

XBOXER CUSTOM MADE AHU SOLUTIONS

OPTIMISING AIR QUALITY AND ENERGY CONSUMPTION.



BENEFITS

The XBOXER custom-made solution is customised and covers functions for applications with special demands: energy efficiency, high performance and fast commissioning are some of the qualities applied on both ranges.

CUSTOMER DEFINED

Customers now have the flexibility to combine modules to build tailor-made AHUs up to 20m³/s.

SPECIAL DEMANDS

For installations that demand functionality XBOXER can always offer a solution. For instance, the installation might require a humidifier in order to achieve a specific humidity level. The application environment might also require components in a specific finish, XBOXER can meet this requirement.

FLEXIBILITY

The possibility to combine single and double deck units has been increased in combinations and sizes within this range. Installations with high demands might need one or a few functions outside the standard range.

The pre-configured and tailored solution ranges can be combined to offer the best solution. The unit platform could be standardised, whereas a selection of the functions are customised making XBOXER the most flexible AHU range available.

PROJECT SPECIFIC CONTROL

AHUs are sent to site control free allowing them to be integrated with control systems supplied by others.

ENERGY SOLUTIONS

Nuaire also offers a number of world class solutions for energy efficiency.

CUSTOM-MADE SOLUTIONS

THE XBOXER RANGE

■ PUTTING CUSTOM SOLUTIONS INTO CIRCULATION: THE MOST FLEXIBLE AHU RANGE ON THE MARKET TODAY



The XBOXER range offers a solution for every conceivable application and environment, whether inside a plant room or on a roof. There are XBOXER solutions for applications in industrial premises and public buildings as well as domestic dwellings, schools, offices, leisure complexes and shops.

The pre-configured range, covering the most common applications, is standardised enabling shorter delivery times. In addition to a pre-configured range, XBOXER also offers the complete flexibility of custom-made solutions.

For even greater flexibility, it's possible to add customised features to pre-configured units, making XBOXER the most flexible AHU range on the market today. Energy efficiency, high performance, easy to commission and low noise levels are some of the features common to both ranges.



■ XBOXER CUSTOM-MADE

The XBOXER custom-made range offers highly-efficient solutions purpose-built to meet the exacting demands of even the most specialised application.

The range provides the capability to combine single and double deck units in many different combinations and sizes. Installations with specialised demands might also require one or several functions that lie outside the standard range. In an instance such as this, the ranges can be combined to provide the optimum solution. For example, the unit platform can be a standard component with some of the functions customized.

■ CUSTOMER-ADAPTED

For installations with more specialised needs, for example in terms of hygiene or material, XBOXER enables customer adaptation of the air handling unit as a whole or of its constituent parts. Custom-made units offer a far wider range of components than the "pre-configured" range leading to significant advantages in terms of functionality and flexibility.

■ CUSTOMER-ADAPTED CONTROL

Customer-adapted control solutions are available for every conceivable application.



■ SPECIALISED DEMANDS

For installations where functionality is the prime concern, the solution will most frequently be found here, for example if the installation requires a humidifier to achieve a specific humidity level. Alternatively, the environment the application is designed for might require components in a specific material, such as casing in stainless steel.

■ ENERGY SOLUTIONS

Nuair also offers a range of world class energy efficiency solutions, such as constant pressure, which can be incorporated into its AHU ventilation systems.

VENTILATION FOR SCHOOLS

■ NUAIRE – PROVIDING CLEAN AIR SOLUTIONS FOR UK SCHOOLS



Building on its reputation of delivering a varied range of quality, innovative ventilation systems, Nuair products have been specified for a wide variety of schools projects across the UK.

As the market leader in the design and manufacture of commercial and domestic energy efficient ventilation systems, Nuair now offers a wide selection of products that have been specifically designed for schools and are suitable for a variety of applications throughout.



Whether an existing educational establishment is being refurbished or a brand new school is being built, the importance of creating a fresh, healthy and comfortable learning environment for the teachers and pupils cannot be underestimated. The quality of the air inside the school plays a key role in creating such an environment and so specifying the correct ventilation systems for school buildings is critical.

The demanding specification requirements expected for the new wave of classrooms has resulted in Nuair adapting one of its existing specialist schools systems into a brand new product, the XBOXER 55. This unit had to provide increased levels of ventilation with a reduction in depth, whilst maintaining low noise levels. Nuair worked closely with consultants and clients on a number of school projects in order to produce a unit that met their requirements, and conducted exhaustive tests both on an actual school site and at Nuair's renowned test laboratory.

As AHU Sales Manager, Stuart Freeman, explains "Issues concerning indoor air quality within schools are becoming increasingly important," he said. "As well as constructing school buildings that are environmentally sustainable, energy efficient and aesthetically pleasing, local education authorities are also looking to create fresh, healthy and comfortable learning environments for their pupils, and our systems have been designed to do just that."

"Compared to most other types of building, schools are extreme environments as they have high and sporadic occupancy levels. For example, due to the irregular occupancy of areas such as classrooms, we have incorporated Ecosmart controls into the XBOXER unit which automatically adjust the systems to allow varying fan speeds, matching the output of the systems to the demand, to minimise energy usage. Also, controls can be linked to business management systems, providing on-demand ventilation, minimising carbon emissions and also prolonging the life of the equipment."

Nuair, which manufactures all its products out of its South Wales base and was the first UK ventilation company to achieve the Carbon Trust Standard, boasts its own in-house Applications Engineering team which works in close partnership with its clients to ensure the best possible solution for their project.

The company has even built a 30-seat mock classroom at its UK headquarters.

Designed to display and test its range of innovative school ventilation systems, the classroom is the only one of its kind among UK ventilation manufacturers and is to be used as a testing and demonstration facility for customers who wish to test Nuair's products.

For more information on Nuair's range of school ventilation products, visit www.nuair.co.uk/schools or to arrange a visit to the facility contact laura.barker@nuair.co.uk

TYPICAL AIR HANDLING UNIT

KEY FEATURES AND BENEFITS

■ GREAT HARDWARE, GREAT SOFTWARE

It's not just Nuaire's hardware that sets it apart from its competitors. The software we use is tailor-made to facilitate the specification, design and build of the units through creating detailed drawings and technical specifications within a very short time frame.



■ AIR HANDLING SYSTEM

Variable and optimised adjustment for all system-specific applications:

- Very latest production technology delivering highest product quality
- Unit design optimised for lowest possible energy consumption
- Design and calculations supported by the most advanced selection program and software available

Efficiency and economy:

- By optimising air flow through AHU components thereby reducing energy consumption and minimises internal pressure loss
- XBOXER uses all conventional heat recovery systems: Thermal wheel, run around coil and high efficiency plate heat exchanger

- Optional EC motors - (EC)
Electronically commutated motors are brushless DC motors. They can be speed controlled with a 0-10V input, removing the need for additional speed control devices. This combined with lower running temperatures and brushless commutation results in longer motor life of up 70,000 hours (L/10) and higher efficiencies
- Optional IE2 motors.
IE2 motors are ideal for applications where the ventilation equipment is expected to run continuously or for long periods of time. The higher efficiencies result in greater savings over the life of the motor and an overall reduction in CO2 emissions during operation

■ DESIGN EXPERIENCE THAT IMPROVES THE CUSTOMER EXPERIENCE

At Nuaire, our wealth of design experience is harnessed to deliver unique design features that will significantly enhance the customer experience:

- Maximum corrosion protection by galvanised and optional powder-coated casing panels
- 50mm construction providing high standards of heat and noise insulation
- Building material class A1 mineral wool heat and noise insulation
- Thermal transmittance minimised by optimised casing covers
- Unit construction can be dismantled into component sections
- Class B leakage classification

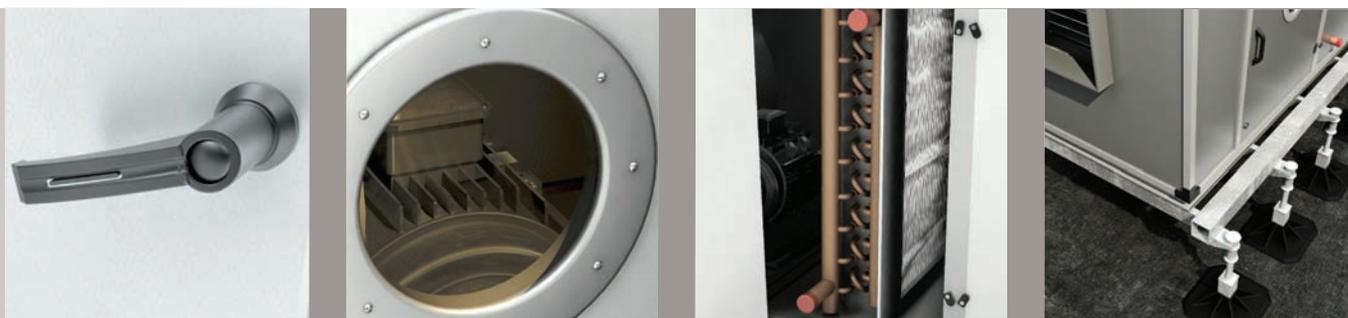
The quality of the units is due to a combination of in-house technical expertise, high quality production facilities and an experienced workforce dedicated to delivering a quality product. With the emphasis on quality and efficiency, a wide range of both single and modular section construction units are available. These units can be supplied with any combination of standard components including filtration, heating, cooling and heat recovery.

TYPICAL AIR HANDLING UNIT
KEY FEATURES AND BENEFITS

■ NEW UNIT, NEW STANDARDS

Nuaire's flexible air handling unit range.

The casing and energy-efficient components make the range uniquely cost-effective, while the fact that units can be manufactured up to 50mm panel construction makes them extremely flexible.



■ QUALITY FEATURES: ALL THE INS AND OUTS

At Nuaire, quality is the key component of all our products, whatever the application:

- Suitable for all installations, internally and externally
- A choice of materials
- A choice of heat recovery options (including plate HX, thermal wheel and run-around coil)

■ OPTIONAL
NON-PENETRATING
MOUNTING SYSTEM

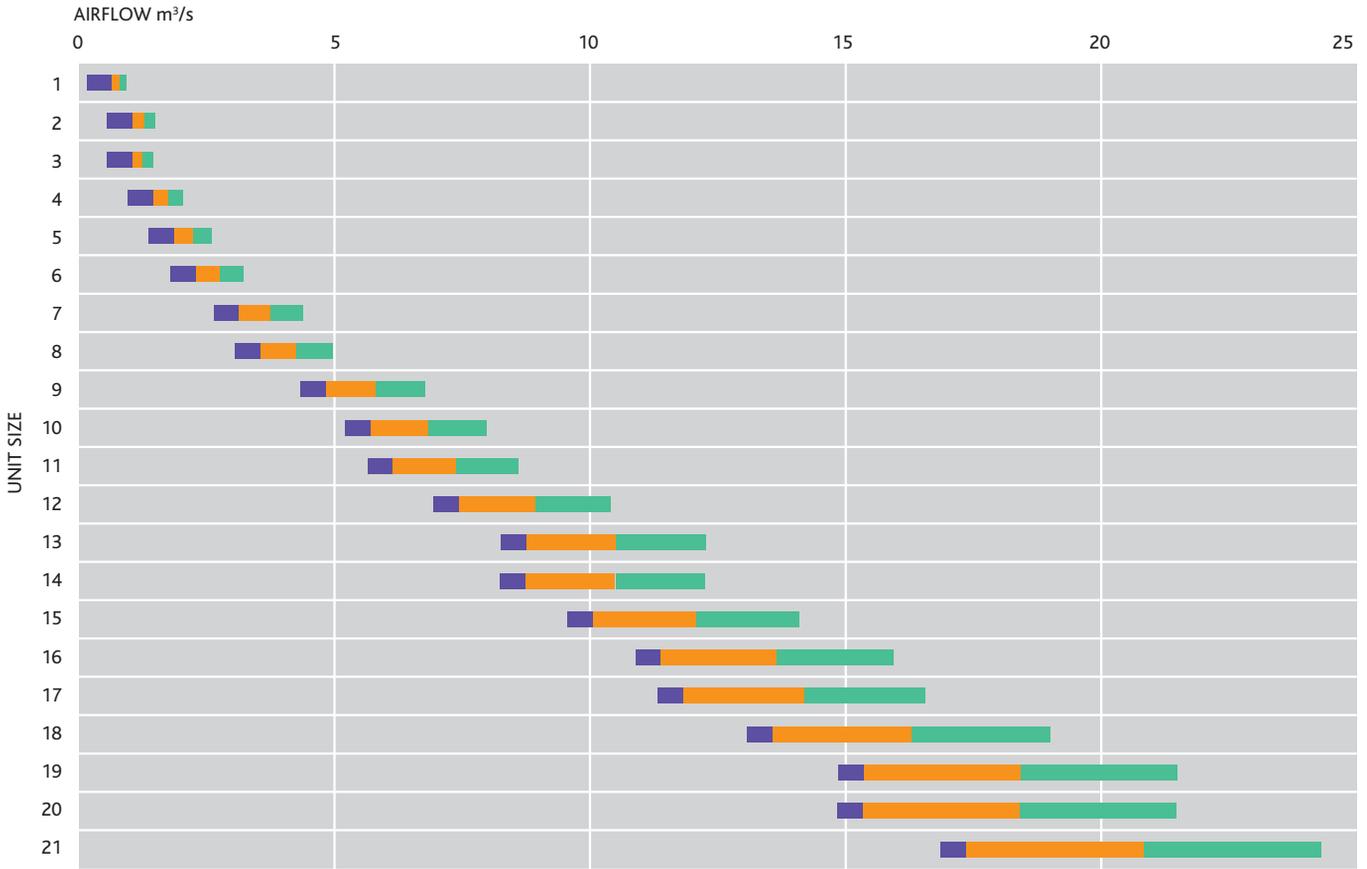


AIR HANDLING UNITS (AHU'S)

XBOXER CUSTOM MADE AHU'S

TECHNICAL INFORMATION

PRODUCT SPECIFICATION



| UNIT CHARACTERISTICS | | | | | COIL CHARACTERISTICS | | | | | | FILTER CHARACTERISTICS | |
|----------------------|-------------------|--------|-------------------|--------|---|-------|---|-------|---|-------|--|-------|
| MODEL NUMBER | 25mm CONSTRUCTION | | 50mm CONSTRUCTION | | AIRFLOW (m³/s) BASED ON 2.5m/s THROUGH COIL | | AIRFLOW (m³/s) BASED ON 3m/s THROUGH COIL | | AIRFLOW (m³/s) BASED ON 3.5m/s THROUGH COIL | | AIRFLOW (m³/s) BASED ON 3m/s THROUGH FILTERS | |
| | WIDTH | HEIGHT | WIDTH | HEIGHT | 25mm | 50mm | 25mm | 50mm | 25mm | 50mm | 25mm | 50mm |
| NA-01-*-080/080 | 755 | 775 | 805 | 825 | 0.66 | 0.69 | 0.80 | 0.83 | 0.93 | 0.96 | 0.80 | 0.83 |
| NA-02-*-090/080 | 1060 | 775 | 1110 | 825 | 1.06 | 1.10 | 1.28 | 1.32 | 1.49 | 1.54 | 1.28 | 1.32 |
| NA-03-*-090/090 | 755 | 1080 | 805 | 1130 | 1.05 | 1.08 | 1.26 | 1.30 | 1.47 | 1.51 | 1.26 | 1.30 |
| NA-04-*-100/080 | 1360 | 775 | 1410 | 825 | 1.46 | 1.50 | 1.75 | 1.80 | 2.04 | 2.10 | 1.75 | 1.80 |
| NA-05-*-100/090 | 1665 | 775 | 1715 | 825 | 1.86 | 1.91 | 2.23 | 2.29 | 2.60 | 2.67 | 2.23 | 2.29 |
| NA-06-*-120/080 | 1360 | 1080 | 1410 | 1130 | 2.30 | 2.35 | 2.76 | 2.82 | 3.22 | 3.29 | 2.76 | 2.82 |
| NA-07-*-100/100 | 1360 | 1380 | 1410 | 1430 | 3.14 | 3.19 | 3.76 | 3.83 | 4.39 | 4.47 | 3.76 | 3.83 |
| NA-08-*-130/080 | 1965 | 1080 | 2015 | 1130 | 3.56 | 3.62 | 4.27 | 4.35 | 4.98 | 5.07 | 4.27 | 4.35 |
| NA-09-*-130/100 | 1965 | 1380 | 2015 | 1430 | 4.84 | 4.92 | 5.81 | 5.90 | 6.78 | 6.88 | 5.81 | 5.90 |
| NA-10-*-160/080 | 2270 | 1380 | 2320 | 1430 | 5.71 | 5.79 | 6.85 | 6.94 | 7.99 | 8.10 | 6.85 | 6.94 |
| NA-11-*-130/130 | 1965 | 1685 | 2015 | 1735 | 6.15 | 6.23 | 7.38 | 7.48 | 8.61 | 8.72 | 7.38 | 7.48 |
| NA-12-*-160/100 | 1965 | 1985 | 2015 | 2035 | 7.44 | 7.53 | 8.93 | 9.03 | 10.41 | 10.54 | 8.93 | 9.03 |
| NA-13-*-180/090 | 2270 | 1985 | 2320 | 2035 | 8.76 | 8.86 | 10.51 | 10.63 | 12.27 | 12.40 | 10.51 | 10.63 |
| NA-14-*-190/100 | 1965 | 2290 | 2015 | 2340 | 8.75 | 8.84 | 10.50 | 10.61 | 12.25 | 12.38 | 10.50 | 10.61 |
| NA-15-*-160/130 | 2570 | 1985 | 2620 | 2035 | 10.06 | 10.16 | 12.08 | 12.20 | 14.09 | 14.23 | 12.08 | 12.20 |
| NA-16-*-160/160 | 2875 | 1985 | 2925 | 2035 | 11.39 | 11.50 | 13.66 | 13.79 | 15.94 | 16.09 | 13.66 | 13.79 |
| NA-17-*-220/130 | 2570 | 2290 | 2620 | 2340 | 11.83 | 11.94 | 14.20 | 14.33 | 16.56 | 16.72 | 14.20 | 14.33 |
| NA-18-*-220/160 | 2570 | 2590 | 2620 | 2640 | 13.57 | 13.69 | 16.29 | 16.43 | 19.00 | 19.16 | 16.29 | 16.43 |
| NA-19-*-250/160 | 2875 | 2590 | 2925 | 2640 | 15.36 | 15.48 | 18.43 | 18.58 | 21.50 | 21.67 | 18.43 | 18.58 |
| NA-20-*-250/190 | 2570 | 2895 | 2620 | 2945 | 15.34 | 15.47 | 18.41 | 18.56 | 21.48 | 21.65 | 18.41 | 18.56 |
| NA-21-*-250/250 | 2875 | 2895 | 2925 | 2945 | 17.36 | 17.49 | 20.83 | 20.99 | 24.30 | 24.49 | 20.83 | 20.99 |

* = FOR 25MM CONSTRUCTION INSERT 30/25 * = FOR 50MM CONSTRUCTION INSERT 50/45 EXAMPLE NA-15-50/45-160/130

PRODUCT SPECIFICATION



■ GENERAL SPECIFICATION

The Nuair range of Air Handling Units are designed to meet all the ventilation requirements for commercial and industrial buildings meeting with current standards for construction and operation.

■ BASE FRAME CONSTRUCTION

The base frame is constructed from hot dip galvanised steel section with longitudinal and cross members, the base frame incorporates lifting points.



■ MATERIALS

The frame is a pentapost rigid closed section aluminium alloy. The panels have perimeter inner seals with the unit panels seals seating onto the pentapost section ensuring that there is no air leakage into the AHU. All modules, panels and sections with the AHU are manufactured to air leakage classification 2A. The closed section framework provides air gap insulation within the cavity. The unit panels are nominal 25mm or 50mm double skin insulated panels. The panel insulation is high density mineral wool slab which provides good thermal or acoustic properties. Special finishes can be incorporated to meet specific requirements.



■ EXTERNAL AIR HANDLING UNITS

Full weatherproof facilities are available for externally mounted units. The units have a rigid weatherproof roof complete with gutter profile allowing clear drainage with all sections fully sealed to prevent the ingress of water through any panels.

■ INLET SECTIONS

All units can be provided with grilles or louvres to suit the application. This can be in the form of a weatherproof louvre, inlet grille or bird/insect mesh. Dampers will be opposed blade multi leaf type manufactured in silver anodised aluminium extruded section with low pressure drop characteristics when open. Opposed or parallel blade dampers will have an interlocking gear drive on each blade. Damper blades can be provided in steel with special paint finishes or stainless steel in accordance with particular specification requirements. Sealing edge strips are provided for low air leakage operation. The mixing box will have a single compartment for re circulation and fresh air mode of operation and a twin compartment for recirculation, exhaust and fresh air.



■ FILTRATION

The filter section will incorporate bag and/or panel filters suitable for front or side withdrawal. The panel type filters will be disposable or washable in accordance with specification requirements.

Filter panels are held in rigid galvanised steel holding frames complete with seals to prevent leakage. Magnahelic gauges can be provided if required. Each filter section will be provided with a full access section to allow ease of filter replacement.

■ HEAT RECOVERY

All types of heat recovery options can be incorporated into the air handling unit and generally comprise the following:

Thermal Wheel Exchangers have a rotating wheel that will recover both sensible and latent heat with efficiencies up to 85%.

Plate Heat Exchangers Cross flow type heat recovery will provide up to 70% efficiency. Summer bypass facilities are available.

Run Around Coils Waste heat recovery is available with liquid coupled run around coils, the construction is to the same specification as the heating coils, a water/glycol medium is pumped through the coupled coil circuit to provide up to 65% heat recovery.

The pump set to be provided by others.

■ COIL TYPES

Nuair provide coils for all types of heating and cooling applications:

The coils are constructed from a rigid galvanised framework section with a copper header that the finned, coil tubes are brazed to. Each has flow and return screwed or flanged connections. Coils are fabricated from copper tube with aluminium collars with fins spaced at pitches set to meet specific design performance requirements, providing excellent heat transfer characteristics. Special materials and finishes can be provided such as copper fins and electro tinning to meet particular specification requirements. All pipe and drain connections are fitted with flexible bushes to ensure an airtight seal and good vibration isolation. All coils are fitted with an air vent and drain plug as standard.

■ HEATING TYPES

Nuair can provide the following heating mediums:

Hot water coils are available for low, medium and high pressure hot water and steam applications and are manufactured as described in coil types above.

Electric The electric heater elements are designed for black heat operation with 80/20 nickel chrome resistance wire centred in a protected metal tube packed with magnesium oxide. The element tubes are copper coated mild steel tubular or finned to meet the particular application. The units are complete with safety cut outs with manual reset. The control system operation is from remote thermostat or step control with pre wired switching and overheat protection. Thyristor/SCR control can be provided.

PRODUCT SPECIFICATION



Indirect Gas and Oil Indirect fired heat modules are suitable for natural gas, LPG or oil. Gas-fired modules are CE marked and comply with all relevant standards. A heavy gauge, high quality stainless steel (316 grade) combustion chamber / heat exchanger is available. Heater efficiencies will be in excess of 85% across the output range, condensing heater modules are also available to provide higher combustion efficiencies. For large output units, up to 890kW, a forced draught burner is supplied, installed with all controls to meet the particular specification requirements.

Heaters are provided with full safety controls including gas pressure proving, flame detection, airflow proving and high temperature cut-out. Burner control can be provided as on/off, high/low/off or modulating as appropriate.

■ COOLING

A choice of chilled water or direct expansion heat exchangers are available and are manufactured as described in coil types on page 00 with the exception that the DX Coils have interlaced tubes staggered in the direction of airflow.

■ FANS

This section incorporates a fan and motor assembly to meet the specific air volume and pressure requirements for the application. A comprehensive range of fan types are available including centrifugal forward and backward curved fans, plug type, axial or mixed flow type fans. Special fan finishes can be incorporated to meet the particular specification and application requirements.

The fan and motor assembly is mounted onto an independent sub frame with anti vibration mount isolation from the main unit frame and a flexible connection on the fan discharge preventing noise and vibration transmission. If direct drive fans are installed then anti vibration mounts would only be fitted as required dependant upon the fan selection and application.

Motors will be cage rotor type with an aluminium or steel frame construction and will comply with current British and European standards. Motor sizes up to and including 5.5 kW shall be suitable for D.O.L starting, above 7.5 kW motors shall be suitable for Star-Delta starting. Various methods of speed control are available as an option. Motors shall have Class `F` insulation to BS 2757 and shall be provided as standard with an IP54, TEFV enclosure.

Thermistor protection can be provided and shall be set to operate at not more than 120°C and shall comply with BS 4999: part 72. The fan motor drive will be a pulley belt drive with taper lock pulleys used on motor ratings up to and including 30kW. Drives above 30kW shall have key secured pulleys. A minimum of two belts shall be used on each drive and shall be endless V belts manufactured in accordance with BS 3790 utilising `A`, `B` or `C` sections.

■ PLUG CENTRIFUGAL FAN

Direct drive axial-centrifugal fans providing maximum performance with optimum efficiency. The fans are single-entry air intake with backward-curved blades. The impeller directly coupled to the motor shaft providing a space saving solution for simplifying installation and maintenance. Complete fan and motor assembly is supported by compressed anti-vibration mounting system.

Wiring All AHUs be supplied non-wired. This maintains the integrity of the air handling unit as cable entries and connections can be properly protected and sealed. A full range of control accessories including damper actuators, pressure switches, valves, transmitters and signal conditioners can be fitted.

■ ACCESSORIES

Attenuation Sound absorbent elements are arranged within the unit casing providing a series of vertical splitters to suit the acoustic requirements. The splitter frames contain a faced fibrous infill that is non shredding, non combustible with a class 1 rating, non-hygroscopic and chemically inert. Perforated and melanex facings can be provided on request.

Steam Humidification The steam humidifier has injection tubes with a steam jacket and condensate separator providing efficient operation and maintenance. The system provides clean sterile humidification without wetting and corrosion.

