited warranty is available for the following product types:

- Sizes from 2 tons to 6 tons with 208/230 single phase voltage

AP SERIES

Performance Data



Horizontal



Vertical



Counter-Flow

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
AP025												
Part Load	20,000	19.3	23,000	6.5	22,500	32.5	19,500	5.5	22,000	27.8	16,600	4.7
Full Load	27,000	16.2	32,500	5.3	31,000	25.1	26,500	4.8	28,500	19.2	20,400	4.1
AP035												
Part Load	25,700	19.8	29,500	6.3	29,500	34.0	24,300	5.3	28,200	28.5	22,000	4.8
Full Load	36,600	16.0	43,000	5.1	41,200	23.5	36,200	4.7	38,200	18.4	28,200	4.1
AP049												
Part Load	37,000	20.0	38,500	5.9	41,200	32.5	31,500	5.0	40,200	28.0	28,000	4.6
Full Load	50,000	16.9	53,000	5.2	56,000	24.0	45,500	4.8	52,000	19.0	38,000	4.1
AP061												
Part Load	47,000	19.0	56,500	6.2	53,000	33.0	45,000	5.2	51,000	27.7	39,000	4.6
Full Load	64,000	16.2	78,500	5.4	71,000	23.8	65,000	5.0	67,000	18.5	49,000	4.1
AP071												
Part Load	53,000	18.2	65,800	5.2	59,000	28.8	53,700	4.6	57,500	25.2	47,000	4.1
Full Load	72,000	16.0	89,000	5.2	78,000	21.8	73,000	4.7	74,000	18.0	58,000	4.1

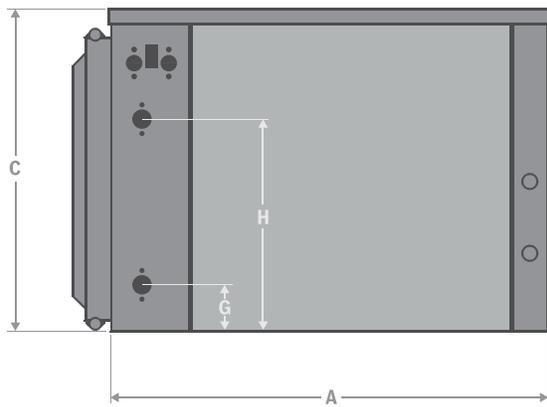
Energy Star Rated Products.



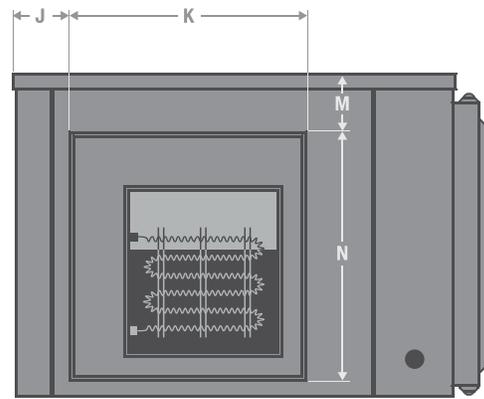
AP 025 - 071 SERIES | HORIZONTAL DIMENSIONS

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		
AP025	26.00	54.50	22.00	2.00	28.00	22.50	5.25	16.25	4.50	13.75	3.00	15.75	20.00	18.00	3/4" F.P.T.	16x20x2 (2)
AP035	30.00	68.00	22.00	2.50	32.50	32.00	5.25	16.25	5.81	15.75	3.00	15.75	20.00	18.50	3/4" F.P.T.	18x20x2 (2)
AP049	30.00	68.00	22.00	2.50	32.50	32.00	5.25	19.25	7.66	17.75	2.00	17.75	20.00	18.50	1" F.P.T.	18x20x2 (2)
AP061	30.00	89.00	22.00	2.50	54.00	31.50	3.25	17.25	3.50	17.75	3.75	17.75	20.00	18.25	1" F.P.T.	20x28x2 (2)
AP071	30.00	89.00	22.00	2.50	54.00	31.50	3.25	19.50	3.50	17.75	3.75	17.75	20.00	18.25	1" F.P.T.	20x28x2 (2)

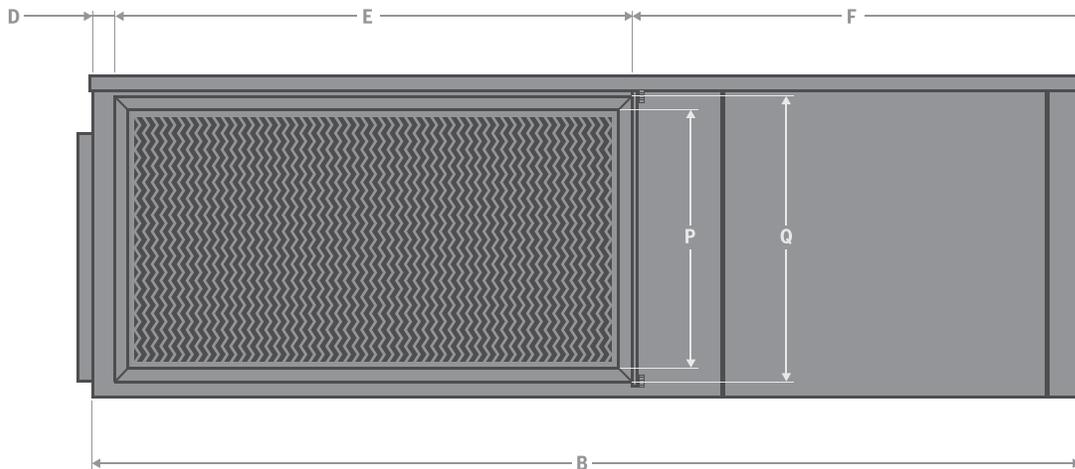
UNIT FRONT



UNIT BACK



LEFT HAND RETURN



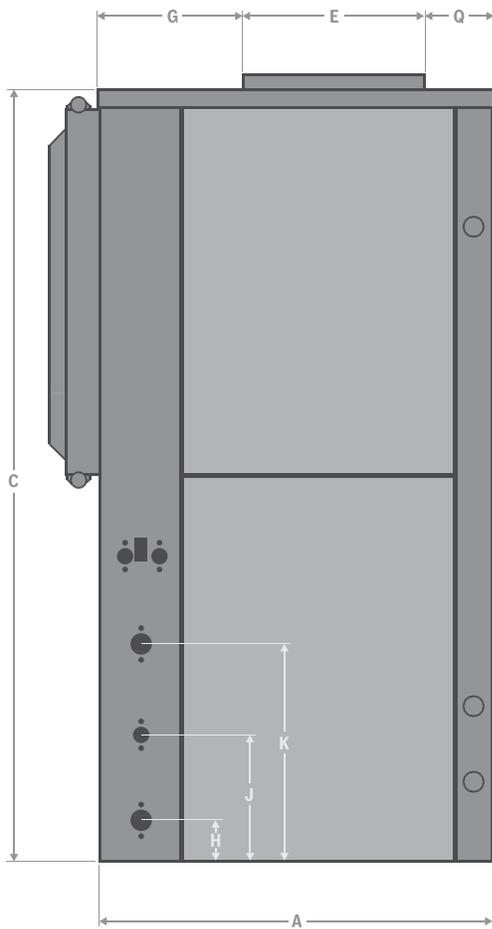
NOTES: All dimensions within +/- 0.125".

All condensate drain connections are 3/4" FPT. All Heat Recovery Kit connections are 1/2" FPT.
 Internal electric heat available on 208-230 units only. Internal Loop Pump available on 208-230 volt units only. Internal Heat Recovery Kit available on 208-230 volt units only. Units can be field converted between end blow and straight through supply air configurations. Specifications subject to change without notice.

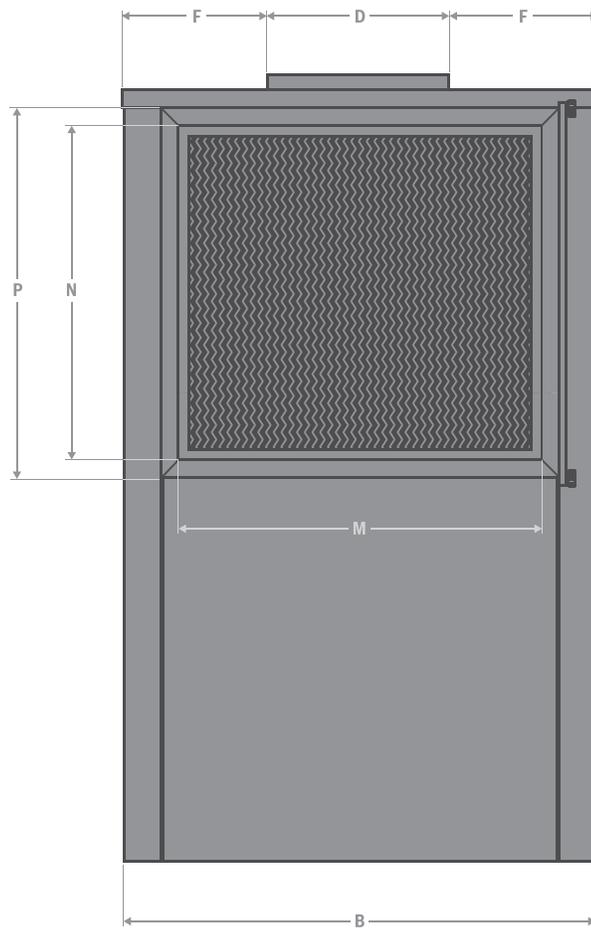
AP 025 - 071 SERIES | VERTICAL DIMENSIONS

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			
AP025	21.50	26.00	47.25	13.75	15.75	6.13	5.25	5.25	8.00	16.25	21.00	24.00	24.00	4.00	3/4" F.P.T.	24X24X2
AP035	24.00	33.25	47.25	15.75	15.75	8.25	6.37	5.25	8.00	16.25	27.00	24.00	24.00	4.00	3/4" F.P.T.	24X30X2
AP049	26.00	33.25	51.25	17.75	17.75	8.50	7.25	3.25	10.25	17.25	32.00	27.00	30.00	4.00	1" F.P.T.	16X30X2 (2)
AP061	26.00	33.25	66.25	17.75	17.75	8.38	6.38	3.25	10.25	17.25	27.00	38.75	40.00	4.00	1" F.P.T.	30X20X2 (2)
AP071	26.00	33.25	66.25	17.75	17.75	8.38	6.38	3.25	10.25	19.50	27.00	38.75	40.00	4.00	1" F.P.T.	30X20X2 (2)

UNIT FRONT



LEFT SIDE



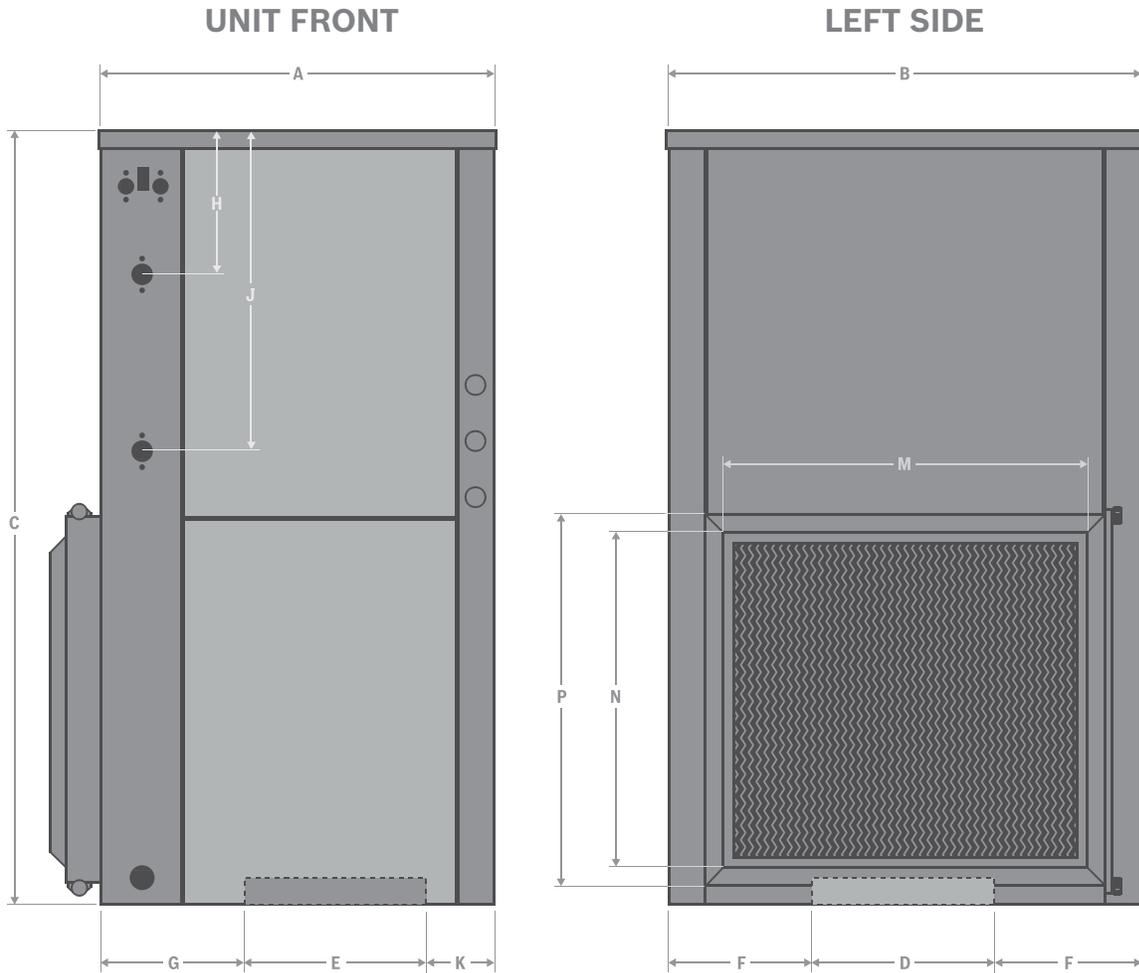
NOTES: All dimensions within +/- 0.125".

All condensate drain connections are 3/4" FPT. All Heat Recovery Kit connections are 1/2" FPT.

Internal electric heat available on 208-230/1/60 top discharge units only. Internal Loop Pump available on 208-230 volt units only. Internal Heat Recovery Kit available on 208-230 volt units only. Specifications subject to change without notice.

AP 025 - 071 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		
AP025	21.50	26.00	47.25	9.25	10.25	8.38	5.00	7.50	18.50	10.25	21.00	24.00	24.00	3/4" F.P.T.	24X24X2
AP035	24.00	33.25	47.25	9.25	10.25	11.13	6.88	7.50	18.50	12.00	27.00	24.00	24.00	3/4" F.P.T.	24X30X2
AP049	26.00	33.25	51.25	10.50	11.50	10.63	5.00	7.00	20.25	10.50	32.00	27.00	30.00	1" F.P.T.	16X30X2 (2)
AP061	26.00	33.25	66.25	11.80	12.50	9.75	4.50	7.00	21.00	11.00	27.00	38.75	40.00	1" F.P.T.	30X20X2 (2)
AP071	26.00	33.25	66.25	12.25	13.50	9.75	4.50	7.00	23.25	11.00	27.00	38.75	40.00	1" F.P.T.	30X20X2 (2)



NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT. All Heat Recovery Kit connections are 1/2" FPT. Internal electric heat available on 208-230/1/60 bottom discharge units only. Internal Loop Pump available on 208-230 volt units only. Internal Heat Recovery Kit available on 208-230 volt units only. Specifications subject to change without notice.

How To Start Using Geothermal Energy In Your Home Or Business

You can tap into renewable energy for your home or business with our innovative geothermal heat pump systems by speaking directly with your local FHP-Bosch Group representative.

He can help you determine which system is the best fit for both your home or business and your financial needs. With new incentives available from federal, state and local governments, there has never been a better time to start saving money and doing your part to contribute to a greener, cleaner and better world.



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