colair

FAN COIL UNITS

FCU

PRODUCT GUIDE

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Features

SLIM AND COMPACT DESIGN
Light and rigid construction due to the compact and strong structural design of the unit.
Slim unit design also fulfills the stringent space requirement of today's building design. High Air Volume FCU with the height of only 430mm is most suitable for application that demand for high air flow but with space saving in mind.

HIGH EFFICIENCY HEAT EXCHANGER
High quality copper pipes with slit profile aluminium fins are being transformed into high efficiency heat exchanger through advance design, manufacturing equipment and processes.

LOW NOISE
Through stringent static and dynamic balancing tests of motors, coupled with high quality thermal and acoustic insulation in the unit, superb low noise performance is achieved.

MULTIPLE ESP OPTIONS
Standard fan coil units come with low ESP (0Pa) and high ESP (30Pa and 60Pa) options to suit different applications. High Air Volume FCU comes with Standard ESP (40 Pa) and High ESP (130 Pa) options to add to the product line up.

SIMPLE INSTALLATION
Unique design of the fan coil units allow easy on-site modifications of water pipes configuration (left or right). Accessories are alsoavailable to ensure trouble-free installation.

EASY MAINTENANCE
The fan coil units are equipped with high quality electrical motor with low noise bearing that do not require lubrication and thus minimum maintenance effort required.
Blowers and also motors can be dismantled individually if cleaning of heat exchanger is needed.
High efficiency filter provides better filtration than normal filter with longer operational life and easy to clean.

NO LEAKAGE
One piece molded drain pan with integral thermal insulation and professional welding skill enable all condensate water to be collected and prevent condensation at the outside of the drain pan.

SUPERIOR PRODUCT QUALITY
All fan coil units are manufactured in a 1509001:2000 and 15014000:2004 certified manufacturing facility whereby highest products' quality is always top priority. The products' high quality standard has been recognized through successfully obtaining the CE marking certification which in turn comply with the stringent EU requirements.

COLAIR IS COMMITTED TO PROVIDING COMFORT AND ASSURANCE WITH A CERTIFIED AND QUALITY SOLUTION FOR YOUR NEXT PROJECT OR DESIGN.

CEILING CONCEALED FAN COIL UNIT

3 ROWS COIL - 50/60Hz

MODEL			PFUS08	AF200E	AF300E	AF400E	AF500E	AF600E	AF800E	AF1000E	AF1200E	AF1400E
Air Flow	High		LPS	98	146	194	238	289	387	479	572	672
			CMH	350	520	689	850	1030	1380	1710	2040	2400
	Medium		LPS	75	106	143	180	219	289	362	432	553
			CMH	270	380	510	640	780	1030	1290	1540	1975
	Low		LPS	54	79	96	126	157	208	250	292	352
			CMH	190	280	340	450	560	740	890	1040	1255
Total Cooling Capacity	High		W	2250	3180	4050	4920	5830	8115	9300	11800	13000
	Medium		W	2025	2765	3480	4130	4895	6895	8185	10265	11700
	Low		W	1665	2290	2875	3245	4255	5760	6325	7905	7560
Sensible Cooling Capacity	High		W	1450	2080	2920	3535	4320	5660	6695	7480	9360
	Medium		W	1275	1750	2455	2900	3675	4695	5760	6280	7950
	Low		W	960	1415	1960	2190	2980	3790	4285	4635	5710
External Static Pressure	High	Pa	60									
	Low		30									
Filter	Type		Washable Type									
	Material		Nylon									
	Thickness		8mm									
Fan	Type		Centrifugal forward curved blades									
	Quantity		1	2	2	2	2	3	4	4	4	
	Material		Galvanized Steel									
	Drive		Direct-drive									
	Type		Permanent split capacitor with thermal overload protection									
	Insulation Class		Class B									
Motor	Power Supply	V/Ph/Hz	220~240/1/50~60									
	Quantity		1	1	1	1	1	2	2	2	2	
Rated Power Input	at ESP: 60 Pa	W	65	75	90	110	150	178	228	270	340	
	at ESP: 30 Pa	W	42	55	65	82	105	148	171	212	253	
Cooling Coil	Type		Seamless copper tubes mechanically bonded to aluminium hydrophilic fins and collars									
	Max. Working Pressure	MPa	2									
	Pipe Connection	mm(in)	DN20 (3/4") - Female Threaded									
	Water Flow Rate	l/s	0.11	0.15	0.20	0.25	0.28	0.39	0.44	0.56	0.62	
	Water Pressure Drop	kPa	10	25	18	21	30	30	39	28	49	
Net Weight		kg	13	17	17	18	20	27	31	34	39	
Dimension	Length	mm	705	805	895	995	1105	1435	1635	1765	1765	
	Width	mm	470	470	470	470	470	470	470	490	490	
	Height	mm	240	240	240	240	240	240	240	250	300	
Sound Pressure Level	at ESP: 60 Pa	dB(A)	42	44	47	47	50	52	54	54	56	
	at ESP: 30 Pa	dB(A	39	41	43	44	46	47	49	51	52	
Condensate Drain Size		mm(in)	DN20 (3/4") - Male Threaded									

NOTES

1. Nominal cooling capacity is based on the following condition:
   a) Water temperature: 7.0°C (inlet) / 12.0°C (outlet)
   b) Air entering condition: 27.0°C DB / 19.5°C WB
2. Air volume is tested under entering air condition of 20.0°C DB and dry coil condition.
3. All the units' airflow value stated is at high speed.
4. Sound pressure level is based on 11.5 dB(A) anechoic room background noise.
5. Extended drain pan is optional upon request
6. The manufacturer reserves the rights to make changes to the above specification without prior notice.

HIGH DELTA-T CEILING CONCEALED FAN COIL UNIT

4 ROWS COIL - 50/60Hz

MODEL			PFUS08	AF200B	AF300B	AF400B	AF500B	AF600B	AF800B	AF900B	AF1000B	AF1200B	AF1400B
Air Flow	High		LPS	93	171	213	252	322	406	454	593	685	770
			CMH	330	610	760	900	1150	1450	1620	2115	2445	2750
	Medium		LPS	87	149	199	241	314	395	432	555	622	723
			CMH	310	530	710	860	1120	1410	1540	1980	2220	2580
	Low		LPS	68	93	140	174	216	308	336	412	440	524
			CMH	240	330	500	620	770	1100	1200	1470	1570	1870
Total Cooling Capacity	High		W	2063	3392	4238	5637	6511	8042	10372	11361	12949	13726
	Medium		W	2000	3200	4100	5500	6400	7900	10100	11000	12400	13300
	Low		W	1784	2532	3475	4722	5353	7072	9036	9593	10534	11450
Sensible Cooling Capacity	High		W	1450	2474	2908	3798	4675	5798	7205	8091	9796	10155
	Medium		W	1400	2300	2800	3700	4600	5700	7000	7800	9300	9800
	Low		W	1204	1708	2262	3036	3657	4925	6043	6525	7534	8070
External Static Pressure			Pa	75									
Filter	Type		Washable Type										
	Material		Nylon										
	Thickness		8mm										
Fan	Type		Centrifugal forward curved blades										
	Quantity		1	2					3		4	3	
	Material		Galvanized Steel										
	Drive		Direct-drive										
Motor	Type		Permanent split capacitor with thermal overload protection										
	Insulation Class		Class B										
	Power Supply	V/Ph/Hz	220~240/1/50~60										
	Quantity		1						2				
Rated Power Input		W	65	95	115	133	190	240	270	370	575	615	
Cooling Coil	Type		Seamless copper tubes mechanically bonded to aluminium hydrophilic fins and collars										
	Max. Working Pressure	MPa	2										
	Pipe Connection	mm(in)	DN20 (3/4") - Female Threaded										
	Water Flow Rate	l/s	0.23	0.35	0.43	0.52	0.67	0.83	1.07	1.17	1.32	1.36	
	Water Pressure Drop	kPa	14	20	26	13	14	22	27	15	29	18	
Net Weight		kg	22	26	30	32	34	46	48	51	55	60	
Dimension	Length	mm	660	880	960	1060	1160	1460	1560	1660	1460	1660	
	Width	mm	553	553	553	553	553	553	553	553	609	609	
	Height	mm	256	256	256	256	256	256	256	256	300	300	
Sound Pressure Level	at ESP: 75 Pa	dB(A)	46	47	50	50	51	51	53	55	60	61	
Condensate Drain Size		mm(in)	DN20 (3/4") - Male Threaded										

NOTES

1. Nominal cooling capacity is based on the following condition:
   a) Water temperature: 5.5°C (inlet) / 14.5°C (outlet)
   b) Air entering condition: 27.0°C DB / 19.5°C WB2)
2. Air volume is tested under entering air condition of 20.0°C DB and dry coil condition.
3. All the units' airflow value stated is at high speed.
4. Sound pressure level is based on 11.5 dB(A) anechoic room background noise.
5. Extended drain pan is optional upon request
6. The manufacturer reserves the rights to make changes to the above specification without prior notice.

HIGH AIR VOLUME FAN COIL UNIT

4 ROWS COIL - 50/60Hz

MODEL			PFUS16	AF800BH			AF1000BH			AF1200BH			AF1600BH		
				High	Med	Low	High	Med	Low	High	Med	Low	High	Med	Low
Air Flow	High ESP (H)		LPS	355	285	229	423	341	272	539	432	345	698	558	447
			CMH	1265	1015	815	1510	1215	970	1925	1540	1230	2490	1990	1595
Total Cooling Capacity	High ESP (H)	130 Pa	W	8290	6640	5300	9870	7900	6310	12040	9630	7700	15930	12570	10200
Sensible Cooling Capacity			W	6110	4890	3920	7390	5910	4730	8750	6990	5600	11870	9510	7610
External Static Pressure	High		Pa	130											
	Low		Pa	40											
Filter	Type			Washable Type											
	Material			Nylon											
	Thickness			8mm											
Fan	Type			Centrifugal forward curved blades											
	Quantity			1			1			1			2		
	Material			Galvanized Steel											
	Drive			Direct-drive											
Motor	Type			Permanent split capacitor with thermal overload protection											
	Insulation Class			Class B											
	Power Supply	V/Ph/Hz		220–240/1/50–60											
	Quantity (H)/(S)			1/1			1/1			1/1			1/1		
Rated Power Input	at ESP: 130 Pa	W		280			370			600			700		
Cooling Coil	Type			Seamless copper tubes mechanically bonded to aluminium hydrophilic fins and collars											
	Pipe Connection	mm(in)		DN25 (3/4") - Male Threaded											
	Water Flow Rate	l/s		0.44			0.50			0.66			0.86		
	Water Pressure Drop	kPa		6			14			25			20		
Net Weight		kg		55			55			61			74		
Dimension	Length	mm		860			860			960			1110		
	Width	mm		770			770			770			770		
	Height	mm		430			430			430			430		
Sound Pressure Level		dB(A)		58			58			59			61		
Condensate Drain Size		mm(in)		DN25 (3/4") - Male Threaded											

NOTES

1. Nominal cooling capacity is based on the following condition:
   a) Water temperature: 7.0°C (inlet) / 12.0°C (outlet)
   b) Air entering condition: 27.0°C DB / 19.5°C WB
2. Air volume is tested under entering air condition of 20.0°C DB and dry coil condition.
3. All the units' airflow value stated is at high speed.
4. Sound pressure level is based on 11.5 dB(A) anechoic room background noise.
5. Extended drain pan is optional upon request
6. The manufacturer reserves the rights to make changes to the above specification without prior notice.

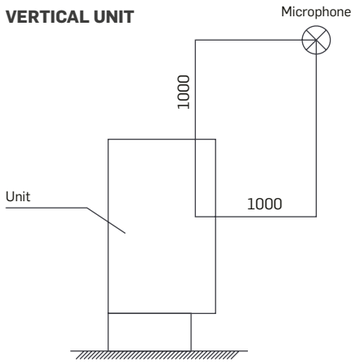
MODEL			PFUS16	AF1800BH			AF2000BH			AF3000BH		
				High	Medium	Low	High	Medium	Low	High	Medium	Low
Air Flow	High ESP (H)		LPS	825	661	540	1087	868	696	1540	1231	986
			CMH	2945	2360	1890	3880	3100	2485	5500	4395	3520
Total Cooling Capacity	High ESP (H)	130 Pa	W	19110	15290	12220	24260	19390	15530	34410	27510	22010
Sensible Cooling Capacity			W	14280	11420	9140	17620	14090	11290	25000	19980	15990
External Static Pressure	High		Pa	130								
	Low		Pa	40								
Filter	Type			Washable Type								
	Material			Nylon								
	Thickness			8mm								
Fan	Type			Centrifugal forward curved blades								
	Quantity			3			2			2		
	Material			Galvanized Steel								
	Drive			Direct-drive								
Motor	Type			Permanent split capacitor with thermal overload protection								
	Insulation Class			Class B								
	Power Supply	V/Ph/Hz		220–240/1/50–60								
	Quantity (H)/(S)			2/1			2/2			3/3		
Rated Power Input	at ESP: 130 Pa	W		750			1200			1800		
Cooling Coil	Type			Seamless copper tubes mechanically bonded to aluminium hydrophilic fins and collars								
	Pipe Connection	mm(in)		DN25 (1") - Male Threaded			DN40 (1 ½") - Male Threaded					
	Water Flow Rate	l/s		0.44			0.50			0.66		
	Water Pressure Drop	kPa		6			14			25		
Net Weight		kg		55			55			61		
Dimension	Length	mm		860			860			960		
	Width	mm		770			770			770		
	Height	mm		430			430			430		
Sound Pressure Level		dB(A)		58			58			59		
Condensate Drain Size		mm(in)		DN25 (1") - Male Threaded								

NOTES

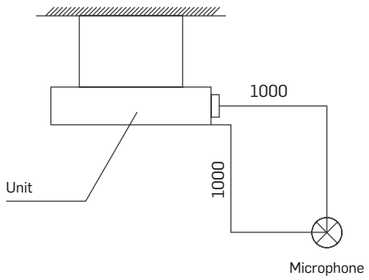
1. Nominal cooling capacity is based on the following condition:
   a) Water temperature: 7.0°C (inlet) / 12.0°C (outlet)
   b) Air entering condition: 27.0°C DB / 19.5°C WB
2. Air volume is tested under entering air condition of 20.0°C DB and dry coil condition.
3. All the units' airflow value stated is at high speed.
4. Sound pressure level is based on 11.5 dB(A) anechoic room background noise.
5. Extended drain pan is optional upon request
6. The manufacturer reserves the rights to make changes to the above specification without prior notice.

SOUND PRESSURE LEVEL

VERTICAL UNIT



HORIZONTAL UNIT



Sound pressure level test setup complies to GB/T19232-2003

ESP		30Pa									
MODEL PFUS08	Fan Speed	1/1 Octave Sound Pressure Level (dBA, red 20μPa)								Overall dB(A)	NC
		63	125	250	500	1K	2K	4K	8K		
AF200E AF200B	High	14	24	33	34	34	29	22	13	36.9	33
	Medium	13	18	27	28	29	24	16	12	32.0	27
	Low	12	16	23	26	26	22	13	13	29.5	24
AF300E AF300B	High	17	27	36	37	38	33	25	16	40.9	37
	Medium	12	21	30	32	32	27	19	13	34.8	31
	Low	12	13	21	23	23	19	14	12	26.8	21
AF400E AF400B	High	19	29	37	39	40	35	27	18	42.9	39
	Medium	14	24	32	35	35	31	22	14	38.0	34
	Low	13	17	24	26	35	22	15	12	29.7	24
AF500E AF500B	High	21	32	39	41	35	36	29	20	44.4	40
	Medium	14	24	33	35	35	30	23	14	38.0	34
	Low	12	17	25	27	35	24	15	12	30.9	26
AF600E AF600B	High	22	33	41	42	35	38	30	22	46.4	43
	Medium	17	27	35	36	35	33	25	17	40.2	36
	Low	13	18	26	29	35	24	17	14	32.3	27
AF800E AF800B	High	23	34	42	43	35	39	32	23	46.5	43
	Medium	18	28	36	37	35	34	26	17	41.0	36
	Low	13	19	28	29	35	25	18	13	32.6	27
AF1000E AF1000B	High	25	35	44	45	35	41	33	25	49.0	45
	Medium	21	32	40	42	35	37	30	21	45.3	41
	Low	14	22	30	32	35	28	20	13	35.1	31
AF1200E AF1200B	High	26	37	46	47	35	43	35	26	50.9	47
	Medium	19	30	38	39	35	35	27	19	42.8	39
	Low	13	21	29	30	35	26	18	12	33.9	30
AF1400E AF1400B	High	27	38	47	48	35	43	37	28	51.3	47
	Medium	19	30	38	40	35	36	28	19	43.7	39
	Low	13	21	29	31	35	26	19	14	34.4	30

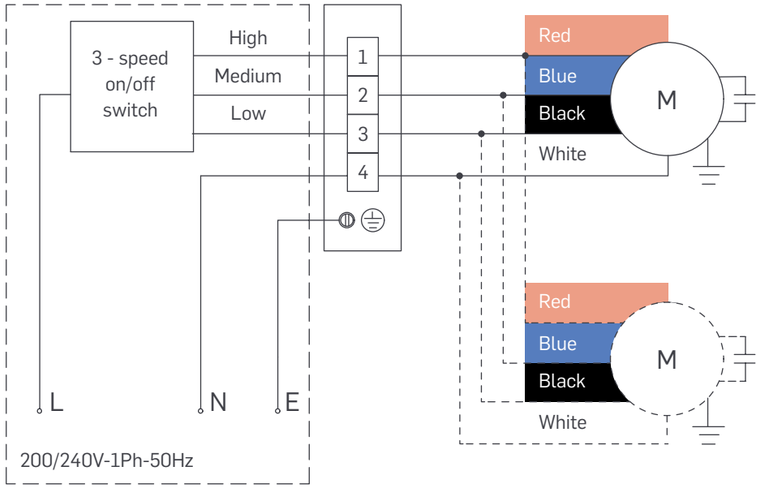
NOTES
1. Sound pressure level of FCUs are tested in accordance to GB/T19232-2003 under 11.5 dBA background noise.
2. Microphone position: 1m in front and 1m below the unit.

ESP		130Pa									
MODEL PFUS16	Fan Speed	1/1 Octave Sound Pressure Level (dBA, red 20μPa)								Overall dB(A)	NC
		63	125	250	500	1K	2K	4K	8K		
AF800BH	High	33	44	52	54	54	50	41	33	57.1	53
	Medium	28	38	47	48	49	45	36	28	51.8	47
	Low	25	35	44	46	46	41	33	25	49.1	45
AF1000BH	High	34	45	53	55	55	50	42	34	58.0	54
	Medium	28	39	46	48	49	45	36	28	51.7	47
	Low	20	30	38	40	41	36	28	19	43.7	40
AF1200BH	High	34	45	53	54	55	52	43	34	58.2	54
	Medium	29	39	48	49	49	45	37	29	52.4	48
	Low	21	33	40	42	42	37	30	22	45.0	41
AF1600BH	High	37	47	54	57	56	53	45	36	60.1	55
	Medium	30	40	49	50	51	49	37	30	54.1	50
	Low	22	33	40	43	44	39	31	22	46.7	43
AF1800BH	High	37	48	56	58	58	54	46	36	61.0	57
	Medium	31	41	50	51	52	48	40	31	55.2	51
	Low	22	33	41	44	44	39	31	23	46.9	43
AF2000BH	High	39	50	58	59	60	56	47	38	63.2	59
	Medium	33	45	52	53	54	49	42	33	57.0	53
	Low	26	36	45	46	45	42	34	25	49.2	44
AF3000BH	High	41	51	60	62	62	58	49	40	65.3	61
	Medium	38	48	57	59	59	54	45	38	61.9	58
	Low	27	38	47	49	49	44	36	27	52.0	47

NOTES
1. Sound pressure level of FCUs are tested in accordance to GB/T19232-2003 under 11.5 dBA background noise.
2. Microphone position: 1m in front and 1m below the unit.

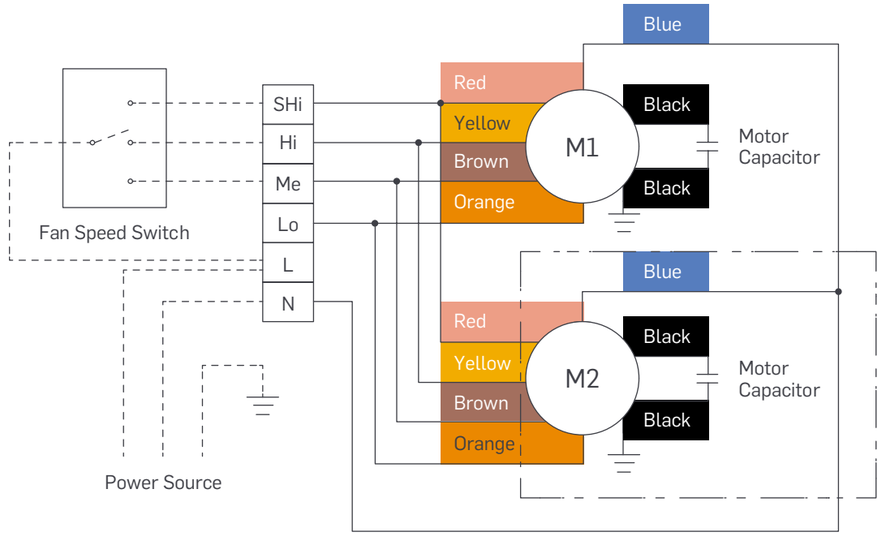
WIRING DIAGRAMS

MODEL PFUS08-AF-E



Field Supply

MODEL PFUS08-AF-B



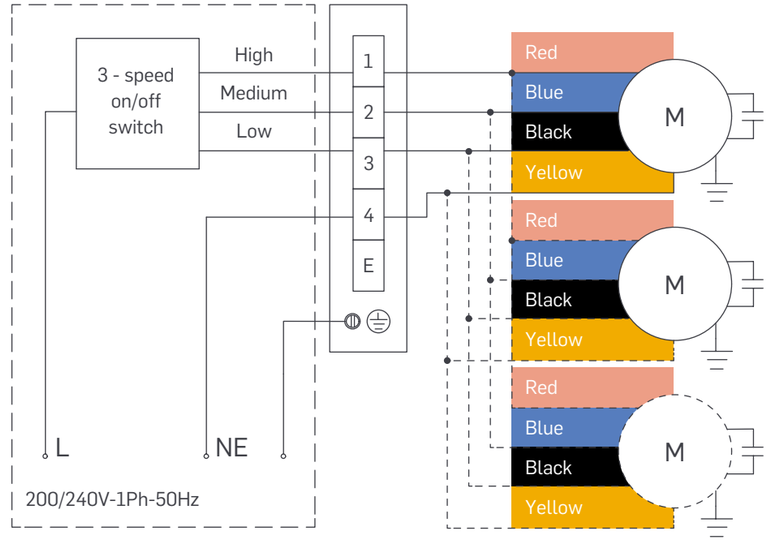
Field Wiring

NOTES

SHi : Super High Speed
H i : High Speed
Me : Medium Speed
Lo : Low Speed

MOTORA2 PPLYT O 800-1400 UNITS
50-60Pa UNITS:(H,M,L)CONNECTTO (Hi.Me, Lo)
70-BOPa UNITS:(H,M,L)CONNECTTO (SHi, Hi.Me)

MODEL PFUS16-AF-BH



Field Supply

INSTALLATION AND MAINTENANCE

PRE-INSTALLATION

Caution: Installation and maintenance should be done by qualified technicians who are familiar with local codes and regulations.

Sharp edges from the unit and heat exchanger are potential hazard. Handle with extreme care.

1. The unit needs to be handled with care during transportation and it is prohibited to move the unit by holding on to the blower or blower blade.
2. The unit is designed to take its own weight. As such, do not transfer the load of duct, water pipes and other accessories to the unit. This may cause the hanger to deform and fail.
3. Before any installation work starts, the following should be checked:
   a) Chilled water pipes and condensate water drainage pipes must be properly connected and standby for use.
   b) Electrical wiring is properly connected and all terminals are tightened to prevent loose wires.
   c) Sufficient space must be reserved for installation, service and maintenance purposes.
   d) Ensure the hanging rod is capable of supporting the weight of the unit and the position of rods are according to drawing.
   e) Ensure the supply and return duct installed (for units that required ducting) is according to the specification of the unit.

UNIT INSTALLATION

WATER SYSTEM

1. The top connecting pipe is for water outlet and bottom connecting pipe is for water inlet. During installation, do not tighten the pipe with excessive torque to prevent deformation of heat exchanger. Both inlet and outlet pipes should be insulated, connecting threads should be sealed using PTFE tape and sufficient gradient should be maintained for condensate water pipe for proper water drainage.
2. It is recommended to use union for connection of unit to the supply and return water pipes and to have isolation valves for each unit to ease servicing work / upgrade of equipment in the future.
3. Water piping should be sufficiently supported at proper intervals to cater for the weight of the pipes and also water flowing inside. Consideration for expansion and contraction is a must to prevent leaking and breakage of pipes.
4. A manual air vent is located at the water outlet pipe. During commissioning or changing from cooling to heating cycle (or vice versa), the valve must be opened to release air that might be trapped inside the pipe in order to ensure good heat exchange efficiency.

DIRECTION OF PIPES CONNECTION

Direction of pipes is determined by facing the supply air side of the unit. If the pipes are located at the left, they are left piping and vice versa. It is important to specify the piping direction during ordering to avoid installation problem at site.

PIPES CONNECTION

1. All threaded pipes must be sealed using PTFE tape during connection.
2. After leak testing of water pipes, all pipes must be insulated to prevent heat lost / heat gain.
3. All valves on the piping system must be located within the area of the drain pan of the unit. If the site condition does not permit that, additional insulation or an additional drain pan should be installed to prevent condensation.
4. The drain pan is designed to have gradient to ease the flow of condensate water. To facilitate the proper drainage of condensate water, it is recommended to install the unit at a gradient of 3 ~ 5mm tilting to the drainage pipe.
5. Condensate water pipe should be insulated to prevent condensation at the outer pipe due to the cool drainage water. It is recommended that the gradient of the pipe should not be less than 1:75 to facilitate the flow of drainage water.

Caution: When connecting water pipes, proper sized tools should be used to avoid damage of pipes or unit.

ELECTRICAL CONNECTION

1. All electrical wiring must be performed by a qualified technician who is certified by the local authorities.
2. All electrical wires used for wiring must comply to the local codes and regulations.
3. Fluctuation of electricity should be within +/-10% of the rated power supply.
4. During installation, wiring should be connected according to the wiring diagram provided by the manufacturer and do not wire all of the three speeds of motor together to a single power source.
5. Earth wire is provided and it is being connected to the casing of the motor for protection. The unit should be properly GROUNDED to avoid incident of electrical shock.
6. Unit of different model should not share a single 3-speed switch, or the motor will not work properly or it will be burnt.

SERVICING AND MAINTENANCE

PRE-INSTALLATION

Warning: Moving parts of unit and electric shock will cause serious injury or fatality to human.
Power supply to the unit must be disconnected before carrying out any maintenance work.

1. Dirty filter will increase the air resistance, dirty heat exchanger will reduce the cooling capacity of the unit and blocked drain pan will cause water dripping to the ceiling of the building. In view of that, schedule maintenance should be carried out to clean the filters, heat exchanger and drain pan.

2. It is prohibited to operate the unit without any filter to prevent rapid blockage of heat exchanger by dust and as a result, poor heat transfer. Thus, it is recommended to install filter at return air duct to maintain cleanliness of aluminum fins for better and consistent heat exchange.

3. Water temperature during summer should not be lower than 5°C and not higher than 80°C during winter.
The water must be treated and ensure it is clean for optimum performance.

4. It is not recommended to adopt control that allows flowing of cool water through heat exchanger with fan motor idle. This will cause extensive condensation occur not only on heat exchanger but on the surface of casing due to very low air temperature in the unit. If the control do not prevent chilled water flowing through heat exchanger during idling of fan motor, it is recommended to close the water circuit through manual hand valve.

5. When the unit is not going to be used for extended period, the water pipes and heat exchanger should be filled with water to reduce internal corrosion. If the unit is going to be idle throughout the winter, the water pipe should be drained completely and anti-freeze procedure should be adopted to prevent water pipes breakage.

Caution: Unfiltered and untreated water will cause excessive scaling, corrosion and growing of bacteria.

NOTES

RECENT PROJECTS

Werribee Police

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Kangan Tafe

Queen and Collins

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