



TurboChill™

Air Cooled (TCC) and FreeCool (TCF) Chiller

200kW to 1650kW

R513A
Spray Evaporator



Technical Manual
Original Instructions



FM00542

EMS52086

Special Precautions

The guidance in this manual must be followed to provide safe, efficient and trouble-free operation. In addition, particular care must be exercised regarding the special precautions listed below. Failure to properly address these critical areas could result in property damage or loss, personal injury or death. These instructions are subject to any additional restrictive local or national codes.

Hazard Intensity Levels

1. **DANGER:** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
2. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
3. **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.
4. **IMPORTANT:** Indicates a situation which, if not avoided, MAY result in a potential safety concern.
5. **NOTE:** Indicates information that is not a safety concern but may invalidate warranty if not adhered to.

⚠ 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.
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, crankcase heater permanent supplies etc. 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. These Airedale chillers use R513A refrigerant which requires careful attention to proper storage and handling procedures in accordance with EN 378. Maximum water temperature flowing through the chiller should be 40°C.
CAUTION PACEMAKER WEARERS
To avoid any risk of injury, any work to be carried out on or around the compressor should be done with personnel that <u>do not</u> have pacemakers fitted.
Care must be taken when working around the discharge pipe work of the unit. High surface temperatures may exist during unit operation. The refrigerant has a boiling point of -29.2°C.
Units without compressor enclosures are class A group 1 products and are only intended to be used at locations where there is a distance greater than 30m between the equipment and third party sensitive radio communication equipment.
The Actuated suction ball valve is required if unit is to be shut down for winter with water still circulating through unit, for freeze protection. The actuated suction ball valve is to stop liquid migration and protect the compressor.
The Pump interlock and Flow switch are flow proving devices, and 2 out of the 3 should be fitted to any unit to validate warranty.
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Password Protection
The control system integrity shall be maintained by restricting access with a password PIN number.
When adding to an existing controls scheme, please consult Airedale Controls to ensure strategy compatibility.
Only use the SHC data when calculating fluid volume. Use figure for 0% concentration (100% water). When calculating volumes of glycol solutions, refer to glycol data correction factors and convert the water volume.
The unit water connections are NOT designed to support external pipe work, pipe work MUST be supported separately.
The Standard installation recommendations should be adhered to. Failure to do this may invalidate the chiller warranty.
Full design water flow must be maintained at all times. Variable water flow is not recommended and will invalidate warranty. The correct operation of the flow proving device is critical if the chiller warranty is to be valid.
Failure to install both safety devices will invalidate the chiller warranty. Do not rely solely on the BMS to protect the chiller against low flow conditions.
The unit should be lifted from the base and where possible, with all packing and protection in position. If any other type of slinging is used, due care should be taken to ensure that the slings do not crush the casework or coil.
Do not connect any services until all anti vibration mounts have been fully adjusted.

A separately fused permanent single phase and neutral supply must be fitted for the evaporator trace heating and control circuits and for the leak detection and ventilation systems to work in the event of a leak being detected. All work must be carried out by technically trained competent personnel. Failure to do these actions will invalidate warranty. Isolate remotely the mains incoming supply to the busbar chamber prior to maintenance or repair work.
The plugged termination ensures that the connections are made simultaneously. Failure to attached the cables this way may cause damage to the controller.
ALL work must be carried out by technically trained competent personnel. The equipment contains live electrical and moving parts, Isolate prior to maintenance or repair work.
If the unit is operated without water flow the unit will be damaged.
The L4 permanent supply also provides power to the leak detector. Check phase rotation of electrical supply prior to running the compressor as it's direction sensitive.
When the chiller has been re-started it will go through its start-up sequence. Pressing  will turn the unit off.
The equipment contains live electrical and moving parts, ISOLATE prior to maintenance or repair work. Ensure lock off procedures are carried out accordingly.
If inverter driven pumps are used ensured at least 5 minutes is allowed for them to discharge any electrical charge.

⚠️ IMPORTANT

When a unit with axial fans is not in operation and is in a humid or otherwise challenging environment, such as a subtropical/tropical or coastal region, it is required to regularly run the fans to avoid any risk of condensation build up. This can be achieved by using the fan override through the controller display and may require installation of a temporary power supply. This measure will help extend the lifespan of the fans. The override should be scheduled for a three hour duration once a month. This is especially relevant for situations where the unit is in storage, in transit, installed without power or intentionally kept on standby.
To change the PIN number; please contact Airedale at time of order with the preferred 4 digit number.
The equipment and system should be kept clean and free of solid, scale, corrosion and biological fouling. Failure to do so may invalidate the warranty.
The Water Treatment Guidelines do not give exhaustive list of all the substances found in plant items produced by Airedale and specific advice should be sought for individual items of equipment or specific applications, if required.
Lines specified on the Interconnecting Wiring diagram must be directly wired to the chiller to validate warranty.
This system has been designed to be connected to a TN type distribution system. For alternate distribution type systems, contact Airedale.

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.

ChillerGuard™

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: connect@airedale.com or telephone:

UK Sales Enquiries	+ 44 (0) 113 239 1000	connect@airedale.com
International Enquiries	+ 44 (0) 113 239 1000	connect@airedale.com
Spares Hot Line	+ 44 (0) 113 238 7878	spares@airedale.com
Airedale Service	+ 44 (0) 113 239 1000	service@airedale.com
Technical Support	+ 44 (0) 113 239 1000	tech.support@airedale.com
Training Enquiries	+ 44 (0) 113 239 1000	training@airedale.com

For information, visit us at our Web Site: www.airedale.com

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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.

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.

CAUTION ⚠	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, crankcase heater permanent supplies etc. 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. These Airedale chillers use R513A refrigerant which requires careful attention to proper storage and handling procedures in accordance with EN 378. Maximum water temperature flowing through the chiller should be 40°C.
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Service Equipment

All service personnel must have refrigerant handling training. They must use only manifold gauge sets designed for use with refrigerants. Use only refrigerant recovery units and cylinders designed for the pressure category of the refrigerants. The refrigerant used in this range of products is classified under the COSHH regulations as an irritant, with set Workplace Exposure Levels (WEL) for consideration if this plant is installed in confined or poorly ventilated areas. A full hazard data sheet in accordance with COSHH regulations is available should this be required. Refrigerants must only be charged in the liquid state and must be stored in a clean, dry area away from sunlight. The refrigerant must never be stored above 50°C.

Global Warming Potential

R513A refrigerant has a GWP of 631 (Based on EN378-1:2016, 100 year life).

Pressure Equipment Directive

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

Refrigeration

Allowable Temperature Range (TS) = Min -20°C* to Max 120°C**

Maximum Allowable Pressure (PS) = High Side 18.8 Barg Low side 10.3 Barg

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

**Based on the maximum allowable super heated refrigerant temperature.

Waterside

Allowable Temperature Range (TS) = Min -20°C* to Max 40°C**

Maximum Allowable Pressure (PS) = 10.0 Barg

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

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

Pressure System Safety Regulations 2000

Refrigeration assemblies/systems may constitute a Pressure System as defined in the Pressure System Safety Regulations 2000.

Ecodesign Directive 2009/125/EC

The product range within this document is designed in accordance with the European Ecodesign Directive 2009/125/EC. The Ecodesign Appendix at the end of the document details the products MEPS (Minimum Efficiency Performance Standards). Products sold outside of the EU are exempt from this directive.

Dangerous Substances and Explosive Atmospheres Regulations

The completion of a DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) risk assessment must be completed as a legal requirement by the employer of the business where this equipment will be installed. This is not the responsibility of Airedale International Air Conditioning Ltd to undertake as the manufacturer of the equipment.

Protective Personal 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 regards to manual handling. This requirement is down to the discretion of the engineer. Remember do not perform a lift that exceeds your ability.



no access for people with active implanted cardiac devices

CAUTION PACEMAKER WEARERS

To avoid any risk of injury, any work to be carried out on or around the compressor should be done with personnel that do not have pacemakers fitted.

CAUTION 

Care must be taken when working around the discharge pipe work of the unit. High surface temperatures may exist during unit operation. The refrigerant has a boiling point of -29.2°C.

Electromagnetic Compatability (EMC)

CAUTION 

Units without compressor enclosures are class A group 1 products and are only intended to be used at locations where there is a distance greater than 30m between the equipment and third party sensitive radio communication equipment.

Environmental Considerations

Freeze Protection

The instructions below must be followed to protect the unit during low temperature operation in both the ON and OFF state.

An appropriate concentration of glycol(1) is required when the unit is operating with a supply water temperature set point of $\leq +41^{\circ}\text{F} / +5^{\circ}\text{C}$ or if the evaporating temperature is $\leq +37.4^{\circ}\text{F} / +3^{\circ}\text{C}$.

Units subject to ambient temperatures lower than $32^{\circ}\text{F} / 0^{\circ}\text{C}$, a minimum of 2 of the following are required:

1. Glycol of an appropriate concentration(1) is used within the system to ensure adequate freeze protection. Please ensure that the concentration is capable of protection to at least 3K lower than the minimum ambient the chiller can be subjected to.
2. The water/glycol solution should be continuously circulated through all waterside pipework and coils to prevent static water from freezing even during shut down periods, when the ambient is within $5.4^{\circ}\text{R} / 3\text{K}$ of the solution freeze point(1) (i.e. if the solution freezes at $32^{\circ}\text{F} / 0^{\circ}\text{C}$, the pump must be operating at $37.4^{\circ}\text{F} / 3^{\circ}\text{C}$ ambient).
3. Trace heating should be adequately sized and provided by others for all interconnecting water pipework between the chiller and the process.

Trace Heating:

Water pipework trace heating is included as standard within the chiller. It is imperative that as soon as the chiller is filled with water/glycol that a separately fused, permanent, single phase and neutral supply is fitted to the trace heating, evaporator immersion heater and controls circuits. This circuit should be backed up in the event of a power failure to prevent a potential freeze scenario. Please reference the interconnecting wiring diagram for further information.

The chiller must be filled with water/glycol before power is applied to the trace heating circuit. Failure to do so will damage any immersion heaters present.

Maintenance

It is important that the glycol concentration is not diluted, if a pressurisation unit is present to maintain system pressure then Airedale advises that a premixed solution of glycol to the required concentration is used and not water. Airedale recommends that during prolonged cold periods or during winter months that the frequency of glycol concentration checks are increased to ensure the glycol meets the required concentration.

During any reclamation of refrigerant from the evaporator during the off state, ensure the water/glycol solution is continuously circulated to prevent static water from freezing.

If maintenance work is being carried out on the chiller preventing fluid flow whilst the ambient temperature is within 3K of the fluid freezing point, then the fluid circuit must be fully drained and the evaporator immersion heaters should be turned off.

Free Cooling Chillers

For free cooling chillers it is mandatory that glycol of an appropriate concentration(1) is used within the coil volume. The concentration should be capable of protection to at least $5.4^{\circ}\text{R} / 3\text{K}$ lower than the minimum ambient.

(1) Refer to your glycol supplier for specific details. Airedale insists that the glycol freeze point (the temperature at which ice crystals begin to form) is used rather than the burst point (the temperature the fluid freezes and becomes expansive) for all pumped systems. Failure to follow these instructions can damage pumps if slush is present and the pumps start to run.

Flow Control

For fixed flow applications, when the chiller is in operation the design water flow MUST be maintained at all times within acceptable tolerances ($\pm 5\%$). For variable flow systems, flow variation must not exceed 10% of the design flow per minute and both the evaporator minimum/maximum flow rates should always be respected. Care to be taken when selecting a chiller within 5% of the evaporator minimum flow rate. The end user must ensure that flow variation does not fall below this minimum as the chiller will shut down.

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.

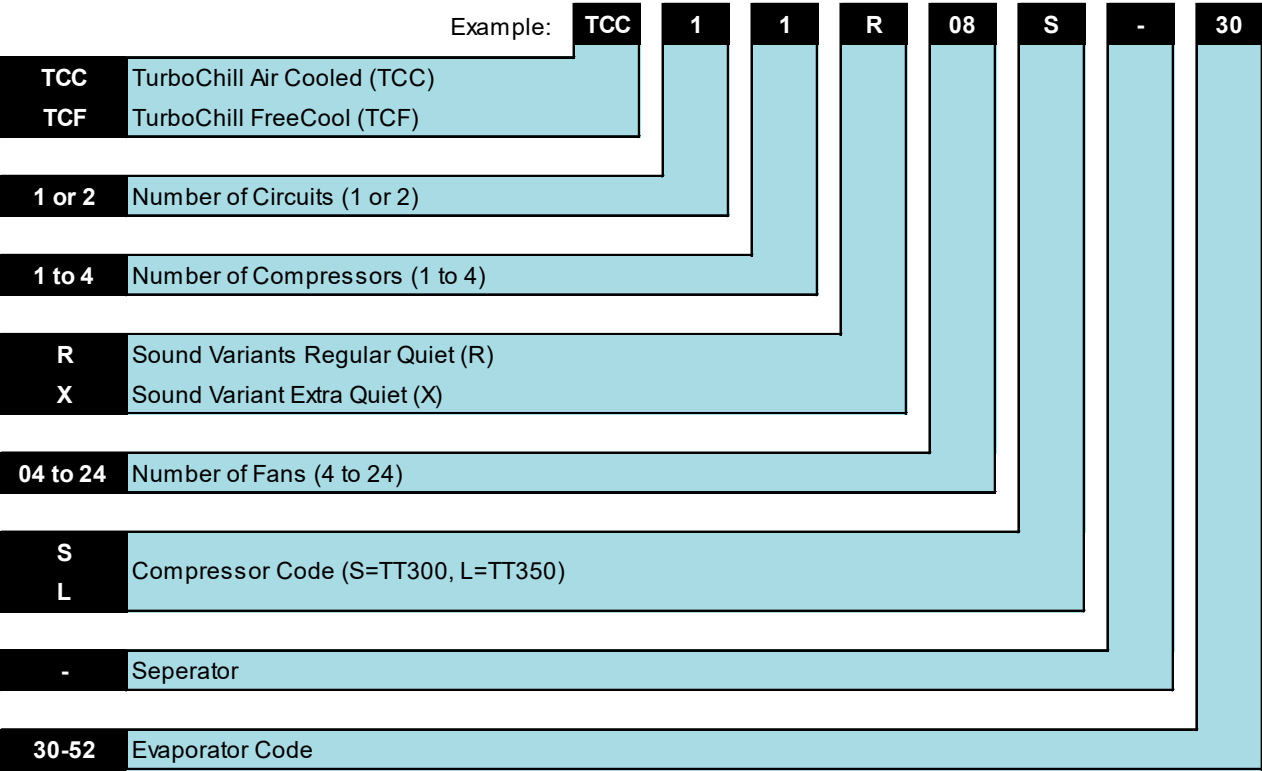
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Nomenclature



Introduction

The Airedale range of TurboChill air cooled and Freecool liquid chillers uses the technologically superior centrifugal Danfoss Turbocor® compressors. Designed to cover the high capacity range between 200kW and 1650kW. Each model is individually selected to provide the optimum solution for each application by offering maximum flexibility and matching customer requirements in terms of:

- Capacity.
-

- EER/ESEER (Energy Efficiency Ratio and European Seasonal Energy Efficiency ratio).
- Sound Levels - Quiet (R) and Extra Quiet (X).
- Footprint.

For guidance the unit's information within this manual has been generated at nominal conditions, due to the unit's ability to modulate capacity, individually tailored unit solutions are available on request. Please contact Airedale, with your specific requirements and we will be pleased to provide you with an individually tailored selection and technical specification.

Construction

The base shall be fabricated from galvanised steel to ensure a rigid, durable, weatherproof construction.

Unit panels shall be manufactured from galvanised sheet steel coated with epoxy baked powder paint to provide a durable and weatherproof finish. Standard unit colour shall be Light Grey (RAL 7035).

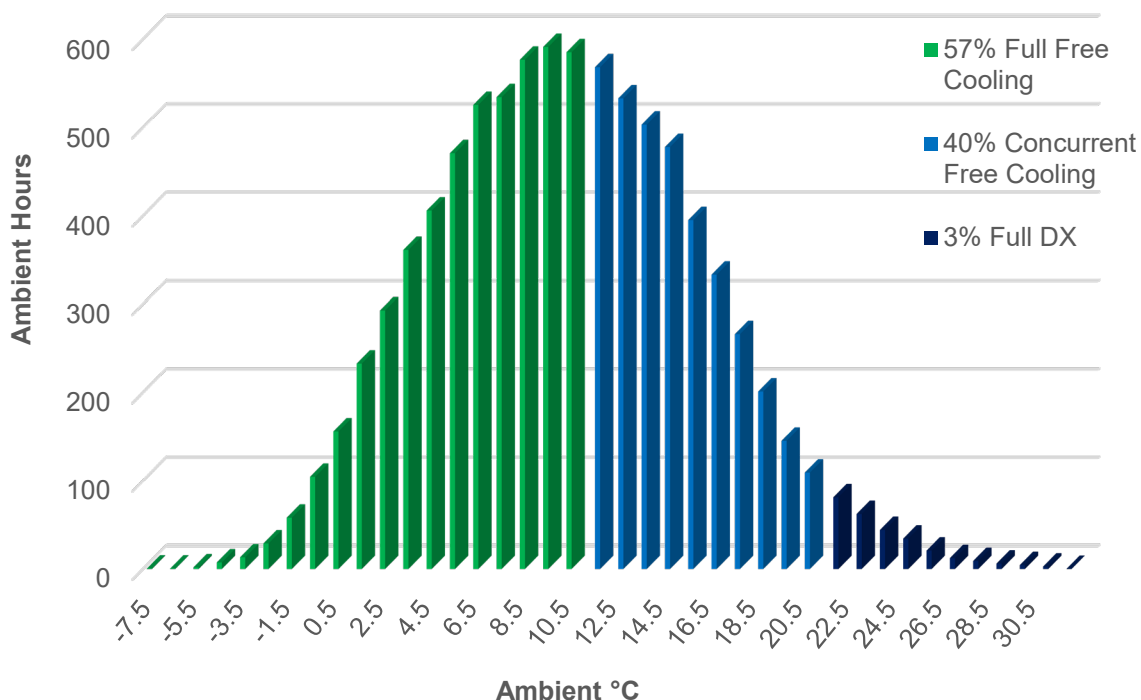
Free Cooling Operation

The TurboChill Free Cool chiller has been designed to provide the cooling load required whilst optimising energy efficiency at all times and as such will take advantage of free cooling whenever available. If the free cooling available cannot satisfy the required full cooling load, direct expansion cooling is used to supplement the output.

In high ambients where free cooling is not available the fan speed modulates in the conventional manner to maintain an optimised head pressure. Free cooling is initiated wherever the outdoor ambient is 2K less than the return water temperature. During concurrent cooling mode the condensing temperature is constantly monitored and intelligently kept within the compressor envelope to allow the fans to run as fast as possible and therefore achieve the most free-cooling without having a negative impact on compressor integrity.

In ambients where the free cooling coil is capable of meeting the full cooling demand, the condenser fans are modulated to provide the desired duty. The condenser fans are capable of being modulated between 15-100% (EC) or 40% - 100% (AC) of airflow to maintain the supply water temperature. During periods where the condenser fan speed has been reduced to a minimum, the supply water temperature will then be controlled by the 3 way valve.

Free Cooling vs. Mechanical Cooling



Unit Overview

Airflow

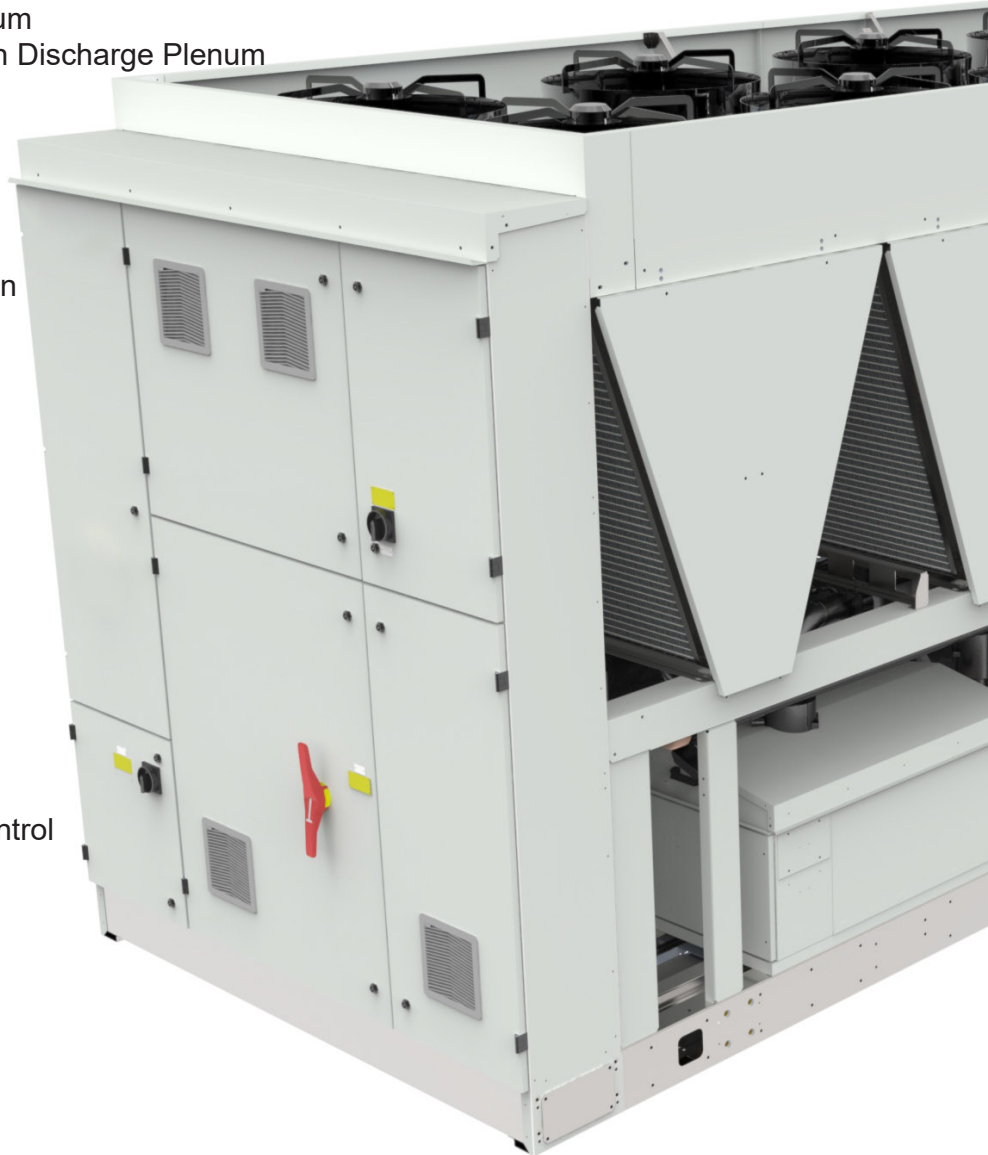
- EC Condenser Fans
- AC Condenser Fans
- High Airflow EC Condenser Fans
- No Discharge Plenum
- 300mm Fan Discharge Plenum
- 500mm Extended Height Fan Discharge Plenum

Electrical Panel

- Single Point 3 Phase Isolation
- UltraCap Power Backup
- Control Panel Heater
- Panel Ventilation
- Power Monitoring
- Weatherproof Rain Hood

Controls

- Helix Microprocessor
- Leak Detection
- Intelligent Head Pressure Control



Coils

- Epoxy Coated Microchannel Condenser Coils
- RTPF FreeCooling Coils



Waterside

- Differential Pressure Sensor
- Flow Switch
- Pump Interlock
- Water Filter
- Various Pump Options
- Immersion Heater
- Grooved and Clamped Type Connections

Refrigeration

- Centrifugal Compressors
- Spray Flooded Evaporator
- Actuated Suction Ball Valves
- Liquid and Discharge Shut Off Valves
- Liquid Line Sight Glasses
- Dual Pressure Relief Valves
- Micro-Plate Economiser

Unit Components

Refrigeration

Refrigeration	TCC	TCF
Compressors - Danfoss Turbocor® centrifugal	●	●
Dual maintainable pressure relief valves	●	●
Microchannel epoxy coated condensing coils	●	●
RTPF free cooling coils	—	●
Epoxy coated RTPF free cooling coils	—	○
Modulating starting line assembly	●	●
Filter driers with replaceable cores	●	●
Electronic expansion valves	●	●
Spray flooded evaporator	●	●
Full operating charge of R513A	●	●
Liquid and discharge shut off valves	●	●
Liquid line sight glasses (integral to EEV)	●	●
Micro-plate economiser	○	○
Actuated suction ball valve(s)*	○	○
Large capacity filter drier(s) with replaceable cores	●	●
Liquid line sight glasses	●	●
Low pressure switch with auto reset	●	●
2 High pressure switches with manual reset per compressor	●	●
High ambient starting valves	●	●
Suction and liquid pressure transducers	●	●
Discharge check (non return) valve(s)	●	●

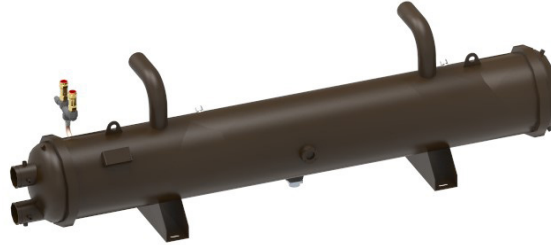
● Standard features ○ Optional features — Feature not available

CAUTION ⚠

* Feature required if unit is to be shut down for winter with water still circulating through unit, for freeze protection. The actuated suction ball valve is to stop liquid migration and protect the compressor.

Evaporator

Spray flooded evaporator technology used to dramatically reduce unit refrigerant charge by up to 50% whilst maintaining efficiency close to traditional fully flooded evaporators. This reduction in refrigerant charge within the evaporator means that capacitive liquid level technology is no longer required to regulate evaporator efficiency. The heat exchanger is insulated with closed cell polyurethane foam which is to class "O" fire rating and the material is UV resistant. The flooded evaporator results in significant energy savings in compressor operation particularly at part load.



Two immersion heater(s) and thermostat protect the evaporator against freeze up in ambient temperatures down to -20°C. (in compliance with Airedale freeze protection policy). Connections for external trace heating rated at 230V/500W is available. Compressors and evaporator shall be mounted on a rigid galvanised heavy duty sub frame.

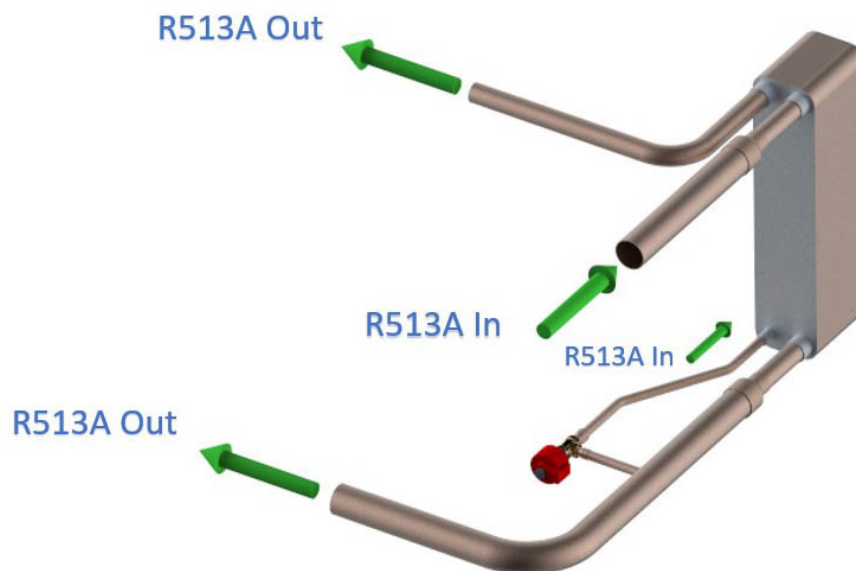
Actuated Suction Ball Valve(s)

To protect the compressors against liquid migration, actuated suction line ball valves are fitted. This protects the compressors when there is no cooling demand by keeping the refrigerant in the evaporator, even if water is still flowing through the unit. This option also allows partial pumpdown of the system refrigerant charge into the evaporator where it is isolated in the event of a leak. Partial pumpdown is only available with the actuated suction ball valve option fitted.

Economiser Circuit for Increased Part Load Efficiency

The addition of an economiser circuit provides increased cooling and enhances EER, in full and part load operation. Sub cooled liquid is expanded using a dedicated EEV (electronic expansion valve) to medium pressure, and passed through one side of a plate heat exchanger, whilst on the other side flows the 'normal' pressure liquid.

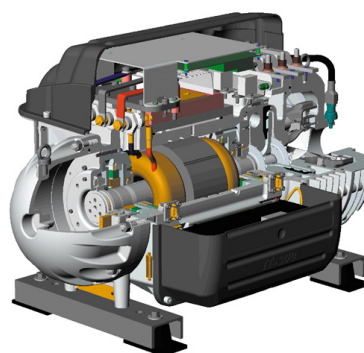
The result is that the sub cooling of the liquid entering the system EEV is increased, which improves evaporator performance and at the same time the suction pressure within the compressor body is lifted, improving compressor efficiency.



Danfoss Turbocor® Compressor

Each installed compressor comes with the following components:

- Suction and discharge shut off valves.
- Discharge non-return valve.
- Line reactor (for removing additional impedance harmonics and voltage spikes in the ac waveform).
- EMI/EMC filter:
 - AC-DC rectifier.
 - DC capacitors.
 - DC-AC (IGBT) converter.
 - Motor/bearing management system and incorporated surge protection.
 - Soft start module.
 - Magnetic bearing system.
 - Vibration reducing isolating rubber mounts.
 - Linear capacity modulation is provided by a variable frequency drive.



Key benefits of Danfoss Turbocor® compressor technology:

- Oil Free Operation:
 - More efficient heat exchange.
 - No oil entrainment issues – pipe work can be optimised for performance not oil return.
- Small and light, only 120kg or 132kg (compressor size dependant).
- Danfoss Turbocor® compressor shaft and impellers levitate on a magnetic cushion eliminating friction and vibration resulting in the compressor running at a smooth and reduced sound spectrum.
- The TurboChill compressor's variable speed control offers 2 major benefits:
 - Uses substantially less power at part load and gives accurate set-point control and exact capacity match.
 - The inbuilt electronic soft start produces a very low starting current of just 2A and eradicates the need to oversize electrical supply components on site.

Condenser

Large surface area microchannel coil(s) (ideally positioned to optimise airflow and heat transfer) shall be manufactured as a “V-block” arrangement. This microchannel “V-block” arrangement has a lower airside pressure drop than a traditional round tube plate fin heat exchanger making the fans run more efficiently. The coils have free flowing liquid drains that enable us to reduce the amount of subcooling done in the coil, leaving more area for heat exchange.

R513A Leak Detection System

A factory calibrated leak detection system shall be fitted as standard to units containing circuits carrying > 500 tonnes equivalent CO₂ / circuit of refrigerant to comply with F-gas legislation, however the leak detection system can be supplied as an optional extra with refrigerant charges <500 tonnes equivalent CO₂. A dedicated refrigerant sensor shall be fitted in close proximity to each evaporator circuit and will raise an alarm on detection of refrigerant gas.

Maintainable Dual Pressure Relief Valve

An auto resetting pressure relief valve assembly shall be provided per evaporator circuit, opening on pressure rise above 10.3 barg. The dual shut-off valve assembly incorporates 2 pressure relief valves which can be individually shut off via a 3 way valve. This allows the maintenance of individual pressure relief valves without any requirement for refrigerant evacuation. Rupture discs are also fitted on systems with a circuit refrigerant charge larger than 300kg in line with EN 378-2:2016 clause 6.2.6.5. In accordance with EN13136:2013, pressure relief valves have been sized to ensure that in the event of fire they can prevent excessive build-up of pressure within the evaporator. EN13136:2013 section 6.2.1 has been used to size valves accordingly.

Fire is a hazard that these units have not been designed to operate under. However, the inclusion of various safety devices ensures that any damage due to fire is limited via the release of pressure in the form of gas discharge.

If concerns of the ability of the pressure relief valve to discharge in the event of a fire >107°C exist, then it is the responsibility of the end user to protect the pressure relief valve assembly from excessive external temperatures.

This must however allow the pressure relief valve to discharge effectively and not act as a ‘choke’ (offer any resistance) when discharging.

Electrical

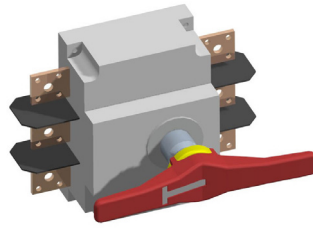


Controls and Electrical	TCC	TCF
Leak detection on circuits containing >500 tonnes equivalent CO ₂	●	●
Intelligent head pressure control	●	●
Actuated suction shut off valve	○	○
Power monitoring	●	●
Individual mains power isolator for each compressor	●	●
Separate electrical isolation for fans	●	●
Single point isolation for connection of incoming 3-phase and earth mains power supply	●	●
Circuit breakers for protection of all major unit components	●	●
Phase rotation relay incorporating phase loss protection	●	●
Mains power loss emergency shutdown via ultracap	●	●
Control panel light	○	○
Maintenance socket	○	○

● Standard features ○ Optional features — Feature not available

3 Phase Single Point Isolaton

Single point isolation shall be fitted as a standard feature.



Ultracap Power Backup

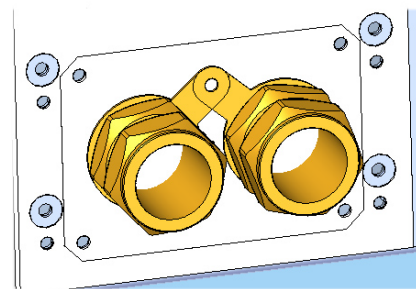
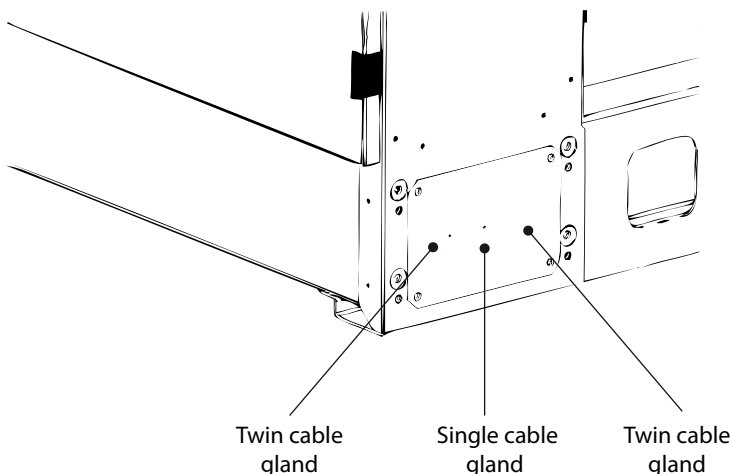
The Ultracap module is a standard feature utilising the latest Ultra Capacitor technology in external backup device for the EVD Evolution drivers and pCO controllers. The module guarantees temporary power to the controller and drivers in the event of mains power failures. The Ultra Capacitors are used to maintain the controller's main functions and to close the electronic valves in the event of mains power failures. This avoids the need to install a solenoid valve in the refrigerant circuit or use a battery backup module and allows the system to resume control as soon as mains or backup power returns to the unit.

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.

Mains Cable Entry

The unit mains cable can enter from either side of the electrical control panel.



Maximum Cable Gland Sizes

Single 1 x M75S

Twin 2 x M63S

Control Panel Light

A control panel light shall be fitted to enable control panel maintenance to be carried out during poor light conditions.

Maintenance Socket

A single phase maintenance socket (RCD protected) is available located within the control panel. This socket enables UK plugs to be connected.

Condenser Fans



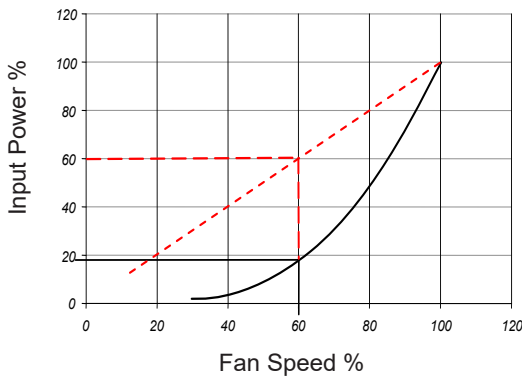
Fans	TCC	TCF
800 mm diameter EC axial fans	●	●
800 mm diameter AC axial fans	○	○
800 mm diameter High Airflow EC fans*	○	○

● Standard features ○ Optional features — Feature not available

* High airflow EC fans are not available with the X type units.

Energy saving Electronically Commutated (EC) Fan Motor

Each 800 mm diameter fan incorporates on board electronics with AC / DC conversion and inverter driven DC motor control to offer unparalleled high efficiency levels combined with smooth step-less speed control and quiet operation. Sickle blades reduce air turbulence to minimise sound levels and power consumption whilst maximising performance. The long bell mouth design provides improved aerodynamics, up to 10% more air movement, and an extended vertical throw of air to reduce the chance of air re-circulation. As standard the enclosure is complete with an integral finger proof grille. The fans offer maximum airflow performance while keeping sound levels to a minimum. A mains EMC filter is fitted when the standard EC fan option is selected with the unit. The filter is designed for convenient mains connection within the bus bar chamber. The in built EC fan control module allows for fan speed modulation from 15-100%, an AC fans modulating range is typically 40-100% of full fan speed. The EC fan presents superior energy efficiency at full and reduced fan speed compared to the equivalent AC fan motor, offering efficiency savings anywhere between 30 to 100% compared with an AC fan. Fan speeds are factory set depending on sound level variant. Voltage regulated (VR) fan speed controllers offer a linear response. By comparison the standard EC fan is adjusted on demand via the unit microprocessor with precision, offering substantial energy savings. The following illustration shows a comparison of the typical power input required by each method.



Fan speed of 60%
Voltage regulated input power required 60%
EC input power required 18%

— EC (Electronically Commutated) Fan Speed Control
- - - Voltage Regulated Fan Speed Control

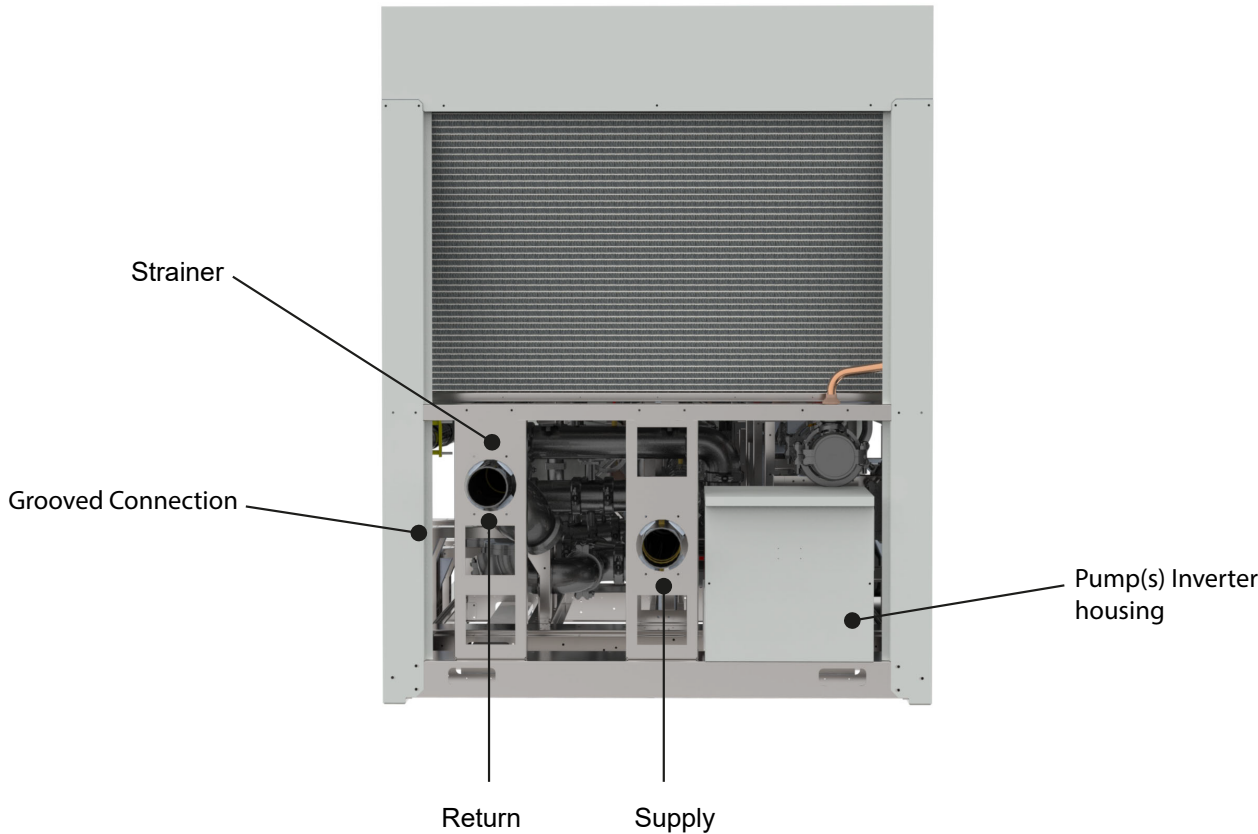
Condenser Fan and Motor - AC

Axial fan assemblies with finger proof grille and incorporating external rotor AC motor technology, capable of highly accurate discreet speed control. The fans Discharge air vertically and offer maximum performance whilst keeping sound levels to a minimum.

⚠️IMPORTANT

When a unit with axial fans is not in operation and is in a humid or otherwise challenging environment, such as a subtropical/tropical or coastal region, it is required to regularly run the fans to avoid any risk of condensation build up. This can be achieved by using the fan override through the controller display and may require installation of a temporary power supply. This measure will help extend the lifespan of the fans. The override should be scheduled for a three hour duration once a month. This is especially relevant for situations where the unit is in storage, in transit, installed without power or intentionally kept on standby.

Waterside



Waterside	TCC	TCF
Standard Free Cooling Coil	—	●
Optimised Free Cooling Coil	—	●
Evaporator immersion heaters	●	●
Internal water filter**	○	●
Pump hydronic options**	○	○
Grooved and clamped type connections	●	●
Flanged connections***	○	○
Pump vibration eliminators	●	●
Pump interlock*	○	○
Flow switch*	○	○
Differential pressure transducer*	●	●

● Standard features ○ Optional features — Feature not available

CAUTION ⚠

*Each feature is a flow proving device, and 2 out of the 3 should be fitted to any unit to validate warranty.

**options only available within units with sufficient space.
*** Flanged connection not available on TCC Evaporator only.

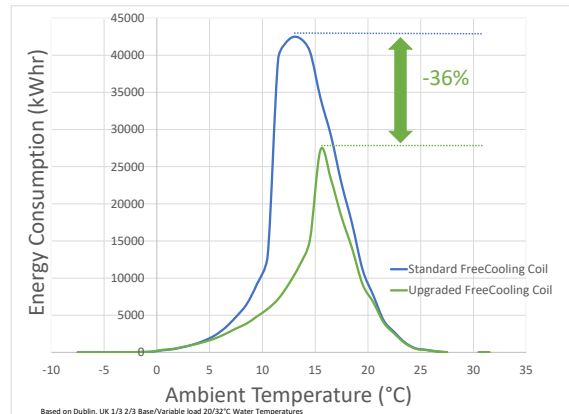
Free Cooling Coil

A free cooling coil constructed in a “V” frame arrangement, allowing for efficient heat transfer from the ambient air temperature to the cooling process. The free cooling coil is manufactured from copper tube and aluminium fin. The TurboChill free cool chiller's pipe work has been designed to optimise pressure drop, reducing pump input power. It shall be fitted with a water drain valve (schrader point located at lowest point of coils) for maintenance purposes.

Free cooling is initiated whenever the outdoor ambient temperature is 2K less than the return water temperature. The “V” frame arrangement enables efficient concurrent cooling.

Optimised Free Cooling Coil

Additional free cooling is available with an upgraded freecooling coil and fan combination. Whereby the coil design is optimised for high ΔT s and high water temperature applications as is typical in data centres. This has been shown to provide up to 40% additional annual energy savings when applied to a typical load profile compared to the standard freecooling unit design. Please contact Airedale for more details on this optional feature.

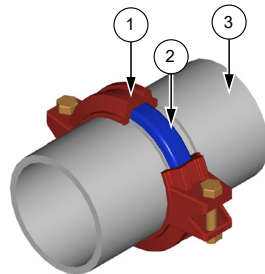


Water Filter

A 20 mesh water filter can be supplied fitted to protect the evaporator from clogging by sediment. On certain models the filter is fitted externally.

Grooved and Clamp Type Connections

Grooved and clamp type connections shall be fitted to the unit.



1. Clamp.
2. Gasket.
3. Counter pipe.

Flanged Connections

Flanged connections shall be fitted to the unit upon request. (excluding TCC evaporator only hydronic options). Please contact Airedale.

Pump Vibration Eliminator

Bellows shall be fitted to the pumps (>11kW) to reduce any vibration through the system pipework.

Pump Interlock*

Provision for a pump interlock is available within the control panel.

Water Flow Switch*

If selected. A water flow switch is fitted ensuring integrity of the cooling solution flow. The flow switch shall protect the chiller against low water flow conditions. Despatched loose for on site fitment.

Flow Proving Device

An evaporator differential pressure sensor facilitates low flow limiting and pressure drop monitoring via the microprocessor shall be fitted. This is to ensure correct unit water flow at all times during unit operation. If the water flow is reduced a critical alarm is generated.

CAUTION ⚠

* Each feature is a flow proving device, and 2 out of the 3 should be fitted to any unit to validate warranty.

Pump Options

A variety of pump options to suit a wide range of applications are available:

Factory fitted in line as a single pump or run / standby configuration with multiple pump sizes to tailor exact customer requirements in terms of flow and additional head. Factory fitted run/standby pumps have a shut off valve to the inlet and a non return valve to the outlet, enabling one pump to be maintained without interrupting chiller flow. Supplied with electrical switchgear and isolating valve as standard. Run / standby pumps are rotated automatically to ensure even pump usage and prolong component life.

Pump - AC Motor - Fixed Speed

Flow can be proven via the microprocessor display.

Factory fitted and supplied as standard complete with:

- Differential pressure sensor.
- Isolating valves.
- Inlet strainer.
- Vibration isolation.
- Electrical switch gear.

Pump - Inverter Driven - Variable Speed

Flow is varied via an electronic flow meter, depending on system requirements.

Adjustment and monitoring is via the microprocessor display.

Factory fitted and supplied as standard complete with:

- Differential pressure sensor.
- Isolating valves.
- Inlet strainer.
- Vibration isolation.
- Electrical switch gear.
- Inverter panel with ventilation fan and panel heater (high / low ambient operation).

Water Connections

Water inlet and outlet connections shall be of a grooved and clamped type construction. Optional flanged connections shall be available on request (excluding TCC evaporator only), please consult Airedale.

Water connection to evaporator only (air cooled only)

Water inlet and outlet connections shall terminate directly on the evaporator.

Extended Water Connections (air cooled only)

Extended water connections shall be available on all air cooled units, it allows the water connections to terminate at the end of the unit.

Bypass Options**No bypass**

Comprises:

- Shut off valves.
- Filter.

Flushing bypass kit (standard)

Comprises:

- Shut off valves.
- Filter.
- Bypass leg with shut off valve.

Flushing bypass kit (regulating)

Comprises:

- Shut off valves.
- Filter.
- Bypass leg with double regulating valve.

Pump Configurations**Single pump + filter + bypass (flushing)**

Comprises:

- Single pump with vibration isolation.
- Shut off valves.
- Filter.
- Bypass leg.

Single pump + filter + bypass (regulating)

Comprises:

- Single pump with vibration isolation.
- Shut off valves.
- Filter.
- Double regulating valves.

Run & standby pumps + filter + bypass (flushing)

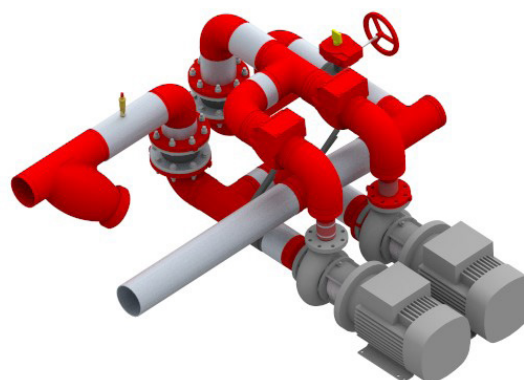
Comprises:

- Run and standby pumps with vibration isolation.
- Shut off valves.
- Filter.
- Non return valves.

Run & standby pumps + filter + bypass (regulating)

Comprises:

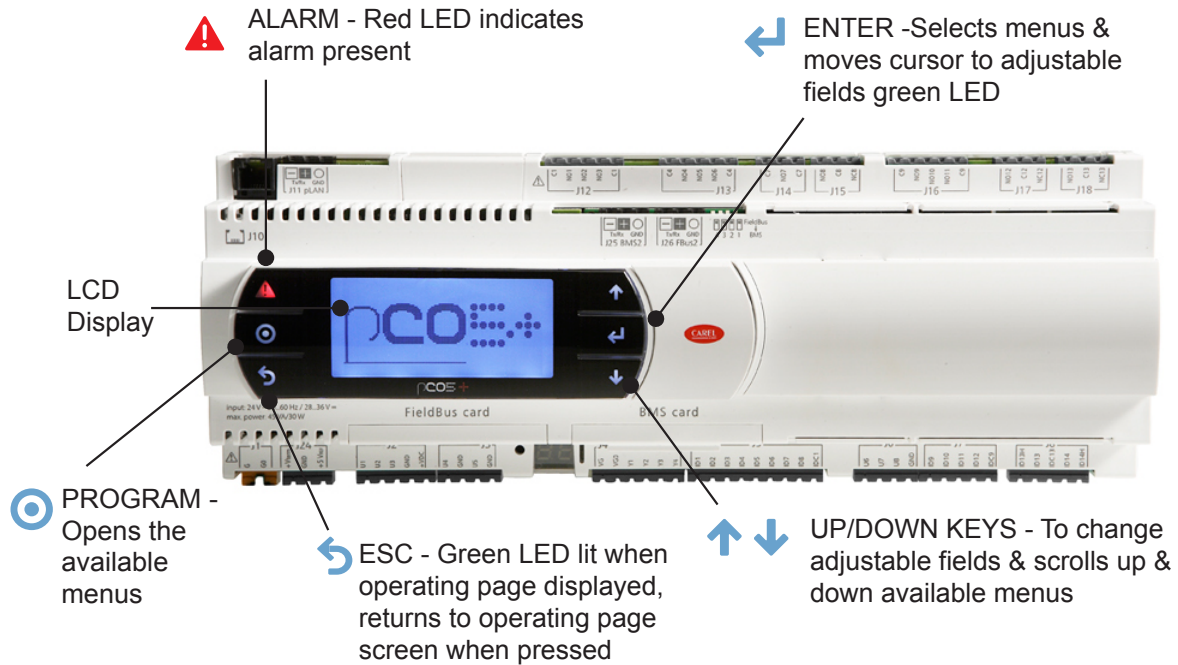
- Run and standby pumps with vibration isolation.
- Shut off valves.
- Filter.
- Double regulating valve.
- Non return valve.



Run and standby pump set.

Controls

The microprocessor controller shall offer 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. The controller's inbuilt display shall be used for viewing the unit operating status and making adjustments to control parameters by allowing the operator access to a series of display pages. Also featured shall be a visual alarm and the facility to adjust and display control settings by local operator for information and control.



Temperature Control

The microprocessor controller shall monitor the return and supply temperatures. The supply temperature is used to calculate the required cooling demand. Further calculations are then made to determine the optimum compressors to be selected and their individual cooling demands. These calculations ensure the unit efficiency is maximised under all load conditions. As standard, the microprocessor controller can provide an infinite capacity control between minimum unloading capacity and 100% depending upon component selection and operating conditions. Refer to mechanical data tables for unit specific control ranges.

Monitoring

The microprocessor shall also monitor and display the following measured parameters:

- Supply water temperature.
- Return water temperature.
- Liquid pressure.
- Suction pressure.
- Evaporator differential water pressure.

Alarm Handling

The controller shall log and allow viewing of the last 150 conditions recorded in descending chronological order through the keypad display.

The following conditions shall be detected, triggering a visual display:

- High compressor discharge temperature (per compressor).
- Low supply temperature.
- Phase rotation.
- Emergency stop.
- Evaporator flow failure.
- Low pressure safety switch.
- Low suction pressure (per compressor).
- High liquid pressure.
- Refrigerant leak detection.
- Compressor 1 contactor status.
- Compressor 2 contactor status. (dependant on model).
- Compressor 3 contactor status (dependant on model).
- Compressor 4 contactor status (dependant on model).
- Volt free contact non-critical alarm indication.
- Volt free contact critical alarm indication.

Building Management Systems (BMS)

Sequencing (Master / Slave and Run / Standby) via the Airedale sequence manager. Please specify at time of enquiry.

Chiller Sequence Manager

For the efficient temperature and capacity operation of multiple units on a single site, the sequence manager will permit interlinked operation of the complete system thereby providing optimum temperature control and minimum power consumption. Up to 6 units can be sequenced. Included within this package is a site visit by an Airedale control specialist to set up multiple unit sequence control. The chiller sequence manager is supplied as a separate control panel to be mounted remotely in an indoor location, such as a plant room.



Unit Remote ON/OFF

Disables / Enables the unit remotely.

Compressor Anti Cycle Control

Automatic via the Microprocessor.

Compressor Load Limit

This feature limits the condensing pressure to 15 Barg by unloading the compressor.

Suction Pressure Limiting

Limits the evaporating pressure by unloading at the minimum pressure set-point, which is adjustable depending on system glycol content.

Supply Temperature Limiting

Based upon the freezing point of the water/ glycol solution, the unit operation is limited to a 2K differential. Cooling is reduced as the temperature approaches the freezing point (below this differential). The differential is the difference between actual temperature and the freezing point of the solution.

Pump(s) Remote ON/OFF

Disables / Enables the pump(s) remotely.

Evaporator Differential Pressure Sensor

Shall facilitate low flow limiting and pressure drop monitoring via the microprocessor.

Remote Setback Temperature Set-point Switch

A setback set-point for supply water temperature shall be selected to suit summer / winter conditions or night setback.

Remote Set-point Adjust

Shall allow the chilled water set-point to be adjusted via an external 0-10V signal.

Compressor Hours Run

Displays hours run of each compressor.

Interactive Head Pressure Setpoint Management

The combination of variable speed compressor, EC fan and interactive control logic allows fans to be slowed down to give the optimum head pressure setpoint in relation to combined power draw of compressor and fans. The fan speed shall automatically modulate to achieve the best energy balance for all normal operating conditions. Reducing the head pressure setpoint decreases the compressor input power at the expense of the fan input power.

Compressor Reduced Start Delay

Compressor fast start functionality shall be available for applications that require minimum downtime following 3 phase power failure. This is subject to a compressor UPS being fitted onto the L4 permanent supply. Please contact Airedale.

CAUTION ⚠**Password Protection**

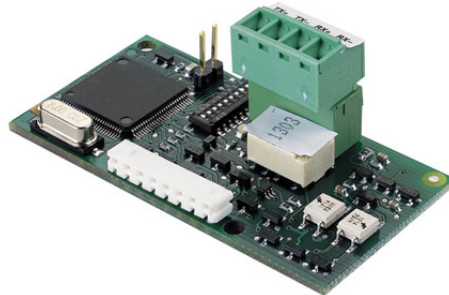
The control system integrity shall be maintained by restricting access with a password PIN number.

IMPORTANT ⚠

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

BMS Interface Card

It is possible to integrate the unit control system into a BMS. Communication protocols must be specified at the time of order. Serial protocols options include Modbus RTU and BACnet MSTP. Ethernet IP protocols include BACnet/IP and Modbus TCP. Configuration for all protocols should occur as part of the installation.



Modbus/Carel BMS Connection

The Airedale controllers shall be able to communicate directly using the Modbus® protocol.

The Modbus® card shall be a small PCB (60mm x 30mm), which is plugged into the controller to provide it with the following protocol support:

- Modbus® - JBus slave.
- RTU mode (Remote Terminal Unit) with 8 bit encoding and error handling using 16 bit CRC.
- Communication standard connection options of RS485 (multipoint) or RS232 (point-point).
- Maximum Baud Rate of 19200.

The data communication shall be asynchronous serial, 8 data bits, 2 stop bits and no parity (in total 11 bits/datum).

The data/parameters from the controller shall be represented within Modbus® registers, each register containing information pertaining to temperatures, pressures, setpoint and status etc. shall be available to the site integration company in a spreadsheet format.

Lon BMS Connection

The Airedale controllers, using special serial cards, shall be integrated into LonWorks® networks. The RS485 and the FTT10 standards shall be supported by the LonWorks® serial cards.

The two types of LonWorks® serial cards shall differ by the type of interface on the LonWorks® network side:-

- FTT-10A 78 kbs (TP/FT-10).
- RS485 39 kbs (TP/485-39).

pCOWeb

pCOWeb is a new generation of Airedale supervisory plug-in cards which make communicating with an Airedale unit simply a matter of logging onto the office Intranet or via the web. Based on Ethernet TCP/IP secure technology, pCOWeb shall require no proprietary cabling. It shall have little or no setup on site and can be pre-programmed with an IP address prior to dispatch from airedale.

CAUTION ⚠

When adding to an existing controls scheme, please consult Airedale Controls to ensure strategy compatibility.

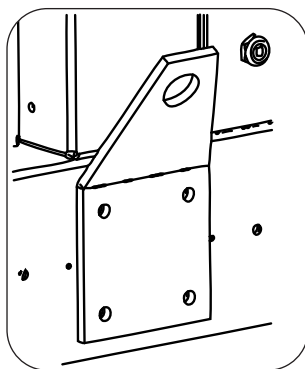
Mechanical

Mechanical	TCC	TCF
Lifting lugs	●	●
Base - plain galvanised steel	●	●
Panels - galvanised sheet steel with epoxy powder paint	●	●
No discharge plenum	●	●
300mm height fan discharge plenum	○	○
500mm Extended height fan discharge plenum	○	○
Anti-vibration mounts (spring or pad type)	○	○
Weatherproof rain hood	○	○
Compressor enclosure	○	○

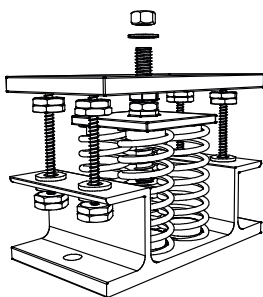
● Standard features ○ Optional features — Feature not available

Lifting Lugs

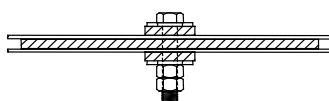
Lifting Lugs shall be fitted to the unit enabling full lifting requirements. The lifting lug hole diameter is 40 mm.

**Anti Vibration Mounts (Spring Type)**

Specially selected spring vibration isolators shall be supplied loose for on site fitting to the base frame of each unit. The isolators shall be suitable for fitting to structural steelwork providing the surface is level and of sufficient strength where a high level of vibration elimination is required.

**Anti Vibration Mounts (Pad Type)**

Pad vibration isolators can be supplied loose for on site fitting to the base frame of each unit. The isolators are suitable for fitting to structural steelwork providing the surface is level and of sufficient strength where a moderate degree of vibration elimination is required.



No Discharge Plenum

No discharge plenum is fitted as standard.

Discharge Air Plenum - Condenser Fan

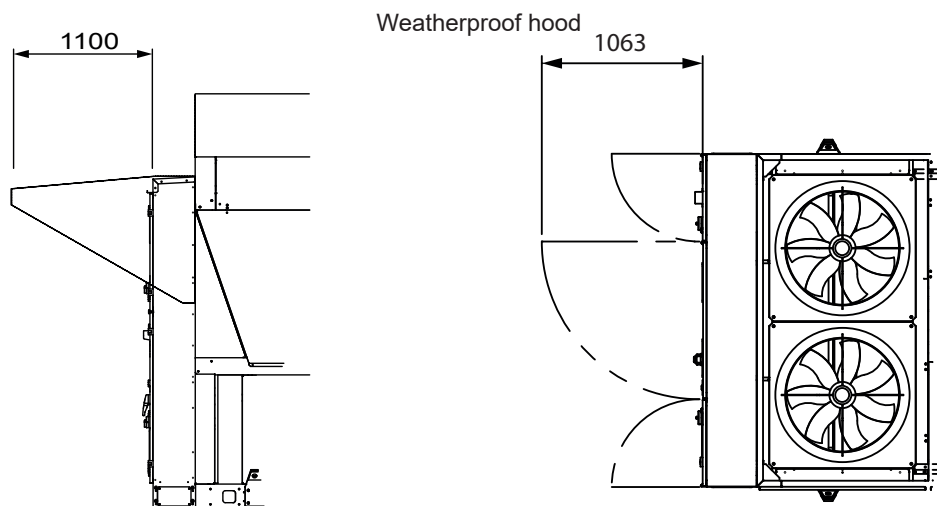
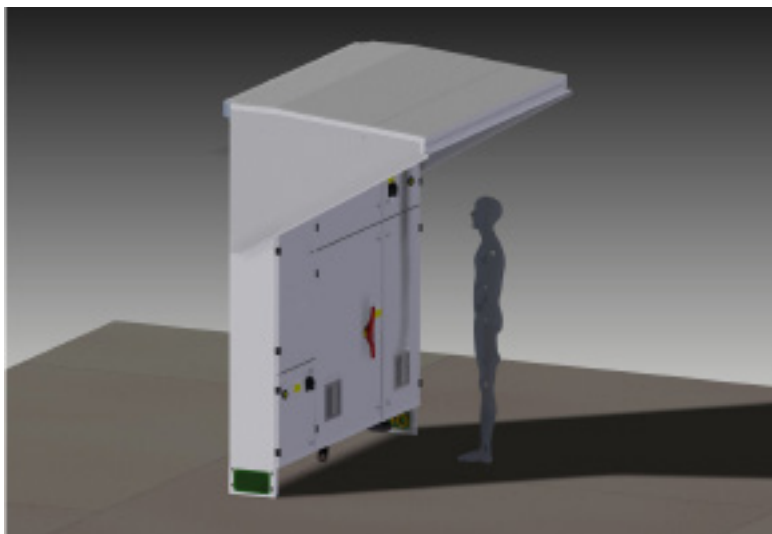
Factory fitted and constructed from galvanised sheet steel coated with epoxy baked powder paint, this plenum shall direct discharge air vertically which reduces air re-circulation and provides a degree of acoustic reduction in the horizontal plane. Standard unit colour shall be Light Grey (RAL 7035). The overall unit height when fitted with the optional 300mm discharge air plenum is 2800mm.

Extended Discharge Air Plenum - Condenser Fan

Site fitted and constructed from galvanised sheet steel coated with epoxy baked powder paint, this plenum shall direct discharge air vertically as an aid to minimise air re-circulation and also offers a degree of acoustic reduction in the horizontal plane. Standard unit colour shall be Light Grey (RAL 7035). The overall unit height when fitted with the extended 500mm discharge air plenum is 3300mm.

Weatherproof Rain Hood

A rain hood shall be fitted to the TurboChill chiller which will allow the customer, (maintenance / commissioning personnel), to work on the control panel whatever the weather with a reduced risk of sensitive electrical components getting wet. The electrical panels are fully weatherproof when closed.

**Compressor Enclosure**

Optional compressor enclosure offers improved resistance to dust over the standard compressor's IP54 housing. The weatherproof compressor enclosure is recommended for installations with particularly adverse dusty environments.

Design Features & Information

Specific Heat Capacity (SHC)

% Ethylene Glycol Concentration		0%	10%	20%	30%	40%
Specific Heat Capacity (kJ/kgK)	(1)	4.190	4.115	3.901	3.686	3.474

% Propylene Glycol Concentration		0%	10%	20%	30%	40%
Specific Heat Capacity (kJ/kgK)	(1)	4.190	4.139	4.033	3.903	3.749

(1) Data quoted for water/glycol solutions at a nominal temperature of 10°C.

CAUTION

Only use the SHC data when calculating fluid volume. Use figure for 0% concentration (100% water). When calculating volumes of glycol solutions, refer to glycol data correction factors and convert the water volume.

Minimum System Water Volume Calculations

METHOD 1 (Preferred Method)

Where the system permanent heat load is known, the minimum water volume in litres V_{min} is:

$$V_{min} = q \times t \times CLF$$

$$q = \text{water flow rate (litre/min)} = \frac{\text{kW} \times 60}{\text{Specific heat capacity} \times \Delta t} = \frac{750 \times 60}{4.19 \times 5}$$

$$t = \text{Minimum compressor run time (minutes)} = 2$$

$$CLF = \text{Chiller loading factor} = \frac{\text{kW} \times \text{Minimum Turndown} \times 1.2}{\text{Permanent Heat Load}} = \frac{750 \times 0.15 \times 1.2}{300}$$

$$\text{Minimum Turndown} = \text{Based on data from the mechanical data table. For this example 15\% (0.15).}$$

Example: 750kW output at 35°C Ambient and 7/12°C Water
 Permanent Heat Load = 300kW
 Minimum Turndown = 15% (0.15)
 Factor = 1.2

$$= V_{min} = \frac{750 \times 60}{4.19 \times 5} \times 2 \times \frac{(750 \times 0.15)}{300} \times 1.2 = 1933 \text{ Litres}$$

METHOD 2

Where the system permanent heat load is unknown:

$$V_{min} = \frac{q \times MTR \times 1.2}{MNS}$$

where:

$$q = \text{water flow rate (litre/hour)} = \frac{\text{kW} \times 3600}{\text{Specific heat Capacity} \times \Delta t} = \frac{750 \times 3600}{4.19 \times 5}$$

$$\text{Minimum Turndown} = \text{Based on data from the mechanical data table. For this example 15\% (0.15).}$$

$$\text{Factor} = 1.2$$

$$\text{MNS} = \text{Maximum number of starts / hour} = 12$$

Example: 750kW output at 35°C Ambient and 7/12°C Water
 Minimum Turndown = 15% (0.15)
 Factor = 1.2
 Maximum number of starts per hour = 12

$$V_{min} = \frac{\frac{750 \times 3600}{4.19 \times 5} \times 0.15 \times 1.2}{12} = 1933 \text{ Litres}$$

Design Features & Information

Operating Limits

Standard Unit

Minimum ambient air DB	-20°C*
Maximum ambient air DB at full load operation	35°C
Max ambient air DB (subject to chiller model selected)	40°C
Minimum supply water temperature	5°C
Maximum return water temperature	26°C**
Maximum supply water temperature	18°C
Minimum / maximum ΔT	4K / 8K

* Appropriate Glycol may be required, refer to the freeze protection policy.

** With an 8K ΔT

ESEER Calculations

The quoted EER figures cover the performance of the unit ONLY at the standard rating conditions of 7/12°C water, 35°C ambient. The ESEER (European Seasonal Energy Efficiency Ratio) calculation method has been developed by Eurovent to give a single value that is a realistic indication of the efficiency of the chiller across the year round range of operation. The ESEER value is calculated from the unit's performance at 20, 25, 30 and 35°C ambient temperatures for 25, 50, 75 and 100% loading stages respectively, and with a fixed 7°C supply temperature.

The calculation below uses the Eurovent weighting coefficients and the part load EERs are determined in accordance with EN14825:2018 Clause 4.4.

$$\text{ESEER} = A \bullet \text{EER}_{100\%} + B \bullet \text{EER}_{75\%} + C \bullet \text{EER}_{50\%} + D \bullet \text{EER}_{25\%}$$

A, B, C and D are weighting factors 0.03, 0.33, 0.41 and 0.23.

	A	B	C	D
Temperature	35°C	30°C	25°C	20°C
Capacity Requirement	100%	73.7%	47.4%	21.1%
Weighting (Eurovent)	0.03	0.33	0.41	0.23

Design Features & Information

Performance Effects of Glycol

Glycol Data

For a given percentage of glycol in the system there are correction factors that need to be applied, the following tables should be used as a guide only. For accurate glycol selections please contact Airedale.

CAUTION

The source data must be based upon 100% water for the correction factors to be valid.

Ethylene Glycol Nominal Correction Factors

Glycol in System / Freezing Point °C		10% / -4°C	20% / -9°C	30% / -15°C	40% / -23°C
Output (kW)		0.98	0.97	0.95	0.93
Compressor Input (kW)		0.99	0.98	0.96	0.95
Water Flow (l/s)	x	0.99	1.02	1.04	1.07
Pressure Drop (kPa)		1.05	1.20	1.38	1.57

Propylene Glycol Nominal Correction Factors

Glycol in System / Freezing Point °C		10% / -2°C	20% / -6°C	30% / -12°C	40% / -20°C
Output (kW)		0.97	0.95	0.91	0.88
Compressor Input (kW)		0.99	0.98	0.96	0.95
Water Flow (l/s)	x	0.98	0.97	0.95	0.95
Pressure Drop (kPa)		1.08	1.17	1.31	1.45

Example: At 100% Water:

Output	=750 kW
Compressor Input	=228.6 kW
Flow Rate	=35.83 l/s
Pressure Drop	=20.6 kPa
Ambient	=35°C
Inlet Fluid Temp.	=7°C
Outlet Fluid Temp.	=12°C (5K ΔT)

To 20% Ethylene Glycol:

	100% Water	Multiplier	20% Ethylene Glycol
Output (kW)	750	x 0.97	727.5 kW
Compressor Input (kW)	228.6	x 0.98	224.0 kW
Water Flow (l/s)	35.83	x 1.02	36.55 l/s
Pressure Drop (kPa)	20.6	x 1.20	24.72 kPa

Design Features & Information

Measurement of Sound Data

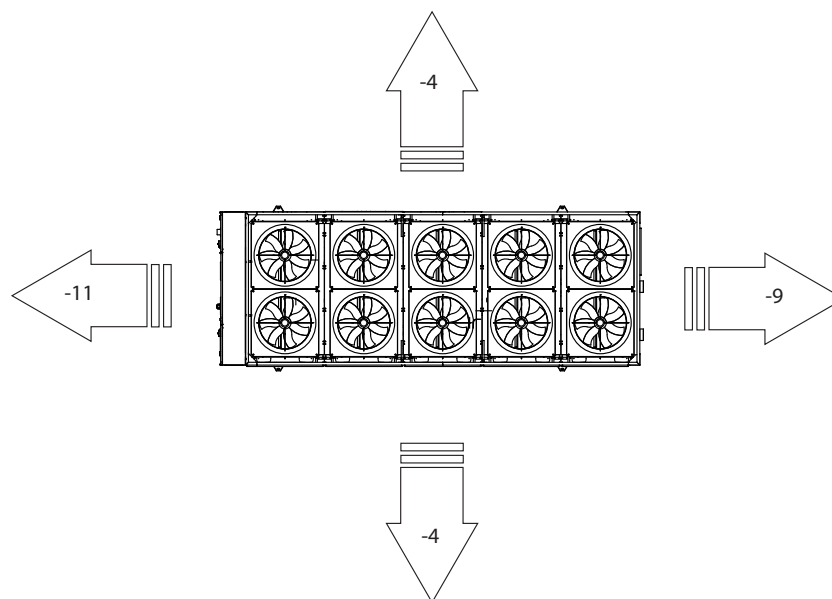
All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1:2009. The Global sound data quoted is valid for noise emitted in the horizontal plane in all directions. All sound power levels quoted are calculated from measured sound intensity according to BS EN ISO9614 Part 1: 2009. The sound pressure levels are calculated from sound power using the expanded parallelepiped method according to BS EN ISO 11203: 2009. Resultant performance figures obtained from test will be proven to not differ from the claimed figures by more than the allowable deviations specified in table 7 of section VII of Eurovent RS 6/C/003-2016 (A-weighted sound power; +3dBA).

Acoustic data is representative of the unit running at the nominal duty and conditions, under steady state operation.

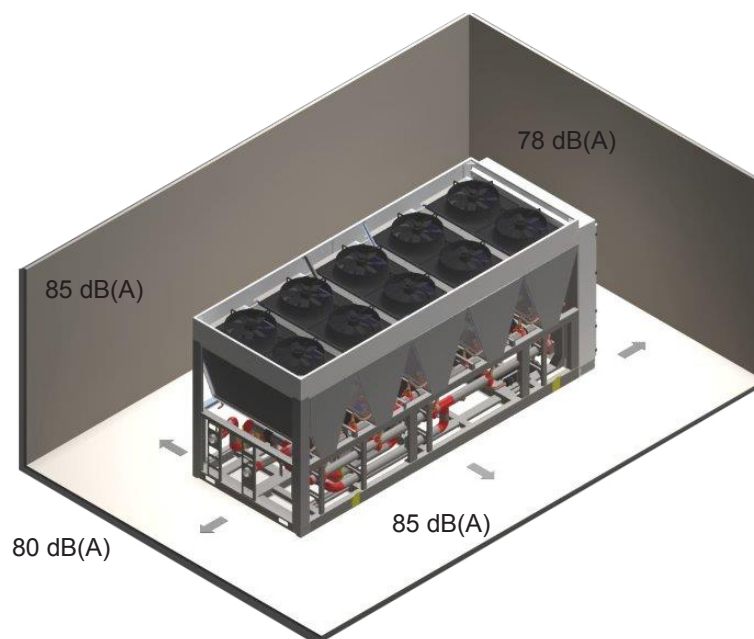
Sound Directivity

The global sound measurements quoted in the following tables do not incorporate any directivity or denote any sound level heard at any given position surrounding the unit, rather they represent the total sound level radiating from the unit in all directions in the horizontal plane from source. Using the adjustment factors from the map below, partial sound power levels can be derived from the global sound power data.

Base Correction Values - Global dB



EXAMPLE (dB(A)): 470 kW Output - Quiet Models - TCC12R08S-33 Overall Sound Power of 89 dB(A) =



Design Features & Information

Pressure Relief Valve Discharge Piping

Considerations must be made when designing pipework for PRV venting. This must be designed in accordance to EN378-3 Section 5.8 Piping and ducting.

- Caution must be taken to ensure excessive pressure drop in the pipework is avoided.
- All piping and ventilation ducting which passes through walls, ceilings and floors of machinery rooms, shall be sealed where it passes through the walls or floors. The sealing shall have fire resisting properties at least equivalent to the wall, ceiling or floor.
- Discharge pipes from relief valves, safety valves and fusible plugs may diffuse the charge into the air by adequate means but away from any air intake to the building or discharge into an adequate quantity of a suitable absorbing material.
- Relief devices for refrigerant in group A1 (R134a refrigerant) may discharge into the machinery room provided the system charge is less than the limit set in Annex C of prEN378-1:2016. Such discharges of refrigerant should take place so that persons and property are not endangered.
- Compression fittings must not be used for the discharge piping.

Water System

Chilled water pipe work and ancillary components must be installed in accordance with:

- National and local water supply company standards.
- The manufacturer's instructions are followed when fitting ancillary components.
- The system liquid is treated to prevent corrosion and algae forming.
- The schematic is referred to as a guide to ancillary recommendations.

CAUTION ⚠

The unit water connections are NOT designed to support external pipe work, pipe work MUST be supported separately.

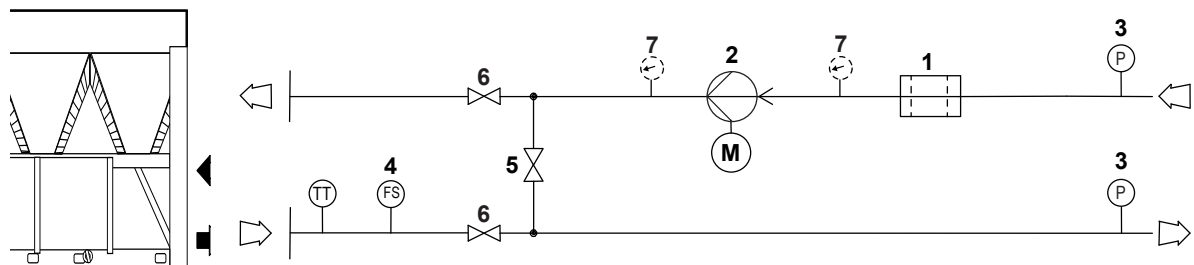
Standard Recommended Installation

General

The following diagram illustrates the minimum component installation requirements. A wide range of optional extras are available to suit various applications.

CAUTION ⚠

The following installation recommendations should be adhered to. Failure to do this may invalidate the chiller warranty.



The water flow commissioning valve set is not shown in the diagram, as the valve can be fitted elsewhere within the chilled water circuit.

- 1 Filter 20 mesh.
- 2 Pump.
- 3 Pressure sensor.
- 4 Flow switch.
- 5 Flushing bypass leg.
- 6 Shut off valve.
- 7 Pressure gauge.

CAUTION ⚠

Full design water flow must be maintained at all times. Variable water flow is not recommended and will invalidate warranty. The correct operation of the flow proving device is critical if the chiller warranty is to be valid.

System Flushing

Flushing of the water system must occur before the commissioning to protect the unit components from damage. As a good practise, the recommended minimum flushing flow rate should be the design flow rate plus 10%.

Installation Data

Water Treatment Guidelines

Protecting Plant

It is important that the Airedale plant and equipment is properly protected and maintained to ensure optimal system performance.

IMPORTANT ⚠ The equipment and system should be kept clean and free of solid, scale, corrosion and biological fouling. Failure to do so may invalidate the warranty.

Properly maintaining the system can improve energy efficiency and life expectancy. Acceptable water treatment levels for the system should be determined by the water treatment specialist on a project by project, system by system basis. The table below provides a guide to the acceptable range required for Airedale plant, although hardness of water may vary depending on the location of the site.

PH (5oC – 40oC)	7.0 – 8.5	Total Hardness (mg CaCO ₃ /L)	<200
Electrical Conductivity (µs/cm)	<800	Total Iron (mg Fe/l)	<3.0
Chloride (mg Cl/l)	<200	Soluble Iron (mg Fe/l)	<1.0
Alkalinity (mg CaCO ₃ /l)	<100	Ammonium (mg NH ₄ ⁺ /l)	<1.0
Sulphate ion (mg SO ₄ ²⁻ /l)	<200	Sulphide (mg S ₂ ⁻ /l)	<5

When completing a chemical clean or a dynamic flush and dose on the secondary system from the low loss header or buffer vessel, primary units such as chillers, condensers and air conditioning units should have a full-bore bypass installed as close to the plant as possible. The plant should be placed in bypass when carrying out the chemical clean in order to protect sensitive plant items and smaller bore pipes from blockage.

Installers should refer to BG29 2020, Pre-Commissioning cleaning of Pipework Systems for the most up to date guidelines of pre-commissioning cleaning of pipework systems and BSRIA BG50 2013, Water Treatment for Closed Heating and Cooling Systems for ongoing water quality maintenance and systems in operation. The manufacturer is not responsible for damage to or malfunctioning of equipment caused by failure to treat water or by improperly treated system water - this applies to both before and after commissioning.

Choice of Chemicals

Below is a table of metallic and non-metallic substances found in plant items produced by Airedale.

All chemicals to be used during the water treatment process should be carefully selected by the water treatment specialist so that they do not have a detrimental effect on these items, any component within the plant and equipment or the system as a whole. Frost protection and the dosing of chemicals such as monoethylene and polypropylene should be carefully considered in terms of dosing levels and blended chemical compatibility. Thermal efficiency should also be considered, on a project-by-project basis.

IMPORTANT ⚠ This is not an exhaustive list and specific advice should be sought for individual items of equipment or specific applications, if required.

Copper	Stainless Steel (AISI 302)	Silicon	PA66
Brass	Stainless Steel (AISI 316)	PVC	Neoprene
Cast Bronze	Nickel Plated Brass	PTFE	Nitrile-Butylene Elastomer
Cast Iron	Galvanized Iron	PPS	Ethylene Propylene Rubber
Mild Steel	VITON (Rubber/Silicone mix)	PPE	EPDM
TPE	Synthetic Fibre	PPA 40-GF	Diaphragm

Filling Stage

- Before filling plant items, a visual inspection of valves should take place to ensure that there are no open ends such as drain cocks opened during installation.
- The plant items should be filled with clean water, dosed with corrosion inhibitor and biocides as required in order to prevent corrosion and biological growth. Refer to BSRIA recommendations regarding pre-filling.
- Manual or automatic air vents should be opened to release displaced air from the system during the filling process until pressurised.

Installation Data

Water Systems and Recommended Flow Schemes

The recommended requirements to allow commissioning to be carried out correctly are:

- The inclusion of binder points adjacent to the flow and return connections, to allow temperature and pressure readings.
- A flow switch or equivalent, fitted adjacent to the water outlet side of the chiller.
- A 20 mesh strainer fitted prior to the evaporator inlet.
- A water-flow commissioning valve set fitted to the system.
- In multiple chiller installations, 1 commissioning valve set is required per chiller.
- Air vents are to be installed at all high points and where air is likely to be trapped at intermediate points.
- Drain points are to be installed at all low points in the system and in particular adjacent to the unit for maintenance to be carried out. The unit must be drained for winter shut down.
- Isolating valves should be installed adjacent to all major items of equipment for ease of maintenance.
- Balancing valves can be installed if required to aid correct system balancing.
- All chilled water pipe work must be insulated and vapour sealed to avoid condensation.
- If several units are installed in parallel adjacent to each other, reverse return should be applied to avoid unnecessary balancing valves.

Pump Statement

When installing circulating water pumps or equipment containing them, the following rules should be applied:

- Ensure the system is filled with water then vented and the pump primed with water before running the pump, this is required because the pumped liquid cools the pump bearings and mechanical seal faces.
- To avoid cavitation the NPSH (Net Positive Suction Head) incorporating a safety margin of 0.5m head must be available at the pump inlet during operation.

Interlocks & Protection

Always electrically interlock the operation of the chiller with the pump controls **and** water flow switch.

CAUTION ⚠

Failure to install both safety devices will invalidate the chiller warranty.
Do not rely solely on the BMS to protect the chiller against low flow conditions.

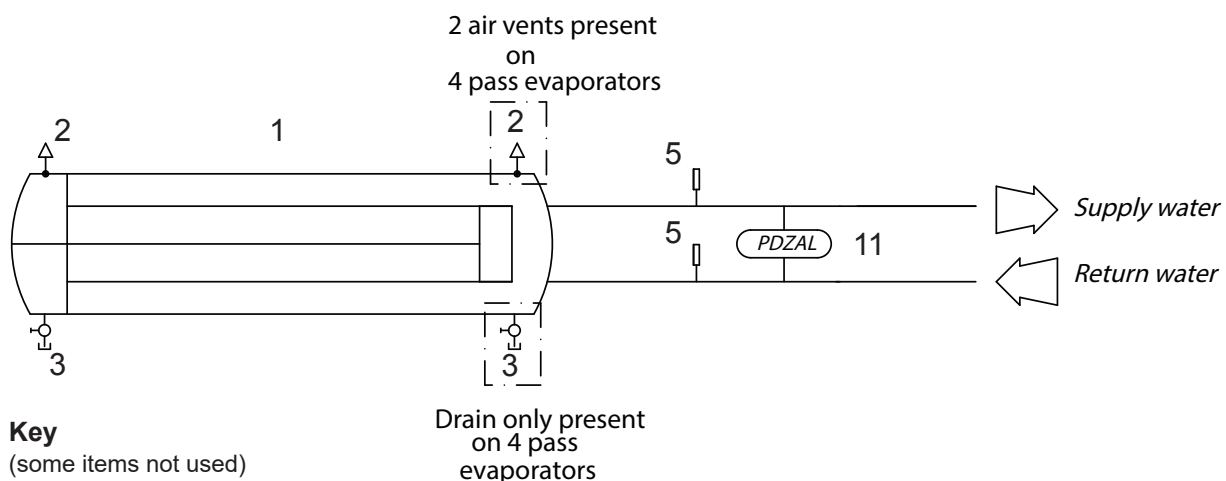
These safety devices prevent the chiller operating with low water flow which can cause serious damage.

An evaporator pump interlock and flow switch **MUST** be directly wired to the chiller, refer to Interconnecting Wiring.

Flow Schemes

Basic Supplied Water Schematic - Evaporator only.

(Includes flow proving device)



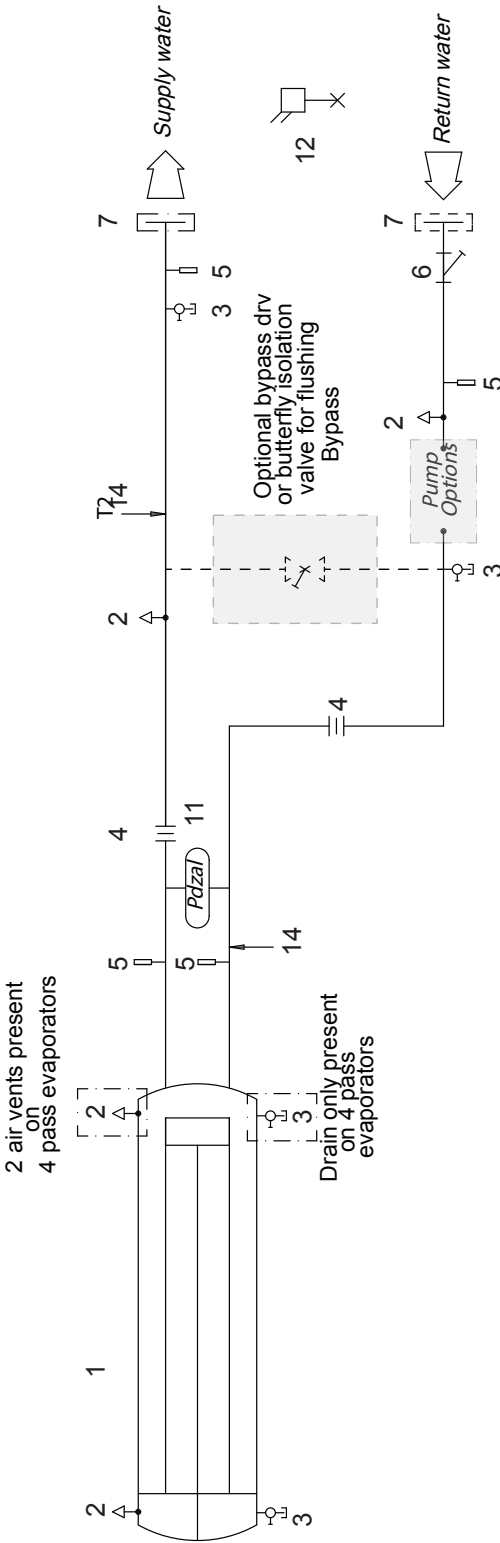
- | | |
|----------------------------------|--------------------------------------|
| 1 Evaporator. | 10 Non return valve. |
| 2 Automatic air vent. | 11 Differential pressure transducer. |
| 3 Drain. | 12 Flow switch. |
| 4 Butterfly shut off valve. | 13 Double regulating valve. |
| 5 Binder point. | 14 Temperature sensor. |
| 6 Filter. | 15 Mixing valve. |
| 7 Flanged terminations (option). | 16 Free cooling coil. |
| 8 Pump. | |
| 9 AV mounts. | |

Installation Data

Standard Air Cooled Circuit

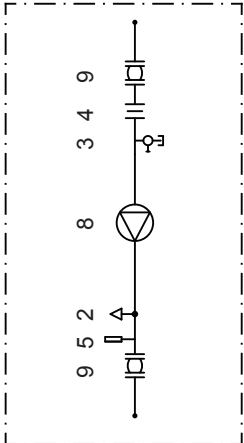
Incorporating:

- 20 Mesh Water Filter.
- Differential Pressure Transducer.
- Shut off Valves.

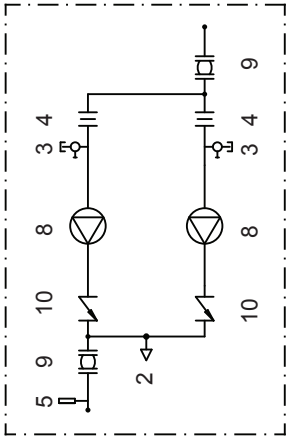


Pump Options

Single Pump



Run / Standby Pumps



Key

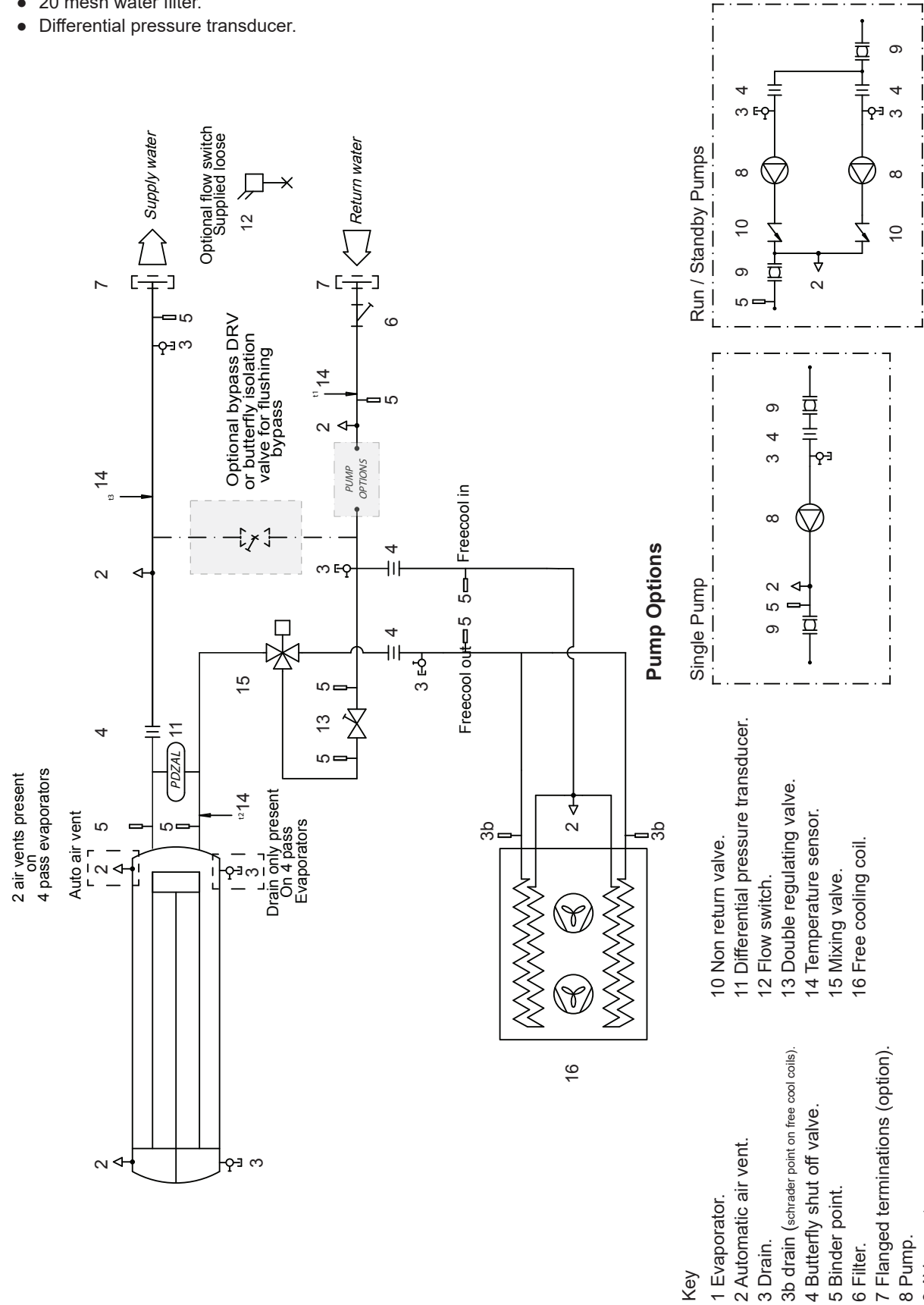
- 1 Evaporator.
- 2 Automatic air vent.
- 3 Drain.
- 4 Butterfly shut off valve.
- 5 Binder point.
- 6 Filter.
- 7 Flanged terminations (option).
- 8 Pump.
- 9 AV mounts.
- 10 Non return valve.
- 11 Differential pressure transducer.
- 12 Flow switch.
- 13 Double regulating valve.
- 14 Temperature sensor.
- 15 Mixing valve.
- 16 Free cooling coil.

Installation Data

Standard Free Cool Circuit

Incorporating:

- Double regulating valve.
- Mixing valve.
- 20 mesh water filter.
- Differential pressure transducer.



Technical Data - TCC

Mechanical and Electrical Data

			TCC11R04S-30	TCC11R06S-30	TCC11R08S-30	TCC11R06L-31	TCC11R08L-32	TCC11R10L-32
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	225	245	255	365	395	410
Nom Input - Cooling Only		kW	68	69	69	122	127	127
EER	(2)		3.30	3.55	3.72	3.00	3.11	3.23
ESEER	(3)		4.48	5.07	5.32	4.88	4.99	5.19
Minimum Turndown (Capacity/% Max)	(6)	kW/%	156/52.0	149/49.6	77/25.8	122/30.5	119/29.8	118/29.4
Dimensions (H 2800 x W 2200)								
Length		mm	2626	3758	4890	3758	4890	6022
Machine Weight	(7)	kg	2685	3240	3725	3415	4225	4805
Operating Weight	(7)	kg	2800	3360	3850	3560	4355	4945
Evaporator								
Total Max. Water Flow		l/s	23.0	23.0	23.0	35.4	32.7	32.7
Total Min. Water Flow		l/s	7.7	7.7	7.7	11.8	10.9	10.9
Condenser								
Face Area Total		m ²	9.5	14.2	18.9	14.2	18.9	23.7
Maximum Airflow - EC Fans		m ³ /s	26.2	39.2	52.3	39.2	52.3	65.4
Condenser Fan EC								
Quantity			4	6	8	6	8	10
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Single Circuit					
Charge (Total) CCT1+CCT2		kg	90	105	120	130	195	210
GWP Tonnes Equivalent CO ₂		tCO ₂ e	57	66	76	82	123	133
Water System								
Water Inlet/Outlet			DN100	DN100	DN100	DN100	DN100	DN100
Water Volume		l	102	102	102	126	114	114
Minimum System Water Volume	(8)	l	1676	1741	942	1595	1686	1769
Flow Rate		l/s	8.9	9.7	10.1	14.5	15.7	16.7
Pressure Drop		kPa	22.8	26.6	28.6	17.2	33.0	36.9
Electrical Data								
Full Load Amps	(9)	A	161	168	176	233	241	249
Maximum Start Amps		A	2	2	2	2	2	2
Recommended Mains Fuse Size		A	200	200	200	250	315	315
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	145	210	210	210
Motor Rating		kW	87	87	87	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC12R08S-33	TCC12R10S-33	TCC12R10L-34	TCC12R12L-35	TCC12R14L-35	TCC12R16L-35
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	435	465	560	625	700	745
Nom Input - Cooling Only		kW	135	139	181	197	223	238
EER	(2)		3.22	3.35	3.09	3.18	3.14	3.14
ESEER	(3)		4.91	5.03	5.09	5.17	5.24	5.24
Minimum Turndown (Capacity/% Max)	(6)	kW/%	77/12.9	75/12.5	118/14.7	117/14.6	116/14.5	115/14.4
Dimensions (H 2800 x W 2200)								
Length		mm	4890	6022	6022	7154	8286	9418
Machine Weight	(7)	kg	4645	5190	5290	6325	7110	7490
Operating Weight	(7)	kg	4810	5350	5480	6565	7355	7735
Evaporator								
Total Max. Water Flow		l/s	41.8	41.8	52.4	67.7	67.7	67.7
Total Min. Water Flow		l/s	13.9	13.9	17.5	22.6	22.6	22.6
Condenser								
Face Area Total		m ²	18.9	23.7	23.7	28.4	33.2	37.9
Maximum Airflow - EC Fans		m ³ /s	52.3	65.4	65.4	78.5	91.5	104.6
Condenser Fan EC								
Quantity			8	10	10	12	14	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Single Circuit					
Charge (Total) CCT1+CCT2		kg	200	215	215	305	320	335
GWP Tonnes Equivalent CO ₂		tCO ₂ e	127	136	136	193	203	212
Water System								
Water Inlet/Outlet			DN125	DN125	DN150	DN150	DN150	DN150
Water Volume		l	141	141	161	219	219	219
Minimum System Water Volume	(8)	l	804	833	1179	1307	1454	1537
Flow Rate		l/s	17.3	18.4	22.2	24.8	27.8	29.6
Pressure Drop		kPa	23.8	26.8	25.3	20.3	24.8	27.7
Electrical Data								
Full Load Amps	(9)	A	321	329	459	467	475	482
Maximum Start Amps		A	176	184	249	257	265	272
Recommended Mains Fuse Size		A	355	355	500	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	210
Motor Rating		kW	87	87	129	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC12R18L-35	TCC22R08S-36	TCC22R10S-36	TCC22R12L-37	TCC22R14L-37	TCC22R16L-37
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	790	435	465	625	700	745
Nom Input - Cooling Only		kW	258	133	137	193	218	231
EER	(2)		3.06	3.26	3.40	3.23	3.22	3.23
ESEER	(3)		5.25	4.40	4.86	4.55	4.80	4.95
Minimum Turndown (Capacity/% Max)	(6)	kW/%	115/14.3	88/14.7	84/14.0	122/15.3	121/15.1	119/14.9
Dimensions (H 2800 x W 2200)								
Length		mm	10550	4890	6022	7154	8286	9418
Machine Weight	(7)	kg	8345	4760	5390	6400	7030	7790
Operating Weight	(7)	kg	8605	4900	5530	6610	7240	8010
Evaporator								
Total Max. Water Flow		l/s	67.7	41.8	41.8	67.7	67.7	67.7
Total Min. Water Flow		l/s	22.6	13.9	13.9	22.6	22.6	22.6
Condenser								
Face Area Total		m ²	42.6	18.9	23.7	28.4	33.2	37.9
Maximum Airflow - EC Fans		m ³ /s	117.7	52.3	65.4	78.5	91.5	104.6
Condenser Fan EC								
Quantity			18	8	10	12	14	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Single Circuit	Dual Circuit				
Charge (Total) CCT1+CCT2		kg	340	90 + 95	100 + 100	135 + 135	145 + 145	150 + 145
GWP Tonnes Equivalent CO ₂		tCO ₂ e	215	57 + 60	63 + 63	85 + 85	92 + 92	95 + 92
Water System								
Water Inlet/Outlet			DN150	DN125	DN125	DN150	DN150	DN150
Water Volume		l	219	148	148	219	219	227
Minimum System Water Volume	(8)	l	1618	916	932	1370	1514	1590
Flow Rate		l/s	31.3	17.3	18.4	24.8	27.8	29.6
Pressure Drop		kPa	30.8	23.8	26.8	20.3	24.8	27.7
Electrical Data								
Full Load Amps	(9)	A	490	321	329	467	475	482
Maximum Start Amps		A	280	176	184	257	265	272
Recommended Mains Fuse Size		A	560	355	355	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x170)	(2x170)	(2x170)	(2x170)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	145	145	145	210	210
Motor Rating		kW	129	87	87	87	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC22R18L-37	TCC23R12S-38	TCC23R14S-38	TCC23R16S-38	TCC23R18S-38	TCC23R16L-39
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	790	625	650	680	725	810
Nom Input - Cooling Only		kW	249	195	196	201	213	259
EER	(2)		3.17	3.21	3.31	3.39	3.40	3.12
ESEER	(3)		4.96	5.05	5.19	5.24	5.30	4.88
Minimum Turndown (Capacity/% Max)	(6)	kW/%	118.4/14.8	77/8.6	76/8.4	74/8.2	73/8.1	117/9.8
Dimensions (H 2800 x W 2200)								
Length		mm	10550	7154	8286	9418	10550	9418
Machine Weight	(7)	kg	8220	6880	7440	7850	8530	8600
Operating Weight	(7)	kg	8440	7110	7670	8080	8760	8880
Evaporator								
Total Max. Water Flow		l/s	67.7	67.7	67.7	67.7	67.7	88.0
Total Min. Water Flow		l/s	22.6	22.6	22.6	22.6	22.6	29.3
Condenser								
Face Area Total		m ²	42.6	28.4	33.2	37.9	42.6	37.9
Maximum Airflow - EC Fans		m ³ /s	117.7	78.5	91.5	104.6	117.7	104.6
Condenser Fan EC								
Quantity			18	12	14	16	18	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	150 + 155	185 + 100	195 + 105	210 + 105	210 + 110	260 + 125
GWP Tonnes Equivalent CO ₂		tCO ₂ e	95 + 98	117 + 63	123 + 66	133 + 66	133 + 70	165 + 79
Water System								
Water Inlet/Outlet			DN150	DN150	DN150	DN150	DN150	DN200
Water Volume		l	227	235	235	235	235	282
Minimum System Water Volume	(8)	l	1675	770	782	799	841	1137
Flow Rate		l/s	31.3	24.8	25.8	27.0	28.8	32.1
Pressure Drop		kPa	30.8	20.3	21.7	23.5	26.4	19.7
Electrical Data								
Full Load Amps	(9)	A	490	482	490	497	475	692
Maximum Start Amps		A	280	337	345	352	340	482
Recommended Mains Fuse Size		A	750	500	500	560	560	710
Evaporator								
Immersion Heater Rating		W	(2x170)	(2x170)	(2x170)	(2x170)	(2x170)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	145	145	145	145	210
Motor Rating		kW	129	87	87	87	87	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC23R18L-39	TCC23R20L-39	TCC24R18S-40	TCC24R20S-40	TCC24R22L-41	TCC24R24L-41
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	835	895	800	835	1060	1080
Nom Input - Cooling Only		kW	260	274	243	249	340	339
EER	(2)		3.22	3.26	3.29	3.35	3.12	3.18
ESEER	(3)		5.01	5.15	5.21	5.27	5.15	5.22
Minimum Turndown (Capacity/% Max)	(6)	kW/%	117/9.7	116/9.7	76/6.3	75/6.2	117/7.3	117/7.3
Dimensions (H 2800 x W 2200)								
Length		mm	10550	11682	10550	11682	12814	13946
Machine Weight	(7)	kg	9270	10190	8910	9860	11360	11990
Operating Weight	(7)	kg	9550	10480	9160	10110	11680	12310
Evaporator								
Total Max. Water Flow		l/s	88.0	88.0	83.1	83.1	119.9	119.9
Total Min. Water Flow		l/s	29.3	29.3	27.7	27.7	40.0	40.0
Condenser								
Face Area Total		m ²	42.6	47.4	42.6	47.4	52.1	56.8
Maximum Airflow - EC Fans		m ³ /s	117.7	130.8	117.7	130.8	143.9	156.9
Condenser Fan EC								
Quantity			18	20	18	20	22	24
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration								
Charge (Total) CCT1+CCT2		kg	265 + 135	280 + 140	175 + 175	180 + 190	220 + 240	235+245
GWP Tonnes Equivalent CO ₂		tCO ₂ e	168 + 85	177 + 89	111 + 111	114 + 120	139 + 152	149+155
Water System								
Water Inlet/Outlet			DN200	DN200	DN200	DN200	DN200	DN200
Water Volume		l	282	292	260	260	330	330
Minimum System Water Volume	(8)	l	1160	1243	722	742	1108	1129
Flow Rate		l/s	33.1	35.5	31.7	33.1	42.0	42.8
Pressure Drop		kPa	20.8	23.5	21.6	23.3	20.1	20.8

Electrical Data

Full Load Amps	(9)	A	700	708	650	658	926	934
Maximum Start Amps		A	490	498	505	513	716	724
Recommended Mains Fuse Size		A	750	750	670	670	1000	1000
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x170)	(2x170)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	210	145	145	210	210
Motor Rating		kW	129	129	87	87	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data -TCC (X)

Mechanical and Electrical Data

			TCC11X04S-30	TCC11X06S-30	TCC11X08S-30	TCC11X06L-31	TCC11X08L-32	TCC11X10L-32
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	195	215	225	300	315	330
Nom Input - Cooling Only		kW	58	57	57	94	89	89
EER	(2)		3.37	3.77	3.96	3.20	3.56	3.71
ESEER	(3)		4.68	5.12	5.42	4.81	5.09	5.32
Minimum Turndown (Capacity/% Max)	(6)	kW/%	81/27.1	78/25.8	122/40.7	120/29.9	118/29.4	78/19.4
Dimensions (H 2800 x W 2200)								
Length		mm	2626	3758	4890	3758	4890	6022
Machine Weight	(7)	kg	2685	3240	3725	3415	4225	4805
Operating Weight	(7)	kg	2800	3360	3850	3560	4355	4945
Evaporator								
Total Max. Water Flow		l/s	23.0	23.0	23.0	35.4	32.7	32.7
Total Min. Water Flow		l/s	7.7	7.7	7.7	11.8	10.9	10.9
Condenser								
Face Area Total		m ²	9.5	14.2	18.9	14.2	18.9	23.7
Maximum Airflow - EC Fans		m ³ /s	26.2	39.2	52.3	39.2	52.3	65.4
Condenser Fan EC								
Quantity			4	6	8	6	8	10
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration					Single Circuit			
Charge (Total) CCT1+CCT2		kg	90	105	120	130	195	210
GWP Tonnes Equivalent CO ₂		tCO ₂ e	57	66	76	82	123	133
Water System								
Water Inlet/Outlet			DN100	DN100	DN100	DN100	DN100	DN100
Water Volume		l	102	102	102	126	114	114
Minimum System Water Volume	(8)	l	757	795	1312	1285	1326	917
Flow Rate		l/s	7.7	8.5	8.9	11.9	12.5	13.1
Pressure Drop		kPa	17.6	21.0	22.8	11.7	22.0	23.9
Electrical Data								
Full Load Amps	(9)	A	161	168	176	233	241	249
Maximum Start Amps		A	2	2	2	2	2	2
Recommended Mains Fuse Size		A	200	200	200	250	250	250
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	145	210	210	210
Motor Rating		A	87	87	87	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC12X08S-33	TCC12X10S-33	TCC12X10L-34	TCC12X12L-35	TCC12X14L-35	TCC12X16L-35
Mechanical Data	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	355	380	500	570	600	635
Nom Input - Cooling Only		kW	106	106	164	177	178	185
EER	(2)		3.36	3.59	3.06	3.22	3.36	3.44
ESEER	(3)		5.23	5.35	5.05	5.32	5.37	5.37
Minimum Turndown (Capacity/% Max)	(6)	kW/%	75/12.5	118/19.6	117/14.6	116/14.5	115/14.4	115/14.3
Dimensions (H 2800 x W 2200)								
Length		mm	4890	6022	6022	7154	8286	9418
Machine Weight	(7)	kg	4645	5190	5290	6325	7110	7490
Operating Weight	(7)	kg	4810	5350	5480	6565	7355	7735
Evaporator								
Total Max. Water Flow		l/s	41.8	41.8	52.4	67.7	67.7	67.7
Total Min. Water Flow		l/s	13.9	13.9	17.5	22.6	22.6	22.6
Condenser								
Face Area Total		m ²	18.9	23.7	23.7	28.4	33.2	37.9
Maximum Airflow - EC Fans		m ³ /s	52.3	65.4	65.4	78.5	91.5	104.6
Condenser Fan EC								
Quantity			8	10	10	12	14	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration								
Charge (Total) CCT1+CCT2		kg	200	215	215	305	320	335
GWP Tonnes Equivalent CO ₂		tCO ₂ e	127	136	136	193	203	212
Water System								
Water Inlet/Outlet			DN125	DN125	DN150	DN150	DN150	DN150
Water Volume		l	141	141	161	219	219	219
Minimum System Water Volume	(8)	l	636	1067	1046	1184	1238	1301
Flow Rate		l/s	14.1	15.1	19.8	22.6	23.8	25.2
Pressure Drop		kPa	16.6	18.7	20.7	17.2	18.9	20.9

Electrical Data

Full Load Amps	(9)	A	321	329	459	467	475	482
Maximum Start Amps		A	176	184	249	257	265	272
Recommended Mains Fuse Size		A	355	355	500	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	210
Motor Rating		A	87	87	129	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC12X18L-35	TCC22X08S-36	TCC22X10S-36	TCC22X12L-37	TCC22X14L-37	TCC22X16L-37
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	680	355	380	570	600	635
Nom Input - Cooling Only		kW	197	106	107	176	177	183
EER	(2)		3.45	3.34	3.57	3.24	3.40	3.48
ESEER	(3)		5.45	4.32	4.78	4.73	4.89	4.87
Minimum Turndown (Capacity/% Max)	(6)	kW/%	88/11.0	84/14.0	122/20.4	121/15.1	120/14.9	119/14.8
Dimensions (H 2800 x W 2200)								
Length		mm	10550	4890	6022	7154	8286	9418
Machine Weight	(7)	kg	8345	4760	5390	6400	7030	7790
Operating Weight	(7)	kg	8605	4900	5530	6610	7240	8010
Evaporator								
Total Max. Water Flow		l/s	67.7	41.8	41.8	67.7	67.7	67.7
Total Min. Water Flow		l/s	22.6	13.9	13.9	22.6	22.6	22.6
Condenser								
Face Area Total		m ²	42.6	18.9	23.7	28.4	33.2	37.9
Maximum Airflow - EC Fans		m ³ /s	117.7	52.3	65.4	78.5	91.5	104.6
Condenser Fan EC								
Quantity			18	8	10	12	14	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Single Circuit	Dual Circuit				
Charge (Total) CCT1+CCT2		kg	340	90 + 95	100 + 100	135 + 135	145 + 145	150 + 145
GWP Tonnes Equivalent CO ₂		tCO ₂ e	215	57 + 60	63 + 63	85 + 85	92 + 92	95 + 92
Water System								
Water Inlet/Outlet			DN150	DN125	DN125	DN150	DN150	DN150
Water Volume		l	219	148	148	219	219	227
Minimum System Water Volume	(8)	l	1071	712	1110	1233	1280	1346
Flow Rate		l/s	27.0	14.1	15.1	22.6	23.8	25.2
Pressure Drop		kPa	23.5	16.6	18.7	17.2	18.9	20.9
Electrical Data								
Full Load Amps	(9)	A	490	321	329	467	475	482
Maximum Start Amps		A	280	176	184	257	265	272
Recommended Mains Fuse Size		A	500	355	355	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2 x170)	(2 x170)	(2 x170)	(2 x170)	(2 x170)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	145	145	210	210	210
Motor Rating		A	129	87	87	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC22X18L-37	TCC23X12S-38	TCC23X14S-38	TCC23X16S-38	TCC23X18S-38	TCC23X16L-39
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	680	570	590	610	640	493
Nom Input - Cooling Only		kW	194	176	173	172	177	160
EER	(2)		3.51	3.25	3.42	3.54	3.62	3.08
ESEER	(3)		5.01	5.17	5.34	5.43	5.52	5.11
Minimum Turndown (Capacity/% Max)	(6)	kW/%	78/9.7	76/8.5	74/8.2	73/8.1	117/13.0	117/9.7
Dimensions (H 2800 x W 2200)								
Length		mm	10550	7154	8286	9418	10550	9418
Machine Weight	(7)	kg	8220	6880	7440	7850	8530	8600
Operating Weight	(7)	kg	8440	7110	7670	8080	8760	8880
Evaporator								
Total Max. Water Flow		l/s	67.7	67.7	67.7	67.7	67.7	88.0
Total Min. Water Flow		l/s	22.6	22.6	22.6	22.6	22.6	29.3
Condenser								
Face Area Total		m ²	42.6	28.4	33.2	37.9	42.6	37.9
Maximum Airflow - EC Fans		m ³ /s	117.7	78.5	91.5	104.6	117.7	104.6
Condenser Fan EC								
Quantity			18	12	14	16	18	16
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	150 + 155	185 + 100	195 + 105	210 + 105	210 + 110	260 + 125
GWP Tonnes Equivalent CO ₂		tCO ₂ e	95 + 98	117 + 63	123 + 66	133 + 66	133 + 70	165 + 79
Water System								
Water Inlet/Outlet			DN150	DN150	DN150	DN150	DN150	DN200
Water Volume		l	227	235	235	235	235	282
Minimum System Water Volume	(8)	l	945	694	693	708	1192	1028
Flow Rate		l/s	27.0	22.6	23.4	24.2	25.4	29.4
Pressure Drop		kPa	23.5	17.2	18.3	19.4	21.1	16.8

Electrical Data

Full Load Amps	(9)	A	490	482	490	497	505	692
Maximum Start Amps		A	280	337	345	352	360	482
Recommended Mains Fuse Size		A	500	500	500	560	560	710
Evaporator								
Immersion Heater Rating		W	(2 x170)	(2 x170)	(2 x170)	(2 x170)	(2 x170)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	145	145	145	145	210
Motor Rating		A	129	87	87	87	87	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCC23X18L-39	TCC23X20L-39	TCC24X18S-40	TCC24X20S-40	TCC24X22L-41	TCC24X24L-41
Mechanical Data								
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	760	800	700	735	1010	1040
Nom Input - Cooling Only		kW	235	240	206	211	327	327
EER	(2)		3.23	3.33	3.40	3.49	3.09	3.18
ESEER	(3)		5.15	5.26	5.49	5.53	5.25	5.31
Minimum Turndown (Capacity/% Max)	(6)	kW/%	116/9.7	76/6.3	75/6.2	117/9.8	117/7.3	71/4.5
Dimensions (H 2800 x W 2200)								
Length		mm	10550	11682	10550	11682	12814	13946
Machine Weight	(7)	kg	9270	10190	8910	9860	11360	11990
Operating Weight	(7)	kg	9550	10480	9160	10110	11680	12310
Evaporator								
Total Max. Water Flow		l/s	88.0	88.0	83.1	83.1	119.9	119.9
Total Min. Water Flow		l/s	29.3	29.3	27.7	27.7	40.0	40.0
Condenser								
Face Area Total		m ²	42.6	47.4	42.6	47.4	52.1	56.8
Maximum Airflow - EC Fans		m ³ /s	117.7	130.8	117.7	130.8	143.9	156.9
Condenser Fan EC								
Quantity			18	20	18	20	22	24
Maximum Speed - EC Fans		rpm	1050	1050	1050	1050	1050	1050
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	265 + 135	280 + 140	175 + 175	180 + 190	220 + 240	235 + 245
GWP Tonnes Equivalent CO ₂		tCO ₂ e	168 + 85	177 + 89	111 + 111	114 + 120	139 + 152	149 + 155
Water System								
Water Inlet/Outlet			DN200	DN200	DN200	DN200	DN200	DN200
Water Volume		l	282	292	260	260	330	330
Minimum System Water Volume	(8)	l	1056	722	622	1032	1056	670
Flow Rate		l/s	30.1	31.7	27.8	29.2	40.1	41.3
Pressure Drop		kPa	17.6	19.3	17.1	18.6	18.5	19.4
Electrical Data								
Full Load Amps	(9)	A	700	708	650	658	926	934
Maximum Start Amps		A	490	498	505	513	716	724
Recommended Mains Fuse Size		A	710	710	670	670	1000	1000
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x170)	(2x170)	(2x170)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	210	210	145	145	145	145
Motor Rating		A	129	129	87	87	87	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Sound Data

TCC - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCC11R04S-30	Sound Power	78	86	86	80	81	78	81	83	88
	Sound Pressure @10m	46	54	54	48	49	46	49	51	56
TCC11R06S-30	Sound Power	79	88	88	81	82	79	81	83	89
	Sound Pressure @10m	47	55	55	49	50	47	49	51	56
TCC11R08S-30	Sound Power	81	89	89	83	83	80	81	83	89
	Sound Pressure @10m	48	56	57	50	51	47	49	50	57
TCC11R06L-31	Sound Power	79	88	88	82	84	80	80	81	89
	Sound Pressure @10m	47	55	55	50	52	48	47	49	57
TCC11R08L-32	Sound Power	81	89	89	83	85	81	80	81	90
	Sound Pressure @10m	48	56	56	51	52	48	47	49	57
TCC11R10L-32	Sound Power	81	90	90	84	86	81	80	81	90
	Sound Pressure @10m	49	57	57	51	53	49	47	49	58
TCC12R08S-33	Sound Power	81	89	89	83	84	81	84	86	91
	Sound Pressure @10m	48	57	57	51	52	48	52	53	59
TCC12R10S-33	Sound Power	82	90	90	84	85	81	84	86	91
	Sound Pressure @10m	49	57	57	51	52	49	51	53	59
TCC12R10L-34	Sound Power	82	90	90	85	87	82	83	84	92
	Sound Pressure @10m	49	57	57	52	54	50	50	52	59
TCC12R12L-35	Sound Power	82	91	91	85	87	83	83	84	92
	Sound Pressure @10m	50	58	58	52	55	50	50	52	59
TCC12R14L-35	Sound Power	83	91	91	86	88	83	83	84	92
	Sound Pressure @10m	50	59	58	53	55	50	50	51	59
TCC12R16L-35	Sound Power	84	92	92	86	88	84	83	84	93
	Sound Pressure @10m	51	59	59	53	55	51	50	51	60
TCC12R18L-35	Sound Power	84	92	92	86	88	84	83	84	93
	Sound Pressure @10m	51	59	59	53	55	51	50	51	60
TCC22R08S-36	Sound Power	84	91	90	84	85	82	84	86	92
	Sound Pressure @10m	51	58	58	52	52	50	52	53	59
TCC22R10S-36	Sound Power	85	92	91	85	86	83	84	86	92
	Sound Pressure @10m	52	59	58	52	53	50	52	53	60
TCC22R12L-37	Sound Power	85	92	92	86	88	84	84	84	93
	Sound Pressure @10m	53	60	59	53	55	51	51	52	60

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

(2) All sound data measured at nominal conditions: Water in/out 13/7°C at 35°C ambient.

(3) Based on a unit with a 300mm plenum, for other configurations please see Airedale.

Technical Data

Sound Data

TCC - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCC22R14L-37	Sound Power	86	93	92	87	88	85	84	84	93
	Sound Pressure @10m	53	60	60	54	55	52	51	52	60
TCC22R16L-37	Sound Power	87	94	93	87	89	85	84	84	93
	Sound Pressure @10m	54	61	60	54	56	52	51	51	61
TCC22R18L-37	Sound Power	87	94	93	88	89	85	84	84	94
	Sound Pressure @10m	54	61	60	55	56	52	51	51	61
TCC23R12S-38	Sound Power	85	92	92	86	86	84	86	88	93
	Sound Pressure @10m	52	59	59	53	54	51	53	55	60
TCC23R14S-38	Sound Power	85	93	92	86	87	84	86	88	94
	Sound Pressure @10m	53	60	59	53	54	51	53	55	61
TCC23R16S-38	Sound Power	86	93	93	87	87	84	86	88	94
	Sound Pressure @10m	53	60	60	54	54	51	53	55	61
TCC23R18S-38	Sound Power	86	94	93	87	88	85	86	88	94
	Sound Pressure @10m	53	61	60	54	55	52	53	55	61
TCC23R16L-39	Sound Power	86	93	93	87	89	85	85	86	94
	Sound Pressure @10m	53	60	60	54	56	52	52	53	61
TCC23R18L-39	Sound Power	86	94	93	88	89	86	85	86	94
	Sound Pressure @10m	53	61	60	55	56	52	52	53	61
TCC23R20L-39	Sound Power	87	94	94	88	90	86	85	86	95
	Sound Pressure @10m	54	61	60	55	57	53	52	53	61
TCC24R18S-40	Sound Power	87	94	94	88	88	86	87	89	95
	Sound Pressure @10m	54	61	61	55	55	53	54	56	62
TCC24R20S-40	Sound Power	88	95	94	88	89	86	88	89	95
	Sound Pressure @10m	54	62	61	55	55	53	54	56	62
TCC24R22L-41	Sound Power	88	95	94	89	91	87	87	87	96
	Sound Pressure @10m	55	62	61	56	57	54	53	54	62
TCC24R24L-41	Sound Power	88	95	95	89	91	87	87	87	96
	Sound Pressure @10m	55	62	61	56	58	54	53	54	62

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

(2) All sound data measured at nominal conditions: Water in/out 13/7°C at 35°C ambient.

(3) Based on a unit with a 300mm plenum, for other configurations please see Airedale.

Technical Data

Sound Data

TCC - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCC11X04S-30	Sound Power	78	86	86	80	81	78	81	83	88
	Sound Pressure @10m	46	54	54	48	49	46	49	51	56
TCC11X06S-30	Sound Power	79	88	88	81	82	79	81	83	89
	Sound Pressure @10m	47	55	55	49	50	47	49	51	56
TCC11X08S-30	Sound Power	81	89	89	83	83	80	81	83	89
	Sound Pressure @10m	48	56	57	50	51	47	49	50	57
TCC11X06L-31	Sound Power	79	88	88	82	84	80	80	81	89
	Sound Pressure @10m	47	55	55	50	52	48	47	49	57
TCC11X08L-32	Sound Power	81	89	89	83	85	81	80	81	90
	Sound Pressure @10m	48	56	56	51	52	48	47	49	57
TCC11X10L-32	Sound Power	81	90	90	84	86	81	80	81	90
	Sound Pressure @10m	49	57	57	51	53	49	47	49	58
TCC12X08S-33	Sound Power	81	89	89	83	84	81	84	86	91
	Sound Pressure @10m	48	57	57	51	52	48	52	53	59
TCC12X10S-33	Sound Power	82	90	90	84	85	81	84	86	91
	Sound Pressure @10m	49	57	57	51	52	49	51	53	59
TCC12X10L-34	Sound Power	82	90	90	85	87	82	83	84	92
	Sound Pressure @10m	49	57	57	52	54	50	50	52	59
TCC12X12L-35	Sound Power	82	91	91	85	87	83	83	84	92
	Sound Pressure @10m	50	58	58	52	55	50	50	52	59
TCC12X14L-35	Sound Power	83	91	91	86	88	83	83	84	92
	Sound Pressure @10m	50	59	58	53	55	50	50	51	59
TCC12X16L-35	Sound Power	84	92	92	86	88	84	83	84	93
	Sound Pressure @10m	51	59	59	53	55	51	50	51	60
TCC12X18L-35	Sound Power	84	92	92	86	88	84	83	84	93
	Sound Pressure @10m	51	59	59	53	55	51	50	51	60
TCC22X08S-36	Sound Power	84	91	90	84	85	82	84	86	92
	Sound Pressure @10m	51	58	58	52	52	50	52	53	59
TCC22X10S-36	Sound Power	85	92	91	85	86	83	84	86	92
	Sound Pressure @10m	52	59	58	52	53	50	52	53	60
TCC22X12L-37	Sound Power	85	92	92	86	88	84	84	84	93
	Sound Pressure @10m	53	60	59	53	55	51	51	52	60

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

(2) All sound data measured at nominal conditions: Water in/out 13/7°C at 35°C ambient.

(3) Based on a unit with a 300mm plenum, for other configurations please see Airedale.

Technical Data

Sound Data

TCC - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCC22X14L-37	Sound Power	86	93	92	87	88	85	84	84	93
	Sound Pressure @10m	53	60	60	54	55	52	51	52	60
TCC22X16L-37	Sound Power	87	94	93	87	89	85	84	84	93
	Sound Pressure @10m	54	61	60	54	56	52	51	51	61
TCC22X18L-37	Sound Power	87	94	93	88	89	85	84	84	94
	Sound Pressure @10m	54	61	60	55	56	52	51	51	61
TCC23X12S-38	Sound Power	85	92	92	86	86	84	86	88	93
	Sound Pressure @10m	52	59	59	53	54	51	53	55	60
TCC23X14S-38	Sound Power	85	93	92	86	87	84	86	88	94
	Sound Pressure @10m	53	60	59	53	54	51	53	55	61
TCC23X16S-38	Sound Power	86	93	93	87	87	84	86	88	94
	Sound Pressure @10m	53	60	60	54	54	51	53	55	61
TCC23X18S-38	Sound Power	86	94	93	87	88	85	86	88	94
	Sound Pressure @10m	53	61	60	54	55	52	53	55	61
TCC23X16L-39	Sound Power	86	93	93	87	89	85	85	86	94
	Sound Pressure @10m	53	60	60	54	56	52	52	53	61
TCC23X18L-39	Sound Power	86	94	93	88	89	86	85	86	94
	Sound Pressure @10m	53	61	60	55	56	52	52	53	61
TCC23X20L-39	Sound Power	87	94	94	88	90	86	85	86	95
	Sound Pressure @10m	54	61	60	55	57	53	52	53	61
TCC24X18S-40	Sound Power	87	94	94	88	88	86	87	89	95
	Sound Pressure @10m	54	61	61	55	55	53	54	56	62
TCC24X20S-40	Sound Power	88	95	94	88	89	86	88	89	95
	Sound Pressure @10m	54	62	61	55	55	53	54	56	62
TCC24X22L-41	Sound Power	88	95	94	89	91	87	87	87	96
	Sound Pressure @10m	55	62	61	56	57	54	53	54	62
TCC24X24L-41	Sound Power	88	95	95	89	91	87	87	87	96
	Sound Pressure @10m	55	62	61	56	58	54	53	54	62

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

(2) All sound data measured at nominal conditions: Water in/out 13/7°C at 35°C ambient.

(3) Based on a unit with a 300mm plenum, for other configurations please see Airedale.

Technical Data -TCF

Mechanical and Electrical Data

			TCF11R06S-42	TCF11R08S-42	TCF11R06L-43	TCF11R08L-44	TCF11R10L-45	TCF12R08S-46
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	260	280	365	400	405	440
Nom Input - Cooling Only		kW	72	75	118	131	120	134
EER	(2)		3.63	3.74	3.09	3.06	3.37	3.29
ESEER	(3)		4.74	4.96	4.40	4.57	4.82	4.60
Nominal Output (Gross) - Free Cooling	(4)	kW	257	311	294	364	416	378
Ambient when Free Cooling = 100% DX	(5)	°C	1.8	3.3	-1.4	0.6	2.3	-0.3
Minimum Turndown (Capacity/% Max)	(6)	kW/%	71/23.7	71/23.8	123/30.7	120/30.0	118/29.5	73/12.1
Dimensions (H 2800 x W 2200)								
Length		mm	2758	4890	3758	4890	6022	4890
Machine Weight	(7)	kg	3965	4750	4410	5070	6120	5495
Operating Weight	(7)	kg	4425	5300	4965	5705	6845	5930
Evaporator								
Total Max. Water Flow		l/s	28.2	28.2	35.2	41.8	38.2	46.0
Total Min. Water Flow		l/s	9.4	9.4	11.8	13.9	12.7	15.3
Condenser								
Face Area Total		m²	14.2	18.9	14.2	18.9	23.7	18.9
Maximum Airflow - EC Fans		m³/s	22.2	29.6	22.2	29.6	37.0	29.6
Condenser Fan EC								
Quantity			6	8	6	8	10	8
Maximum Speed - EC Fans		rpm	1025	1025	1025	1025	1025	1025
Refrigeration			Single Circuit					
Charge (Total) CCT1+CCT2		kg	100	115	125	135	200	150
GWP Tonnes Equivalent CO ₂		tCO ₂ e	63	73	79	85	126	95
Water System								
Water Inlet / Outlet			DN100	DN100	DN125	DN125	DN125	DN125
Water Volume		l	424.4	513.5	513.1	585.7	672.7	400.9
Minimum System Water Volume	(8)	l	965	1044	1755	1880	1872	834
Flow Rate		l/s	10.9	11.8	15.4	16.8	17.0	18.5
Pressure Drop		kPa	75.8	78.7	92.0	71.2	77.7	80.7
Electrical Data								
Full Load Amps	(9)	A	168	176	233	241	249	321
Maximum Start Amps		A	2	2	2	2	2	176
Recommended Mains Fuse Size		A	200	200	250	315	315	355
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	145
Motor Rating		kW	87	87	129	129	129	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF12R10S-34	TCF12R12S-34	TCF12R12L-47	TCF12R14L-47	TCF12R16L-47	TCF12R18L-47
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	470	500	660	705	750	800
Nom Input - Cooling Only		kW	134	139	211	221	235	256
EER	(2)		3.50	3.59	3.13	3.19	3.19	3.13
ESEER	(3)		4.74	4.98	4.59	4.70	4.74	4.73
Nominal Output - Free Cooling	(4)	kW	444	505	567	639	709	780
Ambient when Free Cooling = 100% DX	(5)	°C	1.2	2.1	-0.3	0.6	1.2	1.6
Minimum Turndown (Capacity/% Max)	(6)	kW/%	73/12.1	73/12.1	117/14.7	116/14.5	116/14.5	115/14.4
Dimensions (H 2800 x W 2200)								
Length		mm	6022	7154	7154	8286	9418	10550
Machine Weight	(7)	kg	6490	7385	8140	9065	9730	10735
Operating Weight	(7)	kg	7240	8255	9205	10295	11060	12195
Evaporator								
Total Max. Water Flow		l/s	52.4	52.4	78.9	78.9	78.9	78.9
Total Min. Water Flow		l/s	17.5	17.5	26.3	26.3	26.3	26.3
Condenser								
Face Area Total		m²	23.7	28.4	28.4	33.2	37.9	42.6
Maximum Airflow - EC Fans		m³/s	37.0	44.5	44.5	51.9	59.3	66.7
Condenser Fan EC								
Quantity			10	12	12	14	16	18
Maximum Speed - EC Fans		rpm	1025	1025	1025	1025	1025	1025
Refrigeration					Single Circuit			
Charge (Total) CCT1+CCT2		kg	205	225	295	310	325	330
GWP Tonnes Equivalent CO ₂		tCO ₂ e	129	142	186	196	205	208
Water System								
Water Inlet / Outlet			DN125	DN125	DN150	DN150	DN150	DN150
Water Volume		l	700	819	991	1144	1251	1365
Minimum System Water Volume	(8)	l	891	948	1520	1601	1704	1805
Flow Rate		l/s	19.8	21.0	27.8	29.6	31.5	33.6
Pressure Drop		kPa	83.4	87.0	83.8	87.3	92.1	99.3
Electrical Data								
Full Load Amps	(9)	A	329	337	467	475	482	490
Maximum Start Amps		A	184	192	257	265	272	280
Recommended Mains Fuse Size		A	355	355	500	500	500	560
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	210
Motor Rating		kW	87	87	129	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF22R10S-48	TCF22R12L-49	TCF22R14L-49	TCF22R16L-49	TCF22R18L-49	TCF23R12S-50
Mechanical Data								
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	460	660	680	720	800	660
Nom Input - Cooling Only		kW	127	200	199	207	238	200
EER	(2)		3.61	3.30	3.42	3.47	3.36	3.30
ESEER	(3)		4.47	4.21	4.42	4.61	4.57	4.58
Nominal Output - Free Cooling	(4)	kW	439	567	629	697	780	567
Ambient when Free Cooling = 100% DX	(5)	°C	1.4	-0.3	0.9	1.5	1.6	-0.3
Minimum Turndown (Capacity/% Max)	(6)	kW/%	72/12.1	123/15.4	121/15.2	120/15.0	119/14.9	73/8.1
Dimensions (H 2800 x W 2200)								
Length		mm	6022	7154	8286	9418	10550	7154
Machine Weight	(7)	kg	6690	8400	9360	10270	11080	8780
Operating Weight	(7)	kg	7330	9310	10450	11440	12370	9700
Evaporator								
Total Max. Water Flow		l/s	52.4	78.9	78.9	78.9	78.9	78.9
Total Min. Water Flow		l/s	17.5	26.3	26.3	26.3	26.3	26.3
Condenser								
Face Area Total		m ²	42.6	47.4	33.2	37.9	42.6	28.4
Maximum Airflow - EC Fans		m ³ /s	103.3	114.8	51.9	59.3	66.7	44.5
Condenser Fan EC								
Quantity			10	12	14	16	18	12
Maximum Speed - EC Fans		rpm	1025	1025	1025	1025	1025	1025
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	95+100	130+130	140+140	145+145	150+150	185+100
GWP Tonnes Equivalent CO ₂		tCO ₂ e	60+63	82+82	88+88	92+92	95+95	117+63
Water System								
Water Inlet / Outlet			DN125	DN150	DN150	DN150	DN150	DN150
Water Volume		l	735	1027	1204	1282	1405	1026
Minimum System Water Volume	(8)	l	872	1592	1619	1692	1867	837
Flow Rate		l/s	19.3	27.8	28.6	30.3	33.6	27.8
Pressure Drop		kPa	79.6	83.4	81.7	85.4	99.0	83.1
Electrical Data								
Full Load Amps	(9)	A	329	467	475	482	490	482
Maximum Start Amps		A	184	257	265	272	280	337
Recommended Mains Fuse Size		A	355	500	500	500	560	500
Evaporator								
Immersion Heater Rating		W	(2x170)	(2x170)	(2x170)	(2x170)	(2x250)	(2x170)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	210	210	210	210	145
Motor Rating		kW	87	129	129	129	129	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF23R14S-50	TCF23R16S-50	TCF23R18S-50	TCF23R18L-51	TCF23R20L-51	TCF24R18S-52
Mechanical Data								
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	680	700	735	880	900	840
Nom Input - Cooling Only		kW	198	198	205	272	271	247
EER	(2)		3.43	3.53	3.58	3.24	3.33	3.40
ESEER	(3)		4.74	4.82	4.90	4.63	4.74	4.83
Nominal Output - Free Cooling	(4)	kW	629	688	751	812	871	796
Ambient when Free Cooling = 100% DX	(5)	°C	0.9	1.8	2.3	0.8	1.5	1.2
Minimum Turndown (Capacity/% Max)	(6)	kW/%	73/8.1	72/8.0	73/8.1	117/9.8	117/9.7	73/6.1
Dimensions (H 2800 x W 2200)								
Length		mm	8286	9418	10550	10550	11682	10550
Machine Weight	(7)	kg	9690	10400	11220	12310	13510	12590
Operating Weight	(7)	kg	10710	11570	12450	13720	15170	14040
Evaporator								
Total Max. Water Flow		l/s	78.9	78.9	78.9	106.3	106.3	100.1
Total Min. Water Flow		l/s	26.3	26.3	26.3	35.4	35.4	33.4
Condenser								
Face Area Total		m ²	33.2	37.9	42.6	47.4	47.4	42.6
Maximum Airflow - EC Fans		m ³ /s	51.9	59.3	103.3	114.8	74.1	66.7
Condenser Fan EC								
Quantity			14	16	18	18	20	18
Maximum Speed - EC Fans		rpm	1025	1025	1025	1025	1025	1025
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	195+105	205+105	210+110	255+130	265+135	205+205
GWP Tonnes Equivalent CO ₂		tCO ₂ e	123+66	129+66	133+69	161+82	167+85	129+129
Water System								
Water Inlet / Outlet			DN150	DN150	DN150	DN200	DN200	DN200
Water Volume		l	1138	1282	1343	1919	2204	1954
Minimum System Water Volume	(8)	l	863	877	933	1351	1368	803
Flow Rate		l/s	28.6	29.4	30.9	37.0	37.8	35.3
Pressure Drop		kPa	81.3	81.3	84.6	71.8	70.9	68.1
Electrical Data								
Full Load Amps	(9)	A	490	497	505	700	708	650
Maximum Start Amps		A	345	352	360	490	498	505
Recommended Mains Fuse Size		A	560	560	500	750	750	670
Evaporator								
Immersion Heater Rating		W	(2x170)	(2x170)	(2x170)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	145	210	210	145
Motor Rating		kW	87	87	87	129	129	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF24R20S-52	TCF24R22L-41	TCF24R24L-41
Mechanical Data	Notes	Units			
Capacity					
Cooling Duty (Gross) - EC Fans	(1)	kW	860	1035	1090
Nom Input - Cooling Only		kW	247	330	342
EER	(2)		3.48	3.14	3.19
ESEER	(3)		5.03	4.69	4.70
Nominal Output - Free Cooling	(4)	kW	854	976	1049
Ambient when Free Cooling = 100% DX	(5)	°C	1.9	1.2	1.5
Minimum Turndown (Capacity/% Max)	(6)	kW/%	73/6.1	118/7.4	117/7.3
Dimensions (H 2800 x W 2200)					
Length		mm	11682	12814	13946
Machine Weight	(7)	kg	13780	14800	15800
Operating Weight	(7)	kg	15390	16530	17730
Evaporator					
Total Max. Water Flow		l/s	100.1	119.9	119.9
Total Min. Water Flow		l/s	33.4	40.0	40.0
Condenser					
Face Area Total		m ²	47.4	52.1	56.8
Maximum Airflow - EC Fans		m ³ /s	74.1	81.5	88.9
Condenser Fan EC					
Quantity			20	22	24
Maximum Speed - EC Fans		rpm	1025	1025	1025
Refrigeration				Dual Circuit	
Charge (Total) CCT1+CCT2		kg	210+220	220+240	235+245
GWP Tonnes Equivalent CO ₂		tCO ₂ e	133+139	139+151	148+155
Water System					
Water Inlet / Outlet			DN200	DN200	DN200
Water Volume		l	2160	2309	2554
Minimum System Water Volume	(8)	l	822	1200	1247
Flow Rate		l/s	36.2	43.5	45.8
Pressure Drop		kPa	67.3	83.4	88.4
Electrical Data					
Full Load Amps	(9)	A	658	926	934
Maximum Start Amps		A	513	716	724
Recommended Mains Fuse Size		A	670	1000	1000
Evaporator					
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)					
Full Load Amps		A	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56
Compressor - Per Compressor					
Nominal Run Amps		A	145	210	210
Motor Rating		kW	87	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data - TCF

Mechanical and Electrical Data

			TCF11X06S-42	TCF11X08S-42	TCF11X06L-43	TCF11X08L-44	TCF11X10L-45	TCF12X08S-46
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	225	240	280	335	345	365
Nom Input - Cooling Only		kW	59	60	86	100	94	105
EER	(2)		3.78	3.99	3.25	3.35	3.66	3
ESEER	(3)		4.80	5.06	4.32	4.67	4.90	4.87
Nominal Output - Free Cooling	(4)	kW	210	259	224	290	340	297.12
Ambient when Free Cooling = 100% DX	(5)	°C	1.0	3.0	-1.5	-0.2	1.8	-1
Minimum Turndown (Capacity/% Max)	(6)	kW/%	71/23.7	123/40.9	120/30.0	118/29.5	73/18.1	72.2 /12
Dimensions (H 2800 x W 2200)								
Length		mm	3758	4890	3758	4890	6022	4890
Machine Weight	(7)	kg	3965	4750	4410	5070	6120	5495
Operating Weight	(7)	kg	4425	5300	4965	5705	6845	5930
Evaporator								
Total Max. Water Flow		l/s	28.2	28.2	35.2	41.8	38.2	46.0
Total Min. Water Flow		l/s	9.4	9.4	11.8	13.9	12.7	15.3
Condenser								
Face Area Total		m²	14.2	18.9	14.2	18.9	23.7	18.9
Maximum Airflow - EC Fans		m³/s	22.2	29.6	22.2	29.6	37.0	29.6
Condenser Fan EC								
Quantity			6	8	6	8	10	10
Maximum Speed - EC Fans		rpm	715	715	715	715	715	715
Refrigeration			Single Circuit					
Charge (Total) CCT1+CCT2		kg	100	115	125	135	200	150
GWP Tonnes Equivalent CO ₂		tCO ₂ e	63	73	79	85	126	95
Water System								
Water Inlet / Outlet			DN100	DN100	DN125	DN125	DN125	DN125
Water Volume		l	424	514	513	586	673	401
Minimum System Water Volume	(8)	l	835	1538	1316	1548	978	686
Flow Rate		l/s	9.5	10.1	11.8	14.1	14.5	15.4
Pressure Drop		kPa	58.3	59.3	58.4	52.5	58.7	58.0
Electrical Data								
Full Load Amps	(9)	A	168	176	233	241	249	
Maximum Start Amps		A	2	2	2	2	2	
Recommended Mains Fuse Size		A	200	200	250	250	250	
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	
Motor Rating		kW	87	87	129	129	129	

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF12X10S-34	TCF12X12S-34	TCF12X12L-47	TCF12X14L-47	TCF12X16L-47	TCF12X18L-47
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	420	440	630	640	670	700
Nom Input - Cooling Only		kW	119	119	213	202	204	209
EER	(2)		3.53	3.70	2.95	3.17	3.28	3.34
ESEER	(3)		4.88	4.99	4.61	4.77	4.88	4.94
Nominal Output - Free Cooling	(4)	kW	362	416	463	520	579	636
Ambient when Free Cooling = 100% DX	(5)	°C	-0.2	1.2	-3.0	-1.2	-0.2	0.6
Minimum Turndown (Capacity/% Max)	(6)	kW/%	73/12.1	117/19.5	116/14.5	116/14.5	115/14.4	72/9.0
Dimensions (H 2800 x W 2200)								
Length		mm	6022	7154	7154	8286	9418	10550
Machine Weight	(7)	kg	6490	7385	8140	9065	9730	10735
Operating Weight	(7)	kg	7240	8255	9205	10295	11060	12195
Evaporator								
Total Max. Water Flow		l/s	52.4	52.4	78.9	78.9	78.9	78.9
Total Min. Water Flow		l/s	17.5	17.5	26.3	26.3	26.3	26.3
Condenser								
Face Area Total		m ²	23.7	28.4	28.4	33.2	37.9	42.6
Maximum Airflow - EC Fans		m ³ /s	37.0	44.5	44.5	51.9	59.3	66.7
Condenser Fan EC								
Quantity			10	12	12	14	16	18
Maximum Speed - EC Fans		rpm	715	715	715	715	715	715
Refrigeration						Single Circuit		
Charge (Total) CCT1+CCT2		kg	205	225	295	310	325	330
GWP Tonnes Equivalent CO ₂		tCO ₂ e	129	142	186	196	205	208
Water System								
Water Inlet / Outlet			DN125	DN125	DN150	DN150	DN150	DN150
Water Volume		l	700	819	991	1144	1251	1365
Minimum System Water Volume	(8)	l	796	1344	1431	1454	1511	987
Flow Rate		l/s	17.7	18.5	26.5	26.9	28.2	29.4
Pressure Drop		kPa	68.5	69.4	77.3	73.7	75.5	78.3
Electrical Data								
Full Load Amps	(9)	A	329	337	467	475	482	490
Maximum Start Amps		A	184	192	257	265	272	280
Recommended Mains Fuse Size		A	355	355	500	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	210	210	210	210
Motor Rating		kW	129	87	129	129	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF22X10S-48	TCF22X12L-49	TCF22X14L-49	TCF22X16L-49	TCF22X18L-49	TCF23X12S-50
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	420	630	640	670	700	630
Nom Input - Cooling Only		kW	116	202	191	192	196	201
EER	(2)		3.62	3.12	3.36	3.49	3.57	3.13
ESEER	(3)		4.43	4.01	4.40	4.57	4.67	4.58
Nominal Output - Free Cooling	(4)	kW	362	463	520	579	636	463
Ambient when Free Cooling = 100% DX	(5)	°C	-0.2	-3.0	-1.2	-0.2	0.6	-3.0
Minimum Turndown (Capacity/% Max)	(6)	kW/%	123/20.5	121/15.2	120/15.0	119/14.9	73/9.1	72/8.0
Dimensions (H 2800 x W 2200)								
Length		mm	6022	7154	8286	9418	10550	7154
Machine Weight	(7)	kg	6690	8400	9360	10270	11080	8780
Operating Weight	(7)	kg	7330	9310	10450	11440	12370	9700
Evaporator								
Total Max. Water Flow		l/s	52.4	78.9	78.9	78.9	78.9	78.9
Total Min. Water Flow		l/s	17.5	26.3	26.3	26.3	26.3	26.3
Condenser								
Face Area Total		m ²	23.7	28.4	33.2	37.9	42.6	28.4
Maximum Airflow - EC Fans		m ³ /s	37.0	44.5	51.9	59.3	66.7	44.5
Condenser Fan EC								
Quantity			10	12	14	16	18	12
Maximum Speed - EC Fans		rpm	715	715	715	715	715	715
Refrigeration			Dual Circuit					
Charge (Total) CCT1+CCT2		kg	95+100	130+130	140+140	145+145	150+150	185+100
GWP Tonnes Equivalent CO ₂		tCO ₂ e	60+63	82+82	88+88	92+92	95+95	117+63
Water System								
Water Inlet / Outlet			DN125	DN150	DN150	DN150	DN150	DN150
Water Volume		l	735	1027	1204	1282	1405	1026
Minimum System Water Volume	(8)	l	1349	1500	1504	1564	998	790
Flow Rate		l/s	17.7	26.5	26.9	28.2	29.4	26.5
Pressure Drop		kPa	67.9	77.0	73.5	75.3	78.2	76.7
Electrical Data								
Full Load Amps	(9)	A	329	467	475	482	490	482
Maximum Start Amps		A	184	257	265	272	280	337
Recommended Mains Fuse Size		A	355	500	500	500	500	500
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	210	210	210	210	145
Motor Rating		kW	87	129	129	129	129	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF23X14S-50	TCF23X16S-50	TCF23X18S-50	TCF23X18L-51	TCF23X20L-51	TCF24X18S-52
Mechanical Data								
	Notes	Units						
Capacity								
Cooling Duty (Gross) - EC Fans	(1)	kW	655	670	685	845	860	795
Nom Input - Cooling Only		kW	197	192	189	272	266	239
EER	(2)		3.33	3.50	3.62	3.10	3.24	3.33
ESEER	(3)		4.76	4.85	4.98	4.57	4.76	4.88
Nominal Output - Free Cooling	(4)	kW	524	579	632	674	730	662
Ambient when Free Cooling = 100%								
DX	(5)	°C	-1.5	-0.2	0.8	-1.5	-0.5	-0.8
Minimum Turndown (Capacity/% Max)	(6)	kW/%	72/8.0	73/8.1	117/13.0	117/9.7	12	72/6.0
Dimensions (H 2800 x W 2200)								
Length		mm	8286	9418	10550	10550	11682	10550
Machine Weight	(7)	kg	9690	10400	11220	12310	13510	12590
Operating Weight	(7)	kg	10710	11570	12450	13720	15170	14040
Evaporator								
Total Max. Water Flow		l/s	78.9	78.9	78.9	106.3	106.3	100.1
Total Min. Water Flow		l/s	26.3	26.3	26.3	35.4	35.4	33.4
Condenser								
Face Area Total		m²	33.2	37.9	42.6	42.6	47.4	42.6
Maximum Airflow - EC Fans		m³/s	51.9	59.3	66.7	66.7	74.1	66.7
Condenser Fan EC								
Quantity			14	16	18	18	20	18
Maximum Speed - EC Fans		rpm	715	715	715	715	715	715
Refrigeration					Dual Circuit			
Charge (Total) CCT1+CCT2		kg	195+105	205+105	210+110	255+130	265+135	205+205
GWP Tonnes Equivalent CO ₂		tCO ₂ e	123+66	129+66	133+69	161+82	167+85	129+129
Water System								
Water Inlet / Outlet			DN150	DN150	DN150	DN200	DN200	DN200
Water Volume		l	1138	1282	1343	1919	2204	1954
Minimum System Water Volume	(8)	l	821	850	1395	1284	808	747
Flow Rate		l/s	27.5	28.2	28.8	35.5	36.2	33.4
Pressure Drop		kPa	76.2	75.3	74.7	66.9	65.5	61.9
Electrical Data								
Full Load Amps	(9)	A	490	497	505	700	708	650
Maximum Start Amps		A	345	352	360	490	498	505
Recommended Mains Fuse Size		A	500	560	560	710	710	670
Evaporator								
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)								
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor								
Nominal Run Amps		A	145	145	145	210	210	145
Motor Rating		kW	87	87	87	129	129	87

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Mechanical and Electrical Data

			TCF24X20S-52	TCF24X22L-41	TCF24X24L-41
Mechanical Data	Notes	Units			
Capacity					
Cooling Duty (Gross) - EC Fans	(1)	kW	815	955	1000
Nom Input - Cooling Only		kW	236	315	320
EER	(2)		3.45	3.03	3.12
ESEER	(3)		4.97	4.78	4.81
Nominal Output - Free Cooling	(4)	kW	718	805	867
Ambient when Free Cooling = 100% DX	(5)	°C	0.1	-0.6	-0.1
Minimum Turndown (Capacity/% Max)	(6)	kW/%	118/9.8	117/7.3	91/5.7
Dimensions (H 2800 x W 2200)					
Length		mm	11682	12814	13946
Machine Weight	(7)	kg	13780	14800	15800
Operating Weight	(7)	kg	15390	16530	17730
Evaporator					
Total Max. Water Flow		l/s	100.1	119.9	119.9
Total Min. Water Flow		l/s	33.4	40.0	40.0
Condenser					
Face Area Total		m²	47.4	52.1	56.8
Maximum Airflow - EC Fans		m³/s	74.1	81.5	88.9
Condenser Fan EC					
Quantity			20	22	24
Maximum Speed - EC Fans		rpm	715	715	715
Refrigeration				Dual Circuit	
Charge (Total) CCT1+CCT2		kg	210+220	220+240	235+245
GWP Tonnes Equivalent CO ₂		tCO ₂ e	133+139	139+151	148+155
Water System					
Water Inlet / Outlet			DN200	DN200	DN200
Water Volume		l	2160	2309	2554
Minimum System Water Volume	(8)	l	1251	1092	893
Flow Rate		l/s	34.3	40.2	42.1
Pressure Drop		kPa	61.3	72.4	76.0
Electrical Data					
Full Load Amps	(9)	A	658	926	934
Maximum Start Amps		A	513	716	724
Recommended Mains Fuse Size		A	670	1000	1000
Evaporator					
Immersion Heater Rating		W	(2x250)	(2x250)	(2x250)
Condenser Fan - Per Fan (EC)					
Full Load Amps		A	3.9	3.9	3.9
Motor Rating		kW	2.56	2.56	2.56
Compressor - Per Compressor					
Nominal Run Amps		A	145	210	210
Motor Rating		kW	87	129	129

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water. All performance data is supplied in accordance with BS EN 14511-1:2018.

Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.

(2) EER = DX cooling output / (compressor input power + fan input power).

(3) ESEER/SEER based upon unit operating at 12/7°C return/supply temperature, 35°C ambient.

(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.

(5) Ambient temperature that nominal DX duty can be achieved using free cooling only.

(6) This is a nominal figure based on full compressor duty at 20°C Ambient, 7°C supply, actual turndown depends on both condensing and evaporating temperatures.

(7) Based on standard unit without options, machine weight includes refrigerant charge, operating weight includes refrigerant charge and water volume.

For unit weights with waterside options fitted please contact Airedale.

(8) For minimum system water volume calculation, refer to Design Features & Information - Minimum System Water Volume Calculations.

(9) Based on full load conditions and EC fans. Pump electrical data is available from Airedale upon request.

Technical Data

Sound Data

TCF - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCF11R06S-42	Sound Power	84	83	83	79	80	76	81	83	87
	Sound Pressure @10m	52	51	51	47	47	43	49	51	55
TCF11R08S-42	Sound Power	86	85	82	79	79	75	81	83	87
	Sound Pressure @10m	54	53	50	46	46	43	48	50	54
TCF11R06L-43	Sound Power	92	89	87	84	85	81	80	81	90
	Sound Pressure @10m	60	57	55	52	53	48	48	49	57
TCF11R08L-44	Sound Power	91	89	87	84	85	80	80	81	90
	Sound Pressure @10m	59	56	55	51	53	48	48	49	57
TCF11R10L-45	Sound Power	87	86	85	82	84	78	80	81	88
	Sound Pressure @10m	54	53	52	49	51	46	47	49	56
TCF12R08S-46	Sound Power	91	89	88	84	85	80	84	86	91
	Sound Pressure @10m	59	56	55	51	52	48	52	53	59
TCF12R10S-34	Sound Power	88	87	86	82	83	79	84	86	90
	Sound Pressure @10m	56	54	54	50	51	46	51	53	58
TCF12R12S-34	Sound Power	87	86	86	82	82	79	84	86	90
	Sound Pressure @10m	54	53	53	49	50	46	51	53	57
TCF12R12L-47	Sound Power	94	91	90	86	88	83	83	84	92
	Sound Pressure @10m	61	59	57	54	55	50	50	52	60
TCF12R14L-47	Sound Power	93	91	89	86	88	82	83	84	92
	Sound Pressure @10m	60	58	57	53	55	50	50	51	59
TCF12R16L-47	Sound Power	92	90	89	86	88	82	83	84	92
	Sound Pressure @10m	59	57	56	53	55	49	50	51	59
TCF12R18L-47	Sound Power	92	90	89	86	88	82	83	84	92
	Sound Pressure @10m	59	57	56	53	55	49	50	51	59
TCF22R10S-48	Sound Power	88	86	86	82	83	79	84	86	90
	Sound Pressure @10m	55	54	53	50	50	46	51	53	58
TCF22R12L-49	Sound Power	93	91	89	86	88	83	83	84	92
	Sound Pressure @10m	61	58	57	53	55	50	50	52	59
TCF22R14L-49	Sound Power	91	89	88	85	87	82	83	84	92
	Sound Pressure @10m	58	57	56	52	54	49	50	51	59

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

(2) All sound data measured at nominal conditions: Water in/out 16/10°C at 35°C ambient.

(3) Based on unit with a 300mm plenum, for units fitted with optional extras, please contact Airedale.

Technical Data

Sound Data - TCF

TCF - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCF22R16L-49	Sound Power	90	89	88	85	87	81	83	84	91
	Sound Pressure @10m	57	56	55	52	54	48	50	51	58
TCF22R18L-49	Sound Power	91	90	89	85	87	82	83	84	92
	Sound Pressure @10m	58	57	56	52	54	49	50	51	59
TCF23R12S-50	Sound Power	93	90	89	86	86	82	86	88	93
	Sound Pressure @10m	60	58	57	53	54	49	53	55	60
TCF23R14S-50	Sound Power	91	89	88	85	85	81	86	88	92
	Sound Pressure @10m	58	56	56	52	53	48	53	55	59
TCF23R16S-50	Sound Power	89	88	88	84	85	81	86	88	92
	Sound Pressure @10m	56	55	55	51	52	48	53	55	59
TCF23R18S-50	Sound Power	88	87	87	83	84	80	86	88	92
	Sound Pressure @10m	55	54	54	50	51	47	53	55	59
TCF23R18L-51	Sound Power	93	91	90	87	89	83	85	86	93
	Sound Pressure @10m	60	58	57	54	56	50	51	53	60
TCF23R20L-51	Sound Power	92	90	89	86	89	83	85	86	93
	Sound Pressure @10m	59	57	56	53	55	50	51	53	60
TCF24R18S-52	Sound Power	91	90	89	85	86	82	87	89	93
	Sound Pressure @10m	58	57	56	52	53	49	54	56	60
TCF24R20S-52	Sound Power	90	89	89	85	86	82	87	89	93
	Sound Pressure @10m	57	56	55	52	52	48	54	56	60
TCF24R22L-41	Sound Power	66	66	71	83	87	82	86	87	92
	Sound Pressure @10m	60	58	57	54	57	51	52	54	61
TCF24R24L-41	Sound Power	66	66	71	83	87	82	86	87	92
	Sound Pressure @10m	60	58	57	54	56	51	52	54	61

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

(2) All sound data measured at nominal conditions: Water in/out 16/10°C at 35°C ambient.

(3) Based on unit with a 300mm plenum, for units fitted with optional extras, please contact Airedale.

Technical Data**Sound Data - TCF****TCF - EC Fans**

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCF11X06S-42	Sound Power	84	83	80	77	78	75	81	83	87
	Sound Pressure @10m	51	50	48	45	45	42	49	51	54
TCF11X08S-42	Sound Power	83	82	80	77	77	75	81	83	86
	Sound Pressure @10m	51	50	47	45	45	42	48	50	54
TCF11X06L-43	Sound Power	84	83	79	79	82	77	80	81	87
	Sound Pressure @10m	51	50	47	47	50	45	47	49	55
TCF11X08L-44	Sound Power	85	84	81	79	82	77	80	81	87
	Sound Pressure @10m	52	51	48	47	50	45	47	49	55
TCF11X10L-45	Sound Power	86	85	82	80	82	77	80	81	87
	Sound Pressure @10m	53	52	49	47	50	44	47	49	55
TCF12X08S-46	Sound Power	85	84	82	80	80	78	84	86	89
	Sound Pressure @10m	52	52	49	47	48	45	51	53	57
TCF12X10S-34	Sound Power	86	85	82	80	80	78	84	86	89
	Sound Pressure @10m	53	52	50	47	48	45	51	53	57
TCF12X12S-34	Sound Power	87	86	83	80	81	78	84	86	90
	Sound Pressure @10m	54	53	50	48	48	45	51	53	57
TCF12X12L-47	Sound Power	87	86	82	82	85	80	83	84	90
	Sound Pressure @10m	54	53	50	49	52	47	50	52	57
TCF12X14L-47	Sound Power	87	86	83	82	85	80	83	84	90
	Sound Pressure @10m	54	53	50	49	52	47	50	51	57
TCF12X16L-47	Sound Power	88	87	84	82	85	80	83	84	90
	Sound Pressure @10m	55	54	51	49	52	47	50	51	57

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

(2) All sound data measured at nominal conditions: Water in/out 16/10°C at 35°C ambient.

(3) Based on unit with a 300mm plenum, for units fitted with optional extras, please contact Airedale.

Technical Data

Sound Data - TCF

TCF - EC Fans

		Single Octave Sound Levels (dB)								
		Frequency (Hz)								Overall [dB(A)]
		63	125	250	500	1000	2000	4000	8000	
TCF12X18L-47	Sound Power	88	87	84	83	85	80	83	84	90
	Sound Pressure @10m	55	54	51	50	52	47	50	51	57
TCF22X10S-48	Sound Power	86	85	82	80	80	78	84	86	89
	Sound Pressure @10m	53	52	50	47	48	45	51	53	57
TCF22X12L-49	Sound Power	87	86	82	82	85	80	83	84	90
	Sound Pressure @10m	54	53	50	49	52	47	50	52	57
TCF22X14L-49	Sound Power	87	86	83	82	85	80	83	84	90
	Sound Pressure @10m	54	53	50	49	52	47	50	51	57
TCF22X16L-49	Sound Power	88	87	84	82	85	80	83	84	90
	Sound Pressure @10m	55	54	51	49	52	47	50	51	57
TCF22X18L-49	Sound Power	88	87	84	83	85	80	83	84	90
	Sound Pressure @10m	55	54	51	50	52	47	50	51	57
TCF23X12S-50	Sound Power	87	86	83	81	82	79	86	88	91
	Sound Pressure @10m	54	53	51	49	49	47	53	55	58
TCF23X14S-50	Sound Power	87	86	84	82	82	79	86	88	91
	Sound Pressure @10m	54	54	51	49	49	47	53	55	58
TCF23X16S-50	Sound Power	88	87	84	82	82	79	86	88	91
	Sound Pressure @10m	55	54	52	49	49	46	53	55	58
TCF23X18S-50	Sound Power	88	87	85	82	82	80	86	88	91
	Sound Pressure @10m	55	54	52	49	49	46	53	55	58
TCF23X18L-51	Sound Power	88	87	84	84	87	82	84	86	92
	Sound Pressure @10m	55	54	51	51	54	49	51	53	59
TCF23X20L-51	Sound Power	89	88	85	84	87	82	84	86	92
	Sound Pressure @10m	56	55	51	51	54	48	51	53	59
TCF24X18S-52	Sound Power	88	87	85	83	83	81	87	89	92
	Sound Pressure @10m	55	54	52	50	50	48	54	56	59
TCF24X20S-52	Sound Power	89	88	85	83	83	81	87	89	92
	Sound Pressure @10m	56	55	52	50	50	47	54	56	59
TCF24X22L-41	Sound Power	89	88	85	85	88	83	86	87	93
	Sound Pressure @10m	56	55	52	51	55	50	52	54	60
TCF24X24L-41	Sound Power	90	89	85	85	88	83	86	87	93
	Sound Pressure @10m	56	55	52	51	54	49	52	54	60

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

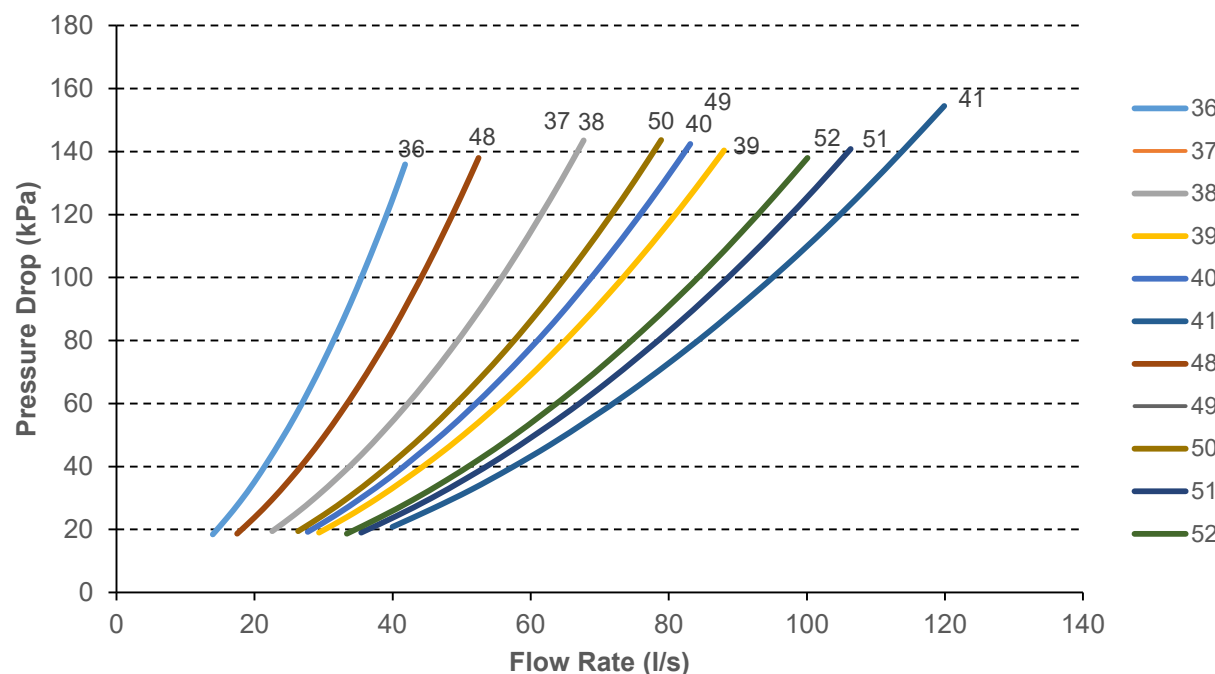
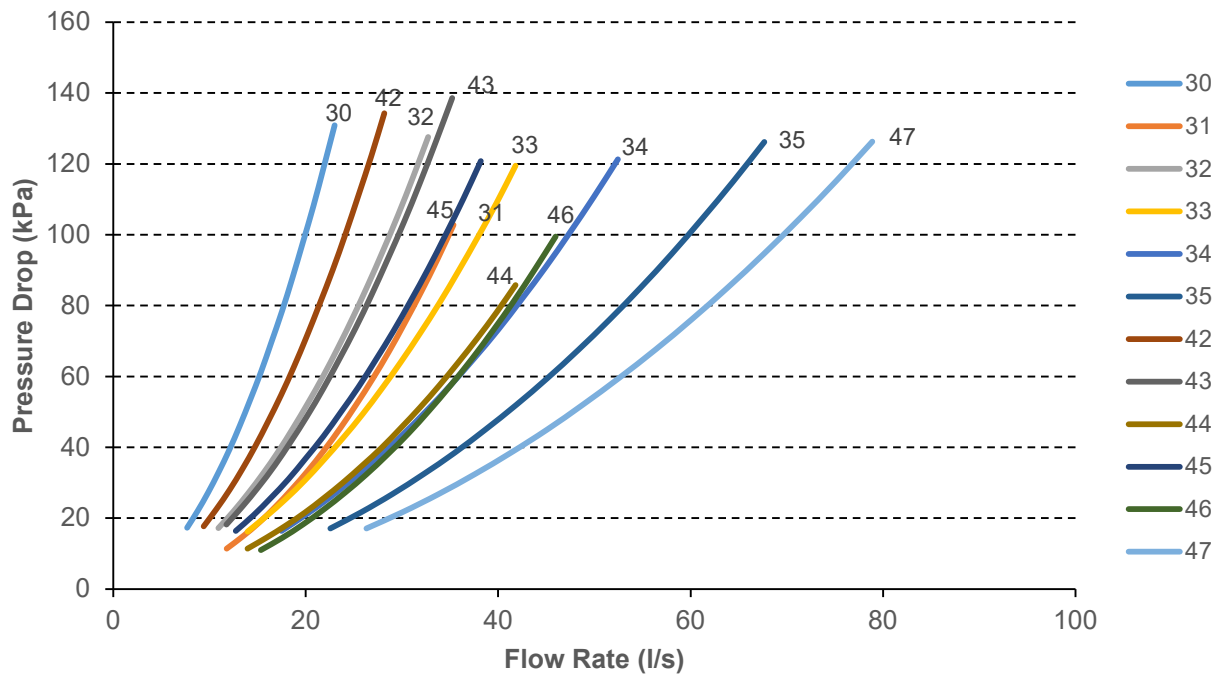
(2) All sound data measured at nominal conditions: Water in/out 16/10°C at 35°C ambient.

(3) Based on unit with a 300mm plenum, for units fitted with optional extras, please contact Airedale.

Technical Data

Hydronic Data

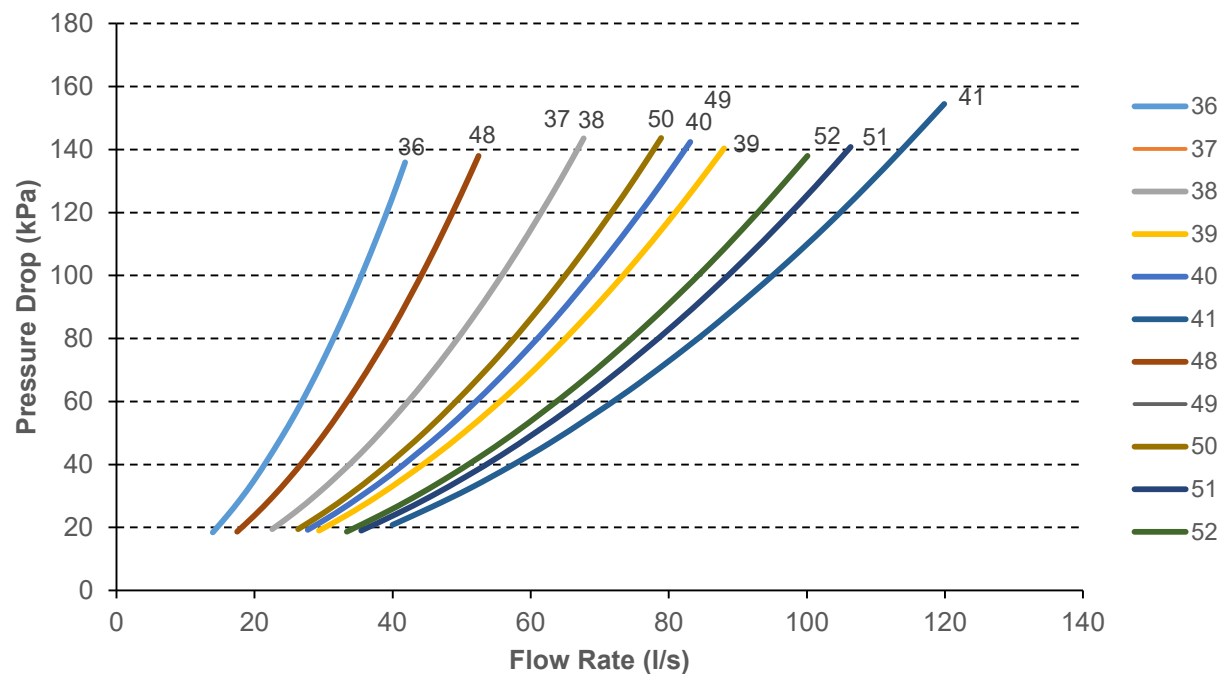
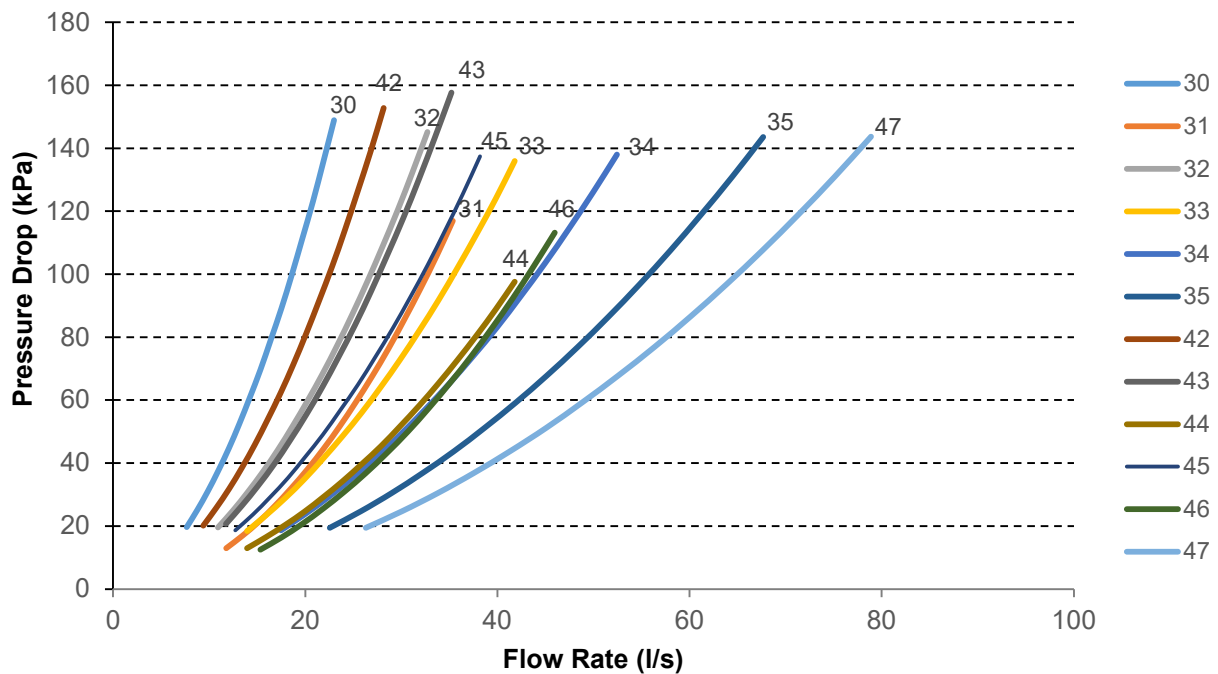
Evaporator Pressure Drop - 100% Water



Technical Data

Hydronic Data

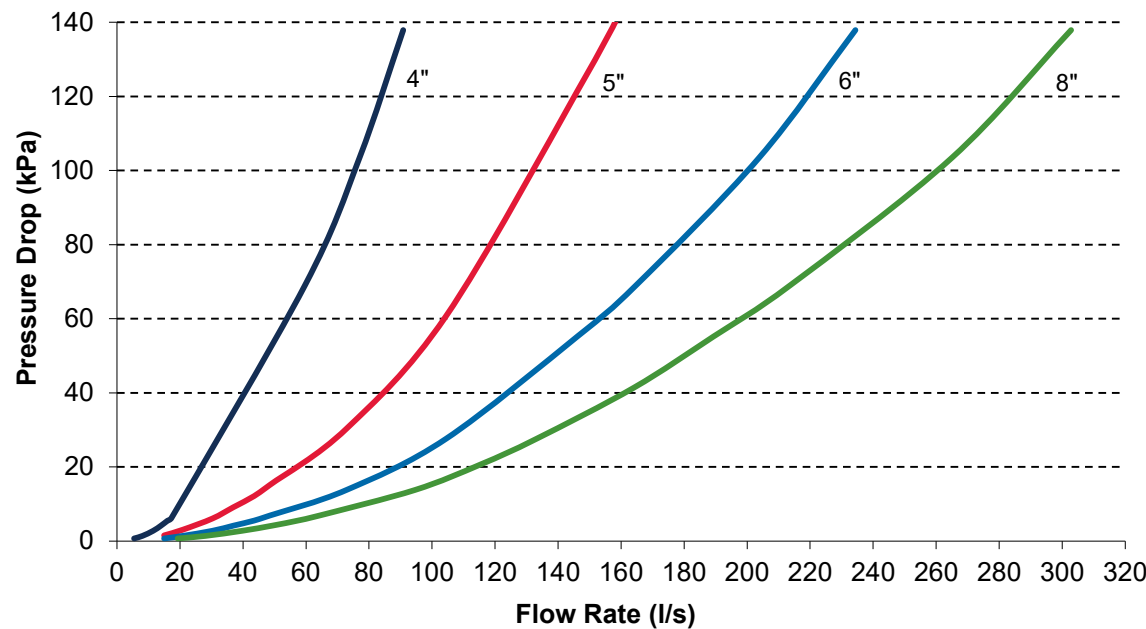
Evaporator Pressure Drop - 20% Ethylene Glycol



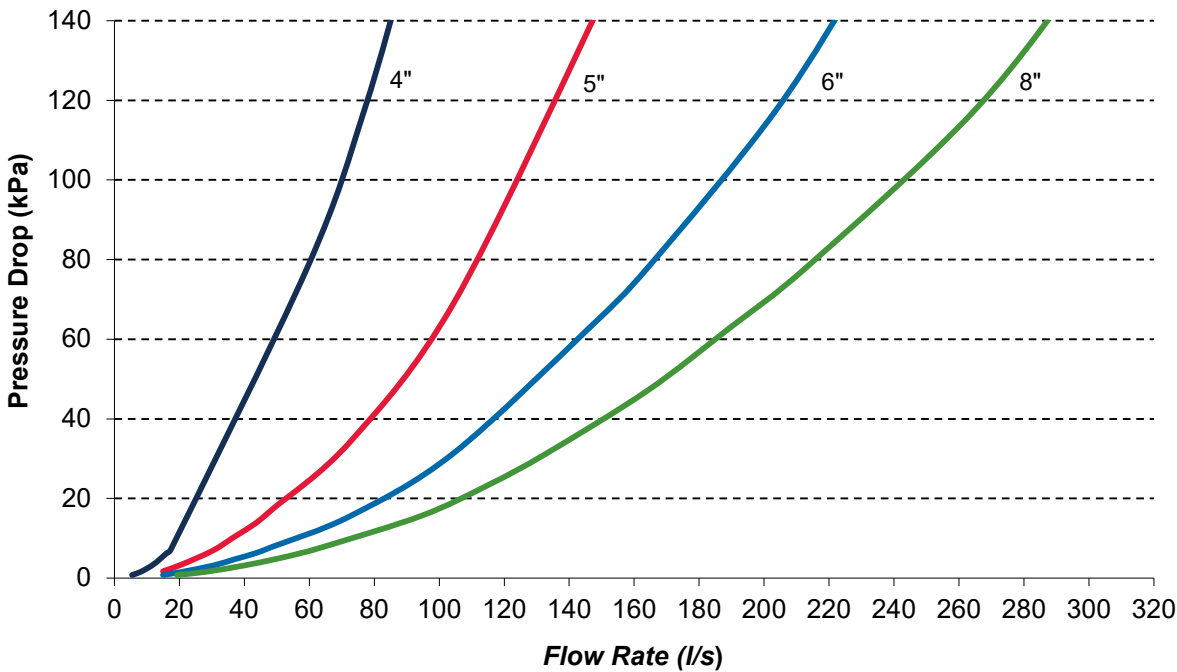
Technical Data

Hydronic Data

Strainer Pressure Drop - 100% Water

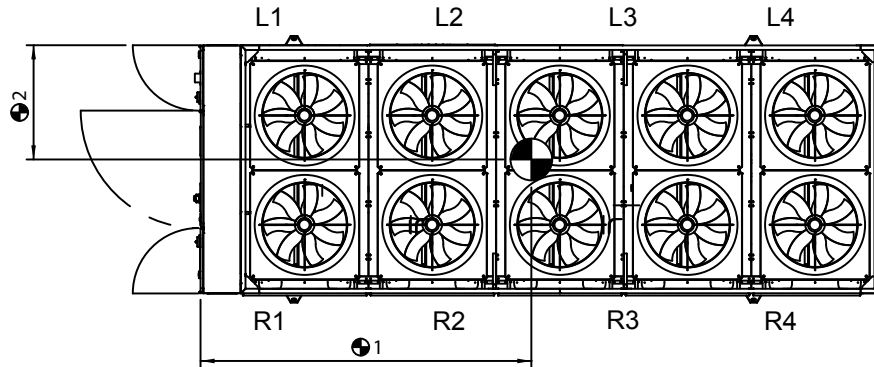


Strainer Pressure Drop - 20% Ethylene Glycol



Installation Data

Air Cooled Masses & Centre of Gravity (C of G)



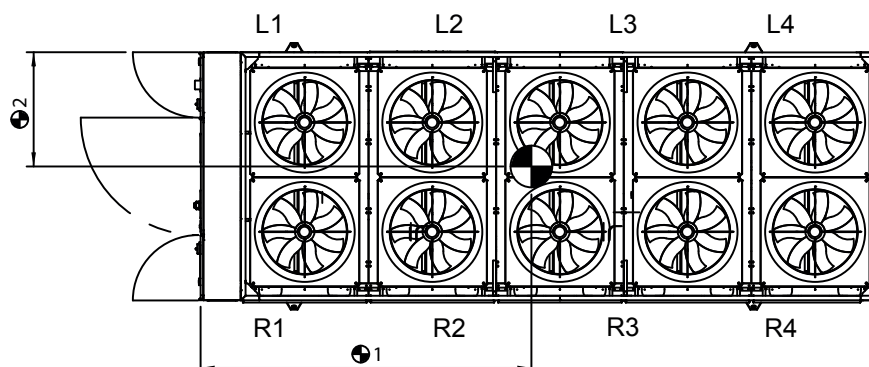
	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1 (mm)	C of G 2 (mm)
TCC11R04S-30	2685	2800	1350	1150
TCC11R06S-30	3240	3360	1760	1140
TCC11R08S-30	3725	3850	2260	1130
TCC11R06L-31	3415	3560	1760	1130
TCC11R08L-32	4225	4355	2330	1120
TCC11R10L-32	4805	4945	2730	1120
TCC12R08S-33	4645	4810	2360	1160
TCC12R10S-33	5190	5350	2750	1150
TCC12R10L-34	5290	5480	2750	1150
TCC12R12L-35	6325	6565	3130	1140
TCC12R14L-35	7110	7355	3600	1130
TCC12R16L-35	7490	7735	4310	1130
TCC12R18L-35	8345	8605	4930	1130
TCC22R08S-36	4760	4900	2340	1150
TCC22R10S-36	5390	5530	2710	1150
TCC22R12L-37	6400	6610	3070	1140
TCC22R14L-37	7030	7240	3760	1130
TCC22R16L-37	7790	8010	4280	1130
TCC22R18L-37	8220	8440	4800	1130
TCC23R12S-38	6880	7110	3240	1160
TCC23R14S-38	7440	7670	3890	1150
TCC23R16S-38	7850	8080	4240	1150
TCC23R18S-38	8530	8760	4940	1140
TCC23R16L-39	8600	8880	4240	1140
TCC23R18L-39	9270	9550	4950	1140
TCC23R20L-39	10190	10480	5480	1140
TCC24R18S-40	8910	9160	4850	1160
TCC24R20S-40	9860	10110	5540	1160
TCC24R22L-41	11360	11680	6380	1150
TCC24R24L-41	11990	12310	6630	1150

Centre of gravity is always measured from the control panel end.

Above refers to standard unit water configurations of evaporator only, contact Airedale for other options.

Installation Data

Air Cooled Masses & Centre of Gravity (C of G)



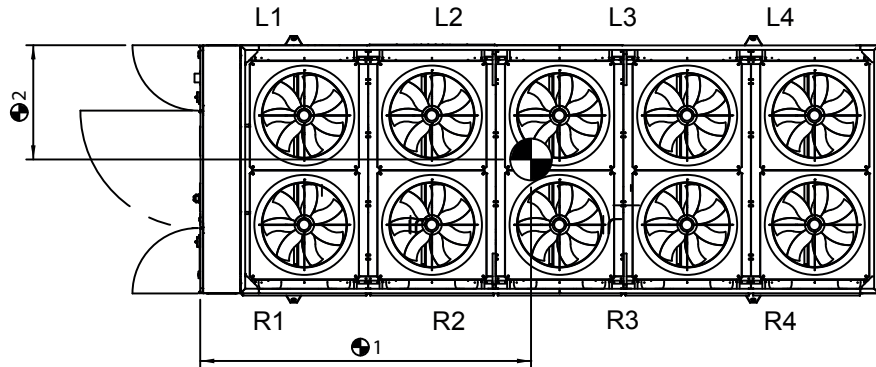
	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1 (mm)	C of G 2 (mm)
TCC11X04S-30	2685	2800	1350	1150
TCC11X06S-30	3240	3360	1760	1140
TCC11X08S-30	3725	3850	2260	1130
TCC11X06L-31	3415	3560	1760	1130
TCC11X08L-32	4225	4355	2330	1120
TCC11X10L-32	4805	4945	2730	1120
TCC12X08S-33	4645	4810	2360	1160
TCC12X10S-33	5190	5350	2750	1150
TCC12X10L-34	5290	5480	2750	1150
TCC12X12L-35	6325	6565	3130	1140
TCC12X14L-35	7110	7355	3600	1130
TCC12X16L-35	7490	7735	4310	1130
TCC12X18L-35	8345	8605	4930	1130
TCC22X08S-36	4760	4900	2340	1150
TCC22X10S-36	5390	5530	2710	1150
TCC22X12L-37	6400	6610	3070	1140
TCC22X14L-37	7030	7240	3760	1130
TCC22X16L-37	7790	8010	4280	1130
TCC22X18L-37	8220	8440	4800	1130
TCC23X12S-38	6880	7110	3240	1160
TCC23X14S-38	7440	7670	3890	1150
TCC23X16S-38	7850	8080	4240	1150
TCC23X18S-38	8530	8760	4940	1140
TCC23X16L-39	8600	8880	4240	1140
TCC23X18L-39	9270	9550	4950	1140
TCC23X20L-39	10190	10480	5480	1140
TCC24X18S-40	8910	9160	4850	1160
TCC24X20S-40	9860	10110	5540	1160
TCC24X22L-41	11360	11680	6380	1150
TCC24X24L-41	11990	12310	6630	1150

Centre of gravity is always measured from the control panel end.

Above refers to standard unit water configurations of evaporator only, contact Airedale for other options.

Installation Data

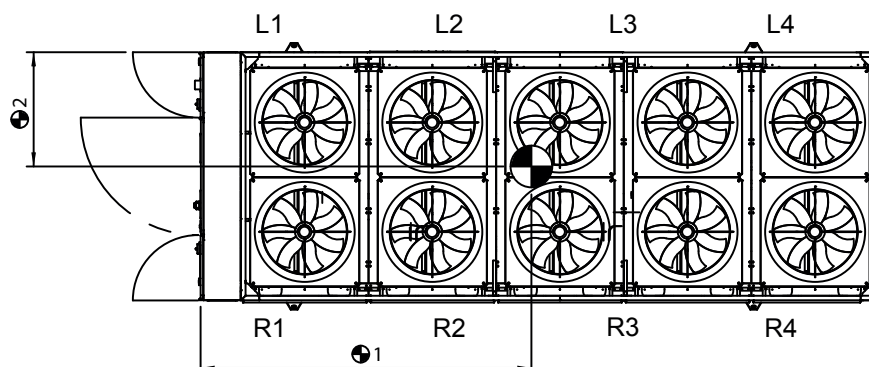
Freecool Masses & Centre of Gravity (C of G)



	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1 (mm)	C of G 2 (mm)
TCF11R06S-42	3965	4425	1840	1170
TCF11R08S-42	4750	5300	2350	1110
TCF11R06L-43	4410	4965	1840	1090
TCF11R08L-44	5070	5705	2390	1090
TCF11R10L-45	6120	6845	2820	1090
TCF12R08S-46	5495	5930	2390	1130
TCF12R10S-34	6490	7240	2820	1120
TCF12R12S-34	7385	8255	3230	1120
TCF12R12L-47	8140	9205	3240	1120
TCF12R14L-47	9065	10295	3890	1100
TCF12R16L-47	9730	11060	4570	1100
TCF12R18L-47	10735	12195	5260	1090
TCF22R10S-48	6690	7330	2810	1090
TCF22R12L-49	8400	9310	3220	1070
TCF22R14L-49	9360	10450	3960	1060
TCF22R16L-49	10270	11440	4460	1060
TCF22R18L-49	11080	12370	5000	1050
TCF23R12S-50	8780	9700	3380	1080
TCF23R14S-50	9690	10710	4040	1080
TCF23R16S-50	10400	11570	4440	1070
TCF23R18S-50	11220	12450	5090	1070
TCF23R18L-51	12310	13720	5130	1060
TCF23R20L-51	13510	15170	5700	1050
TCF24R18S-52	12590	14040	5050	1070
TCF24R20S-52	13780	15390	5740	1060
TCF24R22L-41	14800	16530	6570	1060
TCF24R24L-41	15800	17730	6840	1050

Centre of gravity is always measured from the control panel end.

Above refers to standard unit water configurations of no pump, no bypass, contact Airedale for other options.

Installation Data**Freecool Masses & Centre of Gravity (C of G)**

	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1 (mm)	C of G 2 (mm)
TCF11X06S-42	3965	4425	1840	1170
TCF11X08S-42	4750	5300	2350	1110
TCF11X06L-43	4410	4965	1840	1090
TCF11X08L-44	5070	5705	2390	1090
TCF11X10L-45	6120	6845	2820	1090
TCF12X08S-46	5495	5930	2390	1130
TCF12X10S-34	6490	7240	2820	1120
TCF12X12S-34	7385	8255	3230	1120
TCF12X12L-47	8140	9205	3240	1120
TCF12X14L-47	9065	10295	3890	1100
TCF12X16L-47	9730	11060	4570	1100
TCF12X18L-47	10735	12195	5260	1090
TCF22X10S-48	6690	7330	2810	1090
TCF22X12L-49	8400	9310	3220	1070
TCF22X14L-49	9360	10450	3960	1060
TCF22X16L-49	10270	11440	4460	1060
TCF22X18L-49	11080	12370	5000	1050
TCF23X12S-50	8780	9700	3380	1080
TCF23X14S-50	9690	10710	4040	1080
TCF23X16S-50	10400	11570	4440	1070
TCF23X18S-50	11220	12450	5090	1070
TCF23X18L-51	12310	13720	5130	1060
TCF23X20L-51	13510	15170	5700	1050
TCF24X18S-52	12590	14040	5050	1070
TCF24X20S-52	13780	15390	5740	1060
TCF24X22L-41	14800	16530	6570	1060
TCF24X24L-41	15800	17730	6840	1050

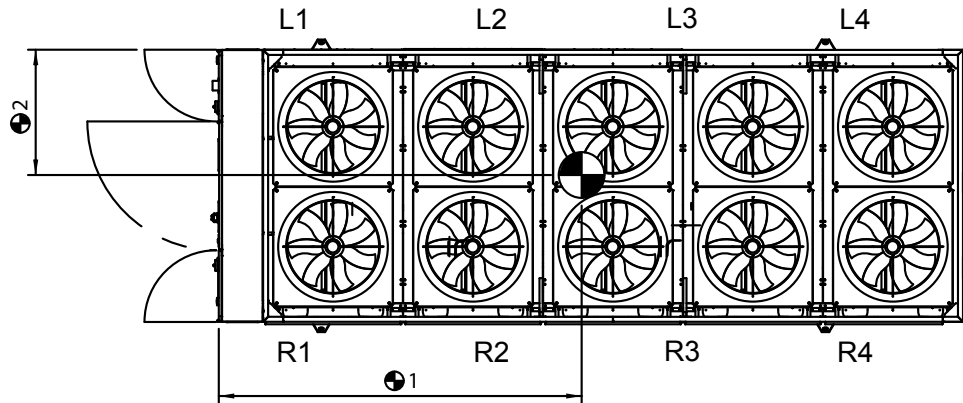
Centre of gravity is always measured from the control panel end.

Above refers to standard unit water configurations of no pump, no bypass, contact Airedale for other options.

Installation Data

Point Loadings

Air Cooled



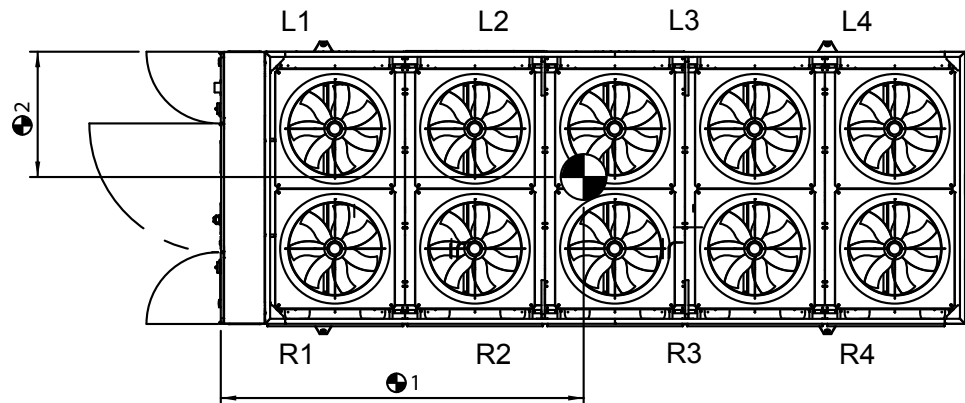
Standard Unit Point Loads																
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCC11R04S-30	695	645	-	-	-	-	-	-	745	715	-	-	-	-	-	-
TCC11R06S-30	625	565	430	-	-	-	-	-	665	615	460	-	-	-	-	-
TCC11R08S-30	580	475	425	385	-	-	-	-	615	510	455	405	-	-	-	-
TCC11R06L-31	660	610	455	-	-	-	-	-	695	660	480	-	-	-	-	-
TCC11R08L-32	615	535	520	460	-	-	-	-	645	570	540	470	-	-	-	-
TCC11R10L-32	695	630	575	530	-	-	-	-	725	655	595	540	-	-	-	-
TCC12R08S-33	650	570	560	490	-	-	-	-	710	645	640	545	-	-	-	-
TCC12R10S-33	725	660	605	555	-	-	-	-	790	735	675	605	-	-	-	-
TCC12R10L-34	740	675	620	565	-	-	-	-	810	755	695	620	-	-	-	-
TCC12R12L-35	900	830	760	675	-	-	-	-	960	900	820	720	-	-	-	-
TCC12R14L-35	885	825	745	645	460	-	-	-	965	935	820	615	460	-	-	-
TCC12R16L-35	780	840	805	730	595	-	-	-	810	900	870	785	620	-	-	-
TCC12R18L-35	735	670	800	780	620	580	-	-	770	710	850	830	655	605	-	-
TCC22R08S-36	655	605	575	485	-	-	-	-	705	685	655	530	-	-	-	-
TCC22R10S-36	750	710	635	540	-	-	-	-	815	795	705	580	-	-	-	-
TCC22R12L-37	920	875	770	625	-	-	-	-	975	945	835	660	-	-	-	-
TCC22R14L-37	855	785	705	615	545	-	-	-	895	835	760	665	575	-	-	-
TCC22R16L-37	875	840	800	730	650	-	-	-	910	890	855	780	680	-	-	-
TCC22R18L-37	800	745	710	670	615	565	-	-	825	785	750	715	660	595	-	-
TCC23R12S-38	860	890	870	740	-	-	-	-	950	1005	975	815	-	-	-	-
TCC23R14S-38	810	790	755	680	610	-	-	-	890	885	850	750	650	-	-	-
TCC23R16S-38	875	835	795	720	630	-	-	-	950	925	885	790	675	-	-	-
TCC23R18S-38	765	705	715	720	670	615	-	-	830	780	790	790	725	650	-	-
TCC23R16L-39	950	940	900	795	680	-	-	-	1020	1025	980	865	720	-	-	-
TCC23R18L-39	815	775	800	805	740	665	-	-	880	845	870	870	790	695	-	-
TCC23R20L-39	920	870	895	860	795	725	-	-	985	945	965	925	845	750	-	-
TCC24R18S-40	810	750	745	720	665	605	-	-	905	865	860	825	745	660	-	-
TCC24R20S-40	870	805	825	810	760	705	-	-	950	915	935	915	850	765	-	-
TCC24R22L-41	970	925	975	975	895	835	-	-	1035	1020	1085	1080	980	900	-	-
TCC24R24L-41	1040	985	1030	1020	945	865	-	-	1115	1085	1140	1125	1030	925	-	-

Above refers to standard unit water configurations of evaporator only, contact Airedale for other options.

Installation Data

Point Loadings

Air Cooled



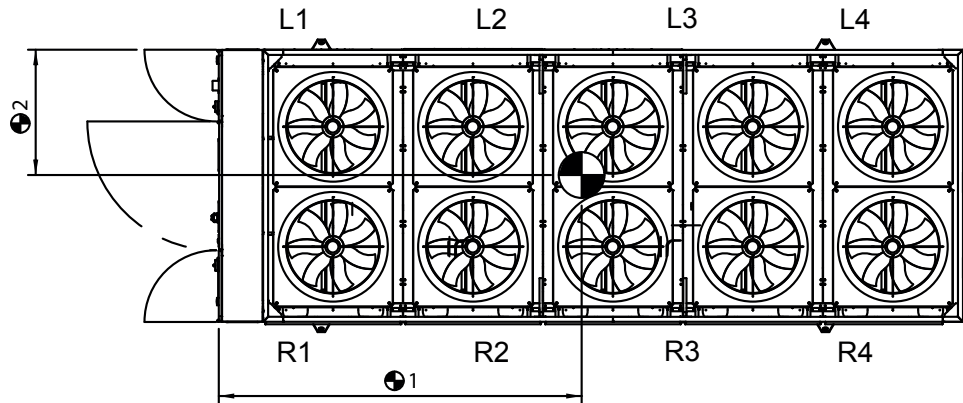
	Standard Unit Point Loads															
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCC11X04S-30	695	645	-	-	-	-	-	-	745	715	-	-	-	-	-	-
TCC11X06S-30	625	565	430	-	-	-	-	-	665	615	460	-	-	-	-	-
TCC11X08S-30	580	475	425	385	-	-	-	-	615	510	455	405	-	-	-	-
TCC11X06L-31	660	610	455	-	-	-	-	-	695	660	480	-	-	-	-	-
TCC11X08L-32	615	535	520	460	-	-	-	-	645	570	540	470	-	-	-	-
TCC11X10L-32	695	630	575	530	-	-	-	-	725	655	595	540	-	-	-	-
TCC12X08S-33	650	570	560	490	-	-	-	-	710	645	640	545	-	-	-	-
TCC12X10S-33	725	660	605	555	-	-	-	-	790	735	675	605	-	-	-	-
TCC12X10L-34	740	675	620	565	-	-	-	-	810	755	695	620	-	-	-	-
TCC12X12L-35	900	830	760	675	-	-	-	-	960	900	820	720	-	-	-	-
TCC12X14L-35	885	825	745	645	460	-	-	-	965	935	820	615	460	-	-	-
TCC12X16L-35	780	840	805	730	595	-	-	-	810	900	870	785	620	-	-	-
TCC12X18L-35	735	670	800	780	620	580	-	-	770	710	850	830	655	605	-	-
TCC22X08S-36	655	605	575	485	-	-	-	-	705	685	655	530	-	-	-	-
TCC22X10S-36	750	710	635	540	-	-	-	-	815	795	705	580	-	-	-	-
TCC22X12L-37	920	875	770	625	-	-	-	-	975	945	835	660	-	-	-	-
TCC22X14L-37	855	785	705	615	545	-	-	-	895	835	760	665	575	-	-	-
TCC22X16L-37	875	840	800	730	650	-	-	-	910	890	855	780	680	-	-	-
TCC22X18L-37	800	745	710	670	615	565	-	-	825	785	750	715	660	595	-	-
TCC23X12S-38	860	890	870	740	-	-	-	-	950	1005	975	815	-	-	-	-
TCC23X14S-38	810	790	755	680	610	-	-	-	890	885	850	750	650	-	-	-
TCC23X16S-38	875	835	795	720	630	-	-	-	950	925	885	790	675	-	-	-
TCC23X18S-38	765	705	715	720	670	615	-	-	830	780	790	790	725	650	-	-
TCC23X16L-39	950	940	900	795	680	-	-	-	1020	1025	980	865	720	-	-	-
TCC23X18L-39	815	775	800	805	740	665	-	-	880	845	870	870	790	695	-	-
TCC23X20L-39	920	870	895	860	795	725	-	-	985	945	965	925	845	750	-	-
TCC24X18S-40	810	750	745	720	665	605	-	-	905	865	860	825	745	660	-	-
TCC24X20S-40	870	805	825	810	760	705	-	-	950	915	935	915	850	765	-	-
TCC24X22L-41	970	925	975	975	895	835	-	-	1035	1020	1085	1080	980	900	-	-
TCC24X24L-41	1040	985	1030	1020	945	865	-	-	1115	1085	1140	1125	1030	925	-	-

Above refers to standard unit water configurations of evaporator only, contact Airedale for other options.

Installation Data

Point Loadings

Freecool



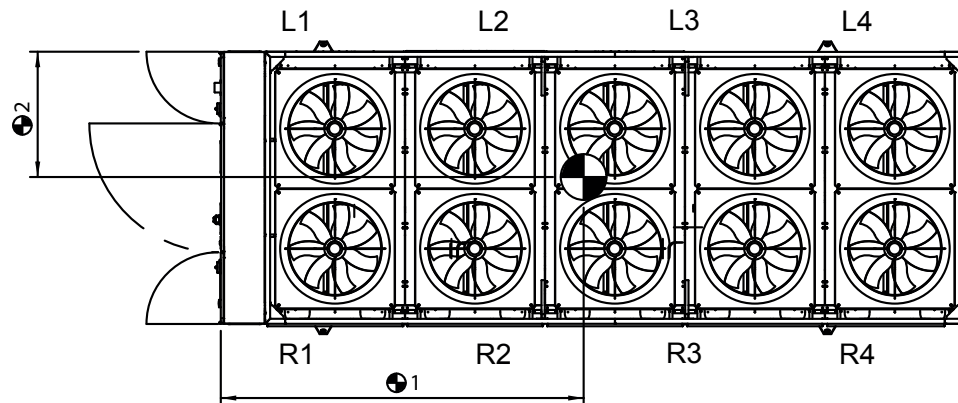
Standard Unit Point Loads																
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCF11R06S-42	750	715	595	-	-	-	-	-	825	830	710	-	-	-	-	-
TCF11R08S-42	745	665	640	575	-	-	-	-	765	685	650	575	-	-	-	-
TCF11R06L-43	865	900	730	-	-	-	-	-	875	895	700	-	-	-	-	-
TCF11R08L-44	780	725	715	650	-	-	-	-	790	725	695	625	-	-	-	-
TCF11R10L-45	910	880	865	795	-	-	-	-	915	875	835	770	-	-	-	-
TCF12R08S-46	790	725	710	645	-	-	-	-	835	780	765	680	-	-	-	-
TCF12R10S-34	940	910	890	820	-	-	-	-	980	950	915	835	-	-	-	-
TCF12R12S-34	1075	1035	1010	930	-	-	-	-	1125	1085	1045	950	-	-	-	-
TCF12R12L-47	1185	1170	1145	1035	-	-	-	-	1230	1215	1175	1050	-	-	-	-
TCF12R14L-47	1035	1130	1125	1045	800	-	-	-	1115	1205	1140	950	750	-	-	-
TCF12R16L-47	950	1175	1225	1195	985	-	-	-	980	1190	1225	1180	955	-	-	-
TCF12R18L-47	895	825	1130	1225	1170	905	-	-	925	870	1120	1180	1075	875	-	-
TCF22R10S-48	935	970	965	820	-	-	-	-	965	980	920	775	-	-	-	-
TCF22R12L-49	1195	1275	1270	1040	-	-	-	-	1195	1225	1160	945	-	-	-	-
TCF22R14L-49	1125	1155	1150	1070	930	-	-	-	1100	1090	1045	950	830	-	-	-
TCF22R16L-49	1160	1210	1275	1240	1065	-	-	-	1130	1150	1155	1095	955	-	-	-
TCF22R18L-49	1075	1090	1120	1140	1075	950	-	-	1040	1030	1025	1015	950	855	-	-
TCF23R12S-50	1100	1265	1360	1205	-	-	-	-	1140	1255	1275	1100	-	-	-	-
TCF23R14S-50	1065	1130	1180	1115	980	-	-	-	1085	1120	1115	1020	895	-	-	-
TCF23R16S-50	1165	1210	1275	1230	1055	-	-	-	1175	1190	1195	1115	955	-	-	-
TCF23R18S-50	1025	1025	1100	1165	1105	985	-	-	1030	1010	1045	1065	995	895	-	-
TCF23R18L-51	1095	1130	1235	1315	1250	1100	-	-	1095	1095	1150	1180	1100	975	-	-
TCF23R20L-51	1235	1280	1395	1460	1375	1210	-	-	1220	1215	1275	1270	1180	1050	-	-
TCF24R18S-52	1145	1180	1260	1305	1230	1080	-	-	1165	1175	1210	1205	1110	970	-	-
TCF24R20S-52	1230	1270	1395	1475	1395	1230	-	-	1215	1230	1305	1315	1230	1095	-	-
TCF24R22L-41	1305	1355	1505	1605	1470	1350	-	-	1280	1300	1400	1435	1315	1210	-	-
TCF24R24L-41	1425	1475	1620	1715	1605	1425	-	-	1385	1400	1490	1515	1405	1265	-	-

Above refers to standard unit water configurations of no pump, no bypass, contact Airedale, for other options.

Installation Data

Point Loadings

Freecool



	Standard Unit Point Loads															
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCF11X06S-42	750	715	595	-	-	-	-	-	825	830	710	-	-	-	-	-
TCF11X08S-42	745	665	640	575	-	-	-	-	765	685	650	575	-	-	-	-
TCF11X06L-43	865	900	730	-	-	-	-	-	875	895	700	-	-	-	-	-
TCF11X08L-44	780	725	715	650	-	-	-	-	790	725	695	625	-	-	-	-
TCF11X10L-45	910	880	865	795	-	-	-	-	915	875	835	770	-	-	-	-
TCF12X08S-46	790	725	710	645	-	-	-	-	835	780	765	680	-	-	-	-
TCF12X10S-34	940	910	890	820	-	-	-	-	980	950	915	835	-	-	-	-
TCF12X12S-34	1075	1035	1010	930	-	-	-	-	1125	1085	1045	950	-	-	-	-
TCF12X12L-47	1185	1170	1145	1035	-	-	-	-	1230	1215	1175	1050	-	-	-	-
TCF12X14L-47	1035	1130	1125	1045	800	-	-	-	1115	1205	1140	950	750	-	-	-
TCF12X16L-47	950	1175	1225	1195	985	-	-	-	980	1190	1225	1180	955	-	-	-
TCF12X18L-47	895	825	1130	1225	1170	905	-	-	925	870	1120	1180	1075	875	-	-
TCF22X10S-48	935	970	965	820	-	-	-	-	965	980	920	775	-	-	-	-
TCF22X12L-49	1195	1275	1270	1040	-	-	-	-	1195	1225	1160	945	-	-	-	-
TCF22X14L-49	1125	1155	1150	1070	930	-	-	-	1100	1090	1045	950	830	-	-	-
TCF22X16L-49	1160	1210	1275	1240	1065	-	-	-	1130	1150	1155	1095	955	-	-	-
TCF22X18L-49	1075	1090	1120	1140	1075	950	-	-	1040	1030	1025	1015	950	855	-	-
TCF23X12S-50	1100	1265	1360	1205	-	-	-	-	1140	1255	1275	1100	-	-	-	-
TCF23X14S-50	1065	1130	1180	1115	980	-	-	-	1085	1120	1115	1020	895	-	-	-
TCF23X16S-50	1165	1210	1275	1230	1055	-	-	-	1175	1190	1195	1115	955	-	-	-
TCF23X18S-50	1025	1025	1100	1165	1105	985	-	-	1030	1010	1045	1065	995	895	-	-
TCF23X18L-51	1095	1130	1235	1315	1250	1100	-	-	1095	1095	1150	1180	1100	975	-	-
TCF23X20L-51	1235	1280	1395	1460	1375	1210	-	-	1220	1215	1275	1270	1180	1050	-	-
TCF24X18S-52	1145	1180	1260	1305	1230	1080	-	-	1165	1175	1210	1205	1110	970	-	-
TCF24X20S-52	1230	1270	1395	1475	1395	1230	-	-	1215	1230	1305	1315	1230	1095	-	-
TCF24X22L-41	1305	1355	1505	1605	1470	1350	-	-	1280	1300	1400	1435	1315	1210	-	-
TCF24X24L-41	1425	1475	1620	1715	1605	1425	-	-	1385	1400	1490	1515	1405	1265	-	-

Above refers to standard unit water configurations of no pump, no bypass, contact Airedale, for other options.

Installation Data

Unit Lifting

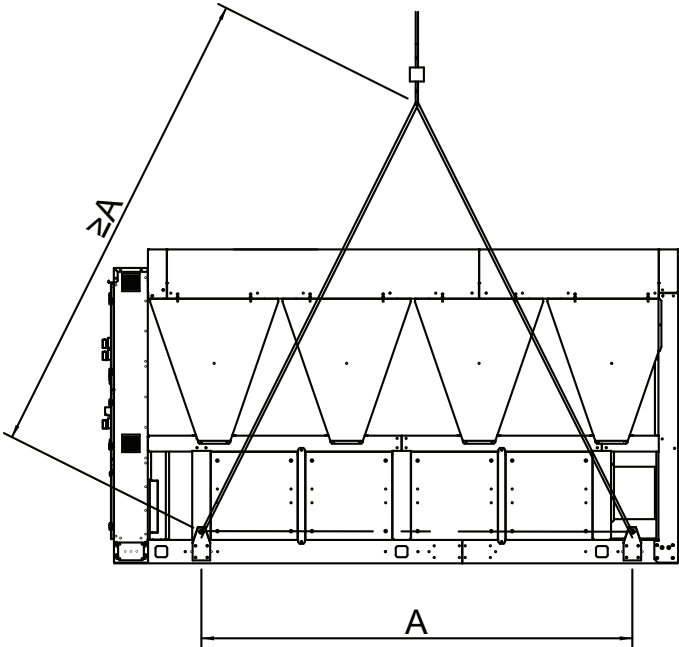
- Employ lifting specialists.
- Local codes and regulations relating to the lifting of this type of equipment should be observed.
- Use the lifting eye bolts/lifting lugs provided.
- Attach lifting chains to each of the lifting eye bolts/lifting lugs provided; each chain and eye bolt must be capable of lifting the whole chiller.
- Use the appropriate spreader bars/lifting slings with the holes/lugs provided.
- Lift the unit slowly and evenly.
- If the unit is dropped, it should immediately be checked for damage and reported to Airedale.
- Allow free space above the fans to prevent air recirculation.

CAUTION ⚠

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

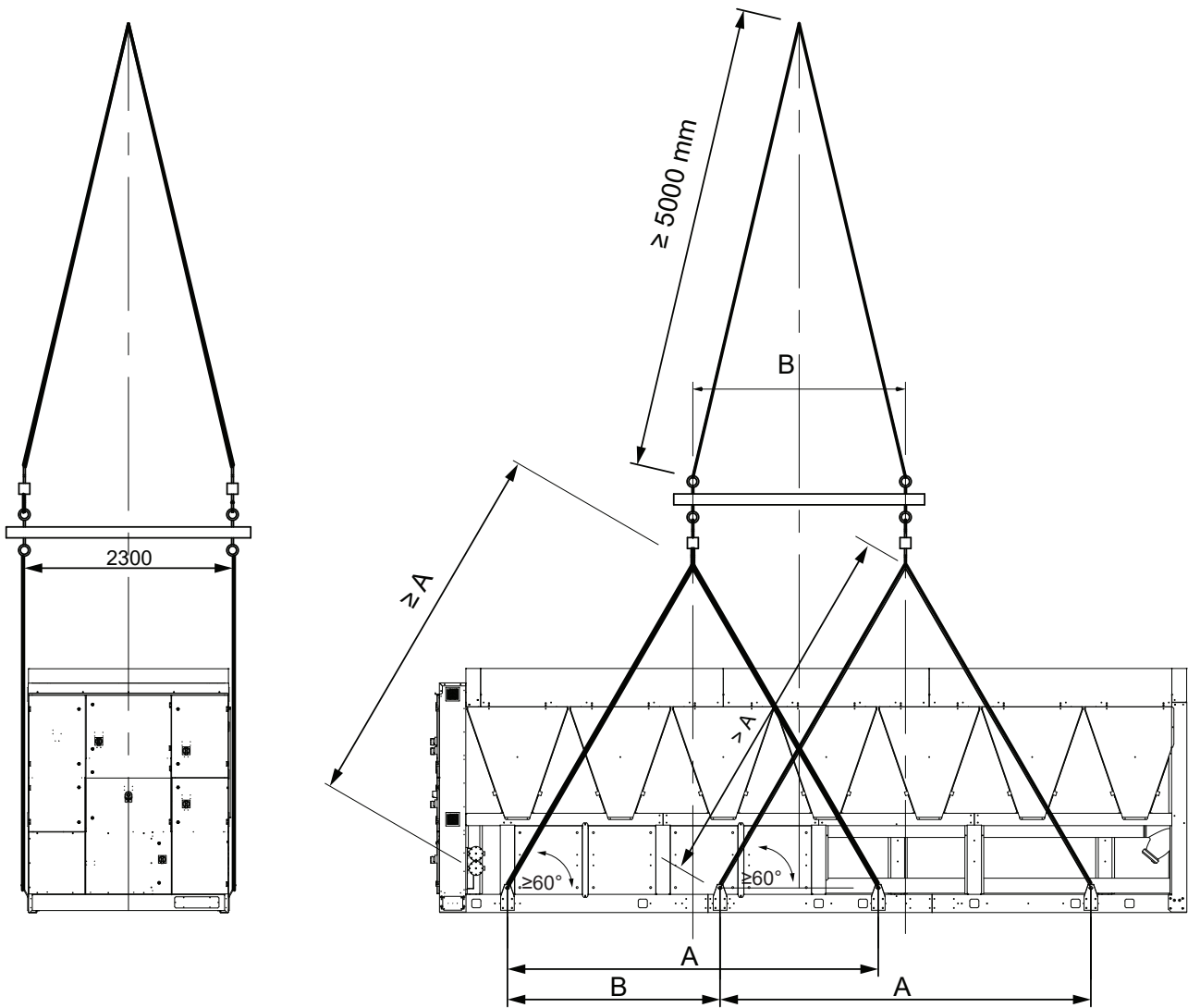
Lifting Dimensions

4 Point



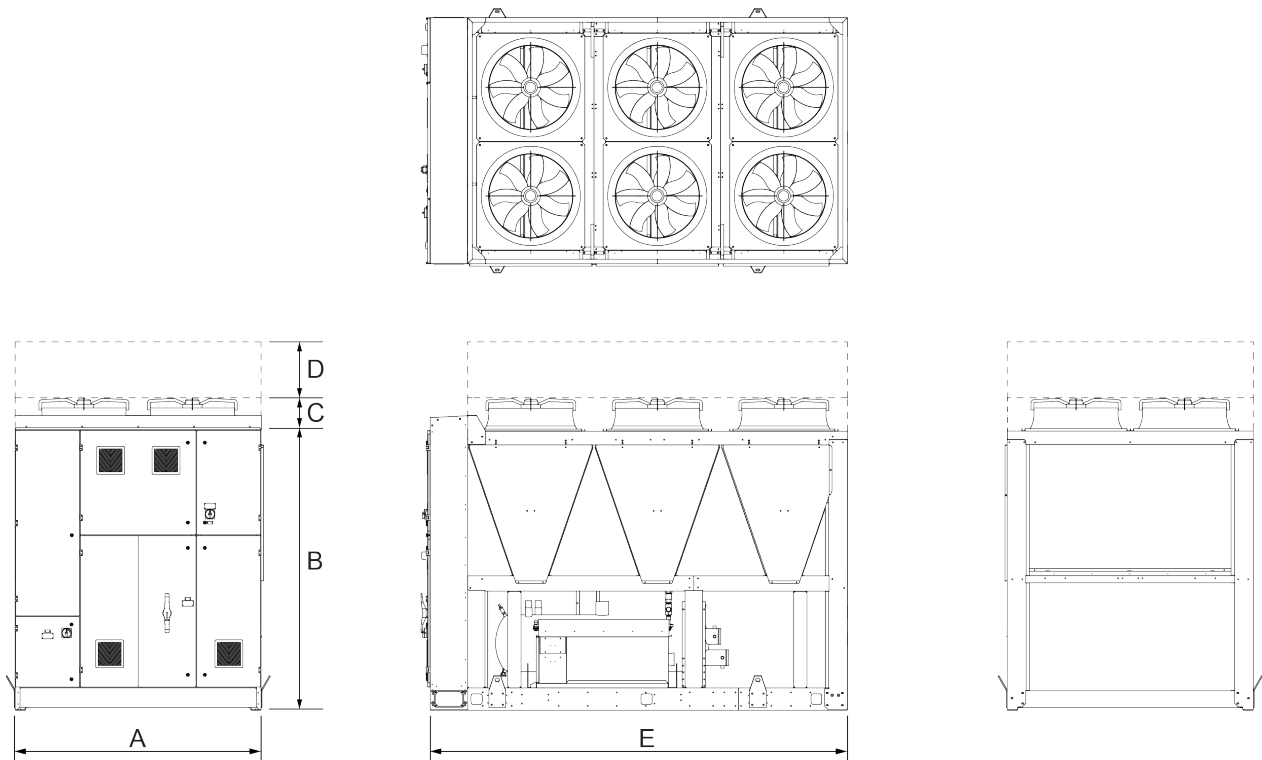
Number of Fans	Lifting Lug Size	A (mm)
4	35	1533
6	35	2332
8	35	3464
10	35	4077

Installation Data
Lifting Dimensions
8 Point



Number of Fans	Lifting Lug Size	Single Circuit Machines		Dual Circuit Machines	
		A (mm)	B (mm)	A (mm)	B (mm)
12	35	3600	1536	3600	1490
14	35	4500	1536	4500	1536
16	35	4300	3100	4300	3100
18	35	5500	2800	5200	2968
20	35	6500	3164	6500	3139
22	35	—	—	6650	3966
24	35	—	—	6650	4950

Installation Data
Dimensions



Contact Airedale for detailed general arrangement drawings.

Number of Fans		A	B	C	D	E
4 Fan	mm	2200	2800	300	500	2626
6 Fan	mm	2200	2800	300	500	3758
8 Fan	mm	2200	2800	300	500	4890
10 Fan	mm	2200	2800	300	500	6022
12 Fan	mm	2200	2800	300	500	7154
14 Fan	mm	2200	2800	300	500	8286
16 Fan	mm	2200	2800	300	500	9418
18 Fan	mm	2200	2800	300	500	10550
20 Fan	mm	2200	2800	300	500	11682
22 Fan	mm	2200	2800	300	500	12814
24 Fan	mm	2200	2800	300	500	13946

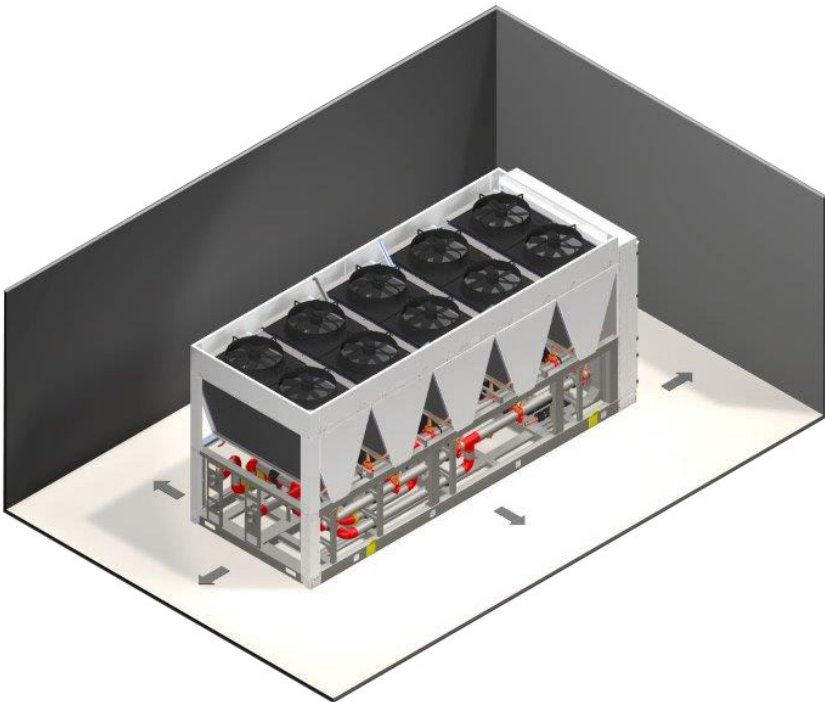
Installation Data

Positioning

The installation position should be selected with the following points in mind:

- Position on a stable and even base, levelled to ensure that the compressor operates correctly.
- Levelling should be to $\pm 1^\circ$.
- Where vibration transmission to the building structure is possible, fit spring anti-vibration mounts and flexible water connections.
- Observe airflow and maintenance clearances.
- Pipe work and electrical connections are readily accessible.
- Where multiple units are installed, due care should be taken to avoid the discharge air from each unit adversely affecting other units in the vicinity.
- Within a side enclosed installation, the fan MUST be higher than the enclosing structure.
- Increased airflow and maintenance clearances for side-enclosed or multiple unit applications.
- Ensure there are no obstructions directly above the fans to prevent air recirculation.
- If the unit is installed in particularly windy locations, the provision of wind breaks may be required. For such applications a vertical discharge unit is recommended or where horizontal airflow could be obstructed.

Airflow & Maintenance Clearances



Application	Distance between Overall Base Dimension
Single unit	1300mm
Side-enclosed or multiple units	2600mm

Installation Data

Anti Vibration Mounting (Optional)

ISL Spring Type

Each mount is coloured to indicate the different loads, refer to instructions supplied for correct allocation.

Dimensions

	A(1)	B	C	D	E	F
TCC / TCF Units	162	130	225	186	20	16

(1) Unloaded dimension

The ISL range of AV mounts have an optimum deflection of around 38mm (product dependent) and a maximum of 50mm. Please contact Airedale for more details.

Components

- | | | | |
|----|-------------------------|----|-----------------------|
| 1 | Locating screw. | 6b | Lower retaining nuts. |
| 2 | Retaining nut & washer. | 7 | Spring assembly. |
| 3 | Levelling screw. | 8 | Pressure plate. |
| 4 | Levelling lock nut. | 9 | Top plate. |
| 5 | Retaining studs. | 10 | fixing holes. |
| 6a | Upper retaining nuts. | | |

Installation

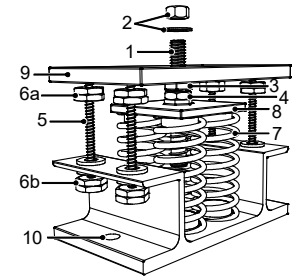
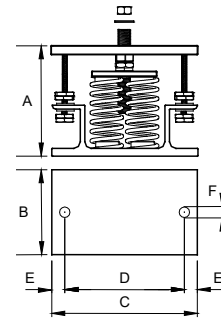
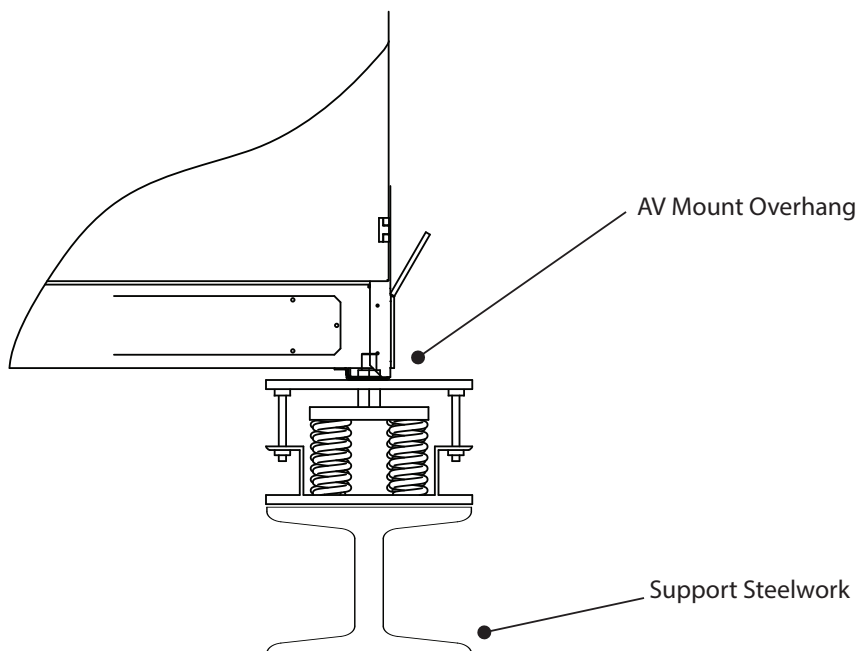
1. Locate and secure mount using fixing down holes (10) in base plate.
2. Ensure mounts are located in line with the unit base.
3. If applicable, remove compressor enclosure covers to allow access to mount fixing holes in the unit base.
4. Lock the upper retaining nuts (6a) to the underside of the top plate (9) before a load is applied.
5. Slacken levelling lock nut (4). (the levelling screw will not move if this is not slackened)
6. Remove retaining nut and washer (2), lower the unit onto the mounts and replace retaining nut and washer.
7. Beginning with the mount with the largest deflection adjust the height of each mount using the levelling screw (3). Mountings must be adjusted incrementally in turn.
8. Do not fully adjust 1 mount at a time as this may overload and damage springs.
9. When all mounts are level, lock each into place using the levelling lock nut (4).
10. Lock all retaining nuts (6a and 6b) to the extreme ends of the retaining studs (5).

CAUTION

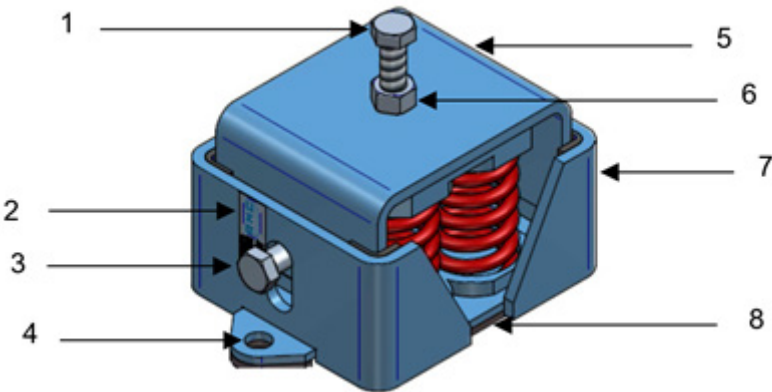
Do not connect any services until all anti vibration mounts have been fully adjusted.

Anti Vibration Mount location to Unit and Plinth

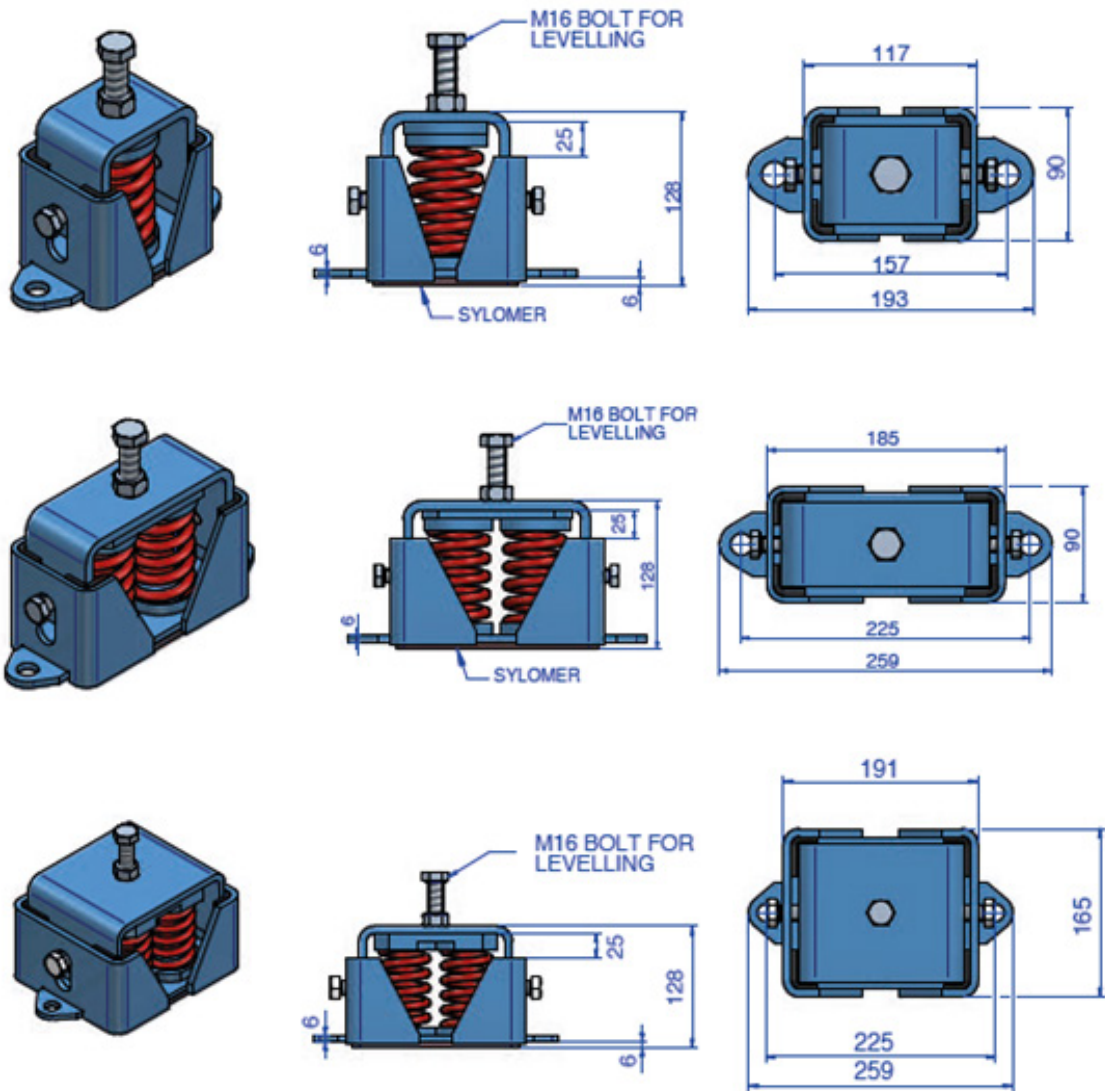
The Anti Vibration mount is larger than the unit base. Consideration must be made with regard to steelwork / concrete plinth sizes. Full information is available on the approved General Arrangement drawings. The base of the unit is open. Considerations must be made for service and maintenance requirements if the unit is installed on a gantry.



AMC AV Mount Fitting Instructions



Mounts may be supplied in either a one, two or four spring variation.
All variations have an optimum deflection of 15mm and a maximum of 22cm.



Please contact Airedale for more details

AMC AV Mount Installation

Installation

1. Position and secure mount using mounting holes, with displacement gauge facing away from the chiller.
2. Ensure mounts are located in line with the unit base.
3. If applicable, remove compressor enclosure covers to allow access to mount fixing holes in the unit base.
4. Remove the levelling screw and fixing nut from the top housing of the mount.
5. Lower the unit onto the mounts and replace the levelling screw and nut.
6. Starting with the most deflected mount, adjust the height of each mount using the levelling screw.
7. When all mounts are level, lock each into place using the levelling lock nut.

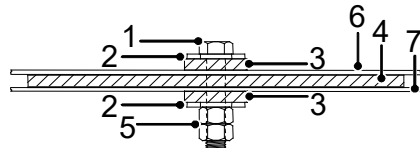
CAUTION

Mountings must be adjusted incrementally in turn. Do not fully adjust 1 mount at a time as this may overload and damage springs. Do not connect any services until all anti vibration mounts have been fully adjusted.

Pad Type

Components

1. M16 Bolt (not supplied).
2. Washer (not supplied).
3. Fixing pad 6173231.
4. Anti vibration pad 6173223.
5. 2 x M16 nut (not supplied).
6. Unit base.
7. Unit mounting plinth.



Installation (steel plinth)

1. Locate the pad type anti vibration mount between the unit base and the unit steel mounting plinth.
2. Locate the M16 bolt through the hole in the unit, AV mount pad and steel mounting plinth.
3. Tighten the M16 nut to the underside of the steel mounting plinth.
4. Tighten the second M16 nut (locking nut) to the underside of the steel mounting plinth.

Installation (concrete plinth)

1. Locate the pad type anti vibration mount between the unit base and the unit concrete mounting plinth.
2. Locate the concrete fixing anchor through the AV mount pad and the hole in the unit.
3. Tighten the anchor bolt.

Interconnecting Wiring

General

As standard the equipment is designed for 400V, 3 phase, 3 wire 50Hz and a separate permanent 230V, 1 phase, 50Hz supply, to all relevant IEE regulations, British standards and IEC requirements.

The control voltage to the interlocks is 24V, always size the low voltage interlock and protection cabling for a maximum voltage drop of 2V. Avoid large voltage drops on cable runs, particularly low voltage wiring. A fused and isolated electrical supply of the appropriate phase, frequency and voltage should be installed. Wires should be capable of carrying the maximum load current under non-fault conditions at the stipulated voltage.

CAUTION ⚠

A separately fused permanent single phase and neutral supply must be fitted for the evaporator trace heating and control circuits and for the leak detection and ventilation systems to work in the event of a leak being detected.

All work must be carried out by technically trained competent personnel.

Failure to do these actions will invalidate warranty.

Isolate remotely the mains incoming supply to the busbar chamber prior to maintenance or repair work.

TURBOCHILL		L1	○	←	Mains Incoming Supply 400V/3PH/50Hz (Direct to 3 Phase Isolator)
		L2	○	←	
		L3	○	←	
		E	○	←	
		L4	○	←	Separate Permanent Supply 230V/1PH/50Hz (Direct to Control Panel Isolator)
		N	○	←	
		E	○	←	
		L4	○	→	External Trace Heating Connections 240V/500W max
		N	○	→	
		502	○	→	(1) Remote Pump Interlock 24VAC
		508	○	←	
		502	○	→	(1) Evaporator Pump Water Flow Switch 24VAC
		506	○	←	
		502	○	→	Unit Remote On/Off 24VAC
		507	○	←	
		502	○	→	Setback Setpoint Temperature Switch
		510	○	←	
		581	○	←	Non-Critical Alarm
		580	○	→	
		582	○	→	
		591	○	←	Critical Alarm
		590	○	→	
		592	○	→	
		RX-/Tx-	○	←	Network Connections (Inward Connection)
		RX+/Tx+	○	←	
		GND	○	←	
		RX-/Tx-	○	→	Network Connections (Outward Connection)
		RX+/Tx+	○	→	
		GND	○	→	

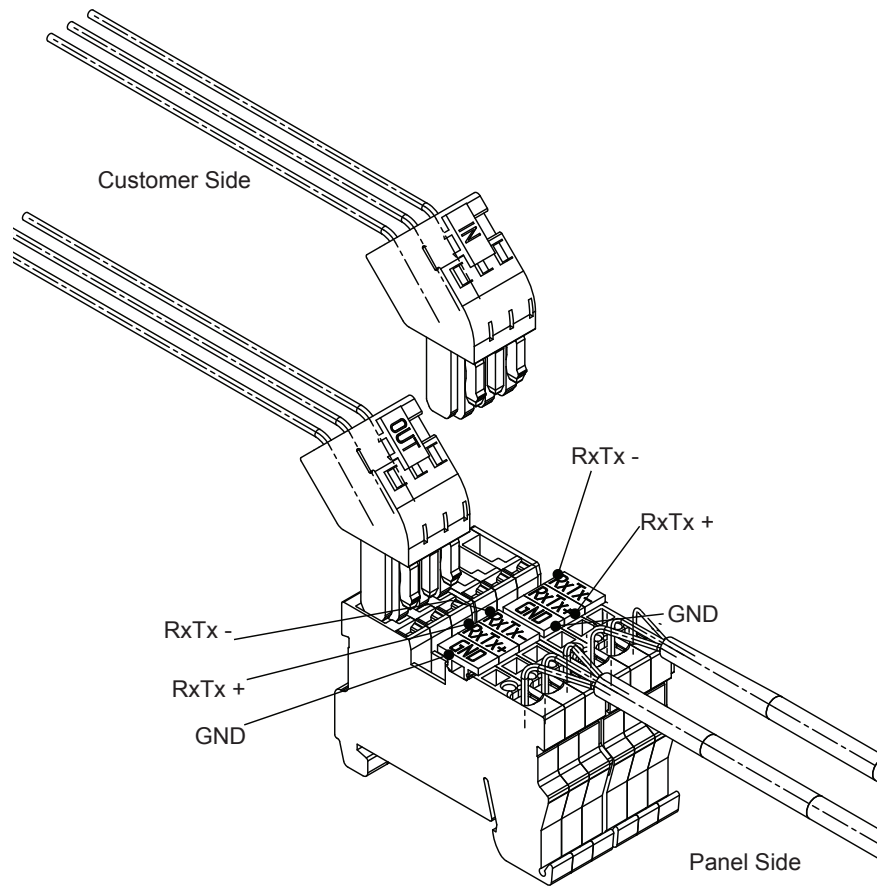
IMPORTANT ⚠

(1) Must be directly wired to the chiller to validate warranty.

IMPORTANT ⚠

This system has been designed to be connected to a TN type distribution system. For alternate distribution type systems, contact Airedale.

pLAN termination



CAUTION ⚠

The plugged termination ensures that the connections are made simultaneously. Failure to attached the cables this way may cause damage to the controller.

Power Quality & Harmonics

Variable speed drives are now common place due to their efficiency and versatility. Not ignoring these facts, care must be taken when installing VSD technology into new and existing installations. This is due to the effect the introduction of such technology may have on line harmonics of a buildings electrical system. VSDs by their nature cause distortion of the AC line by drawing current in pulses, rather than continuously from the supply resulting in harmonic generation. The useful power to a motor is that obtained from the fundamental frequency of 50Hz. The additional currents at the higher frequencies are not useful to the appliance and are therefore transmitted back onto the line.

Examples of other non-linear loads that cause harmonics are:-

Single phase loads, e.g.

- Switched mode power supplies.
- Personal computers.
- HF fluorescent ballasts.
- Compact fluorescent lamps.

Three phase loads, e.g.

- Variable frequency drives.
- Inverters.
- Large UPS systems.

The distortion of the line caused by harmonics can cause the following associated issues:-

- Erroneous operation of control systems.
- Nuisance tripping of circuit breakers.
- Overloading of transformers.
- Overloading of capacitors.
- Overvoltage problems.
- Excessive currents in neutral conductor.

The 3rd, 5th, 7th and 9th harmonics are considered to be the predominant frequencies produced by non-linear loads. To minimize the harmonic effect, each Danfoss Turbocor® compressor is fitted with a 5% line reactor to help reduce the harmonics and improve the displacement power factor above 0.95⁽¹⁾. However, to further reduce the effects and to help meet limits for engineering recommendation (ER) G5/4, the following guidelines can be followed.

Current Harmonics

Harmonic currents contribute to system losses. Mitigation measures can be implemented in the following ways:

- Install passive/active harmonic filters.
- Install the unit as far from the source transformer as possible.

Voltage Harmonics

Harmonic voltage distortion causes disturbance to other loads and increases losses in them. Methods for harmonic voltage reduction can be achieved in the following ways:

- Increase the size of the supply transformer.
- Connect the unit to a point with a high fault level (low impedance).
- Keep the unit as far from the point of common coupling (PCC) as possible.

Engineering Recommendation G5/4

It is important to understand that G5/4 is effectively an "Installation Standard" and applies to the total harmonic generating equipment installed by a consumer. G5/4 identifies consumers by their PCC to the supply and applies limits at that point. G5/4 is not a product or equipment standard and therefore no single item of equipment can be said to comply.

Note: (1) Based at full load conditions.

Pre Start Checks

CAUTION ⚠

ALL work must be carried out by technically trained competent personnel.
The equipment contains live electrical and moving parts, Isolate prior to maintenance or repair work.

Water Flow

Make sure that you have the correct water flow rate before turning the unit on. (Refer to commissioning documentation).

CAUTION ⚠

If the unit is operated without water flow the unit will be damaged.

Shut Off Valves

All shut off valves must be opened prior to starting the unit.

Electrical Power Supply

The power supply to the unit must be correct to design. The three phase power must be of correct phase orientation. A permanent single phase supply (L4) provides power to the microprocessor and evaporator trace heater. This must be supported by a UPS.

CAUTION ⚠

The L4 permanent supply also provides power to the leak detector. Check phase rotation of electrical supply prior to running the compressor as it's direction sensitive.

Visual Inspection

Check that the unit is of satisfactory condition and that it has not been damaged.

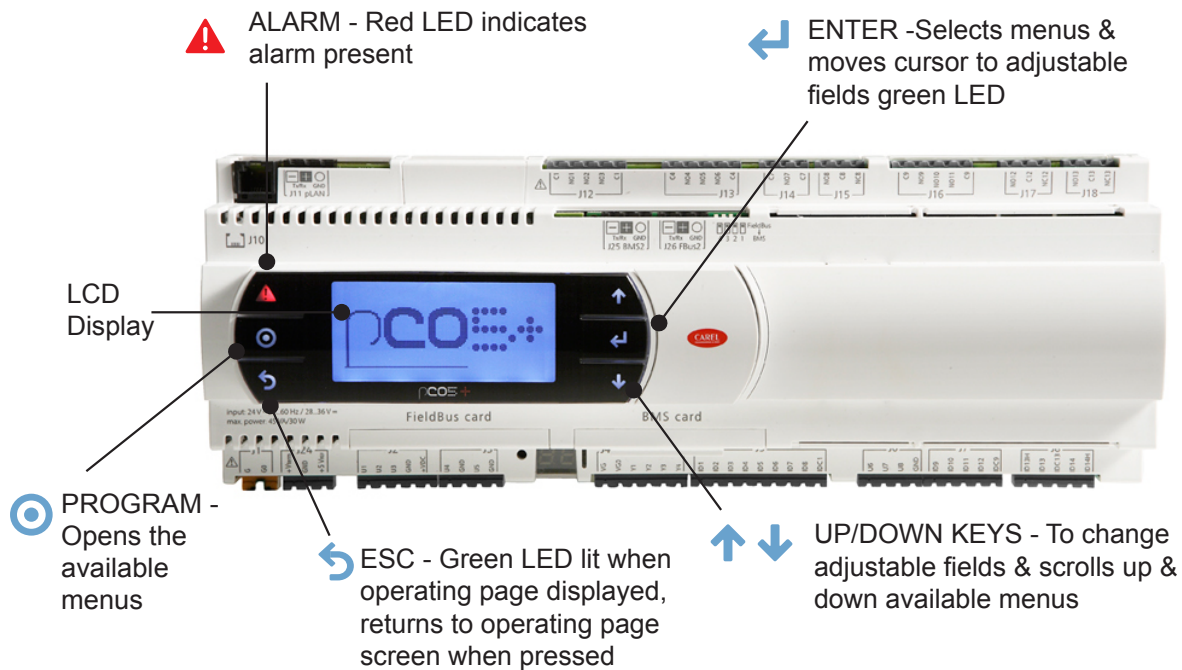
A damaged component could indicate a reason why the unit is not operating for example a refrigerant leak etc.

Electrical Overloads

Check that circuit breakers are all turned on. If not investigate why they have tripped. This could be the reason why the unit has turned off.

pCO5+ Built In Display and Keypad

The in-built display is equipped with LCD display (8 rows x 22 columns) with 6 buttons.

**Display/Keypad**

- | | | |
|---|--|---|
| 1 | | UP/DOWN KEYS - to change adjustable fields & scrolls up & down available menus. |
| 2 | | ENTER - selects menus & moves cursor to adjustable fields blue LED. |
| 3 | | ESC - green LED lit when operating page displayed, returns to operating page screen when pressed. |
| 4 | | PROGRAM - opens the available menus. |
| 5 | | ALARM - red LED indicates alarm present. |
| 6 | | 8 ROW LCD DISPLAY. |
| 7 | | CURSOR (FLASHING) Top left position = "HOME" indicates adjustable fields. |

Monitoring

The microprocessor also monitors and displays the following measured parameters:

- Supply water temperature (°C).
- Return water temperature (°C).
- Suction pressure of each circuit (Barg).
- Liquid pressure of each circuit (Barg).
- Suction temperature at each circuit (°C).
- Subcool for each circuit (K).

Unit Operation

The unit must not be started unless the pre start checks have been carried out.

Restarting the Unit

```
7:04 3/12/13 Unit:01
Cond. Air On: 35.1%
Return Temp.: 12.5%
Supply Temp.: 7.5%
Supply Setp.: 7.0%
Off by Display A
```

To turn the unit on press the  key to enter the program menu.

Using the  or  keys select the Unit On/Off option and press .

```
Program Menu
Manufacturer
->UNIT ON/OFF
Maintenance
```

```
Unit 1 Status
- Press ENTER to -
- switch On -
```

When  is pressed the above screen will be shown.

To turn the unit on simply press the  key again and the screen will change:

```
Unit 1 Status
- Press ENTER to -
- switch Off -
```

CAUTION

The chiller will be going through its start-up sequence. Pressing  will turn the unit off.

Once the screen has changed to the above press the  key which will return back to the main screen.

Changing the Setpoint

To change the set point of the unit from the main screen press the  button.

Use the  and  to scroll to the set point option as shown below and press 

```
Program Menu
Clock
->SETPOINT
User
```

The following screen will be shown:

```
Current Supply Temp. S1
Setpoint: 7.0%
```

Using the  or  button scroll to the password screen.

```
Setpoint S2
Password
*****
```

Enter the password 4648 using the  and  keys and press  after each number is entered. (The numbers start at 5555. So down one to 4, up one to 6 etc).

When the final number is entered the screen will jump to the set point adjustment screen:

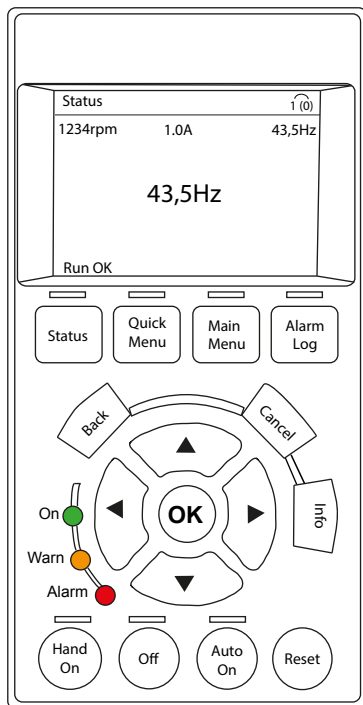
```
Supply Temperature S3
Setpoint: 7.0%
Deadband: 0.0%
Proportional Band: 8.0
Integral Time: 300s
Derivative Time: 15s
```

To adjust the set point press the  key to highlight the set point, using the  and  keys enter the required set point and press the  key until the cursor returns to the top of the screen.

Enabling Pumps

Pump Start-Up

Use the start-up guide for the general setting of the pump controller including the setting of the correct direction of rotation. The start-up guide will be started the first time when the controller is connected to a supply voltage. It can be restarted in the menu under GENERAL. Please note that in this case all previous settings will be erased.



Editing Buttons

	Select parameter marked by cursor and enables the change of parameters.
	Enables control of drive via the GLCP. Start the motor and allows speed setting using arrow keys.
	Stops the motor.
	Enables drive control via controls input(s).
	Resets the drive after an alarm (trip).

Indicator Lights

	On (green) • The pump is running or has stopped by a stop function. • If flashing, the pump has been stopped by the user (CUE menu), external start/stop or bus.
	Warn (orange) The pump has been stopped with the on/off button.
	Alarm (red) Indicates an alarm or a warning.

Navigation Buttons

	Navigates from one menu to another. When the menu is changed, the display shown will always be the top display of the new menu.
	Navigates up and down in the individual menu.
	Reverts to the previous step or layer in the navigation structure.
	Last change or command will be cancelled as long as the display has not been changed.
	Displays info about a command, parameter or function.
	Indicates the status of the drive and / or motor.
	Allows quick setup of the drive, most common parameters and functions can be accessed here.
	Used to access all parameters for programming.
	Displays a list of the 10 latest alarms, Extra info can be obtained by selecting the alarms.

Running the pump alone for low ambient flow protection or during commissioning.

To run the pumps alone without operating the compressors, the following procedure is carried out:

1. Set the remote unit ON / OFF to the OFF position (open circuit).
2. Remote pump ON / OFF to ON position (closed circuit).
3. Turn the unit ON by display through the microprocessor.

The pumps on the chiller will start. Cooling will not be enabled until the remote unit ON / OFF is to the ON position.

This method is used to ensure that there is water flow through the chiller during periods of unit shut down.

To reinstate cooling the unit remote ON / OFF is to be closed.

Operational Maintenance checks

Owners Responsibility

To ensure that the chiller can be maintained correctly ensure the following requirements are met.

Maintain a safe working environment around the chiller, free from obstructions and debris.

The unit shall follow the maintenance schedule below as a minimum.

CAUTION ⚠	The equipment contains live electrical and moving parts, ISOLATE prior to maintenance or repair work. Ensure lock off procedures are carried out accordingly. If inverter driven pumps are used ensured at least 5 minutes is allowed for them to discharge any electrical charge.
------------------	---

Maintenance

General Inspections

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
General Inspections	Check for visible mechanical damage to unit.	●		
	Visually inspect the unit for general wear and tear, treat metalwork.	●		
	Rust should be inhibited, primed and touched up with matching paint.			
	Check for excess vibration from other rotating equipment.	●		
	Clean Microchannel condenser coil	●		
	Ensure no debris has collected under compressor housing (if fitted)	●		



Service Tools/Test Equipment

- Touch-up Paint
- Pressurised Air
- Soft Brush

Safety Equipment

- Safety glasses / goggles

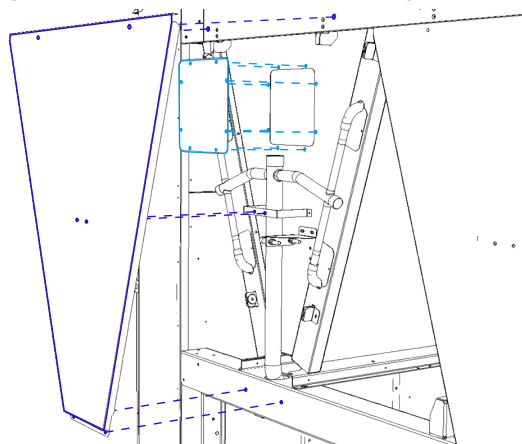
Procedures

Coil Cleaning

The coil should be cleaned using pressurised air, which must not exceed 10 bar at any time, from a minimum distance of 300mm. The air should be directed in the same direction as the fins to avoid damage, fins should be combed back into position if they become misaligned.

The coil should never be exposed to substances which are abrasive to aluminium, including the use of copper bits and substances with a pH outside of 7 to 8.2, even during maintenance and cleaning. Such substances can seriously damage the coil. This applies both to the internal circuits and to the external surface of the coil.

Access to the coil for cleaning and maintenance purposes is through the removable side panel, as shown below.



Maintenance

Electrical Inspection

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
Electrical Inspection	Check mains power supply voltages		●	
	Check electrical terminals are tight.		●	
	Check for signs of hot spots/ discolouration on power cables.		●	
	Check amperages are as per design.	●		



Service Tools/Test Equipment

- Voltmeter
- Screwdrivers / Allen keys
- Ammeter

Safety Equipment

- Safety glasses / goggles

Procedures

Electrical Connections

Ensure all electrical connections are tight and correctly terminated.

Electrical Earthing

Check that the unit is correctly earthed.

Voltage

Measure the voltage at the following points and record on the maintenance sheet:

- Voltage at busbar.
- Dedicated power supply.
- Voltage at permanent supply.
- Control voltage at transformer (min 22.5V, max 25V).

The voltage measurements should be carried out with the unit MCB's turned off.

EC Fan Interrogation

The EC fans can be interrogated by connecting a hardware interface kit from the fan to a PC. The kit comprises of a USB to RS232 9-pin "D-type" adapter. This should be installed on the PC with the software supplied with the kit.

The "COM" port of the USB to RS232 adapter should be assigned to a free COM port between COM 1 and 4 via the system device manager. Connect the RS232 to RS485 interface converter to the USB port of your PC via the USB to RS232 serial interface lead and connect the RS485 output to the fan.

- Tx += RS A
- Tx - = RS B

(Except high airflow fans where interrogation is via a separate module available from Airedale).

Maintenance**Refrigeration**

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
Refrigeration	Compare the following and compare results with commissioning records:			
	Suction, liquid and discharge pressures.	●		
	Refrigeration system temperatures, suction, liquid and discharge. Record superheat and sub cooling temperatures.	●		
	Check each circuit sight glass for dryness and bubbles for indication of leaks.	●		
	Head pressure control is maintained.	●		
	Record details on F-Gas record.	●		
	Pressure relief valves. (replace in accordance to building insurance)			●

**Service Tools/Test Equipment**

- Refrigerant manifold gauges
- Spanners
- Voltmeter

Safety Equipment

- Safety glasses / goggles
- Gloves
- Overalls

Procedures**HP / LP Safety Pressure Switch Settings**

Check operation of HP/LP cut-out.

Settings

- LP cut-out – (Auto reset for 3 times when the Low Pressure is detected over a period of 1 hour).
- Has a 2 minute delay on start-up (similar to a Low ambient kit).
- Low pressure cut-out 0.5 +/- 0.2 Barg.
- HP switch (Manual reset): High pressure switch 17.5 Barg +/- 0.7 Barg.
- HP limiting function 15.0 Barg / 1.5 Barg differential.

Maintenance**Waterside**

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
Waterside	Check pressure drop of water strainer against graphs. If excessive clean the strainer.		●	
	Visually inspect pipe and pipework insulation. Ensure pipework clamps are secure.		●	
	Inspect for water leakage.	●		
	Check pressure drop of evaporator against graphs. Clean evaporator if excessive.	●		
	Check condition of Water / Glycol solution to ensure that the system is protected against corrosion, scale and microbiological fouling, ensuring maximum heat transfer efficiency.	●		

**Service Tools/Test Equipment**

- Spanners
- Manometer
- Thermometer
- Refractometer

Safety Equipment

- Safety glasses / goggles
- Gloves
- Overalls

Procedures**Water Strainer**

A water strainer must be fitted to the inlet side of the chiller evaporator.

Failure to do so may result in severe damage and will void the AIREDALE warranty.

Water Flow Rate

Check that the design water flow rate is available to the unit. If not available do not turn unit on.

Waterside Pressure Drop

Measure the waterside pressure drop of the unit ensuring that the pump (if fitted) is operating.

Glycol Strength

Check and record the glycol type and strength. Low levels of glycol can cause freeze up problems when operating at low temperatures or during the unit off state during cold ambient conditions. Glycol concentration is measured by use of a refractometer.

Differential Pressure Sensor

To ensure that the differential pressure sensor operates satisfactorily, the best way to do this is to reduce the flow to the chiller.

- From pressure curves determine the design flow rate / pressure drop
- Make sure that any effects of glycol in the system are taken into account (flow rate and pressure drop).
- Input into the controller the reduced pressure drop (kPa) value (normally 80% of design flow rate).
- Once this value is programmed into the controller the water flow rate can be reduced to verify that the low flow alarm is activated.
- Ensure that the tubes connected to the sensor are trace heated and insulated.

Flow Switch

A "paddle" type flow switch is fitted, wired to the chiller control panel and tested. This should be fitted on the outlet of the evaporator and before isolation valves.

Pump Interlock

Check that the pump interlock is fitted and functioning correctly.

Maintenance
Controls

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
Controls	Change controller battery.		•	

The controller will keep the strategy for a short period of time with no battery.



Service Tools/Test Equipment

- Small terminal screwdriver

Safety Equipment

- Electrostatic wristband

Procedures

The following controller settings are to be recorded on the maintenance sheet:

- Head pressure differential (Bar).
- Minimum suction pressure (Barg).
- Supply water set point (Summer / Day) (°C).
- Supply water set point (Winter / Night) (°C).
- Minimum supply water temperature (°C).

Maintenance System

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
System	Check the following against the commissioning records:			
	Record operating conditions.	•		
	Water on / off temperatures.	•		
	Water pressure drop.	•		

Unit Operation Checks

Record the following operating conditions of the unit at stable conditions:

- Suction pressure (Barg).
- Liquid pressure (Barg).
- Discharge pressure (Barg).
- Suction temperature (°C).
- Liquid temperature (°C).
- Discharge temperature (°C).
- Superheat (K).
- Sub cooling (K).
- Water return temperature (°C).
- Water supply temperature (°C).

Low supply water trip

To check operation of the low temperature trip the following procedure can be carried out.

- With the unit running increase the low temperature limit to the actual supply water temperature.
- This will trip the unit in a safe manner without risk of freezing the evaporator.
- Return the low temperature limit to correct value after test (this will allow the unit to operate correctly).

Liquid line sight glass

Record the status of the liquid line sight glass:

- Clear/flashing.
- Wet/dry.

The sight glass is used to indicate:

- The condition of the refrigerant in the system.
- Lack of refrigerant.
- Moisture content of the refrigerant.

The colour of the sight glass depends on the moisture content of the refrigerant. The recommended moisture levels of a system should be below 75ppm. An indication of green/dry are to be considered as perfect conditions meaning full protection by the filter drier against effects from moisture. If the green colour starts to fade, the colour change from green to yellow has begun and the indicator should therefore be watched carefully. If the colour changes to yellow it is a clear signal that the capacity of the filter drier is exceeded and should be replaced as soon as possible.

F-Gas Leak Detection Checks

Perform an F-Gas refrigerant leak detection on the unit and ensure no refrigerant leaks are found. Checks must also be carried out on the operation of the refrigerant leak detector in accordance to manufacturers instructions.

Appendix - Ecodesign

SEPR (Seasonal Energy Performance Ratio)

- Type of condensing - Air cooled standard EC fans.
- Refrigerant fluid - R513A.
- Operating temperature - +7°C (Outlet water).
- Operating control - Variable.
- Outdoor Side Heat Exchanger - Air.
- Indoor heat exchanger - Water.
- Type driven - Vapour compression.
- Driver of compressor - Electric motor.
- Degradation coefficient - 0.9

Part load conditions for SEPR calculation for air cooled high temperature process chillers

Rating Point	Part load ratio (%)	Outdoor side heat exchanger	Indoor side heat exchanger
		Inlet air temperature (°C)	Evaporator inlet/ outlet water temperatures (°C)
			Fixed outlet
A	100	35	12/7
B	93	25	(*)/7
C	87	15	(*)/7
D	80	5	(*)/7

EU 2016/2281 Table 22.

(*) With the water flow rate determined during "A" test for units with a fixed water flow rate.

SSCEE (Seasonal Space Cooling Energy Efficiency)

- Capacity control - Variable.
- Standard rating condition - Low temperature operation.

Air to water comfort chillers

Rating Point	T ₁ (°C)	Part load ratio (%)	Outdoor air dry bulb temperature (°C)	Fan coil application inlet/ outlet water temperature (°C)		Cooling floor application inlet/ outlet water temperatures (°C)
				Fixed outlet	Variable outlet (*)/ (*)	
A	35	100 %	35	12/7	12/7	23/18
B	30	74 %	30	(*)/7	(*)/8.5	(*)/18
C	25	47 %	25	(*)/7	(*)/10	(*)/18
D	20	21 %	20	(*)/7	(*)/11.5	(*)/18

EU 2016/2281 Table 21.

Technical Data

Ecodesign - TCC (R)

Notes: Units			TCC11R04S-30	TCC11R06S-30	TCC11R08S-30	TCC11R06L-31	TCC11R08L-32	TCC11R10L-32
SEPR	1,3,5		7.4	7.9	8.1	7.0	7.1	7.2
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	225725.0	228639.0	230439.2	398835.0	431715.9	458705.0
Rated Refrigerant Capacity P _A	1,3,5	kW	224.7	244.7	254.7	364.7	394.6	409.5
Rated Power Input D _A		kW	69.0	69.9	69.7	122.7	128.9	129.3
Rated EER _{DC,A}			3.3	3.5	3.7	3.0	3.1	3.2
Declared Refrigerant Capacity P _B	1,3,5	kW	209.7	228.3	237.7	340.3	368.2	382.2
Declared Power Input D _B		kW	46.0	46.3	45.8	78.4	80.8	81.1
Declared EER _{DC,B}			4.6	4.9	5.2	4.3	4.6	4.7
Declared Refrigerant Capacity P _C	1,3,5	kW	194.7	212.0	220.7	316.0	341.9	354.9
Declared Power Input D _C		kW	29.2	29.5	29.3	49.3	51.0	51.4
Declared EER _{DC,C}			6.7	7.2	7.5	6.4	6.7	6.9
Declared Refrigerant Capacity P _D	1,3,5	kW	179.7	195.7	203.7	291.7	315.6	327.5
Declared Power Input D _D		kW	17.2	18.2	18.8	29.9	34.6	36.2
Declared EER _{DC,D}			10.5	10.8	10.9	9.8	9.1	9.0
SSCEE	2,3,5	%	1.9	2.1	2.2	2.0	2.1	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity P _{rated,c}	2,4,5	kW	225.0	245.0	255.0	365.0	395.0	420.0
Declared Cooling Capacity 35°C P _{dc}	2,3,5	kW	224.7	244.7	254.7	364.7	394.6	409.5
Declared EER _g 35°C			3.3	3.5	3.7	3.0	3.1	3.2
Declared Cooling Capacity 30°C P _{dc}	2,3,5	kW	165.5	180.2	187.6	268.6	290.6	301.6
Declared EER _g 30°C			4.2	4.5	4.7	4.1	4.4	4.6
Declared Cooling Capacity 25°C P _{dc}	2,3,5	kW	106.3	115.7	120.4	172.6	186.7	193.7
Declared EER _g 25°C			5.1	6.0	6.3	5.3	5.7	5.9
Declared Cooling Capacity 20°C P _{dc}	2,3,5	kW	72.8	69.8	70.0	127.5	125.8	124.8
Declared EER _g 20°C			6.7	7.1	7.2	7.0	7.2	7.4
Sound Power Level		dB(A)	88	87	87	91	90	90
Air Volume		m³/h	78811	96579	110475	123975	158002	178777
Off mode P _{OFF}		kW	0.249	0.249	0.249	0.249	0.249	0.249
Thermostat-off mode P _{TO}		kW	0.737	0.868	0.937	0.862	1.483	1.716
Standby Mode P _{SB}		kW	0.330	0.340	0.350	0.340	0.350	0.360
Crankcase heater mode P _{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data Ecodesign

Notes: Units			TCC12R08S-33	TCC12R10S-33	TCC12R10L-34	TCC12R12L-35	TCC12R14L-35	TCC12R16L-35
SEPR	1,3,5		7.3	7.6	7.2	7.4	7.4	7.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	446773.4	461494.0	603525.1	655931.0	748662.9	805644.8
Rated Refrigerant Capacity P _A	1,3,5	kW	434.6	464.6	559.5	624.6	699.5	744.4
Rated Power Input D _A		kW	136.4	140.6	183.1	198.4	225.6	240.3
Rated EER _{DC,A}			3.2	3.3	3.1	3.1	3.1	3.1
Declared Refrigerant Capacity P _B	1,3,5	kW	405.6	433.6	522.2	582.9	652.8	694.8
Declared Power Input D _B		kW	90.5	93.0	120.2	128.6	144.1	152.1
Declared EER _{DC,B}			4.5	4.7	4.3	4.5	4.5	4.6
Declared Refrigerant Capacity P _C	1,3,5	kW	376.6	402.6	484.9	541.2	606.2	645.1
Declared Power Input D _C		kW	57.3	59.1	74.3	80.4	90.4	95.7
Declared EER _{DC,C}			6.6	6.8	6.5	6.7	6.7	6.7
Declared Refrigerant Capacity P _D	1,3,5	kW	347.6	371.6	447.5	499.6	559.5	595.4
Declared Power Input D _D		kW	33.4	35.0	43.9	47.9	54.6	58.6
Declared EER _{DC,D}			10.4	10.6	10.2	10.4	10.2	10.2
SSCEE	2,3,5	%	2.0	2.1	2.1	2.1	2.2	2.2
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity P _{rated,c}	2,4,5	kW	435.0	465.0	560.0	625.0	700.0	745.0
Declared Cooling Capacity 35°C P _{dc}	2,3,5	kW	434.6	464.6	559.5	624.6	699.5	744.4
Declared EER _g 35°C			3.2	3.3	3.1	3.1	3.1	3.1
Declared Cooling Capacity 30°C P _{dc}	2,3,5	kW	320.1	342.2	412.2	460.1	515.3	548.4
Declared EER _g 30°C			4.1	4.3	4.1	4.1	4.2	4.3
Declared Cooling Capacity 25°C P _{dc}	2,3,5	kW	205.7	219.8	264.8	295.6	331.1	352.3
Declared EER _g 25°C			5.5	5.7	5.9	6.1	6.1	6.1
Declared Cooling Capacity 20°C P _{dc}	2,3,5	kW	69.1	69.2	124.6	131.1	146.9	156.3
Declared EER _g 20°C			7.3	7.2	7.7	7.8	8.1	7.8
Sound Power Level		dB(A)	91	91	93	92	92	92
Air Volume		m³/h	156846	177108	206626	238257	277872	304662
Off mode P _{OFF}		kW	0.301	0.301	0.301	0.301	0.301	0.301
Thermostat-off mode P _{TO}		kW	1.217	1.423	1.586	1.441	1.882	2.183
Standby Mode P _{SB}		kW	0.453	0.463	0.463	0.473	0.483	0.493
Crankcase heater mode P _{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data
Ecodesign

Notes: Units			TCC12R18L-35	TCC22R08S-36	TCC22R10S-36	TCC22R12L-37	TCC22R14L-37	TCC22R16L-37
SEPR	1,3,5		7.0	7.4	7.6	7.4	7.4	7.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	898157.4	434508.5	447371.7	624598.3	708139.8	760294.8
Rated Refrigerant Capacity P _A	1,3,5	kW	789.4	434.6	464.6	624.6	699.5	744.4
Rated Power Input D _A		kW	261.0	134.7	138.6	194.9	220.0	233.7
Rated EER _{DC,A}			3.0	3.2	3.4	3.2	3.2	3.2
Declared Refrigerant Capacity P _B	1,3,5	kW	736.7	405.6	433.6	582.9	652.8	694.8
Declared Power Input D _B		kW	162.2	89.7	92.0	126.8	141.4	148.9
Declared EER _{DC,B}			4.5	4.5	4.7	4.6	4.6	4.7
Declared Refrigerant Capacity P _C	1,3,5	kW	684.1	376.6	402.6	541.2	606.2	645.1
Declared Power Input D _C		kW	102.0	56.7	58.4	79.2	88.8	93.9
Declared EER _{DC,C}			6.7	6.6	6.9	6.8	6.8	6.9
Declared Refrigerant Capacity P _D	1,3,5	kW	631.4	347.6	371.6	499.6	559.5	595.4
Declared Power Input D _D		kW	70.8	33.7	35.7	49.1	55.8	60.1
Declared EER _{DC,D}			8.9	10.3	10.4	10.2	10.0	9.9
SSCEE	2,3,5	%	2.2	1.9	2.1	1.9	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 1 (2018)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity P _{rated,c}	2,4,5	kW	790.0	435.0	465.0	625.0	700.0	745.0
Declared Cooling Capacity 35°C P _{dc}	2,3,5	kW	789.4	434.6	464.6	624.6	699.5	744.4
Declared EER _g 35°C			3.0	3.2	3.4	3.2	3.2	3.2
Declared Cooling Capacity 30°C P _{dc}	2,3,5	kW	581.5	320.1	342.2	460.1	515.3	548.4
Declared EER _g 30°C			4.4	4.1	4.3	4.1	4.2	4.3
Declared Cooling Capacity 25°C P _{dc}	2,3,5	kW	373.6	205.7	219.8	295.6	331.1	352.3
Declared EER _g 25°C			6.1	5.1	5.7	5.3	5.5	5.7
Declared Cooling Capacity 20°C P _{dc}	2,3,5	kW	165.7	72.5	68.9	131.1	146.9	156.3
Declared EER _g 20°C			7.9	6.8	6.9	6.3	7.0	6.8
Sound Power Level		dB(A)	92	91	91	92	92	92
Air Volume		m³/h	338944	155636	175537	234351	271542	297196
Off mode P _{OFF}		kW	0.301	0.322	0.322	0.322	0.322	0.322
Thermostat-off mode P _{TO}		kW	2.513	1.217	1.423	1.441	1.882	2.183
Standby Mode P _{SB}		kW	0.503	0.474	0.484	0.494	0.504	0.514
Crankcase heater mode P _{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

- (1) Nominal conditions as stated in EU 2016/2281 Table 22.
- (2) Nominal conditions as stated in EU 2016/2281 Table 21.
- (3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.
- (4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.
- (5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC22R18L-37	TCC23R12S-38	TCC23R14S-38	TCC23R16S-38	TCC23R18S-38	TCC23R16L-39
SEPR	1,3,5		7.1	7.4	7.5	7.7	7.6	7.3
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	846146.7	629562.2	635727.4	654331.4	703169.8	836964.3
Rated Refrigerant Capacity P_A	1,3,5	kW	789.4	624.6	649.5	679.5	724.5	809.5
Rated Power Input D_A		kW	252.5	196.3	198.0	202.9	215.5	261.4
Rated $EER_{DC,A}$			3.1	3.2	3.3	3.3	3.4	3.1
Declared Refrigerant Capacity P_B	1,3,5	kW	736.7	582.9	606.2	634.2	676.1	755.5
Declared Power Input D_B		kW	158.5	130.0	131.0	134.2	142.2	170.8
Declared $EER_{DC,B}$			4.6	4.5	4.6	4.7	4.8	4.4
Declared Refrigerant Capacity P_C	1,3,5	kW	684.1	541.2	562.9	588.8	627.8	701.5
Declared Power Input D_C		kW	100.0	81.6	82.4	84.6	90.3	104.6
Declared $EER_{DC,C}$			6.8	6.6	6.8	7.0	7.0	6.7
Declared Refrigerant Capacity P_D	1,3,5	kW	631.4	499.6	519.5	543.5	579.5	647.5
Declared Power Input D_D		kW	69.3	47.8	49.2	51.1	55.4	63.4
Declared $EER_{DC,D}$			9.1	10.4	10.6	10.6	10.5	10.2

SSCEE	2,3,5	%	2.1	2.1	2.2	2.2	2.2	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	790.0	625.0	650.0	680.0	725.0	810.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	789.4	624.6	649.5	679.5	724.5	809.5
Declared EER_g 35°C			3.1	3.2	3.3	3.3	3.4	3.1
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	581.5	460.1	478.5	500.6	533.7	596.4
Declared EER_g 30°C			4.4	4.2	4.4	4.4	4.4	4.2
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	373.6	295.6	307.4	321.6	342.9	383.2
Declared EER_g 25°C			5.8	5.7	5.9	6.0	6.1	5.5
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	165.7	131.1	136.4	142.7	152.1	170.0
Declared EER_g 20°C			6.8	8.1	8.1	8.3	8.3	7.8
Sound Power Level		dB(A)	92	93	92	92	92	94
Air Volume		m³/h	329545	229966	245958	270586	291735	314665
Off mode P_{OFF}		kW	0.322	0.375	0.375	0.375	0.375	0.375
Thermostat-off mode P_{TO}		kW	2.513	1.441	1.580	1.757	2.046	1.751
Standby Mode P_{SB}		kW	0.524	0.596	0.606	0.616	0.626	0.616
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC23R18L-39	TCC23R20L-39	TCC24R18S-40	TCC24R20S-40	TCC24R22L-41	TCC24R24L-41
SEPR	1,3,5		7.5	7.5	7.6	7.6	7.3	7.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption	kWh/a		840947.9	899114.6	776991.8	803670.7	1103881.6	1103834.3
Rated Refrigerant Capacity P_A	1,3,5	kW	834.5	894.4	799.5	834.5	1059.4	1079.4
Rated Power Input D_A		kW	261.7	276.8	245.4	251.6	342.5	342.2
Rated $EER_{DC,A}$			3.2	3.2	3.3	3.3	3.1	3.2
Declared Refrigerant Capacity P_B	1,3,5	kW	778.8	834.8	746.2	778.8	988.8	1007.4
Declared Power Input D_B		kW	171.0	180.6	161.5	165.9	223.5	222.8
Declared $EER_{DC,B}$			4.6	4.6	4.6	4.7	4.4	4.5
Declared Refrigerant Capacity P_C	1,3,5	kW	723.2	775.1	692.8	723.1	918.1	935.4
Declared Power Input D_C		kW	104.8	111.5	100.5	103.7	136.4	136.0
Declared $EER_{DC,C}$			6.9	6.9	6.9	7.0	6.7	6.9
Declared Refrigerant Capacity P_D	1,3,5	kW	667.5	715.4	639.5	667.5	847.4	863.4
Declared Power Input D_D		kW	64.6	69.3	60.8	63.4	84.6	85.5
Declared $EER_{DC,D}$			10.3	10.3	10.5	10.5	10.0	10.1
SSCEE	2,3,5	%	2.1	2.2	2.2	2.2	2.2	2.2
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	835.0	895.0	800.0	835.0	1060.0	1080.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	834.5	894.4	799.5	834.5	1059.4	1079.4
Declared EER_g 35°C			3.2	3.2	3.3	3.3	3.1	3.2
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	614.8	658.9	589.0	614.7	780.5	795.2
Declared EER_g 30°C			4.3	4.4	4.3	4.3	4.3	4.4
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	395.0	423.4	378.4	395.0	501.5	511.0
Declared EER_g 25°C			5.7	5.8	6.1	6.2	6.1	6.2
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	175.3	187.9	167.9	175.2	222.6	226.8
Declared EER_g 20°C			7.9	8.0	7.8	7.8	7.7	7.8
Sound Power Level		dB(A)	93	93	93	93	95	94
Air Volume		m³/h	329483	356857	316035	335733	418288	437675
Off mode P_{OFF}		kW	0.375	0.375	0.427	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	1.882	2.220	1.876	2.077	2.238	2.339
Standby Mode P_{SB}		kW	0.626	0.636	0.729	0.739	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign - TCC (X)

Notes: Units			TCC11X04S-30	TCC11X06S-30	TCC11X08S-30	TCC11X06L-31	TCC11X08L-32	TCC11X10L-32
SEPR	1,3,5		7.9	8.4	8.7	7.7	8.1	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	178259.6	182601.0	183150.9	284972.7	278552.0	283663.7
Rated Refrigerant Capacity P_A	1,3,5	kW	194.7	214.6	224.7	299.7	314.7	329.7
Rated Power Input D_A		kW	58.5	57.9	57.7	94.3	89.6	90.0
Rated $EER_{DC,A}$			3.3	3.7	3.9	3.2	3.5	3.7
Declared Refrigerant Capacity P_B	1,3,5	kW	181.7	200.3	209.7	279.7	293.7	307.7
Declared Power Input D_B		kW	37.7	38.3	38.0	59.6	57.7	58.1
Declared $EER_{DC,B}$			4.8	5.2	5.5	4.7	5.1	5.3
Declared Refrigerant Capacity P_C	1,3,5	kW	168.7	185.9	194.7	259.7	272.7	285.7
Declared Power Input D_C		kW	23.4	24.0	23.8	36.9	36.0	36.3
Declared $EER_{DC,C}$			7.2	7.8	8.2	7.0	7.6	7.9
Declared Refrigerant Capacity P_D	1,3,5	kW	155.7	171.6	179.7	239.7	251.7	263.7
Declared Power Input D_D		kW	13.9	15.1	15.6	22.3	23.1	24.0
Declared $EER_{DC,D}$			11.2	11.4	11.5	10.7	10.9	11.0
SSCEE	2,3,5	%	2.0	2.1	2.2	2.0	2.1	2.2
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	195.0	215.0	225.0	300.0	315.0	330.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	194.7	214.6	224.7	299.7	314.7	329.7
Declared EER_g 35°C			3.3	3.7	3.9	3.2	3.5	3.7
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	143.4	158.0	165.5	220.7	231.8	242.8
Declared EER_g 30°C			4.3	4.7	5.0	4.2	4.5	4.7
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	105.0	101.5	106.3	141.8	148.9	156.0
Declared EER_g 25°C			5.5	6.2	6.5	5.4	6.0	6.1
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	73.1	71.2	71.3	127.6	126.0	125.0
Declared EER_g 20°C			6.8	7.2	7.3	7.0	7.3	7.5
Sound Power Level		dB(A)	86	87	86	87	87	88
Air Volume		m³/h	57433	86149	100777	86149	114865	143582
Off mode P_{OFF}		kW	0.427	0.427	0.427	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	0.527	0.687	0.737	0.553	0.902	0.972
Standby Mode P_{SB}		kW	0.739	0.749	0.759	0.739	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC12X08S-33	TCC12X10S-33	TCC12X10L-34	TCC12X12L-35	TCC12X14L-35	TCC12X16L-35
SEPR	1,3,5		8.1	8.3	7.5	7.7	7.9	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	320369.0	329502.8	568971.9	543872.4	556588.5	582656.9
Rated Refrigerant Capacity P_A	1,3,5	kW	354.7	379.7	499.6	569.6	599.6	634.6
Rated Power Input D_A		kW	106.6	107.0	164.9	178.6	180.0	186.6
Rated $EER_{DC,A}$			3.3	3.5	3.0	3.2	3.3	3.4
Declared Refrigerant Capacity P_B	1,3,5	kW	331.0	354.3	466.3	531.6	559.6	592.2
Declared Power Input D_B		kW	68.5	69.9	104.5	113.8	115.4	119.5
Declared $EER_{DC,B}$			4.8	5.1	4.5	4.7	4.8	5.0
Declared Refrigerant Capacity P_C	1,3,5	kW	307.3	329.0	432.9	493.6	519.6	549.9
Declared Power Input D_C		kW	42.0	43.0	63.1	69.8	71.4	74.5
Declared $EER_{DC,C}$			7.3	7.6	6.9	7.1	7.3	7.4
Declared Refrigerant Capacity P_D	1,3,5	kW	283.7	303.7	399.6	455.6	479.6	507.6
Declared Power Input D_D		kW	24.9	26.3	38.0	42.3	44.1	46.6
Declared $EER_{DC,D}$			11.4	11.5	10.5	10.8	10.9	10.9
SSCEE	2,3,5	%	2.2	2.2	2.1	2.2	2.3	2.2
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	355.0	380.0	500.0	570.0	600.0	635.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	354.7	379.7	499.6	569.6	599.6	634.6
Declared EER_g 35°C			3.3	3.5	3.0	3.2	3.3	3.4
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	261.3	279.7	368.0	419.6	441.7	467.4
Declared EER_g 30°C			4.6	4.7	4.5	4.4	4.4	4.4
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	167.8	179.7	236.5	269.6	283.8	300.3
Declared EER_g 25°C			6.2	6.4	5.3	6.3	6.4	6.5
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	65.4	65.4	124.8	124.4	125.8	133.2
Declared EER_g 20°C			7.1	7.1	7.9	8.1	8.1	7.3
Sound Power Level		dB(A)	89	90	90	90	90	90
Air Volume		m³/h	114865	143582	143582	172298	201014	229730
Off mode P_{OFF}		kW	0.249	0.249	0.249	0.301	0.301	0.301
Thermostat-off mode P_{TO}		kW	0.805	0.916	1.216	1.163	1.310	1.496
Standby Mode P_{SB}		kW	0.340	0.350	0.360	0.453	0.463	0.473
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC12X18L-35	TCC22X08S-36	TCC22X10S-36	TCC22X12L-37	TCC22X14L-37	TCC22X16L-37
SEPR	1,3,5		8.0	7.9	8.2	7.7	7.8	7.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	631255.7	318661.1	327229.9	534144.3	546165.4	571148.9
Rated Refrigerant Capacity P_A	1,3,5	kW	679.5	354.7	379.7	569.6	599.6	634.6
Rated Power Input D_A		kW	199.0	107.3	107.6	177.3	178.3	184.5
Rated $EER_{DC,A}$			3.4	3.3	3.5	3.2	3.4	3.4
Declared Refrigerant Capacity P_B	1,3,5	kW	634.2	331.0	354.3	531.6	559.6	592.2
Declared Power Input D_B		kW	127.4	69.0	70.3	113.2	114.6	118.5
Declared $EER_{DC,B}$			5.0	4.8	5.0	4.7	4.9	5.0
Declared Refrigerant Capacity P_C	1,3,5	kW	588.8	307.3	329.0	493.6	519.6	549.9
Declared Power Input D_C		kW	79.6	42.2	43.2	69.3	70.8	73.7
Declared $EER_{DC,C}$			7.4	7.3	7.6	7.1	7.3	7.5
Declared Refrigerant Capacity P_D	1,3,5	kW	543.5	283.7	303.7	455.6	479.6	507.6
Declared Power Input D_D		kW	50.3	25.7	27.2	43.7	45.7	48.3
Declared $EER_{DC,D}$			10.8	11.0	11.2	10.4	10.5	10.5
SSCEE	2,3,5	%	2.3	1.8	2.0	2.0	2.1	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	680.0	355.0	380.0	570.0	600.0	635.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	679.5	354.7	379.7	569.6	599.6	634.6
Declared EER_g 35°C			3.4	3.3	3.5	3.2	3.4	3.4
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	500.6	261.3	279.7	419.6	441.7	467.4
Declared EER_g 30°C			4.5	3.5	4.4	4.2	4.3	4.4
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	321.6	167.8	179.7	269.6	283.8	300.3
Declared EER_g 25°C			6.5	5.1	5.3	5.1	5.7	5.8
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	142.7	71.5	67.8	127.4	126.6	133.2
Declared EER_g 20°C			7.7	6.5	6.7	7.4	7.6	6.1
Sound Power Level		dB(A)	90	89	90	90	90	90
Air Volume		m³/h	258447	114865	143582	172298	201014	229730
Off mode P_{OFF}		kW	0.301	0.301	0.301	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	1.757	0.805	0.916	1.163	1.310	1.496
Standby Mode P_{SB}		kW	0.483	0.483	0.493	0.494	0.504	0.494
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC22X18L-37	TCC23X12S-38	TCC23X14S-38	TCC23X16S-38	TCC23X18S-38	TCC23X16L-39
SEPR	1,3,5		7.9	7.8	8.0	8.1	8.2	7.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption	kWh/a		614928.1	533885.6	534471.3	539260.9	560669.2	712933.8
Rated Refrigerant Capacity P_A	1,3,5	kW	679.5	569.6	589.6	609.6	639.5	739.6
Rated Power Input D_A		kW	196.1	177.0	174.2	173.8	178.5	240.9
Rated $EER_{DC,A}$			3.5	3.2	3.4	3.5	3.6	3.1
Declared Refrigerant Capacity P_B	1,3,5	kW	634.2	531.6	550.3	568.9	596.9	690.2
Declared Power Input D_B		kW	126.1	113.7	113.3	114.0	117.6	152.7
Declared $EER_{DC,B}$			5.0	4.7	4.9	5.0	5.1	4.5
Declared Refrigerant Capacity P_C	1,3,5	kW	588.8	493.6	510.9	528.2	554.2	640.9
Declared Power Input D_C		kW	78.8	70.1	70.1	70.7	73.3	91.9
Declared $EER_{DC,C}$			7.5	7.0	7.3	7.5	7.6	7.0
Declared Refrigerant Capacity P_D	1,3,5	kW	543.5	455.6	471.6	487.6	511.5	591.6
Declared Power Input D_D		kW	52.2	41.7	42.6	43.8	46.0	57.1
Declared $EER_{DC,D}$			10.4	10.9	11.1	11.1	11.1	10.4

SSCEE	2,3,5	%	2.1	2.2	2.3	2.3	2.3	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	680.0	570.0	590.0	610.0	640.0	740.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	679.5	569.6	589.6	609.6	639.5	739.6
Declared EER_g 35°C			3.5	3.2	3.4	3.5	3.6	3.1
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	500.6	419.6	434.3	449.1	471.1	544.8
Declared EER_g 30°C			4.5	4.4	4.6	4.6	4.7	4.2
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	321.6	269.6	279.1	288.5	302.7	350.1
Declared EER_g 25°C			5.9	5.9	6.1	6.2	6.3	5.7
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	142.7	119.6	123.8	128.0	134.3	155.4
Declared EER_g 20°C			6.8	8.4	8.5	8.6	8.6	8.0
Sound Power Level		dB(A)	90	91	91	91	92	92
Air Volume		m³/h	258447	172298	201014	229730	258447	229730
Off mode P_{OFF}		kW	0.322	0.322	0.322	0.375	0.375	0.375
Thermostat-off mode P_{TO}		kW	1.757	1.163	1.260	1.361	1.523	1.416
Standby Mode P_{SB}		kW	0.504	0.524	0.534	0.596	0.606	0.616
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCC23X18L-39	TCC23X20L-39	TCC24X18S-40	TCC24X20S-40	TCC24X22L-41	TCC24X24L-41
SEPR	1,3,5		7.7	7.8	8.0	8.1	7.4	7.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	711919.0	738675.3	622726.2	645485.5	986649.9	998180.5
Rated Refrigerant Capacity P_A	1,3,5	kW	759.6	799.5	699.6	734.5	1009.5	1039.4
Rated Power Input D_A		kW	236.9	242.4	207.4	212.4	329.3	329.4
Rated $EER_{DC,A}$			3.2	3.3	3.4	3.5	3.1	3.2
Declared Refrigerant Capacity P_B	1,3,5	kW	708.9	746.2	652.9	685.5	942.1	970.1
Declared Power Input D_B		kW	151.5	156.2	134.0	138.0	209.3	210.5
Declared $EER_{DC,B}$			4.7	4.8	4.9	5.0	4.5	4.6
Declared Refrigerant Capacity P_C	1,3,5	kW	658.2	692.9	606.2	636.5	874.8	900.8
Declared Power Input D_C		kW	91.6	94.9	81.4	84.2	126.3	127.8
Declared $EER_{DC,C}$			7.2	7.3	7.4	7.6	6.9	7.1
Declared Refrigerant Capacity P_D	1,3,5	kW	607.6	639.5	559.6	587.5	807.5	831.4
Declared Power Input D_D		kW	58.1	60.7	50.7	53.0	79.5	81.3
Declared $EER_{DC,D}$			10.5	10.5	11.0	11.1	10.2	10.2
SSCEE	2,3,5	%	2.2	2.2	2.3	2.3	2.2	2.2
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	760.0	800.0	700.0	735.0	1010.0	1040.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	759.6	799.5	699.6	734.5	1009.5	1039.4
Declared EER_g 35°C			3.2	3.3	3.4	3.5	3.1	3.2
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	559.6	589.0	515.4	541.1	743.7	765.8
Declared EER_g 30°C			4.4	4.5	4.7	4.7	4.5	4.5
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	359.6	378.5	331.2	347.7	477.9	492.1
Declared EER_g 25°C			5.8	6.0	6.4	6.5	6.1	6.2
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	159.6	167.9	146.9	154.3	212.1	218.4
Declared EER_g 20°C			8.2	8.2	8.4	8.4	7.9	8.0
Sound Power Level		dB(A)	92	92	93	93	93	93
Air Volume		m³/h	258447	287163	258447	287163	315879	344596
Off mode P_{OFF}		kW	0.375	0.375	0.427	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	1.507	1.701	1.370	1.536	1.996	2.139
Standby Mode P_{SB}		kW	0.626	0.626	0.719	0.729	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign - TCF (R)

Notes: Units			TCF11R06S-42	TCF11R08S-42	TCF11R06L-43	TCF11R08L-44	TCF11R10L-45	TCF12R08S-46
SEPR	1,3,5		8.6	8.8	7.6	7.8	8.4	6.8
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption	kWh/a		223034.9	235657.7	354220.6	379081.4	358036.4	477315.2
Rated Refrigerant Capacity P _A	1,3,5	kW	259.5	279.5	364.4	399.4	404.4	439.3
Rated Power Input D _A		kW	80.4	84.9	133.8	150.1	137.3	147.3
Rated EER _{DC,A}			3.23	3.29	2.72	2.66	2.94	2.98
Declared Refrigerant Capacity P _B	1,3,5	kW	242.2	260.8	340.0	372.7	377.4	410.0
Declared Power Input D _B		kW	53.1	55.5	85.5	92.2	86.0	98.1
Declared EER _{DC,B}			4.56	4.70	3.98	4.04	4.39	4.18
Declared Refrigerant Capacity P _C	1,3,5	kW	224.8	242.1	315.7	346.1	350.4	380.7
Declared Power Input D _C		kW	34.4	36.1	54.4	57.9	54.5	63.0
Declared EER _{DC,C}			6.53	6.70	5.81	5.98	6.43	6.04
Declared Refrigerant Capacity P _D	1,3,5	kW	207.5	223.5	291.4	319.4	323.4	351.3
Declared Power Input D _D		kW	12.5	13.5	19.8	21.1	20.2	35.8
Declared EER _{DC,D}			16.58	16.61	14.75	15.14	15.97	9.80
SSCEE	2,3,5	%	1.9	2.0	1.7	1.9	2.0	1.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity P _{rated,c}	2,4,5	kW	260.0	280.0	365.0	400.0	405.0	440.0
Declared Cooling Capacity 35°C P _{dc}	2,3,5	kW	259.5	279.5	364.4	399.4	404.4	439.3
Declared EER _g 35°C			3.23	3.29	2.72	2.66	2.94	2.98
Declared Cooling Capacity 30°C P _{dc}	2,3,5	kW	191.1	205.8	268.3	294.1	297.8	323.5
Declared EER _g 30°C			4.28	4.50	3.75	3.97	4.25	3.83
Declared Cooling Capacity 25°C P _{dc}	2,3,5	kW	122.7	132.1	172.3	188.9	191.2	207.8
Declared EER _g 25°C			5.57	5.86	4.76	5.20	5.50	5.47
Declared Cooling Capacity 20°C P _{dc}	2,3,5	kW	68.9	69.2	127.6	125.9	124.8	69.1
Declared EER _g 20°C			6.41	6.49	6.07	6.62	6.78	6.18
Sound Power Level		dB(A)	87	87	90	90	89	91
Air Volume		m³/h	102219	120542	123975	164183	175352	159198
Off mode P _{OFF}		kW	0.249	0.249	0.249	0.249	0.249	0.249
Thermostat-off mode P _{TO}		kW	1.781	1.965	2.777	2.428	2.639	2.953
Standby Mode P _{SB}		kW	0.330	0.340	0.350	0.340	0.350	0.360
Crankcase heater mode P _{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF12R10S-34	TCF12R12S-34	TCF12R12L-47	TCF12R14L-47	TCF12R16L-47	TCF12R18L-47
SEPR	1,3,5		6.5	8.6	7.8	7.8	8.0	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	533642.4	431580.2	623165.1	665818.2	692623.7	745577.1
Rated Refrigerant Capacity P_A	1,3,5	kW	469.3	499.3	659.2	704.2	749.1	799.1
Rated Power Input D_A		kW	148.7	155.3	233.3	247.3	265.2	292.2
Rated $EER_{DC,A}$			3.16	3.21	2.83	2.85	2.83	2.73
Declared Refrigerant Capacity P_B	1,3,5	kW	438.0	465.9	615.2	657.2	699.1	745.8
Declared Power Input D_B		kW	98.8	102.6	150.7	158.1	167.0	180.3
Declared $EER_{DC,B}$			4.44	4.54	4.08	4.16	4.19	4.14
Declared Refrigerant Capacity P_C	1,3,5	kW	406.6	432.6	571.2	610.2	649.1	692.4
Declared Power Input D_C		kW	63.6	66.3	95.3	100.2	105.8	113.8
Declared $EER_{DC,C}$			6.39	6.52	5.99	6.09	6.13	6.09
Declared Refrigerant Capacity P_D	1,3,5	kW	375.3	399.3	527.2	563.2	599.1	639.1
Declared Power Input D_D		kW	47.3	24.4	34.9	38.7	38.9	41.8
Declared $EER_{DC,D}$			7.94	16.35	15.08	14.55	15.39	15.29
SSCEE	2,3,5	%	1.9	2.0	1.8	1.9	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	470.0	500.0	660.0	705.0	750.0	800.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	469.3	499.3	659.2	704.2	749.1	799.1
Declared EER_g 35°C			3.16	3.21	2.83	2.85	2.83	2.73
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	345.6	367.7	485.5	518.7	551.8	588.6
Declared EER_g 30°C			4.08	4.14	3.73	3.85	3.94	4.01
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	221.9	236.1	311.8	333.1	354.4	378.1
Declared EER_g 25°C			5.64	5.72	5.38	5.45	5.45	5.40
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	68.9	104.5	138.2	147.6	157.0	167.5
Declared EER_g 20°C			6.12	7.19	6.45	6.86	6.95	6.97
Sound Power Level		dB(A)	91	90	93	93	92	93
Air Volume		m³/h	179225	200334	247951	277147	306101	341957
Off mode P_{OFF}		kW	0.301	0.301	0.301	0.301	0.301	0.301
Thermostat-off mode P_{TO}		kW	3.209	3.519	4.299	4.728	5.239	5.929
Standby Mode P_{SB}		kW	0.453	0.463	0.483	0.463	0.473	0.483
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data
Ecodesign

Notes: Units			TCF22R10S-48	TCF22R12L-49	TCF22R14L-49	TCF22R16L-49	TCF22R18L-49	TCF23R12S-50
SEPR	1,3,5		8.1	8.0	8.1	8.4	8.2	7.8
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	423050.5	610452.7	624593.7	636256.4	724208.4	624118.6
Rated Refrigerant Capacity P_A	1,3,5	kW	459.3	659.2	679.2	719.2	799.1	659.2
Rated Power Input D_A		kW	141.9	224.2	223.5	234.9	275.5	220.2
Rated $EER_{DC,A}$			3.24	2.94	3.04	3.06	2.90	2.99
Declared Refrigerant Capacity P_B	1,3,5	kW	428.7	615.2	633.9	671.2	745.8	615.2
Declared Power Input D_B		kW	94.6	145.8	144.7	150.6	172.4	146.8
Declared $EER_{DC,B}$			4.53	4.22	4.38	4.46	4.32	4.19
Declared Refrigerant Capacity P_C	1,3,5	kW	398.0	571.2	588.5	623.2	692.4	571.2
Declared Power Input D_C		kW	60.6	92.4	91.6	95.9	109.7	93.9
Declared $EER_{DC,C}$			6.56	6.18	6.42	6.50	6.31	6.08
Declared Refrigerant Capacity P_D	1,3,5	kW	367.3	527.2	543.2	575.2	639.1	527.2
Declared Power Input D_D		kW	27.4	35.0	38.2	37.0	41.6	36.6
Declared $EER_{DC,D}$			13.42	15.04	14.21	15.55	15.38	14.39
SSCEE	2,3,5	%	1.8	1.7	1.8	1.9	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 1 (2018)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	460.0	660.0	680.0	720.0	800.0	660.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	459.3	659.2	679.2	719.2	799.1	659.2
Declared EER_g 35°C			3.24	2.94	3.04	3.06	2.90	2.99
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	338.3	485.5	500.3	529.7	588.6	485.5
Declared EER_g 30°C			4.14	3.83	3.99	4.10	4.15	3.94
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	217.2	311.8	321.3	340.2	378.1	311.8
Declared EER_g 25°C			5.17	4.94	5.15	5.27	5.34	5.26
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	70.1	138.2	142.4	150.8	167.5	138.2
Declared EER_g 20°C			5.93	5.27	6.04	6.13	6.06	6.71
Sound Power Level		dB(A)	90	93	92	92	92	93
Air Volume		m³/h	175952	245416	265656	291380	335240	238410
Off mode P_{OFF}		kW	0.301	0.322	0.322	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	3.026	4.283	4.325	4.732	5.917	4.267
Standby Mode P_{SB}		kW	0.503	0.484	0.494	0.504	0.484	0.504
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

- (1) Nominal conditions as stated in EU 2016/2281 Table 22.
- (2) Nominal conditions as stated in EU 2016/2281 Table 21.
- (3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.
- (4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.
- (5) All performance data based upon standard waterside configuration.

Technical Data Ecodesign

Notes: Units			TCF23R14S-50	TCF23R16S-50	TCF23R18S-50	TCF23R18L-51	TCF23R20L-51	TCF24R18S-52
SEPR	1,3,5		8.2	8.2	8.2	8.1	8.2	7.3
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	614714.1	630570.9	663157.4	809605.4	809692.6	852856.7
Rated Refrigerant Capacity P_A	1,3,5	kW	679.2	699.2	734.2	879.2	899.2	839.2
Rated Power Input D_A		kW	219.2	219.8	228.7	298.2	298.0	270.6
Rated $EER_{DC,A}$			3.10	3.18	3.21	2.95	3.02	3.10
Declared Refrigerant Capacity P_B	1,3,5	kW	633.9	652.5	685.2	820.5	839.2	783.2
Declared Power Input D_B		kW	145.8	145.9	151.3	195.0	193.9	179.3
Declared $EER_{DC,B}$			4.35	4.47	4.53	4.21	4.33	4.37
Declared Refrigerant Capacity P_C	1,3,5	kW	588.5	605.9	636.2	761.8	779.2	727.2
Declared Power Input D_C		kW	93.3	93.6	97.4	121.8	121.4	113.5
Declared $EER_{DC,C}$			6.31	6.48	6.53	6.26	6.42	6.40
Declared Refrigerant Capacity P_D	1,3,5	kW	543.2	559.2	587.2	703.2	719.2	671.2
Declared Power Input D_D		kW	35.4	38.2	41.1	46.7	47.0	62.7
Declared $EER_{DC,D}$			15.33	14.65	14.29	15.07	15.29	10.71
SSCEE	2,3,5	%	2.0	2.0	2.0	1.9	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	680.0	700.0	735.0	880.0	900.0	840.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	679.2	699.2	734.2	879.2	899.2	839.2
Declared EER_g 35°C			3.10	3.18	3.21	2.95	3.02	3.10
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	500.3	515.0	540.8	647.6	662.3	618.1
Declared EER_g 30°C			4.09	4.11	4.16	4.01	4.13	4.04
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	321.3	330.8	347.3	416.0	425.5	397.1
Declared EER_g 25°C			5.49	5.56	5.68	5.29	5.45	5.78
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	142.4	146.6	153.9	184.4	188.6	176.0
Declared EER_g 20°C			6.85	7.07	7.05	6.78	6.88	6.76
Sound Power Level		dB(A)	92	92	92	94	93	94
Air Volume		m³/h	254406	277960	297103	343832	360895	326011
Off mode P_{OFF}		kW	0.322	0.322	0.322	0.375	0.375	0.375
Thermostat-off mode P_{TO}		kW	4.307	4.421	4.786	4.824	4.873	4.421
Standby Mode P_{SB}		kW	0.514	0.524	0.534	0.596	0.606	0.626
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF24R20S-52	TCF24R22L-41	TCF24R24L-41
SEPR	1,3,5		7.4	7.9	7.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	865091.5	975598.6	1019513.5
Rated Refrigerant Capacity P_A	1,3,5	kW	859.2	1034.1	1089.1
Rated Power Input D_A		kW	270.9	359.5	373.3
Rated $EER_{DC,A}$			3.17	2.88	2.92
Declared Refrigerant Capacity P_B	1,3,5	kW	801.9	965.1	1016.4
Declared Power Input D_B		kW	179.2	235.2	244.2
Declared $EER_{DC,B}$			4.47	4.10	4.16
Declared Refrigerant Capacity P_C	1,3,5	kW	744.5	896.1	943.7
Declared Power Input D_C		kW	113.6	145.2	151.6
Declared $EER_{DC,C}$			6.55	6.17	6.23
Declared Refrigerant Capacity P_D	1,3,5	kW	687.2	827.1	871.1
Declared Power Input D_D		kW	65.1	56.9	59.9
Declared $EER_{DC,D}$			10.55	14.53	14.54
SSCEE	2,3,5	%	2.0	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	860.0	1035.0	1090.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	859.2	1034.1	1089.1
Declared EER_g 35°C			3.17	2.88	2.92
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	632.9	761.7	802.2
Declared EER_g 30°C			4.12	4.08	4.04
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	406.6	489.4	515.4
Declared EER_g 25°C			5.88	5.57	5.62
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	180.2	217.0	228.5
Declared EER_g 20°C			6.90	6.38	6.38
Sound Power Level		dB(A)	93	94	94
Air Volume		m³/h	343502	413937	441404
Off mode P_{OFF}		kW	0.375	0.427	0.427
Thermostat-off mode P_{TO}		kW	4.473	6.363	7.020
Standby Mode P_{SB}		kW	0.636	0.719	0.729
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000

- (1) Nominal conditions as stated in EU 2016/2281 Table 22.
 (2) Nominal conditions as stated in EU 2016/2281 Table 21.
 (3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.
 (4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.
 (5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign - TCF (X)

Notes: Units			TCF11X06S-42	TCF11X08S-42	TCF11X06L-43	TCF11X08L-44	TCF11X10L-45	TCF12X08S-46
SEPR	1,3,5		8.2	9.5	6.9	8.6	9.1	8.1
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	204241.6	187417.1	299740.8	289720.1	282025.4	332587.1
Rated Refrigerant Capacity P_A	1,3,5	kW	224.6	239.6	279.6	334.5	344.5	364.5
Rated Power Input D_A		kW	65.9	67.0	94.9	112.0	105.7	122.8
Rated $EER_{DC,A}$			3.41	3.58	2.95	2.99	3.26	2.97
Declared Refrigerant Capacity P_B	1,3,5	kW	209.6	223.6	260.9	312.2	321.5	340.2
Declared Power Input D_B		kW	43.4	44.2	60.1	69.9	67.3	77.8
Declared $EER_{DC,B}$			4.83	5.06	4.34	4.46	4.78	4.37
Declared Refrigerant Capacity P_C	1,3,5	kW	194.6	207.6	242.2	289.9	298.5	315.8
Declared Power Input D_C		kW	27.6	28.2	37.0	44.0	42.4	48.3
Declared $EER_{DC,C}$			7.04	7.35	6.54	6.60	7.04	6.54
Declared Refrigerant Capacity P_D	1,3,5	kW	179.6	191.6	223.6	267.5	275.5	291.5
Declared Power Input D_D		kW	14.6	10.9	24.4	16.4	16.3	20.4
Declared $EER_{DC,D}$			12.30	17.51	9.15	16.32	16.87	14.27
SSCEE	2,3,5	%	2.0	2.1	1.8	1.9	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	225.0	240.0	280.0	335.0	345.0	365.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	224.6	239.6	279.6	334.5	344.5	364.5
Declared EER_g 35°C			3.41	3.58	2.95	2.99	3.26	2.97
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	165.4	176.4	205.9	246.4	253.7	268.4
Declared EER_g 30°C			4.37	4.62	3.86	4.08	4.33	4.17
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	106.2	113.3	139.3	158.2	162.9	172.4
Declared EER_g 25°C			5.69	6.01	5.11	5.34	5.63	5.77
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	68.7	68.9	127.8	126.0	124.9	68.8
Declared EER_g 20°C			6.60	6.75	6.18	6.73	6.92	6.69
Sound Power Level		dB(A)	87	87	87	87	87	89
Air Volume		m³/h	83964	108082	83964	111952	139940	111952
Off mode P_{OFF}		kW	0.249	0.249	0.249	0.249	0.249	0.301
Thermostat-off mode P_{TO}		kW	1.267	1.360	1.503	1.610	1.811	1.896
Standby Mode P_{SB}		kW	0.340	0.350	0.340	0.350	0.360	0.453
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF12X10S-34	TCF12X12S-34	TCF12X12L-47	TCF12X14L-47	TCF12X16L-47	TCF12X18L-47
SEPR	1,3,5		7.6	7.4	7.9	8.2	8.4	8.3
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	411916.0	440634.3	592699.0	576023.6	592199.4	626942.0
Rated Refrigerant Capacity P _A	1,3,5	kW	419.4	439.4	629.2	639.3	669.2	699.2
Rated Power Input D _A		kW	131.1	131.1	236.5	224.0	227.5	235.1
Rated EER _{DC,A}			3.20	3.35	2.66	2.85	2.94	2.97
Declared Refrigerant Capacity P _B	1,3,5	kW	391.4	410.1	587.2	596.6	624.6	652.5
Declared Power Input D _B		kW	85.3	86.3	145.2	139.1	142.3	146.5
Declared EER _{DC,B}			4.59	4.75	4.04	4.29	4.39	4.45
Declared Refrigerant Capacity P _C	1,3,5	kW	363.4	380.7	545.2	553.9	579.9	605.9
Declared Power Input D _C		kW	54.1	54.8	90.0	87.3	89.5	92.6
Declared EER _{DC,C}			6.72	6.95	6.06	6.35	6.48	6.54
Declared Refrigerant Capacity P _D	1,3,5	kW	335.4	351.4	503.2	511.3	535.2	559.2
Declared Power Input D _D		kW	30.9	36.3	33.1	32.7	33.8	37.7
Declared EER _{DC,D}			10.84	9.68	15.22	15.65	15.82	14.84
SSCEE	2,3,5	%	2.0	2.0	1.8	1.9	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity P _{rated,c}	2,4,5	kW	420.0	440.0	630.0	640.0	670.0	700.0
Declared Cooling Capacity 35°C P _{dc}	2,3,5	kW	419.4	439.4	629.2	639.3	669.2	699.2
Declared EER _g 35°C			3.20	3.35	2.66	2.85	2.94	2.97
Declared Cooling Capacity 30°C P _{dc}	2,3,5	kW	308.9	323.6	463.5	470.8	492.9	515.0
Declared EER _g 30°C			4.12	4.29	3.70	3.88	3.99	4.08
Declared Cooling Capacity 25°C P _{dc}	2,3,5	kW	198.3	207.8	297.7	302.4	316.6	330.8
Declared EER _g 25°C			5.84	5.98	5.43	5.60	5.69	5.73
Declared Cooling Capacity 20°C P _{dc}	2,3,5	kW	69.0	69.0	131.9	134.0	140.3	146.6
Declared EER _g 20°C			6.47	6.44	6.54	6.79	7.14	7.21
Sound Power Level		dB(A)	89	90	90	90	90	90
Air Volume		m³/h	139940	167928	167928	195916	223904	251892
Off mode P _{OFF}		kW	0.301	0.301	0.301	0.301	0.301	0.301
Thermostat-off mode P _{TO}		kW	2.457	2.592	3.850	3.752	3.993	4.288
Standby Mode P _{SB}		kW	0.463	0.473	0.473	0.483	0.493	0.503
Crankcase heater mode P _{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF22X10S-48	TCF22X12L-49	TCF22X14L-49	TCF22X16L-49	TCF22X18L-49	TCF23X12S-50
SEPR	1,3,5		8.6	8.1	7.7	8.6	8.6	7.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	361465.9	579286.7	612521.5	577857.4	604849.3	588414.9
Rated Refrigerant Capacity P_A	1,3,5	kW	419.4	629.2	639.3	669.2	699.2	629.2
Rated Power Input D_A		kW	128.9	226.3	214.0	216.7	222.7	221.9
Rated $EER_{DC,A}$			3.25	2.78	2.99	3.09	3.14	2.84
Declared Refrigerant Capacity P_B	1,3,5	kW	391.4	587.2	596.6	624.6	652.5	587.2
Declared Power Input D_B		kW	84.1	140.1	134.1	136.8	140.6	141.3
Declared $EER_{DC,B}$			4.65	4.19	4.45	4.56	4.64	4.16
Declared Refrigerant Capacity P_C	1,3,5	kW	363.4	545.2	553.9	579.9	605.9	545.2
Declared Power Input D_C		kW	53.3	87.0	84.2	86.3	89.1	88.4
Declared $EER_{DC,C}$			6.82	6.27	6.58	6.72	6.80	6.17
Declared Refrigerant Capacity P_D	1,3,5	kW	335.4	503.2	511.3	535.2	559.2	503.2
Declared Power Input D_D		kW	21.9	33.2	42.1	33.9	36.7	33.9
Declared $EER_{DC,D}$			15.31	15.17	12.15	15.77	15.25	14.83
SSCEE	2,3,5	%	1.9	1.6	1.8	1.9	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 1 (2018)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	420.0	630.0	640.0	670.0	700.0	630.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	419.4	629.2	639.3	669.2	699.2	629.2
Declared EER_g 35°C			3.25	2.78	2.99	3.09	3.14	2.84
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	308.9	463.5	470.8	492.9	515.0	463.5
Declared EER_g 30°C			4.16	3.81	4.00	4.12	4.22	3.87
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	198.4	297.7	302.4	316.6	330.8	297.7
Declared EER_g 25°C			5.37	4.28	5.19	5.33	5.44	5.31
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	69.9	131.9	134.0	140.3	146.6	131.9
Declared EER_g 20°C			6.17	5.36	5.62	6.25	6.33	6.83
Sound Power Level		dB(A)	89	90	90	90	90	91
Air Volume		m³/h	139940	167928	195916	223904	251892	167928
Off mode P_{OFF}		kW	0.322	0.322	0.322	0.322	0.322	0.375
Thermostat-off mode P_{TO}		kW	2.440	3.836	3.743	3.980	4.279	3.821
Standby Mode P_{SB}		kW	0.484	0.494	0.504	0.514	0.524	0.596
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.

(2) Nominal conditions as stated in EU 2016/2281 Table 21.

(3) Performance data (Nett) is supplied in accordance with EN14511-1:2018.

(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2018.

(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF23X14S-50	TCF23X16S-50	TCF23X18S-50	TCF23X18L-51	TCF23X20L-51	TCF24X18S-52
SEPR	1,3,5		8.3	8.4	8.6	8.1	8.3	7.8
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	585402.2	587669.5	589366.8	771450.0	764325.8	754769.1
Rated Refrigerant Capacity P_A	1,3,5	kW	654.2	669.2	684.2	844.2	859.2	794.2
Rated Power Input D_A		kW	217.5	212.0	209.7	299.2	292.4	262.2
Rated $EER_{DC,A}$			3.01	3.16	3.26	2.82	2.94	3.03
Declared Refrigerant Capacity P_B	1,3,5	kW	610.6	624.6	638.6	787.9	801.9	741.2
Declared Power Input D_B		kW	140.2	138.1	137.7	188.5	185.4	168.4
Declared $EER_{DC,B}$			4.35	4.52	4.64	4.18	4.33	4.40
Declared Refrigerant Capacity P_C	1,3,5	kW	566.9	579.9	592.9	731.5	744.5	688.2
Declared Power Input D_C		kW	88.7	87.9	87.7	115.7	114.6	105.5
Declared $EER_{DC,C}$			6.39	6.60	6.76	6.32	6.50	6.52
Declared Refrigerant Capacity P_D	1,3,5	kW	523.2	535.2	547.2	675.2	687.2	635.2
Declared Power Input D_D		kW	33.5	34.7	35.2	44.0	43.9	50.3
Declared $EER_{DC,D}$			15.62	15.41	15.54	15.36	15.66	12.62
SSCEE	2,3,5	%	2.0	2.0	2.1	1.9	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	655.0	670.0	685.0	845.0	860.0	795.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	654.2	669.2	684.2	844.2	859.2	794.2
Declared EER_g 35°C			3.01	3.16	3.26	2.82	2.94	3.03
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	481.9	492.9	504.0	621.8	632.9	585.0
Declared EER_g 30°C			4.09	4.13	4.28	3.95	4.12	4.12
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	309.5	316.6	323.7	399.5	406.6	375.8
Declared EER_g 25°C			5.53	5.61	5.78	5.31	5.48	5.77
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	137.1	140.3	143.4	177.1	180.3	166.6
Declared EER_g 20°C			6.95	7.18	7.27	6.75	6.95	6.92
Sound Power Level		dB(A)	91	91	91	92	92	92
Air Volume		m³/h	195916	223904	251892	251892	279880	251892
Off mode P_{OFF}		kW	0.375	0.375	0.375	0.375	0.375	0.427
Thermostat-off mode P_{TO}		kW	3.939	3.980	4.038	4.381	4.373	3.881
Standby Mode P_{SB}		kW	0.606	0.616	0.626	0.626	0.636	0.729
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000	0.000	0.000	0.000

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(5) All performance data based upon standard waterside configuration.

Technical Data

Ecodesign

Notes: Units			TCF24X20S-52	TCF24X22L-41	TCF24X24L-41
SEPR	1,3,5		7.7	8.0	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption	kWh/a		786395.2	880205.0	929162.9
Rated Refrigerant Capacity P_A	1,3,5	kW	814.2	954.1	999.1
Rated Power Input D_A		kW	259.4	356.2	369.0
Rated $EER_{DC,A}$			3.14	2.68	2.71
Declared Refrigerant Capacity P_B	1,3,5	kW	759.9	890.5	932.5
Declared Power Input D_B		kW	168.0	216.9	221.9
Declared $EER_{DC,B}$			4.52	4.10	4.20
Declared Refrigerant Capacity P_C	1,3,5	kW	705.6	826.8	865.8
Declared Power Input D_C		kW	105.7	130.9	135.4
Declared $EER_{DC,C}$			6.68	6.32	6.39
Declared Refrigerant Capacity P_D	1,3,5	kW	651.2	763.1	799.1
Declared Power Input D_D		kW	56.5	50.3	55.8
Declared $EER_{DC,D}$			11.52	15.18	14.33
SSCEE	2,3,5	%	2.0	1.9	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	815.0	955.0	1000.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	814.2	954.1	999.1
Declared EER_g 35°C			3.14	2.68	2.71
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	599.8	702.8	736.0
Declared EER_g 30°C			4.15	4.24	4.23
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	385.3	451.5	472.8
Declared EER_g 25°C			5.95	5.64	5.70
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	170.8	200.2	209.6
Declared EER_g 20°C			7.02	6.56	6.59
Sound Power Level		dB(A)	92	93	93
Air Volume		m³/h	279880	307868	335856
Off mode P_{OFF}		kW	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	3.937	5.241	5.695
Standby Mode P_{SB}		kW	0.739	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000

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(2) Nominal conditions as stated in EU 2016/2281 Table 21.

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(5) All performance data based upon standard waterside configuration.

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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