TurboChill™

200kW to 1360kW

Air Cooled (TCC) and FreeCool (TCF) Chiller
R1234ze(E)

Technical Manual
Original Instructions

ecoDesign COMPLIANT

CE

bsi. ISO 9001 Quality Management FM00542 ISO 14001 Environmental Management EMS52086

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

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.

Personal Refrigerant Leak Detector

Personal refrigerant leak detectors must be worn when servicing this machine.

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 R1234ze(E) 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. All service personnel must have hydrocarbon refrigerant handling training.

Service Equipment

Use only manifold gauge sets designed for use with hydrocarbon refrigerants. Use only refrigerant recovery units and cylinders designed for the pressure category of the refrigerants. Hydrocarbon refrigerant recovery machines must be used.
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.
The refrigerant must be stored in a clean, dry area away from sunlight. The refrigerant must never be stored above 50°C.
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.

Protective Personal Equipment

Airedale recommends that personal protective equipment is used whilst installing, maintaining and commissioning equipment.
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 -19°C.

Manual Handling

Some operations when servicing or maintaining the unit may require additional assistance with regard to manual handling. This requirement is down to the discretion of the engineer.
Remember do not perform a lift that exceeds your ability.

Pressure Equipment Directive

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

Refrigeration

AllowableTemperature Range (TS),Min -20°C* to Max 120°C**

Maximum Allowable Pressure (PS) High Side 13.0 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

AllowableTemperature Range (TS, Min -20°C* to Max 40°C*

Maximum Allowable Pressure (PS) 10.0 Barg

*Based on the water 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 defi ned in the Pressure System Safety Regulations 2000.

Ecodesign Directive 2009/125/EC

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

Dangerous Substances and Explosive Atmospheres Regulations

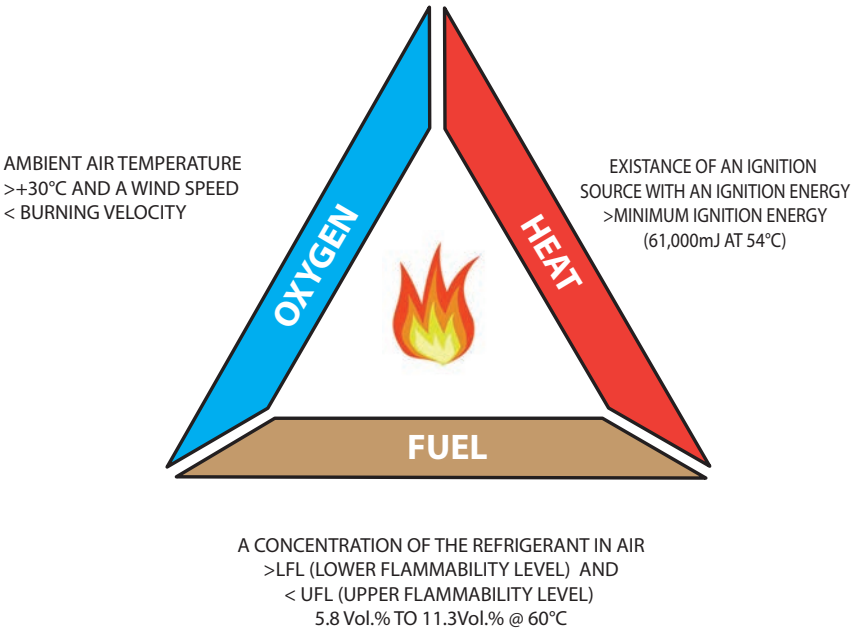
The completion of a DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) risk assessment must be completed as a legal requirement by the employer of the business where this equipment will be installed. This is not the responsibility of Airedale International Air Conditioning Ltd to undertake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

Safe Operating Limits

The TurboChill R1234ze(E) chiller has operating limits set to ensure that the refrigerant does not become unstable. Certain aspects of the installation and design must be considered.
The installation of the unit is subject to various design aspects, see below.

Flammability

In the event of a leak the combination of the following 3 operating conditions detailed in the fire triangle MUST be avoided at all times. Failure to do this could cause a fire.



CAUTION ⚠	This refrigerant is not flammable as per the Material Safety Data Sheet (MSDS) “Hazards Identification” supplied by the refrigerant manufacturer.

No smoking or NAKED FLAME.

CAUTION PACEMAKER WEARERS ⚠
To avoid any risk of injury, any work to be carried out on or around the compressor and magnetic check valve should be completed by personnel that do not have pacemakers fitted.

Global Warming Potential
R1234ze(E) = 7

EN378-1 :2016 (100 year life)

Environmental Considerations

Freeze Protection

Airedale recommends the following actions to help protect the unit during low temperature operation. This also includes the units subject to low ambient temperatures.

Units with supply water temperatures below +5°C

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

Units subject to ambient temperatures lower than 0°C, a minimum of 1 of the following is required:

1. Glycol of an appropriate concentration (1) is used within the system to ensure adequate protection.
   Please ensure that the concentration is capable of protection at least 3K lower than the minimum operating ambient.
2. Ensure water/glycol solution is constantly circulated through all waterside pipework and coils to prevent static water from freezing.
3. Ensure that pumps are started and running even during shut down periods, when the ambient is within 3K of the solution freeze point (1) (i.e. if the solution freezes at 0°C, the pump must be operating at 3°C ambient).(2)
4. Additional trace heating is provided for interconnecting pipework.

(1) Refer to your glycol supplier for details.

(2) An actuated suction ball valve shall be fitted to protect the compressor from liquid migration.

Free Cooling Chillers

A minimum of 20% glycol concentration must be applied to all free cooling chillers. Concentration should be increased so that its capable of protection at least 3K lower than the minimum operating ambient.

Flow Control

Full design water flow MUST be maintained at all times. Variable water volume is NOT recommended and will invalidate warranty. 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.

Occupancy Note

When placing a Chiller the access category for the surrounding area needs to be classified in accordance with EN 378-1:2016 section 5.1.1. In most cases the access would be ‘Authorized Access’ as described in EN378-1:2016 Table 4. This access level needs to be confirmed by the end user. As well as the above the location within which the product is to be installed also needs to be defined so that the correct charge limitations can be calculated. EN 378-1:2016 section 5.3 describes the four main types of location and the hazards associated with each. Given that an air cooled Chiller is typically an ‘Authorized Access’ installation and is most often installed in open air, ‘Class III’ location, EN378-1:2016 Table C.2 states that there is ‘No charge restriction’ for these systems using R1234ze (A2L) refrigerant.

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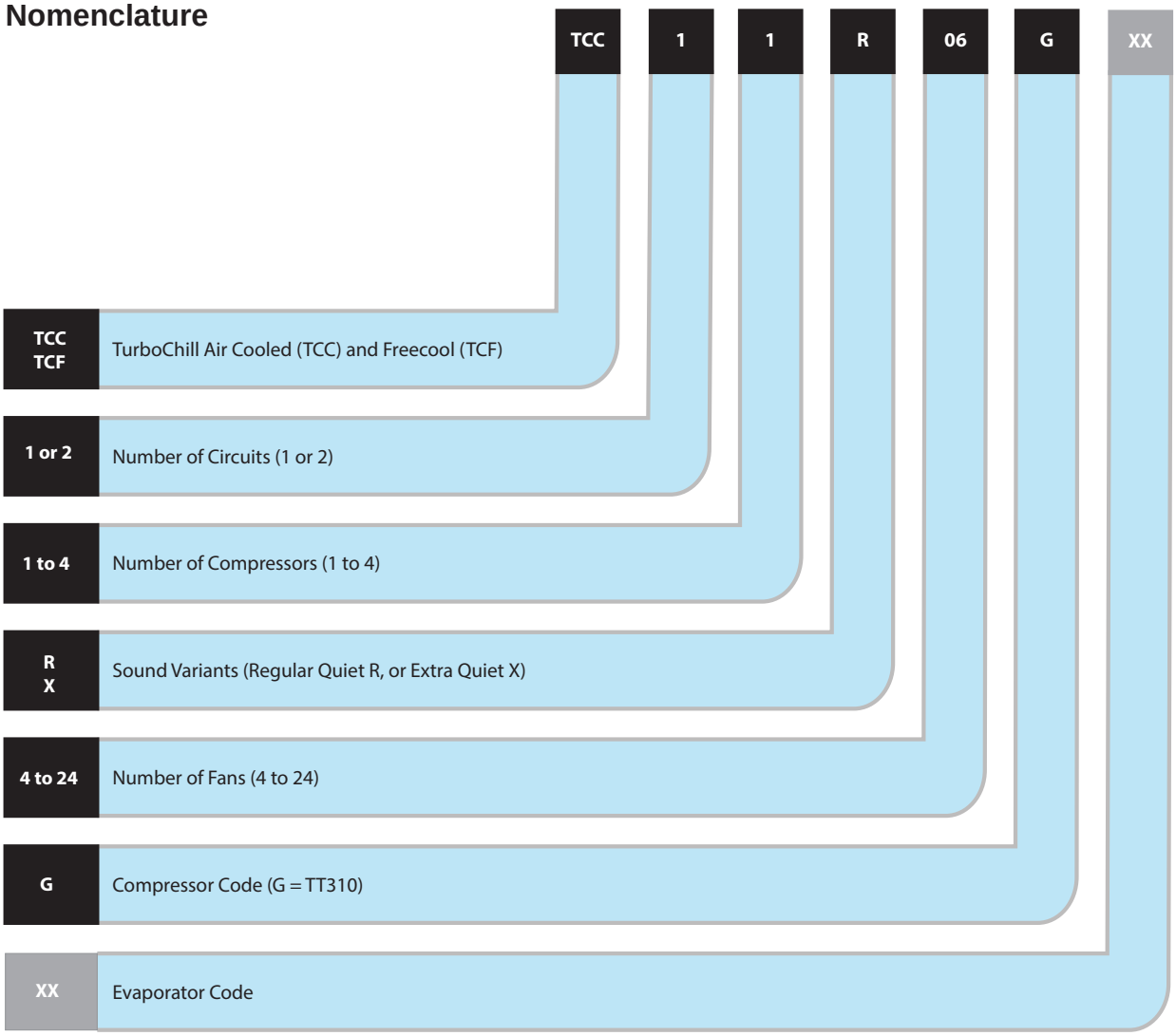
Nomenclature



Introduction

The Airedale range of TurboChill air cooled and Free cool liquid chillers uses the technologically superior centrifugal Turbocor compressors. Designed to cover the high capacity range between 200kW and 1360kW.

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.

Please contact Airedale with your specific requirements and we will be pleased to provide you with an individually tailored selection and technical detail.

Refrigerants

The range has been designed and optimised for operation with ozone benign R1234ze(E) refrigerant.

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.

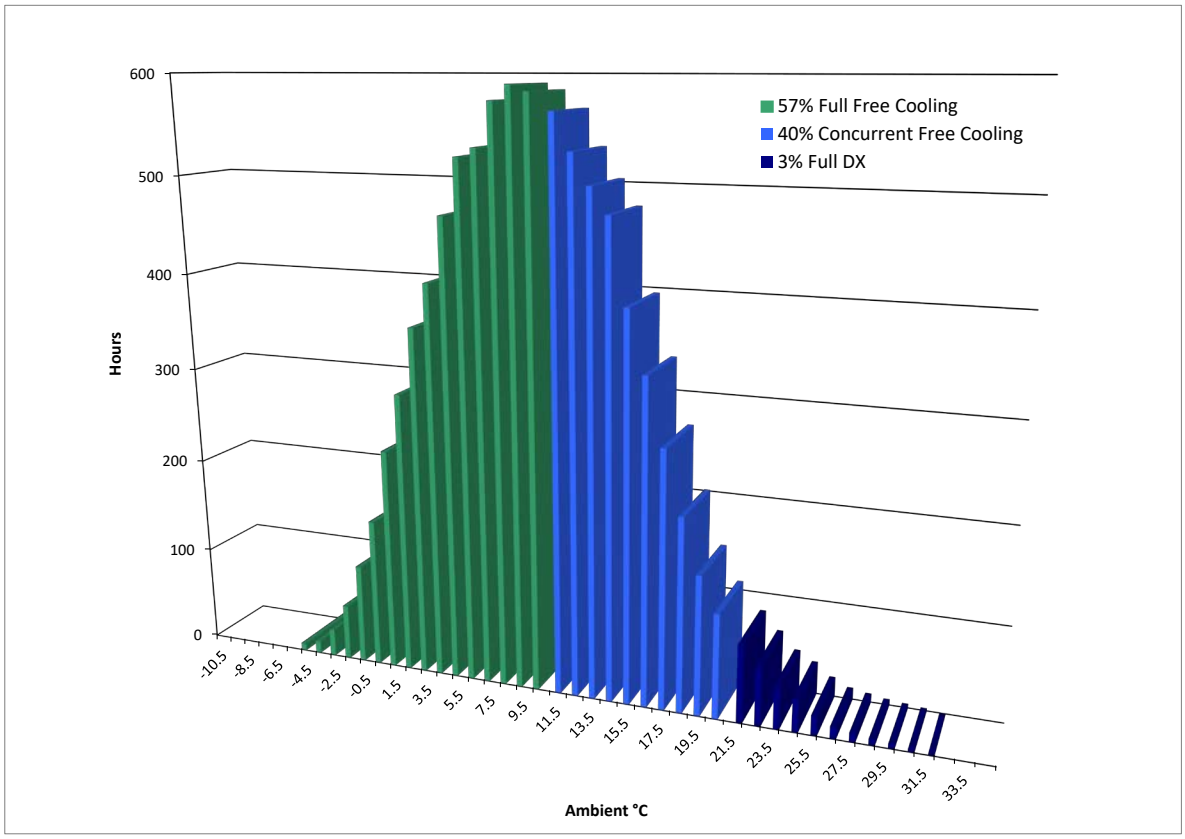
In high ambients where free cooling is not available the fan speed modulates in the conventional manner to maintain an optimised head pressure. Free cooling is initiated wherever the outdoor ambient is 2°C less than the return water temperature.

During concurrent cooling mode 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 satisfying 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

- AC Condenser Fans
- EC Condenser Fans
- High Airflow EC Condenser Fans
- Fan Discharge Plenum
- Extended Height Fan Discharge Plenum

Electrical Panel

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

Controls

- Microprocessor
- Leak Detection
- Inteligent Head Pressure Control

Coils

- Epoxy Coated Microchannel Condenser Coils
- Epoxy Coated RTPF Free Cooling Coils

Waterside

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

Refrigeration

- Centrifugal Compressors
- Flooded Evaporator with Integral Subcooler
- Actuated Suction Ball Valves
- Liquid and Discharge Shut Off Valves
- Liquid Line Sight Glasses
- Dual Pressure Relief Valves (remotely ventilated above condenser fans)
- Ventilated Compressor Enclosure upon Refrigerant Leak Detection

Unit Components

Refrigeration

Refrigeration	TCC	TCF
Compressors - Turbocor Centrifugal	●	●
Dual Maintainable Pressure Relief Valves	●	●
Microchannel Expoxy Coated Condensing Coils	●	●
RTPF Free Cooling Coils	-	●
Epoxy Coated RTPF Free Cooling Coils	-	○
Actuated Starting Line Assembly	●	●
Filter Driers with Replaceable Cores	●	●
Electronic Expansion Valves	●	●
Flooded Evaporator with integral subcooler	●	●
Stainless Steel Suction Pipe Assembly	●	●
Full Operating Charge of R134a	●	●
Acoustically Lined Compressor Enclosure/s	○	○
Liquid and Discharge Shut Off Valves	●	●
Liquid Line Sight Glasses (integral to EEV)	●	●
Micro-Plate Economiser	○	○
Actuated Suction Ball Valves	○	○

● Standard features ○ Optional features – Feature not available

Evaporator

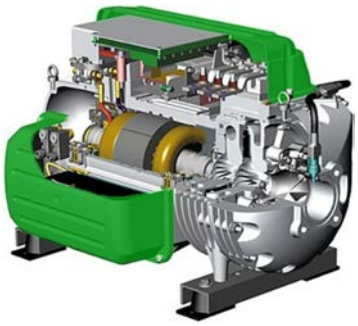
Flooded evaporator incorporating an internal round tube plate fin heat exchanger. This heat exchanger is used to further sub-cool refrigerant leaving the condenser extending the potential cooling capacity and as a result, efficiency of the system. At the same time suction gas vapour that passes over the heat exchanger within the shell is superheated to a higher temperature, eliminating the risk of wet vapour returning to the compressor. 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 heaters 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 (230V / 500W available). Maximum water temperature 40°C. The compressors and evaporator shall be mounted on a rigid galvanised heavy duty sub frame. Fully weatherproofed electrical panels are situated at one end of the unit.

Turbocor Compressor

Turbocor centrifugal compressor supplied with as standard:

- 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 and comprising of:
    - AC-DC rectifier
    - DC capacitors
    - DC-AC (IGBT) converter
    - Motor/bearing management system and incorporated surge protection
    - Soft start module
    - Magnetic bearing system
    - The compressors are mounted on Turbocor specially designed vibration reducing isolating rubber mounts
    - Linear capacity modulation is provided by a variable frequency drive



Key benefits of Turbocor compressor technology:

- Oil Free Operation
- More efficient use of heat exchangers
- No oil entrainment issues – pipe work can be optimised for performance not oil return
- Variable speed operation offering exact capacity match and optimum part load performance
- Magnetic bearing system constantly optimises shaft / impeller position
- Small and light, only 132kg
- No mechanical contact, very quiet operation
- Very low start current, only 2A
- The intelligent, self optimising compressor offers near silent, oil free operation and ultra efficient variable speed control
- 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 “V-block” arrangement has a lower airside pressure drop making the fans run more efficiently. The coils have freeflowing liquid drains that enable us to reduce the amount of subcooling done in the coil, leaving more area for heat exchange.

R1234ze(E) Leak Detection System

A factory calibrated leak detection system shall be fitted as standard to units

A dedicated refrigerant sensor shall be fitted within each compressor enclosure and will raise an alarm on detection of refrigerant gas.

Actuated Suction Ball Valve(s)

To protect the compressors against liquid migration, actuated suction line ball valves shall be 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 serves as a means of isolating the majority of the system refrigerant charge in the evaporator, upon a leak being detected.

Refrigerant Isolation

To maintain the functionality of the refrigerant partial pump down and isolation strategy in the event of a power failure. This 24V actuator will be connected to a single phase permanent supply so that in the event of a power failure the evaporator is isolated.

CAUTION ⚠	Ensure single phase power supply is connected permanently to ensure that the system will isolate refrigerant and ventilate the compressor housing in the event of a leak being detected. A UPS permanent supply is required.

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 refrigerant circuit charge larger than 300kg in line with EN 378-2:2008+A2:2012 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.

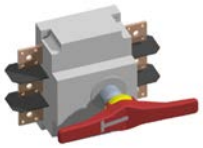
Electrical

Controls and Electrical	TCC	TCF
Leak detection on circuits containing >300kg of refrigerant	●	●
Intelligent Head Pressure Control	●	●
Discharge Non Return Valve	●	●
Power Monitoring	○	○

● 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

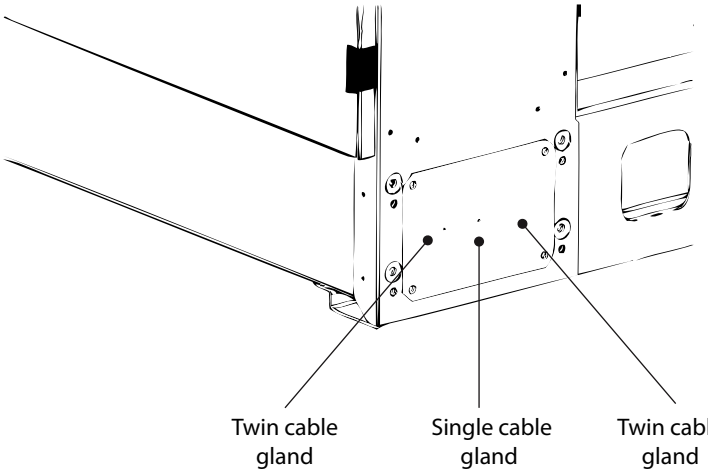
The Ultracap module is a standard feature utilising the latest Ultra Capacitor technology in external backup device for the EVD Evolution drivers and pCO controllers. The module guarantees temporary power to the controller and drivers in the event of mains power failures. The Ultra Capacitors are used to maintain the controller's main functions, 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 the 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

An optional control panel light may be fitted to enable control panel maintenance to be carried out during poor light conditions.

Distribution system

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

Condenser Fans

Fans	TCC	TCF
Ø800mm AC Axial Fans	●	●
EC Fan	○	○
High Airflow EC Fan	○	○

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

● Standard features ○ Optional features – Feature not available

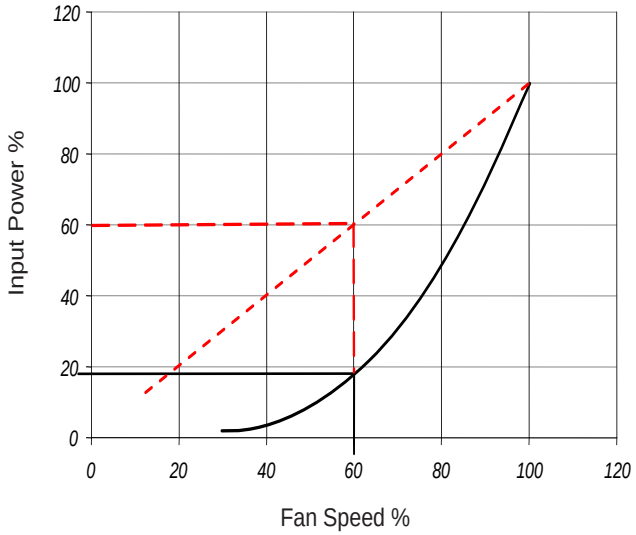
Energy saving Electronically Commutated (EC) Fan Motor

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 recirculation. 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 fan's modulating range is typically 40-100% of full fan speed.

The EC fan presents superior energy efficiency at 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%

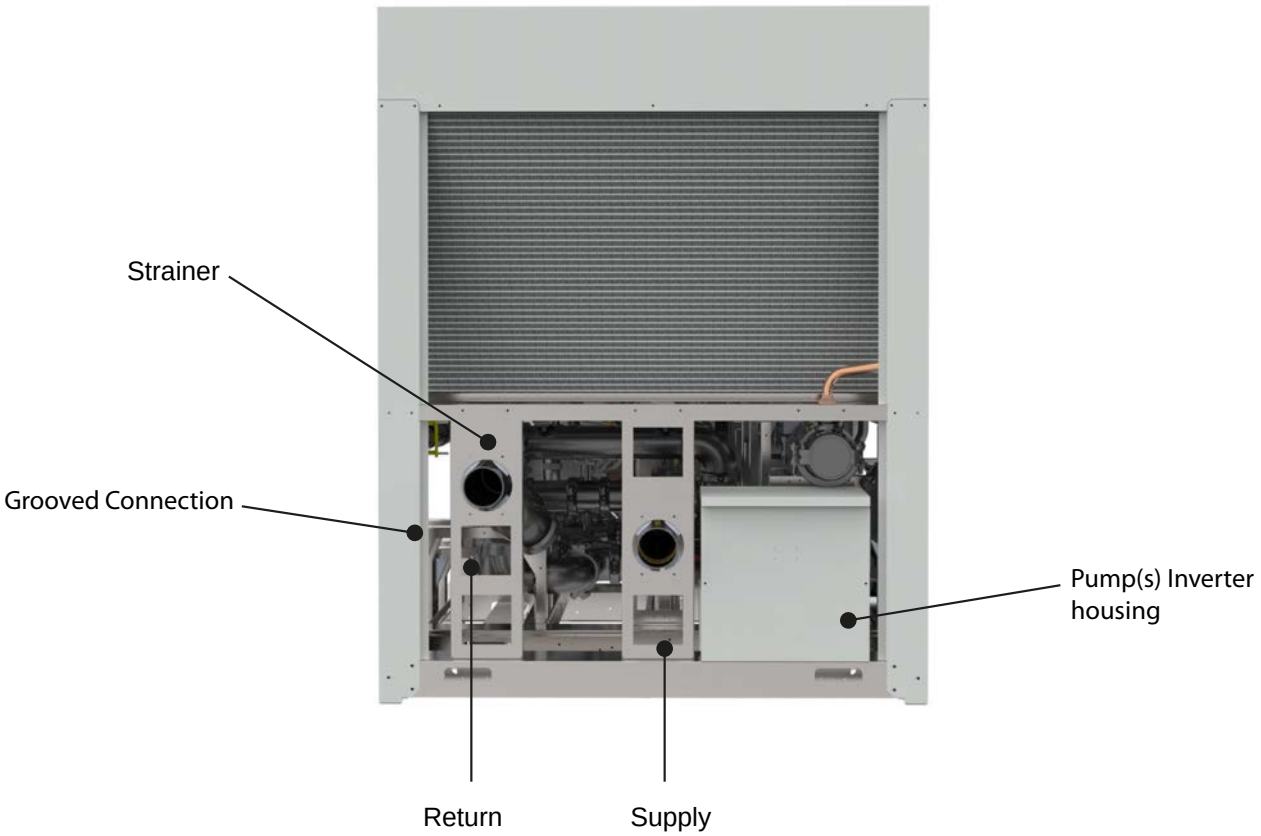
EC (Electronically Commutated) Fan Speed Control

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 discrete speed control, discharges air vertically. The fans offer maximum performance whilst keeping sound levels to a minimum.

Waterside



Waterside	TCC	TCF
Evaporator Immersion Heaters	●	●
Water Filter	○	●
Grooved and Clamped Type Connections	●	●
Pump Hydronic Options**	○	○
Water Flow Meter	○	○
Flanged Connections	○	○
Pump Interlock*	○	○
Flow Switch*	○	○

● 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.

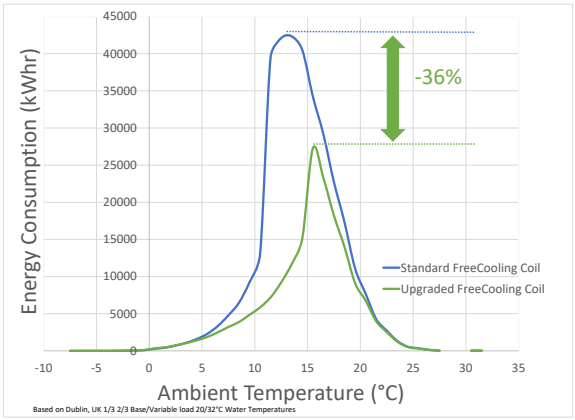
**options only available within units with sufficient space.
*** Flanged connnection not available on TCC Evaporator only.

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 fins.
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.
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.

Optimised Free Cooling Coil

Additional free cooling is available with an upgraded free cooling coil and fan combination. Whereby the coil design is optimised for high ΔTs 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.



Flow Proving Device

An evaporator differential pressure sensor facilitates low flow limiting and pressure drop monitoring via the microprocessor which shall be fitted to ensure correct unit water flow.

Grooved and Clamp Type Connections

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

Flanged Connections

Flanged connections shall be fitted to the unit upon request. Please contact Airedale.

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. A 1” BSP socket is required for this fitment.

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

Pump Vibration Eliminator

Flexible couplings shall be fitted to the pumps to reduce any vibration through the system pipework.

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 and available in standard and larger nominal external head pressures.

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 switch gear 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

A factory fitted in line single or run / standby pump is available with various pump external head options, please specify at order.

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

A factory fitted in line single or run / standby pump is available with various pump external head options, please specify at order.

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, 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.

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.

Bypass Options

No Bypass
Comprises
- Shut off valves
- Filter

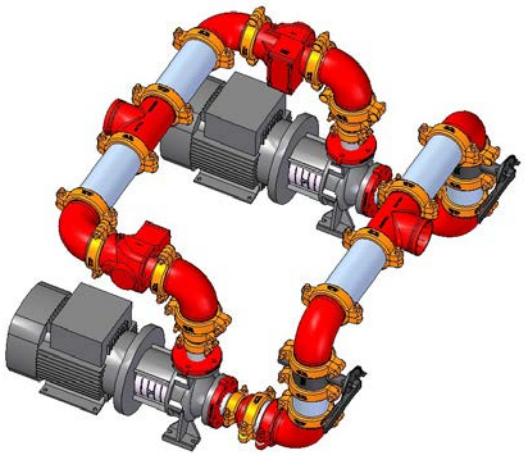
Flushing bypass kit (standard)
Comprises:
- Shut off valves
- Filter
- Bypass leg with shut off valve

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 valve



Run & standby pumps + filter + bypass (flushing)
Comprises:
- Run and standby pumps with vibration isolation
- Shut off valves
- Filter
- Non return valve

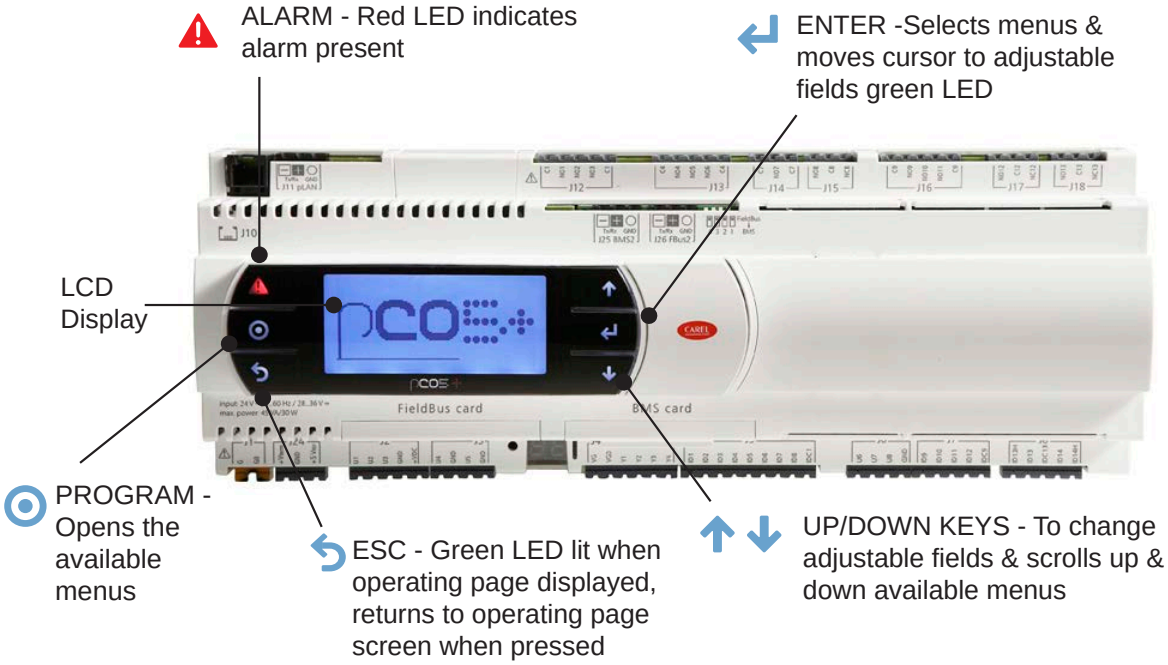
Run & standby pumps + filter + bypass (regulating)
Comprises:
- Run and standby pumps with vibration isolation
- Shut off valves
- Filter
- Double regulating valve
- Non return valves

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 15% and 100%, depending on the component selection. 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 Detected.
- 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.

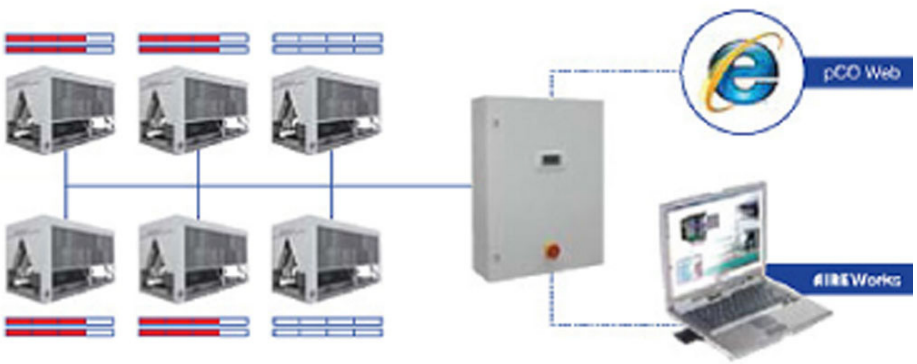
Chiller Sequence Manager

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 12.4 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).

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

BMS Interface Card

BMS system configuration by others.
Enables units to be interfaced with most BMS, factory fitted, please contact Airedale.
A wide range of protocols shall be accommodated through the use of interface devices.
Available as a standard option are: ModBus/Jbus, Carel, SNMP, LonWorks, Metasys and BACnet
Also available shall be Airedale's own supervisory plug-in BMS card pCOWEB.
Based on Ethernet TCP/IP secure technology with SNMP features.
Requires no proprietary cabling or monitoring software and supplied pre-programmed with an IP address for ease of setup.

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.

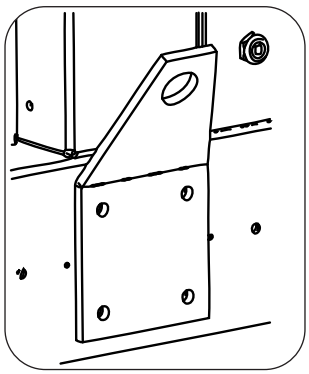
Mechanical

Mechanical	TCC	TCF
Lifting Lugs	●	●
Base - Plain Galvanised Steel	●	●
Panels - Galvanised Sheet Steel with Epoxy Powder Paint	●	●
Standard Height Fan Discharge Plenum	●	●
Extended Height Fan Discharge Plenum	○	○
Anti-Vibration Mounts (Spring and Pad Type)	○	○
Control Panel Rain Hood	○	○

● Standard features ○ Optional features – Feature not available

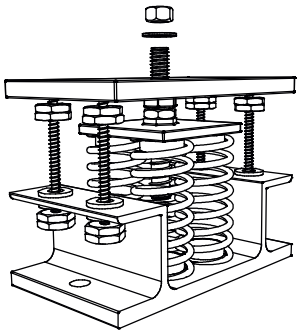
Lifting Lugs

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



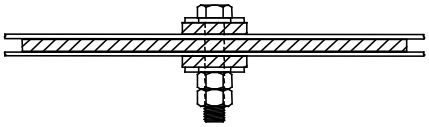
Anti Vibration Mounts (Spring Type)

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.



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 standard discharge air plenum is 2800mm.

Extended Discharge Air Plenum - Condenser Fan

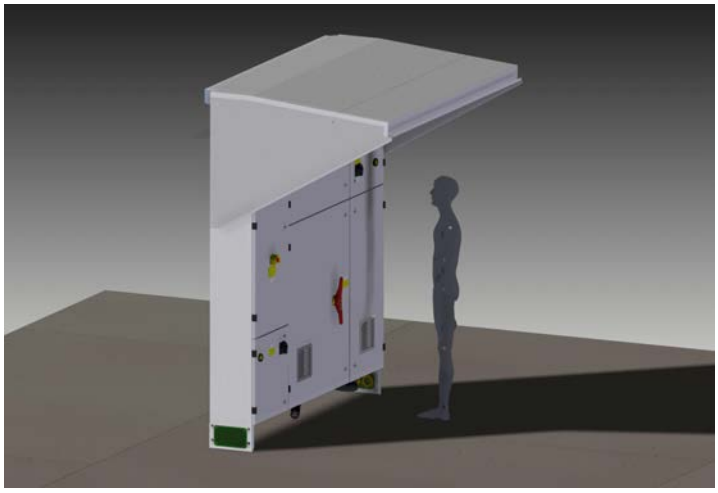
Site fitted and constructed from galvanised sheet steel coated with epoxy baked powder paint, this plenum shall direct discharge air vertically as an aid to minimise air re-circulation and also offers a degree of acoustic reduction in the horizontal plane; site fitted.

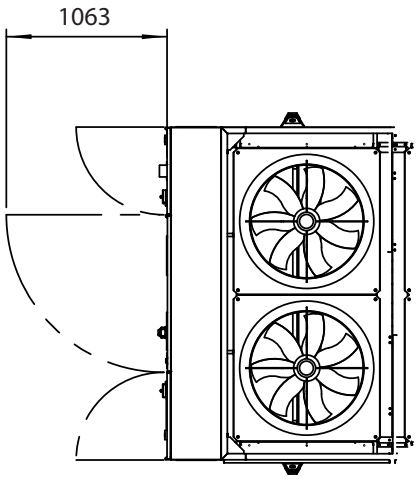
Standard unit colour shall be Light Grey (RAL 7035).

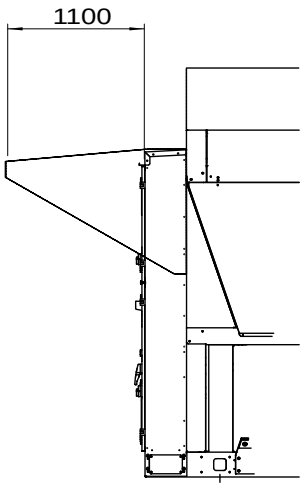
The overall unit height when fitted with the extended discharge air plenum is 3300mm.

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.







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 applying Glycol Correction Factors, refer to Glycol Data.

Minimum System Water Volume Calculations

METHOD 1
(Preferred Method)
Where the system permanent heat load is known, the minimum water volume in litres Vmin is:

Vmin = Water Flow Rate (litres/min)
x Minimum Compressor Run Time (min)
x Chiller Loading Factor

Chiller Loading Factor = $\frac{\text{Minimum Turndown (kW) x 1.2}}{\text{Permanent Heat Load}}$

Minimum Turndown =
1 compressor – 30%
2 compressors – 15%
3 compressors - 10%
4 compressors - 5%

Example: 750kW output at 35°C Ambient and 7/12°C Water

Permanent Heat Load = 300kW
Minimum Turndown = 15% (2 compressors)

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

METHOD 2

Where the system permanent heat load is unknown:

$$\text{Vmin} = \frac{\text{Water Flow Rate (litres/hour) x Minimum turndown ratio x 1.2}}{\text{Maximum number of compressor starts (per hour)}}$$

Minimum Turndown =
1 compressor – 30%
2 compressor – 15%
3 compressors - 10%
4 compressors - 5%

Example: 750kW output at 35°C Ambient and 7/12°C Water
Minimum Turndown = 0.15 (15% 2 compressors)

$$\text{Vmin} = \frac{750 \times 3600}{4.19 \times 5} \times 0.15 \times 1.2 \times \frac{5}{60} = 1933 \text{ Litres}$$

Design Features & Information

Capacity Data

For guidance, a number of units from 200 kW to 1000 kW at nominal conditions and at both fan speeds have been pre-selected and used throughout this manual for information only.
Please contact Airedale with your specific requirements and we will be pleased to provide you with an individually tailored selection and technical detail.

Operating Limits

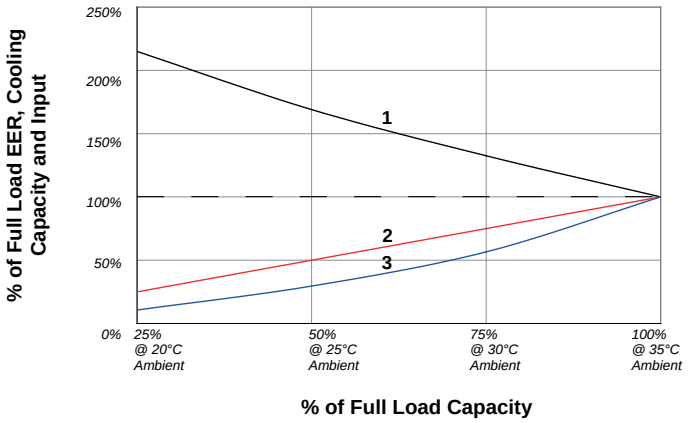
(For 100% Water) Standard Unit

Minimum ambient air DB	-20°C
Maximum ambient air DB at full load operation	35°C
Maximum ambient air DB at reduced load operation	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

* With an 8K ΔT

Typical Part Load Efficiencies

The following graph gives a general indication of the effect of reduced load on the performance of the unit, for performance details, please contact Airedale.



Key: 1 = EER
2 = Output kW
3 = Input kW

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. All calculations assume the system operates with 100% water.

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

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%	75%	50%	25%
Percentage of Total Hours	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 can be used as a guide.

CAUTION

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

Ethylene Glycol Nominal Correction Factors

Glycol in System / Freezing Point °C		10% / -4°C	20% / -7.8°C	30% / -14.1°C	40% / -22.3°C
Output (kW)	x	0.98	0.97	0.95	0.93
Compressor Input (kW)		0.99	0.98	0.96	0.95
Water Flow (l/s)		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% / -7.1°C	30% / -12.7°C	40% / -21.1°C
Output (kW)	x	0.97	0.95	0.91	0.88
Compressor Input (kW)		0.99	0.98	0.96	0.95
Water Flow (l/s)		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

Sound Data

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.

Sound Pressure Levels are calculated from sound power using the expanded parallelepiped method according to BS EN ISO 11203: 2009.

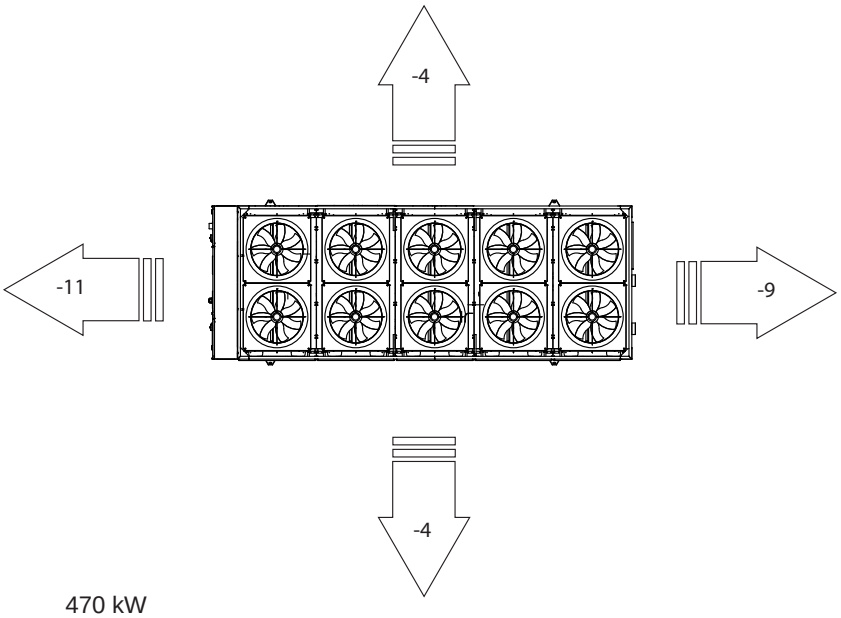
Acoustic data is representative of the unit running at the nominal duty and conditions, under steady state operation."

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.

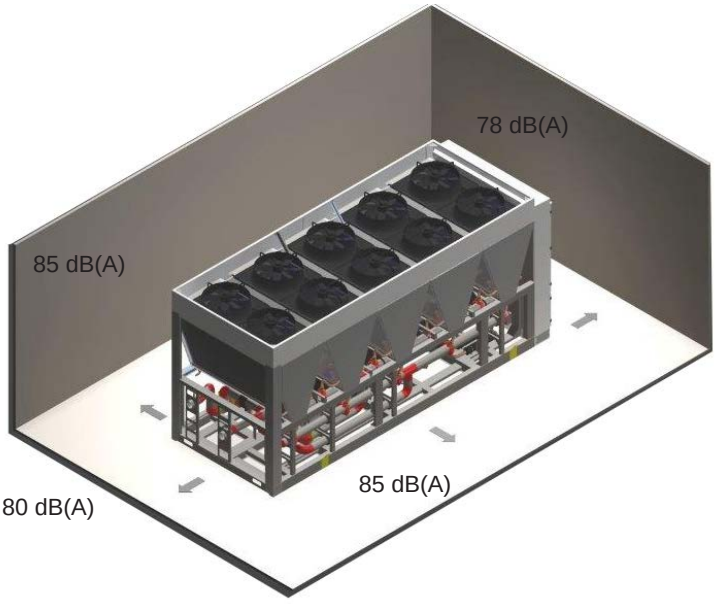
Using the adjustment factors from the map below, partial sound power levels can be derived from the global sound power data.

Base Correction Values - Global dB



EXAMPLE (dB(A)): 470 kW
Output - Quiet Models - TCC12R08G-04

Overall Sound Power of 89 dB(A) =



Design Features & Information

Water System

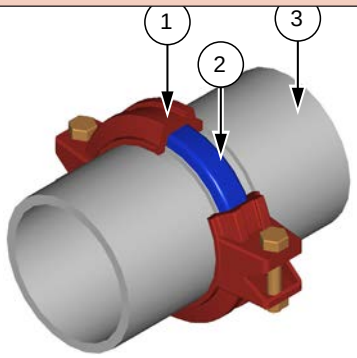
Chilled water pipe work and ancillary components must be installed in accordance with:

- 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
- In ambients of 3°C and below, where static water can be expected, or when water supply temperatures of +5°C or below are required, the necessary concentration of Glycol or use of an electrical trace heater must be included
- 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.

Grooved & Clamped Type Connection

1. Clamp
2. Gasket
3. Counter pipe



Standard Recommended Installation

General

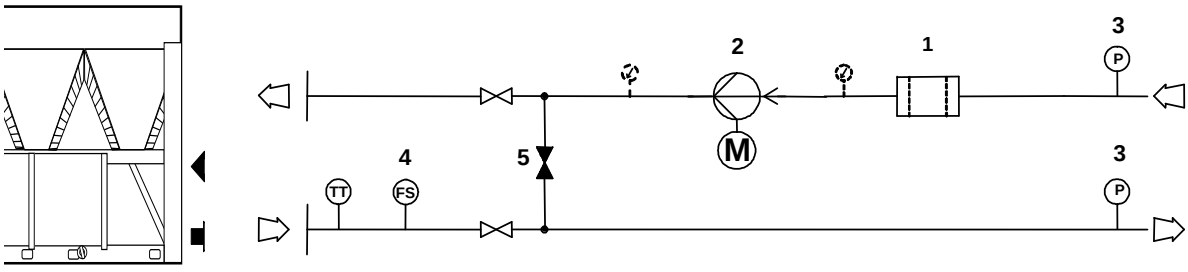
The following diagram illustrates the minimum component installation requirements. A wide range of optional extras are available to suit various applications.

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	4	Flow switch
3	Pressure sensor	5	Flushing bypass leg

Full design water flow MUST be maintained at all times. Variable water volume is NOT recommended and will invalidate warranty.



CAUTION ⚠	The correct operation of the flow proving device is critical if the chiller warranty is to be valid.

Design Features & Information

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%.

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 CaCO3/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 CaCO3/l)	<100	Ammonium (mg NH4+/l)	<1.0
Sulphate ion (mg S02 4-/l)	<200	Sulphide (mg S2-/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.

Design Features & Information

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 shutdown.
- 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.

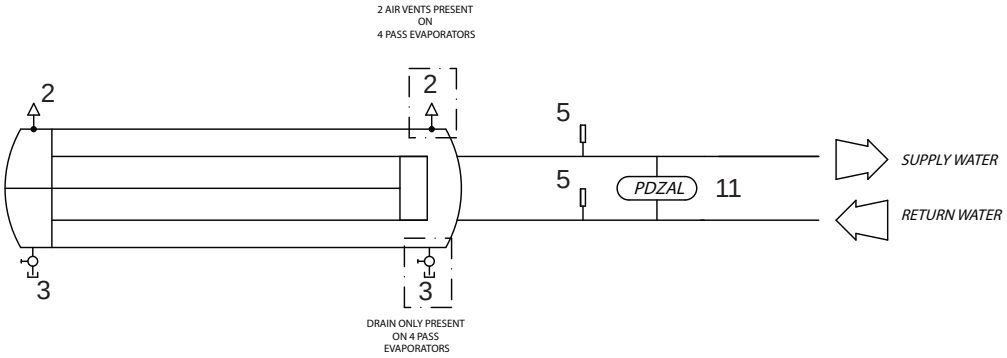
CAUTION ⚠	These safety devices prevent the chiller operating with low water flow which can cause serious damage.

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.
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)



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.

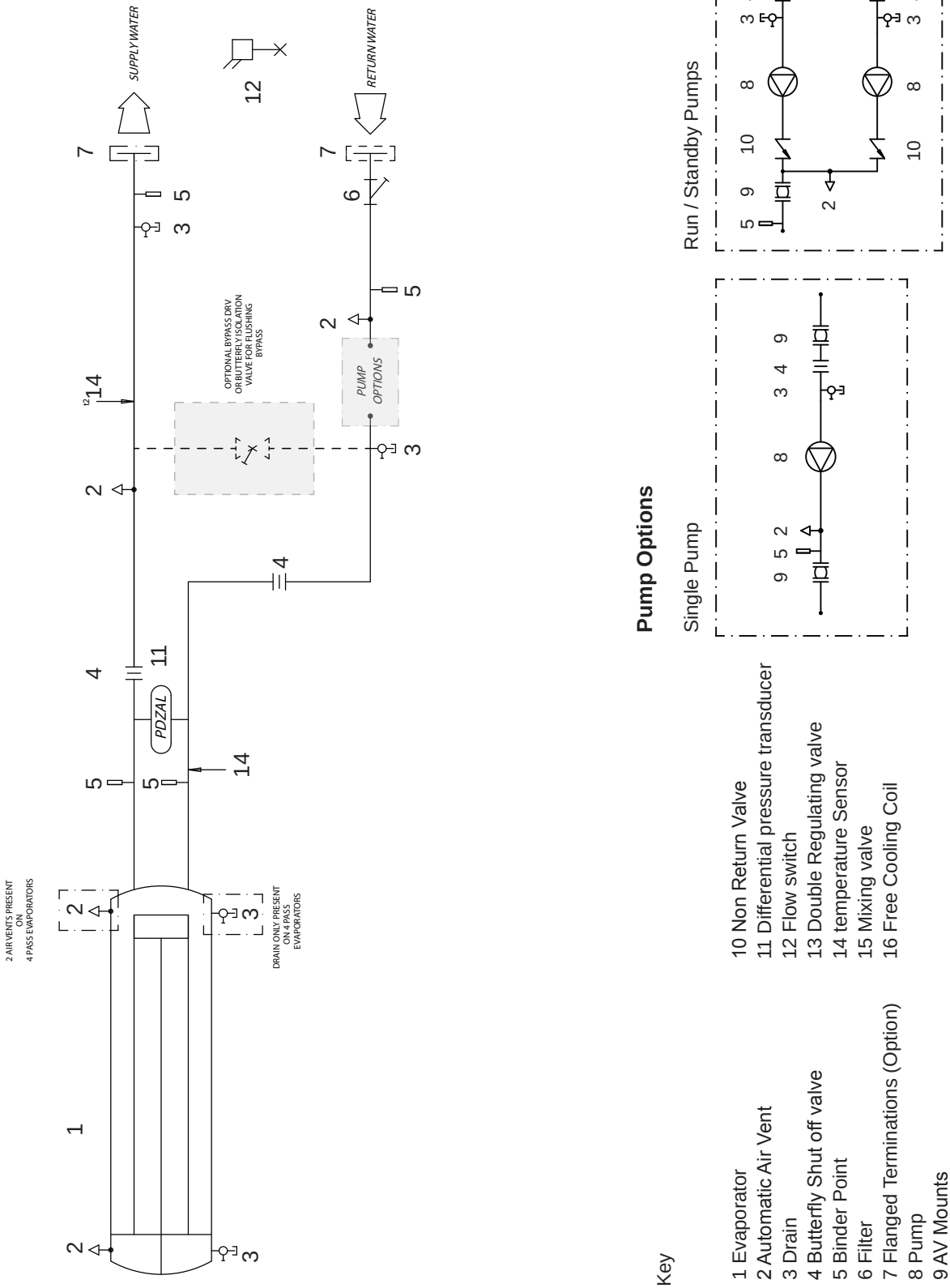
- Caution must be taken to ensure excessive pressure drop in the pipework is avoided.
- All piping and ventilation ducting which passes through walls, ceilings and floors of machinery rooms, shall be sealed where it passes through the walls or floors. The sealing shall have fire resisting properties 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 that the limit set in Annex C of prEN378-1:2013. 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

Design Features & Information

Standard Air Cooled Circuit

Incorporating

- 20 Mesh Water Filter
- Differential Pressure Transducer
- Shut off valves



Key

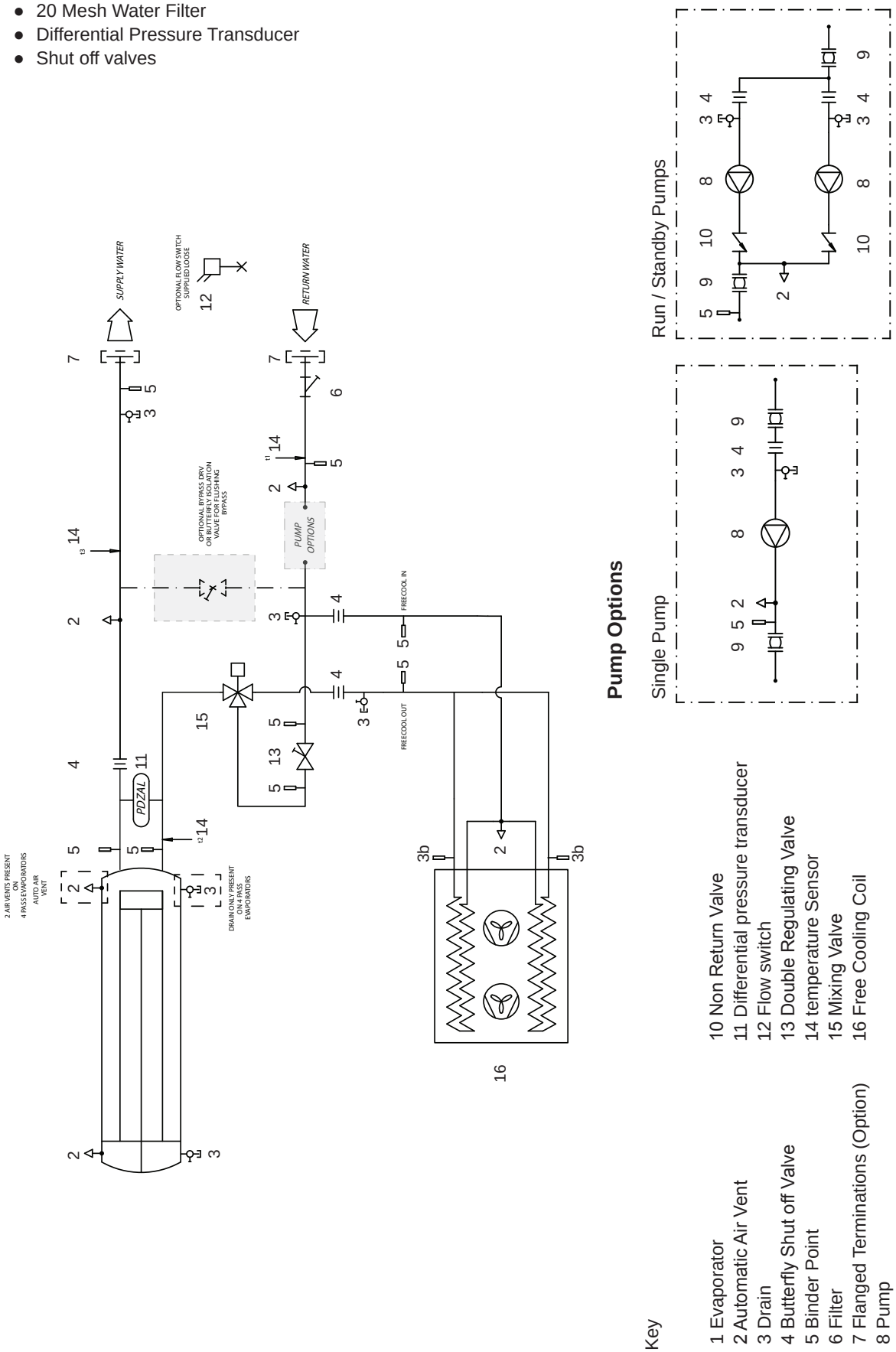
1 Evaporator
2 Automatic Air Vent
3 Drain
4 Butterfly Shut off valve
5 Binder Point
6 Filter
7 Flanged Terminations (Option)
8 Pump
9 AV Mounts
10 Non Return Valve
11 Differential pressure transducer
12 Flow switch
13 Double Regulating valve
14 temperature Sensor
15 Mixing valve
16 Free Cooling Coil

Design Features & Information

Standard Free Cooling Circuit

Incorporating

- 20 Mesh Water Filter
- Differential Pressure Transducer
- Shut off valves



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

Technical Data TCC (R) TCC11R04G-01, TCC11R06G-01, TCC11R08G-01

Mechanical Data

Mechanical Data	Notes	Units	TCC11R04G-01	TCC11R06G-01	TCC11R08G-01
Cooling Duty - EC Fans	(1)	kW	240	265	275
Nom Input -Cooling Only		kW	69.2	70.9	69.5
EER	(2)		3.47	3.74	3.96
ESEER	(3)		4.86	5.28	5.57
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	30-100%	30-100%	30-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 2626	2800 x 2200 x 3758	2800 x 2200 x 4890
Machine Weight	(7)	kg	2745	3300	3785
Operating Weight	(7)	kg	2845	3400	3885
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	21.9	21.9	21.9
Total Min. Water Flow		l/s	7.3	7.3	7.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	9.5	14.21	18.9
Maximum Airflow - EC Fans		m^3/s	25.3	38.0	50.6
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			4	6	8
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	110	115	125
GWP Tonnes Equivalent CO2		tC02	0.77	0.81	0.88
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN100	DN100	DN100
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	102	102	102
Minimum System Water Volume	(8)	l	1123	1230	1272
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	9.5	10.5	10.9
Pressure Drop		kPa	26.1	30.8	32.8

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC11R04G-01, TCC11R06G-01, TCC11R08G-01

Electrical Data

ELECTRICAL DATA		TCC11R04G-01	TCC11R06G-01	TCC11R08G-01
Unit Data				
Full Load Amps (1)	A	166	173	181
Maximum Start Amps	A	2	2	2
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	250	250	250
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		4	6	8
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1	1	1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC12R08G-04, TCC12R10G-04

Mechanical Data

Mechanical Data	Notes	Units	TCC12R08G-04	TCC12R10G-04
Cooling Duty - EC Fans	(1)	kW	470	500
Nom Input -Cooling Only		kW	139.0	142.7
EER	(2)		3.38	3.50
ESEER	(3)		4.97	5.04
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 4890	2800 x 2200 x 6022
Machine Weight	(7)	kg	4730	5275
Operating Weight	(7)	kg	4870	5415
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	40.5	40.5
Total Min. Water Flow		l/s	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	18.9	23.7
Maximum Airflow - EC Fans		m^3/s	50.6	63.3
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			8	10
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	255	265
GWP Tonnes Equivalent CO_2		tC02	1.79	1.86
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	141	141
Minimum System Water Volume	(8)	l	1141	1205
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	18.6	19.8
Pressure Drop		kPa	26.0	28.8

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC12R08G-04, TCC12R10G-04

Electrical Data

ELECTRICAL DATA		TCC12R08G-04	TCC12R10G-04
Unit Data			
Full Load Amps (1)	A	331	339
Maximum Start Amps	A	181	189
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		8	10
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC12R12G-04, TCC12R14G-04

Mechanical Data

Mechanical Data	Notes	Units	TCC12R12G-04	TCC12R14G-04
Cooling Duty - EC Fans	(1)	kW	530	560
Nom Input -Cooling Only		kW	147.8	154.1
EER	(2)		3.59	3.63
ESEER	(3)		5.48	5.54
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	30-100%	30-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	5850	6640
Operating Weight	(7)	kg	5990	6780
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	40.5	40.5
Total Min. Water Flow		l/s	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	75.9	88.6
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	280	290
GWP Tonnes Equivalent CO2		tC02	1.96	2.03
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN100	DN100
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	141	141
Minimum System Water Volume	(8)	l	1268	1332
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	21.0	22.2
Pressure Drop		kPa	31.8	35.0

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC12R12G-04, TCC12R14G-04

Electrical Data

ELECTRICAL DATA		TCC12R12G-04	TCC12R14G-04
Unit Data			
Full Load Amps (1)	A	352	360
Maximum Start Amps	A	202	210
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	400	400
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC22R08G-14, TCC22R10G-14, TCC22R12G-14

Mechanical Data

Mechanical Data	Notes	Units	TCC22R08G-14	TCC22R10G-14	TCC22R12G-14
Cooling Duty - EC Fans	(1)	kW	470	500	530
Nom Input -Cooling Only		kW	137.1	140.0	144.5
EER	(2)		3.43	3.57	3.67
ESEER	(3)		4.41	4.50	5.06
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 4890	2800 x 2200 x 6022	2800 x 2200 x 7154
Machine Weight	(7)	kg	4790	5430	5900
Operating Weight	(7)	kg	4930	5570	6040
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	43.7	43.7	43.7
Total Min. Water Flow		l/s	14.6	14.6	14.6
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	18.9	23.7	28.4
Maximum Airflow - EC Fans		m^3/s	50.6	63.3	75.9
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	12
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	140 + 140	150 + 145	155 + 150
GWP Tonnes Equivalent CO_2		tC02	0.98 + 0.98	1.05 + 1.02	1.09 + 1.05
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	148	148	148
Minimum System Water Volume	(8)	l	1169	1211	1275
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	18.6	19.8	21.0
Pressure Drop		kPa	22.5	25.1	27.8

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC22R08G-14, TCC22R10G-14, TCC22R12G-14

Electrical Data

ELECTRICAL DATA		TCC22R08G-14	TCC22R10G-14	TCC22R12G-14
Unit Data				
Full Load Amps (1)	A	331	339	347
Maximum Start Amps	A	181	189	197
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	355	355	400
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		8	10	12
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	1 / 1	1 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC22R14G-14, TCC23R12G-17, TCC23R14G-17

Mechanical Data

Mechanical Data	Notes	Units	TCC22R14G-14	TCC23R12G-17	TCC23R14G-17
Cooling Duty - EC Fans	(1)	kW	560	630	680
Nom Input -Cooling Only		kW	150.4	183.8	193.4
EER	(2)		3.72	3.43	3.52
ESEER	(3)		5.18	5.20	5.34
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 8286	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	6540	6950	7510
Operating Weight	(7)	kg	6680	7180	7740
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	43.7	66.5	66.5
Total Min. Water Flow		l/s	14.6	22.3	22.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	33.2	28.42	33.2
Maximum Airflow - EC Fans		m^3/s	88.6	75.9	88.6
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			14	12	14
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	165 + 160	300 + 175	310 + 180
GWP Tonnes Equivalent CO_2		tC02	1.16 + 1.12	2.1 + 1.23	2.17 + 1.26
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	148	235	235
Minimum System Water Volume	(8)	l	1339	1129	1200
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	22.2	25.0	27.0
Pressure Drop		kPa	30.6	17.8	20.4

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC22R14G-14, TCC23R12G-17, TCC23R14G-17

Electrical Data

ELECTRICAL DATA		TCC22R14G-14	TCC23R12G-17	TCC23R14G-17
Unit Data				
Full Load Amps (1)	A	355	497	505
Maximum Start Amps	A	205	347	355
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	400	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		14	12	14
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	2 / 1	2 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC23R16G-17, TCC23R18G-17, TCC24R16G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC23R16G-17	TCC23R18G-17	TCC24R16G-18
Cooling Duty - EC Fans	(1)	kW	730	780	820
Nom Input -Cooling Only		kW	204.9	218.2	240.5
EER	(2)		3.56	3.58	3.41
ESEER	(3)		5.40	5.46	5.34
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	10-100%	10-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550	2800 x 2200 x 9418
Machine Weight	(7)	kg	7930	8610	8670
Operating Weight	(7)	kg	8160	8840	8920
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	66.5	66.5	77.9
Total Min. Water Flow		l/s	22.3	22.3	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	37.9	42.63	37.9
Maximum Airflow - EC Fans		m^3/s	101.2	113.9	101.2
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			16	18	16
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			3	3	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	320 + 195	325 + 200	230 + 225
GWP Tonnes Equivalent CO_2		tC02	2.24 + 1.37	2.28 + 1.4	1.61 + 1.58
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN150	DN150	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	235	235	260
Minimum System Water Volume	(8)	l	1271	1342	1074
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	29.0	30.9	32.5
Pressure Drop		kPa	23.2	26.1	21.5

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC23R16G-17, TCC23R18G-17, TCC24R16G-18

Electrical Data

ELECTRICAL DATA		TCC23R16G-17	TCC23R18G-17	TCC24R16G-18
Unit Data				
Full Load Amps (1)	A	512	520	662
Maximum Start Amps	A	362	370	512
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	560	560	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		16	18	16
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		2 / 1	2 / 1	2 / 2
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC24R18G-18, TCC24R20G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC24R18G-18	TCC24R20G-18
Cooling Duty - EC Fans	(1)	kW	860	900
Nom Input -Cooling Only		kW	248.6	256.9
EER	(2)		3.46	3.50
ESEER	(3)		5.41	5.46
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 10550	2800 x 2200 x 11682
Machine Weight	(7)	kg	8990	9930
Operating Weight	(7)	kg	9240	10180
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	42.6	47.4
Maximum Airflow - EC Fans		m^3/s	113.9	126.5
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			18	20
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	240 + 230	245 + 245
GWP Tonnes Equivalent CO_2		tC02	1.68 + 1.61	1.72 + 1.72
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	260	260
Minimum System Water Volume	(8)	l	1114	1153
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	34.1	35.7
Pressure Drop		kPa	23.4	25.3

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC24R18G-18, TCC24R20G-18

Electrical Data

ELECTRICAL DATA		TCC24R18G-18	TCC24R20G-18
Unit Data			
Full Load Amps (1)	A	670	678
Maximum Start Amps	A	520	528
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	750	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		18	20
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC24R22G-18, TCC24R24G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC24R22G-18	TCC24R24G-18
Cooling Duty - EC Fans	(1)	kW	950	1000
Nom Input -Cooling Only		kW	267.1	280.7
EER	(2)		3.56	3.56
ESEER	(3)		5.50	5.58
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 12814	2800 x 2200 x 13946
Machine Weight	(7)	kg	10560	11190
Operating Weight	(7)	kg	10810	11440
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	52.1	56.8
Maximum Airflow - EC Fans		m^3/s	139.2	151.9
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			22	24
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	250 + 255	265 + 260
GWP Tonnes Equivalent CO_2		tC02	1.75 + 1.79	1.86 + 1.82
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	260	260
Minimum System Water Volume	(8)	l	1203	1253
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	37.7	39.7
Pressure Drop		kPa	27.9	30.5

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC24R22G-18, TCC24R24G-18

Electrical Data

ELECTRICAL DATA		TCC24R22G-18	TCC24R24G-18
Unit Data			
Full Load Amps (1)	A	686	686
Maximum Start Amps	A	536	536
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	750	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		22	22
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data TCC (X) TCC11X04G-01, TCC11X06G-01, TCC11X08G-01

Mechanical Data

Mechanical Data	Notes	Units	TCC11X04G-01	TCC11X06G-01	TCC11X08G-01
Cooling Duty - EC Fans	(1)	kW	200	225	250
Nom Input -Cooling Only		kW	56.9	56.6	60.0
EER	(2)		3.51	3.98	4.16
ESEER	(3)		4.53	5.41	5.57
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	30-100%	30-100%	30-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 2626	2800 x 2200 x 3758	2800 x 2200 x 4890
Machine Weight	(7)	kg	2745	3300	3785
Operating Weight	(7)	kg	2845	3400	3885
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	21.9	21.9	21.9
Total Min. Water Flow		l/s	7.3	7.3	7.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	9.5	14.21	18.9
Maximum Airflow - EC Fans		m^3/s	17.7	26.5	35.3
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			4	6	8
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	730	730	730
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	110	115	125
GWP Tonnes Equivalent CO_2		tC02	0.77	0.81	0.88
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN100	DN100	DN100
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	102	102	102
Minimum System Water Volume	(8)	l	953	1059	1166
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	7.9	8.9	9.9
Pressure Drop		kPa	19.3	23.4	27.9

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC11X04G-01, TCC11X06G-01, TCC11X08G-01

Electrical Data

ELECTRICAL DATA		TCC11X04G-01	TCC11X06G-01	TCC11X08G-01
Unit Data				
Full Load Amps (1)	A	166	173	181
Maximum Start Amps	A	2	2	2
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	250	250	250
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		4	6	8
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1	1	1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC12X08G-04, TCC12X10G-04

Mechanical Data

Mechanical Data	Notes	Units	TCC12X08G-04	TCC12X10G-04
Cooling Duty - EC Fans	(1)	kW	430	460
Nom Input -Cooling Only		kW	124.6	124.8
EER	(2)		3.45	3.69
ESEER	(3)		5.44	5.56
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 4890	2800 x 2200 x 6022
Machine Weight	(7)	kg	4730	5275
Operating Weight	(7)	kg	4870	5415
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	40.5	40.5
Total Min. Water Flow		l/s	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	18.9	23.7
Maximum Airflow - EC Fans		m^3/s	35.3	44.2
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			8	10
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	730	730
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	255	265
GWP Tonnes Equivalent CO_2		tC02	1.79	1.86
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	141	141
Minimum System Water Volume	(8)	l	1056	1119
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	17.1	18.2
Pressure Drop		kPa	22.4	25.0

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC12X08G-04, TCC12X10G-04

Electrical Data

ELECTRICAL DATA		TCC12X08G-04	TCC12X10G-04
Unit Data			
Full Load Amps (1)	A	331	339
Maximum Start Amps	A	181	189
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		8	10
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC12X12G-04, TCC12X14G-04

Mechanical Data

Mechanical Data	Notes	Units	TCC12X12G-04	TCC12X14G-04
Cooling Duty - EC Fans	(1)	kW	490	520
Nom Input -Cooling Only		kW	128.3	133.7
EER	(2)		3.82	3.89
ESEER	(3)		5.48	5.80
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	5850	6640
Operating Weight	(7)	kg	5990	6780
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	40.5	40.5
Total Min. Water Flow		l/s	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	53.0	61.9
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	730	730
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	280	290
GWP Tonnes Equivalent CO_2		tC02	1.96	2.03
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	141	141
Minimum System Water Volume	(8)	l	1183	1247
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	19.4	20.6
Pressure Drop		kPa	27.8	30.8

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC12X12G-04, TCC12X14G-04

Electrical Data

ELECTRICAL DATA		TCC12X12G-04	TCC12X14G-04
Unit Data			
Full Load Amps (1)	A	347	355
Maximum Start Amps	A	197	205
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC22X08G-14, TCC22X10G-14, TCC22X12G-14

Mechanical Data

Mechanical Data	Notes	Units	TCC22X08G-14	TCC22X10G-14	TCC22X12G-14
Cooling Duty - EC Fans	(1)	kW	430	460	490
Nom Input -Cooling Only		kW	125.3	125.0	128.1
EER	(2)		3.43	3.68	3.82
ESEER	(3)		4.72	4.98	4.94
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 4890	2800 x 2200 x 6022	2800 x 2200 x 7154
Machine Weight	(7)	kg	4790	5430	5900
Operating Weight	(7)	kg	4930	5570	6040
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	43.7	43.7	43.7
Total Min. Water Flow		l/s	14.6	14.6	14.6
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	18.9	23.68	28.4
Maximum Airflow - EC Fans		m^3/s	35.3	44.2	53.0
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	12
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	730	730	730
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	140 + 140	150 + 145	155 + 150
GWP Tonnes Equivalent CO_2		tC02	0.98 + 0.98	1.05 + 1.02	1.09 + 1.05
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	148	148	148
Minimum System Water Volume	(8)	l	1062	1126	1190
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	17.1	18.2	19.4
Pressure Drop		kPa	19.2	21.7	24.2

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC22X08G-14, TCC22X10G-14, TCC22X12G-14

Electrical Data

ELECTRICAL DATA		TCC22X08G-14	TCC22X10G-14	TCC22X12G-14
Unit Data				
Full Load Amps (1)	A	331	339	347
Maximum Start Amps	A	181	189	197
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	355	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator				
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		8	10	12
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	1 / 1	1 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC22X14G-14, TCC23X12G-17, TCC23X14G-17

Mechanical Data

Mechanical Data	Notes	Units	TCC22X14G-14	TCC23X12G-17	TCC23X14G-17
Cooling Duty - EC Fans	(1)	kW	520	590	640
Nom Input -Cooling Only		kW	133.2	173.5	178.3
EER	(2)		3.90	3.40	3.59
ESEER	(3)		5.25	5.29	5.43
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 8286	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	6540	6950	7510
Operating Weight	(7)	kg	6680	7180	7740
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	43.7	66.5	66.5
Total Min. Water Flow		l/s	14.6	22.3	22.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	33.2	28.42	33.2
Maximum Airflow - EC Fans		m^3/s	61.9	53.0	61.9
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			14	12	14
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	730	730	730
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	165 + 160	300 + 175	310 + 180
GWP Tonnes Equivalent CO_2		tC02	1.16 + 1.12	2.1 + 1.23	2.17 + 1.26
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	148	235	235
Minimum System Water Volume	(8)	l	1254	1072	1143
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	20.6	23.4	25.4
Pressure Drop		kPa	26.9	15.8	18.3

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC22X14G-14, TCC23X12G-17, TCC23X14G-17

Electrical Data

ELECTRICAL DATA		TCC22X14G-14	TCC23X12G-17	TCC23X14G-17
Unit Data				
Full Load Amps (1)	A	355	497	505
Maximum Start Amps	A	205	347	355
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	355	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator				
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		14	12	14
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	2 / 1	2 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC23X16G-17, TCC23X18G-17, TCC24X16G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC23X16G-17	TCC23X18G-17	TCC24X16G-18
Cooling Duty - EC Fans	(1)	kW	690	740	790
Nom Input -Cooling Only		kW	187.1	197.7	235.1
EER	(2)		3.69	3.74	3.36
ESEER	(3)		5.52	5.61	5.46
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A
Capacity Steps	(6)	%	10-100%	10-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550	2800 x 2200 x 9418
Machine Weight	(7)	kg	7930	8610	8670
Operating Weight	(7)	kg	8160	8840	8920
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	66.5	66.5	77.9
Total Min. Water Flow		l/s	22.3	22.3	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	37.9	42.63	37.9
Maximum Airflow - EC Fans		m^3/s	70.7	79.5	70.7
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			16	18	16
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	730	730	730
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			3	3	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	320 + 195	325 + 200	230 + 225
GWP Tonnes Equivalent CO_2		tC02	2.24 + 1.37	2.28 + 1.4	1.61 + 1.58
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN150	DN150	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	235	235	260
Minimum System Water Volume	(8)	l	1214	1285	1044
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	27.4	29.4	31.3
Pressure Drop		kPa	21.0	23.8	20.1

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC23X16G-17, TCC23R18G-17, TCC24X16G-18

Electrical Data

ELECTRICAL DATA		TCC23X16G-17	TCC23X18G-17	TCC24X16G-18
Unit Data				
Full Load Amps (1)	A	512	520	662
Maximum Start Amps	A	362	370	512
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	560	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator				
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		16	18	16
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		2 / 1	2 / 1	2 / 2
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC24X18G-18, TCC24X20G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC24X18G-18	TCC24X20G-18
Cooling Duty - EC Fans	(1)	kW	820	860
Nom Input -Cooling Only		kW	229.8	237.0
EER	(2)		3.57	3.63
ESEER	(3)		5.57	5.62
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 10550	2800 x 2200 x 11682
Machine Weight	(7)	kg	8990	9930
Operating Weight	(7)	kg	9240	10180
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	42.6	47.4
Maximum Airflow - EC Fans		m^3/s	79.5	88.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			18	20
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	730	730
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	240 + 230	245 + 245
GWP Tonnes Equivalent CO_2		tC02	1.68 + 1.61	1.72 + 1.72
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	260	260
Minimum System Water Volume	(8)	l	1074	1114
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	32.5	34.1
Pressure Drop		kPa	21.5	23.4

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC24X18G-18, TCF24X20G-18

Electrical Data

ELECTRICAL DATA		TCC24X18G-18	TCC24X20G-18
Unit Data			
Full Load Amps (1)	A	670	678
Maximum Start Amps	A	520	528
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	670	670
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		18	20
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCC24X22G-18, TCC24X24G-18

Mechanical Data

Mechanical Data	Notes	Units	TCC24X22G-18	TCC24X24G-18
Cooling Duty - EC Fans	(1)	kW	910	960
Nom Input -Cooling Only		kW	246.2	257.6
EER	(2)		3.70	3.73
ESEER	(3)		5.65	5.72
Nominal Output - Free Cooling	(4)	kW	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 12814	2800 x 2200 x 13946
Machine Weight	(7)	kg	10560	11190
Operating Weight	(7)	kg	10810	11440
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	52.1	56.8
Maximum Airflow - EC Fans		m^3/s	97.2	106.0
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			22	24
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	730	730
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	250 + 255	265 + 260
GWP Tonnes Equivalent CO_2		tC02	1.75 + 1.79	1.86 + 1.82
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	260	260
Minimum System Water Volume	(8)	l	1163	1213
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	36.1	38.1
Pressure Drop		kPa	25.8	28.4

(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 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCC24X22G-18, TCC24X24G-18

Electrical Data

ELECTRICAL DATA		TCC24X22G-18	TCC24X24G-18
Unit Data			
Full Load Amps (1)	A	686	694
Maximum Start Amps	A	536	544
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	670	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		22	24
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Sound Data - TCC

TCC - EC Fans

		Single-Octave Sound								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11R04G-01	Power	89	87	85	82	84	78	76	80	88
	Sound Pressure @10m	57	54	53	50	52	46	44	48	56
TCC11R06G-01	Power	85	83	83	80	83	76	76	80	87
	Sound Pressure @10m	52	51	51	48	51	44	44	47	54
TCC11R08G-01	Power	85	84	81	80	82	75	76	80	86
	Sound Pressure @10m	53	52	48	47	50	43	43	47	53
TCC12R08G-04	Power	92	89	88	85	87	81	79	83	91
	Sound Pressure @10m	59	56	55	52	54	48	47	50	58
TCC12R10G-04	Power	89	88	87	84	86	80	79	83	90
	Sound Pressure @10m	56	55	54	51	54	47	46	50	57
TCC12R12G-04	Power	88	86	86	83	86	79	79	83	90
	Sound Pressure @10m	54	53	53	50	53	46	46	50	57
TCC12R14G-04	Power	86	86	85	83	86	79	79	83	89
	Sound Pressure @10m	53	52	52	49	52	45	46	49	56
TCC22R08G-14	Power	92	89	88	85	87	81	79	83	91
	Sound Pressure @10m	59	56	55	52	54	48	47	50	58
TCC22R10G-14	Power	89	88	87	84	86	80	79	83	90
	Sound Pressure @10m	56	55	54	51	54	47	46	50	57
TCC22R12G-14	Power	88	86	86	83	86	79	79	83	90
	Sound Pressure @10m	54	53	53	50	53	46	46	50	57
TCC22R14G-14	Power	86	86	85	83	86	79	79	83	89
	Sound Pressure @10m	53	52	52	49	52	45	46	49	56
TCC23R12G-17	Power	91	89	88	85	88	81	81	84	92
	Sound Pressure @10m	57	56	55	52	55	48	48	51	58
TCC23R14G-17	Power	90	88	88	85	88	81	81	84	91
	Sound Pressure @10m	56	55	54	52	54	48	48	51	58
TCC23R16G-17	Power	89	88	88	85	88	81	81	84	91
	Sound Pressure @10m	56	55	54	51	54	47	47	51	58
TCC23R18G-17	Power	89	88	87	85	88	81	81	84	91
	Sound Pressure @10m	55	54	54	51	54	47	47	51	58
TCC24R16G-18	Power	91	90	89	86	89	82	82	86	93
	Sound Pressure @10m	58	56	55	53	56	49	49	52	59
TCC24R18G-18	Power	91	89	89	86	89	82	82	86	93
	Sound Pressure @10m	57	55	55	52	55	48	48	52	59
TCC24R20G-18	Power	90	89	88	86	89	82	82	86	92
	Sound Pressure @10m	56	55	54	52	55	48	48	52	59
TCC24R22G-18	Power	89	89	88	86	89	82	82	86	92
	Sound Pressure @10m	55	54	54	52	55	48	48	52	58
TCC24R24G-18	Power	89	89	88	86	89	82	82	86	92
	Sound Pressure @10m	55	54	54	52	54	48	48	51	58

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

Sound Data - TCC

TCC - EC Fans

		Single-Octave Sound								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11X04G-01	Power	83	82	78	78	82	75	76	80	86
	Sound Pressure @10m	50	49	46	46	50	43	44	47	53
TCC11X06G-01	Power	84	83	80	79	82	75	76	80	86
	Sound Pressure @10m	52	51	48	47	50	43	44	47	53
TCC11X08G-01	Power	84	83	80	79	82	75	76	80	86
	Sound Pressure @10m	51	50	47	46	49	42	43	47	53
TCC12X08G-04	Power	86	85	81	81	85	78	79	83	89
	Sound Pressure @10m	53	52	49	49	52	45	46	50	56
TCC12X10G-04	Power	86	86	82	82	85	78	79	83	89
	Sound Pressure @10m	54	53	49	49	52	45	46	50	56
TCC12X12G-04	Power	87	86	83	82	85	78	79	83	89
	Sound Pressure @10m	54	53	50	49	52	45	46	50	56
TCC12X14G-04	Power	88	87	84	82	85	78	79	83	89
	Sound Pressure @10m	55	54	50	49	52	45	46	49	56
TCC22X08G-14	Power	86	85	81	81	85	78	79	83	89
	Sound Pressure @10m	53	52	49	49	52	45	46	50	56
TCC22X10G-14	Power	86	86	82	82	85	78	79	83	89
	Sound Pressure @10m	54	53	49	49	52	45	46	50	56
TCC22X12G-14	Power	87	86	83	82	85	78	79	83	89
	Sound Pressure @10m	54	53	50	49	52	45	46	50	56
TCC22X14G-14	Power	88	87	84	82	85	78	79	83	89
	Sound Pressure @10m	55	54	50	49	52	45	46	49	56
TCC23X12G-17	Power	87	86	83	83	87	80	81	84	90
	Sound Pressure @10m	54	53	50	50	53	47	48	51	57
TCC23X14G-17	Power	88	87	84	83	87	80	81	84	90
	Sound Pressure @10m	55	54	50	50	53	46	47	51	57
TCC23X16G-17	Power	89	88	84	84	87	80	81	84	90
	Sound Pressure @10m	55	54	51	50	53	46	47	51	57
TCC23X18G-17	Power	89	88	85	84	87	80	81	84	91
	Sound Pressure @10m	55	54	51	50	53	46	47	51	57
TCC24X16G-18	Power	89	88	84	84	88	81	82	86	92
	Sound Pressure @10m	55	54	51	51	54	47	48	52	58
TCC24X18G-18	Power	89	88	85	85	88	81	82	86	92
	Sound Pressure @10m	55	54	51	51	54	47	48	52	58
TCC24X20G-18	Power	89	89	85	85	88	81	82	86	92
	Sound Pressure @10m	56	55	51	51	54	47	48	52	58
TCC24X22G-18	Power	90	89	86	85	88	81	82	86	92
	Sound Pressure @10m	56	55	52	51	54	47	48	52	58
TCC24X24G-18	Power	90	89	86	85	88	81	82	86	92
	Sound Pressure @10m	56	55	52	51	54	47	48	51	58

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

Technical Data - TCF (R) TCF11R06G-07, TCF11R08G-07

Mechanical Data

Mechanical Data	Notes	Units	TCF11R06G-07	TCF11R08G-07
Cooling Duty - EC Fans	(1)	kW	290	300
Nom Input -Cooling Only		kW	81.5	79.5
EER	(2)		3.56	3.77
ESEER	(3)		4.60	4.86
Nominal Output - Free Cooling	(4)	kW	263.9	325.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.5	2.9
insulation	(6)	%	30-100%	30-100%
Dimensions (H x W x L)		mm	2800 x 2200 x 3758	2800 x 2200 x 4890
Machine Weight	(7)	kg	4050	4835
Operating Weight	(7)	kg	4470	5345
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	25.0	25.0
Total Min. Water Flow		l/s	8.3	8.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	14.2	18.9
Maximum Airflow - EC Fans		m^3/s	34.4	45.9
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			6	8
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	105	120
GWP Tonnes Equivalent CO_2		tC02	0.74	0.84
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN100	DN100
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	424	514
Minimum System Water Volume	(8)	l	1691	1920
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	12.2	12.6
Pressure Drop		kPa	94.6	91.7

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF11R06G-07, TCF11R08G-07

Electrical Data

ELECTRICAL DATA		TCF11R06G-07	TCF11R08G-07
Unit Data			
Full Load Amps (1)	A	173	181
Maximum Start Amps	A	2	2
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	250	250
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		6	8
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		1	1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF12R08G-09, TCF12R10G-05

Mechanical Data

Mechanical Data	Notes	Units	TCF12R08G-09	TCF12R10G-05
Cooling Duty - EC Fans	(1)	kW	470	500
Nom Input -Cooling Only		kW	132.7	130.3
EER	(2)		3.54	3.84
ESEER	(3)		4.62	4.80
Nominal Output - Free Cooling	(4)	kW	380.6	458.1
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.4	0.6
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)		mm	2800 x 2200 x 4890	2800 x 2200 x 6022
Machine Weight	(7)	kg	5600	6620
Operating Weight	(7)	kg	6000	7315
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	50.0	50.0
Total Min. Water Flow		l/s	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	18.9	23.7
Maximum Airflow - EC Fans		m^3/s	45.9	57.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			8	10
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	170	240
GWP Tonnes Equivalent CO_2		tC02	1.19	1.68
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	401	700
Minimum System Water Volume	(8)	l	1444	1872
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	19.8	21.0
Pressure Drop		kPa	85.4	92.3

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF12R08G-09, TCF12R10G-05

Electrical Data

ELECTRICAL DATA		TCF12R08G-09	TCF12R10G-05
Unit Data			
Full Load Amps (1)	A	331	339
Maximum Start Amps	A	181	189
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		8	10
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF12R12G-05, TCF12R14G-05

Mechanical Data

Mechanical Data	Notes	Units	TCF12R12G-05	TCF12R14G-05
Cooling Duty - EC Fans	(1)	kW	530	560
Nom Input -Cooling Only		kW	133.5	138.1
EER	(2)		3.97	4.05
ESEER	(3)		4.90	4.95
Nominal Output - Free Cooling	(4)	kW	523.8	586.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.7	2.4
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	7520	8450
Operating Weight	(7)	kg	8335	9390
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	50.0	50.0
Total Min. Water Flow		l/s	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	68.9	80.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	255	265
GWP Tonnes Equivalent CO_2		tC02	1.79	1.86
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	819	943
Minimum System Water Volume	(8)	l	2062	2256
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	22.3	23.6
Pressure Drop		kPa	95.6	101.5

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF12R12G-05, TCF12R14G-05

Electrical Data

ELECTRICAL DATA		TCF12R12G-05	TCF12R14G-05
Unit Data			
Full Load Amps (1)	A	347	355
Maximum Start Amps	A	197	205
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	400	400
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF22R10G-22, TCF22R12G-22, TCF22R14G-22

Mechanical Data

Mechanical Data	Notes	Units	TCF22R10G-22	TCF22R12G-22	TCF22R14G-22
Cooling Duty - EC Fans	(1)	kW	500	530	560
Nom Input -Cooling Only		kW	129.3	132.3	136.6
EER	(2)		3.87	4.01	4.10
ESEER	(3)		4.25	4.66	4.77
Nominal Output - Free Cooling	(4)	kW	458.1	523.8	586.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.6	1.7	2.4
Capacity Steps	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 6022	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	6730	7540	8440
Operating Weight	(7)	kg	7370	8270	9320
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	49.9	49.9	49.9
Total Min. Water Flow		l/s	16.7	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	23.7	28.42	33.2
Maximum Airflow - EC Fans		m^3/s	57.4	68.9	80.4
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			10	12	14
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)		
Charge (Total) CCT1 + CCT2		kg	140 + 135	145 + 140	155 + 150
GWP Tonnes Equivalent CO_2		tC02	0.98 + 0.95	1.02 + 0.98	1.09 + 1.05
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	735	830	975
Minimum System Water Volume	(8)	l	1907	2073	2288
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	21.0	22.3	23.6
Pressure Drop		kPa	90.6	94.3	100.3

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF22R10G-22, TCF22R12G-22, TCF22R14G-22

Electrical Data

ELECTRICAL DATA		TCF22R10G-22	TCF22R12G-22	TCF22R14G-22
Unit Data				
Full Load Amps (1)	A	339	347	355
Maximum Start Amps	A	189	197	205
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	355	400	400
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		10	12	14
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.6	2.6	2.6
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	1 / 1	1 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF23R12G-24, TCF23R14G-24

Mechanical Data

Mechanical Data	Notes	Units	TCF23R12G-24	TCF23R14G-24
Cooling Duty - EC Fans	(1)	kW	630	680
Nom Input -Cooling Only		kW	173.2	180.6
EER	(2)		3.64	3.77
ESEER	(3)		4.68	4.81
Nominal Output - Free Cooling	(4)	kW	559.6	634.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.2	0.9
Capacity Steps	(6)	%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	8850	9760
Operating Weight	(7)	kg	9770	10780
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	70.2	70.2
Total Min. Water Flow		l/s	23.5	23.5
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	68.9	80.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	290 + 170	300 + 180
GWP Tonnes Equivalent CO_2		tC02	2.03 + 1.19	2.1 + 1.26
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	1026	1138
Minimum System Water Volume	(8)	l	2011	2201
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	26.5	28.6
Pressure Drop		kPa	77.0	81.6

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF23R12G-24, TCF23R14G-24

Electrical Data

ELECTRICAL DATA		TCF23R12G-24	TCF23R14G-24
Unit Data			
Full Load Amps (1)	A	497	505
Maximum Start Amps	A	347	355
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 1	2 / 1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF23R16G-25, TCF23R18G-25

Mechanical Data

Mechanical Data	Notes	Units	TCF23R16G-25	TCF23R18G-25
Cooling Duty - EC Fans	(1)	kW	730	780
Nom Input -Cooling Only		kW	189.1	198.7
EER	(2)		3.86	3.93
ESEER	(3)		4.87	4.92
Nominal Output - Free Cooling	(4)	kW	707.6	779.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.4	1.8
Capacity Steps	(6)	%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550
Machine Weight	(7)	kg	10490	11300
Operating Weight	(7)	kg	11660	12530
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	37.9	42.6
Maximum Airflow - EC Fans		m^3/s	91.8	103.3
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			16	18
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	300 + 180	300 + 190
GWP Tonnes Equivalent CO_2		tC02	2.1 + 1.26	2.1 + 1.33
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	1282	1343
Minimum System Water Volume	(8)	l	2423	2562
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	30.7	32.8
Pressure Drop		kPa	83.5	89.5

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF23R16G-25, TCF23R18G-25

Electrical Data

ELECTRICAL DATA		TCF23R16G-25	TCF23R18G-25
Unit Data			
Full Load Amps (1)	A	512	520
Maximum Start Amps	A	362	370
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		16	18
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 1	2 / 1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF24R16G-26, TCF24R18G-26, TCF24R20G-26

Mechanical Data

Mechanical Data	Notes	Units	TCF24R16G-26	TCF24R18G-26	TCF24R20G-26
Cooling Duty - EC Fans	(1)	kW	820	860	900
Nom Input -Cooling Only		kW	226.3	231.5	237.2
EER	(2)		3.62	3.71	3.79
ESEER	(3)		4.91	4.97	5.03
Nominal Output - Free Cooling	(4)	kW	739.6	810.6	879.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.4	1.0	1.5
Capacity Steps	(6)	%	7.5-100%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550	2800 x 2200 x 11682
Machine Weight	(7)	kg	11970	12650	13850
Operating Weight	(7)	kg	13280	14100	15460
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	99.7	99.7	99.7
Total Min. Water Flow		l/s	33.2	33.2	33.2
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	37.9	42.63	47.4
Maximum Airflow - EC Fans		m^3/s	91.8	103.3	114.8
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			16	18	20
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	1025	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			4	4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	315 + 315	325 + 315	335 + 330
GWP Tonnes Equivalent CO_2		tC02	2.21 + 2.21	2.28 + 2.21	2.35 + 2.31
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN200	DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	1785	1954	2160
Minimum System Water Volume	(8)	l	2682	2895	3145
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	34.5	36.2	37.8
Pressure Drop		kPa	67.0	67.9	69.6

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF24R16G-26, TCF24R18G-26, TCF24R20G-26

Electrical Data

ELECTRICAL DATA		TCF24R16G-26	TCF24R18G-26	TCF24R20G-26
Unit Data				
Full Load Amps (1)	A	662	670	678
Maximum Start Amps	A	512	520	528
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	750	750	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		16	18	20
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.6	2.6	2.6
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		2 / 2	2 / 2	2 / 2
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF24R22G-27, TCF24R24G-27

Mechanical Data

Mechanical Data	Notes	Units	TCF24R22G-27	TCF24R24G-27
Cooling Duty - EC Fans	(1)	kW	950	1000
Nom Input -Cooling Only		kW	245.1	254.6
EER	(2)		3.88	3.93
ESEER	(3)		5.09	5.25
Nominal Output - Free Cooling	(4)	kW	951.6	1022.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.9	2.1
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 12814	2800 x 2200 x 13946
Machine Weight	(7)	kg	14640	15620
Operating Weight	(7)	kg	16360	17540
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	104.2	104.2
Total Min. Water Flow		l/s	34.6	34.6
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	52.1	56.8
Maximum Airflow - EC Fans		m^3/s	126.3	137.8
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			22	24
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	330 + 335	345 + 340
GWP Tonnes Equivalent CO_2		tC02	2.31 + 2.35	2.42 + 2.38
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	2298	2544
Minimum System Water Volume	(8)	l	3338	3638
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	40.0	42.1
Pressure Drop		kPa	71.4	75.6

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF24R22G-27, TCF24R24G-27

Electrical Data

ELECTRICAL DATA		TCF24R22G-27	TCF24R24G-27
Unit Data			
Full Load Amps (1)	A	686	694
Maximum Start Amps	A	536	544
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	750	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		22	24
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data TCF (X) TCF11X06G-07, TCF11X08G-07

Mechanical Data

Mechanical Data	Notes	Units	TCF11X06G-07	TCF11X08G-07
Cooling Duty - EC Fans	(1)	kW	250	260
Nom Input -Cooling Only		kW	77.2	75.0
EER	(2)		3.24	3.47
ESEER	(3)		4.14	4.30
Nominal Output - Free Cooling	(4)	kW	216.8	266.5
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.1	2.3
Capacity Steps	(6)	%	30-100%	30-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 3758	2800 x 2200 x 4890
Machine Weight	(7)	kg	4050	4835
Operating Weight	(7)	kg	4470	5345
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	25.0	25.0
Total Min. Water Flow		l/s	8.3	8.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	14.2	18.9
Maximum Airflow - EC Fans		m^3/s	23.3	31.1
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			6	8
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	715	715
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	105	120
GWP Tonnes Equivalent CO_2		tC02	0.74	0.84
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN100	DN100
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	424	514
Minimum System Water Volume	(8)	l	1597	1733
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	10.5	10.9
Pressure Drop		kPa	72.7	70.9

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF11X06G-07, TCF11X08G-07

Electrical Data

ELECTRICAL DATA		TCF11X06G-07	TCF11X08G-07
Unit Data			
Full Load Amps (1)	A	173	181
Maximum Start Amps	A	2	2
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	250	250
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		6	8
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		1	1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF12X08G-09, TCF12X10G-05

Mechanical Data

Mechanical Data	Notes	Units	TCF12X08G-09	TCF12X10G-05
Cooling Duty - EC Fans	(1)	kW	450	460
Nom Input -Cooling Only		kW	133.4	129.1
EER	(2)		3.22	3.56
ESEER	(3)		4.29	4.50
Nominal Output - Free Cooling	(4)	kW	316.0	372.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-4.4	-1.3
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 4890	2800 x 2200 x 6022
Machine Weight	(7)	kg	5600	6620
Operating Weight	(7)	kg	6000	7315
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	50.0	50.0
Total Min. Water Flow		l/s	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	18.9	23.7
Maximum Airflow - EC Fans		m^3/s	31.1	38.9
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			8	10
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	715	715
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	170	240
GWP Tonnes Equivalent CO_2		tC02	1.19	1.68
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	401	700
Minimum System Water Volume	(8)	l	1480	1778
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	18.1	19.3
Pressure Drop		kPa	73.2	79.9

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF12X08G-09, TCF12X10G-05

Electrical Data

ELECTRICAL DATA		TCF12X08G-09	TCF12X10G-05
Unit Data			
Full Load Amps (1)	A	331	339
Maximum Start Amps	A	181	189
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		8	10
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF12X12G-05, TCF12X14G-05

Mechanical Data

Mechanical Data	Notes	Units	TCF12X12G-05	TCF12X14G-05
Cooling Duty - EC Fans	(1)	kW	490	520
Nom Input -Cooling Only		kW	132.0	136.5
EER	(2)		3.71	3.81
ESEER	(3)		4.61	4.64
Nominal Output - Free Cooling	(4)	kW	430.9	487.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.1	1.1
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	7520	8450
Operating Weight	(7)	kg	8335	9390
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	50.0	50.0
Total Min. Water Flow		l/s	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	46.6	54.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	715	715
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Single Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	255	265
GWP Tonnes Equivalent CO_2		tC02	1.79	1.86
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	819	943
Minimum System Water Volume	(8)	l	1968	2162
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	20.6	21.9
Pressure Drop		kPa	83.4	89.0

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF12X12G-05, TCF12X14G-05

Electrical Data

ELECTRICAL DATA		TCF12X12G-05	TCF12X14G-05
Unit Data			
Full Load Amps (1)	A	347	355
Maximum Start Amps	A	197	205
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply		230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.6	2.6
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2	2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF22X10G-22, TCF22X12G-22, TCF22X14G-22

Mechanical Data

Mechanical Data	Notes	Units	TCF22X10G-22	TCF22X12G-22	TCF22X14G-22
Cooling Duty - EC Fans	(1)	kW	460	490	520
Nom Input -Cooling Only		kW	124.0	125.9	129.6
EER	(2)		3.71	3.89	4.01
ESEER	(3)		4.08	4.20	4.27
Nominal Output - Free Cooling	(4)	kW	372.3	430.9	487.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-1.3	0.1	1.1
Capacity Steps	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 6022	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	6730	7540	8440
Operating Weight	(7)	kg	7370	8270	9320
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	49.9	49.9	49.9
Total Min. Water Flow		l/s	16.7	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	23.7	28.42	33.2
Maximum Airflow - EC Fans		m^3/s	38.9	46.6	54.4
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			10	12	14
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	715	715	715
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	140 + 135	145 + 140	155 + 150
GWP Tonnes Equivalent CO_2		tC02	0.98 + 0.95	1.02 + 0.98	1.09 + 1.05
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN125	DN125	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	735	830	975
Minimum System Water Volume	(8)	l	1814	1979	2194
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	19.3	20.6	21.9
Pressure Drop		kPa	78.3	82.1	87.9

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF22X10G-22, TCF22X12G-22, TCF22X14G-22

Electrical Data

Electrical Data	Units	TCF22X10G-22	TCF22X12G-22	TCF22X14G-22
Unit Data				
Full Load Amps (1)	A	339	347	355
Maximum Start Amps	A	189	197	205
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	355	355	355
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator				
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)	340 (2x 170)
External Trace Heating				
Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		10	12	14
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		1 / 1	1 / 1	1 / 1
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF23X12G-24, TCF23X14G-24

Mechanical Data

Mechanical Data	Notes	Units	TCF23X12G-24	TCF23X14G-24
Cooling Duty - EC Fans	(1)	kW	520	640
Nom Input -Cooling Only		kW	147.5	182.7
EER	(2)		3.52	3.50
ESEER	(3)		4.39	4.64
Nominal Output - Free Cooling	(4)	kW	436.3	511.6
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.4	-0.6
Capacity Steps	(6)	%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 7154	2800 x 2200 x 8286
Machine Weight	(7)	kg	8850	9760
Operating Weight	(7)	kg	9770	10780
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	70.2	70.2
Total Min. Water Flow		l/s	23.5	23.5
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	28.4	33.2
Maximum Airflow - EC Fans		m^3/s	46.6	54.4
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			12	14
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	715	715
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	290 + 170	300 + 180
GWP Tonnes Equivalent CO_2		tC02	2.03 + 1.19	2.1 + 1.26
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	1026	1138
Minimum System Water Volume	(8)	l	1823	2083
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	21.9	26.9
Pressure Drop		kPa	55.4	73.5

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF23X12G-24, TCF23X14G-24

Electrical Data

Electrical Data	Units	TCF23X12G-24	TCF23X14G-24
Unit Data			
Full Load Amps (1)	A	497	505
Maximum Start Amps	A	347	355
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		12	14
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 1	2 / 1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF23X16G-25, TCF23X18G-25

Mechanical Data

Mechanical Data	Notes	Units	TCF23X16G-25	TCF23X18G-25
Cooling Duty - EC Fans	(1)	kW	690	740
Nom Input -Cooling Only		kW	190.6	201.1
EER	(2)		3.62	3.68
ESEER	(3)		4.69	4.74
Nominal Output - Free Cooling	(4)	kW	584.3	647.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.5	0.0
Capacity Steps	(6)	%	10-100%	10-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550
Machine Weight	(7)	kg	10490	11300
Operating Weight	(7)	kg	11660	12530
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	77.9	77.9
Total Min. Water Flow		l/s	25.8	25.8
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	37.9	42.6
Maximum Airflow - EC Fans		m^3/s	62.2	70.0
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			16	18
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	715	715
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			3	3
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	300 + 180	300 + 190
GWP Tonnes Equivalent CO_2		tC02	2.1 + 1.26	2.1 + 1.33
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	1282	1343
Minimum System Water Volume	(8)	l	2361	2499
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	29.0	31.1
Pressure Drop		kPa	75.6	81.5

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF23X16G-25, TCF23X18G-25

Electrical Data

Electrical Data	Units	TCF23X16G-25	TCF23X18G-25
Unit Data			
Full Load Amps (1)	A	512	520
Maximum Start Amps	A	362	370
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	560	560
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	340 (2x 170)	340 (2x 170)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		16	18
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 1	2 / 1
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF24X16G-26, TCF24X18G-26, TCF24X20G-26

Mechanical Data

Mechanical Data	Notes	Units	TCF24X16G-26	TCF24X18G-26	TCF24X20G-26
Cooling Duty - EC Fans	(1)	kW	780	820	860
Nom Input -Cooling Only		kW	238.0	237.3	244.3
EER	(2)		3.28	3.45	3.52
ESEER	(3)		4.71	4.78	4.82
Nominal Output - Free Cooling	(4)	kW	603.4	668.2	729.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-1.9	-1.2	-0.5
Capacity Steps	(6)	%	7.5-100%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x 9418	2800 x 2200 x 10550	2800 x 2200 x 11682
Machine Weight	(7)	kg	11970	12650	13850
Operating Weight	(7)	kg	13280	14100	15460
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)		
Evaporator - Type			Flooded - Shell and Tube Evaporator		
Insulation			Class O, UV stable Insulation		
Total Max. Water Flow		l/s	99.7	99.7	99.7
Total Min. Water Flow		l/s	33.2	33.2	33.2
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m^2	37.9	42.63	47.4
Maximum Airflow - EC Fans		m^3/s	62.2	70.0	77.7
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			16	18	20
Diameter		mm	800	800	800
Maximum Speed - EC Fans		rpm	715	715	715
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			4	4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Dual Circuit		
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	315 + 315	325 + 315	335 + 330
GWP Tonnes Equivalent CO_2		tC02	2.21 + 2.21	2.28 + 2.21	2.35 + 2.31
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN200	DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	1785	1954	2160
Minimum System Water Volume	(8)	l	2627	2851	3101
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	32.8	34.5	36.2
Pressure Drop		kPa	61.5	62.5	64.3

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF24X16G-26, TCF24X18G-26, TCF24X20G-26

Electrical Data

Electrical Data	Units	TCF24X16G-26	TCF24X18G-26	TCF24X20G-26
Unit Data				
Full Load Amps (1)	A	662	670	678
Maximum Start Amps	A	512	520	528
Mains Supply	VAC	400V (±10%) 3PH 50Hz		
Recommended Mains Fuse Size	A	670	670	670
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)		
Independent Permanent Supply Recommended Fuse Size	A	25	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)		
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG		
Control Circuit	VAC	24 VAC & 230VAC (±10%)		
Evaporator Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating Available (fitted by others)	W	500	500	500
Condenser Fan - Per Fan (EC)				
Quantity		16	18	20
Full Load Amps	A	3.9	3.9	3.9
Locked Rotor Amps	A	N/A	N/A	N/A
Motor Rating	kW	2.56	2.56	2.56
Compressor - Per Compressor				
Nominal Run Amps	A	150	150	150
Quantity		2 / 2	2 / 2	2 / 2
Motor Rating	kW	92	92	92
Start Amps	A	2	2	2
Type Of Start		Electronic Soft Start		

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Technical Data

TCF24X22G-27, TCF24X24G-27

Mechanical Data

Mechanical Data	Notes	Units	TCF24X22G-27	TCF24X24G-27
Cooling Duty - EC Fans	(1)	kW	910	960
Nom Input -Cooling Only		kW	252.9	264.2
EER	(2)		3.60	3.63
ESEER	(3)		4.83	5.10
Nominal Output - Free Cooling	(4)	kW	793.2	856.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.1	0.3
Capacity Steps	(6)	%	7.5-100%	7.5-100%
Dimensions (H x W x L)	(9)	mm	2800 x 2200 x	2800 x 2200 x
Machine Weight	(7)	kg	14640	15620
Operating Weight	(7)	kg	16360	17540
Construction Material			Base: Plain Galvanised Steel, Panels: Galvanised Sheet Steel, Epoxy Baked Powder Paint, Light Grey (RAL 7035)	
Evaporator - Type			Flooded - Shell and Tube Evaporator	
Insulation			Class O, UV stable Insulation	
Total Max. Water Flow		l/s	104.2	104.2
Total Min. Water Flow		l/s	34.6	34.6
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m^2	52.1	56.8
Maximum Airflow - EC Fans		m^3/s	85.5	93.3
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			22	24
Diameter		mm	800	800
Maximum Speed - EC Fans		rpm	1025	1025
Compressor - Type			Turbocor - Oil Free Compressor	
Quantity			4	4
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation	
Refrigeration			Dual Circuit	
Refrigerant Pre-charged			R1234ze(E)	R1234ze(E)
Charge (Total) CCT1 + CCT2		kg	330 + 335	345 + 340
GWP Tonnes Equivalent CO_2		tC02	2.31 + 2.35	2.42 + 2.38
Refrigeration Control			Electronic Expansion Valve (EEV)	
Water System			Grooved Type Coupling and Pipe Assembly	
Water Inlet / Outlet			DN200	DN200
Water Drain / Bleed - Evap		inch	1/2	1/2
Water Volume		l	2298	2544
Minimum System Water Volume	(8)	l	3294	3594
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	38.3	40.4
Pressure Drop		kPa	66.2	70.3

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol. All performance data is supplied in accordance with BS EN 14511-1:2013
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER 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 maximum nominal DX duty can be achieved using Free Cooling only.
(6) This is a nominal figure based on full compressor duty, 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) Height based on standard fan, for optional fan dimensions please contact Airedale

Technical Data

TCF24X22G-27, TCF24X24G-27

Electrical Data

Electrical Data	Units	TCF24X22G-27	TCF24X24G-27
Unit Data			
Full Load Amps (1)	A	686	694
Maximum Start Amps	A	536	544
Mains Supply	VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size	A	670	750
Max Mains Incoming Cable Size (Direct to 3 Phase Mains Isolator)	mm²	2x 300mm² (Torque >20Nm)	
Independent Permanent Supply Recommended Fuse Size	A	25	25
Independent Permanent Supply	VAC	230V 1PH 50Hz (±10%)	
Max Permanent Incoming Cable Size (Direct to Control Panel Isolator)	mm²	6mm² / 8 AWG	
Control Circuit	VAC	24 VAC & 230VAC (±10%)	
Evaporator			
Immersion Heater Rating	W	500 (2x 250)	500 (2x 250)
External Trace Heating			
Available (fitted by others)	W	500	500
Condenser Fan - Per Fan (EC)			
Quantity		22	24
Full Load Amps	A	3.9	3.9
Locked Rotor Amps	A	N/A	N/A
Motor Rating	kW	2.56	2.56
Compressor - Per Compressor			
Nominal Run Amps	A	150	150
Quantity		2 / 2	2 / 2
Motor Rating	kW	92	92
Start Amps	A	2	2
Type Of Start		Electronic Soft Start	

(1) Based at full load Conditions and EC Fans
Pump electrical data is available from Airedale upon request.

Sound Data - TCF

TCF - EC Fans

		Single-Octave Sound								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11R06G-07	Power	86	85	84	81	83	77	76	80	87
	Sound Pressure @10m	54	52	51	48	51	44	44	47	55
TCF11R08G-07	Power	82	82	82	79	82	75	76	80	86
	Sound Pressure @10m	50	49	49	47	50	43	43	47	53
TCF12R08G-09	Power	92	89	88	85	87	81	79	83	91
	Sound Pressure @10m	59	56	55	52	54	48	47	50	58
TCF12R10G-05	Power	89	87	86	84	86	80	79	83	90
	Sound Pressure @10m	56	54	54	51	53	47	46	50	57
TCF12R12G-05	Power	87	86	86	83	86	79	79	83	89
	Sound Pressure @10m	54	53	52	50	53	46	46	50	56
TCF12R14G-05	Power	86	85	85	83	85	79	79	83	89
	Sound Pressure @10m	52	52	51	49	52	45	46	49	56
TCF22R10G-22	Power	89	87	86	84	86	80	79	83	90
	Sound Pressure @10m	56	54	54	51	53	47	46	50	57
TCF22R12G-22	Power	87	86	86	83	86	79	79	83	89
	Sound Pressure @10m	54	53	52	50	53	46	46	50	56
TCF22R14G-22	Power	86	85	85	83	85	79	79	83	89
	Sound Pressure @10m	52	52	51	49	52	45	46	49	56
TCF23R12G-24	Power	91	89	88	85	88	81	81	84	92
	Sound Pressure @10m	58	56	55	52	55	48	48	51	59
TCF23R14G-24	Power	90	88	88	85	88	81	81	84	91
	Sound Pressure @10m	56	55	54	52	54	48	48	51	58
TCF23R16G-25	Power	89	88	87	85	88	81	81	84	91
	Sound Pressure @10m	56	54	54	51	54	47	47	51	58
TCF23R18G-25	Power	88	88	87	85	87	81	81	84	91
	Sound Pressure @10m	55	54	53	51	54	47	47	51	57
TCF24R16G-26	Power	91	90	89	86	89	82	82	86	93
	Sound Pressure @10m	58	56	55	53	56	49	49	52	59
TCF24R18G-26	Power	91	89	89	86	89	82	82	86	93
	Sound Pressure @10m	57	56	55	52	55	48	48	52	59
TCF24R20G-26	Power	90	89	88	86	89	82	82	86	92
	Sound Pressure @10m	56	55	54	52	55	48	48	52	59
TCF24R22G-27	Power	89	88	88	86	89	82	82	86	92
	Sound Pressure @10m	55	54	54	52	55	48	48	52	58
TCF24R24G-27	Power	89	88	88	86	89	82	82	86	92
	Sound Pressure @10m	55	54	54	51	54	47	48	51	58

(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.

Sound Data - TCF

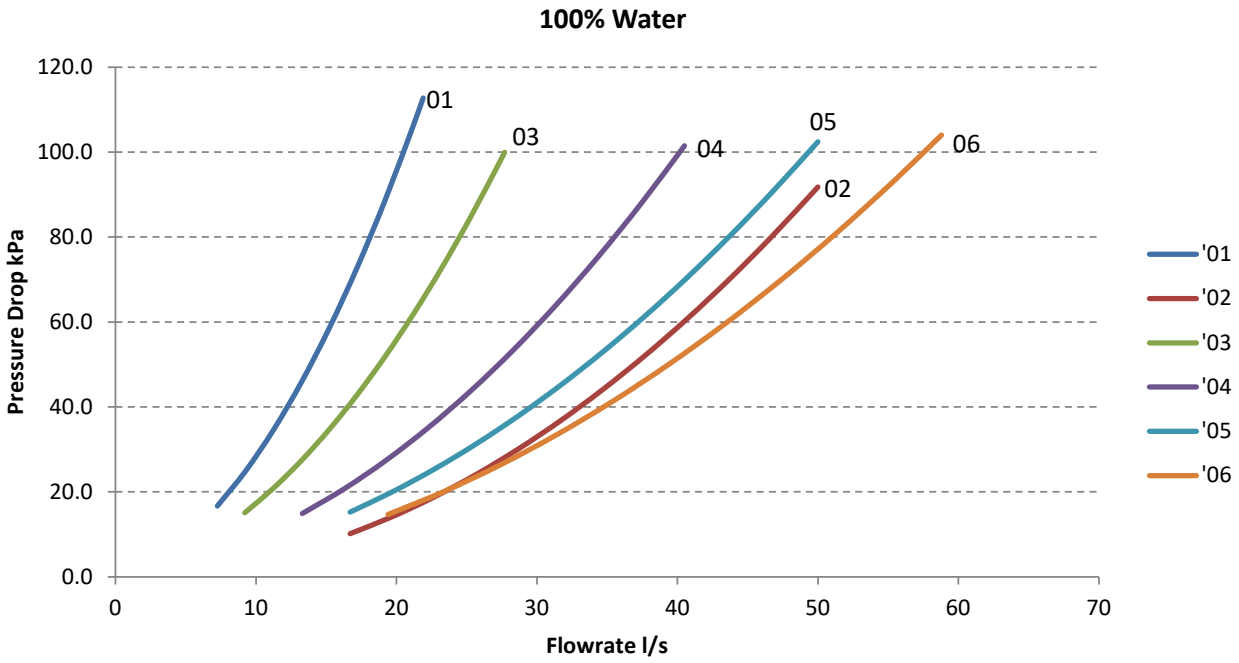
TCF - EC Fans

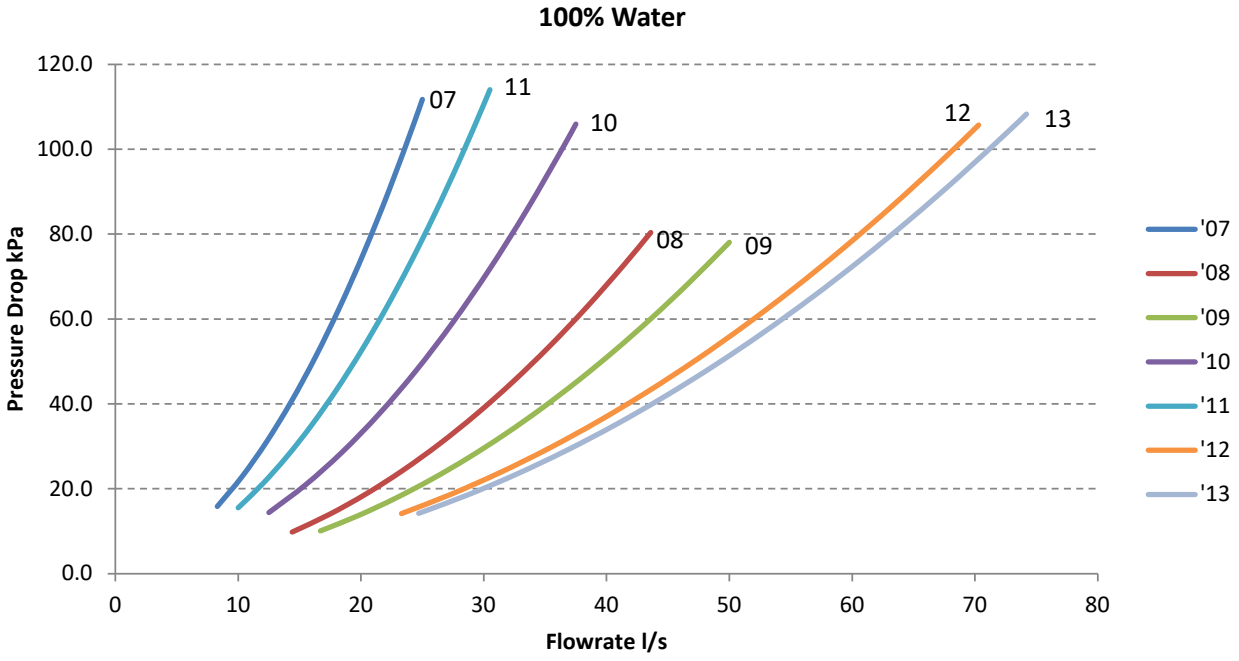
		Single-Octave Sound								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11X06G-07	Power	84	83	79	79	82	75	76	80	86
	Sound Pressure @10m	51	50	47	46	49	43	44	47	53
TCF11X08G-07	Power	84	83	80	79	82	75	76	80	86
	Sound Pressure @10m	52	51	47	47	49	42	43	47	53
TCF12X08G-09	Power	85	84	81	81	85	78	79	83	88
	Sound Pressure @10m	52	51	48	49	52	45	46	50	56
TCF12X10G-05	Power	86	85	82	82	85	78	79	83	89
	Sound Pressure @10m	53	52	49	49	52	45	46	50	56
TCF12X12G-05	Power	87	86	82	82	85	78	79	83	89
	Sound Pressure @10m	53	53	49	49	52	45	46	50	56
TCF12X14G-05	Power	87	86	83	82	85	78	79	83	89
	Sound Pressure @10m	54	53	50	49	52	45	46	49	55
TCF22X10G-22	Power	86	85	82	82	85	78	79	83	89
	Sound Pressure @10m	53	52	49	49	52	45	46	50	56
TCF22X12G-22	Power	87	86	82	82	85	78	79	83	89
	Sound Pressure @10m	53	53	49	49	52	45	46	50	56
TCF22X14G-22	Power	87	86	83	82	85	78	79	83	89
	Sound Pressure @10m	54	53	50	49	52	45	46	49	55
TCF23X12G-24	Power	65	65	69	81	86	79	81	84	90
	Sound Pressure @10m	31	31	36	48	53	46	48	51	57
TCF23X14G-24	Power	87	86	83	83	87	80	81	84	90
	Sound Pressure @10m	54	53	50	50	53	46	47	51	57
TCF23X16G-25	Power	88	87	84	83	87	80	81	84	90
	Sound Pressure @10m	54	53	50	50	53	46	47	51	57
TCF23X18G-25	Power	88	87	84	84	87	80	81	84	90
	Sound Pressure @10m	55	54	50	50	53	46	47	51	57
TCF24X16G-26	Power	88	87	84	84	88	81	82	86	91
	Sound Pressure @10m	54	53	50	51	54	47	48	52	58
TCF24X18G-26	Power	88	87	84	84	88	81	82	86	92
	Sound Pressure @10m	55	54	50	51	54	47	48	52	58
TCF24X20G-26	Power	89	88	85	85	88	81	82	86	92
	Sound Pressure @10m	55	54	51	51	54	47	48	52	58
TCF24X22G-27	Power	89	88	85	85	88	81	82	86	92
	Sound Pressure @10m	55	54	51	51	54	47	48	52	58
TCF24X24G-27	Power	90	89	85	85	88	81	82	86	92
	Sound Pressure @10m	55	54	51	51	54	47	48	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.

Hydronic Data

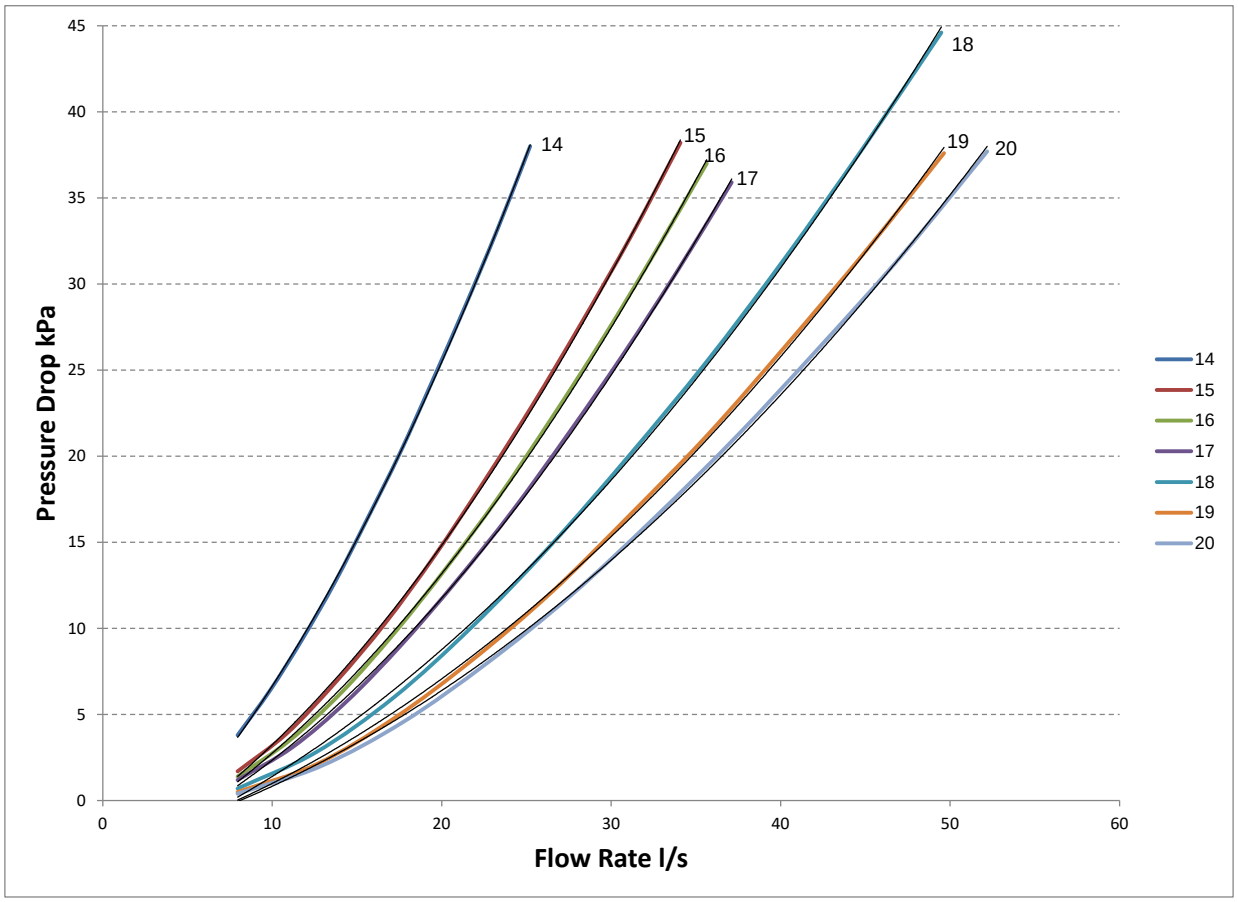
Evaporator Pressure Drop - 100% Water

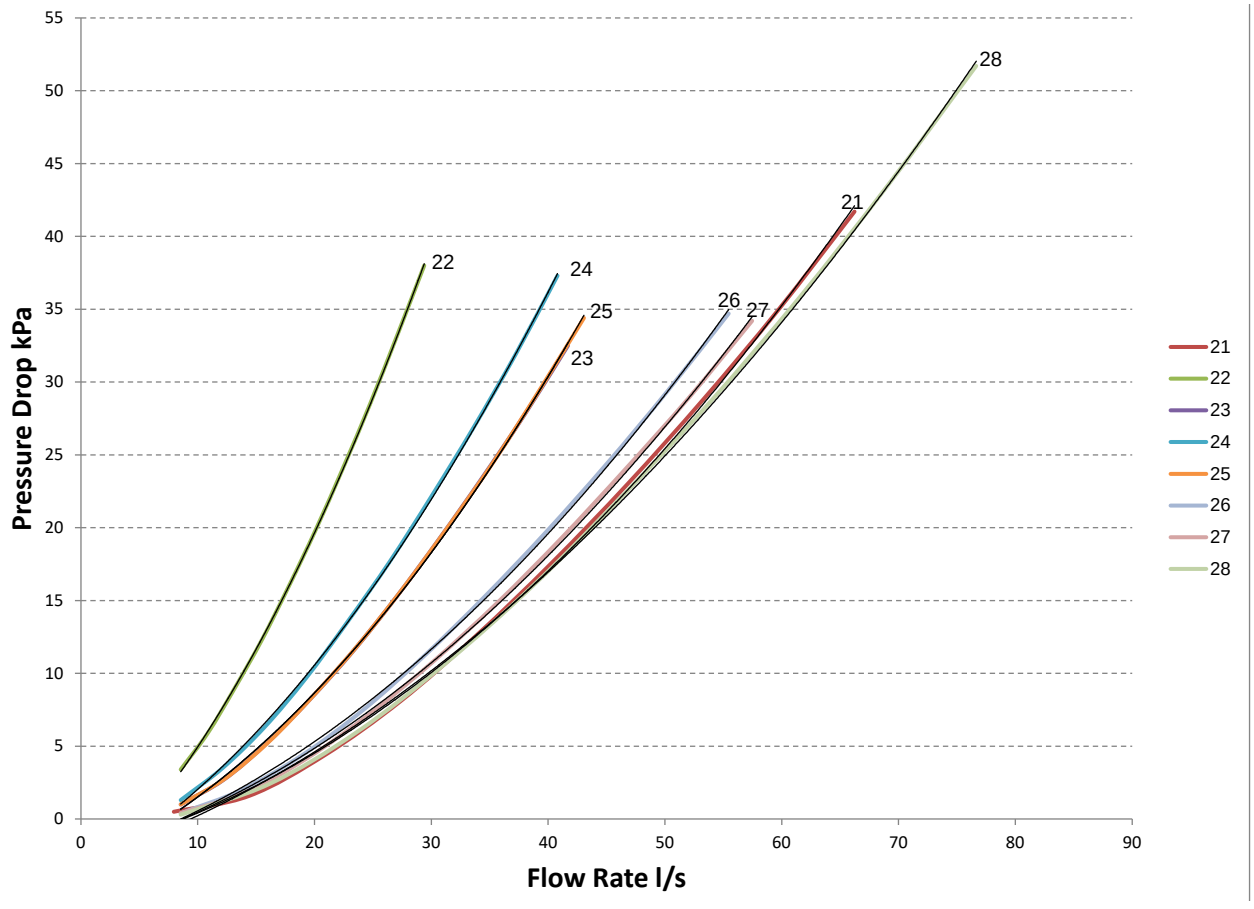




Hydronic Data

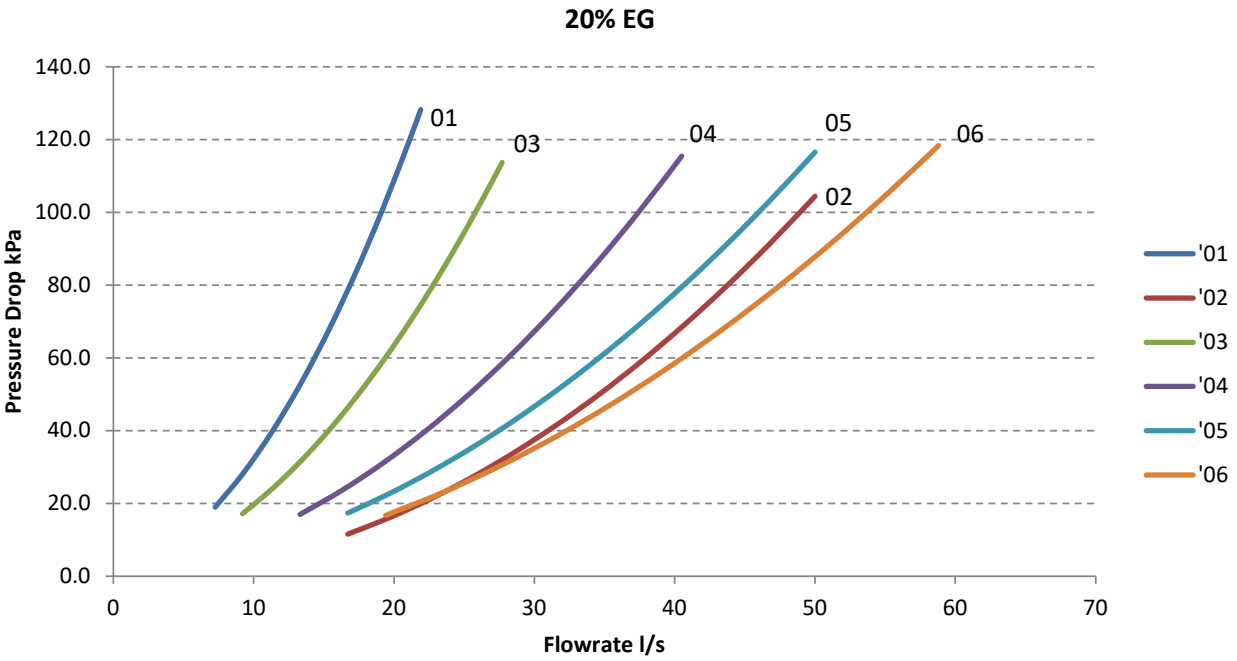
Evaporator Pressure Drop - 100% Water

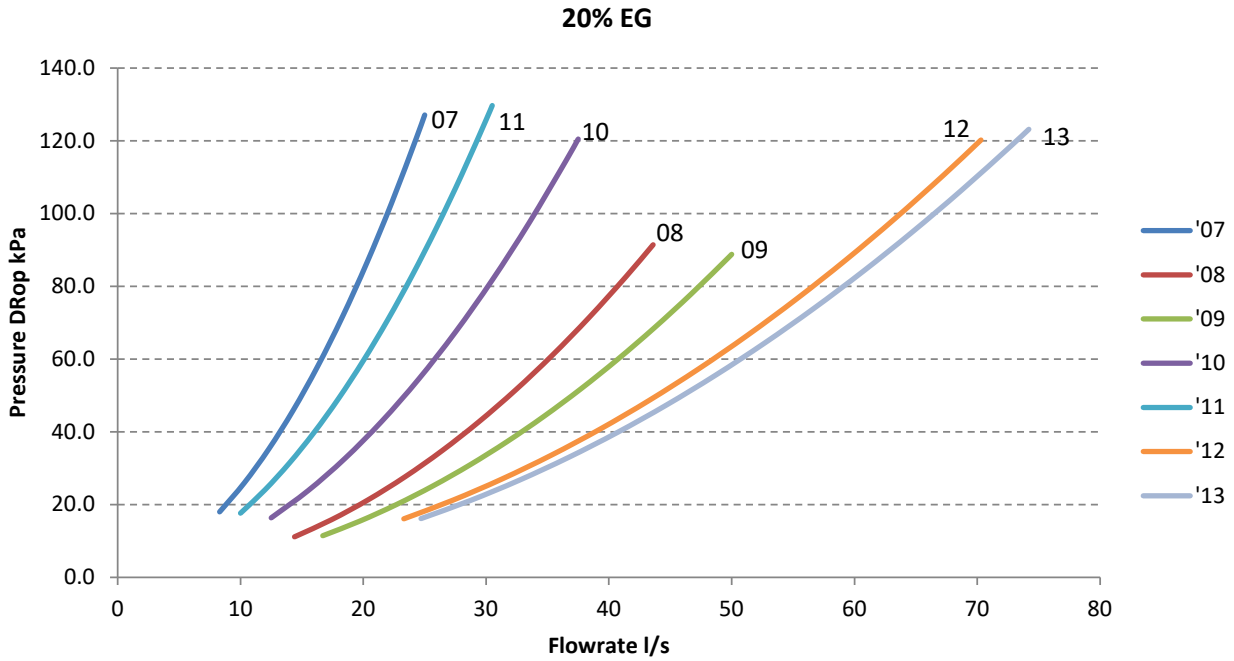




Hydronic Data

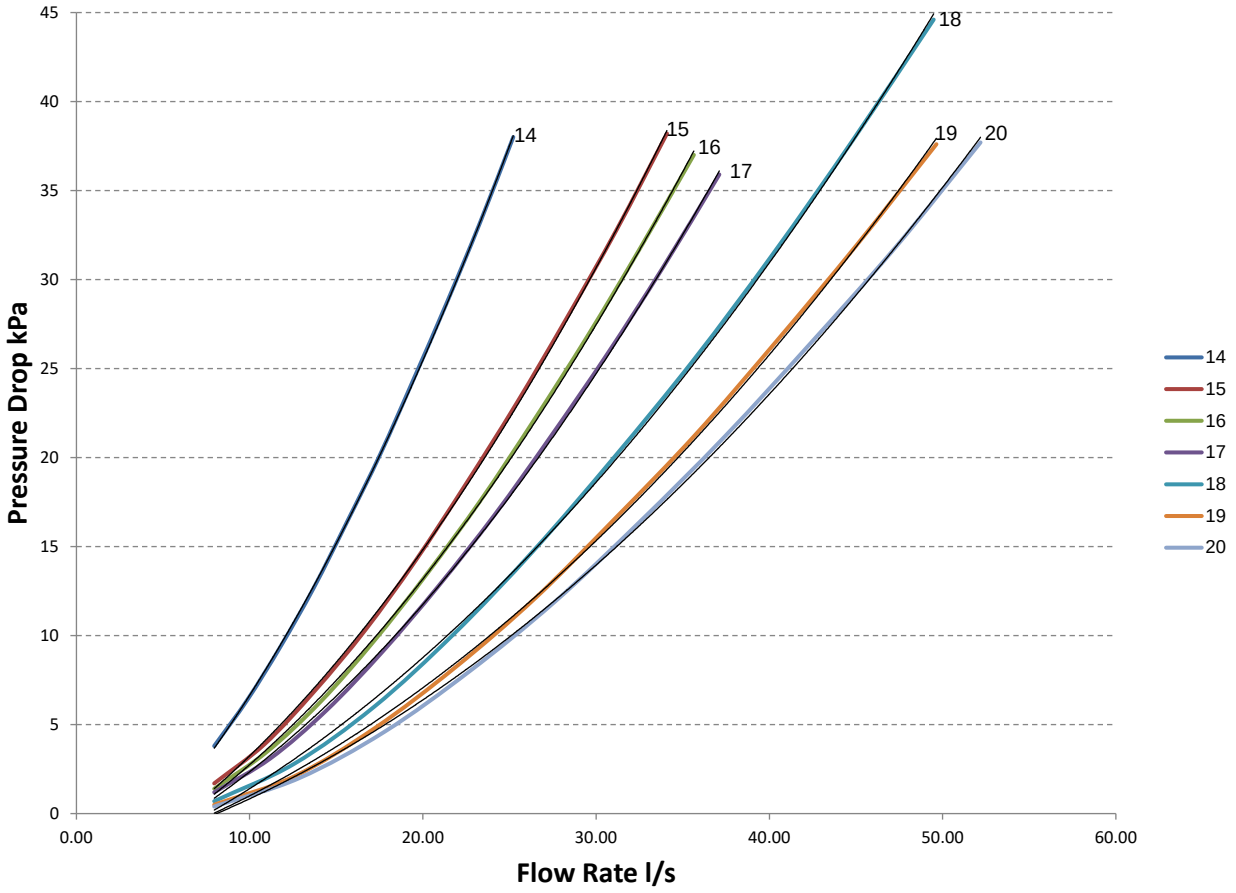
Evaporator Pressure Drop - 20% Ethylene Glycol

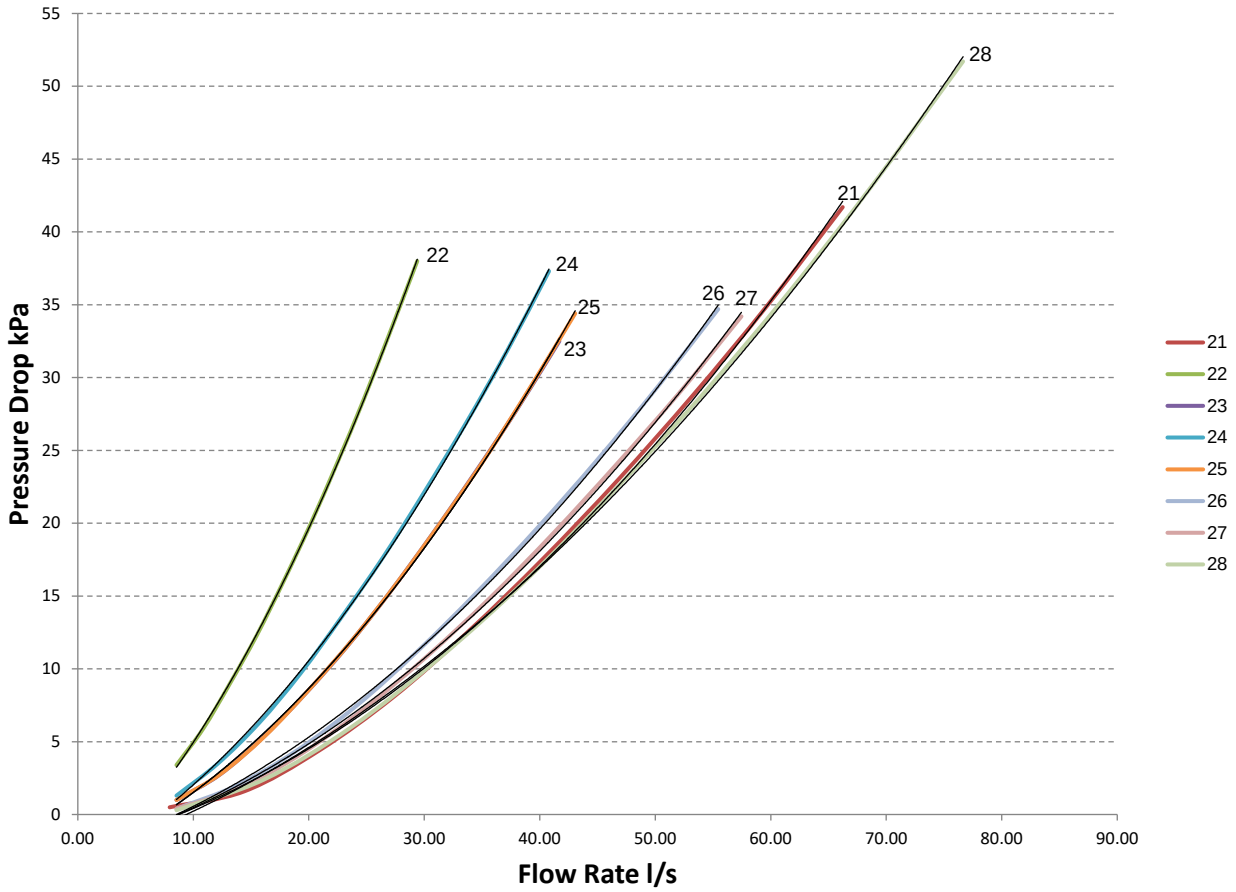




Hydronic Data

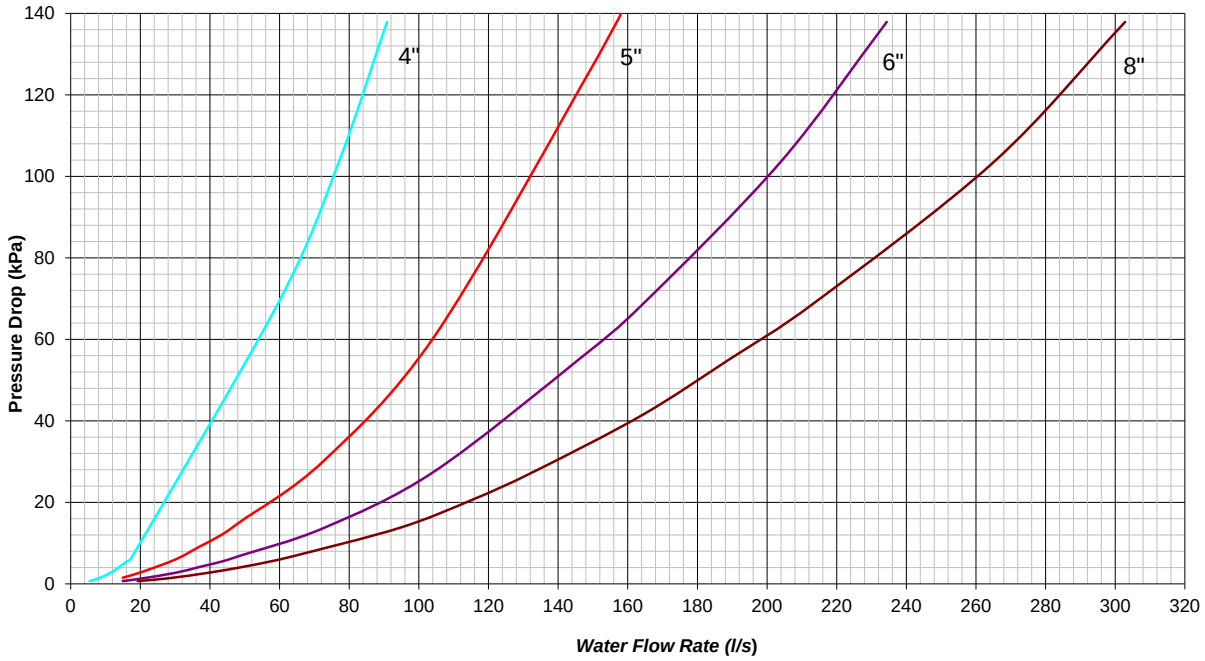
Evaporator Pressure Drop - 20% Ethylene Glycol



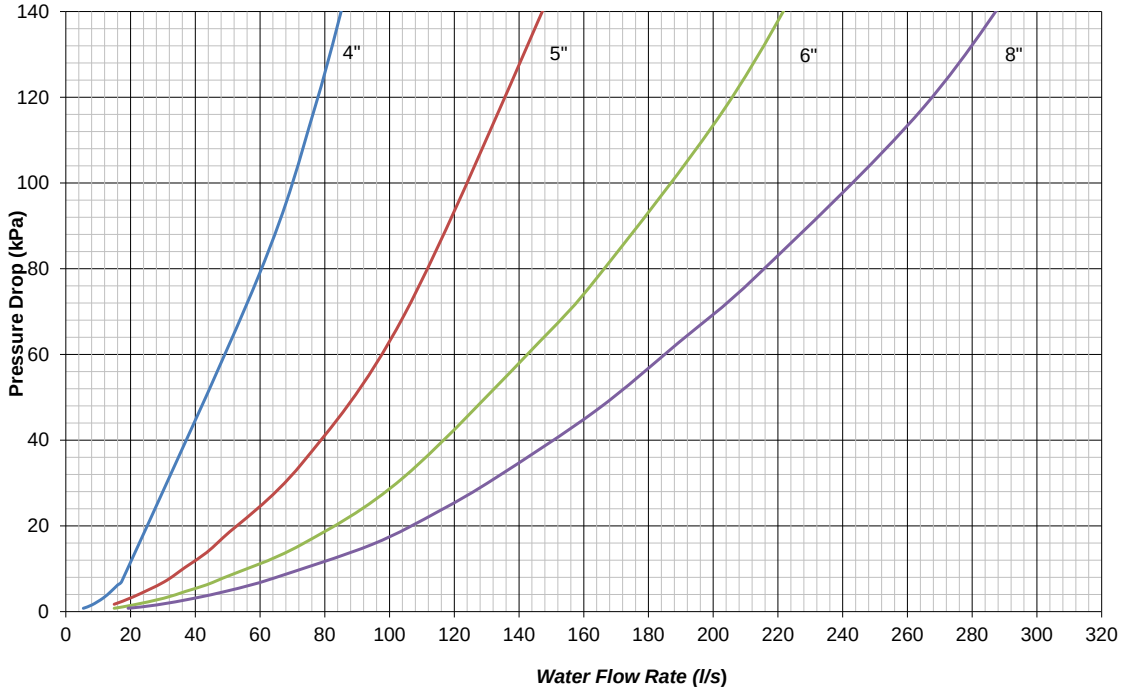


Hydronic Data

Strainer Pressure Drop - 100% Water

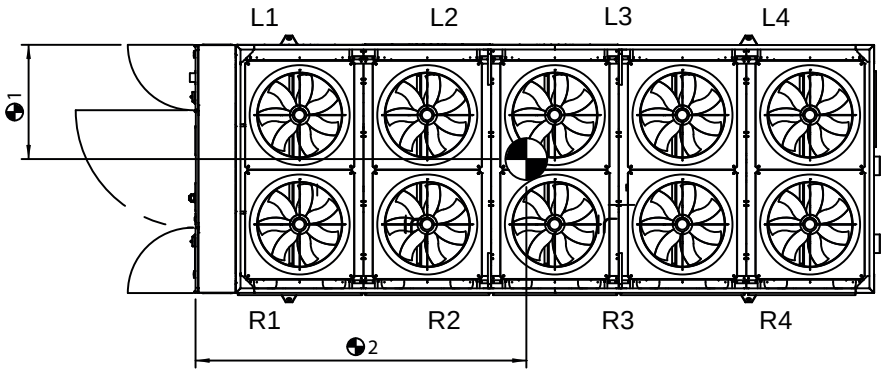


Strainer Pressure Drop - 20% Ethylene Glycol



Installation Data

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



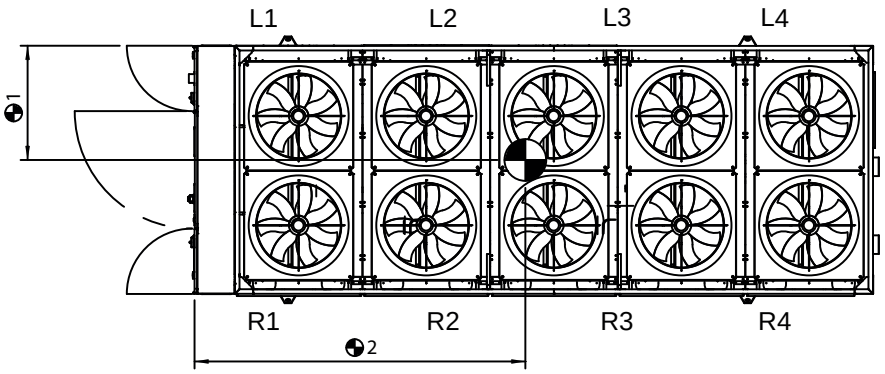
Unit Nomenclature	Machine Weight (kg)	Operating Weight (kg)	CofG 2	CofG 1
TCC11R04G-01	2765	2865	1350	1150
TCC11R06G-01	3390	3490	1760	1140
TCC11R08G-01	3980	4080	2280	1130
TCC12R08G-04	4795	4935	2360	1160
TCC12R10G-04	5405	5545	2750	1150
TCC12R12G-04	6025	6165	3140	1150
TCC12R14G-04	6640	6780	3640	1140
TCC22R08G-14	4800	4940	2350	1160
TCC22R10G-14	5430	5570	2710	1150
TCC22R12G-14	6050	6190	3090	1150
TCC22R14G-14	6680	6820	3810	1140
TCC23R12G-17	7000	7230	3240	1160
TCC23R14G-17	7620	7850	3890	1160
TCC23R16G-17	8260	8490	4250	1150
TCC23R18G-17	8880	9110	4940	1150
TCC24R16G-18	8670	8920	4370	1170
TCC24R18G-18	9300	9550	4860	1170
TCC24R20G-18	9930	10180	5540	1160
TCC24R22G-18	10560	10810	6360	1160
TCC24R24G-18	11190	11440	6620	1160
TCC11X04G-01	2765	2865	1350	1150
TCC11X06G-01	3390	3490	1760	1140
TCC11X08G-01	3980	4080	2280	1130
TCC12X08G-04	4795	4935	2360	1160
TCC12X10G-04	5405	5545	2750	1150
TCC12X12G-04	6025	6165	3140	1150
TCC12X14G-04	6640	6780	3640	1140
TCC22X08G-14	4800	4940	2350	1160
TCC22X10G-14	5430	5570	2710	1150
TCC22X12G-14	6050	6190	3090	1150
TCC22X14G-14	6680	6820	3810	1140
TCC23X12G-17	7000	7230	3240	1160
TCC23X14G-17	7620	7850	3890	1160
TCC23X16G-17	8260	8490	4250	1150
TCC23X18G-17	8880	9110	4940	1150
TCC24X16G-18	8670	8920	4370	1170
TCC24X18G-18	9300	9550	4860	1170
TCC24X20G-18	9930	10180	5540	1160
TCC24X22G-18	10560	10810	6360	1160
TCC24X24G-18	11190	11440	6620	1160

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

Above refers to standard configurations, contact Airedale for other options.

Installation Data

Freecool Masses & Centre of Gravity (C of G)



Unit Nomenclature	Machine Weight (kg)	Operating Weight (kg)	CofG 2	CofG 1
TCF11R06G-07	4145	4565	1850	1170
TCF11R08G-07	4960	5470	2360	1110
TCF12R08G-09	5610	6010	2390	1130
TCF12R10G-05	6700	7395	2830	1120
TCF12R12G-05	7585	8400	3240	1120
TCF12R14G-05	8450	9390	3900	1110
TCF22R10G-22	6730	7460	2820	1090
TCF22R12G-22	7610	8440	3230	1090
TCF22R14G-22	8520	9490	3970	1080
TCF23R12G-24	8880	9900	3380	1080
TCF23R14G-24	9780	10910	4050	1080
TCF23R16G-25	10710	11990	4450	1070
TCF23R18G-25	11510	12850	5100	1070
TCF24R16G-26	12090	13870	4610	1070
TCF24R18G-26	13000	14950	5090	1060
TCF24R20G-26	13990	16150	5780	1050
TCF24R22G-27	14810	17100	6610	1040
TCF24R24G-27	15800	18340	6880	1040
TCF11X06G-07	4145	4565	1850	1170
TCF11X08G-07	4960	5470	2360	1110
TCF12X08G-09	5610	6010	2390	1130
TCF12X10G-05	6700	7395	2830	1120
TCF12X12G-05	7585	8400	3240	1120
TCF12X14G-05	8450	9390	3900	1110
TCF22X10G-22	6730	7460	2820	1090
TCF22X12G-22	7610	8440	3230	1090
TCF22X14G-22	8520	9490	3970	1080
TCF23X12G-24	8880	9900	3380	1080
TCF23X14G-24	9780	10910	4050	1080
TCF23X16G-25	10710	11990	4450	1070
TCF23X18G-25	11510	12850	5100	1070
TCF24X16G-26	12090	13870	4610	1070
TCF24X18G-26	13000	14950	5090	1060
TCF24X20G-26	13990	16150	5780	1050
TCF24X22G-27	14810	17100	6610	1040
TCF24X24G-27	15800	18340	6880	1040

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

Above refers to standard configurations, contact Airedale for other options.

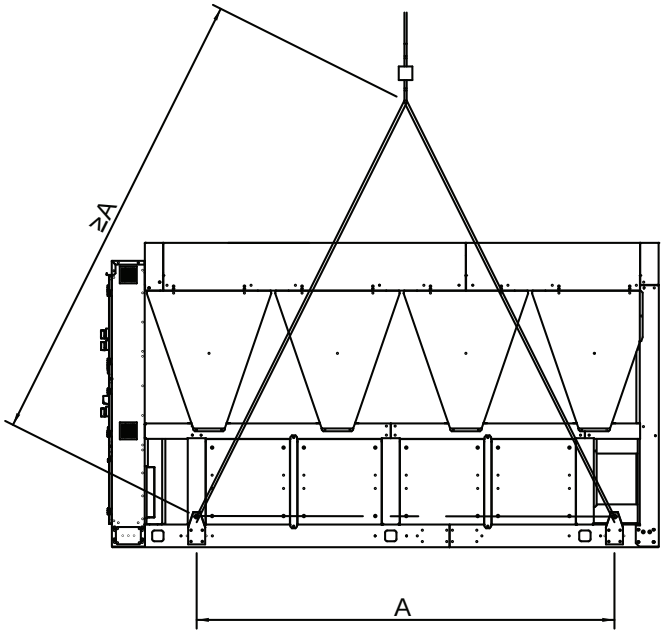
Installation Data

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

CAUTION ⚠	Only use lifting points provided. 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.

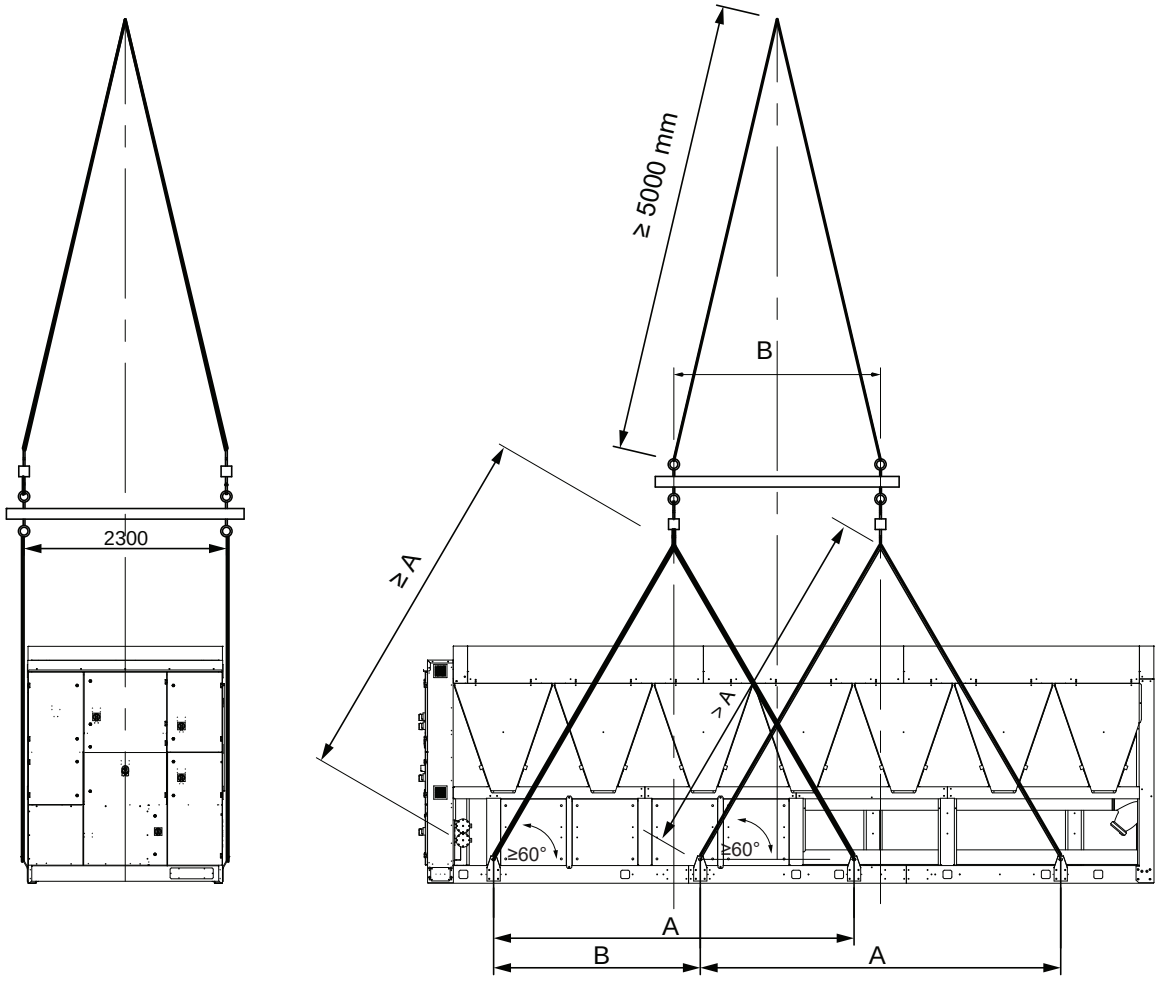
4 Point



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

Installation Data

8 Point

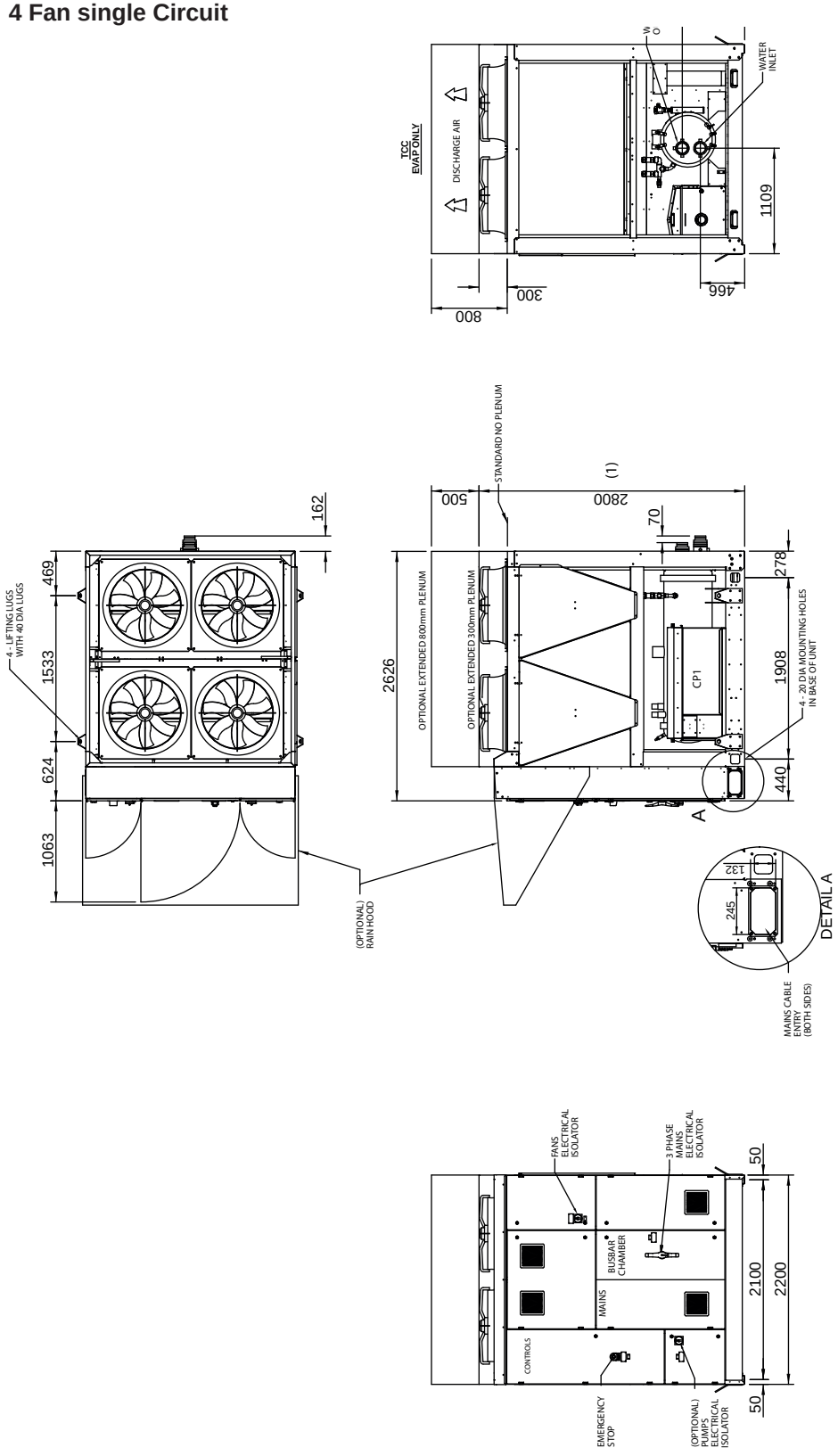


Number of Fans	Lifting Lug Size	Single Circuit Machines		Dual Circuit Machines	
		A (mm)	B (mm)	A (mm)	B (mm)
12 Fan Unit	35	3600	1536	3600	1490
14 Fan Unit	35	4500	1536	4500	1536
16 Fan Unit	35	4300	3100	4300	3100
18 Fan Unit	35	5500	2800	5200	2968
20 Fan Unit	35	6500	3164	6500	3139
22 Fan Unit	35	–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

Installation Data

General Arrangement Drawings

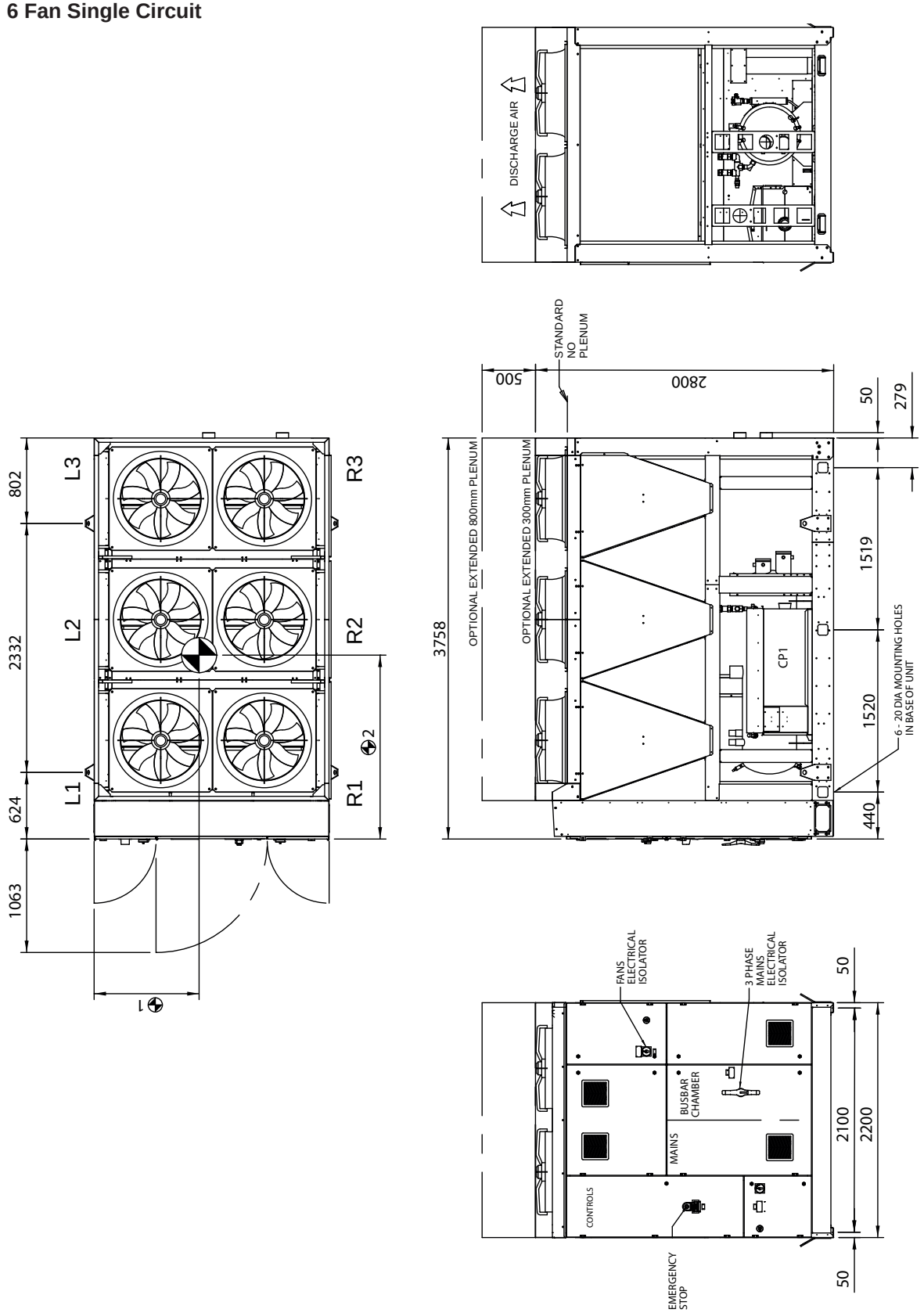
4 Fan single Circuit



Installation Data

General Arrangement Drawings

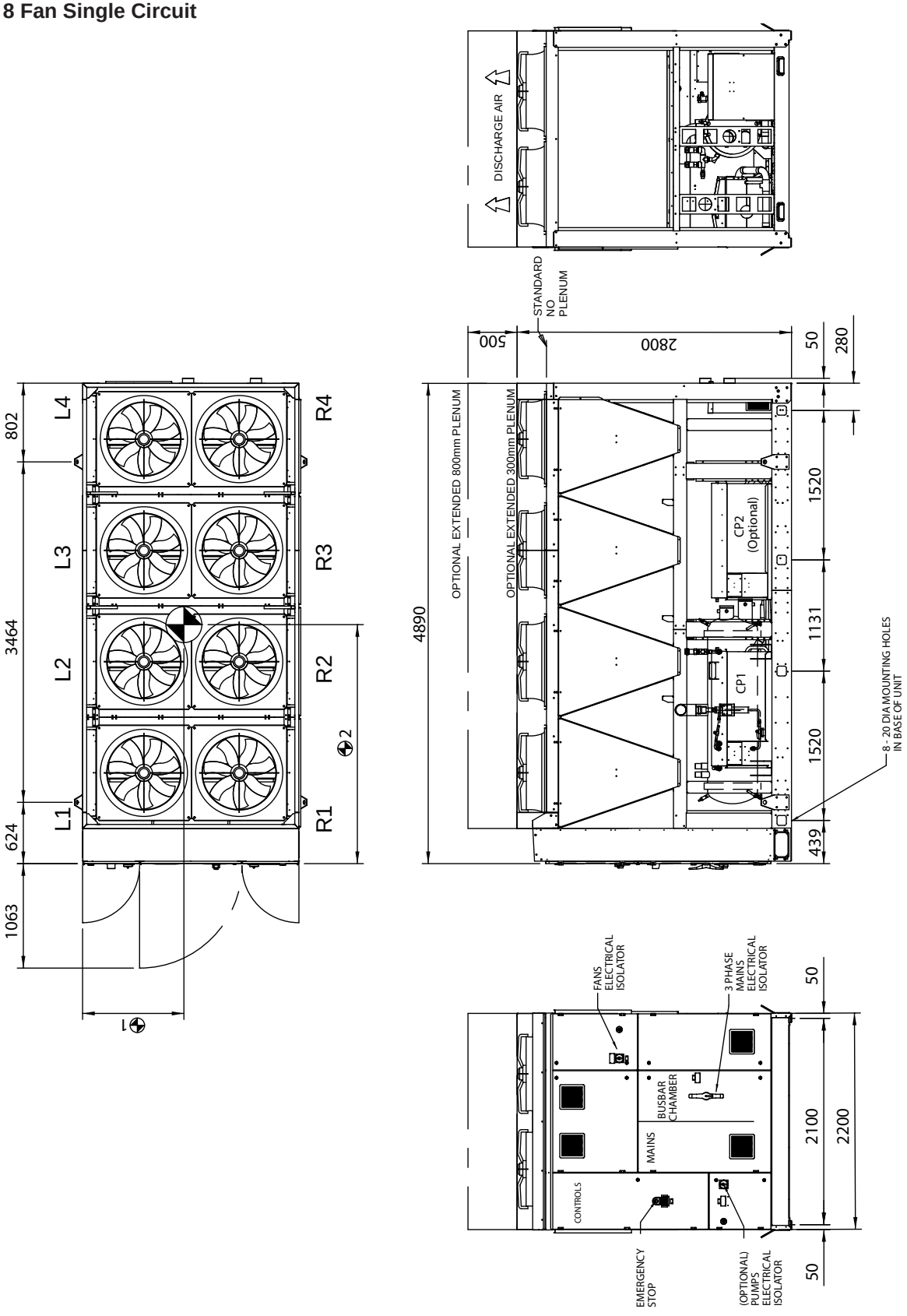
6 Fan Single Circuit



Installation Data

General Arrangement Drawings

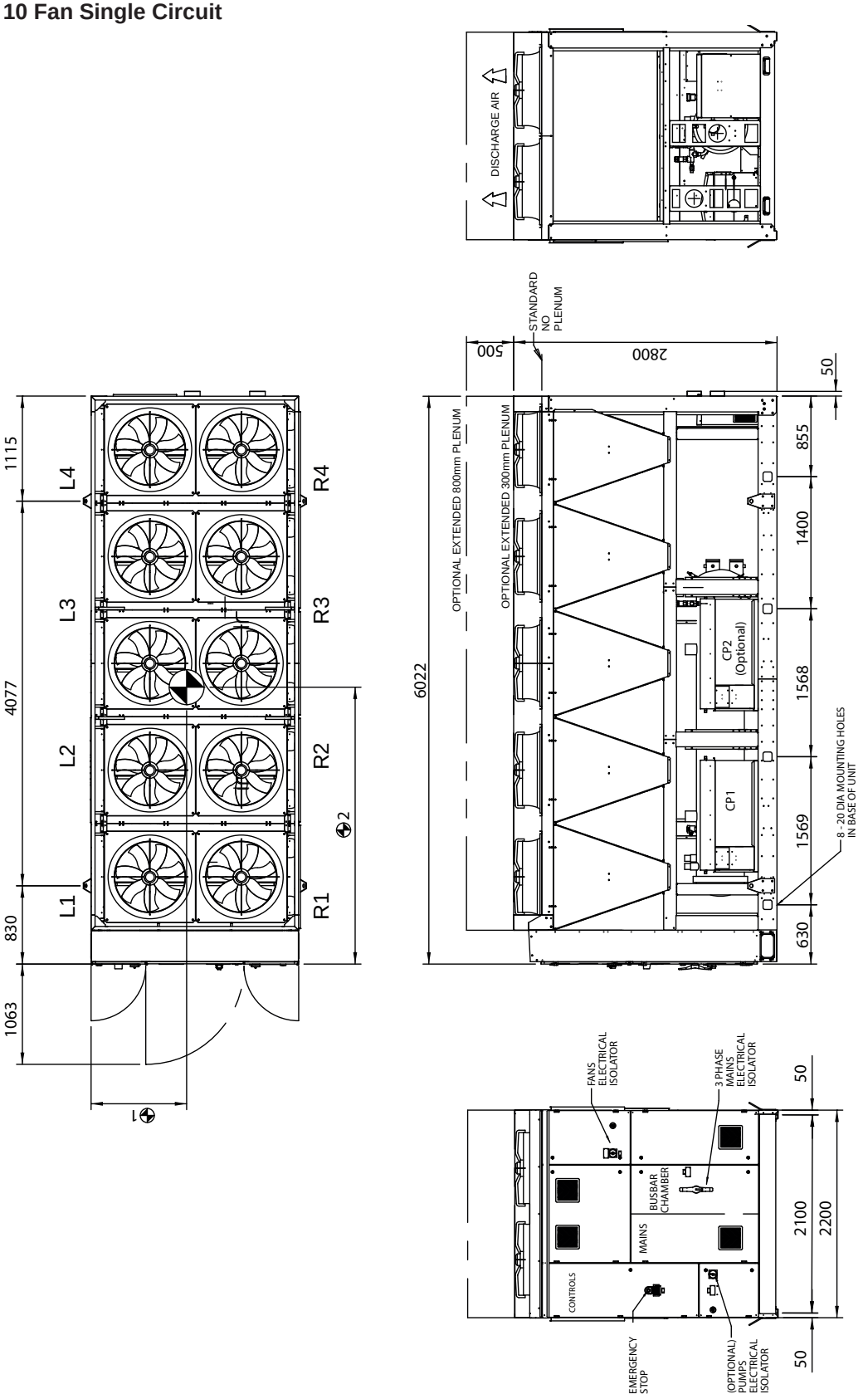
8 Fan Single Circuit



Installation Data

General Arrangement Drawings

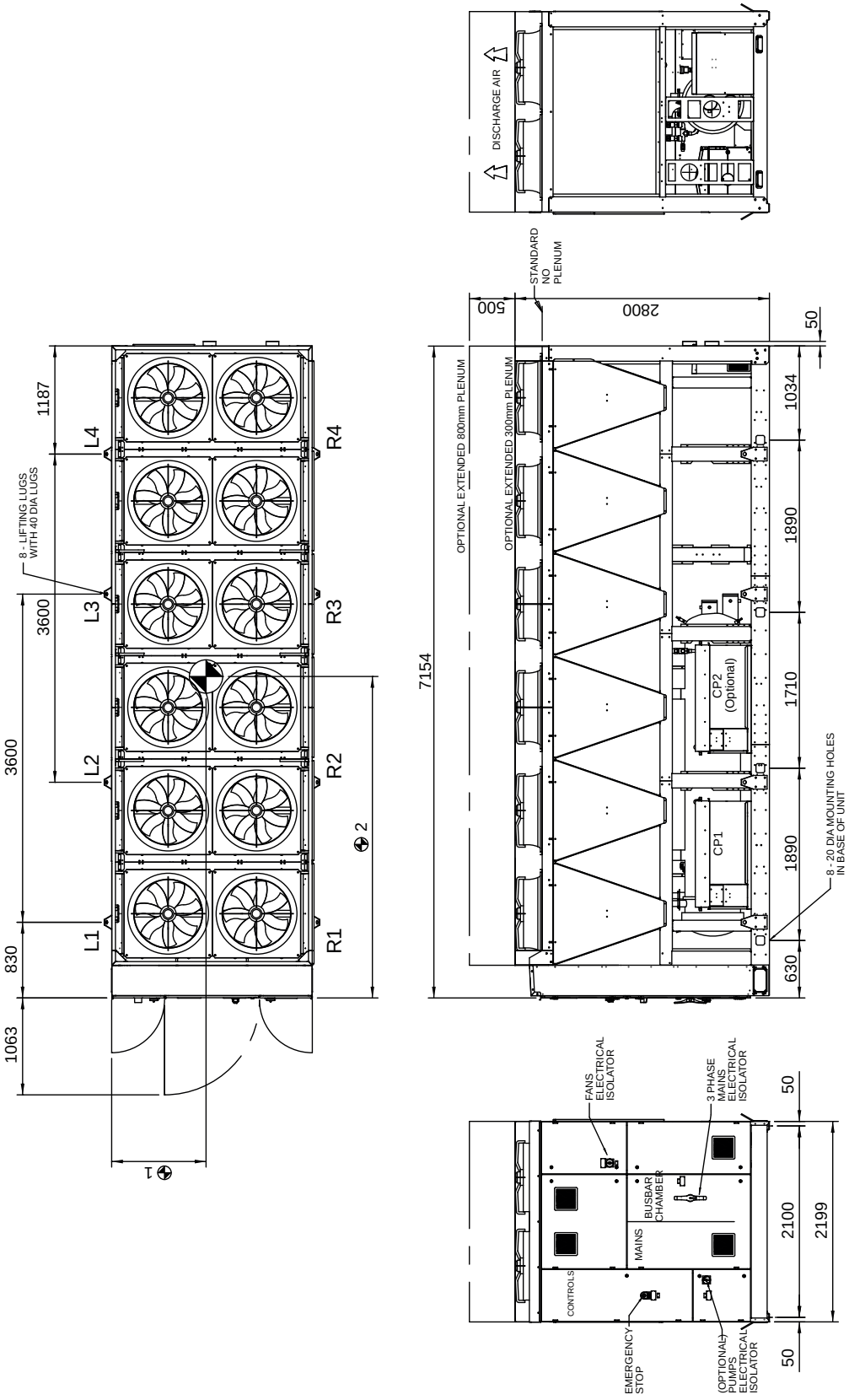
10 Fan Single Circuit



Installation Data

General Arrangement Drawings

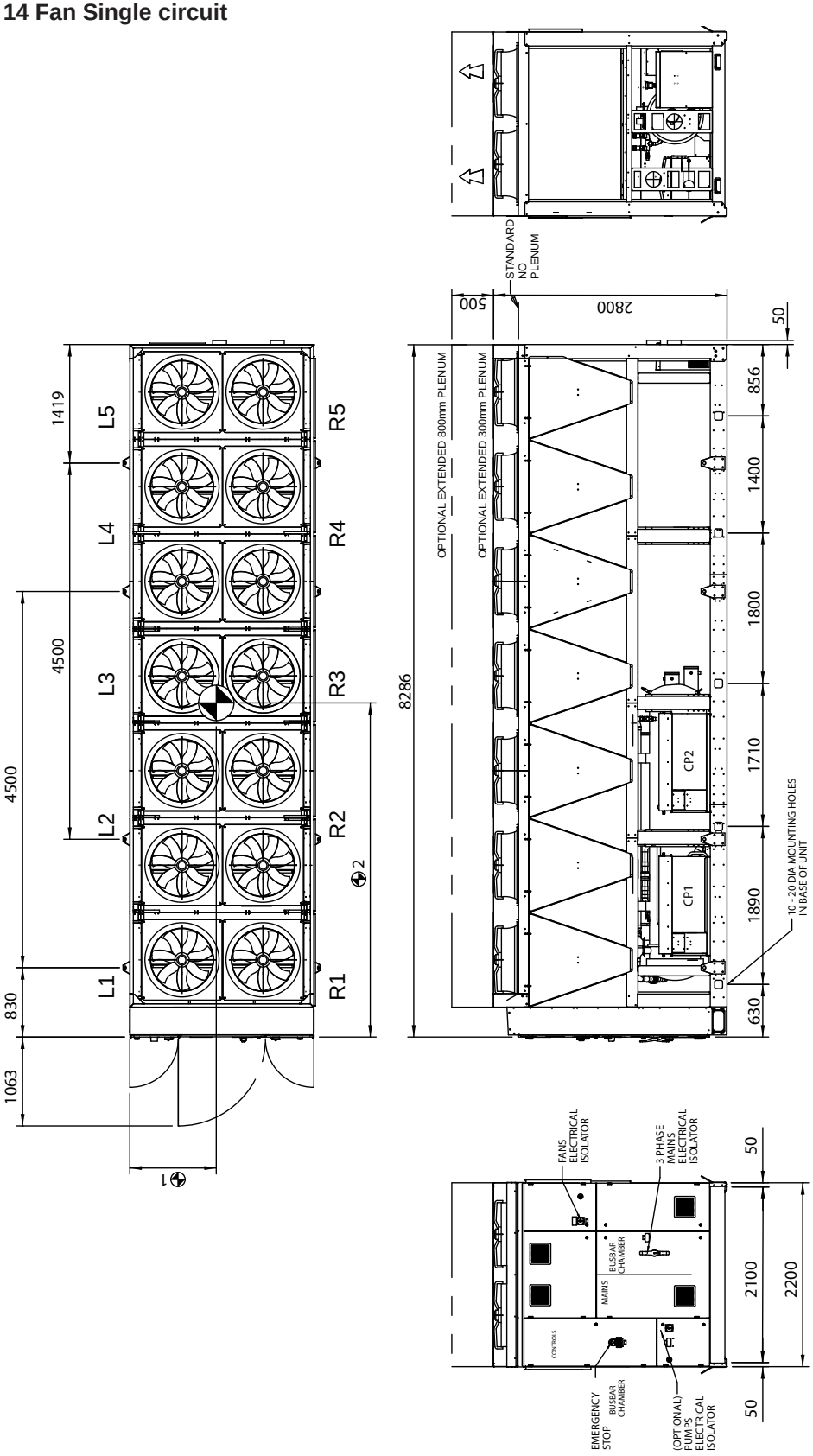
12 Fan Single Circuit



Installation Data

General Arrangement Drawings

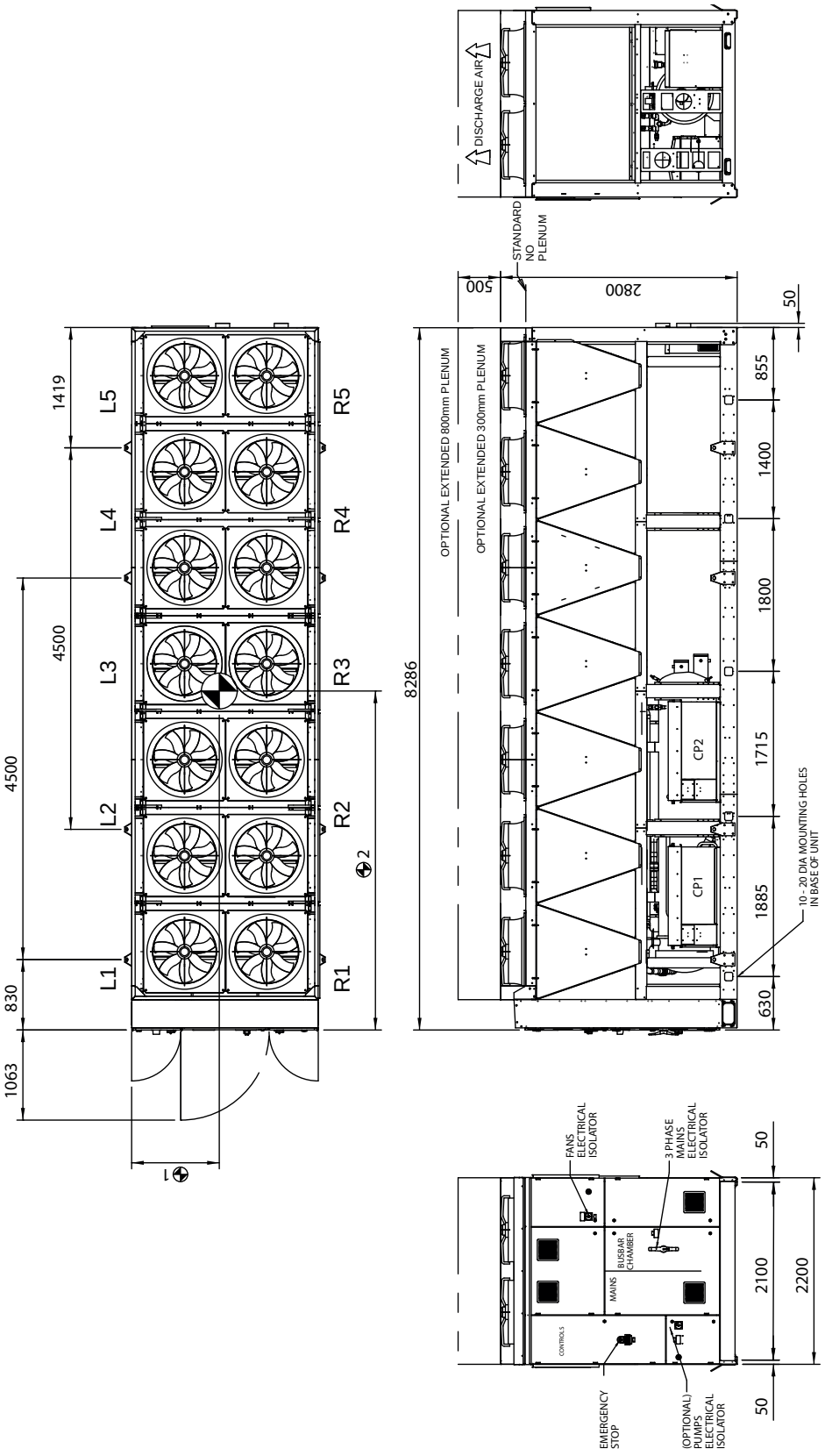
14 Fan Single circuit



Installation Data

General Arrangement Drawings

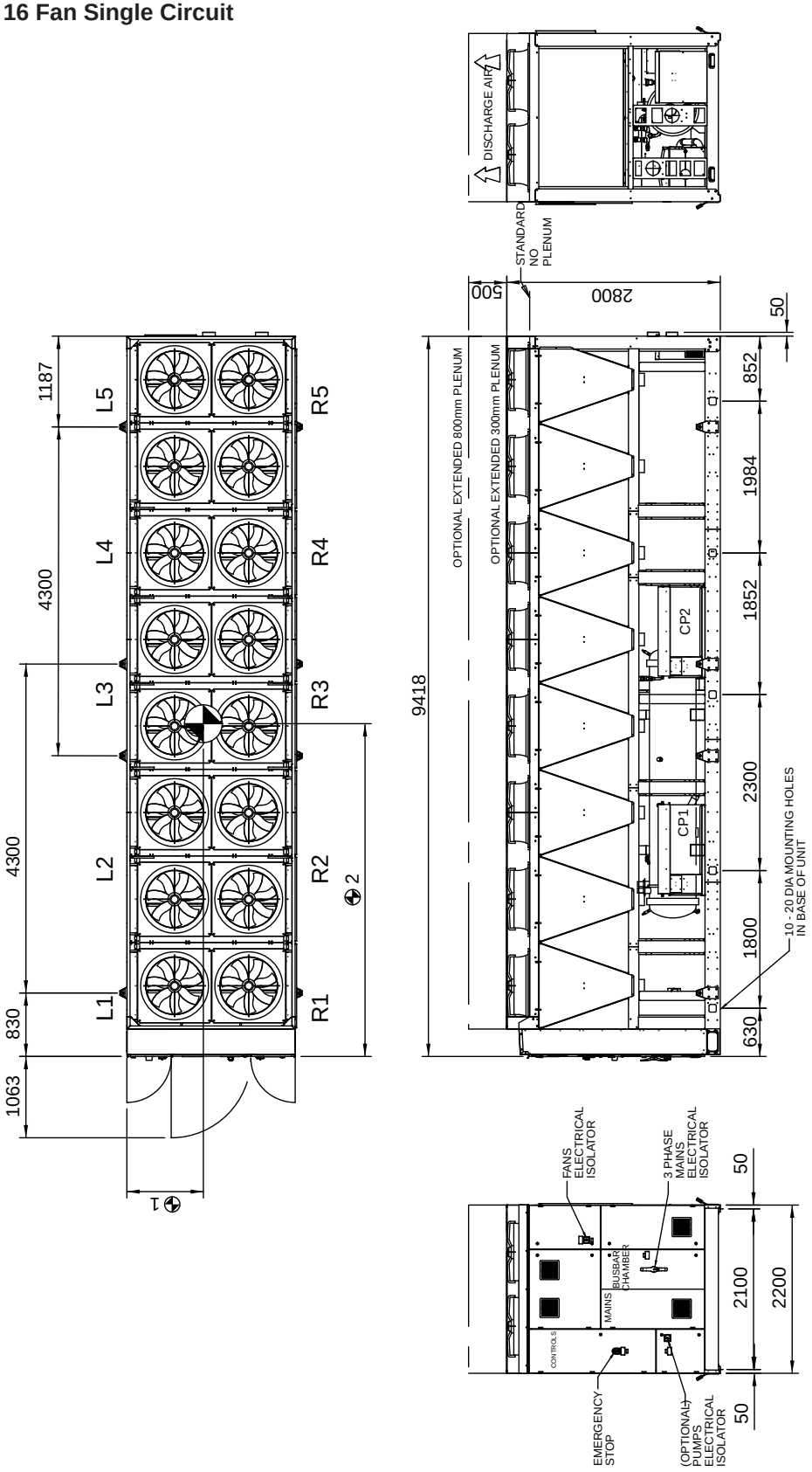
14 Fan Dual Circuit



Installation Data

General Arrangement Drawings

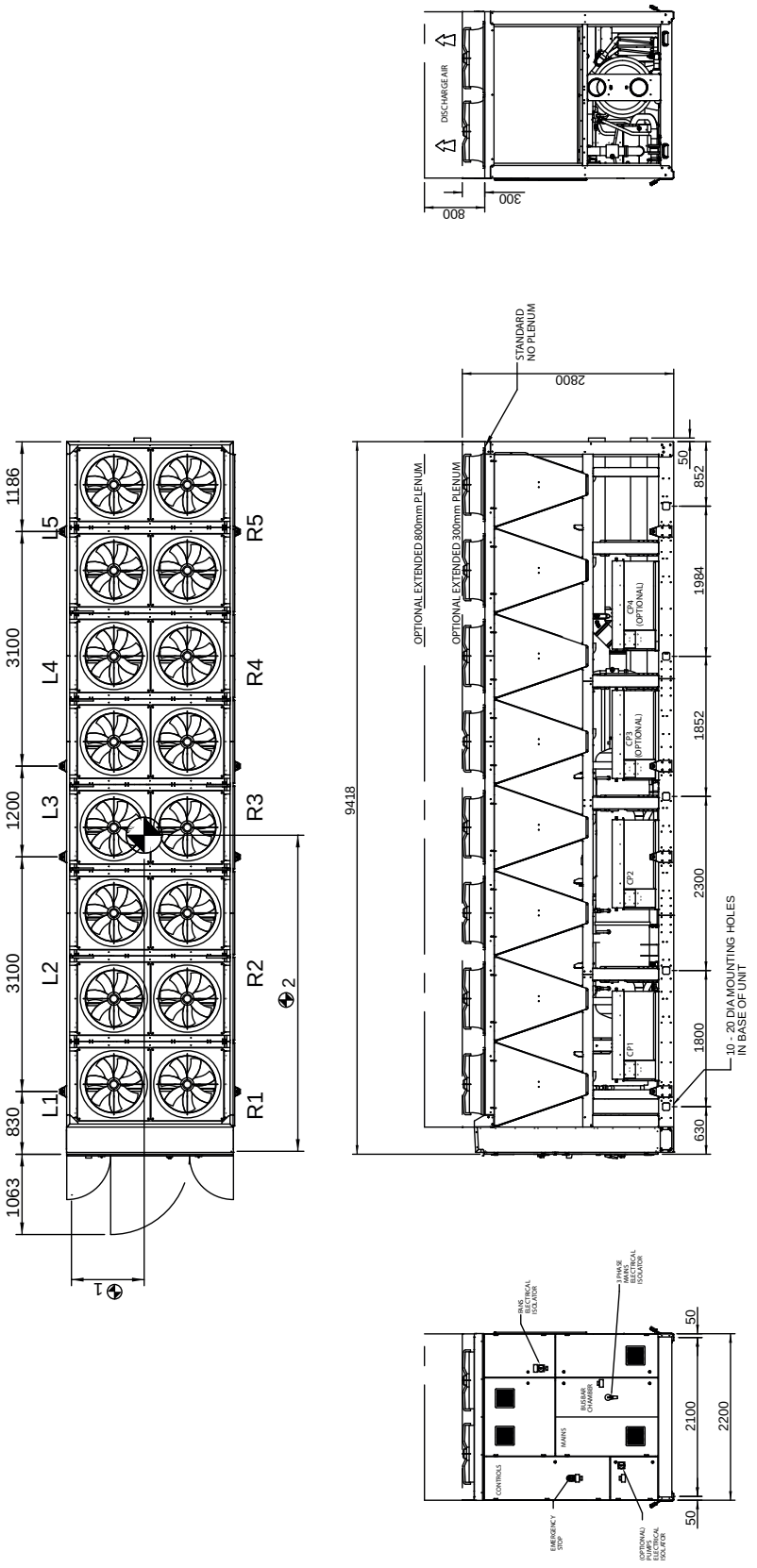
16 Fan Single Circuit



Installation Data

General Arrangement Drawings

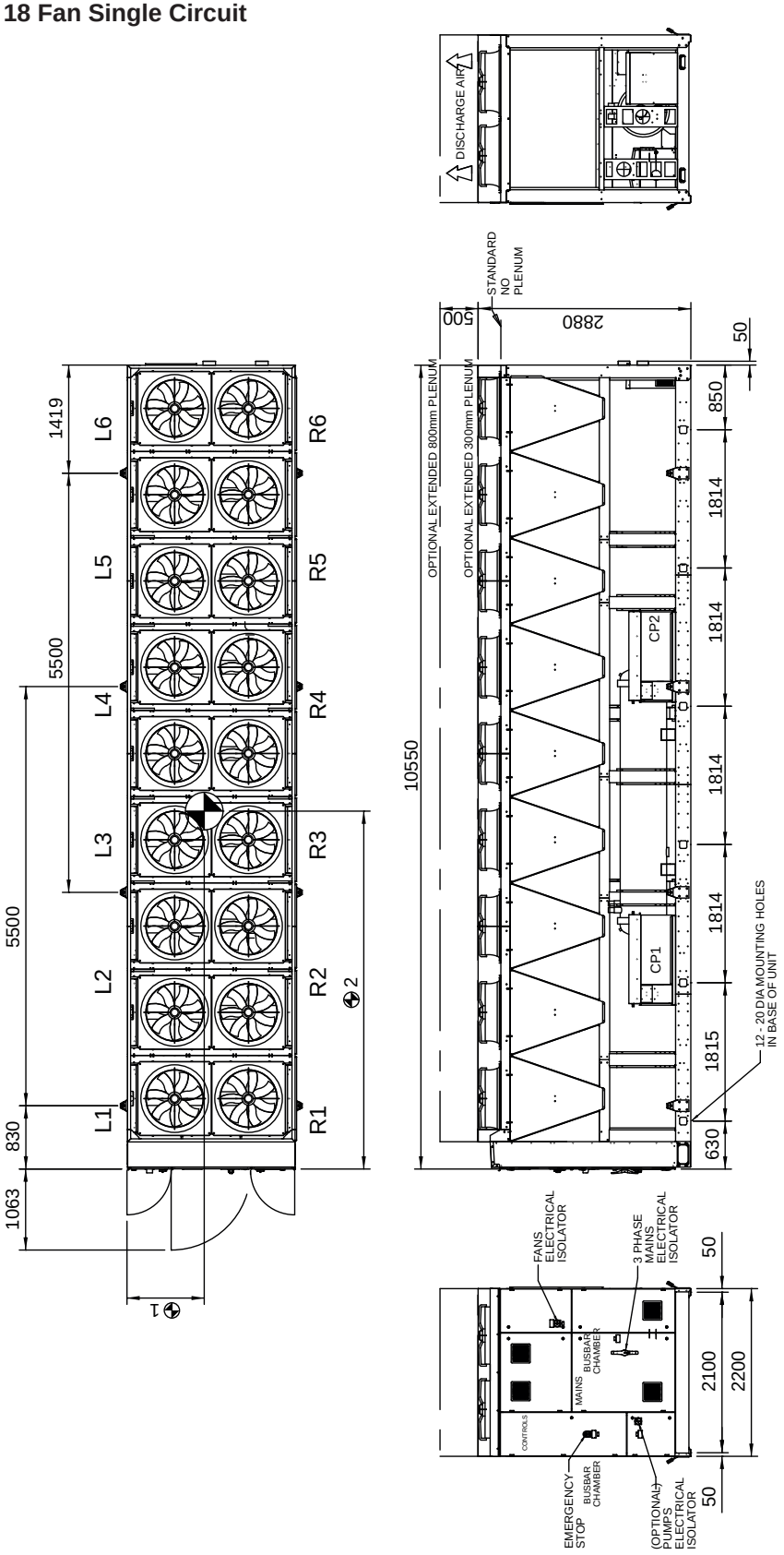
16 Fan Dual Circuit



Installation Data

General Arrangement Drawings

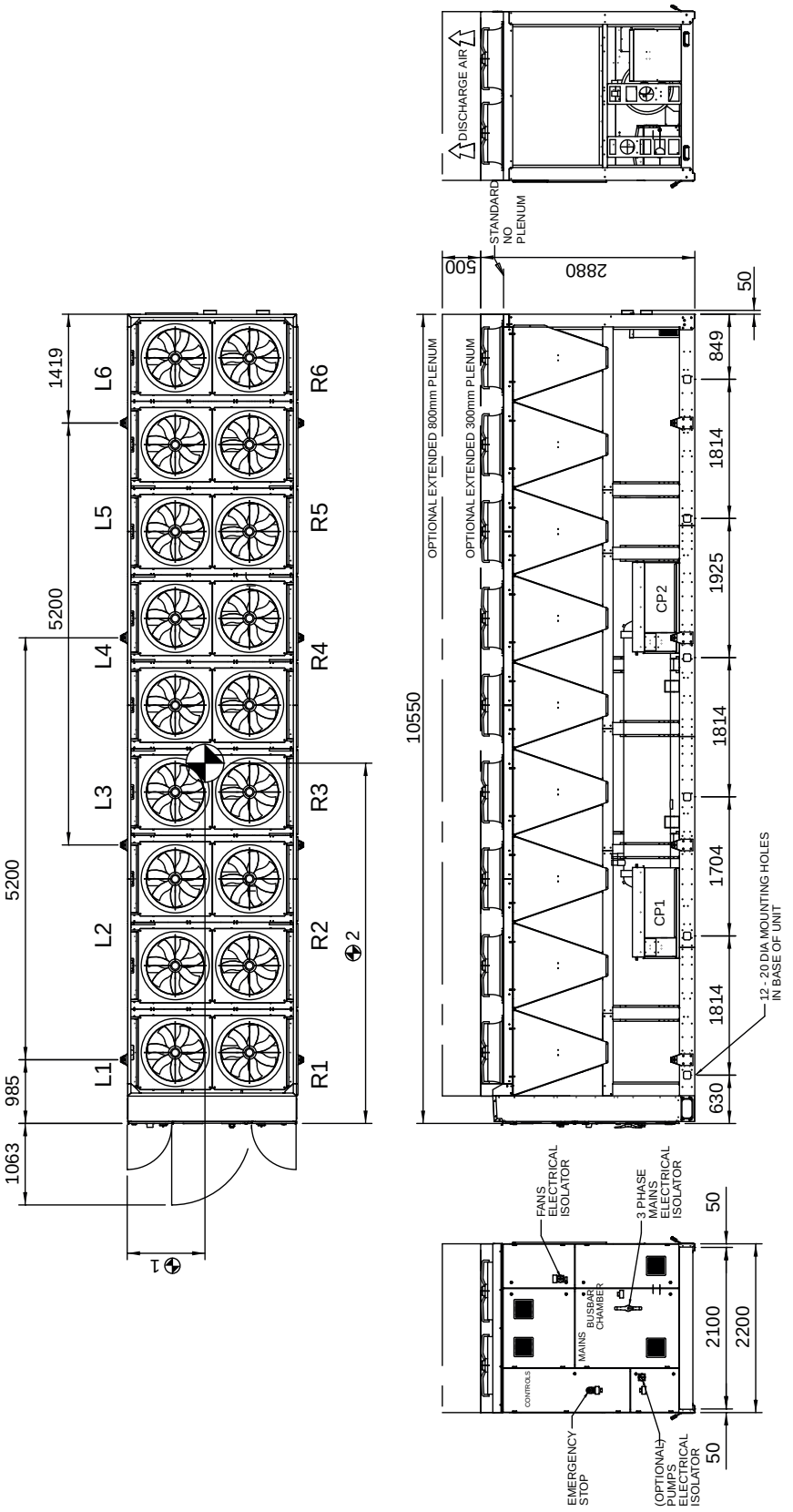
18 Fan Single Circuit



Installation Data

General Arrangement Drawings

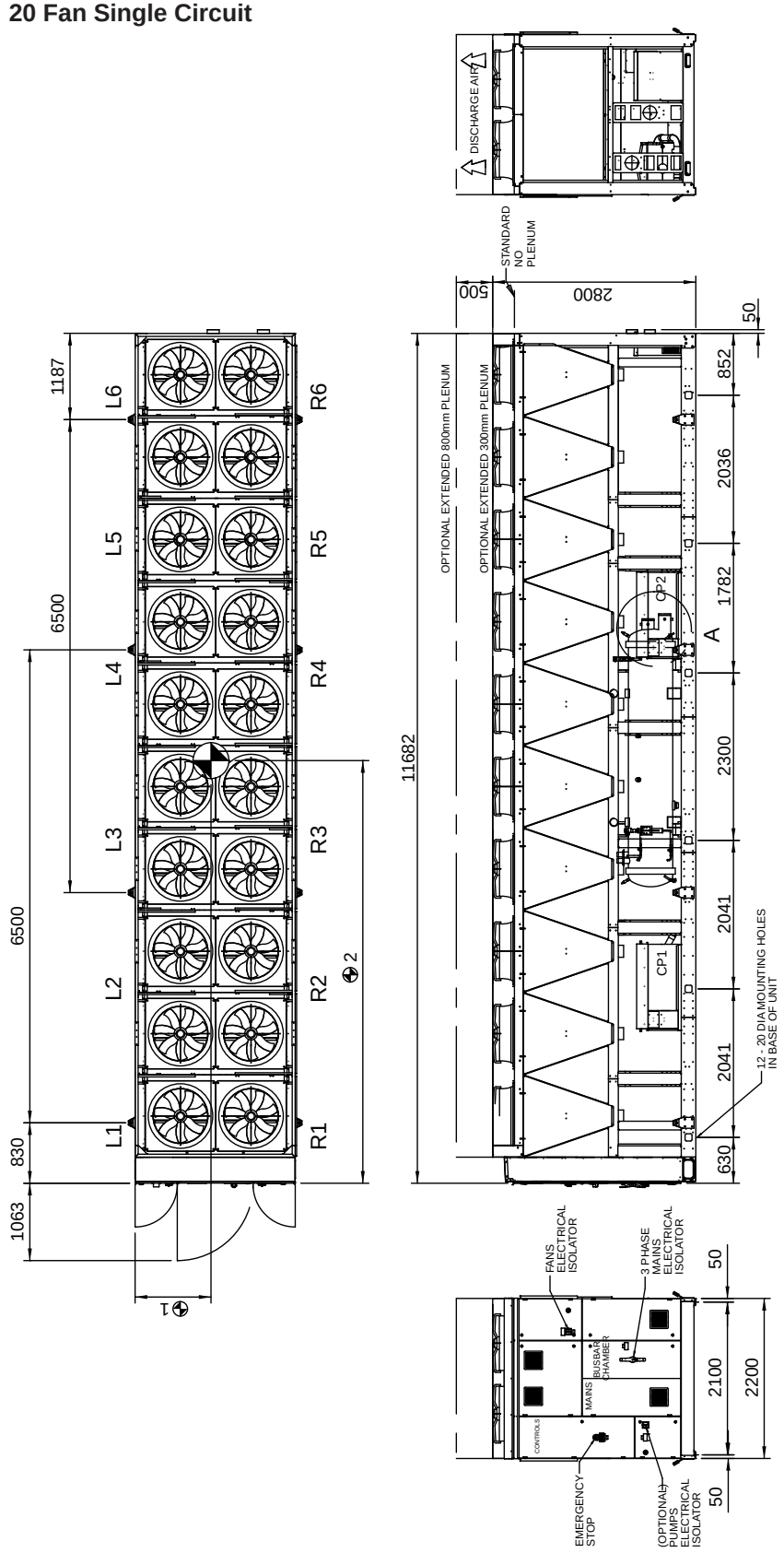
18 Fan Dual Circuit



Installation Data

General Arrangement Drawings

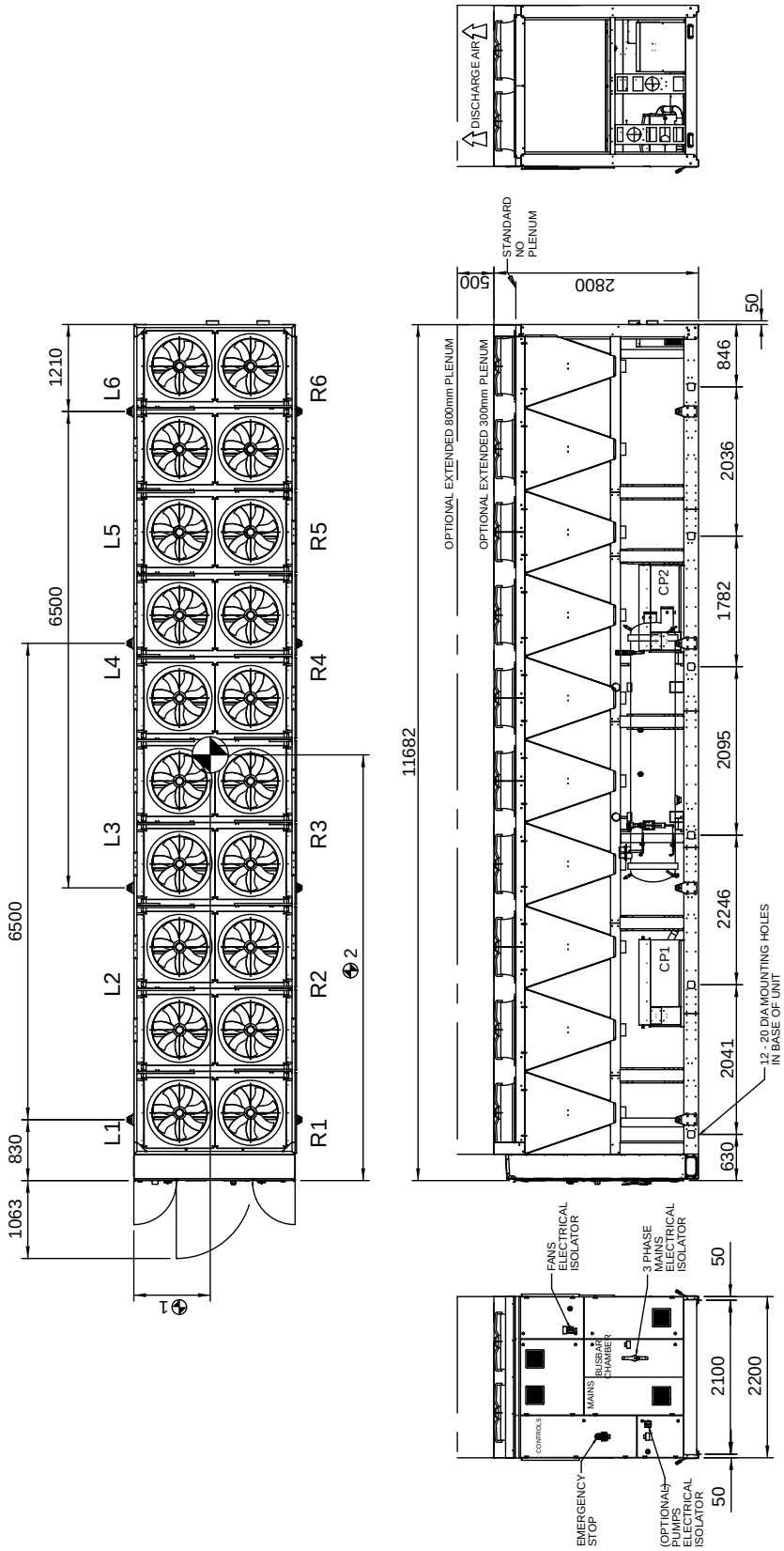
20 Fan Single Circuit



Installation Data

General Arrangement Drawings

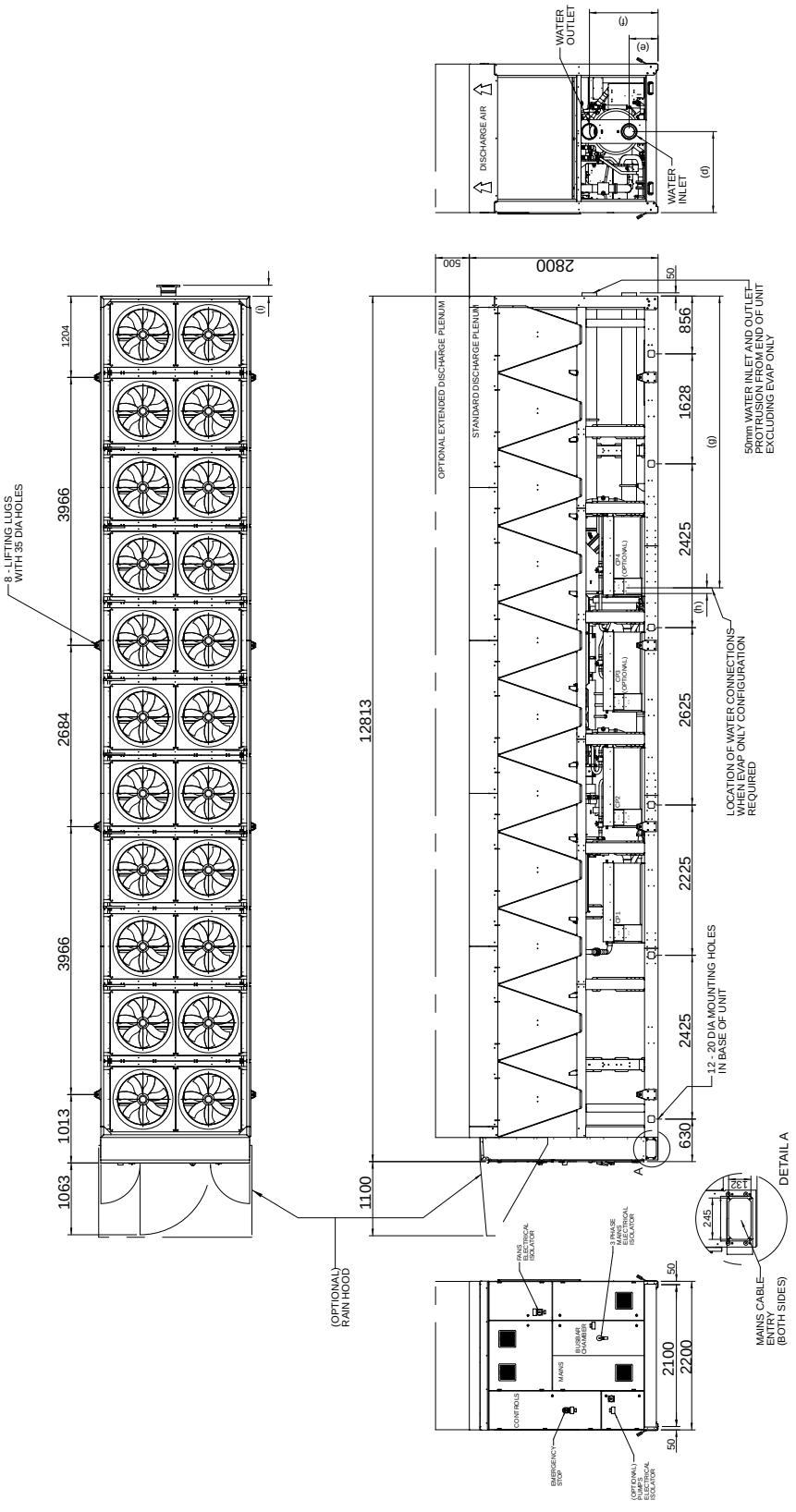
20 Fan Dual Circuit



Installation Data

General Arrangement Drawings

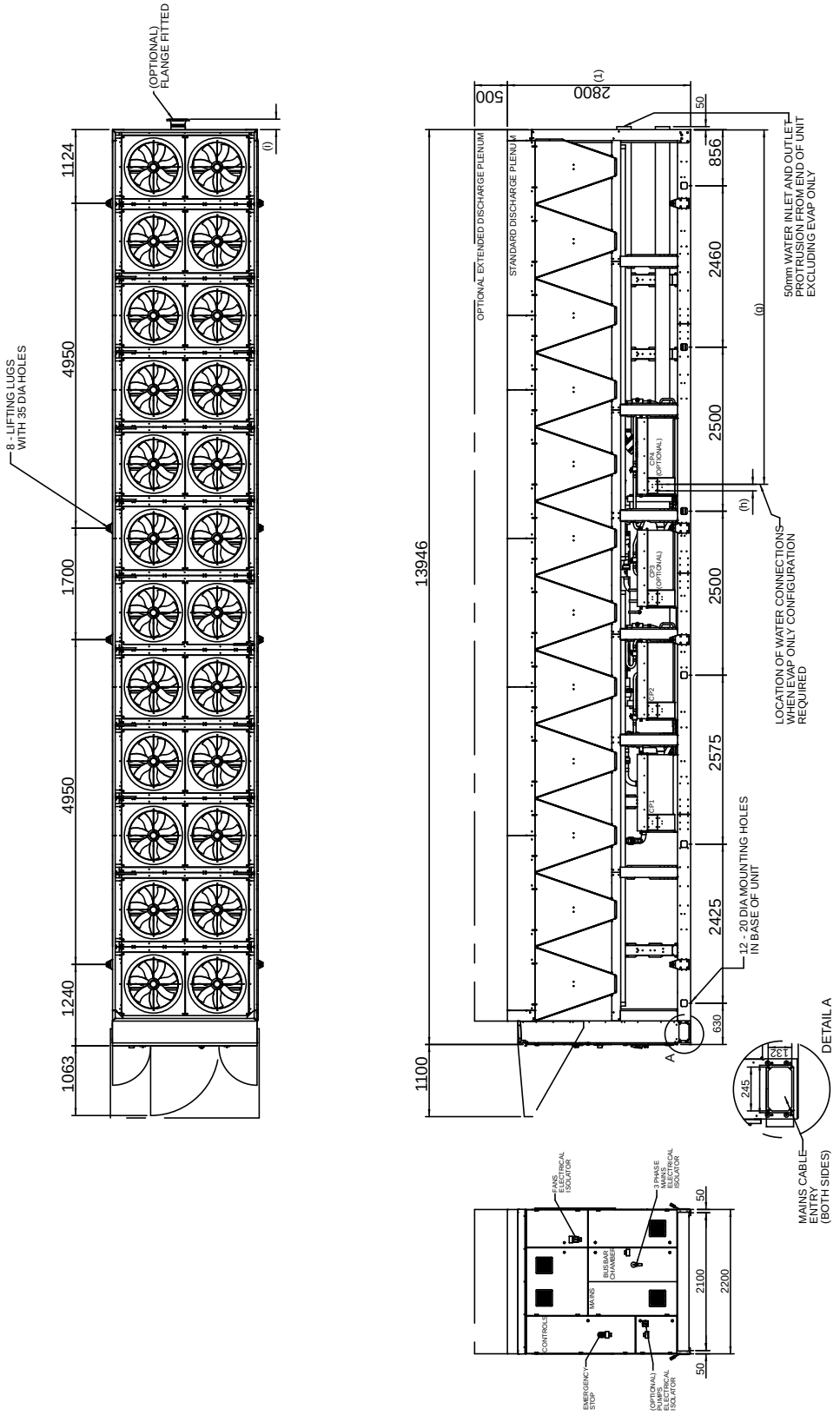
22 Fan Dual Circuit



Installation Data

General Arrangement Drawings

24 Fan Dual Circuit



Installation Data

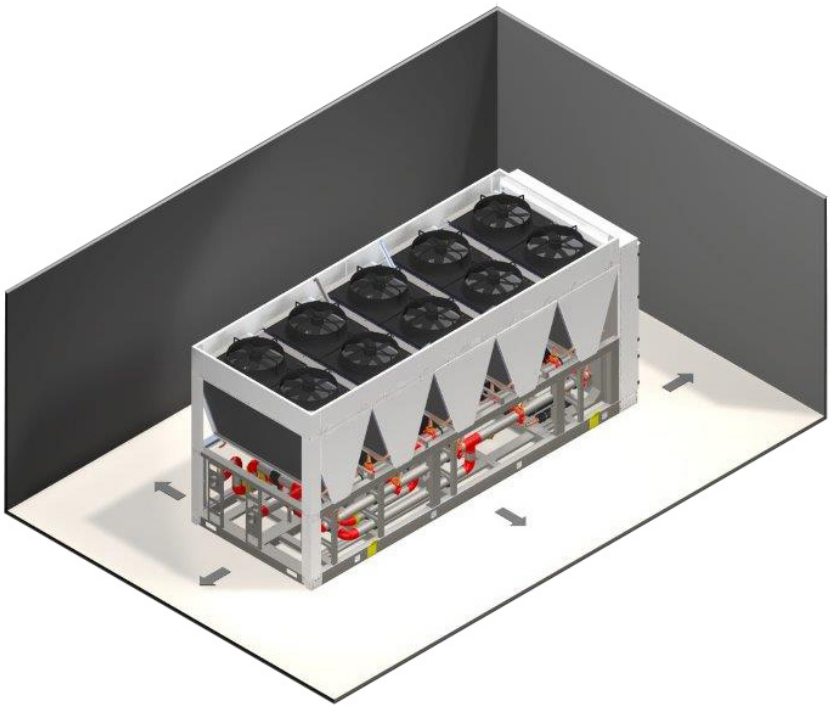
Positioning

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 +/- 5mm
- 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
- Increase airflow and maintenance clearances for side-enclosed or multiple unit applications
- Ensure there are no obstructions directly above the fans
- Allow free space 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.

CAUTION ⚠	The chiller must not be located near any fresh air vents to buildings to ensure that in the event of a refrigerant leak no risk exists. Care must also be taken near drains. The pressure relief valve discharge must be away from high voltage equipment.

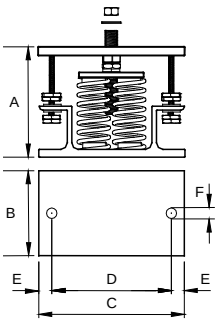
Airflow & Maintenance Clearances



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

Installation Data

Anti Vibration Mounting (Optional)



Spring Type

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

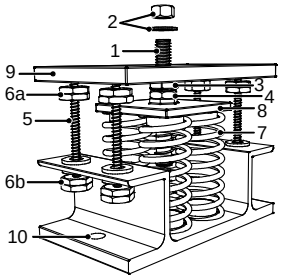
Dimensions

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

(1) Unloaded dimension

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	Bolting-down Holes
6a	Upper Retaining Nuts		



Installation

1. Locate and secure mount using bolting 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.

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. Do not fully adjust 1 mount at a time as this may overload and damage springs.

WHEN ALL MOUNTS ARE LEVEL, LOCK EACH INTO PLACE USING THE LEVELLING LOCK NUT (4)

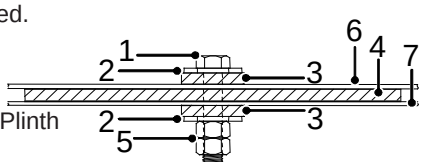
7. Lock all retaining nuts (6a and 6b) to the extreme ends of the retaining studs (5)

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

Pad Type

Components/Installation

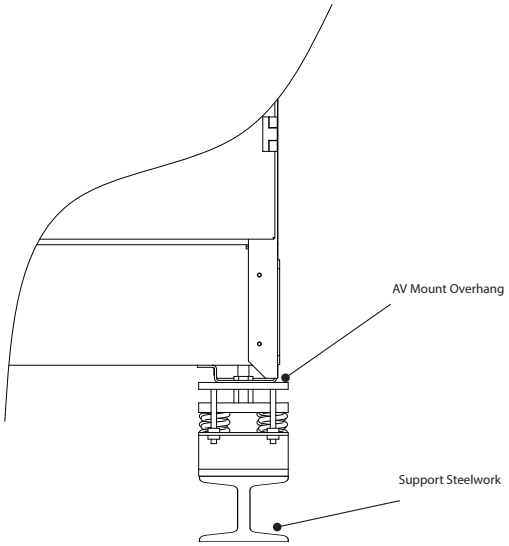
1. M16 Bolt (Not Supplied)
2. Washer (Not Supplied)
3. Fixing Pad 6173231
4. AV Pad 6173223
5. 2 x M16 Nut (Not Supplied)
6. Unit Base
7. Unit Mounting Plinth



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.



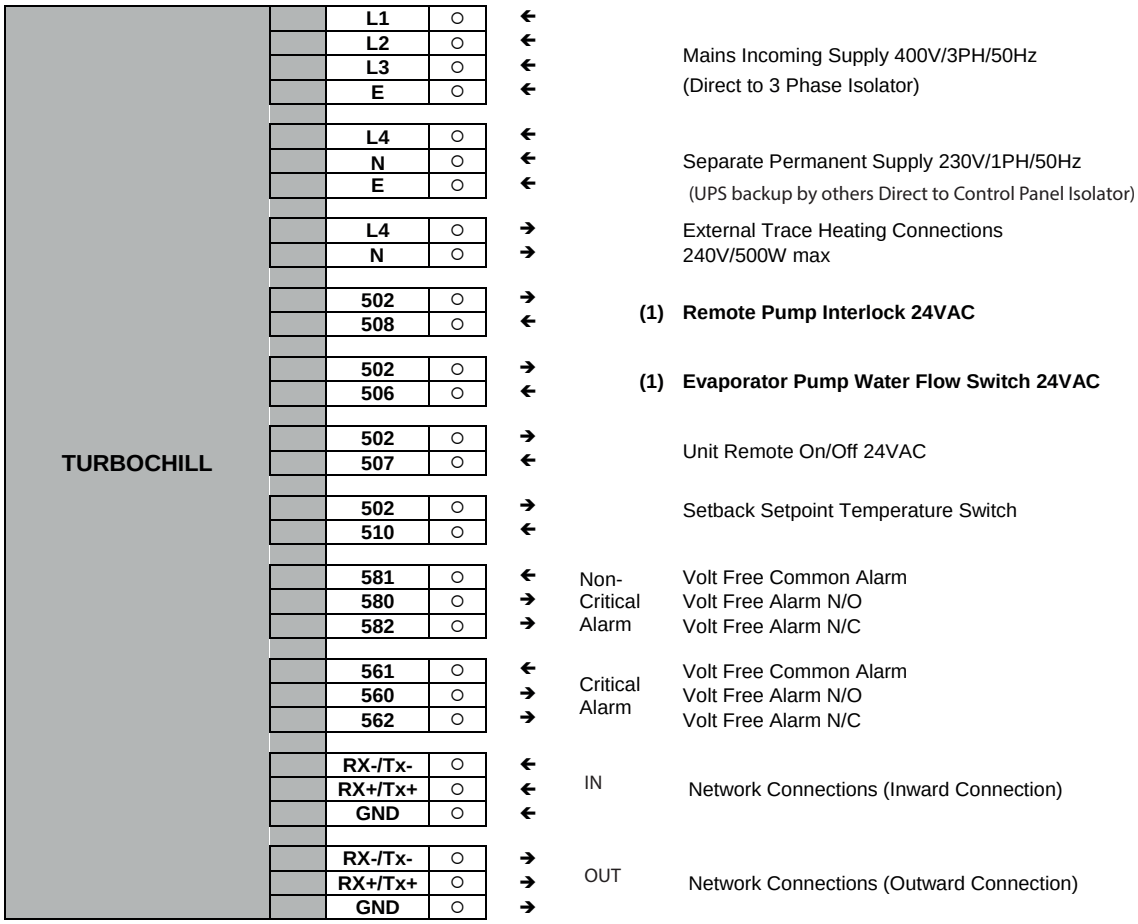
Installation Data

Interconnecting Wiring

General

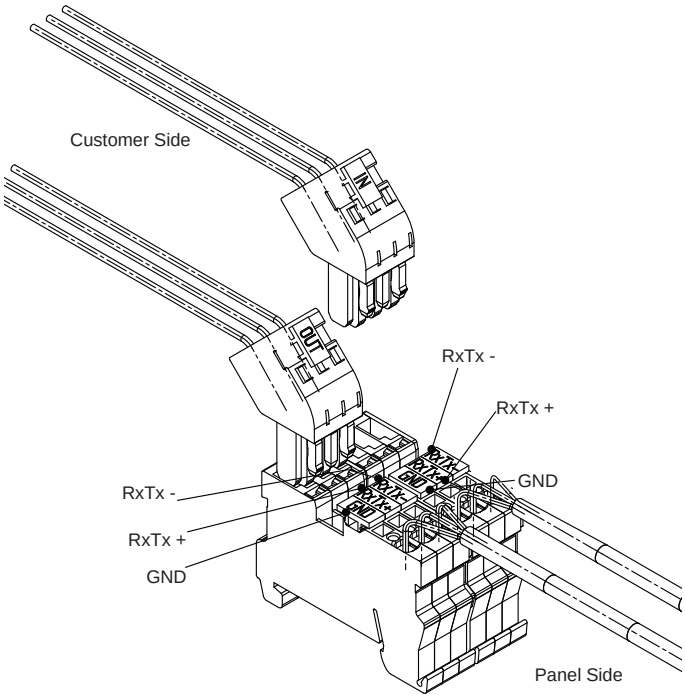
As standard the equipment is designed for 400V, 3 phase, 3 wire 50Hz and a separate permanent 230V, 1 phase, 50Hz supply, to all relevant IEE regulations, British standards and IEC requirements.
The control voltage to the interlocks is 24V, always size the low voltage interlock and protection cabling for a maximum voltage drop of 2V.
Avoid large voltage drops on cable runs, particularly low voltage wiring.

CAUTION ⚠	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. 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. FAILURE to do so will INVALIDATE WARRANTY. ALL work MUST be carried out by technically trained competent personnel. Isolate REMOTELY the mains incoming supply to the BUSBAR chamber prior to maintenance or repair work.



pLAN Termination

The plugged termination ensures that the connections are made simultaneously. Failure to attach 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

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

Three phase loads

- 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 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:

a) Install passive/active harmonic filters

b) 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:

a) Increase the size of the supply transformer

b) Connect the unit to a point with a high fault level (low impedance)

c) 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.

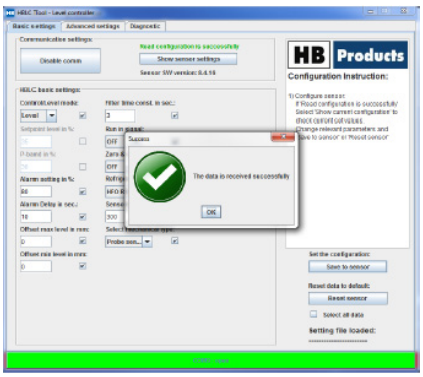
Liquid Level Sensor

The liquid level sensor is designed to measure the amount of refrigerant inside the flooded evaporator of a Turbochill and send a current signal between 4 and 20mA to the microprocessor.
This signal is used by the controller to control the flow of refrigerant into the evaporator for optimal and energy efficient performance. The liquid level sensor will be calibrated and located on the evaporator upon dispatch of the unit. However in the following section there is a quick guide on how to reset and recalibrate the sensor.

Step 1	Connect the USB cable (HBxC-USB) to the laptop. Connect the cable to the sensor. Open the HBLC Tool software

Step 2	Once the following dialog is open, press “Start Scan for Sensor”

Step 3	Once detected then the tool shown in Figure 3 will open. Change all parameters as per Figure 3 ensuring all avalible boxes are ticked



Step 4	Press the “Advanced Settings” tab, all setting stay the same as upon arrival.
Step 5	Click the “Save to sensor” button shown in Figure 4. Once the upload is complete Figure 5 will be shown and the program can be closed.

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 the unit will be damaged.

Shut Off Valves

All shut off valves must be opened prior to starting 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 and compressor ventilation fans. 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.

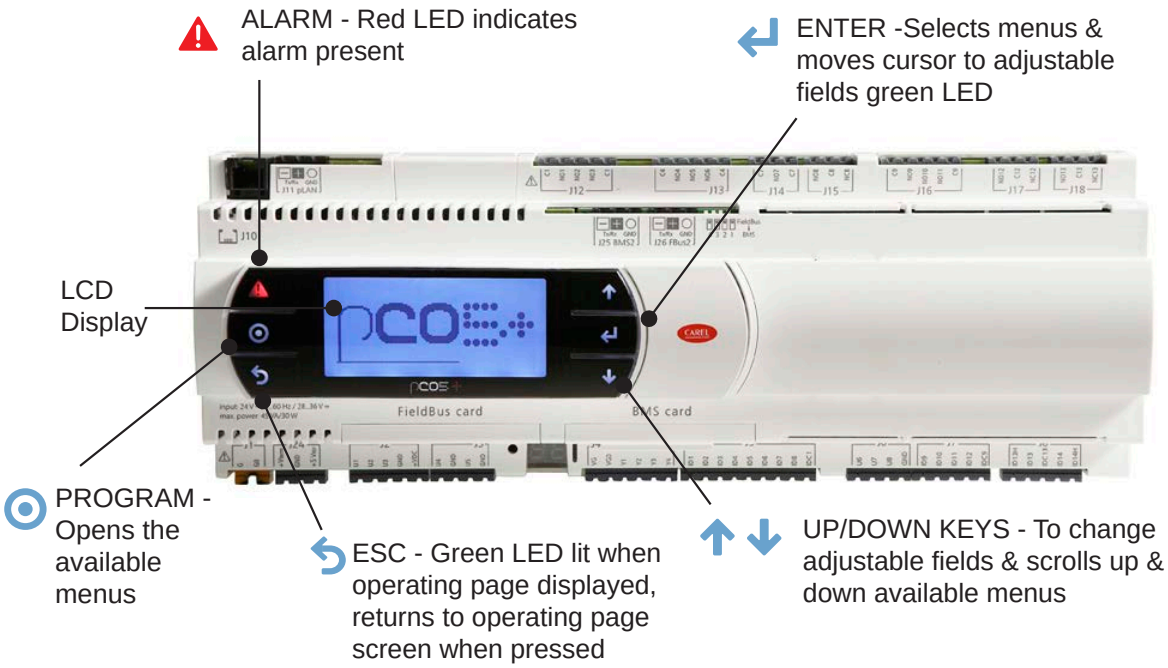
A damaged component could indicate a reason why the unit is not operating. For example: A refrigerant leak etc.

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

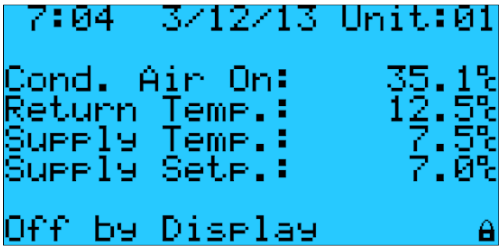
The microprocessor also monitors and displays the following measured parameters:

- Supply water temperature
- Return water temperature
- Suction pressure of each circuit
- Liquid pressure of each circuit
- Suction temperature at each circuit
- Superheat for each circuit

Unit Operation

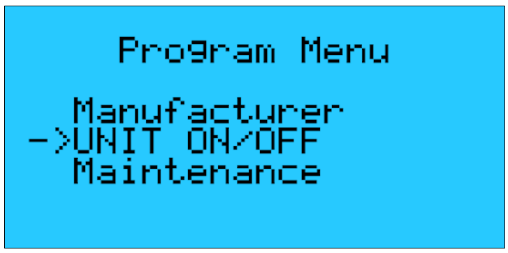
The unit must not be started unless the pre start checks have been carried out.

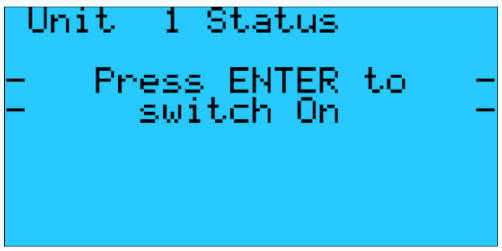
Restarting the Unit



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

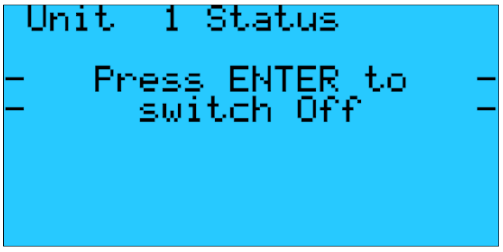
Using the or keys select the Unit On/Off option and press :





When is pressed the above screen will be shown.

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



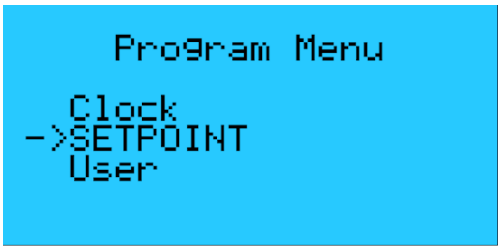
CAUTION ⚠	The chiller will be going through its start-up sequence. Pressing will turn the unit off.

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

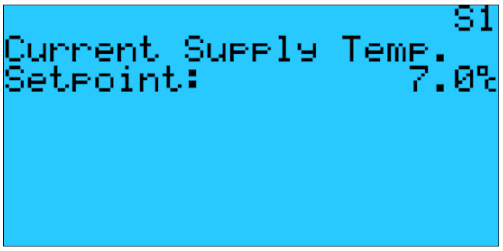
Changing the Setpoint

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



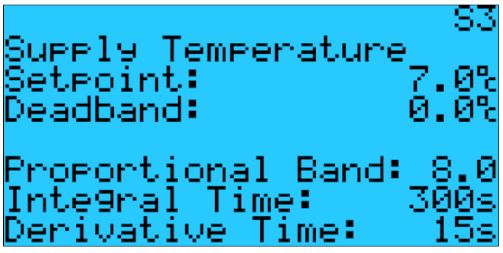
The following screen will be shown:



Using the or button scroll to the password screen

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:



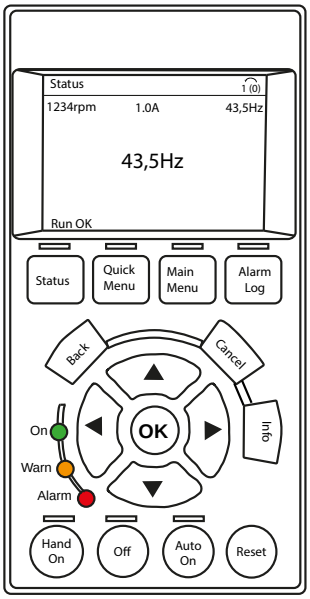
To adjust the set point press the key to highlight the set point, using the and keys enter the required set point and press the key until the cursor returns to the top of the screen.

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 initiated automatically the first time when its 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

OK — Select parameter marked by cursor and enables the change of parameters

Hand On — Enables control of drive via the GLCP. Start the motor and allows speed setting using arrow keys.

Off — Stops the motor.

Auto On — Enables drive control via controls input(s).

Reset — 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.

Back — Reverts to the previous step or layer in the navigation structure.

Cancel — Last change or command will be cancelled as long as the display has not been changed.

Info — Displays info about a command, parameter of function.

Status — Indicates the status of the drive and / or motor.

Quick Menu — Allows quick setup of the drive, most common parameters and functions can be accessed here.

Main Menu — Used to access all parameters for programming.

Alarm Log — 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.
The equipment contains live electrical and moving parts, ISOLATE prior to maintenance or repair work.

CAUTION ⚠	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.	•		

Service Tools/Test Equipment

- Touch-up Paint
- Pressurised Air
- Soft Brush

Safety Equipment

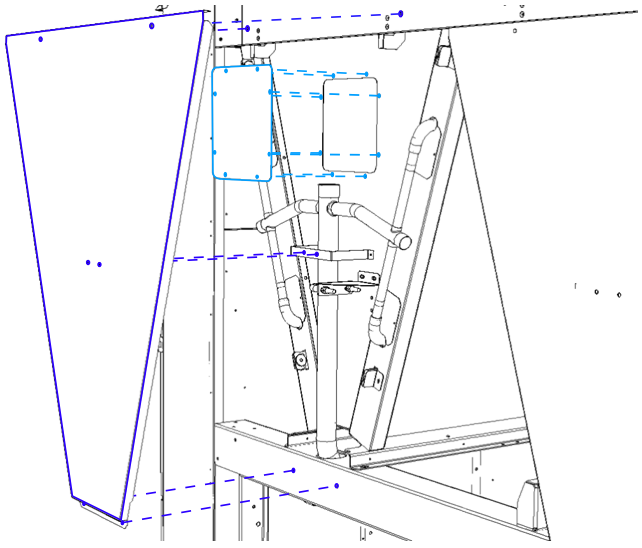
- Safety Glasses/Goggles

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 Isolator
- 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. Interogation 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.	•		
	Inspect the leak detector in accordance to EN378.		•	
	Head pressure control is maintained.	•		
	Check and record filter drier pressure drop.	•		
	Record details on F-Gas record.	•		
	Pressure relief valves. (replace in accordance to building insurance)			•
	Inspect Pressure relief rupture discs			•

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 1.0 +/- 0.3 Barg
HP switch (Auto reset): High pressure switch 12.5 Barg +/- 0.5 Barg
HP limiting function 10.7 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

Ensure that the differential pressure sensor operates satisfactorily; the best way to do this is to carefully reduce the flow to the chiller to simulate a flow fail.
The compressor cannot operate without the correct water flow rate and will invalidate warranty.
Disable compressor operation whilst simulating a low flow.

Procedure

- 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 carefully reduced to verify that the low flow alarm is activated.

Ensure that the tubes connected to the sensor are insulated.
Ensure correct flow rate is available to the chiller before compressors are reinstated.

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 (bar)
- 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 (bar)
- Liquid pressure (Bar)
- Discharge pressure (Bar)
- 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.

Troubleshooting

	Fault	Possible Cause	Remedy / Action
General	Unit will not start	No power.	Check power supply to the controller.
		Wired incorrectly.	Check wire connections in accordance with wiring diagram.
		Loose wires.	Check all wires, connections, terminals etc.
		Remote on/off.	Check that the remote on/ off is at the on position.
Refrigeration	Compressor not operating	No power to compressor.	Check isolator, fuses, MCBs, contactor and control circuit wiring.
		Low pressure cut-out operated (large or complete loss of refrigerant charge).	Recover refrigerant, repair, pressure test, evacuate and recharge system.
		Compressor showing fault on controller.	Determine fault, refer to alarm codes for further information.
	Head pressure too high / HP cut-out operated	Condenser coil clogged or dirty.	Clean condenser.
		Overcharge of refrigerant. Normally troublesome in warm weather.	Remove excess refrigerant from system using correct refrigerant handling techniques.
		Air or other non-condensable gas in system.	Evacuate system and re-charge with new refrigerant.
		Head pressure controller faulty.	Check EC fan control module - if faulty - replace.
		Fan not operating or operating inefficiently.	Check motor - if faulty - replace.
	Head pressure too low	Fan operating too fast in low ambient conditions.	Check EC fan control module - if faulty - replace.
	Suction pressure too low	Flash gas (bubbles in sight glass) at liquid line.	Investigate for refrigerant leaks, repair, pressure test, evacuate and re-charge system.
		Clogged filter drier (pressure / temperature drop across it).	Replace drier cores.

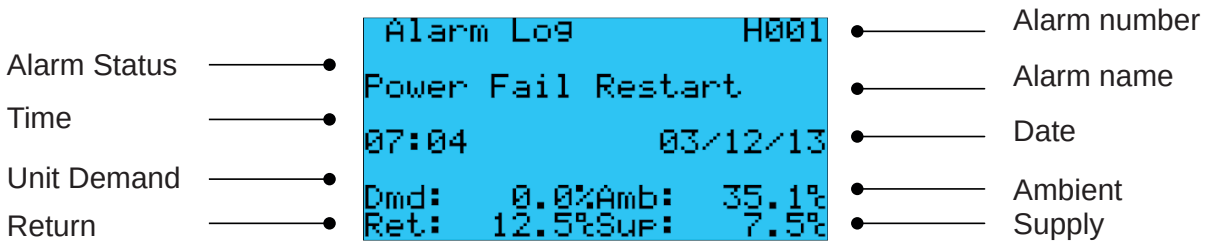
Troubleshooting

	Fault	Possible Cause	Remedy / Action
Condenser	Condenser fan not operating - power on	Power supply failure.	Check power supply at circuit breaker.
		Wiring to motors.	Check voltage at motor terminals.
		Motor / fan assembly jammed.	Isolate unit and check free rotation of motor/fan assembly. If faulty - replace.
		Motor internal overheat protector tripped.	Carry out continuity check at terminals “TK” in motor terminal box.
			If tripped and motor hot - check to see if the motor bearings have seized / fan difficult to turn.
			If tripped and motor cold - replace motor.
		Faulty motor windings / capacitor.	Motor humming would indicate fault in motor or capacitor. Check windings for continuity and if OK replace capacitor.
		Minimum speed set too low.	Adjust head pressure controller to suit.
	Condenser fan runs too fast	High ambient condition or excessive re-circulation of air around condenser coil.	Check installation against design.
		Minimum set speed setting incorrect.	Adjust as necessary.
		Incorrect pressure sensor setting.	Adjust via microprocessor.
		Faulty EC fan.	Replace fan.
		Faulty pressure sensor.	Replace sensor.
	Condenser fans runs only slowly	Incorrect pressure setting.	Adjust via microprocessor.
		Faulty EC fan.	Replace fan.
		Faulty pressure sensor.	Replace sensor.
		Motor / capacitor faulty.	Replace.
		Motor wired incorrectly.	Check against wiring diagram - correct as required.
Waterside	Pump not operating	No power to pump.	Check isolator, fuses, MCBs, contactor and control circuit wiring.
		Inverter tripped and does not auto reset (the microprocessor will try and auto reset 3 times)	Reset inverter drive via microprocessor.
	No water flow	Strainer blocked.	Clean strainer
	Pump noisy	Air in water system.	Purge air from water system.
		Pump cavitations.	Ensure there is 0.5m NPSH suction head to avoid cavitations.
	Unit not operating due to water pressure sensor low limit alarm.	Low flow alarm operating.	Check that the low flow pressure variable is set correctly. If too high the unit may have nuisance trips.
	Low temp limit alarm	Partial blockage in evaporator causing low flow.(1)	Clean evaporator
		No heatload on system	Ensure heatload is avaliable for unit to operate
	Water/ Glycol freezing up (crystallizes)	Insufficient glycol / water concentration for operating temperatures.	Check glycol concentration and add accordingly.

(1) The water flow is reduced however the differential pressure switch may still remains healthy as the pressure would increase.

Alarms

Alarm Menu Display



Alarm Log

The alarm page offers a log of the last 150 alarm messages in a scrolling log, pressing the alarm button will enter the alarm page.

Consequently the most recent alarm has the lowest log number (001) and will be displayed upon entering the alarm page. As another alarm occurs, the alarm number increases until 150 alarms have occurred. From this point on, alarm 001 moves to 002 and any new alarm will reside in position 001.

As new alarms are generated and cleared, the highest number logs (150) in the scroll will be lost.

Viewing the Alarm Log

By using the arrow keys, the last 150 alarms generated can be reviewed in chronological order. The display provides the alarm type information and the time and date of each alarm occurrence.

Alarm Detection

When the controller detects an alarm an output is generated to the relevant alarm relay which in turn illuminates the button. To see which alarm has accrued press the button and the most recent alarm will be displayed.

If the alarm light is on, the alarm page can be interrogated to identify which alarm is active.

Resetting the Alarm

The auto reset alarms will automatically reset once the conditions are within the set parameters. To clear a manual alarm press the button twice and the red LED will disappear.

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL001	Comp1 MB Comms.Offline						
AL002	Comp2 MB Comms.Offline	●		●	Communication to the compressor has failed	Check: Wiring/ Modbus connection/ Compressor communication board/Compressor Fuses and Power	
AL003	Comp3 MB Comms.Offline						
AL004	Comp4 MB Comms.Offline						
AL005	Power Meter MB Offline	●	●	●	Communication to the Power Meter has been lost	Check: Wiring/ Modbus connection/ Power Meter	
AL006	Cond. Pressure1 Fault		●	●			1 = Non Critical
AL007	Evap.Diff.Press. Fault		●	●			
AL008	Evap.Flow Sensor Fault		●	●			
AL009	Return Temp. Fault	●	●	●	The Sensor has gone out of its operating range	Check: Wiring/ Sensor	
AL010	Supply Temp. Fault		●	●			
AL011	Temp. Setpoint Fault			●			
AL012	Cond.Air On Temp Fault			●			
AL013	Clock Alarm	●		●	The internal clock has malfunctioned	Replace Battery	
AL014	Phase Failure	●	●	●	The 3 phase power supply crossed / loss (wait 30s with a power meter on power up)	Check 3 phase connection	2 = Critical
AL015	Emergency Stop	●	●	●	The emergency stop button has been pressed	Release the emergency stop button	
AL016	Evaporator Flow Alarm	●	●	●	No evaporator flow has been detected	Check: pumps are running/flow	
AL017	Low Pressure 1 Switch	●	●	●	The pressure in the system is below 0.5 bar	Check: Refrigerant charge/EEV operation	
AL018	Comp1 Status Alarm			●			
AL019	Comp2 Status Alarm			●			
AL020	Comp3 Status Alarm	●		●	Contactor has been switched on but has failed to operate	Check: High Pressure Switch/ contactor./Wiring.	1 = Non Critical
AL021	Comp4 Status Alarm			●			
AL022	Mains Failure	●	●	●	The permanent L4 supply has failed to the control panel	Check: L4 supply	2 = Critical
AL023	Pump1 Status Alarm		●	●			
AL024	Pump2 Status Alarm		●	●	Contactor has been switched on but has failed to operate	Check: Contactor/ Wiring	1 = Non Critical
AL025	Low Supply Temperature	●	●	●	The supply water temperature is too low	Check: Flow Rate/ Unit TD	

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL026	High Cond. Pressure 1	●	●	●	The condensing pressure is higher than 11.9 Bar	Check: Condenser/ Condenser Fans	1 = Non Critical
AL027	pCOe Module Offline	●		●	Communication to the pCOe expansion module has been lost	Check: Communications link/Wiring	
AL028	Leak Detector 1 Fault	●		●	The output from the leak detector is out of range	Check: Leak detector/Wiring	
AL029	Leak Detector 2 Fault			●			
AL030	Leak Detector 3 Fault			●			
AL031	Leak Detector 4 Fault			●			
AL032	Possible Leak Comp.1	●			The reading from the leak detector is above the threshold	Check: Pipe work around the leak detector	
AL033	Possible Leak Comp.2						
AL034	Possible Leak Comp.3						
AL035	Possible Leak Comp.4						
AL036	Inverter Temp. Comp.1	●		●	The temperature of the compressor inverter is high	Check: liquid line to the compressor/ solenoid valves	
AL037	Discharge Temp. Comp.1	●		●	The temperature of the discharge gas is high	Check: Refrigerant charge/discharge temperature sensor	
AL038	Suction Press. Comp.1	●		●	The suction pressure is too high / low at the compressor	Check: charge/ System load/sensor/ suction strainer	
AL039	Discharge Press.Comp.1	●		●	The Discharge pressure has exceeded it limit	Check: The sensor/ Condenser/Shut off valves	
AL040	3Ph. Current Comp.1	●		●	Indicates there may be an excessive load on the system		
AL041	Cavity Temp. Comp.1	●		●	The Cavity temperature inside the compressor is high	Check: the liquid cooling line/solenoid valve	
AL042	Air/Water Temp. Comp.1	●		●	There may be insufficient water flow due to air gaps	Check: Sensor limits	
AL043	Compress. Ratio Comp.1	●		●	The compression ratio of the compressor is out of range	Check: Condenser/ Evaporator loads and settings	
AL044	Bearing Reset Comp.1	●		●	Low Suction Pressure / Liquid	Check: Refrigerant Circuit	
AL045	SCR Temp. Comp.1	●*		●	Indicates insufficient cooling to the SCR plate	Check: Alarms limits in the compressor	

* AL045 becomes a critical alarm with single compressor units

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL046	System Lockout Comp.1			●	When a SCR/Inverter/Cavity temperature fault occurs more than 3 time in 30minutes	Check: Motor cooling line and solenoids valves/ Cycle Compressor Power	1 = Non Critical
AL047	Inverter Temp. Comp.2	●		●	The temperature of the compressor inverter is high	Check: liquid line to the compressor/ solenoid valves	
AL048	Discharge Temp. Comp.2	●		●	The temperature of the discharge gas is high	Check: Refrigerant charge/discharge temperature sensor	
AL049	Suction Press. Comp.2	●		●	The suction pressure is too high / low at the compressor	Check: charge/ System load/sensor/ suction strainer	
AL050	Discharge Press.Comp.2	●		●	The Discharge pressure has exceeded it limit	Check: The sensor/ Condenser/Shut off valves	
AL051	3Ph. Current Comp.2	●		●	Indicates there may be an excessive load on the system		
AL052	Cavity Temp. Comp.2	●		●	The Cavity temperature inside the compressor is high	Check: the liquid cooling line/solenoid valve	
AL053	Air/Water Temp. Comp.2	●		●	There may be insufficient water flow due to air gaps	Check: Sensor limits	
AL054	Compress. Ratio Comp.2	●		●	The compression ratio of the compressor is out of range	Check: Condenser/ Evaporator loads and settings	
AL055	Bearing Reset Comp.2	●		●	Low Suction / Liquid	Check: Refrigerant Circuit	
AL056	SCR Temp. Comp.2	●		●	Indicates insufficient cooling to the SCR plate	Check: Alarms limits in the compressor	
AL057	System Lockout Comp.2			●	When a SCR/Inverter/Cavity temperature fault occurs more than 3 time in 30minutes	Check: Motor cooling line and solenoids valves/ Cycle Power	
AL058	Inverter Temp. Comp.3	●		●	The temperature of the compressor inverter is high	Check: liquid line to the compressor/ solenoid valves	
AL059	Discharge Temp. Comp.3	●		●	The temperature of the discharge gas is high	Check: Refrigerant charge/discharge temperature sensor	
AL060	Suction Press. Comp.3	●		●	The suction pressure is too high / low at the compressor	Check: charge/ System load/sensor/ suction strainer	
AL061	Discharge Press.Comp.3	●		●	The Discharge pressure has exceeded it limit	Check: The sensor/ Condenser/ Shut off valves	
AL062	3Ph. Current Comp.3	●		●	Indicates there may be an excessive load on the system		
AL063	Cavity Temp. Comp.3	●		●	The Cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL064	Air/Water Temp. Comp.3	●		●	There may be insufficient water flow due to air gaps	Check: Sensor limits	1 = Non Critical
AL065	Compress. Ratio Comp.3	●		●	The compression ratio of the compressor is out of range	Check: Condenser / Evaporator loads and settings	
AL066	Bearing Reset Comp.3	●		●	Low Suction / Liquid	Check: Refrigerant Circuit	
AL067	SCR Temp. Comp.3	●		●	Indicates insufficient cooling to the SCR plate	Check: Alarms limits in the compressor	
AL068	System Lockout Comp.3			●	When a SCR/Inverter/Cavity temperature fault occurs more than 3 time in 30minutes	Check: Motor cooling line and solenoids valves / Cycle Power	
AL069	Inverter Temp. Comp.4	●		●	The temperature of the compressor inverter is high	Check: liquid line to the compressor / solenoid valves	
AL070	Discharge Temp. Comp.4	●		●	The temperature of the discharge gas is high	Check: Refrigerant charge / discharge temperature sensor	
AL071	Suction Press. Comp.4	●		●	The suction pressure is too high/low at the compressor	Check: charge / System load / sensor / suction strainer	
AL072	Discharge Press.Comp.4	●		●	The discharge pressure has exceeded its limit	Check: The sensor / Condenser/ Shut off valves	
AL073	3Ph. Current Comp.4	●		●	Indicates there may be an excessive load on the system		
AL074	Cavity Temp. Comp.4	●		●	The Cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	
AL075	Air/Water Temp. Comp.4	●		●	There may be insufficient water flow due to air gaps	Check: Sensor limits	
AL076	Compress. Ratio Comp.4	●		●	The compression ratio of the compressor is out of range	Check: Condenser / Evaporator loads and settings	
AL077	Bearing Reset Comp.4	●		●	Low Suction/Liquid	Check: Refrigerant Circuit	
AL078	SCR Temp. Comp.4	●		●	Indicates insufficient cooling to the SCR plate	Check: Alarms limits in the compressor	
AL079	System Lockout Comp.4			●	When a SCR/Inverter/Cavity temperature fault occurs more than 3 time in 30minutes	Check: Motor cooling line and solenoids valves / Cycle Power	
AL080	Hours Limit Comp.1	●		●	The hours run for the compressor has exceeded the threshold	If component is functioning correctly perform maintenance and reset hours	
AL081	Hours Limit Comp.2			●			
AL082	Hours Limit Comp.3			●			
AL083	Hours Limit Comp.4			●			

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL084	Hours Limit Pump 1			●	The hours run for the pumps has exceeded the threshold	If component is functioning correctly perform maintenance and reset hours	1 = Non Critical
AL085	Hours Limit Pump 2	●		●			
AL086	Liquid Level 1 Fault	●		●	The liquid level sensor has gone out of range	Check: The sensor / Wiring	
AL087	CW Valve FeedB(A)ck	●		●	Valve Failed to open	Check: Valve operation / Wiring	
AL088	Cond. Pressure2 Fault	●	●	●	The Sensor has gone out of its operating range	Check: Wiring / Sensor	
AL089	Low Pressure 2 Switch			●	The pressure in the system is below 0.5 bar	Check: Refrigerant charge / EEV operation	2 = Critical
AL090	High Cond. Pressure 2			●	The condensing pressure is higher than 11.9 Bar	Check: Condenser / Condenser Fans	1 = Non Critical
AL091	Liquid Level 2 Fault	●	●	●	The Sensor has gone out of its operating range	Check: Wiring / Sensor	
AL092	Evap.Inlet Temp. Fault	●	●	●			
AL093	Serious Alarm Comp.1			●	The compressor has been in alarm more than 5 times in 2 hours	Check the operation of the compressor / circuit	
AL094	Serious Alarm Comp.2			●			
AL095	Serious Alarm Comp.3			●			
AL096	Serious Alarm Comp.4			●			
AL097	Evap. Low Flowrate		●	●	The evaporator flow rate is equal to or less than 20% of design	Check the evaporator strainer or for any other blockages	
AL098	Liq. Valve EVD1 Alarm			●	The electronic expansion valve driver used to position the flooded evaporator liquid level control valve is in alarm	Check the wiring between the EVD and the liquid level control valve / check the operation of the control valve stepper motor	2 = Critical
AL099	Liq. Valve EVD2 Alarm			●			
AL100	High Liquid Level Cct1	●			High level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve	1 = Non Critical
AL101	Low Liquid Level Cct1	●			Low level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve / refrigerant leak	
AL102	High Liquid Level Cct2	●			High level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve	
AL103	Low Liquid Level Cct2	●			Low level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve / refrigerant leak	
AL104	Cond.Return Temp.Fault	●	●	●	The Sensor has gone out of its operating range	Check: Wiring / Sensor	

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL105	Cond.Supply Temp.Fault	●	●	●	The Sensor has gone out of its operating range	Check: Wiring/ Sensor	1 = Non Critical
AL106	Cond.Diff.Press. Fault	●	●	●			
AL107	Condenser Flow Alarm	●			No condenser flow has been detected	Check: condenser pump is running / flow	2 = Critical
AL108	Unit Pump Down Cct1			●	The circuit has been partially pump down and disabled	Check for refrigerant loss and reset	
AL109	Unit Pump Down Cct2			●			
AL110	Possible Unit Ref.Leak	●			A possible unit refrigerant leak has been detected	Check for refrigerant loss	1 = Non Critical
AL111	Mains Isolator Status	●	●	●	Mains isolator has been switched off	Check with maintenance personnel before switching back on	2 = Critical
AL112	Cond. Fan Trip Cct1	●		●	Isolator for circuit 1 condenser fan has been switched off		1 = Non Critical
AL113	Cond. Fan Trip Cct2	●		●	Isolator for circuit 2 condenser fan has been switched off		
AL114	Fan Isolator Status	●		●	Common isolator for circuit 1 and 2 condenser fan has been switched off		
AL115	Pump Isolator Status	●		●	Pump isolator has been switched off		
AL116	Leak1 MB Comms.Offline	●			Communication to the compressor 1 refrigerant leak detector has been lost	Check: Wiring / Modbus connection / Leak detector	
AL117	Leak2 MB Comms.Offline	●			Communication to the compressor 2 refrigerant leak detector has been lost		
AL118	Leak3 MB Comms.Offline	●			Communication to the compressor 3 refrigerant leak detector has been lost		
AL119	Leak4 MB Comms.Offline	●			Communication to the compressor 4 refrigerant leak detector has been lost		
AL120	Leak Alarm		●	●	One or more refrigerant leaks have been detected	Check for refrigerant loss	2 = Critical

TurboChill™ R1234ze Air Cooled and Free Cooled Chiller

Pump Alarms

Code and Display Text	Warning	Status			Operating Mode	Re-setting
		Warning	Alarm	Locked Alarm		
1	Too high leakage current			●	Stop	Man.
2	Mains phase failure		●		Stop	Auto
3	External fault		●		Stop	Man.
16	Other fault		●		Stop	Auto
				●	Stop	Man.
30	Replace motor bearing	●			-	Man. (3)
32	Overvoltage	●			-	Auto
			●		Stop	Auto
40	Undervoltage	●			-	Auto
			●		Stop	Auto
48	Overload		●		Stop	Auto
				●	Stop	Man.
49	Overload		●		Stop	Auto
55	Overload	●			-	Auto
					Stop	Auto
57	Dry running	●			Stop	Auto
64	Too high CUE temperature	●			Stop	Auto
70	Too high motor temperature	●			Stop	Auto
77	Communication fault, duty / standby	●			-	Auto
89	Sensor 1 outside range		●		(1)	Auto
91	Temperature sensor 1 outside range	●			-	Auto
93	Sensor 2 outside range	●			-	Auto
96	Setpoint signal outside range	●			(1)	Auto
148	Too high bearing temperature	●				Auto
			●		Stop	Auto
149	Too high bearing temperature	●				Auto
			●			Auto
155	Inrush fault		●			Auto
175	Temperature sensor 2 outside range	●			-	Auto
240	Re-lubricate motor bearings	●			-	Man. (3)
241	Motor phase failure	●			-	Auto
			●		Stop	Auto
242	AMA did not succeed (2)	●			-	Man.

(1) in case of an alarm, the CUE will change the operating mode depending on the pump type
(2) AMA, Automatic Motor Adaption
(3) Warning is reset in display 3.20

Troubleshooting

Appendix - Ecodesign

The following tables of Ecodesign data is based on the following common information:

SEPR (Seasonal Energy Performance Ratio)

- Type of Condensing - Air Cooled Standard EC Fans
- Refrigerant Fluid - R1234ze(E).
- Operating Temperature - 7°C.
- 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)	Evaportator inlet/ outlet water temperatures (°C)
			Fixed outlet
A	100	35	12/7
B	93	25	(*)/7
C	87	15	(*)/7
D	80	5	(*)/7

Information extracted from EU 2016/2281 Table 22.

(*) With the water flow rate determined during “A” test for units with a fixed water flow rate or with a variable 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

Information extracted from EU 2016/2281 Table 21.

Technical Data - TCC R

TCC11R04G-01, TCC11R06G-01, TCC11R08G-01

Ecodesign

	Notes:		TCC11R04G-01	TCC11R06G-01	TCC11R08G-01
SEPR	1,3,5		7.4	8.1	8.6
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	239842.0	242104.7	236773.9
Rated Refrigerant Capacity P_A	1,3,5	kW	239.2	264.0	273.9
Rated Power Input D_A		kW	70.1	72.1	70.7
Rated $EER_{DC,A}$			3.41	3.66	3.87
Declared Refrigerant Capacity P_B	1,3,5	kW	223.2	246.3	255.6
Declared Power Input D_B		kW	46.8	47.3	46.4
Declared $EER_{DC,B}$			4.77	5.21	5.51
Declared Refrigerant Capacity P_C	1,3,5	kW	207.2	228.7	237.3
Declared Power Input D_C		kW	30.5	30.8	30.3
Declared $EER_{DC,C}$			6.80	7.42	7.82
Declared Refrigerant Capacity P_D	1,3,5	kW	191.2	211.0	218.9
Declared Power Input D_D		kW	19.2	19.3	18.7
Declared $EER_{DC,D}$			9.94	10.91	11.69
SSCEE	2,3,5	%	204.2	219.2	229.6
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	240.0	265.0	275.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	239.2	264.0	273.9
Declared EER_d 35°C			3.41	3.66	3.87
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	176.0	194.3	201.6
Declared EER_d 30°C			4.34	4.76	5.03
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	113.2	124.5	129.2
Declared EER_d 25°C			5.72	6.06	6.38
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	97.7	94.6	92.8
Declared EER_d 20°C			6.78	7.32	7.58
Sound Power Level		dB(A)	88	87	87
Air Volume		m^3/h	82650	123975	165301
Off mode P_{OFF}		kW	0.249	0.249	0.249
Thermostat-off mode P_{TO}		kW	0.832	0.989	1.076
Standby Mode P_{SB}		kW	0.330	0.340	0.350
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC12R08G-04, TCC12R10G-04

Ecodesign

	Notes:		TCC12R08G-04	TCC12R10G-04
SEPR	1,3,5		7.3	7.6
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	478893.2	486447.9
Rated Refrigerant Capacity P_A	1,3,5	kW	468.6	498.4
Rated Power Input D_A		kW	140.6	144.5
Rated $EER_{DC,A}$			3.33	3.45
Declared Refrigerant Capacity P_B	1,3,5	kW	437.3	465.1
Declared Power Input D_B		kW	94.0	95.5
Declared $EER_{DC,B}$			4.65	4.87
Declared Refrigerant Capacity P_C	1,3,5	kW	406.0	431.7
Declared Power Input D_C		kW	60.9	61.9
Declared $EER_{DC,C}$			6.66	6.97
Declared Refrigerant Capacity P_D	1,3,5	kW	374.6	398.4
Declared Power Input D_D		kW	38.3	38.8
Declared $EER_{DC,D}$			9.78	10.26
SSCEE	2,3,5	%	206.8	212.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	470.0	500.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	468.6	498.4
Declared EER_d 35°C			3.33	3.45
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	344.9	366.8
Declared EER_d 30°C			4.27	4.46
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	221.3	235.3
Declared EER_d 25°C			5.64	5.56
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	91.6	94.7
Declared EER_d 20°C			7.24	7.71
Sound Power Level		dB(A)	91	91
Air Volume		m^3/h	165301	206626
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	1.380	1.590
Standby Mode P_{SB}		kW	0.453	0.463
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC12R12G-04, TCC12R14G-04

Ecodesign

	Notes:		TCC12R12G-04	TCC12R14G-04
SEPR	1,3,5		7.8	7.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	500544.2	522260.9
Rated Refrigerant Capacity P_A	1,3,5	kW	528.2	557.9
Rated Power Input D_A		kW	149.9	156.6
Rated $EER_{DC,A}$			3.52	3.56
Declared Refrigerant Capacity P_B	1,3,5	kW	492.8	520.6
Declared Power Input D_B		kW	97.9	102.0
Declared $EER_{DC,B}$			5.03	5.10
Declared Refrigerant Capacity P_C	1,3,5	kW	457.5	483.3
Declared Power Input D_C		kW	63.7	66.6
Declared $EER_{DC,C}$			7.18	7.26
Declared Refrigerant Capacity P_D	1,3,5	kW	422.2	445.9
Declared Power Input D_D		kW	40.0	41.6
Declared $EER_{DC,D}$			10.57	10.72
SSCEE	2,3,5	%	210.1	229.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	530.0	560.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	528.2	557.9
Declared EER_d 35°C			3.52	3.56
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	388.7	410.6
Declared EER_d 30°C			4.62	4.75
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	249.2	263.2
Declared EER_d 25°C			6.64	6.70
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	109.8	87.8
Declared EER_d 20°C			5.62	7.47
Sound Power Level		dB(A)	91	90
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	1.820	2.070
Standby Mode P_{SB}		kW	0.473	0.483
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC22R08G-14, TCC22R10G-14, TCC22R12G-14

Ecodesign

	Notes:		TCC22R08G-14	TCC22R10G-14	TCC22R12G-14
SEPR	1,3,5		7.4	7.8	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	470456.0	476166.8	489306.1
Rated Refrigerant Capacity P_A	1,3,5	kW	468.8	498.6	528.4
Rated Power Input D_A		kW	138.5	141.7	146.5
Rated $EER_{DC,A}$			3.38	3.52	3.61
Declared Refrigerant Capacity P_B	1,3,5	kW	437.4	465.2	493.0
Declared Power Input D_B		kW	92.7	93.9	96.0
Declared $EER_{DC,B}$			4.72	4.96	5.14
Declared Refrigerant Capacity P_C	1,3,5	kW	406.1	431.9	457.7
Declared Power Input D_C		kW	59.9	60.7	62.4
Declared $EER_{DC,C}$			6.78	7.11	7.33
Declared Refrigerant Capacity P_D	1,3,5	kW	374.8	398.6	422.4
Declared Power Input D_D		kW	37.6	37.9	39.0
Declared $EER_{DC,D}$			9.98	10.53	10.84
SSCEE	2,3,5	%	186.3	194.3	211.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	470.0	500.0	530.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	468.8	498.6	528.4
Declared EER_d 35°C			3.38	3.52	3.61
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	345.1	367.0	388.9
Declared EER_d 30°C			4.25	4.50	4.68
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	221.4	235.4	249.4
Declared EER_d 25°C			4.55	4.56	5.99
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	96.2	101.0	109.7
Declared EER_d 20°C			6.52	7.13	6.38
Sound Power Level		dB(A)	91	91	91
Air Volume		m^3/h	165301	206626	247951
Off mode P_{OFF}		kW	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	1.233	1.421	1.624
Standby Mode P_{SB}		kW	0.474	0.484	0.494
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC22R14G-14, TCC23R12G-17, TCC23R14G-17

Ecodesign

	Notes:		TCC22R14G-14	TCC23R12G-17	TCC23R14G-17
SEPR	1,3,5		8.2	7.5	7.7
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	509024.7	623319.1	655029.0
Rated Refrigerant Capacity P_A	1,3,5	kW	558.2	628.7	678.4
Rated Power Input D_A		kW	152.7	185.1	195.1
Rated $EER_{DC,A}$			3.66	3.40	3.48
Declared Refrigerant Capacity P_B	1,3,5	kW	520.8	586.7	633.1
Declared Power Input D_B		kW	99.8	124.5	130.6
Declared $EER_{DC,B}$			5.22	4.71	4.85
Declared Refrigerant Capacity P_C	1,3,5	kW	483.5	544.7	587.8
Declared Power Input D_C		kW	65.1	79.8	83.9
Declared $EER_{DC,C}$			7.42	6.83	7.01
Declared Refrigerant Capacity P_D	1,3,5	kW	446.2	502.7	542.4
Declared Power Input D_D		kW	40.4	49.2	51.7
Declared $EER_{DC,D}$			11.05	10.22	10.50
SSCEE	2,3,5	%	218.7	221.2	226.4
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	560.0	630.0	680.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	558.2	628.7	678.4
Declared EER_d 35°C			3.66	3.40	3.48
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	410.8	462.9	499.5
Declared EER_d 30°C			4.81	4.53	4.64
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	263.4	297.1	320.5
Declared EER_d 25°C			6.15	5.89	6.07
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	123.2	131.3	141.6
Declared EER_d 20°C			6.83	8.10	8.20
Sound Power Level		dB(A)	90	92	92
Air Volume		m^3/h	289276	247951	289276
Off mode P_{OFF}		kW	0.322	0.375	0.375
Thermostat-off mode P_{TO}		kW	1.844	1.304	1.560
Standby Mode P_{SB}		kW	0.504	0.596	0.606
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC23R16G-17, TCC23R18G-17, TCC24R16G-18

Ecodesign

	Notes:		TCC23R16G-17	TCC23R18G-17	TCC24R16G-18
SEPR	1,3,5		7.8	7.9	7.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	691157.9	732800.2	818247.1
Rated Refrigerant Capacity P_A	1,3,5	kW	728.2	777.8	818.1
Rated Power Input D_A		kW	207.0	220.8	242.7
Rated $EER_{DC,A}$			3.52	3.52	3.37
Declared Refrigerant Capacity P_B	1,3,5	kW	679.5	725.8	763.4
Declared Power Input D_B		kW	137.4	144.5	164.1
Declared $EER_{DC,B}$			4.95	5.02	4.65
Declared Refrigerant Capacity P_C	1,3,5	kW	630.8	673.8	708.8
Declared Power Input D_C		kW	88.2	93.5	104.7
Declared $EER_{DC,C}$			7.15	7.21	6.77
Declared Refrigerant Capacity P_D	1,3,5	kW	582.2	621.8	654.1
Declared Power Input D_D		kW	54.7	58.2	64.4
Declared $EER_{DC,D}$			10.64	10.68	10.16
SSCEE	2,3,5	%	229.6	231.5	226.4
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	730.0	780.0	820.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	728.2	777.8	818.1
Declared EER_d 35°C			3.52	3.52	3.37
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	536.1	572.6	602.3
Declared EER_d 30°C			4.65	4.68	4.63
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	343.9	367.3	386.5
Declared EER_d 25°C			6.16	6.30	6.31
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	151.8	162.1	170.7
Declared EER_d 20°C			8.46	8.44	7.87
Sound Power Level		dB(A)	92	92	94
Air Volume		m^3/h	330601	371926	330601
Off mode P_{OFF}		kW	0.375	0.375	0.427
Thermostat-off mode P_{TO}		kW	1.843	2.155	1.900
Standby Mode P_{SB}		kW	0.616	0.626	0.719
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC24R18G-18, TCC24R20G-18

Ecodesign

	Notes:		TCC24R18G-18	TCC24R20G-18
SEPR	1,3,5		7.6	7.7
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	838708.0	861609.1
Rated Refrigerant Capacity P_A	1,3,5	kW	857.9	897.6
Rated Power Input D_A		kW	251.0	259.7
Rated $EER_{DC,A}$			3.42	3.46
Declared Refrigerant Capacity P_B	1,3,5	kW	800.5	837.6
Declared Power Input D_B		kW	168.0	172.3
Declared $EER_{DC,B}$			4.77	4.86
Declared Refrigerant Capacity P_C	1,3,5	kW	743.2	777.6
Declared Power Input D_C		kW	107.4	110.4
Declared $EER_{DC,C}$			6.92	7.04
Declared Refrigerant Capacity P_D	1,3,5	kW	685.9	717.6
Declared Power Input D_D		kW	66.0	67.7
Declared $EER_{DC,D}$			10.40	10.61
SSCEE	2,3,5	%	229.1	228.8
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	860.0	900.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	857.9	897.6
Declared EER_d 35°C			3.42	3.46
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	631.6	660.8
Declared EER_d 30°C			4.63	4.59
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	405.2	424.0
Declared EER_d 25°C			6.44	6.53
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	178.9	187.1
Declared EER_d 20°C			7.99	7.83
Sound Power Level		dB(A)	94	93
Air Volume		m^3/h	371926	413252
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	2.124	2.363
Standby Mode P_{SB}		kW	0.729	0.739
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC24R22G-18, TCC24R24G-18

Ecodesign

	Notes:		TCC24R22G-18	TCC24R24G-18
SEPR	1,3,5		7.8	7.8
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	900299.7	945103.2
Rated Refrigerant Capacity P_A	1,3,5	kW	947.3	997.0
Rated Power Input D_A		kW	270.4	284.5
Rated $EER_{DC,A}$			3.50	3.50
Declared Refrigerant Capacity P_B	1,3,5	kW	884.0	930.3
Declared Power Input D_B		kW	179.3	187.5
Declared $EER_{DC,B}$			4.93	4.96
Declared Refrigerant Capacity P_C	1,3,5	kW	820.6	863.6
Declared Power Input D_C		kW	114.9	120.7
Declared $EER_{DC,C}$			7.14	7.15
Declared Refrigerant Capacity P_D	1,3,5	kW	757.3	797.0
Declared Power Input D_D		kW	71.1	74.7
Declared $EER_{DC,D}$			10.65	10.67
SSCEE	2,3,5	%	231.1	232.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	950.0	1000.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	947.3	997.0
Declared EER_d 35°C			3.50	3.50
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	697.3	733.8
Declared EER_d 30°C			4.58	4.62
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	447.3	470.7
Declared EER_d 25°C			6.59	6.63
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	197.3	207.5
Declared EER_d 20°C			8.05	8.05
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	454577	495902
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	2.684	3.030
Standby Mode P_{SB}		kW	0.749	0.759
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data - TCC X

TCC11X04G-01, TCC11X06G-01, TCC11X08G-01

Ecodesign

	Notes:		TCC11X04G-01	TCC11X06G-01	TCC11X08G-01
SEPR	1,3,5		8.0	8.8	9.2
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	186386.5	190217.3	201921.2
Rated Refrigerant Capacity P_A	1,3,5	kW	199.4	224.3	249.1
Rated Power Input D_A		kW	59.7	57.4	61.0
Rated $EER_{DC,A}$			3.34	3.91	4.08
Declared Refrigerant Capacity P_B	1,3,5	kW	186.1	209.3	232.4
Declared Power Input D_B		kW	37.4	38.1	40.4
Declared $EER_{DC,B}$			4.98	5.49	5.75
Declared Refrigerant Capacity P_C	1,3,5	kW	172.7	194.3	215.8
Declared Power Input D_C		kW	23.8	24.3	25.8
Declared $EER_{DC,C}$			7.26	7.99	8.35
Declared Refrigerant Capacity P_D	1,3,5	kW	159.4	179.3	199.1
Declared Power Input D_D		kW	14.6	14.9	15.8
Declared $EER_{DC,D}$			10.91	12.01	12.58
SSCEE	2,3,5	%	193.4	226.8	231.5
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	200.0	225.0	250.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	199.4	224.3	249.1
Declared EER_d 35°C			3.34	3.91	4.08
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	146.8	165.1	183.3
Declared EER_d 30°C			4.30	4.85	5.13
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	111.5	105.8	114.6
Declared EER_d 25°C			5.01	6.44	6.30
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	98.1	95.0	93.2
Declared EER_d 20°C			6.76	7.36	7.66
Sound Power Level		dB(A)	87	87	87
Air Volume		m^3/h	82650	123975	165301
Off mode P_{OFF}		kW	0.249	0.249	0.249
Thermostat-off mode P_{TO}		kW	0.594	0.738	0.897
Standby Mode P_{SB}		kW	0.330	0.340	0.350
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC12X08G-04, TCC12X10G-4

Ecodesign

	Notes:		TCC12X08G-04	TCC12X10G-04
SEPR	1,3,5		7.7	8.1
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	414154.7	419863.5
Rated Refrigerant Capacity P_A	1,3,5	kW	428.9	458.7
Rated Power Input D_A		kW	125.9	126.2
Rated $EER_{DC,A}$			3.41	3.63
Declared Refrigerant Capacity P_B	1,3,5	kW	400.2	428.0
Declared Power Input D_B		kW	82.8	83.5
Declared $EER_{DC,B}$			4.83	5.13
Declared Refrigerant Capacity P_C	1,3,5	kW	371.5	397.4
Declared Power Input D_C		kW	52.8	53.7
Declared $EER_{DC,C}$			7.04	7.40
Declared Refrigerant Capacity P_D	1,3,5	kW	342.9	366.7
Declared Power Input D_D		kW	32.7	33.1
Declared $EER_{DC,D}$			10.48	11.08
SSCEE	2,3,5	%	225.7	230.7
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	430.0	460.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	428.9	458.7
Declared EER_d 35°C			3.41	3.63
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	315.7	337.6
Declared EER_d 30°C			4.69	4.71
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	202.6	216.6
Declared EER_d 25°C			6.36	6.59
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	92.3	91.1
Declared EER_d 20°C			7.69	7.75
Sound Power Level		dB(A)	90	90
Air Volume		m^3/h	165301	206626
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	1.128	1.314
Standby Mode P_{SB}		kW	0.453	0.463
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC12X12G-04, TCC12X14G-04

Ecodesign

	Notes:		TCC12X12G-04	TCC12X14G-04
SEPR	1,3,5		8.4	8.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	432445.2	451108.0
Rated Refrigerant Capacity P_A	1,3,5	kW	488.5	518.3
Rated Power Input D_A		kW	130.0	135.8
Rated $EER_{DC,A}$			3.76	3.82
Declared Refrigerant Capacity P_B	1,3,5	kW	455.8	483.6
Declared Power Input D_B		kW	86.1	89.1
Declared $EER_{DC,B}$			5.30	5.43
Declared Refrigerant Capacity P_C	1,3,5	kW	423.1	448.9
Declared Power Input D_C		kW	55.3	57.5
Declared $EER_{DC,C}$			7.66	7.80
Declared Refrigerant Capacity P_D	1,3,5	kW	390.5	414.3
Declared Power Input D_D		kW	34.1	35.7
Declared $EER_{DC,D}$			11.45	11.59
SSCEE	2,3,5	%	212.0	243.4
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	490.0	520.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	488.5	518.3
Declared EER_d 35°C			3.76	3.82
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	359.5	381.4
Declared EER_d 30°C			4.77	4.92
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	230.6	244.6
Declared EER_d 25°C			6.24	7.00
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	101.6	123.3
Declared EER_d 20°C			5.98	8.31
Sound Power Level		dB(A)	90	90
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	1.518	1.741
Standby Mode P_{SB}		kW	0.473	0.483
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC22X08G-14, TCC22X10G-14, TCC22X12G-14

Ecodesign

	Notes:		TCC22X08G-14	TCC22X10G-14	TCC22X12G-14
SEPR	1,3,5		7.7	8.1	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	413723.5	418691.9	429796.6
Rated Refrigerant Capacity P_A	1,3,5	kW	429.0	458.8	488.6
Rated Power Input D_A		kW	126.4	126.4	129.7
Rated $EER_{DC,A}$			3.39	3.63	3.77
Declared Refrigerant Capacity P_B	1,3,5	kW	400.3	428.2	456.0
Declared Power Input D_B		kW	83.0	83.5	85.9
Declared $EER_{DC,B}$			4.82	5.13	5.31
Declared Refrigerant Capacity P_C	1,3,5	kW	371.7	397.5	423.3
Declared Power Input D_C		kW	52.8	53.6	55.0
Declared $EER_{DC,C}$			7.04	7.42	7.69
Declared Refrigerant Capacity P_D	1,3,5	kW	343.0	366.8	390.6
Declared Power Input D_D		kW	32.6	33.0	33.8
Declared $EER_{DC,D}$			10.52	11.12	11.56
SSCEE	2,3,5	%	198.6	208.9	209.6
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	430.0	460.0	490.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	429.0	458.8	488.6
Declared EER_d 35°C			3.39	3.63	3.77
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	315.8	337.8	359.7
Declared EER_d 30°C			4.34	4.57	4.76
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	202.7	216.7	230.7
Declared EER_d 25°C			5.10	5.41	5.19
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	96.9	94.9	100.8
Declared EER_d 20°C			6.92	7.18	7.35
Sound Power Level		dB(A)	90	90	90
Air Volume		m^3/h	165301	206626	247951
Off mode P_{OFF}		kW	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	1.007	1.174	1.357
Standby Mode P_{SB}		kW	0.474	0.484	0.494
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC22X14G-14, TCC23X12G-17, TCC23X14G-17

Ecodesign

	Notes:		TCC22X14G-14	TCC23X12G-17	TCC23X14G-17
SEPR	1,3,5		8.6	7.8	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	448182.6	561629.2	590340.9
Rated Refrigerant Capacity P_A	1,3,5	kW	518.4	588.9	638.6
Rated Power Input D_A		kW	135.1	174.6	179.7
Rated $EER_{DC,A}$			3.84	3.37	3.55
Declared Refrigerant Capacity P_B	1,3,5	kW	483.8	549.5	596.0
Declared Power Input D_B		kW	88.8	113.8	118.7
Declared $EER_{DC,B}$			5.45	4.83	5.02
Declared Refrigerant Capacity P_C	1,3,5	kW	449.1	510.2	553.3
Declared Power Input D_C		kW	57.2	72.0	75.7
Declared $EER_{DC,C}$			7.85	7.08	7.31
Declared Refrigerant Capacity P_D	1,3,5	kW	414.4	470.9	510.6
Declared Power Input D_D		kW	35.5	43.8	46.3
Declared $EER_{DC,D}$			11.69	10.75	11.03
SSCEE	2,3,5	%	215.5	224.8	231.4
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	520.0	590.0	640.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	518.4	588.9	638.6
Declared EER_d 35°C			3.84	3.37	3.55
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	381.6	433.6	470.2
Declared EER_d 30°C			4.91	4.59	4.78
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	244.8	278.4	301.8
Declared EER_d 25°C			5.85	6.01	6.16
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	108.0	123.1	133.4
Declared EER_d 20°C			6.67	8.27	8.39
Sound Power Level		dB(A)	90	92	92
Air Volume		m³/h	289276	247951	289276
Off mode P_{OFF}		kW	0.322	0.375	0.375
Thermostat-off mode P_{TO}		kW	1.555	1.119	1.353
Standby Mode P_{SB}		kW	0.504	0.596	0.606
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
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(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCC23X16G-17, TCC23X18G-17, TCC22X16G-18

Ecodesign

	Notes:		TCC23X16G-17	TCC23X18G-17	TCC24X16G-18
SEPR	1,3,5		8.2	8.3	7.7
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	624747.9	661155.1	761892.3
Rated Refrigerant Capacity P_A	1,3,5	kW	688.4	738.1	788.3
Rated Power Input D_A		kW	188.8	199.9	247.9
Rated $EER_{DC,A}$			3.65	3.69	3.18
Declared Refrigerant Capacity P_B	1,3,5	kW	642.4	688.8	735.6
Declared Power Input D_B		kW	125.0	132.0	154.0
Declared $EER_{DC,B}$			5.14	5.22	4.78
Declared Refrigerant Capacity P_C	1,3,5	kW	596.4	639.4	682.9
Declared Power Input D_C		kW	80.1	84.6	97.5
Declared $EER_{DC,C}$			7.45	7.55	7.01
Declared Refrigerant Capacity P_D	1,3,5	kW	550.4	590.1	630.3
Declared Power Input D_D		kW	49.1	52.0	59.4
Declared $EER_{DC,D}$			11.21	11.34	10.60
SSCEE	2,3,5	%	232.5	238.8	230.3
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	690.0	740.0	790.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	688.4	738.1	788.3
Declared EER_d 35°C			3.65	3.69	3.18
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	506.8	543.4	580.4
Declared EER_d 30°C			4.61	4.86	4.80
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	325.2	348.6	372.5
Declared EER_d 25°C			6.26	6.43	6.43
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	143.6	153.9	164.6
Declared EER_d 20°C			8.63	8.71	8.08
Sound Power Level		dB(A)	92	92	93
Air Volume		m^3/h	330601	371926	330601
Off mode P_{OFF}		kW	0.375	0.375	0.427
Thermostat-off mode P_{TO}		kW	1.614	1.903	1.741
Standby Mode P_{SB}		kW	0.616	0.626	0.719
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 EN14511-1:2013.
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(5) All performance data based upon standard waterside configuration.

Technical Data

TCC24X18G-18, TCC24X20G-18

Ecodesign

	Notes:		TCC24X18G-18	TCC24X20G-18
SEPR	1,3,5		7.9	8.1
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	765161.7	787425.2
Rated Refrigerant Capacity P_A	1,3,5	kW	818.1	857.9
Rated Power Input D_A		kW	232.0	239.4
Rated $EER_{DC,A}$			3.53	3.58
Declared Refrigerant Capacity P_B	1,3,5	kW	763.4	800.5
Declared Power Input D_B		kW	154.7	158.8
Declared $EER_{DC,B}$			4.93	5.04
Declared Refrigerant Capacity P_C	1,3,5	kW	708.8	743.2
Declared Power Input D_C		kW	97.9	100.9
Declared $EER_{DC,C}$			7.24	7.36
Declared Refrigerant Capacity P_D	1,3,5	kW	654.1	685.9
Declared Power Input D_D		kW	59.9	61.5
Declared $EER_{DC,D}$			10.92	11.14
SSCEE	2,3,5	%	236.2	238.5
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	820.0	860.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	818.1	857.9
Declared EER_d 35°C			3.53	3.58
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	602.3	631.6
Declared EER_d 30°C			4.85	4.83
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	386.5	405.2
Declared EER_d 25°C			6.57	6.69
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	170.7	178.9
Declared EER_d 20°C			8.21	8.32
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	371926	413252
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	1.900	2.124
Standby Mode P_{SB}		kW	0.729	0.739
Crankcase heater mode P_{CK}		kW	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.
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(5) All performance data based upon standard waterside configuration.

Technical Data

TCC24X22G-18, TCC24X24G-18

Ecodesign

	Notes:		TCC24X22G-18	TCC24X24G-18
SEPR	1,3,5		8.2	8.2
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	825295.0	862875.0
Rated Refrigerant Capacity P_A	1,3,5	kW	907.6	957.2
Rated Power Input D_A		kW	249.0	260.9
Rated $EER_{DC,A}$			3.64	3.67
Declared Refrigerant Capacity P_B	1,3,5	kW	846.9	893.2
Declared Power Input D_B		kW	165.5	172.4
Declared $EER_{DC,B}$			5.12	5.18
Declared Refrigerant Capacity P_C	1,3,5	kW	786.2	829.2
Declared Power Input D_C		kW	105.8	110.3
Declared $EER_{DC,C}$			7.43	7.52
Declared Refrigerant Capacity P_D	1,3,5	kW	725.6	765.2
Declared Power Input D_D		kW	64.7	67.9
Declared $EER_{DC,D}$			11.22	11.27

SSCEE	2,3,5	%	231.0	238.7
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	910.0	960.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	907.6	957.2
Declared EER_d 35°C			3.64	3.67
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	668.1	704.6
Declared EER_d 30°C			4.75	4.79
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	428.6	452.0
Declared EER_d 25°C			6.75	6.81
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	189.2	199.4
Declared EER_d 20°C			7.36	8.19
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	454577	495902
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	2.426	2.752
Standby Mode P_{SB}		kW	0.749	0.759
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
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(5) All performance data based upon standard waterside configuration.

Technical Data - TCF R

TCF11R06G-07, TCF11R08G-07

Ecodesign

	Notes:		TCF11R06G-07	TCF11R08G-07
SEPR	1,3,5		8.0	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	267741.6	264475.7
Rated Refrigerant Capacity P_A	1,3,5	kW	289.4	299.4
Rated Power Input D_A		kW	94.6	93.3
Rated $EER_{DC,A}$			3.06	3.21
Declared Refrigerant Capacity P_B	1,3,5	kW	270.1	279.4
Declared Power Input D_B		kW	61.1	59.8
Declared $EER_{DC,B}$			4.42	4.67
Declared Refrigerant Capacity P_C	1,3,5	kW	250.7	259.4
Declared Power Input D_C		kW	40.2	39.2
Declared $EER_{DC,C}$			6.24	6.63
Declared Refrigerant Capacity P_D	1,3,5	kW	231.4	239.4
Declared Power Input D_D		kW	16.1	16.2
Declared $EER_{DC,D}$			14.41	14.75
SSCEE	2,3,5	%	1.9	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	290.0	300.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	289.4	299.4
Declared EER_d 35°C			3.06	3.21
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	213.1	220.5
Declared EER_d 30°C			4.21	4.47
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	136.8	141.5
Declared EER_d 25°C			5.31	5.63
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	94.9	93.2
Declared EER_d 20°C			6.44	6.73
Sound Power Level		dB(A)	88	88
Air Volume		m^3/h	123975	165301
Off mode P_{OFF}		kW	0.249	0.249
Thermostat-off mode P_{TO}		kW	2.353	2.365
Standby Mode P_{SB}		kW	0.340	0.350
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF12R08G-09, TCF12R10G-05

Ecodesign

	Notes:		TCF12R08G-09	TCF12R10G-05
SEPR	1,3,5		7.2	7.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	484981.7	496282.3
Rated Refrigerant Capacity P_A	1,3,5	kW	469.3	499.3
Rated Power Input D_A		kW	149.2	148.1
Rated $EER_{DC,A}$			3.15	3.37
Declared Refrigerant Capacity P_B	1,3,5	kW	438.0	465.9
Declared Power Input D_B		kW	99.8	98.7
Declared $EER_{DC,B}$			4.39	4.72
Declared Refrigerant Capacity P_C	1,3,5	kW	406.6	432.6
Declared Power Input D_C		kW	65.7	65.0
Declared $EER_{DC,C}$			6.19	6.65
Declared Refrigerant Capacity P_D	1,3,5	kW	375.3	399.3
Declared Power Input D_D		kW	35.4	38.3
Declared $EER_{DC,D}$			10.62	10.42
SSCEE	2,3,5	%	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	470.0	500.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	469.3	499.3
Declared EER_d 35°C			3.15	3.37
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	345.6	367.7
Declared EER_d 30°C			4.00	4.27
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	221.9	236.1
Declared EER_d 25°C			5.45	5.61
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	93.1	103.2
Declared EER_d 20°C			6.63	6.28
Sound Power Level		dB(A)	92	91
Air Volume		m^3/h	165301	206626
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	3.281	3.688
Standby Mode P_{SB}		kW	0.453	0.463
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF12R12G-05, TCF12R14G-05

Ecodesign

	Notes:		TCF12R12G-05	TCF12R14G-05
SEPR	1,3,5		8.5	8.6
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	460164.1	479733.8
Rated Refrigerant Capacity P_A	1,3,5	kW	529.2	559.2
Rated Power Input D_A		kW	152.4	159.1
Rated $EER_{DC,A}$			3.47	3.51
Declared Refrigerant Capacity P_B	1,3,5	kW	493.9	521.9
Declared Power Input D_B		kW	101.1	105.1
Declared $EER_{DC,B}$			4.89	4.97
Declared Refrigerant Capacity P_C	1,3,5	kW	458.6	484.5
Declared Power Input D_C		kW	66.7	69.1
Declared $EER_{DC,C}$			6.88	7.01
Declared Refrigerant Capacity P_D	1,3,5	kW	423.2	447.2
Declared Power Input D_D		kW	29.8	31.3
Declared $EER_{DC,D}$			14.23	14.29
SSCEE	2,3,5	%	1.9	1.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	530.0	560.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	529.2	559.2
Declared EER_d 35°C			3.47	3.51
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	389.8	411.8
Declared EER_d 30°C			4.45	4.60
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	250.3	264.5
Declared EER_d 25°C			5.72	5.76
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	113.5	115.6
Declared EER_d 20°C			5.55	5.35
Sound Power Level		dB(A)	91	90
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	4.009	4.437
Standby Mode P_{SB}		kW	0.473	0.483
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF22R10G-22, TCF22R12G-22, TCF22R14G-22

Ecodesign

	Notes:		TCF22R10G-22	TCF22R12G-22	TCF22R14G-22
SEPR	1,3,5		7.9	8.2	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	471901.3	478512.0	491920.2
Rated Refrigerant Capacity P_A	1,3,5	kW	499.3	529.2	559.2
Rated Power Input D_A		kW	147.0	151.2	157.4
Rated $EER_{DC,A}$			3.40	3.50	3.55
Declared Refrigerant Capacity P_B	1,3,5	kW	465.9	493.9	521.9
Declared Power Input D_B		kW	98.2	100.4	104.2
Declared $EER_{DC,B}$			4.75	4.92	5.01
Declared Refrigerant Capacity P_C	1,3,5	kW	432.6	458.6	484.5
Declared Power Input D_C		kW	64.6	66.2	68.6
Declared $EER_{DC,C}$			6.70	6.93	7.07
Declared Refrigerant Capacity P_D	1,3,5	kW	399.3	423.2	447.2
Declared Power Input D_D		kW	33.8	33.7	34.1
Declared $EER_{DC,D}$			11.82	12.57	13.12
SSCEE	2,3,5	%	1.7	1.9	1.9
SSCEE Tier			Tier 1 (2018)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	500.0	530.0	560.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	499.3	529.2	559.2
Declared EER_d 35°C			3.40	3.50	3.55
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	367.7	389.8	411.8
Declared EER_d 30°C			4.28	4.46	4.62
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	236.1	250.3	264.5
Declared EER_d 25°C			4.63	5.52	5.68
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	104.5	109.5	117.1
Declared EER_d 20°C			4.50	5.76	4.81
Sound Power Level		dB(A)	91	91	90
Air Volume		m^3/h	206626	247951	289276
Off mode P_{OFF}		kW	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	3.633	3.963	4.396
Standby Mode P_{SB}		kW	0.484	0.494	0.504
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.
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(5) All performance data based upon standard waterside configuration.

Technical Data

TCF23R12G-24, TCF23R14G-24

Ecodesign

	Notes:		TCF23R12G-24	TCF23R14G-24
SEPR	1,3,5		8.0	8.2
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	584366.3	613846.3
Rated Refrigerant Capacity P_A	1,3,5	kW	629.2	679.2
Rated Power Input D_A		kW	194.9	203.3
Rated $EER_{DC,A}$			3.23	3.34
Declared Refrigerant Capacity P_B	1,3,5	kW	587.2	633.9
Declared Power Input D_B		kW	130.3	136.1
Declared $EER_{DC,B}$			4.51	4.66
Declared Refrigerant Capacity P_C	1,3,5	kW	545.2	588.5
Declared Power Input D_C		kW	84.6	88.7
Declared $EER_{DC,C}$			6.45	6.63
Declared Refrigerant Capacity P_D	1,3,5	kW	503.2	543.2
Declared Power Input D_D		kW	37.5	39.6
Declared $EER_{DC,D}$			13.43	13.72
SSCEE	2,3,5	%	2.0	2.0
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	630.0	680.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	629.2	679.2
Declared EER_d 35°C			3.23	3.34
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	463.5	500.3
Declared EER_d 30°C			4.32	4.46
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	297.7	321.3
Declared EER_d 25°C			5.48	5.69
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	131.9	142.4
Declared EER_d 20°C			6.58	6.63
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.375	0.375
Thermostat-off mode P_{TO}		kW	3.832	4.318
Standby Mode P_{SB}		kW	0.596	0.606
Crankcase heater mode P_{CK}		kW	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.
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(3) Performance data (Nett) is supplied in accordance with EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF23R16G-25, TCF23R18G-25

Ecodesign

	Notes:		TCF23R16G-25	TCF23R18G-25
SEPR	1,3,5		8.3	8.3
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	654068.0	693487.2
Rated Refrigerant Capacity P_A	1,3,5	kW	729.2	779.1
Rated Power Input D_A		kW	213.7	226.0
Rated $EER_{DC,A}$			3.41	3.45
Declared Refrigerant Capacity P_B	1,3,5	kW	680.5	727.1
Declared Power Input D_B		kW	142.4	150.0
Declared $EER_{DC,B}$			4.78	4.85
Declared Refrigerant Capacity P_C	1,3,5	kW	631.8	675.1
Declared Power Input D_C		kW	93.2	98.4
Declared $EER_{DC,C}$			6.78	6.86
Declared Refrigerant Capacity P_D	1,3,5	kW	583.2	623.1
Declared Power Input D_D		kW	43.5	46.5
Declared $EER_{DC,D}$			13.42	13.40
SSCEE	2,3,5	%	1.9	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	730.0	780.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	729.2	779.1
Declared EER_d 35°C			3.41	3.45
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	537.1	573.9
Declared EER_d 30°C			4.46	4.50
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	345.0	368.6
Declared EER_d 25°C			5.25	5.90
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	152.9	163.4
Declared EER_d 20°C			6.04	6.78
Sound Power Level		dB(A)	92	92
Air Volume		m^3/h	330601	371926
Off mode P_{OFF}		kW	0.375	0.375
Thermostat-off mode P_{TO}		kW	4.703	5.303
Standby Mode P_{SB}		kW	0.616	0.626
Crankcase heater mode P_{CK}		kW	0.000	0.000

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

Technical Data

TCF24R16G-26, TCF24R18G-26, TCF24R20G-26

Ecodesign

	Notes:		TCF24R16G-26	TCF24R18G-26	TCF24R20G-26
SEPR	1,3,5		8.1	8.0	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	750690.1	799159.7	836838.0
Rated Refrigerant Capacity P_A	1,3,5	kW	819.2	859.2	899.2
Rated Power Input D_A		kW	255.0	259.4	264.9
Rated $EER_{DC,A}$			3.21	3.31	3.39
Declared Refrigerant Capacity P_B	1,3,5	kW	764.5	801.9	839.2
Declared Power Input D_B		kW	169.4	172.8	176.9
Declared $EER_{DC,B}$			4.51	4.64	4.74
Declared Refrigerant Capacity P_C	1,3,5	kW	709.9	744.5	779.2
Declared Power Input D_C		kW	109.7	112.1	114.9
Declared $EER_{DC,C}$			6.47	6.64	6.78
Declared Refrigerant Capacity P_D	1,3,5	kW	655.2	687.2	719.2
Declared Power Input D_D		kW	47.2	54.4	59.2
Declared $EER_{DC,D}$			13.89	12.64	12.14
SSCEE	2,3,5	%	2.1	2.1	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	820.0	860.0	900.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	819.2	859.2	899.2
Declared EER_d 35°C			3.21	3.31	3.39
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	603.4	632.9	662.3
Declared EER_d 30°C			4.47	4.48	4.56
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	387.6	406.6	425.5
Declared EER_d 25°C			5.98	6.11	6.21
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	171.8	180.2	188.6
Declared EER_d 20°C			6.57	6.68	6.74
Sound Power Level		dB(A)	94	94	94
Air Volume		m³/h	330601	371926	413252
Off mode P_{OFF}		kW	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	4.270	4.508	4.797
Standby Mode P_{SB}		kW	0.719	0.729	0.739
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.
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(5) All performance data based upon standard waterside configuration.

Technical Data

TCF24R22G-27, TCF24R24G-27

Ecodesign

	Notes:		TCF24R22G-27	TCF24R24G-27
SEPR	1,3,5		8.0	8.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	884572.7	869476.5
Rated Refrigerant Capacity P_A	1,3,5	kW	949.2	999.1
Rated Power Input D_A		kW	276.0	288.2
Rated $EER_{DC,A}$			3.44	3.47
Declared Refrigerant Capacity P_B	1,3,5	kW	885.8	932.5
Declared Power Input D_B		kW	183.7	191.2
Declared $EER_{DC,B}$			4.82	4.88
Declared Refrigerant Capacity P_C	1,3,5	kW	822.5	865.8
Declared Power Input D_C		kW	119.5	124.7
Declared $EER_{DC,C}$			6.88	6.94
Declared Refrigerant Capacity P_D	1,3,5	kW	759.2	799.1
Declared Power Input D_D		kW	64.5	56.9
Declared $EER_{DC,D}$			11.77	14.04
SSCEE	2,3,5	%	2.1	2.1
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	950.0	1000.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	949.2	999.1
Declared EER_d 35°C			3.44	3.47
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	699.2	736.0
Declared EER_d 30°C			4.49	4.53
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	449.2	472.8
Declared EER_d 25°C			6.28	6.32
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	199.2	209.6
Declared EER_d 20°C			6.77	6.75
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	454577	495902
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	5.156	5.673
Standby Mode P_{SB}		kW	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000

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

Technical Data - TCF X

TCF11X06G-07, TCF11X08G-07

Ecodesign

	Notes:		TCF11X06G-07	TCF11X08G-07
SEPR	1,3,5		7.6	7.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	242689.6	243217.0
Rated Refrigerant Capacity P_A	1,3,5	kW	248.3	258.3
Rated Power Input D_A		kW	88.0	85.8
Rated $EER_{DC,A}$			2.82	3.01
Declared Refrigerant Capacity P_B	1,3,5	kW	231.7	241.0
Declared Power Input D_B		kW	56.1	55.3
Declared $EER_{DC,B}$			4.13	4.36
Declared Refrigerant Capacity P_C	1,3,5	kW	215.0	223.7
Declared Power Input D_C		kW	36.5	35.8
Declared $EER_{DC,C}$			5.89	6.24
Declared Refrigerant Capacity P_D	1,3,5	kW	198.3	206.3
Declared Power Input D_D		kW	14.1	14.7
Declared $EER_{DC,D}$			14.04	13.99
SSCEE	2,3,5	%	169.6	175.9
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	250.0	260.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	248.3	258.3
Declared EER_d 35°C			2.82	3.01
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	182.6	189.9
Declared EER_d 30°C			3.87	4.07
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	116.8	118.7
Declared EER_d 25°C			4.48	4.53
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	93.2	91.5
Declared EER_d 20°C			5.96	6.28
Sound Power Level		dB(A)	87	87
Air Volume		m^3/h	123975	165301
Off mode P_{OFF}		kW	0.249	0.249
Thermostat-off mode P_{TO}		kW	1.658	1.682
Standby Mode P_{SB}		kW	0.340	0.350
Crankcase heater mode P_{CK}		kW	0.000	0.000

(1) Nominal conditions as stated in EU 2016/2281 Table 22.
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(3) Performance data (Nett) is supplied in accordance with EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF12X08G-09, TCF12X10G-05

Ecodesign

	Notes:		TCF12X08G-09	TCF12X10G-05
SEPR	1,3,5		5.9	6.9
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	564255.9	492043.7
Rated Refrigerant Capacity P_A	1,3,5	kW	447.0	457.0
Rated Power Input D_A		kW	162.4	144.6
Rated $EER_{DC,A}$			2.75	3.16
Declared Refrigerant Capacity P_B	1,3,5	kW	417.0	426.3
Declared Power Input D_B		kW	103.1	95.5
Declared $EER_{DC,B}$			4.04	4.47
Declared Refrigerant Capacity P_C	1,3,5	kW	387.0	395.6
Declared Power Input D_C		kW	66.3	62.1
Declared $EER_{DC,C}$			5.84	6.38
Declared Refrigerant Capacity P_D	1,3,5	kW	357.0	365.0
Declared Power Input D_D		kW	50.1	39.5
Declared $EER_{DC,D}$			7.12	9.24
SSCEE	2,3,5	%	161.2	182.9
SSCEE Tier			Tier 1 (2018)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	430.0	460.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	447.0	457.0
Declared EER_d 35°C			2.75	3.16
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	328.6	335.9
Declared EER_d 30°C			3.80	4.05
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	210.2	214.9
Declared EER_d 25°C			4.82	5.02
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	90.3	89.2
Declared EER_d 20°C			4.53	6.17
Sound Power Level		dB(A)	90	90
Air Volume		m^3/h	165301	206626
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	2.960	3.027
Standby Mode P_{SB}		kW	0.453	0.463
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF12X12G-05, TCF12X14G-05

Ecodesign

	Notes:		TCF12X12G-05	TCF12X14G-05
SEPR	1,3,5		8.4	8.5
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	430318.4	450879.9
Rated Refrigerant Capacity P_A	1,3,5	kW	486.7	516.3
Rated Power Input D_A		kW	149.5	156.5
Rated $EER_{DC,A}$			3.25	3.30
Declared Refrigerant Capacity P_B	1,3,5	kW	454.0	481.6
Declared Power Input D_B		kW	98.2	101.9
Declared $EER_{DC,B}$			4.62	4.73
Declared Refrigerant Capacity P_C	1,3,5	kW	421.3	447.0
Declared Power Input D_C		kW	64.0	66.7
Declared $EER_{DC,C}$			6.58	6.70
Declared Refrigerant Capacity P_D	1,3,5	kW	388.7	412.3
Declared Power Input D_D		kW	25.7	27.3
Declared $EER_{DC,D}$			15.12	15.13
SSCEE	2,3,5	%	180.6	177.2
SSCEE Tier			Tier 2 (2021)	Tier 1 (2018)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	490.0	520.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	486.7	516.3
Declared EER_d 35°C			3.25	3.30
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	357.7	379.4
Declared EER_d 30°C			4.22	4.32
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	228.8	242.6
Declared EER_d 25°C			4.60	5.13
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	96.2	107.3
Declared EER_d 20°C			6.33	5.00
Sound Power Level		dB(A)	90	90
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.301	0.301
Thermostat-off mode P_{TO}		kW	3.322	3.710
Standby Mode P_{SB}		kW	0.473	0.483
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF22X10G-22, TCF22X12G-22, TCF22X14G-22

Ecodesign

	Notes:		TCF22X10G-22	TCF22X12G-22	TCF22X14G-22
SEPR	1,3,5		7.8	8.1	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	438772.6	446195.9	460552.5
Rated Refrigerant Capacity P_A	1,3,5	kW	457.0	486.7	516.3
Rated Power Input D_A		kW	139.1	142.8	148.6
Rated $EER_{DC,A}$			3.28	3.41	3.47
Declared Refrigerant Capacity P_B	1,3,5	kW	426.4	454.0	481.7
Declared Power Input D_B		kW	92.0	94.3	97.6
Declared $EER_{DC,B}$			4.64	4.81	4.93
Declared Refrigerant Capacity P_C	1,3,5	kW	395.7	421.4	447.0
Declared Power Input D_C		kW	59.7	61.3	63.8
Declared $EER_{DC,C}$			6.62	6.87	7.01
Declared Refrigerant Capacity P_D	1,3,5	kW	365.0	388.7	412.3
Declared Power Input D_D		kW	30.9	30.9	31.5
Declared $EER_{DC,D}$			11.80	12.58	13.08
SSCEE	2,3,5	%	168.4	175.8	174.7
SSCEE Tier			Tier 1 (2018)	Tier 1 (2018)	Tier 1 (2018)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	460.0	490.0	520.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	457.0	486.7	516.3
Declared EER_d 35°C			3.28	3.41	3.47
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	336.0	357.8	379.5
Declared EER_d 30°C			4.16	4.33	4.46
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	214.9	228.8	242.6
Declared EER_d 25°C			4.15	4.28	4.33
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	93.2	99.4	103.9
Declared EER_d 20°C			5.64	6.06	5.66
Sound Power Level		dB(A)	90	90	90
Air Volume		m^3/h	206626	247951	289276
Off mode P_{OFF}		kW	0.322	0.322	0.322
Thermostat-off mode P_{TO}		kW	2.980	3.284	3.676
Standby Mode P_{SB}		kW	0.484	0.494	0.504
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 EN14511-1:2013.
(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF23X12G-24, TCF23R14G-24

Ecodesign

	Notes:		TCF23X12G-24	TCF23X14G-24
SEPR	1,3,5		7.1	7.1
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	545906.5	666047.6
Rated Refrigerant Capacity P_A	1,3,5	kW	517.6	636.3
Rated Power Input D_A		kW	169.0	202.6
Rated $EER_{DC,A}$			3.06	3.14
Declared Refrigerant Capacity P_B	1,3,5	kW	482.9	593.6
Declared Power Input D_B		kW	106.1	134.3
Declared $EER_{DC,B}$			4.55	4.42
Declared Refrigerant Capacity P_C	1,3,5	kW	448.2	550.9
Declared Power Input D_C		kW	68.1	86.5
Declared $EER_{DC,C}$			6.58	6.37
Declared Refrigerant Capacity P_D	1,3,5	kW	413.6	508.3
Declared Power Input D_D		kW	44.4	50.8
Declared $EER_{DC,D}$			9.31	10.00

SSCEE	2,3,5	%	178.9	191.8
SSCEE Tier			Tier 1 (2018)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	520.0	640.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	517.6	636.3
Declared EER_d 35°C			3.06	3.14
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	380.7	467.8
Declared EER_d 30°C			4.23	4.30
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	243.9	299.4
Declared EER_d 25°C			4.62	5.48
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	108.0	131.0
Declared EER_d 20°C			5.96	6.09
Sound Power Level		dB(A)	90	92
Air Volume		m^3/h	247951	289276
Off mode P_{OFF}		kW	0.375	0.375
Thermostat-off mode P_{TO}		kW	2.446	3.739
Standby Mode P_{SB}		kW	0.596	0.606
Crankcase heater mode P_{CK}		kW	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 EN14511-1:2013.
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(5) All performance data based upon standard waterside configuration.

Technical Data

TCF23X16G-25, TCF23X18G-25

Ecodesign

	Notes:		TCF23X16G-25	TCF23X18G-25
SEPR	1,3,5		7.2	8.4
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	707970.0	656499.3
Rated Refrigerant Capacity P_A	1,3,5	kW	685.9	735.3
Rated Power Input D_A		kW	213.2	227.8
Rated $EER_{DC,A}$			3.22	3.23
Declared Refrigerant Capacity P_B	1,3,5	kW	639.9	686.0
Declared Power Input D_B		kW	140.9	149.2
Declared $EER_{DC,B}$			4.54	4.60
Declared Refrigerant Capacity P_C	1,3,5	kW	593.9	636.7
Declared Power Input D_C		kW	91.4	96.9
Declared $EER_{DC,C}$			6.50	6.57
Declared Refrigerant Capacity P_D	1,3,5	kW	547.9	587.3
Declared Power Input D_D		kW	54.7	39.8
Declared $EER_{DC,D}$			10.01	14.77

SSCEE	2,3,5	%	194.1	195.7
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	690.0	740.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	685.9	735.3
Declared EER_d 35°C			3.22	3.23
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	504.3	540.6
Declared EER_d 30°C			4.28	4.36
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	322.7	345.9
Declared EER_d 25°C			5.56	5.68
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	141.2	151.1
Declared EER_d 20°C			6.20	6.13
Sound Power Level		dB(A)	92	92
Air Volume		m^3/h	330601	371926
Off mode P_{OFF}		kW	0.375	0.375
Thermostat-off mode P_{TO}		kW	4.108	4.669
Standby Mode P_{SB}		kW	0.616	0.626
Crankcase heater mode P_{CK}		kW	0.000	0.000

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(2) Nominal conditions as stated in EU 2016/2281 Table 21
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(4) Performance data (Gross) is supplied excluding absorbed pump power as per EN14511-1:2013.
(5) All performance data based upon standard waterside configuration.

Technical Data

TCF24X16G-26, TCF24X18G-26, TCF24X20G-26

Ecodesign

	Notes:		TCF24X16G-26	TCF24X18G-26	TCF24X20G-26
SEPR	1,3,5		6.6	7.8	8.0
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	870785.1	774764.8	793586.4
Rated Refrigerant Capacity P_A	1,3,5	kW	776.2	816.0	855.7
Rated Power Input D_A		kW	285.1	260.2	270.6
Rated $EER_{DC,A}$			2.72	3.14	3.16
Declared Refrigerant Capacity P_B	1,3,5	kW	724.2	761.3	798.4
Declared Power Input D_B		kW	175.0	175.0	179.3
Declared $EER_{DC,B}$			4.14	4.35	4.45
Declared Refrigerant Capacity P_C	1,3,5	kW	672.2	706.6	741.0
Declared Power Input D_C		kW	111.5	112.2	115.5
Declared $EER_{DC,C}$			6.03	6.30	6.42
Declared Refrigerant Capacity P_D	1,3,5	kW	620.2	652.0	683.7
Declared Power Input D_D		kW	67.5	48.6	49.4
Declared $EER_{DC,D}$			9.19	13.42	13.85
SSCEE	2,3,5	%	171.8	198.0	199.4
SSCEE Tier			Tier 1 (2018)	Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	780.0	820.0	860.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	776.2	816.0	855.7
Declared EER_d 35°C			2.72	3.14	3.16
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	570.9	600.2	629.4
Declared EER_d 30°C			3.93	4.36	4.35
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	365.7	384.4	403.1
Declared EER_d 25°C			4.50	5.89	5.99
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	160.4	168.6	176.7
Declared EER_d 20°C			5.92	6.00	6.03
Sound Power Level		dB(A)	92	93	93
Air Volume		m³/h	330601	371926	413252
Off mode P_{OFF}		kW	0.427	0.427	0.427
Thermostat-off mode P_{TO}		kW	3.795	4.027	4.305
Standby Mode P_{SB}		kW	0.719	0.729	0.739
Crankcase heater mode P_{CK}		kW	0.000	0.000	0.000

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

Technical Data

TCF24X22G-27, TCF24X24G-27

Ecodesign

	Notes:		TCF24X22G-27	TCF24X24G-27
SEPR	1,3,5		8.1	8.2
SEPR Tier			Tier 2 (2021)	Tier 2 (2021)
Annual Electricity Consumption		kWh/a	827901.7	865343.5
Rated Refrigerant Capacity P_A	1,3,5	kW	905.3	954.9
Rated Power Input D_A		kW	281.6	296.8
Rated $EER_{DC,A}$			3.22	3.22
Declared Refrigerant Capacity P_B	1,3,5	kW	844.7	890.9
Declared Power Input D_B		kW	186.8	194.9
Declared $EER_{DC,B}$			4.52	4.57
Declared Refrigerant Capacity P_C	1,3,5	kW	784.0	826.9
Declared Power Input D_C		kW	120.8	126.3
Declared $EER_{DC,C}$			6.49	6.55
Declared Refrigerant Capacity P_D	1,3,5	kW	723.3	762.9
Declared Power Input D_D		kW	51.4	53.7
Declared $EER_{DC,D}$			14.08	14.21
SSCEE	2,3,5	%	199.5	199.4
SSCEE Tier			Tier 2 (2021)	Tier 2 (2021)
Rated Cooling Capacity $P_{rated,c}$	2,4,5	kW	910.0	960.0
Declared Cooling Capacity 35°C Pdc	2,3,5	kW	905.3	954.9
Declared EER_d 35°C			3.22	3.22
Declared Cooling Capacity 30°C Pdc	2,3,5	kW	665.9	702.2
Declared EER_d 30°C			4.26	4.26
Declared Cooling Capacity 25°C Pdc	2,3,5	kW	426.4	449.6
Declared EER_d 25°C			6.05	6.09
Declared Cooling Capacity 20°C Pdc	2,3,5	kW	186.9	197.0
Declared EER_d 20°C			6.03	5.99
Sound Power Level		dB(A)	93	93
Air Volume		m^3/h	454577	495902
Off mode P_{OFF}		kW	0.427	0.427
Thermostat-off mode P_{TO}		kW	4.650	5.140
Standby Mode P_{SB}		kW	0.749	0.759
Crankcase heater mode P_{CK}		kW	0.000	0.000

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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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