

SmartCool™ Downflow  
6 to 200kW

SN, SR and SD  
SmartCool Chilled Water



Technical Manual



## Customer Services

### Warranty, Commissioning & Maintenance

As standard, Airedale guarantees all non consumable parts only for a period of 12 months, variations tailored to suit product and application are also available; please contact Airedale for full terms and details.

To further protect your investment in Airedale products, Airedale can provide full commissioning services, comprehensive maintenance packages and service cover 24 hours a day, 365 days a year (UK mainland).

For a free quotation contact Airedale or your local Sales Engineer.

All Airedale products are designed in accordance with EU Directives regarding prevention of build up of water, associated with the risk of contaminants such as legionella.

For effective prevention of such risk it is necessary that the equipment is maintained in accordance with Airedale recommendations.

### SafeCool

In addition to commissioning, a 24 hour, 7 days a week on-call service is available throughout the year to UK mainland sites. This service will enable customers to contact a duty engineer outside normal working hours and receive assistance over the telephone. The duty engineer can, if necessary, attend site, usually within 24 hours or less.

Full details will be forwarded on acceptance of the maintenance agreement.

#### CAUTION ▲

Warranty cover is not a substitute for maintenance. Warranty cover is conditional to maintenance being carried out in accordance with the recommendations provided during the warranty period. Failure to have the maintenance procedures carried out will invalidate the warranty and any liabilities by Airedale International Air Conditioning Ltd.

### Spares

A spares list for 1, 3 and 5 years will be supplied with every unit and is also available from our Spares department on request.

### Training

As well as our comprehensive range of products, Airedale offers a modular range of Refrigeration and Air Conditioning Training courses, for further information please contact Airedale.

### Customer Services

For further assistance, please e-mail: [enquiries@airedale.com](mailto:enquiries@airedale.com) or telephone:

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Spares Hot Line	+ 44 (0) 113 238 7878	<a href="mailto:spares@airedale.com">spares@airedale.com</a>
Airedale Service	+ 44 (0) 113 239 1000	<a href="mailto:service@airedale.com">service@airedale.com</a>
Technical Support	+ 44 (0) 113 239 1000	<a href="mailto:tech.support@airedale.com">tech.support@airedale.com</a>
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For information, visit us at our web site: [www.airedale.com](http://www.airedale.com)

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## Environmental Considerations

### Units with supply water temperatures below +5°C

- Glycol is recommended when a supply water temperature of +5°C or below is required or when static water can be exposed to freezing temperatures.

### Units subject to ambient temperatures lower than 0°C

- Glycol of an appropriate concentration (1) must be used within the system to ensure adequate freeze protection. Please ensure that the concentration is capable of protection to at least 3K lower than ambient.
- Water / glycol solution should be constantly circulated through all waterside pipework and coils to avoid static water from freezing.
- Ensure that pumps are started and running even during shut down periods, when the ambient is within 3K of the solution freeze point (1) (i.e. if the solution freezes at 0°C, the pump must be operating at 3°C ambient).
- Additional trace heating is provided for interconnecting pipework.

(1) Refer to your glycol supplier for details.

## Environmental Policy

It is our policy to:

- Take a proactive approach to resolve environmental issues and ensure compliance with regulatory requirements.
- Train personnel in sound environmental practices.
- Pursue opportunities to conserve resources, prevent pollution and eliminate waste.
- Manufacture products in a responsible manner with minimum impact on the environment.
- Reduce our use of chemicals and minimise their release to the environment.
- Measure, control and verify environmental performance through internal and external audits.
- Continually improve our environmental performance.

## CE Directive

Airedale certify that the equipment detailed in this manual conforms with the following EC Directives:

Electromagnetic Compatibility Directive (EMC)	2014/30/EU
Machinery Directive (MD)	89/392/EEC version 2006/42/EC
Pressure Equipment Directive (PED)	2014/68/EU
Ecodesign	2009/125/EC

To comply with these directives appropriate national & harmonised standards have been applied. These are listed on the Declaration of Conformity, supplied with each product.

## Health and Safety

### IMPORTANT

The information contained in this manual is critical to the correct operation and maintenance of the unit and should be read by all persons responsible for the installation, commissioning and maintenance of this Airedale unit.

### Safety

The equipment has been designed and manufactured to meet international safety standards but, like any mechanical/ electrical equipment, care must be taken if you are to obtain the best results.

<b>CAUTION</b> ⚠	When working with any air conditioning units ensure that the electrical isolator is switched off prior to servicing or repair work and that there is no power to any part of the equipment. Also ensure that there are no other power feeds to the unit such as fire alarm circuits, BMS circuits etc.
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Electrical installation commissioning and maintenance work on this equipment should be undertaken by competent and trained personnel in accordance with local relevant standards and codes of practice.

A full hazard data sheet in accordance with COSHH regulations is available should this be required.

### Personal Protective Equipment

Airedale recommends that personal protective equipment is used whilst installing, maintaining and commissioning equipment.

### Manual Handling

Some operations when servicing or maintaining the unit may require additional assistance with regard to manual handling. This requirement is down to the discretion of the engineer.

Remember do not perform a lift that exceeds your ability.

### Pressure Equipment Directive (2014/68/EU)

#### Minimum and Maximum Operation Temperature (TS) and Pressure (PS)

##### Waterside

Allowable Temperature Range (TS) = Min -5°C\* to Max 40°C\*\*

Maximum Allowable Pressure (PS) = 10 Barg

\*Based on the waterside temperature in the unit off state in the lowest permitted ambient temperature.

\*\*Based upon maximum machine running temperatures.

### Ecodesign Directive 2009/125/EC

The product range within this document is designed in accordance to the European Ecodesign Directive 2009/125/EC. The appendix at the rear section of the manual gives the product compliancy metrics. Products sold outside of the EU are exempt from this directive.

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## Introduction

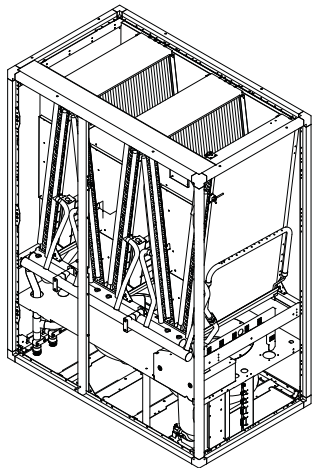
Designed to provide environmental precision air conditioning for applications such as telecommunication facilities, data centers, computer rooms, clean rooms and laboratories.

Full function units provide full control of temperature, humidity and filtration.

The modular design of the SmartCool allows grouping of differing model types and capacities to be installed side by side. The flexibility of this type of installation provides for multi-circuit functionality.

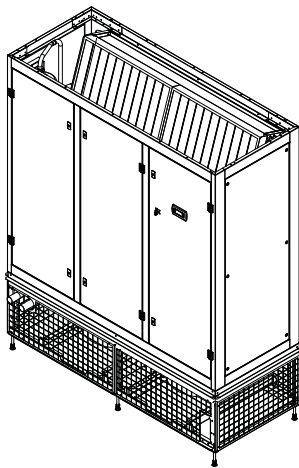
Introduction

SN, SR



Range	Performance (kW)
SN C000 <sup>(1)</sup>	13 – 36
SR C000 <sup>(1)</sup>	35 – 98
SR C0C0 <sup>(1)</sup>	25 – 70

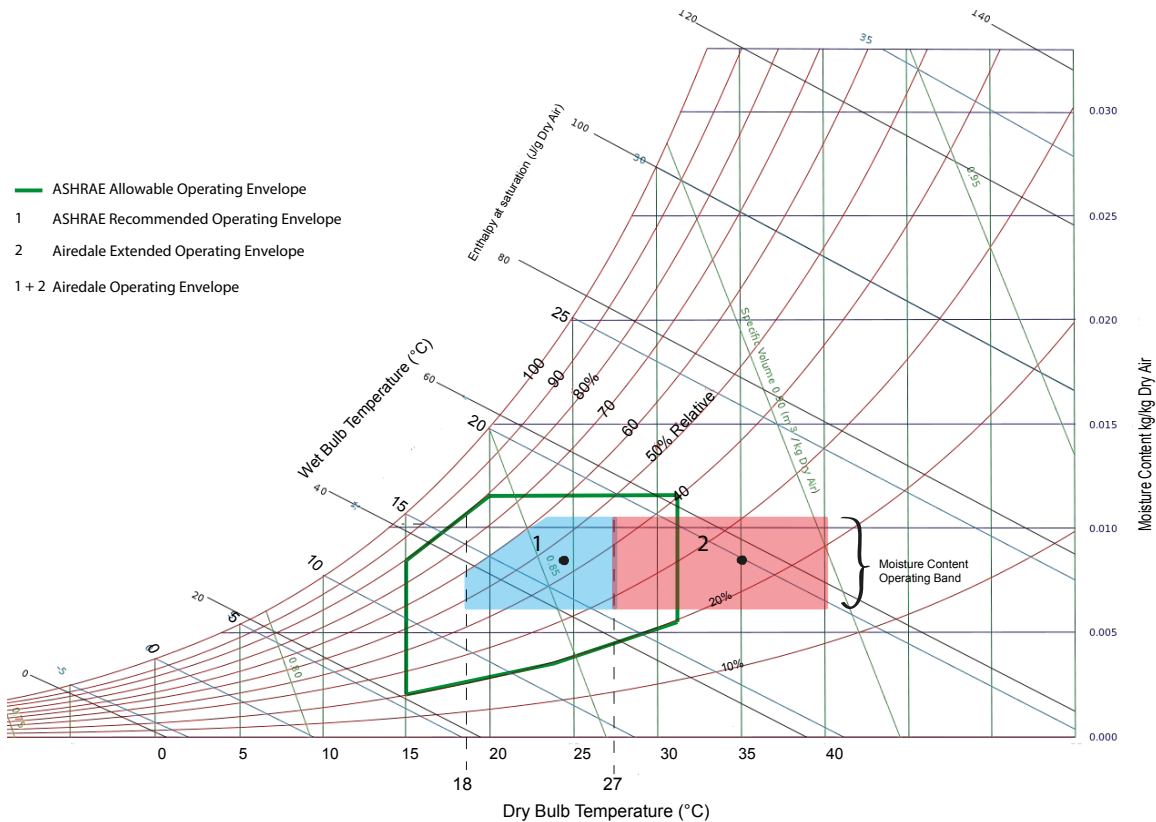
SD



Range	Performance (kW)
SD CH00 <sup>(1)</sup>	105 – 255
SD CHCH <sup>(1)</sup>	75 – 184
SD CL00 <sup>(2)</sup>	92 – 215
SD CLCL <sup>(2)</sup>	75 – 185

<sup>(1)</sup> Based on nominal unit capacities 24°C 45% RH 7°C /12°C Water

<sup>(2)</sup> Based on nominal unit capacities 35°C 24% RH 18°C / 24°C Water



**Precision Air Conditioning System**

The computer room air conditioning equipment shall be designed specifically for precision temperature and humidity control applications. It shall automatically monitor and control cooling, heating, humidification, de-humidification and filtering functions for the conditioned space. The system shall be built to the highest quality engineering and manufacturing standards and shall be subject to a functional test prior to leaving the factory.

**Construction****SN, SR Units**

The cabinet shall be manufactured using an external aluminium extrusion frame with aluminium corners.

Panels shall be completely removable to gain unequalled access during installation as required. The galvanised sheet steel panels and aluminium frame and corners shall be coated with an epoxy baked powder paint to provide a durable finish.

Standard unit colour shall be Black Grey to RAL 7021.

Cabinets shall be lined internally with various thickness fire resistant foam (BS 476) for thermal and acoustic insulation. The insulation density shall not be less than 75 kg/m<sup>3</sup>.

The cabinet doors shall be full height, hinged and key lock secured. The hinge arrangement shall allow flexible door opening/removal for improved access.

A propriety rubberised door seal shall reduce sound breakout and eradicate air leakage. In-seal type foam based door seals shall not be acceptable.

The control panel is mounted on hinges to allow easy removal of filters and access to several electrical components.

The unit design shall incorporate a series of M6 fixings to the top and bottom face to ease customer ductwork connection and reduce installation time.

**SD Units**

The cabinet shall be manufactured using steel frame.

Panels shall be completely removable to gain unequalled access during installation as required. The galvanised sheet steel panels shall be coated with an epoxy baked powder paint to provide a durable finish.

Standard unit colour shall be Black Grey to RAL 7021.

Cabinets shall be lined internally with various thickness fire resistant foam (BS 476) for thermal and acoustic insulation. The insulation density shall not be less than 75 kg/m<sup>3</sup>.

The cabinet doors shall be full height, hinged and key lock secured. The hinge arrangement shall allow flexible door opening/removal for improved access.

A propriety rubberised door seal shall reduce sound breakout and eradicate air leakage. In-seal type foam based door seals shall not be acceptable.

The unit design shall incorporate a series of M6 fixings to the top and bottom face to ease customer ductwork connection and reduce installation time.



## System Configurations

### SN, SR Range



### SD Range



#### SN C000 Units

- Fans located within unit
- Separate floorstand (min 350mm)

#### SR C000 / C0C0 Units

- Fans located within unit
- Separate floorstand (min 350mm)

#### SD CL00 / CLCL Units

- Fans located within floorstand
- Floorstand integral to unit (min 600mm)

#### SD CH00 / CHCH Units

- Fans located within floorstand
- Floorstand integral to unit (min 600mm)

**Single Circuit System Configuration**  
(SN C000, SR C000, CL00, CH00)**Dual Circuit System Configuration**  
(SR C0C0, SD CLCL, SD CHCH)

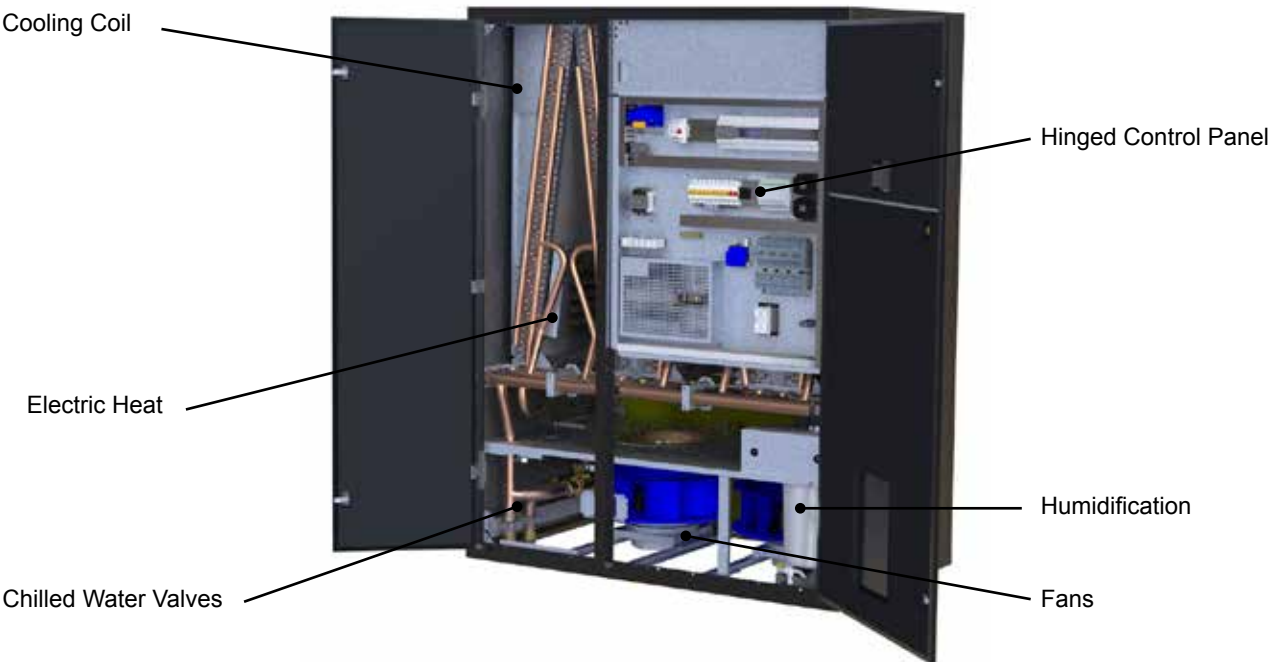
## SN, SR Nomenclature

S	Product Name	SmartCool	S	R	12	D	055	-	C000	-	0
R	Variant	Regular Case (890mm deep)									
N		Narrow Case (600mm deep)									
06	Case Width	684 mm									
09		963 mm									
12		1242 mm									
15		1521 mm									
18		1800 mm									
D	Flow Configuration	Downflow									
010	Nominal Cooling Capacity (kW)										
095											
-	Separator										
C000	Cooling Configuration	Single Circuit CW									
C0C0		Dual Circuit CW									
-	Separator										
0	Power Supply	400V / 3Ph +N / 50Hz									
1		380V / 3Ph +N / 60Hz									
2		220V / 3Ph / 60Hz									

## SD Nomenclature

S	Product Name	SmartCool	S	D	31	D	215	-	C	H	0	0	-	0
D	Product Variant	Dedicated Chilled Water												
18	Case Width	1800 mm												
22		2200 mm												
25		2500 mm												
31		3100 mm												
35		3500 mm												
D	Flow Configuration	Downflow												
085-255	Nominal Cooling Capacity (kW)													
-	Separator													
C	Chilled Water													
H	Coil Type	Coil Streamed For High Flow												
L		Coil Streamed For Low Flow												
C	Second Circuit	Chilled Water Circuit												
0		No Chilled Water Circuit												
H	Coil Type Second Circuit	Coil Streamed For High Flow												
L		Coil Streamed For Low Flow												
-	Separator													
0	Power Supply	400V / 3Ph + N / 50Hz												
1		380V / 3Ph +N / 60Hz												
2		220V / 3Ph / 60Hz												

Unit Overview  
SN, SR Range

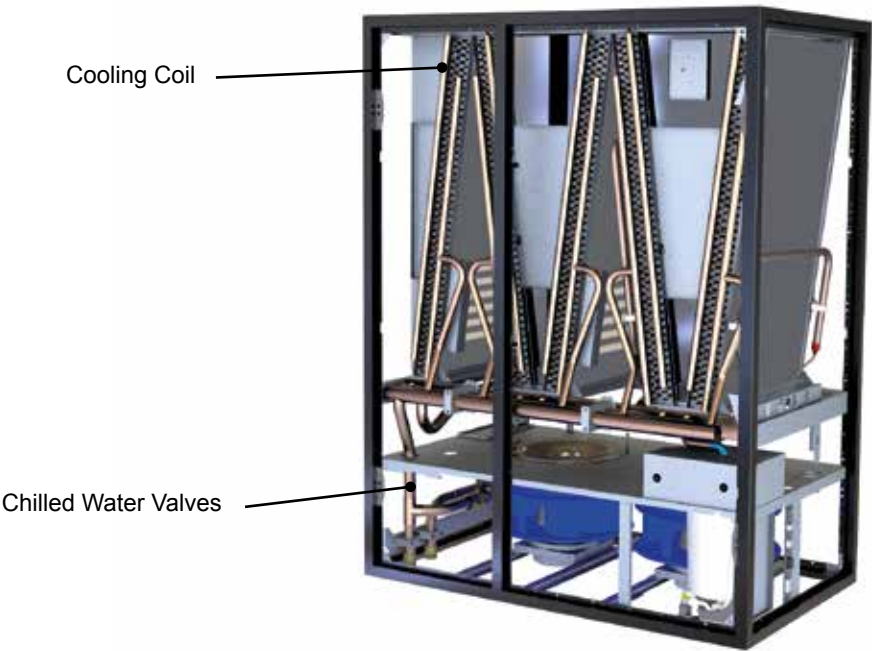


SD Range



Chilled Water Components  
SN, SR Range

Introduction



SD Range



## Chilled Water Components

		Range Number of Circuits	System Configuration				
			SN	SR		SD	
			Single	Single	Dual	Single	Dual
Chilled Water	Hydrophilic Epoxy Coated RTPF Chilled Water Coil		●	●	●	●	●
	0-10 Volts Chilled Water Regulating Valve (2 Way)		●	●	●	●	●
	0-10 Volts Chilled Water Regulating Valve (3 Way)		○	○	○	—	—
	0-10 Volts Chilled Water Regulating Valve (2 x 2-Way) Auto Commission		—	—	—	○	○
	Pressure Independant Control Valve (PICV)		○	○	○	○	○
	Brazed Connections		●	●	●	●	●
	Threaded Connections		○	○	○	○	○
	Grooved Connections		—	—	—	○	○
	Flanged Connections		—	—	—	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**Chilled Water Coil**

Chilled water coils shall be ideally positioned to optimise airflow and heat transfer, they shall be manufactured from plain copper tubes with mechanically bonded aluminium fins. Fins shall be coated with a non-stick acrylic film (hydrophilic) to provide additional corrosion protection and efficient surface water removal for improved performance. Plain aluminium shall not be acceptable. The cooling coil shall be mounted over a full width stainless steel condensate tray. A 22mm condensate drain hose connection shall be available. For control of water flow, various valve options shall be fitted. The factory test pressure shall not be less than 20 Barg and the maximum operating pressure shall be less than 10. Sweat copper pipe for brazed connection shall be standard. Optional threaded and Grooved connections shall be available.

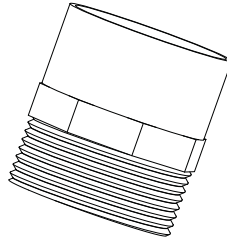
**Water Connection Types**

	SN06	SN09	SN12	SR09	SR12	SR15	SR18	SD18	SD22	SD25	SD31	SD35
Sweat Copper Connection	●	●	●	●	●	●	●	●	●	●	●	●
Threaded Pipe Connection	○	○	○	○	○	○	○	○	○	○	○	○
Grooved Water Connection	—	—	—	—	—	—	—	○	○	○	○	○
Flanged Connection	—	—	—	—	—	—	—	○	○	○	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**Threaded Water Pipe Connection**

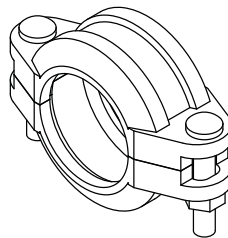
As an alternative to brazed water pipe connections, BSP brass male taper threaded connections shall be factory fitted.



Nominal Diameter (mm)	Pipe Size (mm)	Nominal Pipe size (Inch)
DN15	15	1/2
DN20	22	3/4
DN25	28	1
DN32	35	1 1/4
DN40	42	1 1/2
DN50	54	2
DN65	67	2 1/2

**Grooved Water Connections**

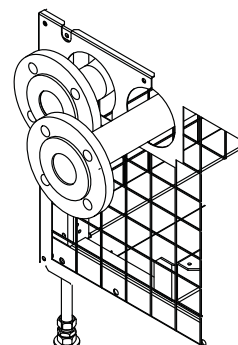
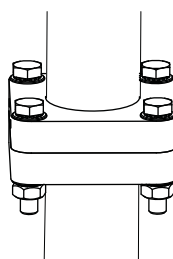
Grooved water connections shall be available enabling easy pipework termination.

**Flanged Connections**

For spool and unit termination, two types of flange shall be available.

For the spool termination, a bespoke flange design shall incorporate a flange profile and gasket configuration.

For the unit termination, a PN16 round bi-metallic flange shall be used. The unit termination end shall require staggering by 100mm to allow fitting of the flanges as shown.



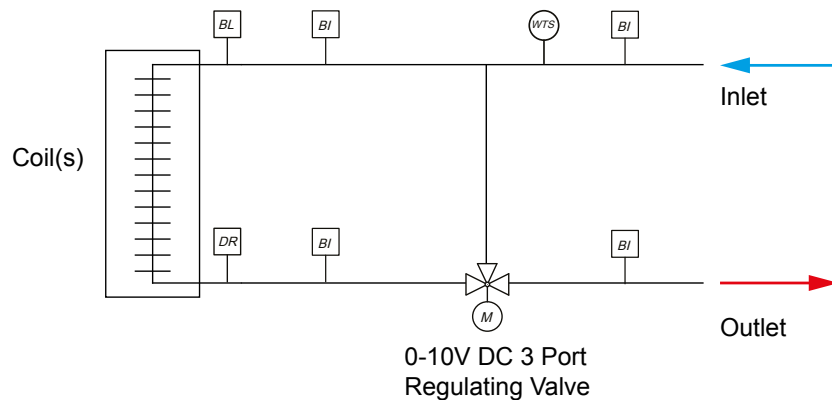
## Chilled Water Valves

### Chilled Water Valve Options

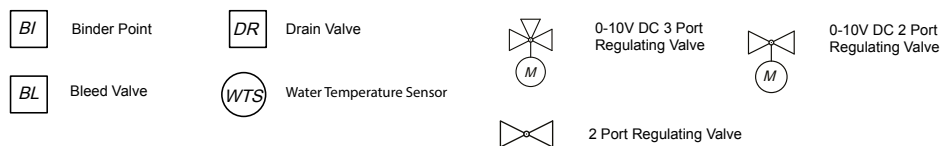
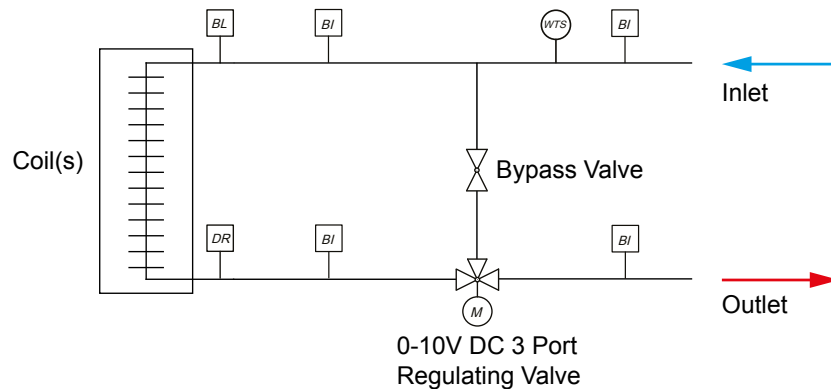
	SN06	SN09	SN12	SR09	SR12	SR15	SR18	SD18	SD22	SD25	SD31	SD35
2 Port Chilled Water Valves	●	●	●	●	●	●	●	●	●	●	●	●
2 Port Chilled Water Valves with 2 Port Commissioning Valve	—	—	—	—	—	—	—	○	○	○	○	○
3 Port Chilled Water Valves	○	○	○	○	○	○	○	—	—	—	—	—
3 Port Chilled Water Valves with Bypass	○	○	○	○	○	○	○	—	—	—	—	—

● Standard Features    ○ Optional Features    — Feature Not Available

### 0-10 Volts DC 3 Port Chilled Water Regulating Valve (SN, SR Units)



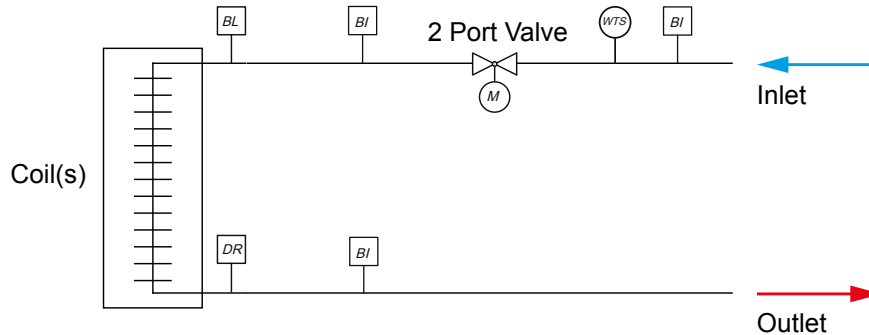
### 0-10 Volts DC 3 Port Chilled Water Regulating Valve with Bypass (SN, SR Units)





## 0-10 Volts DC 2 Port Chilled Water Regulating Valve (SN, SR, SD Units)

For systems with variable speed pumps and water flow, a 2 port control valve can be fitted. The two port valve has a shut off pressure of 13.6 Barg.

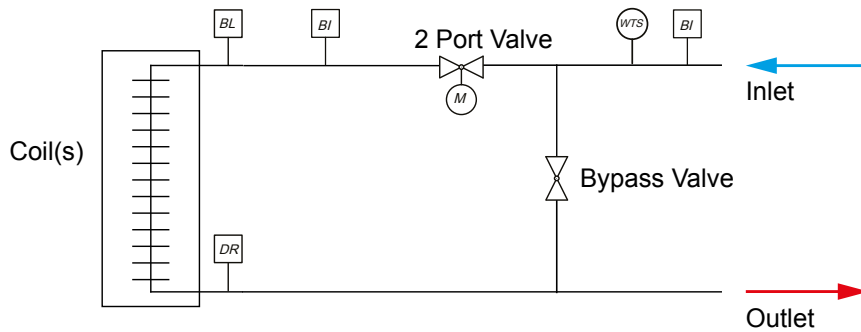


## 0-10 Volts DC 2 Port Chilled Water Regulating Valve with bypass for auto commissioning (SD Units)

For systems with variable speed pumps and water flow, a 2 port control valve can be fitted. The two port valve has a shut off pressure of 13.6 Barg.

A bypass leg fitted with a further 2 port valve enables auto commissioning.

The auto commissioning shall be enabled by using a differential pressure transducer to maintain balanced water flow through the bypass. The controller maintains the same pressure drop through the coil and the bypass. A fixed flowrate is required for this initial commissioning to occur.



BI Binder Point  
BL Bleed Valve

DR Drain Valve  
WTS Water Temperature Sensor

0-10V DC 3 Port  
Regulating Valve

2 Port Regulating Valve

0-10V DC 2 Port  
Regulating Valve

**Pressure Independant Control Valve (PICV)**

Pressure Independant Control Vales (PICV) fitted to the SmartCool ensure that constant waterflow is achieved. The PICV valves maintain the design flowrate based upon the valve setup.

**SN / SR Units**

	Valve			
	DN20	DN25	DN32	DN40
SN06D-C000	○	○	○	○
SN09D-C000	○	○	○	○
SN12D-C000	—	○	○	○
SR09D-C000	—	○	○	○
SR12D-C000	—	—	○	○
SR15D-C000	—	—	○	○
SR18D-C000	—	—	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**SD Units**

Unit	Valve							
	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
SD18D-CH00	—	—	—	○	●	○	—	—
SD22D-CH00	—	—	—	○	●	○	○	—
SD25D-CH00	—	—	—	○	○	●	○	○
SD31D-CH00	—	—	—	—	○	○	●	○
SD35D-CH00	—	—	—	—	○	○	○	●
SD18D-CL00	—	—	—	○	●	○	○	—
SD22D-CL00	—	—	—	○	●	○	○	—
SD25D-CL00	—	—	—	○	●	○	○	○
SD31D-CL00	—	—	—	—	○	●	○	○
SD35D-CL00	—	—	—	—	○	●	○	○
SD18D-CHCH	○	○	●	○	○	—	—	—
SD22D-CHCH	—	○	○	●	○	○	—	—
SD25D-CHCH	—	○	○	○	●	○	○	—
SD31D-CHCH	—	—	○	○	●	○	○	—
SD35D-CHCH	—	—	○	○	●	○	○	—
SD18D-CLCL	○	○	●	○	○	—	—	—
SD22D-CLCL	○	○	○	●	○	○	—	—
SD25D-CLCL	—	○	○	●	○	○	○	—
SD31D-CLCL	—	○	○	○	●	○	○	—
SD35D-CLCL	—	—	○	○	●	○	○	—

● Standard Features    ○ Optional Features    — Feature Not Available

## Airflow Components

		System Configuration				
		SN	SR		SD	
		Single	Single	Dual	Single	Dual
Chilled Water	EC Backward Curved Centrifugal Fans in Unit	●	●	●	—	—
	EC Backward Curved Centrifugal Fans in Floorstand	—	—	—	●	●
	G4 Air Filtration	●	●	●	●	●
	High Grade F7 Filtration	○	○	○	○	○
	Airflow Monitoring	○	○	○	○	○
	Airflow Switch	●	●	●	●	●
	Constant Air Volume	○	○	○	○	○
	Constant Pressure Control	○	○	○	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**Fan & Motor Assembly**

Backward curved impellers, direct drive centrifugal fan assemblies shall be used with integral EC motors. They shall be dynamically balanced for quiet operation.

Fan speed, air flow and external static pressure shall be controlled by the use of a voltage controller which shall maintain optimised performance and reduce energy consumption.

Designed for high corrosion resistance, the impellers shall be composite plastic with a galvanised rotor.

### Electronically Commutated (EC) Fan Motor

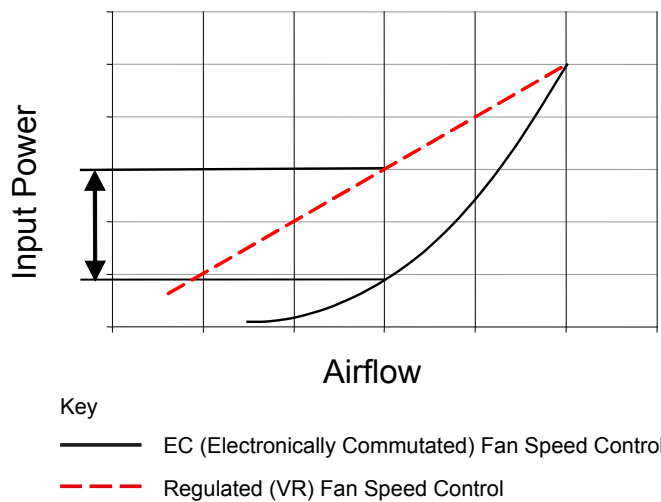
EC motors incorporate integrated electronics to convert AC power to DC for efficient and accurate speed control and are adjustable via the microprocessor display keypad.

The fans offer maximum air flow performance while keeping sound levels to a minimum.

It gives the flexibility of connecting to AC mains with the efficiency and simple speed control of a DC motor. The EC fan offers significant power reduction in comparison with an equivalent AC fan at modulated fan speeds. The inbuilt EC fan control module allows for fan speed modulation from 15-100%.

A standard AC fans modulating range is typically 40 -100% of full fan speed.

Standard voltage regulated (VR) fan speed controllers offer a linear response. The illustration on the right shows a comparison of the typical power input required by each method.



### Standard Filtration

Pleated disposable panel filters in a rigid frame. Conform to ISO16890:2016 with filtration classes of ISO-C-85 (SN) ISO-C-75 (SR) and ISO-C-80 (SD)

Access and removal from unit front. As standard the microprocessor provides an alarm following a pre set run time limit being exceeded.

### High Grade ISO-1-60 Filtration

Pleated disposable panel filters conforming to ISO 16890:2016 with filtration class of ISO-C-60 shall be provided.

### Air Flow Switch

An adjustable differential pressure switch shall activate a visual alarm at the status panel and break the power supply in the event of a fan or motor failure.

## Electrical Components

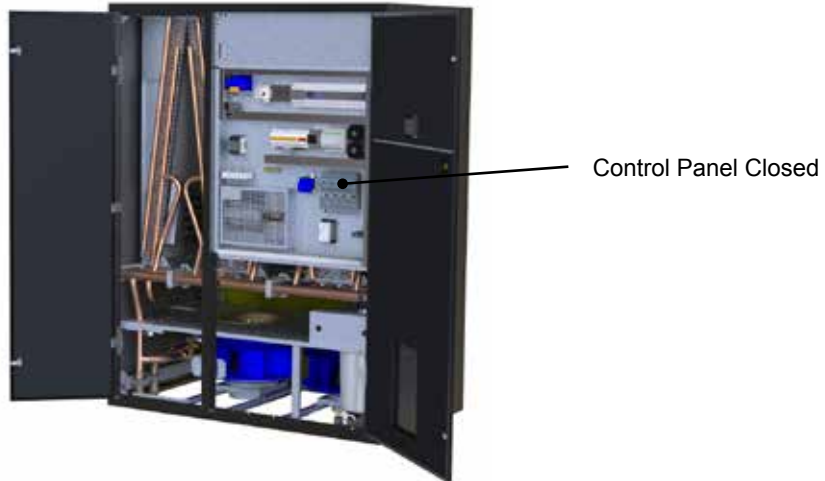
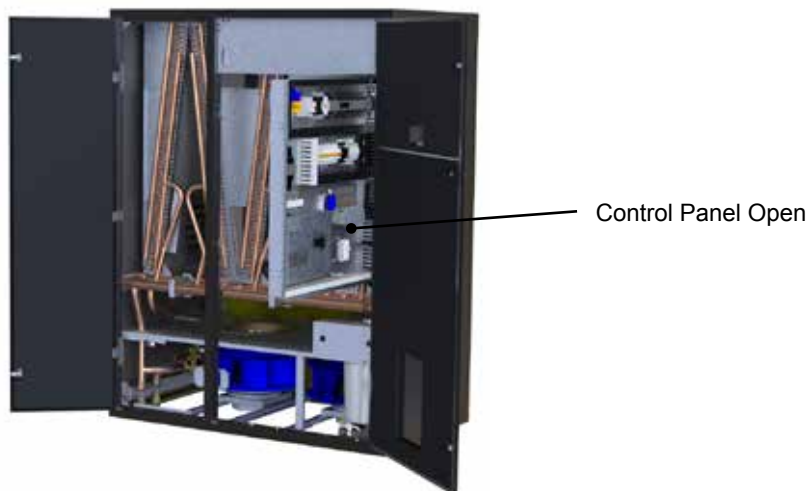
		Range	System Configuration				
			SN	SR		SD	
			Single	Single	Dual	Single	Dual
Electrical	Door Interlocked Mains Isolator	Number of Circuits	●	●	●	●	●
	Electrical Switch Gear		●	●	●	●	●
	Customer Connection Terminals		●	●	●	●	●
	Power Monitoring		○	○	○	○	○
	Phase Monitoring Relay		○	○	○	○	○
	Ultra Capacitive Module (Controller Power Backup)*		○	○	○	○	○
	Dual Power Supply		○	○	○	○	○
	Variable Humidification		○	○	○	○	○
	Electric Heating		○	○	○	○	○
	Modulating Electric Heating		○	○	○	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

\* Fitted as standard when dual power supply is fitted.

**Electrical Panels**

The control panel contains the necessary contactors, transformer, sub circuit protection, volt free contacts for a common alarm and mains and inter-connecting terminals. The panel is situated within the cabinet and is hinged to allow for essential maintenance of other components within the unit (SN, SR Units only). The electrical control panels are wired to the latest European standards and codes of practice.

**Control Panel Closed (SN, SR Units)****Control Panel Open (SN,SR Units)****SD Units**

Optional control panels are fitted dependant on which optional features are fitted

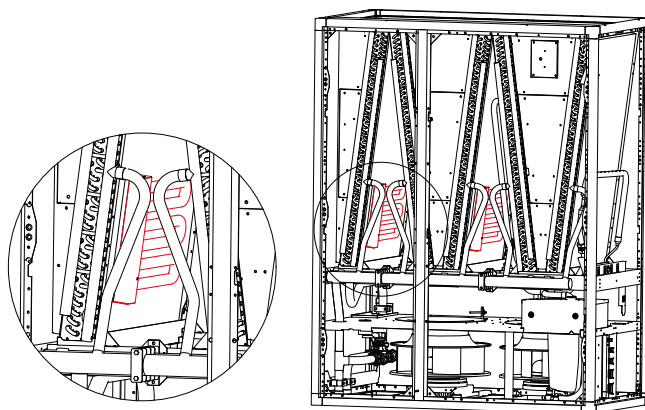
## Electric Heating

### SN, SR Units

These shall be multi-stage finned electric heating elements complete with auto and manual reset overheat cut-out protection, element shall be phase balanced for increased efficiency.

The electric heating elements are designed to be located between coil blocks, prior to fans. This enables the unit to effectively re-heat the air and evenly distribute the temperature within the floor void. All sizes of electric heating are configurable based upon customer requirements.

A maximum bank of 7.5kW is allocated per coil block. The available heating shall be 3kW, 6kW or 7.5kW. Consequently the level of configuration is dependent on the number of coils in the unit.



### SD Units

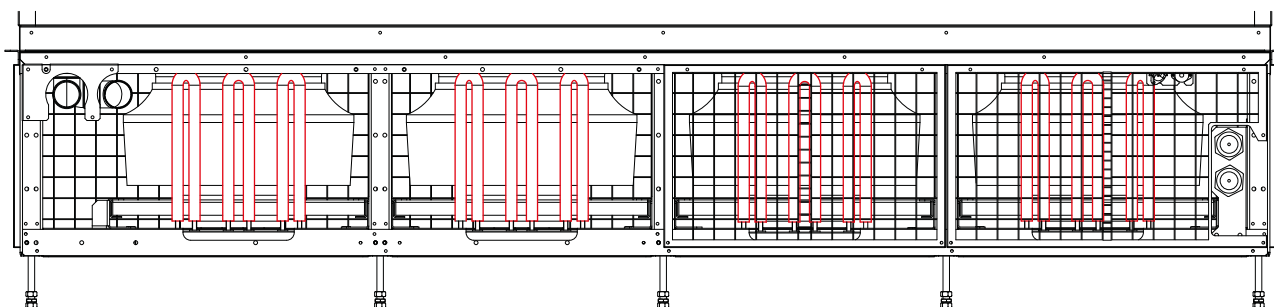
These shall be multi-stage finned electric heating elements complete with auto and manual reset overheat cut-out protection, element shall be phase balanced for increased efficiency.

The electric heating elements are designed to be located within the unit's fan module. This enables the unit to effectively re-heat the air and evenly distribute the temperature within the floor void. All sizes of electric heating are configurable based upon customer requirements.

A bank of 7.5kW is allocated per fan and as standard each can be downsized in banks of 7.5kW. Consequently the level of configuration is dependent on the number of fans in the unit.

### Electric Heating Thyristor Control

In addition to the electric heat option a 0 – 100% Thyristor shall be provided to deliver accurate heating control.



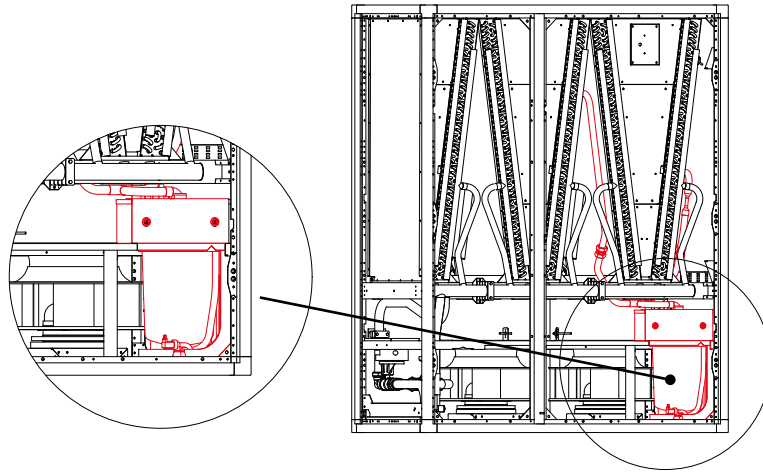
	SN06	SN09	SN12	SR09	SR12	SR15	SR18	SD18	SD22	SD25	SD31	SD35
3kW Electric Heat	○	○	○	—	—	—	—	—	—	—	—	—
6kW Electric Heat	—	○	○	—	—	—	—	—	—	—	—	—
7.5kW Electric Heat	—	—	—	○	○	○	○	○	○	○	○	○
15kW Electric Heat	—	—	—	—	—	○	—	○	○	○	○	○
22.5kW Electric Heat	—	—	—	—	—	—	—	—	—	○	○	○
30kW Electric Heat	—	—	—	—	—	—	—	—	—	—	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**Humidification****SN and SR Ranges**

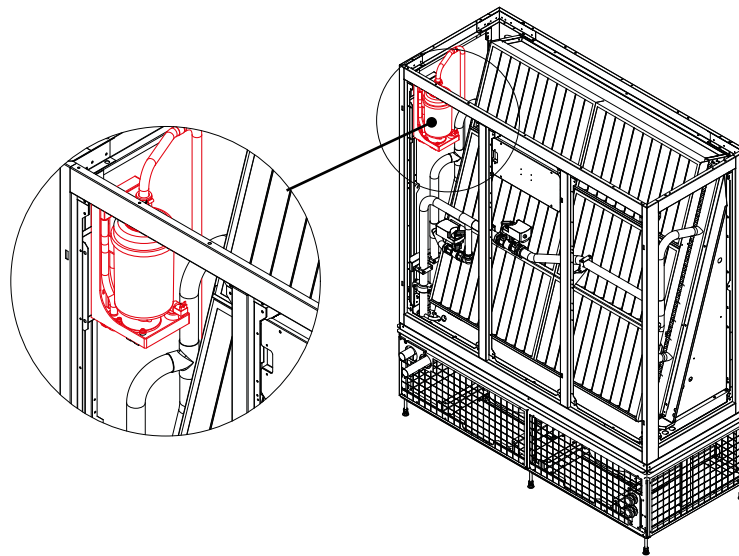
The SmartCool SN and SR range have configurable humidification selections delivering 3, 8, 15 kg/hr:

- SN06 configurable with 3kg/hr only
- SN09 - SR15 configurable between 3 - 8kg/hr
- SR15 - SR18 configurable between 3 - 15kg/hr

**SD Range**

The SmartCool SD Range has configurable humidification selections delivering 3, 8, 15 or 30 kg/hr

- SD18 configurable between 3 - 8 kg/hr
- SD22 - SD35 configurable between 3 - 30 kg/hr



The flexibility of the humidification options across the SmartCool SD range enables the humidification to be configured to meet the customers design requirements and conditions.

Note: the 30 kg/hr option utilises 2 x 15 kg/hr bottles.

**Humidification Sizes**

	SN06	SN09	SN12	SR09	SR12	SR15	SR18	SD18	SD22	SD25	SD31	SD35
3kg/hr Humidification	○	○	○	○	○	○	○	○	○	○	○	○
8kg/hr Humidification	—	○	○	○	○	○	○	○	○	○	○	○
15kg/hr Humidification	—	—	—	—	—	—	○	—	○	○	○	○
30kg/hr Humidification	—	—	—	—	—	—	—	—	○	○	○	○

● Standard Features ○ Optional Features — Feature Not Available

**Inlet and Drain Connections**

The humidifiers have a 3/4" BSPF Braided Flexible Hose inlet connection and a 22mm drain hose connection. The humidifier drain pump has a flowrate of 7.0l/m.



## Humidification

### Control Principles

In a humidifier with electrodes, steam shall be produced by passing a current between electrode plates to generate heat. The higher the current being passed between the electrodes, the greater the quantity of steam that is produced.

To modulate the rate of steam production, this system shall vary the level of water within the cylinder, thereby increasing the immersion level of the electrodes and the current being passed between them. The more conducting area that is available to pass current between the electrodes, the larger the amount of steam that shall be produced.

Modulated by the controller, the water level is varied so that the level of steam being produced ensures that the room humidity set-point is continually maintained within a tight tolerance.

### Optimised Lifetime

The life span of the Airedale humidification system shall be optimised by the inclusion of a water conductivity sensor into the bottle feed. This sensor shall determine the conductivity level of the supply water and by using an algorithm embedded in the software, determines the frequency that the bottle should be drained.

Example: (Optimised Lifetime with High Water Conductivity Supply)

As liquid water is boiled off into steam, mineral deposits are left in solution increasing the conductivity of the water.

To counter this, the intelligent software increases the frequency of drain meaning that the replenishing supply water keeps the concentration of minerals diluted. By maintaining an acceptable mineral concentration, the bottle lifespan is maximised.

### De-humidification

(With Electric Heating and Humidification only)

Controlled by the microprocessor the de-humidification feature reduces fan speeds by 20% (adjustable). The reduction of fan speed increases de-humidification which means that the time taken to reduce the room humidity to the required level is drastically decreased, along with the energy required to do so.

The return temperature is monitored during de-humidification to ensure that the temperature does not fall to a critical level. If the temperature reaches the low limit de-humidification is cancelled until the return air temperature increases.

**Humidifier - Intelligent Modulation**

Humidification shall be provided by an electrode boiler. The sealed humidifier design shall ensure that only clean sterile steam is supplied to the conditioned area and corrosive salts and minerals are held in the disposable bottle. The steam shall be distributed through a sparge pipe fitted to the coil assembly.

Featuring modulating capacity output control as standard, the system shall provide continuous modulation of steam output in response to a proportional control signal. The output control shall range from 20%-100% of the humidifier rated value and be designed to give an approximate steam output of +/- 5% at 25°C (at the sensor), thus ensuring precise control of the conditioned space.

The cylinder operating life time shall be automatically optimised via the integrated water conductivity sensor, which combined with the controls shall monitor and regulate the water refill cycle to reduce excessive salt deposits and the progressive wear of the cylinder.

All humidifier parameters and alarms shall be accessible and adjustable via the microprocessor display keypad unit, main features shall include not less than:

- Supply water conductivity ( $\mu\text{S}/\text{cm}$ )
- Actual steam output ( $\text{kg}/\text{h}$ )
- Required steam output ( $\text{kg}/\text{h}$ )
- Actual current rating (A)
- Required current rating (A)
- Status mode (Start Up, Running, Filling, Draining)

**Water Conductivity & Cylinder Type**

Three different cylinders shall be available which correspond to the supply water conductivity.

The cylinder type shall be matched with the standard conductivity of the supply water to ensure optimum performance and to increase the life span of the cylinder.

1	Low Conductivity (Soft Water)	100 to 350 $\mu\text{S}/\text{cm}$
2	Standard Conductivity (Moderate / Hard Water)	350 to 750 $\mu\text{S}/\text{cm}$
3	High Conductivity (Very Hard Water)	750 to 1250 $\mu\text{S}/\text{cm}$

Conductivity is a measure of the ability of water to pass an electric current, measured in micro Siemens / centimetre ( $\mu\text{S}/\text{cm}$ ).

As standard the humidifier shall be fitted with the standard conductivity cylinder which shall cover the majority of water supplies.

Where the water conductivity is known, please specify at order. For further details please contact Airedale.

**Dual Power Supply**

The SmartCool range shall be designed with dual power supply capability, so that in the event of a power failure the supply can be switched from utility to an alternative power supply (such as second utility or generator).

A dual power supply changeover switch shall be provided to enable continuous power to the SmartCool in order to reduce unit downtime and therefore loss of cooling to a minimum.

For the dual power supply feature to operate effectively the two incoming power supplies must have the same voltage and frequency.

During changeover of power there is an interval of  $\approx 180\text{ms}$  with no power. For critical applications a power backup module can be added to maintain power to the unit controls, allowing for immediate reinstatement of cooling following changeover.

The option as standard offers switch position status and supply priority set, both of which are configurable via the unit's display.

Supply priority set is fully configurable via the unit's display and is used to set which of the two power supplies power will be drawn from when both power supplies are active.

Switch position status indicates to the end user which position the switch is currently in i.e. A or B and is shown via the unit's display.

When the dual power supply is fitted the UltraCap UPS is fitted as standard.

**Ultracap UPS**

The Ultracap module is an external backup device for the controller. The module guarantees temporary power to the controller in the event of power failures and allows for enough time to keep the controller running with time to change power supplies.

The module is made using Ultracap storage capacitors (EDLC = Electric Double Layer Capacitor), which are recharged independently by the module.

These ensure reliability in terms of much longer component life than a module made with lead batteries: the life of the Ultracap module is at least 10 years.

When the dual power supply is fitted the Ultracap UPS is fitted as standard.

**Energy Manager**

Analysis of system energy consumption can be monitored via a dedicated LCD display. Unit parameters can be adjusted via the unit microprocessor control to affect energy usage in line with the system need.

## Controls



Display for illustration only

		System Configuration				
		SN	SR		SD	
			Single	Dual	Single	Dual
Controls	Range					
	Number of Circuits					
	PCO5 Microprocessor	●	●	●	●	●
	Airetronix Controls	●	●	●	●	●
	Vu™ Touch Screen Display	●	●	●	●	●
	PGD1 Display (Door Mounted)	○	○	○	○	○
	PGD1 Display with Audible Alarm (Door Mounted)	○	○	○	○	○
	PDG Touch Display	○	○	○	○	○
	Constant Air Volume	○	○	○	○	○
	Constant Pressure Control	○	○	○	○	○
	Temperature Control	●	●	●	●	●
	Temperature & Humidity Control	○	○	○	○	○
	Supply Air Temp Control	○	○	○	○	○
	NTC Water Temperature Sensor / Probe	●	●	●	●	●
	Filter Change Switch	○	○	○	○	○
	BMS and SNMP Compatibility	○	○	○	○	○
	Drip Tray Level Detection	○	○	○	○	○
	Fire Detection	○	○	○	○	○
	Smoke Detection	○	○	○	○	○
	Water Detection	○	○	○	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

**Vu™**

The units shall be supplied with a European ROHS Directive 2002/95/EC compatible microprocessor controller connected to a 4.3" colour resistive TFT LCD touch screen display.

The microprocessor controller offers powerful analogue and digital control to meet a wide range of monitoring and control features including a real time clock and industry standard communication port and network connections.

All the SmartCool products feature a 32 bit microprocessor, offering significant calculation power and operation processing speed.

Also featured is the facility to adjust and display control settings by local operator, for information and control.













**Display / Keypad**

The 4.3" touchscreen Vu™ display provides important unit status and allows page navigation with a swipe. The default screen shows the unit status and room condition (°C/RH %). Further screens offer adjustment to parameters, fine-tuning of setpoints (via a rotating control wheel) and scrollable data tables.

Trends of system information can be analysed and managed via the Vu™ allowing for easy system optimisation.

The operating status of the unit can also be easily be determined "at a glance" with a colour coded LED bar.



	Home		Temperature
	Main Menu		Humidity
	Current Alarms (and no. of alarms)		Setpoint
	Help Screen		Fan
	Unit Status		Cooling
	Network Address		Heating

PGD1

The units shall be supplied with a European ROHS Directive 2002/95/EC compatible microprocessor controller connected to an 8 x 22 back-lit LCD keypad display. LEDs shall not be acceptable.

The microprocessor controller offers powerful analogue and digital control to meet a wide range of monitoring and control features including a real time clock and Industry standard communication port and network connections.

All the boards feature a 16 bit microprocessor, and consequently the calculation power and operation processing speed have been significantly increased.

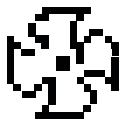
Also featured are a visual alarm and the facility to adjust and display control settings by local operator for information and control.

Display / Keypad

The display keypad features a simple array of keys to navigate through the in built menus.

With an 8 x 22 character (132 x 64 pixel) screen size, back lit in white for improved contrast, the larger screen shall provide for user friendly viewing and easy status recognition by displaying a combination of text and icons.

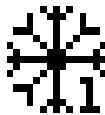
The default screen shall show the unit status and room condition (°C/RH %) without the need for interrogation and an easy to navigate menu structure for further interrogation and adjustment shall be provided.



Fan Operating



De-humidification



Cooling - Variable



Humidification - Variable



Heating - Various Stages  
SN - 2 Stages  
SR - 3 Stages  
SD - 4 Stages

**Controls****Password Protection**

The control system integrity shall be maintained by restricting access with a password PIN number.

**IMPORTANT**

To change the PIN , please contact Airedale at time of order with the preferred 4 digit number.

**Remote On/Off**

Terminals for interlocking shall be provided to enable or disable the unit remotely.

**Fire Shut Down**

Terminals for interlocking shall be provided to shut down the unit in the event of fire.

**Evaporator Fan Hours Run Log & Reset**

Shall allow the user to monitor the running times of the evaporator fans and reset after maintenance.

Hours run log or visual service indicator shall be provided.

**Evaporator Fan Speed Control**

Evaporator fan speed control shall be easily set via the display keypad and can be incrementally increased or decreased to meet on site airflow and external static pressure requirements.

**Filter Change Alarm**

Filter change shall be managed by the software, and shall be based on fan(s) hours run with an alarm being generated when the pre-set run time limit has been exceeded. The set-point value shall be adjusted to suit each application and is factory set to 4000 hours.

**Standard Network Features**

As standard the controller shall be capable of providing a platform for the following and shall be enabled on request for 2 to 8 units, please specify at order:

**Networking**

A Local Area Network (pLAN ) shall be used to connect up to 8 units to offer intercommunication and Run / Standby control. This also allows the connection of computers, printers and modems on the same communications ring.

For further details, please contact Airedale Controls.

**CAUTION ⚠**

When adding to an existing network, please consult Airedale to ensure strategy compatibility.

**Run / Standby Operation**

The controller shall enable units to operate in run/standby mode, with up to 8 units networked together, without the need for additional hardware or controllers. Standby units shall be configured to start when the run unit has a critical alarm.

**Smart Key**

A smart key shall be supplied to offer software back-up of the control strategy. The key shall feature simple plug in operation and allow transfer of software programs from the key to the microprocessor and vice versa. The use of a service laptop shall not be necessary.

**Audible Alarm**

The display keypad shall be upgraded to include audible alerts.

**Water Detector**

Three methods shall be available:

1. A solid state (probe) sensor shall be supplied loose for remote mounting on site.
2. Tape suitable for sensing water droplets shall be supplied loose for remote mounting on site. Standard tape length 10m.
3. Condensate drain tray level detection.

**Fire Detection**

Shall be supplied loose for installation in the return air stream to shut down the unit in the event of an unusually high return air temperature.

**Smoke Detector**

Shall be supplied loose for remote mounting to shut down the unit and activate the alarm upon sensing the presence of smoke.

**Controls****Temperature Control**

A temperature sensor shall be mounted in the return air side of the unit to sense the return dry bulb condition (cooling only variants). A combined temperature and humidity sensor shall be supplied on full function units.

The temperature sensor shall be an NTC type thermistor with an accuracy of not less than  $\pm 5\%$  at  $25^{\circ}\text{C}$  at the sensor.

The microprocessor shall sense the return air conditions and maintain the return air temperature and humidity by controlling cooling, heating, humidification and dehumidification outputs accordingly.

The microprocessor shall monitor and display the following values as a minimum:

- Return Air Temperature
- Return Air Humidity (Optional on Full Function units)
- Fan run hours
- Coil Temperature Sensor (Indoor)

The maintenance of key components such as air filters shall be monitored via a service indicator which visually demonstrates the status relative to the component service intervals.

**Alarm Log**

The controller shall log and allow viewing of not less than the last 100 conditions recorded in descending chronological order through the keypad display.

The standard display keypad shall visually display operating alarms, however, as an optional extra, a display keypad with audible alarms is available.

**Supply Air Temperature Control**

Modulation of unit capacity to ensure that user defined supply air set points shall be maintained and / or a high / low return air temperature alarm.

During peak demand, the standby units shall temperature assist.

**Duty Rotation**

Networked units shall be configured to duty rotate, providing equal hours run of fans.

**BMS Interface Cards**

BMS Interface Card controlled units shall be interfaced with most BMS, factory fitted, please contact Airedale.

A wide range of protocols shall be accommodated through the use of interface devices. Available as a standard option are: ModBus / Jbus, and Carel.

For interfaces such as SNMP, LonWorks, Metasys and BACnet, please contact Airedale.

Also available shall be Airedale's own supervisory plug-in BMS card pCOWEB.

Based on Ethernet TCP/IP secure technology with SNMP features.

It shall require no proprietary cabling or monitoring software and be supplied pre - programmed with an IP address for ease of set up. Cables to the BMS to be supplied by others.

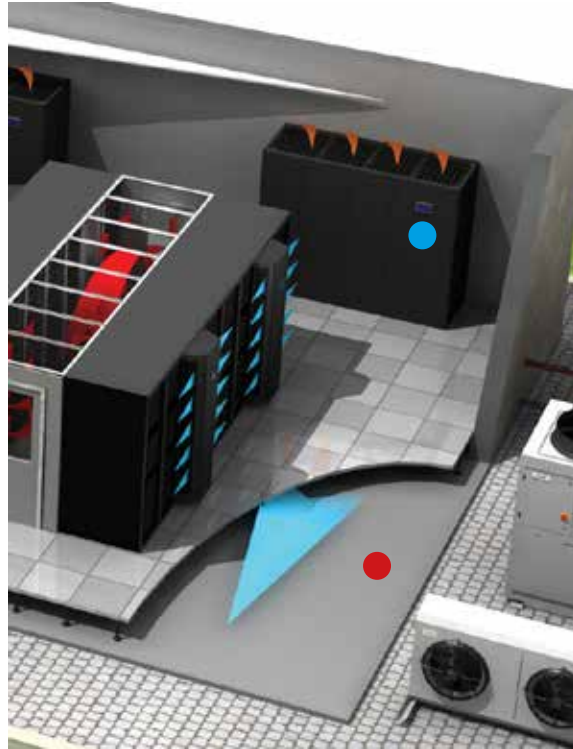


## Controls

### Constant Pressure Control

Constant pressure control is a method of controlling air pressure within a space, such as a floor void or a duct. The air pressure is controlled using a variable speed fan that is modulated to maintain a given set point.

Constant pressure control monitors the air pressure differential between two points. In a typical application (shown below) the pressure under the raised floor (red) is compared to the room pressure (blue).



The two pressure points, positive and negative, are routed back to an air differential pressure sensor inside the CRAC unit. The value from the air pressure sensor is compared to the set point and a fan speed demand is generated, to maintain the required pressure differential.

It is the responsibility of the installer to fit the air pressure sensor(s). The sensor shall be located under the false floor with the 6mm flamtronix tubing routed back into the control panel of the unit (the tubing must not be obstructed / damaged to ensure accurate pressure control).

The constant pressure system shall be commissioned by Airedale following routing of tubing from the pressure diffuser and the unit.

A maximum of 8m/s air velocity is allowed at the diffuser so consideration must be made to its location.

### Constant Air Volume

Constant air volume is a method of automatically adjusting the unit fan speed to deliver a specific air volume.

When faced with a change in system resistance, the fan speed modulates to obtain the air volume set point.

Constant air volume monitors the air pressure differential between two points.

These two pressure points, positive and negative, are routed back to an air differential pressure sensor inside the unit.

## General Features

		Range	System Configuration				
			SN	SR		SD	
				Single	Single	Dual	Single
General	Condensate Pump (Hot or Cold Water)*		○	○	○	○	○
	Condensate Drain Tray Monitoring		○	○	○	○	○
	Straight and “L” Shaped Ceiling Duct Extensions		○	○	○	○	○
	Open Floorstand		○	○	○	○	○
	Front and Rear Floorstands (enclosed)		○	○	○	○	○
	UPS Floorstand		○	○	○	—	—
	Sterling Board LAT (Wooden Case) Packing		○	○	○	○	○

● Standard Features    ○ Optional Features    — Feature Not Available

\*Condensate pump type depends if humidification is selected.

### Open & Enclosed Floorstand

Open or enclosed floor stands shall be available, complete with adjustable feet and floor tile lip. Enclosed floor stands shall incorporate an air turning vane (SN,SR only). The height of the floor stand shall be specified at order.

### Discharge Air Configuration

Standard configuration shall be downflow "draw through" design.

### Straight and L shaped Ceiling Duct Extension

Straight and 'L' shaped duct extensions up to a height of 1350mm shall be constructed and finished to match the unit.

For extensions greater than 1350mm, please contact Airedale.

Height shall be specified at order.

### Sterling Board LAT (Wooden Case) Packing

Units shall be supplied complete with additional LAT corner protection and cross braces to afford extra transit protection.

Sterling board heat treated man made material shall be used (including pallet) to comply with phytosanitary import regulations, please contact Airedale for this option.

Condensate Pumps

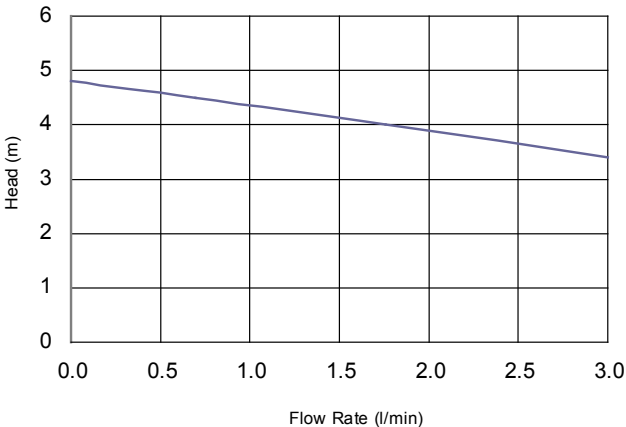
The SmartCool condensate pump shall be either hot water (full function units when a humidifier is fitted) or cold water type (cooling only).

Performance

The following graphs illustrate the TOTAL static (head) pressure available. The system horizontal pipe losses and vertical lift should be factored in when calculating the condensate pump performance.

Cold Water (Cooling only units)

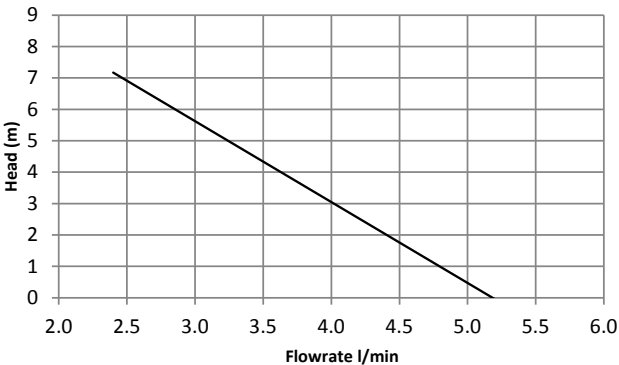
SN, SR Units



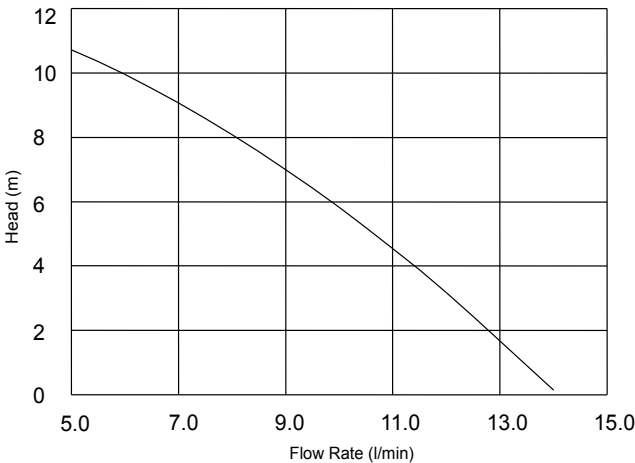
The cold water condensate pump has 10mm quarter turn plastic “barbed” connection.

The discharge line from the pump should rise no more than 4 metres before being interrupted with a swan neck air break and tundish.

SD Units



Hot Water (Full function units, SN,SR,SD type units)



The hot water condensate pump uses 10mm (3/8”) copper tube when connecting to the discharge stub of the pump.

The discharge line from the pump should rise no more than 6 metres vertically and no more than 8 metres in total length before being interrupted with a swan neck air break and tundish.

Condensate Drain Tray Monitoring

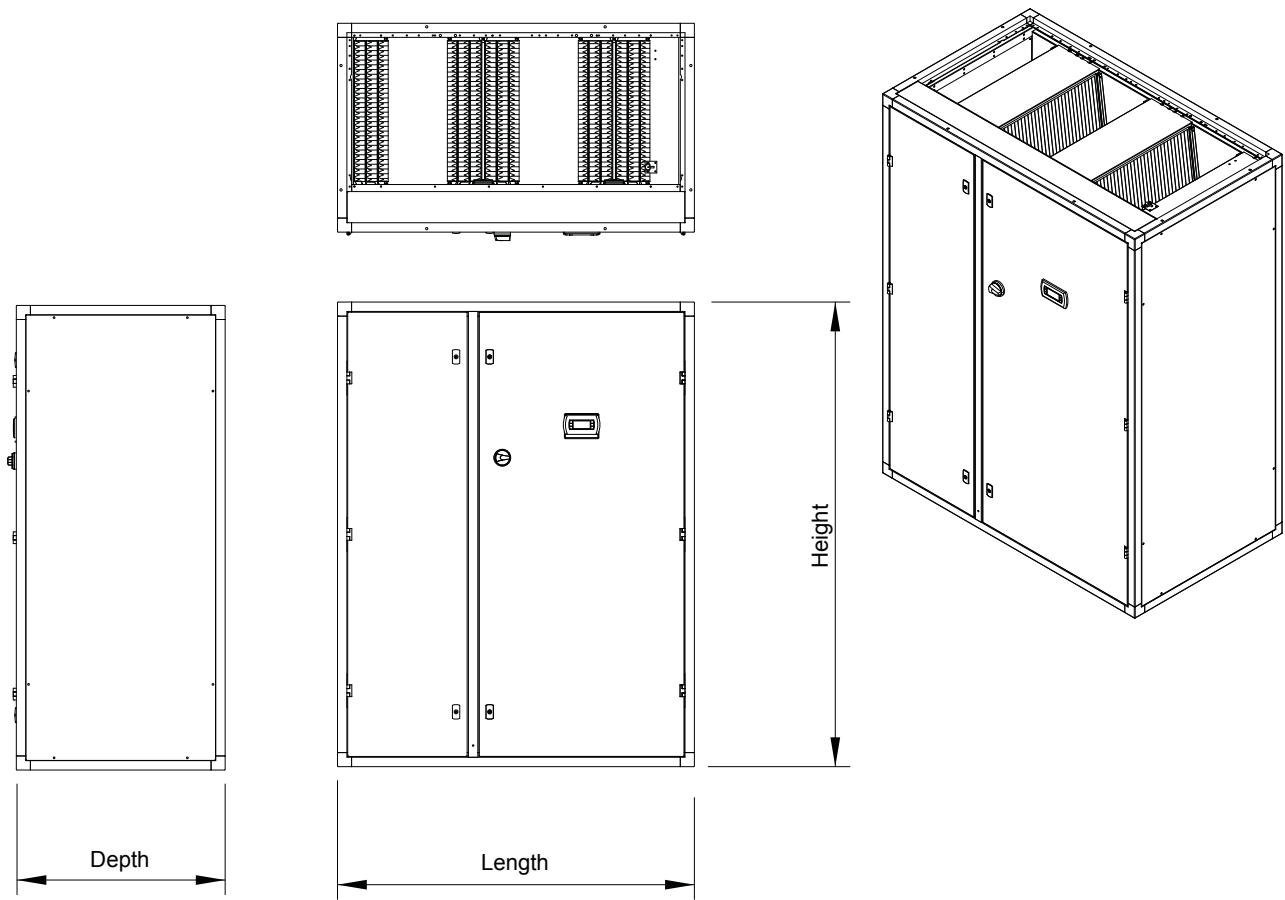
A float level switch shall be incorporated into the unit drain tray for indication of a high water alarm.

Installation Data

Dimensions

SN/SR

Installation



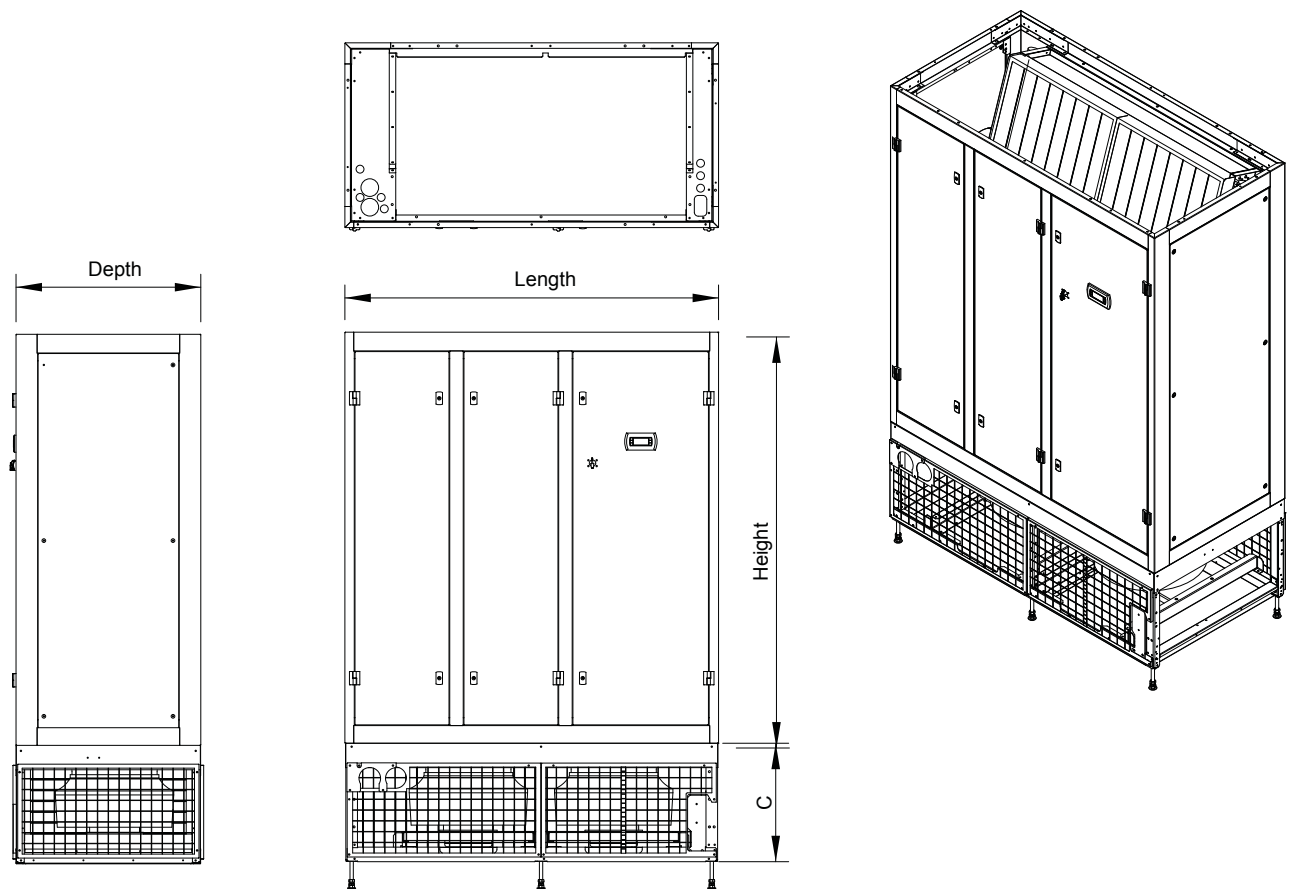
		Length	Height	Depth
SN06D	mm	684	1980	600
SN09D	mm	963	1980	600
SN12D	mm	1242	1980	600
SR09D	mm	963	1980	890
SR12D	mm	1242	1980	890
SR15D	mm	1521	1980	890
SR18D	mm	1800	1980	890

Detail of the doors and return air ducting centres is available from the general arrangement drawings upon request.

Installation Data

Dimensions

SD



Installation

		Length	Height	Depth
SD18D	mm	1800	1980	890
SD22D	mm	2200	1980	890
SD25D	mm	2500	1980	890
SD31D	mm	3100	1980	890
SD35D	mm	3500	1980	890

Detail of the doors and return air ducting centres is available from the general arrangement drawings upon request.

## Installation Data

### Lifting

Whenever a unit is lifted, it should be from the base and, where possible, with all packing and protection in position. If any type of slinging is used, due care should be taken to ensure that the slings do not crush the casework.

### IMPORTANT

If the unit is dropped, it should immediately be checked for damage and reported to Airedale.

### Positioning & Levelling

The unit should be positioned on a stable and even base. With the use of a spirit level the base should be levelled to ensure good condensate removal and prevent door misalignment.

Positioning the unit should be achieved by the use of rollers or skids. Crowbars must not be used as they impose a point load on the unit frame which may cause damage and distortion.

- Check the unit is as ordered. Discrepancies or transit damage should be reported to Airedale immediately.
- This small footprint unit is relatively tall and heavy. Care should be taken during handling and lifting, that the unit is well supported and properly balanced.
- Observe airflow and maintenance clearances
- Check all services are present and accessible

### CAUTION

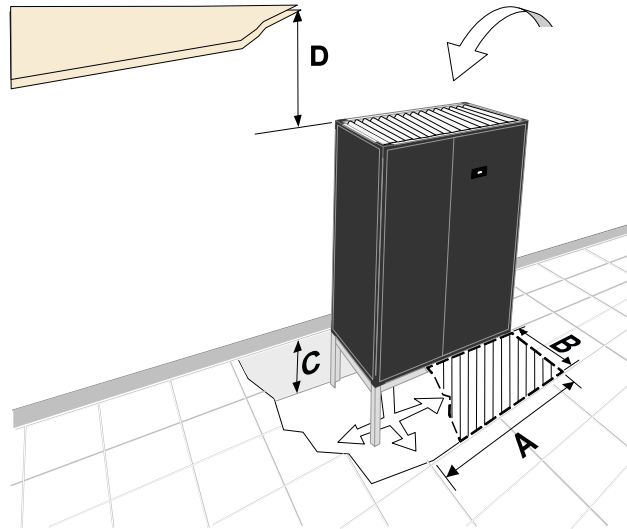
Airedale will accept no responsibility for mishandling during the positioning of the equipment.

### Unpacking

The unit is to be carefully unpacked. Inspected and any damage reported to Airedale immediately.



All packaging is to be recycled accordingly.

**Positioning**
**Minimum Unit Clearance SN, SR**  
**Open and Enclosed Floorstand Option**

		A	B	C - Floorstand <sup>(3)</sup>
SN06D	mm	684	600	Min 350 – Max 750 (+ 50mm Feet Adjustable +/-20mm) <sup>(4)</sup>
SN09D / SR09D	mm	963	880	
SN12D / SR12D	mm	1242	880	
SR15D	mm	1521	880	
SR18D	mm	1800	880	

		Minimum Ceiling Clearance- (D)			
		Forward Only	Forward and 1 Side	Forward and 2 Sides	All Faces
SN06D	mm	720	500	380	250
SN09D / SR09D	mm	720	500	380	250
SN12D / SR12D	mm	720	500	380	250
SR15D	mm	740	550	440	280
SR18D	mm	750	590	480	300

(1) Shown with optional open floor stand.

(2) Shaded area indicates minimum service and maintenance requirements. The unit must be installed with allowance for carpet tile clearance.

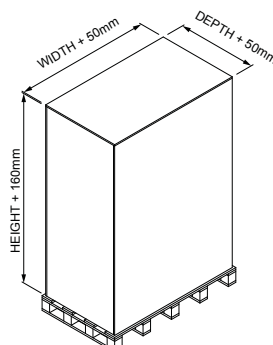
(3) Dimension C denotes recommended minimum/maximum floor stand height, refer to Airedale for special applications, please specify at order.

(4) Min = Threaded foot at minimum extension (additional to "C" dimension).

Max = Threaded foot at maximum extension (additional to "C" dimension).

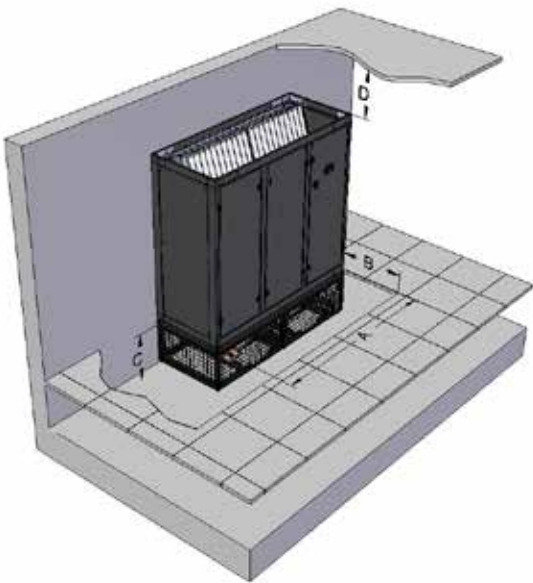
**Packed Dimensions**

For specific markets units shall be shipped, mounted on wooden pallet and covered with polythene. The pallet shall be mechanically fixed to the unit for transportation only (Please contact Airedale for this option). Add 50mm to length and width and 160mm to height.



Positioning

Installation



Minimum Unit Clearance SD  
Open and Enclosed Floorstand Option

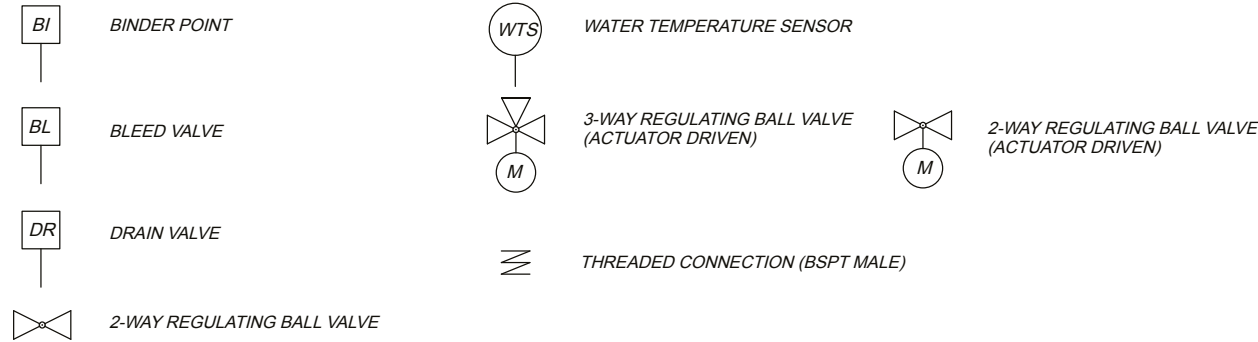
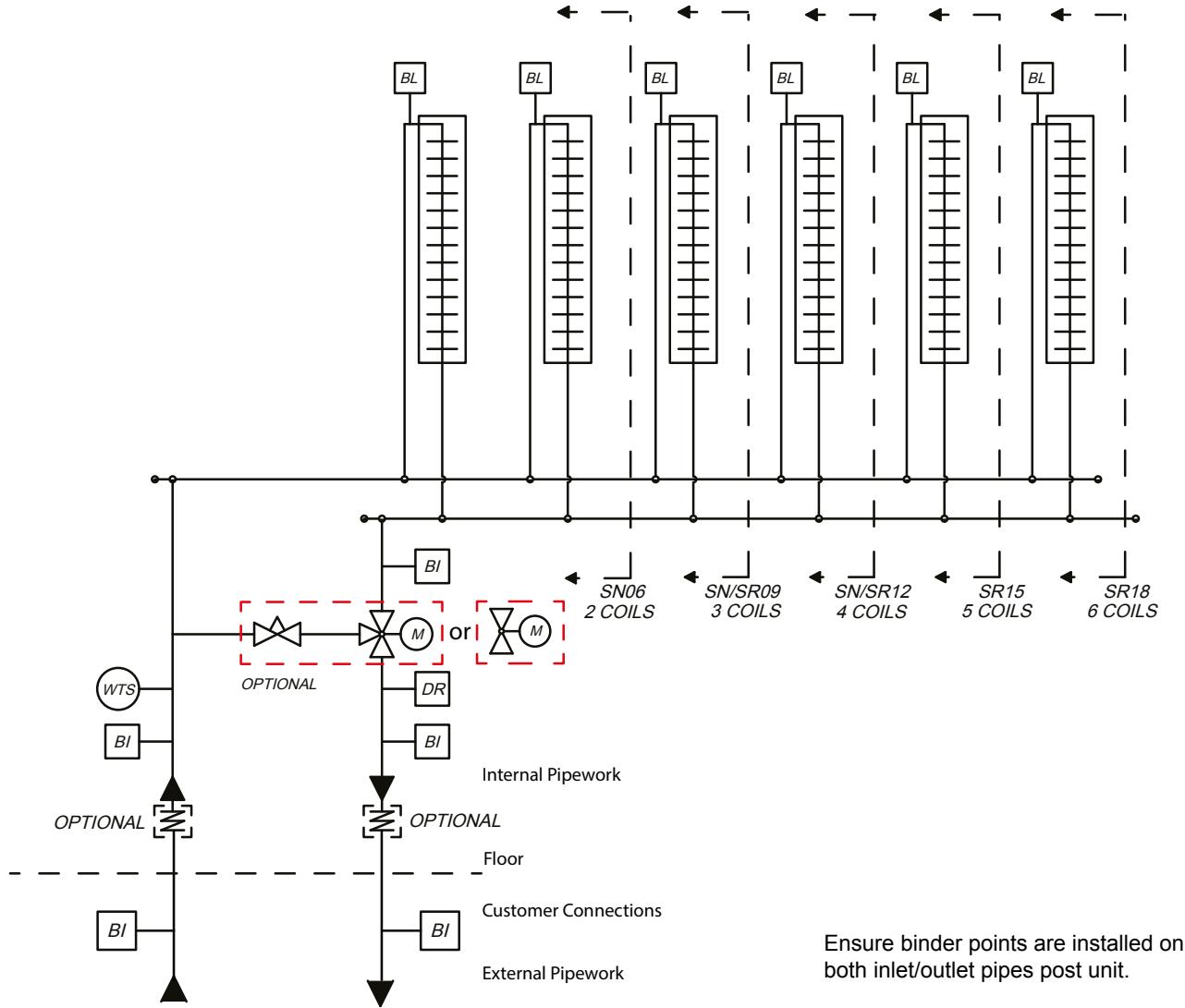
		A	B	C - Floorstand <sup>(3)</sup>
SD18D	mm	1800	880	Min 600 – Max 750
SD22D	mm	2200	880	
SD25D	mm	2500	880	
SD31D	mm	3100	880	
SD35D	mm	3500	880	

		Minimum Ceiling Clearance- (D)			
		Forward Only	Forward and 1 Side	Forward and 2 Sides	All Faces
SD18D	mm	720	500	380	250
SD22D	mm	720	500	380	250
SD25D	mm	720	500	380	250
SD31D	mm	740	550	440	280
SD35D	mm	750	590	480	300

(1) Shown with standard open floor stand.  
(2) Shaded area indicates minimum service and maintenance requirements. The unit must be installed with allowance for carpet tile clearance.  
(3) Dimension C denotes recommended minimum/maximum floor stand height, refer to Airedale for special applications, please specify at order.

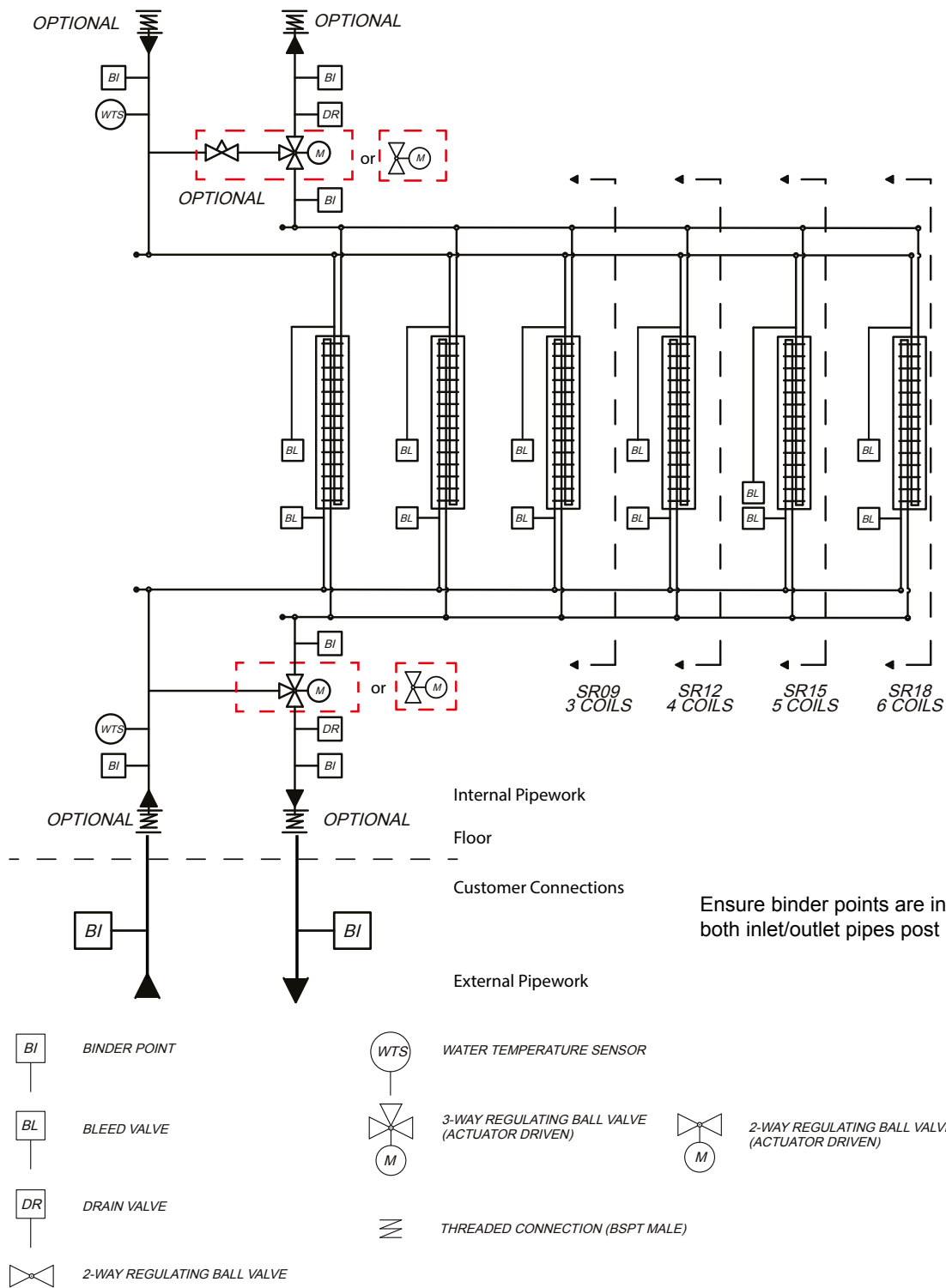


Pipework Schematics  
SN/SR Single Circuit

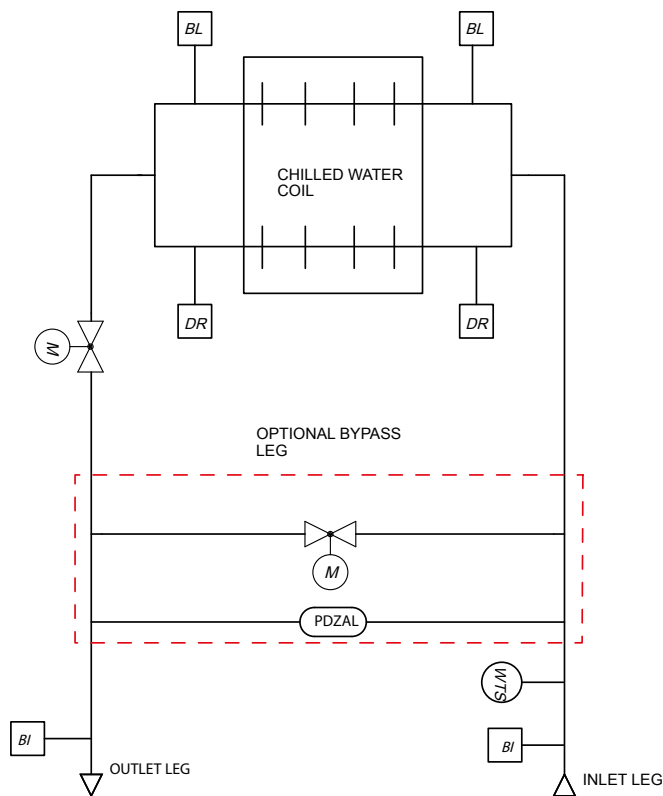


Pipework Schematics  
SR Dual Circuit

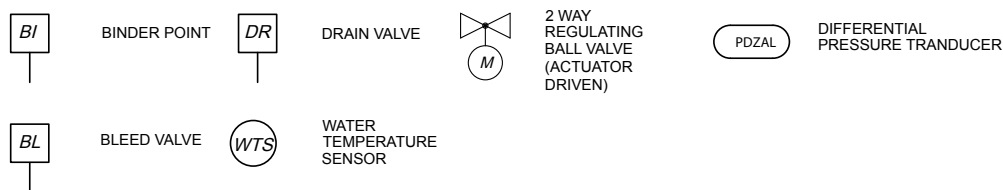
Installation



Pipework Schematics  
SD Single Circuit

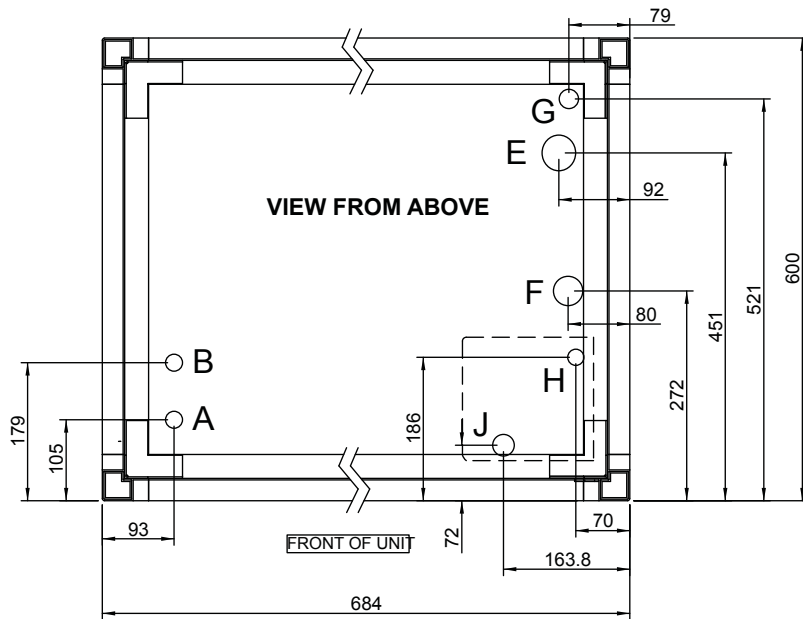


SD Dual Circuit  
Dual circuit units have two single circuits duplicated.



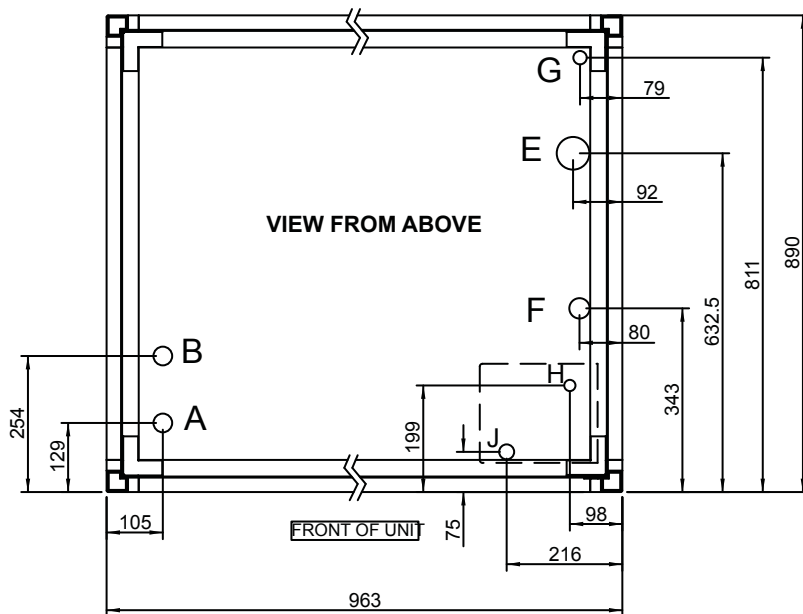
## Incoming Services

### SN Single Circuit



- A DIA 22mm WATER INLET
- B DIA 22mm WATER OUTLET
- E POWER (CONNECT VIA EXTERNAL CONNECTION BOX)
- F CONTROLS (CONNECT VIA CONNECTORS)
- G CONDENSATE DRAIN (TEE TO HUMIDIFIER DRAIN - IF USED)
- H HUMIDIFIER DRAIN (TEE TO CONDENSATE DRAIN)
- J HUMIDIFIER FILL

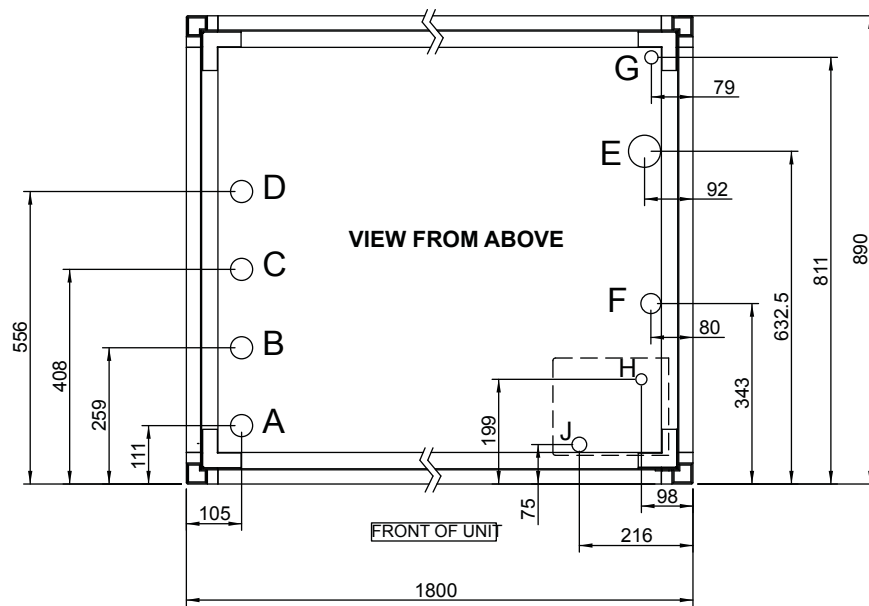
### SR Single Circuit



- A DIA 35mm WATER INLET
- B DIA 35mm WATER OUTLET
- E POWER (CONNECT VIA EXTERNAL CONNECTION BOX)
- F CONTROLS (CONNECT VIA CONNECTORS)
- G CONDENSATE DRAIN (TEE TO HUMIDIFIER DRAIN - IF USED)
- H HUMIDIFIER DRAIN (TEE TO CONDENSATE DRAIN)
- J HUMIDIFIER FILL

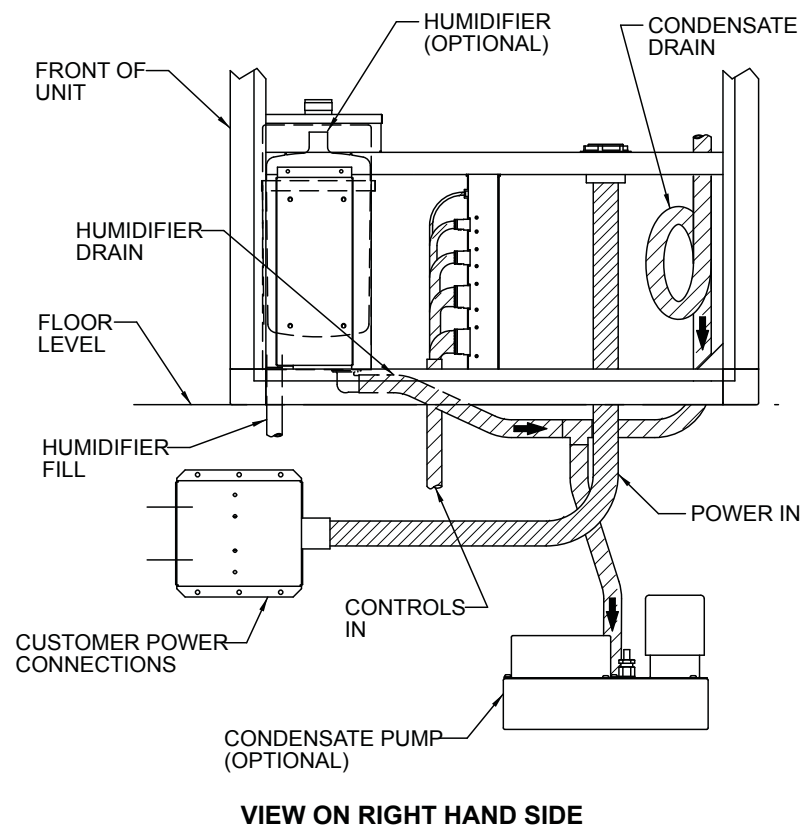
## Incoming Services

### SR Dual Circuit



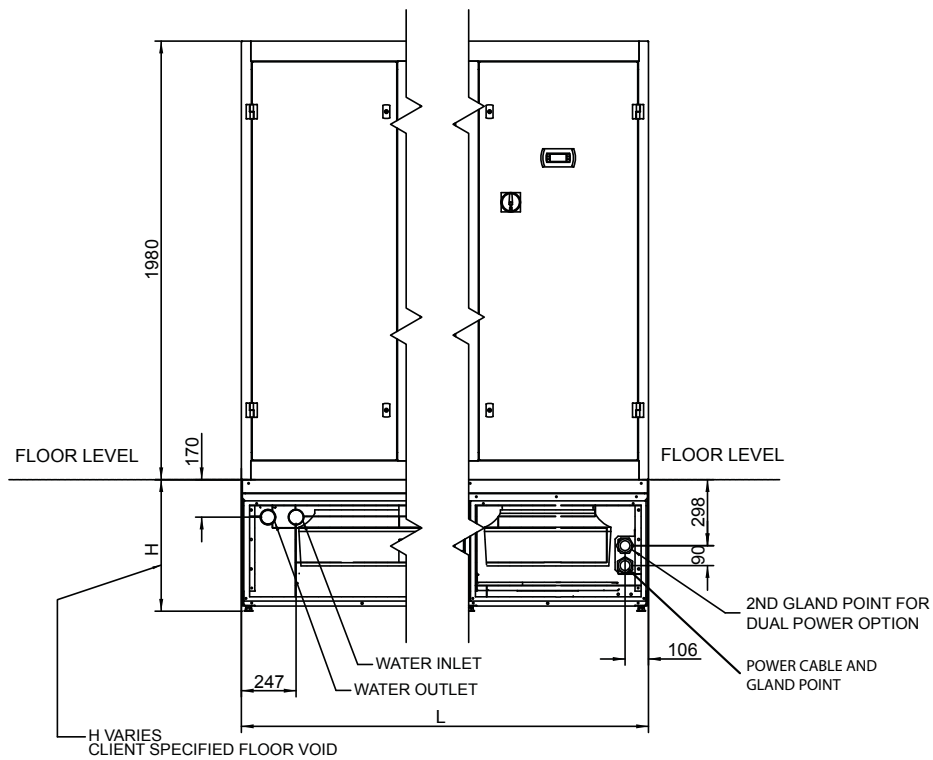
- A DIA 42mm CIRCUIT 1 WATER INLET
- B DIA 42mm CIRCUIT 1 WATER OUTLET
- C DIA 42mm CIRCUIT 2 WATER INLET
- D DIA 42mm CIRCUIT 2 WATER OUTLET
- E POWER (CONNECT VIA EXTERNAL CONNECTION BOX)
- F CONTROLS (CONNECT VIA CONNECTORS)
- G CONDENSATE DRAIN (TEE TO HUMIDIFIER DRAIN - IF USED)
- H HUMIDIFIER DRAIN (TEE TO CONDENSATE DRAIN)
- J HUMIDIFIER FILL

## SN, SR Electrical Power Connections

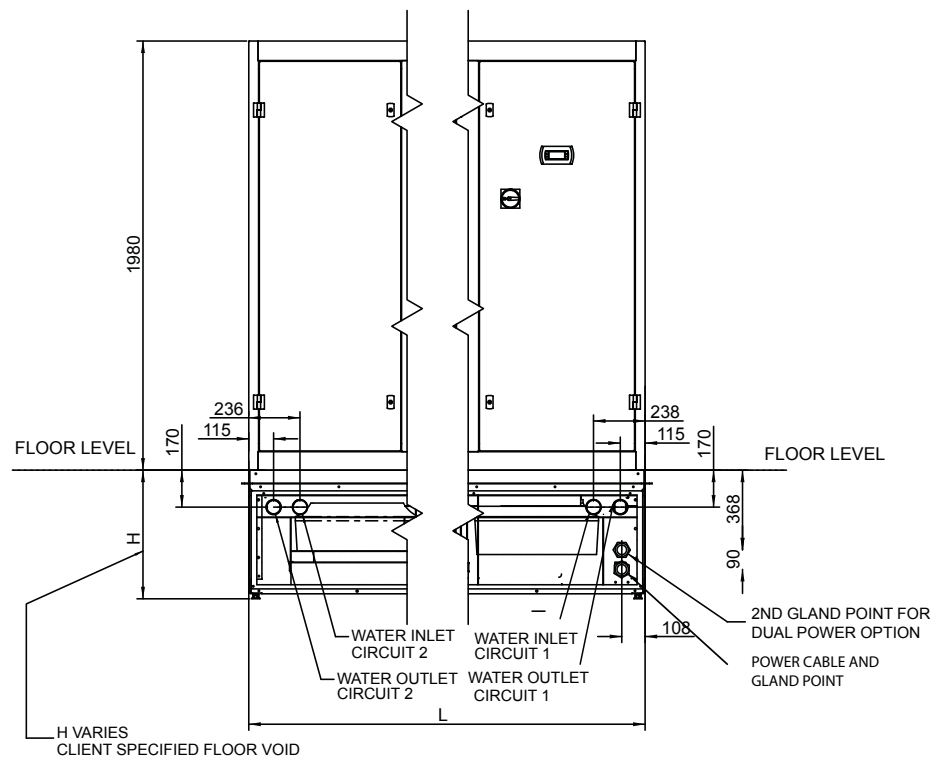


**Incoming Services**  
**SD Single Circuit**

# Installation



## SD Dual Circuit



**Glycol****Specific Heat Capacity ( $C_p$ ) (kJ/kg K)**

Water/Glycol Temperature °C	Ethylene Glycol (Volume) / Freezing Point °C				
	0% / 0°C	10% / -4°C	20% / -9°C	30% / -15°C	40% / -23°C
	$C_p$	$C_p$	$C_p$	$C_p$	$C_p$
20	4.183	3.972	3.815	3.645	3.468
25	4.181	3.981	3.826	3.660	3.485
30	4.179	3.989	3.838	3.674	3.502
35	4.178	3.998	3.849	3.688	3.518
40	4.179	4.007	3.861	3.702	3.535
45	4.181	4.015	3.872	3.716	3.552

**Density ( $\rho$ ) (kg/m³)**

Water/Glycol Temperature °C	Ethylene Glycol (Volume) / Freezing Point °C				
	0% / 0°C	10% / -4°C	20% / -9°C	30% / -15°C	40% / -23°C
	$\rho$	$\rho$	$\rho$	$\rho$	$\rho$
20	998	1013	1030	1045	1060
25	997	1012	1028	1043	1058
30	996	1010	1026	1041	1055
35	994	1008	1024	1039	1053
40	992	1006	1022	1036	1050
45	990	1003	1020	1035	1048

**Pressure Drop Correction Factor ( $P_x$ )**

Water/Glycol Temperature °C	Ethylene Glycol (Volume)				
	0%	10%	20%	30%	40%
	$P_x$	$P_x$	$P_x$	$P_x$	$P_x$
20	0.983	1.0125	1.054	1.0958	1.15

(1) All data based upon ASHRAE fundamentals 2001.

### Water Detection Tape Installation

Monitored by a sensing relay, the water detection tape will provide an alarm when in contact with several drops of conductive liquid. High humidity should normally not cause an alarm unless it results in condensation dripping on the tape surface or condensation present on the surface to which the tape is applied.

The recommended installation process is as follows:

- When applying to a surface such as concrete, the most popular method is to press the tape firmly onto a continuous film of approved adhesive or glue. When properly glued to the floor the tape lies flat on the floor avoiding “bridging” (where the detector lifts off the floor allowing water to run under the detector without detection) and avoids damage to the detector
- When applying the tape directly to the piping, the tape is simply strapped to the pipe
- Care should be taken to prevent the wire detectors in the tape from coming into contact with any electrically conductive material causing a “fault” condition. Anything used in applying the tape which interferes with the capability of the fleece substrate may adversely affect the detector’s function
- The tape should not be installed under piping or equipment that can condense liquid as the condensation could drip on the tape causing an alarm
- The tape should not be installed directly under an air handling unit, but around the unit
- In the sub-floor of a computer room the tape should be installed after the raised floor, conduit and piping are installed and the sub-floor cleaned and sealed

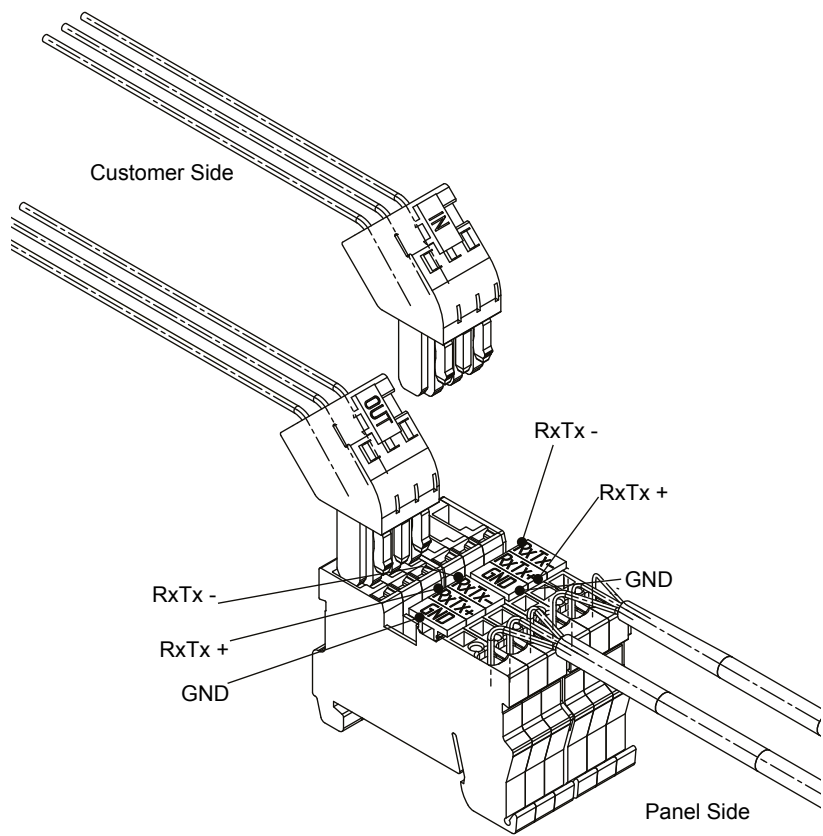
<b>IMPORTANT</b> ▲	Any adhesive which alters the chemical composition of the tape must be avoided and any use thereof voids any warranty, expressed or implied. <b>3M Scotch-Weld™ 77 adhesive</b> is strongly recommended to ensure the warranty will be maintained. When adhesive is used, adhesive with an oily or greasy base <b>MUST</b> be avoided as this will affect the tape’s ability to detect moisture. When the use of an adhesive is not desirable or practical, staples, clips or other devices may be used. When applying the tape to piping a combination of glue and plastic or nylon straps or wire ties may be used. The straps or ties help to cut down installation time and secures the tape to the pipe while the adhesive cures and dries.
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<b>CAUTION</b> ▲	Any electrically conductive attachment devices used must not touch the wires that are within the tape fabric. The maximum length of a detector loop, including wire and detector tape is 50 metres. However, this tape length is not practical for most applications. Where the tape is concealed or not easily accessible, tape runs should be limited to no more than 30 metres, and 10 to 15 metres per zone is generally used. If the water detector tape is to be attached to or covered by a metallic or conductive surface, care should be taken not to short the conductors. When installing tape to any surface, be careful not to short circuit or ground out the conductors (such as over/under conduit or sharp edges of cable trays etc.). This also applies to any covering which may be applied over the tape. Before installing the tape, be sure to inspect areas where the tape is to be applied for presence of chemical materials that could create problems. If in doubt, it is recommended to clean the floor with a mild detergent.
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For further information, please refer to Airedale’s Technical Bulletin and Loose Part Instruction Manual.



pLAN Termination



<b>CAUTION</b> ⚠	The plugged termination ensures that the connections are made simultaneously. Failure to attached the cables this way may cause damage to the controller.
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Technical

SN

C000

## Technical Data SN C000 Units

## Mechanical and Electrical Data

			SN06D010-C000	SN06D015-C000	SN09D020-C000	SN09D025-C000	SN12D030-C000	SN12D035-C000
Technical	<b>Mechanical</b>							
	<b>Capacity</b>							
	Nom Cooling (Gross)	(1) kW	12.8	16.8	21.7	26.9	31.3	36.3
	Fan Power Input (Fan Gain)	(2) kW	0.25	0.62	0.65	1.32	0.99	1.75
	<b>Dimensions</b> -D(600) x H(1980)							
	Width	mm	684		963		1242	
	Weight - Machine	(3) kg	181	181	242	242	294	294
	- Operating	kg	194	194	262	262	319	319
	<b>Cooling Coil</b>							
	Water volume	l	13	13	19	19	25	25
SN	Water flow rate	l/s	0.61	0.8	1.03	1.28	1.49	1.73
	Pressure drop	kPa	18.7	31.8	23.2	35.4	24.8	32.9
	<b>Fan &amp; Motor</b>							
	Quantity x Motor Size	(4) kW	1 x 0.78	1 x 0.78	1 x 2.5	1 x 2.5	1 x 2.4	1 x 2.4
	Speed @25Pa ESP	rpm	1954	2590	2120	2474	1985	2361
	Speed @maximum ESP	rpm	2680	2680	2970	2970	2400	2400
	Maximum ESP	Pa	552	87	1126	618	589	85
	Nominal Airflow	m³/s	0.70	0.95	1.20	1.55	1.75	2.10
	<b>Connections</b>							
	Water Inlet / Outlet	mm	22.0	22.0	28.0	28.0	35.0	35.0
C000	<b>Filtration</b>							
	Quantity		6	6	9	9	12	12
	<b>Electric Heating</b>							
	Rating	kW	3.0	3.0	6.0	6.0	6.0	6.0
	Stage of Reheat		1	1	2	2	2	2
	<b>Humidifier</b>							
	Capacity	kg/hr	3	3	8	8	8	8
	<b>Electrical</b>							
	<b>Unit Data - Full Function</b>		(5)					
	Nominal Run Amps	A	10.3	10.3	22.4	22.4	22.3	22.3
	Recommended Mains Fuse Size	A	16	16	32	32	32	32
	<b>Unit Data - Cooling Only</b>							
	Nominal Run Amps	A	2.55	2.55	5	5	4.9	4.9
	Recommended Mains Fuse Size	A	10	10	10	10	10	10
	Max Mains Incoming Cable Size	mm²	16	16	16	16	16	16
	<b>Fan and motor</b>							
	Full Load Amps	A	1.6	1.6	4	4	3.9	3.9
	<b>Electric Heat</b>							
	Current Per Phase	A	4.4	4.4	8.7	8.7	8.7	8.7
	<b>Humidifier</b>							
	Rating	kW	2.25	2.25	6	6	6	6
	Full Load Amps	A	3.3	3.3	8.7	8.7	8.7	8.7

(1) Entering air 24°C /45% RH water 7°C/ 12°C.

(2) Fan Gain / Fan power input based upon fan operating with design airflow at 25Pa ESP, these values may change with different ESP.

(3) Machine weight excludes water charge.

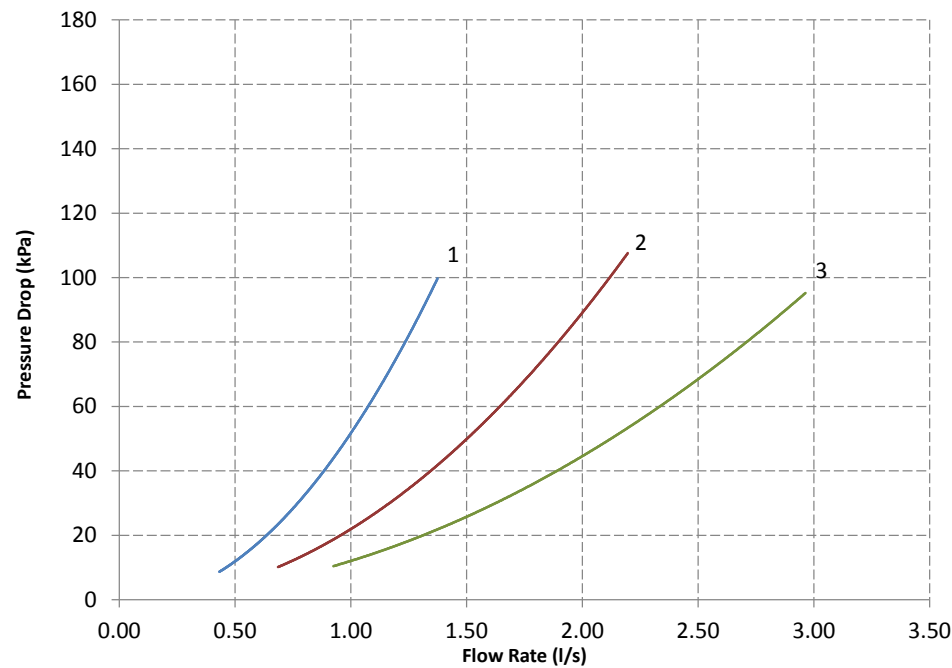
(4) Backward curved EC fan options quote electrical power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other fans are available, please contact Airedale.

Technical Data SN C000 Units

Waterside Pressure Drop Data



- 1 SN06D010-C000 / SN06D015-C000
  - 2 SN09D020-C000 / SN09D025-C000
  - 3 SN12D030-C000 / SN12D035-C000
- Includes coil, 2 or 3 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left(\frac{Q}{M}\right)^2$   
where  $\Delta P$  = Pressure Drop in kPa,  
Q = Water Flow Rate in l/s and  $M = \left(\frac{Kv}{36}\right)$

- Fluid 100% water.

	Valve Kv	M
SN06 C000	10.0	0.28
SN09 C000	16.0	0.44
SN12 C000	25.0	0.69

**Measurement of Sound Data**

All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1: 2009.

All Sound Power Levels quoted are calculated from measured sound intensity according to BS EN ISO9614 Part 1: 2009.

**Semi Hemispherical**

Sound Pressure Levels are calculated from sound power using the semi-hemispherical method where the noise source is in junction with 2 boundaries i.e. the floor and 1 wall.

**Free Field**

For comparison, the semi hemispherical figures can typically be reduced by 6dB to provide free field conditions.

**IMPORTANT**

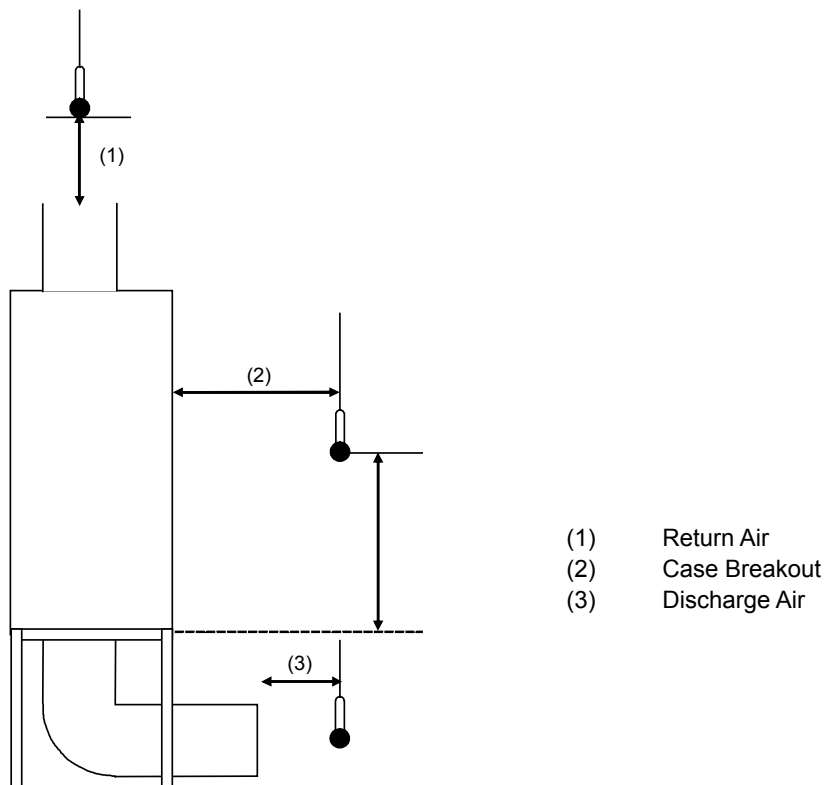
The sound data quoted is based on the unit having a ducted return air and standard backwards curved EC motors fitted, refer to illustration below.

Case breakout sound data is therefore independent of the discharge air and return air sound data.

For non-ducted return air applications, the overall case breakout sound levels may increase, due to the return air sound being predominant.

Within the conditioned space, sound from in-room ducted discharge air grilles and other equipment will contribute to the overall sound level and should therefore be considered as part of sound calculations.

Specialist acoustic advice is recommended for noise critical applications.



**Technical Data****Sound Data**

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SN06D010-C000	Discharge Air	70	64	66	71	69	64	58	51	27
	Return Air	68	64	66	69	68	63	58	50	26
	Case Breakout	70	68	71	72	69	64	58	51	30
	Sound Pressure @ 3m	56	53	57	58	54	50	44	37	15
SN06D015-C000	Discharge Air	81	75	76	81	80	75	69	62	38
	Return Air	79	75	76	79	79	73	68	61	37
	Case Breakout	81	79	82	83	80	75	69	62	41
	Sound Pressure @ 3m	66	64	67	68	65	61	54	48	26
SN09D020-C000	Discharge Air	69	68	70	74	69	60	57	51	34
	Return Air	68	68	70	72	68	58	56	50	34
	Case Breakout	70	72	75	76	68	60	56	52	37
	Sound Pressure @ 3m	56	57	61	61	54	45	42	37	23
SN09D025-C000	Discharge Air	76	73	72	82	75	67	63	57	40
	Return Air	75	73	72	80	74	65	62	56	39
	Case Breakout	77	77	77	83	74	67	63	57	43
	Sound Pressure @ 3m	62	62	63	69	60	52	48	43	29
SN12D030-C000	Discharge Air	69	65	72	73	67	60	57	56	37
	Return Air	68	65	72	71	66	58	56	55	36
	Case Breakout	70	69	78	75	67	60	57	57	40
	Sound Pressure @ 3m	55	55	63	60	52	45	42	42	26
SN12D035-C000	Discharge Air	73	64	74	78	71	64	62	58	44
	Return Air	72	64	73	76	70	62	61	57	43
	Case Breakout	74	68	79	79	71	64	61	58	47
	Sound Pressure @ 3m	59	53	64	65	56	49	47	44	32

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

Technical

SN

C000

## Technical Data SN C000 Units

## Interconnecting Wiring

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
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502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

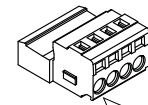
609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	←	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

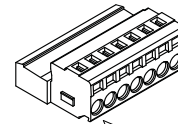
CONN17



PIN 1

Pin No.	Wire
1	502
2	583 or 584
3	2
4	N or 3

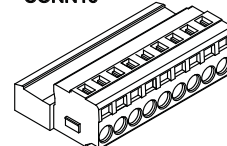
CONN14



PIN 1

Pin No.	Wire
1	502
2	522
3	560
4	561
5	563
6	564
7	565

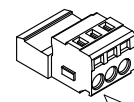
CONN16



PIN 1

Pin No.	Wire
1	2
2	N or 3
3	PE
4	534
5	535
6	609
7	610
8	810
9	811

CONN15



PIN 1

Pin No.	Wire
1	881
2	882
3	883

Conn 17

Conn 14

Conn 16

Conn 14

Conn 15

Technical

SN

C000

## Technical Data SR C000 Units

## Mechanical and Electrical Data

			SR09D030-C000	SR09D040-C000	SR12D045-C000	SR12D055-C000	SR15D065-C000	SR15D075-C000	SR18D080-C000	SR18D095-C000
<b>Mechanical</b>										
<b>Capacity</b>										
Nom Cooling (Gross)	(1)	kW	34.7	42.3	50.3	60.1	70.0	76.3	84.6	98.3
Fan Power Input (Fan Gain)	(2)	kW	0.8	1.45	1.25	2.34	2.12	2.79	2.22	3.8
<b>Dimensions -D(600) x H(1980)</b>										
Width		mm	963		1242		1521		1800	
Weight - Machine	(3)	kg	307	307	380	380	461	461	528	528
- Operating		kg	337	337	420	420	512	512	593	593
<b>Cooling Coil</b>										
Water volume		l	30	30	40	40	51	51	65	65
Water flow rate		l/s	1.65	2.01	2.4	2.86	3.33	3.63	4.03	4.68
Pressure drop		kPa	25.9	37.4	30.8	41.9	46.8	54.4	35.3	46.3
<b>Fan &amp; Motor</b>										
Quantity x Motor Size	(4)	kW	1 x 1.96	1 x 1.96	1 x 2.9	1 x 2.9	2 x 1.96	2 x 1.96	2 x 2.9	2 x 2.9
Speed @25Pa ESP		rpm	1174	1440	1313	1592	1276	1400	1227	1455
Speed @maximum ESP		rpm	1560	1560	1660	1660	1560	1560	1660	1660
Maximum ESP		Pa	463	202	508	129	354	227	557	325
Nominal Airflow		m³/s	1.85	2.30	2.70	3.30	3.80	4.20	4.60	5.50
<b>Connections</b>										
Water Inlet / Outlet		mm	35.0	35.0	42.0	42.0	42.0	42.0	54	54
<b>Filtration</b>										
Quantity			9	9	12	12	15	15	18	18
<b>Electric Heating</b>										
Rating		kW	7.5	7.5	15	15	15	15	22.5	22.5
Stage of Reheat			1	1	2	2	2	2	3	3
<b>Humidifier</b>										
Capacity		kg/hr	8	8	8	8	15	15	15	15
<b>Electrical</b>										
Unit Data - Full Function	(5)									
Nominal Run Amps		A	26.4	26.4	35.8	35.8	50.6	50.6	58.7	58.7
Recommended Mains Fuse Size		A	32	32	50	50	63	63	80	80
<b>Unit Data - Cooling Only</b>										
Nominal Run Amps		A	4	4	5.43	5.43	7	7	9.86	9.86
Recommended Mains Fuse Size		A	10	10	10	10	10	10	16	16
Max Mains Incoming Cable Size		mm²	16	16	35	35	35	35	70	70
<b>Fan and motor</b>										
Full Load Amps		A	3	3	4.5	4.5	3	3	4.5	4.5
<b>Electric heat</b>										
Current Per Phase		A	10.9	10.9	21.7	21.7	21.7	21.7	32.5	32.5
<b>Humidifier</b>										
Rating		kW	6	6	6	6	11.25	11.25	11.25	11.25
Full Load Amps		A	8.7	8.7	8.7	8.7	16.3	16.3	16.3	16.3

(1) Entering air 24°C /45% RH water 7°C/ 12°C.

(2) Fan Gain / Fan power input based upon fan operating with design airflow at 25Pa ESP, these values may change with different ESP.

(3) Machine weight excludes water charge.

(4) Backward curved EC fan options quote electrical power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other fans are available, please contact Airedale.

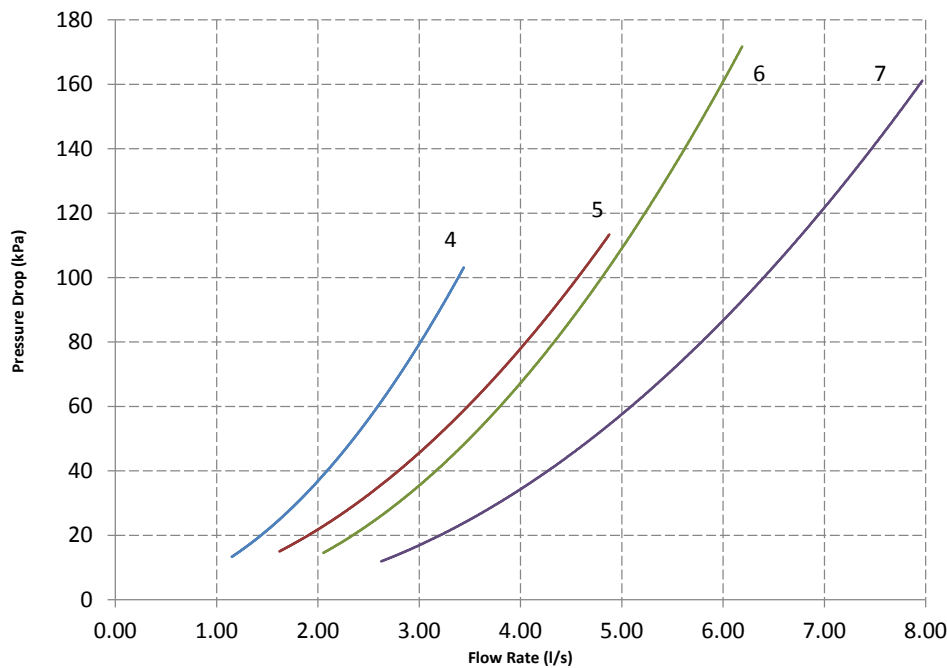
Technical

SR

C000

Technical Data SR C000 Units

Waterside Pressure Drop Data



- 4 SR09D030-C000 / SR09D040-C000
- 5 SR12D045-C000 / SR09D055-C000
- 6 SR15D065-C000 / SR15D075-C000
- 7 SR18D080-C000 / SR18D095-C000

Includes coil, 2 or 3 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$

where

$\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{K_v}{36} \right)$

Fluid 100% water.

	Valve Kv	M
SR09 C000	25.0	0.69
SR12 C000	40.0	1.11
SR15 C000	40.0	1.11
SR18 C000	63.0	1.75

Technical

SR

C000



## Technical Data SR C000 Units

### Sound Data

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SR09D030-C000	Discharge Air	74	73	71	72	73	71	65	56	26
	Return Air	73	73	71	71	71	69	64	55	25
	Case Breakout	75	76	76	74	72	71	64	56	29
	Sound Pressure @ 3m	60	62	62	60	58	56	50	42	14
SR09D040-C000	Discharge Air	80	78	77	78	78	76	70	61	31
	Return Air	78	78	77	76	77	74	69	60	31
	Case Breakout	80	82	82	80	78	76	70	62	34
	Sound Pressure @ 3m	65	67	67	65	63	62	55	47	20
SR12D045-C000	Discharge Air	76	73	76	75	74	73	67	61	37
	Return Air	75	73	76	73	73	71	66	60	36
	Case Breakout	77	76	81	77	74	73	66	61	40
	Sound Pressure @ 3m	62	62	67	62	59	58	52	47	25
SR12D055-C000	Discharge Air	82	78	81	80	79	79	73	67	43
	Return Air	81	78	81	79	78	77	72	66	42
	Case Breakout	82	82	87	82	79	79	72	67	46
	Sound Pressure @ 3m	68	67	72	68	64	64	58	53	31
SR15D065-C000	Discharge Air	79	78	76	77	78	76	70	61	31
	Return Air	78	78	76	76	77	74	69	60	30
	Case Breakout	80	81	82	79	77	76	69	61	34
	Sound Pressure @ 3m	65	67	67	65	63	61	55	47	19
SR15D075-C000	Discharge Air	82	80	79	80	80	78	72	63	34
	Return Air	81	80	79	78	79	77	72	62	33
	Case Breakout	82	84	84	82	80	78	72	64	37
	Sound Pressure @ 3m	68	69	70	67	65	64	57	49	22
SR18D080-C000	Discharge Air	78	74	77	76	75	74	68	62	38
	Return Air	76	74	77	74	74	72	67	61	37
	Case Breakout	78	78	82	78	75	74	68	62	41
	Sound Pressure @ 3m	64	63	68	64	60	60	53	48	27
SR18D095-C000	Discharge Air	82	78	82	81	80	79	73	67	43
	Return Air	81	79	82	79	79	77	72	66	42
	Case Breakout	83	82	87	83	79	79	72	67	46
	Sound Pressure @ 3m	68	68	72	68	65	64	58	53	31

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

Technical

SR

C000

## Technical Data SR C000 Units

## Interconnecting Wiring

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
----	---	---	------------------

502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

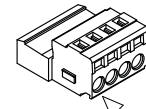
609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

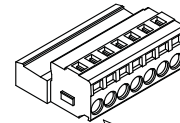
CONN17



PIN 1

Pin No.	Wire
1	502
2	583 or 584
3	2
4	N or 3

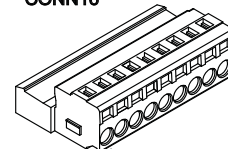
CONN14



PIN 1

Pin No.	Wire
1	502
2	522
3	560
4	561
5	563
6	564
7	565

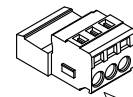
CONN16



PIN 1

Pin No.	Wire
1	2
2	N or 3
3	PE
4	534
5	535
6	609
7	610
8	810
9	811

CONN15



PIN 1

Pin No.	Wire
1	881
2	882
3	883

Conn 17

Conn 14

Conn 16

Conn 14

Conn 15

Technical

SR

C000

## Technical Data SR C0C0 Units

## Mechanical and Electrical Data

			SR09D020-C0C0	SR09D025-C0C0	SR12D030-C0C0	SR12D035-C0C0	SR15D040-C0C0	SR15D045-C0C0	SR18D050-C0C0	SR18D060-C0C0
<b>Mechanical</b>										
<b>Capacity</b>										
Nom Cooling (Gross)	(1)	kW	25.3	30.5	36.5	43.1	50.5	54.7	61.0	70.1
Fan Power Input (Fan Gain)	(2)	kW	0.81	1.47	1.26	2.36	2.15	2.82	2.25	3.86
<b>Dimensions - D(600) x H(1980)</b>										
Width		mm	963		1242		1521		1800	
Weight - Machine	(3)	kg	320	320	380	380	464	464	540	540
- Operating		kg	351	351	424	424	518	518	609	609
<b>Cooling Coil</b>										
Water volume		l	16	16	22	22	27	27	35	35
Water flow rate		l/s	1.2	1.45	1.74	2.05	2.4	2.6	2.9	3.34
Pressure drop		kPa	18.7	26.6	21.5	29.0	30.5	35.3	26.2	33.1
<b>Fan &amp; Motor</b>										
Quantity x Motor Size	(4)	kW	1 x 1.96	1 x 1.96	1 x 2.9	1 x 2.9	2 x 1.96	2 x 1.96	2 x 2.9	2 x 2.9
Speed @25Pa ESP		rpm	1178	1444	1316	1595	1281	1404	1231	1460
Speed @maximum ESP		rpm	1560	1560	1660	1660	1560	1560	1660	1660
Maximum ESP		Pa	459	197	504	124	349	221	551	318
Nominal Airflow		m³/s	1.85	2.30	2.70	3.30	3.80	4.20	4.60	5.50
<b>Connections</b>										
Water Inlet / Outlet		mm	35.0	35.0	42.0	42.0	42.0	42.0	54	54
<b>Filtration</b>										
Quantity			9	9	12	12	15	15	18	18
<b>Electric Heating</b>										
Rating		kW	7.5	7.5	7.5	7.5	15.0	15.0	15	15
Stage of Reheat			1	1	1	1	2	2	2	2
<b>Humidifier</b>										
Capacity		kg/hr	3	3	3	3	8	8	8	8
<b>Electrical</b>										
<b>Unit Data - Full Function</b>			(5)							
Nominal Run Amps		A	21.0	21.0	19.63	19.63	43	43	40.3	40.3
Recommended Mains Fuse Size		A	25	25	25	25	50	50	50	50
<b>Unit Data - Cooling Only</b>										
Nominal Run Amps		A	4	4	5.43	5.43	7	7	9.86	9.86
Recommended Mains Fuse Size		A	10	10	10	10	10	10	16	16
Max Mains Incoming Cable Size		mm²	16	16	16	16	35	35	35	35
<b>Fan and motor</b>										
Full Load Amps		A	3	3	4.5	4.5	3	3	4.5	4.5
<b>Electric heat</b>										
Current Per Phase		A	10.9	10.9	10.9	10.9	21.7	21.7	21.7	21.7
<b>Humidifier</b>										
Rating		kW	2.25	2.25	2.25	2.25	6	6	6	6
Full Load Amps		A	3.3	3.3	3.3	3.3	8.7	8.7	8.7	8.7

(1) Entering air 24°C /45% RH water 7°C/ 12°C.

(2) Fan Gain / Fan power input based upon fan operating with design airflow at 25Pa ESP, these values may change with different ESP.

(3) Machine weight excludes water charge.

(4) Backward curved EC fan options quote electrical power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other fans are available, please contact Airedale.

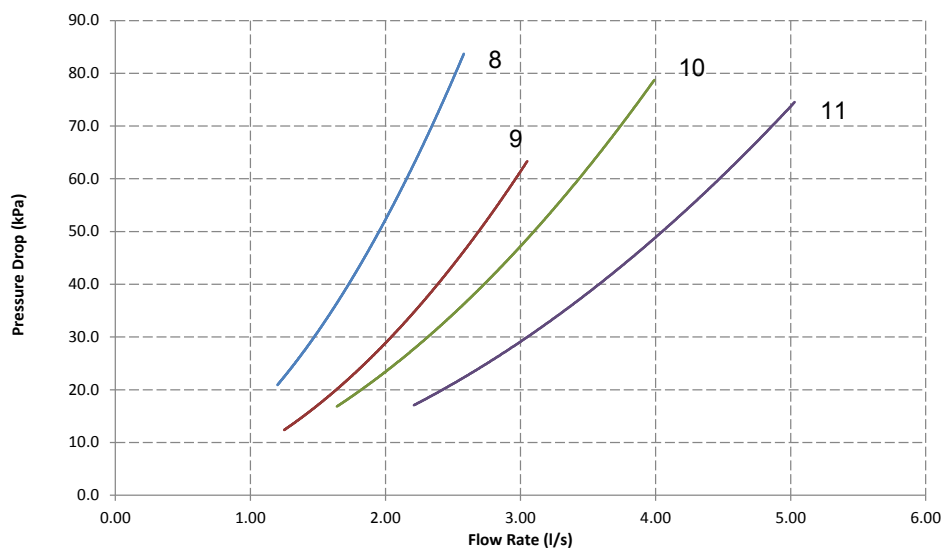
Technical

SR

C0C0

Technical Data SR C0C0 Units

Waterside Pressure Drop Data



- 8 SR09D020-C0C0 / SR09D025-C0C0
- 9 SR12D030-C0C0 / SR12D035-C0C0
- 10 SR15D040-C0C0 / SR15D045-C0C0
- 11 SR18D050-C0C0 / SR 18D060-C0C0

Includes coil, 2 or 3 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$

where  $\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

Fluid 100% water.

	Valve Kv	M
SR09 C0C0	16.0	0.44
SR12 C0C0	25.0	0.69
SR15 C0C0	25.0	0.69
SR18 C0C0	40.0	1.11

Technical

SR

C0C0

**Technical Data SR C0C0 Units****Sound Data**

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SR09D020-C0C0	Discharge Air	74	73	71	72	73	71	65	56	26
	Return Air	73	73	71	71	72	69	64	55	25
	Case Breakout	75	77	77	74	72	71	64	56	29
	Sound Pressure @ 3m	60	62	62	60	58	56	50	42	14
SR09D025-C0C0	Discharge Air	80	78	77	78	78	76	70	61	31
	Return Air	79	78	77	76	77	74	69	60	31
	Case Breakout	80	82	82	80	78	76	70	62	34
	Sound Pressure @ 3m	66	67	67	65	63	62	55	47	20
SR12D030-C0C0	Discharge Air	77	73	76	75	74	73	67	61	37
	Return Air	75	73	76	73	73	71	66	60	36
	Case Breakout	77	76	81	77	74	73	66	61	40
	Sound Pressure @ 3m	62	62	67	62	59	59	52	47	26
SR12D035-C0C0	Discharge Air	82	78	81	81	79	79	73	67	43
	Return Air	81	78	81	79	78	77	72	66	42
	Case Breakout	82	82	87	82	79	79	72	67	46
	Sound Pressure @ 3m	68	68	72	68	64	64	58	53	31
SR15D040-C0C0	Discharge Air	80	78	76	78	78	76	70	61	31
	Return Air	78	78	76	76	77	74	69	60	30
	Case Breakout	80	82	82	79	77	76	70	61	34
	Sound Pressure @ 3m	65	67	67	65	63	61	55	47	20
SR15D045-C0C0	Discharge Air	82	80	79	80	80	78	72	63	34
	Return Air	81	80	79	78	79	77	72	63	33
	Case Breakout	82	84	84	82	80	78	72	64	37
	Sound Pressure @ 3m	68	70	70	67	65	64	58	49	22
SR18D050-C0C0	Discharge Air	78	74	77	76	76	74	68	62	38
	Return Air	76	74	77	75	74	72	67	61	38
	Case Breakout	78	78	82	78	75	74	68	63	41
	Sound Pressure @ 3m	64	63	68	64	60	60	53	48	27
SR18D060-C0C0	Discharge Air	82	79	82	81	80	79	73	67	43
	Return Air	81	79	82	79	79	77	72	66	42
	Case Breakout	83	82	87	83	79	79	72	67	46
	Sound Pressure @ 3m	68	68	72	68	65	64	58	53	32

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

Technical

SR

C0C0

## Technical Data SR C0C0 Units

## Interconnecting Wiring

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
----	---	---	------------------

502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	←	Smoke Detector
584	○	→	Smoke Detector

502	○	←	Remote On/Off
522	○	→	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

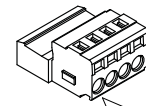
609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

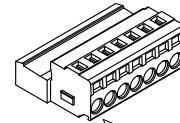
CONN17



PIN 1

Pin No.	Wire
1	502
2	583 or 584
3	2
4	N or 3

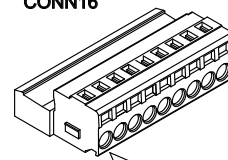
CONN14



PIN 1

Pin No.	Wire
1	502
2	522
3	560
4	561
5	563
6	564
7	565

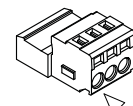
CONN16



PIN 1

Pin No.	Wire
1	2
2	N or 3
3	PE
4	534
5	535
6	609
7	610
8	810
9	811

CONN15



PIN 1

Pin No.	Wire
1	881
2	882
3	883

Conn 17

Conn 14

Conn 16

Conn 14

Conn 15

Technical

SR

C0C0

## Technical Data SD CH00 Units

## Mechanical and Electrical Data

Mechanical			SD18D110-CH00	SD22D140-CH00	SD25D175-CH00	SD31D215-CH00	SD35D255-CH00
<b>Capacity</b>							
Nom Cooling (Gross)	(1)	kW	105.3	132.4	174.7	216.5	255.2
Fan Power Input (Fan Gain)	(2)	kW	2.6	3.5	4.7	5.9	7.8
<b>Dimensions - W x D(890) x H(1980)</b>			1800	2200	2500	3100	3500
Weight - Machine Case	(3)	kg	463	525	588	690	745
- Fan Module		kg	175	189	244	305	326
- Operating		kg	699	787	919	1101	1190
<b>Cooling Coil</b>							
Water Volume		l	62	73	88	107	120
Water Flow Rate		l/s	5.0	6.3	8.3	10.3	12.1
Pressure Drop		kPa	35.7	55.6	77.2	76.3	106.5
<b>Fan &amp; Motor</b>							
Quantity x Motor Size	(4)	kW	2 x 2.9	2 x 2.9	3 x 2.9	4 x 2.9	4 x 2.9
Speed @ 25Pa ESP		rpm	1330	1503	1409	1374	1532
Speed @ Maximum ESP		rpm	1657	1657	1657	1657	1657
Maximum ESP		Pa	485	266	392	428	225
Nominal Airflow		m³/s	5.7	6.7	8.8	11.3	13.0
<b>Connections</b>							
Water Inlet / Outlet		mm	54	54	67	67	67
<b>Filtration</b>							
Quantity			6	6	6	9	9
<b>Electric Heating</b>							
Rating		kW	15.0	15.0	22.5	30.0	30.0
Stage of Reheat			2	2	3	4	4
<b>Humidifier</b>							
Capacity		kg/hr	8	30	30	30	30
Rating		kW	6.0	22.5	22.5	22.5	22.5
Full Load Amps		A	8.7	32.6	32.6	32.6	32.6
<b>Electrical</b>							
<b>Unit Data - Full Function</b>			(5)				
Nominal Run Amps		A	40.3	64.2	79.4	94.7	94.7
Recommended Mains Fuse Size		A	50	80	100	125	125
<b>Unit Data - Cooling Only</b>							
Nominal Run Amps		A	9.9	9.9	14.3	18.7	18.7
Recommended Mains Fuse Size		A	16	16	20	25	25
Max Mains Incoming Cable Size		mm²	35	70	70	70	70
<b>Fan and Motor</b>							
Full Load Amps		A	4.5	4.5	4.5	4.5	4.5
<b>Electric heat</b>							
Current Per Phase		A	21.7	21.7	32.5	43.4	43.4

(1) Entering air 24°C /45% RH water 7°C/ 12°C.

(2) Fan Gain / Fan power input based upon fan operating with design airflow at 25Pa ESP, these values may change with different ESP.

(3) Machine weight excludes water charge.

(4) Backward curved EC fan options quote electrical power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other fans are available, please contact Airedale.

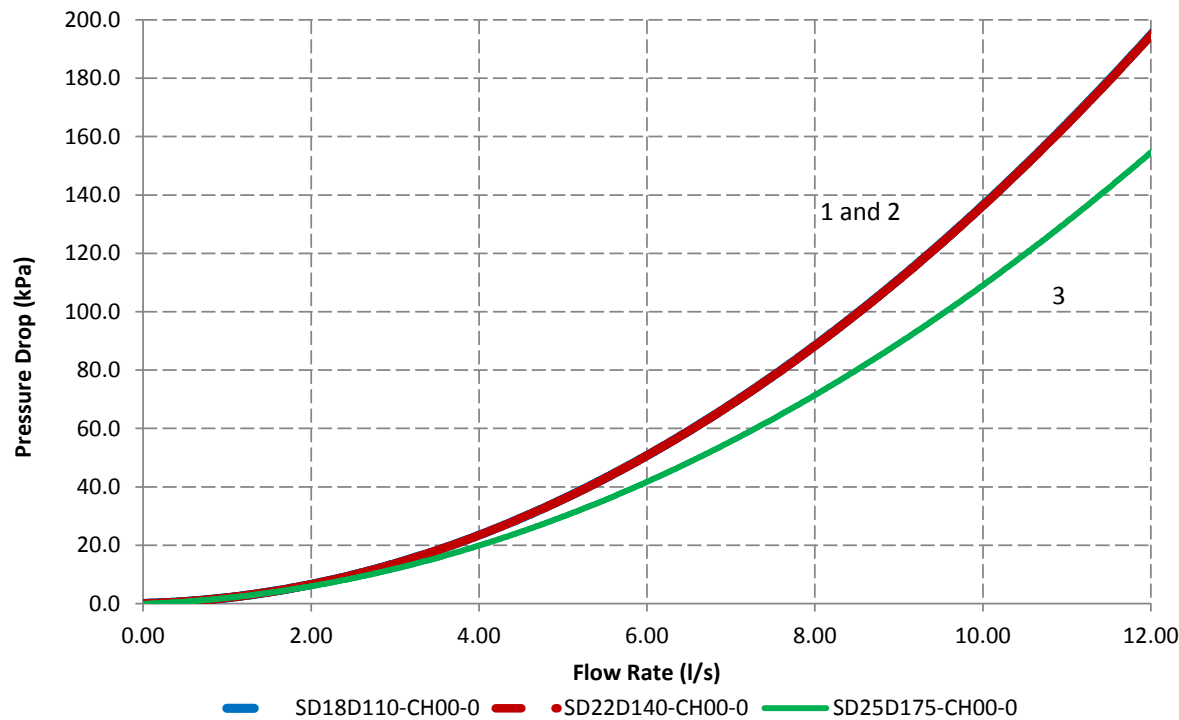
Technical

SD

CH00

Technical Data SD CH00 Units

Waterside Pressure Drop Data



- 1 SD18D110-CH00-0
- 2 SD22D140-CH00-0
- 3 SD25D175-CH00-0

Includes coil, 2 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$

where  $\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

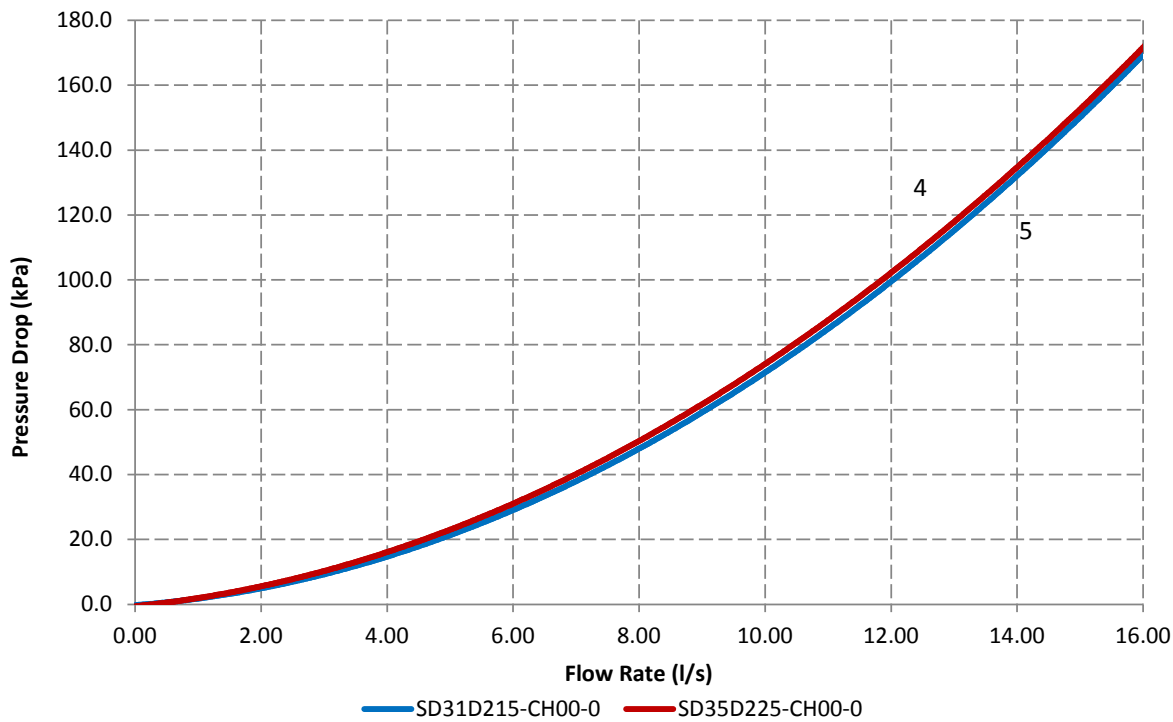
Fluid 100% water.

	Kv Cooling	Kv Bypass
SD18D110-CH00	40	40
SD22D140-CH00	63	40
SD25D175-CH00	63	40



Technical Data SD CH00 Units

Waterside Pressure Drop Data



- 4 SD31D215 - CH00 - 0
- 5 SD35D255 - CH00 - 0

Includes coil, port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P \text{ valve} = \left(\frac{Q}{M}\right)^2$

where  $\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left(\frac{Kv}{36}\right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD31D215-CH00	63	63
SD35D255-CH00	63	63

## Technical Data SD CH00 Units

## Sound Data

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SD18D110-CH00	Discharge Air	63	66	77	64	56	50	47	40	32
	Return Air	58	64	71	59	53	47	47	40	32
	Case Breakout	64	72	76	67	60	54	51	46	38
	Sound Pressure @ 3m	50	57	62	52	46	39	36	32	23
SD22D140-CH00	Discharge Air	66	69	80	67	59	53	51	43	36
	Return Air	61	67	74	62	55	50	51	43	35
	Case Breakout	67	75	79	70	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	49	43	39	35	27
SD25D175-CH00	Discharge Air	66	69	80	67	59	53	51	43	35
	Return Air	61	67	74	62	56	50	50	43	35
	Case Breakout	67	75	79	70	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	49	43	39	35	26
SD31D215-CH00	Discharge Air	67	70	81	68	60	54	51	44	36
	Return Air	62	68	75	63	56	50	51	43	36
	Case Breakout	68	75	80	70	64	58	54	50	42
	Sound Pressure @ 3m	53	61	66	56	49	43	40	36	27
SD35D255-CH00	Discharge Air	70	73	84	70	62	57	54	47	39
	Return Air	65	71	78	66	59	54	54	47	39
	Case Breakout	71	78	83	73	67	61	58	54	45
	Sound Pressure @ 3m	56	64	68	59	52	46	43	39	30

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

**Technical Data SD CH00 Units****Interconnecting Wiring**

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
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502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

Technical

SD

CH00

## Technical Data SD CL00 Units

## Mechanical and Electrical Data

			SD18D115-CL00	SD22D145-CL00	SD25D180-CL00	SD31D235-CL00	SD35D270-CL00
Mechanical							
<b>Capacity</b>							
Nom Cooling (Gross)	(1)	kW	91.6	110.2	144.3	186.4	215.4
Fan Power Input (Fan Gain)	(2)	kW	2.6	3.5	4.7	5.9	7.8
<b>Dimensions</b> - W x D(890) x H(1980)			1800	2200	2500	3100	3500
Weight - Machine Case	(3)	kg	463	525	588	690	745
- Fan Module		kg	175	189	244	305	326
- Operating		kg	699	787	919	1101	1190
<b>Cooling Coil</b>							
Water Volume		l	62	73	88	107	120
Water Flow Rate		l/s	3.6	4.4	5.7	7.4	8.6
Pressure Drop		kPa	25.9	39.5	62.4	67.1	95.1
<b>Fan &amp; Motor</b>							
Quantity x Motor Size	(4)	kW	2 x 2.9	2 x 2.9	3 x 2.9	4 x 2.9	4 x 2.9
Speed @ 25Pa ESP		rpm	1334	1503	1409	1374	1532
Speed @ Maximum ESP		rpm	1657	1657	1657	1657	1657
Maximum ESP		Pa	485	266	392	428	225
Nominal Airflow		m³/s	5.7	6.7	8.8	11.3	13.0
<b>Connections</b>							
Water Inlet / Outlet		mm	54	54	67	67	67
<b>Filtration</b>							
Quantity			6	6	6	9	9
<b>Electric Heating</b>							
Rating		kW	15.0	15.0	22.5	30.0	30.0
Stage of Reheat			2	2	3	4	4
<b>Humidifier</b>							
Capacity		kg/hr	8	30	30	30	30
Rating		kW	6.0	22.5	22.5	22.5	22.5
Full Load Amps		A	8.7	32.6	32.6	32.6	32.6
<b>Electrical</b>							
<b>Unit Data - Full Function</b>			(5)				
Nominal Run Amps		A	40.3	64.2	79.4	94.7	94.7
Recommended Mains Fuse Size		A	50	80	100	125	125
<b>Unit Data - Cooling Only</b>							
Nominal Run Amps		A	9.9	9.9	14.3	18.7	18.7
Recommended Mains Fuse Size		A	16	16	20	25	25
Max Mains Incoming Cable Size		mm²	35	70	70	70	70
<b>Fan and Motor</b>							
Full Load Amps		A	4.5	4.5	4.5	4.5	4.5
<b>Electric heat</b>							
Current Per Phase		A	21.7	21.7	32.5	43.4	43.4

(1) Entering air 35°C / 24% RH water 18°C / 24°C

(2) Fan gain/ fan power input is shown for a unit delivering nominal air volume with 25Pa ESP. The fan gain / fan power values will change when selected with alternative airflow or ESP values.

(3) Machine weight excludes water charge.

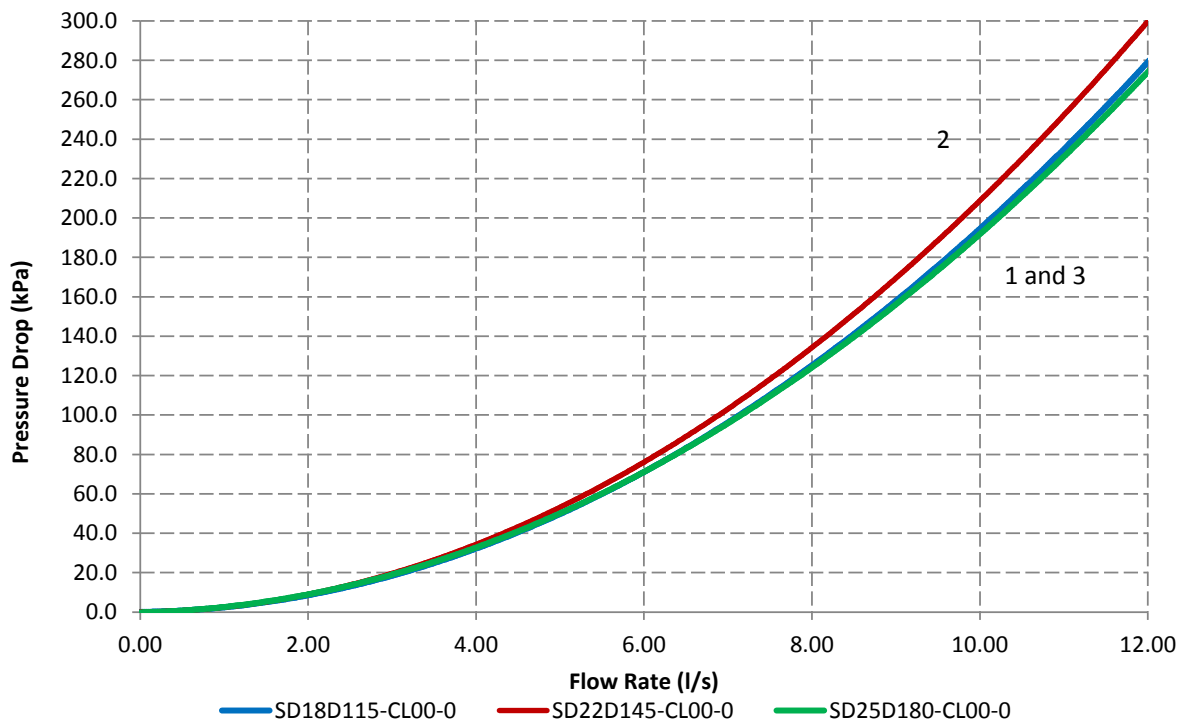
(4) Backward curved EC fan options quote electrical power. All other options quote shaft power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other Fans are available, please contact airedale.

Technical Data SD CL00 Units

Waterside Pressure Drop Data



- 1 SD18D115-CL00-0
- 2 SD22D145-CL00-0
- 3 SD25D180-CL00-0

Includes coil, 2 port valve and pipework.

To calculate 2 port valve pressure drop:

$\Delta P_{\text{valve}} = \left(\frac{Q}{M}\right)^2$

where

$\Delta P$  = Pressure Drop in kPa,

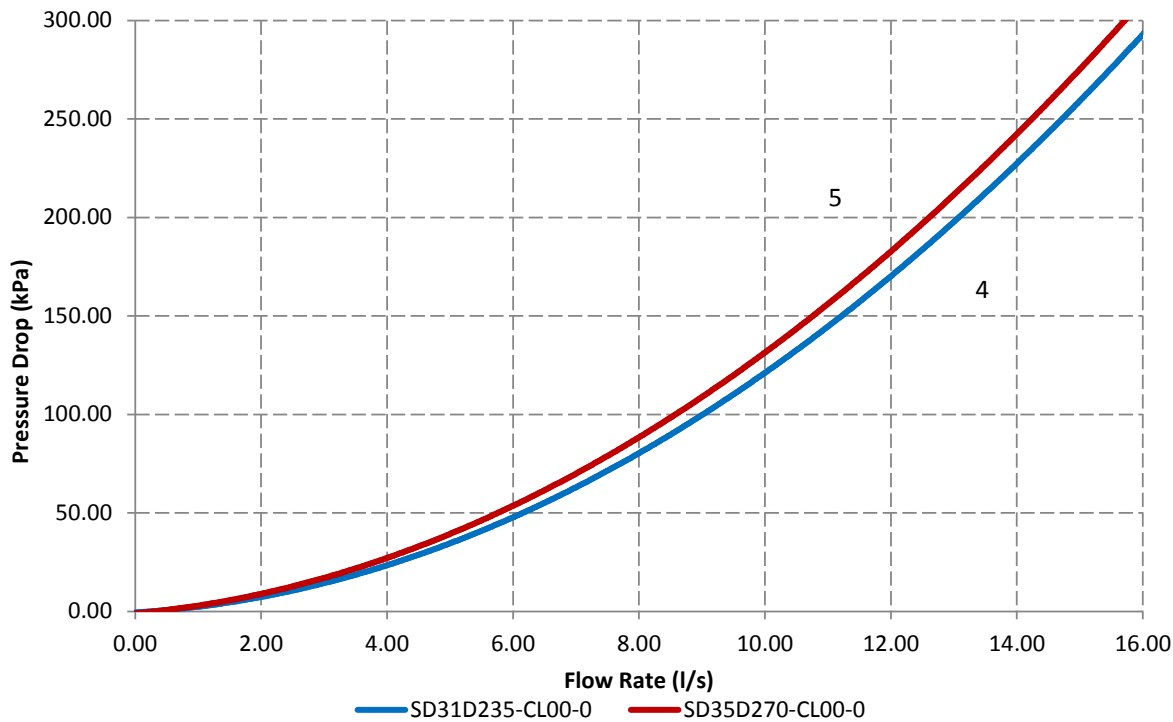
$Q$  = Water Flow Rate in l/s and  $M = \left(\frac{Kv}{36}\right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD18D115-CL00	40	40
SD22D145-CL00	63	40
SD25D180-CL00	63	40

Technical Data SD CL00 Units

Waterside Pressure Drop Data



- 4 SD31D235-CL00-0
- 5 SD35D270-CL00-0

Includes coil, 2 port valve and pipework.

To calculate 2 port valve pressure drop:

$$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$$

where  $\Delta P$  = Pressure Drop in kPa,

Q = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD31D235-CL00	63	63
SD35D270-CL00	63	63

**Technical Data SD CL00 Units****Sound Data**

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SD18D115-CL00	Discharge Air	63	66	77	64	56	50	47	40	32
	Return Air	58	64	71	59	53	47	47	40	32
	Case Breakout	64	72	76	67	60	54	51	46	38
	Sound Pressure @ 3m	50	57	62	52	46	39	36	32	23
SD22D145-CL00	Discharge Air	66	69	80	67	59	53	51	43	36
	Return Air	61	67	74	62	55	50	51	43	35
	Case Breakout	67	75	79	70	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	49	43	39	35	27
SD25D180-CL00	Discharge Air	66	69	80	67	59	53	51	43	35
	Return Air	61	67	74	62	56	50	50	43	35
	Case Breakout	67	75	79	70	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	49	43	39	35	26
SD31D235-CL00	Discharge Air	67	70	81	68	60	54	51	44	36
	Return Air	62	68	75	63	56	50	51	43	36
	Case Breakout	68	75	80	70	64	58	54	50	42
	Sound Pressure @ 3m	53	61	66	56	49	43	40	36	27
SD35D270-CL00	Discharge Air	70	73	84	70	62	57	54	47	39
	Return Air	65	71	78	66	59	54	54	47	39
	Case Breakout	71	78	83	73	67	61	58	54	45
	Sound Pressure @ 3m	56	64	68	59	52	46	43	39	30

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

Technical

SD

CL00

## Technical Data SD CL00 Units

## Interconnecting Wiring

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
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502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection



## Technical Data SD CHCH Units

## Mechanical and Electrical Data

Mechanical		SD18D085-CHCH	SD22D105-CHCH	SD25D135-CHCH	SD31D165-CHCH	SD35D195-CHCH
<b>Capacity</b>						
Nom Cooling (Gross)	(1) kW	75.2	98.3	128.4	155.0	183.6
Fan Power Input (Fan Gain)	(2) kW	2.3	3.5	4.1	5.4	7.2
<b>Dimensions</b> - W x D(890) x H(1980)	mm	1800	2200	2500	3100	3500
Weight - Machine Case	(3) kg	477	547	618	727	788
- Fan Module	kg	175	189	244	305	325
- Operating	kg	702	798	940	1127	1221
<b>Cooling Coil</b>						
Water Volume	l	50	62	79	96	108
Water Flow Rate	l/s	3.6	4.7	6.1	7.4	8.7
Pressure Drop	kPa	23.0	39.5	43.5	37.1	51.3
<b>Fan &amp; Motor</b>						
Quantity x Motor Size	(4) kW	2 x 2.9	2 x 2.9	3 x 2.9	4 x 2.9	4 x 2.9
Speed @ 25Pa ESP	rpm	1266	1491	1337	1322	1479
Speed @ Maximum ESP	rpm	1657	1657	1657	1657	1657
Maximum ESP	Pa	538	287	463	473	302
Nominal Airflow	m³/s	5.3	6.5	8.2	10.7	12.4
<b>Connections</b>						
Water Inlet / Outlet	mm	54	54	67	67	67
<b>Filtration</b>						
Quantity		6	6	6	9	9
<b>Electric Heating</b>						
Rating	kW	15.0	15.0	22.5	30.0	30.0
Stage of Reheat		2	2	3	4	4
<b>Humidifier</b>						
Capacity	kg/hr	8	30	30	30	30
Rating	kW	6.0	22.5	22.5	22.5	22.5
Full Load Amps	A	8.7	32.6	32.6	32.6	32.6
<b>Electrical</b>						
<b>Unit Data - Full Function</b>		(5)				
Nominal Run Amps	A	40.3	64.2	79.4	94.7	94.7
Recommended Mains Fuse Size	A	50	80	100	125	125
<b>Unit Data - Cooling Only</b>						
Nominal Run Amps	A	9.9	9.9	14.3	18.7	18.7
Recommended Mains Fuse Size	A	16	16	20	25	25
Max Mains Incoming Cable Size	mm²	35	70	70	70	70
<b>Fan and Motor</b>						
Full Load Amps	A	4.5	4.5	4.5	4.5	4.5
<b>Electric heat</b>						
Current Per Phase	A	21.7	21.7	32.5	43.4	43.4

(1) Entering air 24°C /45% RH water 7°C/ 12°C.

(2) Fan Gain / Fan power input based upon fan operating with design airflow at 25Pa ESP, these values may change with different ESP.

(3) Machine weight excludes water charge.

(4) Backward curved EC fan options quote electrical power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other fans are available, please contact Airedale.

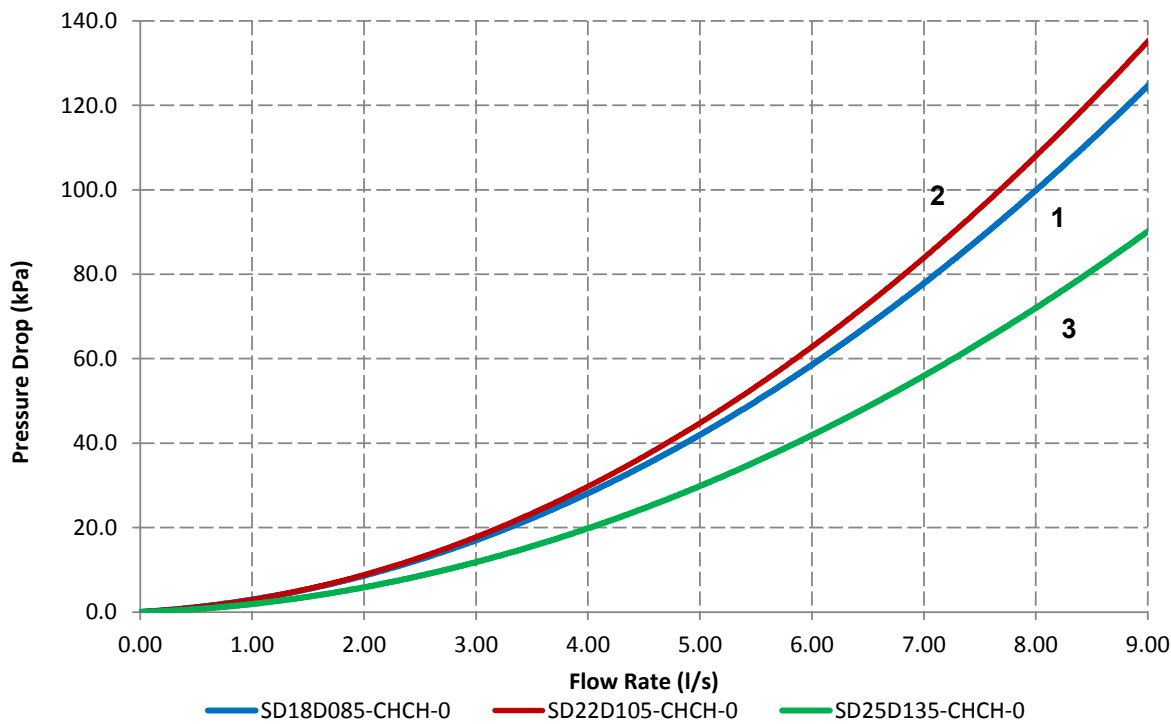
Technical

SD

CHCH

Technical Data SD CHCH Units

Waterside Pressure Drop Data



- 1 SD18D085-CHCH-0
- 2 SD22D105-CHCH-0
- 3 SD25D135-CHCH-0

Includes coil, 2 port valve and pipework.

To calculate 2 port valve pressure drop:

$$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$$

where

$\Delta P$  = Pressure Drop in kPa,

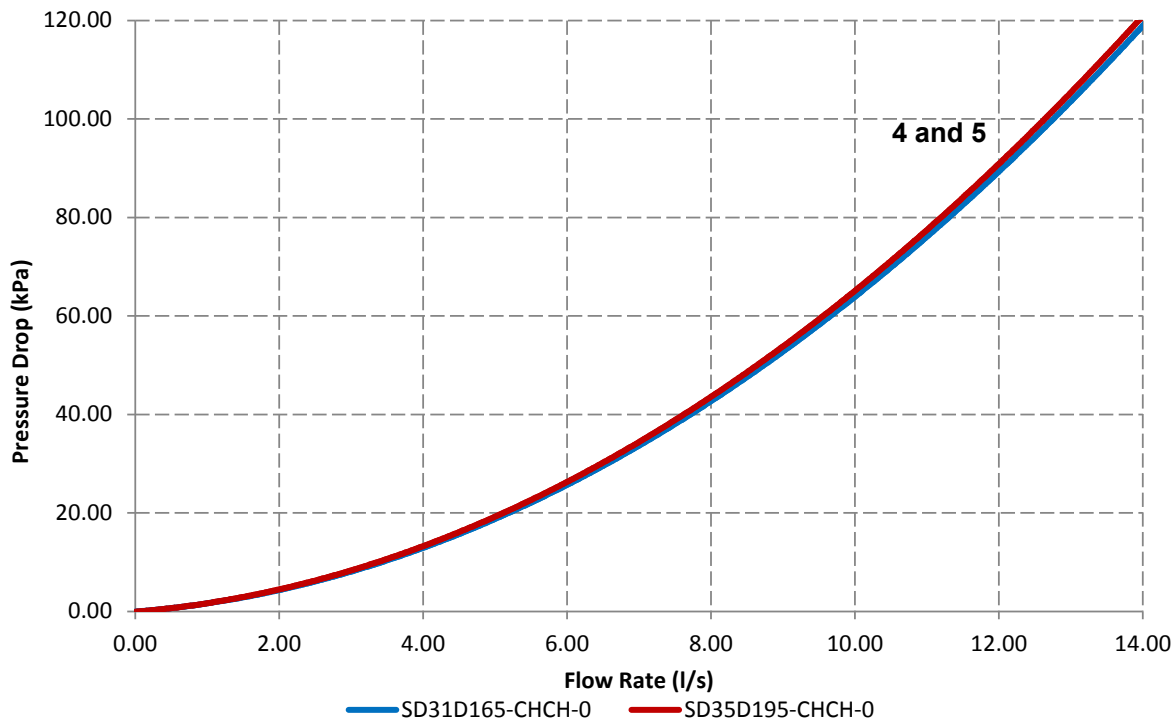
$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD18D085-CHCH	40	40
SD22D105-CHCH	63	40
SD25D135-CHCH	63	40

Technical Data SD CHCH Units

Waterside Pressure Drop Data



- 4 SD31D165-CHCH-0
- 5 SD35D195-CHCH-0

Includes coil, 2 port valve and pipework.

To calculate 2 port valve pressure drop:

$\Delta P_{\text{valve}} = \left(\frac{Q}{M}\right)^2$

where

$\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left(\frac{Kv}{36}\right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD31D165-CHCH	63	63
SD35D195-CHCH	63	63

Technical

SD

CHCH

## Technical Data SD CHCH Units

## Sound Data

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SD18D085-CHCH	Discharge Air	62	65	76	63	55	49	46	39	31
	Return Air	57	63	70	58	52	46	46	38	31
	Case Breakout	63	70	75	66	59	53	49	45	37
	Sound Pressure @ 3m	49	56	61	51	45	38	35	31	22
SD22D105-CHCH	Discharge Air	66	69	80	67	59	53	50	43	35
	Return Air	61	67	74	62	55	50	50	43	35
	Case Breakout	67	75	79	69	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	48	42	39	35	26
SD25D135-CHCH	Discharge Air	65	68	79	66	58	52	49	42	34
	Return Air	60	66	73	61	54	49	49	41	34
	Case Breakout	66	73	78	68	62	56	52	48	40
	Sound Pressure @ 3m	52	59	64	54	48	41	38	34	25
SD31D165-CHCH	Discharge Air	66	69	80	67	59	53	50	43	35
	Return Air	61	67	74	62	55	50	50	42	35
	Case Breakout	67	74	79	69	63	57	53	49	41
	Sound Pressure @ 3m	53	60	65	55	49	42	39	35	26
SD35D195-CHCH	Discharge Air	69	72	83	69	61	56	53	46	38
	Return Air	64	70	77	65	58	52	53	46	38
	Case Breakout	70	77	82	72	66	60	56	52	44
	Sound Pressure @ 3m	55	63	67	58	51	45	42	38	29

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

**Technical Data SD CHCH Units****Interconnecting Wiring**

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
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502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

Technical

SD

CHCH

## Technical Data SD CLCL Units

## Mechanical and Electrical Data

		SD18D090-CLCL	SD22D120-CLCL	SD25D140-CLCL	SD31D190-CLCL	SD35D225-CLCL
<b>Mechanical</b>						
<b>Capacity</b>						
Nom Cooling (Gross)	(1) kW	75.3	96.7	117.6	158.8	185.4
Fan Power Input (Fan Gain)	(2) kW	2.3	3.5	4.1	5.4	7.2
<b>Dimensions</b> - W x D(890) x H(1980)		mm	1800	2200	2500	3100
Weight - Machine Case	(3) kg	477	547	618	727	788
- Fan Module	kg	175	189	244	305	326
- Operating	kg	702	798	940	1127	1221
<b>Cooling Coil</b>						
Water Volume	l	50	62	79	96	108
Water Flow Rate	l/s	3.0	3.8	4.7	6.3	7.4
Pressure Drop	kPa	23.1	41.0	25.5	49.7	72.1
<b>Fan &amp; Motor</b>						
Quantity x Motor Size	(4) kW	2 x 2.9	2 x 2.9	3 x 2.9	4 x 2.9	4 x 2.9
Speed @ 25Pa ESP	rpm	1266	1491	1337	1322	1479
Speed @ Maximum ESP	rpm	1657	1657	1657	1657	1657
Maximum ESP	Pa	538	287	463	473	302
Nominal Airflow	m³/s	5.3	6.5	8.2	10.7	12.4
<b>Connections</b>						
Water Inlet / Outlet	mm	54	54	67	67	67
<b>Filtration</b>						
Quantity		6	6	6	9	9
<b>Electric Heating</b>						
Rating	kW	15.0	15.0	22.5	30.0	30.0
Stage of Reheat		2	2	3	4	4
<b>Humidifier</b>						
Capacity	kg/hr	8	30	30	30	30
Rating	kW	6.0	22.5	22.5	22.5	22.5
Full Load Amps	A	8.7	32.6	32.6	32.6	32.6
<b>Electrical</b>						
<b>Unit Data - Full Function</b> (5)						
Nominal Run Amps	A	40.3	64.2	79.4	94.7	94.7
Recommended Mains Fuse Size	A	50	80	100	125	125
<b>Unit Data - Cooling Only</b>						
Nominal Run Amps	A	9.9	9.9	14.3	18.7	18.7
Recommended Mains Fuse Size	A	16	16	20	25	25
Max Mains Incoming Cable Size	mm²	35	70	70	70	70
<b>Fan and Motor</b>						
Full Load Amps	A	4.5	4.5	4.5	4.5	4.5
<b>Electric heat</b>						
Current Per Phase	A	21.7	21.7	32.5	43.4	43.4

(1) Entering air 35°C / 24% RH water 18°C / 24°C

(2) Fan gain/ fan power input is shown for a unit delivering nominal air volume with 25Pa ESP. The fan gain / fan power values will change when selected with alternative airflow or ESP values.

(3) Machine weight excludes water charge.

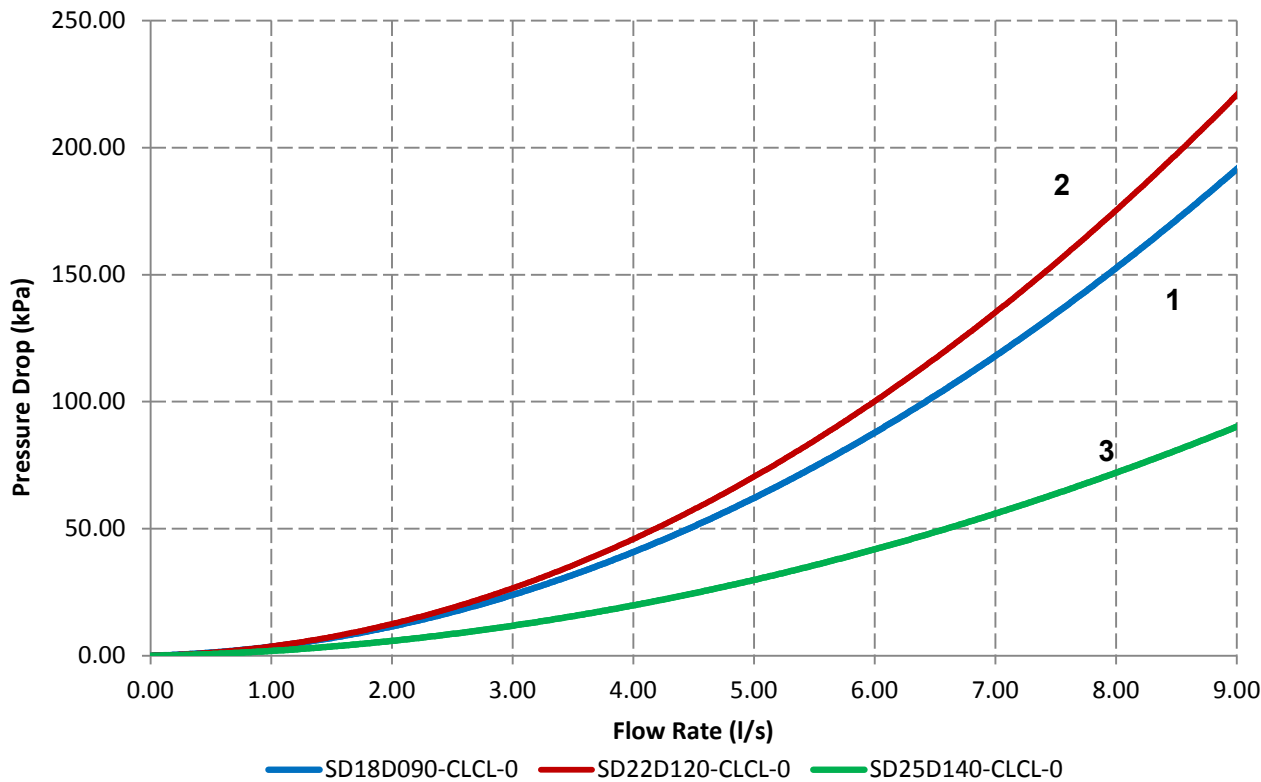
(4) Backward curved EC fan options quote electrical power. All other options quote shaft power.

(5) Values given for full function units with standard selections for heating, humidification, supply air fans.

Other Fans are available, please contact airedale.

Technical Data SD CLCL Units

Waterside Pressure Drop Data



- 1 SD18D090-CLCL-0
- 2 SD22D120-CLCL-0
- 3 SD25D140-CLCL-0

Includes coil, 2 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$

where

$\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD18D090-CLCL	40	40
SD22D120-CLCL	40	40
SD25D140-CLCL	63	63

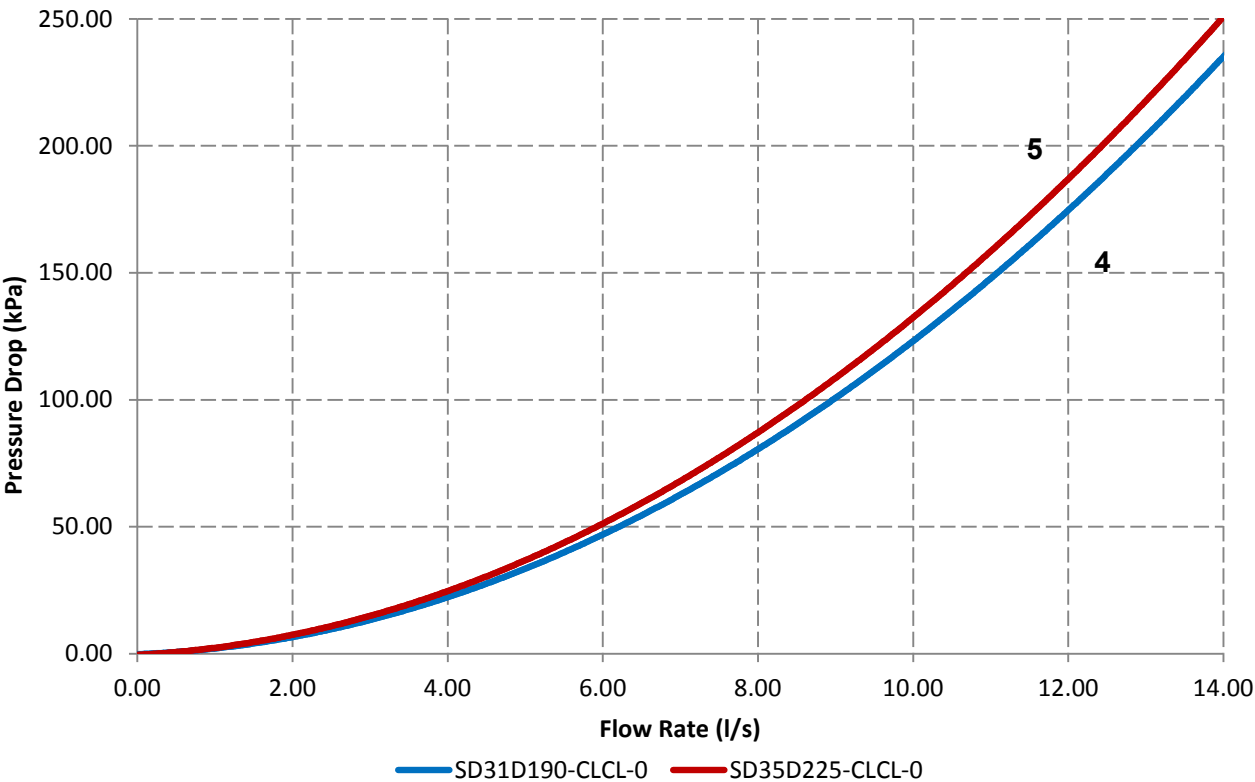
Technical

SD

CLCL

Technical Data SD CLCL Units

Waterside Pressure Drop Data



- 4 SD31D190-CLCL-0
- 5 SD35D225-CLCL-0

Includes coil, 2 port valve and pipework.

To calculate 3 port valve pressure drop:

$\Delta P_{\text{valve}} = \left( \frac{Q}{M} \right)^2$

where

$\Delta P$  = Pressure Drop in kPa,

$Q$  = Water Flow Rate in l/s and  $M = \left( \frac{Kv}{36} \right)$

Fluid 100% water.

	Kv Cooling	Kv Bypass
SD31D190-CLCL	63	63
SD35D225-CLCL	63	63



**Technical Data SD CLCL Units****Sound Data**

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
SD18D090-CLCL	Discharge Air	62	65	76	63	55	49	46	39	31
	Return Air	57	63	70	58	52	46	46	38	31
	Case Breakout	63	70	75	66	59	53	49	45	37
	Sound Pressure @ 3m	49	56	61	51	45	38	35	31	22
SD22D120-CLCL	Discharge Air	66	69	80	67	59	53	50	43	35
	Return Air	61	67	74	62	55	50	50	43	35
	Case Breakout	67	75	79	69	63	57	54	50	41
	Sound Pressure @ 3m	53	60	65	55	48	42	39	35	26
SD25D135-CLCL	Discharge Air	65	68	79	66	58	52	49	42	34
	Return Air	60	66	73	61	54	49	49	41	34
	Case Breakout	66	73	78	68	62	56	52	48	40
	Sound Pressure @ 3m	52	59	64	54	48	41	38	34	25
SD31D190-CLCL	Discharge Air	66	69	80	67	59	53	50	43	35
	Return Air	61	67	74	62	55	50	50	42	35
	Case Breakout	67	74	79	69	63	57	53	49	41
	Sound Pressure @ 3m	53	60	65	55	49	42	39	35	26
SD35D225-CLCL	Discharge Air	69	72	83	69	61	56	53	46	38
	Return Air	64	70	77	65	58	52	53	46	38
	Case Breakout	70	77	82	72	66	60	56	52	44
	Sound Pressure @ 3m	55	63	67	58	51	45	42	38	29

(1) dB(A) is the overall sound level, measured on the A scale

(2) All sound data measured at nominal conditions, Discharge Air, Return air and case breakout is sound power.

Technical

SD

CLCL

## Technical Data SD CLCL Units

## Interconnecting Wiring

N1	○	←	Neutral (Supply 1)
301	○	←	L1 (Supply 1)
302	○	←	L2 (Supply 1)
303	○	←	L3 (Supply 1)

N2	○	←	Neutral (Supply 2)
304	○	←	L1 (Supply 2)
305	○	←	L2 (Supply 2)
306	○	←	L3 (Supply 2)

PE	○	←	Protective Earth
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502	○	→	Fire Detector
583	○	←	Fire Detector

583	○	→	Smoke Detector
584	○	←	Smoke Detector

502	○	→	Remote On/Off
522	○	←	Remote On/Off

2	○	→	Condensate Pump Supply (230V)
N (3*)	○	→	Condensate Pump Supply (230V)
534	○	→	Condensate Pump High Level Alarm
535	○	←	Condensate Pump High Level Alarm

609	○	→	Flood Detection Tape / Probe
610	○	←	Flood Detection Tape / Probe

810	○	→	Supply Air Temperature Sensor
811	○	→	Supply Air Temperature Sensor

560	○	→	Non-Critical Alarm N/O
561	○	→	Non-Critical Alarm Common
563	○		Critical Alarm N/O
564	○		Critical Alarm Common
565	○		Critical Alarm N/C

881	○	←	BMS Connection
882	○	←	BMS Connection
883	○	←	BMS Connection

Technical

SD

CLCL

## After Sales

### Warranty

All Airedale products or parts (non consumable) supplied for installation within the UK mainland and commissioned by an Airedale engineer, carry a full Parts & Labour warranty for a period of 12 months from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.

Parts or Equipment supplied by Airedale for installation within the UK or for Export that are properly commissioned in accordance with Airedale standards and specification, not commissioned by an Airedale engineer; carry a 12 month warranty on non consumable Parts only from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.

Parts or equipment installed or commissioned not to acceptable Airedale standards or specification invalidate all warranty.

### Warranty is only valid in the event that

In the period between delivery and commissioning the equipment:

- is properly protected & serviced as per the Airedale installation & maintenance manual provided
- where applicable the glycol content is maintained to the correct level.

In the event of a problem being reported and once warranty is confirmed\* as valid under the given installation and operating conditions, the Company will provide the appropriate warranty coverage (as detailed above) attributable to the rectification of any affected Airedale equipment supplied (excluding costs for any specialist access or lifting equipment that must be ordered by the customer).

\*Once warranty is confirmed, maintenance must be continued to validate the warranty period.

Any spare part supplied by Airedale under warranty shall be warranted for the unexpired period of the warranty or 3 months from delivery, whichever period is the longer.

To be read in conjunction with the Airedale Conditions of Sale - Warranty and Warranty Procedure, available upon request.

### Procedure

When a component part fails, a replacement part should be obtained through our Spares department. If the part is considered to be under warranty, the following details are required to process this requirement. Full description of part required, including Airedale's part number, if known. The original equipment serial number. An appropriate purchase order number.

A spares order will be raised under our warranty system and the replacement part will be despatched, usually within 24 hours should they be in stock. When replaced, the faulty part must be returned to Airedale with a suitably completed and securely attached "Faulty Component Return" (FCR) tag. FCR tags are available from Airedale and supplied with each Warranty order.

On receipt of the faulty part, suitably tagged, Airedale will pass to its Warranty department, where it will be fully inspected and tested in order to identify the reason for failure, identifying at the same time whether warranty is justified or not.

On completion of the investigation of the returned part, a full "Report on Goods Returned" will be issued. On occasion the release of this complete report may be delayed as component manufacturers become involved in the investigation. When warranty is allowed, a credit against the Warranty invoice will be raised. Should warranty be refused the Warranty invoice becomes payable on normal terms.

### Exclusions

Warranty may be refused for the following reasons.

- Misapplication of product or component
- Incorrect site installation
- Incomplete commissioning documentation
- Inadequate site installation
- Inadequate site maintenance
- Damage caused by mishandling
- Replaced part being returned damaged without explanation
- Unnecessary delays incurred in return of defective component

### Returns analysis

All faulty components returned under warranty are analysed on a monthly basis as a means of verifying component and product reliability as well as supplier performance. It is important that all component failures are reported correctly.



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