



BOSCH Climate 5000

Air Cooled Scroll Chiller



BOSCH

Invented for life

Introduction to Bosch Thermotechnology

Bosch Thermotechnik GmbH is a leading supplier of resource-efficient heating products and hot water solutions in Europe. In fiscal 2011, the company generated sales of 3.1 billion Euros (68% outside Germany) and employed approx. 13,900 people. Bosch Thermotechnology has strong international and regional brands and manufactures a diversified product range in 21 plants in 11 European, North American and Asian countries.

In 2011, Bosch Thermotechnology invested 127 million Euros in research and development, roughly 10.4% more than in the previous year. Intelligent networks and local systems for heating, ventilation, air-conditioning and electricity generation are fundamental technologies for the future building standard, which will generate more energy than is used.

Bosch Thermotechnology (Shandong) Co. Ltd is a division of Bosch Thermotechnology with focus on providing energy ef-

ficient cooling, heating and comfort hot water equipment & solutions for commercial and industrial segments.

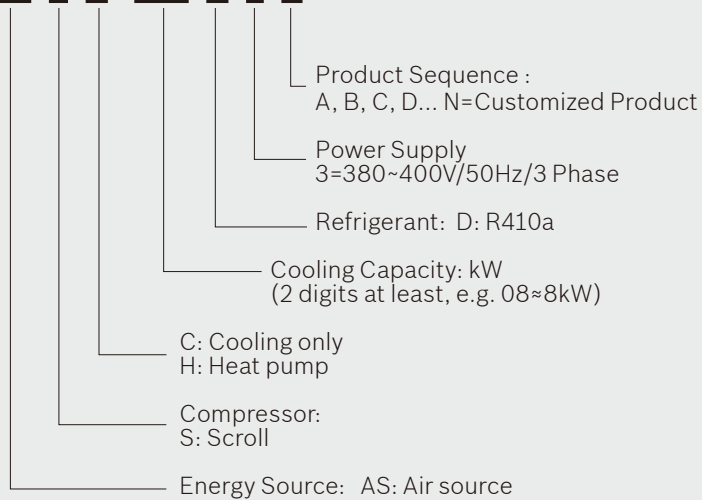
The division employs approx. 260 people with more than 40 engineers, and has a plant of 80000sqm with state-of-art manufacturing facility and high-demanding quality management system.

A comprehensive range of renewable heat pumps, chillers, fan coil units and air handling units meets almost all kinds of requirement from buildings like office, hospital, hotel, shopping mall or industrial plants.

Bosch Climate 5000 Air Cooled Scroll Chiller is a product engineered with state-of-art technology which brings you great energy saving, and flexibility of project extension with highest stability.

Nomenclature

BOSCH Climate 5000 AS S H - 035 D 3 A



Features

The Best Industrial Design

Bosch Group's industrial design team has designed the product on the basis of engineering, aesthetics and economics. The product won silver prize in '2013 Focus Design' of Germany.

Environmentally Friendly Refrigerant R410A

The products use environmentally friendly refrigerant R410A, having an ozone depletion potential (ODP) of 0, and a global warming potential (GWP) of less than 0.2, minimize the impact of environment.

High Efficiency and Energy Saving

- ▶ The product obtained the national energy-saving certification, with a less overall operation cost and saves more than 15% of energy than conventional product.
- ▶ It uses the unique radial and axial flexible volute design to enhance the efficiency and reliability of the compressor
- ▶ It uses high efficient water-side plate heat exchanger, thus having high heat transfer efficiency.

Free Combination

- ▶ Modular design, up to 16 units can be combined together as one system, maximum capacity can reach 1072 kW.
- ▶ Modular design also facilitates transportation and installation. System expansion can be done easily according to project phases.

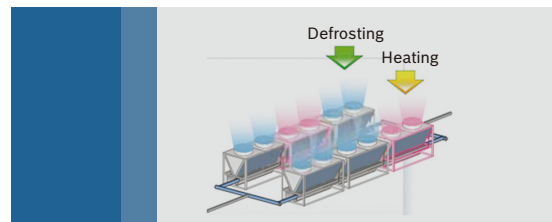
Non-Stop Defrosting

In case of module combination, the master controller will balance the defrosting time for each module, avoiding the combined modules from entering the defrosting operation at the same time, thus modules which don't need defrosting will continue running to produce heat and ensuring that the heating is not interrupted.

Wide Operating Range

The highest ambient temperature of cooling : +46°C

The lowest ambient temperature of heating: -15°C



Major functions

Balanced Operation of Compressors

The unit monitors the operating conditions of each compressor in real time and adjusts the operating time of each compressor in an intelligent and balanced way to prolong the lifetime of the product.

Intelligent Defrosting

High-precision temperature sensors can precisely sense the changes of the system pressure and temperature in the frosting condition and intelligently choose the optimal defrosting time to avoid incomplete defrosting or frequent defrosting. Defrost intelligently through the switch of the four-way valve, making defrost safer, complete.

Compulsory Defrosting Function

When the unit operate in heating mode in bad conditions, it is also designed to have the compulsory defrosting

function in addition to the intelligent defrosting function. When a high environmental humidity leads to a thick frost layer or a low environmental temperature results in an ice layer, the machine unit can implement the compulsory defrosting function to completely remove the frost or ice layer.

Self-Diagnostic Function

The unit can automatically monitor failures and display error codes on the controller, make the service and maintenance much easier.

Auto-Reset Function

The unit has automatic reset function for some non-destruction failures. When the system parameters restore to normal, the failures will be automatically removed.

BMS Compatibility

The unit can be integrated into the Building Management System via the equipped RS485 port, then it can be monitored and controlled via the building central control system.

Protection of Compressor Refrigerant Liquid Strike

The compressor is equipped with a stainless steel crankshaft gear heater. In case of standby in winter, the unit can ensure that the refrigeration oil in the compressor is in the good lubrication condition and ensure the gasified separation of liquid refrigerant from the refrigeration oil to prevent the liquid refrigerant from being compressed and

thus damaging the compressor when the machine unit is started.

Auto-Restart Function

When the auto-restart function is activated, when the power is restored, the unit can automatically enter the same running mode before the power off.

Multiple Timing functions

The unit has weekly timing, cycle timing and single timing functions to meet the different timing needs of users.

Technical highlights

High Efficient Scroll Compressor

The unit uses the high-efficiency R410A scroll compressor, which features a compact structure, low noise and low vibration and is safe and reliable.

High Efficient Water-Side Plate Heat Exchanger

The plate heat exchanger has a low refrigerant leak rate, a compact structure and less weight and is easy for production and installation.

V-Type Inner-grooved Air-Side Heat Exchanger

- ▶ The heat exchanger made of inner grooved copper tubes and louvered hydrophilic aluminum fins, has a larger heat transfer area and higher heat transfer efficiency.
- ▶ The V-type flat design and optimized inclination of the heat exchanger improve the flow of the condensate water, reduce frost blockage and ice blockage risks but enhance the heat transfer capacity of the heat exchanger.

IP55 Fan Motor

The unit uses the totally enclosed air-cooled squirrel-cage three-phase motor. It has built-in overheat protection and an aluminum chassis, and its dustproof and waterproof level reaches IP55.

High Precision Electronic Expansion Valve Control

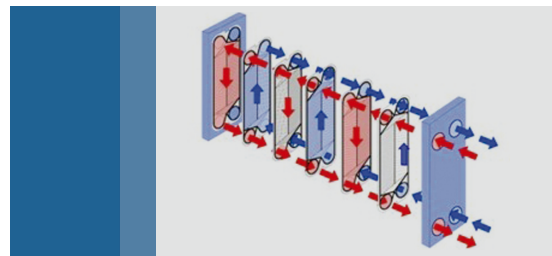
The system uses the high precision electronic expansion valve control and has a wider throttling range. In an ambient temperature ranging from -15C to 46C, it can throttle normally to ensure that the compressor is running in the best condition, thus prolonging the life of the compressor.

Multiple Protections

- ▶ Power protection (Phase protection, over-voltage and

low-voltage protection)

- ▶ High and low pressure protection
- ▶ Water flow protection
- ▶ Anti-freeze / water temperature protection
- ▶ Sensor fault detection and protection
- ▶ Compressor & motor protection
- ▶ Compressor discharge temperature protection
- ▶ Compressor suction pressure protection
- ▶ Fan motor overload protection



Specifications

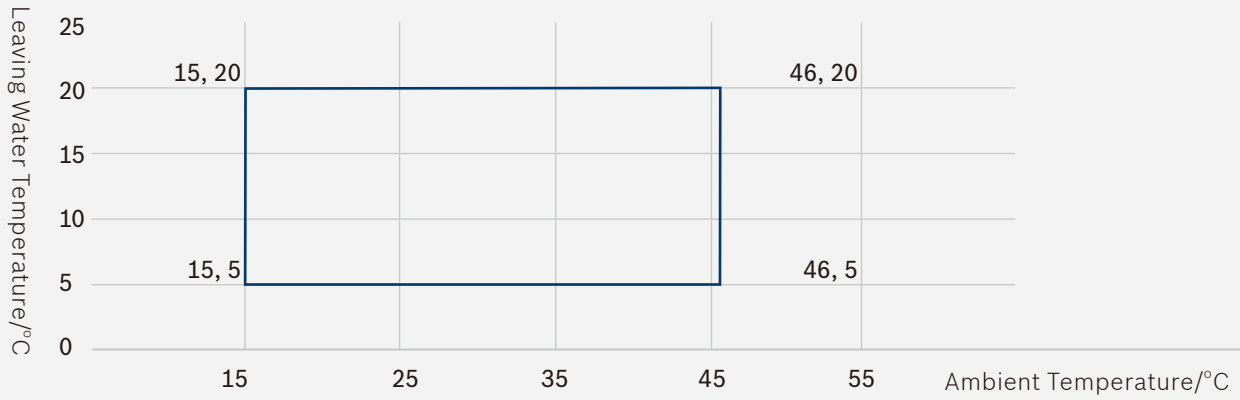
Model		035D3A	070D3A	135D3A
Cooling				
Cooling Capacity	kW	32.5	66.5	133.0
Power Input	kW	10.2	19.9	39.8
EER		3.19	3.34	3.34
Heating				
Heating Capacity	kW	33.0	67.5	135.0
Power Input	kW	10.3	20.2	40.4
COP		3.20	3.34	3.34
Min. Capacity Output	%	100%	50%	25%
Compressor				
Type		Scroll		
Qty		1	2	4
Air-side HE				
Type		Inner-Grooved Copper Tube & Hydrophilic Louvered Fin		
Fan Qty		1	2	4
Fan Air Flow	m ³ /h	13000	13000*2	13000*4
Fan Power Input	kW	0.75	0.75*2	0.75*4
Water-side HE				
Type		Plate Heat Exchanger		
Water Flow	m ³ /h	5.6	11.4	22.9
Water Pressure Drop	kPa	28	36	36
Pipe Connection Type		External Thread	Flange	Flange
Pipe Connection Dimension		DN40	DN50	DN80
Power Supply		380V/50Hz/3Ph		
Max. Running Current	A	24.0	45.8	92.5
Starting Current	A	128.0	152.1	200.3
Refrigerant		R410A		
Refrigerant Charge	kg	9.85	9.5×2	9.5×4
Circuits		1	2	4
Dimension				
Width	mm	1293	2150	2150
Depth	mm	1050	1050	1909
Height	mm	2030	2030	2030
Packing Dimension				
Width	mm	1293	2150	2150
Depth	mm	1100	1100	1909
Height	mm	2110	2110	2030
Weight				
Net Weight	kg	438	688	1210
Packing Weight	kg	445	705	1230
Operation Weight	kg	473	743	1306

Note:

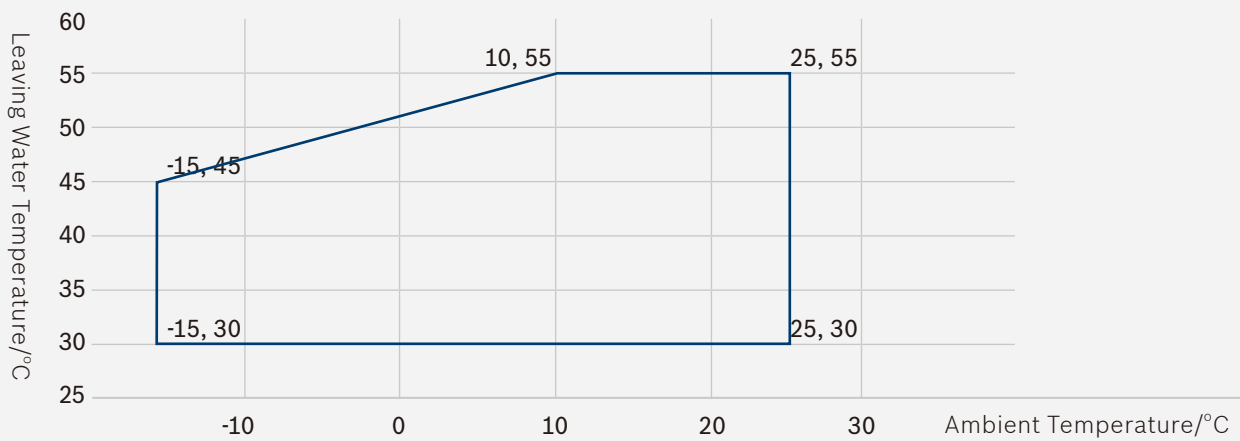
1. Nominal cooling condition: entering/leaving water temperature 7/12°C; ambient temperature 35°C.
2. Nominal heating condition: entering/leaving water temperature 45/40°C; ambient temperature DB/WB 7°C/6°C.

Operating Limits

Cooling Mode

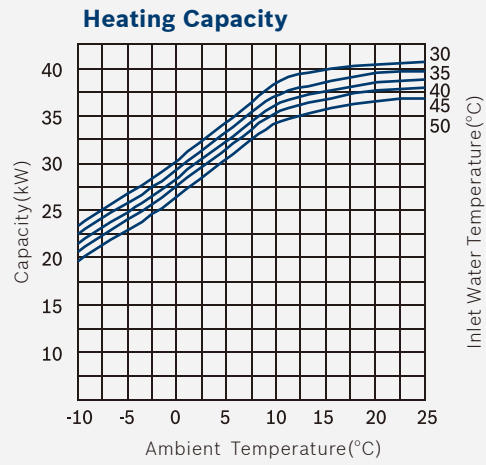
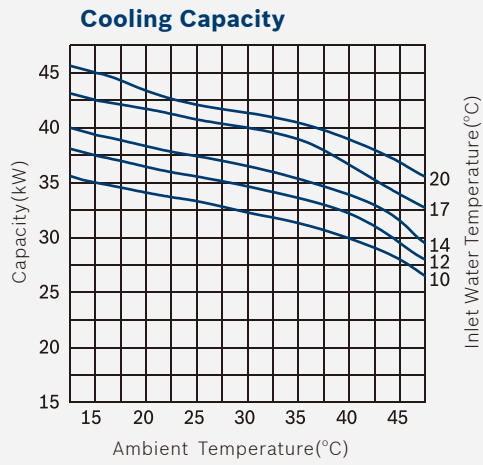


Heating Mode

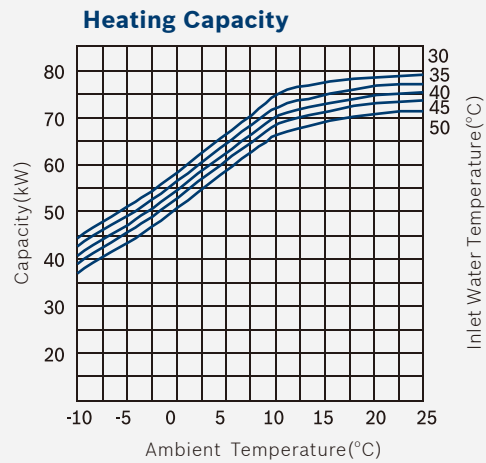
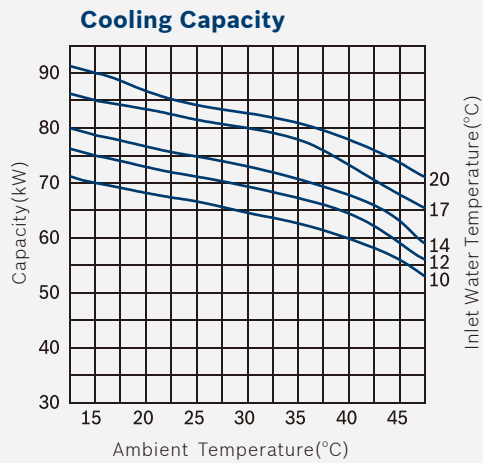


Performance Curves

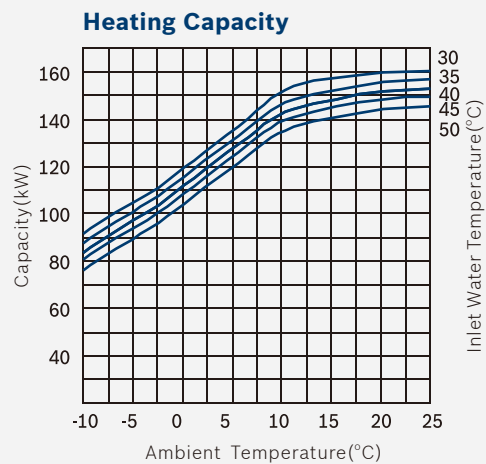
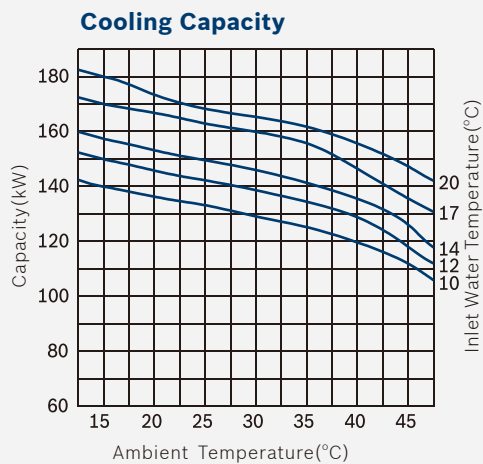
Model: 035D3A



Model: 070D3A

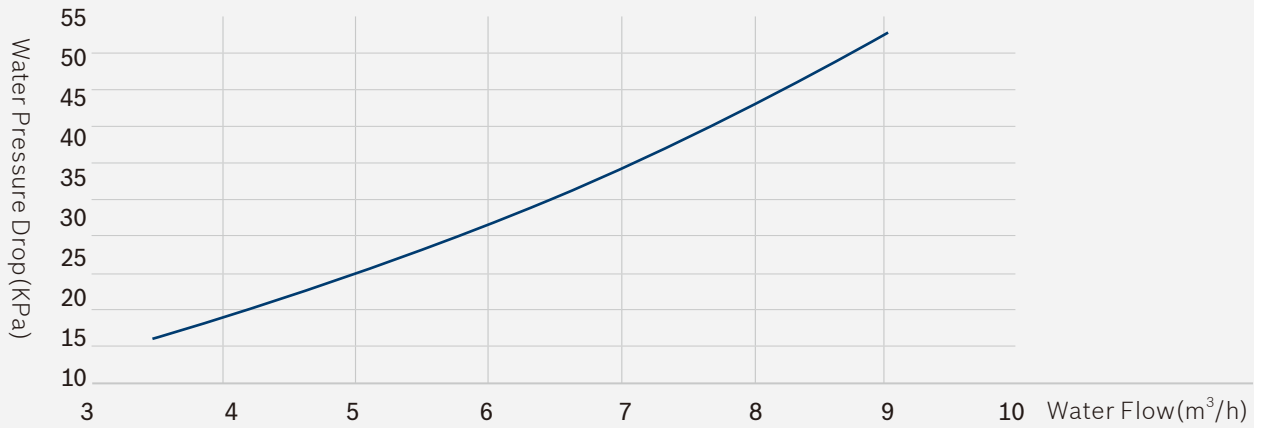


Model: 135D3A

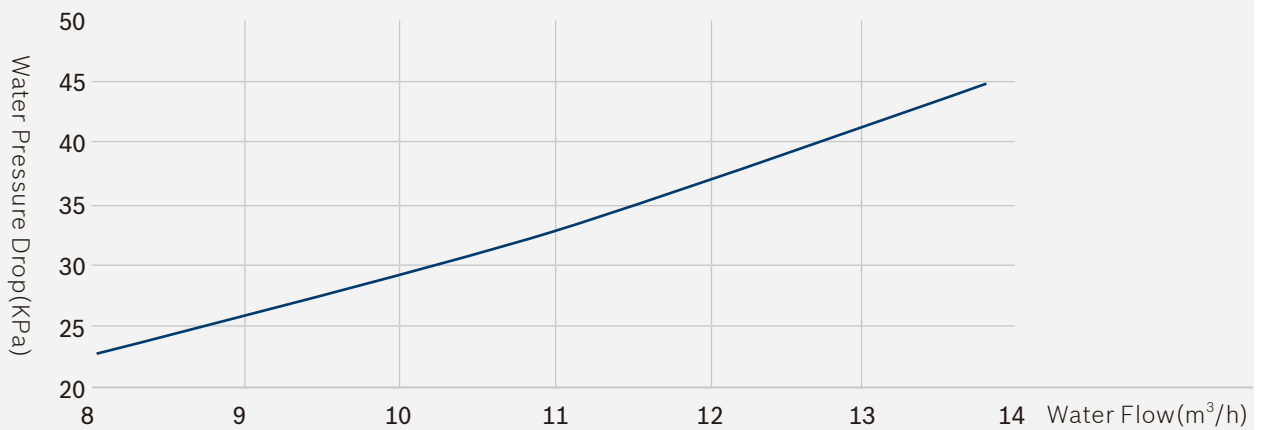


Water Pressure Drop

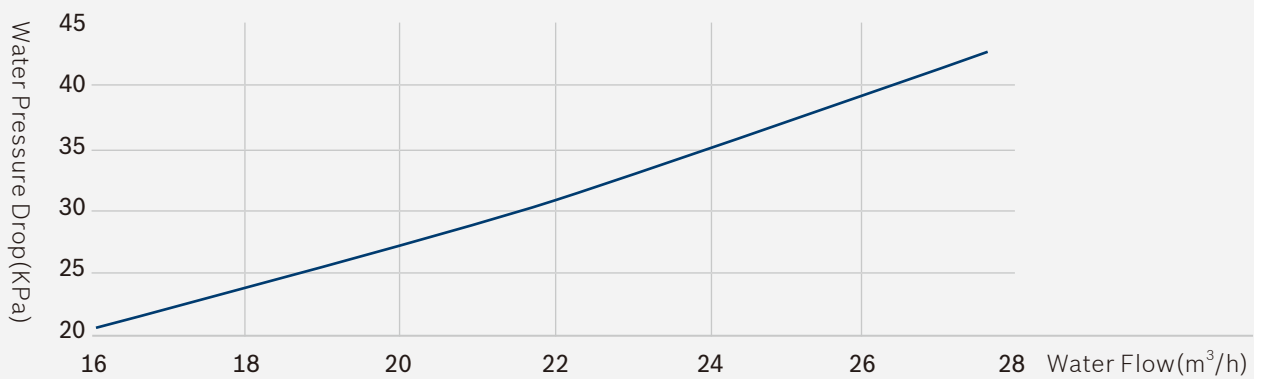
Model: 035D3A(Water Temperature 9.5°C)



Model: 070D3A(Water Temperature 9.5°C)

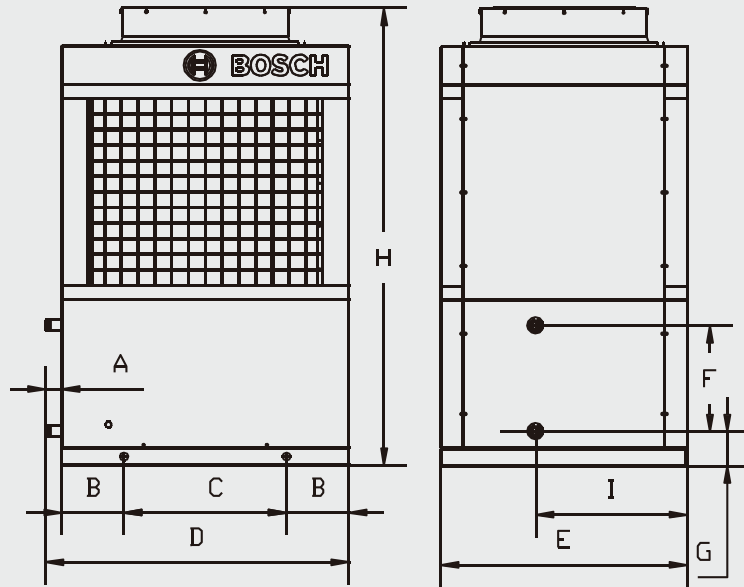


Model: 135D3A(Water Temperature 9.5°C)

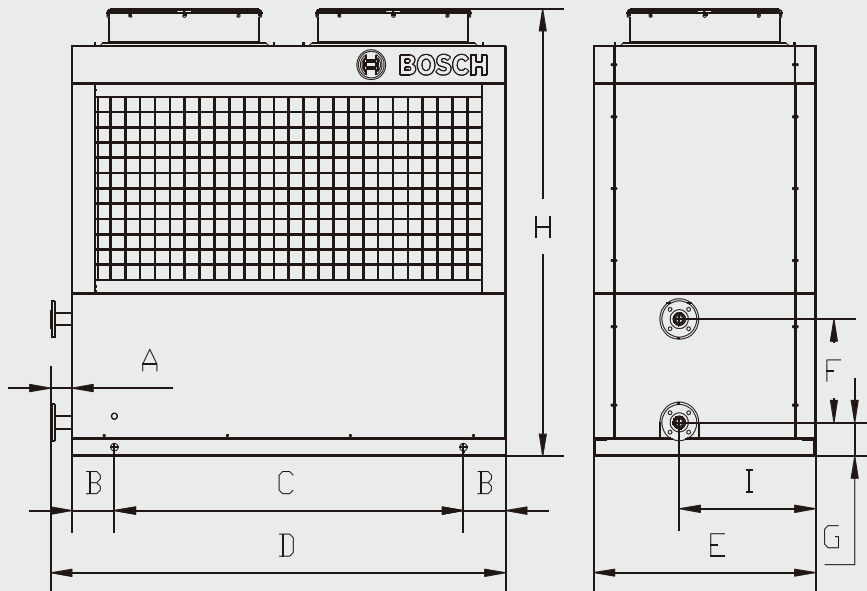


Dimensions

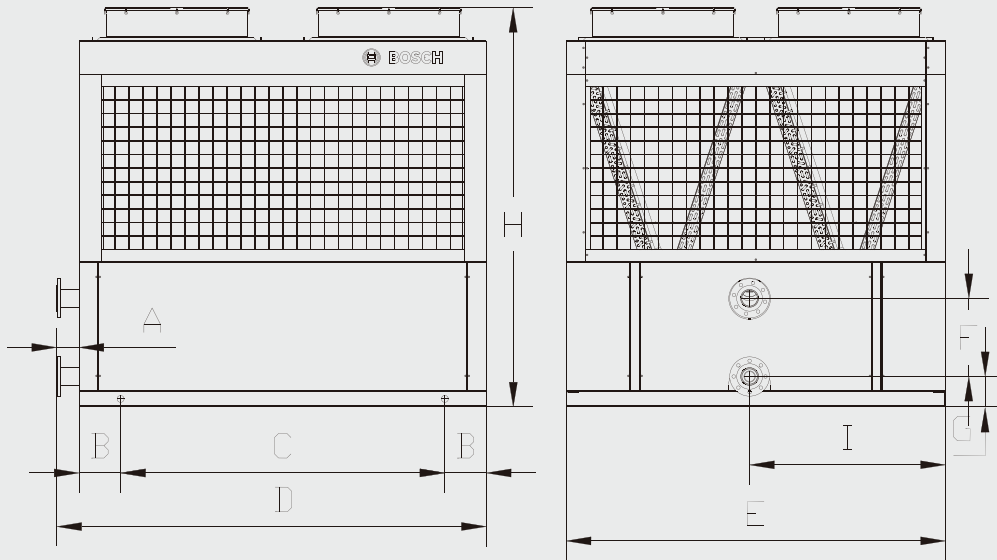
Model: 035D3A



Model: 070D3A



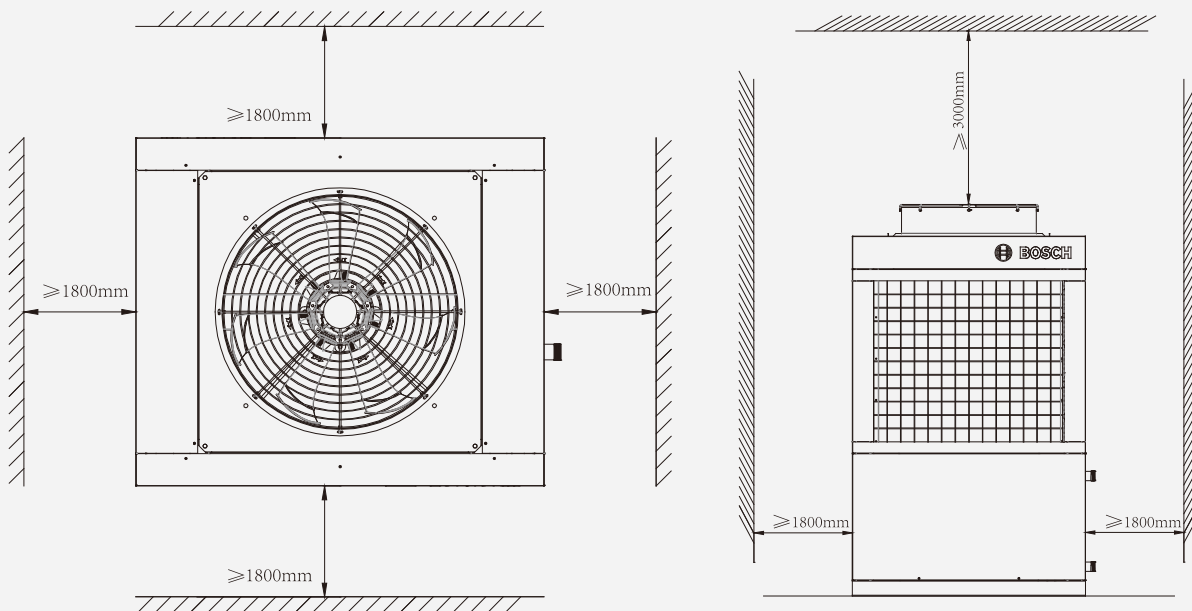
Model: 135D3A

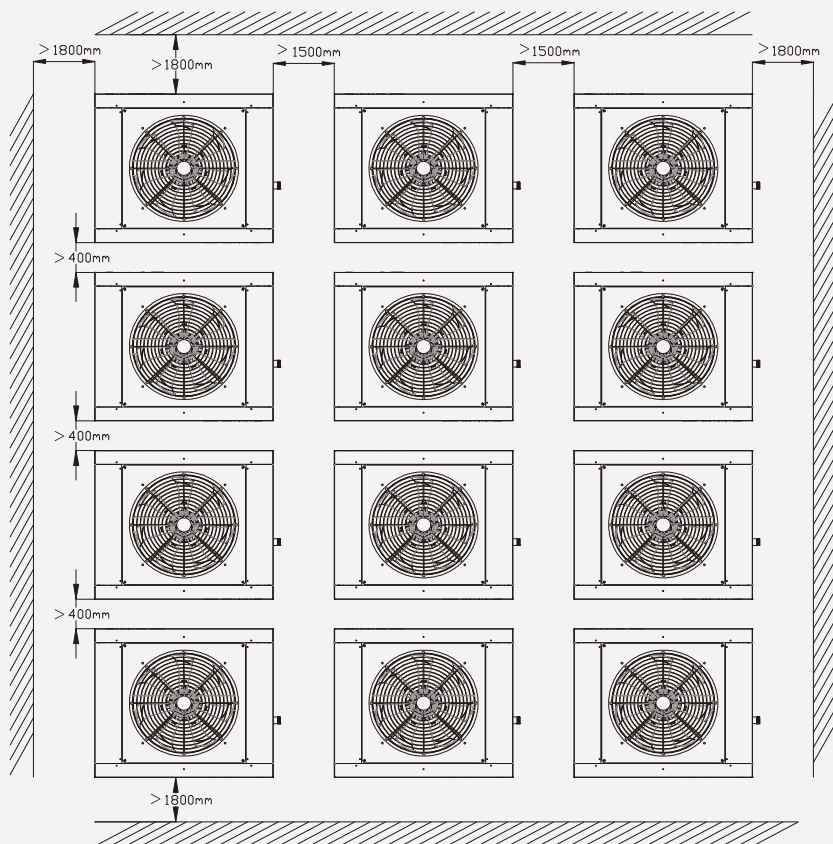


Model	A	B	C	D	E	F	G	H	I	Water Pipe Diameter	Connection
035D3A	68	256	713	1293	1050	470	154	2030	645	DN40	External Thread
070D3A	100	200	1650	2150	1050	470	153	2030	645	DN50	Flange
135D3A	100	130	1790	2150	1909	398	154	2030	986	DN80	Flange

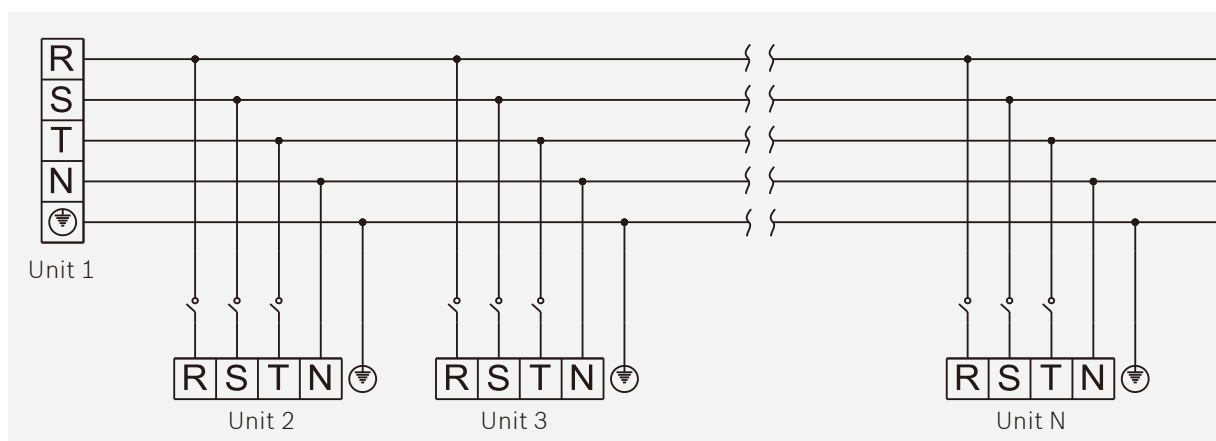
Unit(mm)

Installation





Wiring Diagram



Electric Data

Model	Power Supply	Rated Current(A)	Max Running Current(A)	Starting Current(A)	Power Line (mm ²)	Neutral Line (mm ²)	Ground Line (mm ²)
035D3A	380V/50Hz/3Ph	18.4	24	128	10×3	6	10
070D3A	380V/50Hz/3Ph	35.9	45.8	152.1	25×3	6	16
135D3A	380V/50Hz/3Ph	71.8	92.5	200.3	70×3	6	35

Bosch reserves the right to change any specification, design and information without any prior notice for further improvement on quality and performance. 201405A

