



AIR HANDLING UNIT

Manual

Installation-Operation-Maintenance





AIR HANDLING UNIT

MODEL GAS / GAD

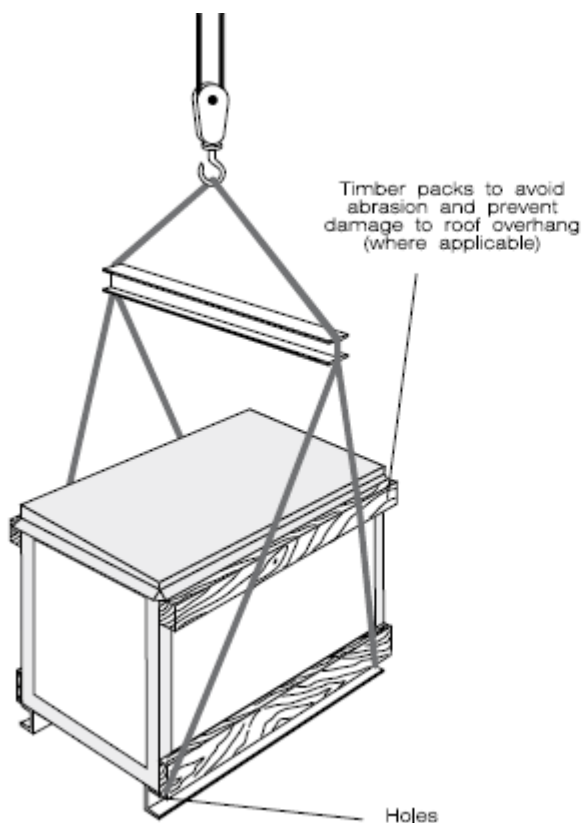
PERFORMANCES

Sr.Nr.	MODEL	NOMINAL CAPACITIES (kW)					
		2,0m/s		2,5m/s		3,0m/s	
		Inlet air temp 25oC @ 50% Water 7/12oC		Inlet air temp 25oC @ 50% Water 7/12oC		Inlet air temp 25oC @ 50% Water 7/12oC	
		m3/h	kW	m3/h	kW	m3/h	kW
1	GAD 50	4,000	28	5,000	35	6,000	42
2	GAD 75	6,000	40	7,500	50	9,000	60
3	GAD 100	8,000	56	10,000	70	12,000	84
4	GAD 150	12,000	80	15,000	100	18,000	120
5	GAD 200	16,000	120	20,000	150	24,000	180
6	GAD 250	20,000	140	25,000	175	30,000	210
7	GAD 300	24,000	168	30,000	210	36,000	252
8	GAD 350	28,000	200	35,000	250	42,000	300
9	GAD 400	32,000	224	40,000	280	48,000	336
10	GAD 450	36,000	256	45,000	320	54,000	384
11	GAD 500	40,000	280	50,000	350	60,000	420
12	GAD 600	48,000	320	60,000	400	72,000	480

**Performance may vary depend on the condition applied*

Installation

1. Observe the guidelines for transporting the AHU unit.
 - a. For crane lifting, use wood (or other means) to protect the surface of the AHU and use a spreader bar to avoid crushing the unit.
 - b. When forklift is used, ensure the forks extend to the full length of the unit to avoid damaging the bottom of the unit.



Forklift truck



Forks to extend full width/length
Use extensions if necessary

IMPORTANT NOTE

Where sections are fitted with a roof, additional timber packing must be utilised to ensure that the slings do not bear on the roof structure and that all forces are transferred to the section framework.
NOTE: Failure to utilise additional timber packing will result in damage to the roof.



2. Ensure that the unit to be installed is correct by cross checking on the specification and serial number on the AHU door.



Check the AHU for any damage when receiving the units.

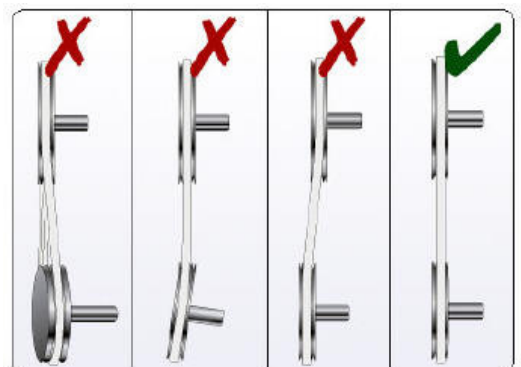
3. Locate the unit on a flat surface and ENSURE the unit is level to allow proper unit operation and condensate water drainage.



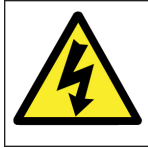
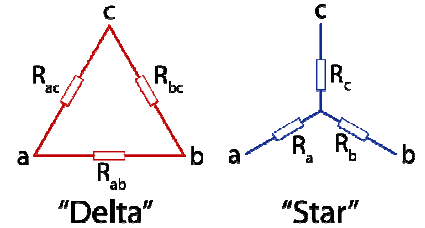
4. The AHU fan base springs are securely tighten with brackets to ensure safe transportation. Brackets MUST BE removed by installer to free the spring as shown before the unit is put to operation.



5. The drive package of unit fan and motor is aligned and properly tensioned. RE-CHECK the pulley alignment and belt tension before start the fan unit.



6. Connect appropriate cable size to the motor and follow the instruction on the motor name plate for star or delta connections.



WARNING!! ELECTRICAL HAZARD!!

ONLY QUALIFIED ELECTRICAL TECHNICIAN IS ALLOWED TO INSTALL CABLE TO THE AHU MOTOR.

7. Air filters are wrapped with plastic film during transportation as protection against dust. REMOVE the plastic film before operating the AHU.



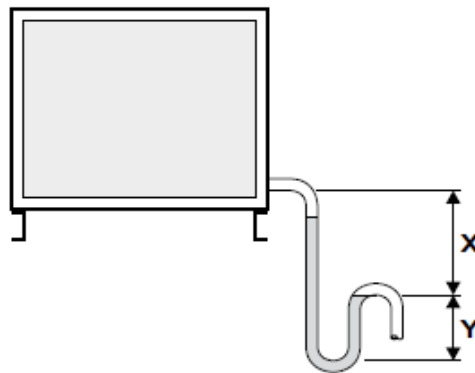
8. Water piping connection MUST OBSERVE the water inlet and water outlet labels on the AHU unit panel to ensure the performance of the cooling coil. They should be properly insulated to avoid condensation on piping.



9. Drain pipe must be properly connected and drain trap to be properly sized to ensure good flow of condensate water out from the AHU drain pan.

Condensate Drain Connections

**Draw-through,
Negative Pressure: -
'S' trap arrangement**



MSP = Maximum suction pressure (in Pa)
(Based on 'dirty' filter conditions)

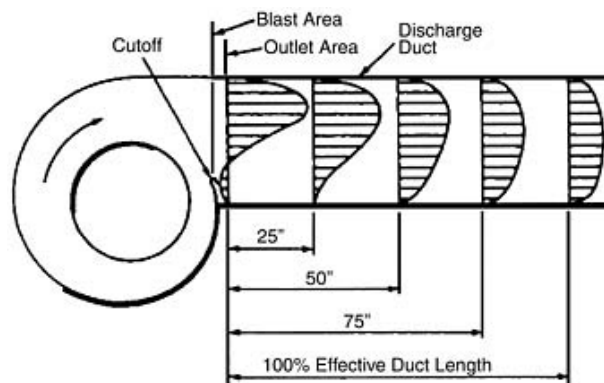
Dimension X = $(\text{MSP}/10) + 50$ (mm)
Dimension Y = $X/2$ (minimum)

For example if MSP = 1500Pa

Dimension X = $(1500/10) + 50 = 150 + 50 = 200\text{mm}$
Dimension Y = $200/2 = 100\text{mm}$

Overall trap height = $X + Y = 200 + 100 = 300\text{mm}$

10. The AHU discharge duct should have sufficient effective length (3*fan diameter) to ensure blower air flow delivery performance. Duct bending at AHU discharge is NOT ALLOWED.





Operation (Run)

1. Prior to starting the fan motor. Ensure that the electrical overload is properly set to avoid motor runs at over-current and burnt down.
2. Run the fan motor and check on the fan rotation. If rotation is wrong, change the phase wire on the motor to get the correct the rotation. Ensure no excessive vibration from the fan operation.
3. Turn on all the water piping valves. Start the chilled water pump and regulate to the design water flow rate entering the cooling coil by adjusting the valve at the AHU piping outlet. Release air in the water piping and the highest point of the piping arrangement.
4. Start the chiller (follow instruction from chiller manufacturer to start the machine) and check for air supply temperature.



Operation (Troubleshooting)

Symptom	Probable Cause	Proposed Action
Air flow is low	a. Filters are wrapped with plastic films. b. Filters are clogged. c. Duct static is too high. d. Wrong fan rotation. e. Dampers are shut. f. Bended duct at fan discharge. g. Wrong pulleys selection//rpm.	a. Remove plastic films. b. Wash/change filters. c. Check design. d. Rotate phase cable. e. Adjust dampers. f. Rework on ducting. g. Resize pulleys.
Air flow is high	a. Filters are not installed. b. Duct static is too low. c. Dampers are not regulated. d. Wrong pulleys selection//rpm.	a. Install filters. b. Check design. c. Adjust dampers. d. Resize pulleys.
Air temperature is too high	a. Water is not sufficiently chilled. b. Insufficient water flow.	a. Check chilled water inlet temperature. b. Regulate valve to increase water flow or check pump.
Air temperature is too low	a. Wrong chilled water setpoint. b. Excessive water flow.	a. Check chilled water inlet temperature. b. Regulate valve to decrease water flow or bypass the water.
Motor always tripped when started.	a. Static too low. b. Wrong overload setting.	a. Check damper setting. b. Check overload is properly set(motor max amp).



Maintenance

Components	Action
Filters	<ul style="list-style-type: none">- Weekly washing.- Changed when filter leaks or too dirty.
Cooling coils	<ul style="list-style-type: none">- Fins to be washed where necessary (annual).
Drive package	<ul style="list-style-type: none">- Biweekly check on pulleys alignment and readjustment.- Biweekly check on belt condition.
Motor	<ul style="list-style-type: none">- Monthly check on winding insulation.