Airedale by MODINE

Chiller | Air cooled / Free-cooling



TurboChill™ & TurboChill™ FreeCool

SPRAY EVAPORATOR RANGE

190 – 1650kW

- \+ ESEER up to 5.66
- \+ Class A EER up to 4.18
- \+ 195 – 1550kW air cooled models
- \+ 225 – 1650kW FreeCool models

ecoDesign COMPLIANT

HFO/C R513A — HFO / HFC R513A

HFO R1234ze — HFO R1234ze

CENTRIFUGAL COMPRESSOR

MICRO — MICROCHANNEL COIL

FREE COOL — FREE-COOLING

EC — EC FAN

www.airedale.com

BRITISH MANUFACTURER | ENERGY EFFICIENCY | CONTROLS | 24/7 SERVICE | TRAINING

Unparalleled efficiency

Ultimate in advanced chiller technology

The TurboChill™ is a high-capacity, air-cooled, single/dual circuit chiller, which offers exceptional ESEER values of up to 5.66

With low global warming potential (GWP), R513A and R1234ze refrigerants, the TurboChill™ Spray Evaporator range offers Ecodesign Tier 2 (2021) compliance for both comfort and process based applications.

TG230 TurboChill Compact (TCC11R03Z-64)

Increased flexibility and choice

The TurboChill™ offers increased flexibility and choice with more than 166 models available to choose from - 52 models (R1234ze), 114 models (R513A). All units incorporate the latest Centrifugal TurboCor compressor technology. The new Turbochill Compact includes the low capacity TG230 compressor which operates using R1234ze with a GWP less than 1. These intelligent, self-optimising compressors enable 30 – 100% variable speed control with respect to maximum capacity for tighter setpoint management and unbeatable efficiencies at part load.

Spray flooded evaporator

Innovative spray flooded type evaporator technology means that the TurboChill™ Spray Evaporator range reduces refrigerant evaporator charge (kg) by up to 70% and overall unit charge up to 50%, whilst maintaining a level of efficiency close to a traditionally flooded system of the same capacity.

Microchannel heat exchanger*

High surface area provides increased heat transfer and lower airside pressure drop, giving lower fan powers. The slim, light profile reduces weight/ space claim and microchannel coils are polymer-coated for longevity.

Centrifugal compressor

30 - 100% variable speed control for tighter setpoint management and substantial energy savings at part load

EC fans

Electronically commutated axial fans give increased performance for reduced power input*

* than an AC fan at part load

Modular V-frame

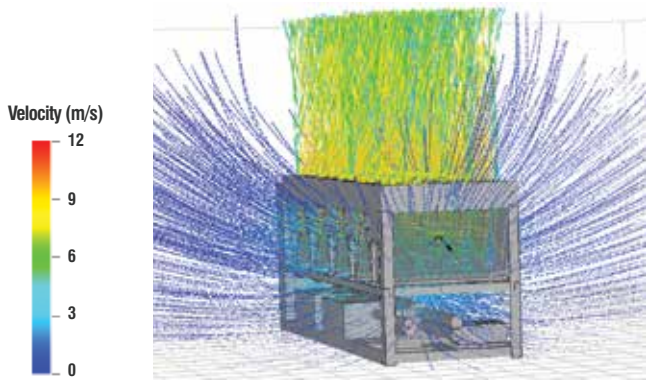
Vastly improves heat exchange, resulting in better performance and control particularly at part load; also facilitates easier maintenance

*Excluding TG230 model; this utilises round tube plate fin coils.

Class A EER up to 4.18

Energy Efficiency Ratio at 7/12°C water and 35°C ambient.

CFD analysis was used to determine the optimum fan and heat exchanger size and the best distribution and total air flow through the unit.



Modular V-frame coil design

The Turbochill™ range utilises an innovative V-frame coil configuration, which maximises the heat exchange area, therefore improving system performance and control. The unique coil arrangement offers high coil face area and enables best air flow distribution to minimise power consumption.

Microchannel heat exchangers*

The large surface areas of the microchannel heat exchangers enable cooling capacities to be extended and lower condensing temperatures to be achieved within a smaller footprint.

The microchannel heat exchangers offer increased heat transfer and further improve efficiency by reducing air-side pressure drop, allowing increased air flow to pass through the coil. This increases the total heat rejection and fan efficiency at both full and part load.

* excluding TCC11R03Z-64 and TCC11X03Z-64

Low GWP refrigerants

R1234ze significantly reduces environmental impact and has a low global warming potential (GWP) of under one*. This means that the time taken for the refrigerant to break down and for it to be absorbed into the atmosphere is minimised. Therefore, the lifespan of the refrigerant R1234ze is just 16 days.

*As rated by the International Panel for Climate Change (IPCC-AR5).

Up to 20% energy savings

The latest EC fan technology is used within the TurboChill™ range to provide even greater control, increase efficiency and minimise noise. EC fans offer a lightweight, rigid alternative to conventional fans. The fan housing is also up to 8kg lighter, helping to improve fan performance.

EC fans provide variable speed control which matches to load requirements and lowers air flow resistance, therefore reducing power input and energy consumption.

Next generation

Oil-free compressor technology

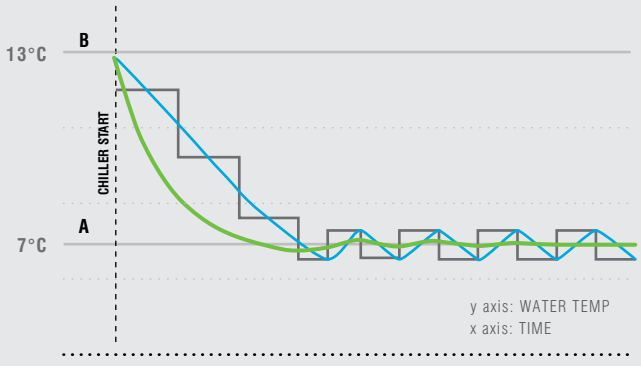
The TurboChill™ Spray Evaporator range utilises oil-free centrifugal compressors (TT300, TT350 / R513A) and (TG230, TG310 / R1234ze).

These intelligent, self-optimising compressors enable variable speed control and minimise input power with near silent operation. Magnetic bearings within the centrifugal compressor levitate the compressor shaft and with no mechanical contact or friction between mating surfaces, the need for lubrication is eliminated.

Image shown: TG310 Compressor

Excellent reliability: No operational wear and tear

With virtually no vibration and fewer moving parts within the compressor, there is no operational wear and tear. Costly bearing replacement is therefore avoided and equipment life extended. In the event of a power failure, the compressor acts as a generator and powers itself down in a controlled manner.



30-100% modulating TurboChill™ vs. staged screw chiller

- TurboChill modulating supply water temperature
- Conventional screw chiller water temperature
- Step control conventional screw chiller - 4 stages of cooling

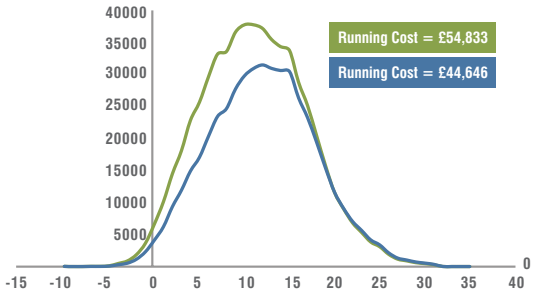
A = Supply temperature setpoint B = Actual water temperature

Exact capacity match

Variable speed compressor control ranging from 30 - 100%, allows the TurboChill™ to save substantial amounts of energy when operating at part load. Variable speed control facilitates accurate supply water set point control. It enables the TurboChill™ to react to system load fluctuations and exactly match cooling demand.

Brilliantly engineered

For enhanced performance and increased reliability



Leading competitor inverter screw chiller vs. TurboChill™ @ 50% load

Leading competitor
Airedale

x axis: Ambient Temperature °C
y axis: kWh

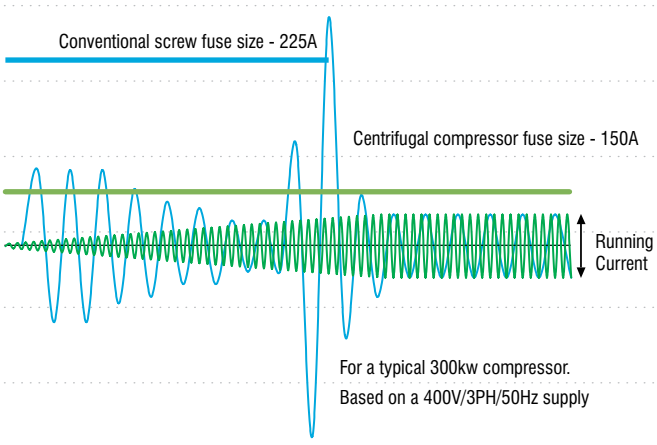
Save up to **23%** in operating costs p.a

Running costs significantly reduced by up to 23% p.a*, when operating at part load.

*compared with the leading competitor screw chiller over an annual cycle in Leeds, UK

Low current start

By removing the transient starting 'spikes' normally associated with screw chillers of this capacity, electrical supply components need not be oversized on site.



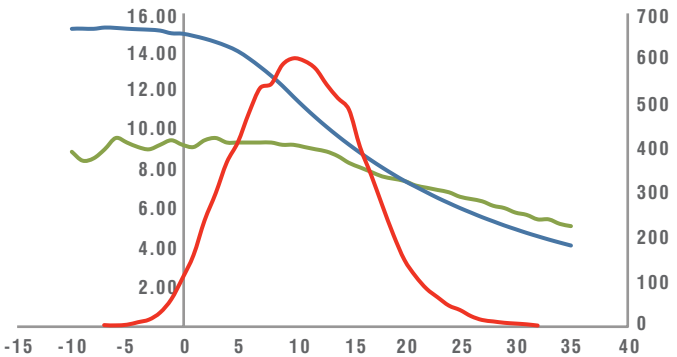
Integral low current start (2A)

Centrifugal compressor
Conventional screw

EER over 15.0 at part load

EER increase of over **22%***

* at peak ambient hours



Leading competitor screw chiller vs. TurboChill™ @ 50% load

Leading competitor
Airedale
Ambient Hours Leeds

x axis: Ambient Temperature °C
y axis 1: EER
y axis 2: Ambient Hours

Free-cooling

For over 95% of the year

Free-cooling saves vast amounts of energy, particularly when room temperatures are high. For free-cooling operation, the temperature difference between the ambient air and the return water can be as little as 1K.

The TurboChill FreeCool range offers free-cooling for up to 95% of the year, with concurrent free-cooling for up to 65% of the year and full free-cooling for up to 30%.

One kilowatt of power saved every hour 24/7, represents a saving of £876* a year, equivalent to over 4 tonnes of CO_2.

***£0.10kW/h**

BREEAM

BREEAM assesses, encourages and rewards environmental, social and economic sustainability throughout the built environment. A key objective is to ensure best environmental practice is incorporated in the planning, design, construction and operation of buildings and the wider built environment.

The TurboChill™ range contributes to a building achieving up to two BREEAM points in an effort to limit the impact of refrigerant gases on the atmosphere.

Impact of Refrigerant

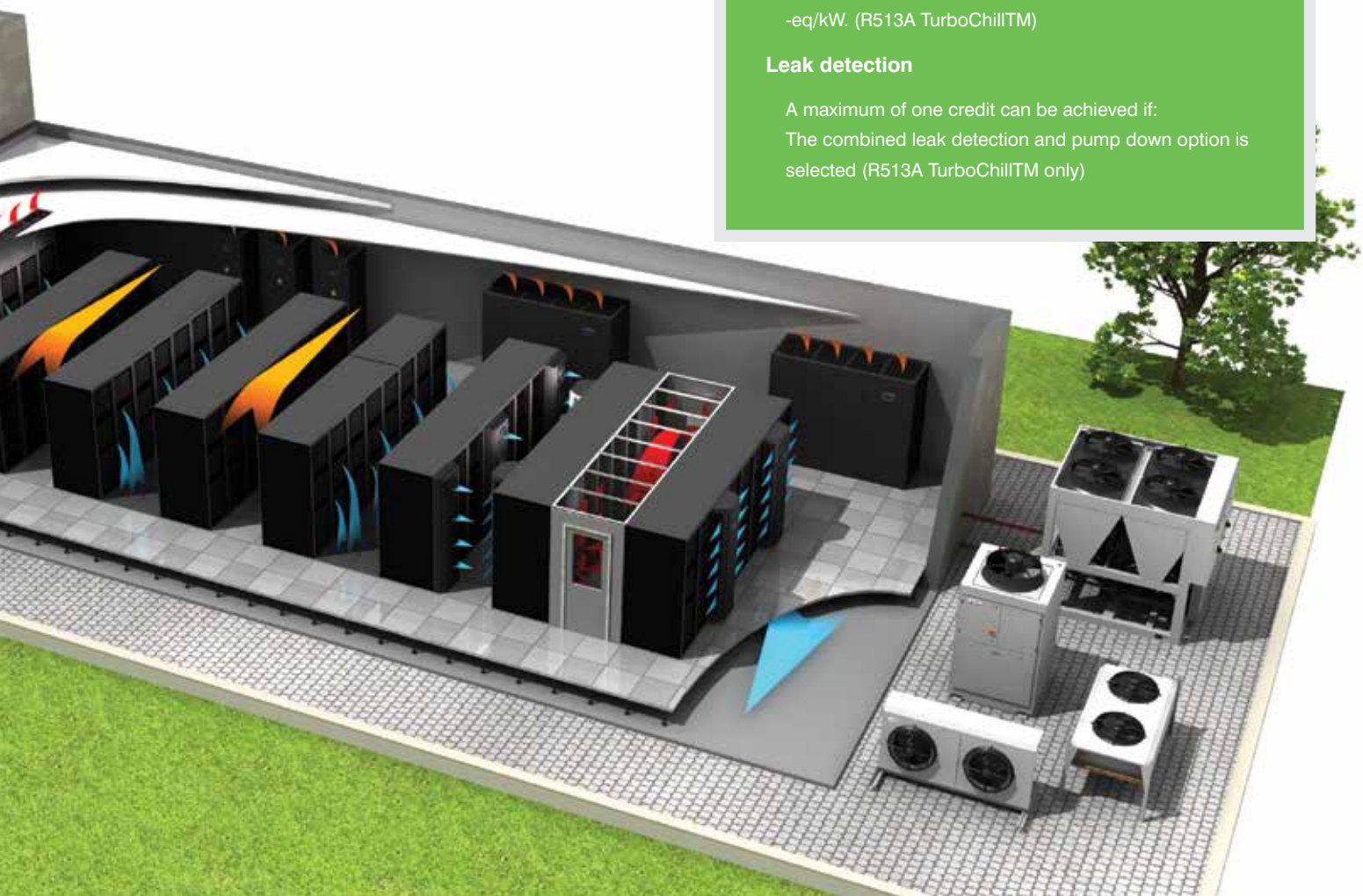
A maximum of two credits can be achieved if:
All refrigerants used have a global warming potential (GWP) ≤10. (R1234ze TurboChillTM)

OR

One credit can be achieved if:
Systems using refrigerants have a DELC of ≤1000kgCO_2 -eq/kW. (R513A TurboChillTM)

Leak detection

A maximum of one credit can be achieved if:
The combined leak detection and pump down option is selected (R513A TurboChillTM only)



ACIS™ BMS

One source, complete visibility

ACIS™ BMS, Airedale's exclusive Building Management System is an innovative, scalable and future-proof solution which has been specifically designed to enhance system performance, drive down operational costs and aid decision making for a wide range of building services.

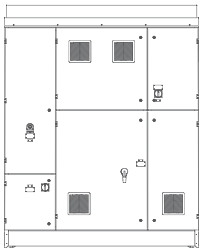
Offering a more pre-emptive BMS solution, ACIS™ is able to make decisions, delivering a higher level of building intelligence. With its simplistic and intuitive interface, ACIS™ BMS allows you to gain access anytime, anywhere to your building's systems, enabling you to manage building services from any manufacturer across multiple sites through a single integrated system.

A wide range of features enable total system efficiency to be evaluated, puts the user in full control, provides complete visibility of all building services and offers total facility integration.

- Complete Visibility of Building Infrastructure
- Secure Remote 24/7 Access
- Extensive Analysis, Monitoring and Diagnostic Tools
- Fully Compatible
- Immediate Notifications
- Live Capture and Historical Energy Usage
- Visualisation and Graphical Representation
- Optional 24/7 Support

Specifications at a glance

The ultra-efficient, variable speed control of the TurboChill™ allows it to match load requirements exactly and enables selection of the optimum model, in terms of efficiency, sound level, footprint and price, for each individual application.

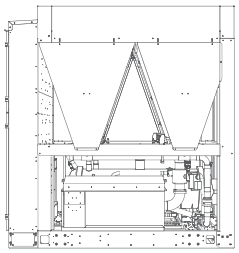


Environment

- TurboChill™ range available with R513A refrigerant and low GWP refrigerant R1234ze
- Refrigerant isolation actuators as standard to contain refrigerant in the event of a leak (R1234ze models only / optional for R513A models)
- Free-cooling at up to 116% of nominal capacity for reduced operating costs and carbon footprint (TCF)
- High supply water temperature capability; up to 18°C
- Centrifugal compressor technology offers near silent compressor operation
- Low sound ranges: Regular Quiet (R) and Extra Quiet (X)
- Latest axial fan technology for reduced sound and power input
- Polymer-coated microchannel coils for reduced life cycle costs and reduced footprint (excluding TCC11R03Z-64 and TCC11X03Z-64)
- Spray flooded evaporators can reduce system refrigerant charge by up to 50% with up to 70% saving in the evaporator.

Optional

- Compressor acoustic enclosures minimising sound emission
- Leak detection system for F Gas compliance (standard for R1234ze models)
- Automatic refrigerant pump down in the event of a refrigerant leak, which together with leak detection, qualifies the TurboChill™ for one additional BREEAM point (for R513A models)
- Extended plenum to minimise sound
- Anti-vibration mounts reduce sound levels transmitted to building

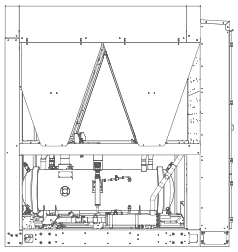


Mechanical

- R513A Single circuit 225 - 1550kW (TCC), 225 – 1650kW (TCF) / Dual circuit 355 - 855kW (TCC), 420 – 930kW (TCF)
- R1234ze Single circuit 195 – 1550kW (TCC), 225 – 1280kW (TCF) / Dual circuit 355 – 855kW (TCC), 420 – 930kW (TCF)
- 166 models, 94 of which are dual circuit models
- Turbochill™ range offers 48 free-cooling variants
- Operation up to 35°C ambient at full load, 40°C at reduced load
- TT300, TT350, TG230 and TG310 fully modulating compressors
- Spray flooded evaporator improves part load efficiencies
- Modular 'V' frame coil arrangement offers increased heat exchange area and improved air flow for increased efficiency
- Additional redundancy back-up and quicker compressor start up to full load capacity on dual circuit models
- Filter drier, sight glass and liquid, discharge and suction ball valves allowing each compressor to be individually isolated
- Easy access to components for maintenance
- Condensers can be isolated, facilitating maintenance

Optional

- Rain hood available
- Choice of refrigerant R513A or R1234ze (model dependent)
- Corrosion-resistant condenser coils for corrosive atmospheres (option for FC models, standard otherwise)
- Actuated suction ball valves (R513A models only)

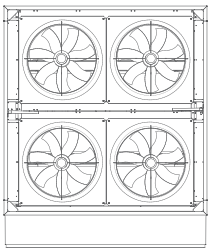


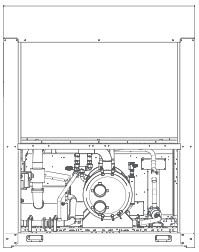
Energy-saving

- EC fans provide increased airflow, reduced noise and greater efficiencies
- Variable speed for super efficiency, tighter set point control and exact capacity match
- In-built low current start (2A)
- Oil-free operation enhances heat exchanger efficiency
- Up to two compressors across a single circuit for reduced energy consumption at part load
- Automatic rescheduling of chilled water setpoint
- Head pressure set point management achieving optimum EER

Optional

- High airflow EC fan available
- Variable supply water temperature control to save power and raise the free-cooling threshold
- Chiller Sequence Manager integrates 2 to 6 chillers into a single, efficient operating system
- Energy Manager is a compact, space-saving analyser which enables monitoring of the TurboChill's energy consumption locally and remotely via BMS connections
- Economiser circuit for increased capacity and efficiency





Hydronics

- Differential pressure transducer to indicate water flow
- Grooved water connections for simple installation

Optional

- Latest technology end suction pumps offer excellent flow rate control whilst having low vibrational characteristics
- Selection of hydronic options available include extended pipework; bypass or no bypass; single pump and run and standby (selected models only)
- Inverter-driven pumps enabling exact water flow control for the application
- Regulating or flushing bypass for enhanced resilience and maintenance
- Flow switch for flow rate detection
- Water filter safeguarding performance (standard on TCF)

Electronics & controls

- Advanced controls technology to manage and optimise performance
- Electrical supply phase loss and rotation protection
- Accessible control panel, even when unit is operational
- Single point of isolation for ease of maintenance
- Control panel mounted isolator for single phase permanent power supply
- Control panel lighting for maintenance in low light conditions
- Panel thermostatically controlled ventilation and heating
- Individual mains isolators for fans and optional pump(s)
- Ultracap power backup for the controllers and valve drivers

EU F-Gas Regulations

This product range contains R1234ze/ R513A fluorinated greenhouse gases with an IPCC-AR4 rated GWP of 7/ 631 respectively. Weight range of 75 - 480kg, representing 0.5 - 303 equivalent tonnes of CO_2.

TurboChill™ technical specifications (R513A)

Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
Regular Quiet - Single Circuit - Air Cooled							
TCC11R04S-30	225	3.26	4.50	-	-	55.9	2800 x 2200 x 2626
TCC11R06S-30	245	3.50	5.05	-	-	54.7	2800 x 2200 x 3758
TCC11R08S-30	255	3.66	5.32	-	-	54.2	2800 x 2200 x 4890
TCC11R06L-31	365	2.85	4.76	-	-	57.4	2800 x 2200 x 3758
TCC11R08L-32	395	2.94	4.88	-	-	57.3	2800 x 2200 x 4890
TCC11R10L-32	420	2.98	5.06	-	-	56.4	2800 x 2200 x 6022
TCC12R08S-33	435	3.15	4.54	-	-	58.6	2800 x 2200 x 4890
TCC12R10S-33	465	3.26	4.73	-	-	57.9	2800 x 2200 x 6022
TCC12R10L-34	560	2.91	4.95	-	-	59.7	2800 x 2200 x 6022
TCC12R12L-35	625	2.97	4.77	-	-	59.5	2800 x 2200 x 7154
TCC12R14L-35	700	2.89	4.85	-	-	59.7	2800 x 2200 x 8286
TCC12R16L-35	745	2.88	4.94	-	-	59.3	2800 x 2200 x 9418
TCC12R18L-35	790	2.79	4.94	-	-	59.3	2800 x 2200 x 10550
Regular Quiet - Dual Circuit - Air Cooled							
TCC22R08S-36	435	3.23	4.30	-	-	58.5	2800 x 2200 x 4890
TCC22R10S-36	465	3.36	4.67	-	-	57.8	2800 x 2200 x 6022
TCC22R12L-37	625	3.13	4.27	-	-	59.3	2800 x 2200 x 7154
TCC22R14L-37	700	3.09	4.53	-	-	59.4	2800 x 2200 x 8286
TCC22R16L-37	745	3.10	4.75	-	-	59.0	2800 x 2200 x 9418
TCC22R18L-37	790	3.03	4.76	-	-	59.0	2800 x 2200 x 10550
TCC23R12S-38	625	3.15	5.03	-	-	59.9	2800 x 2200 x 7154
TCC23R14S-38	650	3.25	5.17	-	-	59.4	2800 x 2200 x 8286
TCC23R16S-38	680	3.32	5.23	-	-	59.0	2800 x 2200 x 9418
TCC23R18S-38	725	3.33	5.28	-	-	58.7	2800 x 2200 x 10550
TCC23R16L-39	810	2.98	4.79	-	-	60.6	2800 x 2200 x 9418
TCC23R18L-39	835	3.06	4.91	-	-	60.1	2800 x 2200 x 10550
TCC23R20L-39	895	3.09	5.04	-	-	59.9	2800 x 2200 x 11682
TCC24R18S-40	800	3.22	5.18	-	-	60.2	2800 x 2200 x 10550
TCC24R20S-40	835	3.28	5.23	-	-	59.9	2800 x 2200 x 11682
TCC24R22L-41	1060	2.95	5.01	-	-	61.3	2800 x 2200 x 12814
TCC24R24L-41	1080	3.00	5.08	-	-	60.9	2800 x 2200 x 13946
Extra Quiet - Single Circuit - Air Cooled							
TCC11X04S-30	195	3.34	4.67	-	-	54.2	2800 x 2200 x 2626
TCC11X06S-30	215	3.74	5.16	-	-	54.3	2800 x 2200 x 3758
TCC11X08S-30	225	3.93	5.45	-	-	53.9	2800 x 2200 x 4890
TCC11X06L-31	300	3.15	4.72	-	-	54.7	2800 x 2200 x 3758
TCC11X08L-32	315	3.51	5.09	-	-	54.7	2800 x 2200 x 4890
TCC11X10L-32	330	3.66	5.32	-	-	54.8	2800 x 2200 x 6022
TCC12X08S-33	355	3.31	5.18	-	-	56.9	2800 x 2200 x 4890
TCC12X10S-33	380	3.54	5.31	-	-	56.9	2800 x 2200 x 6022
TCC12X10L-34	500	2.99	4.96	-	-	57.3	2800 x 2200 x 6022
TCC12X12L-35	570	3.14	5.29	-	-	57.3	2800 x 2200 x 7154
TCC12X14L-35	600	3.28	5.35	-	-	57.3	2800 x 2200 x 8286
TCC12X16L-35	635	3.35	5.31	-	-	57.2	2800 x 2200 x 9418
TCC12X18L-35	680	3.36	5.39	-	-	57.2	2800 x 2200 x 10550
Extra Quiet - Dual Circuit - Air Cooled							
TCC22X08S-36	355	3.32	4.25	-	-	56.9	2800 x 2200 x 4890
TCC22X10S-36	380	3.55	4.73	-	-	56.9	2800 x 2200 x 6022
TCC22X12L-37	570	3.20	4.70	-	-	57.3	2800 x 2200 x 7154
TCC22X14L-37	600	3.36	4.90	-	-	57.3	2800 x 2200 x 8286
TCC22X16L-37	635	3.44	4.82	-	-	57.2	2800 x 2200 x 9418
TCC22X18L-37	680	3.46	4.97	-	-	57.2	2800 x 2200 x 10550
TCC23X12S-38	570	3.21	5.18	-	-	58.4	2800 x 2200 x 7154
TCC23X14S-38	590	3.38	5.36	-	-	58.4	2800 x 2200 x 8286
TCC23X16S-38	610	3.50	5.45	-	-	58.4	2800 x 2200 x 9418
TCC23X18S-38	640	3.58	5.54	-	-	58.3	2800 x 2200 x 10550
TCC23X16L-39	740	3.04	5.10	-	-	58.7	2800 x 2200 x 9418
TCC23X18L-39	760	3.18	5.14	-	-	58.7	2800 x 2200 x 10550
TCC23X20L-39	800	3.27	5.25	-	-	58.6	2800 x 2200 x 11682
TCC24X18S-40	700	3.36	5.50	-	-	59.4	2800 x 2200 x 10550
TCC24X20S-40	735	3.45	5.54	-	-	59.3	2800 x 2200 x 11682
TCC24X22L-41	1010	3.03	5.23	-	-	59.7	2800 x 2200 x 12814
TCC24X24L-41	1040	3.11	5.29	-	-	59.6	2800 x 2200 x 13946

TurboChill™ technical specifications (R513A) Continued

Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
Regular Quiet - Single Circuit - FreeCool							
TCF11R06S-42	260	3.63	4.74	257.0	17.90	54.9	2800 x 2200 x 3758
TCF11R08S-42	280	3.74	4.96	310.7	16.23	54.5	2800 x 2200 x 4890
TCF11R06L-43	365	3.09	4.40	293.7	20.45	57.4	2800 x 2200 x 3758
TCF11R08L-44	400	3.06	4.57	364.1	19.01	57.2	2800 x 2200 x 4890
TCF11R10L-45	405	3.37	4.82	415.7	17.37	55.7	2800 x 2200 x 6022
TCF12R08S-46	440	3.29	4.60	377.7	19.72	58.5	2800 x 2200 x 4890
TCF12R10S-34	470	3.50	4.74	443.6	18.53	57.8	2800 x 2200 x 6022
TCF12R12S-34	500	3.59	4.98	505.2	17.59	57.4	2800 x 2200 x 7154
TCF12R12L-47	660	3.13	4.59	566.6	19.72	59.7	2800 x 2200 x 7154
TCF12R14L-47	705	3.19	4.70	638.9	19.06	59.2	2800 x 2200 x 8286
TCF12R16L-47	750	3.19	4.74	709.0	18.51	59.0	2800 x 2200 x 9418
TCF12R18L-47	800	3.13	4.73	779.7	18.09	58.9	2800 x 2200 x 10550
Regular Quiet - Dual Circuit - FreeCool							
TCF22R10S-48	460	3.61	4.47	439.5	18.36	57.7	2800 x 2200 x 6022
TCF22R12L-49	660	3.30	4.21	566.6	19.72	59.5	2800 x 2200 x 7154
TCF22R14L-49	680	3.42	4.42	629.4	18.78	58.8	2800 x 2200 x 8286
TCF22R16L-49	720	3.47	4.61	696.8	18.19	58.4	2800 x 2200 x 9418
TCF22R18L-49	800	3.36	4.57	779.7	18.09	58.6	2800 x 2200 x 10550
TCF23R12S-50	660	3.30	4.58	566.6	19.72	60.1	2800 x 2200 x 7154
TCF23R14S-50	680	3.43	4.74	629.4	18.78	59.5	2800 x 2200 x 8286
TCF23R16S-50	700	3.53	4.82	688.4	17.97	59.0	2800 x 2200 x 9418
TCF23R18S-50	735	3.58	4.90	750.8	17.42	58.7	2800 x 2200 x 10550
TCF23R18L-51	880	3.24	4.63	811.7	18.84	60.2	2800 x 2200 x 10550
TCF23R20L-51	900	3.33	4.74	871.0	18.19	59.8	2800 x 2200 x 11682
TCF24R18S-52	840	3.40	4.83	795.9	18.47	60.3	2800 x 2200 x 10550
TCF24R20S-52	860	3.48	5.03	853.7	17.83	59.9	2800 x 2200 x 11682
TCF24R22L-41	1035	3.14	4.69	976.3	18.54	61.0	2800 x 2200 x 12814
TCF24R24L-41	1090	3.19	4.70	1049.0	18.26	60.8	2800 x 2200 x 13946
Extra Quiet - Single Circuit - FreeCool							
TCF11X06S-42	225	3.78	4.80	209.7	41.66	54.2	2800 x 2200 x 3758
TCF11X08S-42	240	3.99	5.06	259.3	38.65	54.0	2800 x 2200 x 4890
TCF11X06L-43	280	3.25	4.32	224.3	44.57	54.6	2800 x 2200 x 3758
TCF11X08L-44	335	3.35	4.67	289.5	43.15	54.6	2800 x 2200 x 4890
TCF11X10L-45	345	3.66	4.90	340.0	40.53	54.7	2800 x 2200 x 6022
TCF12X08S-46	365	3.48	4.87	297.1	44.28	56.9	2800 x 2200 x 4890
TCF12X10S-34	420	3.53	4.88	362.3	43.19	56.8	2800 x 2200 x 6022
TCF12X12S-34	440	3.70	4.99	416.3	41.36	56.8	2800 x 2200 x 7154
TCF12X12L-47	630	2.95	4.61	463.4	46.04	57.2	2800 x 2200 x 7154
TCF12X14L-47	640	3.17	4.77	520.3	44.31	57.2	2800 x 2200 x 8286
TCF12X16L-47	670	3.28	4.88	579.1	43.15	57.1	2800 x 2200 x 9418
TCF12X18L-47	700	3.34	4.94	636.5	42.16	57.1	2800 x 2200 x 10550
Extra Quiet - Dual Circuit - FreeCool							
TCF22X10S-48	420	3.62	4.43	362.3	43.19	56.8	2800 x 2200 x 6022
TCF22X12L-49	630	3.12	4.01	463.4	46.04	57.2	2800 x 2200 x 7154
TCF22X14L-49	640	3.36	4.40	520.3	44.31	57.2	2800 x 2200 x 8286
TCF22X16L-49	670	3.49	4.57	579.1	43.15	57.1	2800 x 2200 x 9418
TCF22X18L-49	700	3.57	4.67	636.5	42.16	57.1	2800 x 2200 x 10550
TCF23X12S-50	630	3.13	4.58	463.4	46.04	58.4	2800 x 2200 x 7154
TCF23X14S-50	655	3.33	4.76	523.8	44.61	58.3	2800 x 2200 x 8286
TCF23X16S-50	670	3.50	4.85	579.1	43.15	58.3	2800 x 2200 x 9418
TCF23X18S-50	685	3.62	4.98	632.0	41.86	58.2	2800 x 2200 x 10550
TCF23X18L-51	845	3.10	4.57	674.1	44.65	58.6	2800 x 2200 x 10550
TCF23X20L-51	860	3.24	4.76	729.8	43.50	58.5	2800 x 2200 x 11682
TCF24X18S-52	795	3.33	4.88	662.1	43.86	59.3	2800 x 2200 x 10550
TCF24X20S-52	815	3.45	4.97	717.7	42.79	59.2	2800 x 2200 x 11682
TCF24X22L-41	955	3.03	4.78	805.1	43.63	59.6	2800 x 2200 x 12814
TCF24X24L-41	1000	3.12	4.81	867.3	43.08	59.5	2800 x 2200 x 13946

TurboChill™ technical specifications (R1234ze)

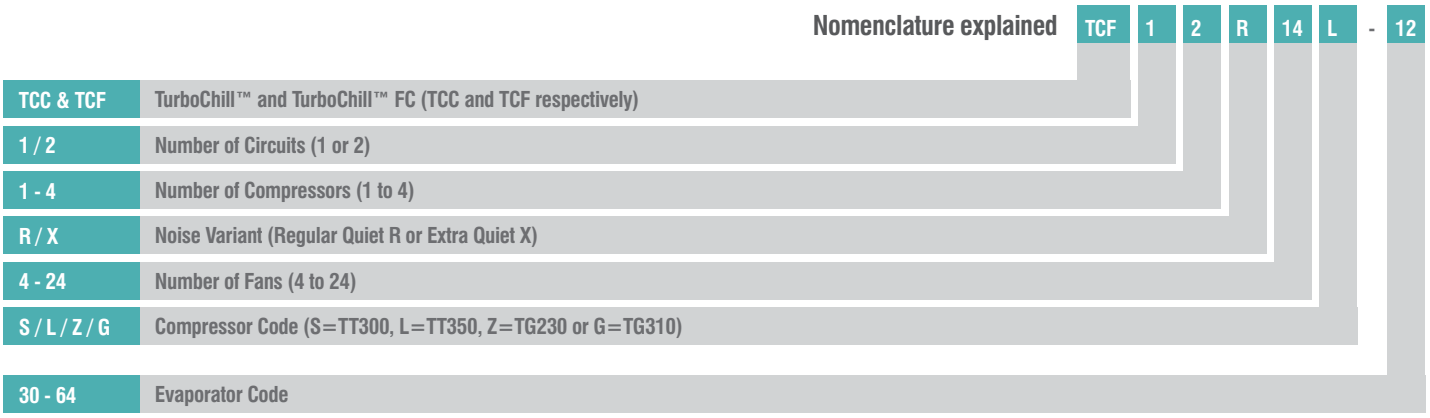
Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
Regular Quiet - Single Circuit - Air Cooled							
TCC11R03Z-64	190	3.14	4.58	-	-	54.1	2180 x 1300 x 3746
TCC11R04G-53	230	3.26	4.55	-	-	56.4	2800 x 2200 x 2626
TCC11R06G-53	250	3.53	5.14	-	-	55.1	2800 x 2200 x 3758
TCC11R08G-53	260	3.70	5.44	-	-	54.7	2800 x 2200 x 4890
TCC12R08G-55	445	3.17	4.82	-	-	59.0	2800 x 2200 x 4890
TCC12R10G-55	475	3.29	4.98	-	-	58.4	2800 x 2200 x 6022
Regular Quiet - Dual Circuit - Air Cooled							
TCC22R08G-58	445	3.23	4.46	-	-	59.0	2800 x 2200 x 4890
TCC22R10G-58	475	3.37	4.79	-	-	58.3	2800 x 2200 x 6022
TCC23R12G-60	620	3.21	5.08	-	-	60.1	2800 x 2200 x 7154
TCC23R14G-60	645	3.31	5.24	-	-	59.6	2800 x 2200 x 8286
TCC23R16G-60	695	3.35	5.29	-	-	59.4	2800 x 2200 x 9418
TCC23R18G-60	740	3.37	5.35	-	-	59.2	2800 x 2200 x 10550
TCC24R18G-62	815	3.26	5.30	-	-	60.5	2800 x 2200 x 10550
TCC24R20G-62	855	3.31	5.36	-	-	60.3	2800 x 2200 x 11682
Extra Quiet - Single Circuit - Air Cooled							
TCC11X03Z-64	175	2.99	4.52	-	-	50.7	2180 x 1300 x 3746
TCC11X04G-53	195	3.38	4.75	-	-	54.6	2800 x 2200 x 2626
TCC11X06G-53	215	3.79	5.23	-	-	54.7	2800 x 2200 x 3758
TCC11X08G-53	225	4.01	5.54	-	-	54.3	2800 x 2200 x 4890
TCC12X08G-55	355	3.36	5.44	-	-	57.3	2800 x 2200 x 4890
TCC12X10G-55	380	3.59	5.62	-	-	57.3	2800 x 2200 x 6022
Extra Quiet - Dual Circuit - Air Cooled							
TCC22X08G-58	355	3.34	4.61	-	-	57.3	2800 x 2200 x 4890
TCC22X10G-58	380	3.58	4.88	-	-	57.3	2800 x 2200 x 6022
TCC23X12G-60	570	3.25	5.17	-	-	58.9	2800 x 2200 x 7154
TCC23X14G-60	585	3.43	5.38	-	-	58.8	2800 x 2200 x 8286
TCC23X16G-60	615	3.55	5.47	-	-	58.7	2800 x 2200 x 9418
TCC23X18G-60	660	3.61	5.58	-	-	58.7	2800 x 2200 x 10550
TCC24X18G-62	700	3.33	5.59	-	-	59.8	2800 x 2200 x 10550
TCC24X20G-62	735	3.48	5.66	-	-	59.7	2800 x 2200 x 11682
Regular Quiet - Single Circuit - FreeCool							
TCF11R06G-54	275	3.65	4.78	263.3	18.33	55.6	2800 x 2200 x 3758
TCF11R08G-54	285	3.88	5.07	313.3	16.36	54.7	2800 x 2200 x 4890
TCF12R08G-56	445	3.40	4.79	379.4	19.81	58.8	2800 x 2200 x 4890
TCF12R10G-57	475	3.63	4.96	445.6	18.61	58.2	2800 x 2200 x 6022
TCF12R12G-57	505	3.74	5.08	507.5	17.67	57.7	2800 x 2200 x 7154

TurboChill™ technical specifications (R1234ze) Continued

Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
Regular Quiet - Dual Circuit - FreeCool							
TCF22R10G-59	475	3.68	4.56	445.6	18.61	58.2	2800 x 2200 x 6022
TCF23R12G-61	660	3.40	4.63	566.6	19.72	60.3	2800 x 2200 x 7154
TCF23R14G-61	680	3.54	4.80	629.4	18.78	59.7	2800 x 2200 x 8286
TCF23R16G-61	710	3.65	4.87	692.6	18.08	59.4	2800 x 2200 x 9418
TCF23R18G-61	740	3.72	4.96	753.3	17.48	59.1	2800 x 2200 x 10550
TCF24R18G-63	890	3.48	4.89	815.5	18.93	60.8	2800 x 2200 x 10550
TCF24R20G-63	930	3.55	4.96	883.1	18.45	60.5	2800 x 2200 x 11682
Extra Quiet - Single Circuit - FreeCool							
TCF11X06G-54	225	3.92	4.88	209.7	41.66	54.6	2800 x 2200 x 3758
TCF11X08G-54	240	4.18	5.17	259.3	38.65	54.4	2800 x 2200 x 4890
TCF12X08G-56	420	3.23	4.82	308.9	46.04	57.3	2800 x 2200 x 4890
TCF12X10G-57	440	3.61	5.04	367.4	43.81	57.2	2800 x 2200 x 6022
TCF12X12G-57	470	3.79	5.15	425.3	42.25	57.2	2800 x 2200 x 7154
Extra Quiet - Dual Circuit - FreeCool							
TCF22X10G-59	420	3.70	4.55	362.3	43.19	57.2	2800 x 2200 x 6022
TCF23X12G-61	630	3.23	4.61	463.4	46.04	58.8	2800 x 2200 x 7154
TCF23X14G-61	645	3.46	4.83	521.4	44.41	58.7	2800 x 2200 x 8286
TCF23X16G-61	660	3.64	4.93	576.4	42.95	58.7	2800 x 2200 x 9418
TCF23X18G-61	690	3.76	5.05	633.5	41.96	58.6	2800 x 2200 x 10550
TCF24X18G-63	845	3.38	4.92	674.1	44.65	59.7	2800 x 2200 x 10550
TCF24X20G-63	865	3.52	5.03	731.1	43.58	59.6	2800 x 2200 x 11682

1) Nominal cooling capacity and EER for air cooled units is at 7/13°C water and 35°C ambient temperature*
2) Nominal cooling capacity and EER for Free Cooling units is at 10/16°C water and 35°C ambient temperature*
3) ESEER based on Eurovent standard calculation method
4) Nominal free-cooling capacity at 16°C Return, 20% ethylene glycol, flow rate based on the nominal duty and a 2°C ambient temperature
5) Free-cooling EER at 16°C return water; 20% ethylene glycol; 2°C ambient temperature and based on TOTAL input power of fans
* Based on TOTAL input power of compressors and fans
For application specific data please contact Airedale
Performance data calculated in accordance with BSEN 14511-2011 and Eurovent 6/6

Nomenclature explained



Performance tested

and proven efficiencies

Quality is assured by our on-site, world-class testing and production facilities and the application of the latest manufacturing techniques and continuous improvement.

High efficiency cooling at John Lewis

TurboChill™ FreeCool with low GWP refrigerant R1234ze is currently cooling shoppers visiting the new £15 million John Lewis store in York.

John Lewis was built on the principles of being a responsible business and as part of its wider corporate social responsibility strategy, is committed to reducing its carbon footprint. The TurboChill™ system was selected, as it provided the best solution for John Lewis, creating perfect synergy to a range of stringent sustainable design requirements.

National Gallery, London

> Airedale ticked all the boxes in terms of footprint, build quality, new technology such as the centrifugal compressor, and high efficiency. The National Gallery is a high user of energy because of its large areas of air conditioned space. The Gallery's goal is to reduce energy consumption and the TurboChill™ assists that.
>
> **Martin Goswell**
> Project Engineer, Troupe, Bywaters and Anders

IBM data centre, London

> I believe we are the first company in the world to install a TurboChill™ FreeCool chiller. When the data centre is operating in free cooling mode, the PUE has been measured at 1.36 and we expect that to reduce further as we install more equipment.
>
> **Bob Finn**
> Programme Manager, EDF Energy

Total support

Whenever you need it

At Airedale, we don't just manufacture and supply cooling and refrigeration products; we also provide a broad range of supporting services to ensure our customers receive the best possible aftersales care.

With more than 40 years' experience in business critical cooling, investing in an Airedale cooling or refrigeration solution means that you can benefit from our advice, expertise and technical support too. From design and selection, through to commissioning and beyond, we make sure your system reduces your total cost of ownership, whilst providing maximum availability and longevity.

Service plans

Maximising your system's effectiveness 24/7

An Airedale service plan provides a planned, preventative maintenance package to sustain the optimum efficiency of your system, enabling the user to see real savings in energy costs and reduced carbon emissions.

With Airedale, you can rest assured that help is never far away. Our 24/7 emergency helpline and call out service is available 365 days of the year, ensuring that we are always on hand to provide expert advice and immediate help, day or night.

A guaranteed emergency response time means that a qualified Airedale engineer will be with you in no time, therefore maximising your system's uptime. Service plans also ensure F Gas compliance and incorporate a full parts and labour warranty for the first 12 months.

For more information visit **www.airedale.com**

* For customers outside the UK, our international distributors trained by Airedale would be pleased to offer service on Airedale units

Talk directly with an experienced engineer

Find out how we design our systems to reduce your whole life costs. Our highly experienced engineers are adept at tailoring our systems to suit your requirements.

+44 (0)113 239 1000

Have complete control of your site

Customers with critical sites can benefit from our remote monitoring facility. Aftersales services include chiller sequencing, network setup and integration as well as a live demonstration and training centre at our head office.

24/7 support; maintenance and spares

Immediate help on hand to keep your critical cooling system operational. Realise the full potential of your system; improve its longevity and efficiency and be F Gas compliant. Avoid downtime with our fast, efficient spares service.

Develop your skills

Learn more about your cooling system by attending an air conditioning and refrigeration course in our purpose-built training school. Train on high-tech cooling systems and fully operational rigs in our dedicated workshops. Industry recognised courses also available. Email **training@airedale.com** for further details.

Distributed by:

Airedale International Air Conditioning Limited | Leeds Road, Rawdon, Leeds LS19 6JY, England
Tel: +44 (0) 113 239 1000 **Fax:** +44 (0) 113 250 7219 **E-Mail:** enquiries@airedale.com

www.airedale.com

A MODINE Company