

BOSCH Climate 5000 Fan Coil Unit



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.

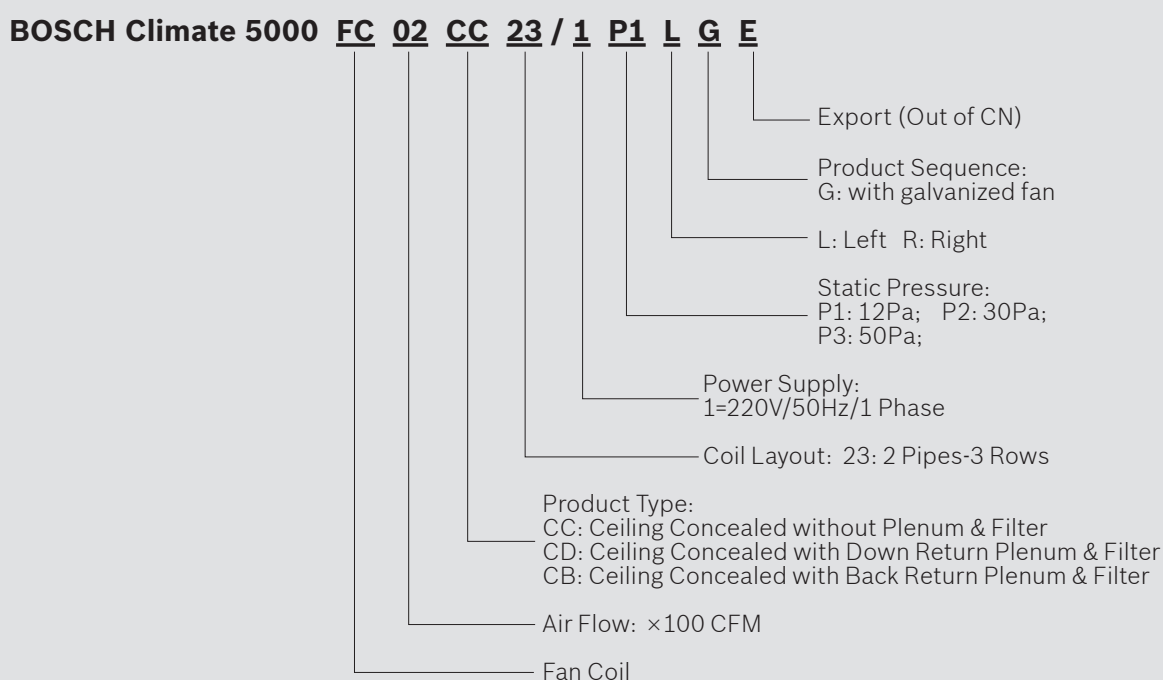
Bosch Thermotechnology (Shandong) Co. Ltd is a division of Bosch Thermotechnology with focus on providing energy efficient cooling, heating and comfort hot water equipment & solutions for commercial and industrial segments.

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 fan coil unit with galvanized fan is a product engineered with most advanced technology which brings you great energy savings, and an ultimate quiet and comfortable working/living environment.

Nomenclature



Explosive View

1) High Efficiency AC motor

High quality AC motor works with reliable bearings. Fan and motor are preciously adjusted for dynamic balance before leaving the factory.

2) Galvanized Fan & Volute

High efficiency large centrifugal fan ensures strong and constant air flow. Axes and bearings have been special treated for longer service life.

3) Heat Exchanger Complex

High quality hydrophilic fins and seamless copper tubes are made into state-of-art heat exchangers, ensuring a smooth and even energy transfer.

4) Drain Pan with Insulation

The enlarged drain pan has a two degree slope to ensure a smooth drainage and is covered with 5mm PE insulation to avoid external condensation.

5) Return Plenum and Washable Nylon Filter

Changeable air return plenum can be done easily at job-site with screw driver only.(backside to downside air return or downside to backside air return).

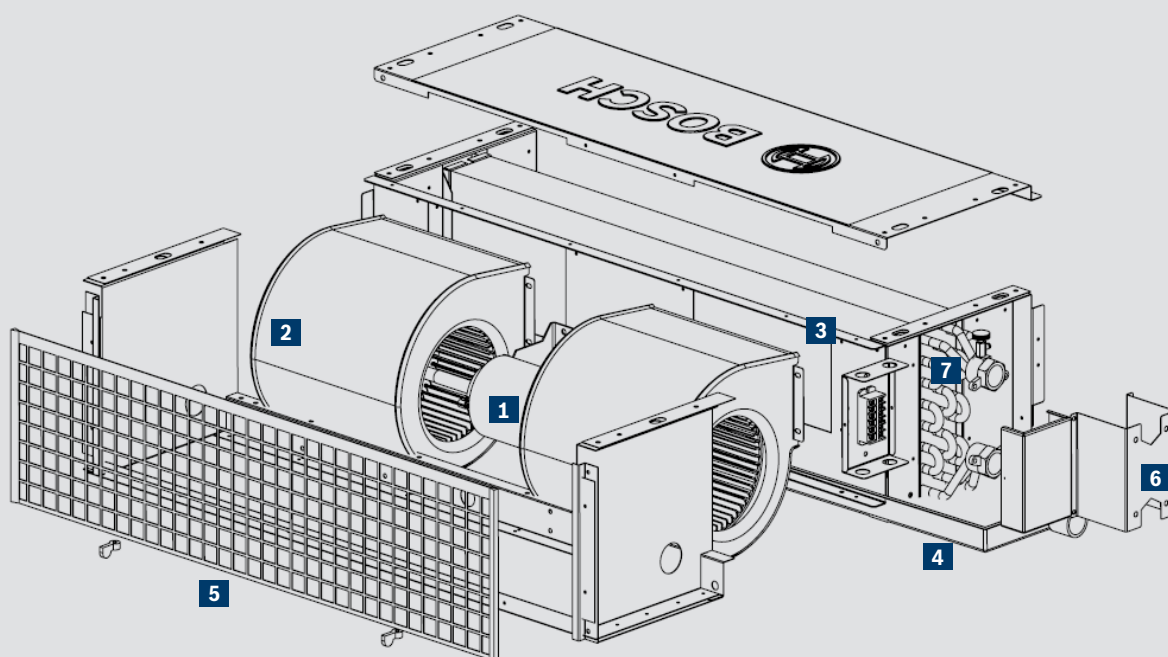
Product is equipped with washable nylon filter if with air return plenum, Aluminum filter is optional.

6) Removable End Panel

End panels on both sides can be removed; coil connection orientation can be easily changed on jobsite.

7) Leakage-tight Header

This safe and secure header structure is perfectly designed, aiming at totally leakage-free and durable operating performance.



Features

1

High energy efficiency

Bosch Climate 5000 Fan Coil Unit is the new energy saving products engineered with most-advanced technology by Bosch Thermotechnology. High efficient heat coil is manufactured by mechanically expanded copper pipe with open-window hydrophilic aluminium fins with state-of-art techniques. The strengthened air supply of the large diameter impeller fan makes the maximum heat transfer efficiency of the unit.

2

Wide range choice

Bosch Climate 5000 Fan Coil Unit has wide offering with airflow 170~2380m³/h, and cooling capacity 1.45~13.18kW, and product is available with configuration of with back return plenum, or with down return plenum, or without air return plenum. In order to meet all the possible applications, 12Pa, 30Pa, 50Pa esp. is also available. Extended drain pan, stainless steel drain pan is optional.

3

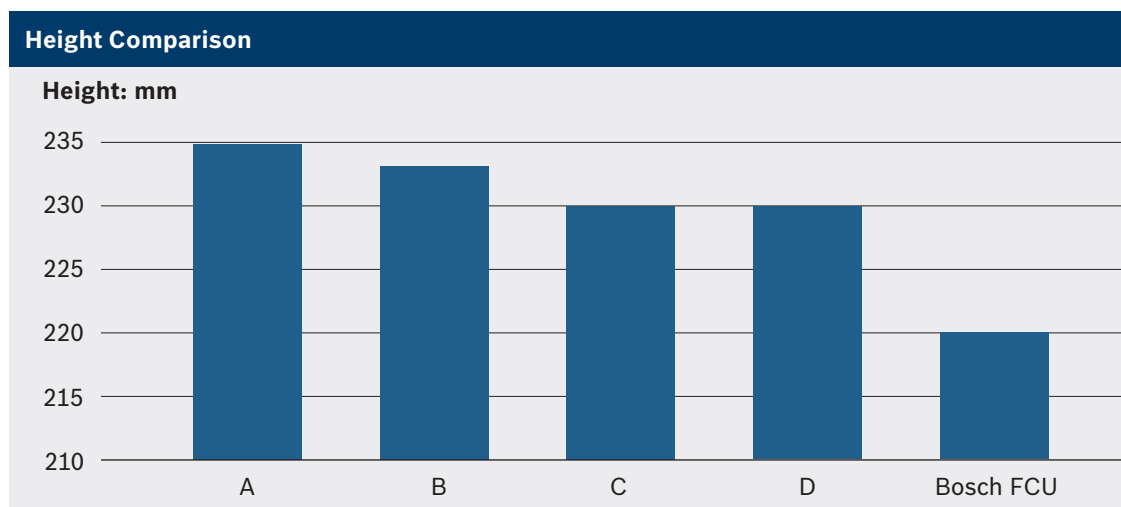
Low Noise

The unit use the latest wide wheel and low speed forward-curved blades, dynamically balanced and adjusted with the motor, plus the high performance low noise bearing. The Unit casing is equipped with good noise eliminate insulation materials. Thus lead to a lower noise than the conventional products.

4

Most Compact Design

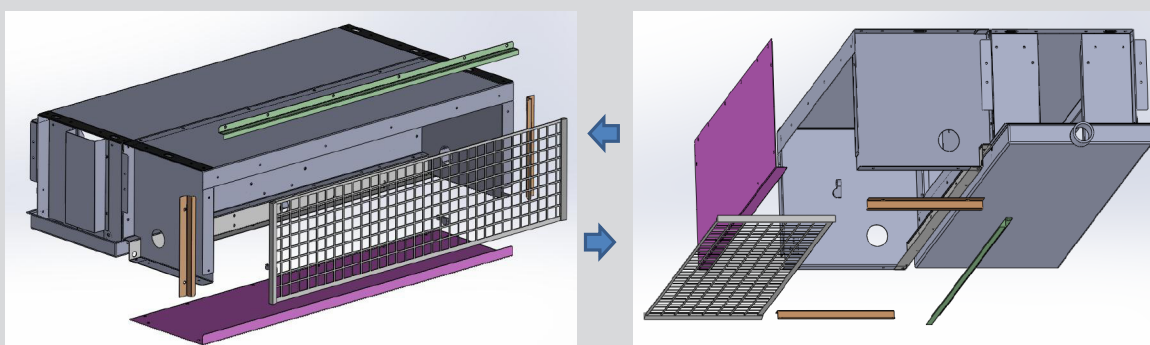
The unit height is only 220mm the most compact thus saves lots of installation space and can meet all kinds of diverse applications. Which also makes the installation easier.



5

Flexible design

The unit has been carefully designed with a changeable air return plenum, thus it can be easily changed as simply as with screw driver only. From backside to downside air return or from downside to backside air return



Specifications

Fan Coil Unit (Two-pipe Three Rows)

| Model | | FC02 | FC03 | FC04 | FC05 | FC06 | FC08 | FC10 | FC12 | FC14 |
|-------------------------------|-----------------------|--|------|------|------|------|-------|-------|-------|-------|
| Air Flow m ³ /h | H | 340 | 510 | 680 | 850 | 1020 | 1360 | 1700 | 2040 | 2380 |
| | M | 260 | 380 | 510 | 640 | 770 | 1020 | 1280 | 1530 | 1790 |
| | L | 170 | 260 | 340 | 430 | 510 | 680 | 850 | 1020 | 1190 |
| Total Cooling Capacity W | H | 2370 | 3260 | 4100 | 4840 | 5630 | 7740 | 9400 | 11200 | 13180 |
| | M | 1870 | 2450 | 2930 | 3740 | 4480 | 5920 | 7400 | 8940 | 10420 |
| | L | 1450 | 1760 | 2120 | 2730 | 3240 | 4290 | 5370 | 6510 | 7580 |
| Sensible Cooling Capacity W | H | 1570 | 2050 | 2530 | 3020 | 3490 | 4880 | 5970 | 7200 | 8250 |
| | M | 1250 | 1530 | 1810 | 2320 | 2750 | 3730 | 4700 | 5720 | 6480 |
| | L | 950 | 1110 | 1300 | 1680 | 2009 | 2690 | 3400 | 4180 | 4740 |
| Heating Capacity W | H | 3980 | 5260 | 6850 | 7410 | 9470 | 12680 | 14410 | 17160 | 20190 |
| | M | 3210 | 3950 | 4900 | 5740 | 7550 | 9690 | 11340 | 13700 | 15970 |
| | L | 2600 | 2840 | 3550 | 4190 | 5450 | 7030 | 8230 | 9970 | 11610 |
| Power Input W | 12Pa H | 36 | 52 | 58 | 82 | 94 | 143 | 166 | 186 | 226 |
| | 30Pa H | 43 | 58 | 78 | 87 | 108 | 146 | 187 | 211 | 271 |
| | 50Pa H | 47 | 65 | 80 | 101 | 126 | 165 | 200 | 240 | 326 |
| Noise Level dB(A) | 12Pa | 36 | 38 | 40 | 42 | 44 | 45 | 47 | 49 | 51 |
| | 30Pa | 39 | 41 | 43 | 45 | 46 | 47 | 49 | 51 | 53 |
| | 50Pa | 41 | 43 | 45 | 46 | 48 | 49 | 51 | 53 | 54 |
| Fan | | Galvanized Forward Curve Centrifugal Fan | | | | | | | | |
| Motor | Type | AC Motor | | | | | | | | |
| | Insulation Class | B | | | | | | | | |
| | Power Supply | AC220V±10%, 1Ph/50Hz | | | | | | | | |
| Coil | Type | Seamless copper mechanically expanded into aluminum fins | | | | | | | | |
| | Max. Working Pressure | 1.6MPa | | | | | | | | |
| Inlet/Outlet Water Pipe | | FPT 3/4" | | | | | | | | |
| Condensate Water Pipe | | 20mm | | | | | | | | |
| Water Flow kg/h | H | 415 | 571 | 718 | 847 | 987 | 1356 | 1649 | 1962 | 2313 |
| Water Pressure Drop kPa | H | 18 | 24 | 28 | 30 | 32 | 36 | 38 | 40 | 42 |
| Net Weight w/o plenum kg | | 13.2 | 16.2 | 16.2 | 16.2 | 18 | 23.3 | 28.8 | 28.8 | 33.6 |
| Net Weight c/w plenum kg | | 15.7 | 19.6 | 19.6 | 19.6 | 21.5 | 28.3 | 34.2 | 34.2 | 39.5 |
| Dimensions | W | 880 | 1030 | 1030 | 1030 | 1180 | 1500 | 1660 | 1660 | 1930 |
| | D | 466 | 466 | 466 | 466 | 466 | 466 | 466 | 466 | 466 |
| | H | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 |

Notes:

1. Nominal Testing condition:

Cooling: entering air temp 27°C DB/19.5°C WB; entering water temp 7°C, leaving water temp 12°C;

Heating: entering air temp 21°C; entering water temp 60°C, the same water flow as in cooling;

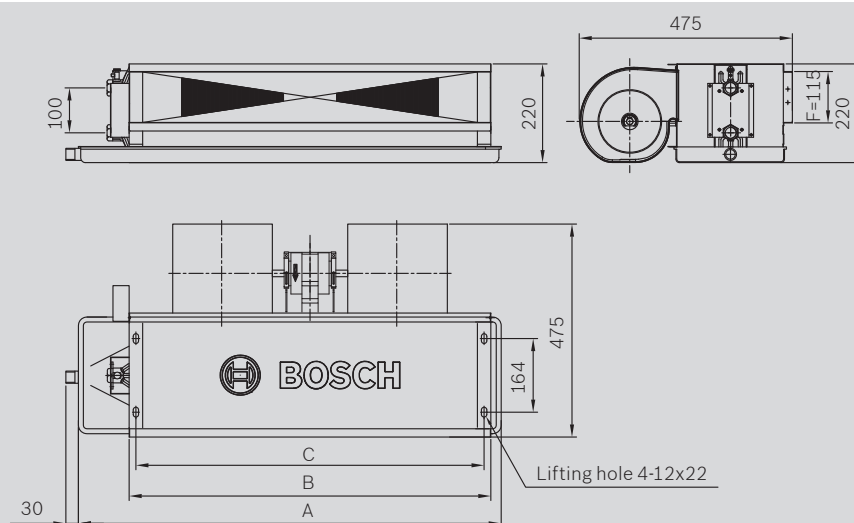
2. H, M and L stand for high, medium and low speed;

3. Sound pressure level are measured in acoustic room, position of the measure point is 1m in the front and 1m below the vertical center line of the unit;

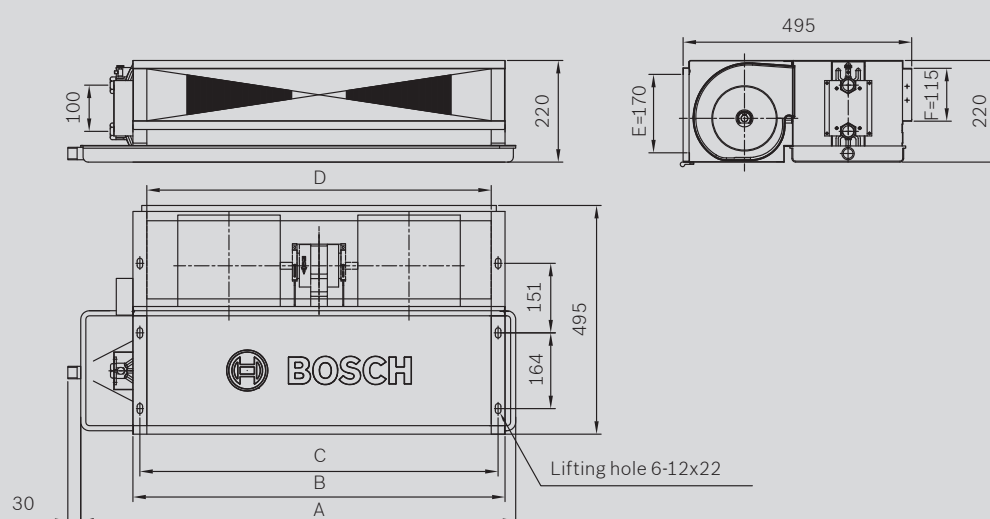
4. Static pressure is measured without filter and air outlet (no air return box).

Dimensions

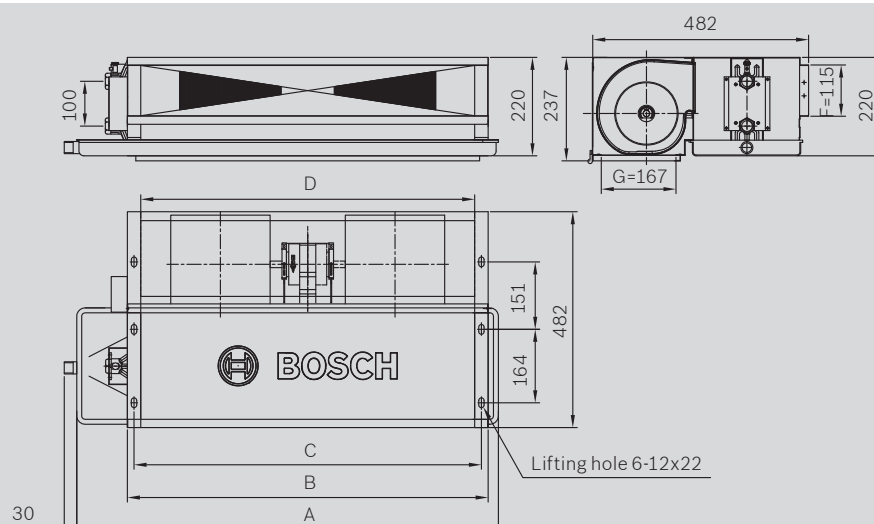
Without Plenum



With Back Return Plenum



With Down Return Plenum



| Model | Without Plenum | | | | With Plenum | | | | |
|-------|----------------|-------|-------|------------|-------------|-------|-------|-------|------------|
| | A(mm) | B(mm) | C(mm) | Weight(kg) | A(mm) | B(mm) | C(mm) | D(mm) | Weight(kg) |
| FC02 | 850 | 638 | 608 | 13.2 | 850 | 638 | 608 | 574 | 15.7 |
| FC03 | 1000 | 808 | 778 | 16.2 | 1000 | 808 | 778 | 744 | 19.6 |
| FC04 | 1000 | 808 | 778 | 16.2 | 1000 | 808 | 778 | 744 | 19.6 |
| FC05 | 1000 | 808 | 778 | 16.2 | 1000 | 808 | 778 | 744 | 19.6 |
| FC06 | 1150 | 938 | 908 | 18 | 1150 | 938 | 908 | 874 | 21.5 |
| FC08 | 1470 | 1238 | 1208 | 23.3 | 1470 | 1238 | 1208 | 1174 | 28.3 |
| FC10 | 1630 | 1498 | 1468 | 28.8 | 1630 | 1498 | 1468 | 1434 | 34.2 |
| FC12 | 1630 | 1498 | 1468 | 28.8 | 1630 | 1498 | 1468 | 1434 | 34.2 |
| FC14 | 1900 | 1758 | 1728 | 33.6 | 1900 | 1758 | 1728 | 1694 | 39.5 |

Correction Factors

Cooling Capacity Correction Factors

| EWT (C) | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------|------|------|---|------|------|------|-----|------|
| Correction Factor | 1.15 | 1.07 | 1 | 0.92 | 0.85 | 0.77 | 0.7 | 0.62 |

Note: air side condition, entering DB 27C, WB 19.5C.

Heating Capacity Correction Factors

| EWT (C) | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
|-------------------|------|------|------|------|------|----|------|------|
| Correction Factor | 0.36 | 0.49 | 0.62 | 0.74 | 0.87 | 1 | 1.13 | 1.26 |

Note: air side condition, entering DB 21C.

Cooling Capacity Correction Factors Based on Different Ambient Conditions

| WB (C) | DB (C) | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|--------|--------|------|------|------|----|------|------|------|
| 17 | | 0.76 | | | | | | |
| 18 | | | 0.85 | | | | | |
| 19 | | | | 0.94 | | | | |
| 19.5 | | | | | 1 | | | |
| 20 | | | | | | 1.06 | | |
| 21 | | | | | | | 1.15 | |
| 22 | | | | | | | | 1.25 |

Note: entering cooling water temperature 7C.

Heating Capacity Correction Factors Based on Different Ambient Conditions

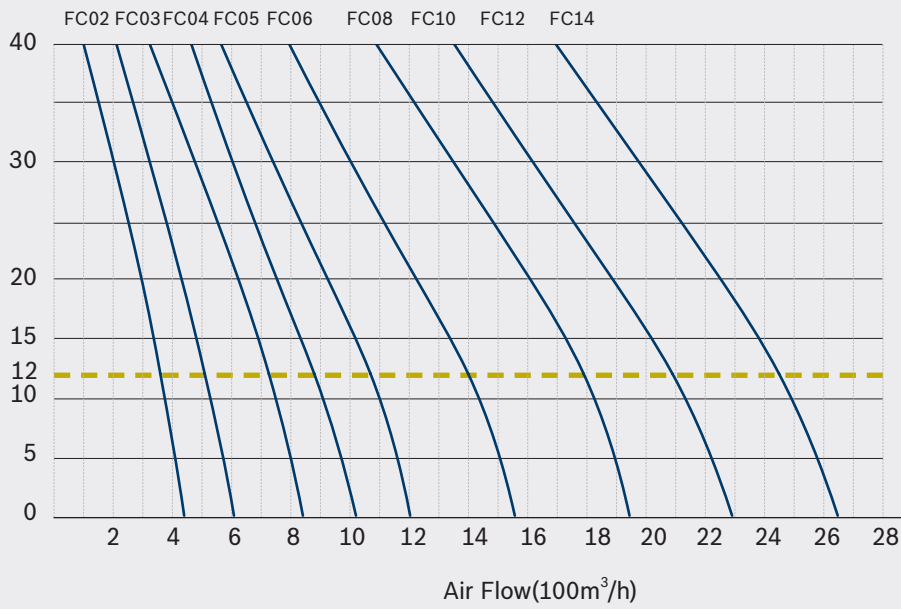
| DB (C) | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|-------------------|-----|------|------|----|------|------|-----|
| Correction Factor | 1.1 | 1.07 | 1.02 | 1 | 0.97 | 0.94 | 0.9 |

Note: entering heating water temperature 60C.

Fan Curve

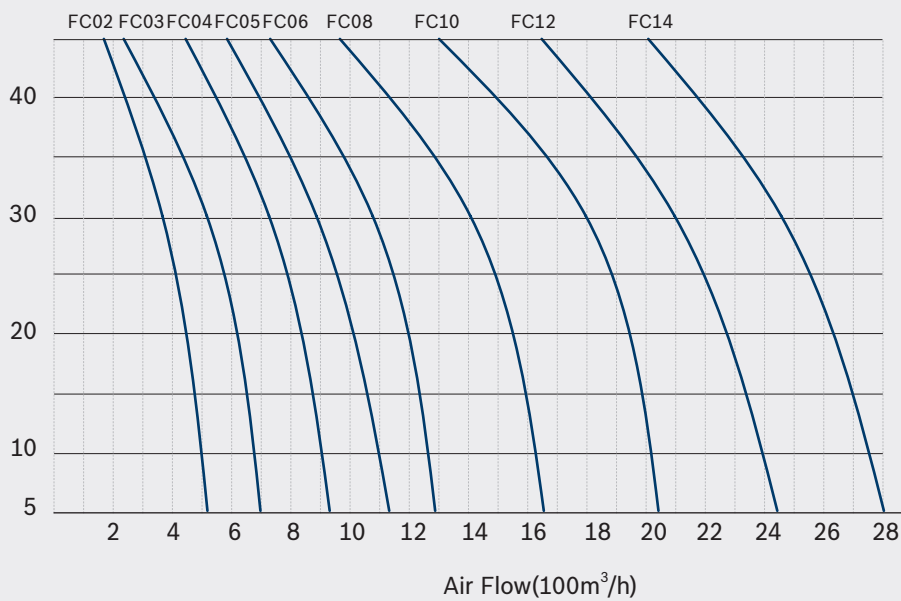
Bosch Fan Coil Unit with ESP 12Pa

External Static Pressure (Pa)



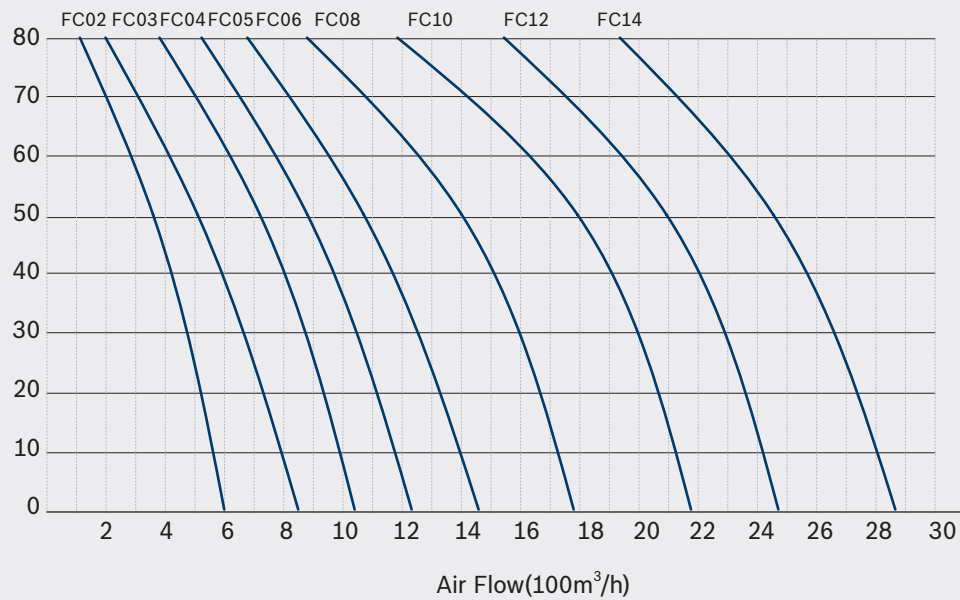
Bosch Fan Coil Unit with ESP 30Pa

External Static Pressure (Pa)



Bosch Fan Coil Unit with ESP 50Pa

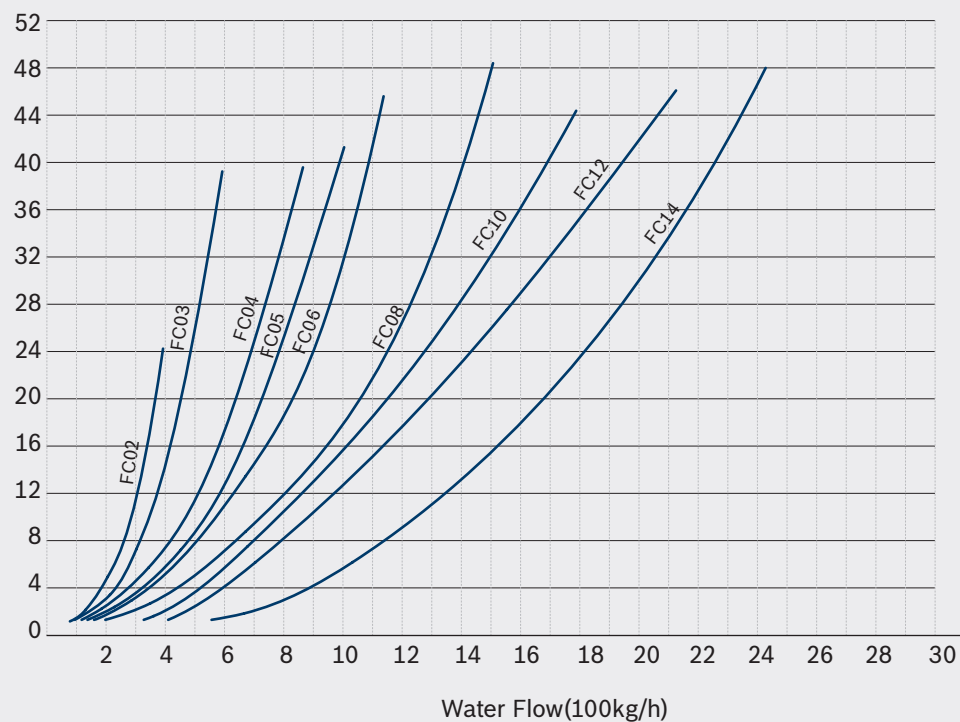
External Static Pressure (Pa)



Water Flow-Pressure Drop

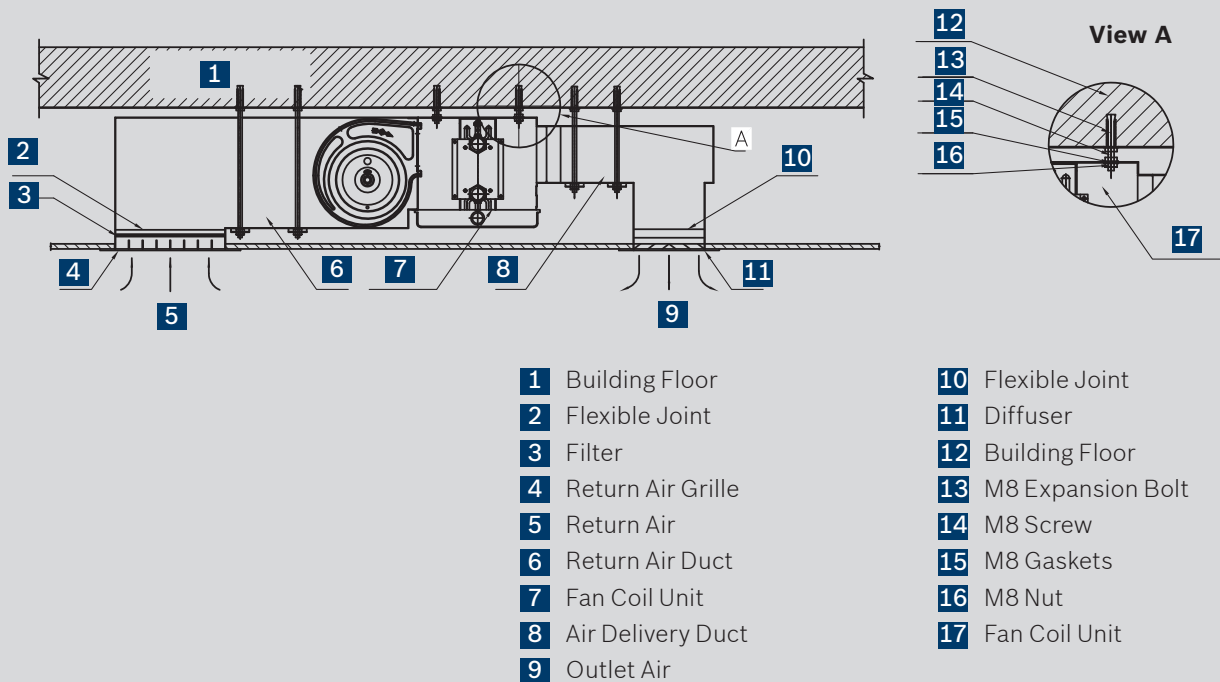
Bosch Fan Coil Unit

Water Pressure Drop (kPa)

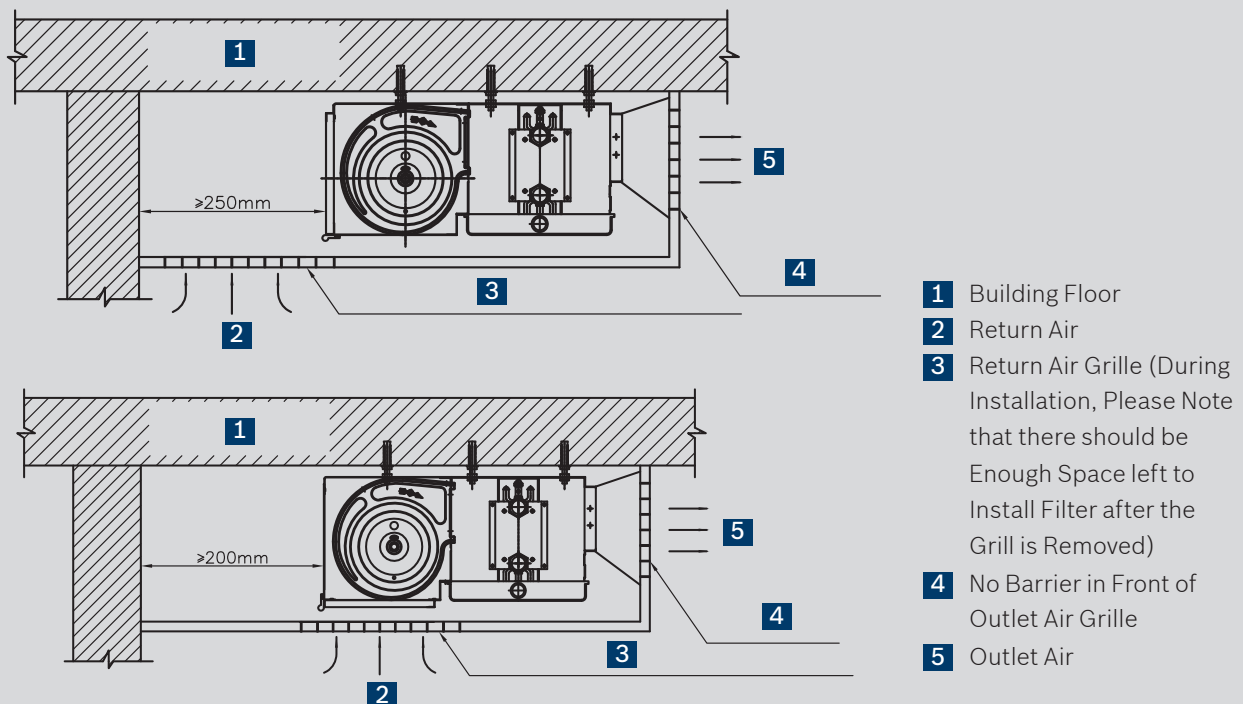


Installation

Installation of Fan Coil Unit without Plenum

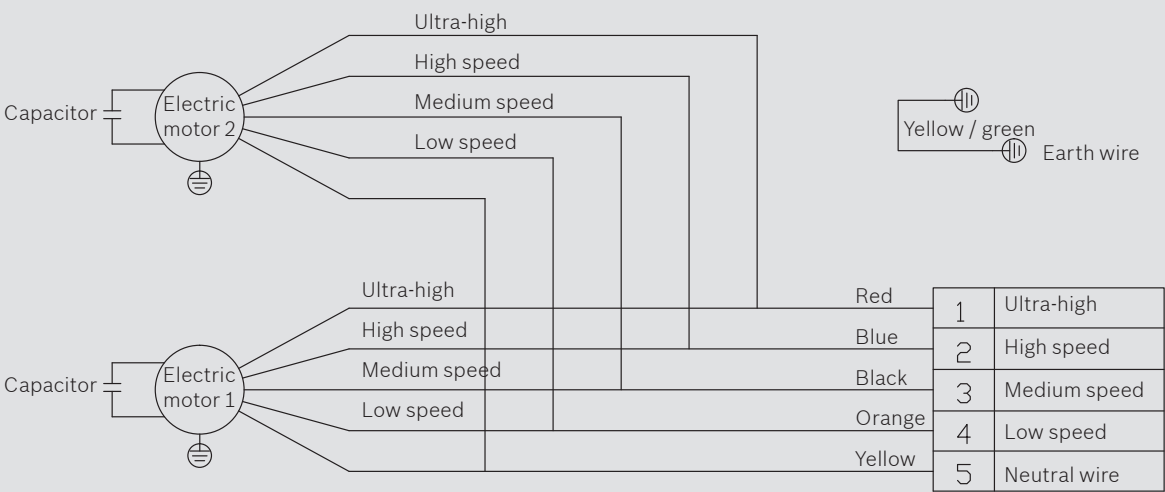


With Back/Down Return Plenum



The above installation diagrams are for informational purpose only. Any changes may be made based on site conditions during installation so as to improve air-conditioning effects and facilitate maintenance.

Wiring diagram



Note:

- 1. Connect terminal block's low, medium, high and ultra-high speed to fan coil's controller (or three-speed switch).
- 2. When ESP is 0 or 12 Pa, the fan coil controller is wired to low, medium and high speed;
 - When ESP is 30 Pa, the fan coil controller is wired to medium, high speed and ultra-high speed;
 - When ESP is 50 Pa, the fan coil controller is wired to medium, high speed and ultra-high speed;
 - Also, users may make an on-site change on demand.
- 3. Single-motor fan coil has no electric motor 2 and corresponding wiring.



Bosch reserves the right to change any specification, design and information without any prior notice for further improvement on quality and performance. 201408A

