

# Healthcare premises ventilation

- ▶ HTM 03-01 compliance
- ▶ Fully bespoke solutions to suit all applications
- ▶ Innovative new technologies
- ▶ Easy and convenient maintenance and inspection
- ▶ Health and safety of patients and staff
- ▶ Support through design - capital and running costs



**HTM-03-01**



## Healthcare premises

Solving hospital ventilation issues and providing energy saving solutions.

## Health Technical Memoranda

Health Technical Memoranda (HTMs) gives comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare. The focus of Health Technical Memoranda guidance remains on healthcare-specific elements of standards, policies and up-to-date established best practice. They are applicable to new and existing sites and are for use at various stages during the whole building lifecycle.

VES AHUs are fully compliant with the latest iteration of HTM 03-01 published in 2021, including all the newest recommendations and technologies. As a bespoke manufacturer, VES can offer full compliance and develop the design further.

With over 50 years' experience designing and manufacturing bespoke ventilation solutions we have the knowledge and expertise to help guide you through the process of HTM-03-01 ventilation from design and specification, all the way through to after sales support.



## Specialised healthcare ventilation

It is not possible to give definitive guidance for every healthcare ventilation application; however, the section on operating theatres contains most of the information that is common to other applications.

The following departments will usually have specialised ventilation requirements, either for a single room or throughout a suite of rooms.



### Operating suites

Including recovery areas of any type, including rooms used for interventional procedures.



### Critical care areas

Generally life threatening or intensive care. ICU or CCU.



### Airborne isolation facilities

Any area requiring isolation from infectious diseases or viruses. Rooms under negative pressure.



### Invasive treatment

Including Endoscopy and Bronchoscopy rooms. Theatres and / or Surgical areas.



### Containment level 3 laboratory

Biological Safety Level (BSL) typically where staff are working on microbes that can cause serious or potentially lethal disease through inhalation.



### Pharmacy

Pharmacy aseptic preparation facilities.



### Sterile services

Inspection, assembly and packing room in a sterile services department. Hospital Sterile and Decontamination Unit (HSDU) and Aseptic unit.



### Operative imaging unit

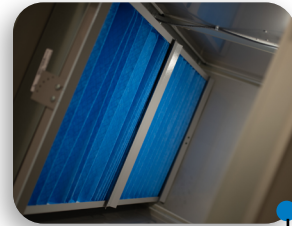
CT and MRI, PET and Radiology.



**Access doors**  
Minimum 500mm hinged access for component cleaning. If section is under 1m tall then the access section must be 600mm minimum. Double latch entry for pressurised sections.



**Frost / Fog coil**  
Finless plain copper tube, LPHW preferred but electric heating can be used where necessary.



**Pre filter**  
These are to be grade ISO ePM10  $\geq 50\%$  (M5) constructed with metal frames. Complete with magnahelic gauge.



**Inlet / Outlet cowls**  
Coated, bolt on, maximum velocity 2.0m/s with 12mm protective mesh. Optional cowls supplied loose.

**Protective coating**  
Internal smooth coated finish on all units. External coating for weatherproof units available in a choice of colours.



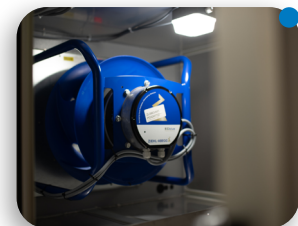
**Case construction**  
All units built with aluminium tubular frame and galvanised steel sheet panels tested to BS EN 1886 to achieve Thermal Bridging (TB2), Thermal Transmittance Class T2 and Deflection Class D1.

Factory airtightness test pre-delivery, Class L2 test at +700Pa and -400Pa, Site airtightness test; Class L2 +700/ - 400Pa.

**Channel base**  
Channel size to meet trapping requirements ranging from 150mm minimum up to 300mm typically.

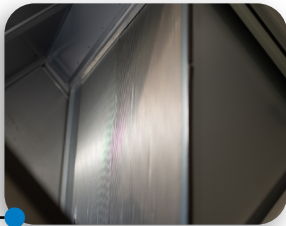


**All dampers**  
Motorised, with C3 2% low leakage galvanised steel blades, metal cogs and linkages. Spring return actuator with end switches available on request.



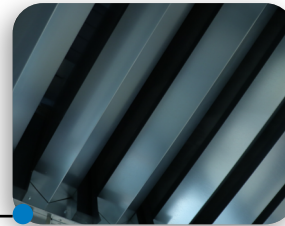
**Fans**  
High efficiency EC fan and motor, with quick change plug connections, located on the bottom deck where possible. Various fan arrangements are available including fan walls, to improve redundancy for scheduled maintenance.

# Typical plate heat exchanger



## Heat exchanger

ErP 2018 EU1253 73% minimum efficiency aluminium plate heat exchanger with face and bypass damper. Thermal Wheel or Run Around Coil also available. Heat exchanger section internal panels constructed from stainless steel. A fully accessible or removable stainless steel drain pan is also included.



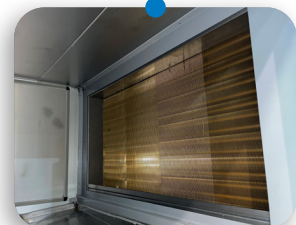
## Attenuators

Sound absorbing in-fill protected by perforated sheet metal and protective membrane.



## Secondary filter

These are to be grade ISO ePM1  $\geq 50\%$  (F7) rigid bag filter, front clip in and withdrawal, with magnehelic gauge.



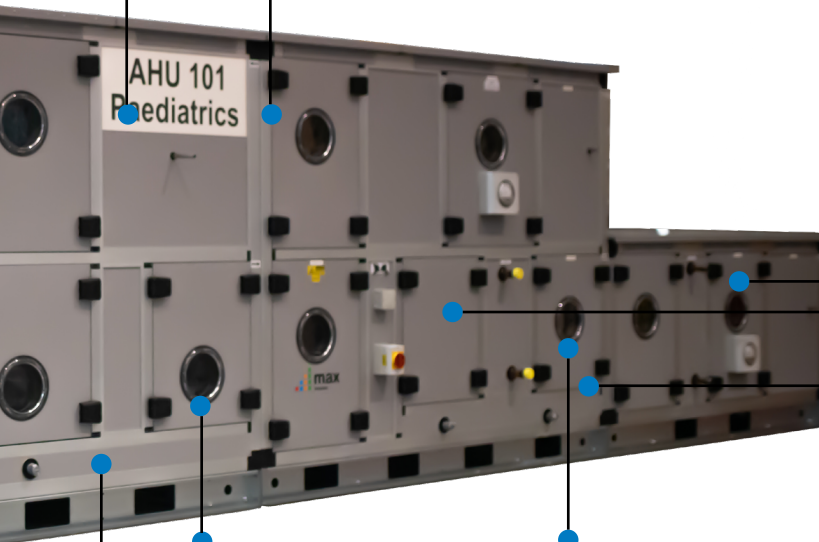
## Cooling coil

Copper tube and fins, electro tinned or polyester coated,  $< 2.0\text{m/s}$  face velocity. Complete with separate removable moisture eliminator. Cooling coil section internal panels constructed from stainless steel. A fully accessible or removable stainless steel drain pan is also included.



## Heating coil

Constructed from copper tube and fins. LPHW coil preferred but electric heating or a reverse cycle DX coil can be used when necessary.



## Viewing ports

Viewing ports for component and task operation with IP56 inspection lights from central AHU switch all wired with low smoke zero halogen cable.

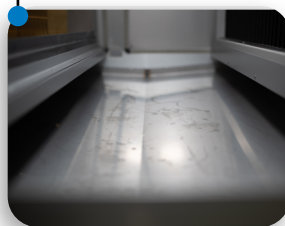
## Traffolyte labelling

100mm AHU identification labelling. Individual component labels.



## Lifting beam

Extended lifting beam for quick fan change.

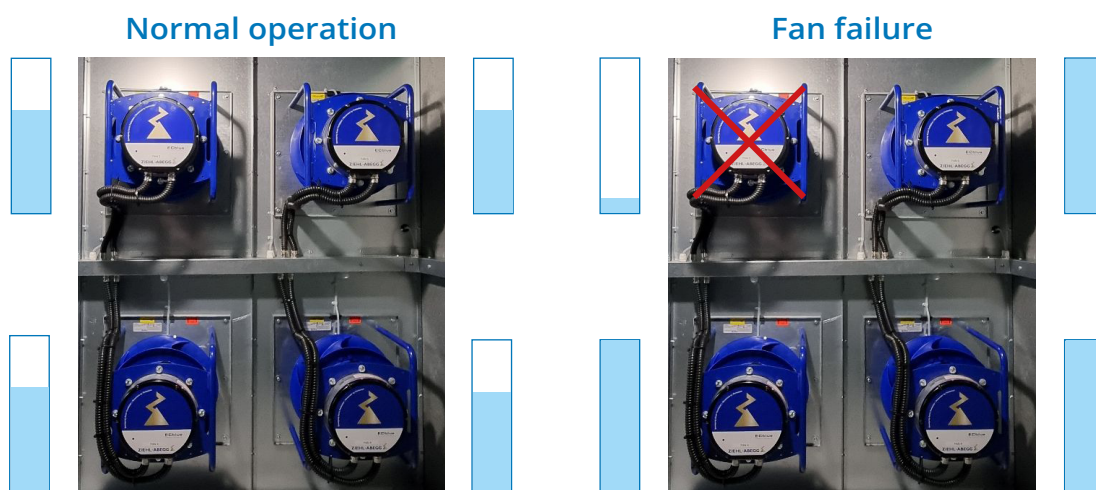


## Drain pan

Fixed stainless-steel drain pan with 500mm cleanable access to both sides, and 1-20 fall in all directions. If access for cleaning is not possible drain pans will be fully removable.

## Fan wall

An EC fan wall consists of several EC fans operated in parallel. The volume flow is multiplied proportionally to the number of fans, while the pressure conditions remain constant. In the example below, we can see that under normal conditions all 4 fans run simultaneously, if one fan fails the remaining 3 are sized to be able to ramp up and achieve full capacity.



### Benefits:

- Standardisation across multiple units
- Easier maintenance due to smaller, lighter fans
- Allows for redundancy in case of failure
- Reduced downtime

## Maintenance corridor

Under the new HTM 03-01 requirements external AHUs should have all access protected from the elements to allow maintenance to be carried out in any conditions. To facilitate this VES can provide any bespoke single or double weatherproof service corridor for maintenance in all weather conditions, built to suit your specification.

### Single weatherproof service corridor

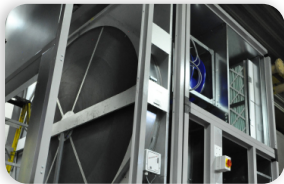


### Double weatherproof service corridor



## HVAC projects

VES operates an HVAC projects division, which is a market leader in the repair and refurbishment of any make or model of air handling equipment.



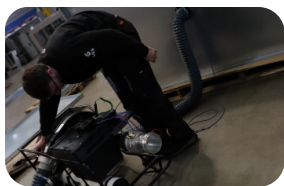
### Flat packing

There is often a requirement for new air handling units to be supplied in a flat pack or sectional format to overcome restricted access. The AHU is fully built and tested at VES HQ before being dismantled then once the components arrive on-site, our in-house team of mechanical and electrical engineers are on hand to re-build the units and then leakage test them.



### Site installation

Our established industry leading product portfolio combined with our building services expertise, allows VES to undertake full supply and installation projects for a variety of sectors. Working closely with our customers from initial consultation through to project delivery and completion, our VES projects team thrive on delivering complete HVAC solutions.



### Factory and site leakage tests

Every HTM unit will include Factory and Site leakage testing in accordance with HTM guidelines. As part of this service VES will attend site to assemble the unit and leakage test it before any connections or third-party penetrations are made. Certificates of test results will be provided, and the tests can be witnessed if needed. The AHU will be tested under positive and negative pressure in accordance with EN 1886:2007 specification.

## NHS COVID-19 test laboratories case study

Fast tracked AHU to meet the demands of COVID-19 pandemic test laboratories.

Working in close partnership with ARUP Consultants and Lorne Stewart, VES designed and developed four new HTM compliant AHUs for the NHS test laboratories, to dilute and prevent microbiological growth.

With a strict specification to mitigate the risks of infection at the COVID-19 test laboratories, optimum indoor air quality was top priority of the air handling unit's effectiveness.

There was also a requirement to ensure occupant comfort for all NHS workers, as well as delivering a high-grade specification product in a short space of time, to support the NHS against the pandemic and minimising cleaning and maintenance of the AHUs.

*"We instructed VES to provide us with compliant units, manufactured in the UK with reliable support from design to completion. Another excellent service"*

**Project Manager**



HTM 03-01 compliant AHU



Manufactured in controlled conditions at VES



Incorporating the latest industry standard components

Other products and services from the complete range of VES HVAC solutions

### Air Handling Units

- Supply and extract, combined or separate
- Heat recovery including crossflow plate heat exchangers, thermal wheels and run-around coils
- Plantroom or weatherproof, flat or stacked
- Fitted silencers, inverters and controls
- Matching DX condensing units
- Various case constructions including EN 1886 certified units

### Duct Fans

- In-line centrifugal, with forward or backward curved impellers
- Round, axial and mixed flow fans
- Fitted silencers available on all units
- Manual and automatic speed controllers available

### Twin Fans

- For ceiling void, plantroom and weatherproof
- Many models and configurations
- Fitted auto-changeover system

### Hybrid Units

- Natural ventilation enhanced by a low power fan
- Utilises a combination of automatic mechanical ventilation and manually operated windows to achieve classroom comfort conditions
- Simple user interface with indication of operating mode
- Slimline, lightweight construction, saving space and easing installation
- Available in a range of sizes with the ability to add heating coils when required

### Roof Extract Units

- Three ranges for volume and pressure
- Curb and soaker sheet bases

### Wall and Ceiling Fans

- All types for commercial, industrial and domestic premises

### Kitchen Hood Extract Fans

- Heavy duty high temperature fans for hot greasy air
- Motors out of airstream
- Single inlet fans, in-line and vertical jet roof units

### Control Panels

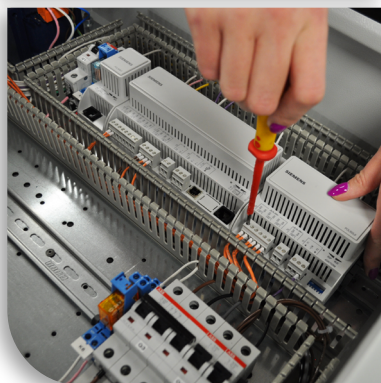
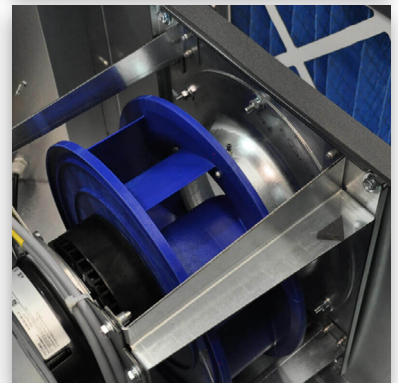
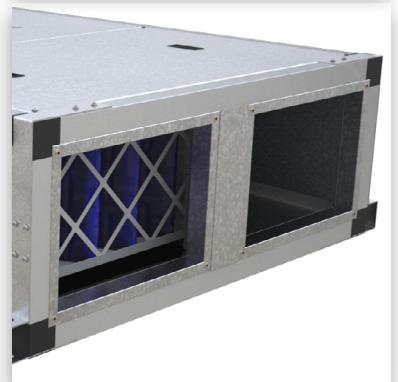
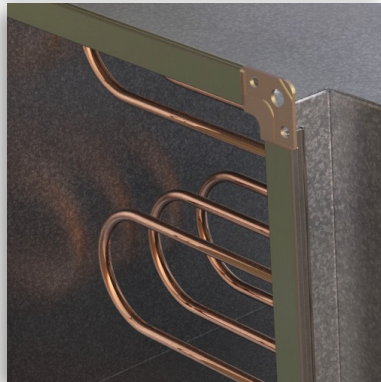
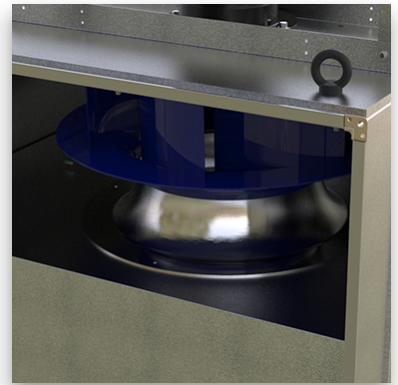
- Off the shelf and built to order panels
- Air quality sensors and energy savers
- Intelligent control software
- A range of remotes including touch screen

### Noise Control

- Matching silencers available for all ventilation products
- Silencers designed to meet noise criteria
- Cleanable silencers
- Weatherproof silencers

### Specialist Site Services

- Plant refurbishment
- Energy saving upgrades
- Noise reduction



VES Head Office

Eagle Close, Chandlers Ford Industrial Estate, Chandlers Ford, Eastleigh, Hampshire SO53 4NF

Tel: +44 (0)23 8046 1150 Fax: +44 (0)23 8026 1204

Offices in London, Manchester, Glasgow and Birmingham

[ves.co.uk](http://ves.co.uk) [vesdirect.co.uk](http://vesdirect.co.uk) [sales@ves.co.uk](mailto:sales@ves.co.uk)