NOBUS
gebläsekonvektoren/fan coil units

Fan Coil Unit

Operation and Installation Manual

Standard Series Fan Coil

- Ceiling Concealed
- Vertical Concealed
- Ceiling Exposed
- Vertical Exposed

FC02, 03, 04, 05, 06, 08, 10, 12, 14

*Please read this manual before using the fan coil.
*Please keep this manual for future use

Table of Contents

Note:
All illustrations and contents in this manual are provided for information only. We will continuously improve the products in aspects of product dimensions, performances, materials and structures without prior notification.

1. Safety and User Information

1.1 Safety instructions

The fan coil units are developed and manufactured in accordance with the state-of-the-art technological standards and established technical safety norms and regulations. The fan coil units comply with the Machinery Safety Directive.

The fan coil units are reliable and satisfy high quality standards. This product range combines advanced technology with a high level of user friendliness and ease of maintenance.

However, all fan coil units inevitably pose residual risks of injury to the user or third parties or material damage to the unit or other objects. For this reason, you should take into account and follow all safety instructions. Ignoring these safety instructions is connected with risks to your health and safety, can lead to the environmental damage and/or extensive material damage.

Observing the safety instructions in the operation manual will help you to avoid risks, ensure economical operation of the unit and enjoy full benefits of the product.

The safety aspects covered by this Chapter are valid for the entire operation manual. To ensure our own safety consider the following safety instructions.

⚠ ELECTRICAL HAZARD!

Before carrying out any work on the unit, power the unit down to avoid injury from electrical current. Check that the unit is isolated and ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

⚠ DANGER OF SCALDING!

Before performing work on the valves or the inlet or outlet pipes, seal off the heating or cooling medium inlet to prevent scalding. Do not commence work before the heating medium has cooled down.

⚠ DANGER OF ROTATING UNIT PARTS!

Rotating fan wheels can cause injury! Before performing any work on the unit, ensure that it is powered down. Ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

⚠ DANGER OF OVERHEAD LOADS!

Wear a helmet and safety boots to prevent injury from falling components, especially when fitting the unit to the ceiling. Ceiling installations should always be performed by two people.

⚠ PERSONAL INJURY!

Always wear protective gloves when moving or fitting the unit to avoid injury from sharp edges.

1.2 Important notes

The fan coil units are end units of chilled/hot water air conditioning system featuring high profession and high technological requirement, therefore, the unit shall be installed, operated and maintained only by qualified, specially trained and authorized staff.

1.2.1 Proper use

The fan coil units are exclusively designed for ventilating, heating, filtering and cooling purposes. Water or water/glycol solution (max. 50%) may be used as the medium. The following limit values apply to the medium for operating Cu/Al heat exchangers:

		Unit	Value
pH value (at 20 °C)			7,5 – 9
Conductivity (at 20 °C)		µS/cm	< 700
Oxygen content	O_2	mg/l	< 0,1
Total hardness		°dH	1 – 15
Dissolved sulphur	S		not detectable
Sodium	Na^+	mg/l	< 100
Iron	Fe^{2+}, Fe^{3+}	mg/l	< 0,1
Manganese	Mn^{2+}	mg/l	< 0,05
Ammonium content	NH_4^+	mg/l	< 0,1
Chloride	Cl^-	mg/l	< 100
Sulphate	SO_4^{2-}	mg/l	< 50
Nitrite	NO_2^-	mg/l	< 50
Nitrate	NO_3^-	mg/l	< 50

⚠ DAMAGE TO THE UNIT!

On open systems (e.g. when using well water observe the limit values stated in above table), the used water should additionally be cleansed of suspended matter using a filter which should be located at the inlet. Otherwise there is a risk of erosion by suspended matter.

You also have to ensure that the unit is protected from dust and other substances that can cause acidic or alkaline reaction when combined with water (aluminum corrosion).

- The fan coil units may only be used indoors.
- The fan coil units is suitable for wall and ceiling installation.

The unit is considered to be used in an improper manner if it is applied for other purposes or a purpose that is not covered by the scope of the given operation manual. The manufacturer or supplier is not liable for any resulting damage: the user alone bears the full risk.

The user is responsible for proper use. Proper use also stipulates the observance of the operation manual and the inspection and maintenance conditions defined by the manufactures.

1.2.2 Improper use

The fan coil may not be operated:

- In locations where there is a risk of explosion
- In wet areas or
- In locations with high dust levels or aggressive air.

⚠ PERSONAL INJURY & MATERIAL DAMAGE!

Improper use can cause personal injury and material damage.

2. Product Introduction

2.1 Features and benefits

The fan coil units have become a hall mark for de-central air treatment, with top levels of comfort and truly impressive cost-effectiveness. A selection of the versatile fan coil units assures that we offer you the perfectly matching product solution for each of your individual requirements.

Practical Orientation

The fan coil units offer an extensive portfolio of solutions for all applications involving de-central air handling.

Effectiveness

The fan coil units guarantee cosy and comfortable room atmosphere.

Space savings

The fan coil units assure optimal use of available space by their design and installation possibilities.

Flexible

Depending on the model type, the customer enjoys a selection among possibilities of media connection to the heat exchangers- as well as the possibility of implementing heating and cooling with 2 or 4 conductor operations.

Quietness

Sophisticated systems mean that the fan coil units are characterize by a minimum of noise emission.

Functionality

The fan coil units offer highly functional controller concepts and optimal interfacing with building management systems

Stylishness

The modern appealing design of the fan coil units is truly impressive.

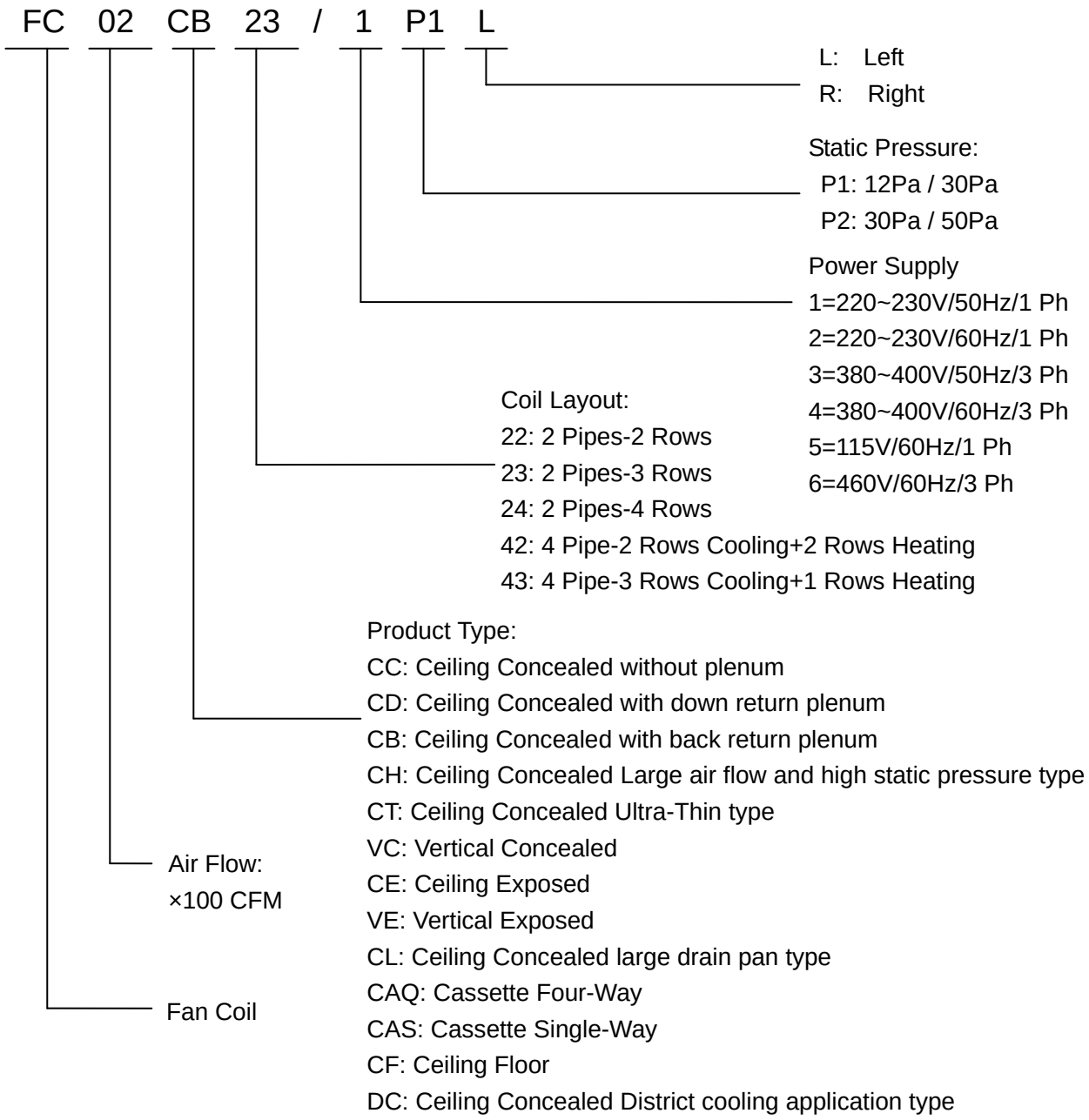
Cost effectiveness

The fan coil units have become the effective standard solution in many and various industrial segments for comfortable economical air conditioning.

Profitability

The fan coil units operate with low maintenance and follow-up costs.

2.2 Nomenclature



Standard Series Fan Coil can be divided by coil layout as: -2

pipe system 3 rows

-4 pipe system 3 cooling + 1 heating rows

-4 pipe system 2 cooling + 2 heating rows

Standard Series Fan Coil can be divided by product type as: CB:

Ceiling Concealed - with back return plenum and filter (Basic Unit*)

CC: Ceiling Concealed - without return plenum or filter

CD: Ceiling Concealed - with down return plenum and filter

VC: Vertical Concealed - with bottom return plenum and filter

CE: Ceiling Exposed - with filter

VE: Vertical Exposed – with filter

***Basic Unit:** Ceiling Concealed type with back return plenum (CB) is the basic unit of all the other type Standard Series fan coil units. The main unit body is the same for all the 6 type of fan coils, the difference between 6 types is the arrangement of the air return plenum, condensate tray, with unit decorative casing or without.

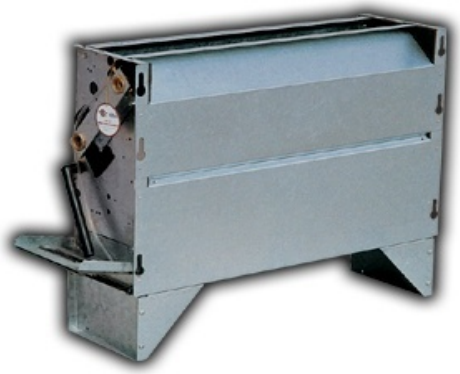
NOTE!

THE INSTUCTIONS IN THIS MANUAL MAY NOT COVER ALL THE DETAILS/DIFFERENCES OF EACH TYPE OF FAN COIL AS THE MAIN UNIT BODY IS THE SAME! IN CASE OF NON-SUFFICIENT INFORMATION OF ONE TYPE, PLEASE REFER TO OTHER TYPE!

Product illustrative photo:

CC/CD/CB-Ceiling Concealed

VC-Vertical Concealed



CE-Ceiling Exposed

VE-Vertical Exposed

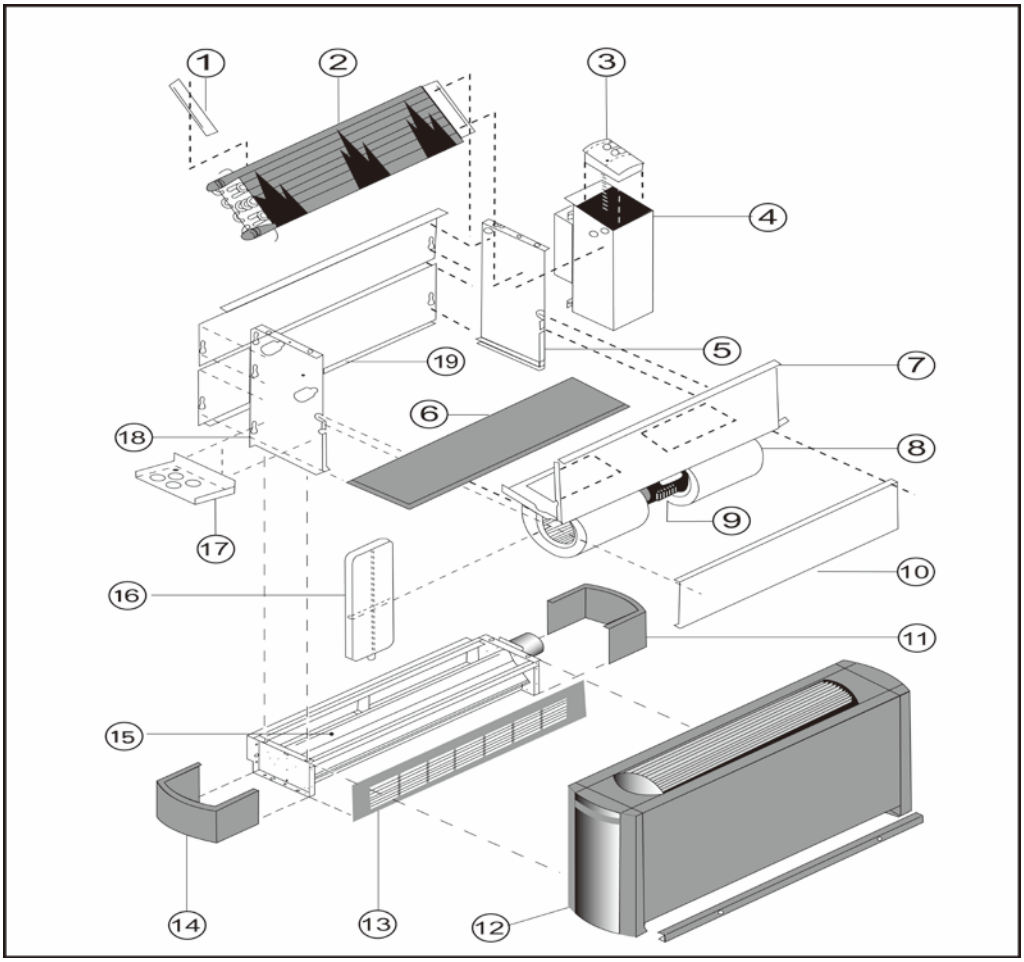
2.2 Operating limits

Unit and heat exchanger	**Values**
Max. operating pressure/temperature	1,6 MPa (16 bar) / 85 °C
Max. permissible ambient temperature	40 °C
Min. permissible ambient temperature	2 °C
Operating voltage	220~230V AC (50Hz or 60Hz) *
Power consumption/protection class	See nameplate

***NOTE!**

- **Please refer to unit name plate to know the right power supply!**

2.3 Unit Components



1. Supporting plate
2. Heat exchanger
3. Control panel
4. Sheet steel electric switch box
5. Basic casing (lateral-right)
6. Filter
7. Main condensate tray
8. Fan with casing
9. Fan motor
10. Basic casing (front)
11. Foot cover(right)
12. Unit decorative casing
13. Air intake grille
14. Foot cover(left)
15. Mixed air box
16. Lateral condensate tray (ceiling type)
17. Lateral condensate tray (vertical type)
18. Basic casing (lateral-left)
19. Basic casing (rear)

Note:

Above exploded view is used for illustrative of unit construction only, it may be different from the unit you received, please refer to the unit.

Ceiling Concealed: Parts 11, 12, 13, 14, 15, 17 does not exist.

Vertical Concealed: Parts 11, 12, 13, 14, 15, 16 does not exist.

Ceiling Exposed: Parts 11, 13, 14, 15, 17 does not exist.

Vertical Exposed: Parts 11, 13, 14, 15, 17 does not exist.

2.4 Specifications

Please refer to below specification sheet in page 8, 9, 10, 11.

Specification Standard Series Fan Coil Unit - 12/30/50Pa - 2 Pipe system 2 Rows (CC/CB/CD/VC/CE/VE)

Specification	Model		FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
Air Flow	H	CFM	235	347	441	541	635	876	1029	1212	1441
		m^3/h	400	590	750	920	1080	1490	1750	2060	2450
	M	CFM	182	265	329	406	476	659	776	906	1082
		m^3/h	310	450	560	690	810	1120	1320	1540	1840
	L	CFM	118	176	218	271	318	441	512	606	724
		m^3/h	200	300	370	460	540	750	870	1030	1230
Total Cooling Capacity kW	H		1.97	2.67	3.45	4.23	5.02	7.12	8.46	9.83	11.11
	M		1.65	2.24	2.95	3.59	4.26	6.07	7.21	8.37	9.50
	L		1.45	1.99	2.57	3.17	3.76	5.35	6.36	7.39	8.36
Sensible Cooling Capacity kW	H		1.39	1.84	2.41	2.97	3.59	5.00	6.75	6.94	7.96
	M		1.20	1.58	2.05	2.55	3.07	4.25	5.89	6.11	6.94
	L		0.94	1.19	1.56	2.05	2.49	3.30	4.47	4.65	5.42
Heating Capacity kW	H		2.91	3.71	5.18	6.35	7.54	10.70	12.73	14.75	16.72
	M		2.48	3.16	4.42	5.27	6.39	9.11	10.85	12.58	14.24
	L		2.18	2.80	3.88	4.76	5.64	8.06	9.57	11.08	12.58
Power Input W	12Pa-H		34	46	55	70	87	117	140	181	223
	30Pa-H		42	56	70	81	101	149	165	202	241
	50Pa-H		46	65	82	89	109	163	201	228	286
Max Current	A		0.21	0.30	0.37	0.40	0.50	0.74	0.91	1.04	1.30
Static Pressure	Pa		12/30/50 Pa								
Noise Level dB(A)	12Pa-H		35	37	39	41	43	44	46	48	50
	30Pa-H		38	40	42	44	45	46	48	50	52
	50Pa-H		40	42	44	45	47	48	50	52	54
Water Flow	kg/h		350	470	600	740	870	1230	1460	1700	1910
	l/s		0.097	0.131	0.167	0.206	0.242	0.342	0.406	0.472	0.531
Water Resistance	kPa		10	18	19	23	24	23	36	21	35
Fan Type			Forward curve centrifugal fan								
Motor	Type		Four speed asynchronous fan motor								
	Insulation		Class E								
	Power Supply		220~230V/1Ph/50 or 60Hz								
Coil	Type		Seamless copper mechanically expanded into aluminum fins								
	Rows		2								
	Max. Working Pressure		1.6 MPa								
Inlet/Outlet Water Pipe			3/4" FPT								
Condensate Water Pipe			Φ20								
Unit Dimension W/D/H	Ceiling Concealed		645*450*225	795*450*225	875*450*225	945*450*225	1095*450*225	1395*450*225	1545*450*225	1695*450*225	1995*450*225
	Ceiling Exposed		850*245*505	1000*245*505	1080*245*505	1150*245*505	1300*245*505	1600*245*505	1750*245*505	1900*245*505	2200*245*505
	Vertical Concealed		745*225*584	895*225*584	975*225*584	1045*225*584	1195*225*584	1495*225*584	1645*225*584	1795*225*584	2095*225*584
	Vertical Exposed		850*245*639	1000*245*639	1080*245*639	1150*245*639	1300*245*639	1600*245*639	1750*245*639	1900*245*639	2200*245*639
Packing Dimension W/D/H	Ceiling Concealed		660*460*240	810*460*240	890*460*240	960*460*240	1110*460*240	1410*460*240	1560*460*240	1710*460*240	2010*460*240
	Ceiling Exposed		870*260*520	1020*260*520	1100*260*520	1170*260*520	1320*260*520	1620*260*520	1770*260*520	1920*260*520	2220*260*520
	Vertical Concealed		870*240*600	910*240*600	990*240*600	1060*240*600	1210*240*600	1510*240*600	1660*240*600	1810*240*600	2110*240*600
	Vertical Exposed		870*260*655	1020*260*655	1100*260*655	1170*260*655	1320*260*655	1610*260*655	1770*260*655	1910*260*655	2210*260*655
Unit Weight kg	Ceiling Concealed		14	18	19	20	22	34	36	38	39
	Ceiling Exposed		23	28	29	30	34	48	51	53	55
	Vertical Concealed		12	15	16	17	18	29	30	32	33
	Vertical Exposed		24	29	30	31	35	49	52	54	56
Gross Weight kg	Ceiling Concealed		15	19	20	21	23	35	37	39	40
	Ceiling Exposed		24	29	30	31	35	49	52	54	56
	Vertical Concealed		13	16	17	18	19	30	31	33	34
	Vertical Exposed		25	30	31	32	36	50	53	55	57

Note:

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. 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;
3. Static pressure is measured without filter and air outlet.

Specification Standard Series Fan Coil Unit - 12/30/50Pa - 2 Pipe system 3 Rows (CC/CB/CD/VC/CE/VE)

Specification	Model		FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
Air Flow	H	CFM	235	347	441	541	635	876	1029	1212	1441
		m^3/h	400	590	750	920	1080	1490	1750	2060	2450
	M	CFM	182	265	329	406	476	659	776	906	1082
		m^3/h	310	450	560	690	810	1120	1320	1540	1840
	L	CFM	118	176	218	271	318	441	512	606	724
		m^3/h	200	300	370	460	540	750	870	1030	1230
Total Cooling Capacity kW	H		2.09	3.06	3.89	4.74	5.73	7.79	9.35	11.10	13.08
	M		1.78	2.57	3.32	4.03	4.89	6.64	7.95	9.45	11.16
	L		1.55	2.29	2.91	3.56	4.28	5.85	7.10	8.35	9.83
Sensible Cooling Capacity kW	H		1.47	2.11	2.72	3.33	4.10	5.47	7.46	7.84	9.37
	M		1.29	1.81	2.31	2.86	3.53	4.65	6.49	6.90	8.15
	L		1.00	1.37	1.77	2.30	2.83	3.61	5.00	5.25	6.37
Heating Capacity kW	H		3.13	4.25	5.84	7.12	8.58	11.69	14.03	16.64	19.63
	M		2.54	3.40	4.73	5.77	6.95	9.47	11.50	13.64	15.90
	L		1.91	2.55	3.50	4.34	5.15	7.13	8.56	9.98	11.78
Power Input W	12Pa-H		34	46	55	70	87	117	140	181	223
	30Pa-H		42	56	70	81	101	149	165	202	241
	50Pa-H		46	65	82	89	109	163	201	228	286
Max Current	A		0.21	0.30	0.37	0.40	0.50	0.74	0.91	1.04	1.30
Static Pressure	Pa		12Pa/30Pa/50Pa								
Noise Level dB(A)	12Pa-H		36	38	40	42	44	45	47	49	51
	30Pa-H		39	41	43	45	46	47	49	51	53
	50Pa-H		41	43	45	46	48	49	51	53	55
Water Flow	kg/h		370	540	680	830	990	1350	1610	1920	2250
	l/s		0.103	0.150	0.189	0.231	0.275	0.375	0.447	0.533	0.625
Water Resistance	kPa		10	18	19	23	24	23	36	21	35
Fan Type			Forward curve centrifugal fan								
Motor	Type		Four speed asynchronous fan motor								
	Insulation		Class B								
	Power Supply		220~230V/1Ph/50 or 60Hz								
Coil	Type		Seamless copper mechanically expanded into aluminum fins								
	Rows		3								
	Max. Working Pressure		1.6 MPa								
Inlet/Outlet Water Pipe			3/4" FPT								
Condensate Water Pipe			Φ20								
Unit Dimension W/D/H	Ceiling Concealed		645*450*225	795*450*225	875*450*225	945*450*225	1095*450*225	1395*450*225	1545*450*225	1695*450*225	1995*450*225
	Ceiling Exposed		850*245*505	1000*245*505	1080*245*505	1150*245*505	1300*245*505	1600*245*505	1750*245*505	1900*245*505	2200*245*505
	Vertical Concealed		745*225*584	895*225*584	975*225*584	1045*225*584	1195*225*584	1495*225*584	1645*225*584	1795*225*584	2095*225*584
	Vertical Exposed		850*245*639	1000*245*639	1080*245*639	1150*245*639	1300*245*639	1600*245*639	1750*245*639	1900*245*639	2200*245*639
Packing Dimension W/D/H	Ceiling Concealed		660*460*240	810*460*240	890*460*240	960*460*240	1110*460*240	1410*460*240	1560*460*240	1710*460*240	2010*460*240
	Ceiling Exposed		870*260*520	1020*260*520	1100*260*520	1170*260*520	1320*260*520	1620*260*520	1770*260*520	1920*260*520	2220*260*520
	Vertical Concealed		870*240*600	910*240*600	990*240*600	1060*240*600	1210*240*600	1510*240*600	1660*240*600	1810*240*600	2110*240*600
	Vertical Exposed		870*260*655	1020*260*655	1100*260*655	1170*260*655	1320*260*655	1610*260*655	1770*260*655	1910*260*655	2210*260*655
Unit Weight kg	Ceiling Concealed		15	19	20	21	23	36	38	40	42
	Ceiling Exposed		24	29	30	31	35	50	53	55	58
	Vertical Concealed		15	19	20	21	23	36	38	40	42
	Vertical Exposed		25	30	31	32	36	51	54	56	59
Gross Weight kg	Ceiling Concealed		16	20	21	22	24	37	39	42	44
	Ceiling Exposed		25	30	31	32	36	51	54	57	60
	Vertical Concealed		16	20	21	22	24	37	39	42	44
	Vertical Exposed		26	31	32	33	37	52	55	58	61

Note:
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. 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;
3. Static pressure is measured without filter and air outlet.

Specification Standard Series Fan Coil Unit - 12/30/50Pa - 4 Pipe system 3c + 1h Rows (CC/CB/CD/VC/CE/VE)

Specification	Model		FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
Air Flow	H	CFM	235	347	441	541	635	876	1029	1212	1441
		m^3/h	400	590	750	920	1080	1490	1750	2060	2450
	M	CFM	182	265	329	406	476	659	776	906	1082
		m^3/h	310	450	560	690	810	1120	1320	1540	1840
	L	CFM	118	176	218	271	318	441	512	606	724
		m^3/h	200	300	370	460	540	750	870	1030	1230
Total Cooling Capacity kW	H		2.03	2.98	3.78	4.63	5.62	7.56	9.13	10.88	12.83
	M		1.72	2.5	3.22	3.94	4.79	6.44	7.76	9.27	10.95
	L		1.50	2.23	3.82	3.48	4.19	5.68	6.93	8.19	9.64
Sensible Cooling Capacity kW	H		1.47	2.11	2.72	3.33	4.10	5.47	7.46	7.84	9.37
	M		1.22	1.77	2.26	2.80	3.44	4.54	6.34	6.74	7.96
	L		0.97	1.33	1.71	2.16	2.75	3.50	4.85	5.10	6.18
Heating Capacity kW	H		1.94	2.71	3.64	4.66	5.44	7.76	9.36	11.04	12.57
	M		1.66	2.31	3.11	3.95	4.61	6.62	7.97	9.40	10.71
	L		1.46	2.05	2.73	3.50	4.08	5.84	7.04	8.29	9.44
Power Input W	12Pa-H		40	53	62	78	95	125	147	198	238
	30Pa-H		48	62	76	88	109	161	179	212	256
	50Pa-H		56	72	88	95	110	174	211	240	297
Max Current	A		0.25	0.33	0.40	0.43	0.50	0.79	0.96	1.09	1.35
Static Pressure	Pa		12Pa/30Pa/50Pa								
Noise Level dB(A)	12Pa-H		37	39	41	43	45	46	48	50	52
	30Pa-H		40	42	44	46	47	48	50	52	54
	50Pa-H		42	44	46	47	49	50	52	54	56
Water Flow	Cooling 3R	kg/h	370	540	680	830	990	1350	1610	1920	2250
		l/s	0.103	0.150	0.189	0.231	0.275	0.375	0.447	0.533	0.625
	Heating 1R	kg/h	230	310	420	540	630	890	1080	1270	1450
		l/s	0.064	0.086	0.117	0.150	0.175	0.247	0.300	0.353	0.403
Water Resistance	Cooloing 3R	kPa	10	18	19	23	24	23	36	21	35
	Heating 1R		5	12	17	28	25	16	18	23	29
Fan Type			Forward curve centrifugal fan								
Motor	Type		Four speed asynchronous fan motor								
	Insulation		Class B								
	Power Supply		220~230V/1Ph/50 or 60Hz								
Coil	Type		Seamless copper mechanically expanded into aluminum fins								
	Rows		4								
	Max. Working Pressure		1.6MPa								
Inlet/Outlet Water Pipe			3/4" FPT								
Condensate Water Pipe			Φ20								
Unit Dimension W/D/H mm	Ceiling Concealed		645*450*225	795*450*225	875*450*225	945*450*225	1095*450*225	1395*450*225	1545*450*225	1695*450*225	1995*450*225
	Ceiling Exposed		850*245*505	1000*245*505	1080*245*505	1150*245*505	1300*245*505	1600*245*505	1750*245*505	1900*245*505	2200*245*505
	Vertical Concealed		745*225*584	895*225*584	975*225*584	1045*225*584	1195*225*584	1495*225*584	1645*225*584	1795*225*584	2095*225*584
	Vertical Exposed		850*245*639	1000*245*639	1080*245*639	1150*245*639	1300*245*639	1600*245*639	1750*245*639	1900*245*639	2200*245*639
Packing Dimension W/D/H mm	Ceiling Concealed		660*460*240	810*460*240	890*460*240	960*460*240	1110*460*240	1410*460*240	1560*460*240	1710*460*240	2010*460*240
	Ceiling Exposed		870*260*520	1020*260*520	1100*260*520	1170*260*520	1320*260*520	1620*260*520	1770*260*520	1920*260*520	2220*260*520
	Vertical Concealed		870*240*600	910*240*600	990*240*600	1060*240*600	1210*240*600	1510*240*600	1660*240*600	1810*240*600	2110*240*600
	Vertical Exposed		870*260*655	1020*260*655	1100*260*655	1170*260*655	1320*260*655	1610*260*655	1770*260*655	1910*260*655	2210*260*655
Unit Weight kg	Ceiling Concealed		17	22	23	24	27	39	41	43	46
	Ceiling Exposed		26	32	33	35	39	53	56	58	62
	Vertical Concealed		17	22	23	24	27	39	41	43	46
	Vertical Exposed		27	33	34	36	40	54	57	59	63
Gross Weight kg	Ceiling Concealed		18	23	24	25	28	40	42	45	48
	Ceiling Exposed		27	33	34	36	40	54	57	60	64
	Vertical Concealed		18	23	24	25	28	40	42	45	48
	Vertical Exposed		28	34	35	37	41	55	58	61	65

Note:

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. 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;
3. Static pressure is measured without filter and air outlet.

Specification Standard Series Fan Coil Unit - 12/30/50Pa - 4 Pipe system 2c + 2h Rows (CC/CB/CD/VC/CE/VE)

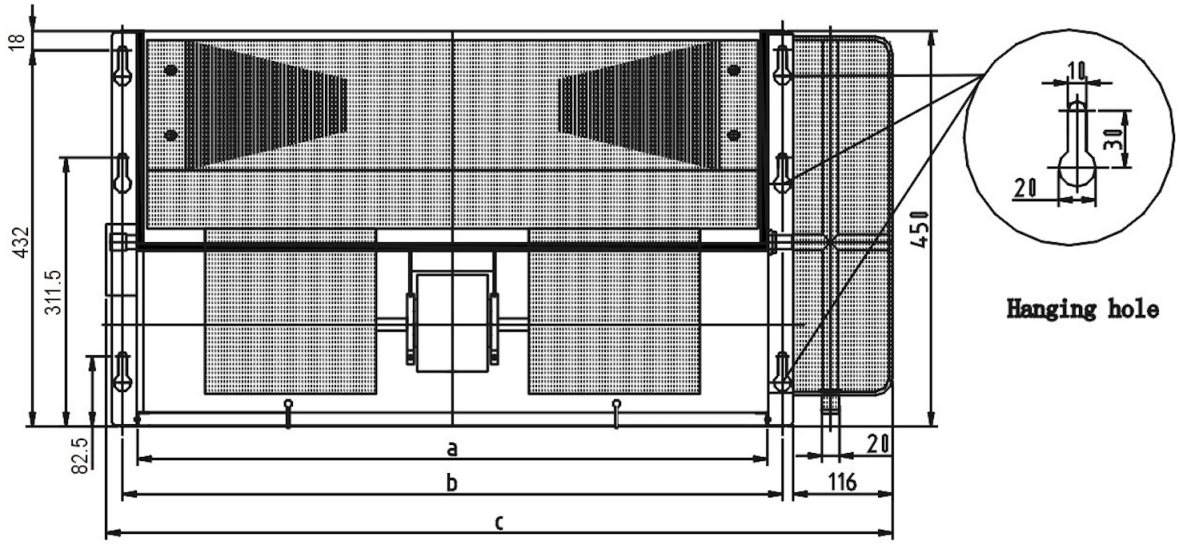
Specification	Model		FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
Air Flow	H	CFM	235	347	441	541	635	876	1029	1212	1441
		m^3/h	400	590	750	920	1080	1490	1750	2060	2450
	M	CFM	182	265	329	406	476	659	776	906	1082
		m^3/h	310	450	560	690	810	1120	1320	1540	1840
	L	CFM	118	176	218	271	318	441	512	606	724
		m^3/h	200	300	370	460	540	750	870	1030	1230
Total Cooling Capacity kW	H		1.60	2.34	3.00	4.11	4.71	6.28	7.35	9.83	11.29
	M		1.36	1.97	2.55	3.49	4.00	5.35	6.25	8.37	9.63
	L		1.19	1.75	2.24	3.08	3.53	4.71	5.51	7.39	8.48
Sensible Cooling Capacity kW	H		1.16	1.66	2.16	2.96	3.44	4.54	6.01	7.08	8.25
	M		0.96	1.39	1.79	2.48	2.89	3.77	5.10	6.09	7.01
	L		0.76	1.04	1.36	1.92	2.30	2.91	3.90	4.60	5.44
Heating Capacity kW	H		2.40	3.51	4.50	6.16	7.06	9.42	11.02	14.74	16.93
	M		2.04	2.95	3.83	5.23	6.00	8.02	9.37	12.55	14.44
	L		1.78	2.62	3.36	4.62	5.29	7.06	8.26	11.08	12.72
Power Input W	12Pa-H		40	53	62	78	95	125	147	198	238
	30Pa-H		48	62	76	88	109	161	179	212	256
	50Pa-H		56	72	88	95	110	174	211	240	297
Max Current	A		0.25	0.33	0.40	0.43	0.50	0.79	0.96	1.09	1.35
Static Pressure	Pa		12Pa/30Pa/50Pa								
Noise Level dB(A)	12Pa-H		37	39	41	43	45	46	48	50	52
	30Pa-H		40	42	44	46	47	48	50	52	54
	50Pa-H		42	44	46	47	49	50	52	54	56
Water Flow	Cooling 2R	kg/h	280	400	520	710	810	1080	1270	1690	1950
		l/s	0.078	0.111	0.144	0.197	0.225	0.30	0.353	0.469	0.542
	Heating 2R	kg/h	280	400	520	710	810	1080	1270	1690	1950
		l/s	0.078	0.111	0.144	0.197	0.225	0.30	0.353	0.469	0.542
Water Resistance	Cooling 2R	kPa	18	14	24	17	21	28	24	38	43
	Heating 2R		18	14	24	17	21	28	24	38	43
Fan Type			Forward curve centrifugal fan								
Motor	Type		Four speed asynchronous fan motor								
	Insulation		Class B								
	Power Supply		220~230V/1Ph/50 or 60Hz								
Coil	Type		Seamless copper mechanically expanded into aluminum fins								
	Rows		4								
	Max. Working Pressure		1.6MPa								
Inlet/Outlet Water Pipe			3/4" FPT								
Condensate Water Pipe			Φ20								
Unit Dimension W/D/H mm	Ceiling Concealed		645*450*225	795*450*225	875*450*225	945*450*225	1095*450*225	1395*450*225	1545*450*225	1695*450*225	1995*450*225
	Ceiling Exposed		850*245*505	1000*245*505	1080*245*505	1150*245*505	1300*245*505	1600*245*505	1750*245*505	1900*245*505	2200*245*505
	Vertical Concealed		745*225*584	895*225*584	975*225*584	1045*225*584	1195*225*584	1495*225*584	1645*225*584	1795*225*584	2095*225*584
	Vertical Exposed		850*245*639	1000*245*639	1080*245*639	1150*245*639	1300*245*639	1600*245*639	1750*245*639	1900*245*639	2200*245*639
Packing Dimension W/D/H mm	Ceiling Concealed		660*460*240	810*460*240	890*460*240	960*460*240	1110*460*240	1410*460*240	1560*460*240	1710*460*240	2010*460*240
	Ceiling Exposed		870*260*520	1020*260*520	1100*260*520	1170*260*520	1320*260*520	1620*260*520	1770*260*520	1920*260*520	2220*260*520
	Vertical Concealed		870*240*600	910*240*600	990*240*600	1060*240*600	1210*240*600	1510*240*600	1660*240*600	1810*240*600	2110*240*600
	Vertical Exposed		870*260*655	1020*260*655	1100*260*655	1170*260*655	1320*260*655	1610*260*655	1770*260*655	1910*260*655	2210*260*655
Unit Weight kg	Ceiling Concealed		17	22	23	24	27	39	41	43	46
	Ceiling Exposed		26	32	33	35	39	53	56	58	62
	Vertical Concealed		17	22	23	24	27	39	41	43	46
	Vertical Exposed		27	33	34	36	40	54	57	59	63
Gross Weight kg	Ceiling Concealed		18	23	24	25	28	40	42	45	48
	Ceiling Exposed		27	33	34	36	40	54	57	60	64
	Vertical Concealed		18	23	24	25	28	40	42	45	48
	Vertical Exposed		28	34	35	37	41	55	58	61	65

Note:
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. 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;
3. Static pressure is measured without filter and air outlet.

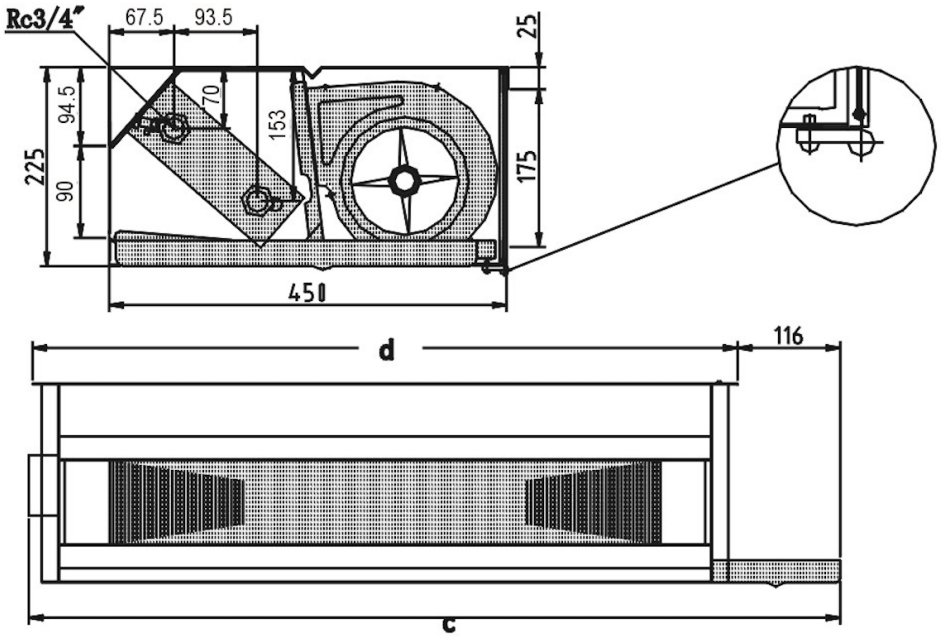
3. Dimensions, Weight and Wiring diagram

3.1 Dimensions and weight

3.1.1 CB: Ceiling Concealed - with back return plenum



Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
a	464	614	694	764	914	1214	1364	1514	1814
b	499	649	729	799	949	1249	1399	1549	1849
c	645	795	875	945	1095	1395	1545	1649	1995



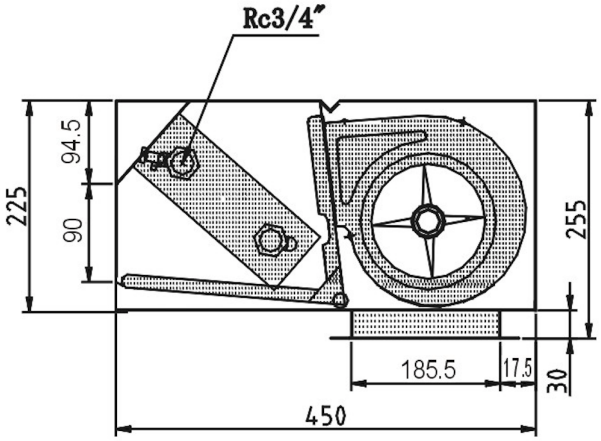
Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
d	524	674	754	824	974	1274	1424	1574	1874
c	645	795	875	945	1095	1395	1545	1695	1995

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): c*450*225mm

- Air inlet flange dimension: a*175mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*226mm or b*348mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.1.2 CD: Ceiling Concealed - with down return plenum



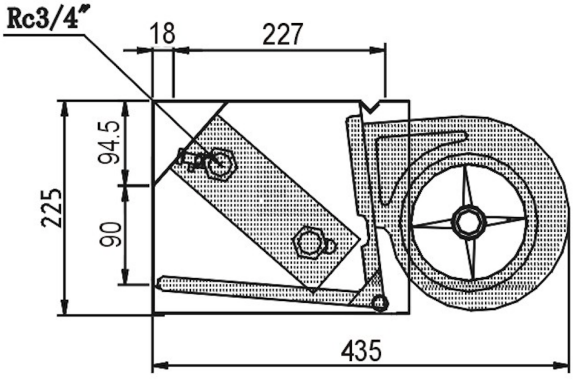
Note:

Dimensions not marked in the above drawing of Ceiling Concealed type with down return plenum (Product code: CD) is the same as Ceiling Concealed type with back return plenum (Product code: CB). Please refer to dimension drawings of CB type to know the installation dimension of a, b.

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): c*450*255mm (c
- Air inlet flange dimension: a*160mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*226mm or b*348mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.1.3 CC: Ceiling Concealed - without return plenum



Note:

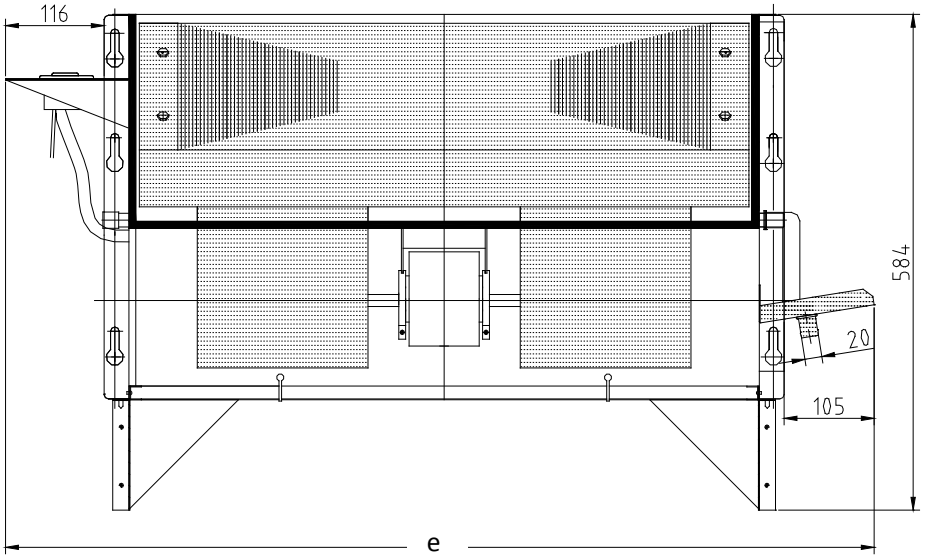
Dimensions not marked in the above drawing of Ceiling Concealed type without return plenum (Product code: CC) is the

same as Ceiling Concealed type with back return plenum (Product code: CB). Please refer to dimension drawings of CB type to know the installation dimension of a, b.

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): c*440*225mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*223mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.1.4 VC: Vertical Concealed



Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
e	754	895	975	1045	1195	1495	1645	1795	2095

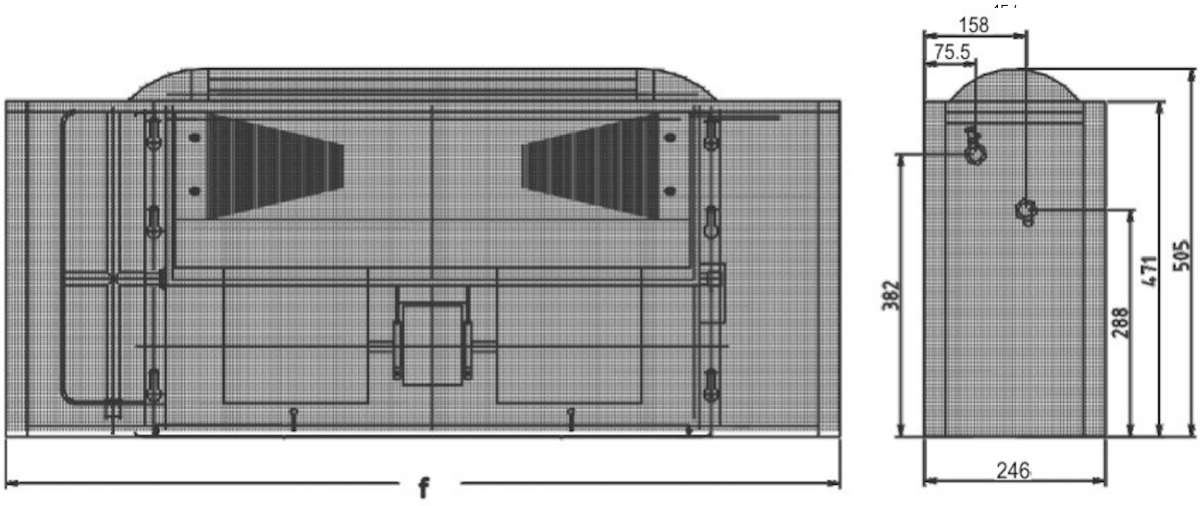
Note:

Dimensions not marked in the above drawing of Vertical Concealed type (Product code: VC) is the same as Ceiling Concealed type with back return plenum (Product code: CB). Please refer to dimension drawings of CB type to know the installation dimension of a, b.

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): a*225*584mm
- Air inlet flange dimension: a*175mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*226mm or b*348mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.1.5 CE: Ceiling Exposed



Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
f	850	1000	1080	1150	1300	1600	1750	1900	2200

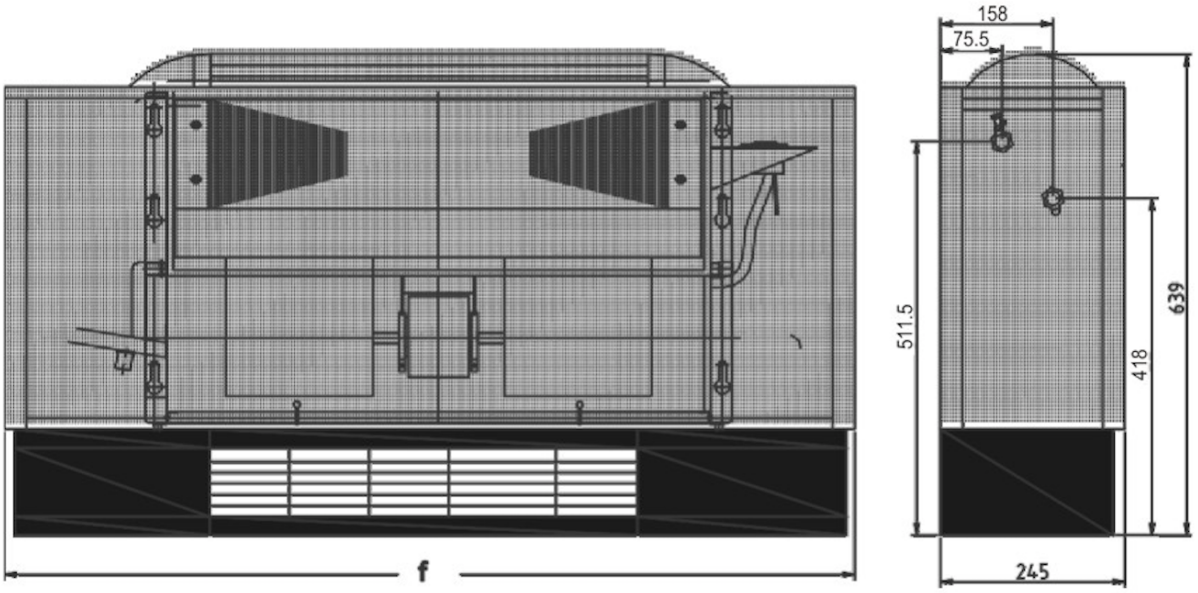
Note:

Dimensions not marked in the above drawing of Ceiling Exposed type (Product code: CE) is the same as Ceiling Concealed type with back return plenum (Product code: CB). Please refer to dimension drawings of CB type to know the installation dimension of a, b.

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): a*245*505mm
- Air inlet flange dimension: a*175mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*226mm or b*348mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.1.6 VE: Vertical Exposed



Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
f	850	1000	1080	1150	130	1600	1750	1900	2200

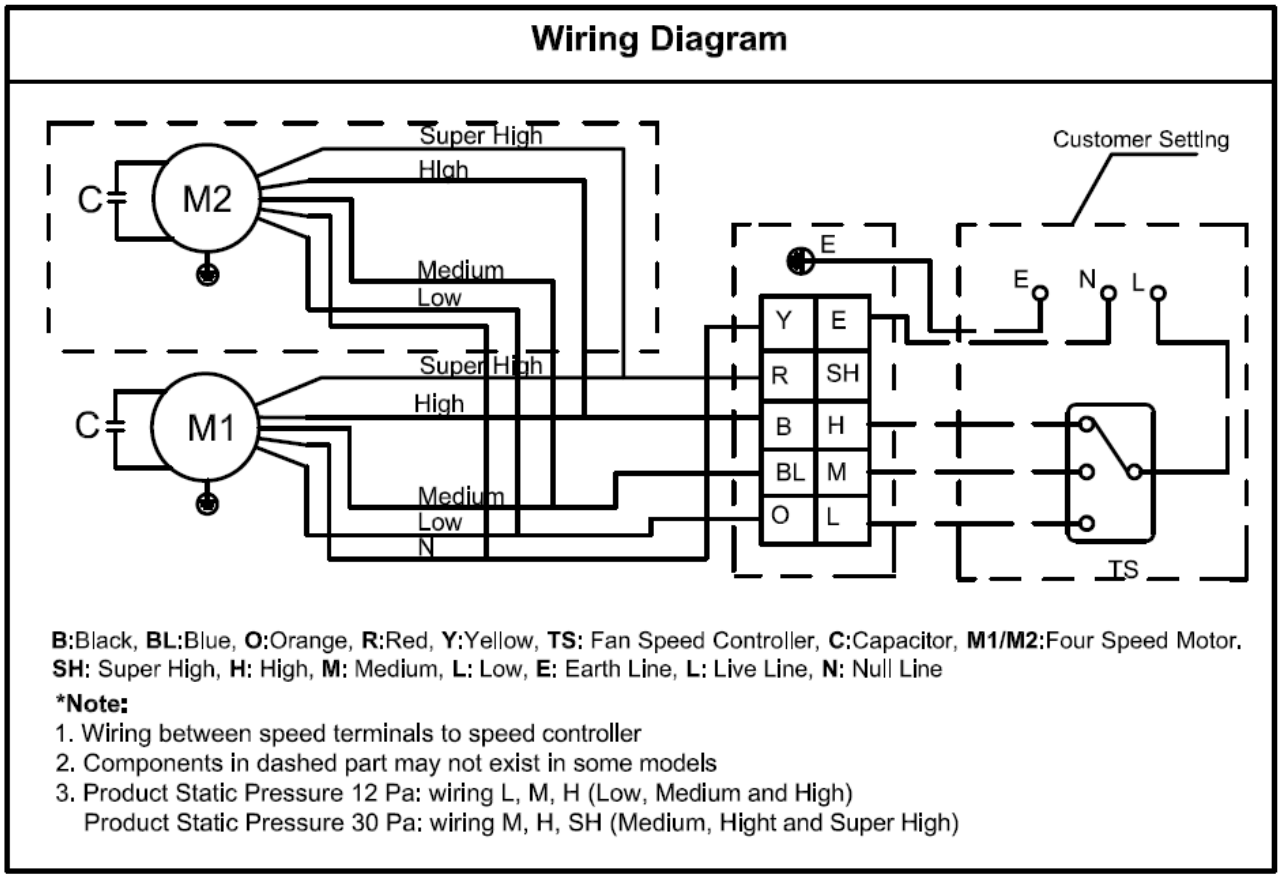
Note:

Dimensions not marked in the above drawing of Vertical Exposed type (Product code: VE) is the same as Vertical Concealed type (Product code: VC). Please refer to dimension drawings of VC type to know the installation dimension of a, b.

Frequently used installation data (2 pipe or 4 pipe system)

- Unit external dimension (W*D*H): a*245*639mm
- Air inlet flange dimension: a*175mm
- Air outlet flange dimension: a*110mm
- Hanging holes position dimension: b*226mm or b*348mm
- For Unit Weight, Water inlet/outlet dimension, condensate pipe dimension please refer to product specification sheet. In case of 4 pipe system there are 2 sets of water inlet/outlet instead of 1 set of a 2 pipe system.

3.2 Wiring diagram



4. Installation

4.1 Checking and acceptance

Each fan coil is packaged in corrugated cartons to avoid damages during transportation, handling and site placement. To make sure no damages occurred due to transportation, please follow below steps to check upon receiving the equipment:

a) Before acceptance, please check if each unit shows any abnormal facts, if carton edges and corners are in good conditions and if there are obvious carton damages;
b) For any obvious carton damages, please immediately unpack to inspect the unit itself. If the unit is indeed damaged, please indicate on the receipt and refuse to accept. Please also check accessories;
c) Check hidden damages of the unit;
d) If any hidden damage is found, do not move the unit on the site. The receiver has the obligation to evidence such damage does not occur after delivery. Meanwhile, please stop unloading and take photos for reference;
e) If damages are found, please notify the carrier, and request the carrier and the receiver to conduct a joint inspection;
f) Do not repair it yourself before inspection and confirmation by the carrier representative has been made;
g) After confirmation of damages, please contact related persons for replacement.

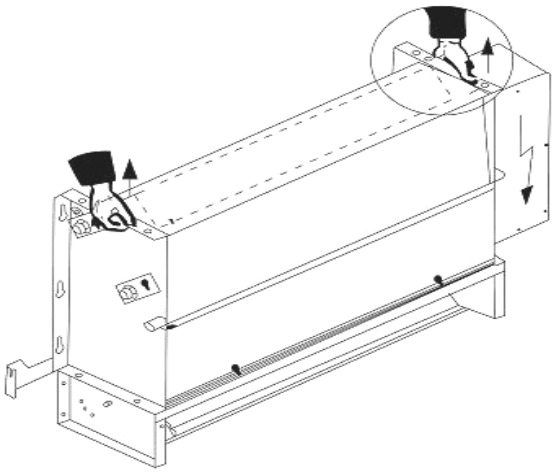
4.2 Transport

⚠ DAMAGE TO UNIT AND PERSONAL INJURY!

- Use protective gloves to avoid injury due to sharp edges.
- Ensure that at least two people carry the fan coil to avoid injury.
- In case of deliveries on pallets, use only lifting and transport vehicles with sufficient carrying capacity.
- Secure the load during transit to prevent it from tipping or falling.

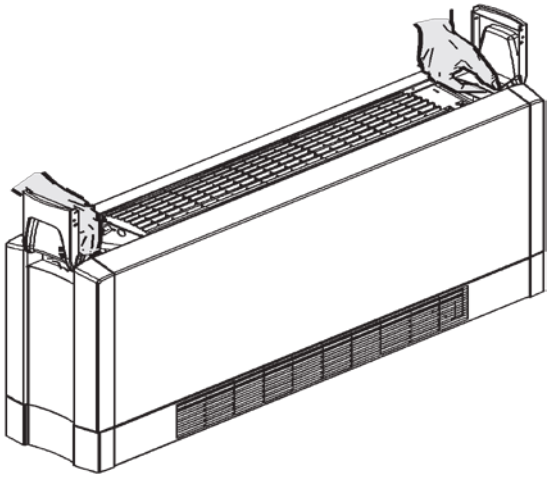
4.2.1 Transport unit without casing (Concealed type)

The fan coils should only be transported and lifted from both sides at the top of the basic unit body. Please refer to below indication.



4.2.2 Transport unit with casing (Exposed type)

The sliding cover of both side of unit mounted with decorative casing should be open in order to lift the unit. The lift position is the same as concealed type. And it should be lifted from both sides at the top of the basic unit body.



4.3 Prepare for Installation

⚠ DANGER FROM ELECTRICAL CURRENT!

- Ensure that the intended drilling area is free from electrical cables or pipes before drilling.

⚠ PERSONAL INJURY!

- Injury may be caused by falling parts and sharp edges!
- Wear a helmet, safety boots and protective gloves when installing the unit. Ceiling installations should always be performed by two people.

NOTE!

- **You must ensure that no mechanical deformations or twisting occurs during installation of all models in all installation locations.**

4.3.1 Installation location

The type, condition and ambient temperature of the installation location must be suitable for the relevant fan coil unit (See Section 1.2.1 and Section 1.2.2). Consider the following points:

- Walls/ceilings or mounting systems must be capable of bearing the weight of the unit, including all accessories.
- Install the unit only in enclosed spaces indoors.

NOTE!

- **Make all wall and ceiling openings in conjunction with an architect or stress analyst and the building contractor.**

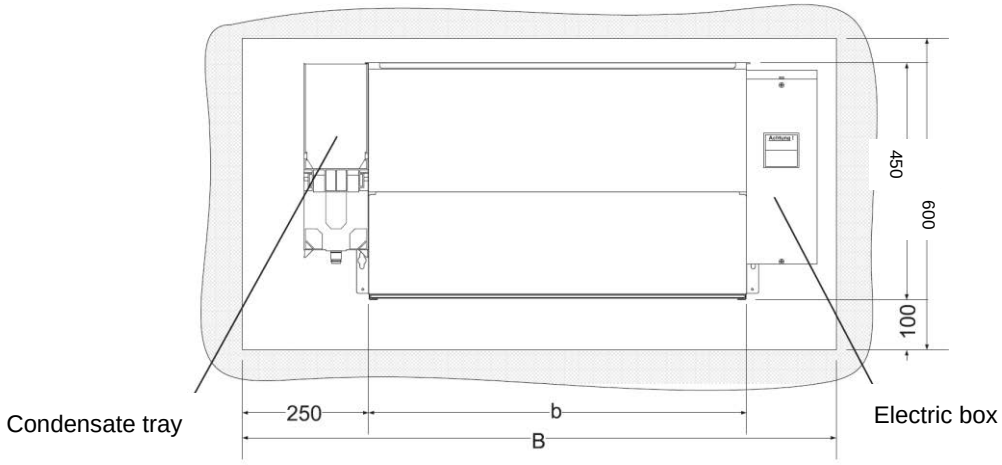
4.3.2 Recommended Service space (Basic Unit Body)

In order to carry out all necessary service and maintenance work on the basic unit it is

recommended that a service opening with the minimum dimensions of B x 600 mm is installed in the false ceiling or wall.

NOTE!

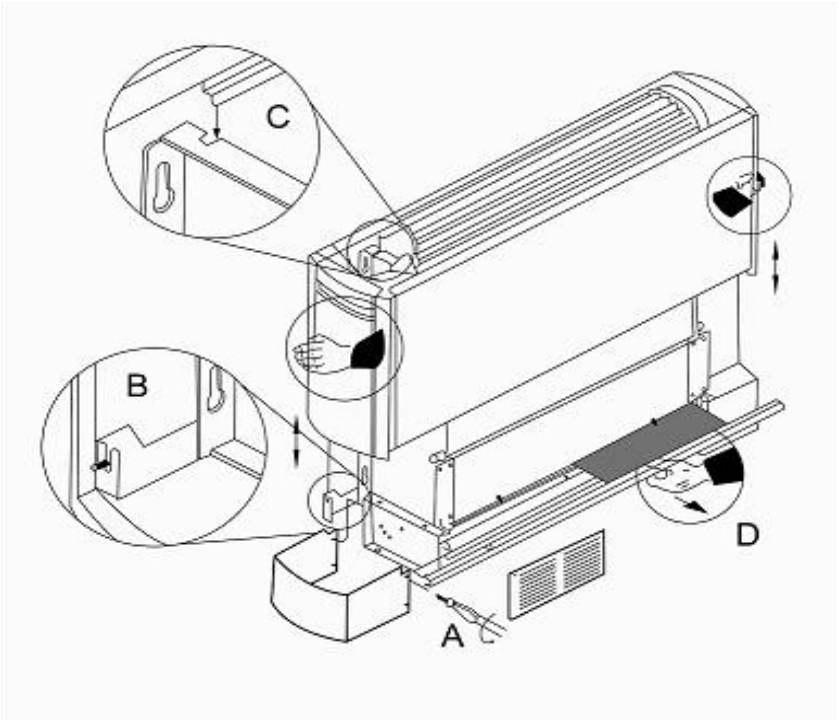
- **Please consider that in case of further mounted accessories more or larger openings may be necessary.**



Model	FC02	FC03	FC04	FC05	FC06	FC08	FC10	FC12	FC14
b	464	614	694	764	914	1214	1364	1514	1814
B	954	1104	1184	1254	1404	1704	1854	2004	2304

4.3.3 Remove unit casing of exposed type

In case of installation of exposed type (unit mounted with decorative casing), the casing must be removed before installation. Please refer to below indication drawing.

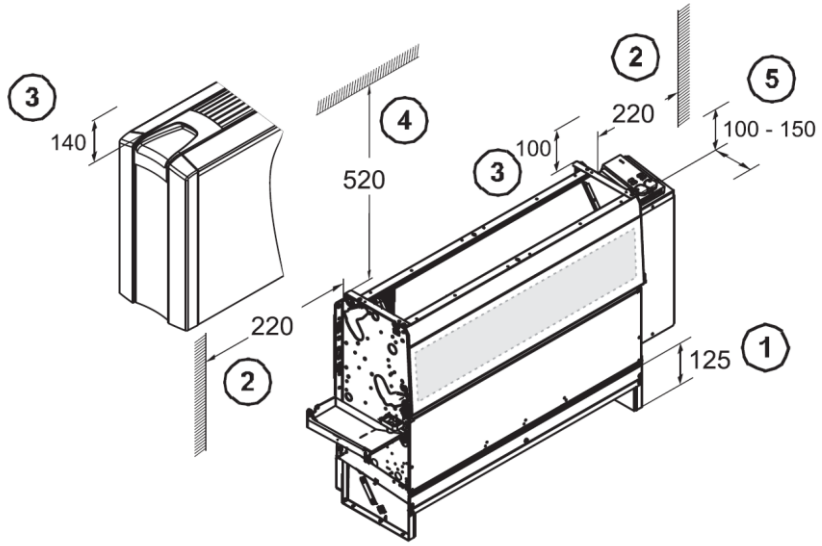


NOTE!

- **Please install the unit decorative casing according to the reverse way of dismounting unit casing after the commissioning.**
- **Do not mount the casing if there is other outstanding installation or commissioning work that has to be carried out on the unit.**

4.3.4 Fitting space

Depending on the model and installation, the pipes may be connected from left or right. The following fitting distances of Main Unit Body should be observed for all the type fan coil unit of Standard Series.



NOTE!

- **Make sure there are adequate spaces reserved for installation of pipes, valves, wiring connections etc. Above indicated fitting space is for reference only and bigger fitting space should be reserved if not sure about the installation convenience or accessibility of the connections.**

4.4 Unit installation

4.4.1 Precautions

To ensure good installation and operation, do check the following items before installation of the unit:

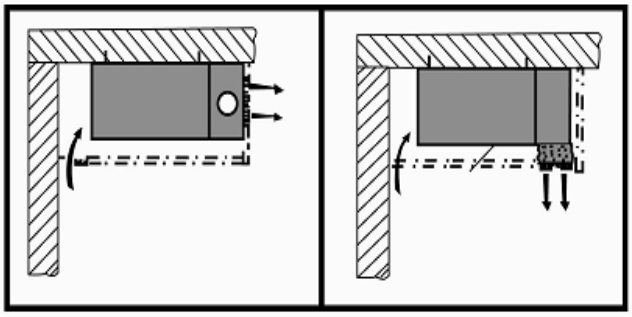
a) Adequate space shall be provided for installation and maintenance of the unit. Please refer to Unit Dimensions and also section 4.3.2 and 4.3.4, Removable ceiling panels or accesses shall be provided for daily maintenance;
b) Determine locations of pipelines and electric wires before installation; and adequate fitting space should be reserved. Kindly refer to section 4.3.4;
c) Make sure hanging structure adequate to support the unit weight;
d) All units shall be leveled to ensure smooth water drain and proper operation;
e) The unit connecting air duct shall be within the external static pressure scope;
f) Thermal insulation of chilled water valves and pipelines shall be made by the installer.

4.4.2 Hanging or fixing

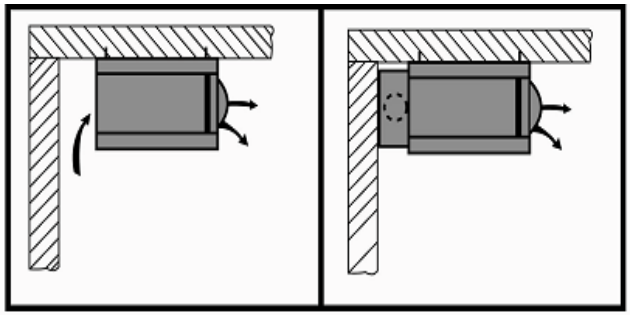
4.4.2.1 Ceiling installation

Please refer to dimensions in section 3.1.1, 3.1.2 and 3.1.3 to know the unit external dimension, air inlet/outlet flange dimension, hanging/fixing holes dimension.

Below installation possibilities can be realized for ceiling type fan coil units. Duct connection is also possible for ceiling concealed type please refer to section 4.4.3.



Ceiling Concealed



Ceiling Exposed.

NOTE:

- **The ceiling type fan coils can be mounted either directly under the ceiling or suspended, using appropriate means.**
- **In order to ensure complete removal of condensate from the condensate tray according to the hygiene regulations, cooling units are recommended to be installed with a 5 mm slope in the direction of the condensate drain and 0-2 mm in the direction of the unit front side.**

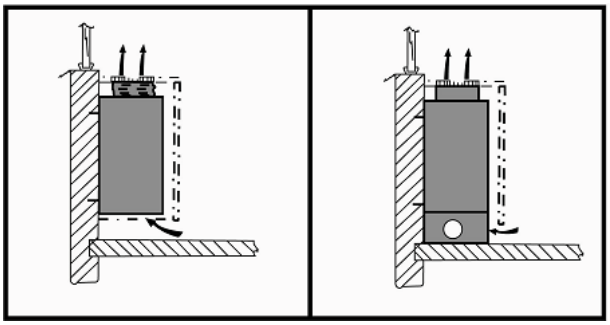
Keyholes are provided at the side of the rear panel for securing the units (2 for each side). Depending on fixing type you will need suitable fixing material.

At least four drill holes are required for ceiling installation (two on each side).

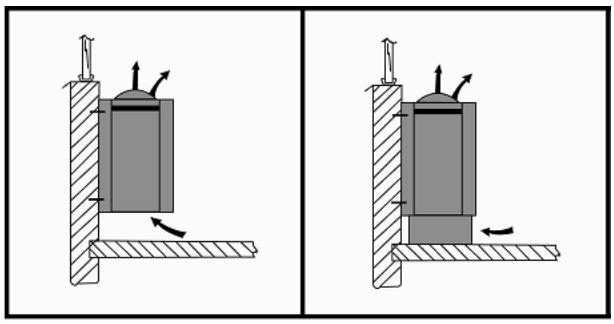
- Transfer the drilling measurements to the ceiling.
- Insert the screws.
- Hang the ceiling type fan coil into the keyholes.
- Use a spirit level for precise vertical and horizontal alignment of the fan coil and tighten the screws. (Pay attention to the tilt of cooling units!)

4.4.2.2 Vertical installation

Please refer to dimensions in section 3.1.4 and 3.1.5 to know the unit external dimension, air inlet/outlet flange dimension, hanging/fixing holes dimension.



Vertical Concealed



Vertical Exposed

Above installation possibilities can be realized for vertical type fan coil units.

NOTE!

- **In order to ensure complete removal of condensate from the condensate tray according to the hygiene regulations, cooling units are recommended to be installed with a 5 mm slope in the direction of the condensate drain and 0-2 mm in the direction of the unit front side.**
- **With stand alone installation on the floor auxiliary balancing devices like washers can be used.**

You can install the unit upright or wall-mounted.

– Hanging units without foot construction must be secured in at least four places (top and bottom on each side).

– Upright units with a foot construction need to be secured in two places only (top on each side).

a) Wall installation:

Keyholes are provided at the side of the rear panel for securing the units (2 for each side). Depending on fixing type and surface features you will need suitable fixing material.

- Transfer the drilling measurements to the wall.
- Insert the screws.
- Hang the fan coil basic unit body into the keyholes.
- Use a spirit level for precise vertical and horizontal alignment of the fan coil and tighten the screws. (Pay attention to the tilt of cooling units!)

b) Stand alone:

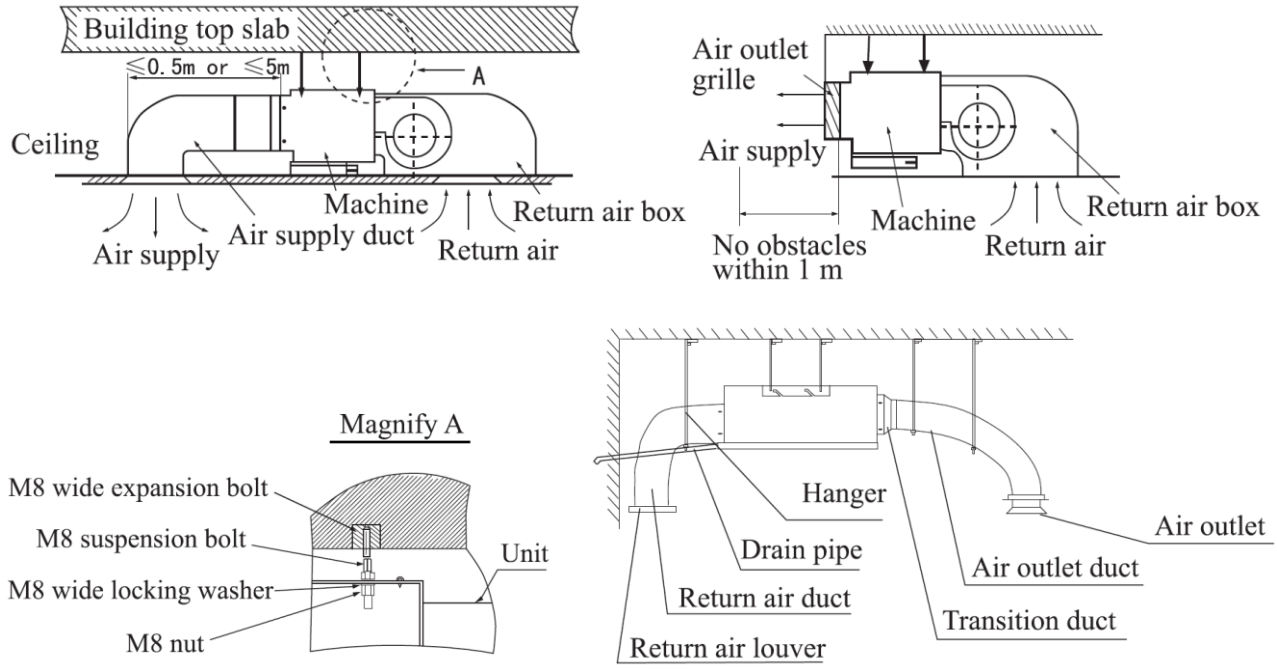
Two mounting slots are provided on each of the unit feet.

- Transfer the four drilling measurements to the ground
- Suitable screws for the intended mounting type are required.
- Use a spirit level for precise vertical and horizontal alignment of the fan coil and tighten the screws. (Pay attention to the tilt of cooling units!)

4.4.3 Duct connection (ceiling concealed installation)

Air ducts made of galvanized steel sheet of certain thickness (provided by the installer) may be connected to the flanges at air inlet/outlet of the unit. Refer to Unit Dimensions in section 3.1. Insert air ducts into flanges and fix with screws. If air duct and flange have different sizes, they should be connected through a site-made adapter. Connection of air supply cabinet and air duct: insert air duct into flange and fix them horizontally with screws or rivets. Same for connection of return air box.

For the ceiling concealed unit without return plenum (CC type) a return air box is recommended as shown below. The air return box/duct or air outlet duct showed below which should be respected for all ceiling concealed type fan coil unit.



The distance from air duct outlet to fan coil outlet shall depend on actual air duct length and static pressure terminal applied.

NOTE!

- **Please refer to product name plate to know the product type Standard pressure type (P1) or High static type (P2)**
- **Please make the wiring according to the static pressure selected and make sure it is in accordance with the air outlet duct length.**

4.5 Pipe connection

⚠ DANGER OF SCALDING BY ESCAPING HEATING MEDIUM!

Before the on-site piping and the fan coil hydraulic connection is set up, the heating/cooling medium should be isolated and secured against being opened unintentionally.

NOTE!

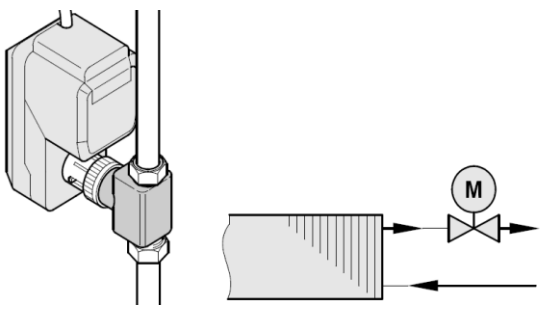
- **All on-site pipes by others for the cooling medium must be insulated against condensate formation. If the pipes are run close to the lateral condensate tray, they should be isolated above the lateral condensate tray by others on-site.**
- **When all connections have been completed, all screw connections should be tightened and checked that they are free of mechanical stress.**
- **In order to ensure cleaning or disassembly of the heat exchanger according to the hygiene guidelines appropriate measures shall be taken so that medium connections at**

the heat exchanger could be disconnected at any time.

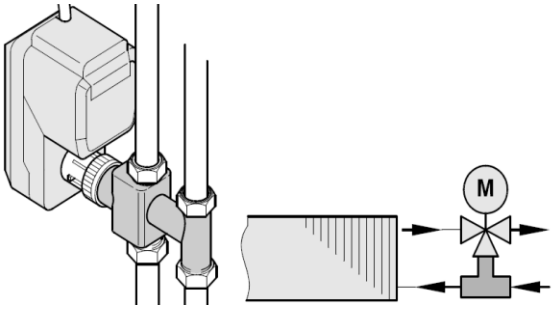
4.5.1 Valve connection

The units are supplied without valves, In case of installation with valves by others, the installation of the water inlet and outlet depends on the location of the medium/water connection and/or the used valves.

Below showed Pic. indicate the connection of a 2-way valve and 3-way valve to the units. In case of 4 pipe system two sets water inlet/outlet pipe will need 2 sets of valves.



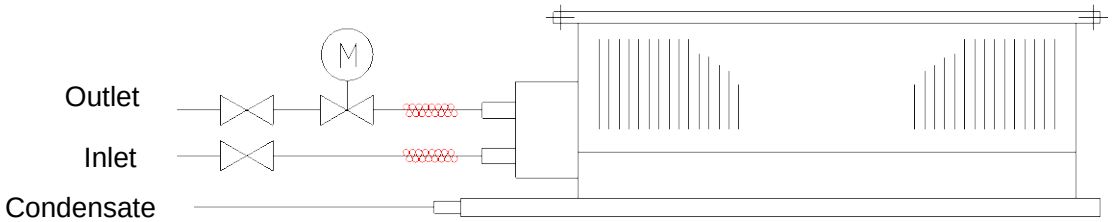
2-Way valve

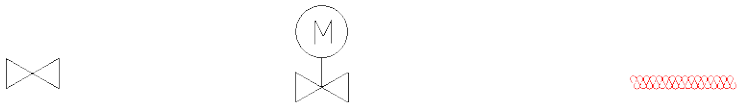


3-Way valve

4.5.2 Water inlet/outlet pipe connection

Please refer to below illustrative piping connection pic. for piping work. In case of installation of 4 pipe system, 2 sets of water inlet/outlet piping required. In case of use of 3-way valve please refer to section 4.5.1 to know right connection between water inlet/outlet pipe and 3-way valves.





Stop Valve 2-Way Valve Flexible connection

NOTE!

- **Water inlet in lower position while water outlet in higher position, refer to connection fittings indication sticked on side of unit.**
- **Flexible connection must be used and connected to water inlet/outlet fittings.**
- **Stop valves must be installed in water inlet/outlet pipeline.**
- **Air discharge valve must be installed in the highest position of the water system.**
- **Water discharge valve must be installed in the lowest position of the water system.**

NOTE!

During fitting, the connection nut on the heat exchanger should be countered using a suitable tool.

- **At the beginning of the fitting procedure, remove the caps of the water inlet and outlet pipes.**
- **Fit the connections, ensuring they are free of mechanical stress.**

In a 2- or 4-pipe system, pipes and all valves must be fitted directly above the lateral condensate tray to drain the condensate that forms on the pipes during cooling operation into the condensate tray.

- Note the specifications in section 2.4 to know the dimension of fittings.
- Run the pipes at a right angle to the side or to the rear.
- Seal the connections.
- Screw on the connections.

4.5.3 Condensate water pipe connection

In order for the condensate to be drained off properly, the condensate drain by others must be connected to the lateral condensate tray.

- Run the condensate drain at an angle/slope.
- When connecting the condensate drain to the wastewater system, observe the wastewater regulations (stench trap).

NOTE!

- **Condensate drains must always be positioned at a sufficiently steep angle! (Recommend 1:100). When running pressureless pipes or draining outdoors, no stench trap is required.**
- **The onsite condensate drain line is to be connected to the connector of the condensate tray in a stress-free way.**
- **To avoid dew formation during cooling, chilled water pipe and condensate pipe must be thermally insulated with careful treatment at insulation ends.**

NOTE!

- **After the installation, the condensate tray must be cleaned to make sure efficiency drainage.**

4.6 Electric Wiring

⚠ DANGER FROM ELECTRICAL CURRENT!

- The electricity shall be disconnected before make any installation work.
- The electrical installation of the air treatment unit must only be carried out by qualified electricians in observance of this operation manual.
- The electrical connection of fan coil units must be performed in accordance with the valid connection diagrams. The connection diagram is located on the side of the sheet electric

control box.

- The earth point provided on the unit shall be connected to the grounding system of the building.
- All electric connections shall comply with local electric regulations.
- The connection diagrams do not contain any protective measures. During connection, the standards and regulations currently in force must be observed and cleared with the local electricity company.

Please refer to section 3.2 wiring diagram to know the connection options in order to realize different static pressure.

1. Standard Static Pressure Type (P1)

If choose static pressure 12pa, pls wiring according to the real line (terminal 2, 3, 4)

If choose static pressure 30pa, pls wiring according to the dashed line (terminal 1, 2, 3)

2. High Static Pressure Type (P2)

If choose static pressure 30pa, pls wiring according to the real line (terminal 2, 3, 4)

If choose static pressure 50pa, pls wiring according to the dashed line (terminal 1, 2, 3)

Please refer to name plate to know the product type P1 or P2.

NOTE!

- **Please make the correct wiring of motorized 2-way or 3-way valve and thermostats in according to its installation instructions and make correct linkage between the units.**

5. Commissioning

⚠ ELECTRICAL HAZARD!

Before carrying out any work on the unit, power the unit down to avoid injury from electrical current. Check that the unit is isolated and ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

⚠ DANGER OF SCALDING!

Before performing work on the valves or the inlet or outlet pipes, seal off the heating or cooling medium inlet to prevent scalding. Do not commence work before the heating medium has cooled down.

⚠ DANGER OF ROTATING UNIT PARTS!

Rotating fan wheels can cause injury! Before performing any work on the unit, ensure that it is powered down. Ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

5.1 Requirements for commissioning

After installation, the installers shall re-inspect and confirm the following items have been made. This manual has been carefully read through. Operators are generally familiar with the unit and can operate it.

- The fan coil is electrically isolated.
- The entire fan coil system has been installed both mechanically and electrically.
- Air ducts have been completely connected and firmly installed;
- All medium/water pipes have been rinsed and are free from residues and foreign objects.
- The system is properly pressurized (Recommended test pressure 2.4Mpa and more than 10min) and then filled with clean medium/water.
- Check that the fan coil is properly fixed and mounted (on the wall, ceiling or on the floor).
- Manually check if valves, actuators thermostats are secured according to its operation manual.
- Tighten all medium/water screw connections.
- Check all electric connections using current wiring diagrams and check terminal strip screws for correct tight seat.

NOTE!

Before commissioning, ensure that

- **the unit discharge (heat exchanger),**
- **the condensate trays and the condensate pump intake area**
- **and the filter medium are clean.**

If necessary, these components may have to be cleaned or the filter medium changed.

NOTE!

- **For first water filling, the fan coil pipeline may retain some air, which will be finally entrapped at top of the water system. A manual discharge valve is provided at the water**

outlet joint of the water system. When abnormal noise is heard due to residual air in the water system or coil, turn the discharge valve knob to release the air. If the knob is too tight, you may use a pair of pinchers to turn it anticlockwise until water flows out of the valve steadily, and then tighten the knob again.

5.2 Startup

The fan coil usually is controlled by a thermostat which can on/off the unit, change the fan speed and also the water valve.

Switch on the power and follow the operation indication of the thermostat to operate the unit one by one working in high/mid/low speed.

Adjust the air outlet grill, setting fan speed and water flow to reach best cooling/heating effect.

In case of abnormal noise or behavior, switch off the unit and recheck the previous mentioned items. Otherwise it is recommended to set the unit working in high speed for 24 hours and recheck the unit behavior again.

NOTE!

- **After the commissioning, in case of non-use in winter season, water inside the unit shall be drained to avoid pipe cracks due to ice formulation.**

6. Maintenance and Troubleshooting

⚠ ELECTRICAL HAZARD!

Before carrying out any work on the unit, power the unit down to avoid injury from electrical current. Check that the unit is isolated and ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

⚠ DANGER OF SCALDING!

Before performing work on the valves or the inlet or outlet pipes, seal off the heating or cooling medium inlet to prevent scalding. Do not commence work before the heating medium has cooled down.

⚠ DANGER OF ROTATING UNIT PARTS!

Rotating fan wheels can cause injury! Before performing any work on the unit, ensure that it is powered down. Ensure that the appropriate point of the unit for the on-site power supply is secured against being switched back on.

6.1 Maintenance

The fan coil unit is a high-quality and reliable unit. However, to guarantee the permanent functioning and performance of the unit, regular maintenance and inspection by technical experts is necessary.

NOTE!

- **Maintenance may only be performed by trained technical personnel in observance of this operation manual and current regulations.**
- **The manufacturer's warranty will be invalidated if unit damage is attributed to the failure to perform regular maintenance and inspections.**
- **The valid warranty prescribes to maintain a written maintenance report according to the following table.**

6.1.1 Checklist of Periodic Maintenance

The following is a suggested maintenance plan.

Monthly Check

If the drip tray is clean and if condensate can flow to the drain pipe freely.

Yearly Check

a) Check if the unit casing is corroded. Clean and repair it if necessary;
b) Check if the fan blades and volute are damaged. Manually turn the blades to make sure it rotates freely without obstacles;
c) Check if coil fins are too dirty or damaged;
d) Clean and tighten all electric wirings;
e) Drain chilled water of all the system to make descaling and water replacement

NOTE!

- **Untreated water may cause unit scaling, corrosion and deterioration. System testing and maintenance shall be guided by water treatment experts. The manufactory shall not be held liable for any losses due to poor water quality.**
- **Due to limitation of support weight and dimensions, this job shall be collaborated by two installers to ensure safety.**
- **During off period in winter, water inside the unit shall be drained to avoid pipe cracks due to ice formulation.**

6.1.2 Coil Cleaning

Blocked or contaminated coil may decrease cooling capacity. It is recommended to clean it every 3 month in the following steps. It is also recommended to read section 2.3 before going to following steps.

1. Disconnect the power and motor wiring to stop rotation of fan blades;
2. Un-tighten fixing screws between side panel and drip tray;
3. Separate the casing and trip tray. Un-tighten fixing screws between fixing plate and side panel;
4. Draw out the coil evaporator;
5. Clean the coil and remove the scale;
6. Re-install the coil evaporator and drip tray, and fix them with screws;
7. Connect the power and water supply. Make trial operation to see the effect.

6.1.3 Drip tray

For smooth draining of condensate, the drip tray must keep clean, otherwise immediate cleaning must be made.

6.1.4 Troubleshooting

Deviations from normal operating states of the fan coil units are evidence of malfunctions that must be investigated by maintenance personnel.

The following table should serve as a starting point for maintenance personnel regarding possible causes of trouble and their correction.

Fault	Possible causes	Remedy	M
Fan does not work	Unit not switched on	Switch on unit	
	No electrical voltage	Check fuse/power supply	*
	Electrical cables not connected	Connect electrical cables	*
	Unit fuses defective	Replace fuses	*
Unit too noisy	Too high RPM level switched on	Set a lower RPM level	
	Air intake or discharge areas blocked	Clear discharge/air intake of obstructions or kinks	
	Noisy fan bearings	Replace the faulty fan	*
	Filter is dirty	Clean/replace the filter	
Unit does not cool(heat) or cool (heat) insufficiently	Fan not switched on	Switch on the fan	
	Air volume flow of the unit too low	Select a higher RPM level	
	Air intake or discharge areas blocked	Unobstruct or clean airways	
	Fan blocked/faulty	Check fan, replace if necessary	*
	Filter is dirty	Clean/replace the filter	
	Water flow rate too low	Check pump performance, Check pipe run balance and adjust using calculated pressure loss	*
	Cooling medium is not cold	Switch on chilled water set, Switch on the circulating pump, Bleed the system	
	Heating medium is not hot	Switch on the heating system boiler, Switch on the circulating pump, Bleed the system	
Water leakage in unit area	Main condensate tray drain blocked	Clean the main condensate tray and the condensate drain	
	Side wall-mounted/ceiling-mounted condensate tray drain blocked	Clean condensate drain and check for sufficient gradient, then clean and fill the siphon if necessary	*
	Chilled water pipes not correctly insulated	Insulate the chilled water pipes	*
	Unit not positioned horizontally	Align the unit and position it horizontally	*
	Heat exchanger or hydraulic connections leaking	Check the heat exchanger, bleeding and valve connections for leaks	
		If necessary, retighten connections, clean screw insert or reseal the connections	
		On valves, check the screw connections for ease of movement, clean sealing surfaces and replace seal if necessary	*
		Check the soldered joints between the collector and heat exchanger tubes and on the heat exchanger deflection bends for leaks; if leaking, replace the heat exchanger	*

*Items marked with * can only be performed by technical person only.

Remarks:

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

Remarks:

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

Remarks:

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

Making Extra Good Air!

Respect the environment!

For a correct disposal, the different materials must be divided and collected according to the regulations in force.