AIREF CHOOSE YOUR AIR

USER'S MANUAL

OPERATION & MAINTENANCE

CEILING SUSPENDED & FLOOR MOUNTED AIR HANDLING UNITS

INDEX

RECEIPT OF EQUIPMENT

As per the sizes of units or feasibility of assembly, the material is supplied either in fully assembled, partly assembled or fully dismantled condition. The material should be visually inspected when received, and any damages should immediately be noted in the delivery form. Short or damaged delivery should be reported to the company immediately. Company shall not be responsible for any kind of damage due to mishandling during unloading / lifting or shifting of material. All components should be safely stored near the assembly area to facilitate easier assembly.

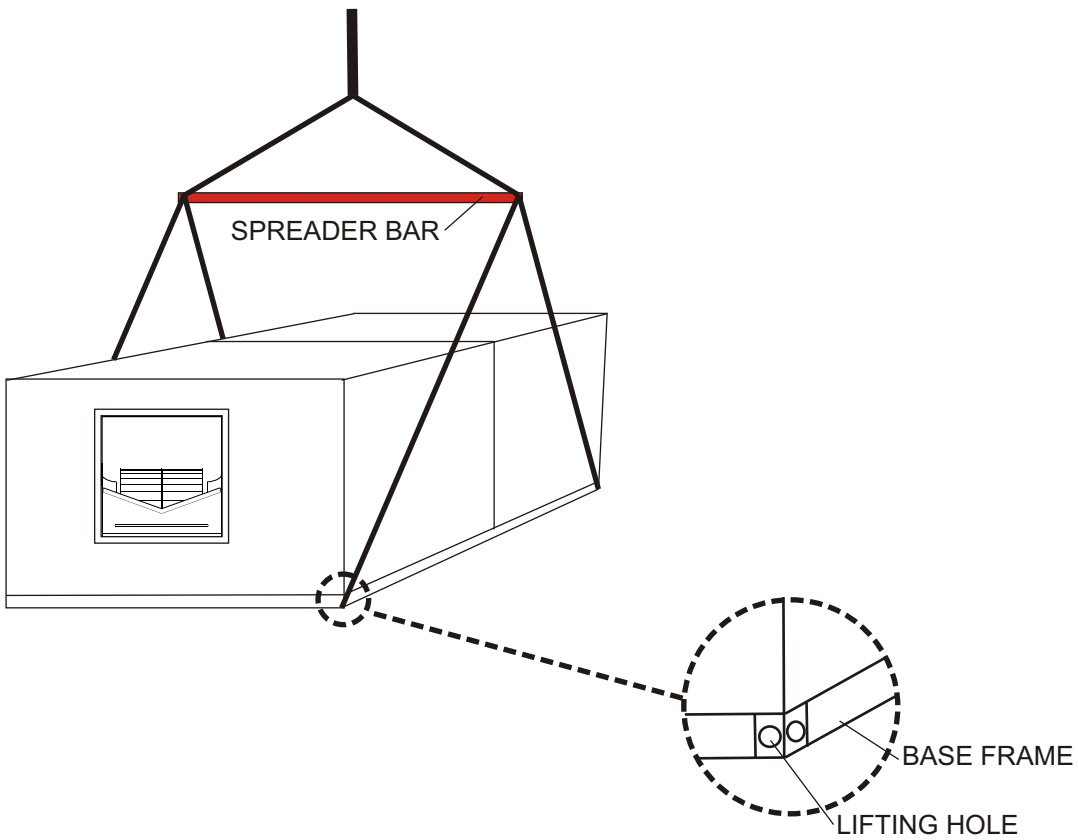
UNLOADING / HANDLING OF EQUIPMENT

The unit is designed for handling by two methods. In both cases it is lifted from the bottom base in a fashion that holds it level, keeps it from tipping, falling or twisting. If the unit is severely twisted during handling, permanent damage may occur. It is not to be lifted from the top in any case. It is the installer's responsibility to verify the handling equipment's ability to safely handle the equipment.

The preferred method of handling is through the unit's channel base frame. All lifting operations must be accomplished with a load spreader of sufficient width to insure that the lifting cables clear the side of the unit. If this type of spreader is not available, wood strips should be inserted between the cables and unit where necessary.

The alternative method of lifting would be by forklift. This is only possible if forks extend across the entire unit. Forks which do not extend across the entire unit could cause it to tip resulting in unsafe conditions or damage to the unit.

Special care should be taken while unloading the coils. Please avoid holding the coils from headers, as it may result in breakage of joints and consequently in leakage.



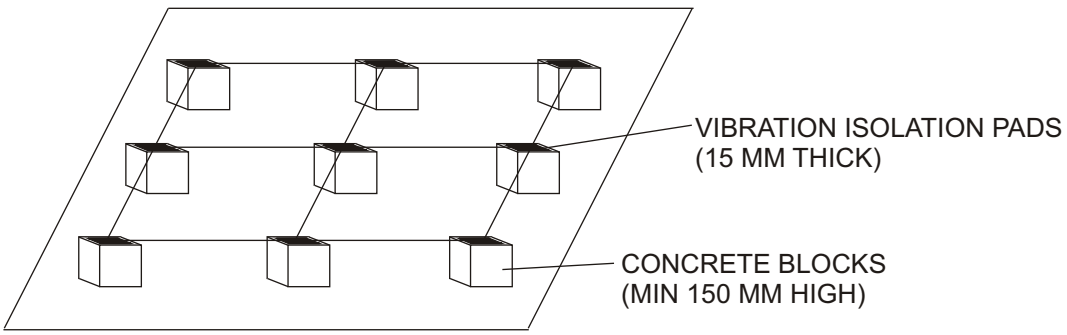
LOCATING THE UNIT

The AHU unit must be LEVEL and located so that there is enough clearance for opening the access doors. Refer to the submittal documents for air flow direction through the unit so that it may be positioned to accommodate necessary ductwork. Also note from the submittal where electrical and coil connection points are located so that proper connections can be made. Remember to verify position and ability of support beams, pad, or curb to properly support the unit. At a minimum, all units are to be supported around the perimeter and across any shipping split. Verify that support structure dimensions coincide with the unit. Locate the unit so that air intakes are not too close to any exhaust fan outlets, petrol/oil storage, or other contaminants that could potentially cause dangerous situations. The use and storage of petrol, diesel or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.

PLACING THE FLOOR MOUNTED UNITS

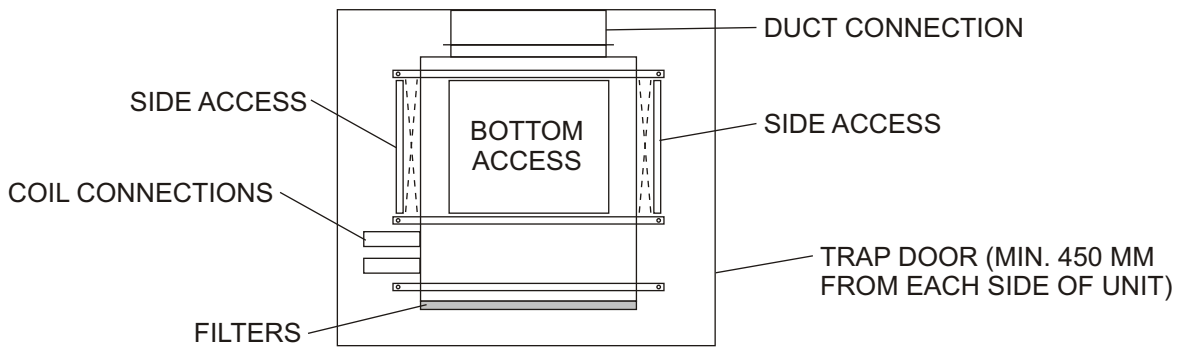
When the unit is mounted on floor/rooftop, ensure that the unit is LEVELED horizontally. The curbs or concrete base should be at least 150-200 mm in height. Uneven foundation may result in drainage problems and consequently in corrosion of cabinet and other metallic parts inside the casing.

Moreover, it is advisable to use 15 mm thick vibration isolation pads between the unit and the curbs so as to avoid the vibration to be carried over to the roof.



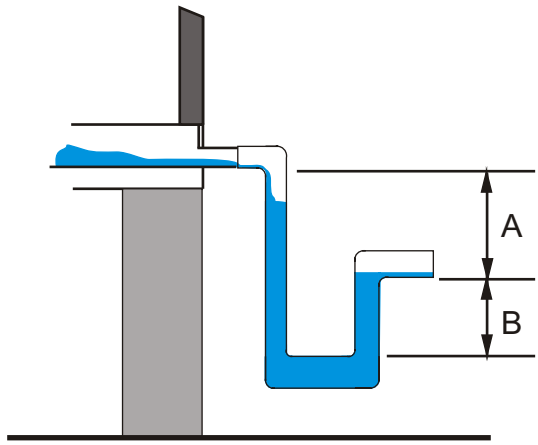
HANGING THE CEILING MOUNTED UNITS

While suspending from the ceiling, the units should preferably be hanged using vibration isolation hanging system. The units should be hanged using all the mounting holes. Adequate space should be left as trap door below the unit so that all the access doors, duct connections and coil connections are easily accessible, for maintenance purposes.



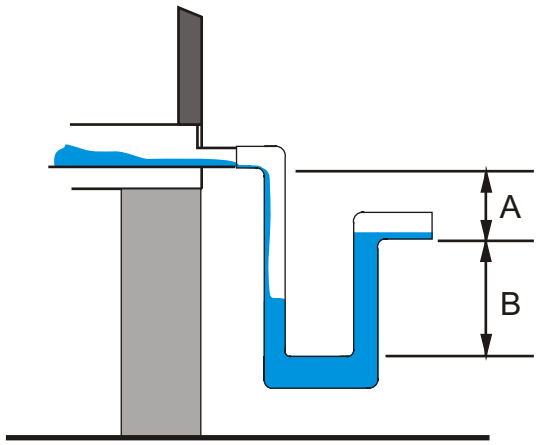
CONDENSATE DRAIN CONNECTION

The units with cooling coil is provided with a threaded condensate drain connection. The unit and drain pan must be level side to side and a P-trap must be installed for proper drainage. If all of the drains are to be piped, each must have its own trap. According to the construction, units may have positive or negative pressure in coil sections. It is recommended that the traps be used in both cases with care given to the negative pressure sections. Size traps properly referring to figure below as a conservative measure to prevent the cabinet static pressure from blowing or drawing the water out of the trap and causing air leakage. Periodic cleaning is necessary to prevent algae buildup from plugging the drain and causing the drain pan to overflow. In addition, the drain pans should be kept clean to prevent the spread of diseases. Only qualified personnel should perform cleaning.



Drain piping for negative pressure inside

A= Inside pressure in mm + 50 mm
B= A/2



Drain piping for positive pressure inside

B= Inside pressure in mm + 50 mm
A= B/2

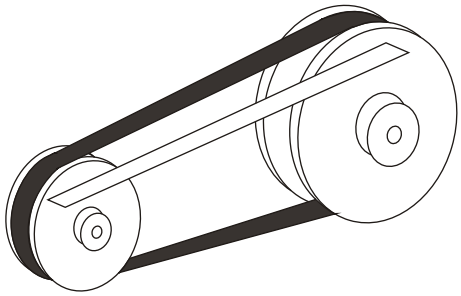
PULLEY ALIGNMENT AND BELT TENSIONING - BELT TYPE

It is important to properly align the motor and fan pulleys to avoid unnecessary loading of bearing. Further, the belt should be optimally tensioned to avoid slipping as well as overloading of shaft and bearing. Please refer to the following procedure in order to align and adjust the belt tension accurately:

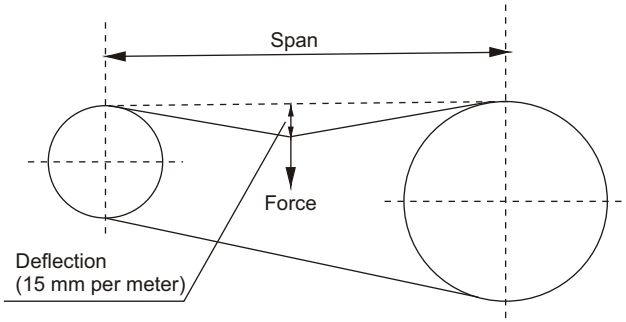
1. Align the pulleys using a flat ruler, ensuring that the pulleys are along the central axis.
2. Fit the belts and adjust the tension using the tightening screw provided on the motor-mounting base.
3. Ensure that the belt deflection is around 15 mm per meter of center-center distance of the pulleys.
4. Use a tensiometer to ensure that the force required for the above deflection is as per the table below.

BELT SECTION	FORCE REQUIRED TO DEFLECT BELT 15 MM PER METER	
	SMALL PULLEY DIA.	FORCE REQUIRED
SPA	80-132 mm	2.5 - 3.6 KgF
	140-200 mm	3.6 - 4.6 KgF
SPB	112-224 mm	4.6 - 6.6 KgF
	236-315 mm	6.6 - 8.7 KgF
SPC	224-355 mm	8.7 - 11.7 KgF
	375-560 mm	11.7 - 15.3 KgF

PICTORIAL DEPICTION - Alignment and belt tensioning



Use a flat ruler (as shown) to align the pulleys.



Check and adjust the belt tension consulting the chart given on the previous page.

OPERATION & TROUBLESHOOTING - PLUG TYPE FANS

Following are the points to be considered while operating the direct driven plug fans:

1. Lock out all power sources.
2. Make sure duct connections are adequately designed.
3. Check all hold-down screws.
4. Spin impeller to check that it rotates freely, and is grossly not out of balance.
5. Check impeller for correct rotation.
6. Switch on the electrical supply and allow the fan to reach full speed.

SWITCH OFF IMMEDIATELY IF EXCESSIVE NOISE OR VIBRATION IN OBSERVED.

PROBLEM	POSSIBLE CAUSE	REMEDY
Fan not starting	Incorrect electrical supply	Check for correct power supply
	Motor not properly connected	Check motor connections or change motor if required
Excessive Air Flow	Excessive fan speed	Reduce fan speed
	Lower actual static pressure	Reduce fan speed
High power absorbed	Wrong impeller rotation	Correct the rotation
	Low motor supply voltage	Correct supply or change motor if required
	Access door open	Close access door
	Filters left out	Add in filters

CHECK LIST (Before starting the unit)

Following check list should be followed before starting the unit, to ensure smooth operation:

1. Ensure that all sections of the unit are clean with no debris/tapes/plastic protective film etc. inside.

2. Close all the access doors properly.

3. Ensure that the proper electrical supply is provided through all necessary protective equipment.

4. Ensure that the coil connections / duct connections are free of leaks. Prime the drain trap with water.

5. Check and tighten all the security bolts.

6. Check that the fan assembly is properly grounded to prevent the chances of electric shock.

7. Check belt tension to be in specified range. Re-tighten belt after 12-15 hours of running.

8. Ensure the correct rotation of the fan by switching on the unit for a moment and switching o ff immediately.

9. On starting up the unit, check for any excessive noise or vibration.

10. In case any problem appears, switch o ffthe unit and follow troubleshooting procedure.

11. After 6-8 Hrs of successful running, recheck the above points to ensure smooth operation of the unit thereafter. In case the unit has to be run without the duct connection or the provided filters, please ensure that the dampers are 60-70% closed, to prevent motor overloading.

EQUIPMENT IN THE ELECTRICAL PANEL

It is recommended to install the following protective equipment in the electrical control panel, as suited for 3 phase and 1 phase motors:

1. MCCB / Line fuses of suitable range
2. Power contactor
3. Current over-load protector (In manual reset position). The setting should not be more than 5 % of the maximum current of motor.
4. Single phase preventer.
5. Volt meter
6. Ammeter

Please note that the warranty of the motor is void in the absence of above safety equipment.

PREVENTIVE MAINTENANCE SCHEDULE

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Have this system inspected at regular intervals by a qualified service technician. The required frequency of the inspections depends upon the total operating time and the indoor and outdoor environmental conditions. Routine maintenance should cover the following items:

EVERY DAY

VOLTS : Ensure that the electrical supply is within specified range.
AMPERES : Check that the current rating is within the correct range.

EVERY MONTH

PRE FILTERS : Check for visible clogging. Change if needed.
FINE FILTERS : Check for the pressure drop. Change if needed.
BLOWER BEARINGS : Ensure that the bearings are properly lubricated.
CONDENSATE DRAIN PIPE : Check for any blockage. Clear if necessary.

EVERY 3 MONTHS

BELTS : Check for wear and tear. Ensure proper tension in the belts.
PULLEYS : Check for proper alignment along the central axis. Check for any damage.
LIMIT SWITCH : Ensure proper operation. Clean terminal if required.
COILS : Look for any damage on the surface. Clean with suitable agent if required.
HEPA FILTERS : Check the pressure drop. Change immediately if required.

EVERY 6 MONTHS

DAMPERS : Look for any leakage due to cuts in the gasket.
ELECTRIC HEATERS : Ensure that all heaters are working. Clean the terminals if required.
CARBON FILTERS : Check the pressure drop. Change if needed.
MOTORS : Ensure that the motor is tightened on the bracket. Look for loose electrical connections.

ANNUALLY

CONTROL PANEL : Inspect for loose wires and terminals. Ensure clean and dirt-free components.
EXTERNAL SURFACE : Look for any visible damage. Change any broken fitting.

AIREF CHOOSE YOUR AIR

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