Airedale
APPLIED THERMAL INNOVATION

TurboChill™

200kW to 900kW

Single Circuit
Air Cooled (TCC) and FreeCool (TCF) Chiller

Technical Manual

ISO 14001
EMS52086

ISO 9001
FM00542

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: enquiries@airedale.com or telephone:

UK Sales Enquiries	+ 44 (0) 113 239 1000	enquiries@airedale.com
International Enquiries	+ 44 (0) 113 239 1000	enquiries@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	marketing@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).

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

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

Procedure

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

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

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

On completion of the investigation of the returned part, a full "Report on Goods Returned" will be issued. On occasion the release of this complete report may be delayed as component manufacturers become involved in the investigation.

When warranty is allowed, a credit against the Warranty invoice will be raised. Should warranty be refused the Warranty invoice becomes payable on normal terms.

Exclusions

Warranty may be refused for the following reasons:

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

Returns Analysis

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

Health and Safety

IMPORTANT

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

Safety

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

CAUTION

When working with any air conditioning units ensure that the electrical isolator is switched off prior to servicing or repair work and that there is no power to any part of the equipment.

Also ensure that there are no other power feeds to the unit such as fire alarm circuits, BMS circuits, crankcase heater permanent supplies etc.

Electrical installation commissioning and maintenance work on this equipment should be undertaken by competent and trained personnel in accordance with local relevant standards and codes of practice.

Refrigerant Warning

The Airedale chillers use R134a refrigerant which requires careful attention to proper storage and handling procedures in accordance with EN 378.

Use only manifold gauge sets designed for use with refrigerants. Use only refrigerant recovery units and cylinders designed for the pressure category of the refrigerants.

The refrigerant used in this range of products is classified under the COSHH regulations as an irritant, with set Workplace Exposure Levels (WEL) for consideration if this plant is installed in confined or poorly ventilated areas.

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

Refrigerants must only be charged in the liquid state to ensure correct blend makeup.

The refrigerant must be stored in a clean, dry area away from sunlight. The refrigerant must never be stored above 50°C.

Global Warming Potential
R134a = 1300

EN378-1 :2008 (100 year life)

Protective Personal Equipment

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

Manual Handling

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

Remember do not perform a lift that exceeds your ability.

CAUTION PACEMAKER WEARERS

To avoid any risk of injury, any work to be carried out on or around the magnetic check valve should be done with personnel that don't have pacemakers fitted.

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 3°C lower than the minimum operating ambient.
2. Ensure water / glycol solution is constantly circulated through all waterside pipework and coils to avoid static water from freezing.
3. Ensure that pumps are started and running even during shut down periods, when the ambient is within 3°C 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) If this option is selected with flooded evaporators, an actuated suction ball valve must 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 3°C lower than the minimum operating ambient.

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)	2004/108/EC
Low Voltage Directive (LVD)	2006/95/EC
Machinery Directive (MD)	89/392/EEC version 2006/42/EC
Pressure Equipment Directive (PED)	97/23/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.

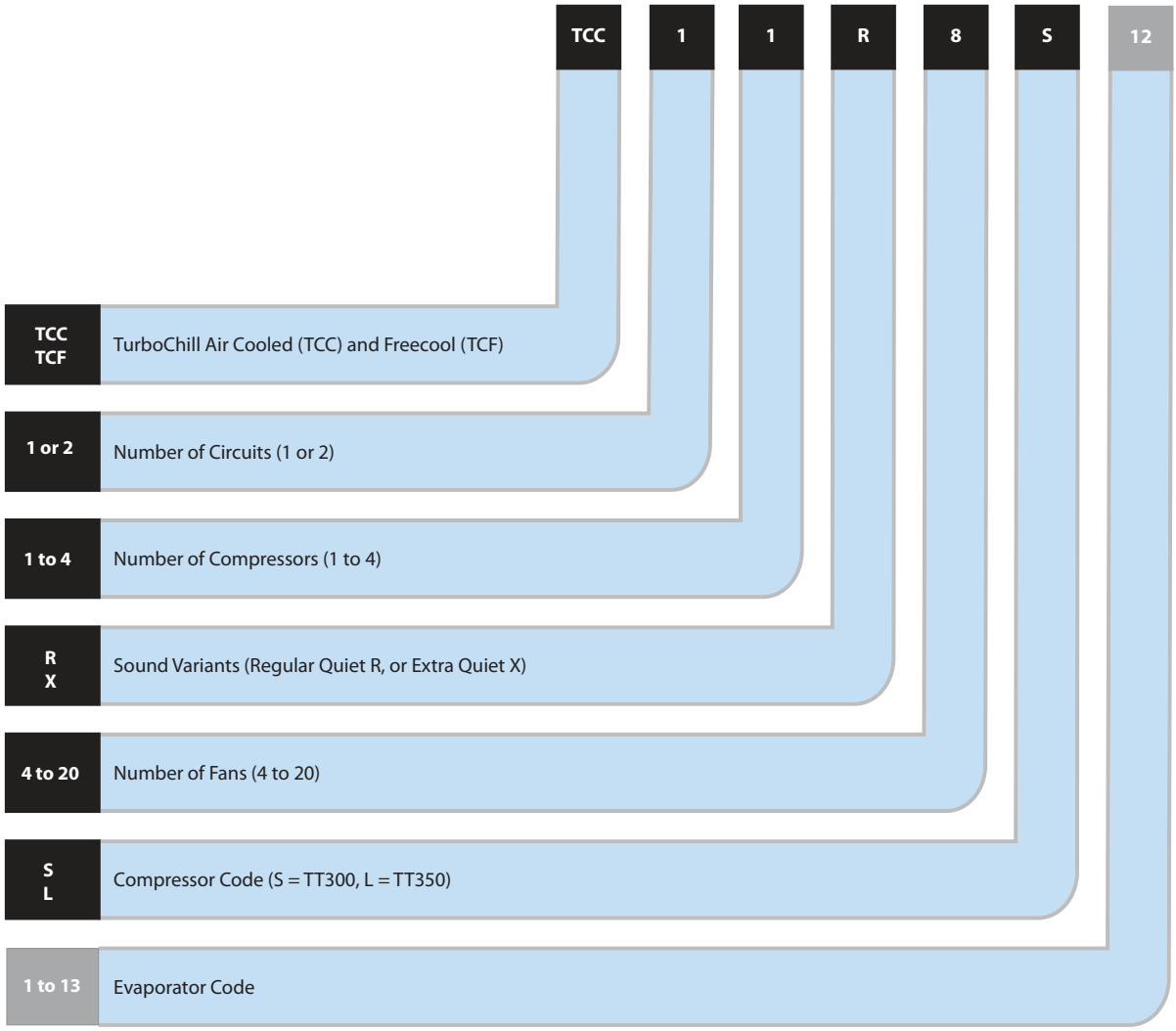
Occupancy Note

When placing a chiller the occupancy of the surrounding area needs to be classified in accordance with EN 378-1:2008+A2:2012 section 4.2. In most cases the level of occupancy for a chiller would be ‘Authorised occupancy C’ as described in EN 378-1:2008+A2:2012 section 4.2.5 Table 1. This level needs to be confirmed by the customer.

Given that an air-cooled chiller can be classified as an ‘indirect system’ in accordance with EN 378-1:2008+A2:2012 section 4.1.3 and the R134a refrigerant falls into refrigerant safety group A1, EN 378-1:2008+A2:2012 Table E.1, no charge limitations apply if the level of occupancy is ‘C’. Please refer to EN 378-1:2008+A2:2012 Table C.1 for further details.

Contents

Nomenclature



Introduction

The Airedale range of TurboChill air cooled and Freecool liquid chillers uses the technologically superior centrifugal Turbocor compressors. Designed to cover the high capacity range between 200kW and 900kW.

Each single circuit 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 TC (C/F)....R and Super Quiet TC (C/F)… 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 R134a 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).

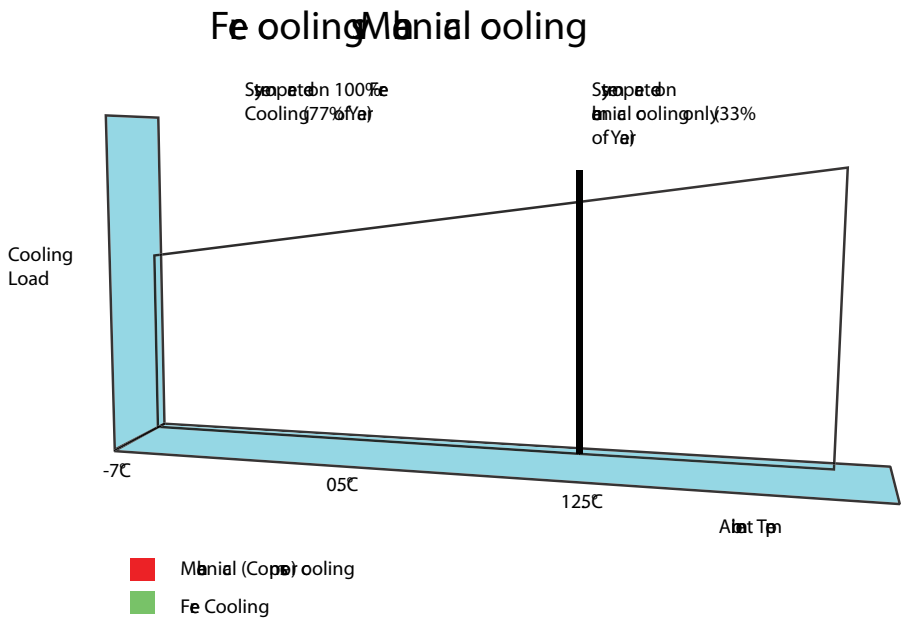
Free Cooling Operation
The TurboChill Free Cool chiller has been designed to provide the cooling load required whilst optimising energy efficiency at all times and as such will take advantage of free cooling whenever available. If the free cooling available cannot satisfy the required full cooling load,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



Range Layout

Regular Quiet - Single Circuit - Air Cooled

	Nominal Cooling (kW)	EER	ESEER	Free Cooling (kW)	Free Cooling EER	Sound Pressure @ 10m (dBA)	Dimensions H x W x L (mm)
TCC11R04S-01	240	3.54	4.90	-	-	54.7	2785 x 2200 x 2626
TCC11R06S-01	265	3.84	5.55	-	-	52.9	2785 x 2200 x 3758
TCC11R08S-01	275	4.04	5.86	-	-	52.1	2785 x 2200 x 4890
TCC11R06L-02	390	3.33	4.81	-	-	56.7	2785 x 2200 x 3758
TCC11R08L-03	425	3.51	5.19	-	-	55.3	2785 x 2200 x 4890
TCC11R10L-03	450	3.55	5.42	-	-	54.5	2785 x 2200 x 6022
TCC12R08S-04	470	3.55	5.34	-	-	57.1	2785 x 2200 x 4890
TCC12R10S-04	500	3.73	5.53	-	-	55.9	2785 x 2200 x 6022
TCC12R12S-04	530	3.84	5.64	-	-	55.2	2785 x 2200 x 7154
TCC12R14S-04	560	3.90	5.72	-	-	55.0	2785 x 2200 x 8286
TCC12R10L-05	600	3.32	5.18	-	-	58.6	2785 x 2200 x 6022
TCC12R12L-06	670	3.50	5.28	-	-	57.9	2785 x 2200 x 7154
TCC12R14L-06	750	3.58	5.39	-	-	57.5	2785 x 2200 x 8286
TCC12R16L-06	800	3.62	5.48	-	-	57.1	2785 x 2200 x 9418
TCC12R18L-06	850	3.63	5.52	-	-	56.6	2785 x 2200 x 10550
TCC12R20L-06	900	3.56	5.52	-	-	56.4	2785 x 2200 x 11682

Extra Quiet - Single Circuit - Air Cooled

	Nominal Cooling (kW)	EER	ESEER	Free Cooling (kW)	Free Cooling EER	Sound Pressure @ 10m (dBA)	Dimensions H x W x L (mm)
TCC11X04S-01	200	3.48	5.17	-	-	52.4	2785 x 2200 x 2626
TCC11X06S-01	225	3.94	5.58	-	-	52.5	2785 x 2200 x 3758
TCC11X08S-01	235	4.16	5.87	-	-	51.8	2785 x 2200 x 4890
TCC11X06L-02	350	3.25	4.80	-	-	53.4	2785 x 2200 x 3758
TCC11X08L-03	385	3.60	5.22	-	-	53.4	2785 x 2200 x 4890
TCC11X10L-03	410	3.75	5.42	-	-	53.4	2785 x 2200 x 6022
TCC12X08S-04	430	3.45	5.40	-	-	54.9	2785 x 2200 x 4890
TCC12X10S-04	460	3.73	5.59	-	-	54.9	2785 x 2200 x 6022
TCC12X12S-04	490	3.90	5.74	-	-	54.8	2785 x 2200 x 7154
TCC12X14S-04	520	3.99	5.81	-	-	54.7	2785 x 2200 x 8286
TCC12X10L-05	560	3.15	5.24	-	-	55.8	2785 x 2200 x 6022
TCC12X12L-06	630	3.39	5.32	-	-	55.7	2785 x 2200 x 7154
TCC12X14L-06	710	3.53	5.43	-	-	55.6	2785 x 2200 x 8286
TCC12X16L-06	760	3.63	5.52	-	-	55.5	2785 x 2200 x 9418
TCC12X18L-06	810	3.67	5.59	-	-	55.5	2785 x 2200 x 10550
TCC12X20L-06	860	3.66	5.60	-	-	55.4	2785 x 2200 x 11682

Range Layout

Regular Quiet - Single Circuit - FreeCool

	Nominal Cooling (kW)	EER	ESEER	Free Cooling (kW)	Free Cooling EER	Sound Pressure @ 10m (dBA)	Dimensions H x W x L (mm)
TCF11R06S-07	290	3.70	5.36	279.8	20.01	53.5	2785 x 2200 x 3758
TCF11R08S-07	300	3.91	5.69	335.8	18.01	52.6	2785 x 2200 x 4890
TCF11R06L-11	390	3.32	4.73	308.7	22.08	56.7	2785 x 2200 x 3758
TCF11R08L-08	425	3.47	5.00	386.2	20.72	55.5	2785 x 2200 x 4890
TCF11R10L-10	450	3.67	5.28	453.4	19.46	54.4	2785 x 2200 x 6022
TCF12R08S-09	470	3.39	5.11	399.4	21.42	57.4	2785 x 2200 x 4890
TCF12R10S-05	500	3.67	5.40	472.3	20.27	56.2	2785 x 2200 x 6022
TCF12R12S-05	530	3.80	5.51	540.0	19.31	55.4	2785 x 2200 x 7154
TCF12R14S-05	560	3.89	5.60	604.5	18.53	54.8	2785 x 2200 x 8286
TCF12R12L-12	670	3.43	5.13	589.2	21.07	58.2	2785 x 2200 x 7154
TCF12R14L-12	750	3.55	5.25	677.8	20.78	57.7	2785 x 2200 x 8286
TCF12R16L-12	800	3.63	5.34	755.7	20.27	57.2	2785 x 2200 x 9418
TCF12R18L-13	850	3.63	5.36	831.9	19.83	56.8	2785 x 2200 x 10550
TCF12R20L-13	900	3.62	5.37	906.9	19.46	56.5	2785 x 2200 x 11682

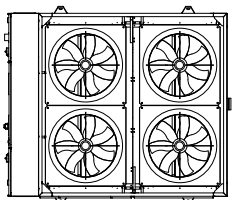
Extra Quiet - Single Circuit - FreeCool

	Nominal Cooling (kW)	EER	ESEER	Free Cooling (kW)	Free Cooling EER	Sound Pressure @ 10m (dBA)	Dimensions H x W x L (mm)
TCF11X06S-07	250	3.82	5.33	223.5	45.63	52.4	2785 x 2200 x 3758
TCF11X08S-07	260	4.07	5.73	274.8	42.07	52.1	2785 x 2200 x 4890
TCF11X06L-11	350	3.14	4.59	245.2	50.04	53.3	2785 x 2200 x 3758
TCF11X08L-08	385	3.48	5.01	311.0	47.62	53.2	2785 x 2200 x 4890
TCF11X10L-10	410	3.79	5.30	370.7	45.40	53.2	2785 x 2200 x 6022
TCF12X08S-09	430	3.24	5.22	320.4	49.06	54.8	2785 x 2200 x 4890
TCF12X10S-05	460	3.63	5.46	383.8	47.01	54.7	2785 x 2200 x 6022
TCF12X12S-05	490	3.83	5.61	444.2	45.34	54.7	2785 x 2200 x 7154
TCF12X14S-05	520	3.96	5.69	502.8	43.99	54.6	2785 x 2200 x 8286
TCF12X12L-12	630	3.24	5.18	477.7	48.76	55.6	2785 x 2200 x 7154
TCF12X14L-12	710	3.43	5.28	552.3	48.31	55.5	2785 x 2200 x 8286
TCF12X16L-12	760	3.58	5.38	619.8	47.44	55.4	2785 x 2200 x 9418
TCF12X18L-13	810	3.63	5.43	686.4	46.71	55.3	2785 x 2200 x 10550
TCF12X20L-13	860	3.66	5.45	752.3	46.07	55.2	2785 x 2200 x 11682

Range Layout

4 Fan

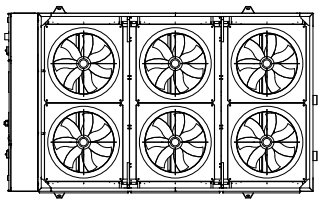
TCC 200 - 240kW



6 Fan

TCC 235 - 470kW

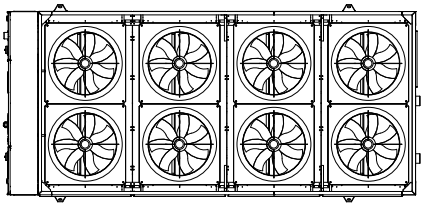
TCF 260 - 430kW



8 Fan

TCC 410 - 600kW

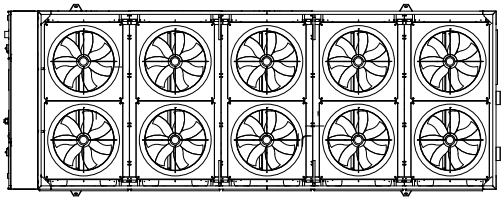
TCF 410 - 500kW



10 Fan

TCC 225 - 265kW

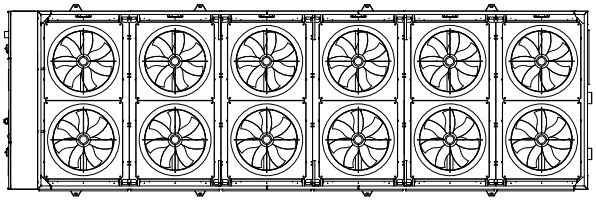
TCF 250 - 430kW



12 Fan

TCC 490 -630kW

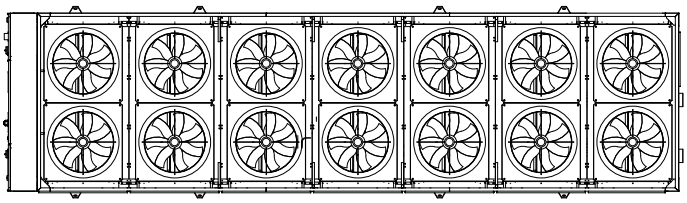
TCF 490 - 530kW



14 Fan

TCC 560 - 750kW

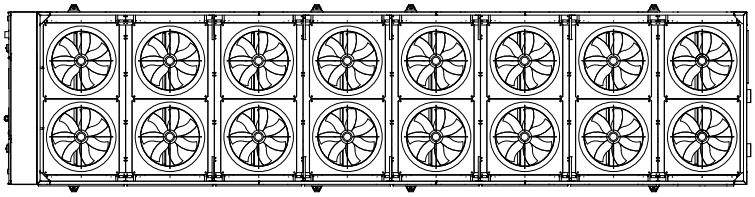
TCF 520 - 750kW



16 Fan

TCC 760 - 800kW

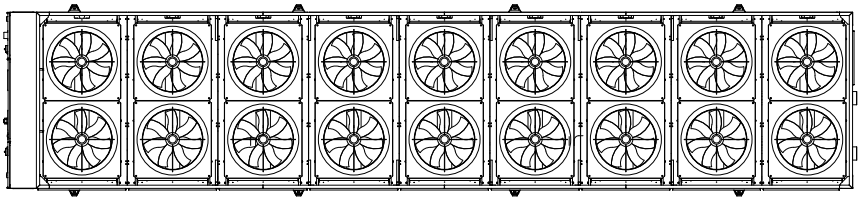
TCF 760 - 800kW



18 Fan

TCC 810 - 850kW

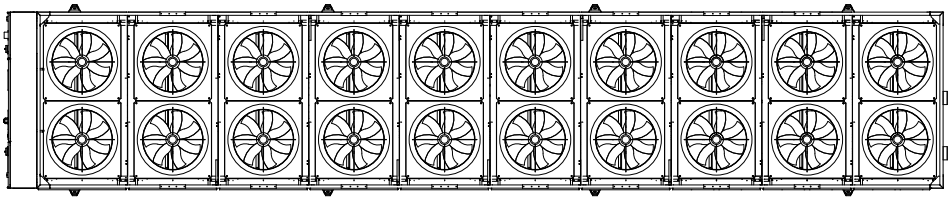
TCF 810 - 850kW



20 Fan

TCC 860 - 900kW

TCF 860 - 900kW



Unit Overview

Airflow

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

Electrical Panel

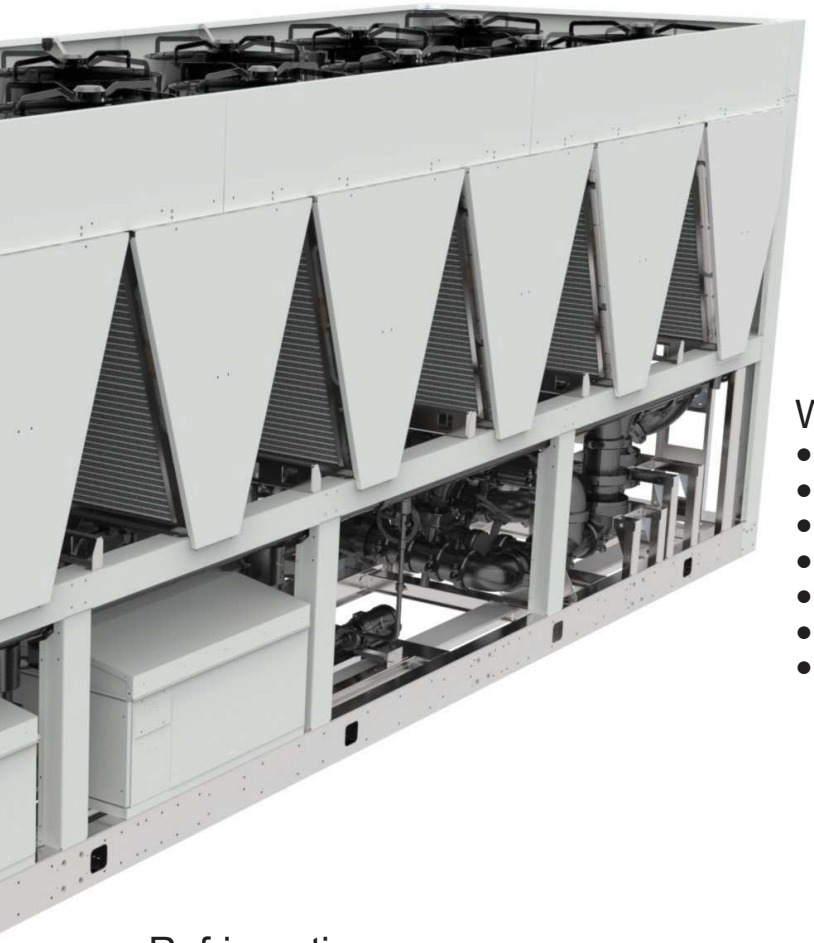
- Single Point Isolation
- UltraCap Power Backup
- Control Panel Heater
- Panel Ventilation
- Emergency Stop
- Power Monitoring
- Rain Hood

Controls

- Microprocessor
- Leak Detection
- Inteligent Head Pressure Control

Coils

- Epoxy Coated Microchannel Condenser Coils
- RTPF FreeCooling Coils



Waterside

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

Refrigeration

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

Unit Components

Refrigeration

Refrigeration	TCC	TCF
Compressors - Turbocor Centrifugal	●	●
Dual Maintainable Pressure Relief Valves	●	●
Microchannel Epoxy 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 Valve(s)*	○	○
Liquid level control valve (LLCV)	●	●
Full operating charge of R134a	●	●
Large capacity filter drier(s) with replaceable cores	●	●
Liquid line sight glasses	●	●
Low pressure switch with auto reset	●	●
2 High pressure switches with manual reset per compressor	●	●
High ambient starting valves	●	●
Suction and liquid pressure transducers	●	●
Discharge check (non return) valve(s)	●	●

● Standard features ○ Optional features — Feature not available

CAUTION
* Feature required if unit is to be shut down for winter with water still circulating through unit. Freeze protection. This is to stop potential liquid migration.

Evaporator

Flooded evaporator incorporating an internal round tube 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 heater(s) and thermostat protect the evaporator against freeze up in ambient temperatures down to -20°C. (in compliance with Airedale freeze protection policy).

Connections for External Trace Heating (240V / 500W available).

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.

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 their is no cooling demand by keeping the refrigerant in the evaporator, even if water is still flowing through the unit.

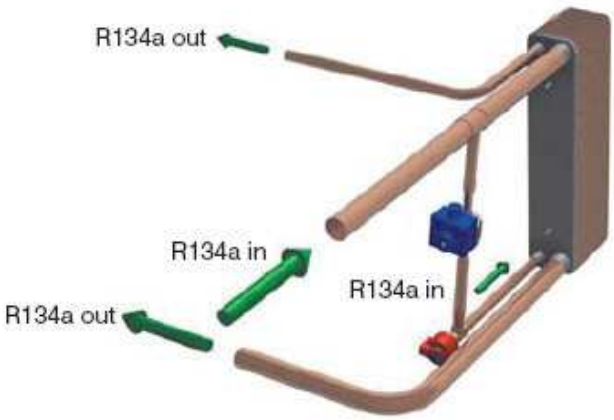
Economiser Circuit for Increased Part Load Efficiency

The addition of an economiser circuit provides increased cooling and enhances EER, in full and part load operation.

Sub cooled liquid is expanded using a dedicated EEV (electronic expansion valve) to medium pressure and passed through one side of a plate heat exchanger.

Through the other side flows the ‘normal’ pressure liquid.

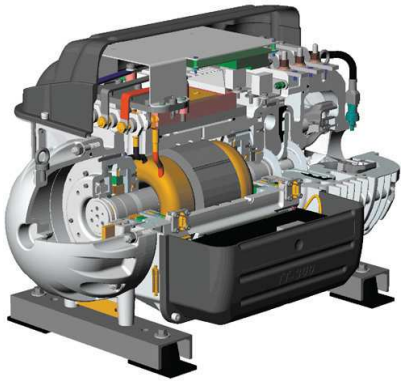
The result is that the sub cooling of the liquid entering the system EEV is increased, which improves evaporator performance and at the same time the suction pressure within the compressor body is lifted, improving compressor efficiency.



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 120kg or 132kg (compressor size dependant)
- 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 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 enables us to reduce the amount of subcooling done in the coil, leaving more area for heat eachange.

R134a Leak Detection System

A factory calibrated leak detection system shall be fitted as standard to units containing circuits carrying > 300kg / circuit of refrigerant to comply with F-gas legislation, however the leak detection system can be supplied as an optional extra with refrigerant charges <300kg.

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

Maintainable Dual Pressure Relief Valve

An auto resetting pressure relief valve assembly shall be provided per evaporator circuit, opening on pressure rise above 10.3 barg. The dual shut-off valve assembly incorporates 2 pressure relief valves which can be individually shut off via a 3 way valve. This allows the maintenance of individual pressure relief valves without any requirement for refrigerant evacuation.

In accordance with EN13136:2001, 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. EN13136:2001 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.

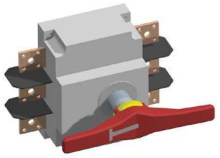
Electrical

Controls and Electrical	TCC	TCF
Leak detection on circuits containing >300kg of refrigerant	●	●
Intelligent head pressure control	●	●
Actuated suction shut off valve	○	○
Power monitoring	○	○
Individual mains power isolator for each compressor	●	●
Separate electrical isolation for fans	●	●
Single point isolation for 3 connection of incoming 3-phase and earth mains power supply	●	●
Emergency Stop fitted to controls compartment door	●	●
Circuit breakers for protection of all major unit components	●	●
Phase rotation relay incorporating phase loss protection	●	●
Mains power loss emergency shutdown via ultracap	●	●

● 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

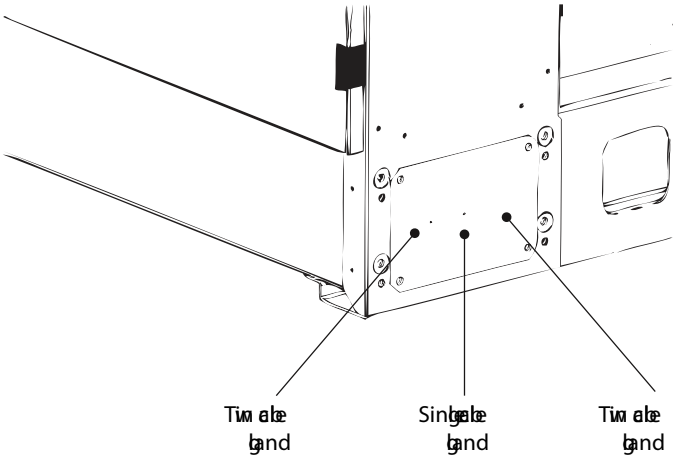
The Ultracap module is a standard feature utilising the latest Ultra Capacitor technology in external backup device for the EVD Evolution drivers and pCO controllers. The module guarantees temporary power to the controller and drivers in the event of mains power failures. The Ultra Capacitors are used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

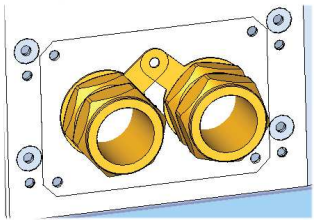
Mains Cable Entry

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

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

Maintenance Socket

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

Condenser Fans

Fans	TCC	TCF
800 mm diameter AC axial fans	●	●
800 mm diameter EC axial fans	○	○
800 mm diameter high airflow EC fans	○	○

● Standard features ○ Optional features — Feature not available

Condenser Fan and Motor - AC

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

Energy saving Electronically Commutated (EC) Fan Motor

Each 800 mm diameter fan incorporates on board electronics with AC / DC conversion and inverter driven DC motor control to offer unparalleled high efficiency levels combined with smooth step-less speed control and quiet operation.

Sickle blades reduce air turbulence to minimise sound levels and power consumption whilst maximising performance.

The long bell mouth design provides improved aerodynamics, up to 10% more air movement, and an extended vertical throw of air to reduce the chance of air re-circulation. As standard the enclosure is complete with an integral finger proof grille.

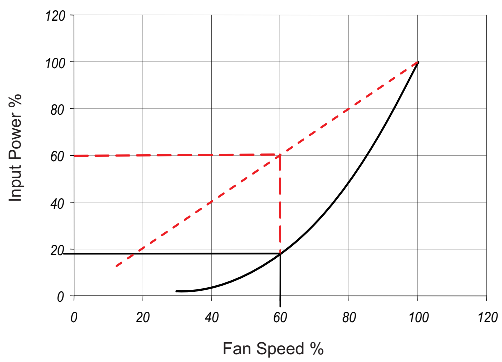
The fans offer maximum airflow performance while keeping sound levels to a minimum.

A mains EMC filter is fitted when the 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%, a standard AC fans modulating range is typically 40-100% of full fan speed.

The EC fan presents superior energy efficiency at full and reduced fan speed compared to the equivalent AC fan motor, offering efficiency savings anywhere between 30 to 100% compared with an AC fan.

Fan speeds are factory set depending on sound level variant.
Standard voltage regulated (VR) fan speed controllers offer a linear response. By comparison the 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.

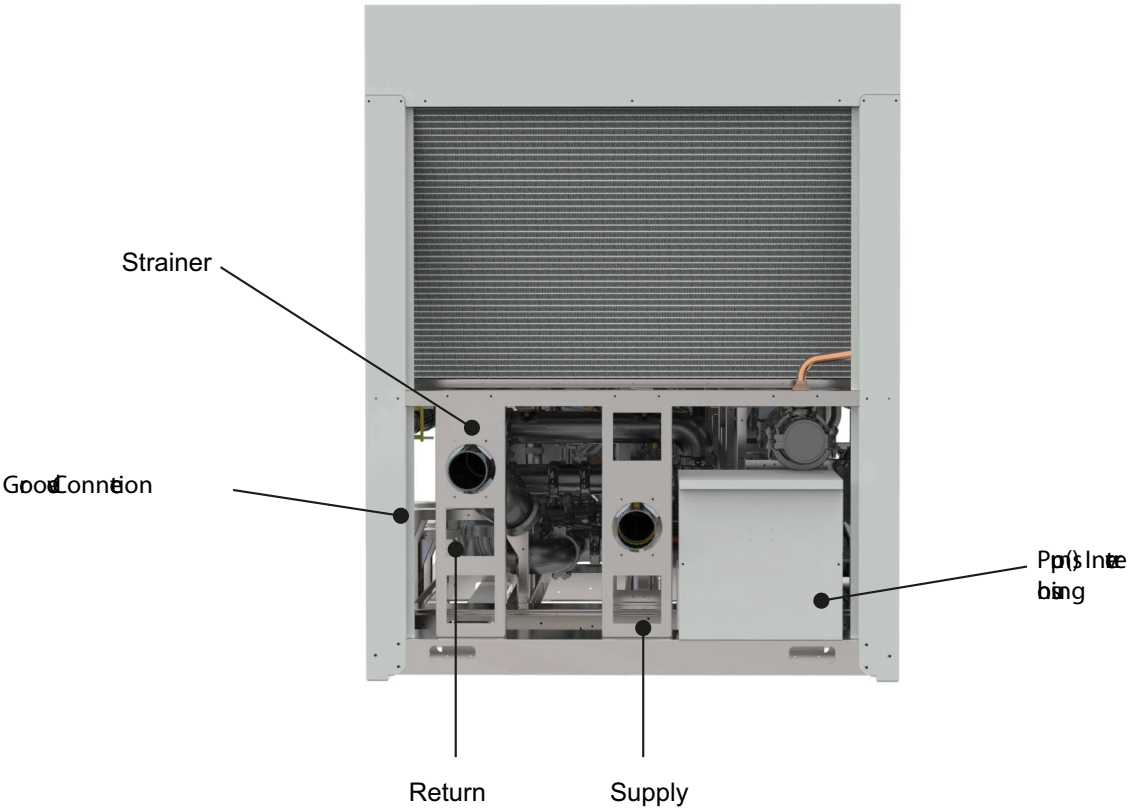


Fan speed of 60%
Voltage regulated input power required 60%
EC input power required 18%

—— EC (Electronically Commutated) Fan Speed Control

---- Voltage Regulated Fan Speed Control

Waterside



Waterside	TCC	TCF
Free Cooling Coil	—	●
Evaporator Immersion Heaters	●	●
Water filter	○	●
Pump hydronic options**	○	○
Water flow meter	○	○
Grooved and clamped type connections	●	●
Flanged connections	○	○
Pump vibration eliminators	●	●
Pump interlock*	○	○
Flow switch*	○	○
Differential pressure transducer*	●	●

● Standard features ○ Optional features — Feature not available

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

**Pump options only available on units with sufficient space.

Free Cooling Coil
A free cooling coil constructed in a “V” frame arrangement, allowing for efficient heat transfer from the ambient air temperature to the cooling process.
The free cooling coil is manufactured from copper tube and aluminium fin.

Free cooling is initiated whenever the outdoor ambient temperature is 2°C 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.

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.

Water Flow Meter
A water flow meter shall be fitted to the unit to monitor water flowrates.

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 switchgear and isolating valve as standard.

Run / standby pumps are rotated automatically to ensure even pump usage and prolong component life.

Pump - AC Motor - Fixed Speed
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)

Waterside Options

Air Cooled

	EVAPORATOR ONLY	EXTENDED PIPEWORK	NO BYPASS (FILTER + SOV)	BYPASS (FILTER + SOV)	SINGLE PUMP	RUN AND STANDBY
TCC11R04S-01	●	-	-	-	-	-
TCC11R06S-01	●	●	○	-	-	-
TCC11R08S-01	●	●	●	●	●	●
TCC12R08S-04	●	●	○	-	-	-
TCC12R10S-04	●	●	●	●	●	●
TCC12R12S-04	●	●	●	●	●	●
TCC12R14S-04	●	●	●	●	●	●
TCC11R06L-02	●	●	○	-	-	-
TCC11R08L-03	●	●	○	-	-	-
TCC11R10L-03	●	●	●	●	●	●
TCC12R10L-05	●	●	●	●	-	-
TCC12R12L-06	●	●	●	●	●	●
TCC12R14L-06	●	●	●	●	●	●
TCC12R16L-06	●	●	●	●	●	●
TCC12R18L-06	●	●	●	●	●	●
TCC12R20L-06	●	●	●	●	●	●

Free Cooled

	NO BYPASS (FILTER + SOV)	BYPASS (FILTER + SOV)	SINGLE PUMP	RUN AND STANDBY
TCF11R06S-07	○	○	-	-
TCF11R08S-07	●	●	●	●
TCF12R08S-09	○	-	-	-
TCF12R10S-05	○	○	-	-
TCF12R12S-05	●	●	●	●
TCF12R14S-05	●	●	●	●
TCF11R06L-11	○	-	-	-
TCF11R08L-08	○	-	-	-
TCF11R10L-10	○	○	-	-
TCF12R12L-12	●	●	●	●
TCF12R14L-12	●	●	●	●
TCF12R16L-12	●	●	●	●
TCF12R18L-13	●	●	●	●
TCF12R20L-13	●	●	●	●

● Waterside + internal strainer
○ Waterside + external strainer (supplied loose)
– Not avaliable

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 1/16” 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

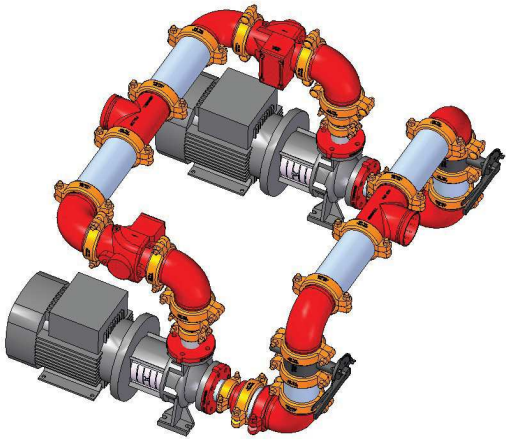
Flushing bypass kit (regulating)
Comprises:
- Shut off valves
- Filter
- Bypass leg with Double regulating valve

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 valves

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



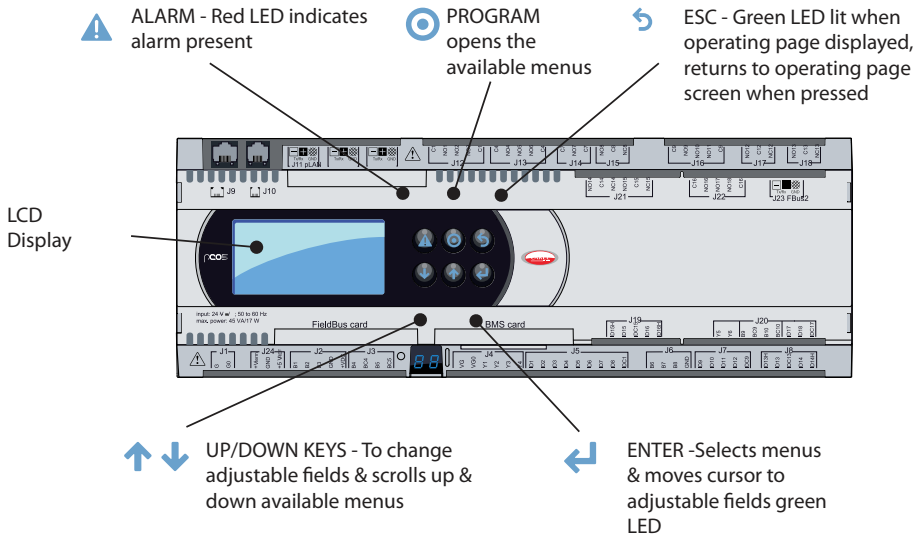
Run & standby pumps + filter + bypass (regulating)
Comprises:
- Run and standby pumps with vibration isolation
- Shut off valves
- Filter
- Double regulating valve
- Non return valve

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.



1 UP / DOWN KEYS - To change adjustable fields & scrolls up & down available menus
2 ENTER - Selects menus & moves cursor to adjustable fields green 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 LCD Display

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
- Compressor 1 contactor status
- Compressor 2 contactor status (dependant on model)
- Volt free contact non-critical alarm indication
- Volt free contact critical alarm indication

Building Management Systems (BMS)

Sequencing (Master / Slave and Run / Standby) via the Airedale sequence manager.

Please specify at time of enquiry.

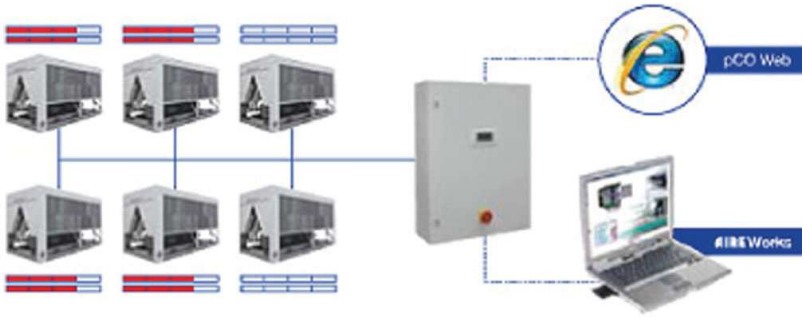
Chiller Sequence Manager

For the efficient temperature and capacity operation of multiple units on a single site, the sequence manager will permit interlinked operation of the complete system thereby providing optimum temperature control and minimum power consumption.

Up to 6 units can be sequenced.

Included within this package is a site visit by an Airedale Control Specialist to set up multiple unit sequence control.

The chiller sequence manager is supplied as a separate control panel to be mounted remotely in an indoor location, such as a plant room.



Unit Remote ON/OFF
Disables / Enables the unit remotely.

Compressor Anti Cycle Control
Automatic via the Microprocessor.

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

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

Supply Temperature Limiting
Based upon the freezing point of the water/ glycol solution, the unit operation is limited to a 2°C 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 avaliable for application 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.

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

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

BMS Interface Card

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, Trend, 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.

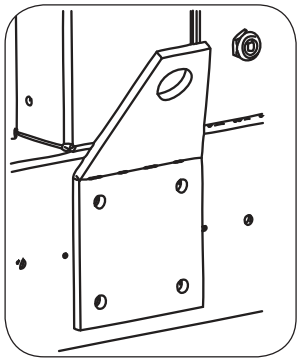
Mechanical

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 or pad type)	○	○
Control panel rain hood	○	○

● Standard features ○ Optional features — Feature not available

Lifting Lugs

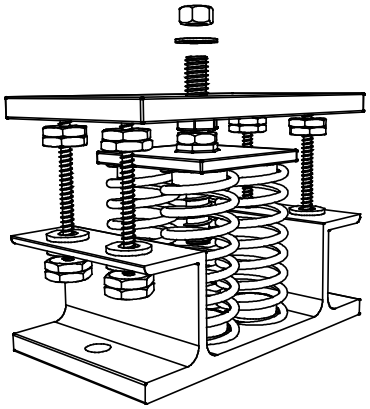
Lifting Lugs shall be fitted to the unit enabling full lifting requirements. The lifting lug hole diameter is 40 mm.



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.

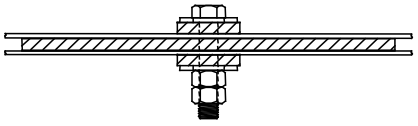
The isolators shall be suitable for fitting to structural steelwork providing the surface is level and of sufficient strength where a high level of vibration elimination is required.



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 2785mm.

Extended Discharge Air Plenum - Condenser Fan

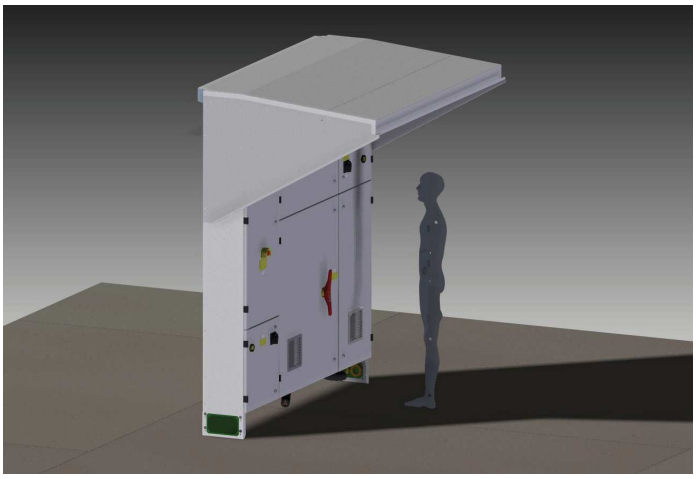
Site fitted and constructed from galvanised sheet steel coated with epoxy baked powder paint, this plenum shall direct discharge air vertically as an aid to minimise air re-circulation and also offers a degree of acoustic reduction in the horizontal plane; site fitted.

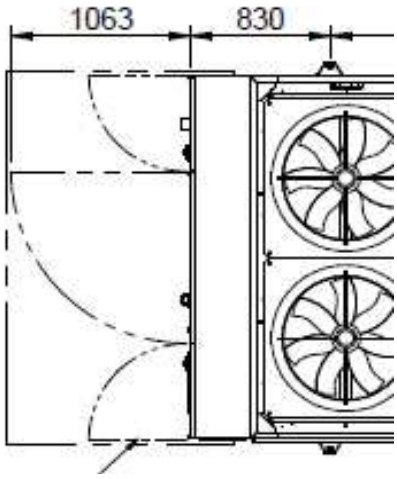
Standard unit colour shall be Light Grey (RAL 7035).

The overall unit height when fitted with the extended discharge air plenum is 3285mm.

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.



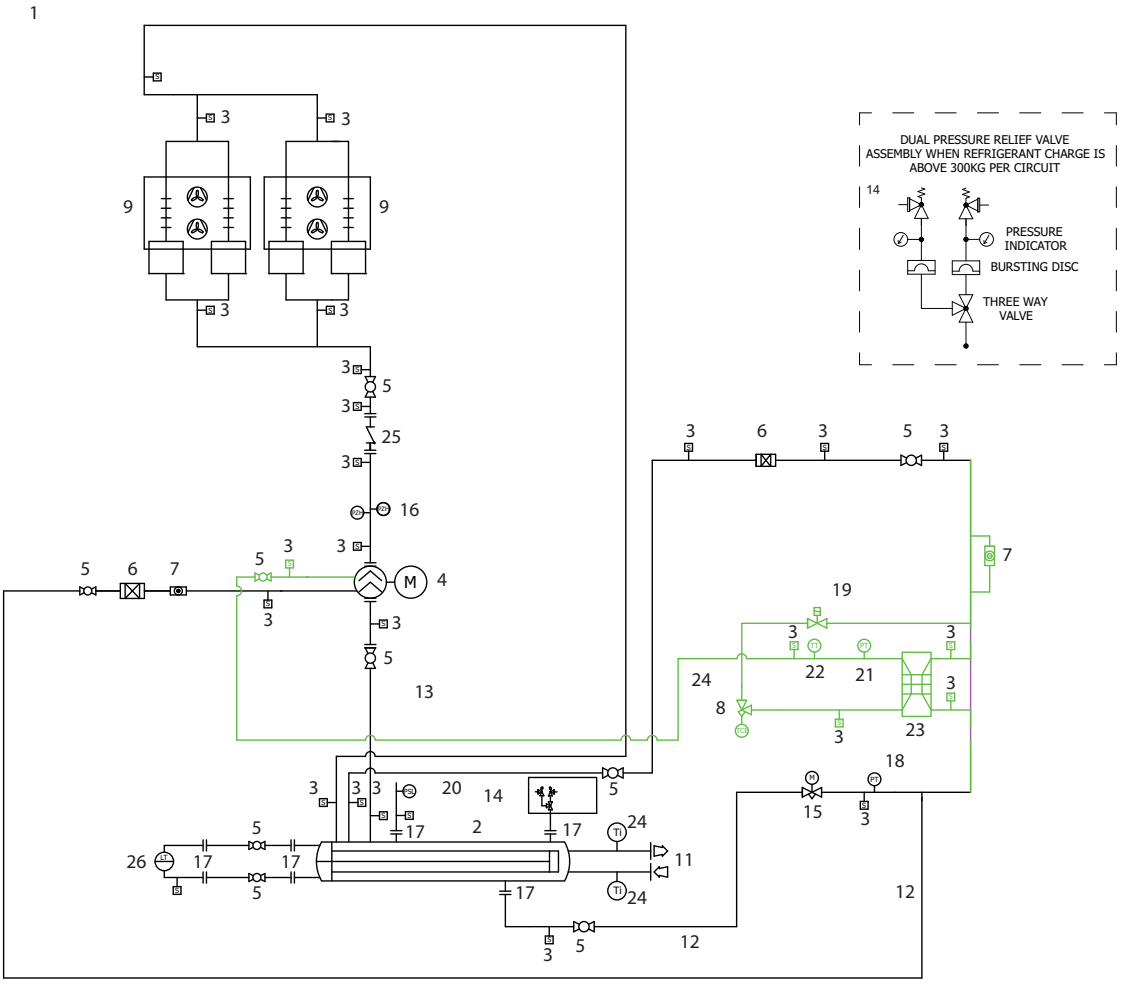


Design Features & Information

Pipework Design

Due to the unique oil free operation of the Turbocor compressor, the need for oil entrainment is eliminated. As pipe work is not required to be sized for oil return it is possible to size pipe work for minimal pressure losses through the system with maximum cooling capacity and optimised unit EER.

Refrigeration Schematic



Note: Schematic above is for a single circuit machine.

key

1	Turbochill flooded schematic	15	Liquid level control valve
2	Flooded evaporator	16	High pressure switch
3	Schrader connection	17	Rotalock adapter
4	Centrifugal compressor	18	Liquid pressure transmitter
5	Shut off valve	19	Solenoid valves
6	Filter drier	20	Low pressure switch
7	Sight glass	21	Economiser pressure transducer
8	Electronic expansion valve (economiser circuit only)	22	Temperature sensor
9	Condenser section	23	Economiser
10	Level transmitter	24	Economiser line
11	Water connections (Inlet /Outlet)	25	Non return valve
12	Liquid line	26	Liquid level sensor
13	Suction line		
14	Dual pressure relief valves		

Design

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

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

Minimum Turndown = 1 compressor – 30%
2 compressors – 15%

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

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

$$= \text{Vmin} = \frac{750 \times 60}{4.19 \times 5} \times 2 \times \frac{(750 \times 0.15)}{300} \times 1.2 = 1935 \text{ Litres}$$

METHOD 2

Where the system permanent heat load is unknown:

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

Minimum Turndown = 1 compressor – 30%
2 compressor – 15%

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

$$\text{Vmin} = \frac{\frac{750 \times 3600}{4.19 \times 5} \times 0.15 \times 1.2}{12} = 1935 \text{ Litres}$$

Capacity Data

For guidance, a number of units from 200 kW to 900 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

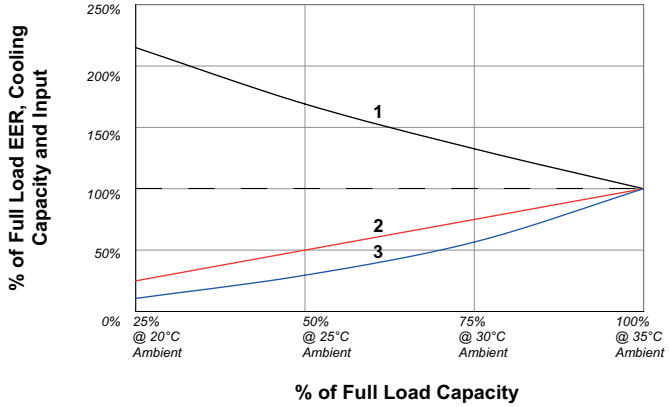
(For 100% Water) Standard Unit

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

SEER

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 SEER calculation method is used for part of the Building Regulations Part "L" to give a single value that realisticly indicates the efficiency of the chiller across the year round range of operation.

The SEER value is calculated from the unit's performance at 20, 25, 30 and 35°C ambient temperatures for all loading stages, and with a fixed 7°C supply temperature. All calculations assume the system operates with 100% water.

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

Where A,B,C and D are specific weighting factors 0.12, 0.32, 0.36 and 0.2 for use on calculating SEER.

	A	B	C	D
Temperature	35°C	30°C	25°C	20°C
Capacity Requirement	100%	75%	50%	25%
Percentage of Total Hours	0.12	0.32	0.36	0.2

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% / -9°C	30% / -15°C	40% / -23°C
Output (kW)		0.98	0.97	0.95	0.93
Compressor Input (kW)	x	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% / -6°C	30% / -12°C	40% / -20°C
Output (kW)		0.97	0.95	0.91	0.88
Compressor Input (kW)	x	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

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 1:1995. 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: 1995.

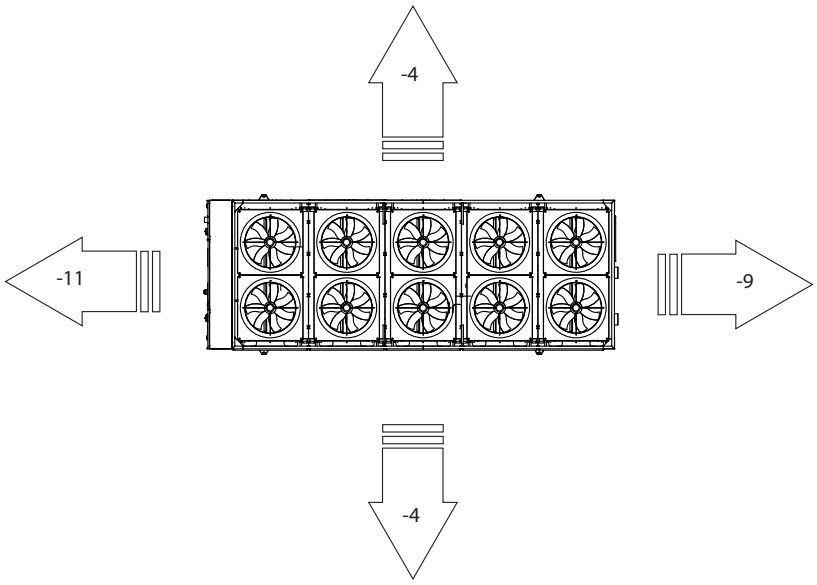
Sound Pressure Levels are calculated from sound power using the expanded parallelepiped method according to BS EN ISO 11203: 1996.

Sound Directivity

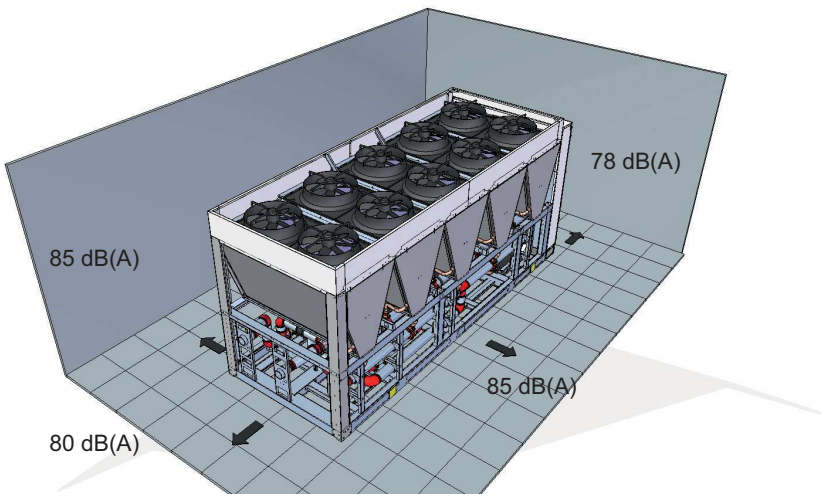
The Global sound measurements quoted in the following tables do not incorporate any directivity or denote any sound level heard at any given position surrounding the unit, rather they represent the total sound level radiating from the unit in all directions in the horizontal plane from source.

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

Base Correction Values - Global dB



EXAMPLE (dB(A)): 470 kW
Output - Quiet Models - TCC12R08S-04
Overall Sound Power of 89 dB(A) =



Installation Data

Water System

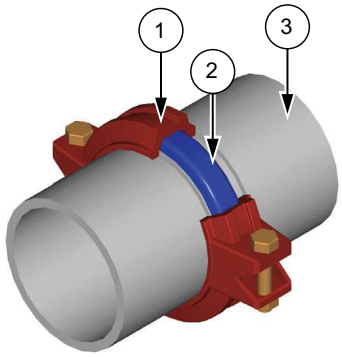
Chilled water pipe work and ancillary components must be installed in accordance with:

- 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 ambient 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

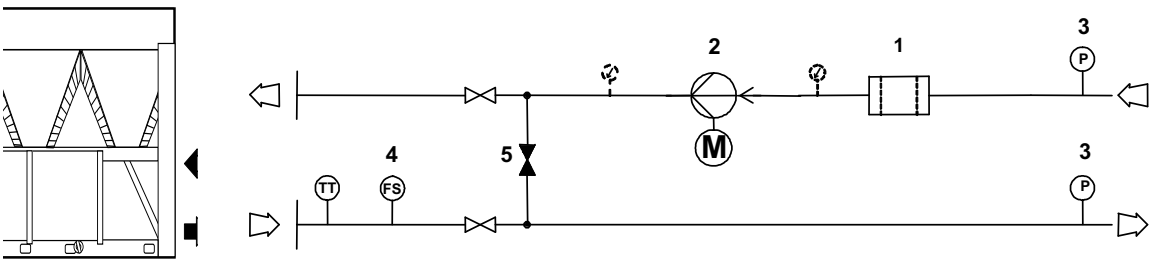
General

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	Pump	4	Flow switch
2	Filter 1/16"	5	Flushing bypass leg
3	Pressure sensor		



CAUTION

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

Installation Data

Water Systems and Recommended Flow Schemes

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

- The inclusion of Binder Points adjacent to the flow and return connections, to allow temperature and pressure readings
- A flow switch or equivalent, fitted adjacent to the water outlet side of the Chiller
- A 1/16” 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.
These safety devices prevent the chiller operating with low water flow which can cause serious damage.

CAUTION
Failure to install both safety devices will invalidate the chiller warranty.

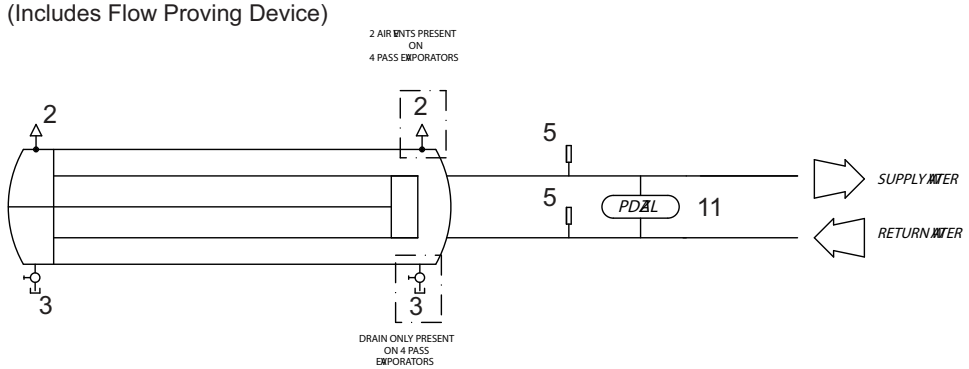
Do not rely solely on the BMS to protect the chiller against low flow conditions.

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)

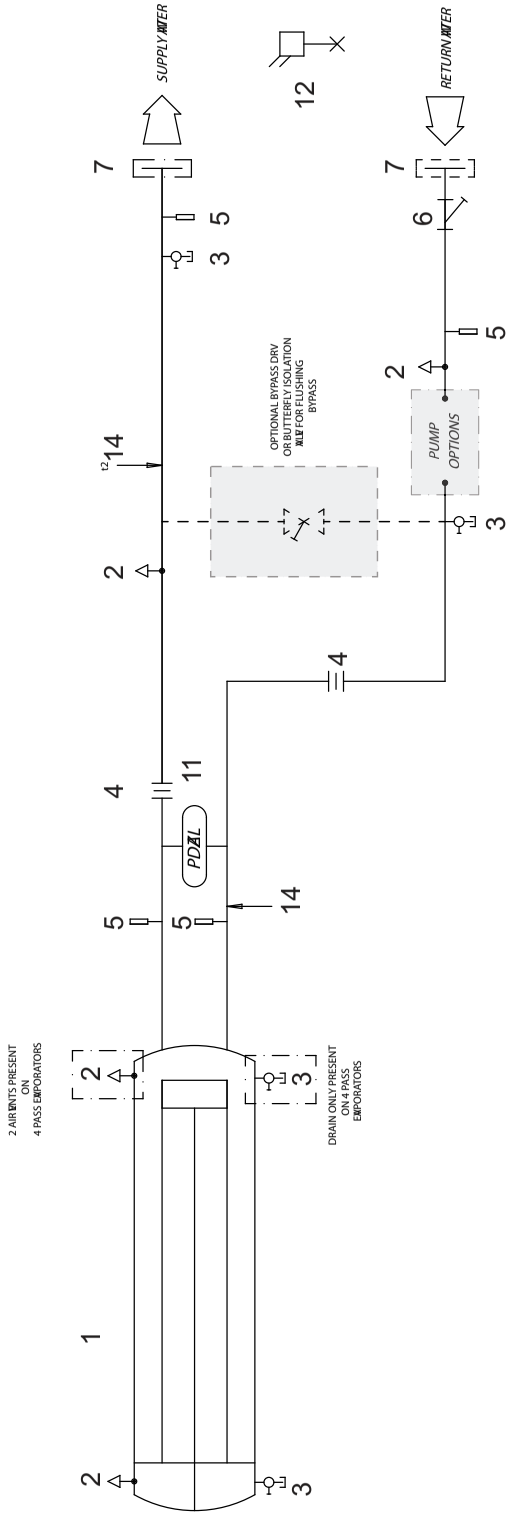


Installation Data

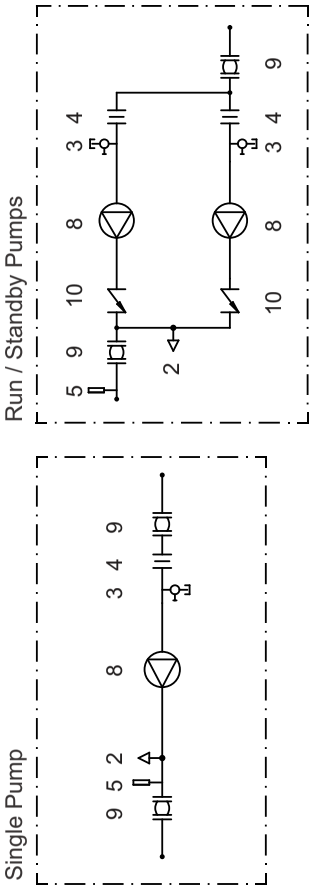
Standard Air Cooled Circuit

Incorporating

- 1/16” Mesh Water Filter
- Differential Pressure Transducer
- Shut off valves



Pump Options



Key

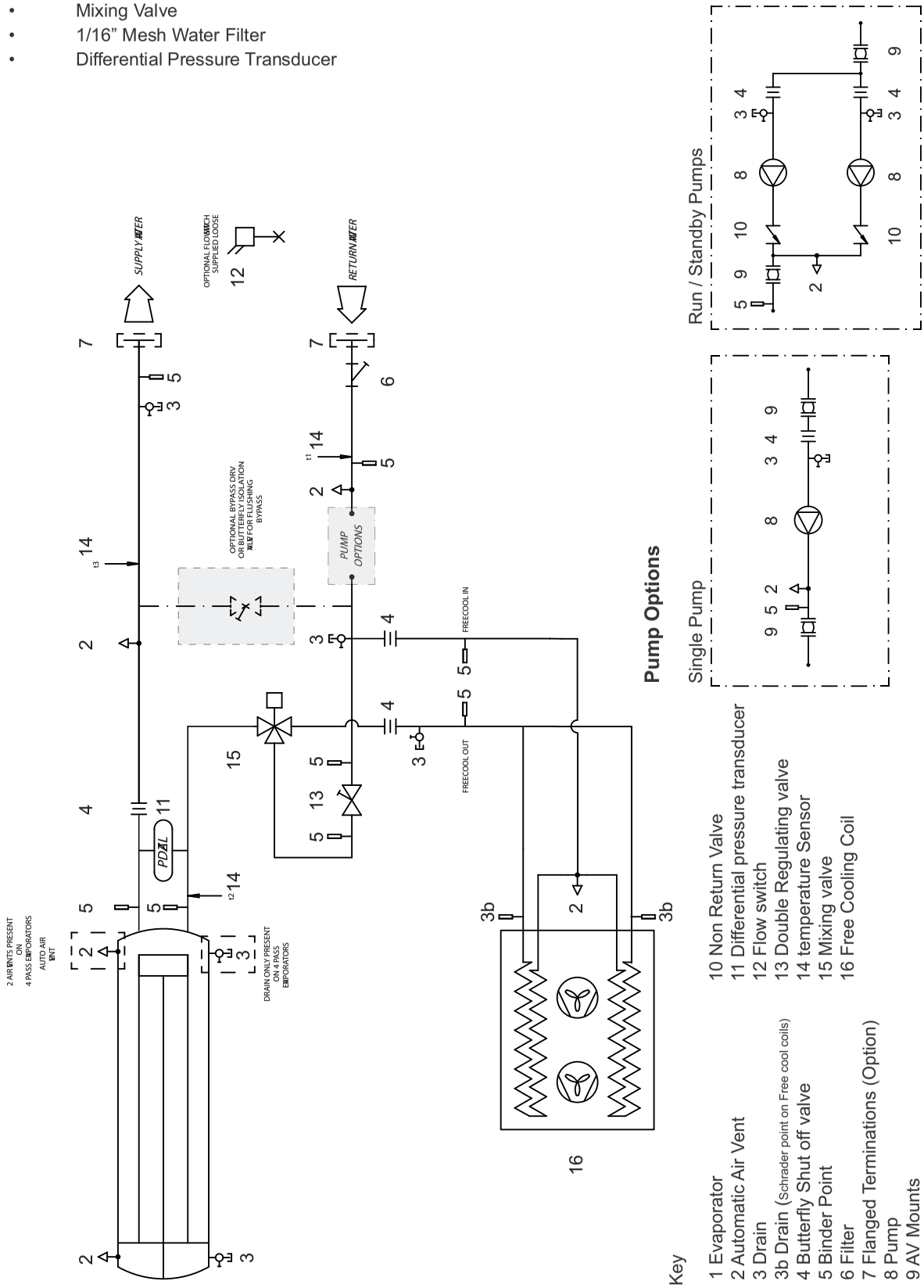
1 Evaporator
2 Automatic Air Vent
3 Drain
4 Butterfly Shut off valve
5 Binder Point
6 Filter
7 Flanged Terminations (Option)
8 Pump
9 AV Mounts
10 Non Return Valve
11 Differential pressure transducer
12 Flow switch
13 Double Regulating valve
14 temperature Sensor
15 Mixing valve
16 Free Cooling Coil

Installation Data

Standard Free Cool Circuit

Incorporating

- Double Regulating Valve
- Mixing Valve
- 1/16” Mesh Water Filter
- Differential Pressure Transducer



Intentionally blank

Technical Data - TCC R TCC11R04S-01, TCC11R06S-01, TCC11R08S-01

Mechanical

			1	2	3
Mechanical Data	Notes	Units	TCC11R04S-01	TCC11R06S-01	TCC11R08S-01
Cooling Duty - AC Fans	(1)	kW	240	265	275
Nom Input -Cooling Only		kW	69.5	71.8	73.4
EER	(2)		3.45	3.69	3.75
ESEER	(3)		4.58	4.80	4.88
SEER	(3)		4.46	4.67	4.75
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
Cooling Duty - EC Fans	(1)	kW	240	265	275
Nom Input -Cooling Only		kW	68.6	70.2	69.2
EER	(2)		3.50	3.78	3.97
ESEER	(3)		4.92	5.60	5.93
SEER	(3)		4.76	5.39	5.70
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
Cooling Duty - High Airflow EC Fans	(1)	kW	240	265	275
Nom Input -Cooling Only		kW	68.6	70.1	69.2
EER	(2)		3.50	3.78	3.98
ESEER	(3)		4.93	5.60	5.92
SEER	(3)		4.77	5.39	5.70
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)		mm	2785 x 2200 x 2626	2785 x 2200 x 3758	2785 x 2200 x 4890
Machine Weight	(7)	kg	2730	3345	3935
Operating Weight	(7)	kg	2840	3465	4055
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		m²	9.5	14.2	18.9
Maximum Airflow - AC Fans		m³/s	22.6	33.9	45.2
Maximum Airflow - EC Fans		m³/s	25.3	38.0	50.6
Maximum Airflow - High Airflow EC Fans		m³/s	27.3	41.0	54.7
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			4	6	8
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	910	910	910
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
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			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	135	145	165
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	101.9	101.9	113.8
Minimum System Water Volume	(8)	l	1123.1	1229.5	1284.0
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.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC11R04S-01, TCC11R06S-01, TCC11R08S-01

Electrical

			1	2	3
ELECTRICAL DATA			TCC11R04S-01	TCC11R06S-01	TCC11R08S-01
Unit Data					
Full Load Amps	(1)	A	152	160.8	169.4
Maximum Start Amps		A	2	2	2
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	160	200	200
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 (AC)					
Quantity			4	6	8
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			4	6	8
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			1	1	1
Motor Rating		kW	87	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC11R06L-02, TCC11R08L-03, TCC11R10L-03

Mechanical

			4	5	6
Mechanical Data	Notes	Units	TCC11R06L-02	TCC11R08L-03	TCC11R10L-03
Cooling Duty - AC Fans	(1)	kW	390	425	450
Nom Input -Cooling Only		kW	124.1	127.9	132.0
EER	(2)		3.14	3.32	3.41
ESEER	(3)		4.42	4.62	4.72
SEER	(3)		4.27	4.48	4.58
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
Cooling Duty - EC Fans	(1)	kW	390	425	450
Nom Input -Cooling Only		kW	121.1	126.3	130.0
EER	(2)		3.22	3.36	3.46
ESEER	(3)		4.87	5.29	5.47
SEER	(3)		4.67	5.08	5.25
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
Cooling Duty - High Airflow EC Fans	(1)	kW	390	425	450
Nom Input -Cooling Only		kW	120.7	126.2	129.8
EER	(2)		3.23	3.37	3.47
ESEER	(3)		4.87	5.29	5.49
SEER	(3)		4.68	5.08	5.26
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)		mm	2785 x 2200 x 3758	2785 x 2200 x 4890	2785 x 2200 x 6022
Machine Weight	(7)	kg	3510	4325	4940
Operating Weight	(7)	kg	3650	3970	5080
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	27.7	27.7
Total Min. Water Flow		l/s	16.7	9.2	9.2
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	14.2	18.9	23.7
Maximum Airflow - AC Fans		m³/s	33.9	45.2	56.5
Maximum Airflow - EC Fans		m³/s	38.0	50.6	63.3
Maximum Airflow - High Airflow EC Fans		m³/s	41.0	54.7	68.3
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			6	8	10
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	910	910	910
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
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			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	170	320	340
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	101.9	113.8	113.8
Minimum System Water Volume	(8)	l	1761.4	1922.2	2028.6
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	15.5	16.9	17.8
Pressure Drop		kPa	8.7	41.4	45.7

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC11R06L-02, TCC11R08L-03, TCC11R10L-03

Electrical

			4	5	6
ELECTRICAL DATA			TCC11R06L-02	TCC11R08L-03	TCC11R10L-03
Unit Data					
Full Load Amps	(1)	A	235.8	244.4	253
Maximum Start Amps		A	2	2	2
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	250	315	315
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 (AC)					
Quantity			6	8	10
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)					
Quantity			6	8	10
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			6	8	10
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	210
Quantity			1	1	1
Motor Rating		kW	129	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12R08S-04, TCC12R10S-04, TCC12R12S-04

Mechanical

			7	8	9
Mechanical Data	Notes	Units	TCC12R08S-04	TCC12R10S-04	TCC12R12S-04
Cooling Duty - AC Fans	(1)	kW	470	500	530
Nom Input -Cooling Only		kW	135.5	137.7	143.8
EER	(2)		3.47	3.63	3.69
ESEER	(3)		4.78	4.84	4.87
SEER	(3)		4.63	4.70	4.73
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
Cooling Duty - EC Fans	(1)	kW	470	500	530
Nom Input -Cooling Only		kW	133.8	135.8	140.5
EER	(2)		3.51	3.68	3.77
ESEER	(3)		5.41	5.62	5.73
SEER	(3)		5.19	5.39	5.51
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
Cooling Duty - High Airflow EC Fans	(1)	kW	470	500	530
Nom Input -Cooling Only		kW	133.7	135.6	140.4
EER	(2)		3.52	3.69	3.77
ESEER	(3)		5.41	5.62	5.73
SEER	(3)		5.19	5.40	5.51
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)		mm	2785 x 2200 x 4890	2785 x 2200 x 6022	2785 x 2200 x 7154
Machine Weight	(7)	kg	4720	5335	5950
Operating Weight	(7)	kg	4875	5500	6115
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	40.5
Total Min. Water Flow		l/s	13.3	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	18.9	23.7	28.4
Maximum Airflow - AC Fans		m³/s	45.2	56.5	67.8
Maximum Airflow - EC Fans		m³/s	50.6	63.3	75.9
Maximum Airflow - High Airflow EC Fans		m³/s	54.7	68.3	82.0
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	12
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	910	910	910
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	295	310	330
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	140.8	140.8	140.8
Minimum System Water Volume	(8)	l	1140.8	1204.6	1268.4
Max System Operating Pressure		Barg	10	4	10
Flow Rate		l/s	18.6	19.8	21.0
Pressure Drop		kPa	26.0	28.8	31.8

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12R08S-04, TCC12R10S-04, TCC12R12S-04

Electrical

			7	8	9
ELECTRICAL DATA			TCC12R08S-04	TCC12R10S-04	TCC12R12S-04
Unit Data					
Full Load Amps	(1)	A	304.4	313	321.6
Maximum Start Amps		A	169.4	178	186.6
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	315	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	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating					
Available (fitted by others)		W	500	500	500
Condenser Fan - Per Fan (AC)					
Quantity			8	10	12
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			8	10	12
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			2	2	2
Motor Rating		kW	87	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12R14S-04, TCC12R10L-05, TCC12R12L-06

Mechanical

			10	11	12
Mechanical Data	Notes	Units	TCC12R14S-04	TCC12R10L-05	TCC12R12L-06
Cooling Duty - AC Fans	(1)	kW	560	600	670
Nom Input -Cooling Only		kW	151.9	183.8	195.4
EER	(2)		3.69	3.26	3.43
ESEER	(3)		4.88	4.65	4.70
SEER	(3)		4.74	4.50	4.56
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
Cooling Duty - EC Fans	(1)	kW	560	600	670
Nom Input -Cooling Only		kW	146.7	180.6	193.0
EER	(2)		3.82	3.32	3.47
ESEER	(3)		5.82	5.24	5.35
SEER	(3)		5.59	5.02	5.13
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
Cooling Duty - High Airflow EC Fans	(1)	kW	560	600	670
Nom Input -Cooling Only		kW	146.6	180.4	192.8
EER	(2)		3.82	3.33	3.47
ESEER	(3)		5.82	5.24	5.35
SEER	(3)		5.59	5.02	5.13
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)		mm	2785 x 2200 x 8286	2785 x 2200 x 6022	2785 x 2200 x 7154
Machine Weight	(7)	kg	6560	5430	6510
Operating Weight	(7)	kg	6735	5625	6760
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	50.0	58.8
Total Min. Water Flow		l/s	13.3	16.7	19.4
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	33.2	23.7	28.4
Maximum Airflow - AC Fans		m³/s	79.0	56.5	67.8
Maximum Airflow - EC Fans		m³/s	88.6	63.3	75.9
Maximum Airflow - High Airflow EC Fans		m³/s	95.7	68.3	82.0
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			14	10	12
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	910	910	910
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	340	290	445
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	140.8	140.8	140.8
Minimum System Water Volume	(8)	l	1332.2	1417.3	1566.3
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	22.2	23.8	26.6
Pressure Drop		kPa	35.0	27.5	25.0

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12R14S-04, TCC12R10L-05, TCC12R12L-06

Electrical

			10	11	12
ELECTRICAL DATA			TCC12R14S-04	TCC12R10L-05	TCC12R12L-05
Unit Data					
Full Load Amps	(1)	A	330.2	463	471.6
Maximum Start Amps		A	195.2	253	261.6
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	355	500	500
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 (AC)					
Quantity			14	10	12
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)					
Quantity			14	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			14	10	12
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	210	210
Quantity			2	2	2
Motor Rating		kW	87	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12R14L-06, TCC12R16S-06, TCC12R18S-06, TCC12R20L-06

Mechanical

			13	14	15	16
Mechanical Data	Notes	Units	TCC12R14L-06	TCC12R16L-06	TCC12R18L-06	TCC12R20L-06
Cooling Duty - AC Fans	(1)	kW	750	800	850	900
Nom Input -Cooling Only		kW	216.5	228.8	246.8	262.9
EER	(2)		3.46	3.50	3.44	3.42
ESEER	(3)		4.78	4.81	4.81	4.78
SEER	(3)		4.64	4.66	4.66	4.64
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Cooling Duty - EC Fans	(1)	kW	750	800	850	900
Nom Input -Cooling Only		kW	214.0	226.0	243.6	258.9
EER	(2)		3.50	3.54	3.49	3.48
ESEER	(3)		5.49	5.57	5.62	5.62
SEER	(3)		5.26	5.33	5.38	5.38
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Cooling Duty - High Airflow EC Fans	(1)	kW	750	800	850	900
Nom Input -Cooling Only		kW	213.8	225.8	243.3	258.6
EER	(2)		3.51	3.54	3.49	3.48
ESEER	(3)		5.49	5.57	5.62	5.61
SEER	(3)		5.26	5.34	5.38	5.38
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%	15-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 8286	2785 x 2200 x 9418	2785 x 2200 x 10550	2785 x 2200 x 11682
Machine Weight	(7)	kg	7120	7755	8355	8975
Operating Weight	(7)	kg	7365	8010	8610	9235
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	58.8	58.8	58.8	58.8
Total Min. Water Flow		l/s	19.4	19.4	19.4	19.4
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins			
Face Area Total		m²	33.2	37.9	42.6	47.4
Maximum Airflow - AC Fans		m³/s	79.0	90.3	101.6	112.9
Maximum Airflow - EC Fans		m³/s	88.6	101.2	113.9	126.5
Maximum Airflow - High Airflow EC Fans		m³/s	95.7	109.3	123.0	136.7
Condenser Fan & Motor			Sickle Bladed Axial Fan			
Quantity			14	16	18	20
Diameter		mm	800	800	800	800
Maximum Speed - AC Fans		rpm	910	910	910	910
Maximum Speed - EC Fans		rpm	1025	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor			
Quantity			2	2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation			
Refrigeration			Single Circuit			
Refrigerant Pre-charged			R134a	R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	460	475	480	495
Refrigeration Control			Electronic Expansion Valve (EEV)			
Water System			Grooved Type Coupling and Pipe Assembly			
Water Inlet / Outlet			DN150	DN150	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2	1/2
Water Volume		l	140.8	219.3	219.3	219.3
Minimum System Water Volume	(8)	l	1736.5	1921.3	2027.7	2134.1
Max System Operating Pressure		Barg	10	10	10	10
Flow Rate		l/s	29.7	31.7	33.7	35.7
Pressure Drop		kPa	30.4	34.1	37.9	42.0

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12R14L-06, TCC12R16S-06, TCC12R18S-06, TCC12R20L-06

Electrical

			13	14	15	16
ELECTRICAL DATA			TCC12R14L-06	TCC12R16L-06	TCC12R18L-06	TCC12R20L-06
Unit Data						
Full Load Amps	(1)	A	480.2	488.8	497.4	506
Maximum Start Amps		A	270.2	278.8	287.4	296
Mains Supply		VAC	400V (±10%) 3PH 50Hz			
Recommended Mains Fuse Size		A	500	500	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	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)	500 (2x 250)
External Trace Heating						
Available (fitted by others)		W	500	500	500	500
Condenser Fan - Per Fan (AC)						
Quantity			14	16	18	20
Full Load Amps		A	4.3	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15	15
Motor Rating		kW	1.8	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)						
Quantity			14	16	18	20
Full Load Amps		A	3.9	3.9	3.9	3.9
Locked Rotor Amps		A	N/A	N/A	N/A	N/A
Motor Rating		kW	2.56	2.56	2.56	2.56
Condenser Fan - Per Fan (EC High Air Volume)						
Quantity			14	16	18	20
Full Load Amps		A	4.8	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10	3.10
Compressor - Per Compressor						
Nominal Run Amps		A	210	210	210	210
Quantity			2	2	2	2
Motor Rating		kW	129	129	129	129
Start Amps		A	2	2	2	2
Type Of Start			Electronic Soft Start			

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data - TCC X TCC11X04S-01, TCC11X06S-01, TCC11X08S-01

Mechanical

			17	18	19
Mechanical Data	Notes	Units	TCC11X04S-01	TCC11X06S-01	TCC11X08S-01
Cooling Duty - AC Fans	(1)	kW	200	225	235
Nom Input -Cooling Only		kW	59.0	59.6	60.2
EER	(2)		3.39	3.77	3.90
ESEER	(3)		4.73	4.85	4.95
SEER	(3)		4.58	4.73	4.83
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
Cooling Duty - EC Fans	(1)	kW	200	225	235
Nom Input -Cooling Only		kW	57.5	57.3	56.8
EER	(2)		3.48	3.92	4.14
ESEER	(3)		5.12	5.58	5.93
SEER	(3)		4.93	5.39	5.72
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
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 2626	2785 x 2200 x 3758	2785 x 2200 x 4890
Machine Weight	(7)	kg	2730	3345	3935
Operating Weight	(7)	kg	2840	3465	4055
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		m²	9.5	14.2	18.9
Maximum Airflow - AC Fans		m³/s	17.7	26.5	35.3
Maximum Airflow - EC Fans		m³/s	17.7	26.5	35.3
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			4	6	8
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	730	730	730
Maximum Speed - EC Fans		rpm	730	730	730
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	135	145	165
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	113.8	113.8	113.8
Minimum System Water Volume	(8)	l	1049.9	1135.0	1177.6
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	8.7	9.5	9.9
Pressure Drop		kPa	22.6	26.1	27.9

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC11X04S-01, TCC11X06S-01, TCC11X08S-01

Electrical

			17	18	19
ELECTRICAL DATA			TCC11X04S-01	TCC11X06S-01	TCC11X08S-01
Unit Data					
Full Load Amps	(1)	A	145	150	155
Maximum Start Amps		A	2	2	2
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	160	160	200
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 (AC)					
Quantity			4	6	8
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			4	6	8
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			1	1	1
Motor Rating		kW	87	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC11X06L-02, TCC11R08L-03, TCC11X10L-03

Mechanical

			20	21	22
Mechanical Data	Notes	Units	TCC11X06L-02	TCC11X08L-03	TCC11X10L-03
Cooling Duty - AC Fans	(1)	kW	350	385	410
Nom Input -Cooling Only		kW	112.9	113.3	116.3
EER	(2)		3.10	3.40	3.53
ESEER	(3)		4.38	4.69	4.76
SEER	(3)		4.20	4.55	4.63
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
Cooling Duty - EC Fans	(1)	kW	350	385	410
Nom Input -Cooling Only		kW	110.7	110.3	112.4
EER	(2)		3.16	3.49	3.65
ESEER	(3)		4.77	5.28	5.54
SEER	(3)		4.55	5.08	5.33
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
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 3758	2785 x 2200 x 4890	2785 x 2200 x 6022
Machine Weight	(7)	kg	3510	4325	4940
Operating Weight	(7)	kg	3650	3970	5080
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	27.7	27.7
Total Min. Water Flow		l/s	16.7	9.2	9.2
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	14.2	18.9	23.7
Maximum Airflow - AC Fans		m³/s	26.5	35.3	44.2
Maximum Airflow - EC Fans		m³/s	26.5	35.3	44.2
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			6	8	10
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	730	730	730
Maximum Speed - EC Fans		rpm	730	730	730
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	1
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	170	320	340
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	113.8	113.8	113.8
Minimum System Water Volume	(8)	l	1603.1	1752.0	1858.4
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	13.9	15.3	16.3
Pressure Drop		kPa	7.0	34.9	38.9

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC11X06L-02, TCC11R08L-03, TCC11X10L-03

Electrical

			20	21	22
ELECTRICAL DATA			TCC11X06L-02	TCC11X08L-03	TCC11X10L-03
Unit Data					
Full Load Amps	(1)	A	225	230	235
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	251	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 (AC)					
Quantity			6	8	10
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)					
Quantity			6	8	10
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			6	8	10
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	210
Quantity			1	1	1
Motor Rating		kW	129	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12X08S-04, TCC12X10S-04, TCC12X12S-04

Mechanical

			23	24	25
Mechanical Data	Notes	Units	TCC12X08S-04	TCC12X10S-04	TCC12X12S-04
Cooling Duty - AC Fans	(1)	kW	430	460	490
Nom Input -Cooling Only		kW	128.1	128.2	131.6
EER	(2)		3.36	3.59	3.72
ESEER	(3)		4.87	4.96	5.02
SEER	(3)		4.70	4.81	4.87
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
Cooling Duty - EC Fans	(1)	kW	430	460	490
Nom Input -Cooling Only		kW	125.0	124.4	127.0
EER	(2)		3.44	3.70	3.86
ESEER	(3)		5.47	5.68	5.83
SEER	(3)		5.24	5.45	5.61
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
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 4890	2785 x 2200 x 6022	2785 x 2200 x 7154
Machine Weight	(7)	kg	4720	5335	5950
Operating Weight	(7)	kg	4875	5500	6115
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	40.5
Total Min. Water Flow		l/s	13.3	13.3	13.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	18.9	23.7	28.4
Maximum Airflow - AC Fans		m³/s	35.3	44.2	53.0
Maximum Airflow - EC Fans		m³/s	35.3	44.2	53.0
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	12
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	730	730	730
Maximum Speed - EC Fans		rpm	730	730	730
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	295	310	330
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	219.3	219.3	219.3
Minimum System Water Volume	(8)	l	1134.2	1198.0	1261.8
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	17.1	18.2	19.4
Pressure Drop		kPa	22.4	25.0	27.8

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12X08S-04, TCC12X10S-04, TCC12X12S-04

Electrical

			23	24	25
ELECTRICAL DATA			TCC12X08S-04	TCC12X10S-04	TCC12X12S-04
Unit Data					
Full Load Amps	(1)	A	290	295	300
Maximum Start Amps		A	155	160	165
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	315	315	315
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 (AC)					
Quantity			8	10	12
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			8	10	12
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			2	2	2
Motor Rating		kW	87	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12X14S-04, TCC12X10L-05, TCC12X12L-05

Mechanical

			26	27	28
Mechanical Data	Notes	Units	TCC12X14S-04	TCC12X10L-05	TCC12X12L-06
Cooling Duty - AC Fans	(1)	kW	520	560	630
Nom Input -Cooling Only		kW	137.6	182.0	191.6
EER	(2)		3.78	3.08	3.29
ESEER	(3)		5.04	4.75	4.78
SEER	(3)		4.89	4.57	4.61
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
Cooling Duty - EC Fans	(1)	kW	520	560	630
Nom Input -Cooling Only		kW	132.3	178.2	187.1
EER	(2)		3.93	3.14	3.37
ESEER	(3)		5.91	5.28	5.38
SEER	(3)		5.69	5.05	5.15
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
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 8286	2785 x 2200 x 6022	2785 x 2200 x 7154
Machine Weight	(7)	kg	6560	5430	6510
Operating Weight	(7)	kg	6735	5625	6760
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	50.0	58.8
Total Min. Water Flow		l/s	13.3	16.7	19.4
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	33.2	23.7	28.4
Maximum Airflow - AC Fans		m³/s	61.9	44.2	53.0
Maximum Airflow - EC Fans		m³/s	61.9	44.2	53.0
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			14	10	12
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	730	730	730
Maximum Speed - EC Fans		rpm	730	730	730
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	340	290	445
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	219.3	219.3	219.3
Minimum System Water Volume	(8)	l	1325.6	1410.7	1559.7
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	20.6	22.2	25.0
Pressure Drop		kPa	30.8	24.5	22.5

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12X14S-04, TCC12X10L-05, TCC12X12L-05

Electrical

			26	27	28
ELECTRICAL DATA			TCC12X14S-04	TCC12X10L-05	TCC12X12L-06
Unit Data					
Full Load Amps	(1)	A	305	445	450
Maximum Start Amps		A	170	235	240
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	315	500	500
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 (AC)					
Quantity			14	10	12
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)					
Quantity			14	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			14	10	12
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	210	210
Quantity			2	2	2
Motor Rating		kW	87	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCC12X14L-06, TCC12X16L-06, TCC12X18L-06, TCC12X20L-06

Mechanical

			29	30	21	32
Mechanical Data	Notes	Units	TCC12X14L-06	TCC12X16L-06	TCC12X18L-06	TCC12X20L-06
Cooling Duty - AC Fans	(1)	kW	710	760	810	860
Nom Input -Cooling Only		kW	210.6	221.3	234.2	252.3
EER	(2)		3.37	3.43	3.46	3.41
ESEER	(3)		4.87	4.93	4.95	4.95
SEER	(3)		4.70	4.76	4.79	4.79
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Cooling Duty - EC Fans	(1)	kW	710	760	810	860
Nom Input -Cooling Only		kW	205.3	215.2	227.3	244.7
EER	(2)		3.46	3.53	3.56	3.52
ESEER	(3)		5.51	5.62	5.69	5.71
SEER	(3)		5.28	5.39	5.45	5.47
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A	N/A
Nominal Output - Free Cooling	(4)	kW	N/A	N/A	N/A	N/A
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	N/A	N/A	N/A	N/A
Capacity Steps	(6)	%	15-100%	15-100%	15-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 8286	2785 x 2200 x 9418	2785 x 2200 x 10550	2785 x 2200 x 11682
Machine Weight	(7)	kg	7120	7755	8355	8975
Operating Weight	(7)	kg	7365	8010	8610	9235
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	58.8	58.8	58.8	58.8
Total Min. Water Flow		l/s	19.4	19.4	19.4	19.4
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins			
Face Area Total		m²	33.2	37.9	42.6	47.4
Maximum Airflow - AC Fans		m³/s	61.9	70.7	79.5	88.4
Maximum Airflow - EC Fans		m³/s	61.9	70.7	79.5	88.4
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan			
Quantity			14	16	18	20
Diameter		mm	800	800	800	800
Maximum Speed - AC Fans		rpm	730	730	730	730
Maximum Speed - EC Fans		rpm	730	730	730	730
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor			
Quantity			2	2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation			
Refrigeration			Single Circuit	Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	460	475	480	495
Refrigeration Control			Electronic Expansion Valve (EEV)			
Water System			Grooved Type Coupling and Pipe Assembly			
Water Inlet / Outlet			DN150	DN150	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2	1/2
Water Volume		l	219.3	219.3	219.3	219.3
Minimum System Water Volume	(8)	l	1729.9	1836.2	1942.6	2049.0
Max System Operating Pressure		Barg	10	10	10	10
Flow Rate		l/s	28.2	30.1	32.1	34.1
Pressure Drop		kPa	27.6	31.1	34.8	38.7

(1) Based on AC units performance at 13/7°C return/supply temperatures, 35°C ambient, 100% water.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCC12X14L-06, TCC12X16L-06, TCC12X18L-05, TCC12X20L-06

Electrical

			29	30	31	32
ELECTRICAL DATA			TCC12X14L-06	TCC12X16L-06	TCC12X18L-06	TCC12X20L-06
Unit Data						
Full Load Amps	(1)	A	455	460	465	470
Maximum Start Amps		A	245	250	255	260
Mains Supply		VAC	400V (±10%) 3PH 50Hz			
Recommended Mains Fuse Size		A	500	500	500	500
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	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)	500 (2x 250)
External Trace Heating						
Available (fitted by others)		W	500	500	500	500
Condenser Fan - Per Fan (AC)						
Quantity			14	16	18	20
Full Load Amps		A	2.5	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)						
Quantity			14	16	18	20
Full Load Amps		A	3.9	3.9	3.9	3.9
Locked Rotor Amps		A	N/A	N/A	N/A	N/A
Motor Rating		kW	2.56	2.56	2.56	2.56
Condenser Fan - Per Fan (EC High Air Volume)						
Quantity			14	16	18	20
Full Load Amps		A	4.8	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10	3.10
Compressor - Per Compressor						
Nominal Run Amps		A	210	210	210	210
Quantity			2	2	2	2
Motor Rating		kW	129	129	129	129
Start Amps		A	2	2	2	2
Type Of Start			Electronic Soft Start			

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Sound Data - TCC

TCC - AC Fans

		AC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11R04S-01	Power	86	85	84	80	80	75	77	81	86
	Pressure @ 10m	53	53	52	48	47	43	45	49	54
TCC11R06S-01	Power	87	87	86	81	81	76	77	81	87
	Pressure @ 10m	55	54	53	49	48	43	45	49	54
TCC11R08S-01	Power	84	85	85	80	79	75	77	81	86
	Pressure @ 10m	52	52	52	47	46	42	45	49	53
TCC11R06L-02	Power	87	87	86	82	83	77	76	80	87
	Pressure @ 10m	55	54	53	49	51	45	44	47	55
TCC11R08L-03	Power	89	88	87	83	84	78	76	80	88
	Pressure @ 10m	56	55	54	50	51	45	44	47	55
TCC11R10L-03	Power	90	89	88	84	84	78	77	80	88
	Pressure @ 10m	57	56	55	51	51	45	44	47	55
TCC12R08S-04	Power	89	88	87	83	83	78	80	84	89
	Pressure @ 10m	56	55	55	50	50	45	48	52	56
TCC12R10S-04	Power	90	89	88	84	83	78	80	84	89
	Pressure @ 10m	57	56	55	51	50	45	48	51	56
TCC12R12S-04	Power	90	90	89	84	84	79	80	84	90
	Pressure @ 10m	57	56	56	51	51	46	47	51	57
TCC12R14S-04	Power	91	90	89	85	84	79	81	84	90
	Pressure @ 10m	58	57	56	51	51	46	47	51	57
TCC12R10L-05	Power	90	89	88	84	86	80	79	83	90
	Pressure @ 10m	57	56	55	51	53	47	46	50	57
TCC12R12L-06	Power	90	90	89	85	86	80	79	83	90
	Pressure @ 10m	57	56	56	52	53	47	46	50	57
TCC12R14L-06	Power	91	90	89	85	87	80	79	83	91
	Pressure @ 10m	58	57	56	52	53	47	46	49	57
TCC12R16L-06	Power	92	91	90	86	87	81	79	83	91
	Pressure @ 10m	58	57	56	52	53	47	46	49	57
TCC12R18L-06	Power	92	91	90	86	87	81	79	83	91
	Pressure @ 10m	58	58	57	52	53	47	46	49	57
TCC12R20L-06	Power	93	92	91	87	87	81	80	83	91
	Pressure @ 10m	59	58	57	53	53	47	46	49	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 13/7°C at 35°C ambient.
(3) Based on standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCC

TCC - AC Fans

		AC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11X04S-01	Power	81	82	81	77	77	73	77	81	85
	Pressure @ 10m	49	50	48	44	45	41	45	49	52
TCC11X06S-01	Power	83	84	82	78	77	73	77	81	85
	Pressure @ 10m	51	51	50	45	45	41	45	49	52
TCC11X08S-01	Power	84	85	83	78	78	74	77	81	85
	Pressure @ 10m	52	52	51	46	45	41	45	49	53
TCC11X06L-02	Power	83	83	82	79	82	75	76	80	86
	Pressure @ 10m	50	51	49	47	49	43	44	47	53
TCC11X08L-03	Power	84	85	83	80	82	76	76	80	86
	Pressure @ 10m	51	52	50	47	49	43	43	47	53
TCC11X10L-03	Power	85	86	84	80	82	76	76	80	86
	Pressure @ 10m	52	53	51	47	49	43	43	47	53
TCC12X08S-04	Power	84	85	84	80	80	76	80	84	88
	Pressure @ 10m	52	52	51	47	47	43	48	52	55
TCC12X10S-04	Power	85	86	84	80	80	76	80	84	88
	Pressure @ 10m	52	53	52	47	47	43	47	51	55
TCC12X12S-04	Power	86	87	85	81	80	76	80	84	88
	Pressure @ 10m	53	53	52	47	47	43	47	51	55
TCC12X14S-04	Power	87	87	86	81	80	77	80	84	88
	Pressure @ 10m	53	54	52	48	47	43	47	51	55
TCC12X10L-05	Power	85	86	84	82	85	78	79	83	89
	Pressure @ 10m	52	53	51	49	52	45	46	50	56
TCC12X12L-06	Power	86	86	85	82	85	78	79	83	89
	Pressure @ 10m	53	53	52	49	52	45	46	50	56
TCC12X14L-06	Power	87	87	85	82	85	78	79	83	89
	Pressure @ 10m	53	54	52	49	52	45	46	49	56
TCC12X16L-06	Power	87	88	86	83	85	79	79	83	89
	Pressure @ 10m	54	54	52	49	51	45	45	49	56
TCC12X18L-06	Power	88	88	86	83	85	79	79	83	89
	Pressure @ 10m	54	55	53	49	51	45	45	49	55
TCC12X20L-06	Power	88	89	87	83	85	79	79	83	89
	Pressure @ 10m	54	55	53	49	51	45	45	49	55

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data

TCC - EC Fans

		EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11R04S-01	Power	88	86	85	81	82	77	78	81	87
	Pressure @ 10m	56	54	53	49	50	45	45	49	55
TCC11R06S-01	Power	84	83	83	79	79	74	77	81	86
	Pressure @ 10m	51	50	50	46	47	42	45	49	53
TCC11R08S-01	Power	85	84	81	78	78	73	77	81	85
	Pressure @ 10m	52	51	48	45	45	41	45	49	52
TCC11R06L-02	Power	92	89	87	84	85	80	77	80	89
	Pressure @ 10m	60	57	55	51	53	48	44	47	57
TCC11R08L-03	Power	91	88	87	83	85	79	77	80	89
	Pressure @ 10m	58	56	54	51	53	46	44	47	56
TCC11R10L-03	Power	88	86	86	82	84	77	76	80	88
	Pressure @ 10m	55	54	53	49	51	44	43	47	55
TCC12R08S-04	Power	91	89	88	84	85	80	81	84	90
	Pressure @ 10m	58	56	55	51	52	47	48	52	57
TCC12R10S-04	Power	88	87	86	83	83	78	80	84	89
	Pressure @ 10m	55	54	54	50	50	45	47	51	56
TCC12R12S-04	Power	87	86	86	82	82	77	80	84	89
	Pressure @ 10m	53	53	52	49	49	44	47	51	55
TCC12R14S-04	Power	85	85	85	81	82	77	80	84	88
	Pressure @ 10m	52	51	52	48	48	43	47	51	55
TCC12R10L-05	Power	94	91	90	86	88	82	80	83	92
	Pressure @ 10m	61	58	57	53	55	50	47	50	59
TCC12R12L-06	Power	93	90	89	86	88	81	80	83	91
	Pressure @ 10m	60	57	56	53	55	48	46	50	58
TCC12R14L-06	Power	92	90	89	86	88	81	80	83	91
	Pressure @ 10m	59	57	56	52	54	48	46	49	58
TCC12R16L-06	Power	91	90	89	85	87	81	79	83	91
	Pressure @ 10m	58	56	55	52	54	47	46	49	57
TCC12R18L-06	Power	91	90	89	85	87	81	79	83	91
	Pressure @ 10m	58	56	55	52	54	47	46	49	57
TCC12R20L-06	Power	91	89	89	85	87	80	79	83	91
	Pressure @ 10m	57	55	55	51	53	46	45	49	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 13/7°C at 35°C ambient.
(3) Based on standard unit, for units fitted with optional extras, please contact Airedale.
(4) Condenser fans running at full speed.

Sound Data

TCC - EC Fans

		EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11X04S-01	Power	83	82	79	77	77	73	77	81	85
	Pressure @ 10m	50	49	47	45	45	41	45	49	52
TCC11X06S-01	Power	84	83	81	78	78	73	77	81	85
	Pressure @ 10m	52	51	48	45	45	41	45	49	53
TCC11X08S-01	Power	82	81	79	77	77	73	77	81	85
	Pressure @ 10m	49	49	46	44	44	40	45	49	52
TCC11X06L-02	Power	84	83	80	79	82	75	76	80	86
	Pressure @ 10m	52	51	48	47	50	43	44	47	53
TCC11X08L-03	Power	86	85	81	80	82	75	76	80	86
	Pressure @ 10m	53	52	49	47	50	43	43	47	53
TCC11X10L-03	Power	86	86	82	80	82	76	76	80	86
	Pressure @ 10m	54	53	49	47	50	43	43	47	53
TCC12X08S-04	Power	86	85	82	80	80	76	80	84	88
	Pressure @ 10m	53	52	50	47	48	43	48	52	55
TCC12X10S-04	Power	87	86	83	80	81	76	80	84	88
	Pressure @ 10m	54	53	50	47	48	43	47	51	55
TCC12X12S-04	Power	87	86	84	81	81	76	80	84	88
	Pressure @ 10m	54	53	51	48	48	43	47	51	55
TCC12X14S-04	Power	88	87	84	81	81	76	80	84	88
	Pressure @ 10m	55	54	51	48	48	43	47	51	55
TCC12X10L-05	Power	86	86	82	82	85	78	79	83	89
	Pressure @ 10m	54	53	49	49	52	45	46	50	56
TCC12X12L-06	Power	87	86	83	82	85	78	79	83	89
	Pressure @ 10m	54	53	50	49	52	45	46	50	56
TCC12X14L-06	Power	88	87	84	82	85	78	79	83	89
	Pressure @ 10m	55	54	50	49	52	45	46	49	56
TCC12X16L-06	Power	89	88	84	83	85	78	79	83	89
	Pressure @ 10m	55	54	51	49	52	45	45	49	56
TCC12X18L-06	Power	89	88	85	83	85	78	79	83	89
	Pressure @ 10m	55	54	51	49	52	45	45	49	55
TCC12X20L-06	Power	89	89	85	83	85	79	79	83	89
	Pressure @ 10m	56	55	51	49	52	45	45	49	55

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data

TCC - High Airflow EC Fans

		High Airflow EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11R04S-01	Power	96	94	91	84	82	79	78	81	89
	Pressure @ 10m	64	62	59	52	50	47	46	49	57
TCC11R06S-01	Power	92	90	88	81	80	76	78	81	87
	Pressure @ 10m	60	58	56	49	48	43	45	49	55
TCC11R08S-01	Power	92	89	86	80	79	74	77	81	86
	Pressure @ 10m	59	56	53	47	46	42	45	49	53
TCC11R06L-02	Power	99	98	94	88	87	84	79	80	93
	Pressure @ 10m	67	66	62	55	54	52	46	47	60
TCC11R08L-03	Power	98	96	93	86	86	81	78	80	91
	Pressure @ 10m	65	63	61	54	53	48	45	47	58
TCC11R10L-03	Power	96	94	92	85	85	79	77	80	90
	Pressure @ 10m	64	61	59	52	52	46	44	47	57
TCC12R08S-04	Power	98	96	94	87	85	82	81	84	92
	Pressure @ 10m	66	64	61	54	53	49	48	52	59
TCC12R10S-04	Power	97	94	92	85	84	80	81	84	91
	Pressure @ 10m	64	62	60	52	51	47	48	51	58
TCC12R12S-04	Power	95	93	91	84	83	79	81	84	90
	Pressure @ 10m	62	60	58	51	50	46	47	51	57
TCC12R14S-04	Power	94	92	90	83	83	78	80	84	90
	Pressure @ 10m	61	58	57	50	49	45	47	51	56
TCC12R10L-05	Power	100	99	95	89	88	85	81	83	94
	Pressure @ 10m	68	66	63	56	56	52	48	50	61
TCC12R12L-06	Power	100	98	95	89	88	83	81	83	93
	Pressure @ 10m	67	65	62	55	55	50	47	50	60
TCC12R14L-06	Power	100	98	96	89	88	83	81	83	93
	Pressure @ 10m	67	65	62	55	55	50	47	49	60
TCC12R16L-06	Power	100	97	95	88	88	82	80	83	93
	Pressure @ 10m	66	64	62	54	54	49	47	49	59
TCC12R18L-06	Power	100	97	95	88	88	82	80	83	93
	Pressure @ 10m	66	64	62	54	54	49	47	49	59
TCC12R20L-06	Power	99	97	95	88	88	82	80	83	93
	Pressure @ 10m	65	63	61	54	54	48	46	49	59

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions: Water in/out 13/7°C at 35°C ambient.
(3) Based on standard unit, for units fitted with optional extras, please contact Airedale.
.

Sound Data

TCC - High Airflow EC Fans

		High Airflow EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCC11X04S-01	Power	90	87	84	78	78	74	77	81	85
	Pressure @ 10m	57	55	52	46	46	41	45	49	53
TCC11X06S-01	Power	91	88	86	80	79	74	77	81	86
	Pressure @ 10m	59	56	53	47	46	42	45	49	54
TCC11X08S-01	Power	89	86	84	78	78	73	77	81	85
	Pressure @ 10m	56	53	51	46	45	41	45	49	53
TCC11X06L-02	Power	91	88	85	80	82	76	76	80	87
	Pressure @ 10m	59	56	53	48	50	43	44	47	54
TCC11X08L-03	Power	93	90	87	81	83	76	76	80	87
	Pressure @ 10m	60	57	54	49	50	43	43	47	54
TCC11X10L-03	Power	94	91	88	82	83	76	76	80	88
	Pressure @ 10m	61	58	55	49	50	44	43	47	55
TCC12X08S-04	Power	93	90	87	81	81	77	80	84	88
	Pressure @ 10m	60	57	54	49	48	44	48	52	56
TCC12X10S-04	Power	94	91	88	82	81	77	80	84	89
	Pressure @ 10m	61	58	55	49	48	44	47	51	56
TCC12X12S-04	Power	94	92	89	83	82	77	80	84	89
	Pressure @ 10m	61	58	55	49	49	44	47	51	56
TCC12X14S-04	Power	95	92	89	83	82	77	80	84	89
	Pressure @ 10m	62	59	56	50	49	44	47	51	56
TCC12X10L-05	Power	94	91	88	83	85	79	79	83	89
	Pressure @ 10m	61	58	55	50	52	46	46	50	57
TCC12X12L-06	Power	94	91	88	83	85	79	79	83	90
	Pressure @ 10m	61	58	55	50	52	46	46	50	57
TCC12X14L-06	Power	95	92	89	84	85	79	79	83	90
	Pressure @ 10m	62	59	56	51	52	46	46	49	57
TCC12X16L-06	Power	96	93	90	84	86	79	79	83	90
	Pressure @ 10m	62	59	56	51	52	46	46	49	57
TCC12X18L-06	Power	96	93	90	85	86	79	79	83	90
	Pressure @ 10m	62	60	56	51	52	46	45	49	57
TCC12X20L-06	Power	97	94	91	85	86	79	79	83	91
	Pressure @ 10m	63	60	57	51	52	46	45	49	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 13/7°C at 35°C ambient.
(3) Based on standard unit, for units fitted with optional extras, please contact Airedale.

Technical Data - TCF R TCF11R06S-07, TCF11R08S-07, TCF11R06L-11

Mechanical

			33	34	35
Mechanical Data	Notes	Units	TCF11R06S-07	TCF11R08S-07	TCF11R06L-11
Cooling Duty - AC Fans	(1)	kW	290	300	390
Nom Input -Cooling Only		kW	80.9	81.4	122.9
EER	(2)		3.58	3.69	3.17
ESEER	(3)		4.64	4.72	4.30
SEER	(3)		4.51	4.59	4.17
Nominal Output - Free Cooling	(4)	kW	265.9	322	291
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.7	3	-2.8
Cooling Duty - EC Fans	(1)	kW	290	300	390
Nom Input -Cooling Only		kW	79.6	77.8	119.5
EER	(2)		3.64	3.86	3.26
ESEER	(3)		5.40	5.74	4.73
SEER	(3)		5.19	5.51	4.55
Nominal Output - Free Cooling	(4)	kW	279.8	335.8	308.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.5	3.5	-1.7
Cooling Duty - High Airflow EC Fans	(1)	kW	290	300	390
Nom Input -Cooling Only		kW	78.8	77.1	117.6
EER	(2)		3.68	3.89	3.32
ESEER	(3)		5.44	5.78	4.78
SEER	(3)		5.23	5.55	4.60
Nominal Output - Free Cooling	(4)	kW	292.9	349	325.5
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	2.1	4	-0.8
Capacity Steps	(6)	%	30-100%	30-100%	30-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 3758	2785 x 2200 x 4890	2785 x 2200 x 3758
Machine Weight	(7)	kg	4075	4885	4505
Operating Weight	(7)	kg	4535	5435	5055
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	30.5
Total Min. Water Flow		l/s	8.3	8.3	10.0
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	14.2	18.9	14.2
Maximum Airflow - AC Fans		m³/s	30.6	40.8	30.6
Maximum Airflow - EC Fans		m³/s	34.4	45.9	34.4
Maximum Airflow - High Airflow EC Fans		m³/s	38.4	51.1	38.4
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			6	8	6
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	905	905	905
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
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			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	135	150	195
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN100	DN100	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	424.4	513.5	0
Minimum System Water Volume	(8)	l	1784.4	1920.4	1828.9
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	12.2	12.6	16.4
Pressure Drop		kPa	94.6	91.7	106.8

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF11R06S-07, TCF11R08S-07, TCF11R06L-11

Electrical

			33	34	35
ELECTRICAL DATA			TCF11R06S-07	TCF11R08S-07	TCF11R06L-11
Unit Data					
Full Load Amps	(1)	A	160.8	169.4	235.8
Maximum Start Amps		A	2	2	2
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	200	200	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 (AC)					
Quantity			6	8	6
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)					
Quantity			6	8	6
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			6	8	6
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	210
Quantity			1	1	1
Motor Rating		kW	87	87	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF11R08L-08, TCF11R10L-10, TCF12R08S-09

Mechanical

			36	37	38
Mechanical Data	Notes	Units	TCF11R08L-08	TCF11R10L-10	TCF12R08S-09
Cooling Duty - AC Fans	(1)	kW	425	450	470
Nom Input -Cooling Only		kW	127.8	126.9	142.1
EER	(2)		3.33	3.55	3.31
ESEER	(3)		3.64	4.58	4.55
SEER	(3)		3.34	4.45	4.41
Nominal Output - Free Cooling	(4)	kW	366	432	377.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.3	1.4	-1.4
Cooling Duty - EC Fans	(1)	kW	425	450	470
Nom Input -Cooling Only		kW	125.9	124.5	139.7
EER	(2)		3.37	3.61	3.36
ESEER	(3)		5.08	5.36	5.17
SEER	(3)		4.87	5.14	4.96
Nominal Output - Free Cooling	(4)	kW	386.2	453.4	399.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.6	2.1	-0.5
Cooling Duty - High Airflow EC Fans	(1)	kW	425	450	470
Nom Input -Cooling Only		kW	124.4	123.2	137.9
EER	(2)		3.42	3.65	3.41
ESEER	(3)		5.12	5.39	5.21
SEER	(3)		4.91	5.18	5.00
Nominal Output - Free Cooling	(4)	kW	405.2	473.7	420.1
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.3	2.7	0.3
Capacity Steps	(6)	%	30-100%	30-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 4890	2785 x 2200 x 6022	2785 x 2200 x 4890
Machine Weight	(7)	kg	5130	6190	5510
Operating Weight	(7)	kg	5755	6915	5945
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	43.6	37.5	50.0
Total Min. Water Flow		l/s	14.4	12.5	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	18.9	23.7	18.9
Maximum Airflow - AC Fans		m³/s	40.8	51.0	40.8
Maximum Airflow - EC Fans		m³/s	45.9	57.4	45.9
Maximum Airflow - High Airflow EC Fans		m³/s	51.1	63.9	51.1
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	8
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	905	905	905
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	195	305	195
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	424.4	672.7	400.9
Minimum System Water Volume	(8)	l	2417.5	2783.0	1503.0
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	17.9	18.9	19.8
Pressure Drop		kPa	75.4	89.7	85.4

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF11R08L-08, TCF11R10L-10, TCF12R08S-09

Electrical

			36	37	38
ELECTRICAL DATA			TCF11R08L-08	TCF11R10L-10	TCF12R08S-09
Unit Data					
Full Load Amps	(1)	A	244.4	253	304.4
Maximum Start Amps		A	2	2	169.4
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	315	315	315
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 (AC)					
Quantity			8	10	8
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)					
Quantity			8	10	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			8	10	8
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	135
Quantity			1	1	2
Motor Rating		kW	129	129	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12R10S-05, TCF12R12S-05, TCF12R14S-05

Mechanical

			39	40	41
Mechanical Data	Notes	Units	TCF12R10S-05	TCF12R12S-05	TCF12R14S-05
Cooling Duty - AC Fans	(1)	kW	500	530	560
Nom Input -Cooling Only		kW	138.9	143.7	150.6
EER	(2)		3.60	3.69	3.72
ESEER	(3)		4.69	4.72	4.73
SEER	(3)		4.56	4.59	4.61
Nominal Output - Free Cooling	(4)	kW	448.4	514.8	578.2
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.4	1.6	2.4
Cooling Duty - EC Fans	(1)	kW	500	530	560
Nom Input -Cooling Only		kW	136.9	140.4	145.3
EER	(2)		3.65	3.78	3.86
ESEER	(3)		5.48	5.60	5.69
SEER	(3)		5.26	5.38	5.47
Nominal Output - Free Cooling	(4)	kW	472.3	540	604.5
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.2	2.3	3
Cooling Duty - High Airflow EC Fans	(1)	kW	500	530	560
Nom Input -Cooling Only		kW	135.3	139.0	143.9
EER	(2)		3.69	3.81	3.89
ESEER	(3)		5.51	5.63	5.72
SEER	(3)		5.29	5.41	5.50
Nominal Output - Free Cooling	(4)	kW	494.8	563.9	629.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.9	2.8	3.5
insulation	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 6022	2785 x 2200 x 7154	2785 x 2200 x 8286
Machine Weight	(7)	kg	6585	7465	8325
Operating Weight	(7)	kg	7335	8335	9335
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	50.0
Total Min. Water Flow		l/s	16.7	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	23.7	28.4	33.2
Maximum Airflow - AC Fans		m³/s	51.0	61.2	71.3
Maximum Airflow - EC Fans		m³/s	57.4	68.9	80.4
Maximum Airflow - High Airflow EC Fans		m³/s	63.9	76.7	89.5
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			10	12	14
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	905	905	905
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	275	295	310
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	699.6	819.2	942.6
Minimum System Water Volume	(8)	l	1872.0	2061.9	2255.7
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	21.0	22.3	23.6
Pressure Drop		kPa	92.3	95.6	101.5

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12R10S-05, TCF12R12S-05, TCF12R14S-05

Electrical

			39	40	41
ELECTRICAL DATA			TCF12R10S-05	TCF12R12S-05	TCF12R14S-05
Unit Data					
Full Load Amps	(1)	A	313	321.6	330.2
Maximum Start Amps		A	178	186.6	195.2
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	500 (2x 250)	500 (2x 250)	500 (2x 250)
External Trace Heating					
Available (fitted by others)		W	500	500	500
Condenser Fan - Per Fan (AC)					
Quantity			10	12	14
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			10	12	14
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			2	2	2
Motor Rating		kW	87	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12R12L-12, TCF12R14L-12, TCF12R16L-12

Mechanical

			42	43	44
Mechanical Data	Notes	Units	TCF12R12L-12	TCF12R14L-12	TCF12R16L-12
Cooling Duty - AC Fans	(1)	kW	670	750	800
Nom Input -Cooling Only		kW	198.0	216.0	226.6
EER	(2)		3.38	3.47	3.53
ESEER	(3)		4.55	4.63	4.65
SEER	(3)		4.41	4.48	4.51
Nominal Output - Free Cooling	(4)	kW	557.6	642.2	717.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.8	-0.3	0.4
Cooling Duty - EC Fans	(1)	kW	670	750	800
Nom Input -Cooling Only		kW	194.9	213.0	223.3
EER	(2)		3.44	3.52	3.58
ESEER	(3)		5.20	5.34	5.42
SEER	(3)		4.98	5.11	5.20
Nominal Output - Free Cooling	(4)	kW	589.2	677.8	755.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.1	0.5	1.2
Cooling Duty - High Airflow EC Fans	(1)	kW	670	750	800
Nom Input -Cooling Only		kW	192.4	210.4	220.8
EER	(2)		3.48	3.57	3.62
ESEER	(3)		5.24	5.37	5.46
SEER	(3)		5.02	5.15	5.23
Nominal Output - Free Cooling	(4)	kW	619.1	711.4	791.7
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.8	1.2	1.9
Capacity Steps	(6)	%	15-100%	15-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 7154	2785 x 2200 x 8286	2785 x 2200 x 9418
Machine Weight	(7)	kg	8215	9075	9960
Operating Weight	(7)	kg	9285	10295	11295
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	70.3	70.3	70.3
Total Min. Water Flow		l/s	23.3	23.3	23.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	28.4	33.2	37.9
Maximum Airflow - AC Fans		m³/s	61.2	71.3	81.5
Maximum Airflow - EC Fans		m³/s	68.9	80.4	91.8
Maximum Airflow - High Airflow EC Fans		m³/s	76.7	89.5	102.3
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			12	14	16
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	905	905	905
Maximum Speed - EC Fans		rpm	1025	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100	1100
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit	Single Circuit	Single Circuit
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	405	420	440
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN150	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	699.6	819.2	1251.2
Minimum System Water Volume	(8)	l	2270.6	2577.8	3127.0
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	28.2	31.5	33.6
Pressure Drop		kPa	86.4	97.7	103.8

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12R12L-12, TCF12R14L-12, TCF12R16L-12

Electrical

			42	43	44
ELECTRICAL DATA			TCF12R12L-12	TCF12R14L-12	TCF12R16L-12
Unit Data					
Full Load Amps	(1)	A	471.6	480.2	488.8
Maximum Start Amps		A	261.6	270.2	278.8
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	500	500	500
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 (AC)					
Quantity			12	14	16
Full Load Amps		A	4.3	4.3	4.3
Locked Rotor Amps		A	15	15	15
Motor Rating		kW	1.8	1.8	1.8
Condenser Fan - Per Fan (EC)					
Quantity			12	14	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			12	14	16
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	210
Quantity			2	2	2
Motor Rating		kW	129	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12R18L-13, TCF12R20L-13

Mechanical

			45	46
Mechanical Data	Notes	Units	TCF12R18L-13	TCF12R20L-13
Cooling Duty - AC Fans	(1)	kW	850	900
Nom Input -Cooling Only		kW	242.7	257.8
EER	(2)		3.50	3.49
ESEER	(3)		4.64	4.62
SEER	(3)		4.50	4.47
Nominal Output - Free Cooling	(4)	kW	791.2	864
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1	1.4
Cooling Duty - EC Fans	(1)	kW	850	900
Nom Input -Cooling Only		kW	238.9	253.1
EER	(2)		3.56	3.56
ESEER	(3)		5.45	5.45
SEER	(3)		5.22	5.22
Nominal Output - Free Cooling	(4)	kW	831.9	906.9
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	1.7	2.1
Cooling Duty - High Airflow EC Fans	(1)	kW	850	900
Nom Input -Cooling Only		kW	236.2	250.5
EER	(2)		3.60	3.59
ESEER	(3)		5.49	5.49
SEER	(3)		5.25	5.25
Nominal Output - Free Cooling	(4)	kW	870.3	947.5
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	2.3	2.7
Capacity Steps	(6)	%	15-100%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 10550	2785 x 2200 x 11682
Machine Weight	(7)	kg	10745	11630
Operating Weight	(7)	kg	12210	13210
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	74.2	74.2
Total Min. Water Flow		l/s	24.7	24.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m²	42.6	47.4
Maximum Airflow - AC Fans		m³/s	91.7	101.9
Maximum Airflow - EC Fans		m³/s	103.3	114.8
Maximum Airflow - High Airflow EC Fans		m³/s	115.1	127.9
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			18	20
Diameter		mm	800	800
Maximum Speed - AC Fans		rpm	905	905
Maximum Speed - EC Fans		rpm	1025	1025
Maximum Speed - High Airflow EC Fans		rpm	1100	1100
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			R134a	R134a
Charge (Total) CCT1 + CCT2		kg	430	430
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	1365.4	1478.2
Minimum System Water Volume	(8)	l	3358.5	3588.5
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	35.7	37.8
Pressure Drop		kPa	108.3	116.8

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12R18L-13, TCF12R20L-13

Electrical

			45	46
ELECTRICAL DATA			TCF12R18L-13	TCF12R20L-13
Unit Data				
Full Load Amps	(1)	A	497.4	506
Maximum Start Amps		A	287.4	296
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	500 (2x 250)	500 (2x 250)
External Trace Heating				
Available (fitted by others)		W	500	500
Condenser Fan - Per Fan (AC)				
Quantity			18	20
Full Load Amps		A	4.3	4.3
Locked Rotor Amps		A	15	15
Motor Rating		kW	1.8	1.8
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
Condenser Fan - Per Fan (EC High Air Volume)				
Quantity			18	20
Full Load Amps		A	4.8	4.8
Locked Rotor Amps		A	N/A	N/A
Motor Rating		kW	3.10	3.10
Compressor - Per Compressor				
Nominal Run Amps		A	210	210
Quantity			2	2
Motor Rating		kW	129	129
Start Amps		A	2	2
Type Of Start			Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data -TCF X TCF11X06S-07, TCF11X08S-07, TCF11X06L-01

Mechanical

			47	48	49
Mechanical Data	Notes	Units	TCF11X06S-07	TCF11X08S-07	TCF11X06L-11
Cooling Duty - AC Fans	(1)	kW	250	260	350
Nom Input -Cooling Only		kW	68.6	67.7	115.9
EER	(2)		3.64	3.84	3.02
ESEER	(3)		4.69	4.84	4.25
SEER	(3)		4.56	4.71	4.11
Nominal Output - Free Cooling	(4)	kW	223.5	274.8	245.2
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.3	2.8	-4
Cooling Duty - EC Fans	(1)	kW	250	260	350
Nom Input -Cooling Only		kW	65.9	64.1	113.2
EER	(2)		3.79	4.06	3.09
ESEER	(3)		5.37	5.79	4.66
SEER	(3)		5.18	5.58	4.47
Nominal Output - Free Cooling	(4)	kW	223.5	274.8	245.2
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	0.3	2.8	-4
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 3758	2785 x 2200 x 4890	2785 x 2200 x 3758
Machine Weight	(7)	kg	4075	4885	4505
Operating Weight	(7)	kg	4535	5435	5055
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	30.5
Total Min. Water Flow		l/s	8.3	8.3	10.0
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	14.2	18.9	14.2
Maximum Airflow - AC Fans		m³/s	23.3	31.1	23.3
Maximum Airflow - EC Fans		m³/s	23.3	31.1	23.3
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			6	8	6
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	710	710	710
Maximum Speed - EC Fans		rpm	715	715	715
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
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			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	135	150	195
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN100	DN100	DN125
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	672.7	672.7	672.7
Minimum System Water Volume	(8)	l	1845.1	1892.0	2314.1
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	10.5	10.9	14.7
Pressure Drop		kPa	72.7	70.9	88.7

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF11X06S-07, TCF11X08S-07, TCF11X06L-11

Electrical

			47	48	49
ELECTRICAL DATA			TCF11X06S-07	TCF11X08S-07	TCF11X06L-11
Unit Data					
Full Load Amps	(1)	A	150	155	225
Maximum Start Amps		A	2	2	2
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	160	200	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	251
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 (AC)					
Quantity			6	8	6
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)					
Quantity			6	8	6
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			6	8	6
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	210
Quantity			1	1	1
Motor Rating		kW	87	87	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF11X08L-08, TCF11X10L-10, TCF12X08S-09

Mechanical

			50	51	52
Mechanical Data	Notes	Units	TCF11X08L-08	TCF11X10L-10	TCF12X08S-09
Cooling Duty - AC Fans	(1)	kW	385	410	430
Nom Input -Cooling Only		kW	116.5	114.5	136.9
EER	(2)		3.30	3.58	3.14
ESEER	(3)		4.47	4.58	4.67
SEER	(3)		4.33	4.46	4.50
Nominal Output - Free Cooling	(4)	kW	311	370.7	320.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-1.3	0.5	-2.8
Cooling Duty - EC Fans	(1)	kW	385	410	430
Nom Input -Cooling Only		kW	112.9	109.9	133.3
EER	(2)		3.41	3.73	3.23
ESEER	(3)		5.06	5.38	5.27
SEER	(3)		4.86	5.18	5.03
Nominal Output - Free Cooling	(4)	kW	311	370.7	320.4
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-1.3	0.5	-2.8
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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%	15-100%
Dimensions (H x W x L)		mm	2785 x 2200 x 4890	2785 x 2200 x 6022	2785 x 2200 x 4890
Machine Weight	(7)	kg	5130	6190	5510
Operating Weight	(7)	kg	5755	6915	5945
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	43.6	37.5	50.0
Total Min. Water Flow		l/s	14.4	12.5	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	18.9	23.7	18.9
Maximum Airflow - AC Fans		m³/s	31.1	38.9	31.1
Maximum Airflow - EC Fans		m³/s	31.1	38.9	31.1
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			8	10	8
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	710	710	710
Maximum Speed - EC Fans		rpm	715	715	715
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			1	1	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	195	305	195
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	672.7	672.7	1478.2
Minimum System Water Volume	(8)	l	2478.2	2595.4	2416.1
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	16.2	17.2	16.8
Pressure Drop		kPa	63.5	76.2	62.3

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF11X08L-08, TCF11X10L-10, TCF12X08S-09

Electrical

			50	51	52
ELECTRICAL DATA			TCF11X08L-08	TCF11X10L-10	TCF12X08S-09
Unit Data					
Full Load Amps	(1)	A	230	235	290
Maximum Start Amps		A	2	2	155
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	250	250	315
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 (AC)					
Quantity			8	10	8
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)					
Quantity			8	10	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			8	10	8
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	135
Quantity			1	1	2
Motor Rating		kW	129	129	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12X10S-05, TCF12X12S-05, TCF12X14S-05

Mechanical

			53	54	55
Mechanical Data	Notes	Units	TCF12X10S-05	TCF12X12S-05	TCF12X14S-05
Cooling Duty - AC Fans	(1)	kW	460	490	520
Nom Input -Cooling Only		kW	131.7	133.8	138.5
EER	(2)		3.49	3.66	3.75
ESEER	(3)		4.80	4.86	4.89
SEER	(3)		4.64	4.72	4.75
Nominal Output - Free Cooling	(4)	kW	383.8	444.2	502.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.8	0.6	1.5
Cooling Duty - EC Fans	(1)	kW	460	490	520
Nom Input -Cooling Only		kW	127.2	128.4	132.2
EER	(2)		3.62	3.82	3.93
ESEER	(3)		5.54	5.70	5.78
SEER	(3)		5.31	5.47	5.56
Nominal Output - Free Cooling	(4)	kW	383.8	444.2	502.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.8	0.6	1.5
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 6022	2785 x 2200 x 7154	2785 x 2200 x 8286
Machine Weight	(7)	kg	6585	7465	8325
Operating Weight	(7)	kg	7335	8335	9335
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	50.0
Total Min. Water Flow		l/s	16.7	16.7	16.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	23.7	28.4	33.2
Maximum Airflow - AC Fans		m³/s	38.9	46.6	54.4
Maximum Airflow - EC Fans		m³/s	38.9	46.6	54.4
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			10	12	14
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	710	710	710
Maximum Speed - EC Fans		rpm	715	715	715
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	275	295	310
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	1478.2	1478.2	1478.2
Minimum System Water Volume	(8)	l	2556.8	2627.1	2697.5
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	19.3	20.6	21.9
Pressure Drop		kPa	79.9	83.4	89.0

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12X10S-05, TCF12X12S-05, TCF12X14S-05

Electrical

			53	54	55
ELECTRICAL DATA			TCF12X10S-05	TCF12X12S-05	TCF12X14S-05
Unit Data					
Full Load Amps	(1)	A	295	300	305
Maximum Start Amps		A	160	165	170
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	315	315	315
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 (AC)					
Quantity			10	12	14
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			10	12	14
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	135	135	135
Quantity			2	2	2
Motor Rating		kW	129	87	87
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12X12L-12, TCF12X14L-12, TCF12X16L-12

Mechanical

			56	57	58
Mechanical Data	Notes	Units	TCF12X12L-12	TCF12X14L-12	TCF12X16L-12
Cooling Duty - AC Fans	(1)	kW	630	710	760
Nom Input -Cooling Only		kW	199.0	215.5	222.7
EER	(2)		3.17	3.30	3.41
ESEER	(3)		4.61	4.69	4.76
SEER	(3)		4.44	4.53	4.60
Nominal Output - Free Cooling	(4)	kW	477.7	552.3	619.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-2.5	-2	-1.2
Cooling Duty - EC Fans	(1)	kW	630	710	760
Nom Input -Cooling Only		kW	193.6	209.1	215.5
EER	(2)		3.25	3.39	3.53
ESEER	(3)		5.22	5.36	5.48
SEER	(3)		4.99	5.12	5.24
Nominal Output - Free Cooling	(4)	kW	477.7	552.3	619.8
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-2.5	-2	-1.2
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A	N/A
EER	(2)		N/A	N/A	N/A
ESEER	(3)		N/A	N/A	N/A
SEER	(3)		N/A	N/A	N/A
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)		mm	2785 x 2200 x 7154	2785 x 2200 x 8286	2785 x 2200 x 9418
Machine Weight	(7)	kg	8215	9075	9960
Operating Weight	(7)	kg	9285	10295	11295
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	70.3	70.3	70.3
Total Min. Water Flow		l/s	23.3	23.3	23.3
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins		
Face Area Total		m²	28.4	33.2	37.9
Maximum Airflow - AC Fans		m³/s	46.6	54.4	62.2
Maximum Airflow - EC Fans		m³/s	46.6	54.4	62.2
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan		
Quantity			12	14	16
Diameter		mm	800	800	800
Maximum Speed - AC Fans		rpm	710	710	710
Maximum Speed - EC Fans		rpm	715	715	715
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A	N/A
Compressor - Type			Turbocor - Oil Free Compressor		
Quantity			2	2	2
Capacity Control			Variable Frequency Drive (VFD) for Linear Capacity Modulation		
Refrigeration			Single Circuit		
Refrigerant Pre-charged			R134a	R134a	R134a
Charge (Total) CCT1 + CCT2		kg	405	420	440
Refrigeration Control			Electronic Expansion Valve (EEV)		
Water System			Grooved Type Coupling and Pipe Assembly		
Water Inlet / Outlet			DN150	DN150	DN150
Water Drain / Bleed - Evap		inch	1/2	1/2	1/2
Water Volume		l	1478.2	1478.2	1478.2
Minimum System Water Volume	(8)	l	2955.4	3143.0	3260.2
Max System Operating Pressure		Barg	10	10	10
Flow Rate		l/s	26.5	29.9	32.0
Pressure Drop		kPa	77.7	88.8	94.8

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12X12L-12, TCF12X14L-12, TCF12X16L-12

Electrical

			56	57	58
ELECTRICAL DATA			TCF12X12L-12	TCF12X14L-12	TCF12X16L-12
Unit Data					
Full Load Amps	(1)	A	450	455	460
Maximum Start Amps		A	240	245	250
Mains Supply		VAC		400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	500	500	500
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 (AC)					
Quantity			12	14	16
Full Load Amps		A	2.5	2.5	2.5
Locked Rotor Amps		A	8.8	8.8	8.8
Motor Rating		kW	1.3	1.3	1.3
Condenser Fan - Per Fan (EC)					
Quantity			12	14	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
Condenser Fan - Per Fan (EC High Air Volume)					
Quantity			12	14	16
Full Load Amps		A	4.8	4.8	4.8
Locked Rotor Amps		A	N/A	N/A	N/A
Motor Rating		kW	3.10	3.10	3.10
Compressor - Per Compressor					
Nominal Run Amps		A	210	210	210
Quantity			2	2	2
Motor Rating		kW	129	129	129
Start Amps		A	2	2	2
Type Of Start				Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Technical Data TCF12X18S-13, TCF12X20L-13

Mechanical

			59	60
Mechanical Data	Notes	Units	TCF12X18L-13	TCF12X20L-13
Cooling Duty - AC Fans	(1)	kW	810	860
Nom Input -Cooling Only		kW	235.9	250.1
EER	(2)		3.43	3.44
ESEER	(3)		4.77	4.77
SEER	(3)		4.61	4.61
Nominal Output - Free Cooling	(4)	kW	686.4	752.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.5	0
Cooling Duty - EC Fans	(1)	kW	810	860
Nom Input -Cooling Only		kW	227.7	241.1
EER	(2)		3.56	3.57
ESEER	(3)		5.52	5.55
SEER	(3)		5.28	5.30
Nominal Output - Free Cooling	(4)	kW	686.4	752.3
Ambient when Free Cooling = 100% Nominal DX	(5)	°C	-0.5	0
Cooling Duty - High Airflow EC Fans	(1)	kW	N/A	N/A
Nom Input -Cooling Only		kW	N/A	N/A
EER	(2)		N/A	N/A
ESEER	(3)		N/A	N/A
SEER	(3)		N/A	N/A
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)		mm	2785 x 2200 x 10550	2785 x 2200 x 11682
Machine Weight	(7)	kg	10745	11630
Operating Weight	(7)	kg	12210	13210
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	74.2	74.2
Total Min. Water Flow		l/s	24.7	24.7
Condenser - Type			Epoxy Coated Aluminium Microchannel & Aluminium Fins	
Face Area Total		m²	42.6	47.4
Maximum Airflow - AC Fans		m³/s	70.0	77.7
Maximum Airflow - EC Fans		m³/s	70.0	77.7
Maximum Airflow - High Airflow EC Fans		m³/s	N/A	N/A
Condenser Fan & Motor			Sickle Bladed Axial Fan	
Quantity			18	20
Diameter		mm	800	800
Maximum Speed - AC Fans		rpm	710	710
Maximum Speed - EC Fans		rpm	715	715
Maximum Speed - High Airflow EC Fans		rpm	N/A	N/A
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			R134a	R134a
Charge (Total) CCT1 + CCT2		kg	430	445
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	1478.2	1478.2
Minimum System Water Volume	(8)	l	3377.5	3494.7
Max System Operating Pressure		Barg	10	10
Flow Rate		l/s	34.1	36.2
Pressure Drop		kPa	99.3	107.6

(1) Based on FC units performance at 16/10°C return/supply temperatures, 35°C ambient, 20% ethylene glycol.
(2) EER = DX cooling output / (compressor input power + fan input power)
(3) ESEER / SEER based upon unit operating at 12 / 7 °C return / supply temperature, 35°C ambient.
(4) Nominal Free Cooling output at 16/10°C return/supply temperatures, 2°C ambient, 20% ethylene glycol.
(5) Ambient temperature that 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.

Technical Data TCF12X18L-13, TCF12X20L-13

Electrical

			59	60
ELECTRICAL DATA			TCF12X18L-13	TCF12X20L-13
Unit Data				
Full Load Amps	(1)	A	465	470
Maximum Start Amps		A	255	260
Mains Supply		VAC	400V (±10%) 3PH 50Hz	
Recommended Mains Fuse Size		A	500	500
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 (AC)				
Quantity			18	20
Full Load Amps		A	2.5	2.5
Locked Rotor Amps		A	8.8	8.8
Motor Rating		kW	1.3	1.3
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
Condenser Fan - Per Fan (EC High Air Volume)				
Quantity			18	20
Full Load Amps		A	4.8	4.8
Locked Rotor Amps		A	N/A	N/A
Motor Rating		kW	3.10	3.10
Compressor - Per Compressor				
Nominal Run Amps		A	210	210
Quantity			2	2
Motor Rating		kW	129	129
Start Amps		A	2	2
Type Of Start			Electronic Soft Start	

(1) Based at full load Conditions and AC Standard Fans

Pump electrical data is avaliable from Airedale upon request.

Sound Data - TCF

TCF - AC Fans

		AC Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11R06S-07	Power	87	86	86	81	80	76	77	81	87
	Pressure @ 10m	55	54	53	49	48	43	45	49	54
TCF11R08S-07	Power	88	88	87	82	81	76	78	81	87
	Pressure @ 10m	56	55	54	49	49	44	45	49	55
TCF11R06L-11	Power	87	86	86	82	83	77	76	80	87
	Pressure @ 10m	55	54	53	49	51	44	44	47	55
TCF11R08L-08	Power	88	88	87	83	84	77	76	80	88
	Pressure @ 10m	56	55	54	50	51	45	44	47	55
TCF11R10L-10	Power	89	88	88	83	84	78	76	80	88
	Pressure @ 10m	56	56	55	50	51	45	44	47	55
TCF12R08S-09	Power	88	88	87	83	82	78	80	84	89
	Pressure @ 10m	56	55	54	50	50	45	48	52	56
TCF12R10S-05	Power	89	89	88	83	83	78	80	84	89
	Pressure @ 10m	56	56	55	51	50	45	48	51	56
TCF12R12S-05	Power	90	89	89	84	83	79	80	84	90
	Pressure @ 10m	57	56	56	51	50	46	47	51	56
TCF12R14S-05	Power	91	90	89	85	84	79	80	84	90
	Pressure @ 10m	57	57	56	51	51	46	47	51	57
TCF12R12L-12	Power	90	89	89	85	86	80	79	83	90
	Pressure @ 10m	57	56	55	52	53	47	46	50	57
TCF12R14L-12	Power	91	90	89	85	86	80	79	83	90
	Pressure @ 10m	57	57	56	52	53	47	46	49	57
TCF12R16L-12	Power	91	91	90	86	87	80	79	83	91
	Pressure @ 10m	58	57	56	52	53	47	46	49	57
TCF12R18L-13	Power	92	91	90	86	87	81	79	83	91
	Pressure @ 10m	58	57	57	52	53	47	46	49	57
TCF12R20L-13	Power	92	91	91	86	87	81	79	83	91
	Pressure @ 10m	58	58	57	52	53	47	46	49	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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCF

TCF - AC Fans

		AC Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11X06S-07	Power	82	83	82	77	77	73	77	81	85
	Pressure @ 10m	50	51	49	45	45	41	45	49	52
TCF11X08S-07	Power	83	84	83	78	77	74	77	81	85
	Pressure @ 10m	51	52	50	45	45	41	45	49	52
TCF11X06L-11	Power	82	83	81	79	82	75	76	80	86
	Pressure @ 10m	50	51	49	46	49	43	44	47	53
TCF11X08L-08	Power	83	84	82	79	82	75	76	80	86
	Pressure @ 10m	51	52	50	47	49	43	43	47	53
TCF11X10L-10	Power	84	85	83	80	82	76	76	80	86
	Pressure @ 10m	51	52	50	47	49	43	43	47	53
TCF12X08S-09	Power	83	84	83	79	80	76	80	84	87
	Pressure @ 10m	51	52	50	47	47	43	48	52	55
TCF12X10S-05	Power	84	85	84	80	80	76	80	84	88
	Pressure @ 10m	51	52	51	47	47	43	47	51	55
TCF12X12S-05	Power	85	86	85	80	80	76	80	84	88
	Pressure @ 10m	52	53	51	47	47	43	47	51	55
TCF12X14S-05	Power	86	87	85	81	80	76	80	84	88
	Pressure @ 10m	52	53	52	47	47	43	47	51	55
TCF12X12L-12	Power	85	86	84	82	85	78	79	83	89
	Pressure @ 10m	52	53	51	49	52	45	46	50	56
TCF12X14L-12	Power	86	87	85	82	85	78	79	83	89
	Pressure @ 10m	52	53	51	49	51	45	46	49	55
TCF12X16L-12	Power	86	87	85	82	85	78	79	83	89
	Pressure @ 10m	53	54	52	49	51	45	45	49	55
TCF12X18L-13	Power	87	88	86	82	85	79	79	83	89
	Pressure @ 10m	53	54	52	49	51	45	45	49	55
TCF12X20L-13	Power	87	88	86	83	85	79	79	83	89
	Pressure @ 10m	53	54	52	49	51	45	45	49	55

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCF

TCF - EC Fans

		EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11R06S-07	Power	86	84	84	80	81	75	77	81	86
	Pressure @ 10m	53	52	52	48	48	43	45	49	54
TCF11R08S-07	Power	82	82	82	78	79	74	77	81	85
	Pressure @ 10m	50	49	49	46	46	41	45	49	53
TCF11R06L-11	Power	92	89	87	84	85	80	77	80	89
	Pressure @ 10m	60	57	55	51	53	48	44	47	57
TCF11R08L-08	Power	91	88	87	83	85	79	77	80	89
	Pressure @ 10m	58	56	54	51	53	46	44	47	56
TCF11R10L-10	Power	87	86	86	82	84	77	76	80	88
	Pressure @ 10m	55	53	53	49	51	44	43	47	55
TCF12R08S-09	Power	92	89	88	84	85	80	81	84	90
	Pressure @ 10m	59	57	56	52	52	48	48	52	58
TCF12R10S-05	Power	89	87	87	83	84	78	80	84	89
	Pressure @ 10m	56	54	54	50	51	45	48	51	56
TCF12R12S-05	Power	87	86	86	82	83	77	80	84	89
	Pressure @ 10m	54	53	53	49	50	44	47	51	56
TCF12R14S-05	Power	86	85	85	81	82	77	80	84	88
	Pressure @ 10m	52	52	52	48	49	44	47	51	55
TCF12R12L-12	Power	93	91	89	86	88	82	80	83	91
	Pressure @ 10m	60	58	56	53	55	49	47	50	58
TCF12R14L-12	Power	93	90	89	86	88	81	80	83	91
	Pressure @ 10m	59	57	56	52	54	48	46	49	58
TCF12R16L-12	Power	91	90	89	85	87	81	79	83	91
	Pressure @ 10m	58	56	55	52	54	47	46	49	57
TCF12R18L-13	Power	91	90	89	85	87	81	79	83	91
	Pressure @ 10m	58	56	55	52	54	47	46	49	57
TCF12R20L-13	Power	91	89	89	85	87	80	79	83	91
	Pressure @ 10m	57	55	55	51	53	46	45	49	57
TCF11X06S-07	Power	84	83	80	77	78	73	77	81	85
	Pressure @ 10m	51	50	48	45	45	41	45	49	52

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCF

TCF - EC Fans

		EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11X08S-07	Power	84	83	81	78	78	73	77	81	85
	Pressure @ 10m	52	51	48	45	45	41	45	49	52
TCF11X06L-11	Power	84	83	79	79	82	75	76	80	86
	Pressure @ 10m	51	50	47	46	49	43	44	47	53
TCF11X08L-08	Power	85	84	81	79	82	75	76	80	86
	Pressure @ 10m	52	51	48	47	49	43	43	47	53
TCF11X10L-10	Power	86	85	82	80	82	75	76	80	86
	Pressure @ 10m	53	52	49	47	49	42	43	47	53
TCF12X08S-09	Power	85	84	82	80	80	76	80	84	87
	Pressure @ 10m	52	51	49	47	47	43	48	52	55
TCF12X10S-05	Power	86	85	82	80	80	76	80	84	88
	Pressure @ 10m	53	52	50	47	47	43	47	51	55
TCF12X12S-05	Power	87	86	83	80	81	76	80	84	88
	Pressure @ 10m	53	53	50	47	47	43	47	51	55
TCF12X14S-05	Power	87	86	84	81	81	76	80	84	88
	Pressure @ 10m	54	53	50	48	47	43	47	51	55
TCF12X12L-12	Power	87	86	82	82	85	78	79	83	89
	Pressure @ 10m	53	53	49	49	52	45	46	50	56
TCF12X14L-12	Power	87	86	83	82	85	78	79	83	89
	Pressure @ 10m	54	53	50	49	52	45	46	49	55
TCF12X16L-12	Power	88	87	84	82	85	78	79	83	89
	Pressure @ 10m	54	53	50	49	52	45	45	49	55
TCF12X18L-13	Power	88	87	84	83	85	78	79	83	89
	Pressure @ 10m	55	54	50	49	51	45	45	49	55
TCF12X20L-13	Power	89	88	85	83	85	78	79	83	89
	Pressure @ 10m	55	54	51	49	51	44	45	49	55

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCF

TCF - High Airflow EC Fans

		High Airflow EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11R06S-07	Power	94	92	90	82	81	77	78	81	88
	Pressure @ 10m	62	59	58	50	49	44	45	49	56
TCF11R08S-07	Power	91	88	87	80	79	75	77	81	86
	Pressure @ 10m	58	56	55	47	47	42	45	49	54
TCF11R06L-11	Power	99	98	94	88	87	84	79	80	92
	Pressure @ 10m	66	65	61	55	54	52	46	47	60
TCF11R08L-08	Power	98	96	93	86	86	81	78	80	91
	Pressure @ 10m	65	63	61	54	53	48	45	47	58
TCF11R10L-10	Power	96	94	92	84	85	79	77	80	90
	Pressure @ 10m	63	61	59	51	52	46	44	47	57
TCF12R08S-09	Power	99	97	94	87	86	82	81	84	92
	Pressure @ 10m	66	64	61	55	53	50	49	52	60
TCF12R10S-05	Power	97	95	93	85	84	80	81	84	91
	Pressure @ 10m	64	62	60	52	51	47	48	51	58
TCF12R12S-05	Power	96	93	92	84	83	79	81	84	90
	Pressure @ 10m	63	60	59	51	50	46	47	51	57
TCF12R14S-05	Power	94	92	91	83	83	78	80	84	90
	Pressure @ 10m	61	59	57	50	49	45	47	51	56
TCF12R12L-12	Power	100	98	95	89	88	84	81	83	94
	Pressure @ 10m	67	65	62	56	55	51	48	50	60
TCF12R14L-12	Power	100	98	96	89	88	83	81	83	93
	Pressure @ 10m	67	65	62	55	55	50	47	49	60
TCF12R16L-12	Power	100	97	95	88	88	83	80	83	93
	Pressure @ 10m	66	64	62	54	54	49	47	49	59
TCF12R18L-13	Power	100	97	95	88	88	82	80	83	93
	Pressure @ 10m	66	64	61	54	54	49	46	49	59
TCF12R20L-13	Power	99	97	95	88	88	82	80	83	93
	Pressure @ 10m	65	63	61	54	54	48	46	49	59

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions: Water in/out 16/10°C at 35°C ambient.
(3) Based on standard unit, for units fitted with optional extras, please contact Airedale.

Sound Data - TCF

TCF - High Airflow EC Fans

		High Airflow EC Fans Single Octave Sound Levels (dB)								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall [dB(A)]
TCF11X06S-07	Power	90	87	84	79	78	74	77	81	85
	Pressure @ 10m	57	54	52	46	46	41	45	49	53
TCF11X08S-07	Power	91	88	85	79	79	74	77	81	86
	Pressure @ 10m	58	55	53	47	46	41	45	49	53
TCF11X06L-11	Power	90	87	84	80	82	75	76	80	86
	Pressure @ 10m	57	54	51	47	50	43	44	47	54
TCF11X08L-08	Power	91	88	85	80	82	76	76	80	87
	Pressure @ 10m	58	55	52	48	50	43	43	47	54
TCF11X10L-10	Power	92	89	86	81	82	76	76	80	87
	Pressure @ 10m	59	56	53	48	50	43	43	47	54
TCF12X08S-09	Power	91	88	86	80	80	76	80	84	88
	Pressure @ 10m	58	55	53	48	48	44	48	52	55
TCF12X10S-05	Power	92	89	86	81	81	76	80	84	88
	Pressure @ 10m	59	56	54	48	48	44	47	51	55
TCF12X12S-05	Power	93	90	87	82	81	77	80	84	88
	Pressure @ 10m	60	57	54	48	48	44	47	51	55
TCF12X14S-05	Power	93	90	88	82	81	77	80	84	89
	Pressure @ 10m	60	57	54	49	48	43	47	51	55
TCF12X12L-12	Power	93	90	87	83	85	78	79	83	89
	Pressure @ 10m	60	57	54	50	52	45	46	50	56
TCF12X14L-12	Power	93	90	88	83	85	79	79	83	89
	Pressure @ 10m	60	57	54	50	52	45	46	49	56
TCF12X16L-12	Power	94	91	88	83	85	79	79	83	90
	Pressure @ 10m	60	58	55	50	52	45	46	49	56
TCF12X18L-13	Power	95	92	89	84	85	79	79	83	90
	Pressure @ 10m	61	58	55	50	52	45	45	49	56
TCF12X20L-13	Power	95	92	89	84	86	79	79	83	90
	Pressure @ 10m	61	58	55	50	52	45	45	49	56

(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 standard unit, for units fitted with optional extras, please contact Airedale.

Hydronic Data

TCC Waterside Pressure Drop kPa (100% Water)

	Flowrate l/s																								
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
TCC11R04S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11R06S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11R08S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11R06L-02	0.6	1.3	2.3	3.6	5.2	7.1	9.3	11.8	14.6	17.7	21.0	24.7	28.7	32.9	37.5	42.3	47.5	52.9	58.7	64.7	71.0	77.6	84.6	91.8
TCC11R08L-03	4.3	7.8	12.1	17.2	23.2	30.1	37.8	46.4	55.8	66.0	77.1	89.1	101.9	115.6	130.1	145.5	161.7	178.8	196.7	215.5	235.1	255.6	276.9	299.1
TCC11R10L-03	4.3	7.8	12.1	17.2	23.2	30.1	37.8	46.4	55.8	66.0	77.1	89.1	101.9	115.6	130.1	145.5	161.7	178.8	196.7	215.5	235.1	255.6	276.9	299.1
TCC12R08S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12R10S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12R12S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12R14S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12R10L-05	1.9	3.3	4.9	6.8	9.0	11.5	14.2	17.2	20.5	24.1	27.9	32.0	36.4	41.1	46.0	51.2	56.7	62.4	68.4	74.7	81.3	88.1	95.2	102.6
TCC12R12L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12R14L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12R16L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12R18L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12R20L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC11X04S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11X06S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11X08S-01	6.7	12.3	19.6	28.3	38.7	50.5	64.0	79.0	95.6	113.7	133.3	154.6	177.3	201.7	227.6	255.0	284.0	314.6	346.7	380.4	415.6	452.4	490.7	530.6
TCC11X06L-02	0.6	1.3	2.3	3.6	5.2	7.1	9.3	11.8	14.6	17.7	21.0	24.7	28.7	32.9	37.5	42.3	47.5	52.9	58.7	64.7	71.0	77.6	84.6	91.8
TCC11X08L-03	4.3	7.8	12.1	17.2	23.2	30.1	37.8	46.4	55.8	66.0	77.1	89.1	101.9	115.6	130.1	145.5	161.7	178.8	196.7	215.5	235.1	255.6	276.9	299.1
TCC11X10L-03	4.3	7.8	12.1	17.2	23.2	30.1	37.8	46.4	55.8	66.0	77.1	89.1	101.9	115.6	130.1	145.5	161.7	178.8	196.7	215.5	235.1	255.6	276.9	299.1
TCC12X08S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12X10S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12X12S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12X14S-04	2.6	4.5	6.8	9.5	12.6	16.2	20.1	24.5	29.2	34.4	40.0	45.9	52.3	59.1	66.3	73.9	82.0	90.4	99.2	108.4	118.1	128.1	138.6	149.5
TCC12X10L-05	1.9	3.3	4.9	6.8	9.0	11.5	14.2	17.2	20.5	24.1	27.9	32.0	36.4	41.1	46.0	51.2	56.7	62.4	68.4	74.7	81.3	88.1	95.2	102.6
TCC12X12L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12X14L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12X16L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12X18L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1
TCC12X20L-06	1.4	2.5	3.7	5.1	6.8	8.6	10.7	13.0	15.4	18.1	21.0	24.1	27.4	30.9	34.6	38.5	42.6	46.9	51.4	56.2	61.1	66.2	71.6	77.1

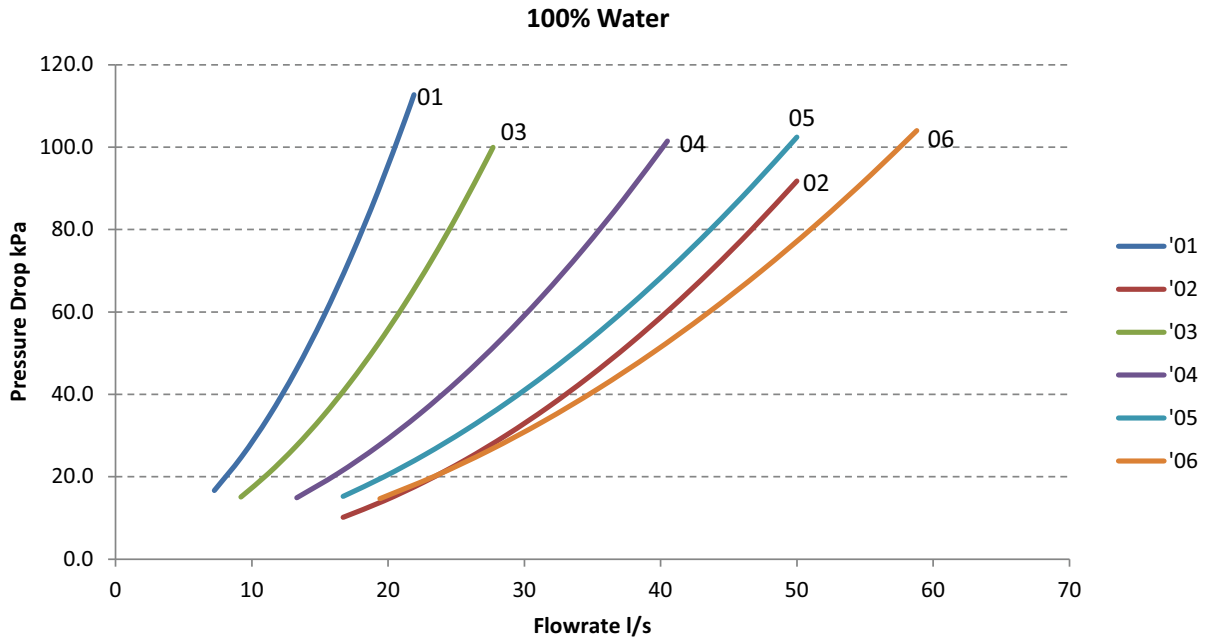
Hydronic Data

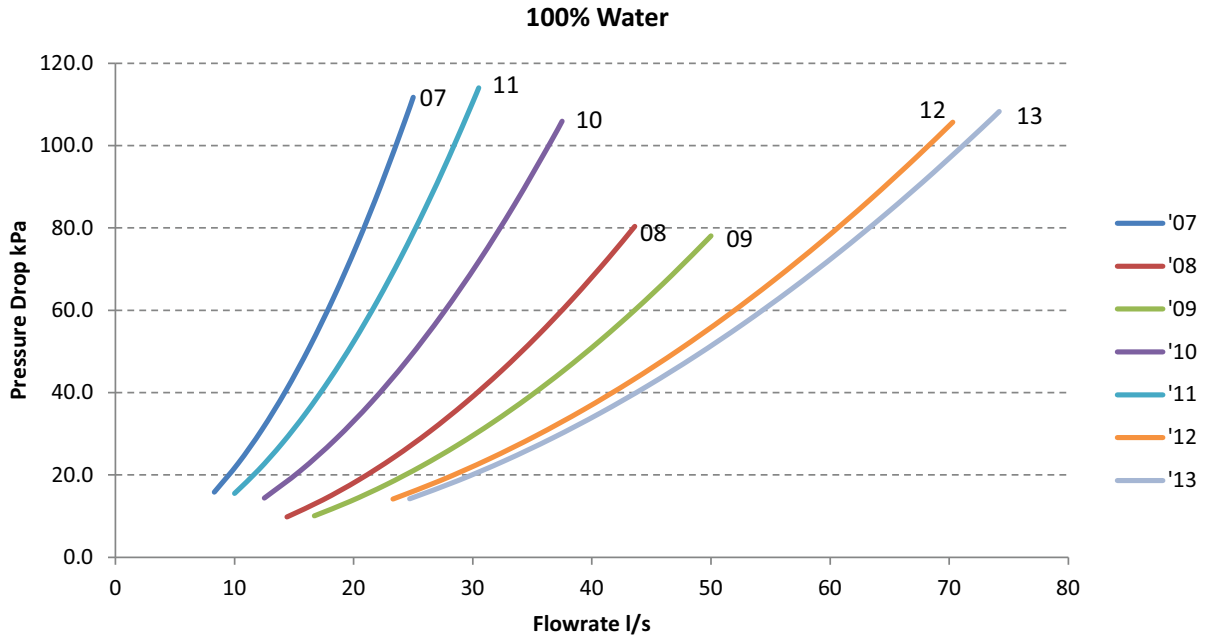
TCF Waterside Pressure Drop kPa (20% Ethylene Glycol)

	Flowrate l/s																							
	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0
TCF11R06S-07	18.9	33.6	51.8	73.5	98.7	127.3	159.5	195.2	234.3	276.9	323.1	372.7	425.8	482.4	542.5	606.0	673.1	743.7	817.7	895.3	976.3	1060.9	1148.9	1240.4
TCF11R08S-07	16.2	29.2	45.7	65.4	88.5	114.9	144.7	177.8	214.2	254.0	297.1	343.5	393.3	446.4	502.8	562.6	625.7	692.2	761.9	835.1	911.5	991.3	1074.4	1160.9
TCF11R06L-11	14.0	24.2	36.5	50.9	67.5	86.1	106.9	129.7	154.7	181.8	211.0	242.4	275.8	311.4	349.1	388.9	430.8	474.8	520.9	569.2	619.6	672.0	726.6	783.3
TCF11R08L-08	8.2	14.3	21.7	30.4	40.5	51.8	64.5	78.5	93.8	110.5	128.5	147.7	168.4	190.3	213.5	238.1	264.0	291.2	319.8	349.6	380.8	413.3	447.1	482.2
TCF11R10L-10	8.3	14.6	22.4	31.7	42.4	54.7	68.4	83.5	100.2	118.3	137.9	158.9	181.4	205.4	230.9	257.8	286.3	316.1	347.5	380.3	414.6	450.4	487.6	526.3
TCF12R08S-09	8.1	13.9	21.0	29.3	38.9	49.6	61.6	74.8	89.2	104.8	121.6	139.7	159.0	179.5	201.2	224.2	248.3	273.7	300.3	328.2	357.2	387.5	419.0	451.7
TCF12R10S-05	7.8	13.5	20.3	28.3	37.5	47.8	59.3	72.0	85.9	100.9	117.1	134.5	153.1	172.8	193.7	215.8	239.0	263.5	289.0	315.8	343.7	372.9	403.1	434.6
TCF12R12S-05	7.0	12.2	18.5	26.0	34.6	44.2	55.1	67.0	80.0	94.2	109.5	126.0	143.5	162.2	182.0	202.9	224.9	248.1	272.4	297.8	324.3	352.0	380.7	410.6
TCF12R14S-05	6.6	11.5	17.5	24.7	32.9	42.3	52.7	64.2	76.9	90.6	105.4	121.4	138.4	156.6	175.8	196.1	217.6	240.1	263.8	288.5	314.3	341.3	369.3	398.5
TCF12R12L-12	4.9	8.3	12.2	16.8	22.0	27.8	34.3	41.3	49.0	57.2	66.1	75.6	85.7	96.4	107.8	119.7	132.2	145.4	159.2	173.6	188.6	204.2	220.4	237.3
TCF12R14L-12	4.4	7.5	11.1	15.3	20.2	25.5	31.5	38.1	45.2	52.9	61.2	70.1	79.6	89.6	100.2	111.4	123.2	135.6	148.5	162.0	176.1	190.8	206.1	221.9
TCF12R16L-12	4.0	6.9	10.3	14.3	18.8	23.9	29.6	35.8	42.6	49.9	57.8	66.2	75.2	84.8	94.9	105.6	116.8	128.7	141.0	153.9	167.4	181.4	196.0	211.2
TCF12R18L-13	3.6	6.2	9.4	13.1	17.3	22.0	27.3	33.1	39.5	46.4	53.8	61.7	70.2	79.2	88.8	98.9	109.5	120.7	132.3	144.6	157.3	170.6	184.4	198.8
TCF12R20L-13	3.4	5.9	9.0	12.5	16.6	21.2	26.3	32.0	38.2	44.9	52.1	59.9	68.1	76.9	86.3	96.1	106.5	117.4	128.8	140.8	153.2	166.2	179.8	193.8
TCF11X06S-07	18.9	33.6	51.8	73.5	98.7	127.3	159.5	195.2	234.3	276.9	323.1	372.7	425.8	482.4	542.5	606.0	673.1	743.7	817.7	895.3	976.3	1060.9	1148.9	1240.4
TCF11X08S-07	16.2	29.2	45.7	65.4	88.5	114.9	144.7	177.8	214.2	254.0	297.1	343.5	393.3	446.4	502.8	562.6	625.7	692.2	761.9	835.1	911.5	991.3	1074.4	1160.9
TCF11X06L-11	14.0	24.2	36.5	50.9	67.5	86.1	106.9	129.7	154.7	181.8	211.0	242.4	275.8	311.4	349.1	388.9	430.8	474.8	520.9	569.2	619.6	672.0	726.6	783.3
TCF11X08L-08	8.2	14.3	21.7	30.4	40.5	51.8	64.5	78.5	93.8	110.5	128.5	147.7	168.4	190.3	213.5	238.1	264.0	291.2	319.8	349.6	380.8	413.3	447.1	482.2
TCF11X10L-10	8.3	14.6	22.4	31.7	42.4	54.7	68.4	83.5	100.2	118.3	137.9	158.9	181.4	205.4	230.9	257.8	286.3	316.1	347.5	380.3	414.6	450.4	487.6	526.3
TCF12X08S-09	8.1	13.9	21.0	29.3	38.9	49.6	61.6	74.8	89.2	104.8	121.6	139.7	159.0	179.5	201.2	224.2	248.3	273.7	300.3	328.2	357.2	387.5	419.0	451.7
TCF12X10S-05	7.8	13.5	20.3	28.3	37.5	47.8	59.3	72.0	85.9	100.9	117.1	134.5	153.1	172.8	193.7	215.8	239.0	263.5	289.0	315.8	343.7	372.9	403.1	434.6
TCF12X12S-05	7.0	12.2	18.5	26.0	34.6	44.2	55.1	67.0	80.0	94.2	109.5	126.0	143.5	162.2	182.0	202.9	224.9	248.1	272.4	297.8	324.3	352.0	380.7	410.6
TCF12X14S-05	6.6	11.5	17.5	24.7	32.9	42.3	52.7	64.2	76.9	90.6	105.4	121.4	138.4	156.6	175.8	196.1	217.6	240.1	263.8	288.5	314.3	341.3	369.3	398.5
TCF12X12L-12	4.9	8.3	12.2	16.8	22.0	27.8	34.3	41.3	49.0	57.2	66.1	75.6	85.7	96.4	107.8	119.7	132.2	145.4	159.2	173.6	188.6	204.2	220.4	237.3
TCF12X14L-12	4.4	7.5	11.1	15.3	20.2	25.5	31.5	38.1	45.2	52.9	61.2	70.1	79.6	89.6	100.2	111.4	123.2	135.6	148.5	162.0	176.1	190.8	206.1	221.9
TCF12X16L-12	4.0	6.9	10.3	14.3	18.8	23.9	29.6	35.8	42.6	49.9	57.8	66.2	75.2	84.8	94.9	105.6	116.8	128.7	141.0	153.9	167.4	181.4	196.0	211.2
TCF12X18L-13	3.6	6.2	9.4	13.1	17.3	22.0	27.3	33.1	39.5	46.4	53.8	61.7	70.2	79.2	88.8	98.9	109.5	120.7	132.3	144.6	157.3	170.6	184.4	198.8
TCF12X20L-13	3.4	5.9	9.0	12.5	16.6	21.2	26.3	32.0	38.2	44.9	52.1	59.9	68.1	76.9	86.3	96.1	106.5	117.4	128.8	140.8	153.2	166.2	179.8	193.8

Hydronic Data

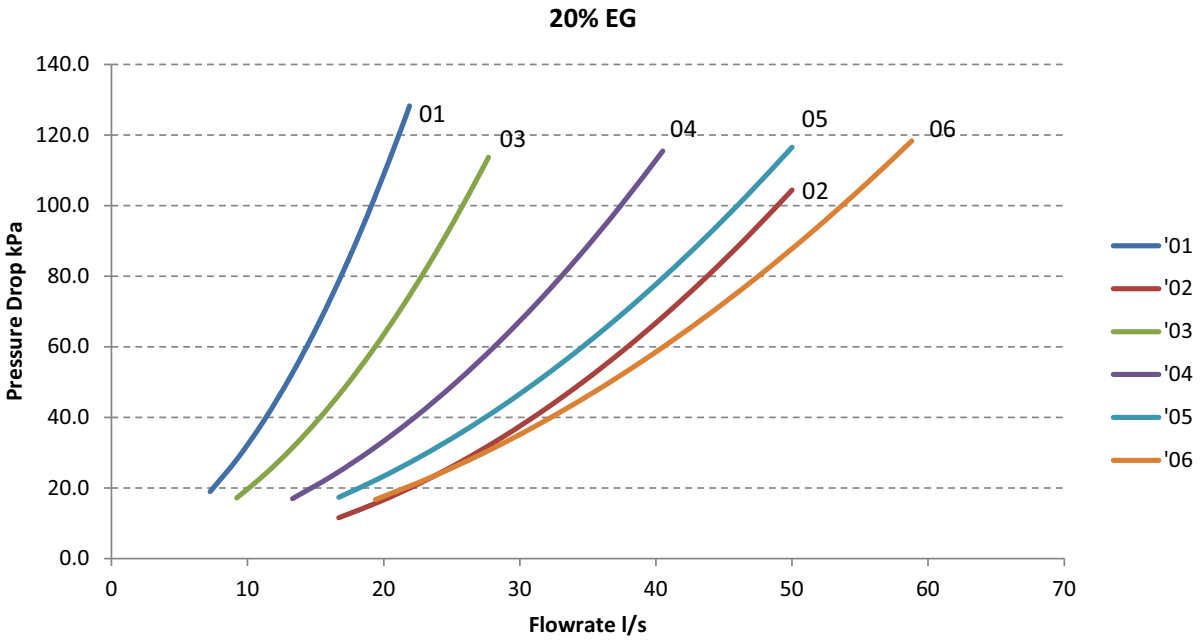
Evaporator Pressure Drop - 100% Water

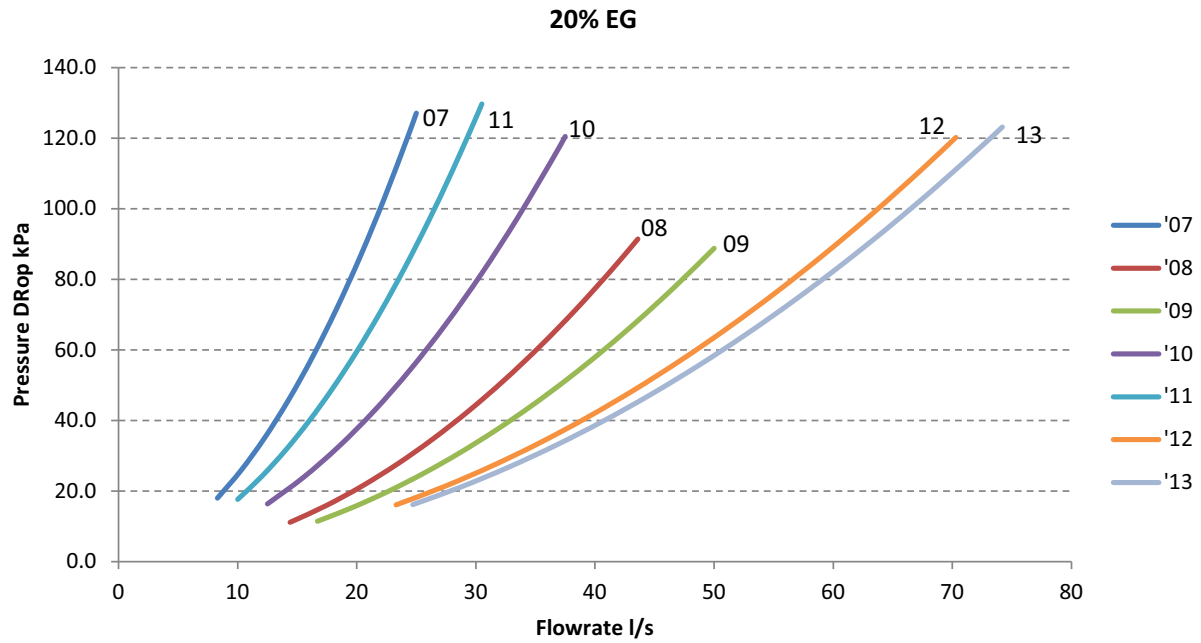




Hydronic Data

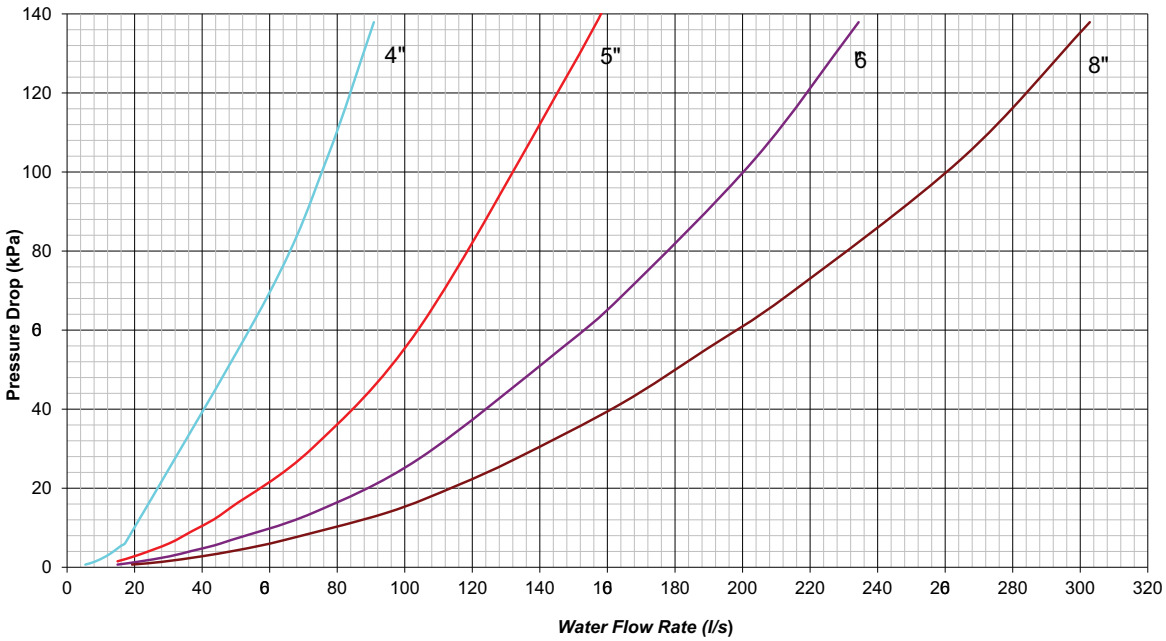
Evaporator Pressure Drop - 20% Ethylene Glycol



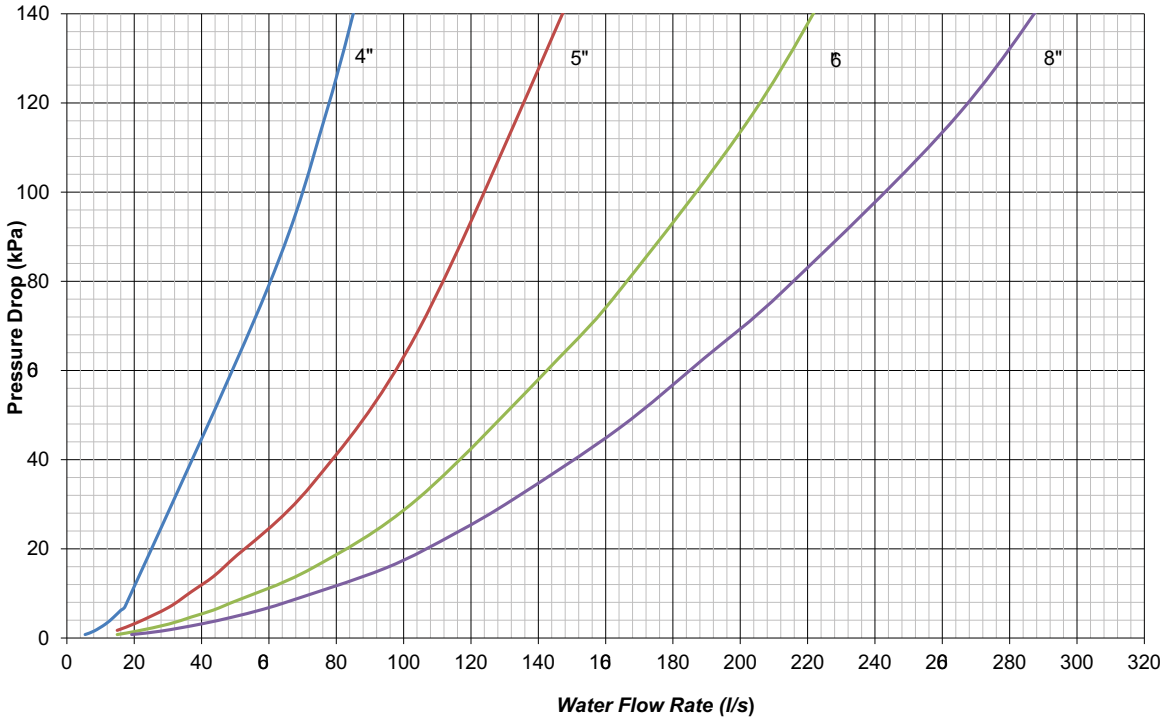


Hydronic Data

Strainer Pressure Drop - 100% Water

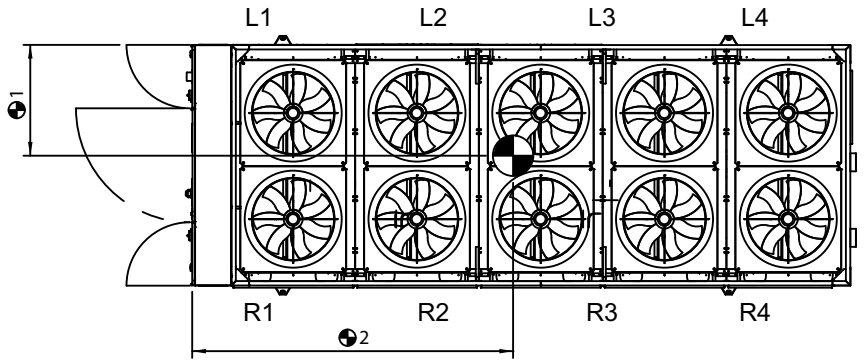


Strainer Pressure Drop - 20% Ethylene Glycol



Installation Data

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



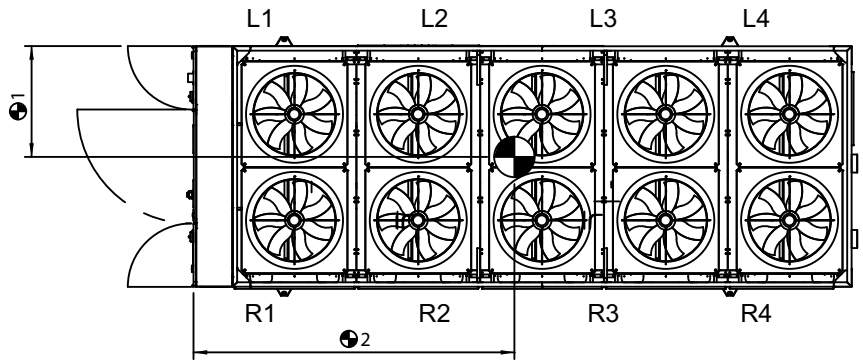
	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1	C of G 2
TCC11R04S-01	2730	2840	1140	1350
TCC11R06S-01	3345	3465	1140	1760
TCC11R08S-01	3935	4055	1130	2040
TCC11R06L-02	3510	3650	1130	1760
TCC11R08L-03	4325	4465	1110	2120
TCC11R10L-03	4940	5080	1120	2740
TCC12R08S-04	4720	4880	1160	2140
TCC12R10S-04	5335	5500	1150	2750
TCC12R12S-04	5950	6115	1150	3140
TCC12R14S-04	6560	6735	1140	3640
TCC12R10L-05	5430	5625	1150	2750
TCC12R12L-06	6510	6760	1140	3140
TCC12R14L-06	7120	7365	1130	3600
TCC12R16L-06	7755	8010	1130	4310
TCC12R18L-06	8355	8610	1130	4930
TCC12R20L-06	8975	9235	1130	5540
TCC11X04S-01	2730	2840	1140	1350
TCC11X06S-01	3345	3465	1140	1760
TCC11X08S-01	3935	4055	1130	2040
TCC11X06L-02	3510	3650	1130	1760
TCC11X08L-03	4325	4465	1110	2120
TCC11X10L-03	4940	5080	1120	2740
TCC12X08S-04	4720	4880	1160	2140
TCC12X10S-04	5335	5500	1150	2750
TCC12X12S-04	5950	6115	1150	3140
TCC12X14S-04	6560	6735	1140	3640
TCC12X10L-05	5430	5625	1150	2750
TCC12X12L-06	6510	6760	1140	3140
TCC12X14L-06	7120	7365	1130	3600
TCC12X16L-06	7755	8010	1130	4310
TCC12X18L-06	8355	8610	1130	4930
TCC12X20L-06	8975	9235	1130	5540

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

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

Installation Data

Freecool Masses & Centre of Gravity (C of G)



	Standard Unit C of G's			
	Machine (kg)	Operating (kg)	C of G 1	C of G 2
TCF11R06S-07	4075	4535	1170	1850
TCF11R08S-07	4885	5435	1110	2130
TCF11R06L-11	4505	5055	1090	1840
TCF11R08L-08	5130	5755	1090	2180
TCF11R10L-10	6190	6915	1090	2820
TCF12R08S-09	5510	5945	1130	2180
TCF12R10S-05	6585	7335	1120	2830
TCF12R12S-05	7465	8335	1120	3240
TCF12R14S-05	8325	9335	1110	3910
TCF12R12L-12	8215	9285	1120	3240
TCF12R14L-12	9075	10295	1100	3890
TCF12R16L-12	9960	11295	1100	4570
TCF12R18L-13	10745	12210	1090	5260
TCF12R20L-13	11630	13210	1090	5920
TCF11X06S-07	4075	4535	1170	1850
TCF11X08S-07	4885	5445	1110	2130
TCF11X06L-11	4505	5055	1090	1840
TCF11X08L-08	5130	5760	1090	2180
TCF11X10L-10	6190	6915	1090	2820
TCF12X08S-09	5510	5950	1130	2180
TCF12X10S-05	6585	7335	1120	2830
TCF12X12S-05	7465	8335	1120	3240
TCF12X14S-05	8325	9335	1110	3910
TCF12X12L-12	8215	9285	1120	3240
TCF12X14L-12	9075	10295	1100	3890
TCF12X16L-12	9960	11295	1100	4570
TCF12X18L-13	10745	12210	1090	5260
TCF12X20L-13	11630	13210	1090	5920

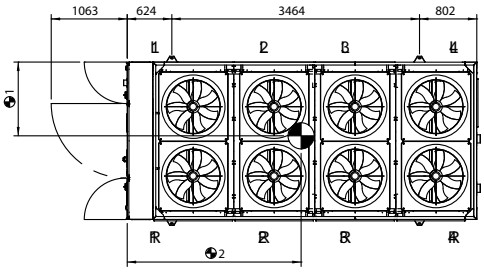
Centre of gravity is always measured from the control panel end.

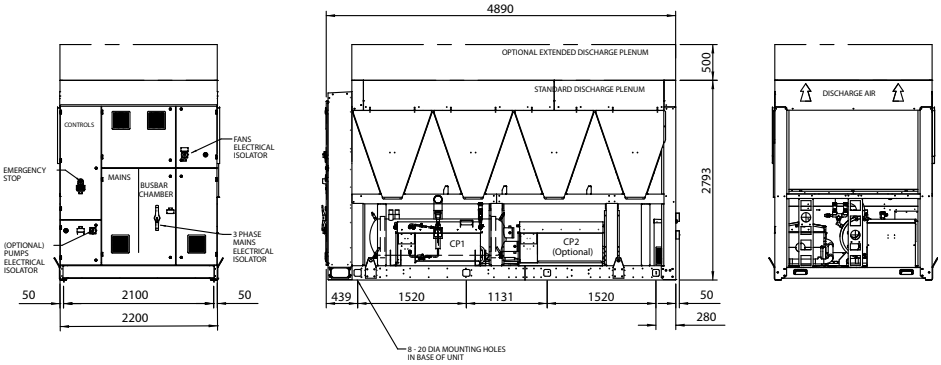
Above refers to standard configurations, contact Airedale for other options.

Installation Data

Point Loadings

Air Cooled





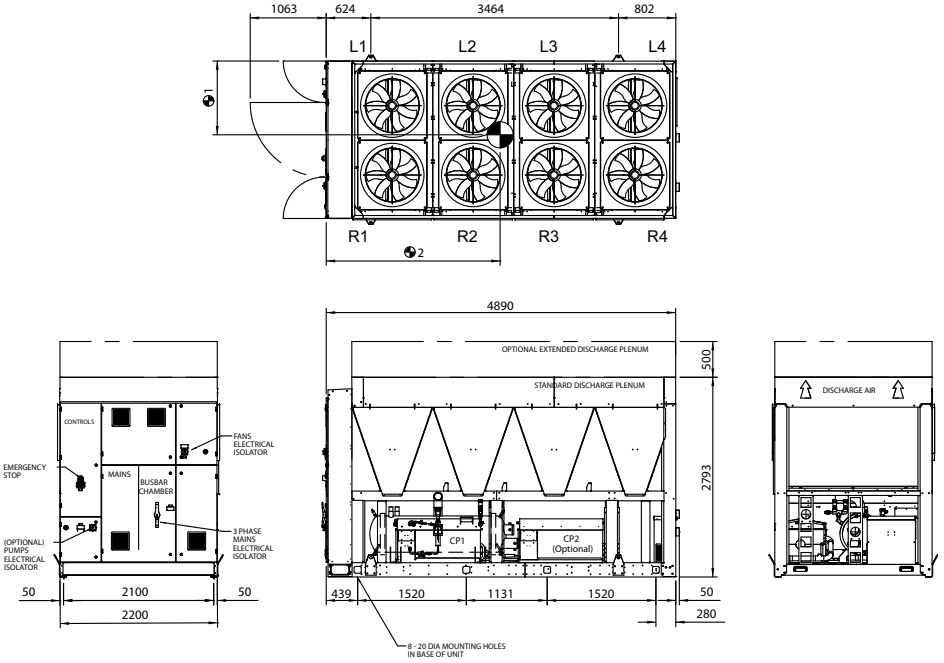
	Standard Unit Point Loads															
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCC11R04S-01	705	655	-	-	-	-	-	-	755	725	-	-	-	-	-	-
TCC11R06S-01	645	580	450	-	-	-	-	-	685	630	475	-	-	-	-	-
TCC11R08S-01	605	500	450	415	-	-	-	-	640	535	480	430	-	-	-	-
TCC11R06L-02	675	625	470	-	-	-	-	-	710	675	495	-	-	-	-	-
TCC11R08L-03	630	550	535	475	-	-	-	-	660	580	550	485	-	-	-	-
TCC11R10L-03	710	645	595	545	-	-	-	-	745	675	610	555	-	-	-	-
TCC12R08S-04	660	580	570	500	-	-	-	-	715	655	645	555	-	-	-	-
TCC12R10S-04	745	675	625	570	-	-	-	-	810	755	695	625	-	-	-	-
TCC12R12S-04	840	755	695	635	-	-	-	-	905	835	765	685	-	-	-	-
TCC12R14S-04	805	725	660	585	460	-	-	-	890	845	740	565	460	-	-	-
TCC12R10L-05	755	690	640	585	-	-	-	-	825	775	715	640	-	-	-	-
TCC12R12L-06	925	855	785	700	-	-	-	-	985	925	845	740	-	-	-	-
TCC12R14L-06	885	825	745	645	465	-	-	-	965	935	820	615	465	-	-	-
TCC12R16L-06	810	870	835	755	620	-	-	-	840	925	895	815	645	-	-	-
TCC12R18L-06	735	670	800	780	620	580	-	-	770	710	850	835	655	605	-	-
TCC12R20L-06	790	710	845	850	675	630	-	-	825	755	900	900	705	650	-	-
TCC11X04S-01	705	655	-	-	-	-	-	-	755	725	-	-	-	-	-	-
TCC11X06S-01	645	580	450	-	-	-	-	-	685	630	475	-	-	-	-	-
TCC11X08S-01	605	500	450	415	-	-	-	-	640	535	480	430	-	-	-	-
TCC11X06L-02	675	625	470	-	-	-	-	-	710	675	495	-	-	-	-	-
TCC11X08L-03	630	550	535	475	-	-	-	-	660	580	550	485	-	-	-	-
TCC11X10L-03	710	645	595	545	-	-	-	-	745	675	610	555	-	-	-	-
TCC12X08S-04	660	580	570	500	-	-	-	-	715	655	645	555	-	-	-	-
TCC12X10S-04	745	675	625	570	-	-	-	-	810	755	695	625	-	-	-	-
TCC12X12S-04	840	755	695	635	-	-	-	-	905	835	765	685	-	-	-	-
TCC12X14S-04	805	725	660	585	460	-	-	-	890	845	740	565	460	-	-	-
TCC12X10L-05	755	690	640	585	-	-	-	-	825	775	715	640	-	-	-	-
TCC12X12L-06	925	855	785	700	-	-	-	-	985	925	845	740	-	-	-	-
TCC12X14L-06	885	825	745	645	465	-	-	-	965	935	820	615	465	-	-	-
TCC12X16L-06	810	870	835	755	620	-	-	-	840	925	895	815	645	-	-	-
TCC12X18L-06	735	670	800	780	620	580	-	-	770	710	850	835	655	605	-	-
TCC12X20L-06	790	710	845	850	675	630	-	-	825	755	900	900	705	650	-	-

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

Installation Data

Point Loadings

Freecool



	Standard Unit Point Loads															
	L1 (kg)	L2 (kg)	L3 (kg)	L4 (kg)	L5 (kg)	L6 (kg)	L7 (kg)	L8 (kg)	R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)	R5 (kg)	R6 (kg)	R7 (kg)	R8 (kg)
TCF11R06S-07	770	730	615	-	-	-	-	-	840	850	730	-	-	-	-	-
TCF11R08S-07	760	685	660	590	-	-	-	-	785	705	665	595	-	-	-	-
TCF11R06L-11	880	915	745	-	-	-	-	-	890	910	715	-	-	-	-	-
TCF11R08L-08	785	730	720	660	-	-	-	-	795	730	705	635	-	-	-	-
TCF11R10L-10	915	890	870	805	-	-	-	-	925	885	845	780	-	-	-	-
TCF12R08S-09	795	725	715	650	-	-	-	-	835	780	770	680	-	-	-	-
TCF12R10S-05	950	920	905	830	-	-	-	-	990	965	930	845	-	-	-	-
TCF12R12S-05	1085	1045	1020	940	-	-	-	-	1135	1095	1055	960	-	-	-	-
TCF12R14S-05	950	995	985	930	755	-	-	-	1035	1085	1020	860	720	-	-	-
TCF12R12L-12	1195	1180	1155	1045	-	-	-	-	1240	1225	1185	1060	-	-	-	-
TCF12R14L-12	1035	1130	1125	1045	800	-	-	-	1115	1205	1140	950	750	-	-	-
TCF12R16L-12	975	1195	1245	1220	1005	-	-	-	1005	1215	1250	1205	980	-	-	-
TCF12R18L-13	895	825	1135	1225	1170	910	-	-	925	870	1125	1180	1075	875	-	-
TCF12R20L-13	960	885	1205	1345	1280	995	-	-	995	930	1200	1295	1170	950	-	-
TCF11X06S-07	770	730	615	-	-	-	-	-	840	850	730	-	-	-	-	-
TCF11X08S-07	760	685	660	590	-	-	-	-	785	705	665	595	-	-	-	-
TCF11X06L-11	880	915	745	-	-	-	-	-	890	910	715	-	-	-	-	-
TCF11X08L-08	785	730	720	660	-	-	-	-	795	730	705	635	-	-	-	-
TCF11X10L-10	915	890	870	805	-	-	-	-	925	885	845	780	-	-	-	-
TCF12X08S-09	795	725	715	650	-	-	-	-	835	780	770	680	-	-	-	-
TCF12X10S-05	950	920	905	830	-	-	-	-	990	965	930	845	-	-	-	-
TCF12X12S-05	1085	1045	1020	940	-	-	-	-	1135	1095	1055	960	-	-	-	-
TCF12X14S-05	950	995	985	930	755	-	-	-	1035	1085	1020	860	720	-	-	-
TCF12X12L-12	1195	1180	1155	1045	-	-	-	-	1240	1225	1185	1060	-	-	-	-
TCF12X14L-12	1035	1130	1125	1045	800	-	-	-	1115	1205	1140	950	750	-	-	-
TCF12X16L-12	975	1195	1245	1220	1005	-	-	-	1005	1215	1250	1205	980	-	-	-
TCF12X18L-13	895	825	1135	1225	1170	910	-	-	925	870	1125	1180	1075	875	-	-
TCF12X20L-13	960	885	1205	1345	1280	995	-	-	995	930	1200	1295	1170	950	-	-

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

Installation Data

Unit Lifting

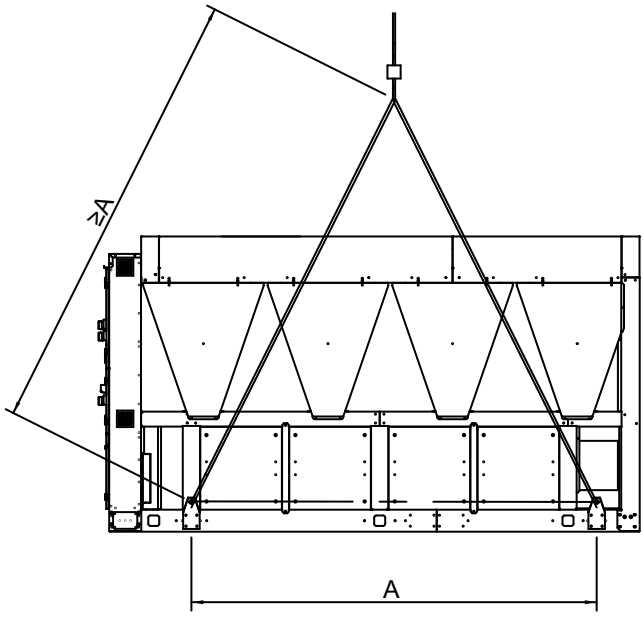
- Employ lifting specialists
- Local codes and regulations relating to the lifting of this type of equipment should be observed
- Use the lifting eye bolts/lifting lugs provided
- Attach lifting chains to each of the lifting eye bolts/lifting lugs provided; each chain and eye bolt must be capable of lifting the whole chiller
- Lifting hole / lug dimension: 40mm
- 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.

Lifting Dimensions

4 Point

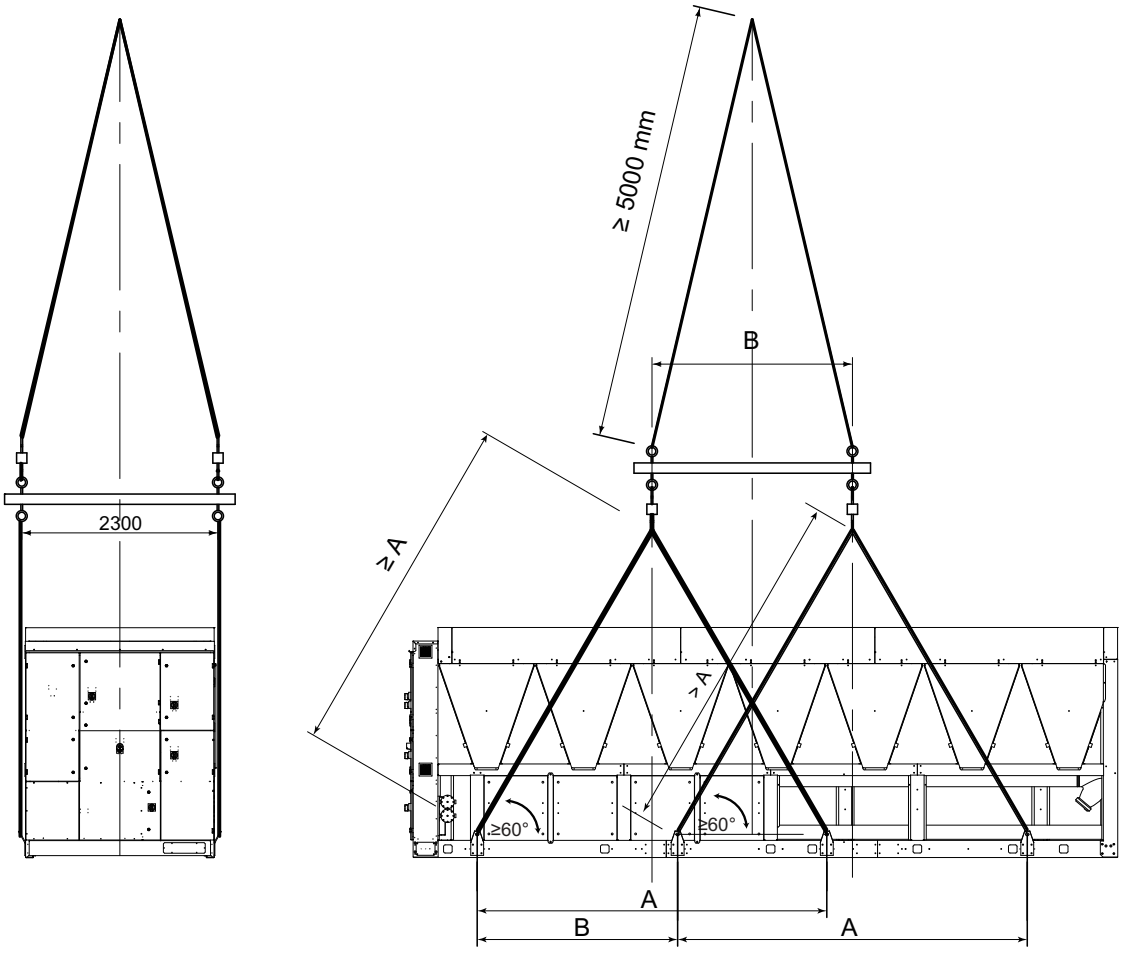


Number of Fans	A (mm)
4	1533
6	2332
8	3464
10	4077

Installation Data

Lifting Dimensions

8 Point

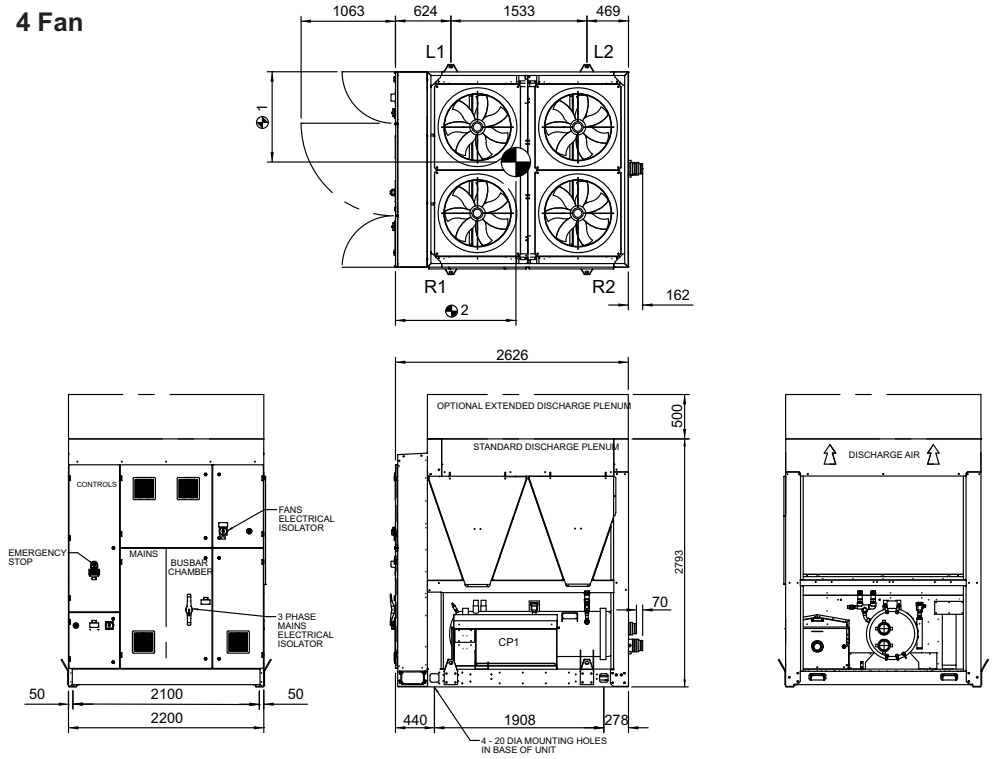


Number of Fans	A (mm)	B (mm)
12	3600	1536
14	4500	1536
16	4300	3100
18	5500	2800
20	6500	3164

Installation Data

General Arrangement

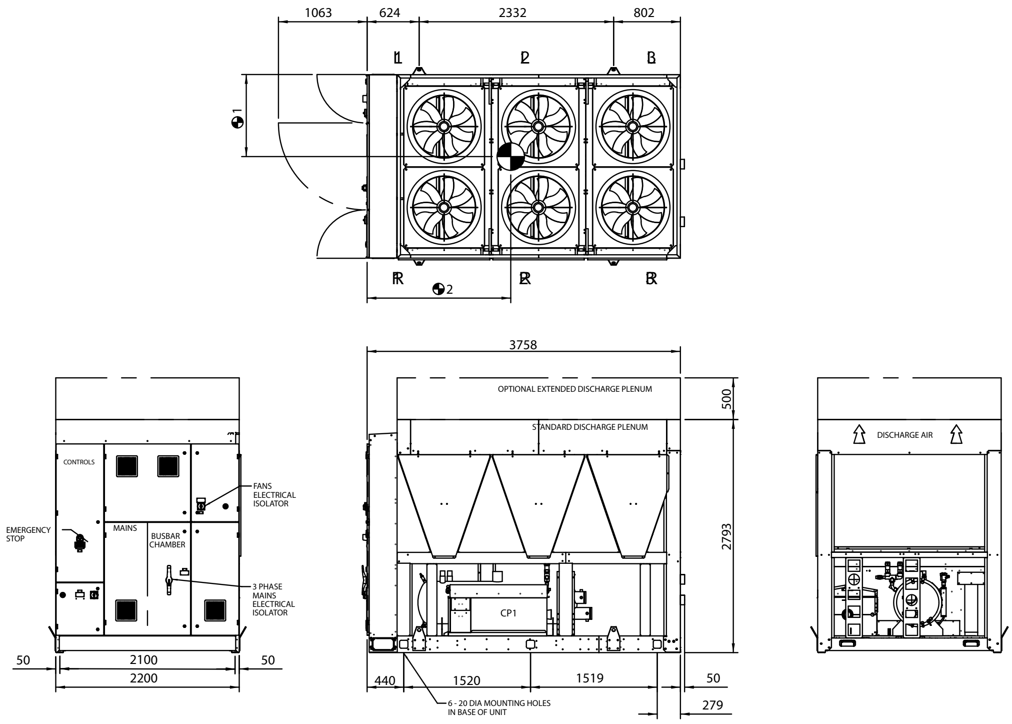
4 Fan



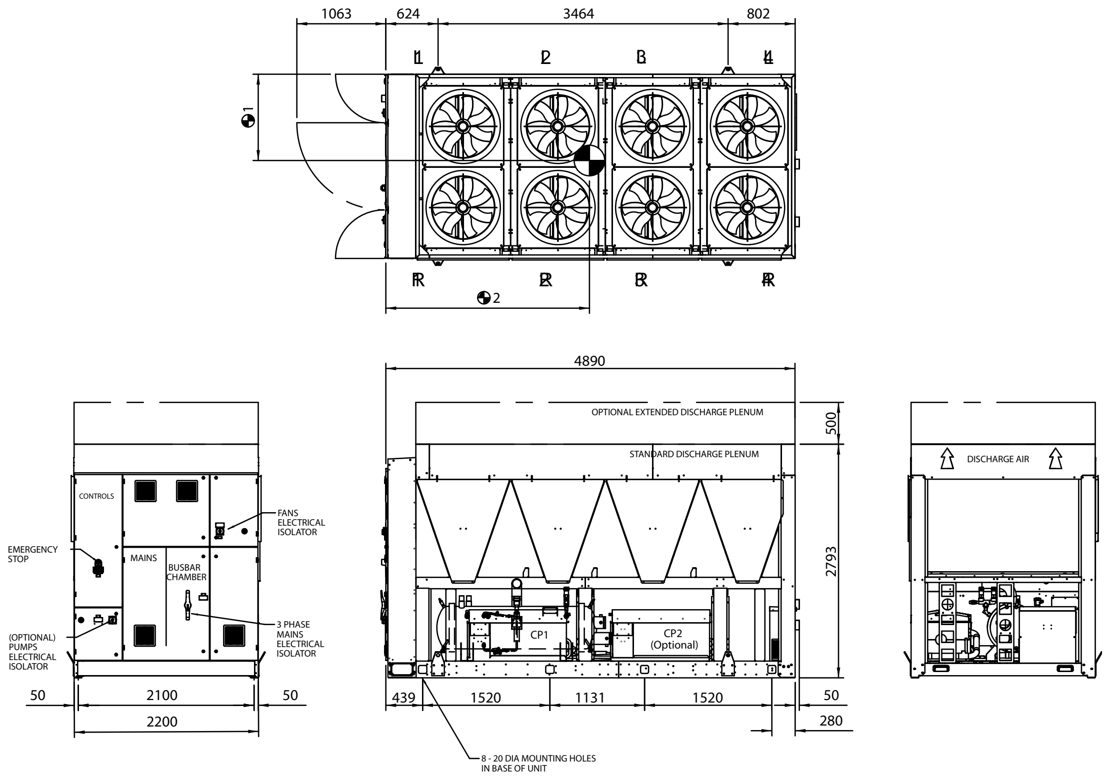
Installation Data

General Arrangement

6 Fan



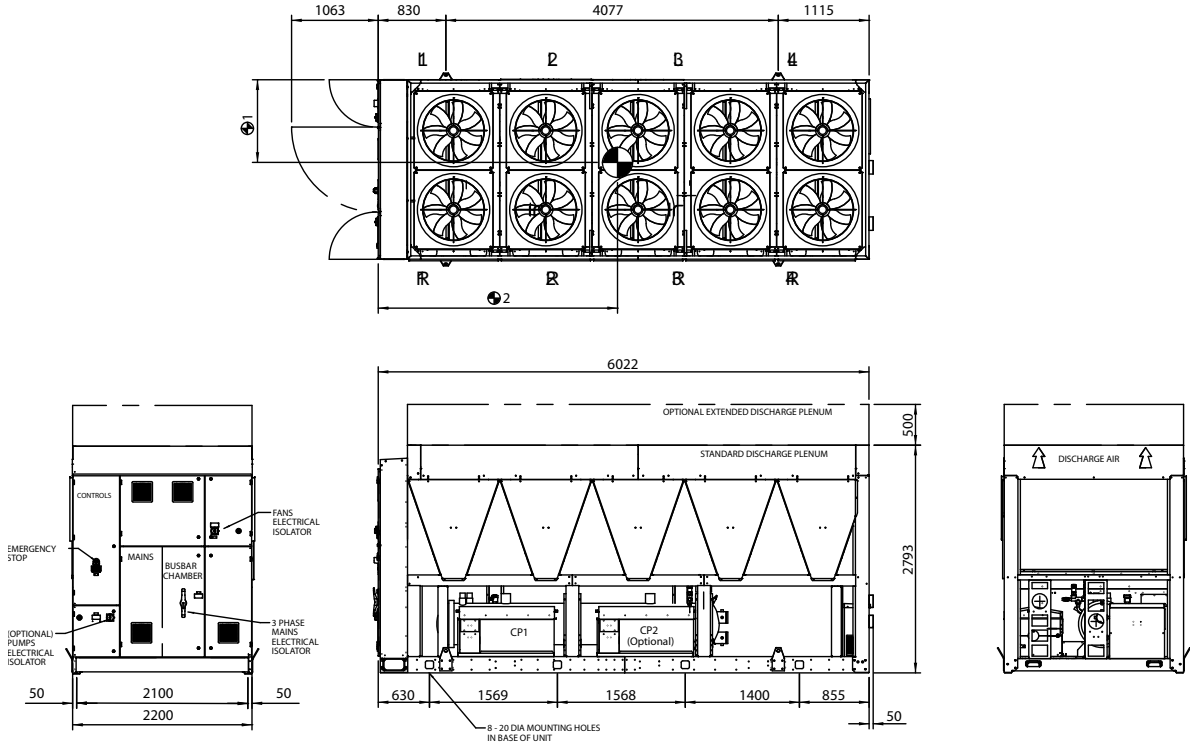
8 Fan



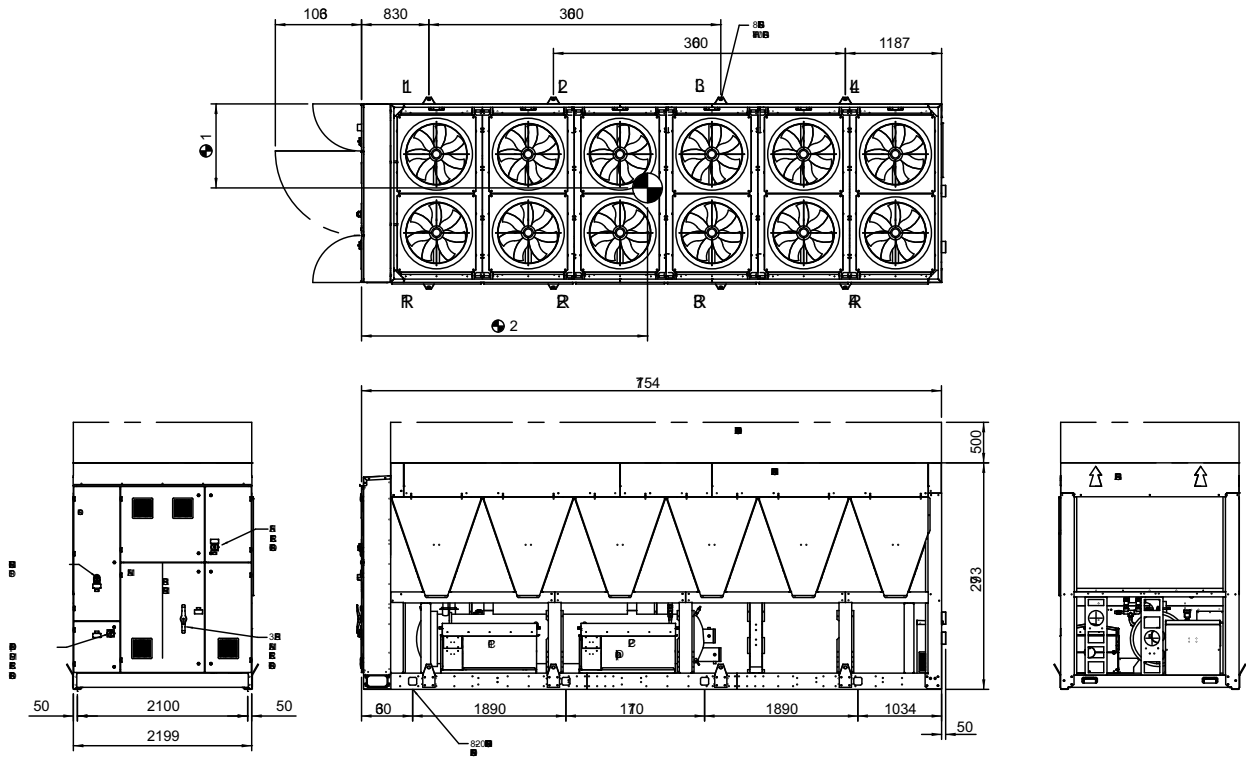
Installation Data

General Arrangement

10 Fan



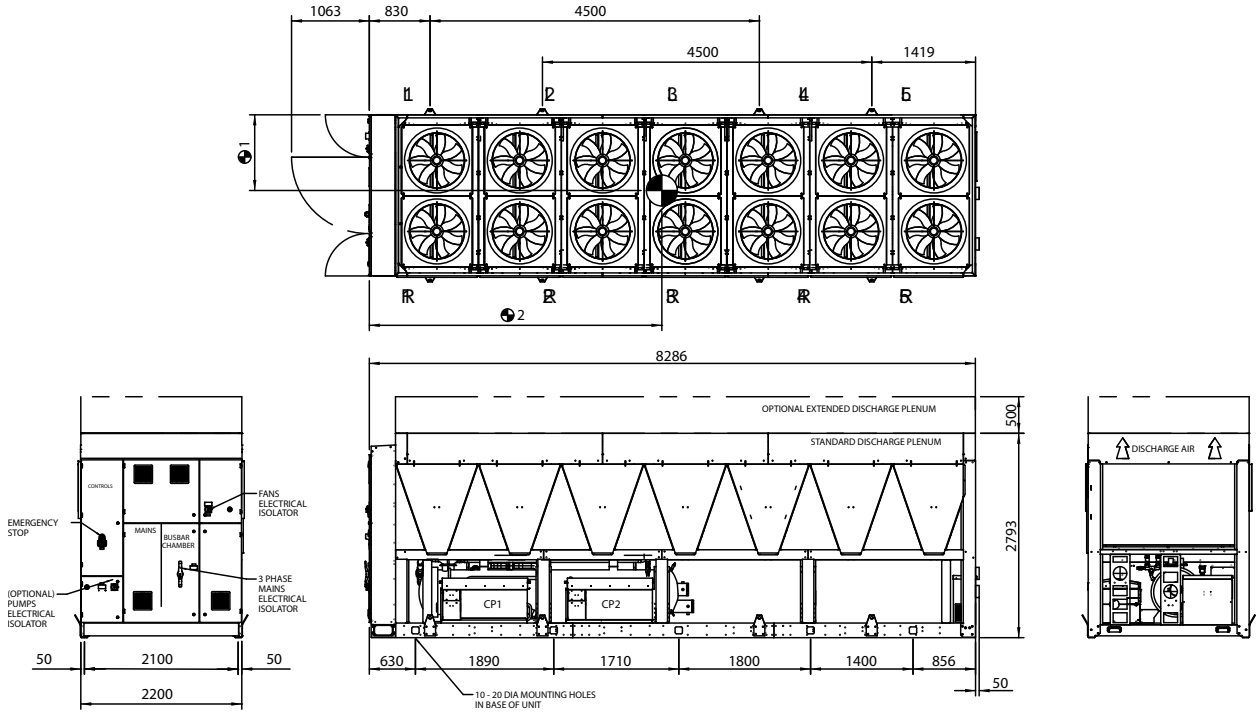
12 Fan



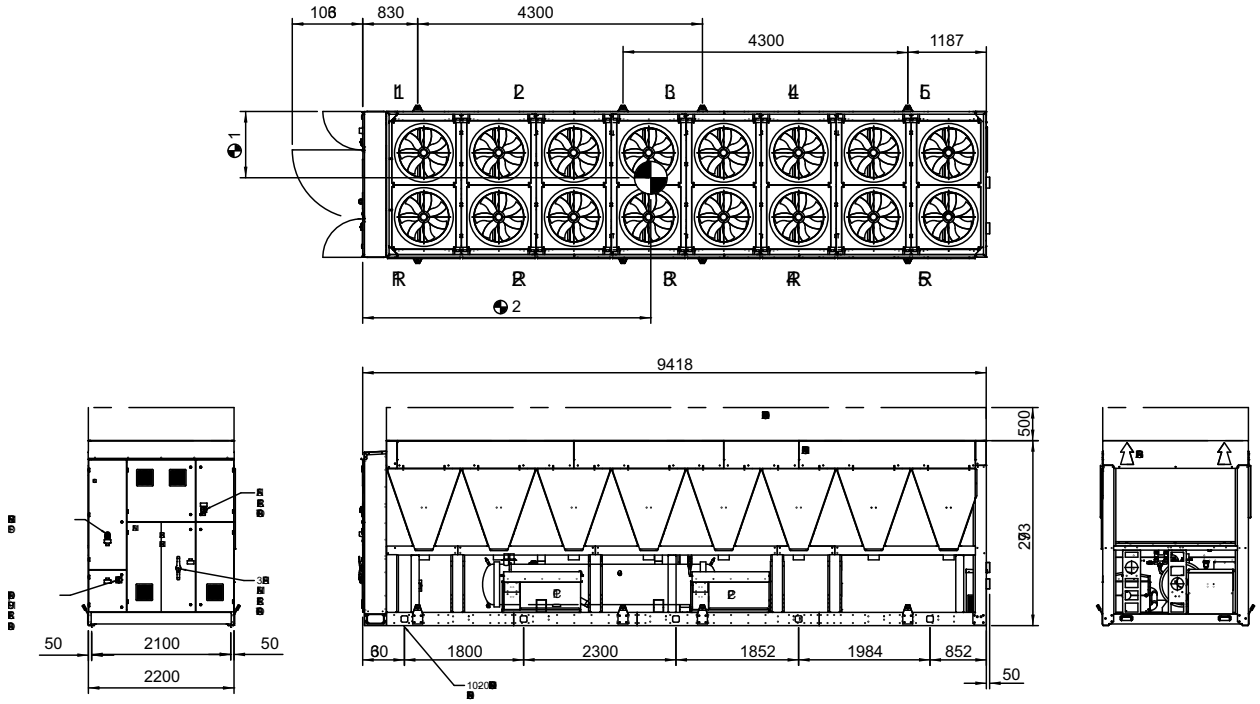
Installation Data

General Arrangement

14 Fan



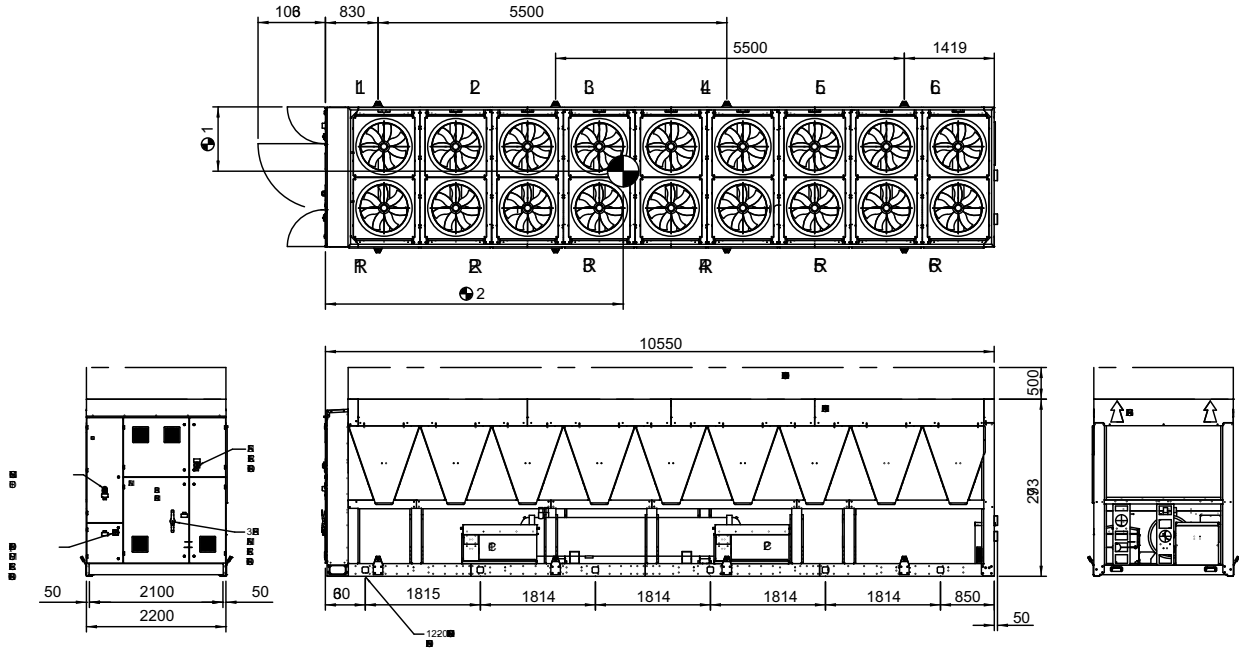
16 Fan



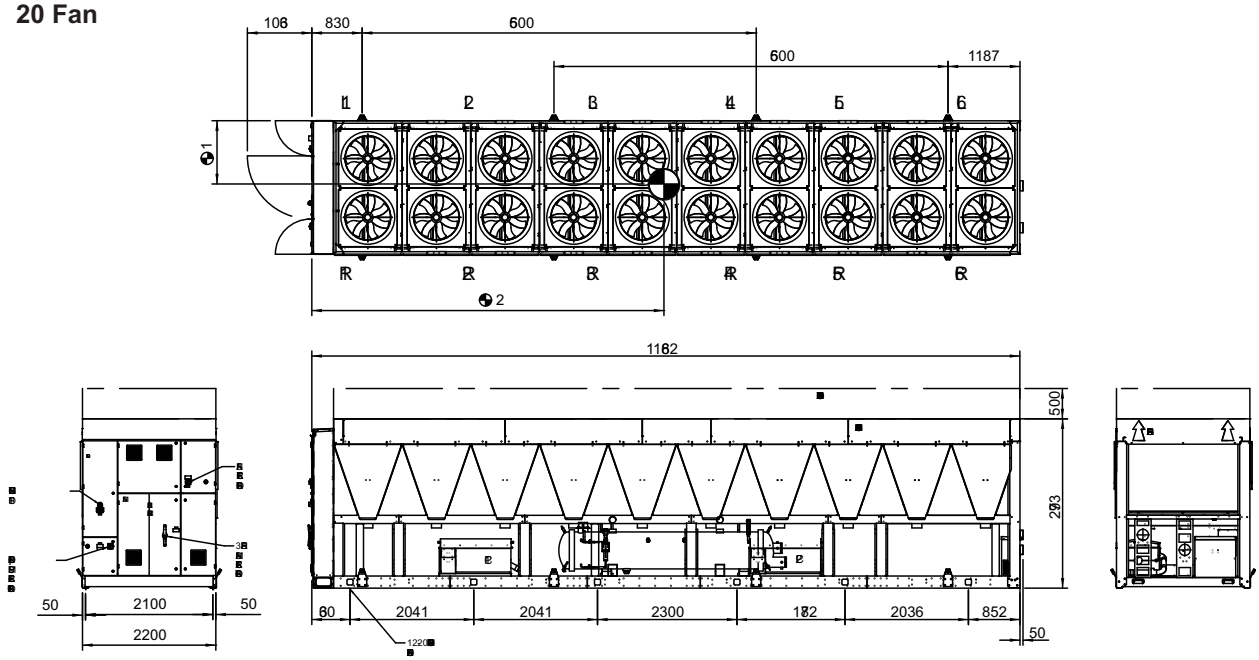
Installation Data

General Arrangement

18 Fan



20 Fan



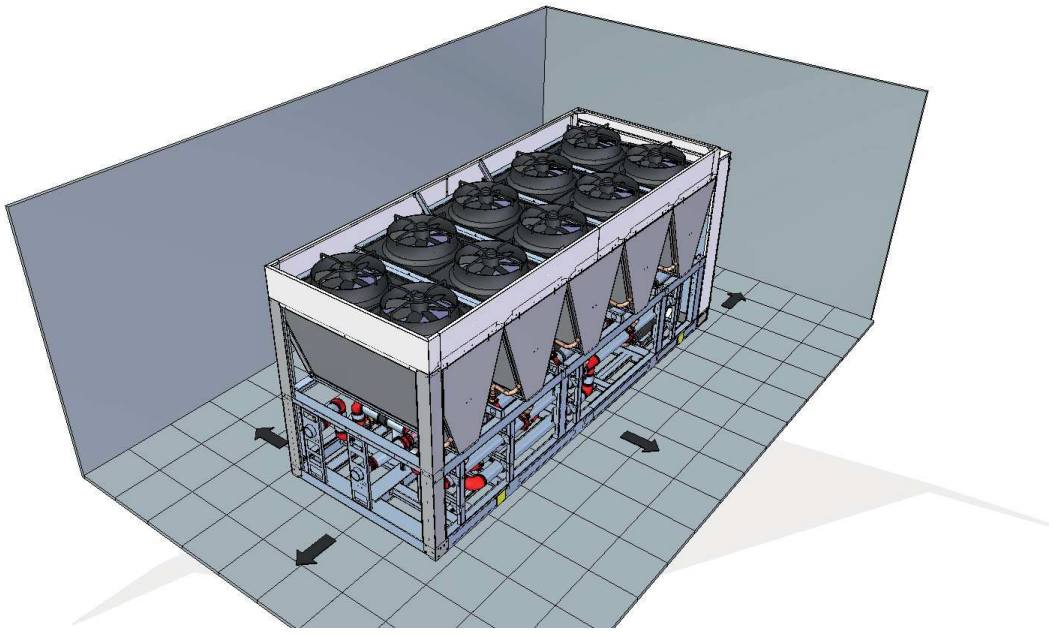
Installation Data

Positioning

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

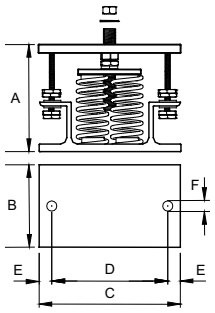
- Position on a stable and even base, levelled to ensure that the compressor operates correctly
- Levelling should be to +/- 5mm
- Where vibration transmission to the building structure is possible, fit spring anti-vibration mounts and flexible water connections
- Observe airflow and maintenance clearances
- 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

Airflow & Maintenance Clearances



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

Installation Data



Anti Vibration Mounting (Optional)

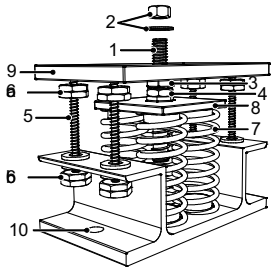
Spring Type

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	180	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).

CAUTION

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)

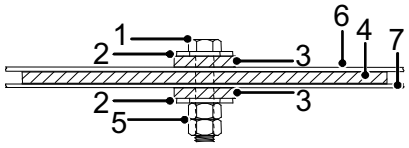
CAUTION

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

Pad Type

Components/Installation

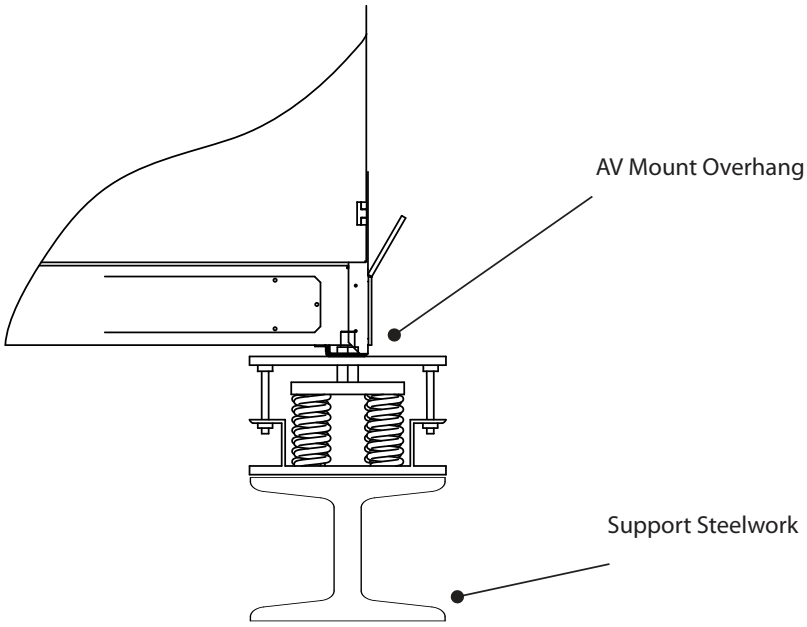
1. M16 Bolt (Not Supplied)
2. Washer (Not Supplied)
3. Fixing Pad 6173231
4. A V Pad 6173223
5. 2 x M16 Nut (Not Supplied)
6. Unit Base
7. Unit Mounting Plinth



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.



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,

FAILURE to do so will INVALIDATE WARRANTY.

CAUTION ⚠

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.

TURBOCHILL	L1	○	←		Mains h o ming S pply 400V/3PH/50Hz
	L2	○	←		
	L3	○	←		
	E	○	←		
	L4	○	←		Separate Permanent Supply 230V/1PH/50Hz
	N	○	←		(Direct to Control Panel Isolator)
	E	○	←		
	L4	○	→		External Trace Heating Connet ions
	N	○	→		240V/500W max
	502	○	→	(1)	**Remote Pump Interlock 24VAC**
	508	○	←		
	502	○	→	(1)	**Evaporator Pump Water Flow Switch 24VAC**
	506	○	←		
	502	○	→		Unit Remote On/Off 24VAC
	507	○	←		
	502	○	→		Setbak Setpoint Temperature S itch
	510	○	←		
	581	○	←	Non-Critia l Alarm	Volt F ee Common Alarm
	580	○	→		Volt F ee Alarm N/O
	582	○	→		Volt F ee Alarm N/C
	591	○	←	Critia l Alarm	Volt F ee Common Alarm
	590	○	→		Volt F ee Alarm N/O
	592	○	→		Volt F ee Alarm N/C
	RX-/Tx-	○	←		Network Connet ions (Inward C nnection)
	RX+/Tx+	○	←		
	GND	○	←		
	RX-/Tx-	○	→		Network Connet ions (Outward C nnet ion)
	RX+/Tx+	○	→		
	GND	○	→		

CAUTION ⚠ (1) MUST be directly wired to the chiller to validate warranty.

Power Quality & Harmonics

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

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

Single phase loads, e.g.

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

Three phase loads, e.g.

- Variable frequency drives
- Inverters
- Large UPS systems

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

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

The 3rd, 5th, 7th and 9th harmonics are considered to be the predominant frequencies produced by non-linear loads. To minimize the harmonic effect, each 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

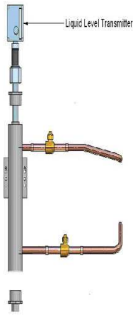
It is important to understand that G5/4 is effectively an “Installation Standard” and applies to the total harmonic generating equipment installed by a consumer. G5/4 identifies consumers by their PCC to the supply and applies limits at that point. G5/4 is not a product or equipment standard and therefore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

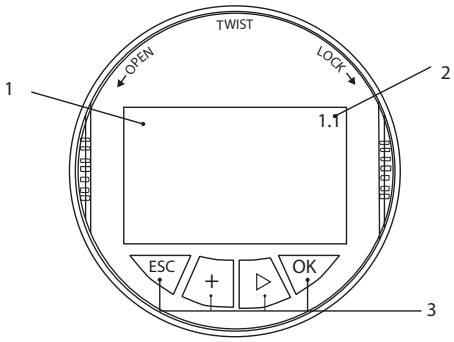
Note: (1) Based at full load conditions.

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.





OK key

- Move to the menu overview
- Confirm selected menu
- Edit parameter
- Save Values

▷ key to select

- Menu Change
- List entry
- Select editing position

+ key

- Change value of the parameter

ESC key

- Interrupt input
- Jump to the next higher menu

Setup instructions / guide	The liquid level sensor is used to monitor the level of refrigerant inside the evaporator by sending a 4 to 20mA signal to the controller. The transmitter then governs the amount of refrigerant in the evaporator.
Step 1 Apply power	To set-up the sensor, power needs to be applied. This can be done by turning on the breaker within the control panel. After power is applied the level sensor does an internal check for 30 seconds. This check includes the internal electronics, the sensor type etc. The output signal jumps briefly to the fault condition (10 seconds.)
Step 2 Minimum adjustment	Through the menu structure “Basic adjustment”, select the “min adjustment”. Set to 0.00% (58.00 pF)
Step 3 Maximum adjustment	Set the maximum adjustment Set to 100.00% (101.00 pF)
Step 4 Damping	Set the damping to “0”. This suppresses any fluctuation in the display level.
Further information	Further information is available from Airedale upon request.

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.

IMPORTANT
Check phase rotation of electrical supply prior to running the compressor as it's direction sensitive.

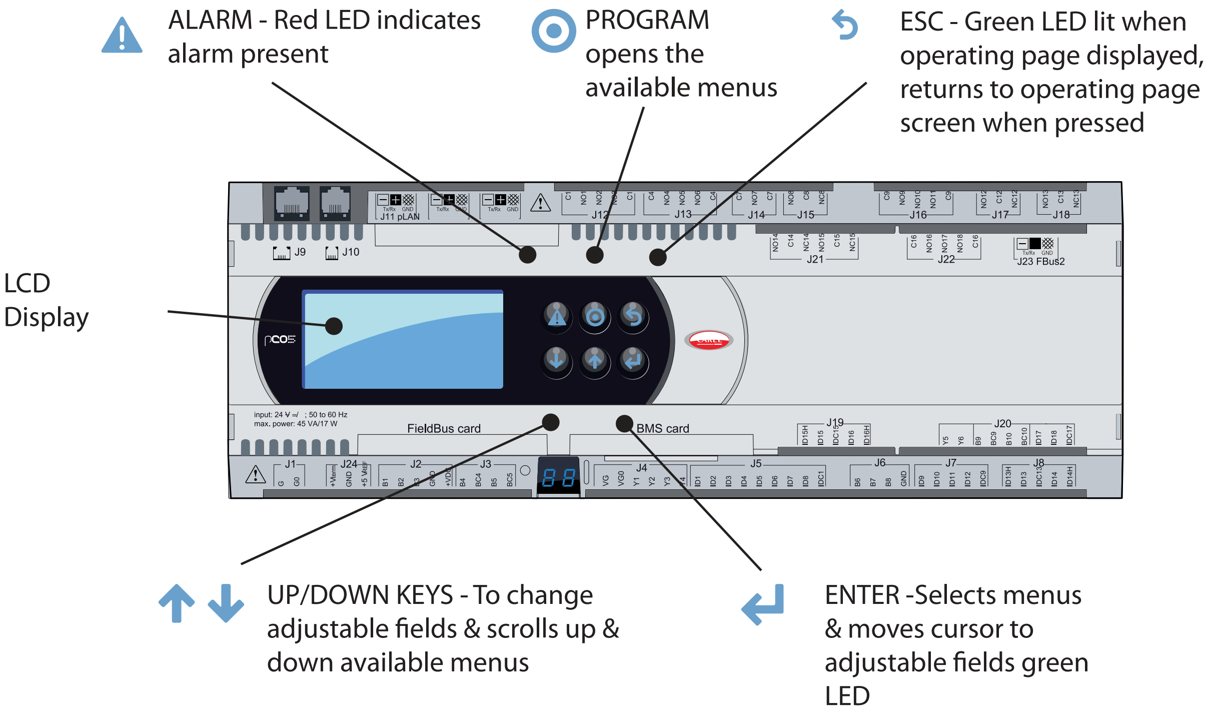
Visual Inspection
Check that the unit is of satisfactory condition and that it's not damaged.

CAUTION
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

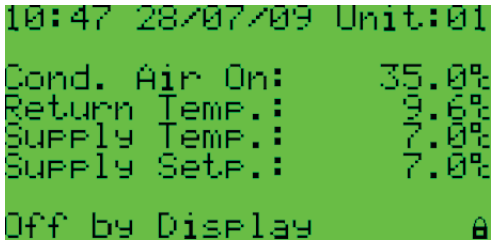
The microprocessor also monitors and displays the following measured parameters:

- 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

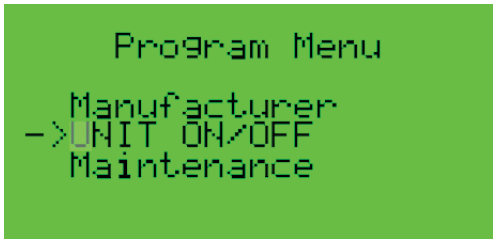
The unit must not be started unless the pre start checks have been carried out.

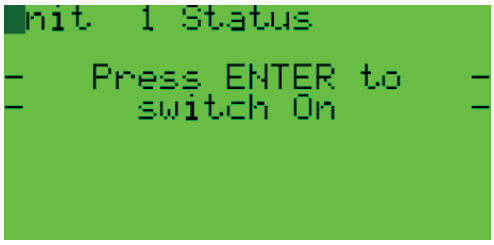
Restarting the Unit



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

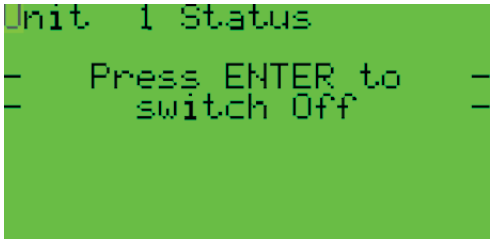
Using the or keys select the Unit On/Off option and press :





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.

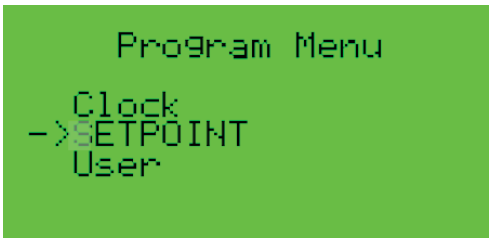
Pressing will turn the unit off.

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

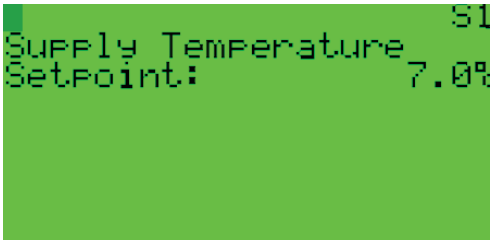
Changing the Setpoint

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

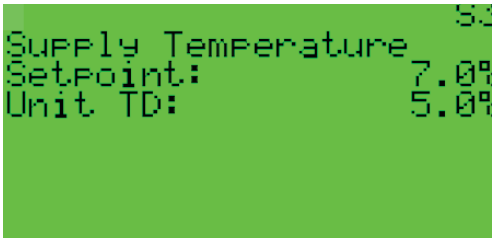


The following screen will be shown:



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 until the cursor returns to the top of the screen.

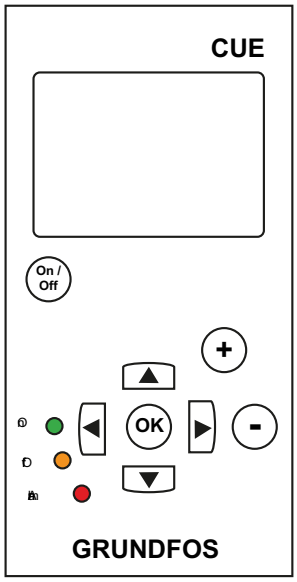
Enabling Pumps

Pump Start-Up

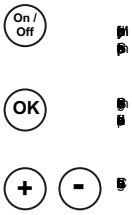
Use the start-up guide for the general setting of the CUE, pump controller including the setting of the correct direction of rotation.

The start-up guide will be started the first time when the CUE is connected to a supply voltage.

It can be restarted in the menu under GENERAL. Please note that in this case all previous settings will be erased.

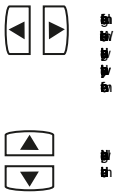


Editing Buttons



Indicator Lights

Navigation Buttons



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

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

1. Set the remote unit ON / OFF to the OFF position (Open Circuit).
2. Remote pump ON / OFF to ON position (Closed Circuit).
3. Turn the unit ON by display through the microprocessor.

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

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

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

Operational Maintenance checks

Owners Responsibility

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

Maintain a safe working environment around the chiller, free from obstructions and debris.
The unit shall follow the maintenance schedule below as a minimum.

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

Ensure lock off procedures are carried out accordingly.

If inverter driven pumps are used ensured at least 5 minutes is allowed for them to discharge any electrical charge.

Maintenance

General Inspections

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
General Inspections	Check for visible mechanical damage to unit.	•		
	Visually inspect the unit for general wear and tear, treat metalwork.	•		
	Rust should be inhibited, primed and touched up with matching paint.			
	Check for excess vibration from other rotating equipment.	•		
	Clean Microchannel condenser coil	•		

Service Tools / Test Equipment

- Touch-up Paint
- Stiff Brush

Safety Equipment

- Safety Glasses / Goggles

Procedures

Coil Cleaning

To clean micro channel condenser coils use detergent and a stiff bristled brush.

For heavy dirt, use either a high pressure water with a broad spray pattern or a non acidic cleaner (Ph ≥7 <10.5).

Do not steam clean.

Maintenance

Electrical Inspection

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

Service Tools / Test Equipment

- Voltmeter
- Screwdrivers / Allen Keys
- Ammeter

Safety Equipment

- Safety Glasses / Goggles

Procedures

Electrical Connections
Ensure all electrical connections are tight and correctly terminated.

Electrical Earthing
Check that the unit is correctly earthed.

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

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

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

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

The "COM" port of the USB to RS232 adapter should be assigned to a free COM port between COM 1 and 4 via the system device manager.

Connect the RS232 to RS485 interface converter to the USB port of your PC via the USB to RS232 serial interface lead and connect the RS485 output to the fan.

Tx += RS A Tx - = RS B

(Except high airflow fans. Interogation is via a separate module avaliable from Airedale)

Maintenance

Refrigeration

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

Service Tools / Test Equipment

- Refrigerant Manifold Gauges
- Spanners
- Voltmeter

Safety Equipment

- Safety Glasses / Goggles
- Gloves
- Overalls

Procedures

HP / LP Safety Pressure Switch Settings
Check operation of HP/LP cut-out.

Settings

LP cut-out – (Auto reset for 3 times when the Low Pressure is detected over a period of 1 hour)
Has a 2 minute delay on start-up (similar to a Low ambient kit)
Low pressure cut-out 0.29 +/- 0.2 Barg
HP switch (Manual reset): High pressure switch 17.5 Barg +/- 0.7 Barg
HP limiting function 15.0 Barg / 1.5 Barg differential

Maintenance

Waterside

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

Service Tools / Test Equipment

- Spanners
- Manometer
- Thermometer
- Refractometer

Safety Equipment

- Safety Glasses / Goggles
- Gloves
- Overalls

Procedures

Water Strainer
A water strainer must be fitted to the inlet side of the chiller evaporator.
Failure to do so may result in severe damage and will void the AIREDALE warranty.

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

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

Glycol Strength
Check and record the glycol type and strength. Low levels of glycol can cause freeze up problems when operating at low temperatures or during the unit off state during cold ambient conditions.

Glycol concentration is measured by use of a Refractometer.

Differential Pressure Sensor

Ensure that the differential pressure sensor operates satisfactorily; the best way to do this is to reduce the flow to the chiller.

From pressure curves determine the design flow rate / pressure drop
Make sure that any effects of glycol in the system are taken into account (flow rate and pressure drop).
Input into the controller the reduced pressure drop (kPa) value (normally 80% of design flow rate)

Once this value is programmed into the controller the water flow rate can be reduced to verify that the low flow alarm is activated.

Ensure that the tubes connected to the sensor are insulated.

Flow Switch

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

A flow switch must also be fitted on the condenser outlet (water cooled models).

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 (°C)
- Sub cooling (°C)
- 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.

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.
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.

	Fault	Possible Cause	Remedy / Action
Waterside	Pump not operating	No power to pump. Inverter tripped and does not auto reset (the microprocessor will try and auto reset 3 times)	Check isolator, fuses, MCBs, contactor and control circuit wiring. Reset inverter drive via microprocessor.
	No water flow	Strainer blocked.	Clean strainer
	Pump noisy	Air in water system. Pump cavitations.	Purge air from water system. 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) No heatload on system	Clean evaporator 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						1 = Non critical
AL002	Comp2 MB Comms.Offline						1 = Non critical
AL003	Comp3 MB Comms.Offline	•		•	Communication to the compressor has failed	Check: Wiring / modbus card / compressor communication board / compressor fuses and power	1 = Non critical
AL004	Comp4 MB Comms.Offline						1 = Non critical
AL005	Power Meter MB Offline	•	•	•	Communication to the power meter has been lost	Check: wiring / modbus card / power meter	1 = Non critical
AL006	Cond. Pressure1 Fault		•	•			1 = Non critical
AL007	Evap.Diff.Press. Fault		•	•			1 = Non critical
AL008	Evap.Flow Meter Fault		•	•			1 = Non critical
AL009	Return Temp. Fault	•	•	•	The sensor has gone out of its operating range	Check: wiring / sensor	1 = Non critical
AL010	Supply Temp. Fault		•	•			1 = Non critical
AL011	Temp. Setpoint Fault			•			1 = Non critical
AL012	Cond.Air On Temp Fault			•			1 = Non critical
AL013	Clock Alarm	•		•	The internal clock has malfunctioned	Replace battery	1 = Non critical
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	2 = Critical
AL016	Evaporator Flow Alarm	•	•	•	No evaporator flow has been detected	Check: pumps are running / flow	2 = Critical
AL017	Low Pressure 1 Switch	•	•	•	Circuit 1 suction pressure below 0.5 bar	Check: refrigerant charge / EEV operation	2 = Critical
AL018	Comp1 Status Alarm			•			1 = Non critical
AL019	Comp2 Status Alarm			•			1 = Non critical
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			•			1 = Non critical
AL022	Mains Failure	•	•	•	The permanent L4 supply has failed to the control panel	Check: L4 supply	2 = Critical
AL023	Pump1 Status Alarm		•	•	Contactor has been switched on but has failed to operate	Check: contactor / wiring	1 = Non critical
AL024	Pump2 Status Alarm		•	•			1 = Non critical

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL025	Low Supply Temperature	•	•	•	The supply water temperature is too low	Check: flow rate / Unit TD	1 = Non critical
AL026	High Cond. Pressure 1	•	•	•	Circuit 1 condensing pressure is higher than 13.6Bar	Check: condenser / condenser fans	1 = Non critical
AL027	pCO5 Module Offline	•		•	Communication to the pCOe expansion module has been lost	Check: communications link / wiring	1 = Non critical
AL028	Leak Detector 1 Fault	•		•	The output from the leak detector is out of range	Check: leak detector / wiring	1 = Non critical
AL029	Leak Detector 2 Fault			•			1 = Non critical
AL030	Leak Detector 3 Fault			•			1 = Non critical
AL031	Leak Detector 4 Fault			•			1 = Non critical
AL032	Possible Leak Comp.1	•			The reading from the leak detector is above the threshold	Check: pipe work around the leak detector	1 = Non critical
AL033	Possible Leak Comp.2						1 = Non critical
AL034	Possible Leak Comp.3						1 = Non critical
AL035	Possible Leak Comp.4						1 = Non critical
AL036	Inverter Temp. Comp.1	•		•	The temperature of the compressor inverter is high	Check: liquid line to the compressor / solenoid valves	1 = Non critical
AL037	Discharge Temp. Comp.1	•		•	The temperature of the discharge gas is high	Check: refrigerant charge / discharge temperature sensor	1 = Non critical
AL038	Suction Press. Comp.1	•		•	The suction pressure is too high / low at the compressor	Check: charge / system load / sensor / suction strainer	1 = Non critical
AL039	Discharge Press.Comp.1	•		•	The discharge pressure has exceeded it limit	Check: The sensor / condenser/ shut off valves	1 = Non critical
AL040	3Ph. Current Comp.1	•		•	Indicates there maybe an excessive load on the system		1 = Non critical
AL041	Cavity Temp. Comp.1	•		•	The cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	1 = Non critical
AL042	Air/Water Temp. Comp.1	•		•	There maybe insufficient water flow due to air gaps	Check: Sensor limits	1 = Non critical
AL043	Compress. Ratio Comp.1	•		•	The compression ratio of the compressor is out of range	Check: condenser / evaporator loads and settings	1 = Non critical

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL044	Bearing Reset Comp.1	•		•	Low suction pressure / liquid	Check: refrigerant circuit	1 = Non critical
AL045	SCR Temp. Comp.1	•		•	Indicates insufficient cooling to the SCR plate	Check: alarms limits in the compressor	1 = Non critical
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	1 = Non critical
AL048	Discharge Temp. Comp.2	•		•	The temperature of the discharge gas is high	Check: refrigerant charge / discharge temperature sensor	1 = Non critical
AL049	Suction Press. Comp.2	•		•	The suction pressure is too high / low at the compressor	Check: charge / system load / sensor / suction strainer	1 = Non critical
AL050	Discharge Press.Comp.2	•		•	The discharge pressure has exceeded it limit	Check: the sensor / condenser/ shut off valves	1 = Non critical
AL051	3Ph. Current Comp.2	•		•	Indicates there maybe an excessive load on the system		1 = Non critical
AL052	Cavity Temp. Comp.2	•		•	The cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	1 = Non critical
AL053	Air/Water Temp. Comp.2	•		•	There maybe insufficient water flow due to air gaps	Check: sensor limits	1 = Non critical
AL054	Compress. Ratio Comp.2	•		•	The compression ratio of the compressor is out of range	Check: condenser / evaporator loads and settings	1 = Non critical
AL055	Bearing Reset Comp.2	•		•	Low suction / liquid	Check: refrigerant Circuit	1 = Non critical
AL056	SCR Temp. Comp.2	•		•	Indicates insufficient cooling to the SCR plate	Check: alarms limits in the compressor	1 = Non critical
AL057	System Lockout Comp.2			•	When a SCR / inverter / cavity temperature fault occurs more than 3 time in 30 minutes	Check: motor cooling line and solenoids valves / cycle power	1 = Non critical
AL058	Inverter Temp. Comp.3	•		•	The temperature of the compressor inverter is high	Check: liquid line to the compressor / solenoid valves	1 = Non critical
AL059	Discharge Temp. Comp.3	•		•	The temperature of the discharge gas is high	Check: refrigerant charge / discharge temperature sensor	1 = Non critical

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL060	Suction Press. Comp.3	•		•	The suction pressure is too high / low at the compressor	Check: charge / system load / sensor / suction strainer	1 = Non critical
AL061	Discharge Press.Comp.3	•		•	The discharge pressure has exceeded it limit	Check: the sensor / condenser/ shut off valves	1 = Non critical
AL062	3Ph. Current Comp.3	•		•	Indicates there maybe an excessive load on the system		1 = Non critical
AL063	Cavity Temp. Comp.3	•		•	The cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	1 = Non critical
AL064	Air/Water Temp. Comp.3	•		•	There maybe 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	1 = Non critical
AL066	Bearing Reset Comp.3	•		•	Low suction / liquid	Check: refrigerant circuit	1 = Non critical
AL067	SCR Temp. Comp.3	•		•	Indicates insufficient cooling to the SCR plate	Check: alarms limits in the compressor	1 = Non critical
AL068	System Lockout Comp.3			•	When a SCR / inverter / cavity temperature fault occurs more than 3 time in 30 minutes	Check: motor cooling line and solenoids valves / cycle power	1 = Non critical
AL069	Inverter Temp. Comp.4	•		•	The temperature of the compressor inverter is high	Check: liquid line to the compressor / solenoid valves	1 = Non critical
AL070	Discharge Temp. Comp.4	•		•	The temperature of the discharge gas is high	Check: refrigerant charge / discharge temperature sensor	1 = Non critical
AL071	Suction Press. Comp.4	•		•	The suction pressure is too high / low at the compressor	Check: charge / system load / sensor / suction strainer	1 = Non critical
AL072	Discharge Press.Comp.4	•		•	The discharge pressure has exceeded it limit	Check: the sensor / condenser/ shut off valves	1 = Non critical
AL073	3Ph. Current Comp.4	•		•	Indicates there maybe an excessive load on the system		1 = Non critical
AL074	Cavity Temp. Comp.4	•		•	The cavity temperature inside the compressor is high	Check: the liquid cooling line / solenoid valve	1 = Non critical
AL075	Air/Water Temp. Comp.4	•		•	There maybe insufficient water flow due to air gaps	Check: sensor limits	1 = Non critical
AL076	Compress. Ratio Comp.4	•		•	The compression ratio of the compressor is out of range	Check: condenser / evaporator loads and settings	1 = Non critical
AL077	Bearing Reset Comp.4	•		•	Low suction / liquid	Check: refrigerant Circuit	1 = Non critical

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
AL078	SCR Temp. Comp.4	•		•	Indicates insufficient cooling to the SCR plate	Check: alarms limits in the compressor	1 = Non critical
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	1 = Non critical
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	1 = Non critical
AL081	Hours Limit Comp.2			•			1 = Non critical
AL082	Hours Limit Comp.3			•			1 = Non critical
AL083	Hours Limit Comp.4			•			1 = Non critical
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			•			1 = Non critical
AL086	Liquid Level 1 Fault	•		•	Circuit 1 liquid level sensor has gone out of range	Check: the sensor / Wiring	1 = Non critical
AL087	CW Valve Feedback	•		•	Valve failed to open	Check: valve operation / Wiring	1 = Non critical
AL088	Cond. Pressure2 Fault	•	•	•	Circuit 2 condensing pressure sensor has gone out of its operating range	Check: wiring / Sensor	1 = Non critical
AL089	Low Pressure 2 Switch			•	Circuit 2 suction pressure is below 0.5 bar	Check: refrigerant charge / EEV operation	2 = Critical
AL090	High Cond. Pressure 2			•	Circuit 2 condensing pressure is higher than 13.6 Bar	Check: Condenser / Condenser Fans	1 = Non critical
AL091	Liquid Level 2 Fault	•	•	•	Circuit 2 liquid level sensor has gone out of range	Check: wiring / Sensor	1 = Non critical
AL092	Evap.Inlet Temp. Fault	•	•	•	The sensor has gone out of its operating range	Check: wiring / sensor	1 = Non critical
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	1 = Non critical
AL094	Serious Alarm Comp.2			•			1 = Non critical
AL095	Serious Alarm Comp.3			•			1 = Non critical
AL096	Serious Alarm Comp.4			•			1 = Non critical
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	1 = Non critical
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			•			2 = Critical

Alarms

Code	Description	Auto Reset	Unit Disabled	Component Disabled	Cause	Action	Default Alarm Type
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	1 = Non critical
AL102	High Liquid Level Cct2	•			High level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve	1 = Non critical
AL103	Low Liquid Level Cct2	•			Low level of refrigerant in flooded evaporator	Check the operation of the liquid level control valve / refrigerant leak	1 = Non critical
AL104	Cond.Return Temp.Fault	•	•	•	The sensor has gone out of its operating range	Check: wiring / sensor	1 = Non critical
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	•	•	•	The sensor has gone out of its operating range	Check: wiring / sensor	1 = Non critical
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	2 = Critical
AL109	Unit Pump Down Cct2			•			2 = Critical
AL110	Possible Unit Ref.Leak	•			A possible unit refrigerant leak has been detected	Check for refrigerant loss	1 = Non critical
AL111	Mains Isolator Status Alarm	•	•	•	Mains isolator is off.	If safe to do so switch on.	2 = Critical
AL112	Circuit 1 Condenser Fan Trip	•			One or more condenser fans have tripped on circuit 1.	Check circuit 1 condenser fan operation / wiring.	1 = Non critical
AL113	Circuit 2 Condenser Fan Trip	•			One or more condenser fans have tripped on circuit 2.	Check circuit 2 condenser fan operation / wiring.	1 = Non critical
AL114	Condenser Fan Isolator Status	•		•	Condenser fan isolator is off.	If safe to do so switch on.	1 = Non critical
AL115	Pump Isolator Status	•		•	Pump isolator is off.	If safe to do so switch on.	1 = Non critical
AL116	Refrigerant Leak Detector 1 MB Communications Offline	•			Communication to the leak detector has failed	Check: wiring / modbus connection / leak detector.	1 = Non critical
AL117	Refrigerant Leak Detector 2 MB Communications Offline	•					1 = Non critical
AL118	Refrigerant Leak Detector 3 MB Communications Offline	•					1 = Non critical
AL119	Refrigerant Leak Detector 4 MB Communications Offline	•					1 = Non critical

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

Head Office
Airedale International Air Conditioning Ltd
Leeds Road
Rawdon
Leeds LS19 6JY

Tel: +44 (0) 113 2391000
Fax:+44 (0) 113 2507219

E-mail enquiries@airedale.com
Web www.airedale.com

A MODINE Company

SYSTEMY HVAC Sp. z o.o.
ul.Rydygiera 8, 01-793 Warszawa
tel.: +48 22 101 74 00
fax: +48 22 101 74 01
e-mail: biuro@systemy-hvac.pl
www.systemy-hvac.pl

TM_7525355_TURBOCHILL_FREECOOL_V1.1.0_04_2013