AMENITY™ Series

Ceiling Packaged Air Handing Unit

MFC–S Series

1500–20000 m^3/h

CLIMAVENETA®

Product Overview

Suspended Packaged Air Handling Unit of MFC-S series, is one of high quality products which adapt the energy-efficient technology from Climaveneta Europe. It is mainly applied to HVAC system. By continuously supplying the air within temperature margin, it will keep the balance of the heat and moisture, and meet the standards fo temperature and humidity in the room. It is widely used in the place such as hotel, apartments, villa, office buildings, hospitals and industrial plants.
Within the ultra-small design of volume, it will save a lot valuable space. Besides, higher efficiency, less noise and easier installation and maintenance are all its selling points.
There are various kinds of model, the air flow ranges from 1500 to 20000CMH, while the cooling capacity ranges from 7.8 to 324.1kw.

Unit Features

Compact structure; Easy Maintenance

Within the lower depth and less weight, it is a unit of compact structure specifically designed for the air conditioners which have strict standards in the depth.
By adapting the designs of half-buried lifting beam, front electric control box, removable side panels and removable filter, it is convenient to install and maintain.

Elegant appearance; Durable Construction

Within the box board made of high quality galvanzed steel, the unit looks beautiful.
Polyethylene is used for heat preservation, condensation prevention.
Within higher efficiency, less noise, overall leak proof.
The design of integral flood plat prevents the floating leakage of condensate.

Flexibility; Suitable matching

Range: The air flow ranges from 1500 to 20000CMH, which supplies more choices of model and save lots of investment.
Filter: By adapting the removeable filter, it could supply two available models depending on the space, one is side withdraw, the other is down withdraw.
Coil: Within the perfec:matching of AL/Cu fin, suitable design of process, and balancde heating exchanged.
Humidifier: wet-film humidifier is optional.

Nomenclature

MFC	04	X	S	F	L	00	0	S	L
1	2	3	4	5	6	7	8	9	10

1--Packaged air handling unit

2--Unit model
(Air Flow)

3--X: 6-row coil
--No: 4-row coil

4--S: Suspended packagecl
air handling unit

5--F: Fresh air Condition
R: Return air condition

6-ESP:
L: Low ESP; H: High ESP

7--00: No hot water coil or wet film humidifier
01: 1 row hot water coil
02: 2 rows hot water coil
03: 50mm wet film humidifier
04: 100mm wet film humidifier
05: 150mm wet film humidifier

8--0: No controller

9--Filiter extraction:
S: Side withdraw; D: Down withdraw

10--Connection type:
L: Left R:Right

Conection type

Facing the return air, of the connector of the water pipe is on the left side, then it is called left type, and vice versa.
Shown as the left type.

Cooling/heating Coil

4-row return air condition

Mode	Air flow m^3/h	Cooling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5S	1500	7.8	22.3	5	16.8	23.6	6
MFC02S	2000	11.0	31.5	11	22.1	31.7	11
MFC2.5S	2500	14.3	41.1	18	27.9	39.9	18
MFC03S	3000	17.2	49.4	20	33.4	47.9	19
MFC04S	4000	23.9	68.5	30	45.0	64.5	28
MFC05S	5000	26.9	77.3	14	55.1	79.0	12
MFC06S	6000	33.1	95.0	17	66.5	95.3	15
MFC08S	8000	44.8	128.5	22	88.9	127.4	20
MFC10S	10000	57.8	165.8	28	111.4	159.7	27
MFC12S	12000	67.5	193.7	32	134.4	192.6	31
MFC15S	15000	84.5	242.5	35	167.5	240.1	34
MFC18S	18000	100.9	289.5	28	195.0	279.5	27
MFC20S	20000	113.8	326.5	30	216.7	310.6	29

Cooling mode: Air inlet:27℃DB/19.5℃WB; Water inlet:7℃,△T=5℃.

Heating mode : Air inlet:15℃DB; Water inlet:60℃,△T=10℃.

6-row return air condition

Mode	Air flow m^3/h	Cooling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5XS	1500	10.5	30.2	11	19.3	27.6	8
MFC02XS	2000	12.9	37.0	5	25.4	36.4	4
MFC2.5XS	2500	17.3	49.5	8	32.0	45.8	7
MFC03XS	3000	20.4	58.6	9	38.4	55.0	8
MFC04XS	4000	28.4	81.5	14	51.5	73.8	11
MFC05XS	5000	35.8	102.8	35	64.2	92.1	18
MFC06XS	6000	41.2	118.1	13	76.8	110.1	12
MFC08XS	8000	55.7	159.9	19	102.6	147.1	18
MFC10XS	10000	71.7	205.7	27	128.5	184.3	26
MFC12XS	12000	83.9	240.8	31	154.7	221.7	29
MFC15XS	15000	105.1	301.6	38	193.2	277.0	35
MFC18XS	18000	125.4	359.8	29	224.9	322.4	27
MFC20XS	20000	141.2	405.1	32	249.9	358.2	30

standard Cooling condition: Air inlet:27℃DB/19.5℃WB; Water inlet:7℃,△T=5℃.

standard Heating condition: Air inlet:15℃DB; Water inlet:60℃,△T=10℃.

Cooling/heating Coil

4-row fresh air condition

Mode	Air flow m^3/h	Cooling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5S	1500	19.0	54.4	19	19.7	28.2	5
MFC02S	2000	26.1	74.9	37	26.4	37.8	14
MFC2.5S	2500	33.2	95.2	57	33.1	47.5	23
MFC03S	3000	39.7	113.8	59	39.8	57.1	25
MFC04S	4000	52.7	151.3	67	53.6	76.8	36
MFC05S	5000	64.6	185.3	33	65.8	94.3	16
MFC06S	6000	78.8	226.0	53	79.3	113.7	20
MFC08S	8000	105.8	303.7	56	105.9	151.8	26
MFC10S	10000	131.2	376.5	69	132.7	190.2	33
MFC12S	12000	159.1	456.5	83	161.0	230.7	39
MFC15S	15000	194.7*	507.9	79	204.7	293.4	43
MFC18S	18000	231.8*	604.7	83	238.2	341.5	44
MFC20S	20000	262.1*	683.7	88	264.7	379.4	46

Cooling mode: Air inlet: 35℃DB/28℃WB; Water inlet:7℃,△T=5℃.

Heating mode : Air inlet: 7℃DB; Water inlet:60℃,△T=10℃.

The data with "*" mark means the △T=5.5℃.

6-row fresh air condition

Mode	Air flow m^3/h	Cooling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5XS	1500	24.1	69.3	36	22.9	32.8	5
MFC02XS	2000	30.7	88.2	16	30.2	43.3	5
MFC2.5XS	2500	39.6	113.8	27	38.0	54.4	9
MFC03XS	3000	47.6	136.5	30	45.6	65.3	10
MFC04XS	4000	65.0	186.5	48	61.1	87.6	15
MFC05XS	5000	81.5	233.8	60	76.2	109.3	23
MFC06XS	6000	95.7	274.6	53	91.2	130.7	16
MFC08XS	8000	128.5	368.9	46	126.0	180.7	24
MFC10XS	10000	163.3	468.4	67	157.8	226.1	30
MFC12XS	12000	192.6	552.5	78	184.5	264.4	34
MFC15XS	15000	240.6	6904	89	235.0	336.8	40
MFC18XS	18000	288.1	826.7	72	273.5	392.0	31
MFC20XS	20000	324.1	930.0	80	303.9	435.6	35

Cooling mode: Air inlet:35℃DB/28℃WB; Water inlet:7℃,△T=5℃.

Heating mode : Air inlet: 7℃DB; Water inlet:60℃,△T=10℃.

Heating Coil

1-row hot water coil

Mode	Air flow m^3/h	Standard condition			Fresh Air condition		
		Heatling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5S	1500	8.4	12.1	2	10.3	14.7	2
MFC02S	2000	11.5	16.4	3	13.8	19.8	4
MFC2.5S	2500	14.6	20.9	5	17.6	25.2	7
MFC03S	3000	17.5	25.0	5	21.1	30.2	7
MFC04S	4000	23.7	34.0	8	28.6	41.0	11
MFC05S	5000	29.4	42.1	12	35.4	50.7	16
MFC06S	6000	35.6	51.0	15	42.8	61.3	20
MFC08S	8000	47.6	68.2	19	57.2	82.0	25
MFC10S	10000	59.7	85.5	30	71.6	102.7	40
MFC12S	12000	72.8	104.3	36	87.9	125.9	47
MFC15S	15000	90.4	129.6	41	111.3	159.6	53
MFC18S	18000	105.3	150.9	31	129.6	185.7	39
MFC20S	20000	116.9	167.6	35	144.0	206.4	39

Return air conditon: Air inlet: 15℃DB, Water inlet:60℃, △T=10℃
Fresh air condition: Air inlet: 7℃DB, Water inlet: 60℃, △T=10℃

2-row hot water coil:

Mode	Air flow m^3/h						
		Cooling capacity kW	Water flow L/M	Water Pressure kPa	Heating capacity kW	Water flow L/M	Water Pressure kPa
MFC1.5S	1500	10.7	15.4	2	13.1	18.7	3
MFC02S	2000	14.6	20.9	4	17.6	25.2	6
MFC2.5S	2500	18.5	26.5	7	22.3	32.0	9
MFC03S	3000	22.2	31.9	7	26.8	38.4	10
MFC04S	4000	30.2	43.3	11	36.4	52.1	15
MFC05S	5000	37.4	53.6	17	45.0	64.5	22
MFC06S	6000	45.3	64.9	20	54.4	78.0	27
MFC08S	8000	60.5	86.7	26	72.8	104.3	34
MFC10S	10000	75.9	108.8	42	91.2	130.7	55
MFC12S	12000	92.6	132.8	49	111.8	160.3	60
MFC15S	15000	115.1	165.0	57	141.7	203.1	72
MFC18S	18000	134.0	192.0	43	164.9	236.4	60
MFC20S	20000	148.8	213.3	46	183.2	262.6	63

Return air conditon: Air inlet: 15℃DB, Water inlet:60℃, △T=10℃
Fresh air condition: Air inlet: 7℃DB, Water inlet: 60℃, △T=10℃

Unit Configuration

Model	Air flow m^3/h	Fan/ Motor Quantity	ESP				Total external pressure				Niotor kW –Number of poles	Noise dB(A)	Unit Weight		Heating coil weight	
			4-row Pa		6-row Pa		4-row Pa		6-row Pa				4-row kg	6-row kg	1-row kg	2-row kg
MFC1.5S	1500	1/1	L	150	L	100	L	180	L	130	0.25KW– 4P	56.5	73	76	7	10
			H	230	H	180	H	260	H	210	0.32KW– 4P	58	73	76	7	10
MFC02S	2000	1/1	L	150	L	100	L	180	L	130	0.32KW– 4P	58.5	83	87	8	11
			H	231	H	181	H	262	H	212	0.55KW– 4P	58.5	84	88	8	11
MFC2.5S	2500	1/1	L	150	L	100	L	200	L	150	0.45KW– 4P	60	93	98	9	12
			H	213	H	163	H	261	H	211	0.55KW– 4P	60.5	94	99	9	12
MFC03S	3000	1/1	L	170	L	120	L	270	L	220	0.55KW– 4P	61.5	105	110	9	14
			H	200	H	150	H	300	H	250	0.55KW– 4P	62.5	107	112	9	14
MFC04S	4000	2/2	L	215	L	165	L	255	L	205	0.32KW– 4P	61.5	135	142	11	18
			H	295	H	245	H	340	H	290	0.45 KW— 4P	62	144	151	11	18
MFC05S	5000	2/2	L	210	L	160	L	281	L	231	0.45 KW— 4P	63.5	153	162	12	20
			H	287	H	237	H	346	H	296	0.55KW– 4P	64	156	165	12	20
MFC06S	6000	2/2	L	176	L	126	L	270	L	220	0.55KW– 4P	64.5	172	182	14	22
			H	220	H	170	H	315	H	260	0.55KW– 4P	64	181	191	14	22
MFC08S	8000	2/1	L	250	L	200	L	316	L	266	2.2KW–4P	64	227	240	17	27
			H	350	H	300	H	416	H	366	3.0KW–4P	65.5	227	240	17	27
MFC10S	10000	2/1	L	250	L	200	L	314	L	264	3.0KW–4P	65	262	277	19	31
			H	350	H	300	H	414	H	364	4.0KW–4P	67	281	297	19	31
MFC12S	12000	2/1	L	300	L	250	L	374	L	324	3.0KW–4P	65.5	308	330	24	39
			H	400	H	350	H	474	H	424	4.0KW–4P	67	327	350	24	39
MFC15S	15000	2/1	L	300	L	250	L	381	L	331	4.0KW–4P	64.5	361	388	27	44
			H	400	H	350	H	481	H	431	5.5KW–4P	66	370	396	27	44
MFC18S	18000	2/1	L	350	L	300	L	439	L	389	5.5KW–4P	66.5	411	447	30	46
			H	450	H	400	H	539	H	489	7.5KW–4P	67.5	426	462	30	46
MFC20S	20000	2/1	L	350	L	300	L	459	L	409	7.5KW–4P	68	449	489	34	51
			H	450	H	400	H	559	H	509	7.5KW–4P	69	449	489	34	51

Increases 1 row hot water coil, EPS will reduce by 25Pa;

Increases 2 row hot water coil, EPS will reduce by 50Pa;

Wet-film Humidifier Performance

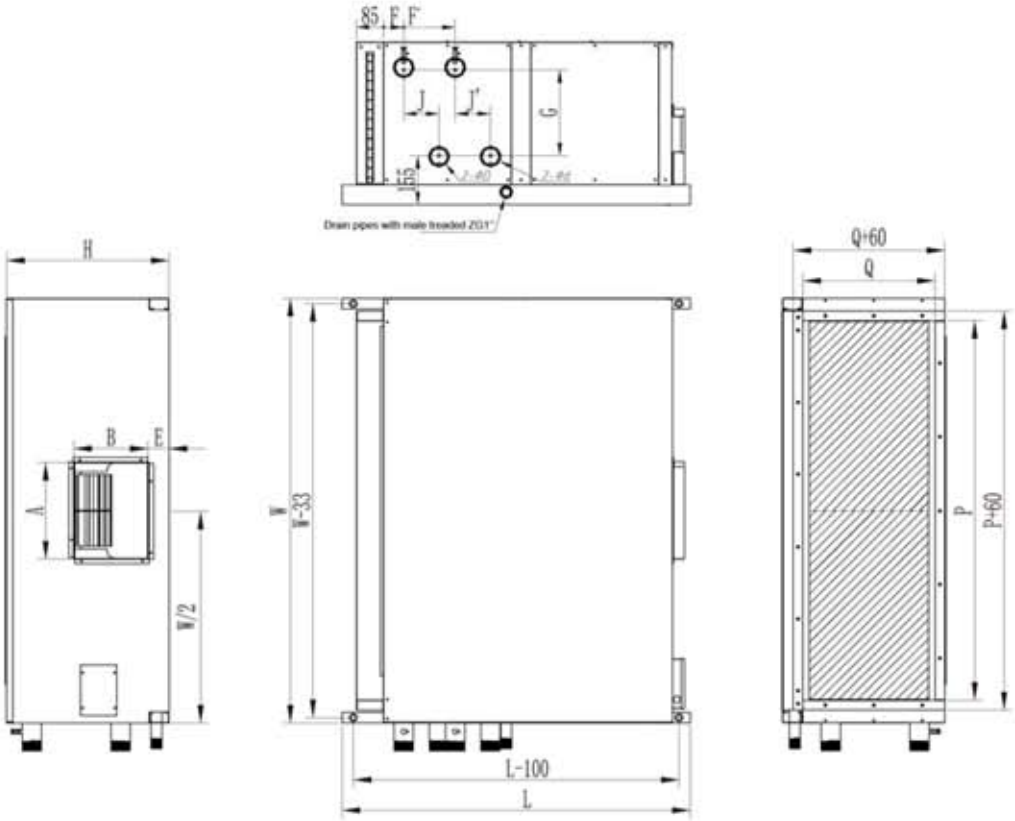
Model	Air Flow (m^3/h)	Fresg air condition humidification (kg/h)			Standard condition humidification (kg/h)		
		The depth of wet film			The depth of wet film		
		50mm	100mm	150mm	50mm	100mm	150mm
MFC1.5S	1500	3.2	6.1	7.8	2.8	4.7	6.4
MFC02S	2000	4.2	8.2	10.4	3.7	6.3	8.5
MFC2.5S	2500	5.3	10.2	13.0	4.6	7.9	10.7
MFC03S	3000	6.4	12.2	15.6	5.6	9.4	12.8
MFC04S	4000	8.5	16.3	20.8	7.4	12.6	17.1
MFC05S	5000	10.6	20.4	25.9	9.3	15.7	21.3
MFC06S	6000	12.7	24.5	31.1	11.1	18.8	25.6
MFC08S	8000	17.0	32.6	41.5	14.8	25.1	34.1
MFC10S	10000	21.2	40.8	51.9	18.5	31.4	42.7
MFC12S	12000	25.5	48.9	62.3	22.2	37.7	51.2
MFC15S	15000	31.8	61.1	77.8	27.8	47.1	64.0
MFC18S	18000	38.2	73.4	93.4	33.4	56.5	76.8
MFC20S	20000	42.4	81.5	103.8	37.1	62.8	85.3

1. 4 types of film depth as options:50mm,100mm,150mm,200mm,with efficiency is：40%，60%，75%，85%；
2. Fresh air condition of humidifier：28℃ DB, humidity10%；
3. standard condition of humidifier：28℃ DB, humidity25%；
4. Wet film humidifier air resistance：50mm:23Pa; 100:38Pa; 150mm:57Pa。

Dimension Drawing

Overall Dimension

MFC1.5(X)S, MFC02(X)S, MFC2.5(X)S, MFC03(X)S



(mm)

Model	L	W	H	Air outlet connection size						Air inlet connection size	
				A		B		E		P	Q
				Low ESP	High ESP	Low ESP	High ESP	Low ESP	High ESP		
MFC1.5(X)S	1035	785	416	234		264		75	75	645	320
MFC02(X)S	1035	945	426	300		264		75	75	805	320
MFC2.5(X)S	1035	1125	426	300		264		75	75	985	320
MFC03(X)S	1085	1145	508	304		264		80	80	1005	412

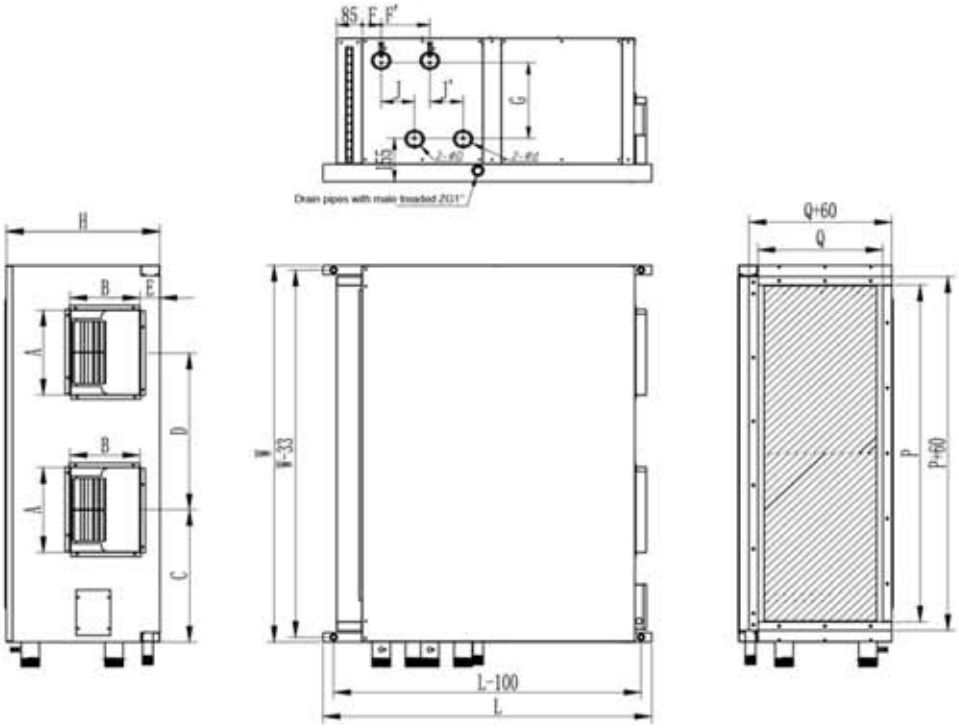
(mm)

Model	Pipe connection size										
	Inlet/outlet pipeφD		Inlet/outlet pipeφd		F		F'		G	J	
	4R	6R	1R	2R	4R	6R	4-1(2)R	6-1(2)R		4R	6R
MFC1.5(X)S	Φ34	Φ34	Φ34	Φ34	78	86	146	198	175	66	110
MFC02(X)S	Φ34	Φ48	Φ34	Φ34	78	86	146	198	175	66	110
MFC2.5(X)S	Φ48	Φ48	Φ34	Φ34	78	86	146	198	175	66	110
MFC03(X)S	Φ48	Φ48	Φ34	Φ34	78	86	146	198	225.6	66	110

Dimension Drawing

Overall Dimension

MFC04(X)S~MFC20(X)



Model	L	W	H	Air outlet connection size								
				A		B		C	D	E	P	Q
				Low ESP	High ESP	Low ESP	High ESP					
MFC04(X)S	1085	1325	508	302	302	224	236	480	550	72	1185	412
MFC05(X)S	1085	1525	508	302	302	224	236	485	555	72	1385	412
MFC06(X)S	1123	1635	558	302	302	224	236	527	591	72	1495	462
MFC08(X)S	1218	1755	660	383	304	333	302	520	715	72	1615	564
MFC10(X)S	1218	2125	660	383	383	333	333	622	881	72	1985	564
MFC12(X)S	1270	2225	736	434	383	332	352	632	961	72	2085	640
MFC15(X)S	1310	2378	812	434	383	332	333	900	739	72	2238	704
MFC18(X)S	1379	2378	927	463	447	417	452	900	739	72	2238	831
MFC20(X)S	1379	2378	1054	502	447	417	452	900	739	72	2238	958

Model	Pipe connection size										
	Inlet/outlet pipeφD		Inlet/outlet pipeφd		F		F'		G	J	
	4R	6R	1R	2R	4R	6R	4+1(2)R	6+1(2)R		4R	6R
MFC04(X)S	Φ48	Φ48	Φ34	Φ48	78	86	146	198	276	66	110
MFC05(X)S	Φ48	Φ60	Φ34	Φ48	78	86	146	198	276	66	110
MFC06(X)S	Φ48	Φ60	Φ34	Φ48	78	86	146	198	327	66	110
MFC08(X)S	Φ48	Φ60	Φ34	Φ48	78	86	146	198	429	66	110
MFC10(X)S	Φ60	Φ76	Φ34	Φ48	78	86	146	198	429	66	110
MFC12(X)S	Φ60	Φ76	Φ48	Φ48	78	86	146	198	480	66	110
MFC15(X)S	Φ60	Φ76	Φ48	Φ48	78	86	146	198	581	66	110
MFC18(X)S	Φ60	Φ89	Φ48	Φ48	78	86	162	224	696	82.5	137.5
MFC20(X)S	Φ60	Φ89	Φ48	Φ48	78	86	162	224	823	82.5	137.5

Installation, Operation and Maintenance

Transportation

Make sure that the lifting beam of the unit is equipped with hanging holes, it is necessary to add padding between the units and hanging rope so as to avoid damage of panel when transport the units. All the water pipe and wind pipe shall be avoided from the hanging rope during the transportation.

Do not use pry bar or similar tools to move units in order to avoid deformation of the unit.

Installation

Relevant specifications shall be conducted according to the state rules, please refer to the Technical Manual supplied.

The unit should be installed in parallel to the ceiling, boom should remain vertical with the lifting beam, master lock or nuts should be tightly locked.

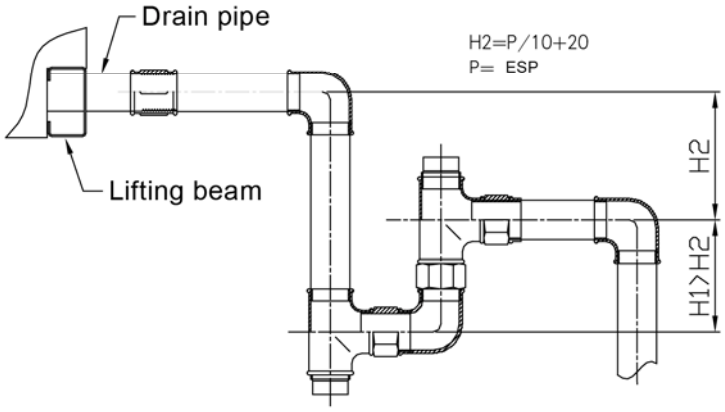
Sufficient space, especially the space near the unit configuration and junction boxes should be allowed around the unit (recommended not less than 1 meter), so that it will be convenient to install, operate, conduct the daily check and maintenance.

Make sure the correct installation according to the attached note, make sure the balanced force so as to avoid damage to the copper pipe and drain.

Pay attention that the unit could not bear the pressure from the weight of duct and water pipe, Soft connection should be used between the duct and the unit to prevent vibration transmission.

Make sure that insulation configuration should be considered when install the cooling coils and the condensate drain.

Make sure that the seal should be installed on the water outlet for the smooth discharge of condensate.



Wiring

Electrical connection should be in accordance with the state rule. Please refer to the technical manual supplied.

Unit shall be fitted with earth wire, and the motor should be connected to the power which contains overload protection

Remember to remove all the debris inside the air duct before the test, also check whether the valve is in normal state, or whether there are any abnormal sounds of the fan impeller when slide by hand to avoid any loose of each fastener.

Make sure the correct match of the electric wires and the correct facing direction of the fan before the test.

Maintain

It is essential to check the unit each time before the test, for instance: check whether the valve status is normal or not.

Remember to clean or replace the filter in time base on its dirt and pressure margin.

The water inside the coil should be discharged when the unit keeps the long-term shutdown. Also pay attention to the antifreeze measures during the winter.

Remember to clean the inside of cooper tube every one or two years. Also remember to clean the surface of the Al fin with the water or compressed air.

Lubrication of the fan bearings should be checked on a regular basis.

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B771 CCU/01-11-2013 EN-SH