DUNHAM-BUSH

OCELOT FAN COIL UNIT

TECHNICAL BROCHURE

Welcome to the Comfort Zone

Vertical floor or wall mounting · Low profile 250mm deep casing · Energy efficient EC motors

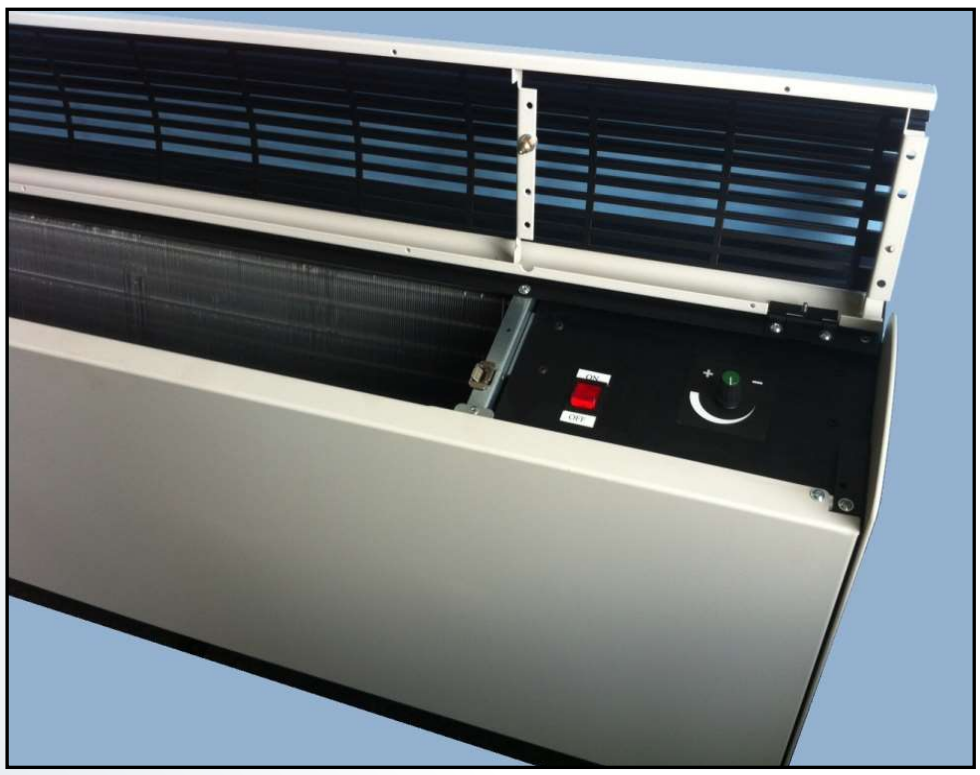
Ocelot, designed and manufactured to ISO9001 : 2015 by Dunham-Bush Ltd, is a high performance fan coil unit designed for quiet, powerful and effective heating and cooling to any indoor space.

Ocelot fan coil units are built to our highest engineering standards, with the latest design and manufacturing technology, Ocelot is the ideal solution where a commercial quality cased vertical fan coil is required.

Based upon our popular Puma vertical chassis unit, Ocelot units are also available in 7 sizes. Fan motors are energy efficient EC type controlled by an internal or external 0-10V signal. Careful consideration has been given to safe site handling and ease of access to all serviceable items. Designed to offer maximum site flexibility, the 'Ocelot' is a versatile and user-friendly product for public or private/commercial buildings, in particular server rooms.

Efficient Cooling and Heating

Ocelot provides a quiet solution to cooling and heating, with low noise air movement provided by efficient centrifugal fans and rapid response to cooling or heating demand provided by a compact heat exchanger coil block.



Flexibility Is The Key

Ocelot is available as either a low wall/floor standing top outlet unit or a front outlet unit for high wall and recessed applications. Inlet options include legs or grille plinth for floor mounting or perforated inlet guard for high level applications.

Access For Maintenance

Ocelot fan coils have a generous integrated access panel allowing easy access to the filter, motors and controls. On the low wall/floor standing model, the main access panel is secured using two screws accessed from under the hinged discharge grille. On the front discharge model the access panel is secured by two quarter turn locks. The casing is sized such that control valves and condensate pumps can be accommodated within the casing.

Fan Assemblies

Ocelot includes high efficiency electronically commutated (EC) motors with low specific fan powers (SFP).

Each fan/motor assembly is independently mounted onto the floating bulkhead, isolating them from the unit chassis, reducing resonance and casing breakout noise. On standard EC motor units fan speed control is via a fan speed potentiometer or 2-10V DC control signal by others.

Condensate Pans

Ocelot fan coil units feature a condensate pan formed from stainless steel. The 'V' formed pan creates a positive seal against the coil preventing any air bypass and is fabricated to provide a positive fall in two directions to the central outlet at its lowest end.

The 22mm OD drain connection is located in a sump to ensure the condensate drains completely.

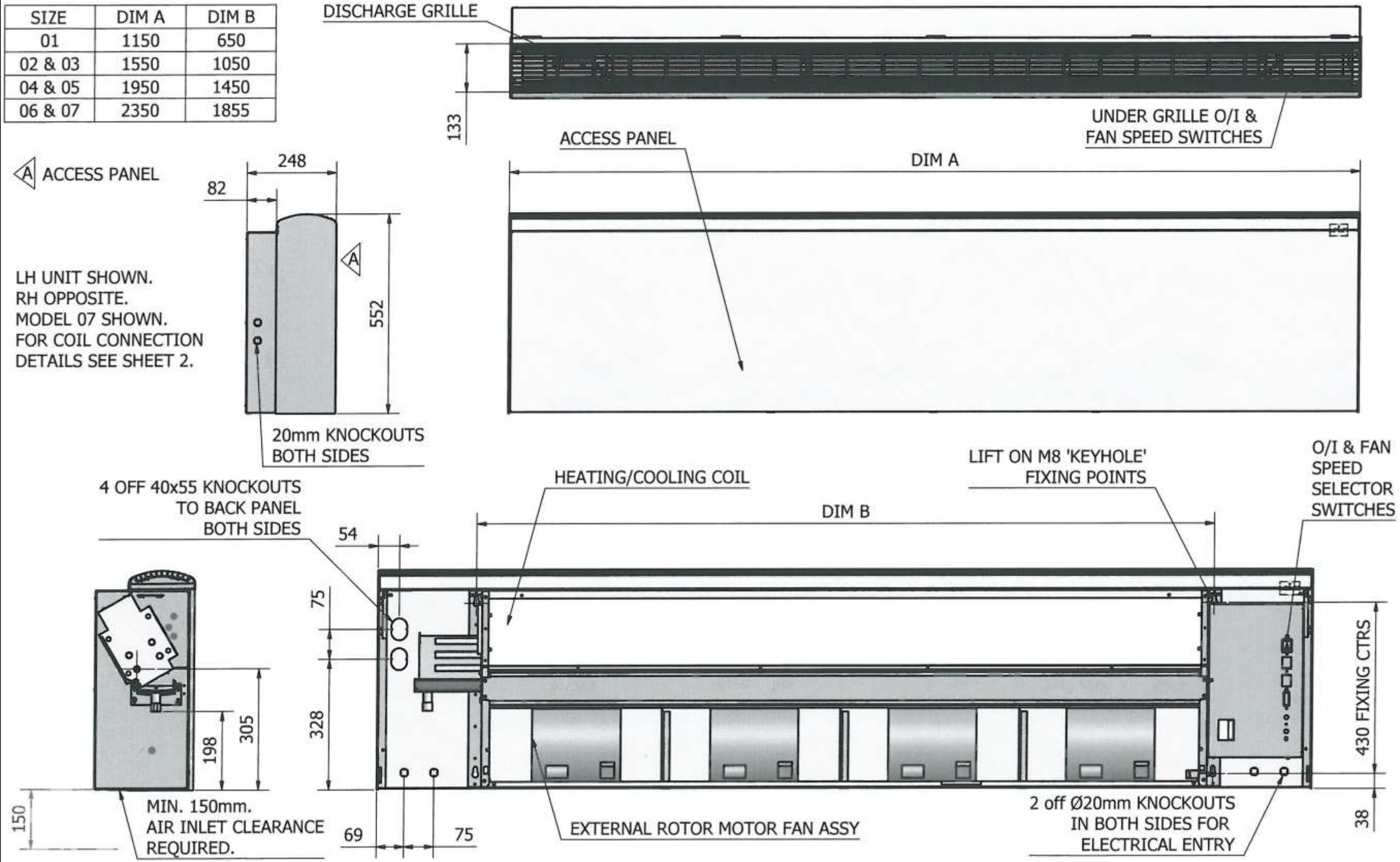
Adaptable Controls Box

Ocelot units are supplied with a well ventilated IP20 control box fitted with a one metre flying lead for connection to an adjacent fused spur. Electrical work can be easily performed via the hinged control box lid giving access to all components in the control box to either stand-alone or DDC controls.

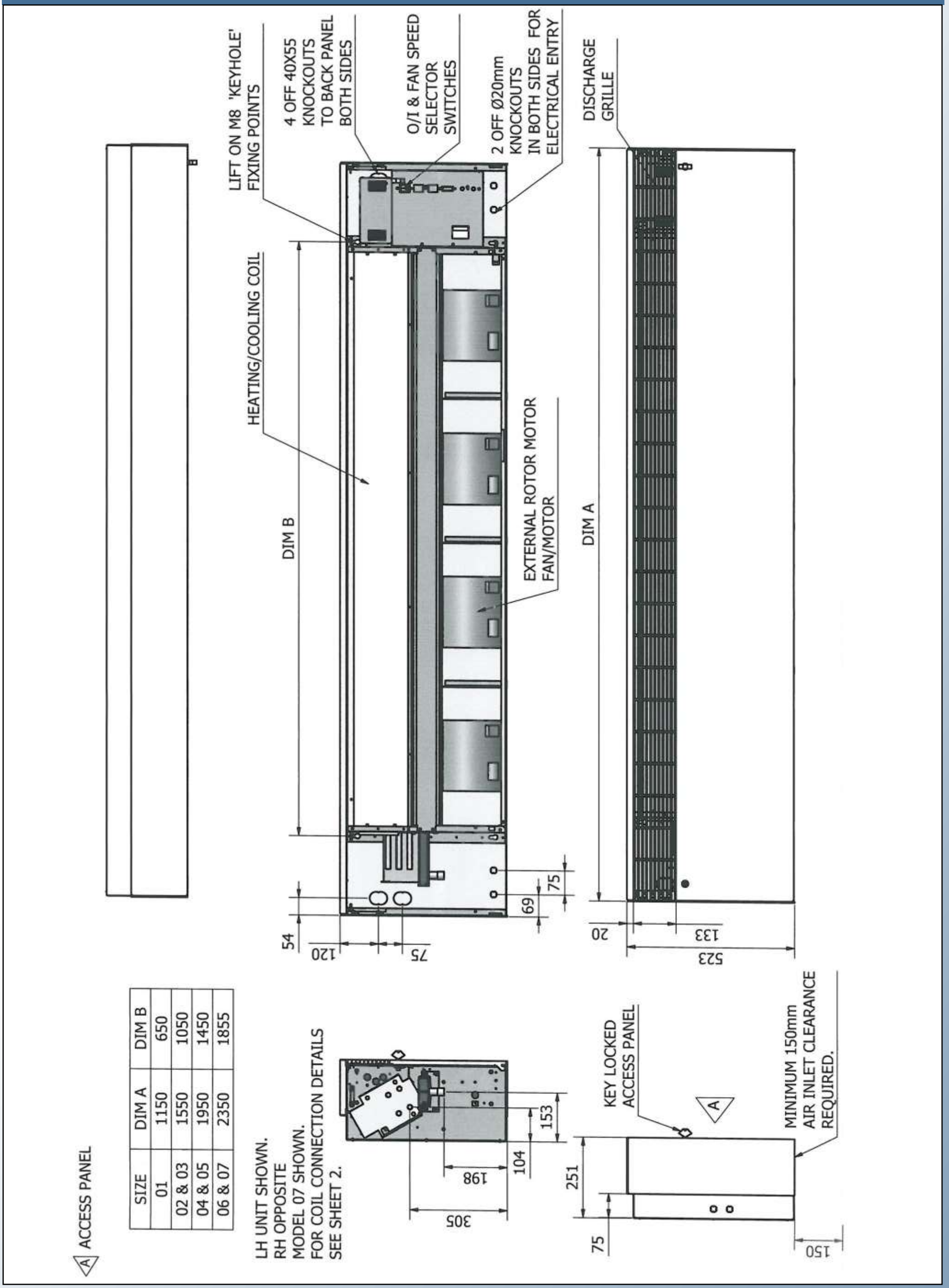
Also housed in the box are the mains fuse holder complete with a spare fuse and transformer. It is electrically connected to the fan/motor(s) via a quick release connector, a feature that enables it to be disconnected from the unit for refurbishment or to be retrofitted subsequent to the installation of the unit.

DIMENSIONS - TOP DISCHARGE STYLE (LOW WALL MOUNTING)

SIZE	DIM A	DIM B
01	1150	650
02 & 03	1550	1050
04 & 05	1950	1450
06 & 07	2350	1855



DIMENSIONS - FRONT DISCHARGE STYLE (HIGH WALL MOUNTING)



SIZE	DIM A	DIM B
01	1150	650
02 & 03	1550	1050
04 & 05	1950	1450
06 & 07	2350	1855

KEY FEATURES

Simple range of size options
- Seven unit sizes in range of four sizes with multiple fan options

Robust casing
- Precision fabrication with CNC punched and folded casing and chassis components
- Rigid construction in stiffened 1.2mm thick powder coated steel

Excellent acoustics
- Plenums lined with 12mm open cell acoustic foam
- Forward curved centrifugal fans isolated from the chassis on a floating bulkhead

High performance cooling and heating
- Integral heat exchanger coil block with dedicated cooling and heating sections
- Copper tube with 'AC' profile aluminium fins for better heat transfer
- Compatible with CHW and LPHW systems with or without glycol treatment

Responsive waterside control
- Rapid response to cooling and heating demand
- Optional 2 port or 4 port (3 port + bypass) control valves

Effective condensate removal
- Precision condensate pan to minimise air bypass
- Condensate pan is graded in two directions to provide rapid removal of condensate

Energy efficient variable air supply
- Electronically commutated (EC) motors with 0-10VDC signal speed control (on-board with fitted fan speed potentiometer or external BMS control)
- Low specific fan powers (SFP) between 0.1W/l/s to 0.4W/l/s

Bespoke control strategy
- Flexible cooling and heating outputs
- Variable CHW and LPHW flow rates with variable air volume

Easy commissioning and maintenance
- Hinged control box lid
- Removable washable inlet air filters
- Removable access panel

OPTIONAL FLEXIBILITY

Filter upgrade

- Improved supply air quality with inlet air filter upgrade

Stand-alone or communicating controls

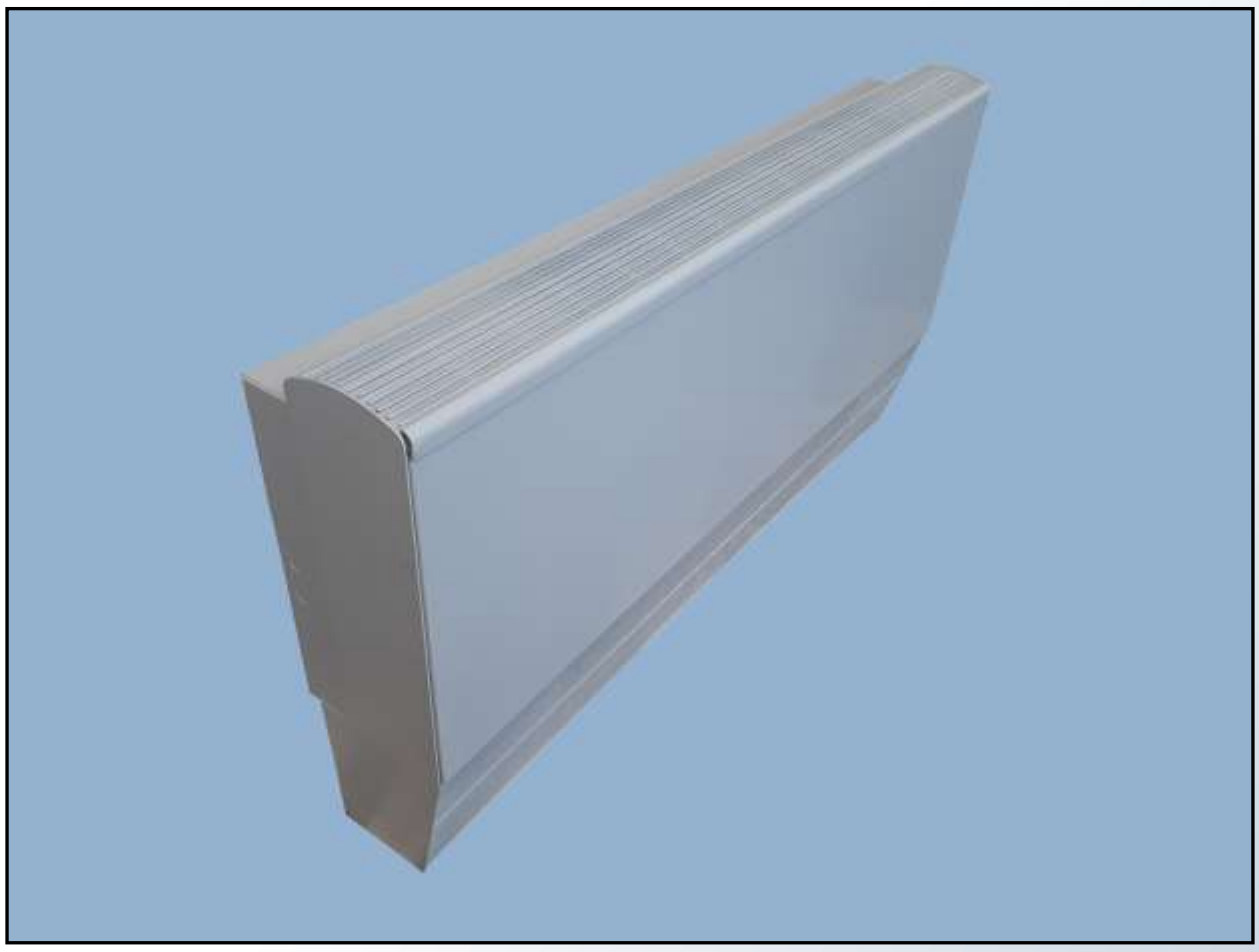
- Range of fitted stand-alone controls packages
- Factory fitted ‘free-issue’ bespoke controls to suit any BMS network

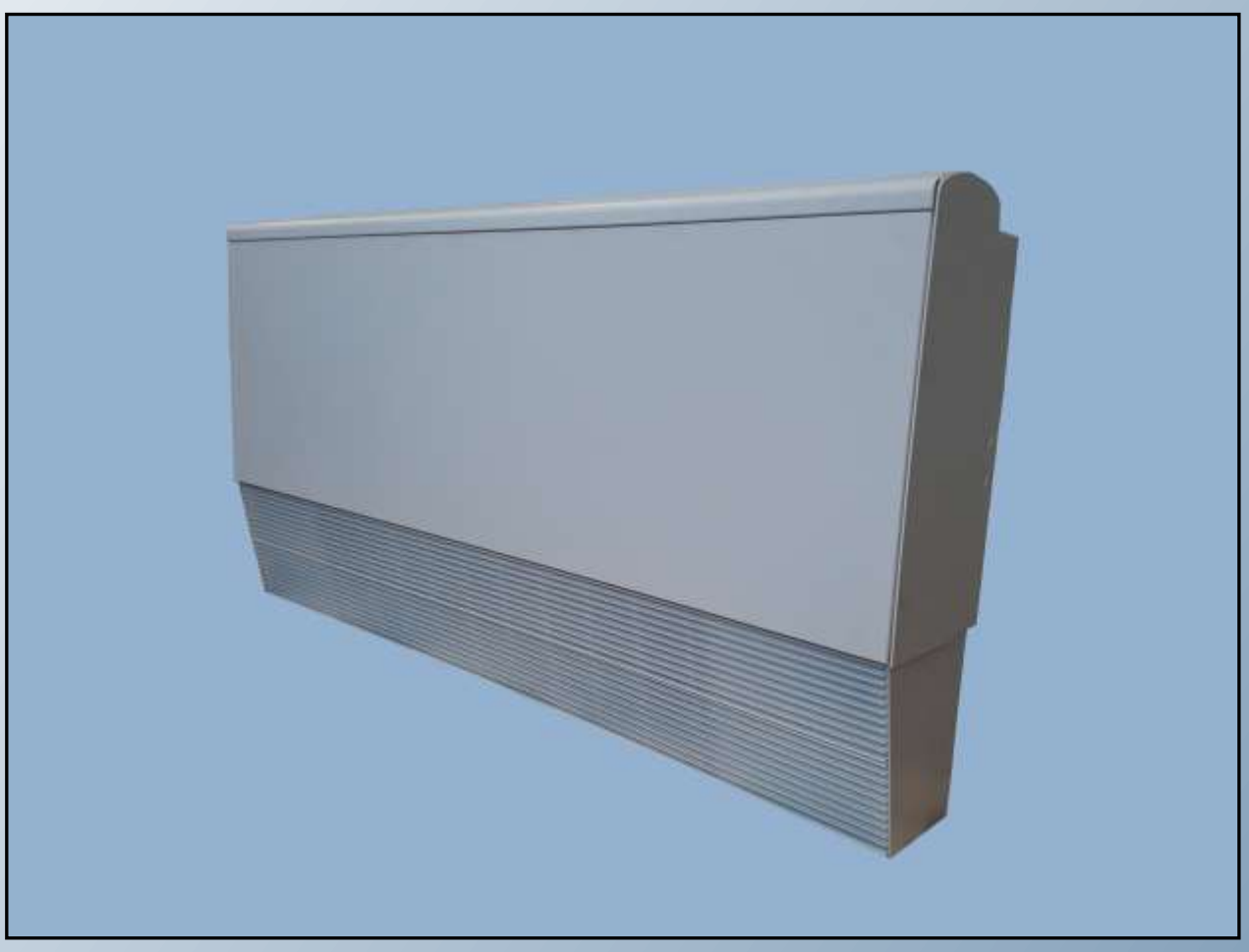
Pumped condensate removal

- Fitted condensate pump with automatic operation and alarm signal

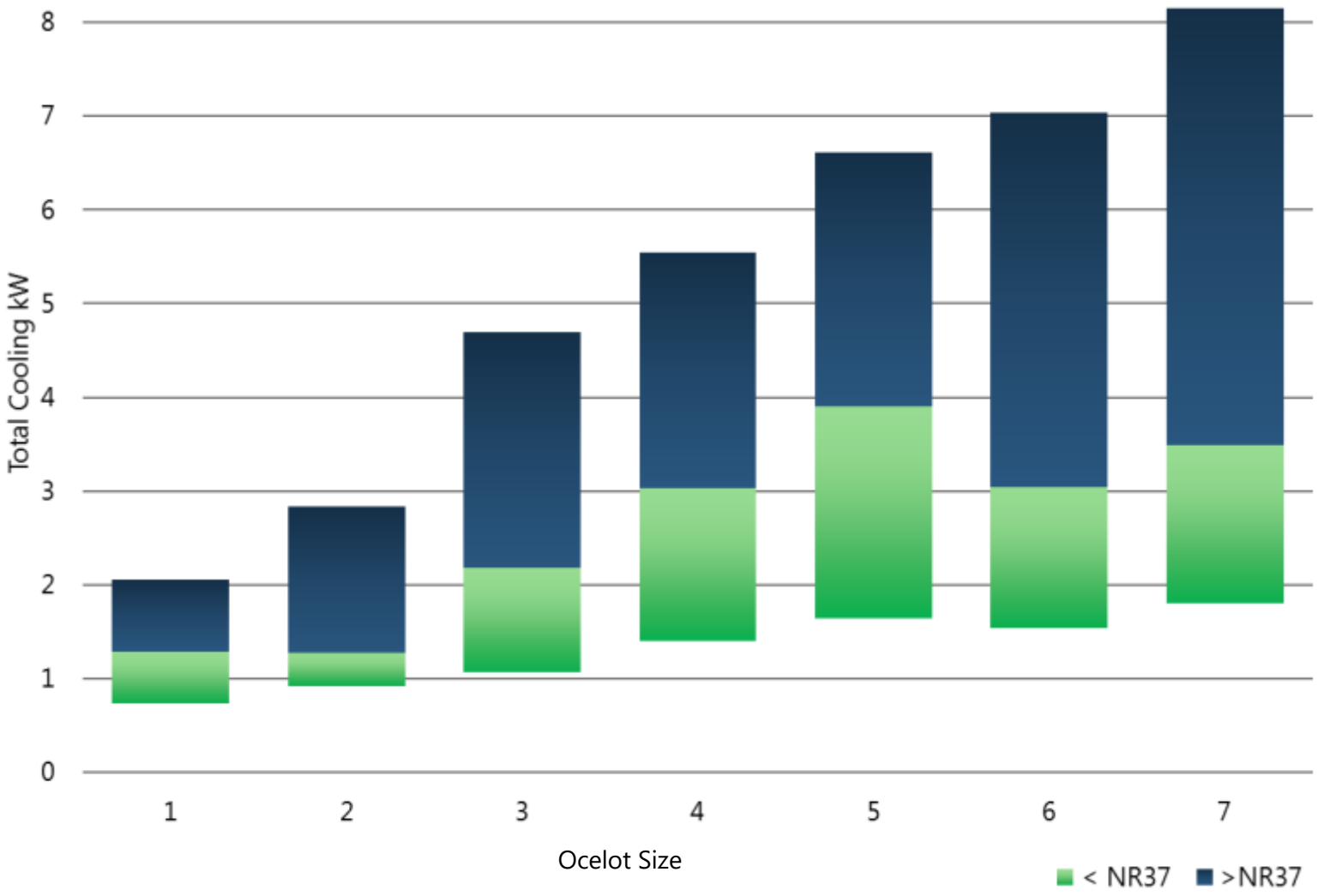
Fan fault monitoring and alarm

- Fitted fan monitoring board with fan speed output, relay alarm signal and fan status LEDs



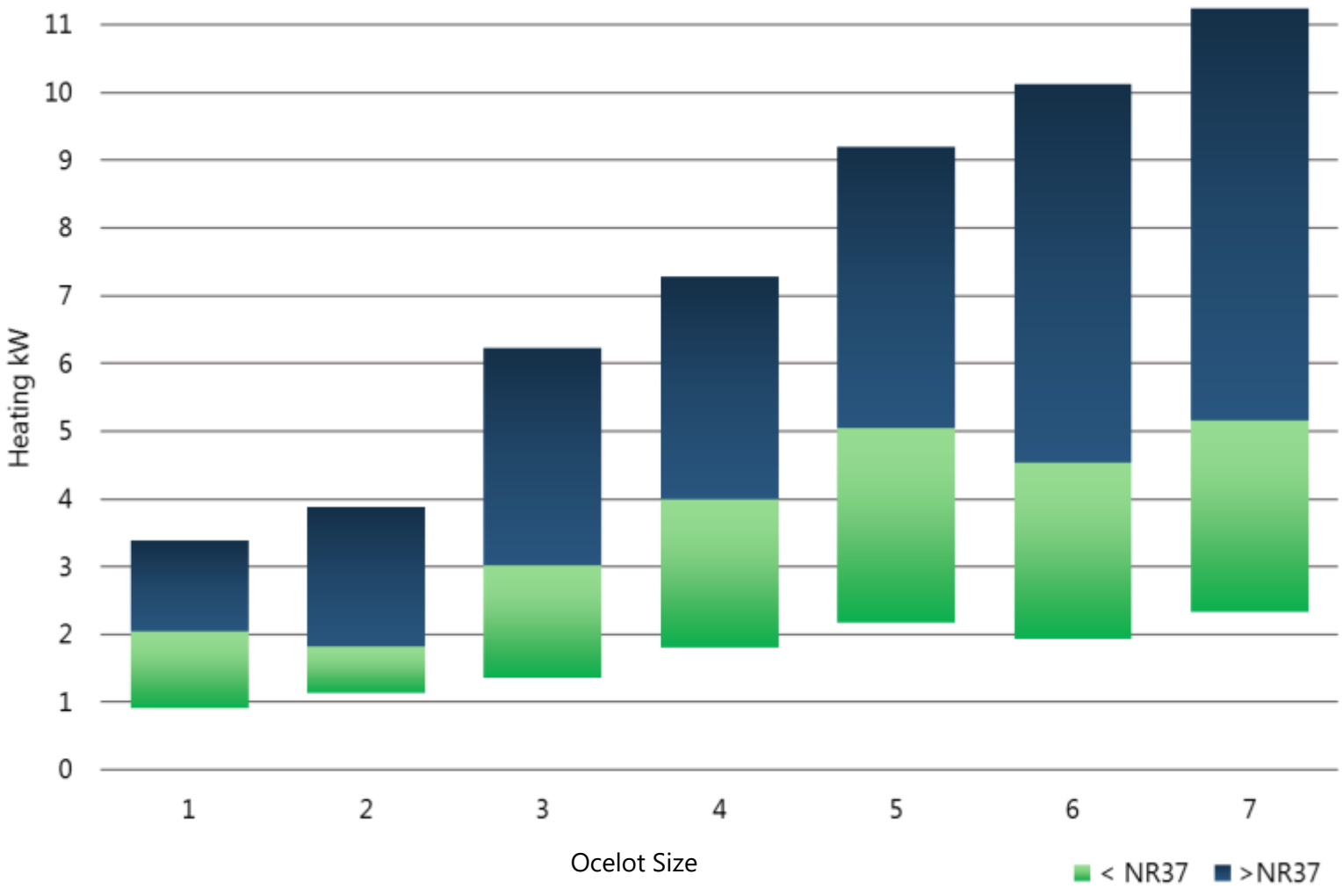


COOLING & HEATING DATA



Range of Cooling Outputs - Based on 6/12C CHW and 23C Air On 50% RH. Please contact Dunham-Bush for confirmation of selections.

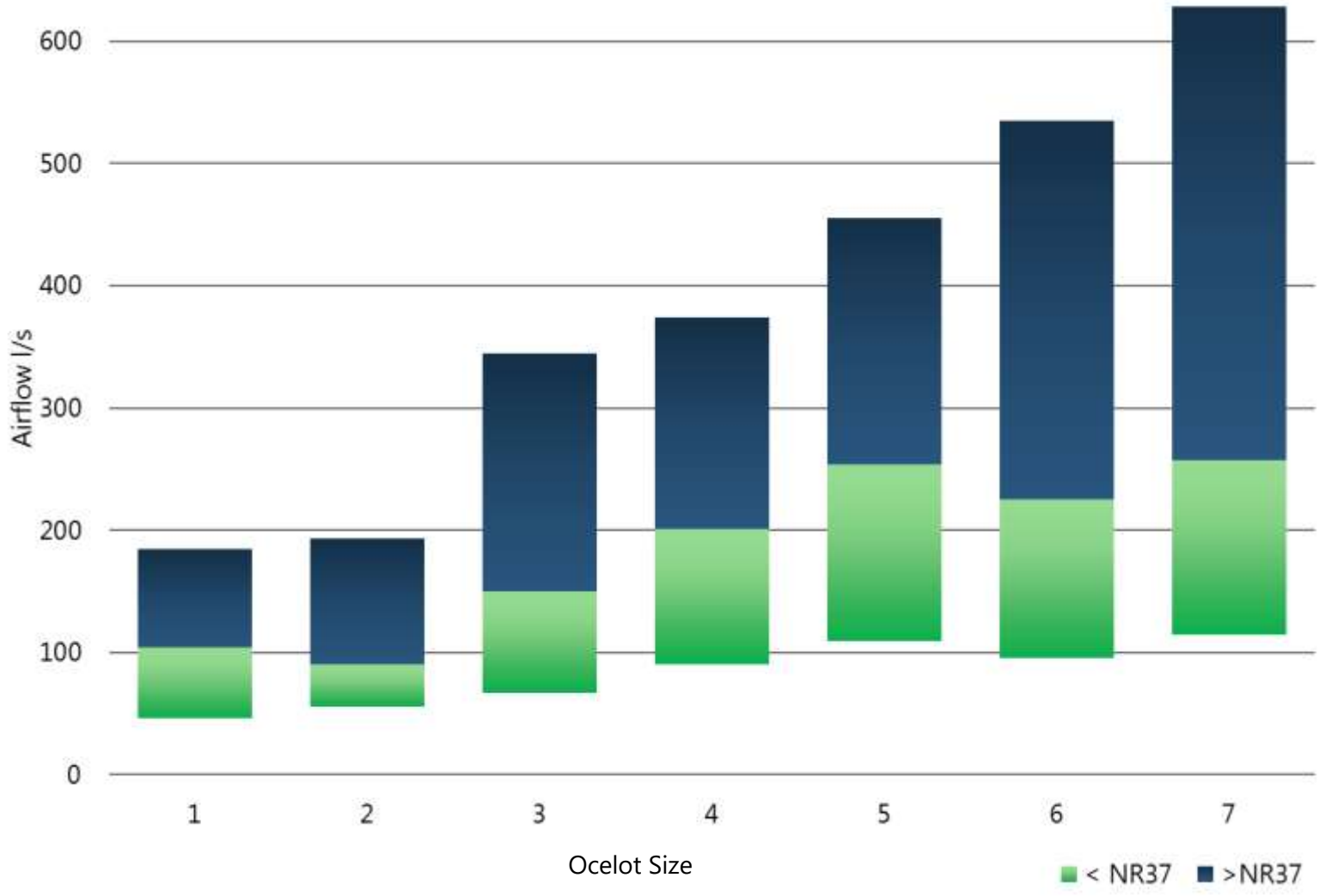
1. Cooling data is based on chilled water with flow/return temperatures as shown; for chilled water with glycol, contact Dunham-Bush.
2. NR levels are predicted guidance, based on typical conditions for commercial applications (see page 10) Sound power levels (inlet/case radiated and discharge radiated) are available; contact Dunham-Bush



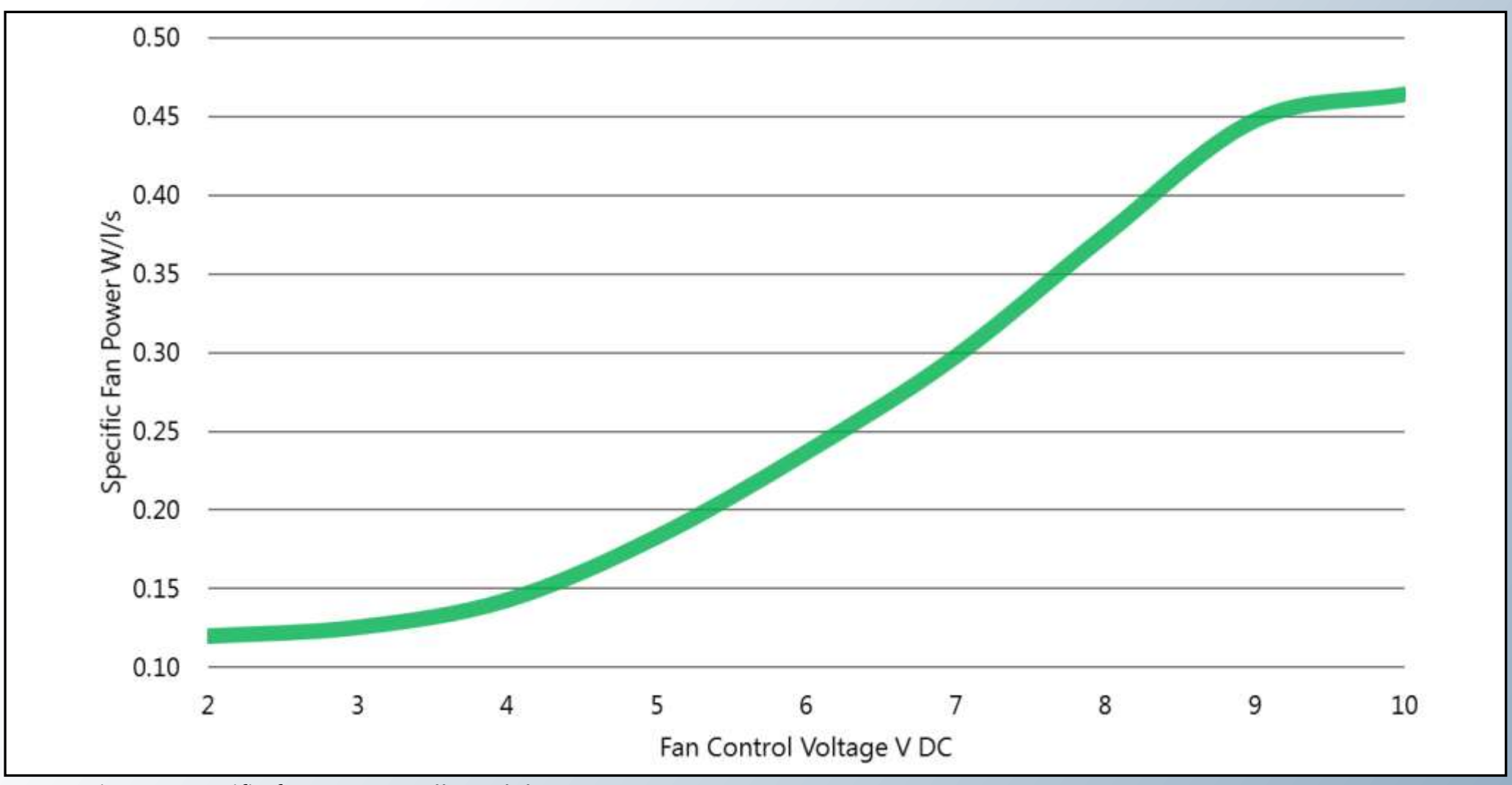
Range of Heating Outputs - Based on 80/70C LPHW and 20C Air On. Please contact Dunham-Bush for confirmation of selections.

1. Heating data is based on low pressure hot water with flow/return temperatures as shown.
2. NR levels are predicted guidance, based on typical conditions for commercial applications (see page 10) Sound power levels (inlet/case radiated and discharge radiated) are available; contact Dunham-Bush.

AIRFLOW ELECTRICAL DATA



Range of Airflow rates. Please contact Dunham-Bush for conformation of selections.



Approximate Specific fan powers, all models.

	OCELOT 1	OCELOT 2	OCELOT 3	OCELOT 4	OCELOT 5	OCELOT 6	OCELOT 7
Full Load Current A	0.66	0.66	1.26	1.26	1.67	1.67	2.14
Nominal Motor Power W	87	87	170	170	239	239	296

Electrical current is drawn by fan coil unit at full speed with 230V/1ph/50Hz supply.

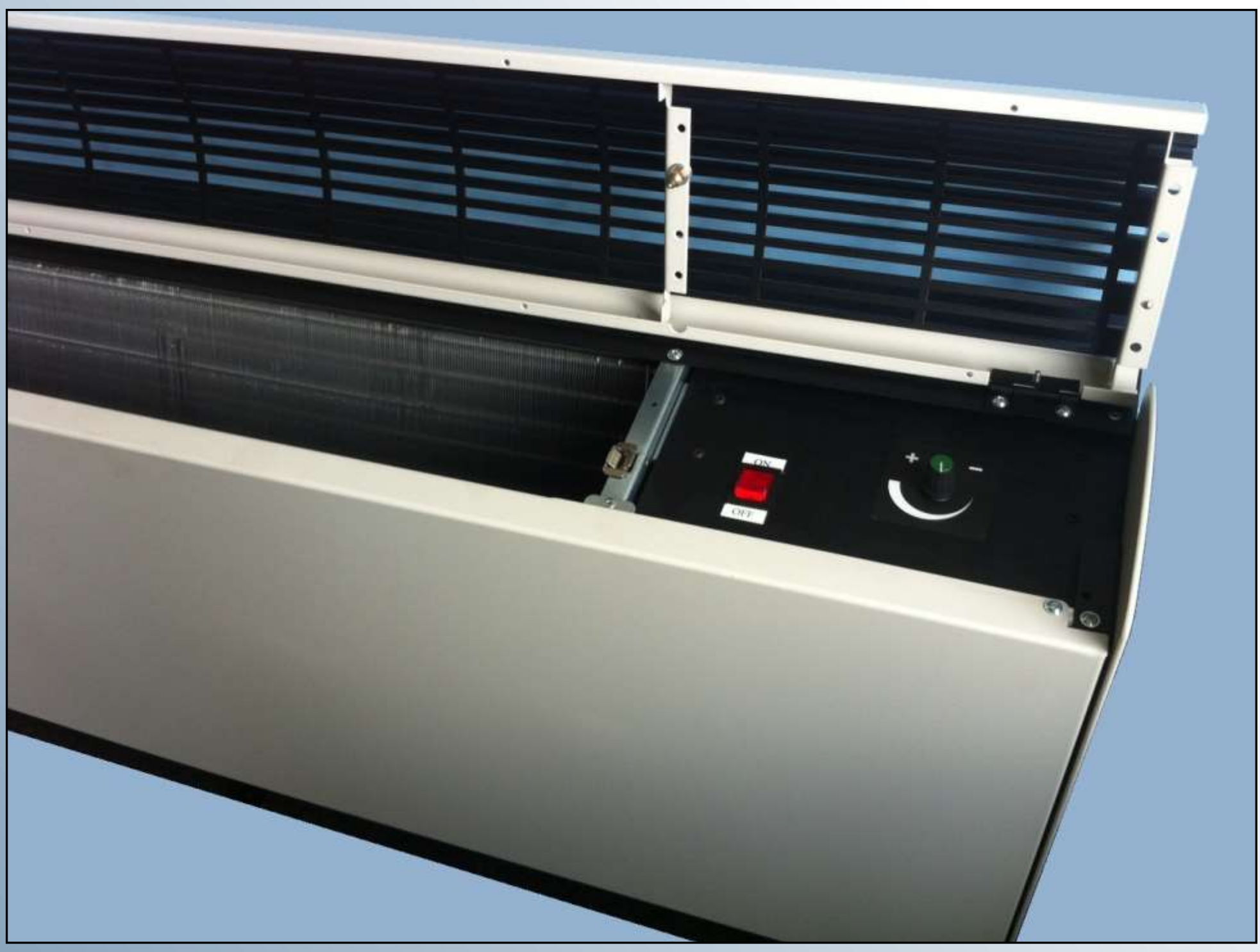
ACOUSTICS

To predict Noise Rating (NR) levels of installed fan coil units, Dunham-Bush use the following assumptions:

- Room acoustic characteristics are taken as medium or average, with a typical reverberation time of 1.0s. Room construction would typically be contract carpet, fibreboard lay-in ceiling tiles in a ceiling grid, wall surface areas comprising glazing and conventional wall finishes, room furnished with office equipment and occupied.
- Room dimensions typically taken as 8m x 8m with a ceiling height of 2.7m and the listener is assumed to be 1.5m from all noise sources.
- Supply/return air paths for Ocelot units will be in the same place.
- Sound pressure levels are determined with fan coil units at least 6m apart

The following corrections can be used to provide an approximate adjustment to predicted NR levels for different room conditions:

• Medium dead room acoustics	-2dB
• Medium live room acoustics	+1dB
• Medium live room acoustics	+4dB
• No ceiling; live room acoustics	+9dB



SPECIFICATIONS

The Ocelot Series Fan Coil Units shall be manufactured by Dunham-Bush Limited, Downley Road, Havant, Hampshire, PO9 2JD. Units shall be selected to achieve the required performance whilst operating against the specified design parameters. Ocelot units shall be of a blow through design and comprise of a washable air filter, dual purpose coil with separate connections for cooling and heating, stainless steel condensate pan, low noise external rotor electronically commutated (EC) motors/fans, and an electrical/controls enclosure.

Unit Chassis

Chassis shall be of a riveted construction manufactured From a minimum thickness of 1.2mm steel, stiffeners and strengthening folds shall be used to form a solid robust structure. Keyhole mounting slots able to accept M8 mounting bolts are provided for installation whilst the panel design and use of 'Dutch folds' produce a flush external finish with no sharp edges. Fan/Motor assemblies shall be mounted on a 1.6mm 'floating' bulkhead plate, isolated from the rest of the unit to prevent noise resonation through the unit casing. Panels shall be designed to allow separate unhindered access to the serviceable items, namely filters, condensate pan, coil, fans/motors and controls.

Casing

Casing is available as low level top discharge or high level front discharge. Front and side panels are colour white RAL 9010 semi-matt finish. Back panel and grille is Black 00 E 53 10% gloss. Special colours are available upon request.

Access

Access for inspection and service to the fans/motors, electrical box, coil connections and filter shall be via removable front panel. Top discharge units have a lift up grille.

Insulation

Unit chassis and panel work shall be both thermally and acoustically insulated with 95kg/m3, CFC & HFC free, Class 'O' open cell expanded foam insulation, having a maximum thermal conductivity of 0.047 W/mK, fully complying with London Borough and CAA flammability and toxicity requirements. The adhesive is a modified acrylic, light and ageing resistant synthetic resin with high temperature tolerance.

Coils

Coils shall be single block, dual purpose, divided into two sections to provide both cooling and heating. To be constructed from 3/8" seamless copper tube mechanically expanded into aluminium fins and brazed into copper headers. Aluminium fins shall be spaced at either 12 FPI or 14 FPI and have die formed collars to provide maximum contact and optimised heat transfer. Coils shall be circuited to provide low hydraulic pressure drops under normal operating conditions whilst being designed to prevent air locks, ensuring positive venting and draining via easily accessible slotted hexagonal vent and drain plugs. Coils to terminate with 15mm copper tails, spaced at 40mm centres to accept most standard 4-port valves. Tails are to terminate within a restraining plate providing adequate support to the control valves and adjoining pipework. Coils shall be tested by dry air under water to 30bar.

Condensate Pan

The condensate pan shall be of a one-piece construction manufactured from 1.2mm grade 316L stainless steel with fully welded corners. Pans to be 'V' formed and mounted to provide a positive fall in two directions ensuring the free flow of condensate to the 22mm diameter stainless steel bottom connection. Pans shall be externally insulated with 3mm closed cell class 'O' thermal insulation.

EC Motors - The Ocelot incorporates high efficiency EC (electronically commutated) motors. Speed adjustment is by an infinitely adjustable potentiometer fitted on the control box, or continuously variable fan speed is affected by a 2-10v DC control signal.

Fan Motor Speed Control

Speed control shall be effected by means of either a potentiometer or an analogue 0-10V control signal by others. Speed control potentiometers shall be fitted to a ventilated controls box mounted on the side of the unit.

Air Filters

The filter mat shall be formed from synthetic polyester fibres to BS EN ISO 16890-1:2016, Course 30%. The washable media shall be thermally bonded over a copper coated mild steel wire frame.

Controls Box

Each unit shall be provided with a well-ventilated electrical box complete with a hinged lid for ease of access. The box shall contain a terminal block, on/off switch and mains fuse whilst also providing space to accommodate most available temperature controllers along with any associated relays (if required). The control box shall be wired to current IEE regulations and be provided with a 1 metre flying lead for site connection to an adjacent fused spur.

Temperature Controls

Temperature controls shall be provided in accordance with the project specification and will comprise of modulating valves and actuators acting in conjunction with a stand-alone (analogue) or DDC temperature controller wired to a return air or room sensor. A wide variety of controls packages are available, either, supplied and fitted by Dunham Bush, or 'Free Issued' to Dunham-Bush for factory fitting only.

Service Support

Dunham-Bush offers a range of services from installation and commissioning to aftercare and routine maintenance to suit all your needs. Our Service Team has a wide range of experience and knowledge of all refrigeration equipment, which includes split A/C VRV or VRF air and water cooled chillers and heat pumps. Continued support and regular maintenance will help prevent any down time of your equipment. All our engineers are fully trained and hold current Skill Cards and F-Gas qualifications.

Dunham-Bush Ltd
Downley Road, Havant, Hampshire, PO9 2JD
Tel. 023 9247 7700
Fax. 023 9245 3601
Email: info@dunham-bush.co.uk
www.dunham-bush.co.uk

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