

نعمه
Nehmeh
Air Conditioners

CFM RANGE FROM 600 TO 48,000

Brought to you by Nehmeh Entreprises and Industries L.L.C



NRS

AIR HANDLING UNIT



Nehmeh Entreprises and Industries LLC participates in the Eurovent Certified Performance programme for AIR HANDLING UNITS (AHU). Check ongoing validity of certificate: www.Eurovent-Certification.com





Your Partner for Quality Industrial Solutions

Nehmeh Enterprises and Industries LLC participates in the Eurovent Certified Performance programme for AIR HANDLING UNITS (AHU). Check on-going validity of certificate: www.Eurovent-Certification.com



Qatar's First & Only Eurovent Certified Manufacturers of Air Handling Units (AHU)



Custom-Built Air Handling Unit

Producing the right Weather in any Environment

For more information visit www.nehme.com/ahu or call +974 5033 0624





About Us

Nehmeh is recognized as one of the leading integrated manufacturing & trading companies headquartered in Doha, Qatar. Nehmeh is engaged in every aspect of the automotive, construction, heat transfer, service and the woodworking industries, including manufacturing, distribution, marketing, sales, aftersales and in addition to investing in renewable and advanced technologies.

The original company name, Anton Nehmeh has roots which can be traced back to 1955 in Doha, Qatar. As years went by and experiences were gained, Nehmeh developed other businesses, namely Nehmeh Entreprises & Industries and Nehmeh Corporation. Subsequently, Nehmeh were appointed authorized dealers for many world renowned brands and has made those brands leaders in the Qatari market.

Our Vision has been set out to put us on course to becoming a regional player in providing innovative & quality solutions by our People to our valued customers.

Today, the quality-endorsed Group is recognized as one of the leading provider of award-winning industrial solutions and offering a broad spectrum of products and services to the government, municipalities, the business community at large and above all the industrial sector and operates in the State of Qatar, the Kingdom of Bahrain and the United Arab Emirates. We are continuously undergoing transformation for providing markets with a choice of quality.

Nehmeh's sustainability initiatives include various commitments and outreach programs some of which include community service. As part of our gratitude and great pride in contributing to the local communities where we live and work as well our care to the environment and we are proud of the many ways in which our family of dedicated staff and management and selected products & services work hard to safeguard and protect our planet.

AIR HANDLING UNIT



Air Conditioners

CFM RANGE FROM 600 TO 48,000



Eurovent Certification certifies the performance ratings of air-conditioning and refrigeration products according to European and international standards. We are proud to be the only Qatari company to have attained this certification and one of only selected few in the MENA region.

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Check ongoing validity of certificate: www.Eurovent-Certification.com*



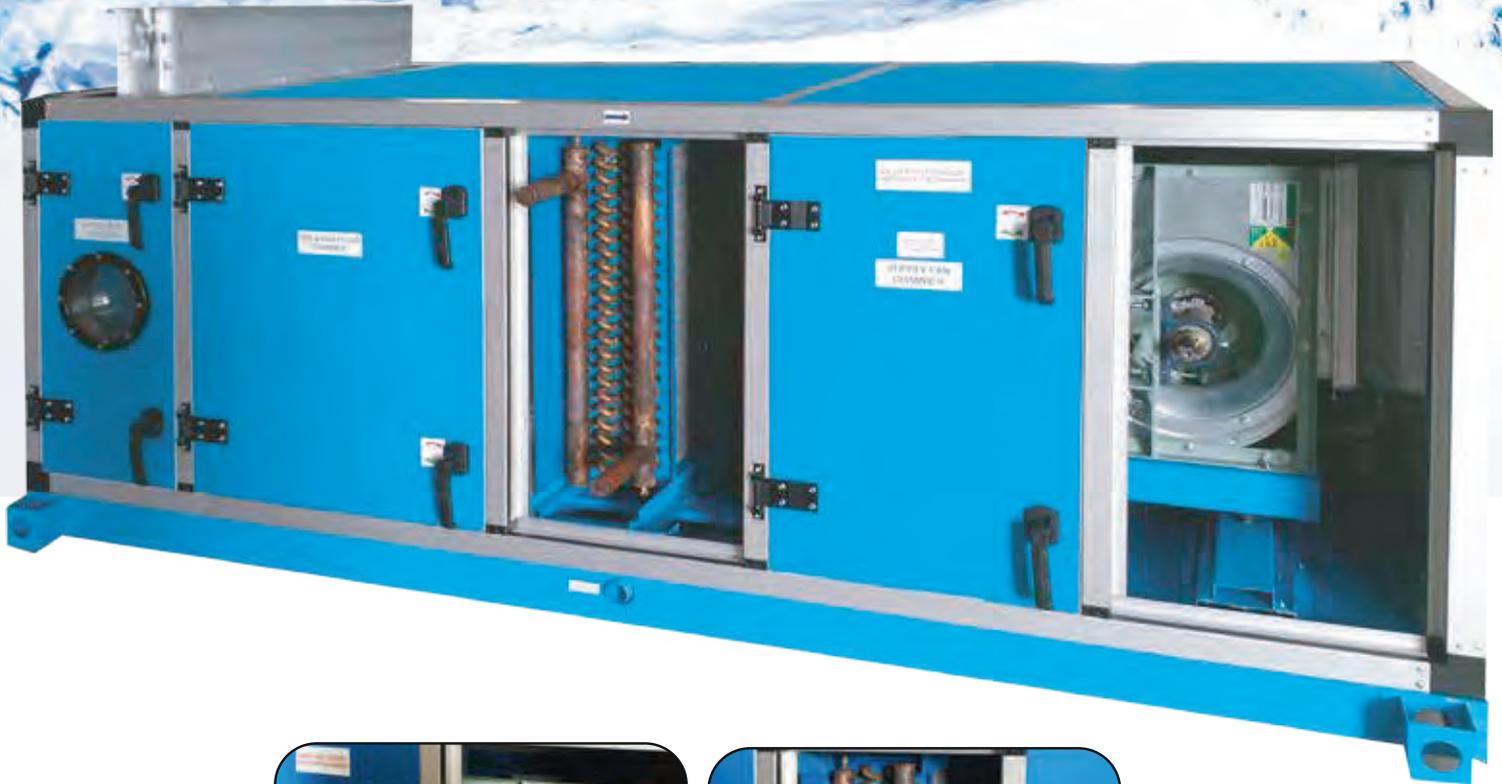
AIR HANDLING UNIT



Air Conditioners

CFM RANGE FROM 600 TO 48,000

AIR HANDLING UNIT



Sliding coil, blower and motor for easy service access

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CERTIFICATE
N° 18.07.011



Air Handling Unit / Centrales de traitement d'air

Range Name / Nom de Gamme :
NRS

Granted on July 13, 2018 - Date 1ère admission 13 juillet 2018

This document is valid at the date of issue - Check the current validity on:
Document valable à la date d'émission - Vérifier la validité en cours sur :
www.eurovent-certification.com

Participant/Titulaire

Nehmeh Entreprises and Industries LLC
Building No. 84, Street 41 - New Industrial Area
P.O. Box 99 Doha, Qatar

This product performance certificate is issued by Eurovent Certita Certification according to the certification rules:

Ce certificat de performance produit est délivré par Eurovent Certita Certification dans les conditions fixées par le référentiel :

ECP AHU - « Air Handling Unit » in force at established date.

ECP AHU – « Centrales de traitement d'air » en vigueur à date d'édition.

Pursuant to the decision notified by Eurovent Certita Certification, the right to use the mark ECP shall be granted to the beneficiary company for the above Range in the conditions defined by the certification program mentioned.

En vertu de la décision notifiée par Eurovent Certita Certification, le droit d'usage de la marque ECP, est accordé à la société qui en est bénéficiaire pour la gamme visée ci-dessus, dans les conditions définies par le programme de certification mentionné.

Unless withdrawn or suspended, this certificate remains valid as long as the requirements for the certification program framework are met. The validity of the certificate is to be verified on www.eurovent-certification.com

Sauf retrait ou suspension, ce certificat demeure valide tant que les conditions du référentiel du programme de certification sont respectées. La validité du certificat est à vérifier sur le site Internet www.eurovent-certification.com

THIS CERTIFICATE HAS BEEN ISSUED ON 29/06/2023
THIS CERTIFICATE IS VALID UNTIL 30/06/2024

CE CERTIFICAT A ÉTÉ EMIS LE 29/06/2023
CE CERTIFICAT EST VALIDE JUSQU'AU 30/06/2024



Organisme accrédité n° 5-0517 Certification Produits et Services selon la norme NF EN ISO/CEI 17065:2012
Portée disponible sur www.cofrac.fr

Accreditation #5-0517 Products and Services Certification according to NF EN ISO/CEI 17065:2012 –
Scope available on www.cofrac.fr

COFRAC est signataire des accords MLA d'EA et MLA d'IAF,
COFRAC is signatory of EA MLA and IAF MLA,
list of EA members is available on www.european-accreditation.org/ea-members
list of IAF members is available on www.iaf.nu/articles/IAF_MEMBERS_SIGNATORIES/4

Paris, 29 juin 2023

MANAGING BOARD MEMBER / MEMBRE DIRECTOIRE





CERTIFICATE
N° 18.07.011



Appendix / Annexe

Granted on July 13, 2018 - Date 1ère admission 13 juillet 2018

This document is valid at the date of issue - Check the current validity on:
Document valable à la date d'émission - Vérifier la validité en cours sur :
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List of certified products and characteristics is displayed on:
La liste des références et caractéristiques certifiées est disponible sur le site :
www.eurovent-certification.com

This product performance certificate is valid for the following trade names:
Ce certificat de performance produit est valide pour les marques commerciales suivantes:
[Trade Name / Marque Commerciale](#)

NEHMEH

This product performance certificate is valid for the following manufacturing places:
Ce certificat de performance produit est valide pour les sites de production suivants:
[Manufacturing Place / Site de Production](#)

Doha, Qatar

This product performance certificate is valid for the following software:
Ce certificat de performance produit est valide pour les logiciels de sélection suivants:
[Software / Logiciel de sélection](#)

Nehmeh Select V1.05 (31/05/2023)

We believe that the keys to the brand success are self-definition, transparency, authenticity and accountability. Our Organization provides a reliable product which comply with the below certification.



TESTED?



QUALITY?



QC/QA?



READY?



- ★ Flexible Cabinet Sizing
- ★ Galvanized Aluminum or Stainless Steel Panels with the various thickness such as 1.0, 1.2 & 1.6
- ★ Inner / Outer Painted GI Panels.
- ★ Selection of Drain Pan Materials.
- ★ Mixing Boxes / Economizers.
- ★ Multiple Coil Section Depths.
- ★ Integral face and Bye-Pass Dampers.
- ★ Multiple Fan Section – Belt or Direct Drive, Forward or backward curved or Aerofoil, Plug Fans & EC Fan.
- ★ Motors – Standard and Energy Efficient (IE1/IE2/IE3)
- ★ Humidifier and De-Humidifier sections.
- ★ Filters – Flat Filters, Bag Filters, HEPA Filters, Chemical Filters
- ★ Digital Controls
- ★ Optional Accessories – View Port, Hinge Door, Lights, etc.
- ★ Based on customer, consultant, contractor specific requirements to be added into the NEHMEH Air Handling series.



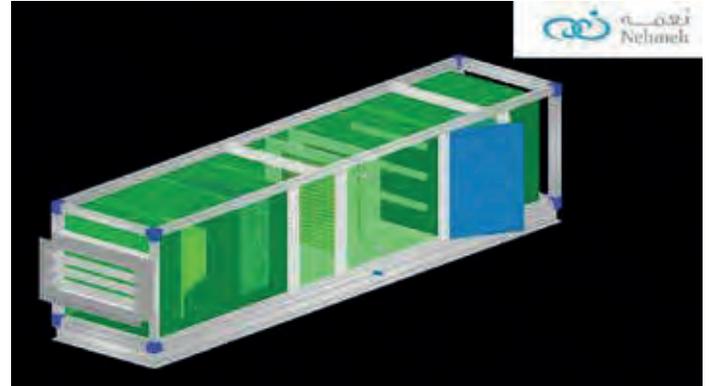
- ★ Thermal Transmittance - T2
- ★ Thermal Bridge - TB2
- ★ Casing Strength - D1
- ★ Casing Leakage (-400 pa) - L2
- ★ Casing Leakage (+700 pa) - L2
- ★ Filter Bye-pass Leakage - F9



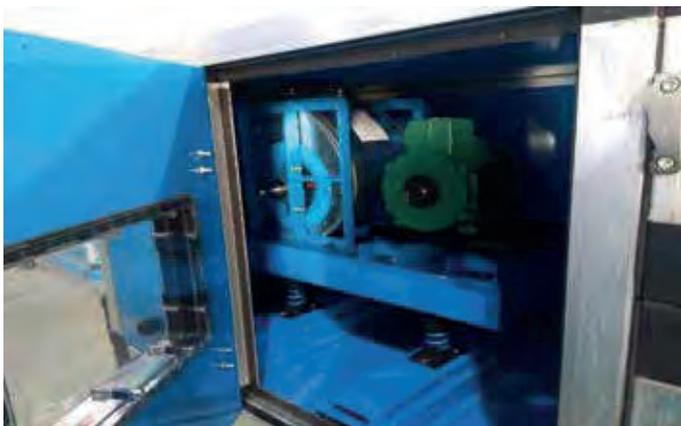
Tested at TUV Lab - Germany

The air handling unit selection software is complete in functions and suitable for AHU Selection. NehCalc is a powerful tool for consultants, sales and application engineers. NACAHU software is able to design custom built AHU with limited time and complies with the latest Eurovent regulation with Energy Ratings.

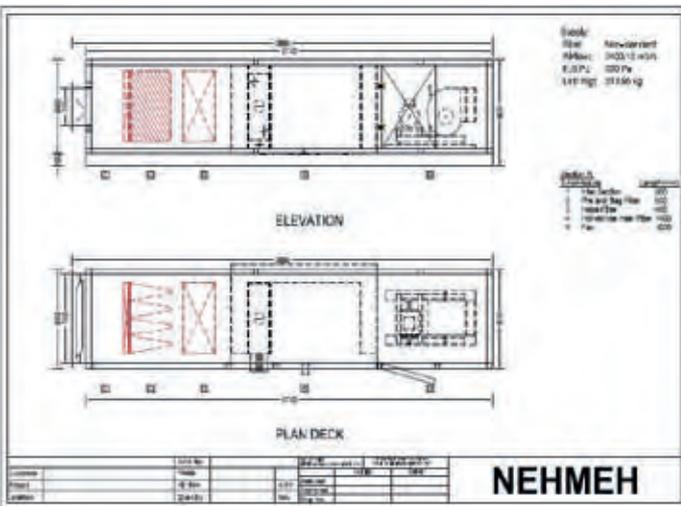
NACAHU our selection program is one of the most sophisticated design software for Air handling Units available on the market. It is the result of years of experience in designing and optimizing customized air handling units. The performances provided by this software are certified by Eurovent. It enables the selection of virtually all possible configurations, components or options to reach your exact project constraints. Detailed data sheets, in duct and radiated sound levels, AutoCAD format drawings, product specifications, Psychometric charts, fan curves, SFPs, and energy classes can be viewed and printed from our software



| PROJECT DETAILS | | | |
|---|--|--|------------------------------------|
| Date | Project No. | Project Reference | Customer |
| 27/05/2019 | Q10-078 | Mediqa Medical Center @ The Pearl | Nehmeh Airconditioners |
| Rev Date | Customer Unit Reference | Unit No. | Unit Model |
| 27/05/2019 | FANCO-1 | FANCO-1037P009 | Non-standard |
| Air Flow | Total Static Pressure | Unit Qty. | Unit Velocity |
| 2400 m ³ /h | 322 Pa | 1 | 1.17 m/s |
| Supply Velocity | Exhaust Velocity | External leakage rate % | Model box |
| 2.27 m/s | | | AL750 |
| Internal leakage rate % | | | Air Density |
| | | | 1.2 kg/m ³ |
| UNIT CONSTRUCTION | | | |
| Panel Thickness | Panel Insulation | Aluminium Framework | Unit Location |
| 25 mm | INSUL PG 45MM THK x 0.48x (1.344 kg/m ³) | PEOPLE COOLER 25 mm THERMAL BRIDGING (ALUMINIUM) | Internal |
| Panel External Sheet | Panel Internal Sheet | Base Frame | Access Side |
| Q-LCOIL-1219 4MM-10 0.8MM THK | Q-LCOIL-1219 4MM-10 0.8MM THK | 100 mm Steel | Right |
| Roof Type | Reinforced floor | | |
| None | None | | |
| SECTION WEIGHTS AND DIMENSIONS | | | |
| Section No. | Length | Width | Height |
| A | 1770 mm | 250 mm | 300 mm |
| | | | Weight |
| | | | 314 kg |
| OVERALL UNIT DIMENSIONS AND CENTRE OF GRAVITY | | | |
| Length | Width | Height | Weight |
| 1770 mm | 250 mm | 300 mm | 314 kg |
| | | | CGG X |
| | | | 155 mm |
| SOIL PLEAT SECTION | | | |
| Air Flow | Air Velocity | Pressure Drop | Model |
| 2400 m ³ /h | 2.32 m/s | 8 Pa | L25 |
| Dampers | Flexible Connection | Leakage | Actuator |
| Yes | No | No | No |
| DOO PANEL AND BAG FILTER | | | |
| Velocity | Class | Type | Media |
| 1.08 m/s | G3 | Fanal | Panel Filter / Pleated - Synthetic |
| | | | Withdrawal |
| | | | Side |
| | | | Filter Air Pressure Drop |
| | | | Clean |
| | | | Design |
| | | | Final |
| 1.08 m/s | F7 | Bag | Bag Filter - Synthetic |
| | | | Side |
| | | | 124 Pa |
| | | | 176 Pa |
| | | | 250 Pa |



| 900 CENTRE FUSION FAN | | | | | | | | | | |
|------------------------------------|-----------------------------|------------------------|-------------------------------------|------|------|-------|-------|-------|-------|----------------|
| Fan Type | Wheel Type | Drive Type | | | | | | | | |
| Centrifugal | Forward Curved | Roll Drive | | | | | | | | |
| Model | Iron blade | Impeller diam. | | | | | | | | |
| 91225R | Colony | 225 mm | | | | | | | | |
| Quantity | Duty N Fan Fan | Motor Make | | | | | | | | |
| 3 | Single Fan | Motor Make | | | | | | | | |
| Air Flow Volume | Fan Abs Power | Motor Type | | | | | | | | |
| 2400 m ³ /h | 1.28 kW | Single Speed 0.1 | | | | | | | | |
| Est Static Pressure | Outlet Velocity | Relax | | | | | | | | |
| 300 Pa | 0.24 m/s | 2 | | | | | | | | |
| Unit Static Pressure | Fan Speed | Motor Speed | | | | | | | | |
| 1524 Pa | 2745 rpm | 2878 rpm | | | | | | | | |
| Fan Total Pressure | Fan max speed | Motor Power | | | | | | | | |
| 1213 Pa | 3407 rpm | 1.00 kW | | | | | | | | |
| Fan System effecit | ELC | Total Consumption (20) | | | | | | | | |
| 35.32 Pa | 0.03 A | 0.88 kW | | | | | | | | |
| Static Efficiency | Starting Method | Volts/Hz/No | | | | | | | | |
| 47.44% | Automatic (DOL/STAR (0.75)) | 380/3/50 | | | | | | | | |
| fan Outlet | fan Outlet Size | | | | | | | | | |
| No | 203 x 282 mm | | | | | | | | | |
| fan Pulley/Wheel | Motor Pulley/Bush | Ball Model | | | | | | | | |
| | | | | | | | | | | |
| Z SPA 300 / 1610 Dia 20 | Z SPA 90 / 1610 Dia 20 | Z SPA 902 | | | | | | | | |
| Frequency | 83 Hz | 125 Hz | 250 Hz | | | | | | | |
| 1k Hz | 2k Hz | 4k Hz | 8k Hz | | | | | | | |
| 96 | 77 | 67 | 57 | | | | | | | |
| 81 | 62 | 53 | 40 | | | | | | | |
| 62 | 50 | 40 | 30 | | | | | | | |
| (1) SWL INSIDE The Inlet Duct (08) | | | (2) SWL INSIDE The Outlet Duct (08) | | | | | | | |
| DOO ACCESS DOOR | | | | | | | | | | |
| Dimension | Type | | | | | | | | | |
| 500 x 750 mm | Hinged door | | | | | | | | | |
| AHU ACOUSTIC DATA SUPPLY SECTION | | | | | | | | | | |
| Description | 25Hz | 315Hz | 500Hz | 63Hz | 80Hz | 100Hz | 125Hz | 160Hz | 200Hz | Overall (R(A)) |
| Output Sound Power (dB) | 84 | 80 | 75 | 71 | 66 | 72 | 77 | 77 | 77 | 70 |
| Sound Power (dB) | 78 | 74 | 72 | 71 | 62 | 61 | 63 | 60 | 60 | 73 |
| Airborne sound power (dB) | 62 | 60 | 59 | 60 | 56 | 56 | 40 | 40 | 40 | 69 |



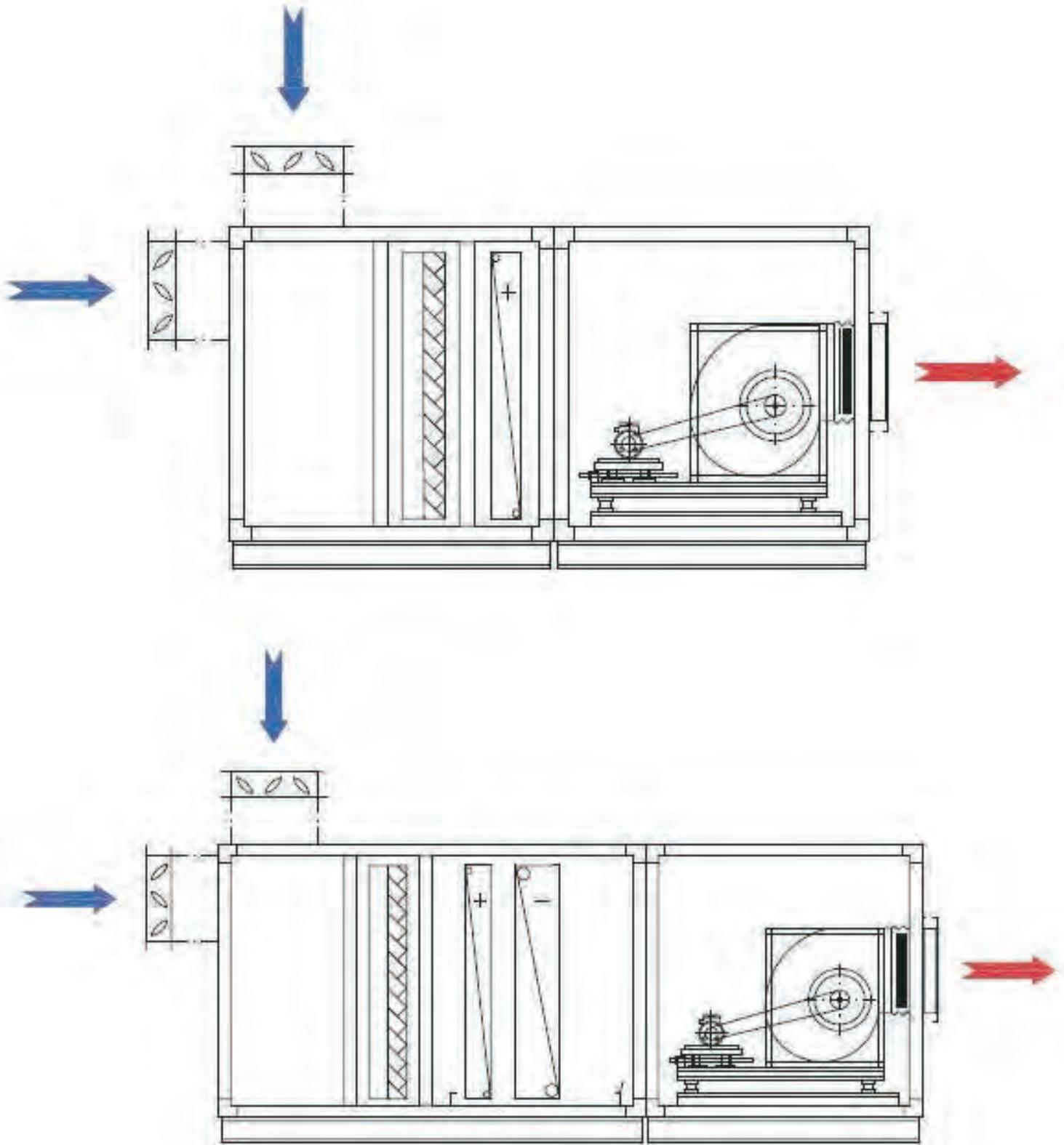
Air Flow rate from 600 to 48,000 CFM

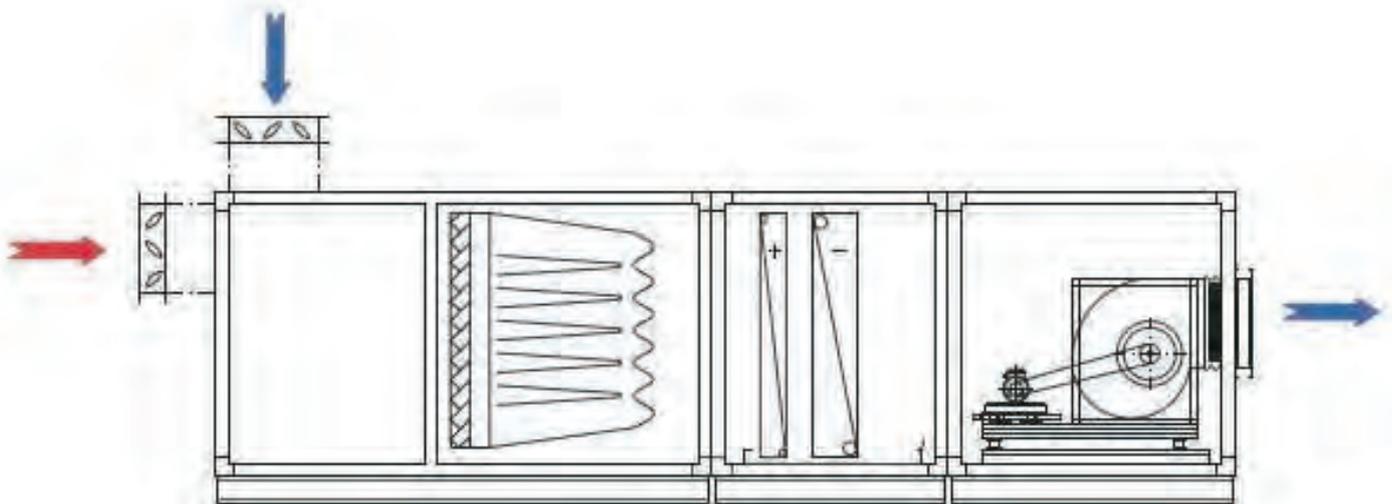
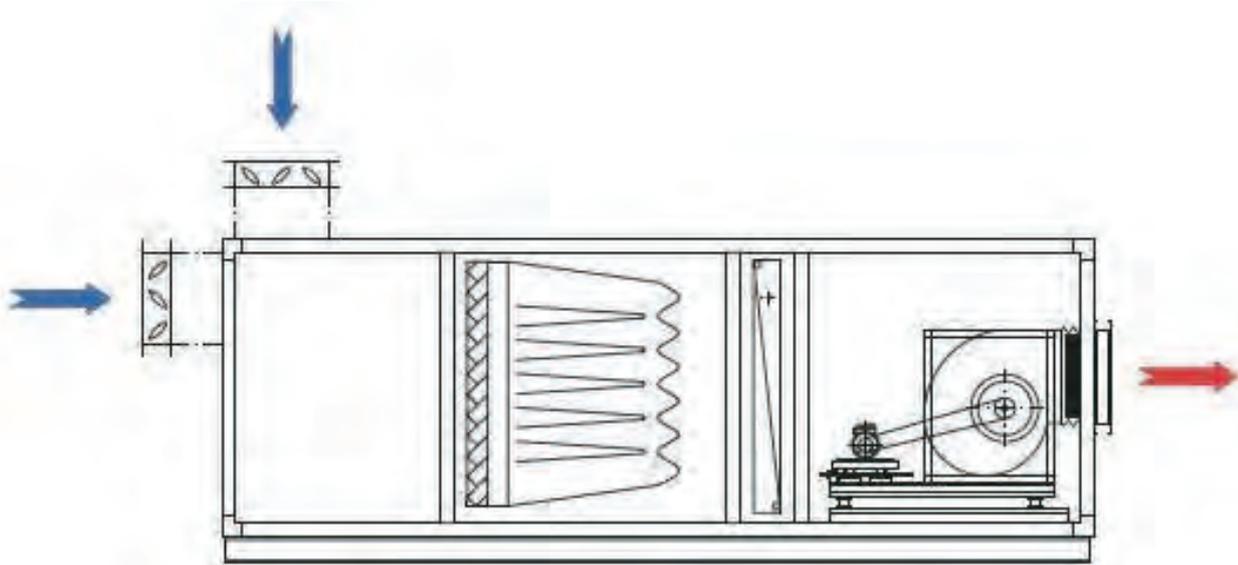
The NRS units are destined to commercial and industrial plants.

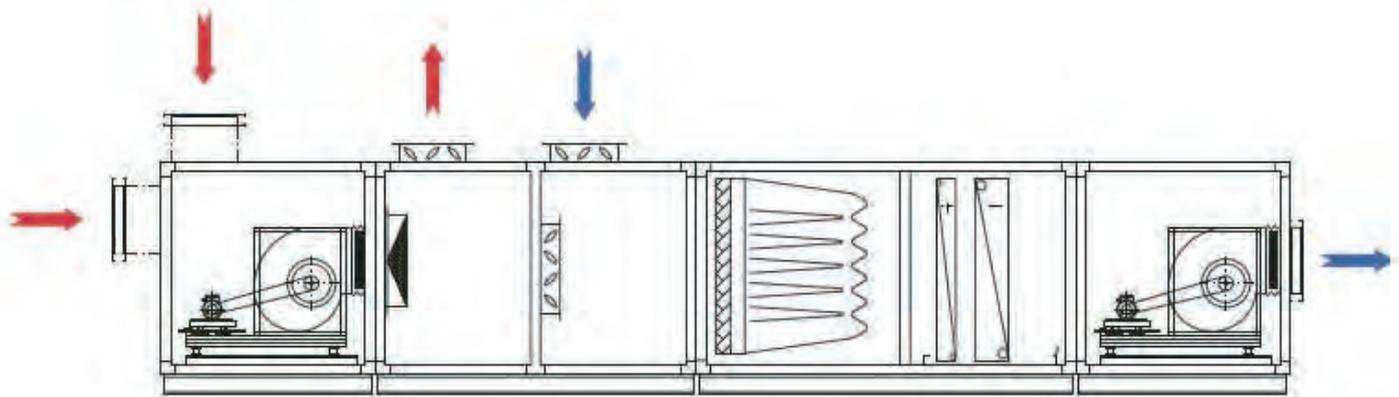
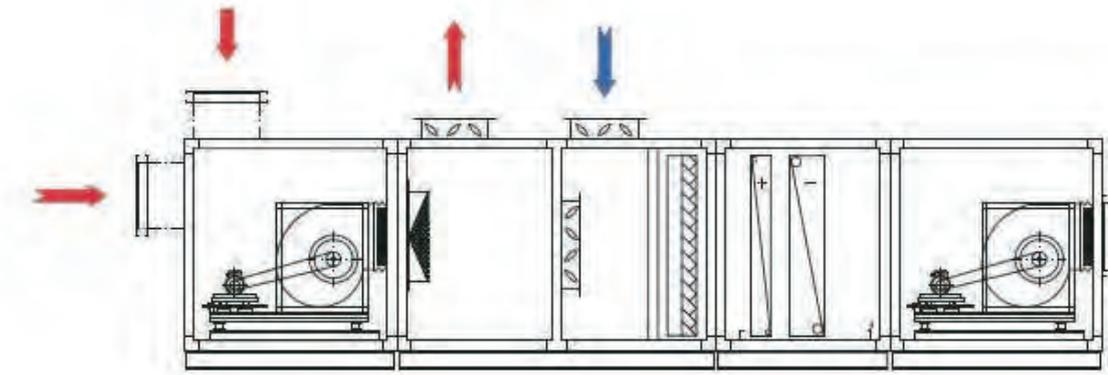
The series consists of 29 sizes with nominal air flow from 600CFM to 48,000 CFM and allows the filtration, heating and / or cooling treatments. The performances are ensured by high efficiency heat exchangers and high pressure fans coupled to the motor by pulley and belt. The compactness, low noise level, and the wide range of accessories gives the NRS series a huge versatility in order to adapt to customer requirements. It has been chosen to add an enhanced configuration to ensure a higher pressure of the fan.

| MODEL | WIDTH [mm] | HEIGHT [mm] | COIL FACE AREA [m ²] | FILTER FACE AREA [m ²] |
|---------|------------|-------------|----------------------------------|------------------------------------|
| NRS 65 | 740 | 550 | 0.17 | 0.17 |
| NRS 95 | 740 | 700 | 0.23 | 0.29 |
| NRS 120 | 740 | 700 | 0.23 | 0.29 |
| NRS 158 | 750 | 800 | 0.30 | 0.35 |
| NRS 177 | 780 | 840 | 0.33 | 0.35 |
| NRS 200 | 840 | 840 | 0.37 | 0.35 |
| NRS 260 | 1035 | 840 | 0.50 | 0.52 |
| NRS 280 | 1080 | 840 | 0.52 | 0.52 |
| NRS 320 | 1080 | 940 | 0.60 | 0.52 |
| NRS 360 | 1180 | 940 | 0.68 | 0.52 |
| NRS 440 | 1400 | 940 | 0.84 | 0.71 |
| NRS 490 | 1400 | 1020 | 0.93 | 0.71 |
| NRS 550 | 1400 | 1120 | 1.05 | 1.05 |
| NRS 620 | 1550 | 1120 | 1.17 | 1.05 |
| NRS 645 | 1630 | 1120 | 1.25 | 1.05 |
| NRS 730 | 1420 | 1420 | 1.38 | 1.41 |
| NRS 865 | 1630 | 1420 | 1.63 | 1.41 |

| MODEL | WIDTH [mm] | HEIGHT [mm] | COIL FACE AREA [m ²] | FILTER FACE AREA [m ²] |
|----------|------------|-------------|----------------------------------|------------------------------------|
| NRS 940 | 1750 | 1420 | 1.78 | 1.75 |
| NRS 1000 | 1830 | 1420 | 1.88 | 1.75 |
| NRS 1100 | 1990 | 1420 | 2.07 | 2.12 |
| NRS 1430 | 2400 | 1500 | 2.77 | 2.46 |
| NRS 1660 | 2400 | 1700 | 3.13 | 3.06 |
| NRS 1855 | 2645 | 1700 | 3.50 | 3.51 |
| NRS 2100 | 2740 | 1850 | 4.03 | 3.51 |
| NRS 2400 | 3000 | 1900 | 4.52 | 3.94 |
| NRS 3000 | 3000 | 2350 | 5.66 | 5.52 |
| NRS 3600 | 3525 | 2350 | 6.76 | 6.75 |
| NRS 4200 | 3950 | 2450 | 7.88 | 7.38 |
| NRS 4800 | 4050 | 2700 | 9.05 | 9.15 |







Note:
Additional sections and components to be added based on customer requirements

Framework

The frame is composed of specially rolled 50 mm Penta post thermal bridge aluminum profiles and plastic brackets designed especially for these profiles. Interior surfaces of the profiles are fully sealed in order to minimize pressure loss and avoid aggregation of contaminants inside the air handling unit.

Panel

The panels constituting the body have double layers. The inner surface of the panels is composed of electrostatic painted galvanized sheets. Heat and sound isolation is achieved either by fixing the sandwiched Panel with the Fiber Glass Insulation having the density of 48 kg/m³ or the sandwiched Panel with the injection of polyurethane having the density of 42 kg/m³. The layers of galvanized sheets are connected via new design thermal bridge profiles.

Besides serving as fixed body panels, the panels can be used as service doors as well. The panels serving as service doors are equipped with hinges and handle mechanisms of which number differ from 2 to 4 depending on the height of the unit. The units are equipped with emergency stop button for emergency and another safety switch will stop the operation in case the maintenance lid is open.

Hinge Access Door

The inspection door is 50 mm thick. The hinges of the inspection door are on the outside. Open the door using tools and the integral grip moulding. The contact pressure can be adjusted via the adjustable latches.

Special, all-round, non-ageing profile with double lip seal is highly effective against excess pressure and under pressure.

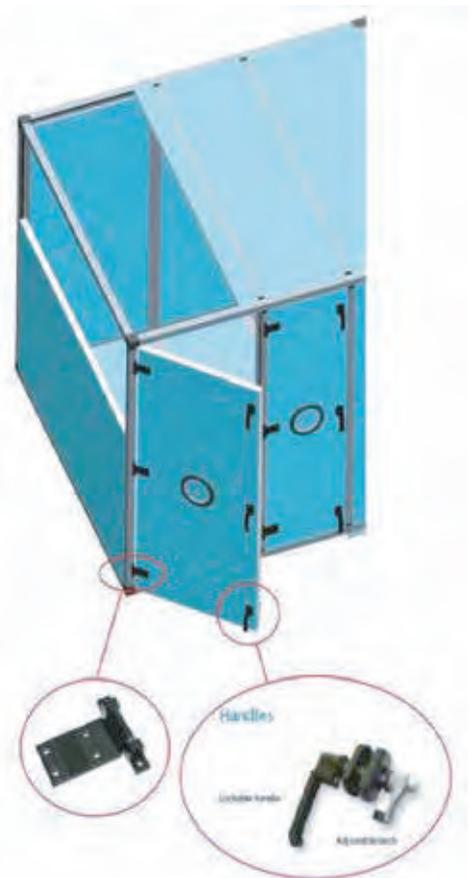
The inspection door consists of an internal and an external section made from fully galvanized sheet steel.

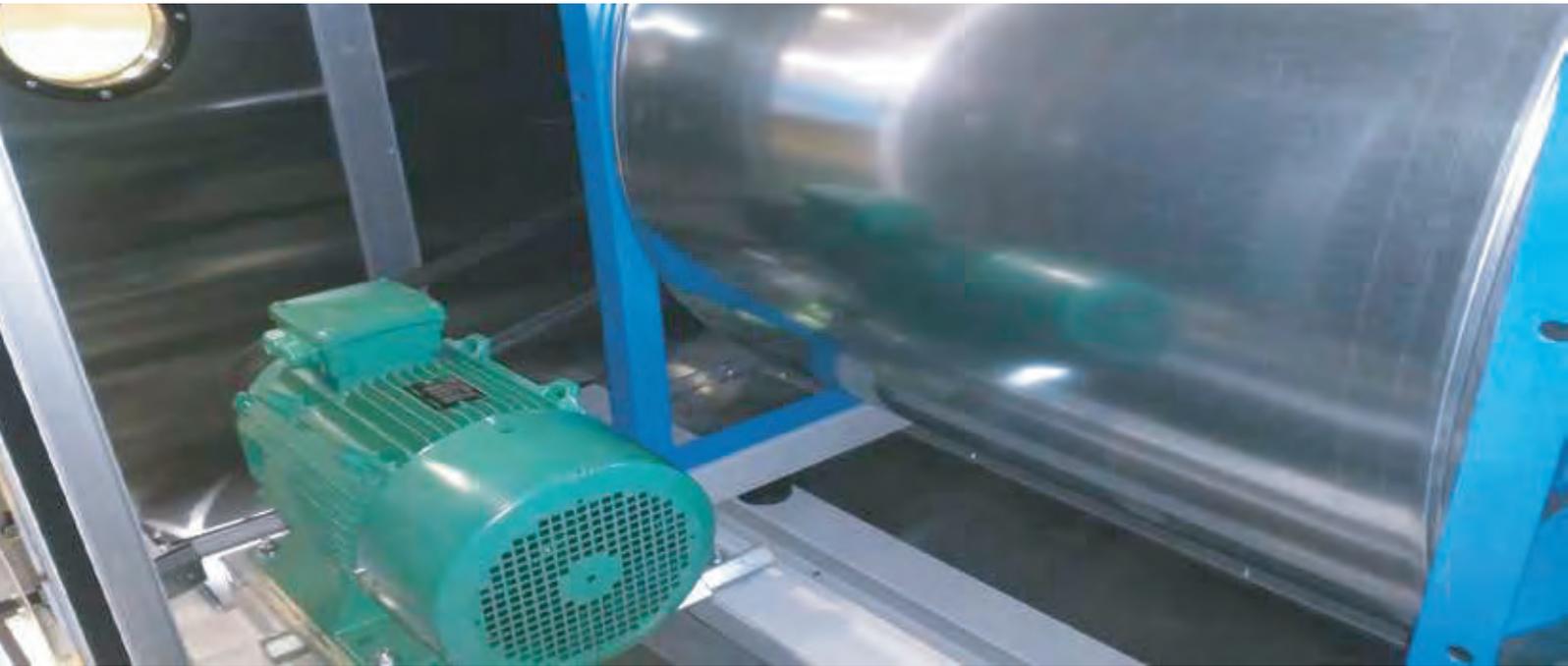
High grade Polyurethane Foam insulation, building the rigidity in the Panel, is injected between the internal and external sections and sealed metallicly on all sides. Thermal and acoustic properties such as thermal insulation between the casing panels.

Door handles are lockable and made from Nylon with the Aluminum Latches. The Oxidized hinges are made from the Aluminum. The Hinge access doors are provided for the Filter and Fan sections. Other sections are equipped with the removable type access doors.

Optional

- Internal and/or external, stainless steel casing panels
- Powder coating using RAL colors (min. thickness 60 µm)
- Inspection port Ø min. 150 mm with twin wall, without thermal bridges
- Lever closures that can be locked from the outside or continuous lever closures that can be opened from inside and out.





Centrifugal Fan Selection depends on the pressure loss in the ventilation system, either tightly set forward curved blade fans (in systems with low to medium pressure loss, 100-700 Pa) or widely set backward curved / Aerofoil blade fans (in systems with high pressure loss, 700-2500 Pa) are used. The fans are statically and dynamically balanced, highly efficient, silent, double suction, KRUGER brand radial fans. Optionally, direct driven Kruger plug fans can be used.

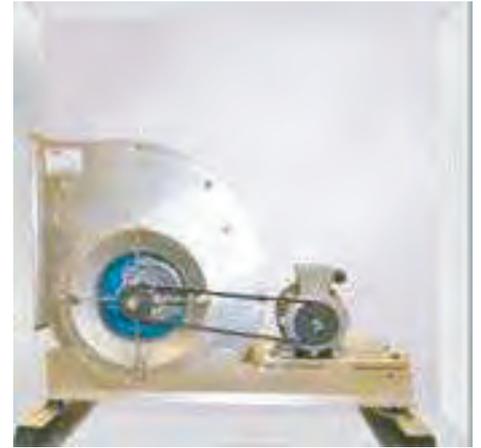
Electric motors have IP55 protection and F isolation classes and operate with 380-460 V / 50-60 Hz. Selection criterions depends on the power required by the fan shaft: Motors having 15% higher capacity (safety margin) are selected. Radial fans and electric motors can be fixed on the same chassis. In order to prevent the transmission of possible vibration into the cabinet rubber or spring vibration absorbers are used on the support skids standing on the body panel below the fan chassis. Fan cabinet outlet mouth and centrifugal fan mouth are interconnected by using rubber sealing and flexible flange.



Air handling unit uses KRUGER plug fan which are centrifugal fans without scroll. The fans have impellers with backward curved blades and they are statically and dynamically balanced, silent and high efficient fans and are suitable for velocity control and easy to clean inside the air handling unit.

Motor is directly coupled to the rotor. This way power loss caused by transmission components is avoided and contamination and breaking risk of belt is eliminated. Because the revolutions of the fan and the motor are the same air flow rate control can be managed by controlling the frequency in the fans. Fans are powered 380V / 50 Hz. Asynchronous motors have IP55 protection class and F isolation class.

- Fan and motor mounted on stable base frame; base frame positioned on flexible anti vibration mounts.
- High performance radial fan with double sided intake and backwards, Aerofoil or forwards-curved impeller blades.
- Shaft aligned to run true, reduced to standard diameter at both ends to accommodate V-belts.
- With stable bearings and acoustically tested, precision, deep groove ball bearings, lubricated with ageing-resistant lithium soap grease. Impeller statically and dynamically balanced in accordance with VDI 2060.
- Can easily be removed from the casing for repairs and maintenance work.
- Driven by three-phase motor 380-460 V/50-60 Hz, thermal category F, protection rating IP 55, TÜV GS tested, wired motors HV-tested and earth-tested as standard.
- Power transmission through high performance V-belt and pulleys.
- Pulleys secured with Taper Lock clamping bushings to DIN 6885.
- Fan and motor secured in the casing to be free from vibrations (up to motor model size 180 on tensioning carriage), with equipotential bonding as optional.
- Connection between fan and airtight, vibration-isolated front panel.



Optional

- Flat belt drive with tensioning carriage
- Spiral fan housing with inspection port
- Protective door grille
- Variable Frequency Drive

TEFC Motor

The Motor is internally mounted integral to an isolated fan assembly. Standard motor shall be horizontal foot mounting, induction motor, Squirrel Cage, Single Speed and Totally Enclosed Fully Air Cooled (TEFC) with Class F Insulation. Motor cannot be undersized but oversized for running capacity. For the desired operation speed between fan and motor, different poles (2, 4, 6 and 8 poles) can be provided.



EC Fan Technology



The following section presents the fan designs principally used in the air handling unit, and their advantages. For reasons of energy saving, fan types with backward-curved impellers have come to dominate the area of air handling units.

Free-running impellers with EC or AC external rotor motors are particularly characterized by their high power-to-weight ratio in conjunction with the compact drive concept. The motor/impeller combination is selected for optimum performance. Direct drive enables this fan type to be used in a wide variety of applications in accordance with hygiene requirements (DIN 1946, VDI 6022). EC motor technology is an innovative drive technology and enables operation at very high efficiency levels with even higher air handling capacity across the entire speed range of the fan.



Note: The investment costs for EC fans may be slightly higher compared to conventional fans, but pay off within a very short operating period due to the lower energy consumption and reduced installation complexity (no transformer, frequency inverter or phase angle control unit required)

Economic application range:

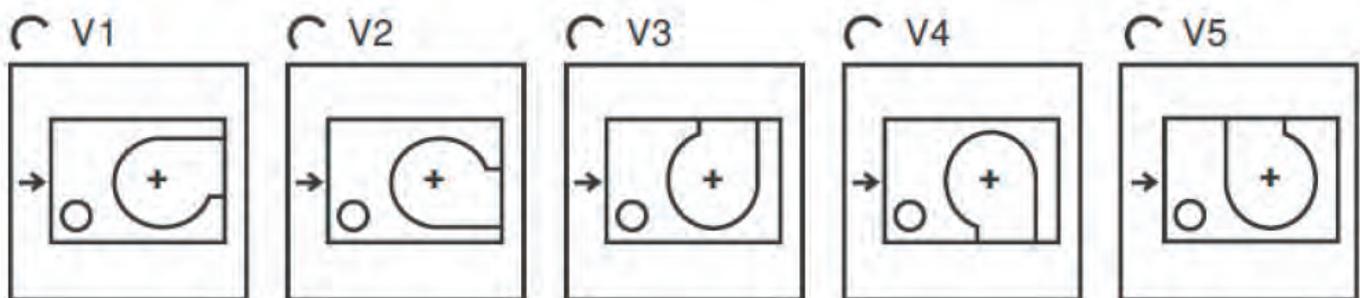
- Static pressure increases up to 1, 200 Pa
- Flow rates up to 12,000 m³/h



Advantages:

- Highly efficient EC motor with integrated control technology
- Very compact length
- It is possible to combine several fans in parallel making a “fan wall“, i.e. increasing the flow rate with a short length
- No frequency inverter used
- Direct drive, no power losses due to a belt drive
- No belt abrasion, therefore single-stage filtering is possible
- Very low maintenance

Centrifugal Fan Arrangements:



Centrifugal Fan-Motor Possible arrangements

Our customized Fan assembly shall be incorporated with the following options:

- Fan section with Inspection Window
- Bulk head Lamp
- Stand by motors for 24 x 7 operations
- Spark proof Fans
- Inlet guide vanes for VAV Control
- Explosion proof motors
- Stainless Steel Shaft Fans
- Extended lubrication fittings
- Fans with drain plug
- Variable frequency drive



For variable speed control (5 to 90 Hz) of the fan motor with quadratic torque pattern, anti-interference to EN 55011 and EN 618003- via anti-interference filter. Connecting cable between the motor and inverter with screened cable. Integral motor protection thanks to PTC thermistor monitoring. Prewired with control panel and preset at the factory.

Inverter for variable speed control of asynchronous three-phase motors especially for driving air handling equipment

- No output reduction at nominal motor speed compared to direct mains operation
- Complete installation unit with integral butterfly valve to reduce perturbation
- Integral anti-interference filter to maintain the limits set by EN 55011 and EN 61800-3
- With automatic energy optimization for maximum motor efficiency in partial load operation
- Output with switching stability, protected against short circuits and earth faults
- Operation permissible with multiple motors
- Ambient temperatures: 0 - 45 °C for protection rating IP 0020/ and IP 54 Graphic programming unit with plain text for commissioning settings and display of all data relevant for operation (for IP 20 appliances, can be removed with copy function), with keys for start, stop, manual and automatic mode.

Standard functions:

Automatic motor adjustment, automatic start-up and delay time adjustment, min. and max. speed restriction, fixed speed selection, synchronization with motors that are already running, motor PTC thermistor analysis, V-belt monitoring, hours run meter, fault message memory, PID controller (scalable in process variables).

Operation with reduced speed at excess temperature, under voltage or failure of a main supply phase, real-time clock for time-dependent control, separate inverter hours run meter and motor hours run meter.

Inputs/outputs:

2x analogue inputs (reversible 0-10 V/0-20 mA), scalable and invertible

4x digital inputs 24 V logic, either H or L active

2x digital terminals 24 V logic, usable as either input or output

2x floating changeover contacts, programmable function and pick-up/drop-out delay

1x programmable analogue output 0/4-20 mA, scalable internal auxiliary voltage supply:

24 V/DC for wiring the digital inputs and, if necessary, for supplying enabled actual value transducers

10 V/DC for set value potentiometer 1kOhm and motor protection

- USB port for PC communication with optional software
- RS-485 connection for Modbus RTU and BACnet MS-TP fieldbus connection Optional
- Sinus filter (LC motor filter)
- Repair switch for on-site bypass circuit (which enables 50 Hz emergency mode)
- Installation kit for mounting the programming unit in an external enclosure in accordance with IP 54
- IP 00/20 for control panel integration





Mixing Section: A factory-made enclosure which includes one or more static air mixers, which is designed to be mounted between sections of an air handling unit and is supplied separately from the mixing box.

Mixing System: The entire mixing system consisting of the mixing/control dampers and any other mixing devices such as air mixers.

Modified Range Mixing Effectiveness (ERdT): The absolute amount, expressed as a percentage that a mixing box or static air mixer reduces the temperature spread entering the mixing device. It is typically used in determining the freeze protection afforded by a mixing system.

Range: The maximum temperature less the minimum temperature for a set of readings.

$$\text{Range} = (T_{\max} - T_{\min})$$

Standard Deviation: A statistical calculation applied to a set of data. In essence it is an average variation from the average data point. For thermal mixing analysis the expression is as follows:

Static

$$\left[SD = \frac{1}{n-1} \sum_{i=1}^n (T_i - T_m)^2 \right]^{.5} \text{ Where:}$$

n = Number of samples
 T_m = Average temperature
 T_i = Temperature measurement
 SD = Standard deviation

Static mixing device: A mixing device fixed in position generally consisting of baffles and blades arranged to induce mixing to a flow of water or air.

Temperature Averaging Bulb: A control sensor designed to read the average temperature across a plenum by using a capillary tube or a special averaging wire approximately 15 to 25 feet long.

Theoretical Mixed Air Temperature: The mixed air temperature based on a calculation of the combined mass flow of two air streams. The theoretical mixed air temperature is found using the following equation:

$$T_{\text{mix}} = \frac{m_{\text{hot}} \cdot T_{\text{hot}} + m_{\text{cold}} \cdot T_{\text{cold}}}{m_{\text{hot}} + m_{\text{cold}}}$$

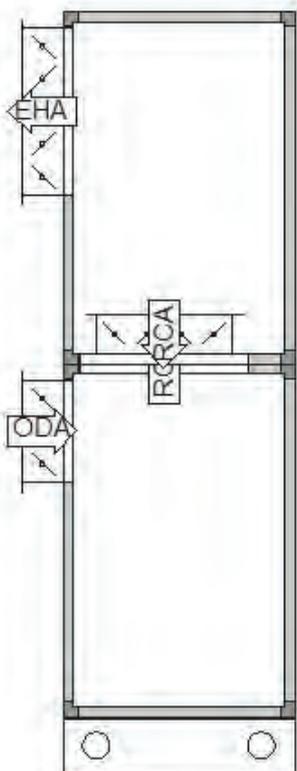
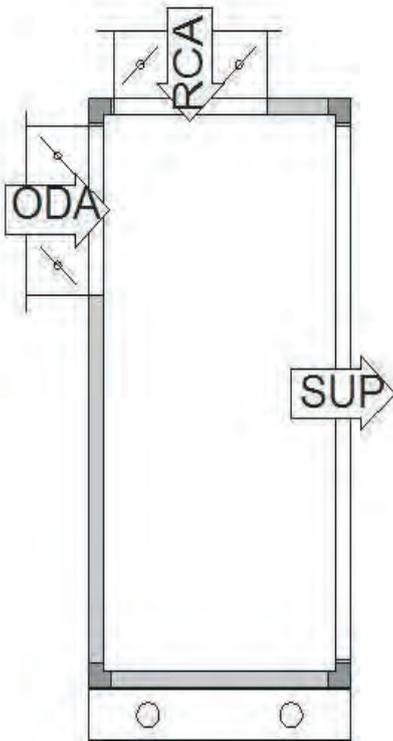
Where:

m_{hot} = Hot air mass flow (lbs/min)

m_{cold} = Cold air mass flow

T_{hot} = Hot air temperature (degrees F)

T_{cold} = Cold air temperature





General Information

Legislation demands that the supply air delivered by the machine is of higher quality than the drawn-in outside air. In order for our room ventilation units to meet these requirements, Our Company uses a wide variety of matched filter types. In addition to the bag filters which are familiar, these include panel or HEPA filters. The filter is very important for air hygiene, but can itself become a hygiene problem if not maintained and inspected correctly, as a result of which microbially safe filters are generally used.

Panel Filter

Panel filters consist of an inherently rigid, folded, Polyester fiber media.

Filter category: G3; depth: 50 mm

Filter frame: Completely Aluminium

Aluminum washable filters, class G2 will be provided upon customer request.



Bag Filters

Bag filters comprising tear-resistant polyester fiber. Filter extractable on slide rails or filter wall that can be operated from the dust air side.

Filter category: M5 - F9; depth: 600 mm or 380 mm

Temperature-resistant: up to 80 °C

Humidity resistance: up to 100% relative humidity

Filter frame: galvanized steel sheet; long service life and large dust storage capacity



HEPA Filters

The filter consists of a high-quality fiberglass medium which retains its strength when wet, and is fitted with aluminum spacers with a special zigzag folding and edge protection. The filter is tested acc. to EN 1822. A test certificate is supplied on delivery. As a rule, pre-filtering is undertaken with M5 or F9 filters.

Filter category: H10 - H14 (acc. to Eurovent DIN EN 779)

Efficiency: DOP 99.99 % (H13)

Decontamination factor: 10,000 <math> < Df < 100,000 < /math>

Filter frame: Humidity-resistant plywood frame with two component compound and neoprene seal; the frame material is also available made from extruded aluminium profiles or galva



Optional Components

Stainless steel filter frame

Differential pressure switch

Inclined gauge manometer

Magnehelic gauge with contact 0-500 Pa

Magnehelic gauge without contact 0-500 Pa



Flat filters are designed for use in commercial and industrial HVAC applications, owing to their excellent dust holding capacity they can be used as Pre-filters to higher efficiency filters or as main filters.

- Used for applications
- Commercial Buildings
- Restaurants
- Manufacturing Industries.

Bag filters supplied by us are renowned for their high performance characteristics in applications requiring a high dust holding capacity and higher air cleaning capacity.

- Used for applications
- Commercial Buildings
- Food Processing
- Manufacturing Industries
- Pharmaceuticals

Because of pleated surface, the filtration area of HEPA filters is more and it can handle more air volume with less resistance.

- Best suited in applications like
- Pharmaceuticals
- Clean Rooms
- Electronic Industries
- Hospitals

Quick Reference

Filter Ratings As Per Different Standards W.R.T Efficiencies

| Dust Spot Efficiency ASHRAE 52.1 | ArrestanceASHRAE 52.1 | MERV Rating ASHRAE 52.2 | EN779 | Eurovent |
|----------------------------------|-----------------------|-------------------------|-----------|-----------|
| Less than 20% | 60-80% | MERV 1-4 | G2 | EU2 |
| Less than 20% | 80-90% | MERV 5 | G3 | EU3 |
| 20-30% | 90-94% | MERV 6 | G4 | EU4 |
| 30-35% | 90-94% | MERV 7 | G4 | EU4 |
| 40-55% | 95-98% | MERV 8-9 | F5 | EU5 |
| 60-80% | 96-99% | MERV 10-12 | F6 | EU6 |
| 80-90% | 98-99% | MERV 13 | F7 | EU7 |
| 90-95% | 0.99 | MERV 14 | F8 | EU8 |
| 0.95 | 99%+ | MERV 15 | F9 | EU9 |
| 95% DOP | NA | MERV 16 | H10* | EU10 |
| 98% DOP | NA | MERV 16 | H11* | EU11 |
| 99.97% @ 0.3m | NA | NA | H12*/H13* | EU12/EU13 |
| 99.99% @ 0.3m | NA | NA | H14* | EU14 |
| 99.999% @ 0.3m | NA | NA | U15* | EU15 |
| 99.9995% @ 0.12m | NA | NA | U15* | EU15 |

* EN1822.



General information

Air temperature is very important for a pleasant climate. Therefore air heaters and coolers play a significant role in room ventilation units. Chiefly, finned heat exchangers are used as heaters or coolers. Variety of coils including water, direct expansion (R22, R134a, and R407C) and hot water coil are available to meet wide range of application requirements.

Heat Exchangers

Coil is installed such that unit casing enclose header and return bends. Coil is designed based on the optimum utilization of available cross section area to achieve the most efficient heat transfer. Coil connections should be factory sealed with grommets on interior and exterior sleeve between outer wall and liner where each pipe extends through the unit casing to minimize air leakage and condensation inside panel assembly. Coils are installed on the GI profile and shall be removable through side panels of unit without the need to remove and disassemble the entire section from the unit.

Coil constructed with aluminum corrugated fins and seamless copper tubes. The copper tubes are mechanically bonded into slit aluminum fin collars and Aluminum End Sheets. Coils leak tested at 350 psi air pressure.

The fins are designed purposely for better heat transfer efficiency and moisture carry-over limit performance. Capacity, Water pressure drop and section procedure is designed in accordance with AHRI standard 410.

Cooling coils exchangers are equipped with an Insulated Angular stainless steel/GI Painted Drain pan for accumulating condensing water.

Cooling coils can be used when the face velocity does not exceed 2.5 m/s. For higher face velocity, a moisture eliminator is required to prevent condensate water carry over. For stacked coil in the coil section, drip pan is installed at back between coils to drain condensate to the main drain pans without flooding the lower coil section. Our Air Handling unit can handle both Chilled Water and Direct expansion system.

Options

- Copper Fins
- Pre-coated Blue Fins
- Anti-Corrosive Coating
- U.V. Lights for high level of air purification and deodorization



The patented CoilClean IL UV Systems are designed to prevent and destroy mold and other microbial growth from growing on the evaporator coil and surrounding areas. The benefits include eliminating biological "blow-off" of bacteria, viruses, spores and odors into the building while maintaining a clean coil eliminating the need for conventional coil cleaning. Typically, bio-film coats the coil reducing heat transfer negatively impacting coil efficiencies; the CoilClean IL maintains a clean coil maximizing system performance enabling the coil to work at optimum efficiency saving energy.

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LED Status Display

Each CoilClean IL system includes an LED Status Display incorporated into each Ballast. The 3 color LED notifies the end-user on the status of the UV system and when the UV Lamp needs to be replaced.

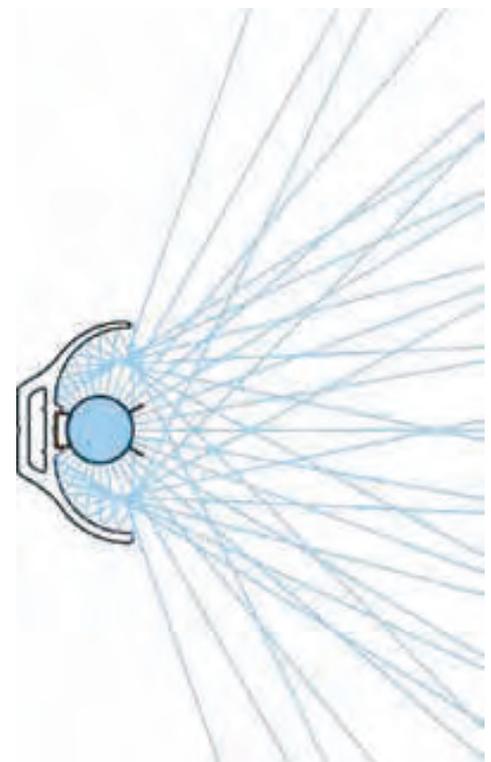
- UV SYSTEM 'ON'
- UV LAMP TO BE REPLACED
- UV LAMP FAILURE
- NO POWER (LED OFF)

Dry Contacts

Each UV CoilClean IL system includes a pair of Dry Contacts (NO & NC). Dry Contacts make it possible for the CoilClean ILs to be easily tied to building automation systems.

UV Lamp Boot

Each UV CoilClean system includes a UV Lamp Boot which seals the connection protecting the contacts from humidity and moisture.



The position of the mist eliminator behind the air cooling coil protects system components against rot. For cleaning, mist eliminators can be removed easily and completely dismantled. Mist eliminators are required for cooling coils and direct evaporators from an air velocity above 2.5 m/s.



Electric Heating Coils

The electric heating coils used are exclusively for heating dust free air and non-aggressive and non-inflammable gases. The heating elements are made from corrosion-resistant heating wire which is wound around ceramic, asbestos-free holders (acc. to DIN 40685) in the aluminium frame. A low surface temperature is achieved by using a bimetallic temperature limiter. The temperature limiter is connected so that the electrical power supply to the heating register is cut off when a temperature of 75 °C is reached on the upper casing surface. The switching power of the temperature limiter is 230 V / 10 A. The electrical connection is by way of a terminal strip with plastic cover. Further wiring must be made in accordance with VDE 0100 (at extra cost, the connection cable is routed to a plastic terminal box located outside the unit). The connection of the overall electrical system must ensure that the electric heating coil is not operated without an air flow in motion. An additional safety temperature limiter with manual reset is installed.



Silencer units are designed to minimize transmission to the ductwork of sound generated by the fan unit and from flow noise. By using different silencer types and splitter widths, we can optimally adjust sound emissions to the duct system to customer requirements whilst keeping the pressure drop low.



- Abrasion-resistant up to 20 m/s thanks to high grade glass fiber cover
- High bio solubility
- Impregnated to be rot-resistant and moisture-repellent
- Non-combustible to DIN 4102 A2
- Max. operating temperature up to 100 °C
- Low operating costs due to flow-optimized, profiled splitter frame
- Gap/splitter ratio optimally matched to pressure drop and soundproofing thanks to the use of varying splitter widths
- Hygienically optimized due to:
 - Floor area free of vertical gaps
 - Easily cleanable splitters
 - Easily removable splitters

3 - Way Valve



Three way valves can be provided as an optional feature in AHUs. Three way valves are factory fitted on the headers of the coil heat exchangers and located inside the casing of AHUS.

Three way valves are fitted with actuator controls to precisely control the required flow across the coil.

Valves are available in Brass up to specific diameter of pipes and the cast iron.

Actuators are designed for long lasting, reliable and quiet operation of air control dampers. All actuators feature a universal self-centering mounting clamp and anti-rotation strap as well as durable brushless DC motor technology and easy manual positioning. Actuators provide high quality, cost effective solution for all environments, with a complete selection for high humidity, wide temperature extremes and outdoor applications without requiring costly additional enclosures.



Steam Humidifier

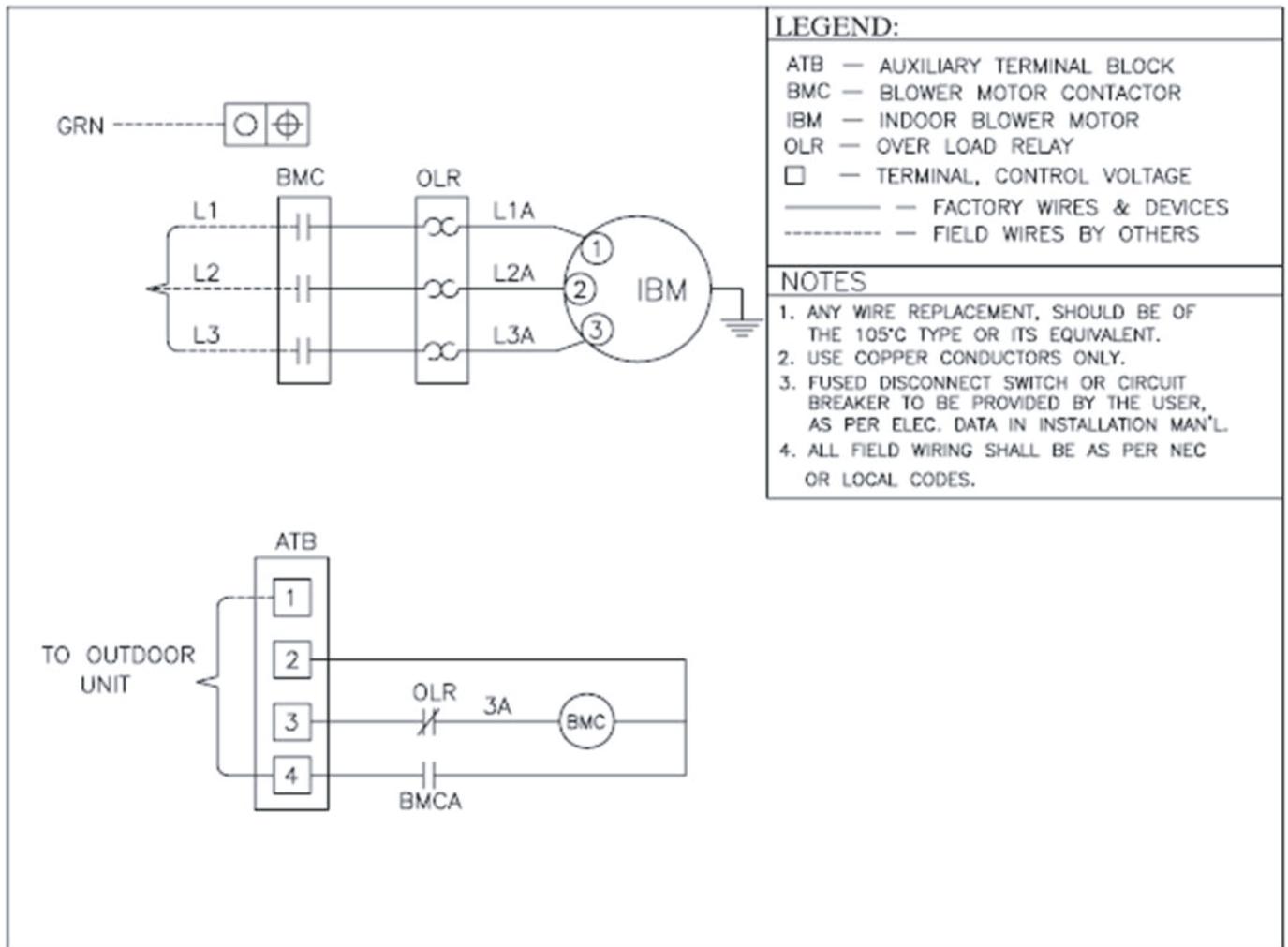
Air handling units can be equipped with a self-contained humidifier which is electronically controlled to sense and control the humidity.



The steam is generated in a polypropylene cylinder mounted onto the outside of the humidifier section within a special enclosure. A stainless steel distributor suitable in length passes through the unit casing to inject steam in the air stream to reach the needed humidity conditions.



TYPICAL WIRING DIAGRAM



SUPER MARKET



HOSPITAL



OFFICE



APARTMENTS



**Custom-Built Air Handling Unit -
Producing the Weather in any environment**

Covering all the most common functions in the modular sizes, our pre-configured range offers horizontal, vertical and twin-fan options with duty range of up to 48,000 CFM.

The range is very impressive.

But there's more. Because at Our Organization we recognize that sometimes there are applications with very special demands.

This is why we now offer customized solutions giving customers the flexibility to combine modules to build tailor-made AHUs according to the customer requirement. The range can meet specific needs, for example when a humidifier or components in a specific finish are required. While pre-configured and tailored solutions can also be combined to achieve the optimum result and making Our AHU the most flexible range available.

Pre-configured or custom-made, it's made for our customers.

BUY LOCAL PRODUCTS

The 'Made in Qatar' exhibition series promoted by Government of Qatar for local manufacturing companies. Nehmeh Air Conditioners participated in events promoted by Qatar Chamber and QDB.



Qatar's first and only manufactured Air Handling Unit (AHU) and Fan Coil Unit (FCU) is among the highlighted products at this exhibition organized by Qatar Chamber.



HH Sheikh Tamim bin Hamad Al Thani at Nehmeh Air Conditioners stand at Made in Qatar Exhibition.

For more information visit:
www.ahu-qatar.com



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AIR HANDLING UNIT

CFM RANGE FROM 600 TO 48,000



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