YORK®	YBAH-G CEILING AIR HANDLING UNIT
Installation, Operation & Maintenance Manual	FORM NO.: 6A6Y-A02C-NA-EN

Air Flow：1500~15000 m^3/h

Contents

1. Unit Instruction

1-1 Instruction

YORK YBAH series ceiling-mounted air handling units are terminal points of central air-conditioning systems. They are designed for fresh air units or to cool, heat, humidity and de-humidify, filter and clean the air, etc. The conditioned air can be delivered to locations across various distances via specially designed ducts. The units are especially suitable for the air-conditioning of commercial buildings and industry applications.

YORK YBAH series air handling units have 12 different models. The cooling capacity ranges from 8kW to 252kW, and air flow from 1500m3/h to 15000m3/h. Rated external total pressure ranges from 175Pa to 315 Pa. More external total pressure can be provided for flexible application.

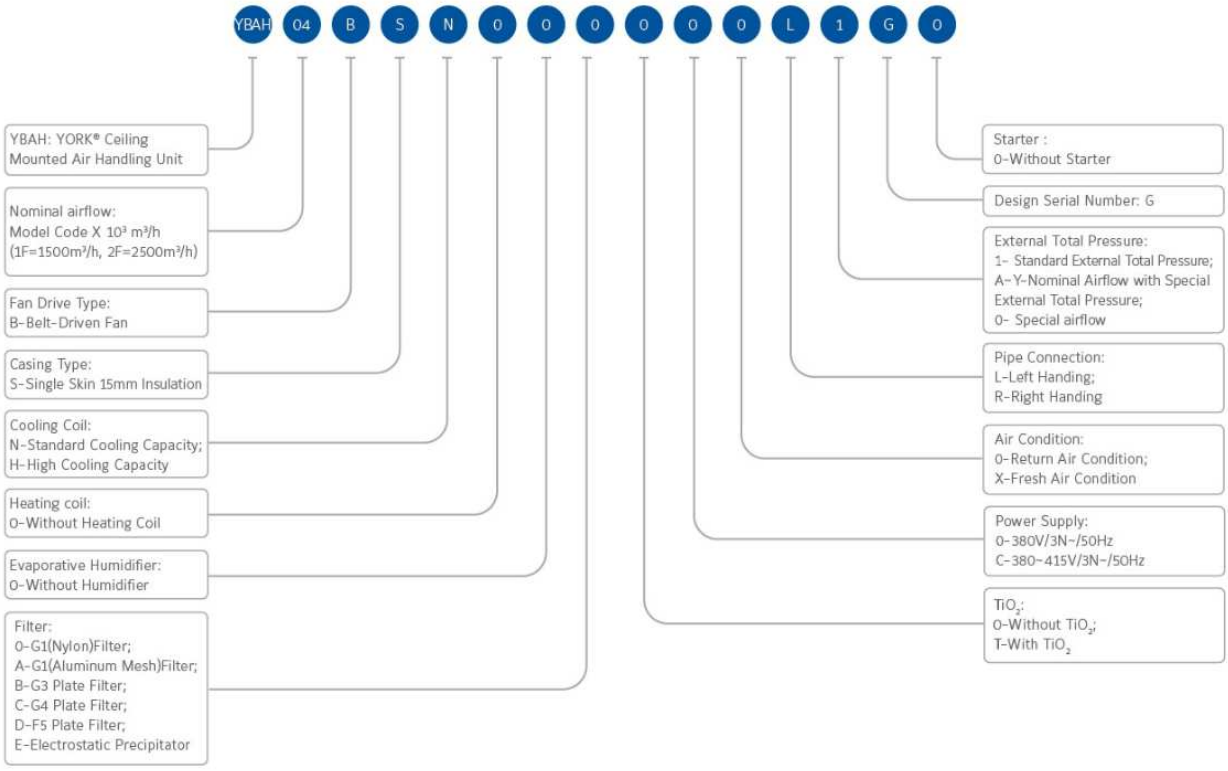
Each single skin unit is made from galvanized steel with 15mm thick polyester fiber inner insulation. It contains a built-in cooling coil and fan, and externally mounted nylon air filters.

Cooling and heating coil use copper tubes with aluminum fins. The fan, motor and belt pulley are all high-quality products producing stable and efficient performance. The fan is a forward curved centrifugal model that works on double air inlets. The motor features IP55 and a type mounted filter can be withdrawn from side or bottom. For double skin unit, the filter only can be withdrawn from side.

Feature:

- Easy installation
- Lower unit height for low head floor ceiling application
- Low noise
- Filter can be withdrawn from side or bottom

Nomenclature:



1-2 Main Technical Data

Model	Airflow (m^3/h)	Nominal external total pressure (Pa)		Nominal cooling capacity (kW)				Nominal heating capacity (kW)				Fan type	Motor type	Motor power(kW)	Weight (kg)	
				Return air condition		Fresh air condition		Return air condition		Fresh air condition						
		N	H	N	H	N	H	N	H	N	H				N	H
YBAH1FB-G	1500	145	70	8.3	11	18.6	24.2	13.5	16.6	19.8	23.7			0.55	64	66
YBAH02B-G	2000	165	90	11.3	15.1	24.4	31.7	18.9	21.8	26.4	31.3			0.55	68	71
YBAH2FB-G	2500	215	135	13.6	18	29.5	38.4	22.3	26.8	32.7	38.5			0.75	77	80
YBAH03B-G	3000	205	130	16.8	22	36.2	47.6	28.3	33.3	41	46.8	High		0.75	85	90
YBAH04B-G	4000	260	185	22.5	29.5	50.5	63.8	37.4	46	53.5	61.8	efficient,	3-Ø	1.1	107	112
YBAH05B-G	5000	235	160	28.3	37	63.1	80.1	47.1	56.6	65.7	77.4	double air	asynchronous	1.5	134	142
YBAH06B-G	6000	220	145	33.7	44	72.6	95.4	58.1	64.6	79.3	92.7	inlets	motor, F class	1.5	147	156
YBAH07B-G	7000	220	140	39.1	50.4	80.7	104.7	64.8	77.3	89.9	108	forward	insulation, IP55	1.5	157	167
YBAH08B-G	8000	260	170	45.6	58.8	96.7	128.2	75.7	90	106.4	130.1	curved		2.2	173	187
YBAH10B-G	10000	300	215	62.3	78.2	133.8	170	103.6	118.7	149	168.6			3	214	234
YBAH12B-G	12000	255	170	75	93.7	157.9	204.5	124.4	140.9	177.3	202.6			3	274	300
YBAH15B-G	15000	315	230	93.4	117.1	197.1	252.9	154.9	176.8	221.5	251.1			4	306	338

Notes:

1. The weight listed in the table is the shipping weight. The operation weight of unit is about 20% more than the shipping weight.
2. Standard return air cooling conditions: air inlet at 27°C DB/19.5WB; chilled water inlet/outlet at 7°C/12°C.
3. Standard return air heating conditions: air inlet at 21°CDB; hot water inlet/outlet at 60°C/50°C.
4. Cooling conditions of fresh air unit: air inlet at 35°C DB/28°C WB; chilled water inlet/outlet at 7°C/12°C.
5. Heating conditions of fresh air unit: air inlet at 7°C DB; hot water inlet/outlet at 60°C/50°C.
6. External total pressure: the sum of velocity pressure and static pressure at the air discharge outlet (exclude the pressure drop across the unit)
7. For four-piped unit, heating coil is in the front of the cooling coil in the direction of air flow.
8. If the unit has TiO2, evaporative humidifier or split coil (cooling + heating) option, the external total pressure should be deducted by the responding air drop pressure.

The unit performance is based on 5m altitude, the variance of altitude will affect the unit performance.

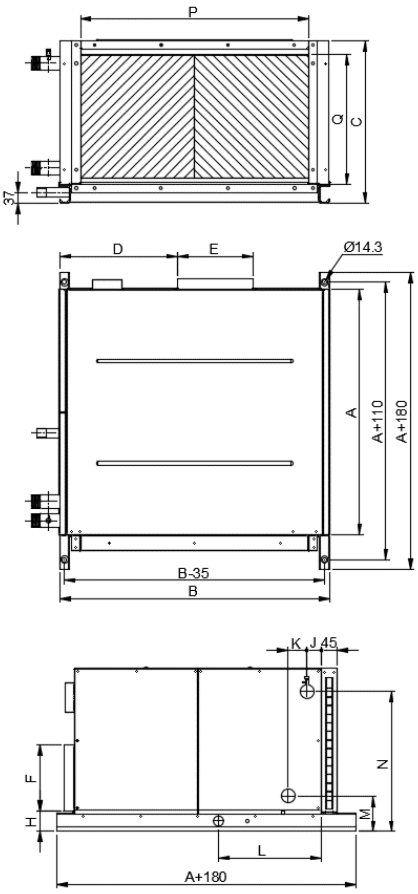
Altitude correction factors：

Altitude(m)	300	900	1200	1500	1800
Total heat	0.99	0.97	0.96	0.94	0.93
Sensible heat	0.96	0.90	0.86	0.93	0.80

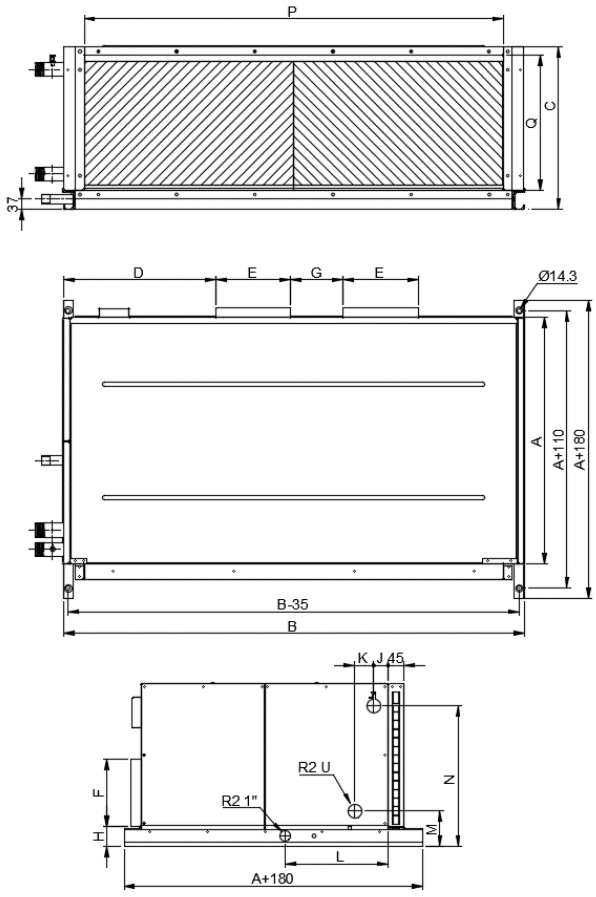
Note: The above is only for reference. Please contact our local office for detailed data.

1-3 Unit Drawing

Single Fan unit



Double Fan Unit



Model	De.	Wi.	He.	Supply air flange size					Piping position										Return air flange size	
	A	B	C	D	E	F	G	H	J		K		L	M		N		P	Q
									N	H	N	H		N	H	N	H		
YBAH1FB-G	680	800	417	402.5	259	228	-	75.2	55.2	51.9	66	72.7	370	128.5	128.5	343.5	343.5	660	320
YBAH02B-G	680	865	417	417.5	259	228	-	75.2	55.2	51.9	66	72.7	370	128.5	128.5	343.5	343.5	725	320
YBAH2FB-G	680	1005	417	495.5	259	228	-	75.2	55.2	51.9	66	72.7	370	128.5	128.5	343.5	343.5	865	320
YBAH03B-G	800	1005	458	511.5	287	256	-	87.2	95.9	98.7	199.6	205.5	550	137.7	148.5	351.5	358.9	865	361
YBAH04B-G	880	1190	485	539.5	298	262	-	98.2	86.2	98.7	229.7	237	540	137.5	130.3	406.7	395.3	1050	388
YBAH05B-G	880	1450	485	611	232	262	184	80.5	86.2	99	229.7	237	540	137.5	130.6	406.7	395.6	1310	388
YBAH06B-G	880	1680	485	612	298	262	244	80.5	86.2	99	229.7	237	540	137.5	129.9	406.7	395.6	1540	388
YBAH07B-G	800	1810	550	609.5	331	289	264	90.5	60.5	64	66	88	368	129.9	129.9	461.7	461.7	1670	453
YBAH08B-G	800	2050	550	619.5	331	289	264	90.5	60.5	64	66	88	368	129.9	129.9	461.7	461.7	1910	453
YBAH10B-G	940	1870	752	704.5	471	404	-	113.5	63.3	76	82.5	110	423	129.9	129.9	677.6	677.6	1730	655
YBAH12B-G	940	2170	752	690	395	341	324	113.5	63.3	76	82.5	110	423	129.9	129.9	677.6	677.6	2030	655
YBAH15B-G	940	2645	752	807.5	373	404	294	113.5	63.3	76	82.5	110	423	129.9	129.9	677.6	677.6	2505	655

Coil connection size：

Model	Cooling coil		Heating coil	
	Nominal capacity	High capacity	1 row	2 rows
YBAH1F	Φ34	Φ34	Φ34	Φ34
YBAH02	Φ34	Φ34	Φ34	Φ34
YBAH2F	Φ34	Φ34	Φ34	Φ34
YBAH03	Φ34	Φ48	Φ34	Φ34
YBAH04	Φ48	Φ48	Φ34	Φ34
YBAH05	Φ48	Φ60	Φ34	Φ34
YBAH06	Φ48	Φ60	Φ34	Φ34
YBAH07	Φ48	Φ60	Φ34	Φ48
YBAH08	Φ48	Φ60	Φ34	Φ48
YBAH10	Φ60	Φ76	Φ48	Φ48
YBAH12	Φ60	Φ76	Φ48	Φ48
YBAH15	Φ60	Φ76	Φ48	Φ48

Notes:

1. When G is“-”, the unit has only one air supply duct connection.
2. The coil pipe connections use male threads (thread code R2).
   The corresponding imperial diameters are:
   34mm---1” 42mm---1-1/4” 48mm---1-1/2”
   60mm---2” 76mm---2-1/2” 89mm---3”
3. The condensate pipe connections use 34mm O.D. male threads (thread code R2).
4. All dimensions are SI unit (mm).

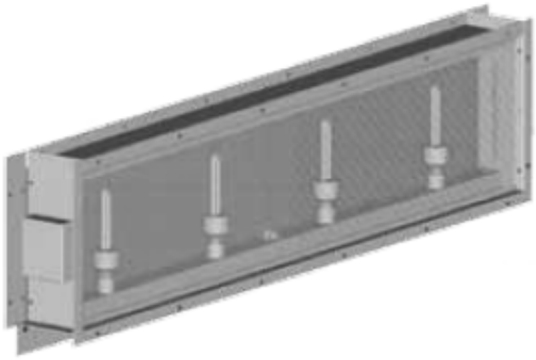
1-4 Main Components

The main components of York YBAH air handling unit include:
Main accessories:
YBAH1F-15 adopts SYT series double-inlet forward-inclined centrifugal fan.
The belt drive series motor adopts the IE3 series three-phase asynchronous motor, the insulation class is F, and the protection class is IP55.

Optional accessories:
Electrostatic precipitator
TiO2 YBAH module

1-5 TiO_2 YBAH Assembly

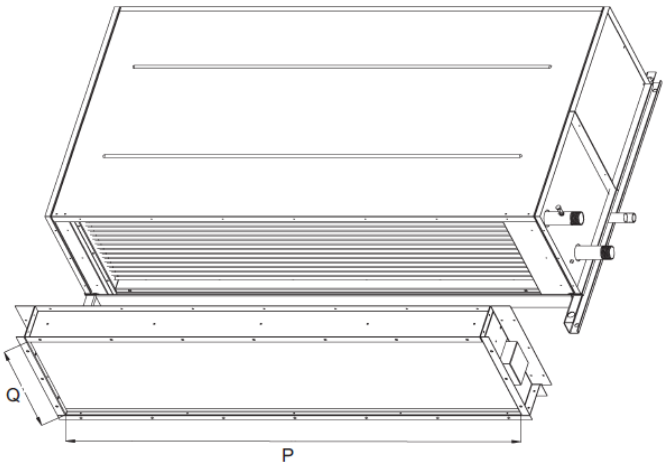
The TiO2 YBAH assembly consists of two parts: sterilizer and sterilizer frame. If the customer selects the TiO2 YBAH assembly, it has been installed in the YBAH unit before ex- factory.



TiO_2 YBAH Assembly

1-5-1 TiO2 assembly installation

The TiO2 YBAH assembly is installed in the air-inlet of the YBAH unit (The Figure shown as below), which has been installed before ex- factory.



Component list of TiO2 YBAH Assembly

Model	TiO_2 model	Connection frame Qty	Connection flange dimension		Lamp input power（W）
			P,mm	Q,mm	
YBAH1F	TiO_2 YBAH1F	1	710	320	3×18
YBAH02	TiO_2 YBAH02	1	795	320	3×18
YBAH2F	TiO_2 YBAH2F	1	950	320	3×18
YBAH03	TiO_2 YBAH03	1	980	371	4×18
YBAH04	TiO_2 YBAH04	1	1120	411	4×18
YBAH05	TiO_2 YBAH05	1	1260	460	4×18
YBAH06	TiO_2 YBAH06	1	1460	460	6×18
YBAH07	TiO_2 YBAH07	1	1700	460	6×18
YBAH08	TiO_2 YBAH08	1	1910	460	9×18
YBAH10	TiO_2 YBAH10	1	1710	639	12×18
YBAH12	TiO_2 YBAH12	1	2010	639	12×18
YBAH15	TiO_2 YBAH15	1	2485	639	18×18

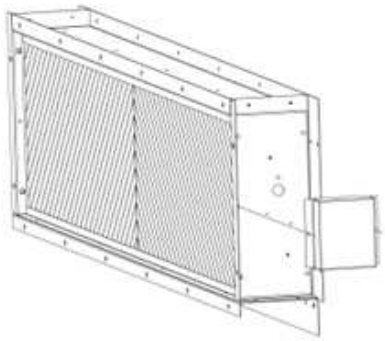
Notice: Ultraviolet Lamp Power 18W/Piece

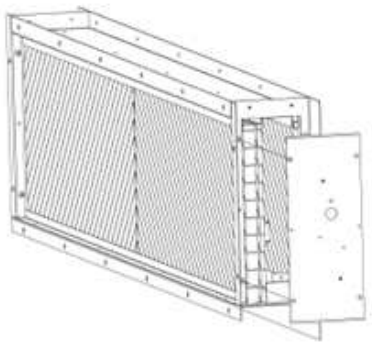
1-5-2 Ultraviolet Lamp Installation, disassembling

The ultraviolet lamp is delivered with the unit but is not installed in the unit, thus, it should be mounted in the unit before being powered on and put into service. It is recommended to install the lamp according to steps as below before the unit is connected to the external air inlet duct：

YBAH1F—YBAH08 unit:

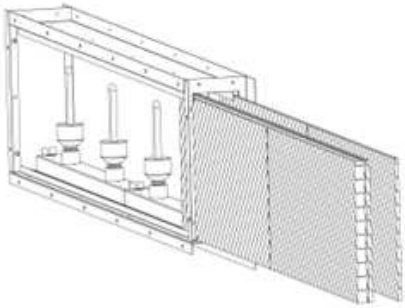
Step 1 disassemble the fastening screw of Junction box, take off Junction box.
Step 2 disassemble the fastening screw of side cover plate, remove side cover plate & disjoin the connector of cable, take off side cover plate.

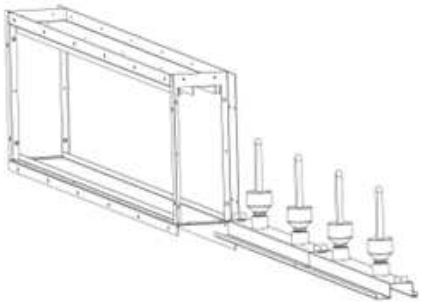




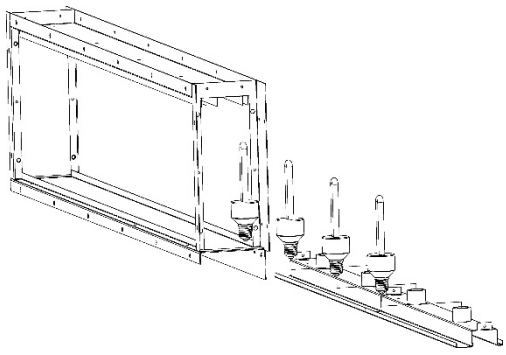
Step 3 take out nylon filter and front, rear TiO2 aluminum filter

Step 4 take out the base of TiO2 Lampe





Step 5 Ultraviolet Lamp Installation, operation, maintenance

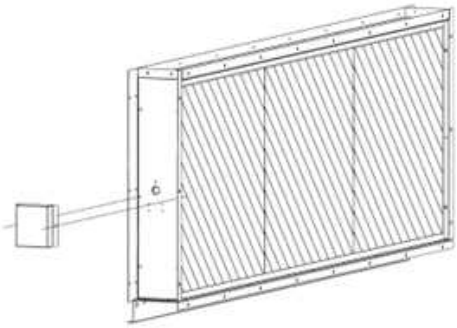


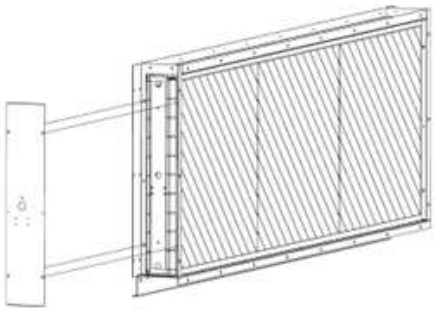
Notice: The installation should be according to steps in the reverse order.

YBAH10-YBAH15 unit:

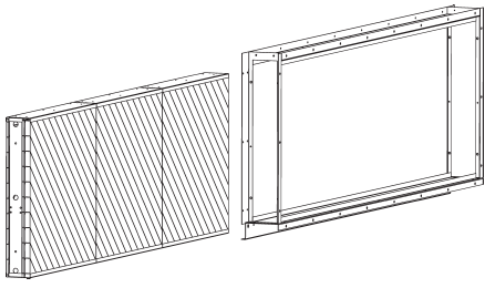
Step 1 disassemble the fastening screw of Junction box, take off Junction box

Step 2 disassemble the fastening screw of side cover plate, remove side cover plate & disjoin the connector of cable take off side cover plate.

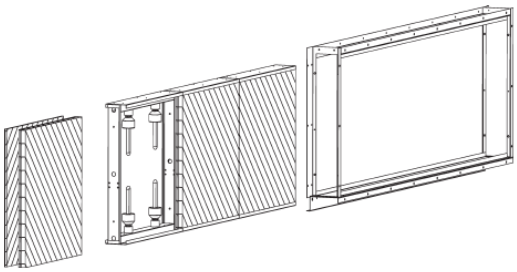




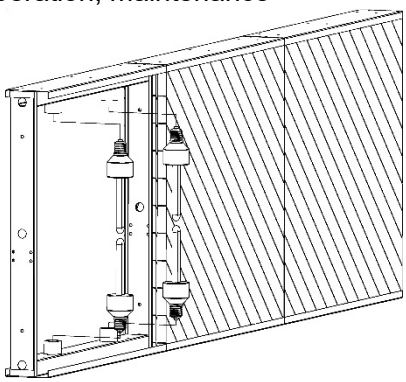
Step 3 take out nylon filter and front, rear TiO2 aluminum filter



Step 4 take out the base of TiO2 Lampe



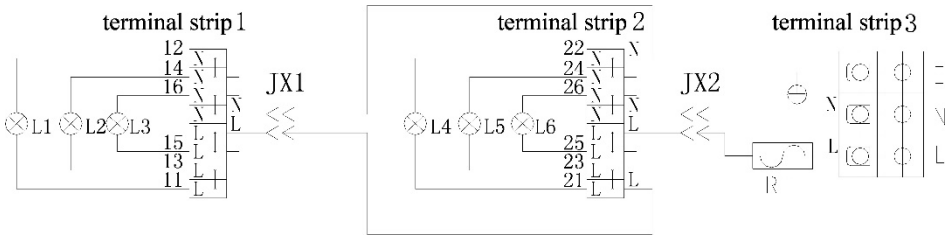
Step 5 Ultraviolet Lamp Installation, operation, maintenance



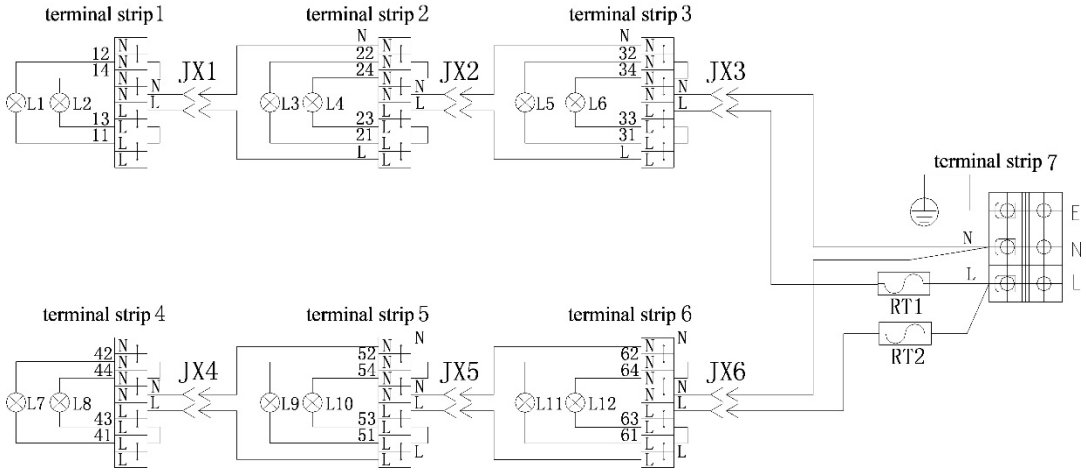
Notice: The installation should be according to steps in the reverse order.

Wiring of TiO2 YBAH Assembly is as follows:

1. TiO_2 YBAH1F assembly ~ TiO_2 YBAH08 assembly



2. TiO_2 YBAH10 assembly ~ TiO_2 YBAH15 assembly



1-5-3 Operation

The operating power supply of the sterilizer ultraviolet lamp is a single-phase, 220V.voltage power

Do not stare at the ultraviolet lamp for a long time, avoiding any possible injury to your eyes.

The starting of the sterilizer is under chain- control together with the proper unit (the wiring of the chain control should be connected by users), that is, the sterilizer starts operation as the internal fan is enabled to operate; it is closed as the internal fan stops operation

1-5-4 Maintenance

1. The filter and the aluminum mesh should be cleaned regularly. It is suggested that the filter should be cleaned once a month and the aluminum mesh should be cleaned every three months.
2. The aluminum mesh is powder-coated with TiO2 and cannot be washed with water; if there is dust adhering to on the aluminum mesh, it should be removed by the blowing air.
3. Both the sterilizer, aluminum mesh and filter screen of the TiO2 YBAH assembly adopts the under-pulling-out (or front disassembly) installation method.

Before the TiO2 YBAH assembly is repaired, stop and unplug the unit. Disassemble the sterilization lamp carefully to avoid any damage to it

NOTE:
TiO2 Assembly has been assembled in the factory. Before leaving the factory, it has been checked and inspected strictly, and installed into and packed with the unit well in accordance with the specifications. Normally, the sterilizer and the unit should thus be kept in good condition when arriving at the acceptance place. Before the sterilizer and the unit are shopped, check whether there is any possible damage to them during the transportation. If there is any obvious damage observed, write it down onto the transportation receipt of the freighter. Based on the indication of the advice note, you can claim for the damage. If there is damage to other parts other than the surfaces, please inform the local maintenance personnel of the York Company informed of it immediately. Our York Company will not be responsible for any loss of or damage to the sterilizer and the unit occurred during the transportation or after they have been accepted by the receiving party.

1-6 Electrostatic Precipitation

1. Electrostatic Precipitation should be interlocked control with fan motor, Electrostatic Precipitation turn on when the fan motor start; Electrostatic Precipitation turn off when the fan motor stop.
2. There will be high-voltage when EP is working, don’t touch EP or get into EP segment when EP is running to avoid Electrical shock.
3. Don’t start and cut off EP frequently, to avoid influencing the service life.
4. EP should be maintained regularly; the maintenance person must be specialized and qualified; power supply must be cut off before maintenance.
5. To ensure EP run normally, dust collector must be washed regularly, normally, a thorough cleaning each two months, and more frequent cleaning is needed (one time per month) if the working condition is special.
6. After running for a period, the ionizer wire may break, the efficiency will decrease slightly. However, the unit will continue to operate with a broken ionizing wire as long as the broken wire has not caused a short circuit of the unit. Remove all loose and broken wires as soon as they are identified.
7. If EP is installed in a location that is dusty and dirty, the sensor will be coated with dirt and lint, and this coating will keep sensors from operating properly. Inspection regularly is needed and clean the sensor in time.

2. Transportation & Installation

2-1 Transportation

a. The packed unit should be prevented from collision, overturning, crushing or rain or snow during the transportation.
b. When moving the unit, please handle with care and prevent the coil water inlet and outlet pipes from collision, avoiding any damage to deformation of the unit.

2-2 Acceptance

Before leaving the factory, the YBAH air treatment unit have been tested and inspected and packed properly. When the unit is transported to the destination, it is required to carry out an inspection on the unit to ensure that the unit is kept in good condition. If it is found that there is any damage to the unit, describe it in the transportation list and demand a signature for confirmation from the personnel of the transportation company. Otherwise, the York Company will not take any responsibility for it.

2-3 Storage

If the unit is stored outdoors, it should be protected against the corrosion from water, moisture, rusting or dust.

2-4 Lifting of the unit

During the erection process, be careful to prevent the unit from any damage due to improper operations, and put a corrugated sheet on the place where the unit lifting rope contacts the unit, avoiding damage to the surface of the unit due to the rope.

2-5 Points for Attention before Installation

Before the unit is installed, the following should have been supplied at the same time during the construction of the building.

1. Water Supply
2. Power Supply
3. Fresh air duct and return air duct
4. Ceiling Suspension Shackle

The item 4 above is very important. Especially, in case of that the top-end of the suspension shackle has been fixed into the cement, the interval between shackles should be accurate; only if it is in consistent with the installation distance specified in the unit design drawing can the installation be up to the accuracy. Any inaccurate position or the displacement of water pipe will cause the delay of the time limit of installation; or any change on site will result in the raising of installation cost.

2-6 Points for Attention during Installation

During the installation, be careful not to make the plaster stone, paint or dirt deposit on the panel, electromotor or fan blades, also not to damage the panel and the heat preservation layer during the

installation. Before the unit starts operation, all dirt in the water collecting tray and the water drain pipe should be removed.

Note: If there is dirt on the motor or the fan blades remained, the York Company will not provide any effective maintenance and repairing service.

2-7 Brief Introduction to the Installation

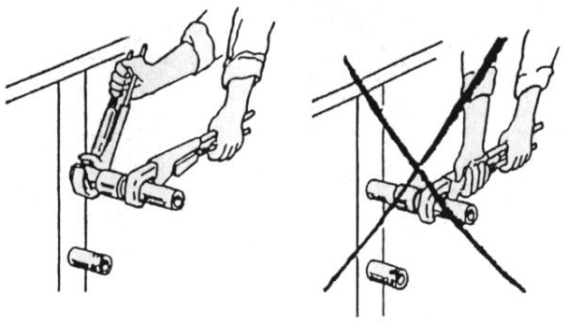
2-7-1 Hydraulic Pipeline

All water inlet and outlet pipes should be constructed according to the design drawing and the York sample drawing. On the other hand, the hydraulic pipeline must be laid in accordance with the accurate space dimensions, ensuring that the pipeline is connected correctly. Space should be remained outside all water pipe paths, which should be big enough to hold the power supply and control lines (if required), or to lay the insulating layer.

The collector of the hot or cold coil pipe has been equipped with the air exhaust and water drainage plugs. The exhaust valve is set on the highest point of the water-outlet collector and the water-escape valve is places in the lowest point of the water inlet collector.

The safety device should be installed in the inlet system of the hot water coil pipe to prevent the internal temperature of the unit from exceeding 60℃ in case of that the fan stops operation.

To tighten an external pipe, always hold the coil pipe by using a pipe wrench to avoid damages to the manifold, as shown in the following figure:



2-7-2 Pipeline Support

The weight of every water pipe should be sustained by the support and should not be borne by the unit.

Meanwhile, enough free space should be reserved for the water inlet, outlet and drain pipe interfaces.

If the hot water and cold water shares the same duct, the water pipe diameter will be subject to change due to contraction and expansion. If the pipe is fixed firmly without any free space considered in advance, it very likely will suffer from bursting or damage.

2-7-3 Determination of Water and Directions of the Unit

The water inlet and outlet pipe interfaces can be arranged in the right or left side of the unit. With viewing from the unit air inlet (or along the air flow direction), if the water inlet and outlet ducts are at the right side of the unit, the unit is called a Right-style Unit; conversely, it is a Left-style Unit. Pay attention to distinguish between Right-style and Left style units when the pipe is connected.

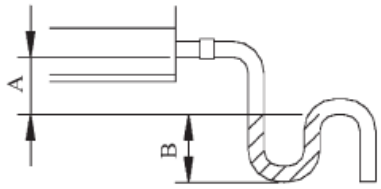
2-7-4 Air Venting of the Coil

Each unit has a manual venting valve at the highest point of the coil. With the valve opened, the gas stored in the coil can be released, keeping the unit in a stable flow of hot water and in a well-distributed heat exchange condition. The air accumulated in the coil should be exhausted regularly.

2-7-5 Condensed Water Drainage

Warning

Dear users,
Before the installation and commissioning of your unit, please connect the water seal (not provided by our company) with the condensed water drain pipe according the following condition.
The coil is positioned in the negative pressure side:
P= Absolute Negative Pressure Value (Pa)
A= B ⩾ P/10+20 (mm)



2-7-6 Air Duct Connection

The connecting between the return air duct and the external filter frame and that between the air outlet flange and the air delivery duct must be flexible. The hard connection between the unit and the air outlet flange must be prohibited. During the installation, the air duct should be provided with a support for its exclusive use and its weight should not be carried by the unit, avoiding applying any extra load to the unit.

2-7-7 Lifting Shock Absorbing

The hoisting equipment should be equipped with a shock absorber of good performance, preventing the unit from the production of resonance and the increasing of low-frequency noise. It is suggested that the shock absorber be installed at the side near the unit.

Points for Attention during Installation:

1. The unit should be installed horizontally in order to ensure free water drainage and a normal operation.
2. There should not be any foreign substance piled up in the water drain tray; and all foreign matters should be removed from the tray. Only if the water drain path is guaranteed to be unobstructed can the unit be started up.
3. All cooling water pipe valve and cold water pipe of the unit should be supplied with the anti-condensing water protection. Unless the cooling water pipe valve and cold water pipe are provided with a heat insulating layer, the extended tray should be installed in the cooling water pipe valve and the cold water duct when they are installed in the construction field.
4. The connecting length of the air duct should not be greater than that defined by the remained pressure in the unit. Moreover, the air duct is not allowed to bear any load and should be connected to the unit.
5. The ceiling suspension unit can only be installed in the place where burning is not to be triggered.
6. The condensed water discharge duct must be installed with an external water seal device.
7. Demand on water quality: the soft water is recommended to be used in order to keep the unit under a good operating condition.

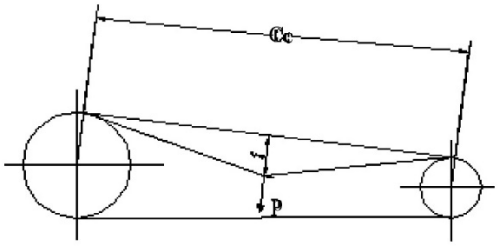
3. Start, Commissioning and Running

3-1 Check before Start up

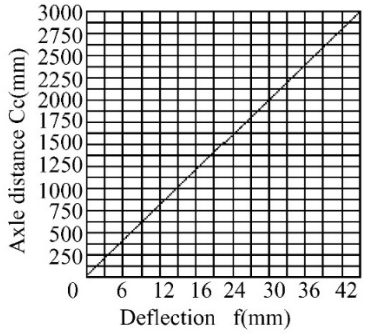
Check the YBAH unit before it is started：

1. Remove the interior and exterior dust from the unit.
2. Check whether there is any component loose in the unit.
3. Check all moveable parts and observe whether they can rotate freely.
4. Inspect all electrical connecting devices connected to the motor, lamp and control equipment and check whether the wiring is correct, whether the power supply can meet the requirement. Arrange the protection devices for short-circuit, overload and phase loss at the power lead-in side; check all earthed system.
5. Clean the condensed water inlet and outlet U bends and fill proper water into them.
6. Perform the system water pressure and air ventilation tests.
7. Before the fan starts operation, check the air path, the flexible sleeve tube or the conduit coupling device.
8. Check the fin surface of the coil. If required, card it with a Coil Pipe Comb.
9. For the belt-driven unit, check the tension of the belt, which should be in accordance with the following figure (Belt Tension Indicating Drawing).
10. Check whether the rough filter has been installed in place and ensure that there is no construction debris or foreign substances attached to it.
11. Check whether the connection duct has been installed properly and the water flow is up to the standard.

Cotrol of narrow V-belt tension



(BELT TENSION INDICATOR APPLIED TO MID-CENTER DISTANCE)



Type	Smaller pulley (mm)	Force(p) (kg)
SPZ	63-71	1.0-1.4
	75-85	1.3-1.9
	90-112	1.5-2.3
	118-150	1.9-2.7
	160-200	2.5-3.4
SPA	90-112	2.2-2.8
	118-150	2.5-3.4
	160-200	2.9-3.8
	224-250	3.5-4.4
	280-315	4.0-5.0
SPB	140-180	3.5-4.4
	190-236	4.0-5.2
	250-315	4.6-6.0
	335-400	5.5-7.6
	450-500	6.7-9.0
SPC	250-315	7.0-10.0
	335-400	8.0-11.5
	450-500	9.0-13.0

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3-2 Electric Wiring Diagrams

Electric connection：

1. The direct start schematic diagram (Fig.1) is for motor up to 5.5kw. The Y-△ start schematic (Fig.2) for motors more than 7.5kw.
2. The dashed lines is provided by customer and it should be connected according to Fig.1 or Fig.2. Please ensure that all connections are tightened.
3. All electric connections should comply with local electric installation codes.
4. The ground terminal of the unit must be connected to the ground terminal in the control panel.
5. Customer should connect the power and control devices and supply short-circuit and over heat protection.
6. The phase sequence protector is required to install and connect its normal-open port to the contactor in order to avoid burning out the motor due to phase loss.

Note for placing an order：

1. Factory can offer supply power at 380V 3N~50Hz or 380V~415V 3N~50Hz.
2. The unit is equipped with plate type pre-filters at the return air intake.
3. When placing an order, the pipe direction (left connection or right) should be noticed (note: facing the return air intake, it is the right if the inlet/outlet water pipes are on the right side of unit, vice versa).
4. The airflow rate and total pressure should be noticed when placing an order.
5. If starter is required, it should be noticed when placing an order (an option)

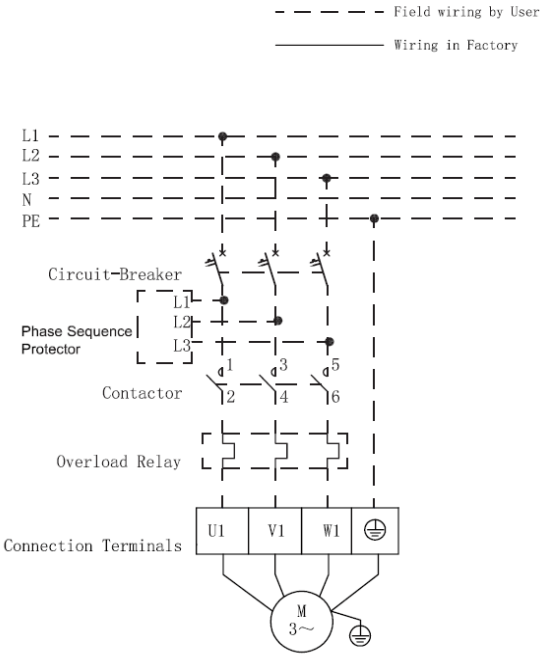


Fig.1

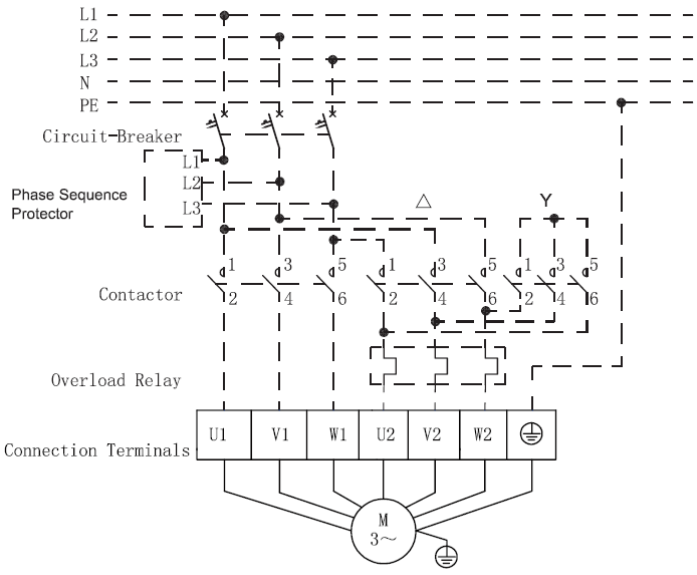


Fig.2

3-3 Fan Part

1. Switch off the master switch before carrying out an internal inspection to the fan.
2. Check whether the electrical connection device of the unit is in consistent with all circuit diagrams.
3. Check the motor's name plate and observe whether the rated voltage, phase and circuit are in consistent with the power supply recorded in field.
4. Before the fan starts operation, check first whether there is foreign matter in the fan housing, then, rotate the fan blade manually and check whether there is any collision and friction observed between the fan blade and the housing; listen whether there is abnormal noise produced from the bearing. You can never start it till no abnormality is found.
5. After the power is switched on, start the fan first and check whether it rotate in a specified direction. If not, stop the fan and change the power phase sequence; then, connect it with the power supply formally.
6. Check the motor operating current with an ammeter and compare the obtained current value with the data indicated in the motor name plate.

3-4 Check the fan bearing

All the belt drive fans use the bearing no grease nipple.
Should be inspected the fan before it starts, please contact our service man if anything is abnormal.
Turn the wheel of the fan to check the abnormal noise, for example: regular friction noise, shrill noise etc.
Observe the spillage lubricating grease from bearing and if the color turn to black or not.

1. If need, clean the bearing and replace the obsolete lubricating grease. Must inspect the fan status if it has not been operating over one month.
2. Lubricating grease replacement steps: firstly, remove the bearing cap and wash the bearing by gasoline, after it's dry, fill in lubricating grease. The lubricating types is ALVANIA RL2 or GOLD GREASE No.3, fill in full lubricating grease.
3. Please replace the bearing if it is damaged or rust. When installation, should tap the sleeve instead of other part of the bearing. Trail run for 15 minutes to make sure it can operate.

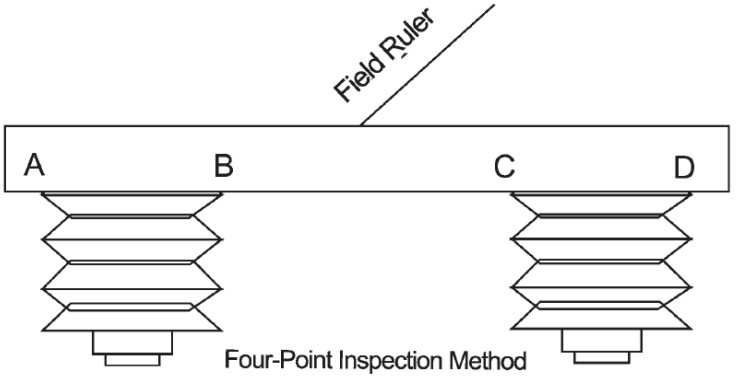
3-5 Motor

It is possible to store the rotation equipment for a certain period of time. Even if the storage time and condition meet the specifications, a series of electrical and mechanical checks are still necessary.
For the motor of 7.5kw or above, it should be equipped with a voltage dropping starter, avoiding the over starting current.
Storage conditions:
The motor should be stored in a dry environment, in which if the humidity exceeds 90%, the motor insulation device will be damaged soon; when the humidity is up to 100%, the insulation device will lose its function completely.
Ambient temperature:
The ambient air temperature changes with the seasons but will not be greater than 40℃.

3-6 Adjustment of belt & belt pulley

Adjustment of smoothness

For the belt drive unit, inspect the smoothness of the fan and motor belts with a ruler, that is, points of A, B, C and D should be in the same line; otherwise, it is needed to adjust the smoothness of the belt pulley.



Four-Point Inspection Method

Warning: Over-tightened or over loose belt will bring about influence on the operation of fan.

Belt Adjustment

1. Before the starting and operation of your unit, check the tension of the belt.
2. After one-week operation, the belt will be expanded slightly. In this case, readjust the tensile force applied to the belt and make it comply with the specifications listed in the belt Tension Indicator.
3. After 30-day operation of the unit, check the tension of the belt again.
4. After one-quarter operation of the unit, make a complete inspection.

3-7 Mechanical Inspection

When contacting the air, the grease used to lubricate the bearing will suffer from oxidation or even deterioration.

If the oxidized lubricating grease is applied to, the bearing of the motor will be damaged soon.

Storage Time

< 6 months	6 months to one year	> one year
The motor can be put into service directly if it is stored under proper conditions.	The motor should be lubricated with grease before starting operation.	Lubricate the motor several times, ensuring that all lubricant has been replaced.

If the motor is lubricated just before it operates, a more effective lubricating effect can be obtained.

3-8 Unused for an Over-long period

If the motor of the unit has been unused for a long time, the incidents described above may occur.

In order to avoid the problems above, it is suggested to adopt an anti-condensation heater and perform a routine repair.

3-9 Points for Attention during Starting Operation

1. Before the unit starts operation, open the coil gas escape valve and exhaust the air.
2. During the operation of the unit, the water pressure should not be greater than 1.6MPa; the vapor pressure should not be greater than 0.4MPa.
3. During the operation of the unit, all panels should be kept fixed firmly.
4. Strictly forbidden shutting off the air valve of the system duct during the normal operation of the fan; otherwise, the box structure may be damaged due to over-pressure.
5. If power failure occurs in the operation of the unit, shut down the cooling and heating pipeline, avoiding forming a broiler or a refrigerator due to over-high or over-low temperature in the unit case.
6. When start up the unit, switch on the fan first and then the cooler, heater and humidifier; when shut down the unit, close the cold or hot water pipeline and then switch off the fan.
7. In the cold area in winter, when starting the unit for heating, switch on the heater and make it operate 5 to 10 minutes or so first, then, start the fan, preventing the large amount of cold air from forming ice chock in the heat exchanger; when stopping the unit, close the fresh air pipeline valve first and then stop the heating by hot water, drain the accumulated water in the heater, and shut down the fan immediately, avoiding electrical equipment (such as motor) failure due to overheat inside the unit and bearing grease loss.

4. Maintenance and Repairing

4-1 Filter Part

The nylon screen filter of 21mm in thickness is provided with the unit, which can filter dirt such as dust, soot, pollen and other foreign substances.
When cleaning the filter, beat the accumulated foreign matters off it. If required, clean it with the warm water filled with liquid detergent, dry it and reassemble it back to the filter frame.
The filter can be removed from the unit only by dissemble the cover plate in the side or on the bottom of the filter frame.

Operating:

1. Remove the filter with dust collected in the metal frame away from the slip fitting carefully. Be careful not to dirty other parts.
2. Shake the filter and wash it in the soap solution of 40℃.
3. Replace the filter if it has been damaged.
4. For the installation of a new filter, operate according to steps above in reverse order.

4-2 Cooling coil and Heating Coil

1. Observe the dirt accumulated in the heat exchanger and clean it if required (it is recommended to clean it with the compressed air or high-pressure vapor at the air outlet side.
2. Check whether the cooling or heating liquid flows in correct direction.
3. When the unit stops work in winter, drain the accumulated water in the coil. If required, blow in the pipe with compressed air, preventing the pipe from freezing crack.
4. Perform a complete maintenance after 3-year operation of the unit, cleaning the water deposition in the heat exchanger, ensuring a good heat exchanging effect.

Replacement of Damaged Coil
If the coil is needed to be replaced, the side panel must be removed. After disconnecting the connection pipe, remove the side panel. The coil is installed in the chassis.
Because the coil is just installed in the unit chassis, when the unit is equipped with a dashboard or humidifier, disassemble it first; then, reinstall the dashboard or humidifier with a new coil.

4-3 Fan part

1. Before repair the internal part of the fan, switch off the control switch.
2. Check the V-belt and its tension regularly. If it is found that the tensile force applied to the belt is not enough, retighten it. For correct tension data, refer to the Belt Tension Indicator.
3. Check the alignment of motor, fan V-belt and pulley.
4. Check whether the interior flexible device is fixed firmly.
5. Check whether the motor can operate freely.
6. Inspect the maintenance instruction provided by the motor supplier.
7. Check whether the fan can operate unobstructed.
8. Clean the fan blade regularly.

Fan Bearing

The double suction forward fan used in the YBAH unit is designed with the sealed bearing, the normal service life of which can be up to 75,000 working hours at least.
During the constantly improvement and development, we reserve the right of changing the technical specification, size without notice in advance.

4-4 Motor

Any maintenance should be carried out in comply according to the motor instructions. This manual is just one part of the technical information provided.
Replace the motor from one side of the unit or after the top or side frame panel is removed.

4-5 Replacement of motor

Replace the motor from one side of the unit or after the top or side frame panel is removed.

4-6 Current and adjustment

Carry out the routine check on all electrical parts and safety devices.

1. Water valve and air admission valve of the system duct.
2. Earthed system.
3. Air switch.

Points for Attention During Maintenance

1. The full-time technicians should be assigned for the maintenance of the air conditioner unit and should be responsible for the daily inspection and regular repairing.it is necessary to formulate a strict job responsibility system and lay down operating rules to strength the regular maintenance and service repair.
2. Clean the inside of the unit regularly.
3. Check the inside of the unit regularly.
4. Lubricate the parts needing lubricating with grease additionally after 6-month to one-year operation of the unit.
5. Before the unit is repaired, switch off the power and set a warning sign to avoid risk due to mis-operation.
6. Open the gas release valve of the coil pipe regularly to exhaust the air inside to keep the cooling and heating medium water following normally in the heat exchanging pipe.
7. When the air conditioner unit operates in winter and needs to stop operation, the fresh air valve of the system pipeline must be closed, preventing the heater from failure due to freezing.
8. To conduct oil filling as following after running for some time.

Motor Brand		WoLong		HeBei		HuaLi		ABB		Siemens	
ITEM	Motor Frame Size	With oil filler hole or not	Service life (hours)/Oil filling cycle (hours)	With oil filler hole or not	Service life (hours)/Oil filling cycle (hours)	With oil filler hole or not	Service life (hours)/Oil filling cycle (hours)	With oil filler hole or not	Service life (hours)/Oil filling cycle (hours)	With oil filler hole or not	Service life (hours)/Oil filling cycle (hours)
1	80	No	10 years	No	20000	No	15000	No	20000	No	20000
2	90	No	10 years	No	20000	No	15000	No	20000	No	20000
3	100	No	10 years	No	20000	No	15000	No	20000	No	20000
4	112	No	10 years	No	20000	No	15000	No	20000	No	20000
5	132	No	10 years	No	20000	No	15000	No	20000	No	20000
6	160	Yes	7000	No	20000	Yes	5000	No	20000	No	20000
7	180	Yes	7000	Yes	2000	Yes	5000	No	20000	No	20000
8	200	Yes	6500	Yes	2000	Yes	5000	No	20000	No	20000
9	225	Yes	6500	Yes	2000	Yes	5000	No	20000	No	20000
10	250	Yes	6000	Yes	2000	Yes	5000	Yes	6500	No	20000
11	280	Yes	6000	Yes	2000	Yes	5000	Yes	6500	No	20000
12	315	Yes	5500	Yes	2000	Yes	5000	Yes	6500	Yes	3000

5. Failure Analysis

5-1 Low Air Flow Rate

The actual static pressure needed in the outside of the unit is greater than the design static pressure and the air flow rate is turned into the static pressure. Thus, the air flow rate is lower than the normal. The loose belt reduces the rotation speed of the fan, resulting in a low air flow rate.

5-2 High Air Flow Rate

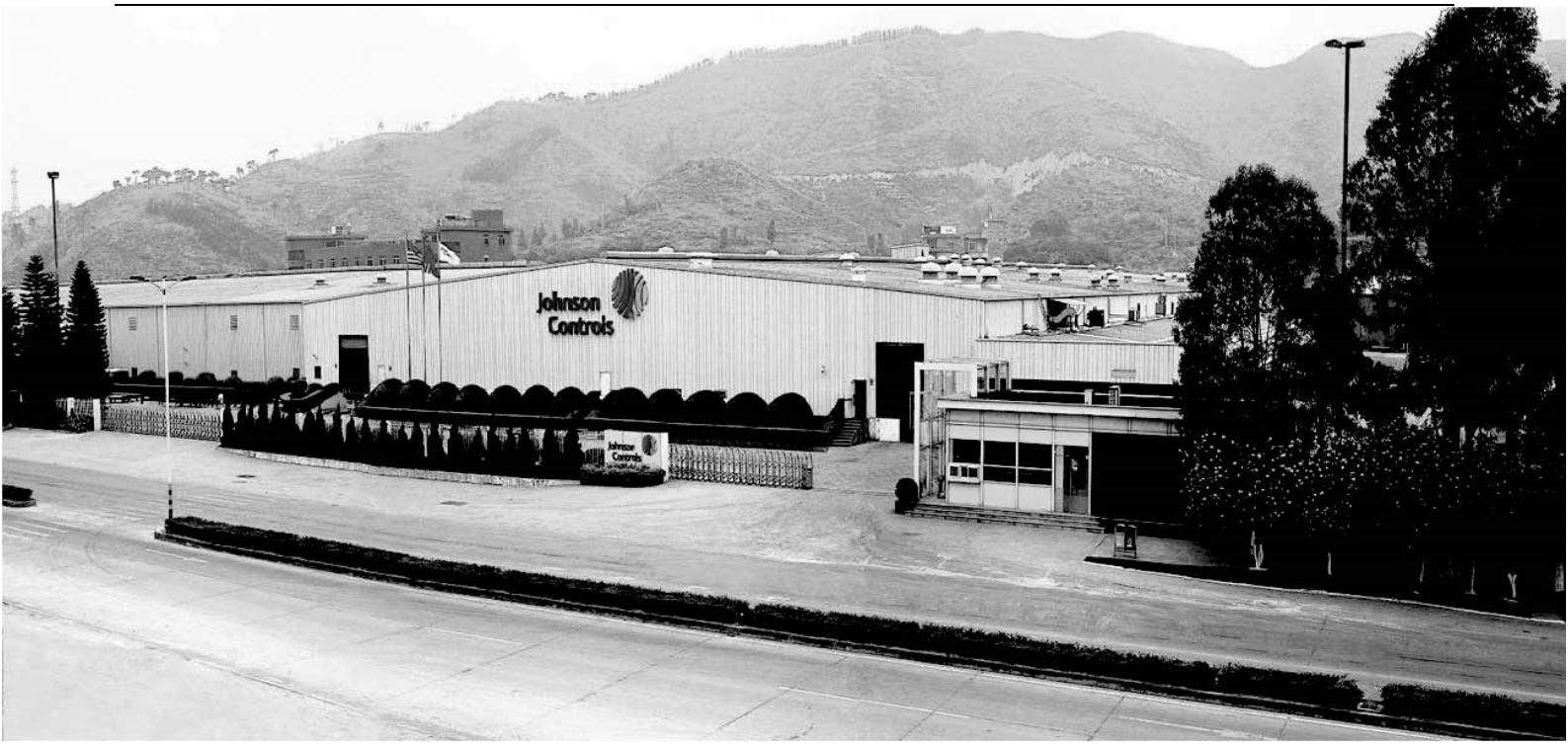
The actual static pressure needed in the outside of the unit is lower than the design static pressure, and the static pressure is turned into the air flow rate, making the air flow rate higher than the normal. The increased air flow rate makes the wind speed increase, and the unit noise level is rising accordingly.

5-3 High-Level Noise

Check whether there is a flexible connection between the air return and delivery duct; whether the lifting device is supplied with a shock absorber; whether the wind speed at the air outlet is over high and whether there is any part loose.

5-4 Belt Breaking

In this case, check whether the belt is under over-tension; whether there is dis-alignment between the fan and the motor belt pulley, or the belt quality is poor.



YORK Guangzhou Air Conditioning & Refrigeration Co.,Ltd.

Phone :(0763)468 1111

Fax :(0763)468 1114

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* Johnson Controls is committed to the continuous product improvement.
Please note the product design may change without notification.

** This manual is for reference only. For the specific product specifications and performance, please refer to the purchase agreement.

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