Airedale
APPLIED THERMAL INNOVATION

OptiChill

Air Cooled Screw Chiller
500 kW - 1100 kW

R134a

INSTALLATION & MAINTENANCE

Qualified for Energy Technology List
www.eca.gov.uk
TM
Authorised User No. 00007

BSI
UKAS
ENVIRONMENTAL MANAGEMENT
003
ISO 14001
EMS52086

BSI
UKAS
QUALITY MANAGEMENT
003
ISO 9001
FM00542

About Airedale Products & Customer Services

WARRANTY, COMMISSIONING & MAINTENANCE

The equipment carries the Airedale ***unit parts and labour warranty*** in respect of non-consumable parts, for a period of ***12 months*** from the date of commissioning or ***18 months*** from the date of despatch which ever is the sooner. (Excludes the cost of any specialist access or lifting equipment.) Commissioning will be carried out by Airedale International Air Conditioning Ltd or an approved Airedale commissioning company.

To further protect your investment in Airedale products, Airedale Service 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 Service 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.

Where applicable, effective removal of condensate is achieved by gradient drainage to outlets and where used, humidification systems produce sterile, non-toxic steam during normal operation.

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

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) 113 238 7789	***uk.sales@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***

Contents

General Statement

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 ⚠ **1 Installation, service and maintenance of Airedale equipment should only be carried out by technically trained competent personnel.**

CAUTION ⚠ **2 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.**

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

4 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.

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

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

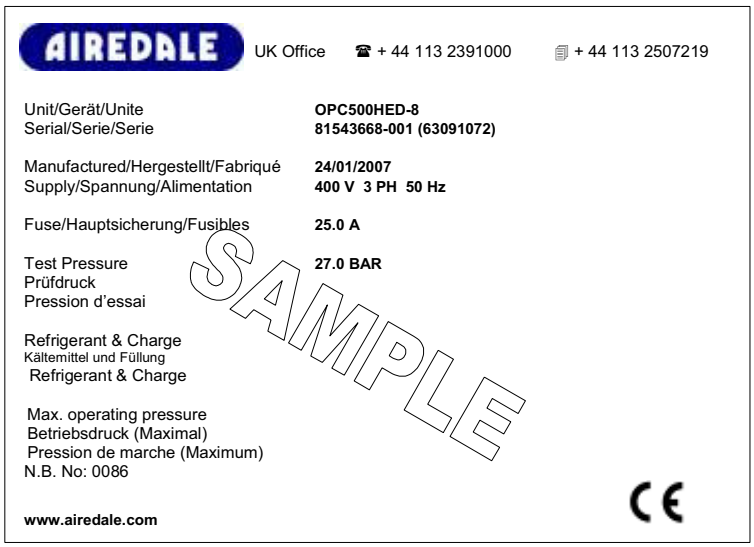
SPARES

For ease of identification when ordering spares or contacting Airedale about your unit, please quote the unit type, unit serial number and the date of manufacture, which can be found on the unit serial plate.

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.

SERIAL PLATE

The serial plate can be located to the inside of the control panel door, refer to ***Parts Identification***, on page 58.



Warranty

GENERAL

To be read in conjunction with Airedale International Air Conditioning Ltd standard Conditions of Sale and any related quotation.

The equipment carries Airedale's standard **Parts** (non consumable) **& Labour** warranty for a period of **12 months** from the date of commissioning or **18 months** from the date of despatch, which ever is the sooner. Commissioning must be carried out by Airedale or an approved Airedale company.

WARRANTY IS ONLY VALID IN THE EVENT THAT:

1 In the period between delivery and commissioning the equipment:
   - is properly protected & serviced
   - water flow safety devices are in place and fully operational

2 The equipment is serviced and maintained by Airedale or an approved Airedale company in accordance with the Installation & Maintenance manual provided, during the Warranty Period.

In the event of a problem being reported, Airedale will cover the full cost of rectification (excluding costs for any specialist access or lifting equipment) if warranty is valid under these conditions.

Any spare part supplied by Airedale under the warranty shall be warranted for the unexpired period of the warranty or 3 months from delivery whichever period is the longer, with the exception of compressors on which a further 12 months warranty is granted.

PROCEDURE

- The on site contractor or service company place an official order on Airedale for the replacement part including site labour if required, Airedale will acknowledge this order with detailed prices for components, travel and labour rates
- Should warranty be accepted, following inspection of the faulty component, a credit note will be issued against the invoice raised in line with the acknowledgement
- Should warranty be refused the invoice raised against the acknowledgement becomes payable on normal terms
- Airedale reserves the right to carry out site warranty labour work using their own direct labour or by sub contracting to an approved company of their choice

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

GENERAL

Dead on arrival or manufacturing defects are the responsibility of Airedale and should be reported immediately.

In the event of a warranty failure, dead on arrival or manufacturing defect, the Airedale Service department should be contacted and on receipt of an order, an Airedale engineer (or representative) will be directed to site as soon as possible.

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.

General Description

UNIT IDENTIFICATION

OPC	800	HED	12

OPC	OptiChill Screw Chiller
500 - 1100	Model Size (Expressed as Nominal Cooling in kW)
HED	High Efficiency - Dual Circuit
HEDQ	High Efficiency - Dual Circuit - Quiet
HE+D	High Efficiency Plus - Dual Circuit
HE+DQ	High Efficiency Plus - Dual Circuit - Quiet
8 - 20	Number of Fans

INTRODUCTION

The Airedale range of OptiChill air cooled liquid screw chillers covers the nominal capacity range 500kW to 1100kW in 13 models sizes.

Each model size is offered in High Efficiency (**HE**) or High Efficiency Plus (**HE+**) and available as Standard (**D**) or Quiet (**DQ**) sound level variations to meet a wide range of applications.

Attention has been placed on offering a low energy high output performance and flexible product, while keeping the sound and footprint to an absolute minimum.

CE DIRECTIVE

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

Electromagnetic Compatibility Directive (EMC)	**89/336/EEC**
Low Voltage Directive (LVD)	**73/23/EEC**
Machinery Directive (MD)	**89/392/EEC in the version 98/37/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.

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

Operating Temperature (TS),	TS =	Min -5°C to Max 120°C *
Maximum Operating Pressure (PS)	PS =	High Side 27.6 Barg

*Based upon the maximum machine running temperatures.

REFRIGERANTS

The range has been designed and optimised for operation with ozone benign R134a refrigerant.

FEATURES	HED High Efficiency	HEDQ High Efficiency - Quiet	HE+D High Efficiency Plus	HE+DQ High Efficiency Plus - Quiet
● Standard ○ Optional Extra - Not available				
Construction				
Acoustically lined compressor enclosure	-	●	-	●
Standard Height Condenser Fan Discharge Plenum (300mm)	○	○	○	○
Extended Condenser Fan Discharge Plenum (800mmm)	○	○	○	○
Evaporator / Waterside				
Shell & Tube evaporator with immersion heater & thermostat	●	●	●	●
Grooved water connections and counter pipe assembly	●	●	●	●
Flow switch	○	○	○	○
Waterside Differential Pressure Switch	○	○	○	○
Pumps - Fixed Speed	○	○	○	○
Low Energy Pumps - Variable Speed incorporating Electronic Flow Metering System	○	○	○	○
Condenser				
Condenser Coils - Enhanced	Standard Size	Larger Size	Standard Size	Larger Size
Corrosion Resistant Condenser Coils	○	○	○	○
Coil Guards	○	○	○	○
Head Pressure Control - Voltage Regulated	●	-	-	-
Head Pressure Control - Electronically Commutated (EC) Regulated	○	●	●	●
Low speed Axial condenser fan with Sickle blades	●	-	●	-
Extra Low speed Axial condenser fan with Sickle blades	-	●	-	●
Refrigeration				
Twin screw compressors with low current Star/Delta Start	●	●	●	●
Dual independent refrigeration circuits	●	●	●	●
Electronic Expansion Valve (EEV)	●	●	●	●
Economiser with dedicated EEV	●	●	●	●
Maintainable Dual Pressure relief valve assembly	●	●	●	●
Discharge line mufflers and noise traps	-	●	-	●
Liquid line sight glass	●	●	●	●
Liquid and Discharge line ball valves	●	●	●	●
Large capacity filter drier with replaceable cores	●	●	●	●
Manual reset HP/LP Switch (LP via microprocessor)	●	●	●	●
Suction and liquid pressure transducers	●	●	●	●
Anti Vibration Mounts	○	○	○	○
Leak Detection System	-	○	-	○
Electrical				
Emergency stop	●	●	●	●
Individual door isolated mains power compartments for each refrigeration CCT, fans & pump option	●	●	●	●
Dedicated bus-bar chamber for incoming 3-phase & earth mains power supply	●	●	●	●
Closed transition Star/Delta Start	○	○	○	○
Connections for External Trace Heating	●	●	●	●
Power Factor Correction	●	○	○	○
Controls				
AIRETronix Microprocessor Controller	●	●	●	●
Energy Manager	○	○	○	○
Electronic compressor protection module with phase & rotation protection	●	●	●	●
Phase Rotation Protection	●	●	●	●
Sequence Control - Chiller Sequence Manager	○	○	○	○
Remote Setpoint Adjust 0-10 V Signal	○	○	○	○
BMS interface Card	○	○	○	○

General Description

STANDARD FEATURES

Construction

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

Unit panels are manufactured from galvanised sheet steel coated with epoxy baked powder paint to provide a durable and weatherproof finish.

Standard unit colour is Light Grey (RAL 7035).

Compressors and evaporator are mounted on a rigid galvanised heavy-duty sub frame. Fully weatherproofed electrical panels are situated at one end of the unit.

STANDARD FEATURES

Compressor

Twin screw semi hermetic compressors comprising:

- Electronic Protection Module featuring:
  Motor, discharge gas and oil monitoring
  Rotation direction protection
  Phase failure protection
- Low current Star/Delta Start
- Internal pressure relief
- Discharge non return valve
- Oil separator
- Oil sight glass
- Oil heater
- Slide valve stepped capacity control
- Suction gas motor cooling

The compressors are mounted to the rigid galvanised heavy duty sub-frame with the use of vibration reducing isolation.

Liquid injection is not required under normal operating conditions, leading to an increase in cooling and efficiency

Closed transition Star/Delta compressor start is available as an optional extra.

Refrigeration

Each refrigeration circuit is supplied with the following:

- Full operating charge of R134a
- Electronic Expansion Valves (EEV)
- Discharge line ball valve
- Liquid line ball valve
- Large capacity filter drier with replaceable cores
- Liquid line sight glass
- Low pressure switch with Auto reset
- High pressure switch with manual reset
- Suction and liquid pressure transducers
- Discharge line mufflers (DQ Models)

General Description

STANDARD FEATURES

Controls

As standard, the AIRETronix microprocessor controller can provide 8 stages of capacity control.

Optionally, the controller is designed to provide capabilities for;

- Building Management Systems (BMS)
- Sequencing (Master/Slave and Run/Standby)

to meet all your system requirements, ***please specify at order***.

Unit initial set up details can be found in the ***Controls*** section.

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

Electrical

A weatherproof electrical power and controls panel is situated at the end of the unit and contains:

- Individual mains power compartments for each refrigeration circuit
- Separate door locking electrical isolation for each mains compartment
- Dedicated bus-bar chamber for connection of incoming 3-phase and earth mains power supply

refer to ***Interconnecting wiring***, on page 31

- Emergency Stop fitted to controls compartment door
- Separate, fully accessible, controls compartment, allowing adjustment of control set points whilst the unit is operational
- Circuit breakers for protection of all major unit components
- Phase rotation relay incorporating phase loss protection (compressor module)

CAUTION **A fused and isolated electrical supply of the appropriate phase, frequency and voltage should be installed.**

The electrical power and control panel is wired to the latest European standards and codes of practice.

Mains supply is 3 phase and a neutral is not required, refer to ***Interconnecting wiring***, on page 31.

Separate 230V permanent supply is required for the controls and safety features.

Electrical terminals for external evaporator pipework trace heating (230V/500W) are provided.

For further electrical information refer to ***Installation Data***, on page 30.

General Description

OPTIONAL EXTRAS

Loose Item

- Anti Vibration Mounts - Instructions supplied with item
- Flow Switch
- Chiller Sequence Manager

CAUTION **It is only possible to set up a sequencing following completion of interconnecting communication wiring. Airedale Service can arrange sequence setup on request (UK Mainland).**

Factory Fitted

- Power Factor Correction
- Electronically Commutated (EC) Fan Motor - Standard feature to HEDQ, HE+D & HE+DQ
- Energy Manager
- Pump - Inverter Driven - Variable Speed for Constant Water Flow
- Pump - ac Motor - Fixed Speed

} Assembly Instructions supplied with item

- Corrosion Resistant Coated Coils
- Coil Guards
- Discharge Air Plenum - Condenser Fan
- Extended Discharge Air Plenum - Condenser Fan
- Maintainable Dual Pressure Relief Valve
- R134a Leak Detection System
- Closed Transition Star/Delta Compressor Start
- Evaporator Differential Pressure Sensor
- Remote Setpoint Adjust
- BMS Interface Card

- Refer to ***Commissioning Data***, on page 50 for details

Optional Unit Cover

Commissioning
Chillerguard® Maintenance(1)

} For details and a competitive quotation, contact Airedale Service.

(1) UK Mainland Sites

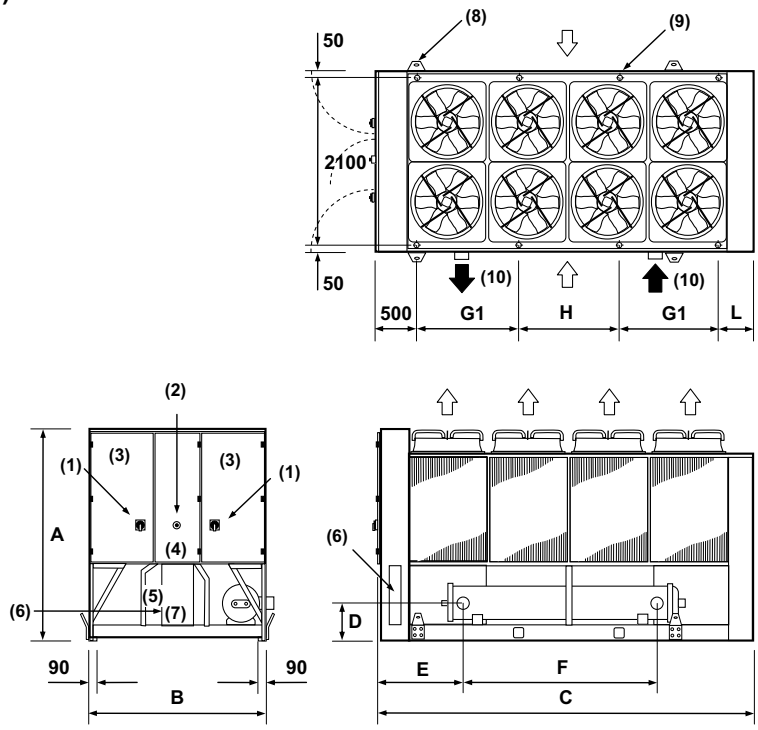
Notes:

Dimensional Data

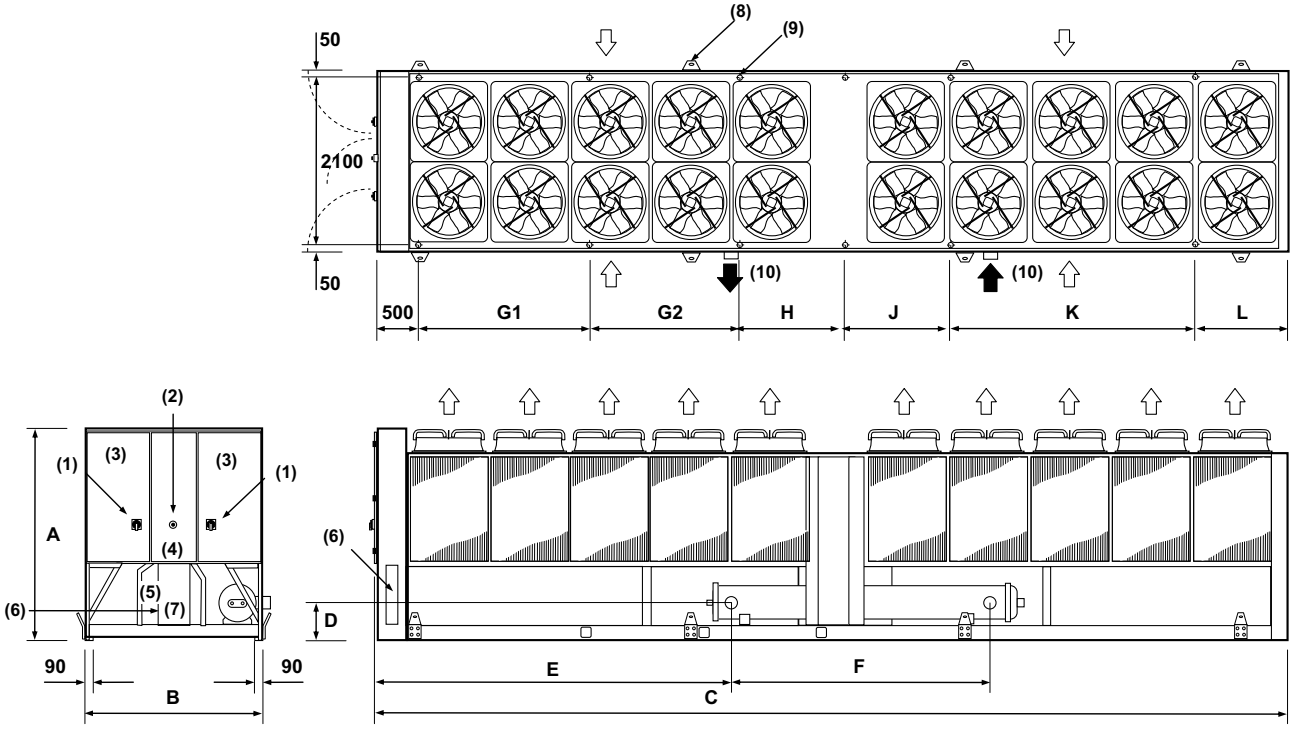
IMPORTANT **The following information is for general guidance; refer to the certified drawings provided for installation.**

STANDARD UNITS

8 - 10 Fan Units (mm)



12 - 20 Fan Units (mm)



Dimensional Data

HIGH EFFICIENCY - STANDARD UNITS

		A	B	C	D	E	F	G1	G2	H	J	K	L	(10)
OPC500HED8	mm	2600	2200	4675	460	1056	2412	1250	N/A	1250	N/A	N/A	425	DN150 PN16
OPC525HED8	mm	2600	2200	4675	460	1056	2412	1250	N/A	1250	N/A	N/A	425	DN150 PN16
OPC550HED8	mm	2600	2200	4675	460	1056	2412	1250	N/A	1250	N/A	N/A	425	DN150 PN16
OPC600HED10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC650HED10	mm	2600	2200	5675	510	1582	2360	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC700HED12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC750HED12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC800HED12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC850HED12	mm	2600	2200	7100	510	2304	3210	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC900HED14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC950HED14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC1000HED16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC1100HED16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16

		A	B	C	D	E	F	G1	G2	H	J	K	L	(10)
OPC500HEDQ10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC525HEDQ10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC550HEDQ10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC600HEDQ10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC650HEDQ10	mm	2600	2200	5675	460	1556	2412	1750	N/A	1250	N/A	N/A	425	DN150 PN16
OPC700HEDQ14	mm	2600	2200	8100	510	2730	2360	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC750HEDQ14	mm	2600	2200	8100	510	2730	2360	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC800HEDQ14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC850HEDQ14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC900HEDQ16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC950HEDQ16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC1000HEDQ18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1100HEDQ18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16

HIGH EFFICIENCY PLUS - STANDARD UNITS

		A	B	C	D	E	F	G1	G2	H	J	K	L	(10)
OPC500HE+D8	mm	2600	2200	4675	510	1082	2360	1250	N/A	1250	N/A	N/A	425	DN200 PN16
OPC525HE+D10	mm	2600	2200	5675	510	1582	2360	1750	N/A	1250	N/A	N/A	425	DN200 PN16
OPC550HE+D10	mm	2600	2200	5675	510	1582	2360	1750	N/A	1250	N/A	N/A	425	DN200 PN16
OPC600HE+D10	mm	2600	2200	5675	510	1582	2360	1750	N/A	1250	N/A	N/A	425	DN200 PN16
OPC650HE+D10	mm	2600	2200	5675	510	1157	3210	1750	N/A	1250	N/A	N/A	425	DN200 PN16
OPC700HE+D12	mm	2600	2200	7100	510	2304	3210	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC750HE+D12	mm	2600	2200	7100	510	2304	3210	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC800HE+D14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC850HE+D14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC900HE+D16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC950HE+D18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1000HE+D18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1100HE+D18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16

		A	B	C	D	E	F	G1	G2	H	J	K	L	(10)
OPC500HE+DQ12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC525HE+DQ12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC550HE+DQ12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC600HE+DQ12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC650HE+DQ12	mm	2600	2200	7100	510	2730	2360	1850	N/A	1200	1175	1775	600	DN200 PN16
OPC700HE+DQ14	mm	2600	2200	8100	510	2304	3210	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC750HE+DQ16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC800HE+DQ16	mm	2600	2200	9100	510	3304	3210	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC850HE+DQ18	mm	2600	2200	10100	510	3304	3210	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC900HE+DQ20	mm	2600	2200	11100	510	4304	3210	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC950HE+DQ20	mm	2600	2200	11100	510	4304	3210	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC1000HE+DQ20	mm	2600	2200	11100	510	4304	3210	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC1100HE+DQ20	mm	2600	2200	11100	510	4304	3210	2000	2000	1400	1400	2700	1100	DN200 PN16

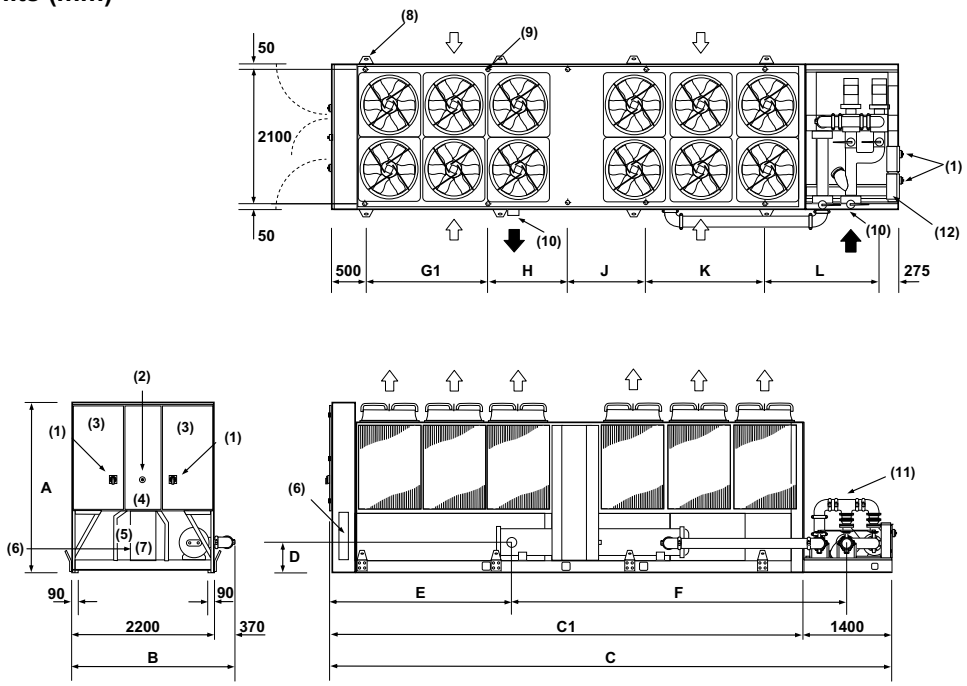
(1) Mains Electric Isolator(s), for unit isolation refer to (6).
(2) Emergency Stop.
(3) Mains Electric Panel(s), for unit isolation refer to (6).
(4) Microprocessor Control Panel.
(5) Compressor Enclosure (DQ Models Only).
(6) Mains Cable Entry to Busbar, unit incoming mains isolation supplied by others.
(7) Busbar Chamber.
(8) Lifting Lugs (removable).
(9) 20mm Ø Mounting Holes: 8 - 10 Fan Unit x 8
12 - 18 Fan Unit x 10
20 Fan Unit x 12
(10) Water Connections.

Dimensional Data

IMPORTANT **The following information is for general guidance; refer to the certified drawings provided for installation.**

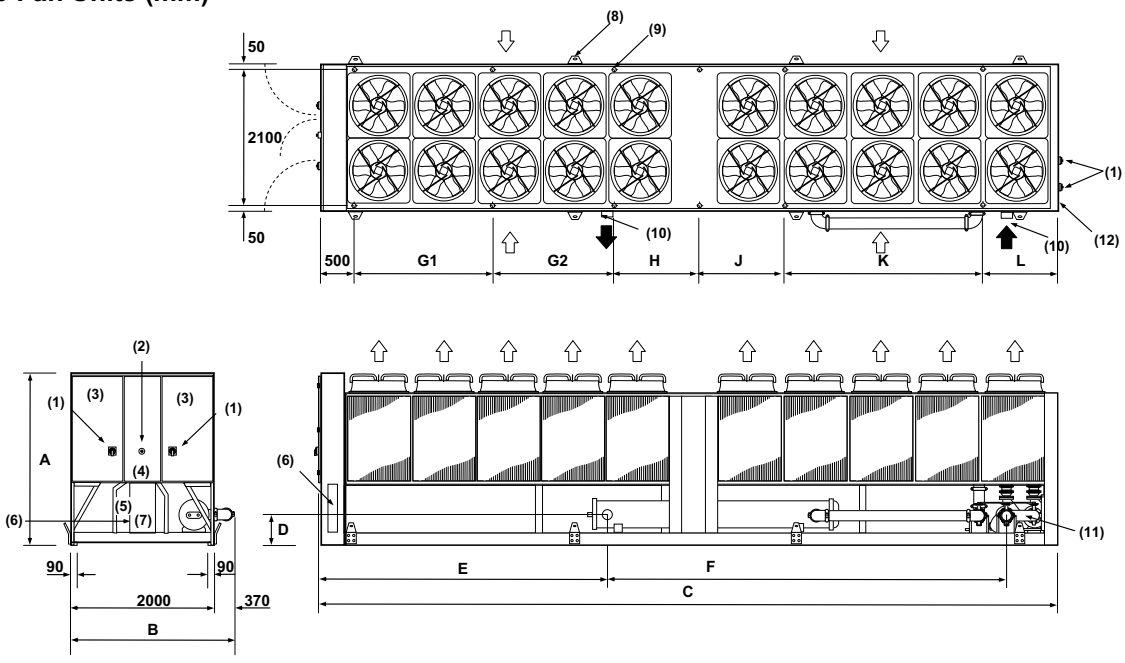
UNITS FITTED WITH OPTIONAL PUMP PACKAGE

8 - 12 Fan Units (mm)



IMPORTANT **Pump package assembly and connecting evaporator pipework supplied loose.**

14 - 20 Fan Units (mm)



IMPORTANT **Connecting evaporator pipework supplied loose.**

Dimensional Data

HIGH EFFICIENCY - WITH OPTIONAL PUMP PACKAGE

		A	B	C	C1	D	E	F	G1	G2	H	J	K	L	(10)
OPC500HED8	mm	2600	2570	6075	4675	460	1056	4300	1250	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC525HED8	mm	2600	2570	6075	4675	460	1056	4300	1250	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC550HED8	mm	2600	2570	6075	4675	460	1056	4300	1250	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC600HED10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC650HED10	mm	2600	2570	7075	5675	510	1582	4770	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC700HED12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC750HED12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC800HED12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC850HED12	mm	2600	2570	8500	7100	510	2304	5477	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC900HED14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC950HED14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC1000HED16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC1100HED16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16

		A	B	C	C1	D	E	F	G	G2	H	J	K	L	(10)
OPC500HEDQ10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC525HEDQ10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC550HEDQ10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC600HEDQ10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC650HEDQ10	mm	2600	2570	7075	5675	460	1556	4800	1750	N/A	1250	N/A	N/A	1550	DN150 PN16
OPC700HEDQ14	mm	2600	2570	8100	N/A	510	2730	4650	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC750HEDQ14	mm	2600	2570	8100	N/A	510	2730	4650	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC800HEDQ14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC850HEDQ14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC900HEDQ16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC950HEDQ16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC1000HEDQ18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1100HEDQ18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16

HIGH EFFICIENCY PLUS - WITH OPTIONAL PUMP PACKAGE

		A	B	C	C1	D	E	F	G	G2	H	J	K	L	(10)
OPC500HE+D8	mm	2600	2570	6075	4675	510	1082	4274	1250	N/A	1250	N/A	N/A	1550	DN200 PN16
OPC525HE+D10	mm	2600	2570	7075	5675	510	1582	4770	1750	N/A	1250	N/A	N/A	1550	DN200 PN16
OPC550HE+D10	mm	2600	2570	7075	5675	510	1582	4770	1750	N/A	1250	N/A	N/A	1550	DN200 PN16
OPC600HE+D10	mm	2600	2570	7075	5675	510	1582	4770	1750	N/A	1250	N/A	N/A	1550	DN200 PN16
OPC650HE+D10	mm	2600	2570	7075	5675	510	1157	5200	1750	N/A	1250	N/A	N/A	1550	DN200 PN16
OPC700HE+D12	mm	2600	2570	8500	7100	510	2304	5477	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC750HE+D12	mm	2600	2570	8500	7100	510	2304	5477	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC800HE+D14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC850HE+D14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC900HE+D16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC950HE+D18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1000HE+D18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC1100HE+D18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16

		A	B	C	C1	D	E	F	G	G2	H	J	K	L	(10)
OPC500HE+DQ12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC525HE+DQ12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC550HE+DQ12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC600HE+DQ12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC650HE+DQ12	mm	2600	2570	8500	7100	510	2730	5050	1850	N/A	1200	1175	1775	1725	DN200 PN16
OPC700HE+DQ14	mm	2600	2570	8100	N/A	510	2304	5075	2000	N/A	1400	1400	2000	800	DN200 PN16
OPC750HE+DQ16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC800HE+DQ16	mm	2600	2570	9100	N/A	510	3304	5075	2875	N/A	1400	1400	2325	600	DN200 PN16
OPC850HE+DQ18	mm	2600	2570	10100	N/A	510	3304	6075	3000	N/A	1400	1400	3000	800	DN200 PN16
OPC900HE+DQ20	mm	2600	2570	11100	N/A	510	4304	6075	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC950HE+DQ20	mm	2600	2570	11100	N/A	510	4304	6075	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC1000HE+DQ20	mm	2600	2570	11100	N/A	510	4304	6075	2000	2000	1400	1400	2700	1100	DN200 PN16
OPC1100HE+DQ20	mm	2600	2570	11100	N/A	510	4304	6075	2000	2000	1400	1400	2700	1100	DN200 PN16

(1) Mains Electric Isolator(s), for unit isolation refer to (6).
(2) Emergency Stop.
(3) Mains Electric Panel(s), for unit isolation refer to (6).
(4) Microprocessor Control Panel.
(5) Compressor Enclosure (DQ Models Only).
(6) Mains Cable Entry to Busbar, unit incoming mains isolation supplied by others.
(7) Busbar Chamber.
(8) Lifting Lugs (removable).
(9) 20mm Ø Mounting Holes:

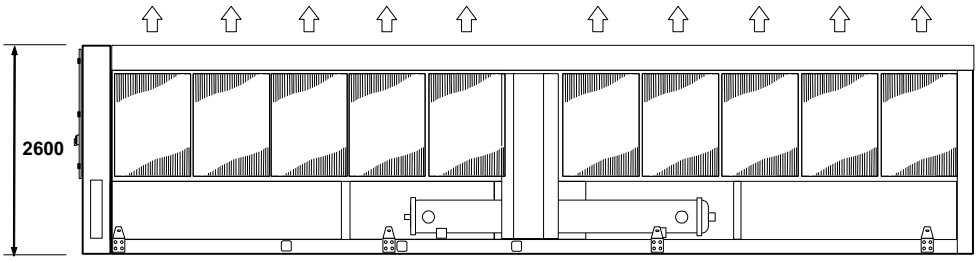
8 - 10	Fan Unit	x 8 + 2 (Pump Package)		14 - 18	Fan Unit	x 10
12	Fan Unit	x 10 + 2 (Pump Package)		20	Fan Unit	x 12

(10) Water Connections.
(11) Pump package including connecting evaporator pipework.
(12) Pump Controls Panel, for unit isolation refer to (6).

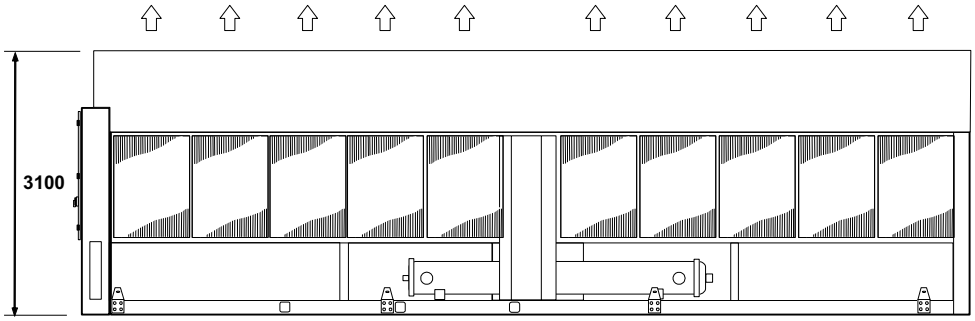
Dimensional Data

PLENUM OPTIONS

Standard Discharge Plenum Option (mm)



Extended Discharge Plenum Option (mm)

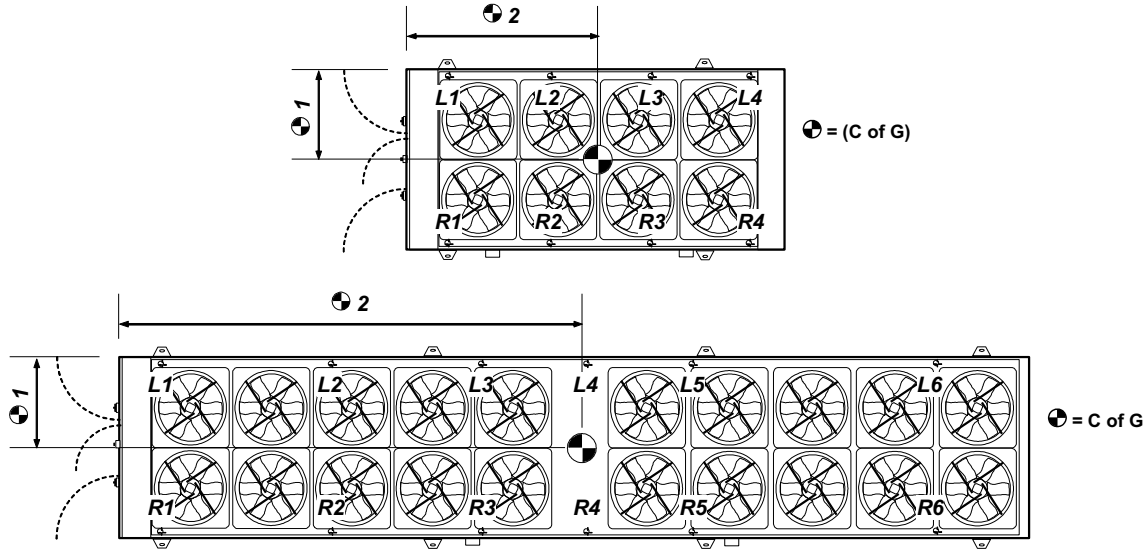


(1) For plenum weights, please contact Airedale.

Installation Data

WEIGHTS, POINT LOADINGS & CENTRE OF GRAVITY (C OF G) - NO PUMPS

High Efficiency



	Point Loadings (kg)												Operating Weight (kg)	C of G (mm)	
	L1	L2	L3	L4	L5	L6	R1	R2	R3	R4	R5	R6		1	2
OPC500HED8	650	680	670	470	(1)	(1)	830	860	850	590	(1)	(1)	5600	1220	2225
OPC525HED8	660	690	680	470	(1)	(1)	830	870	850	590	(1)	(1)	5640	1220	2225
OPC550HED8	660	690	680	470	(1)	(1)	830	870	860	590	(1)	(1)	5650	1220	2230
OPC600HED10	750	880	770	370	(1)	(1)	920	1080	950	450	(1)	(1)	6170	1205	2495
OPC650HED10	760	900	790	380	(1)	(1)	1010	1190	1040	500	(1)	(1)	6570	1245	2515
OPC700HED12	760	630	830	760	360	(2)	950	800	1040	950	450	(2)	7530	1220	3130
OPC750HED12	810	680	880	810	380	(2)	1010	840	1100	1010	480	(2)	8000	1215	3230
OPC800HED12	810	680	880	810	390	(2)	1010	850	1100	1010	480	(2)	8020	1215	3225
OPC850HED12	820	690	900	820	390	(2)	1070	890	1170	1070	510	(2)	8330	1235	3250
OPC900HED14	820	890	970	860	370	(2)	1040	1130	1240	1100	480	(2)	8900	1225	3510
OPC950HED14	830	900	980	870	380	(2)	1050	1140	1250	1110	480	(2)	8990	1225	3525
OPC1000HED16	900	910	1000	910	490	(2)	1130	1140	1260	1140	610	(2)	9490	1220	4290
OPC1100HED16	900	910	1000	910	490	(2)	1130	1140	1260	1140	610	(2)	9490	1220	4295

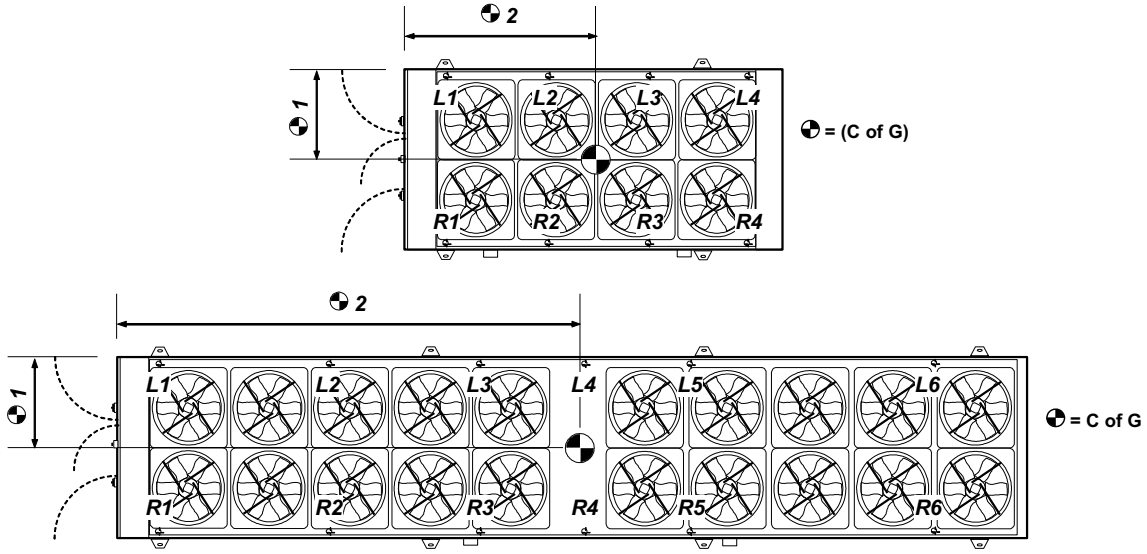
	Point Loadings (kg)												Operating Weight (kg)	C of G (mm)	
	L1	L2	L3	L4	L5	L6	R1	R2	R3	R4	R5	R6		1	2
OPC500HEDQ10	800	940	820	390	(1)	(1)	960	1130	990	470	(1)	(1)	6500	1200	2520
OPC525HEDQ10	800	940	830	390	(1)	(1)	960	1140	1000	470	(1)	(1)	6530	1200	2520
OPC550HEDQ10	800	950	830	400	(1)	(1)	970	1140	1000	480	(1)	(1)	6570	1200	2520
OPC600HEDQ10	800	950	830	400	(1)	(1)	970	1140	1000	480	(1)	(1)	6570	1195	2520
OPC650HEDQ10	810	950	830	400	(1)	(1)	970	1140	1000	480	(1)	(1)	6580	1195	2525
OPC700HEDQ14	790	860	940	830	360	(2)	970	1050	1150	1020	450	(2)	8420	1205	3440
OPC750HEDQ14	840	910	1000	880	390	(2)	1020	1110	1210	1080	470	(2)	8910	1200	3510
OPC800HEDQ14	850	930	1010	900	390	(2)	1070	1170	1270	1130	490	(2)	9210	1220	3525
OPC850HEDQ14	850	930	1010	900	390	(2)	1070	1170	1280	1130	490	(2)	9220	1220	3525
OPC900HEDQ16	930	940	1040	940	510	(2)	1160	1170	1290	1170	630	(2)	9780	1215	4295
OPC950HEDQ16	940	950	1050	950	510	(2)	1170	1180	1300	1180	630	(2)	9860	1210	4305
OPC1000HEDQ18	970	1040	1110	1010	540	(2)	1180	1280	1360	1240	660	(2)	10390	1205	4485
OPC1100HEDQ18	970	1050	1110	1010	540	(2)	1190	1280	1360	1240	670	(2)	10420	1205	4485

(1) Only 8 fixing and loading points to this model.
(2) Only 10 fixing and loading points to this model.
(3) Based on standard unit, for units fitted with options, please contact Airedale.
(4) Operating weight includes refrigerant charge and system water volume.

Installation Data

WEIGHTS, POINT LOADINGS & CENTRE OF GRAVITY (C OF G) - NO PUMPS

High Efficiency Plus



	Point Loadings (kg)												Operating Weight (kg)	C of G (mm)	
	L1	L2	L3	L4	L5	L6	R1	R2	R3	R4	R5	R6		1	2
OPC500HE+D8	670	700	690	480	(1)	(1)	920	960	940	650	(1)	(1)	6010	1265	2225
OPC525HE+D10	760	890	780	370	(1)	(1)	1000	1180	1030	490	(1)	(1)	6500	1245	2510
OPC550HE+D10	760	890	780	370	(1)	(1)	1000	1180	1040	490	(1)	(1)	6510	1245	2515
OPC600HE+D10	760	900	790	370	(1)	(1)	1010	1180	1040	500	(1)	(1)	6550	1245	2515
OPC650HE+D10	770	910	800	380	(1)	(1)	1070	1260	1110	530	(1)	(1)	6830	1270	2530
OPC700HE+D12	770	640	840	770	360	(2)	1010	840	1100	1010	480	(2)	7820	1245	3160
OPC750HE+D12	820	690	900	820	390	(2)	1060	890	1160	1060	510	(2)	8300	1235	3250
OPC800HE+D14	810	880	960	850	370	(2)	1030	1120	1220	1090	470	(2)	8800	1230	3520
OPC850HE+D14	810	880	960	850	370	(2)	1030	1120	1230	1090	470	(2)	8810	1230	3520
OPC900HE+D16	890	900	990	900	480	(2)	1120	1130	1240	1130	610	(2)	9390	1220	4280
OPC950HE+D18	920	990	1050	960	510	(2)	1140	1230	1310	1190	640	(2)	9940	1215	4480
OPC1000HE+D18	920	1000	1050	960	520	(2)	1140	1240	1310	1190	640	(2)	9970	1215	4480
OPC1100HE+D18	920	1000	1060	960	520	(2)	1150	1240	1310	1200	640	(2)	10000	1215	4480

	Point Loadings (kg)												Operating Weight (kg)	C of G (mm)	
	L1	L2	L3	L4	L5	L6	R1	R2	R3	R4	R5	R6		1	2
OPC500HE+DQ12	740	620	810	740	350	(2)	930	780	1020	930	440	(2)	7360	1220	3215
OPC525HE+DQ12	750	630	820	750	360	(2)	940	780	1020	940	450	(2)	7440	1220	3215
OPC550HE+DQ12	750	630	820	750	360	(2)	940	790	1030	940	450	(2)	7460	1220	3220
OPC600HE+DQ12	750	630	820	750	360	(2)	940	790	1030	940	450	(2)	7460	1220	3215
OPC650HE+DQ12	750	630	820	750	360	(2)	940	790	1030	940	450	(2)	7460	1220	3220
OPC700HE+DQ14	800	870	950	840	370	(2)	1020	1110	1210	1070	470	(2)	8710	1225	3455
OPC750HE+DQ16	920	930	1030	930	500	(2)	1150	1160	1280	1160	620	(2)	9680	1215	4300
OPC800HE+DQ16	920	930	1030	930	500	(2)	1150	1160	1280	1160	620	(2)	9680	1215	4295
OPC850HE+DQ18	950	1020	1080	990	530	(2)	1160	1260	1330	1210	650	(2)	10180	1210	4480
OPC900HE+DQ20	560	640	1090	1060	910	590	690	770	1320	1290	1110	720	10750	1205	5265
OPC950HE+DQ20	570	640	1100	1070	920	600	690	780	1330	1300	1120	730	10850	1200	5280
OPC1000HE+DQ20	570	640	1100	1070	920	600	690	780	1340	1310	1120	730	10870	1200	5275
OPC1100HE+DQ20	570	640	1100	1080	920	600	690	780	1340	1310	1120	730	10880	1200	5280

(1) Only 8 fixing and loading points to this model.
(2) Only 10 fixing and loading points to this model.
(3) Based on standard unit, for units fitted with options, please contact Airedale.
(4) Operating weight includes refrigerant charge and system water volume.

Installation Data

WEIGHTS - WITH OPTIONAL PUMPS (GUIDANCE)

CAUTION **Due to the number of different pump options available, the following table is provided as a guide to the MAXIMUM weight of models with optional pumps fitted.**

Once selection has been made, it is important to consult Airedale for the specific details at time of enquiry to ensure lifting and support arrangements are sufficient.

Point Loadings and AV selection will be provided separately.

High Efficiency

		OPC500HED8	OPC525HED8	OPC550HED8	OPC600HED10	OPC650HED10	OPC700HED12	OPC750HED12	OPC800HED12	OPC850HED12	OPC900HED14	OPC950HED14	OPC1000HED16	OPC1100HED16
Single Pump Option														
Weight - Machine	kg	5895	5915	5945	6435	6727	7697	8210	8220	8400	8943	9023	9550	9570
Weight - Operating	kg	6135	6175	6185	6705	7147	8107	8610	8630	8940	9483	9573	10090	10090
Run/Standby Pump Option														
Weight - Machine	kg	6182	6202	6232	6722	7006	7976	8522	8532	8712	9250	9330	9874	9894
Weight - Operating	kg	6422	6462	6472	6992	7426	8386	8922	8942	9252	9790	9880	10414	10414

		OPC500HEDQ10	OPC525HEDQ10	OPC550HEDQ10	OPC600HEDQ10	OPC650HEDQ10	OPC700HEDQ14	OPC750HEDQ14	OPC800HEDQ14	OPC850HEDQ14	OPC900HEDQ16	OPC950HEDQ16	OPC1000HEDQ18	OPC1100HEDQ18
Single Pump Option														
Weight - Machine	kg	6795	6825	6845	6855	6907	8607	9110	9290	9300	9843	9933	10460	10480
Weight - Operating	kg	7035	7065	7105	7105	7157	8997	9520	9820	9830	10363	10443	10990	11020
Run/Standby Pump Option														
Weight - Machine	kg	7082	7112	7132	7142	7186	8886	9422	9602	9612	10150	10240	10784	10804
Weight - Operating	kg	7322	7352	7392	7392	7436	9276	9832	10132	10142	10670	10750	11314	11344

High Efficiency Plus

		OPC500HE+D8	OPC525HE+D10	OPC550HE+D10	OPC600HE+D10	OPC650HE+D10	OPC700HE+D12	OPC750HE+D12	OPC800HE+D14	OPC850HE+D14	OPC900HE+D16	OPC950HE+D18	OPC1000HE+D18	OPC1100HE+D18
Single Pump Option														
Weight - Machine	kg	6125	6635	6665	6675	6887	7867	8390	8870	8880	9423	10003	10040	10060
Weight - Operating	kg	6545	7035	7045	7085	7407	8397	8910	9410	9420	9973	10523	10570	10600
Run/Standby Pump Option														
Weight - Machine	kg	6412	6922	6952	6962	7166	8146	8702	9182	9192	9730	10310	10364	10384
Weight - Operating	kg	6832	7322	7332	7372	7686	8676	9222	9722	9732	10280	10830	10894	10924

		OPC500HE+DQ12	OPC525HE+DQ12	OPC550HE+DQ12	OPC600HE+DQ12	OPC650HE+DQ12	OPC700HE+DQ14	OPC750HE+DQ16	OPC800HE+DQ16	OPC850HE+DQ18	OPC900HE+DQ20	OPC950HE+DQ20	OPC1000HE+DQ20	OPC1100HE+DQ20
Single Pump Option														
Weight - Machine	kg	7525	7555	7585	7595	7647	8767	9760	9770	10270	10813	10903	10940	10970
Weight - Operating	kg	7895	7975	7995	7995	8037	9287	10290	10290	10790	11333	11433	11470	11480
Run/Standby Pump Option														
Weight - Machine	kg	7812	7842	7872	7882	7926	9046	10072	10082	10582	11120	11210	11264	11294
Weight - Operating	kg	8182	8262	8282	8282	8316	9566	10602	10602	11102	11640	11740	11794	11804

(1) Machine weight includes refrigerant charge; operating weight includes refrigerant charge and water volume.

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 appropriate spreader bars/lifting slings (provided by others) with the holes/lugs provided
- Attach individual lifting chains to each of the lifting eye bolts/lifting lugs provided; each individual chain must be capable of lifting the whole unit

IMPORTANT **Do not use 1 chain between 2 lifting points to avoid load shift.**

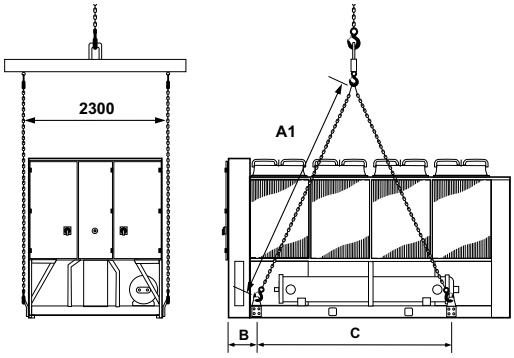
Only use lifting points provided.

- Lifting hole/lug dimension: 40mm
- Chains/slings MUST NOT interfere with the casing or fan assembly to avoid damage
- Lift the unit slowly and evenly

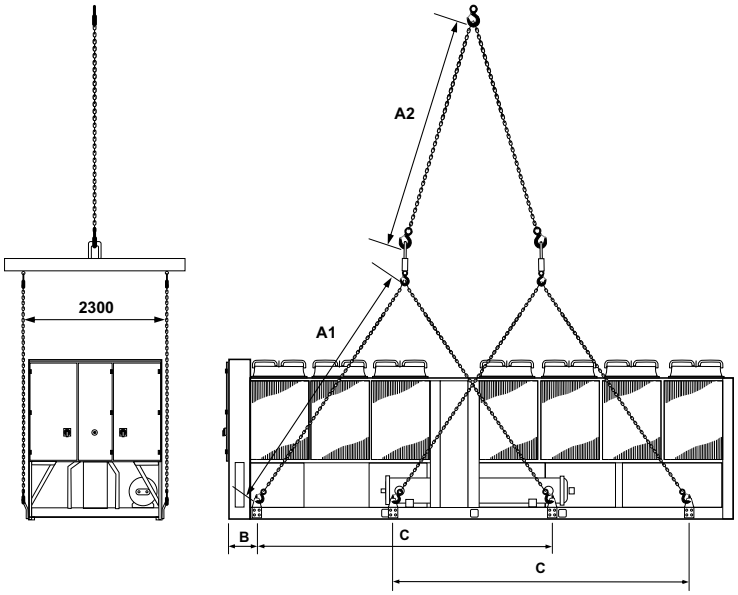
IMPORTANT **If the unit is dropped, it should immediately be checked for damage and reported to Airedale.**

LIFTING DIMENSIONS

8 - 10 Fan



12 - 20 Fan



		A1 (Min)	A2 (Min)	B	C
8 FAN	mm	4000	N/A	520	3200
10 FAN	mm	4000	N/A	846	3500
12 FAN	mm	4000	5000	520	4000
14 FAN	mm	5000	5000	520	4650
16 FAN	mm	5000	5000	520	5000
18 FAN	mm	6000	5000	520	5650
20 FAN	mm	7000	5000	520	6650

IMPORTANT **For models with optional pumps fitted, a separate instruction will be provided.**

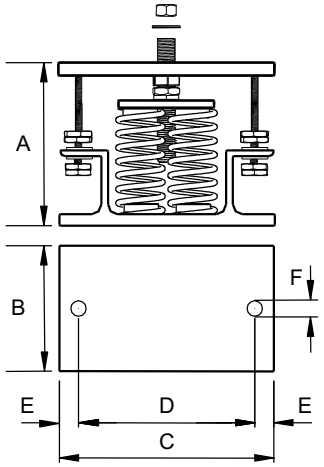
Installation Data

ANTI VIBRATION MOUNTING (OPTIONAL)

Spring Type

Each mount is coloured to indicate the different loads, refer to AV selection sheet supplied separately for correct allocation.

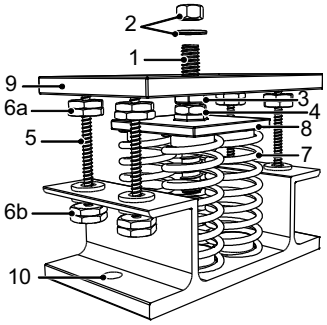
Dimensions



	A(1)	B	C	D	E	FØ
mm	180	130	225	186	20	16

(1) Unloaded dimension
(2) For models with optional pumps fitted, please consult Airedale.

Components



1 Locating Screw
2 Retaining Nut & Washer
3 Levelling Screw
4 Levelling Lock Nut
5 Retaining Studs
6a Upper Retaining Nuts
6b Lower Retaining Nuts
7 Spring assembly
8 Pressure Plate
9 Top Plate
10 Bolting-down holes

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 Remove retaining nut and washer (2), lower the unit onto the mounts and replace retaining nut and washer.
6 Beginning with the mount with the largest deflection, adjust the height of each mount using the levelling screw (3).

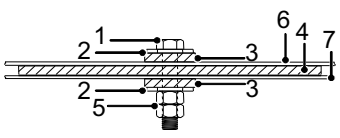
CAUTION **Mountings must be adjusted incrementally in turn. Do not fully adjust 1 mount at a time as this may overload and damage springs.**

7 When all mounts are level, lock each into place using the levelling lock nut (4).
8 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 506-063
4 A V Pad 506-062
5 2 x M16 Nut (Not Supplied)
6 Unit Base
7 Unit Mounting Plinth

Installation Data

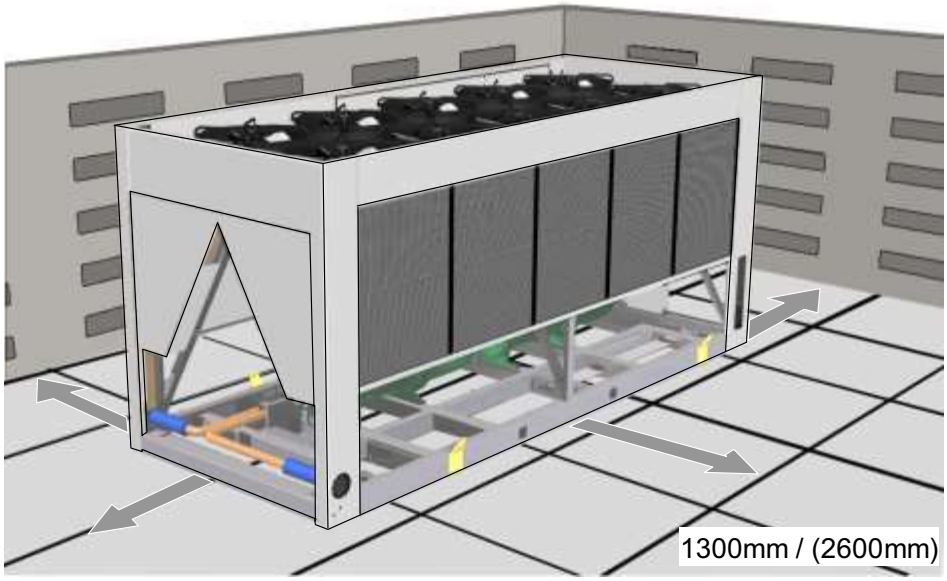
POSITIONING

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
- Pipework 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

CAUTION **Prior to connecting services, ensure that the equipment is installed and completely level.**

AIRFLOW & MAINTENANCE CLEARANCES



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

Installation Data

WATER SYSTEM

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

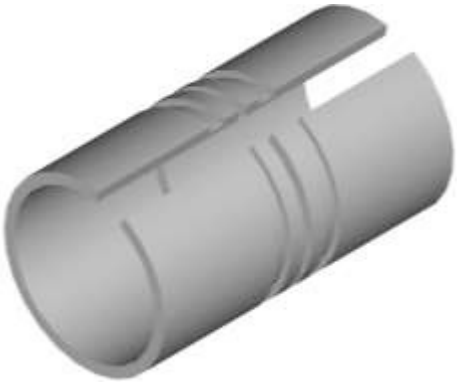
- National and Local Water supply company standards
- The manufacturer's instructions are followed when fitting ancillary components
- The system liquid is treated to prevent corrosion and algae forming
- In ambients of 0°C and below, where static water can be expected, or when water supply temperatures of +5°C or below is 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 pipework, pipework MUST be supported separately.**

GROOVED & CLAMPED TYPE CONNECTION

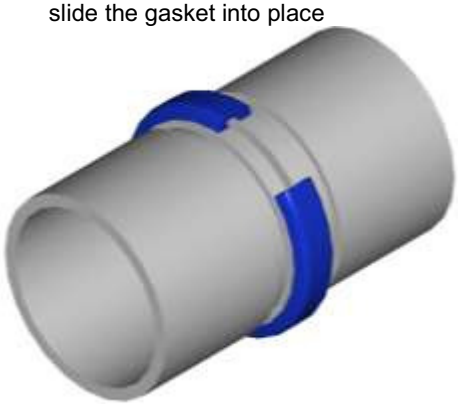
1 Place Grooved Ends Together

- Note that an expansion gap of 5mm is shown here



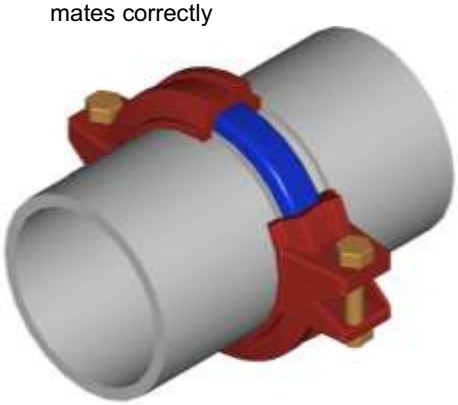
2 Locate Rubber Gasket

- The gasket should be checked for compatability and damage prior to installation
- A thin coat of sealing lubricant should be applied to both the inside and outside mating surfaces
- Slip the gasket fully onto one of the pipe ends, align the second pipe and slide the gasket into place



3 Place Clamp over Gasket

- Wrap the 2-halves of the clamp over the gasket
- Ensure the gasket fits snugly within the grooved recess within the inside of the clamp and that the clamp mates correctly

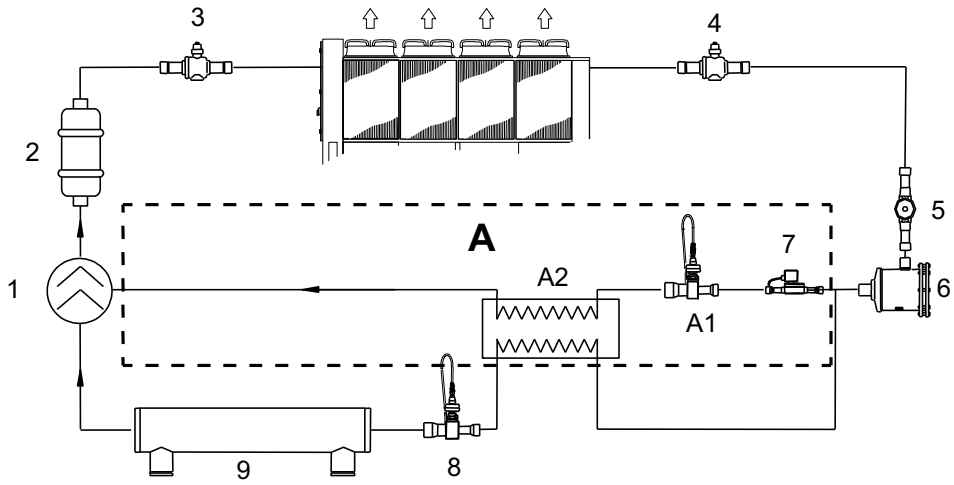


4 Secure Clamp

- Tightend the bolts incrementally and evenly at both sides until a leak free seal is formed
- The gasket should not be visible beneath the clamp when the bolts are properly tightened

Installation Data

REFRIGERATION SCHEMATIC



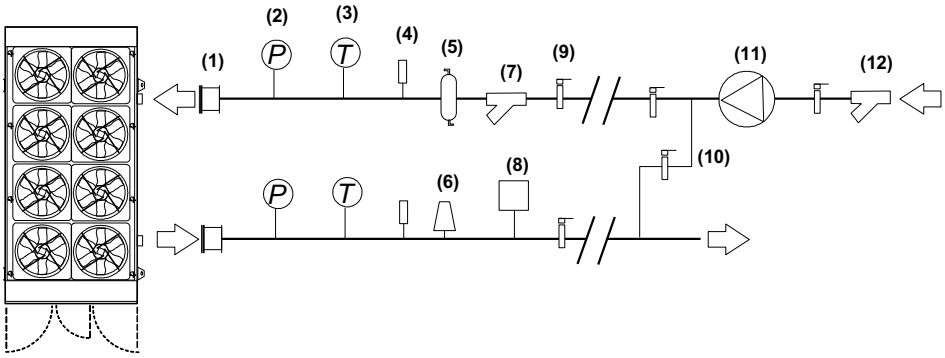
1	Screw compressor	7	Solenoid valve
2	Muffler (DQ Only)	8	EEV
3	Ball Valve - Discharge	9	Evaporator
4	Ball Valve - Liquid	A	Economiser Circuit
5	Sight Glass	A1	EEV
6	Filter driver - Replaceable core	A2	Heat exchanger

STANDARD RECOMMENDED INSTALLATION (Parts Supplied by Others)

GENERAL

The following diagram illustrates the minimum component installation requirements. A wide range of optional extras are available to suit various applications, please refer to ***Optional extras***, on page 10 for details.

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



(1)	Flexible connections	(7)	Strainer (optional extra)
(2)	Pressure gauges	(8)	Flow switch
(3)	Temperature gauges	(9)	Shut off valves
(4)	Binder points	(10)	Bypass circuit (for flushing)
(5)	De-aerator (optional extra)	(11)	Pump
(6)	Auto air vent (at highest point)	(12)	Pump strainer

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.

Following components are fitted within the chiller unit as standard:

- Temperature Sensors
- Drain Point
- Auto Air Vent

Installation Data

WATER SYSTEM

Component Recommended Requirements

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 unit Chiller
- A 20 mesh strainer fitted prior to the evaporator inlet
- A water-flow commissioning valve set fitted to the system
- In multiple chiller installations, 1 commissioning valve set is required per chiller
- 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 pipework 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 liquid 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 flow proving device for safety reasons.

CAUTION **Failure to install 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 proving device MUST be directly wired to the chiller, refer to *Interconnecting wiring*, on page 31.

Pressure Testing

When all the pipework has been connected in the system, proceed as follows:

- Ensure all shut off and control valves are fully open
- Pressurise system to the operating pressure, hold for 1 hour (a gradual fall in pressure shown on the gauge indicates a leak)
- Leaks should be found and repaired and the unit pressure tested for a further hour

When the pressure remains at the operating pressure for 1 hour, the system can be considered leak free.

CAUTION **Although a pressure of 1.5 x working pressure is adequate for testing purposes, most local water authorities require 2 x working pressure.**

RECORD **Record on commissioning sheet provided once completed.**

Filling

CAUTION **The whole system MUST be flushed prior to filling to remove debris left in the water pipework by using a flushing bypass as shown to avoid serious damage to the plate evaporator.**

- During filling the system should be vented at all high points
- Once the system has been completely vented all vents should be closed
- To prevent air locking in the system it is advisable to fill the systems from the lowest point, ie drain point on pipework
- If auto air vents are used then we strongly recommend an auto pressurisation unit be fitted to the system

Installation Data

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 at 100% Water for the correction factors to be valid.**

Ethylene Glycol Nominal Correction Factors

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

Propylene Glycol Nominal Correction Factors

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

Example

Model Ref. = **OPC800HE+D14**
Ambient: = 35°C
Fluid = 20% Ethylene Glycol
Inlet Fluid Temp. = 7°C
Outlet Fluid Temp. = 12°C (***5°C ΔT***)

			100% Water	Multiplier	Corrected Figure
Output (kW)	=		841.2	x 0.97	= 816.0 kW
Compressor Input (kW)		Input (kW) - TFP {283.1 - {14 x 1.7}} =	259.3	x 0.98	= 254.1 kW
Water Flow (l/s)		$\frac{\text{Output}}{4.19 \times \Delta T}$	40.2	x 1.02	= 40.8 l/s
Pressure Drop (kPa)		Plot from curve (refer to ***Waterside pressure drop (kPa)***, on page 46)	33.1	x 1.20	= 39.7 kPa

Where:
Output = (kW) Output (kW), refer to ***Technical Manual***
Compressor Input = (kW) Input (kW) refer to ***Technical Manual*** (-) Minus TFP
TFP (Total Fan Power) = (kW) Quantity of Fans to unit x Fan Motor Size
Water Flow **= (l/s) ALWAYS USE 100% water SHC of 4.19**
ΔT = (°C) Difference of Entering Water and Leaving Water temperature

CAUTION **Waste glycol needs to be handled responsibly, recycled or turned over to professional personnel for correct disposal. Most anti-freeze manufacturers recommend that used anti-freeze be collected and disposed according to Local Legislation. Waste glycol should NOT be drained onto the ground, rainwater drainage system or natural waters.**

If the glycol contains heavy metals or other contaminants from gas or oil, the level of hazard posed by the glycol is increased and could be characterised as hazardous waste.

STEPS IF GLYCOL IS RELEASED/SPILLED
Small spill - soak up with absorbent material.
Large spill - contain spill and pump to suitable container for disposal.

Installation Data

PUMPS OPTIONS

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

A variety of pump options to suit a wide range of applications is 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 may be rotated manually to ensure even pump usage and prolong component life.

For performance curves, please refer to ***Commissioning Data***, on page 47.

The pump motor speed can be supplied as fixed or variable:

Standard - ac Motor - Fixed Speed

The standard ac electric motors are 400Vac / 50Hz / 3ph and fixed speed.

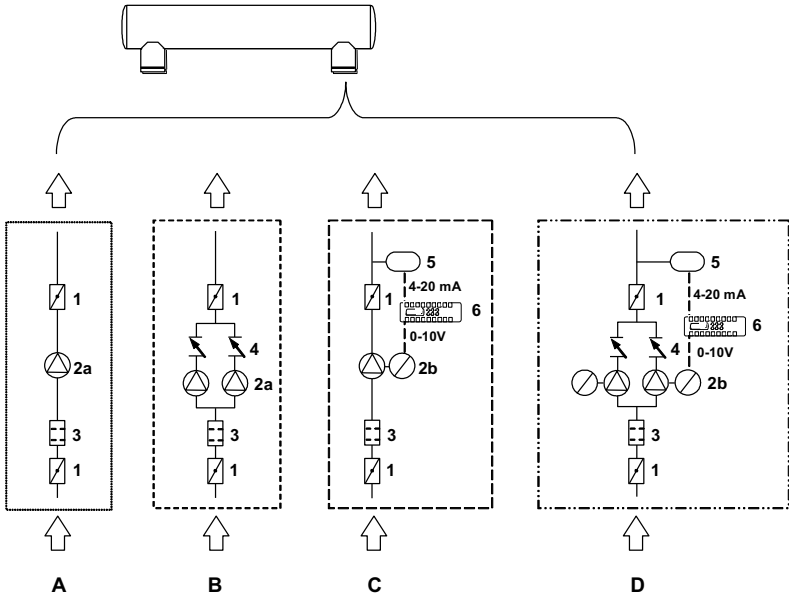
Inverter Driven Motor - Variable Speed for constant water flow

Flow is monitored by the onboard electronic flow meter to maintain the exact requirement of the application, thus saving pump input power whilst providing optimum chilled water flow control.

The option of an onboard variable speed drive combined with the electronic flow metering system offers an exceptional combination of simple commissioning and optimised efficiency.

Flow Schemes:

A Single Head Pump - Standard ac Motor - Fixed Speed
B Run/Standby Pump - Standard ac Motor - Fixed Speed
C Single Head Pump - Inverter Driven Motor - Variable Speed with electronic flow metering system
D Run/Standby Pump - Inverter Driven Motor - Variable Speed with electronic flow metering system



1 Shut off valve
2a Pump
2b Pump & Inverter
3 Liquid Strainer
4 Non Return Valve
5 Electronic Flow Meter
6 AIRETronix Microprocessor

Installation Data

MECHANICAL DATA - HIGH EFFICIENCY

			OPC500HED8	OPC525HED8	OPC550HED8	OPC600HED10	OPC650HED10
Connections			Grooved type Coupling & Pipe Assembly				
Water Inlet / Outlet			DN150 PN16	DN150 PN16	DN150 PN16	DN150 PN16	DN200 PN16
Water Drain / Bleed		in	1/2	1/2	1/2	1/2	1/2
Water System							
Min. System Water Volume		l	1764	1849	1934	2079	2260
Max. System Operating Pressure		bar	10	10	10	10	10
OPTIONAL EXTRAS							
Water Pump - ac Motor	(1)		In Line Pump - Fixed Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	70	66	63	56	76
Nom External Head Single - Larger		kPa	107	104	100	94	179
Water Pump - Inverter Driven Motor			In Line Pump - Variable Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	124	120	117	67	87
Nom External Head Single - Larger		kPa	124	120	117	155	174

			OPC500HEDQ10	OPC525HEDQ10	OPC550HEDQ10	OPC600HEDQ10	OPC650HEDQ10
Connections			Grooved type Coupling & Pipe Assembly				
Water Inlet / Outlet			DN150 PN16	DN150 PN16	DN150 PN16	DN150 PN16	DN150 PN16
Water Drain / Bleed		in	1/2	1/2	1/2	1/2	1/2
Water System							
Min. System Water Volume		l	1750	1832	1915	2001	2087
Max. System Operating Pressure		bar	10	10	10	10	10
OPTIONAL EXTRAS							
Water Pump - ac Motor	(1)		In Line Pump - Fixed Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	71	67	64	60	56
Nom External Head Single - Larger		kPa	108	105	101	97	159
Water Pump - Inverter Driven Motor			In Line Pump - Variable Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	124	121	118	71	67
Nom External Head Single - Larger		kPa	124	121	118	159	155

MECHANICAL DATA - HIGH EFFICIENCY PLUS

			OPC500HE+D8	OPC525HE+D10	OPC550HE+D10	OPC600HE+D10	OPC650HE+D10
Connections			Grooved type Coupling & Pipe Assembly				
Water Inlet / Outlet			DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
Water Drain / Bleed		in	1/2	1/2	1/2	1/2	1/2
Water System							
Min. System Water Volume		l	1825	1967	2067	2164	2297
Max. System Operating Pressure		bar	10	10	10	10	10
OPTIONAL EXTRAS							
Water Pump - ac Motor	(1)		In Line Pump - Fixed Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	87	83	81	78	89
Nom External Head Single - Larger		kPa	124	121	118	116	192
Water Pump - Inverter Driven Motor			In Line Pump - Variable Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	140	137	135	89	100
Nom External Head Single - Larger		kPa	140	137	135	177	187

			OPC500HE+DQ12	OPC525HE+DQ12	OPC550HE+DQ12	OPC600HE+DQ12	OPC650HE+DQ12
Connections			Grooved type Coupling & Pipe Assembly				
Water Inlet / Outlet			DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
Water Drain / Bleed		in	1/2	1/2	1/2	1/2	1/2
Water System							
Min. System Water Volume		l	1850	1947	2044	2139	2234
Max. System Operating Pressure		bar	10	10	10	10	10
OPTIONAL EXTRAS							
Water Pump - ac Motor	(1)		In Line Pump - Fixed Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	86	84	81	79	76
Nom External Head Single - Larger		kPa	123	121	119	116	179
Water Pump - Inverter Driven Motor			In Line Pump - Variable Speed Motor				
Single Head or Run/Standby							
Nom External Head Single - Standard		kPa	140	137	135	90	87
Nom External Head Single - Larger		kPa	140	137	135	177	175

(1) Based on 12/7°C water temperature and 35°C ambient.
All performance data is supplied in accordance with BS EN 14511-1:2013

	OPC700HED12	OPC750HED12	OPC800HED12	OPC850HED12	OPC900HED14	OPC950HED14	OPC1000HED16	OPC1100HED16
	Grooved type Coupling & Pipe Assembly							
	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	2475	2637	2779	2977	3171	3302	3518	3669
	10	10	10	10	10	10	10	10
	In Line Pump - Fixed Speed Motor							
	81	77	72	88	84	81	76	98
	173	168	164	179	175	172	167	164
	In Line Pump - Variable Speed Motor							
	81	76	71	87	111	108	103	99
	168	163	159	174	170	167	226	222

	OPC700HEDQ14	OPC750HEDQ14	OPC800HEDQ14	OPC850HEDQ14	OPC900HEDQ16	OPC950HEDQ16	OPC1000HEDQ18	OPC1100HEDQ18
	Grooved type Coupling & Pipe Assembly							
	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	2437	2594	2785	2928	3109	3231	3434	3581
	10	10	10	10	10	10	10	10
	In Line Pump - Fixed Speed Motor							
	82	78	92	89	85	83	78	100
	174	169	183	180	177	174	169	166
	In Line Pump - Variable Speed Motor							
	82	77	91	88	112	109	105	101
	169	164	178	175	172	169	228	224

	OPC700HE+D12	OPC750HE+D12	OPC800HE+D14	OPC850HE+D14	OPC900HE+D16	OPC950HE+D18	OPC1000HE+D18	OPC1100HE+D18
	Grooved type Coupling & Pipe Assembly							
	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	2519	2698	2891	3040	3226	3412	3567	3722
	10	10	10	10	10	10	10	10
	In Line Pump - Fixed Speed Motor							
	97	100	90	87	83	78	75	97
	188	191	181	178	174	170	166	163
	In Line Pump - Variable Speed Motor							
	96	99	89	86	109	105	102	98
	184	187	176	173	169	165	224	221

	OPC700HE+DQ14	OPC750HE+DQ16	OPC800HE+DQ16	OPC850HE+DQ18	OPC900HE+DQ20	OPC950HE+DQ20	OPC1000HE+DQ20	OPC1100HE+DQ20
	Grooved type Coupling & Pipe Assembly							
	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16	DN200 PN16
	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	2480	2693	2840	3030	3201	3337	3486	3636
	10	10	10	10	10	10	10	10
	In Line Pump - Fixed Speed Motor							
	97	93	91	87	83	80	77	99
	189	185	182	178	175	172	168	165
	In Line Pump - Variable Speed Motor							
	97	93	90	86	110	107	104	100
	184	180	177	173	170	167	226	223

Installation Data

ELECTRICAL

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
- Once the connecting pipework is complete the electrical supply can be connected by routing the cable through the appropriate casing hole and connecting the cables, refer to the Wiring Diagram supplied with each unit

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

The unit isolators DO NOT isolate the incoming mains supply, but isolate the individual electrical panels. Isolate REMOTELY the mains incoming supply to the BUSBAR chamber prior to maintenance or repair work.

CAUTION **ALL work MUST be carried out by technically trained competent personnel.**

The Emergency Stop MUST NOT be used to stop the chiller other than in the event of an emergency.

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, locally isolated, permanent single phase and neutral supply MUST BE FITTED for the compressor oil heater, evaporator trace heating and control circuits, FAILURE to do so will INVALIDATE WARRANTY.

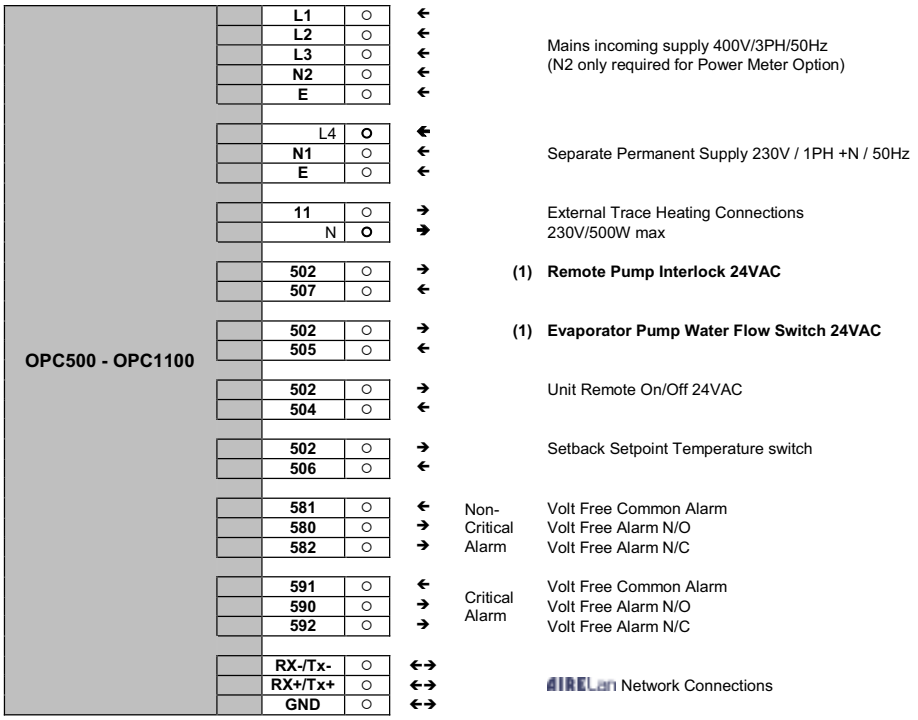
To reduce down time, if possible support the above supply with a UPS.

Ensure correct phase rotation.

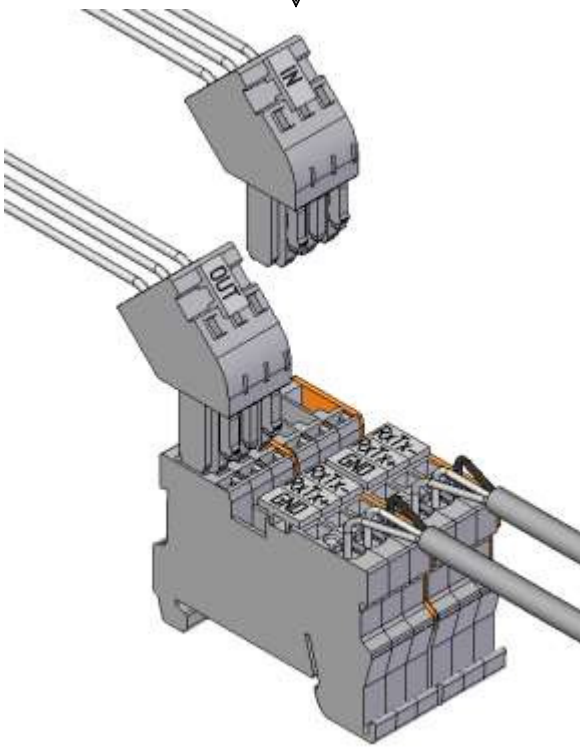
Refer also to ***Interlocks & Protection***, on page 25.

Installation Data

INTERCONNECTING WIRING



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



Installation Data

IMPORTANT **The following information is for general guidance; refer to the certified drawings provided for installation.**

ELECTRICAL DATA - HIGH EFFICIENCY

Standard Chiller - D

			OPC500HED8	OPC525HED8	OPC550HED8	OPC600HED10	OPC650HED10
Unit Data							
Nominal Run Amps	(1)	A	291	308	325	347	361
Maximum Start Amps	(2)	A	461	521	538	589	604
Rec Mains Fuse Size		A	400	450	450	450	500
Mains Supply		VAC	400 V 3 PH 50 Hz				
Max Mains Incoming Cable Size		mm²	Direct to Bus Bar				
Permanent Supply		VAC	230 V 1 PH 50 Hz				
Rec Permanent Fuse Size		A	16	16	16	16	16
Max Permanent Incoming Cable Size		mm²	4mm² Terminal				
Control Circuit		VAC	24V / 230VAC				
Evaporator							
Immersion Heater Rating		W	100	100	100	100	100
External Trace Heating							
Available (fitted by others)		W	500	500	500	500	500
Condenser Fan - Per Fan							
Quantity			8	8	8	10	10
Standard AC Type							
Full Load Amps		A	3.8	3.8	3.8	3.8	3.8
Locked Rotor Amps		A	11	11	11	11	11
Motor Size		kW	1.8	1.8	1.8	1.8	1.8
Optional EC Type							
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9
Motor Size		kW	2.2	2.56	2.2	2.56	2.56
Compressor - Per Compressor							
Quantity			1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Motor Size		kW	74.5 / 74.5	83.4 / 74.5	83.4 / 83.4	91.8 / 83.4	91.8 / 91.8
Nominal Run Amps	(1)	A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Oil Heater Rating		W	300	300	300	300	300
Start Amps	(2)	A	300 / 300	360 / 300	360 / 360	404 / 360	404 / 404
Type Of Start			Star - Delta				
OPTIONAL EXTRAS							
Power Factor Correction							
Nominal Run Amps	(1)	A	257	270	284	304	317
Maximum Start Amps	(2)	A	444	504	517	569	381
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	117 / 117	132 / 117	132 / 132	145 / 132	145 / 145
Closed Transition							
Nominal Run Amps	(1)	A	291	308	325	347	361
Maximum Start Amps	(2)	A	461	521	538	589	604
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Water Pump - ac Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	300	317	334	356	370
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	4.0	4.0	4.0	4.0	4.0
Full Load Amps		A	8.9	8.9	8.9	8.9	10.6
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	306	322	339	361	382
Recommended Mains Fuse		A	400	450	450	500	500
Motor Size		kW	7.5	7.5	7.5	7.5	11.0
Full Load Amps		A	14.4	14.4	14.4	14.4	21.0
Water Pump - Inverter Driven Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	302	319	336	358	372
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	5.5	5.5
Full Load Amps		A	11.0	11.0	11.0	11.3	11.3
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	302	319	336	362	376
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	7.5	7.5
Full Load Amps		A	11.0	11.0	11.0	15.0	15.0

(1) Based at 12/7°C water and 35°C ambient with standard AC type fans.
(2) Starting amps refers to the Star connection only with standard AC type fans.

	OPC700HED12	OPC750HED12	OPC800HED12	OPC850HED12	OPC900HED14	OPC950HED14	OPC1000HED16	OPC1100HED16
	394	419	444	470	512	546	576	597
	643	668	697	723	851	886	957	979
	560	560	630	630	710	710	750	750
				400 V 3 PH 50 Hz				
				Direct to Bus Bar				
				230 V 1 PH 50 Hz				
	16	16	16	16	16	16	16	16
				4mm² Terminal				
				24V / 230VAC				
	100	100	100	100	100	100	100	100
	500	500	500	500	500	500	500	500
	12	12	12	12	14	14	16	16
	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	11	11	11	11	11	11	11	11
	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	109.2 / 91.8	109.2 / 109.2	126.5 / 109.2	162.5 / 162.5	143.1 / 126.5	143.1 / 143.1	156.4 / 143.1	156.4 / 156.4
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	300	300	300	300	300	300	300	300
	436 / 404	436 / 436	465 / 436	465 / 465	586 / 465	586 / 586	650 / 586	650 / 650
				Star - Delta				
	351	377	404	430	463	488	516	536
	621	648	677	703	831	857	928	948
	560	560	630	630	710	710	750	750
	167 / 145	167 / 167	190 / 167	190 / 190	221 / 190	246.5 / 246.5	268.3 / 246.5	240 / 240
	394	419	444	470	512	546	576	597
	643	668	697	723	851	886	957	979
	560	560	630	630	710	710	750	750
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	404	429	455	481	522	557	586	612
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	5.5	5.5	5.5	7.5
	10.6	10.6	10.6	10.6	10.6	10.6	10.6	14.4
	415	440	465	491	533	567	597	618
	560	560	630	630	710	710	750	750
	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
	405	430	456	481	527	561	590	612
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	7.5	7.5	7.5	7.5
	11.3	11.3	11.3	11.3	14.7	14.7	14.7	14.7
	409	440	466	491	533	568	604	625
	560	560	630	630	710	710	750	750
	7.5	11.0	11.0	11.0	11.0	11.0	15.0	15.0
	15.0	21.4	21.4	21.4	21.4	21.4	28.0	28.0

Installation Data

IMPORTANT **The following information is for general guidance; refer to the certified drawings provided for installation.**

ELECTRICAL DATA - HIGH EFFICIENCY

Quiet Chiller - DQ

			OPC500HEDQ10	OPC525HEDQ10	OPC550HEDQ10	OPC600HEDQ10	OPC650HEDQ10
Unit Data							
Nominal Run Amps	(1)	A	277	294	311	325	339
Maximum Start Amps	(2)	A	446	506	523	567	582
Rec Mains Fuse Size		A	400	450	450	450	500
Mains Supply		VAC	400 V 3 PH 50 Hz				
Max Mains Incoming Cable Size		mm²	Direct to Bus Bar				
Permanent Supply		VAC	230 V 1 PH 50 Hz				
Rec Permanent Fuse Size		A	16	16	16	16	16
Max Permanent Incoming Cable Size		mm²	4mm² Terminal				
Control Circuit		VAC	24V / 230VAC				
Evaporator							
Immersion Heater Rating		W	100	100	100	100	100
External Trace Heating							
Available (fitted by others)		W	500	500	500	500	500
Condenser Fan - Per Fan							
Quantity			10	10	10	10	10
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9
Motor Size		kW	2.2	2.56	2.56	2.56	2.56
Compressor - Per Compressor							
Quantity			1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Motor Size		kW	74.5 / 74.5	83.4 / 74.5	83.4 / 83.4	91.8 / 83.4	91.8 / 91.8
Nominal Run Amps	(1)	A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Oil Heater Rating		W	300	300	300	300	300
Start Amps	(2)	A	300 / 300	360 / 300	360 / 360	404 / 360	404 / 404
Type Of Start			Star - Delta				
OPTIONAL EXTRAS							
Power Factor Correction							
Nominal Run Amps	(1)	A	242	256	269	282	295
Maximum Start Amps	(2)	A	429	489	503	547	559
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	113 / 113	127 / 113	127 / 127	139 / 122	139 / 139
Closed Transition							
Nominal Run Amps	(1)	A	277	294	311	325	339
Maximum Start Amps	(2)	A	446	506	523	567	582
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Water Pump - ac Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	286	303	319	334	348
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	4.0	4.0	4.0	4.0	4.0
Full Load Amps		A	8.9	8.9	8.9	8.9	10.6
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	291	308	325	339	360
Recommended Mains Fuse		A	400	450	450	500	500
Motor Size		kW	7.5	7.5	7.5	7.5	11.0
Full Load Amps		A	14.4	14.4	14.4	14.4	21.0
Water Pump - Inverter Driven Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	288	305	322	336	350
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	5.5	5.5
Full Load Amps		A	11.0	11.0	11.0	11.3	11.3
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	288	305	322	340	354
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	7.5	7.5
Full Load Amps		A	11.0	11.0	11.0	15.0	15.0

(1) Based on 12/7°C water temperature and 35°C ambient.
(2) Starting amps refers to the Star connection only.

	OPC700HEDQ14	OPC750HEDQ14	OPC800HEDQ14	OPC850HEDQ14	OPC900HEDQ16	OPC950HEDQ16	OPC1000HEDQ18	OPC1100HEDQ18
	370	396	421	447	484	519	544	565
	620	645	674	700	824	858	925	947
	560	560	630	630	710	710	710	750
				400 V 3 PH 50 Hz				
				Direct to Bus Bar				
				230 V 1 PH 50 Hz				
	16	16	16	16	16	16	16	16
				4mm² Terminal				
				24V / 230VAC				
	100	100	100	100	100	100	100	100
	500	500	500	500	500	500	500	500
	14	14	14	14	16	16	18	18
	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	109.2 / 91.8	109.2 / 109.2	126.5 / 109.2	162.5 / 162.5	143.1 / 126.5	143.1 / 143.1	156.4 / 143.1	156.4 / 156.4
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	300	300	300	300	300	300	300	300
	436 / 404	436 / 436	465 / 436	465 / 465	586 / 465	586 / 586	650 / 586	650 / 650
				Star - Delta				
	328	354	381	407	435	460	484	504
	598	624	653	680	804	829	896	916
	560	560	630	630	710	710	750	750
	166 / 139	166 / 166	192 / 166	192 / 192	217 / 192	217 / 217	238 / 217	238 / 238
	370	396	421	447	484	519	544	565
	620	645	674	700	824	858	925	947
	560	560	630	630	710	710	710	750
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	381	406	432	457	495	529	554	580
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	5.5	5.5	5.5	7.5
	10.6	10.6	10.6	10.6	10.6	10.6	10.6	14.4
	391	417	442	468	505	540	565	586
	560	560	630	630	710	710	750	750
	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
	382	407	432	458	499	533	558	580
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	7.5	7.5	7.5	7.5
	11.3	11.3	11.3	11.3	14.7	14.7	14.7	14.7
	385	417	443	468	506	540	572	593
	560	560	630	630	710	710	750	750
	7.5	11.0	11.0	11.0	11.0	11.0	15.0	15.0
	15.0	21.4	21.4	21.4	21.4	21.4	28.0	28.0

Installation Data

IMPORTANT **The following information is for general guidance; refer to the certified drawings provided for installation.**

ELECTRICAL DATA - HIGH EFFICIENCY PLUS

Standard Chiller - D & Quiet Chiller - DQ

			OPC500HE+D8	OPC525HE+D10	OPC550HE+D10	OPC600HE+D10	OPC650HE+D10
Unit Data							
Nominal Run Amps	(1)	A	288	312	329	343	357
Maximum Start Amps	(2)	A	458	524	541	585	600
Rec Mains Fuse Size		A	400	450	450	450	500
Mains Supply		VAC	400 V 3 PH 50 Hz				
Max Mains Incoming Cable Size		mm²	Direct to Bus Bar				
Permanent Supply		VAC	230 V 1 PH 50 Hz				
Rec Permanent Fuse Size		A	16	16	16	16	16
Max Permanent Incoming Cable Size		mm²	4mm² Terminal				
Control Circuit		VAC	24V / 230VAC				
Evaporator							
Immersion Heater Rating		W	100	100	100	100	100
External Trace Heating							
Available (fitted by others)		W	500	500	500	500	500
Condenser Fan - Per Fan							
Quantity			8	10	10	10	10
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9
Motor Size		kW	2.56	2.56	2.56	2.56	2.56
Compressor - Per Compressor							
Quantity			1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Motor Size		kW	74.5 / 74.5	83.4 / 74.5	83.4 / 83.4	91.8 / 83.4	91.8 / 91.8
Nominal Run Amps	(1)	A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Oil Heater Rating		W	300	300	300	300	300
Start Amps	(2)	A	300 / 300	360 / 300	360 / 360	404 / 360	404 / 404
Type Of Start			Star - Delta				
QUIET DQ			**OPC500HE+DQ12**	**OPC525HE+DQ12**	**OPC550HE+DQ12**	**OPC600HE+DQ12**	**OPC650HE+DQ12**
			All data as above except:				
Condenser Fan - Per Fan							
Quantity			12	12	12	12	12
Full Load Amps		A	3.9	3.9	3.9	3.9	3.9
Motor Size		kW	2.56	2.56	2.56	2.56	2.56
OPTIONAL EXTRAS - ALL MODELS							
Power Factor Correction							
Nominal Run Amps	(1)	A	254	274	287	300	313
Maximum Start Amps	(2)	A	440	507	521	565	577
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	113 / 113	127 / 113	127 / 127	139 / 127	139 / 139
Closed Transition							
Nominal Run Amps	(1)	A	288	312	329	343	357
Maximum Start Amps	(2)	A	458	524	541	585	600
Recommended Mains Fuse		A	400	450	450	450	500
Compressor Nom Run Amps - Per Compressor		A	130.4 / 130.4	147.3 / 130.4	147.3 / 147.3	161.5 / 147.3	161.5 / 161.5
Water Pump - ac Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	297	321	337	352	366
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	4.0	4.0	4.0	4.0	4.0
Full Load Amps		A	8.9	8.9	8.9	8.9	10.6
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	302	326	343	357	378
Recommended Mains Fuse		A	400	450	450	500	500
Motor Size		kW	7.5	7.5	7.5	7.5	11.0
Full Load Amps		A	14.4	14.4	14.4	14.4	21.0
Water Pump - Inverter Driven Motor							
Single Head or Run/Standby - Standard							
Unit Nominal Run Amps	(1)	A	299	323	340	354	368
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	5.5	5.5
Full Load Amps		A	11.0	11.0	11.0	11.3	11.3
Single Head or Run/Standby - Larger							
Unit Nominal Run Amps	(1)	A	299	323	340	358	372
Recommended Mains Fuse		A	400	450	450	450	500
Motor Size		kW	5.5	5.5	5.5	7.5	7.5
Full Load Amps		A	11.0	11.0	11.0	15.0	15.0

(1) Based on 12/7°C water temperature and 35°C ambient.
(2) Starting amps refers to the Star connection only.

	OPC700HE+D12	OPC750HE+D12	OPC800HE+D14	OPC850HE+D14	OPC900HE+D16	OPC950HE+D18	OPC1000HE+D18	OPC1100HE+D18
	389	414	446	472	513	554	576	598
	638	663	699	725	853	894	958	980
	560	560	630	630	710	710	750	750
				400 V 3 PH 50 Hz				
				Direct to Bus Bar				
				230 V 1 PH 50 Hz				
	16	16	16	16	16	16	16	16
				4mm² Terminal				
				24V / 230VAC				
	100	100	100	100	100	100	100	100
	500	500	500	500	500	500	500	500
	12	12	14	14	16	18	18	18
	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	109.2 / 91.8	109.2 / 109.2	126.5 / 109.2	162.5 / 162.5	143.1 / 126.5	143.1 / 143.1	156.4 / 143.1	156.4 / 156.4
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	300	300	300	300	300	300	300	300
	436 / 404	436 / 436	465 / 436	465 / 465	586 / 465	586 / 586	650 / 586	650 / 650
				Star - Delta				
	OPC700HE+DQ14	**OPC750HE+DQ16**	**OPC800HE+DQ16**	**OPC850HE+DQ18**	**OPC900HE+DQ20**	**OPC950HE+DQ20**	**OPC1000HE+DQ20**	**OPC1100HE+DQ20**
	All data as above except:							
	14	16	16	18	20	20	20	20
	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
	346	373	406	432	464	496	516	536
	616	643	679	705	833	865	929	949
	560	560	630	630	710	710	750	750
	166 / 139	166 / 166	192 / 166	192 / 192	217 / 192	217 / 217	238 / 217	238 / 238
	389	414	446	472	513	554	576	598
	638	663	699	725	853	894	958	980
	560	560	630	630	710	710	750	750
	186.6 / 161.5	186.6 / 186.6	212.2 / 186.6	212.2 / 212.2	246.5 / 212.2	246.5 / 246.5	268.3 / 246.5	268.3 / 268.3
	399	425	457	483	524	565	587	612
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	5.5	5.5	5.5	7.5
	10.6	10.6	10.6	10.6	10.6	10.6	10.6	14.4
	410	435	467	493	534	575	597	619
	560	560	630	630	710	710	750	750
	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
	400	425	458	483	528	569	591	613
	560	560	630	630	710	710	750	750
	5.5	5.5	5.5	5.5	7.5	7.5	7.5	7.5
	11.3	11.3	11.3	11.3	14.7	14.7	14.7	14.7
	404	435	468	493	534	576	604	626
	560	560	630	630	710	710	750	750
	7.5	11.0	11.0	11.0	11.0	11.0	15.0	15.0
	15.0	21.4	21.4	21.4	21.4	21.4	28.0	28.0

AIRETronix Controls

TEMPERATURE CONTROL

Airedale recognises that all chiller applications are different but fall mainly into 2 application categories; Variable Supply Temperature and Constant Supply Temperature.

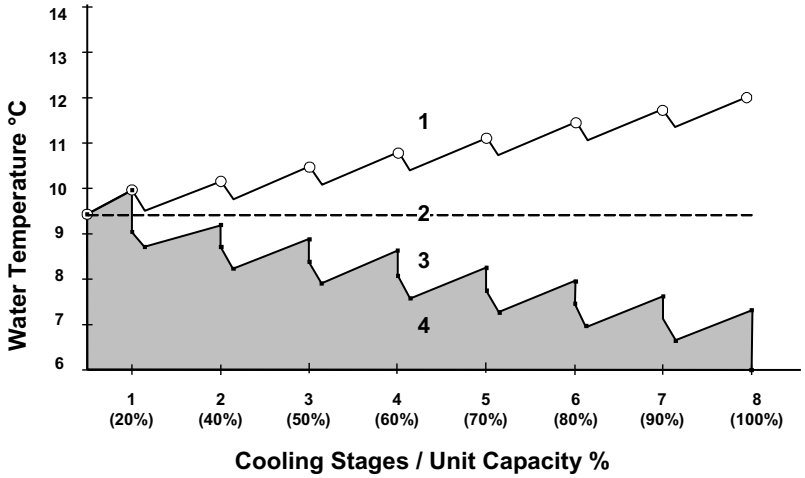
The onboard microprocessor has the capability of satisfying either control requirement as illustrated below. Using the Airedale Variable Supply Temperature control scheme, energy savings are available when compared with previous schemes and that of the Constant Supply Temperature application.

Variable Supply Temperature control schemes offer energy savings where the supply water temperature is not critical to its operation.

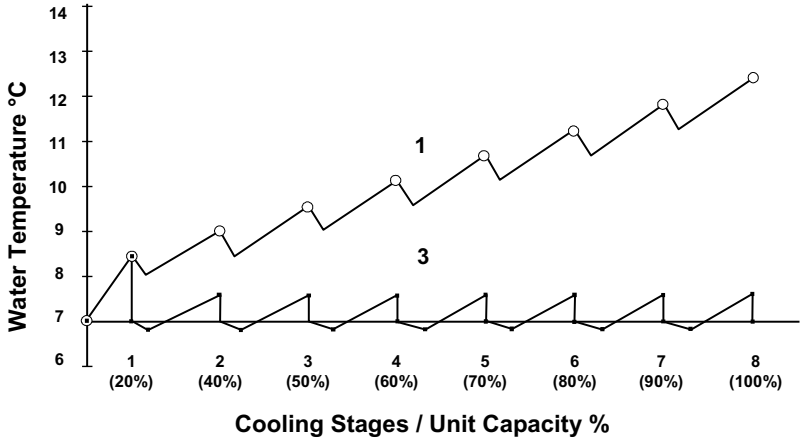
Selection of the best application control scheme can be made via a soft switch in the microprocessor during initial commissioning.

The microprocessor maintains the set supply Chilled Water temperature by sensing the return and supply water temperatures and ambient air temperature to adjust the compressor loading and water valve position as required.

Variable Supply Temperature Control



Constant Supply Temperature Control



1 Return Water Temperature
2 Mean Value
3 Supply Water Temperature
4 Compressor Off

CAUTION **Factory set to Variable Supply Temperature Control unless otherwise stated at order.**

Only when the mode selection has been set can the unit be enabled.

AIRETronix Controls

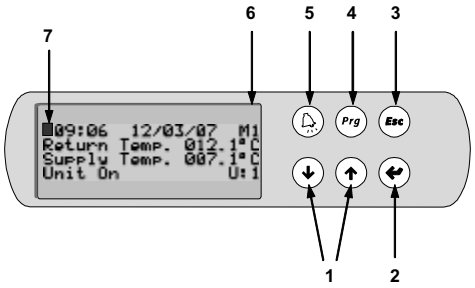
GENERAL DESCRIPTION

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

The controller's inbuilt display is 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 are a visual alarm and the facility to adjust and display control settings by local operator for information and control.

DISPLAY/KEYPAD



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 4 ROW LCD DISPLAY

7 CURSOR (FLASHING) Top Left Position = "HOME" Indicates adjustable Fields

OPERATION

Navigation

The display is used for **Viewing Unit Operating Status** and **Adjusting Customer Control Settings** by allowing the operator access to a series of **Menus** & **sub-menus**. Viewing information is unrestricted, however set up and adjustment requires password entry, refer to ***Password Protection***, on page 40.

Initially, use the Prg key to **access Menus,** the symbol ← will appear top right and the first menu will appear in CAPITALS, these **indicators** shows which menu is selected.

Use the ↓ ↑ keys to **move** the **indicator** ← to the desired menu and press ↵ to **open** the menu.

Use the ↵ key to **move** the flashing **cursor** II to adjustable **fields** and the ↓ ↑ keys to change the values.

Press the ↵ key to **move** the **cursor** to the next **field** or **Home.**

When the cursor is **Home** either use the ↓ ↑ keys to scroll to next **sub-menu** or the Esc to **exit** and **return** to the **Standard Operating** page.

AIRETronix Controls

OPERATION

Standard Operating Page

The following **Menus** can be accessed from the **Operating Page**, it is recommended that the display is always returned to the **Operating Page** by using the Esc key

Password Protection

To guard against unauthorised adjustments, a password is required to gain access to certain menus as defined below.

FACTORY SET PASSWORD PIN NUMBER: 4648 (or Customer chosen number).

When a password is requested use the ↓ ↑ keys to enter the number and ↵ to access the page.

Menus (Listed in Sequence)

Menu	Description	Password
Unit On/Off	Enable or Disable the unit	**Open Access**
Maintenance	Displays hours run for compressors and pumps (if fitted). Also includes Electronic Expansion Valves (if fitted).	**Default 4648**
Alarm Log	Display last 100 alarms in chronological order.	**Open Access**
Input/Output	Displays current status on digital and analogue inputs and outputs.	**Open Access**
Clock	Allows adjustment of real time clock, time zones	**Default 4648**
Setpoint	Allows setpoint adjustment, includes supply temperature setpoint and unit temperature differential.	**Default 4648**
User	Allows selection of setpoint limits, enables unit on/off from display, remote on/off and remote pump on/off.	**Default 4648**
Manufacturer	Factory use only.	**Airedale Only**

SETTING UP

Unit On/Off

By pressing the Esc and ↵ simultaneously for approximately 5 seconds, the unit operation will stop or start. The unit can also be enabled through the Unit On/Off menu.

Real Time Clock

The units leave the factory set, however follow the **Navigation** instructions if necessary.

Time Zones

The programme provides 3 On/Off periods per day, 7 days per week. The unit is factory set for continuous operation.

Technical Support

For further details, please contact Airedale.

AIRETronix Controls

VIEWING UNIT OPERATING STATUS

Status Menu

Allows access to view operating status of Digital and Analogue Inputs and Outputs.

Using the **Navigation** instructions, the following **Sub-Menus** shown in sequence can be accessed:

Digital Inputs

ID1	Phase Rotation (Optional)
ID2	Emergency Stop
ID3	Evaporator Flow Switch
ID4	Remote On/Off (Optional)
ID5	Compressor 1 Contactor Status
ID6	Circuit 1 Low Pressure Switch
ID7	Compressor 1 Overload
ID8	Circuit 1 Isolator Status
ID9	Circuit 1 Discharge Gas Thermostat
ID10	Compressor 2 Contactor Status
ID11	Circuit 2 Low Pressure Switch
ID12	Compressor 2 Overload
ID13	Circuit 2 Isolator Status
ID14	Circuit 2 Discharge Gas Thermostat
ID15	Pump 1 Contactor Status (Optional)
ID16	Pump 2 Contactor Status (Optional)
ID17	Remote Pump Enable
ID18	Summer / Winter Setpoint Enable

Analogue Inputs

B1	Circuit 1 Discharge Temperature
B2	Circuit 1 Liquid Pressure
B3	Refrigerant Leak Detector (Optional)
B4	Return Water Temperature (Optional)
B5	Supply Water Temperature
B6	Circuit 2 Liquid Pressure
B7	Evaporator Differential Pressure (Optional)
B8	Circuit 2 Discharge Temperature
B9	Not Used
B10	Ambient Temperature (Optional)

Digital Outputs

NO1	Compressor 1 Line Contactor
NO2	Compressor 1 Star Contactor
NO3	Compressor 1 Delta Contactor
NO4	Compressor 1 Economiser Solenoid Valve
NO5	Compressor 1 CR1 Solenoid Valve
NO6	Compressor 1 CR2 Solenoid Valve
NO7	Compressor 1 CR3 Solenoid Valve
NO8	Non-Critical Alarm
NO9	Compressor 2 Line Contactor
NO10	Compressor 2 Star Contactor
NO11	Compressor 2 Delta Contactor
NO12	Compressor 1 CR4 Solenoid Valve
NO13	Critical Alarm
NO14	Compressor 2 CR3 Solenoid Valve
NO15	Compressor 2 CR4 Solenoid Valve
NO16	Compressor 2 Economiser Solenoid Valve
NO17	Compressor 2 CR1 Solenoid Valve
NO18	Compressor 2 CR2 Solenoid Valve

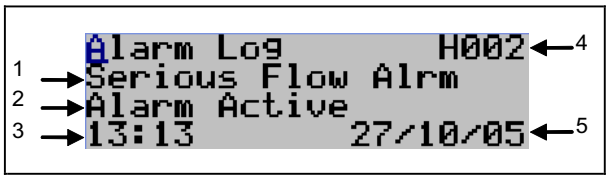
Analogue Outputs

Y1	Not Used
Y2	Circuit 1 Condenser Fan Speed Controller
Y3	Circuit 2 Condenser Fan Speed Controller
Y4	Pump 1 Contactor (Optional)
Y5	Pump 2 Contactor (Optional)
Y6	Not Used

AIRETronix Controls

ALARMS

The controller logs and allows viewing of the last 100 conditions recorded in descending chronological order.



1 Alarm Label
2 Alarm Status: Alarm Active or Alarm Cleared
3 Time of Alarm
4 Alarm Log
5 Date of Alarm

Alarm Handling

1 A **Red LED** behind the **Alarm** key will light in the event of an alarm. To view the alarms, simply press the key and the keys to scroll through.

2 Auto reset alarms will clear following this first depression of the **Alarm** key. If however the **Red LED** behind the **Alarm** key remains illuminated, the unit requires some form of manual reset.

3 For manual reset alarms, isolate the affected circuits before further investigation.

4 To reset or delete the alarms displayed in the alarm screen, simply press again.

COMMON ALARMS

Outlined below is a selection of Common Alarms, a full list is available, please contact Airedale.

Phase Rotation or MCCB

A normally closed contact. When Phase Rotation is incorrect all controller outputs are de-activated.

Emergency Stop

A normally open contact. On closing, all controller outputs are de-activated.

Evaporator Flow Failure

A normally closed contact. On opening, all controller outputs are de-activated.

Low Supply Temperature

Supply Water Temperature Low Limit alarm is generated when the supply water temperature falls below the low limit value set. All controller outputs are de-activated.

INDIVIDUAL CIRCUIT ALARMS

Outlined below is a selection of Individual Circuit Alarms, a full list is, please contact Airedale.

Electronic Expansion Valve Failure

This indicates that the electronic expansion valve controller has detected an operating problem.

Low Suction Pressure

When the suction pressure sensor value falls below the value set by the low suction level for a period exceeding 1 minute (or 3 minutes on compressor start-up), a visual alarm will be generated at the in-built display and the relevant compressor will be de-activated.

High Liquid Pressure

When the liquid pressure reaches 14.6 barg, the relevant circuit will be switched off and an alarm activated, this can only be rectified by manual reset via the microprocessor.

Compressor Status

A normally closed contact when the compressor is operating. If this contact remains open for a period of 5 seconds during operation of the compressor, a visual alarm is generated and the relevant compressor will be de-activated. This alarm comprises of compressor motor protection module, discharge gas thermostat and safety high pressure switch.

Commissioning Data

GENERAL DATA

Operating limits

(For 100% Water)

Standard Unit	
Minimum Ambient Air DB °C	-20°C
Maximum Ambient Air DB °C at Full Load Operation	40°C
Maximum Ambient Air DB °C at Reduced Load Operation	45°C
Minimum Leaving Water Temperature °C	+5°C
Maximum Return Water Temperature °C	+20°C
Minimum / Maximum ΔT	4°C / 8°C

1 For conditions outside those quoted, please refer to Airedale.
2 For minimum ambient, it is assumed that adequate freeze protection is fitted.

Commissioning Data

OIL & REFRIGERANT CHARGES - HIGH EFFICIENCY

		OPC500HED8	OPC525HED8	OPC550HED8	OPC600HED10	OPC650HED10
Compressor		Screw - Twin				
Quantity		1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Oil Charge Volume (Total)	l	22 + 22	19 + 22	19 + 19	19 + 19	19 + 19
Oil Type		Ester Oil				
Refrigeration		Dual Circuit				
Refrigerant Control		Electronic Expansion Valve (EEV)				
Refrigerant Pre Charged		R134a				
Charge (Total)	kg	85 + 85	90 + 85	90 + 90	105 + 105	115 + 115

		OPC500HEDQ10	OPC525HEDQ10	OPC550HEDQ10	OPC600HEDQ10	OPC650HEDQ10
Compressor		Screw - Twin				
Quantity		1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Oil Charge Volume (Total)	l	22 + 22	19 + 22	19 + 19	19 + 19	19 + 19
Oil Type		Ester Oil				
Refrigeration		Dual Circuit				
Refrigerant Control		Electronic Expansion Valve (EEV)				
Refrigerant Pre Charged		R134a				
Charge (Total)	kg	100 + 100	105 + 100	105 + 105	105 + 105	105 + 105

OIL & REFRIGERANT CHARGES - HIGH EFFICIENCY PLUS

		OPC500HE+D8	OPC525HE+D10	OPC550HE+D10	OPC600HE+D10	OPC650HE+D10
Compressor		Screw - Twin				
Quantity		1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Oil Charge Volume (Total)	l	22 + 22	19 + 22	19 + 19	19 + 19	19 + 19
Oil Type		Ester Oil				
Refrigeration		Dual Circuit				
Refrigerant Control		Electronic Expansion Valve (EEV)				
Refrigerant Pre Charged		R134a				
Charge (Total)	kg	90 + 90	115 + 105	115 + 115	115 + 115	120 + 120

		OPC500HE+DQ12	OPC525HE+DQ12	OPC550HE+DQ12	OPC600HE+DQ12	OPC650HE+DQ12
Compressor		Screw - Twin				
Quantity		1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
Oil Charge Volume (Total)	l	22 + 22	19 + 22	19 + 19	19 + 19	19 + 19
Oil Type		Ester Oil				
Refrigeration		Dual Circuit				
Refrigerant Control		Electronic Expansion Valve (EEV)				
Refrigerant Pre Charged		R134a				
Charge (Total)	kg	125 + 125	130 + 125	130 + 130	130 + 130	130 + 130

	OPC700HED12	OPC750HED12	OPC800HED12	OPC850HED12	OPC900HED14	OPC950HED14	OPC1000HED16	OPC1100HED16
				Screw - Twin				
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	35 + 19	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35
				Ester Oil				
				Dual Circuit				
				Electronic Expansion Valve (EEV)				
				R134a				
	130 + 130	130 + 130	130 + 130	135 + 135	160 + 155	160 + 160	180 + 180	180 + 180

	OPC700HEDQ14	OPC750HEDQ14	OPC800HEDQ14	OPC850HEDQ14	OPC900HEDQ16	OPC950HEDQ16	OPC1000HEDQ18	OPC1100HEDQ18
				Screw - Twin				
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	35 + 19	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35
				Ester Oil				
				Dual Circuit				
				Electronic Expansion Valve (EEV)				
				R134a				
	145 + 145	145 + 145	155 + 155	155 + 155	180 + 170	180 + 180	195 + 195	195 + 195

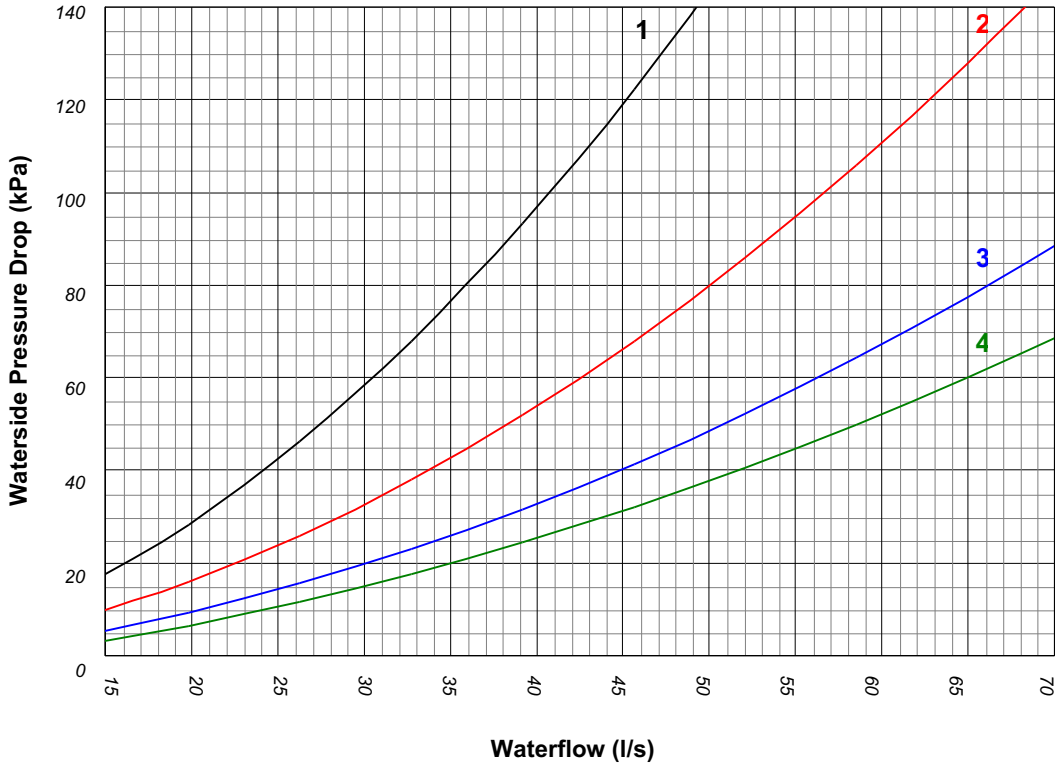
	OPC700HE+D12	OPC750HE+D12	OPC800HE+D14	OPC850HE+D14	OPC900HE+D16	OPC950HE+D18	OPC1000HE+D18	OPC1100HE+D18
				Screw - Twin				
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	35 + 19	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35
				Ester Oil				
				Dual Circuit				
				Electronic Expansion Valve (EEV)				
				R134a				
	135 + 135	140 + 140	155 + 155	155 + 155	180 + 170	195 + 195	195 + 195	195 + 195

	OPC700HE+DQ14	OPC750HE+DQ16	OPC800HE+DQ16	OPC850HE+DQ18	OPC900HE+DQ20	OPC950HE+DQ20	OPC1000HE+DQ20	OPC1100HE+DQ20
				Screw - Twin				
	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1	1 + 1
	35 + 19	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35	35 + 35
				Ester Oil				
				Dual Circuit				
				Electronic Expansion Valve (EEV)				
				R134a				
	155 + 155	170 + 170	170 + 170	185 + 185	215 + 205	215 + 215	215 + 215	215 + 215

Commissioning Data

WATERSIDE PRESSURE DROP (KPA)

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



	HED	HEDQ	HE+D	HE+DQ
OPC500	1	1	2	2
OPC525	1	1	2	2
OPC550	1	1	2	2
OPC600	1	1	2	2
OPC650	2	1	3	2
OPC700	2	2	3	3
OPC750	2	2	4	3
OPC800	2	3	3	3
OPC850	3	3	3	3
OPC900	3	3	3	3
OPC950	3	3	3	3
OPC1000	3	3	3	3
OPC1100	3	3	3	3

(1) Chiller pressure drop refers to standard unit only. For pump options, please contact Airedale.
(2) For glycol solutions, please refer to ***Glycol data***, on page 26.

Commissioning Data

PUMP PACKAGES (OPTIONAL EXTRAS)

Use the formula below and the graphs provided to calculate the External Head Available:

Example

Model Ref.	= **OPC800HE+D14**
Ambient:	= 35°C
Fluid	= 100% Water
Inlet Fluid Temp.	= 7°C
Outlet Fluid Temp.	= 12°C (***5°C ΔT***)
Pump Selection	= Single Standard Head - Standard ac Motor - Fixed Speed Option
Fluid Flow l/s	= 40.0 l/s

EHA (kPa) = External Head Available

EHA (kPa) = { Total Pump Head Available - Unit Waterside Pressure Drop }

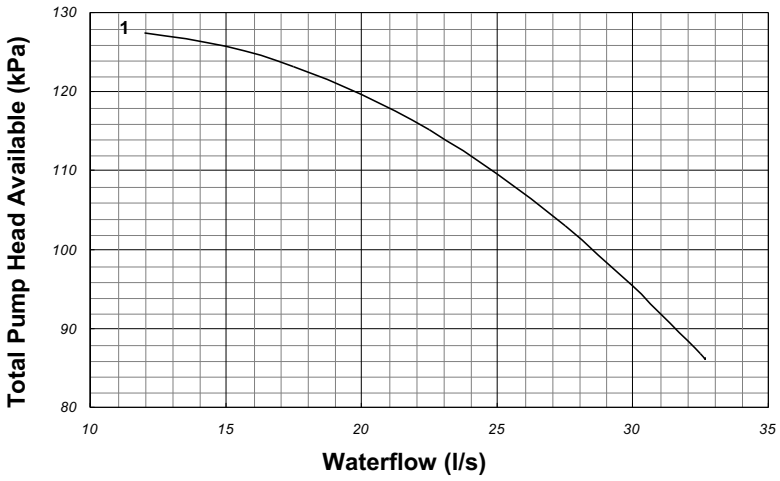
EHA (kPa) = { 123 - 33 }

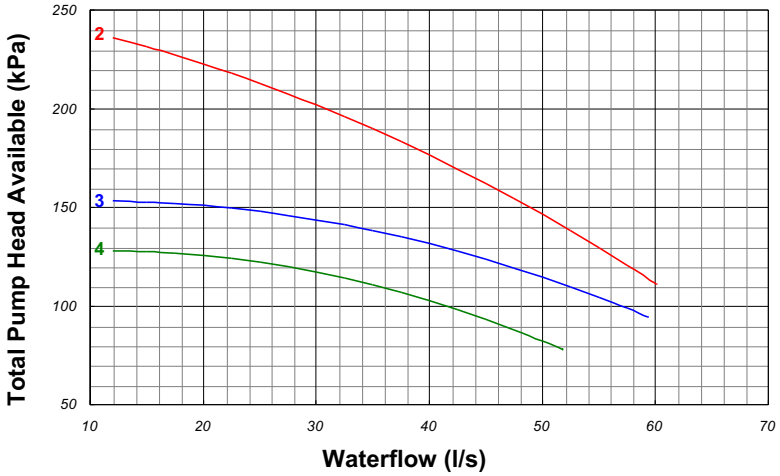
EHA (kPa) = 90 kPa

Commissioning Data

PUMP PACKAGES (OPTIONAL EXTRAS)

ac Motor - Fixed Speed Option



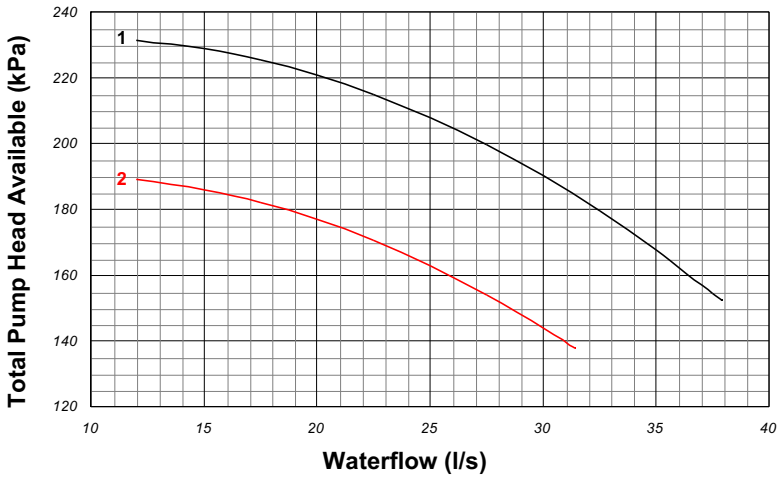


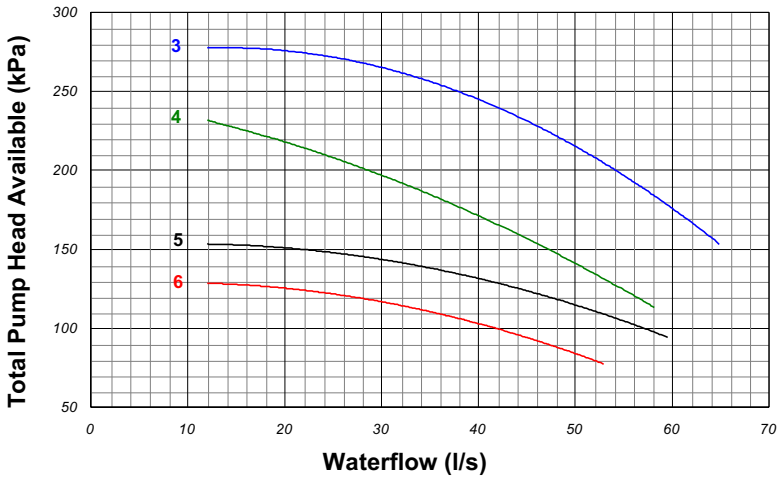
	Single Head	
H E / H E +	Standard Head	Larger Head
OPC500	1	3
OPC525	1	3
OPC550	1	3
OPC600	1	3
OPC650	1	2
OPC700	4	2
OPC750	4	2
OPC800	4	2
OPC850	4	2
OPC900	4	2
OPC950	4	2
OPC1000	4	2
OPC1100	3	2

Commissioning Data

PUMP PACKAGES (OPTIONAL EXTRAS)

Inverter Driven Motor - Variable Speed Option





	Single Head	
HE / HE+	Standard Head	Larger Head
OPC500	2	2
OPC525	2	2
OPC550	2	2
OPC600	6	1
OPC650	6	1
OPC700	6	1
OPC750	6	4
OPC800	6	4
OPC850	6	4
OPC900	5	4
OPC950	5	4
OPC1000	5	3
OPC1100	5	3

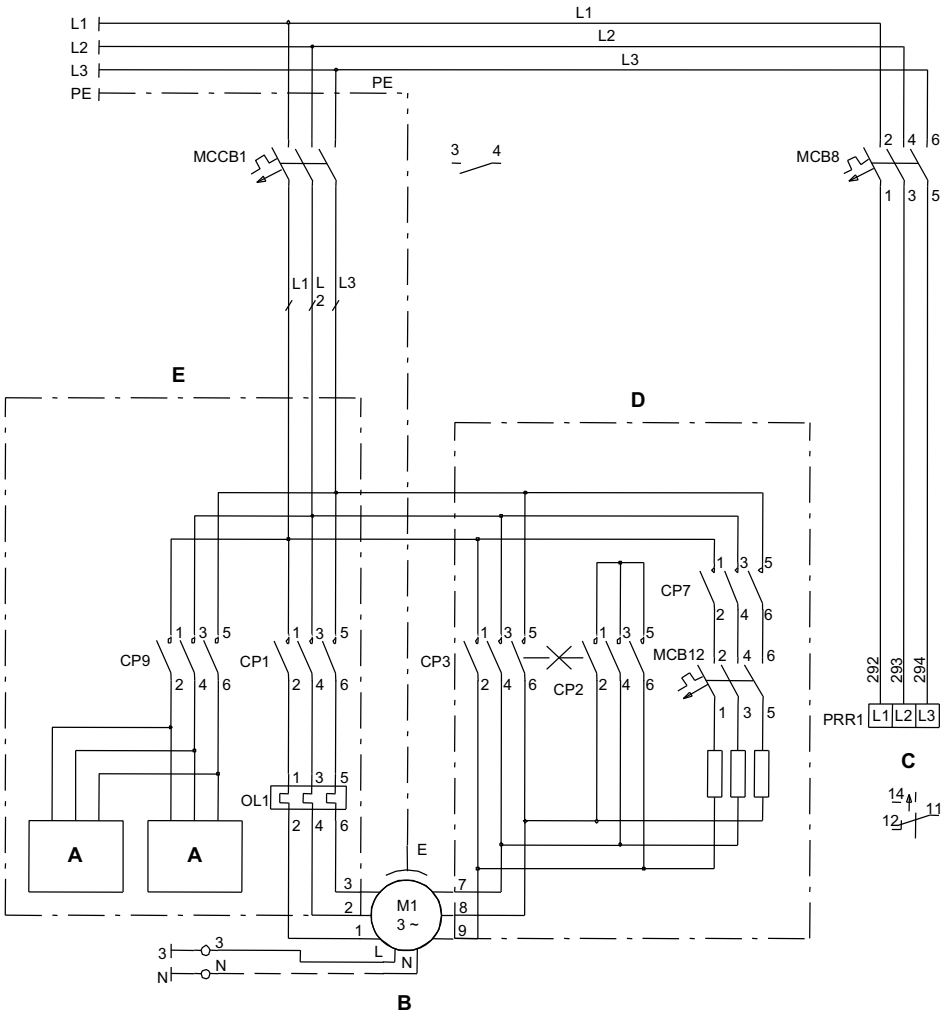
Commissioning Data

ELECTRICAL DATA

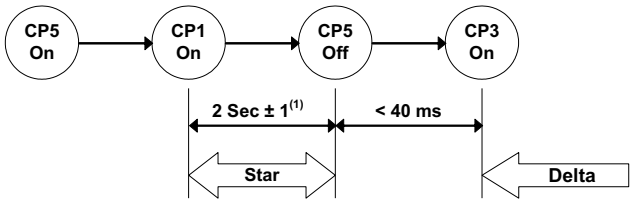
Compressor Start-Up Information

Key:

A Power Factor Correction Capacitor
B Compressor
C Phase Rotation Relay
D Closed Transition Start Optional Extra
E Power Factor Correction Optional Extra



Starting Sequence (Star-Delta Starting)



(1) 0.7 seconds when Closed Transition optional extra selected.

Commissioning Data

OPERATIONAL SEQUENCE

Refrigerant Charge

Liquid refrigerant should be charged into the condenser before compressor starting to ensure that refrigerant is present at compressor start-up.

Compressor Oil Heater

The mains supply to the compressor oil heater should be switched on at least 8 hours prior to compressor starting to avoid refrigerant migration.

CAUTION ⚠ **A separately fused, locally isolated, permanent single phase and neutral supply MUST BE FITTED for the compressor oil heater, evaporator trace heating and control circuits, FAILURE to do so could INVALIDATE WARRANTY.**

To reduce down time, if possible support the above supply with a UPS.

Pre-Start-Up Check

Before compressor start-up, make sure that an oil level is showing in the compressor sight glass, and that all refrigerant ball valves are opened, including the liquid injection line.

Checks at Compressor Start-up

As soon as the compressor starts, make sure that the solenoid valve for liquid injection opens, and that the suction and liquid/discharge pressure gauges are showing low and high pressures respectively.

CAUTION ⚠ **If there is no liquid present or no differential pressure occurs, isolate immediately.**

Check phase rotation by connecting pressure gauges to the suction and discharge ports.

Capacity Control

4 Stage capacity control

CONTROL RELAY	1	2	3	4
START / STOP	○	○	●	○
25% CAPACITY	○	○	○	◉
50% CAPACITY	○	●	○	◉
75% CAPACITY	●	○	○	◉
100% CAPACITY	○	○	○	◉

○ Solenoid Valve De-energized
● Solenoid Valve Energized
◉ Solenoid Valve intermittent (10 sec on / off)

Adding Refrigerant

Additional refrigerant should be added to the system via 1/4” Schrader connection on the expansion line.

Pump Down

Never shut the liquid injection solenoid valve during or before pump down.

Never pump down without the low pressure trip and high discharge temperature switches being operative.

UNLOADING PROTECTION

Head Pressure

The microprocessor has inbuilt protection against nuisance trips. If the head pressure rises above 13.2barg the compressor will unload to 75% and remain unloaded until the head pressure drops below 11.2barg.

Low Pressure

If low pressure drops below the microprocessor setting, the compressor will unload to 75%, if low pressure persists for 1 minute, the circuit will be switched off and sound an alarm.

Commissioning Procedure

GENERAL

To be read in conjunction with the commissioning sheets provided, items highlighted should be recorded.

CAUTION **Please ensure all documents have been completed correctly and return to Airedale Technical Support immediately to validate warranty.**

PRE COMMISSIONING CHECKLIST

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.

The unit isolators DO NOT isolate the incoming mains supply, but isolate the individual electrical panels. Isolate REMOTELY the mains incoming supply to the BUSBAR chamber prior to maintenance or repair work.

The door interlocking MCCB should be in the OFF position and the auxiliary alarm contact from the MCCB should be linked out.

Ensure all items listed in the Pre commissioning section are complete.

RECORD

- The unit should be visually inspected and any damage noted
- Secure commissioning gauges to the high side of the system, check for a positive charge
- Check tightness of electrical components and properly terminated
- Check that the remote on/off switch (if fitted) is in the off position
- With the MCBs in the off position measure the incoming voltage
- Check Phase Rotation
- Check voltage at permanent supply
- Measure and record the primary (230V) and secondary (24V) voltages at each of the transformers, adjust tapping if necessary and record on the commissioning document
- Check all timer settings are correct
- Check compressor oil heater (ensure this is switched on for a minimum of 8 hours prior to the unit operation)
- Check oil level of each compressor
- Check water filter is fitted
- Check design water flow is available
- **Check flow switch and pump interlocks are fitted to the water system and wired directly to the chiller and functioning correctly**
- Switch on the controls and individual circuits, primary and secondary, MCBs to the ON position, at this stage the control display panel should be illuminated
- Record Optional Extras
- Record Controller Data

CAUTION **Disable remote ON/OFF to ensure the unit does not start unintentionally.**

The chiller will not start until microprocessor control SWITCH 1 is in the ON position. DO NOT SWITCH TO ON AT THIS STAGE

Commissioning Procedure

PRE COMMISSIONING CHECKLIST

Adjust the water temperature supply and return set points (if necessary) to call for 100% cooling (refer to ***Controls***, on page 39).

- Ensure all KNOBS and SWITCHES are adjusted to suit the design requirements (refer to ***Controls***, on page 39)
- **To switch the unit ON**, use the microprocessor keypad as follows:
  Press Prg, press ↵, press ↵, press ↑ & finally ↵

CAUTION **There will always be a delay between the enabling of the unit and the energising of the compressor contactors, anything between 1 to 2 minutes. Be patient.**

Check that there is a 2 seconds delay between the Star and Delta contactor energising on each circuit.

CAUTION **This delay period would be 0.7 seconds in Closed Transition Starting.**

- Check capacity control timing as detailed previously
- Check that each circuit trips on low pressure, the alarm should appear within 3 minutes
- The alarm will be recognised at the display circuit trip, to clear the alarms refer to ***Alarm Handling***, on page 42

CAUTION **Prior to the chiller compressors being allowed to start, the Water Flow Fail and Pump Interlock features MUST both be proven to work correctly.**

To check the water flow fail safety protection is working satisfactorily:

RECORD

- Reduce the flow rate to 75% of design and ensure that the evaporator pressure or flow protection switch trips at this flow rate, adjust as necessary
- With compressors off, ensure this alarm is recognised as "**Water Flow Fail**" at the display and disengages the circuits operation immediately, restore flow rate to the design and check the alarm has self-cleared

To check the pump interlock safety feature works satisfactorily:

RECORD

- Switch off the chiller water pump and check the interlock wiring connections at the chiller are open circuit
- **To switch the unit OFF**, use the microprocessor keypad as follows:
  Press Prg, press ↵, press ↵, press ↑ & finally ↵
- Fully open all liquid line and discharge service ball valves on each circuit

CAUTION **Re-instate both the liquid injection and liquid line solenoid valves.**

Remove the link from the MCCB for the auxiliary alarm contact.

Fully open all liquid line and discharge service ball valves on each circuit.

Commissioning Procedure

COMMISSIONING CHECKLIST

The following should be carried out with a load on the system; otherwise the unit is likely to short cycle. The following tests are to be carried out on 1 circuit at a time.

- Switch the door interlocking MCCB to the ON position but again only on the circuit which is to be tested
- Adjust the water temperature supply and return set points to match the system requirements
- To switch the unit ON, use the microprocessor keypad as follows:
  Press Prg, press ↵, press ↵, press ↑ & finally ↵
- Check liquid injection solenoid valve is energised and sight glass is clear
- Check pressures at suction and discharge ports for correct phase rotation

CAUTION **If there is no liquid present or no differential pressure occurs, isolate immediately.**

RECORD

- Check the unloading solenoids operate in the correct sequence - refer to ***Commissioning Data***, on page 51
- Measure and record the compressor amps once the compressors are fully loaded and then at each of the unloading stage
- Measure and record full speed amps of each condenser

CAUTION **The microprocessor LP setting is adjustable via the micro display. It is recommended that this setting be 0.6 bar below the equipment freezing point of the cooling medium ie for water (no glycol) LP micro settings is 3.2barg.**

- Ensure that the low water temperature safety cuts out at the correct setting +/- 0.5°C, to clear the alarms refer to ***Alarm Handling***, on page 42
- For water (no glycol) application, the recommended setting is 3°C below the design supply water temperature (to a minimum of 3°C)

RECORD

- Check the liquid line sight glass is clear and dry
- Check the superheat setting adjust the expansion valve to maintain a superheat setting of 5 - 8°C at all operating loads
- Check and record the following:
  Suction and discharge pressures
  Liquid, discharge and suction line temperature
  Water inlet and outlet temperature
- Ensure the above are all within the design parameters
- Repeat as follows for each circuit:
- To switch the unit OFF, use the microprocessor keypad as follows:
  Press Prg, press ↵, press ↵, press ↑ & finally ↵
- To switch the unit ON, repeat above

The unit is now commissioned and will provide many years of trouble free operation providing the following maintenance schedule is followed.

Maintenance

CAUTION **ALL work MUST be carried out by technically trained competent personnel.**

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

The unit isolators DO NOT isolate the incoming mains supply, but isolate the individual electrical panels. Isolate REMOTELY the mains incoming supply to the BUSBAR chamber prior to maintenance or repair work.

The door interlocking MCCB should be in the OFF position and the auxiliary alarm contact from the MCCB should be linked out.

WARNING **Power Factor Correction - Optional Extra**

Allow Discharge time and short circuit the capacitor before handling! This applies to any flying leads directly attached to the capacitor terminals.

IMPORTANT **UK MAINLAND - The Chiller Maintenance Record and supporting maintenance documents MUST be complete and available on request to validate warranty.**

The Chiller Maintenance Record is located within the unit control panel.

IMPORTANT **Ensure relevant F-Gas Regulation checks are carried out at the appropriate period.**

Maintenance

GENERAL MAINTENANCE The maintenance schedule indicates the time period between maintenance operation.

3 MONTHS	ACTION	NOTES
REFRIGERATION	Check the following and compare results with commissioning records: • Suction and discharge readings • Head pressure control is maintained • Pressure relief indicator gauge • Check each circuit sight glass for dryness and bubbles for indication of leaks • Check compressor oil level and shell/sump temperature	Investigate and rectify variations Remember to re-cap the Schrader connections!
	• Visually inspect the unit for oil patches	Investigate and repair possible leaks
SYSTEM	Check the following against the commissioning records: • Control settings • Alarm log for unusual occurrences • Chilled water control maintains design temperature • Chilled water flow is within design limits of zero to plus 10% • Concurrently ensure chilled water pump and flow switch operate efficiently, and that interlocks function correctly • Operation of waterflow switch and pump interlock	Investigate and adjust as necessary.
Finally!	Record operating conditions.	
FABRIC	Visually inspect the unit for general wear and tear, treat metalwork.	Rust should be inhibited, primed and touched up with matching paint (available from Airedale or your Distributor).
	Visually inspect pipe and pipework insulation.	Repair/rectify as necessary.
	Clean evaporator water strainer.	At first maintenance visit and then as frequently as necessary (12 months).
	Clean condenser coils. **Do not steam clean** use detergent and stiff bristled brush. For heavy dirt, use either a high pressure water or chemical hose.	Do not damage fins and comb out if necessary.
	Visually check the following: • Pipework clamps are secure • Tightness and condition of fan and compressor mounts • Anti-Vibration mounts fixings (if fitted)	Secure/tighten as necessary.
Finally!	Ensure control panel lids and access panels have been correctly replaced and securely fastened in position.	

Maintenance

GENERAL MAINTENANCE

6 MONTHS	ACTION	NOTES
	Repeat 3 month checks plus the following:	
SYSTEM	Check evaporator heater and low ambient thermostat are set to activate at 4.0ºC.	Remember to re-cap the Schrader connections!
12 MONTHS	**ACTION**	**NOTES**
	Repeat 6 month checks plus the following:	
SYSTEM	Check safety devices cut out the compressor at the correct settings.	
REFRIGERATION	Check glycol concentration if appropriate.	Adjust as necessary.
	Leak test all refrigerant joins and inspect all water connections.	Rectify as necessary.
ELECTRICAL	Tighten all electrical terminals.	

COMPRESSOR MAINTENANCE

Periodic maintenance and inspection of this equipment is necessary to prevent premature failure, the following periodic inspections should be carried out by period or hourly use which ever is sooner.

1 Year	Measure compressor motor insulation.
7,500 Hours or 4 Years	Inspect compressor oil.
20,000 Hours or 4 Years	Inspect oil filter, suction filter, check valve and pressure-relief valve.

SHUT DOWN PERIODS

For periods of winter shut down the following precautions are recommended:

- Close the liquid and discharge ball valve
- Cap service ports
- Turn off electrical circuits
- Drain the water from the chiller evaporator via the evaporator drain plug

Parts Identification

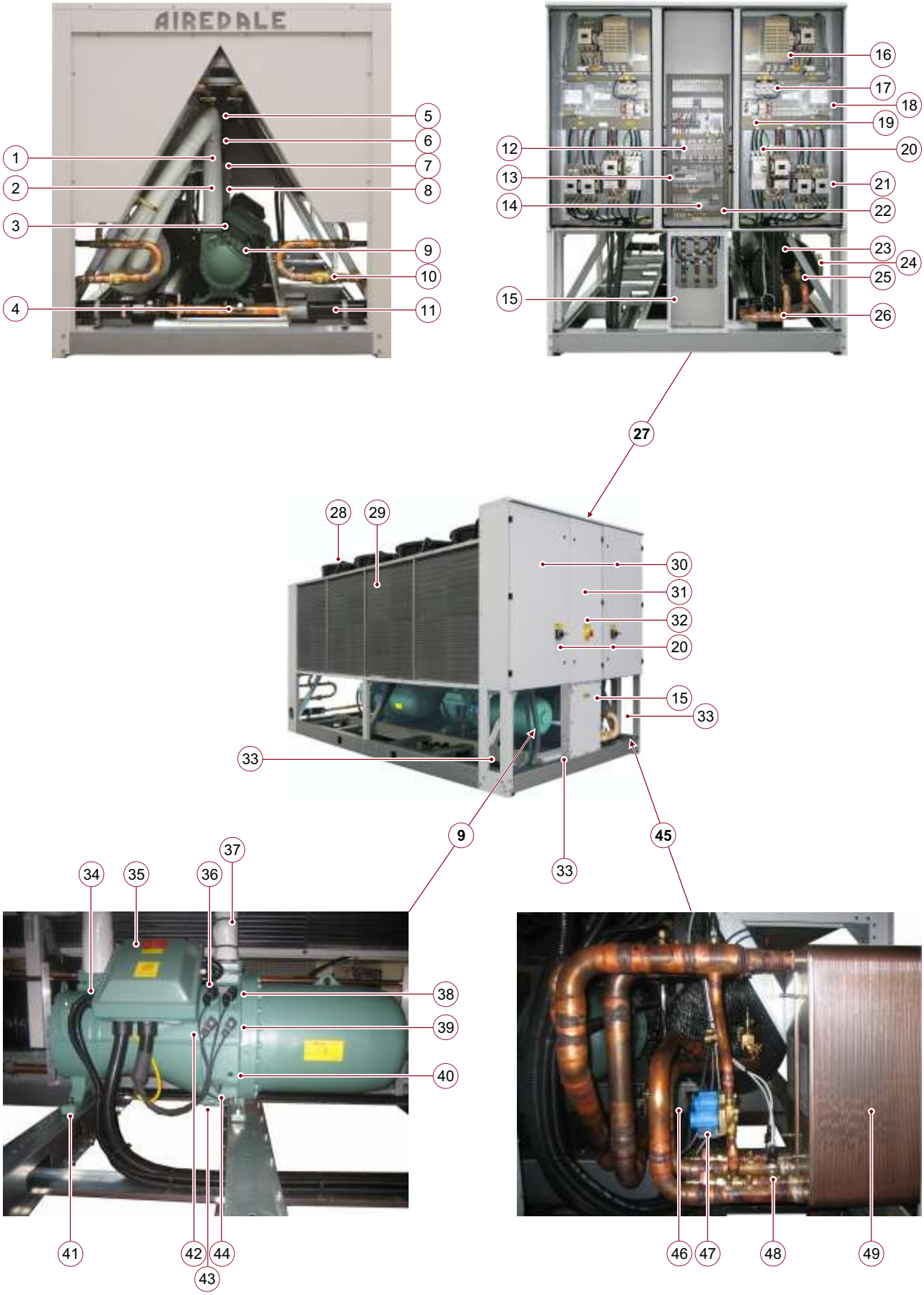
SPARES

For ease of identification when ordering spares or contacting Airedale about your unit, please quote the unit type, unit serial number and the date of manufacture, which can be found on the unit serial plate.

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.

The serial plate can be located inside Item 31.

1 Suction Pressure Transducer
2 Low Pressure Switch
3 HP Switch
4 Liquid Line Sight Glass
5 Discharge Line Ball Valve
6 Discharge NRV
7 Discharge Schrader Connection
8 Discharge Thermostat Switch
9 Compressor
10 Liquid Line Ball Valve
11 Liquid Line Filter Drier
12 Electronic Expansion Valve Controller
13 Microprocessor Controller
14 Phase Rotation Relay
15 Bus bar Chamber 3 phase Mains Incoming
16 Closed Transition Starting Resistor Pack (Optional Extra)
17 Condenser Fan Motor Protection Circuit Breakers
18 Modulating Head Pressure Controller - AC Standard Fans only
19 Timers
20 Door Interlocking Circuit Isolator
21 Star Delta Contactors
22 Incoming Customer Terminals
23 Evaporator
24 Water Connection
25 Electronic Expansion Valve (EEV)
26 Liquid Line
27 Mains Electrics & Controls Panels
28 Fan & Motor Assemblies - AC Motor Standard, EC Motor Optional
29 Condenser Coils
31 Control Panel (Serial Plate to inside)
30 Mains Panel Circuit 2
32 Emergency Stop
33 Incoming Customer Mains Access Points
34 Suction Port
35 Compressor Electrical Terminal Box
36 Unloading Solenoid Valve 1
37 Discharge Line
38 Unloading Solenoid Valve 2
39 Unloading Solenoid Valve 4
40 Oil Level Sight Glass
41 Compressor Feet/Resilient Pads
42 Unloading Solenoid Valve 3
43 Oil Sump Draw Point
44 Sump Heater
45 Economiser Circuit
46 Economiser EEV
47 Liquid Line Solenoid Valve
48 Economiser Liquid Transducer
49 Economiser Plate Heat Exchanger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