ANDREWS SYKES GROUP PLC

PRODUCT GUIDE




ANDREWS AIR CONDITIONING

ANDREWS CHILLERS

ANDREWS HEAT FOR HIRE

ANDREWS BOILERS

ANDREWS VENTILATION

ANDREWS DEHUMIDIFICATION

ANDREWS AIR QUALITY

THE UK'S LEADING HVAC SPECIALIST HIRE COMPANY

Hire · Sales · Service · Install

0800 211 611

andrews-sykes.com

ANDREWS SYKES GROUP PLC

CONTENTS

Established for more than 160 years, Andrews Sykes is the UK's largest specialist hire company. Solutions focused, our industry experienced teams provide 24/7 planned and preventative climate control through our extensive depot network across the UK. Our unique structure enables us to reach any UK destination within four hours and our commitment to delivering the finest equipment, service and expertise is unrivalled within the industry.

As well as our extensive depot network in the UK we have depots throughout Europe and the Middle East, whether through our own depot locations or our carefully selected agents.

Businesses rely on us whether safeguarding against equipment failure, which can have a detrimental impact on people and service, or providing the right conditions to ensure maximum productivity.

From straightforward hire services to full solution provision including design, planning, project management, installation and running of complex temporary and permanent solutions. We can provide an extensive range of air conditioners, chillers, heaters, boilers, dehumidifiers and ventilation equipment to withstand the toughest applications and the most demanding environments.

Our involvement with virtually every market sector allows our engineers to diligently propose solutions to customers operating in any industry, with this expertise reinforced by the fact that there are very few situations that we have not previously encountered.

With an impressive and varied client portfolio, our ability to provide a competitive and engineered solution for every climate control requirement, coupled with bespoke, flexible contract terms to suit, provides ultimate peace of mind and makes us the preferred choice when it comes to business critical equipment hire.

We look forward to working with you.

Regards,

Carl Webb

Carl Webb
Group Managing Director - Andrews Sykes

Andrews Sykes aims to continually improve its performance to meet changing business, regulatory and other requirements, to minimise the effect our activities have on the environment and to provide products and services that fully and consistently meet and exceed the requirements of our customers, both now and in the future.

We are accredited to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018, this is confirmed by an annual audit of our management systems and operational processes by an independent certification body.

To demonstrate our continued commitment to the environment we are certified for ESOS (Energy Saving Opportunity Scheme) and achieved Carbon Reduce Platinum status with Achilles Carbon Reduce accreditation (ISO14064-1:2006).

We are members of the British Safety Council and have achieved CHAS Elite, Constructionline Gold and Safe Contractor accreditations. Our engineers are F-Gas trained and Gas Safe Registered, we are members of the Hire Association of Europe and are a Safehire Certified Company.

To support our customers and demonstrate our commitment to Health & Safety, Quality, and the Environment, we also hold further industry accreditations, such as Achilles UVDB Silver+ and Achilles RISQ.

As a fleet operator of large vehicles, we are registered with FORS (Fleet Operator Recognition Scheme) which is an accreditation scheme encompassing all aspects of safety, fuel efficiency, vehicle emissions and improved operations, we have achieved FORS Silver status for our fleet operations.


International Organization for Standardization
ISO
9001


International Organization for Standardization
ISO
14001


International Organization for Standardization
ISO
45001


Achilles
Carbon Reduce Certified
Powered by
Toitū Envirocare


Achilles
UVDB
SILVER PLUS


SafeContractor
APPROVED


HIRE ASSOCIATION EUROPE
Hae
Member
www.hae.org.uk


ELITE
CHAS


RISQS
VERIFIED


BRITISH
SAFETY
COUNCIL
Member


FORS


SafeHire Certified Company
SafeHire


Constructionline
Gold Member


GAS
safe
REGISTER


REFCOM
F-GAS CERTIFICATION


RISQS
Verified


ISN
iSNetworld

We provide the best cooling and heating equipment at the right price, for virtually every need, location and application. This guide should provide all the data you need to choose the right equipment, including detailed technical information. If you have any questions simply call us free on 0800 211 611.

Air conditioning, cooling, chilling and air purification

- Fully portable air conditioners for locations large or small.
- Stylish portable units for "front of house".
- Mobile fluid chillers and fast chillers - from 6 kW to multi-megawatt packages.
- Low temperature chillers down to -12°C.
- Air handlers.
- Heat pumps for electrical hot water production.
- Evaporative coolers.
- Cooling fans.

Heaters, boilers, dryers and ventilation

- Heat for hire - safe, fume-free warmth anywhere.
- Gas and oil indirect and direct-fired heaters.
- Easy to use electric heaters.
- Fully mobile boiler plant and packaged boilers for instant heat and hot water.
- Site heaters.
- Dust & Fume extraction and ventilation fans.
- Dehumidifiers and humidifiers.
- Flexible ducting, hoses, accessories and all ancillary equipment.

Our mission is to be Europe's leading climate hire services company, helping our customers to address the real-life challenges they face - whether planned or emergency - in the fastest, most expert, professional and cost effective ways. We want to help our customers control their environment more effectively and pay less.

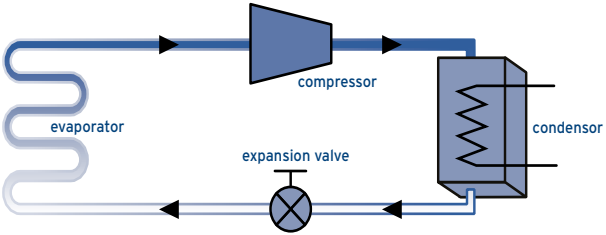
For our extensive range of products, our commitments are:

- We will have products available 24 hours a day 7 days a week.
- We will understand our customers' needs to ensure we provide the most appropriate solution.
- We will employ highly qualified engineers with the necessary training and experience.
- Any products ordered before 12:00 midday on a normal working day will be delivered the same day (if required).
- Free of charge site surveys will be carried out within 24 hours of a request being received.
- Any item that is off hired will be collected within 48 hours of the off hire notice being received.
- Any account queries will be resolved within 14 working days.
- We will respond to any breakdown within 4 hours of being notified.
- All telephone enquiries will be answered within 5 rings of the telephone.

Andrews Sykes are proud to invest in the latest technologies and strive to improve our ever-growing range. We encourage you to visit our website andrews-sykes.com as we regularly add new products and update our technical specifications.

When the temperature rises, it reduces our work performance and equipment failures can occur. To avoid these problems, Andrews offers a wide range of temporary, portable air conditioners based on air and water cooled versions and with or without external air-cooled heat exchangers as well as a wide range of chillers.

The basic principle of air conditioning
An air conditioner is a closed refrigerant system, comprising of an evaporator, a compressor, a condenser and an expansion valve (or capillary), which are all connected to each other with refrigerant piping. Refrigerant gas is circulated within the system in the direction shown in the below drawing.



The indoor unit, which is usually installed in the room to be cooled, contains the process where the refrigerant evaporates within the cold element (evaporator). This evaporation is caused because the refrigerant has a very low boiling point of -40ºC at atmospheric pressure.

To enable the evaporation, a rise in temperature is necessary. This rise is supplied by the air of the room which is to be cooled and in which the evaporator is situated. As air is passed over the evaporator the air temperature will drop and therefore enable the room air temperature to be reduced.

The compressor draws the vapour refrigerant and reduces the pressure in the evaporator. Because of this pressure reduction the refrigerant evaporates. The vapour which is drawn by the compressor is then compressed. The pressure and temperature of the gas rises as it is compressed into the condenser, where the warm gas is cooled down to the condensation temperature of the refrigerant. Subsequently the vapour returns back to liquid again. In the condenser the process is almost directly opposite to the evaporator. The condenser requires cooling otherwise the temperature and gas pressure will rise too high.

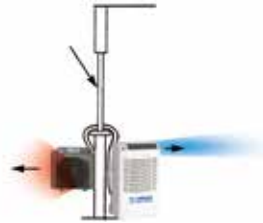
For this cooling process either water or air can be used.

The vapour which has now returned to liquid again is now passed through the expansion valve (or capillary) to the evaporator. Because of the narrowing of the pipe work the pressure decreases and the refrigerant evaporates once more. To enable this evaporation the warm air is needed and so the circuit is closed.

The operation of portable air conditioners: Andrews offer four principle types of portable air conditioners. These are:

1. Exhaust tube units: both the evaporator and condenser are positioned within the room unit. The majority of the air that is passed through the unit is directed over the evaporator and returns back into the room, as cooled air. A smaller volume of air is passed across the condenser to cool the refrigerant gas. This air needs to be removed from the room as it becomes hot. An exhaust tube is used to remove this hot air via an opening in the room (usually through a window). In some cases the exhaust tube may be positioned into a false ceiling void, advice should be sought before using this system.

2. Split type units (refrigerant): These are models similar to the PAC14 QC, such units are supplied in 2 parts, a room unit and a condenser. The room unit placed within the area to be cooled comprises of an evaporator and a compressor. The room air enters the unit and once passed across the evaporator is returned into the room as cooled air. The external unit which is connected to the room unit by a flexible pipe, contains the condenser which needs to cooled by ambient air, therefore the external unit needs to be positioned outside of the room to be cooled. Typically the condenser is hung from a window.



3. Split type units (water)

These units are the PAC22 and PAC60, such units are also supplied in 2 parts, a room unit and a heat exchanger. The principle in operation is very similar to that of the refrigerant units. The major difference is that the condenser is placed within the room unit and cooled by water. The water is then circulated to the external unit (heat exchanger) via flexible pipes before returning to the room unit. The system is totally sealed and requires no further water once the unit is in place. The main advantage of this system is that the connection pipes can be extended - up to 30 metres - allowing the heat exchanger to be positioned away from the room unit.

4. High performance units

In situations where large cooling capacities are required, our high performance air conditioners represent the perfect solution and negate the need for a hire arrangement comprising of several smaller units. Available in 30 kW, 45 kW and 90 kW versions, these units are perfect for reducing the temperatures in large open spaces including film sets, marquees, warehouses and other industrial facilities. They also feature technology that allows them to be used in a heating mode, making them dual-purpose units designed for a range of climate control applications. Variable fan settings provide the option for quieter running modes, which is essential in traditional environments where low background noise is desired.

For the installation of an air conditioner, a number of considerations are important:

1. Ensure that an air-cooled condenser gets enough fresh air (install outside or indoors with sufficient ventilation).
2. Let the evaporator or the indoor unit blow out the cool air freely (i.e. not against cabinets, beams, fluorescent lights), to ensure a draft-free air distribution.
3. Make sure the evaporator is level, otherwise the drip tray may overflow.
4. Make sure the condensate can be safely discharged.
5. Make sure the distance between the indoor and outdoor unit is not too great (up to 30 metres).
6. Provide adequate voltage.
7. Do NOT over extend exhaust tube.

Applications for temporary air conditioning equipment

- Offices
- Events & Exhibitions
- Temporary accommodation (e.g. portable buildings)
- Shops and Restaurants
- Storage of heat-sensitive products (e.g. chocolate)
- Computer server rooms
- Spot Cooling
- Schools
- Telecommunication rooms
- Laboratories
- Hospitals
- Production Facilities
- Process control rooms

- Hotel and conference centres
- Printing and reprographics
- Any application where a fixed unit has broken down or needs to be shut down for maintenance.

Calculating the cooling capacity required and choosing the type of air conditioning

The heat load for each room can vary considerably. This depends on the number of lights, the number of people, glass area facing the sun, and the presence of computers and other equipment. It is therefore essential to determine the capacity correctly.

Rule of thumb for an approximation of air conditioning load are:

Normal Modern Offices:	46 W per m^3
Portable Buildings:	57 W per m^3
Tents/Marquees:	95 W per m^3

In addition to the type and size of the area to be cooled consideration must be given to any appliances that generate heat in the area. Such appliances are listed below along with the approximate heat emission that they generate.

Personal Computer	45 W
Printer	35 W
Photocopier Standby	200 W
Photocopier In Use	1,300 W
Coffee Machine	800 W
TV/ Video Screen	50 W
Person	50 W

The Andrews specialists will be glad to work out an accurate cooling calculation for you.

Selection and installation of your portable air conditioner
To select which type of temporary air conditioner you must first consider the capacity of the unit and the possible alternatives to remove the condenser heat.

A room without outside walls or windows often means that a standard PAC (split) unit cannot be used. If an exhaust tube cannot be vented into a ceiling void or out of the room the only alternative may be a water-cooled PAC unit. Again, if it is not possible to position a heat exchanger within 30 m of the room unit other alternatives such as a chiller, evaporative coolers or cooling fans may need to be considered.

Before you select your Andrews portable air conditioner we suggest the following issues should be considered.

- The indoor unit (evaporator) needs to be positioned within 1.5 metres of a 13 Amp 230 Volt socket and located in a manner to avoid any obstruction to the airflow.
- If you are to use a PAC type unit the heat exchanger (condenser) will need to be positioned outside of the building or in a very well ventilated area that can withstand the heat transferred from the room being cooled. Condensation is discharged from the room unit to the heat exchanger where it is allowed to drain to the outside of the building. If the heat exchanger is placed within the building a separate means of discharging the condensation needs to be provided.
- When using a PAC unit it is always advisable to position the heat exchanger away from direct sunlight or any position where its operation is likely to cause disruption. The heat exchanger can only be positioned within the distance specified by PAC line length. Always aim to keep the PAC line length to a minimum.
- Always ensure that the electrical supply to the unit is adequate and that the operation of the unit will not cause any problems to other sensitive electronic equipment.

Videos depicting the installation process for many of our air conditioners can be found online at andrews-sykes.com/air-conditioning/

EXHAUST TUBE UNIT - POLAR BREEZE STYLE

ANDREWS AIR CONDITIONING

Nominal cooling duty	2.1 kW
Air flow (max)	320 m^3/h
Typical cooled area	70 m^3
Power supply	230 V 1 ph 50 Hz Run 4.2 A
Noise level (max)	63 dBA @ 1 metre
Weight	24 kg
Dimensions (L x W x H)	315 x 395 x 770 mm
Exhaust duct	1.5 metres x 152 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	0.72 kW/h
Refrigerant gas	R290 Propane (GWP = 3)

Suitable applications include:

Offices
Call centres
Classrooms
Small shops
Hospital rooms
Hotels
Events
Many more

Plug and play

EXHAUST TUBE UNIT - POLAR BREEZE

Nominal cooling duty	2.6 kW
Air flow (max)	300 m^3/h
Typical cooled area	63.7 m^3
Power supply	230 V 1 ph 50 Hz Run 7 A
Noise level (max)	55 dBA @ 1 metre
Weight	35 kg
Dimensions (L x W x H)	480 x 380 x 830 mm
Exhaust duct	2 metres x 127 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	1.2 kW/h

Suitable applications include:

Offices
Call centres
Classrooms
Small shops
Hospital rooms
Hotels
Events
Many more

- Plug and play
- Window kits available

ANDREWS AIR CONDITIONING

Nominal cooling duty	2.86 kW
Air flow (max)	360 m^3/h
Typical cooled area	73 m^3
Power supply	230 V 1 ph 50 Hz Run 5.9 A
Noise level	58 dBA @ 1 metre
Weight	35 kg
Dimensions (L x W x H)	420 x 345 x 735 mm
Exhaust duct	1.8 metres x 127 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	1.1 kW/h (Rated 'A' efficiency)

Suitable applications include:

Offices
Call centres
Classrooms
Small shops
Hospital rooms
Hotels
Events
Many more

Energy efficient

Window kits available

EXHAUST TUBE UNIT - POLAR HEAT PUMP

Nominal cooling duty	3.5 kW
Nominal heating duty	3.0 kW
Air flow (max)	360 m^3/hr
Typical cooled / heated area	80 m^3
Power supply	230 V - 50 Hz 5.9 A
Noise level	53 dBA
Weight	35 kg
Dimensions (L x W x H)	405 x 390 x 820 mm
Exhaust duct	152 mm
Control	Remote control with automatic thermostat
Average power consumption	1.4 kW/hr
Refrigerant gas	R290 (GWP = 3)

Suitable applications include:

Offices
Classrooms
Small Shops
Temporary Accommodation
Hotels
Events
Hospital Rooms
Clinics

- Plug and play
- Window kits available

EXHAUST TUBE UNIT - POLAR WIND STYLE

Nominal cooling duty	3.5 kW
Air flow (max)	360 m^3/h
Typical cooled area	90 m^3
Power supply	230 V 1 ph 50 Hz Run 7 A
Noise level (max)	65 dBA @ 1 metre
Weight	39 kg
Dimensions (L x W x H)	390 x 405 x 820 mm
Exhaust duct	1.5 metres x 152 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	1.2 kW/h
Refrigerant gas	R290 Propane (GWP = 3)

Suitable applications include:

Offices
Shops
Hotels
Workshops
Classrooms
Garages
Hospitals
Many more

Plug and play

EXHAUST TUBE UNIT - POLAR WIND

Nominal cooling duty	4.1 kW
Air flow (max)	360 m^3/h
Typical cooled area	99 m^3
Power supply	230 V 1 ph 50 Hz Run 9 A
Noise level	56 dBA @ 1 metre
Weight	45 kg
Dimensions (L x W x H)	480 x 400 x 840 mm
Exhaust duct	2 metres x 127 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	1.5 kW/h

Suitable applications include:

Offices
Call centres
Classrooms
Small shops
Hospital rooms
Hotels
Events
Many more

Energy efficient

Window kits available

ANDREWS AIR CONDITIONING

Nominal cooling duty	4.1 kW
Air flow (max)	450 m^3/h
Typical cooled area	99 m^3
Power supply	230 V 1 ph 50 Hz Run 9 A
Noise level	50 dBA @ 1 metre
Weight	34 kg
Dimensions (L x W x H)	410 x 450 x 850 mm
Exhaust duct	2.5 metres x 127 mm diameter
Control	Remote control with automatic thermostat
Average power consumption	1.5 kW/h

Suitable applications include:

Offices
Call centres
Classrooms
Small shops
Hospital rooms
Hotels
Events
Many more

- Plug and play
- Window kits available

EXHAUST TUBE UNIT - ET21

Nominal cooling duty	6.15 kW
Air flow (max)	780 m^3/h
Typical cooled area	133 m^3
Power supply	230 V 1 ph 50 Hz Run 11 A
Noise level (max)	68 dBA @ 1 metre
Weight	86 kg
Dimensions (L x W x H)	600 x 490 x 1,315 mm
Exhaust duct	8 metres x 450 mm or 3 metres x 300 mm
Optional cold air duct	5 metres x 125 mm
Control	Automatic thermostat
Average power consumption	1.8 kW/h

Suitable applications include:

Large offices
Marquees
Medium shops
Kitchens
Computer rooms
Laboratories
Storerooms
Many more

- Plug and play
- High air flow

EXHAUST TUBE UNIT - ET25 110 V

Nominal cooling duty	7.33 kW
Air flow (max)	960 m^3/h
Typical cooled area	159 m^3
Power supply	110 V 1 ph 50 Hz Run 22 A
Plug type	BS4343 32 A
Noise level (max)	69 dBA @ 1 metre
Weight	98 kg
Dimensions (L x W x H)	680 x 490 x 1,315 mm
Exhaust duct	8 metres x 450 or 3 metres x 300 mm
Optional cold air duct	5 metres x 125 mm
Control	Automatic thermostat
Average power consumption	1.8 kW/h

Suitable applications include:

Large offices
Marquees
Medium shops
Kitchens
Computer rooms
Laboratories
Storerooms
Construction

High air flow

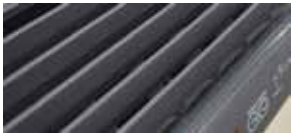
EXHAUST TUBE UNIT - ET25 230 V

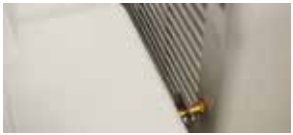
Nominal cooling duty	7.33 kW
Air flow (max)	960 m^3/h
Typical cooled area	159 m^3
Power supply	230 V 1 ph 50 Hz Run 13 A
Noise level (max)	69 dBA @ 1 metre
Weight	90 kg
Dimensions (L x W x H)	680 x 490 x 1,315 mm
Exhaust duct	8 metres x 450 or 3 metres x 300 mm
Optional cold air duct	5 metres x 125 mm
Control	Automatic thermostat
Average power consumption	2.2 kW/h

Suitable applications include:

Large offices
Marquees
Medium shops
Kitchens
Computer rooms
Laboratories
Storerooms
Many more

High air flow





Nominal cooling duty	4.3 kW
Air flow (Max)	620 m^3/h
Typical cooled area	100 m^3
Power supply	230 V 1 ph 50 Hz Run 4.72 A
Indoor noise level (max)	52 dBA @ 1 metre
Outdoor noise level (max)	54 dBA @ 1 metre
Indoor weight	34 kg
Outdoor weight	14 kg
Indoor dimensions (L x W x H)	470 x 335 x 695 mm
Outdoor dimensions (L x W x H)	510 x 230 x 490 mm
PAC line length	3 metres
Control	Automatic thermostat
Average power consumption	1 kW/h

Suitable applications include:

Large offices
Marquees
Medium shops
Kitchens
Computer rooms
Laboratories
Storerooms
Many more

- Plug and play

SPLIT TYPE - PAC22 SERIES 2

Nominal cooling duty	6.47 kW
Air flow (max)	990 m^3/h
Typical cooled area	156 m^3
Power supply	230 V 1 ph 50 Hz Run 11 A
Indoor noise level (max)	62 dBA @ 3 metres
Outdoor noise level (max)	62 dBA @ 3 metres
Indoor weight	119 kg
Outdoor weight	20 kg
Indoor dimensions (L x W x H)	850 x 380 x 1,240 mm
Outdoor dimensions (L x W x H)	560 x 280 x 520 mm
PAC line length	5 metres (max 30 metres)
Control	Automatic thermostat
Average power consumption	1.8 kW/h
Optional cold air duct	2 x 150mm x 5 metres

Suitable applications include:

Offices
Computer rooms
Shops
Hotels
Events
Restaurants
Healthcare
Many more

- Can operate down to 10°C
- HEPA filter version available
- Also available in 230 V 1ph 60 Hz

Nominal cooling duty	6.47 kW
Air flow (max)	1,310 m^3/h
Typical cooled area	156 m^3
Power supply	230 V 1 ph 50 Hz Run 11 A
Indoor noise level (max)	62 dBA @ 3 metres
Outdoor noise level (max)	62 dBA @ 3 metres
Indoor weight	122 kg
Outdoor weight	20 kg
Indoor dimensions (L x W x H)	810 x 390 x 1,240 mm
Outdoor dimensions (L x W x H)	560 x 280 x 520 mm
PAC line length	5 metres (max 30 metres)
Control	Automatic thermostat
Average power consumption	1.8 kW/h
Optional cold air duct	2 x 200 mm x 5 metres

Suitable applications include:

Offices
Computer rooms
Shops
Hotels
Events
Restaurants
Healthcare
Many more

- Can operate down to 10°C
- Also available in 230 V 1ph 60 Hz

SPLIT TYPE - PAC60 SERIES 3

Nominal cooling duty	17 kW
Air flow (max)	3,500 m^3/h
Typical cooled area	410 m^3
Power supply	415 V 3 ph 50 Hz 17 A
Plug type	BS4343 5 pin 32 A
Indoor noise level (max)	65 dBA @ 3 metres
Outdoor noise level (max)	70 dBA @ 3 metres
Indoor weight	230 kg
Outdoor weight	113 kg
Indoor dimensions (L x W x H)	1,000 x 640 x 1,610 mm
Outdoor dimensions (L x W x H)	820 x 605 x 1,085 mm
PAC line length	15 metres (max 30 metres)
Control	Automatic thermostat
Average power consumption	5.2 kW/h
Optional cold air duct	2 x 300 mm x 5 metres

Suitable applications include:

Data centres
Server rooms
Computer rooms
Events
Industrial
Manufacturing
Healthcare
Many more

- Can operate down to 10°C
- HEPA filter adaption available

Nominal cooling duty	30 kW
Air flow (max)	5,900 m^3/h
Typical cooled area	666 m^3
Power supply	415 V 3 ph N+E Run 22 A
Plug type	BS4343 32 A 5 Pin
Noise level (max)	64 dBA @ 3 metres
Weight	435 kg
Dimensions (L x W x H)	1,600 x 730 x 1,660 mm
Duct length (max)	16 metres
Average power consumption	6.8 kW/h
Duct Diameter	450 mm

Suitable applications include:

Data rooms
Storerooms
Server rooms
Workshops
Open plan areas
Events
TV and film studios
Many more

Can operate down to 10°C

HIGH PERFORMANCE - HPAC 30 HP

Nominal cooling duty	30 kW
Nominal heating duty	33 kW
Air flow (max)	5,900 m^3/h
Typical cooled area	666 m^3
Power supply	415 V 3 ph N+E Run 22 A
Plug type	BS4343 32 A 5 Pin
Noise level (max)	64 dBA @ 3 metres
Weight	435 kg
Dimensions (L x W x H)	1,600 x 730 x 1,660 mm
Duct length (max)	16 metres
Average power consumption	6.8 kW/h
Duct Diameter	450 mm

Suitable applications include:

Data rooms
Storerooms
Server rooms
Workshops
Open plan areas
Events
TV and film studios
Many more

Can operate down to 10°C

Nominal cooling duty	45 kW
Nominal heating duty	50 kW
Air flow (max)	7,500 m^3/h
Typical cooled area	1,000 m^3
Power supply	415 V 3 ph N+E Run 40 A
Plug type	BS4343 63 A 5 Pin
Noise level (max)	65.4 dBA @ 3 metres
Weight	780 kg
Dimensions (L x W x H)	1,937 x 1,340 x 2,170 mm
Duct length (max)	16 metres
Average power consumption	12.4 kW/h
Duct Diameter	600 mm

Suitable applications include:

Data rooms
Storerooms
Server rooms
Workshops
Open plan areas
Events
TV and film studios
Many more

- Can operate down to 10°C
- Cooling and heating

HIGH PERFORMANCE - HPAC 90 HP

Nominal cooling duty	90 kW
Nominal heating duty	90 kW
Air flow (max)	15,000 m^3/h
Typical cooled area	2000 m^3
Power supply	415 V 3 ph N+E Run 84 A
Plug type	BS4343 125 A 5 Pin
Noise level (max)	75.2 dBA @ 3 metres
Weight	1,640 kg
Dimensions (L x W x H)	2,280 x 2,030 x 2,450 mm
Duct length (max)	48 metres
Control	Automatic thermostat
Average power consumption	48.4 kW/h
Duct Diameter	600 mm

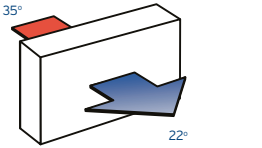
Suitable applications include:

Data rooms
Storerooms
Server rooms
Workshops
Open plan areas
Events
TV and film studios
Many more

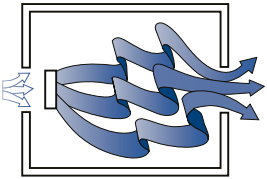
- Can operate down to 10°C
- Cooling and heating

The UK leader in portable evaporative coolers for hire
There are many applications where it is impossible or impractical to use portable air conditioners. In such cases an alternative may be the use of an evaporative air cooler.

Often used where access to an external source is unavailable, the Andrews range of stand alone evaporative air coolers are an ideal solution to uncomfortable conditions.



Typical low ambient humidity performance



The evaporative concept is designed to cool fresh air through the process of natural evaporation by drawing air across a wet filter and providing a refreshing air flow. As the air passes the wet filter, a drop in temperature will be experienced, although the overall room temperature will not be reduced. The unit will provide a localised comfort cooling zone.

Applications for the smaller evaporative coolers

- Offices
- Shops
- Restaurants
- Schools
- Kitchens
- Banks

Applications for the Eventair evaporative coolers

- Sports halls and gymnasiums
- Large manufacturing areas
- Outdoor events and marquees
- Large retail outlets
- Night clubs

EVAPORATIVE COOLER - LITTLE COOLER

Average duty	2 l/h
Air flow	928 m^3/h
Typical cooled area	40 m^3
Power supply	230 V 1 ph 50 Hz Run 0.4 A
Plug type	BS1363 230 V
Noise level (max)	54 dBA @ 1 metre
Weight	11.5 kg empty / 25 kg full
Dimensions (L x W x H)	460 x 340 x 660 mm
Reservoir capacity	12 litres
Power consumption (max)	92 W/h

Suitable applications include:

Offices
Workshops
Call centres
Shops
Schools
Restaurants
Hospitality units
Many more

- Plug and play

EVAPORATIVE COOLER - DOUBLE COOL

ANDREWS AIR CONDITIONING

Average duty	5.5 l/h
Air flow (max)	1,750 m^3/h
Typical cooled area	80 m^3
Power supply	230 V 1ph 50 Hz Run 1.6 A
Plug type	BS1363 230 V
Noise level (max)	59 dBA @ 1 metre
Weight	16.5 kg empty / 61 kg full
Dimensions (L x W x H)	645 x 530 x 915 mm
Reservoir capacity	45 litres
Power consumption	250 W/h

Suitable applications include:

Offices
Workshops
Call centres
Shops
Schools
Restaurants
Hospitality units
Many more

Plug and play

EVAPORATIVE COOLER - CYCLONE DX

Average duty	10 l/h
Air flow (max)	2,550 m^3/h
Typical cooled area	120 m^3
Power supply	230 V 1 ph 50 Hz Run 1.6 A
Plug type	BS1363 230 V
Noise level (max)	59 dBA @ 1 metre
Weight	25 kg empty / 70 kg full
Dimensions (L x W x H)	645 x 530 x 1,315 mm
Reservoir capacity	45 litres
Power consumption	250 W/h

Suitable applications include:

Offices
Workshops
Call centres
Shops
Schools
Restaurants
Hospitality units
Many more

- Plug and play

Average duty	14 l/h
Air flow (max)	4,000 m^3/h
Typical cooled area	160 m^3
Power supply	230 V 1 ph 50 Hz Run 1.3 A
Plug type	BS1363 230 V
Noise level (max)	62 dBA @ 1 metre
Weight	21 kg empty / 91 kg full
Dimensions (L x W x H)	630 x 445 x 1,283 mm
Reservoir capacity	70 litres
Power consumption	170 W/h

Suitable applications include:

Warehouses
Workshops
Factories
Shops
Schools
Restaurants
Hospitality units
Many more

- Plug and play

EVAPORATIVE COOLER - ARENA 15

Average duty	20 l/h
Air flow (max)	15,000 m^3/h
Typical cooled area	675 m^3
Power supply	230 V 1 ph 50 Hz Run 2.9 A
Plug type	BS1363 230 V
Noise level (max)	65 dBA @ 1 metre
Weight	40 kg empty / 140 kg full
Dimensions (L x W x H)	870 x 570 x 1,400 mm
Reservoir capacity	100 litres
Power consumption	667 W/h

Suitable applications include:

Warehouses
Workshops
Factories
Shops
Schools
Restaurants
Hospitality units
Many more

- Plug and play

ANDREWS AIR CONDITIONING

Average duty	21 l/h
Air flow (max)	7,500 m^3/h
Typical cooled area	250 m^3
Power supply	230 V 1 ph 50 Hz Run 2 A
Plug type	BS1363 230 V
Noise level (max)	62 dBA @ 1 metre
Weight	36 kg empty / 156 kg full
Dimensions (L x W x H)	770 x 510 x 1,370 mm
Reservoir capacity	120 litres
Power consumption	440 W/h

Suitable applications include:

Warehouses
Workshops
Factories
Shops
Schools
Restaurants
Hospitality units
Many more

Plug and play

EVAPORATIVE COOLER - ARENA 30

Average duty	30 l/h
Air flow	30,000 m^3/h
Typical cooled space	1200 m^3
Power supply	230 V 1 ph 50 Hz Run 6.0A
Plug type	BS1363 230 V
Noise level (max)	70 dBA @ 1 metre
Weight empty	130 kg
Dimensions (L x W x H)	920 x 1,690 x 1,910 mm
Reservoir capacity	200 litres
Portable	Yes

Suitable applications include:

Warehouses
Workshops
Factories
Shops
Schools
Restaurants
Hospitality units
Many more

- Plug and play

Average duty	45 l/h
Air flow	45,000 m^3/h
Typical cooled space	2000 m^3
Power supply	230 V 1 - 50 Hz Run 9.0A
Plug type	BS1363 230 V
Noise level (max)	60 dBA @ 1 metre
Weight empty	191 kg
Dimensions (L x W x H)	860 x 1,920 x 2,210 mm
Reservoir capacity	244 litres
Portable	Yes

Suitable applications include:

Warehouses
Workshops
Factories
Shops
Distribution centres
Sorting centres
Many more
Music venues

Plug and play

FLUID CHILLERS

The UK leader in fluid chillers, fast chillers and air handlers for hire
We offer you fully portable fluid and low temperature chillers, delivered and installed fast from depots nationwide: a genuine 24/7 service, 365 days a year. With free site surveys, expert advice and a wide range to choose from, our specialists will help ensure you get the equipment you need at the right price.

Fluid chillers - ideal for applications and locations that need quick and reliable temporary cooling. All chillers can be used in parallel to achieve the cooling capacity you need. They are typically used for:

- **Air Conditioning when used with air handlers/fan coils**
- **Process applications in manufacturing e.g. for volatile petrochemicals, fluids and food products**
- **Facilities Management, Building & Construction and HVAC contractors**
- **Bypassing existing systems for planned maintenance, during breakdowns or for disaster recovery**

When sizing a chiller for air conditioning applications the same principles should be applied that are mentioned in the air conditioning section of this booklet. The location of the air handlers, fan coils and chiller does require careful consideration and we would therefore suggest that a site survey is carried out by one of Andrews specialists.

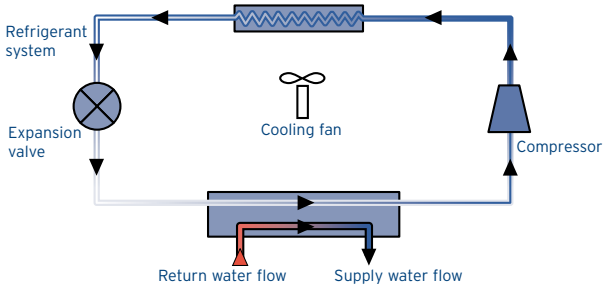
Heat pump option
Many units within our chiller range are also available as heat pumps, providing either heating or cooling from the same unit.

Process applications and breakdown/recovery applications require a great deal of calculation to guarantee that flow rates, design temperature and other requirements are met, it is therefore essential that an Andrews specialist is consulted about such applications.

In addition to providing the chillers, air handlers and fan coils, Andrews also provide all necessary accessories and additional equipment. This includes generators, distribution units, cable, flexible hoses, heat exchangers, valves, pipework, adapters, and flexible ducting.

The Andrews specialist hire team offer FREE on-site surveys and advice, together with a delivery, installation and on-site commissioning service. Once the equipment is installed it is supported 24 hours a day, 7 days a week by Andrews' nationwide service back-up team.

Basic operating principle of a water chiller



The Andrews range of high capacity fluid chillers have been developed to provide a fast and efficient solution for many applications that require high volumes of cooling capacity. In the standard format fluid chillers can provide cooling water to production processes or to bypass/assist permanently installed chillers. When used along with our wide range of air handlers and fan coils, fluid chillers provide high capacity air conditioning for a wide range of applications.

The standard range comprises of units up to 750 kW in capacity and can be used in parallel to achieve higher capacities. Larger units for long term applications are also available. A wide range of temperatures can be provided, with units able to achieve water temperatures below -12ºC. Heat pump versions are available on some models to provide not only cooling but also heating.

All of the units in the Andrews fluid chiller range are air cooled and do not require a permanent water supply. The chiller unit must be placed in a well ventilated area that is able to accept the heat dissipation from the area being cooled. Ideally chillers should always be installed on the exterior of the building, where the ambient air can provide cooling.

Each of the units contains a heat exchanger, condenser, control system, compressor and circulating pumps. Mounted on robust base plates complete with lifting facility, the units can be transported and positioned with the minimum of disruption. The water connection on the supply and return pipework is normally achieved with quick action couplings, removing the need for complicated pipe connections. The chillers use flexible hoses to provide chilled water to either the air handlers or the clients own system.

The operation of high capacity fluid chillers
Andrews offer 3 principle methods of using fluid chillers. These are as follows:

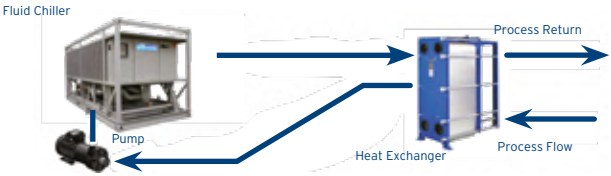
This is where a fluid chiller (or chillers) are connected to air handling units (AHU) or fan coils via flexible pipework.

The chiller provides chilled water to each of the fan coils or AHU, which is then pumped through a coil over which the room air is passed. As the air passes over the cold coil the air temperature will drop, the drop in temperature will depend on several factors such as air flow, air temperature and humidity. Each time the air is passed over the cold coil a similar drop in temperature will take place, this will enable the room temperature to be controlled within specified criteria. As the warm air passes over the cold coil the chilled water temperature rises and therefore returns to the chiller as warm water, the water is then chilled again and returned to the air handlers or fan coils and so the circuit is closed.

Some fan coils have thermostatically operated valves which open and close in relation to the room temperature, bringing in chilled water when required and remaining closed when the desired temperature is achieved. The chiller operates as required depending on the water temperature, although the circulating pump operates at all times.

The normal installation has the fan coils units installed within the room that requires cooling, or AHU installed outside of the room with the air ducted into the room and returned via heavy duty flexible ducting. However in some circumstances it is possible to fit flexible ducting to the fan coils and in others it is possible to install the AHU within the room that is to be cooled.

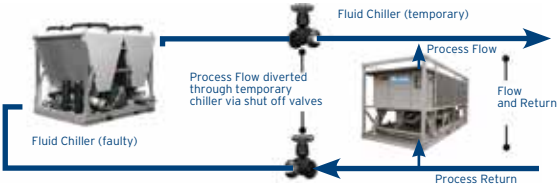
With heat pump versions of the fluid chillers it is possible to generate hot water and thereby use the fan coils and AHUs as heaters rather than air conditioners. In applications that may require heating at night and cooling by day it is possible to fully automate this process.



This system is often used where a product requires cooling but due to its nature or consistency cannot come into contact with the refrigeration process. Such products include oil, volatile fluids and food products. Andrews overcome this problem by using a fluid chiller in conjunction with a process heat exchanger (normally a plate type).

The fluid chiller produces chilled water which is then circulated through the heat exchanger and then returned to the chiller in a closed circuit. The product that requires cooling is also circulated through the heat exchanger but is kept separate from the chilled water at all times. As the product passes through the heat exchanger it is cooled by the chilled water that is being circulated at the same time, this enables the product's temperature to be reduced to the specified level. As the chilled water passes through the same heat exchanger its temperature will rise, as it is effectively being heated by the product. The water will then become warm as it is returned to the chiller to become chilled once more and so the circuit is closed.

The connection between the heat exchanger and the chiller would normally be through flexible pipes with quick release couplings. The temperature can be controlled by the control system within the chiller itself. This application can be easily adjusted to suit most environments.



This application can normally be used where an existing chiller system has broken down, is required to be taken out of operation or needs additional cooling assistance. Such situations may be due to building modifications, maintenance shut downs, main plant failure or abnormal heat loads within the building.

An Andrews fluid chiller can be connected into the clients own pipework system using flanged connections which will be fitted with isolating valves and quick release pipe adapters. Flexible hoses would then connect onto the pipework and run to the temporary chiller.

Where possible the client's own pipework, circulating pumps and controls continue to be used. In some situations the circulating pumps within the chiller may be adequate to cope, or can assist the existing pumps.

Careful consideration must be given to the effect of increasing the flow rate of the chilled water, if the temporary chiller is to be used in conjunction with an existing system. Andrews specialists are able to advise on the correct sizing and correct use of such applications, however it is vital that details of the required flow rates, temperatures and cooling duty are known. A full system diagram of the existing installation is also required. Such systems can be used as a semi-permanent solution or as an emergency back up.

FAST CHILLER - FC21 SERIES 2

Nominal cooling duty	6.4 kW
Air flow (max)	3,030 m^3/h
Plug type	BS4343 32 A 3 Pin
Power supply	230 V 1 ph N+E 50 Hz Run 16.5 A
Indoor noise level (max)	52 dBA / 60 LWA @ 3 metres
Outdoor noise level (max)	60 dBA / 65 LWA @ 1 metre
Indoor weight	280 kg
Outdoor weight	110 kg
Indoor dimensions (L x W x H)	1,500 x 650 x 1,300 mm
Outdoor dimensions (L x W x H)	700 x 800 x 1,165 mm
Control	Automatic thermostat
Average power consumption	3.7 kW/h
Line length	15 metres (max = 30 metres)
Operating temp range	-10ºC to +30ºC
Generator size	5 kVA

Suitable applications include:

Cold stores
Refrigerated warehouses
Industrial processes
Temporary body storage
Food and beverage
Archive document storage
Many more

- High-capacity cooling
- Capable of cooling down to -10 °C

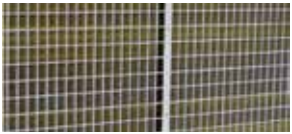
Nominal cooling duty	13.2 kW
Air flow (max)	8,050 m^3/h
Plug type	BS4343 32 A 5 Pin
Power supply	415 V 3 ph N+E 50 Hz Run 24 A
Indoor noise level (max)	58 dBA / 64 LWA @ 3 metres
Outdoor noise level (max)	68 dBA / 70 LWA @ 1 metre
Indoor weight	400 kg
Outdoor weight	145 kg
Indoor dimensions (L x W x H)	2,100 x 750 x 1,300 mm
Outdoor dimensions (L x W x H)	1,250 x 700 x 1,215 mm
Control	Automatic thermostat
Average power consumption	9.9 kW/h
Line length	15 metres (max = 30 metres)
Operating temp range	-10°C to +30°C
Generator size	20 kVA

Suitable applications include:

Cold stores
Refrigerated warehouses
Industrial processes
Temporary body storage
Food and beverage
Archive document storage
Many more

- High-capacity cooling
- Capable of cooling down to -10 °C

FAST CHILLER - FC90

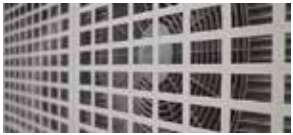


Nominal cooling duty	26.3 kW
Air flow (max)	10,000 m^3/h
Plug type	63 A 3 ph N+E
Power supply	415 V 3 ph N+E 50 Hz Run 37 A
Indoor noise level (max)	63 dBA @ 3 metres
Outdoor noise level (max)	73 dBA @ 1 metre
Indoor weight	597 kg
Outdoor weight	460 kg
Indoor dimensions (L x W x H)	2,000 x 1,400 x 1,850 mm
Outdoor dimensions (L x W x H)	1,450 x 1,350 x 1,800 mm
Control	Automatic thermostat
Average power consumption	11 kW/h
Line length	15 metres (max = 30 metres)
Operating temp range	-10ºC to +30ºC
Generator size	30 kVA

Suitable applications include:

Cold stores
Refrigerated warehouses
Industrial processes
Temporary body storage
Food and beverage
Archive document storage
Many more

- High-capacity cooling
- Capable of cooling down to -10 °C



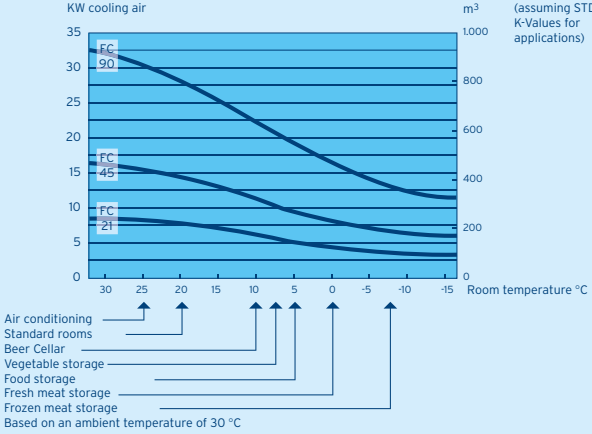
Nominal cooling duty	26.1 kW
Air flow (max)	10,730 m^3/h
Plug type	BS4343 63 A 5 Pin
Power supply	415 V 3 ph N+E 50 Hz Run 43 A
Indoor noise level (max)	60 dBA / 66 LWA @ 3 metres
Outdoor noise level (max)	71 dBA / 73 LWA @ 1 metre
Indoor weight	530 kg
Outdoor weight	295 kg
Indoor dimensions (L x W x H)	2,700 x 750 x 1,300 mm
Outdoor dimensions (L x W x H)	2,355 x 700 x 1,365 mm
Control	Automatic thermostat
Average power consumption	17.8 kW/h
Line length	15 metres (max = 30 metres)
Operating temp range	-10ºC to +30ºC
Generator size	40 kVA

Suitable applications include:

Cold stores
Refrigerated warehouses
Industrial processes
Temporary body storage
Food and beverage
Archive document storage
Many more

- High-capacity cooling
- Capable of cooling down to -10 °C

Graphs FC 21/FC 45/FC 90



FLUID CHILLER - 30 kW HP

Nominal cooling duty	30 kW
Nominal heating duty (HP version)	33 kW
Power supply	415 V 3 ph N+E 50 Hz Run 25 A
Plug type	BS4343 32 A 5 pin
Noise level (max)	70 dBA @ 10 metres
Weight	635 kg
Dimensions (L x W x H)	1,775 x 863 x 1,675 mm
Control	Automatic programmer
Average power consumption	7.7 kW/h
Generator size	40 kVA
Water connection	32 mm (1 1/4") Camlock
Nominal water flow	1.4 l/s

Suitable applications include:

Product storage
Process cooling
Pharmaceuticals
Food and beverages
Events
Agriculture
Industry
Many more

Cooling and heating

Nominal cooling duty	50 kW
Power supply	415 V 3 ph N+E 50 Hz Run 50.1 A
Plug type	BS4343 63 A 5 pin
Noise level (max)	70 dBA / 95 LWA @ 10 metres
Weight	1,290kg
Dimensions (L x W x H)	2,471 x 1,266 x 2,345 mm
Control	Automatic programmer
Average power consumption	15.6 kW/h
Generator size	60 kVA
Water connection	50 mm (2") Bauer
Nominal water flow	2.7 l/s

Suitable applications include:

Food and beverage
Construction
Healthcare
Manufacturing
Events
Pharmaceuticals
Server rooms
Many more

Cooling and heating

Nominal cooling duty	65 kW
Nominal heating duty	76 kW
Main power supply	415 V 3 ph N+E 50 Hz Run 40.2 A
Plug type	BS4343 16 A, BS4343 63 A 5 pin
Plug type (Gas detection)	BS4343 16 A Run 2 A
Noise level (max)	50 dBA / 82 LWA @ 10 metres
Weight	1,740 kg
Dimensions (L x W x H)	3,090 x 1,330 x 2,775 mm
Control	Automatic programmer
Average power consumption	12.5 kW/h
Water connection	50 mm (2") bauer
Nominal water flow	3.6 l/s
Heating (Air Temperature Operating Range)	-20ºC to +35ºC
Heating (Water Temperature Range)	+30ºC to +55ºC
Cooling (Leaving Water Temperature Range)	-15ºC to +15ºC
Refrigerant Gas	R290
GWP	3

Suitable applications include:

Product storage
Process cooling
Pharmaceuticals
Food and beverages
Events
Agriculture
Industry
Many more

High-capacity cooling

FLUID CHILLER - 100 kW

Nominal cooling duty	100 kW
Power supply	415 V 3 ph N+E 50 Hz Run 58 A
Plug type	BS4343 63 A 5 pin
Noise level (max)	86 dBA / 104 LWA @ 10 metres
Weight	1,650 kg
Dimensions (L x W x H)	3,090 x 1,330 x 2,775 mm
Control	Automatic programmer
Average power consumption	18 kW/h
Generator size	75 kVA
Water connection	50 mm (2") bauer
Nominal water flow	4 l/s

Suitable applications include:

Food and beverage
Construction
Healthcare
Manufacturing
Events
Pharmaceuticals
Server rooms
Many more

High-capacity cooling

Nominal cooling duty	100 kW
Power supply	415 V 3 ph N+E 50 Hz Run 61 A
Plug type	BS4343 63 A 5 pin
Noise level (max)	86 dBA / 99 LWA @ 10 metres
Weight	1,570 kg
Dimensions (L x W x H)	3,250 x 1,250 x 2,450 mm
Control	Automatic programmer
Average power consumption	19 kW/h
Generator size	75 kVA
Water connection	50 mm (2") bauer
Nominal water flow	4 l/s

Suitable applications include:

Food and beverage
Construction
Healthcare
Manufacturing
Events
Pharmaceuticals
Server rooms
Many more

High-capacity cooling

FLUID CHILLER - 150 kW HP

Nominal cooling duty	150 kW
Nominal heating duty	160 kW
Power supply	415 V 3 ph N+E 50 Hz Run 110 A
Plug type	BS4343 125 A 5 pin
Noise level (max)	57 dBA @ 10 metres
Weight	2800 kg
Dimensions (L x W x H)	2,600 x 2,400 x 2,400 mm in frame
Control	Automatic programmer
Average power consumption	49 kW/h
Generator size	100 kVA
Water Connection	80 mm (3") Bauer
Nominal water flow	7 l/s
Heating (air temperature operating range)	-15°C to +40°C
Heating (water temperature range)	+20°C to +60°C
Cooling (leaving water temperature range)	-10°C to +20°C

Suitable applications include:

Process Cooling
LTHW/LPHW heating
Ice rinks
Events
Manufacturing
Healthcare
Food and Beverage

Cooling and heating

Nominal cooling duty	200 kW
Nominal heating duty (HP version)	200 kW
Power supply	415 V 3 ph N+E 50 Hz Run 120 A
Plug type	Hard wired 5 core x 35 mm^2
Noise level (max)	54 dBA / 81 LWA @ 10 metres
Weight	2,900 kg
Dimensions (L x W x H)	4,100 x 2,300 x 2,700 mm
Control	Automatic programmer
Average power consumption	37 kW/h
Generator size	120 kVA
Water connection	80 mm (3") bauer
Nominal water flow	9 l/s
Low temperature	Down to -10ºC

Suitable applications include:

Food and beverage
Construction
Healthcare
Manufacturing
Events
Pharmaceuticals
Server rooms
Many more

Cooling and heating

FLUID CHILLER - 250 kW

Nominal cooling duty	250 kW
Power supply	415 V 3 ph +E 50 Hz Run 144 A
Plug type	Hard wired 4 x 95 mm^2
Noise level (max)	80 dBA / 106 LWA @ 10 metres
Weight	2,810 kg
Dimensions (L x W x H)	4,874 x 2,282 x 2,190 mm
Control	Automatic programmer
Average power consumption	44.8 kW/h
Generator size	140 kVA
Water connection	80 mm (3") bauer
Nominal water flow	9 l/s
Low temperature	Down to -5°C

Suitable applications include:

Food and beverage
Construction
Healthcare
Manufacturing
Events
Pharmaceuticals
Server rooms
Many more

High-capacity cooling

Nominal cooling duty	375 kW
Power supply	415 V 3 ph +E 50 Hz Run 205 A
Plug type	Power lock connections (4 x 120 mm)
Noise level (max)	62 dBA / 88 LWA @ 10 metres
Weight	4,240 kg
Dimensions (L x W x H)	4.940 x 2,440 x 2,590 mm
Control	Automatic programmer
Sound level	62 dBA @ 10 metres
Average power consumption	85 kW/h
Generator size	200 kVA
Water connection	4" bauer
Nominal water flow	19.4 l/s

Suitable applications include:

IT / Data centres
Offices
Hospitals
Retail
Hotels
Schools
Restaurants
Many more

High-capacity cooling

FLUID CHILLER - 550 kW SERIES 2

Nominal cooling duty	550 kW
Power supply	415 V 3ph +E 50 Hz Run 346 A
Plug type	Power lock connections (4 x 120 mm)
Noise level (max)	64 dBA / 70 LWA @ 10 metres
Weight	4,650 kg
Dimensions (L x W x H)	4,940 x 2,440 x 2,590 mm
Control	Automatic programmer
Average power consumption	107 kW/h
Generator size	400 kVA
Water connection	100 mm (4") bauer
Nominal water flow	24.8 l/s

Suitable applications include:

IT / Data centres
Offices
Hospitals
Retail
Hotels
Schools
Restaurants
Many more

High-capacity cooling

Nominal cooling duty	750 kW
Power supply	415 V 3ph +E 50 Hz Run 576 A plus pump set
Plug type	Hard wired (4 x 240 mm²)
Noise level (max)	77 dBA / 105 LWA @ 10 metres
Weight	7,450 kg
Dimensions (L x W x H)	6,058 x 2,438 x 2,591 mm
Control	Automatic programmer
Average power consumption	179 kW/h
Generator size	550 kVA
Water connection	100mm (4") bauer / DN100 PN16 Flange
Nominal water flow	32.5 l/s
Low temp	-12ºC

Suitable applications include:

Hotels
Process cooling
Construction
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

High-capacity cooling

FLUID CHILLER - 750 kW SERIES 2

Nominal cooling duty	750 kW
Power supply	415 V 3 ph +E 50 Hz Run 570 A plus pump set
Plug type	Hard wired (4 x 240 mm^2)
Noise level (max)	61 dBA / 87 LWA @ 10 metres
Weight	7,350 kg
Dimensions (L x W x H)	6,400 x 2,450x 2,780 mm
Control	Automatic programmer
Average power consumption	177 kW/h
Generator size	550 kVA
Water connection	100mm (4") bauer / DN100 PN16 Flange
Nominal water flow	34 l/s
Low temp	-12ºC

Suitable applications include:

Hotels
Process cooling
Construction
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

High-capacity cooling

Nominal cooling duty	15 kW
Nominal heating duty	30 kW
Air flow (max)	2,700 m^3/h
Power supply	230 V 1 ph 50 Hz Run 5 A
Plug type	BS1363 13 A
Noise level (max)	51 dBA @ 1 metre
Weight	70 kg
Dimensions (L x W x H)	600 x 380 x 1,930 mm
Control	Automatic thermostat
Average power consumption	345 W/h
Integral condensate pump	Yes
Fan speed controller	Yes

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating

Nominal cooling duty	30 kW
Nominal heating duty	60 kW
Air flow (max)	4,197 m^3/h
Power supply	230 V 1 ph 50 Hz Run 8 A
Plug type	BS1363 13 A
Noise level (max)	59 dBA @ 1 metre
Weight	160 kg
Dimensions (L x W x H)	860 x 542 x 2,025 mm (with top box)
Control	Automatic thermostat
Average power consumption	1.61 kW/h
Integral condensate pump	Yes
Fan speed controller	Yes

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating

Nominal cooling duty	50 kW
Nominal heating duty	100 kW
Air flow (max)	11,500 m^3/h
Power supply	415 V 3 ph 50 Hz N+E Run 6 A
Plug type	BS4343 5 Pin 32 A
Noise level (max)	44 dBA @ 1 metre
Weight	330 kg
Dimensions (L x W x H)	1,600 x 790x 1,510 mm
Duct length (max)	40 metres
Duct size	2 x 600 mm (inlet & outlet)
Average power consumption	1.8 kW/h
Integral condensate pump	Yes
Fan speed controller	Yes (inverter drive technology)
Water connection	50 mm (2") bauer

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

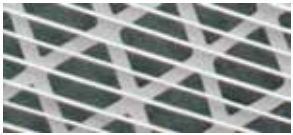
Cooling and heating

Nominal cooling duty	50 kW
Nominal heating duty	100 kW
Air flow (max)	4,500 m^3/h
Power supply	230 V 1 ph 50 Hz Run 4.8 A
Plug type	BS4343 230 V 16 A
Noise level (max)	74 dBA @ 1 metre
Weight	460 kg
Dimensions (L x W x H)	1,500 x 750 x 2,250 mm (with top box)
Average power consumption	1.2 kW/h
Integral condensate pump	Yes
Fan speed controller	Yes
Optional – 600 mm duct under plenum box	

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating



Nominal cooling duty	150 kW
Nominal heating duty	300 kW
Air flow (max)	20,160 m^3/h
Power supply	415 V 3 ph 50 Hz N+E Run 20 A
Plug type	BS4343 5 Pin 32 A
Noise level (max)	84 dBA @ 1 metre
Weight	934 kg
Dimensions (L x W x H)	2,260 x 1,980 x 1,700 mm
Duct length (max)	48 metres
Duct size	4 x 600 mm (2x inlet / 2x outlet)
Average power consumption	14.3 kW/h
Integral condensate pump	Yes
Fan speed controller	No
Water connection	50 mm (2") bauer

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating

AIR HANDLERS - 150/300 kW S2

Nominal cooling duty	150 kW
Nominal heating duty	300 kW
Air flow (max)	22,200 m^3/h
Power supply	415 V 3 ph 50 Hz N+E Run 10 A
Plug type	BS4343 5 Pin 32 A
Noise level (max)	69 dBA @ 1 metre
Weight	1,100 kg
Dimensions (L x W x H)	2,200 x 2,100x 1,700 mm
Duct length (max)	48 metres
Duct size	4 x 600 mm (2x inlet / 2x outlet)
Average power consumption	3.1 kW/h
Integral condensate pump	Yes
Fan speed controller	Yes (Inverter drive technology)
Water connection	50 mm (2") bauer

Suitable applications include:

Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating

Nominal cooling capacity	300 kW
Nominal heating capacity	600 kW
Air flow (max)	35,388 m^3/h
Power supply	415 V 3 ph 50 Hz N+E Run 30 A
Plug type	BS4343 5 Pin 32 A
Noise level (max)	81 dBA @ 5 metres
Weight	2,150 kg
Dimensions (L x W x H)	3,780 x 2,340 x 2,590 mm
Duct length (max)	48 metres
Duct size	8 x 600 mm (4x inlet / 4x outlet)
Average power consumption	21 kW/h
Integral condensate pump	Yes
Fan speed controller	No
Water connection	100 mm (4") bauer

Suitable applications include:

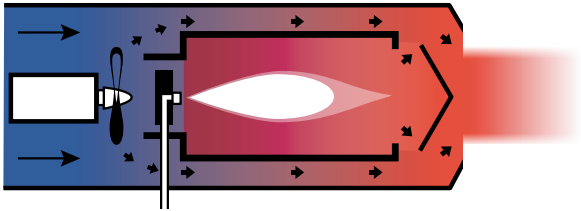
Offices
Hotels
Events
Food and beverages
Healthcare
Data centres
Petrochemicals
Many more

Cooling and heating

Andrews portable heaters are used for many applications within a wide range of environments, including; building and construction, event hire, heavy industry, manufacturing, storage and warehousing, public sector, facilities management, offices, schools and agriculture. The Andrews range of portable heaters provide; safe, efficient and flexible heat to ensure a pleasant working environment or to dry damp areas. When buildings, plants or products must remain frost or cold free or when the cold jeopardises a timely delivery Andrews can offer a solution. When festivals, fairs and exhibitions need to be heated, we help out. Where existing heating system malfunction, we provide temporary mobile solutions. Andrews develop, hire and sell mobile heaters, which are focused on three key characteristics: safety, efficiency and sustainability.

Our heaters are split into three groups based on the fuel used to power them - electric, gas and oil. Gas heaters are normally for use with LPG bottled gas, oil fired heaters can be used with heating oil, diesel or kerosene. Some units can be modified for use with bio oil. Gas and oil heaters are available in either direct fired or indirect fired designs.

Direct fired
A direct fired heater uses an electric fan to provide combustion air and also the main air flow to give large volumes of heated air. Fuel is injected into a combustion chamber where it is ignited and burnt at a regulated rate mixing with the main air stream from the fan.

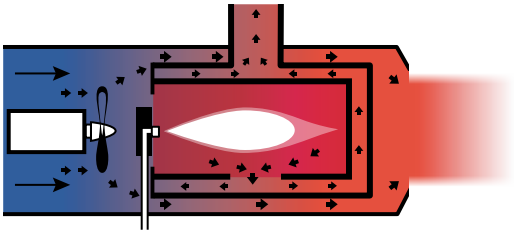


A free site survey by an Andrews heating specialist will help you work out exactly what model and set-up is right for your location and application.

For health and safety reasons, it is essential that you choose and operate the right type of heater for your location and application. We will be pleased to advise you on the safest and most appropriate heater(s) to use.

All direct fired heaters require permanent ventilation to the outside atmosphere and it's recommended to allow a minimum of 6.5 cm^2 for every 293 W of heat input. Call us on **0800 211 611** for help and advice or more details.

Indirect fired
An indirect fired heater is a more sophisticated form of portable heater which is used to provide large volumes of clean dry heat without any products of combustion. Fuel is injected into a gas tight combustion chamber where it is ignited and burnt at a regulated rate.



The products of combustion are exhausted via a simple flue arrangement out to the atmosphere. Electric fans provide combustion air and the main air flow which collects heat indirectly from the heated chamber which is then expelled into the area to be heated.

Indirect heaters are ideal for areas where there is limited ventilation or where there is danger posed by combustible materials. The clean dry heat produced creates a safe, warm fume free environment. Andrews Indirect heaters are capable of distributing heat to inaccessible locations with the addition of an outlet spigot and flexible ducting.

Electric

Andrews electric heaters provide customers with a quick, reliable and economical way of warming a variety of applications and offer heating capacities between 1.5 kW and 42 kW. Split into four groups – fan assisted, oil-filled, quartz heaters and convectors – our electric models offer safe, gas-free heating suitable for a broad range of applications. These include hospitals, offices, construction projects, marquees, storerooms, workshops, garages and many more.

While the majority of our electric heaters are used for warming environments populated by people, it is also very common for our units to be used in conjunction with dehumidifiers. This is often the most efficient way of drying damp buildings, furniture and equipment, which is why our heaters and dehumidifier units are regularly hired as a package.

Calculations to determine the correct size of Andrews portable heaters to use are shown below.

Determine the temperature rise required inside the space to be heated in ^{0}C.

Find the volume of the space in cubic metres i.e. L x W x H in metres.

What sort of insulation does the building have?

- Well insulated k = 1.2
- Average k = 2.2
- Badly insulated k = 3.0
- Hardly any insulation k = 4.0

Amount of heat required = Temperature rise ^{0}C x Volume in m^3 x K x 1.18 = heating requirement in watts

NB: divide by 1000 to give kW.

When recirculation is used, the capacity required can be reduced by as much as 25%. Less power is required or used when the target application is already warm, as the unit draws on this air and uses a smaller amount of energy when converting it into output heat.

For fixed permanent installations a full heat loss calculation must be made to take into account construction of the building, air changes etc. Your local Andrews depot will be pleased to help when required.

Marquee Heating
For the calculation of the heating capacity of marquees, depending on the surface, and the time of the year, other standards apply, but the following provides a useful guide:

- January — approximately 400 Watt/m^2
- February — approximately 400 Watt/m^2
- March — approximately 400 Watt/m^2
- April — approximately 300 Watt/m^2
- May until September — approximately 250 Watt/m^2
- October — approximately 300 Watt/m^2
- November — approximately 400 Watt/m^2
- December — approximately 400 Watt/m^2

Positioning Andrews heaters
When positioning mobile heaters it is important that the fan has enough space to draw in air. The hot air flow coming out of the device should be directed towards the area requiring heat. When using multiple heaters, the devices should be placed in such a way that the air streams do not overlap. Indirect-fired heaters and electric heaters can also be set up outside of the room. The heated air can then be transferred to the room through flexible ducting.

If the temperature of the outside air is considerably lower than the temperature of the air inside, this will reduce the heat output of the equipment.

Outside or inside installation
Heaters with capacities of over 100kW are, because of their large size, often placed outside. In that case, the heated air is transported inside via flexible ducts. A major disadvantage of a heater arranged outside is that there is significantly more energy required, and thus fuel, than with a heater arranged inside. An inside heater heats on the basis of recirculation, and heats up already heated air. A heater that is located outdoors, heats relatively cold outside air and then blows it inside. It is therefore logical that a heater arranged outside needs a lot more time to get a space at the desired temperature than an inside heater. Hence, the fuel costs in an outdoor installation is often 2 to 3 times higher, depending

on the desired indoor temperature and the outdoor temperature. For that reason, Andrews produces compact heaters that can get through most doors. Also, there is the possibility to provide an outdoor heater with a hose, to recirculate already heated air. In this way, energy costs can be reduced.

Fuel

Our range of heaters are powered by a number of different fuels: diesel, IHO, kerosene, natural gas and propane. Andrews can supply all fuel types and for large applications we can supply bulk tanks which are installed outside. Andrews has many environmental tanks for heating oil, double walled IBC tanks with a capacity of 1,000 to 10,000 litres. For propane Andrews works with several leading gas suppliers who can deliver bulk propane tanks with a capacity of up to 5,000 litres. By making use of a bulk tank, heating is not only very easy, but labour cost is also considerably reduced. We are constantly exploring the benefits of biofuels and other alternatives to the more traditional options of diesel and LPG gas. For this reason, we are delighted to be able to now offer customers hydrotreated vegetable oil (HVO) following a sharp rise in popularity.

See pages 106 – 113 for more information on our fuel options*

Energy consumption and costs

Electric heaters are widely used because of the ease of operation and the production of clean, dry heat. Especially for small spaces, with a capacity of up to 500 m^3, the electric heater is an excellent heat source at an attractive rate for hire. However, keep in mind that an electric heater uses more energy than other heat sources.

HVO fuel

HVO fuel is a synthetic, premium quality biofuel made from 100% renewable raw materials. Specifically introduced for use in conjunction with all products featuring modern diesel engines, HVO is widely accepted as being a practical like-for-like replacement for regular diesel. The addition of HVO fuel is aligned with our commitment to finding greener ways of working and represents the perfect choice for UK businesses looking to minimise their carbon footprint.

ELECTRIC - DE20

Nominal heating duty	1.5 kW
Air flow (max)	423 m^3/h
Typical heated area	37.6 m^3
Power supply	230 V 1 ph 50 Hz Run 6 A
Plug type	BS1363 230 V
Noise Level (max)	45 dBA @ 3 metres
Weight	10 kg
Dimensions (L x W x H)	330 x 300 x 360 mm
Control	Integral Thermostat

Suitable applications include:

Offices
Construction
Marquees
Hotels
Workshops
Ships
Education
Many more

- Plug and play

Nominal heating duty	2.8 kW
Air flow (max)	250 m^3/h
Typical heated area	67.6 m^3
Power supply	230 / 110 V 1 ph 50 Hz versions available Run 12.2 / 25.4 A
Plug type	BS1363 230 V or BS4343 32 A 110 V
Noise level (max)	50.6 dBA @ 3 metres
Weight	11 kg
Dimensions (L x W x H)	320 x 260 x 360 mm
Control	DE25 Manual or DE25T (integral thermostat)

Suitable applications include:

Offices
Construction
Marquees
Hotels
Workshops
Ships
Education
Many more

Plug and play

ELECTRIC - DE65

Nominal heating duty	13 kW
Air flow (max)	600 m^3/h
Typical heated area	314 m^3
Power supply	415 V 3 ph +E 50 Hz Run 18.2 A
Generator size	16.5 kVA
Plug type	BS4343 3 ph 5 pin 32 A
Noise level (max)	56.6 dBA @ 3 metres
Weight	25 kg
Dimensions (L x W x H)	600 x 360 x 450 mm
Control	Manual (external controls available)

Suitable applications include:

Offices
Construction
Marquees
Hotels
Workshops
Ships
Education
Many more

- Plug and play

Nominal heating duty	18 kW
Air flow (max)	2,300 m^3/h
Typical heated area	440 m^3
Power supply	415 V 3 ph N+E 50Hz Run 28 A
Generator size	25 kVA
Plug type	BS4343 32A 3 ph 5 pin
Noise level (max)	56 dBA
Weight	58 kg
Dimensions inc diffuser	603 x 393 x 2,107 mm
Dimensions (L x W x H)	603 x 393 x 1,347 mm
Control	Manual Thermostat (external controls available)

Suitable applications include:

Retail
Industrial spaces
Commercial spaces
Factories and warehouses
Offices
Education
Construction
Hotels

- Plug and play
- Easy to manoeuvre

ELECTRIC - DE95

Nominal heating duty	18 kW
Air flow (max)	1,500 m^3/h
Typical heated area	484 m^3
Power supply	415 V 3 ph + E 50 Hz Run 28 A
Generator size	25 kVA
Plug type	BS4343 32 A 3 ph 5 pin
Noise level (max)	61 dBA @ 3 metres
Weight	32 kg
Dimensions (L x W x H)	470 x 410 x 580 mm
Control	Manual

Suitable applications include:

Offices
Construction
Marquees
Hotels
Workshops
Ships
Education
Many more

- Plug and play

Nominal heating duty	18 kW
Air flow (max)	1,500 m^3/h
Typical heated area	484 m^3
Power supply	415 V 3ph N + E 50 Hz Run 28 A
Plug type	BS4343 32 A 3ph 5 pin
Generator size	25 kVA
Noise level (max)	61 dBA @ 3 metres
Weight	30 kg
Dimensions (L x W x H)	520 x 350 x 902 mm
Duct length (max)	8 m
Duct Diameter	300 mm
Control	Integral Thermostat (external controls available)

Suitable applications include:

Workshops
Construction
Marquees
Hotels
garages
Ships
Agricultural
Many more

- Plug and play

ELECTRIC - DE190

Nominal heating duty	42 kW
Air flow (max)	4,500 m^3/h
Typical heated area	1,200 m^3
Power supply	415 V 3ph N + E 50 Hz Run 52 A
Plug type	BS4343 3 ph 5 pin 63 A
Generator size	50 KVA
Noise level (max)	68.7 dBA @ 3 metres
Weight	120 kg
Dimensions (L x W x H)	1,360 x 630 x 950 mm
Duct length (max)	32 metres
Duct size	450 mm
Power consumption	21.5 kW/h
Control	Integral Thermostat (external controls available)

Suitable applications include:

Workshops
Construction
Marquees
Hotels
garages
Ships
Agricultural
Many more

- Plug and play

Nominal heating duty	2.8 kW
Air flow (max)	200 m^3/h
Typical heated area	67.6 m^3
Power supply	230 V 1 ph 50 Hz Run 12.2 A
Noise level (max)	44 dBA @ 3 metres
Plug type	BS1363 230 V
Weight	10.5 kg
Dimensions (L x W x H)	395 x 332 x 310 mm
Duct length (max)	3 metres
Duct size	100 mm
Control	Integral thermostat

Suitable applications include:

Workshops
Construction
Marquees
Hotels
Retail
Ships
Agricultural
Many more

- Plug and play

ELECTRIC - CT40

Nominal heating duty	9 kW
Air flow (max)	450 m^3/h
Typical heated area	241 m^3
Power supply	415 V 3 ph + E 50 Hz Run 14 A
Noise level (max)	57 dBA @ 3 metres
Plug type	BS4343 5 pin 16 A
Generator	12.5 kVA
Weight	19 kg
Dimensions (L x W x H)	670 x 320 x 310 mm
Duct length (max)	3 metres
Duct size	120 mm
Control	Integral thermostat

Suitable applications include:

Workshops
Construction
Marquees
Hotels
Retail
Ships
Agricultural
Many more

- Plug and play

Nominal heating duty	20 kW
Air flow (max)	900 m^3/h
Typical heated area	483 m^3
Power supply	415 V 3 ph + E 50 Hz Run 28 A
Noise level (max)	62 dBA @ 1 metre
Plug type	BS4343 5 pin 32 A
Generator	25 kVA
Weight	28 kg
Dimensions (L x W x H)	980 x 515 x 480 mm
Duct length (max)	5 metres
Duct size	150 mm
Control	Integral thermostat

Suitable applications include:

Workshops
Construction
Marquees
Hotels
Retail
Ships
Agricultural
Many more

- Plug and play

ELECTRIC - CONVECTOR HEATER

Nominal heating duty	2 kW
Typical heated area	48.3 m^3
Power supply	230 V 1 ph 50Hz Run 8.7 A
Plug type	BS1363 230 V
Weight	3.1 kg
Dimensions (L x W x H)	590 x 170 x 420 mm
Control	Integral thermostat

Suitable applications include:

Workshops
Construction
Marquees
Hotels
Retail
Ships
Agricultural
Many more

Plug and play

Nominal heating duty	2.5 kW
Typical heated area	60.4 m^3
Power supply	230 V 1 ph 50 Hz Run 10.86 A
Plug type	BS1363 230 V
Weight	15 kg
Dimensions (L x W x H)	500 x 170 x 670 mm
Control	Integral thermostat

Suitable applications include:

Offices
Construction
Marquees
Hotels
Retail
Ships
Agricultural
Many more

Plug and play

ELECTRIC - QUARTZ

Nominal heating duty	3.0 kW
Typical heated area	72 m^3
Power supply	230 or 110 V 1 ph 50 Hz versions available Run 13 or 27.2 A
Plug type	BS1363 230 V or BS4343 32 A 110 V
Weight	20 kg
Dimensions (L x W x H)	505 x 477 x 906 mm
Control	Manual

Suitable applications include:

Workshops
Construction
Marquees
Offices
Retail
Ships
Agricultural
Many more

Plug and play

Nominal heating duty	3.0 kW
Typical heated area	72 m^3
Power supply	110 V 1ph 50 Hz Run 27.2 A
Plug type	BS4343 32 A 110 V
Weight	20 kg
Dimensions (L x W x H)	505 x 477 x 906 mm
Control	Manual

Suitable applications include:

Workshops
Construction
Marquees
Offices
Retail
Ships
Agricultural
Many more

Plug and play

ACCESSORIES FOR ELECTRIC HEATERS

Our electric heaters are supplied with plugs, three phase models may be supplied with 4 or 5 pin versions. Specific plug details are shown on each product page.

- Extension leads are available in a variety of lengths and voltages.
- DE heaters can be supplied with thermostats.
- CT heaters can be provided with 5 metre ducting (CT20 allow 3 metres only).
- Generator and distribution solutions are available for all applications.

Andrews Heat for Hire can also supply telemetry equipment to allow remote and recorded monitoring of temperatures, particularly useful in heat load tests.

Nominal heating duty	24.8 kW
Air flow (max)	1,450 m^3/h
Typical heated area	600 m^3
Power supply	230 V 1ph 50Hz Run 1.5 A
Plug type	BS1363 230 V
Noise level (max)	75 dBA @ 1 metre
Weight	58 kg (98 kg fuelled)
Dimensions (L x W x H)	1,250 x 490 x 690 mm
Minimum flue	1 metre (150mm od)
Duct length (max)	8 metres
Duct diameter size	300 mm
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	2.4 l/h
Tank capacity	40 litres
Hours run	16 hours (single tank)

Suitable applications include:

Workshops
Construction
Marquees
Events
Workshops
Churches
Agricultural
Many more

- Integral fuel tank
- Easy to manoeuvre

INDIRECT FIRED OIL - ID35 110 V

Nominal heating duty	32 kW
Air flow (max)	1,150 m^3/h
Typical heated area	620 m^3
Power supply	110 V 1ph 50Hz Run 3.3 A
Plug type	BS4343 16 A 110 V
Noise level (max)	72 dBA @ 1 metre
Weight	48 kg (90 kg fuelled)
Dimensions (L x W x H)	1,215 x 440 x 670 mm
Minimum flue	1 metre (150mm od)
Duct length (max)	8 metres
Duct diameter size	300 mm
Control	Manual (external controls available)
Fuel type	Gas Oil / HVO / IHO
Fuel consumption	2.7 l/h
Tank capacity	42 litres
Hours run	15.5 hours (single tank)

Suitable applications include:

Workshops
Construction
Marquees
Events
Warehouses
Churches
Agricultural
Many more

- Integral fuel tank
- Easy to manoeuvre

INDIRECT FIRED OIL - ID65 DV

Nominal heating duty	65 kW
Air flow (max)	4,460 m3/h
Typical heated area	1,625 m3
Power supply	230 /110 V 1 ph 50 Hz Run 4.1/9.0 A
Plug type	BS1363 13 A 230 V BS4343 16 A
Noise level (max)	110 V
Weight	72 dBA @ 1 metre
Dimensions (L x W x H)	230 kg
Minimum flue	1,580 x 730 x 1,300 mm
Duct length (max)	600 x 180 mm
Duct diameter size	24 metres
Control	450 mm
Fuel type	Manual (external controls available)
Fuel consumption	Gas Oil
Tank capacity	6.5 l/h
	Separate fuel buggy/tank required

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Churches
Agricultural
Many more

- Dual voltage
- High-capacity heating
- Easy to manoeuvre

INDIRECT FIRED OIL - AURORA FH111

Nominal heating duty	110 kW
Air flow (max)	8,000 m^3/h
Typical heated area	2,440 m^3
Power supply	230/110 V 1 ph 50 Hz Run 9.2/22 A
Plug type	BS4343 230 V 16 A BS4343 110 V 32 A
Noise level (max)	79 dBA @ 1 metre
Weight	350 kg
Dimensions (L x W x H)	2,230 x 780 x 1,340 mm
Duct length (max)	40 metres
Duct size	450 mm
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	10.9 l/h
Tank capacity	Separate fuel buggy/tank required
Flue size	1 metre x 200 mm

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

- Dual voltage
- High-capacity heating
- Easy to manoeuvre

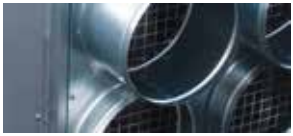
Nominal heating duty	200 kW
Air flow (max)	13,000 m^3/h
Typical heated area	4,204 m^3
Power supply	415 V 3 ph +E 50 Hz Run 10.4 A
Plug type	BS4343 5 pin 3 ph 32 A
Generator size	10 kVA
Noise level (max)	82 dBA @ 1 metre
Weight	428 kg
Dimensions (L x W x H)	2,710 x 910 x 1,520 mm
Duct length (max)	40 metres
Duct size	600 mm
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	18 l/h
Tank capacity	Separate fuel buggy/tank required
Flue size	1 metre x 200 mm

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

- Dual voltage
- Easy to manoeuvre

INDIRECT FIRED OIL - AURORA FH2000



Nominal heating duty	200 kW
Air flow (max)	12,000 m^3/h
Typical heated area	4,108 m^3
Power supply	415 V 3 ph +E 50 Hz Run 7.5 A
Plug type	BS4343 3 ph 5 pin 32 A
Generator size	20 kVA
Noise level (max)	76.5 dBA @ 1 metre
Weight	545 kg
Dimensions (L x W x H)	2,400 x 800 x 1,370 mm
Duct length (max)	40 metres
Duct size	300 mm x 4 or 600 mm x 1
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	18.2 l/h
Tank capacity	Separate tank required
Flue size	1 metre x 200 mm

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

High-capacity heating

INDIRECT FIRED OIL - AURORA FH4000

Nominal heating duty (max)	383 kW
Air flow (max)	24,000 m^3/h
Typical heated area	8,457 m^3
Power supply	415 V 3 ph +E 50 Hz Run 20 A
Plug type	BS4343 5 pin 3 ph 32 A
Generator size (soft start)	20 kVA
Noise level (max)	76.5 dBA @ 1 metre
Weight	1300 kg
Dimensions (L x W x H)	3,850 x 1,200 x 2,015 mm
Duct length (max)	40 metres
Duct size	600 mm x 2
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption (max)	38 l/h
Tank capacity	Separate tank required
Flue size	1 metre x 300 mm

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

- High-capacity heating
- Soft start technology

INDIRECT FIRED GAS HEATER - IDRG30 DV

Nominal heating duty	26 kW
Typical heated area	628 m^3
Power supply	230/110 V 1 ph 50 Hz Run 1.2/2.5 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level (max)	62.3 dBA @ 1 metre
Weight	180 kg
Dimensions (L x W x H)	1,550 x 560 x 1,651 mm
Control	Integral thermostat
Fuel type	LPG propane only
Fuel consumption	1.86 kg/h
Minimum cylinders(s)	1 x 47 kg

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

High-capacity heating

INDIRECT FIRED GAS HEATER - IG65 DV

Nominal heating duty	65 kW
Air flow (max)	4,460 m^3/h
Typical heated area	1,625 m^3
Power supply	230 /110 V 1 ph 50 Hz Run 4.1/9.0 A
Plug type	BS1363 13 A 230 V BS4343 16 A 110 V
Noise level (max)	72 dBA @ 1 metre
Weight	230 kg
Dimensions (L x W x H)	1,580 x 730 x 1,300 mm
Minimum flue	600 x 180 mm
Duct length (max)	24 metres
Duct diameter size	450 mm
Control	Manual (external controls available)
Fuel type	Propane
Fuel consumption	4.6 kg/h
Minimum cylinders	3 x 47 kg

Suitable applications include:

Workshops
Construction
Marquees
Events
Sports venues
Factories
Agricultural
Many more

- Dual voltage
- High-capacity heating

DIRECT FIRED OIL HEATER - MODEL 40

Nominal heating duty	43 kW
Air flow	1,050 m^3/h
Typical heated area	1,050 m^3
Power supply	230 or 110 V 1 ph 50 Hz versions available Run 2/4.1 A
Plug type	BS1363 230 V / BS4343 16 A 110 V
Noise level	79 dBA @ 1 metre
Weight	37 kg (fuelled 87 kg)
Dimensions (L x W x H)	930 x 560 x 615 mm
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	4.6 l/h
Tank capacity	46 litres
Hours run	10 hours per tank

Suitable applications include:

Workshops
Construction
Factories
Agricultural
Garages
Many more

- Dual voltage
- Integral fuel tank

DIRECT FIRED OIL HEATER - TORNADO

Nominal heating duty	69 kW
Air flow (max)	2,500 m^3/h
Typical heated area	2,500 m^3
Power supply	230 or 110 V 1 ph 50 Hz Run 2.8/5.62
Plug type	A BS1363 230 V / BS4343 16 A 110 V
Noise level (max)	71 dBA @ 1 metre
Weight	58 kg (fuelled 123 kg)
Dimensions (L x W x H)	1,200 x 555 x 860 mm
Control	Manual (external controls available)
Fuel type	Gas Oil
Fuel consumption	5.5 l/ h
Tank capacity	65 litres
Hours run	12 hours per tank

Suitable applications include:

Workshops
Construction
Factories
Agricultural
Garages
Many more

- Dual voltage
- Integral fuel tank

DIRECT FIRED GAS HEATER - G30 DV

Nominal heating duty	38.6 kW
Air flow	750 m^3/h
Typical heated area	923 m^3
Power supply	230/110 V 1 ph 50 Hz Run 0.4/0.8 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level	72 dBA @ 1 metre
Weight	15.5 kg
Dimensions (L x W x H)	610 x 372 x 480 mm
Control	Manual
Fuel type	LPG Propane only
Fuel consumption	1.15 kg/h
Minimum cylinder(s)	2 x 47 kg
Max. operating pressure	1.5 bar

Suitable applications include:

Workshops
Construction
Factories
Agricultural
Garages
Many more

No power required

Nominal heating duty	82.43 kW
Air flow	2,190 m^3/h
Typical heated area	2,250 m^3
Power supply	230/110 V 1 ph 50 Hz Run 0.65/1.3 A
Plug type	BS1363 230 V BS4343 16 A 110V
Noise level	77 dBA @ 1 metre
Weight	25 kg
Dimensions (L x W x H)	878 x 450 x 579 mm
Control	Manual
Fuel type	LPG Propane only
Fuel consumption	6.4 kg/h
Minimum cylinder(s)	3 x 47 kg
Max. operating pressure	2 bar

Suitable applications include:

Workshops
Construction
Factories
Agricultural
Garages
Many more

Dual voltage

ACCESSORIES FOR INDIRECT AND DIRECT FIRED HEATERS

The following pages provide details of our range of accessories and fuel supply alternatives which complement our range of portable heaters and provide everything you will need for a complete heating solution.

- Fully bunded fuel oil tanks
- Fuel oil delivery and monitoring
- LPG - bottled gas delivery service
- Gas and Oil connection pipework
- Ducting for supply or recirculation
- Special air diffusers
- Adaptors, T-pieces and Y pieces
- Thermostats
- Electrical distribution boards
- Generators
- Electrical extension cables
- Transformers

Tips for portable gas heaters
Small catalytic gas heaters require a single 15 kg bottle of butane gas. Medium units such as the G30 should be connected to two 47 kg propane gas cylinders. Larger units such as the G80, must be connected to at least three 47 kg propane gas cylinders.

When using too few bottles, or bottles that are too small, the heat output of the unit is adversely affected and this can result in the interruption of the gas supply to the unit. For large gas uses and at low temperatures (below +5^{0}C) Andrews recommend connecting multiple cylinders with a cylinder pairing set and not placing the cylinders in areas that are too cold.

The use and storage of bottled gas can be hazardous and it is vital that careful consideration is given to the application and storage location for gas cylinders. All direct fired heaters require permanent ventilation to the outside atmosphere and it's recommended to allow a minimum of 6.5 cm^{2} for every 293 W of heat input.

A free site survey by an Andrews heating specialist will help you work out exactly what model and set-up is right for your location and application. For health and safety reasons, it is essential that you choose and operate the right type of heater for your location and application. We will be pleased to advise you on the safest and most appropriate heater(s) to use.

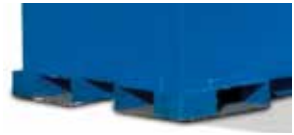
FUEL BUGGY

90 LITRES	
Capacity	90 Litres
Dimensions (L x W x H)	600 x 500 x 1,000 mm
Dry weight	57 kg
Full weight	147 kg
Suitability	Diesel only

105 LITRES	
Capacity	105 Litres
Dimensions (L x W x H)	650 x 543 x 962 mm
Dry weight	53 kg
Full weight	137 kg
Suitability	Diesel only

***Typical weight and dimensions - some versions may vary.**

1,000, 2,000, 2,800, 3,000, 6,000 AND 10,000 LITRE - FUEL TANKS



Capacity	**1,000 Litres**
Dimensions (L x W x H)	1,610 x 1,240 x 1,290 mm
Dry weight	449 kg
Full weight	1,449 kg
Capacity	**2,000 Litres**
Dimensions (L x W x H)	2,225 x 1,250 x 1,540 mm
Dry weight	672 kg
Full weight	2,672 kg
Capacity	**2,800 Litres**
Dimensions (L x W x H)	2,585 x 1,200 x 1,525 mm
Dry weight	900 kg
Full weight	3,700 kg
Capacity	**3,000 Litres**
Dimensions (L x W x H)	2,470 x 1,245 x 1,845 mm
Dry weight	1,000 kg
Full weight	4,000 kg
Capacity	**6,000 Litres**
Dimensions (L x W x H)	3,750 x 2,300 x 2,500 mm
Dry weight	2,615 kg
Full weight	11,915 kg
Capacity	**10,000 Litres**
***Typical weight and dimensions - some versions may vary.**	Specification available upon request

FLEXIBLE DUCTING - FOR INDIRECT FIRED HEATERS

Most indirect fired heater applications require the use of flexible ducting to direct the heated air to where it is needed.

Indirect heaters are designed to allow sufficient air flow through the machine to keep the operating temperature of the combustion chamber within the designed operating temperature range, with the recommended diameter and length of ducting fitted. Exceeding the recommendations reduces the air flow and performance of the heater. It is therefore important that ducting length and diameter are calculated accurately. Always keep ducting runs as straight as possible, bends will increase resistance. When ducts are split to direct warm air into separate areas, ensure the overall surface area of the ducting is not reduced where practical.

For example; A heater with a 600 mm (24") outlet, should not be split into 2 x 300 mm (12") ducts.

Ducting Size	600 mm (24")	450 mm (18")	300 mm (12")
600 mm (24")	1	2	4
450 mm (18")	n/a	1	2
300 mm (12")	n/a	n/a	1

Ducting runs which require splitting to gain access to different areas should be run as far as possible in the same size duct as the heater outlet before fitting the splitter. The greater diameter the duct, the less friction loss / resistance there will be.

To complement our range of heating, cooling and ventilation equipment, Andrews Sykes offer a vast range of flexible ducting and accessories to suit every application. Standard diameters from 150mm to 600mm in 8 metre lengths can be coupled together to deliver airflow to the required location.

Heavy duty ducting suitable for negative pressure extraction applications or positive pressure air supply applications.

- Use minimum length of ducting to maintain highest performance
- Keep all ducting as straight and taut as possible, avoid tight bends
- Duct outlets should be carefully positioned to prevent injury from airborne particles
- Secure duct connections to prevent leakage
- Use inlet guards where there is a chance litter may be drawn into the ducting

Other accessories include:

- Duct adaptors & reducers
- Y pieces
- Connecting collars
- Re-circulation adaptors
- Fixing clips
- Air diffuser boxes

THERMOSTAT T16

Power supply	110 V or 230 V 1 ph 50 Hz
Max current	5 A
Weight	1 kg
Dimensions (L x W x H)	106 x 83 x 200 mm
Operation	Automatic

THERMOSTAT T32

Power supply	415 V 3 ph 50 Hz
Max current	32 A
Weight	2 kg
Dimensions (L x W x H)	106 x 83 x 200 mm
Operation	Automatic

Along with our extensive range of heaters, dehumidifiers, air conditioners, ventilators, chillers and boilers, Andrews can provide a complete hire solution to include generators and power distribution.

We can supply generators from 3 kVA up to multi kW packages, in a variety of voltages. Generators are often fully silenced and complete with fuel tanks. Our electrical distribution equipment includes distribution boards, transformers and cabling.

Andrews supplies the latest in power rental equipment to meet all your requirements. We deliver to you fast from our nationwide depots and offer a genuine 24/7/365 service. Our experienced service team can help you calculate which distribution system is best for your power needs.

Delivering instant heat and hot water, wherever and whenever they're needed.

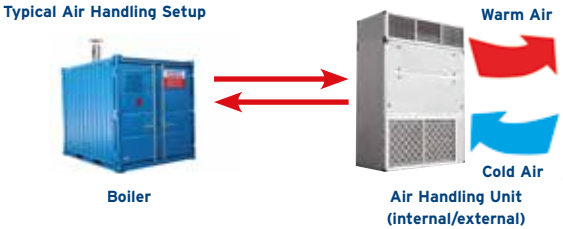
Whether it's support during maintenance, refits and new build or an emergency following a breakdown, our fully mobile boilers are the most advanced and efficient available. We also guarantee fast delivery and installation from our depots nationwide: a genuine 24/7 service, 365 days' a year.

Our portable oil, gas and electric boilers can be coupled to any existing heating and hot water system quickly. All LPHW (Low Pressure Hot Water) boilers deliver large volumes of hot water on demand: for indoor and outdoor locations, at any time of the year, for a range of commercial, industrial and leisure applications.

The range extends from 22 kW to multi-megawatt packages, with every unit featuring high specifications as standard.

To assist our customers, we have provided a simplified guide for the fuel consumption of our oil-fired boilers based on summer and winter seasonal heating loads. This is designed to help our customers with budgeting and is based on industry guidelines and our many years' experience. The guide makes allowances for the normal cycle of peaks and troughs in boiler demand to give a more accurate indication of anticipated fuel consumptions.

- Natural gas and oil fired boilers: the UK's most modern and efficient boiler hire fleet.
- 24/7 boiler hire, service and sales support UK-wide - 365 days a year.
- We offer a 4 hour response.
- Environmentally friendly, energy efficient equipment.
- For planned support, disaster recovery and business continuity.
- Installation, commissioning and service by qualified gas safe engineers.



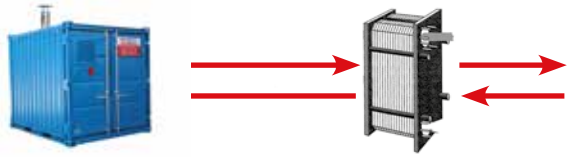
The Andrews package boiler system provides a fast and efficient solution to a wide range of heating and domestic hot water applications. All boilers in our fleet can be coupled with a large range of fan coils and air handling units - providing temperature-controlled heated air for a multitude of applications. Andrews offer an extensive range of electric, oil fired and natural gas fired boilers.

We also stock a large range of ancillaries and accessories which include air handlers, fan coils, pressurisation units, expansion vessels, temporary pipe work, heat exchangers, fluid pump sets, generators and fuel tanks. Additionally, we provide a comprehensive fuel management system to ensure your boiler remains fully operational throughout the hire period. All units and accessories are available 24/7/365 throughout our nationwide depot network.

Our boilers are available in the following capacities: 22 kW, 36 kW, 80 kW, 100 kW, 250 kW, 300 kW, 500 kW, 1,000 kW and 1,500 kW units. All of our temporary boilers can be coupled together in series or parallel to provide multi-megawatt packages. These can be provided with twin heat exchangers to supply individual thermostatically controlled central heating and domestic hot water at the same time.

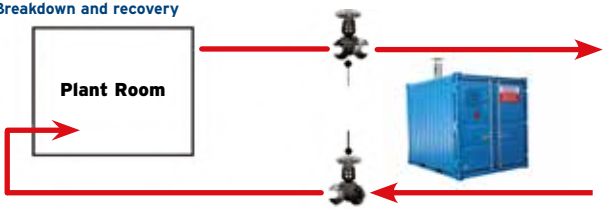
MPHW units available from 500 kW to 1,500 kW and steam units from 1,000 kg/h to 3,000 kg/h on request.

Process heating



This system is often used where a product requires heating but due to the nature of the product it must not come into contact with the boiler circuit. To satisfy this requirement if the boiler is used in conjunction with a heat exchanger, a plate heat exchanger is preferred for this type of application. This will keep the boiler flow and the process flow separate.

Breakdown and recovery



The Andrews packaged boiler may be used to maintain hot water and heating flow to existing systems. In the event of planned maintenance to existing plant or fast on site temporary installation during breakdown situations.

Nominal heating duty	22 kW
Power supply	415 V 3ph N+E Run 31 A
Plug type	BS4343 5 pin 32 A
Noise level (max)	35 dBA / 48 LWA @ 10 metres
Weight	50 kg
Dimensions (L x W x H)	600 x 550 x 1,100 mm
Fuel type	Electric
Average power consumption	9.6 kW/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Many more

- Energy efficient
- Quick connect
- Portable

ELECTRIC BOILER - 22 kW S2 WITH HEAT EXCHANGER

Nominal heating duty	22 kW
Power supply	415 V 3ph N+E Run 31 A
Plug type	BS4343 5 pin 32 A
Noise level (max)	35 dBA / 48 LWA @ 10 metres
Weight	49 kg
Dimensions (L x W x H)	630 x 650 x 1,072 mm
Fuel type	Electric
Average power consumption	9.6 kW/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Many more

- Energy efficient
- Quick connect
- Portable

ELECTRIC BOILER - 36 kW S1

Nominal heating duty	36 kW
Power supply	415 V 3ph N+E Run 52 A
Plug type	BS4343 5 pin 63 A
Noise level (max)	35 dBA @ 10 metres
Weight	60 kg
Dimensions (L x W x H)	600 x 550 x 1,100 mm
Fuel type	Electric
Average power consumption	16 kW/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Many more

- Energy efficient
- Quick connect
- Portable

ELECTRIC BOILER - 36 kW S2

Nominal heating duty	36 kW
Power supply	415 V 3ph N+E Run 55 A
Plug type	BS4343 5 pin 63 A
Noise level (max)	37 dBA / 49 LWA @ 10 metres
Weight	67.6 kg
Dimensions (L x W x H)	630 x 650 x 1,120 mm
Fuel type	Electric
Average power consumption	17.1 kW/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Many more

- Energy efficient
- Quick connect
- Portable

ELECTRIC BOILER - 80 kW

Nominal heating duty	80 kW
Power supply	415 V 3ph N+E Run 117 A
Plug type	EN60309-1 5 pin 125 A
Noise level	30 dBA / 42 LWA @ 10 metres
Weight	1,030 kg
Dimensions (L x W x H)	2,200 x 1,570 x 2,420 mm
Fuel type	Electric
Average power consumption	48.5 kW/h
Water connections	1" BSP stortz coupling
Temperature range	25 / 90 °C

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Energy efficient
- Lockable & secure container
- Zero emissions

PACKAGED BOILER - 100 kW

Nominal heating duty	100 kW
Power supply	230 V 1 ph N+E 50 Hz Run 10 A
Plug type	BS4343 16 A
Noise level (max)	45 dBA / 58 LWA @ 10 metres
Weight	980 kg
Dimensions (L x W x H)	2,200 x 1,550 x 2,400 mm
Fuel type	Gas Oil / IHO / Natural Gas
LPHW connections	25 mm (1") storz coupling
DHW connections	25 mm (1") storz coupling
Natural gas connections	3/4" BSP coupling
Average power consumption	2.3 kW/h
Fuel consumption:	
Winter average heating	4.5 l/h
Summer average heating	3.0 l/h
Peak average heating	8.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Energy efficient
- Lockable & secure container
- High-capacity heating

PACKAGED BOILER - 250 kW

ANDREWS BOILERS

Nominal heating duty	250 kW
Power supply	230 V 1 ph N+E 50 Hz Run 10 A
Plug type	BS4343 16 A
Noise level (max)	45 dBA / 58 LWA @ 10 metres
Weight	2,000 kg
Dimensions (L x W x H)	3,000 x 2,400 x 2,600 mm
Fuel type	Gas Oil / IHO / Natural Gas
LPHW connections	50 mm (2") storz coupling
DHW connections	50 mm (2") storz coupling
DHW recirculation connections	25 mm (1") storz coupling
Natural gas connections	1 1/4" BSP coupling
Fuel consumption:	
Winter average heating	11.0 l/h
Summer average heating	7.5 l/h
Peak average heating	20.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Energy efficient
- Lockable & secure container
- High-capacity heating

PACKAGED BOILER - 300 kW

Nominal heating duty	300 kW
Power supply	240 V 1 ph N+E 50 Hz Run 14 A
Plug type	BS4343 16 A
Noise level (max)	46 dBA / 60 LWA @ 10 metres
Weight	2,600 kg
Dimensions (L x W x H)	3,000 x 2,400 x 2,600 mm
Fuel type	Gas Oil / IHO / Natural Gas
LPHW connections	50 mm (2") stortz coupling
Average power consumption	3.3 kW/h
Fuel consumption:	
Winter average heating	13.5 l/h
Summer average heating	9.0 l/h
Peak average heating	24.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Energy efficient
- Lockable & secure container
- High-capacity heating

PACKAGED BOILER - 300 kW SLIMLINE

Nominal heating duty	300 kW
Power supply	230 V 1 ph N+E 50 Hz Run
Plug type	BS4343 230 V 16 A 3 pin
Noise level (max)	45 dBA @ 10 metres
Weight	850 kg
Dimensions (L x W x H)	2100 x 820 x 2,100 mm (excl flue)
Fuel Type	Natural Gas
LPHW Connections	50 mm (2") Storz
Power consumption	3.1 kW/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Energy efficient
- Lockable & secure container
- High-capacity heating

PACKAGED BOILER - 380 kW HYBRID

Nominal Heating Duty	380 kW (300 kW Oil, 80 kW Electric)
Power Supply	415 Volt 3ph N&E Run 122 A
Plug Type	EN60309-1 Pin 125 A
Noise Level	46 dBA/60 LWA @ 10 metres
Weight	3,700 kg
Dimensions (L x W x H)	3,000 x 2,400 2,600 mm
Fuel Type	Electric / Gas Oil / IHO / Natural Gas
Fuel Consumption	Subject to configuration
LPHW Connection	2" Storz (50 mm)
Natural Gas Connection	2" BSP

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Lockable & secure container
- High-capacity heating
- Intelligent Hybrid Control
- Energy Efficient

Nominal heating duty	500 kW
Power supply	415 V 3ph N+E 50 Hz Run 16 A
Plug type	BS4343 5 pin 32 A
Noise level (max)	45 dBA / 58 LWA @ 10 metres
Weight	4,000 kg
Dimensions (L x W x H)	3,000 x 2,400 x 2,600 mm
Fuel type	Gas Oil / IHO / Natural Gas
LPHW connections	80 mm (3") storz coupling
DHW connections	50 mm (2") storz coupling
DHW recirculation connections	25 mm (1") storz coupling
Natural gas connections	2" BSP coupling
Fuel consumption:	
Winter average heating	22.5 l/h
Summer average heating	15.0 l/h
Peak average heating	40.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Lockable & secure container
- High-capacity heating
- Energy Efficient

PACKAGED BOILER - 1,000 kW

Nominal heating duty	1,000 kW
Power supply	415 V 3 ph N+E 50 Hz Run 17 A
Plug type	B54343 5 pin 32 A
Noise level (max)	48 dBA / 62 LWA @ 10 metres
Weight	7,500 kg
Dimensions (L x W x H)	6,058 x 2,438 x 2,591 mm (without flue)
Fuel type	Gas Oil / IHO / Natural Gas
Control	Automatic thermostat
LPHW connections (flow/ return)	100 mm DN100 PN16 flange
Power consumption	4.1 kW/h
Fuel consumption:	
Winter average heating	45.0 l/h
Summer average heating	30.0 l/h
Peak average heating	80.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Lockable & secure container
- High-capacity heating
- Energy Efficient

PACKAGED BOILER - 1,500 kW

Nominal heating duty	1,500 kW
Power supply	415 V 3 ph N+E 50 Hz Run 27 A
Plug type	BS4343 5 pin 32 A
Noise level (max)	47 dBA / 61 LWA @ 10 metres
Weight	8,900 kg
Dimensions (L x W x H)	6,058 x 2,438 x 2,900 mm (without flue)
Fuel type	Gas Oil / IHO / Natural Gas
Control	Automatic thermostat
LPHW connections (flow/ return)	100 mm DN100 PN16 Flange
Power consumption	11.2 kW/h
Fuel consumption:	
Winter average heating	67.5 l/h
Summer average heating	45.0 l/h
Peak average heating	120.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Lockable & secure container
- High-capacity heating
- Energy Efficient

MOBILE BOILER - 100 kW

Nominal heating duty	100 kW
Power supply	240 V 1 ph N+E 50 Hz Run 7 A
Plug type	BS4343 16 A 3 pin
Noise level	60 dBA @ 3 metres 78 LWA @ 3 metres
Weight	722 kg (Without fuel)
Internal fuel tank	98 litres
Dimensions (L x W x H)	2,700 x 1,600 x 2,000 mm
Fuel type	Gas Oil / IHO
LPHW connections	28 mm (1") stortz coupling
Working temperature (max)	80°C
Fuel consumption:	
Winter average heating	4.5 l/h
Summer average heating	3.0 l/h
Peak average heating	8.0 l/h

Suitable applications include:

Construction
Retail
Food & beverage
Warehouses
Factories
Events
Healthcare
Many more

- Towable
- High-capacity heating
- Energy Efficient

Hoses and Pipework

Along with our boilers, we also supply flexible hoses, manifolds, valve and coupling which help complete the temporary installation and allow the units to be connected to existing systems, or onto air handlers and heat exchangers. Our range of flexible hoses are usually supplied in 6 metre lengths and are fitted with Storz quick release couplings. The hoses are generally rated for use up to 100°C and pressures of up to 10 Bar. Specialist WRAS approved hoses are also available for domestic hot water applications.

Heat Exchangers

In certain applications, it is advisable to use a heat exchanger between the boiler and the system flow. This may be due to hygiene, system pressure or the need to heat sensitive liquids, oils or aggressive material. In such cases, we offer a wide range of plate heat exchangers for hire that suit most applications and capacities.

Andrews Heat Exchanger hire offer the biggest range of Heat Exchangers, air handlers and cooling accessories for hire in the UK.

We can deliver to you fast from our nationwide depots and unlike other suppliers we guarantee a "genuine" 24/7 365 days a year fast and friendly service. We will help you decide which Heat exchanger hire unit is best for you to help with your process applications. Our Heat Exchanger Rental service promise is to be onsite within four hours of your call with reliable and tested Heat Exchangers for all of your cooling or heating requirements.

Fuel Tanks

When our boilers are to be run on fuel oil, we offer a wide range of fuel tanks for hire and along with a full fuel management service to ensure the boiler is kept running 24 /7. Our fuel tanks are available in capacities from 1,000 to 10,000 litres, see page 109.

Air Handlers

For applications where boilers are used to provide heating, we offer a range of air handlers and fan coils for hire. They can be connected to a boiler via flexible hoses and provide high volumes of warm air in capacities from 15 kW to 600 kW, free blowing or via flexible ducting, see page 65 to 71.

Hot Water Calorifiers 1000L

Hot water calorifiers are used to supply a wide range of hot water demands. Installed in conjunction with heating boilers, these products provide an indirect method of generating hot water for various types of buildings. Our 1000l model is suitable for large domestic or small commercial applications and provide a reliable supply of hot water when installed with a suitably sized heating boiler. The 1000l hot water calorifier is constructed from stainless steel and has a single high-capacity stainless steel coil.

DHW Plate Pack

500 kW Controllable DHW plate pack heat exchanger
Also available 300 kW / 100 kW

Separates clean hot tap water from a boiler fed heating system. For use with Andrews Boilers. Fully controllable to achieve exact temperature requirements.

Heating Capacity	520 kW
DHW Inlet Temperature (Design)	25°C
DHW Outlet Temperature (Design)	70°C
Boiler (Primary) Inlet Temperature	90°C
Boiler (Primary) Outlet Temperature	70°C
Pressure Drop (DHW)	0.5 BAR
Mains Cold Water Inlet Connection	2" Storz
Hot Water Outlet Connection	2" Storz
DHW Return Connection	1" Storz
Primary Flow and Return Connections	2" Storz
Plate Material	316 Stainless
DHW Fittings	Brass
Electrical Supply	230 V 1 ph 16 A (Run 6 A)
Controls	Programmable 3 Way Actuating Valve
DHW Pump	Included
Weight in frame (Dry)	375 kg
Dimensions (L x W x H)	1,600 x 620 x 1,660 mm

Pressurisation Unit

Compact, enclosed digital pressurisation unit with electronic pressure transducer for use on sealed systems to provide a minimum system pressure requirement. For use with Andrews Boilers

Electrical supply can be found inside Andrews Boilers - packaged boiler range.
Up to 5.0 bar programmable control (Max 10.0 bar safety)

5.0 bar pressurisation unit
0.1 bar increments
System quick-fill mode
Maximum system temperature 85ºC
18 Litre break tank
Flood protection
15 mm cold water connection required.
230 V 1 phase 50 Hz - 13 A plug. Running 3.4 A
Dimensions (L x W x H) 420 x 320 x 800 mm
Weight (dry) 31 kg

Andrews Sykes Pumps deliver the most dependable pump hire equipment and the most effective pumping solutions for all your cooling requirements.

From fixed to variable speed pumping equipment, Andrews can supply the complete solution. We can offer a complete end-to-end service: from site surveys and planning, through consultancy and engineering skills, to expert installation. Our pumps can handle almost every conceivable need, from high pressure chilled water supply to hot water supply for central heating plants. Available in 6, 10, 15, 20 and 40 l/s (rated at 30 m head).

Tackling high moisture problems with reliable refrigerant and desiccant dryers. If you're experiencing moisture problems in a room or building, our powerful and reliable dehumidifiers can handle up to 1,500 litres dehumidification capacity a day, delivering high levels of drying power. Typical applications include building and construction, offices, industry and manufacturing, agriculture, warehousing and logistics, and even domestic homes.

Two types are available:
Refrigerant - using an evaporator and condenser, these are the most commonly used in the British climate, providing keep-dry areas up to 9,000 m^3 and dry out areas up to 4,500 m^3.

Desiccant - using moisture-absorbing materials like silica gel, these units can handle up to 1,550 litres drying capacity a day, providing keep-dry areas up to 14,000 m^3 and dry out areas up to 7,000 m^3. These units are for when very low relative humidity is needed, if work is being carried out at extremely low temperatures, a low dew point is essential, or for when the unit has to be ducted into the area that needs drying.

With free site surveys and friendly customer service on **0800 211 611**, our specialists can help you decide which unit is best for you.

Diagram of refrigerant principle

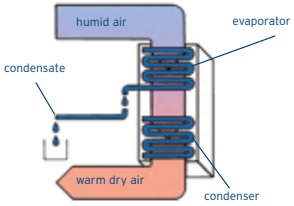
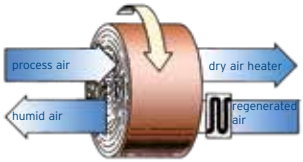


Diagram of desiccant principle



The operation of refrigerant dryers

Refrigerant dryers cool air intake considerably by means of an evaporator section in a closed refrigeration system. As a result of this cooling, the relative humidity of the air over the evaporator rises to above 100% and water vapour condenses. This water (or condensation) is either drained into a reservoir or through a hose to a drain, water container or a suitable outside location. The heat generated in the cooling system condenser is used to warm the returned air to a temperature above that of the original intake. Each time the room air is passed through the dryer a quantity of moisture is removed from the air, therefore the humidity within the room is reduced. Refrigerant dryers are typically positioned within the room to be dried and require little attention whilst in operation.

The operation of desiccant dryers

A desiccant dryer uses the hygroscopic properties of moisture-absorption materials such as silica gel or lithium chloride. These materials are impregnated within a rotating ceramic wheel, over which the humid air from the room is blown. The hygroscopic material absorbs a large percentage of the moisture from the air, therefore reducing the humidity in the area. The wheel is left very wet, it then continues to rotate slowly and the section which is saturated with moisture is heated with an electric heater, to vaporise the water. This warm and very humid air is then expelled outside through a length of flexible ducting. As well as being able to place a desiccant unit within a room that is to be dried, desiccant dryers are often used in applications where it is not possible to position a dryer, such as hazardous areas or areas with limited access such as pipes and tanks.

Applications of refrigerant and desiccant dryers
Refrigerant dryers are most commonly used in the British climate. Desiccant dryers tend to be only used in the following situations:

- a very low relative humidity is required (< 40%)
- the work is being carried out at extremely low temperatures (< -10°C)
- a low dew point is essential (for example tank-coating)
- the unit has to be ducted into the area that needs drying

A refrigerant dryer uses about one third of the energy of a similar desiccant dryer, therefore the obvious advantage (especially on site) is that it requires much less electricity so that running costs are usually reduced. A desiccant dryer is more efficient than a refrigerant dryer at about -5°C.

Typical applications include:

- drying out buildings during construction/finishing
- drying out after a fire or flood
- storage of delicate products that are moisture sensitive
- keeping electrical switch rooms dry
- equipment drying rooms on construction sites, outdoor activity centres, fire stations, etc
- the drying out of pipework and tanks prior to repainting/coating

Fire and water damage
In the case of fire and water damage, immediate professional action is essential to avoid further damage. Andrews hires dryers, heaters and fans to reduce relative humidity and to ventilate polluted air. Corrosion (HCL) can be stopped; buildings, furniture and inventory can be saved and thus restoration costs can be minimized.

Building drying

The most important reason for using building dryers is to minimize the total building time by creating the perfect conditions for painting, plastering, finishing floors and ceilings, wall-paper, etc. Andrews has the right dryer available whether you need a building dryer for a house, a cellar, a safe storage or complete utility.

Humidity control during storage

Increasingly, higher demands are made upon the relative humidity standards for all storage including agricultural products, electronic components, sheet steel, food, paper products, powders, objects d'art, antiques, etc. The list is almost endless.

Typical relative humidity conditions

Material	% R.H.	Material	% R.H
Nuts	60-65	Steel	45
Chocolate	40-50	Electronics	55
Onions	65-70	Switch Rooms	60
Furniture	50-55	Paper	55-65
Flower bulbs	70-75	Artwork	55

To avoid mould the relative humidity has to be maintained below 70% R.H.

Dehumidification with an Andrews refrigerant building dryer is up to 75% cheaper than using heating in combination with ventilation to dry a room.

A combination of equipment can speed the drying process up, the dehumidifier removes the moisture from the air, whilst heaters and fans accelerates the process by circulating warm air throughout the affected area allowing the dehumidifier to be more efficient.

Calculation and selection of the correct dehumidifier or dryer
To correctly decide upon the most efficient way of drying an area, many factors need to be considered: temperature, materials, relative humidity and drying time. This calculation is best left to the experts at Andrews who, armed with a hygrometer and psychrometric chart, will give you the very best advice - free of charge - on how to use our units.

Basic 'rule of thumb' sizing Refrigerant units
These are usually sized taking a typical RH of 75% at an air temperature of 20°C, the performance of the unit will vary greatly as the temperature and RH rises or falls. Typically the units are shown to be able to keep an area in cubic metres dry, based on the above conditions. The dry out area is usually around 50% of this as the area is assumed to be already wet and this moisture needs to be removed.

Desiccant units
In general, a desiccant unit is suitable to dehumidify a room with a volume two times bigger than the dry air volume produced by the dryer. A desiccant dryer with a dry air volume of 1,600 m^3/hr is suitable to dry a room of approximately 3,200 m^3.

Installation of a dehumidifier
Before the installation of a dehumidifier, the room to be dried has to be sealed as well as possible. This means the room's windows and doors are kept closed and gaps and ventilation holes are covered so that humid air is prevented from flowing inside from the outside. Plastic covers are suitable for sealing a room - If one dryer is to be used, it should be positioned in the middle of the room. For larger rooms, where more dryers are used, the total room should be divided into as many equal sections as dryers to be used. A dryer is installed in the middle of each section to ensure perfect air circulation. The dryer has to be positioned so it can blow dry air without obstruction, and its air inlet grill remains clear. If dryers are used in conjunction with heaters (electrical or indirect fired), make sure hot air is not blown in the direction of the dryers. The condensation from the dryer can be caught in a container or a hose can be used to drain the condensation to outside or to a drain. In this case, the water has to be piped off vertically otherwise leakages will occur.

Larger Andrews dryers remove condensation by means of a condensation pump - a new development in dehumidification technology. This pump allows the condensation to be easily pumped upwards through a window or down to an outside drain. Due to this new development, it is no longer necessary to empty and to check the waterbuckets during weekends and holidays, for example.

Faster drying

For a faster drying process, dryers can be installed together with Andrews ventilation fans. The increased air circulation results in faster moisture evaporation, minimising the danger of shrink damage from drying out too fast. In some cases, the addition of indirect or electrical heaters may be recommended.

Accessories

- Humidistats, to turn the units on and off automatically
- Automatic timer controllers
- Condensate pumps
- Flexible ducting, which is available in various lengths and diameters
- Electrical extension leads are available in a variety of lengths and voltages
- Remote humidity loggers
- Condensate tubing
- Condensate collection containers
- Transformers and distribution boards

Andrews Dehumidification Hire also supply telemetry equipment to allow remote and recorded monitoring of humidity and temperature.

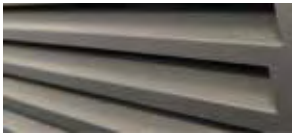
Extraction rate (max)	75 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	37 litres / 24hr
Air flow (max)	420 m^3/h
Keep dry area (typical)	814 m^3
Dry out area (typical)	407 m^3
Power supply	230/110 V 1 ph 50 Hz Run 5.7/11.9 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level (max)	53 dBA @ 3 metres
Weight	48 kg
Dimensions (L x W x H)	510 x 491 x 920 mm
Control	Manual (humidistat option)
Average power consumption	984 W/h

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

Dual voltage

REFRIGERANT DEHUMIDIFIER - FD40 DV S2



Extraction rate (max)	62 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	27 litres / 24hr
Air flow (max)	550 m^3/h
Keep dry area (typical)	930 m^3
Dry out area (typical)	580 m^3
Power supply	230/110 V 1 ph 50 Hz Run 4.4/9.6 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level (max)	50 dBA @ 3 metres
Weight	44 kg
Dimensions (L x W x H)	550 x 550 x 940 mm
Control	Digital (humidistat controlled)
Average power consumption	759 W/h
Refrigerant gas	R1234YF
GWP	4

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

Dual voltage

REFRIGERANT DEHUMIDIFIER - HD500 DV

Extraction rate (max)	70 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	34 litres / 24hr
Air flow (max)	480 m^3/h
Keep dry area (typical)	748 m^3
Dry out area (typical)	374 m^3
Power supply	230/110 V 1 ph 50 Hz Run 4.1/8.2 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level (max)	57 dBA @ 3 metres
Weight	59 kg
Dimensions (L x W x H)	940 x 630 x 1,110 mm
Control	Manual (humidistat option)
Average power consumption	707 W/h

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

Dual voltage

REFRIGERANT DEHUMIDIFIER - DH150

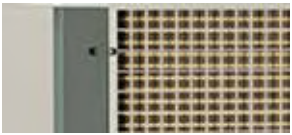
Extraction rate (max)	275 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	150 litres / 24hr
Air flow (max)	2,200 m^3/h
Keep dry area (typical)	3,300 m^3
Dry out area (typical)	1,650 m^3
Power supply	415 V 3 ph 50 Hz Run 8 A
Plug type	BS4343 16 A 5 pin
Noise level (max)	63.83 dBA @ 1 metre
Weight	130 kg
Dimensions (L x W x H)	660 x 660 x 1,313 mm
Control	Manual (humidistat option)
Average power consumption	2.4 kW/h

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

High performance

REFRIGERANT DEHUMIDIFIER - DH600



Extraction rate (max)	1,148 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	600 litres / 24hr
Air flow (max)	9,000 m^3/h
Keep dry area (typical)	13,200 m^3
Dry out area (typical)	6,600 m^3
Power supply	415 V 3 ph N+E 50 Hz Run 18 A
Plug type	BS4343 32 A 5 pin
Noise level (max)	63 dBA @ 1 metre
Weight	497 kg
Dimensions (L x W x H)	2,100 x 1,400 x 1,800 mm
Control	Manual (humidistat option)
Average power consumption	5.6 kW/h

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

High performance

DESICCANT DEHUMIDIFIER - KT190

Extraction rate (max)	18 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	12 litres / 24hr
Air flow (max)	190 m^3/h
Keep dry area (typical)	264 m^3
Dry out area (typical)	132 m^3
Power supply	230 or 110 V 1 ph 50 Hz Run 11 A
Plug type	BS1363 230 V 5A
Generator size	3 kVA
Duct length	5 metres
Noise level (max)	56 dBA @ 1 metre
Weight	12 kg
Dimensions (L x W x H)	314 x 245 x 530 mm
Control	Manual (humidistat option)
Average power consumption	862 W/h
Duct diameters	Wet out 80 mm, Dry out 100 mm, Process in 100 mm

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

Works in low ambient temperatures

DESICCANT DEHUMIDIFIER - DS40

Extraction rate (max)	55 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	33 litres / 24hr
Air flow (max)	160 m^3/h
Keep dry area (typical)	726 m^3
Dry out area (typical)	363 m^3
Power supply	110 V 1 ph 50 Hz Run 11.5 A
Plug type	BS4343 110 V 32 A
Generator size	3 kVA
Duct length	5 metres
Noise level (max)	66 dBA @ 1 metre
Weight	30 kg
Dimensions (L x W x H)	550 x 460 x 700 mm
Control	Manual (humidistat option)
Average power consumption	2.1 kW/h
Duct diameters	Wet out 80 mm, Dry out 100 mm, Process in 125 mm

Suitable applications include:

Construction
Art galleries
Flood recovery
Warehouse
Agricultural
Archives
Industrial
Many more

Works in low ambient temperatures

DESICCANT DEHUMIDIFIER - KT2000

Extraction rate (max)	450 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	300 litres / 24hr
Air flow (max)	2,000 m^3/h
Keep dry area (typical)	6,600 m^3
Dry out area (typical)	3,300 m^3
Power supply	415 V 3 ph N+E 50 Hz Run 28.5 A
Plug type	BS4343 5 pin 32 A
Generator size	26 kVA
Duct length (max)	40 metres
Noise level (max)	82.75 dBA @ 1 metre
Weight	225 kg
Dimensions (L x W x H)	1,290 x 890 x 1,050 mm
Control	Manual (humidistat option)
Average power consumption	8.8 kW/h
Duct diameters	Process in 300mm, Dry out 300mm, Wet out 150mm, Regeneration 150mm

Suitable applications include:

Construction
Pharmaceutical
Flood recovery
Warehouse
Agricultural
Tank drying
Industrial
Many more

Works in low ambient temperatures

DESICCANT DEHUMIDIFIER - KT2200

ANDREWS DEHUMIDIFICATION

Extraction rate (max)	480 litres / 24hr
Nominal extraction duty at 60% RH @ 20°C	310 litres / 24hr
Air flow (max)	2,200 m^3/h
Keep dry area (typical)	7,000 m^3
Dry out area (typical)	3,500 m^3
Power supply	415 V 3 ph N+E 50 Hz Run 24 A
Plug type	BS4343 5 pin 32 A
Generator size	22 kVA
Duct length (max)	40 metres
Noise level (max)	70 dBA / 79 lwA @ 1 metre
Weight	315 kg
Dimensions (L x W x H)	1,326 x 1,210 x 1,510 mm
Control	Manual or Auto (humidistat mounted)
Average power consumption	7.1 kW/h
Duct diameters	Process in 300mm, Dry out 300mm, Wet out 150mm, Regeneration air in 150mm

Suitable applications include:

Construction
Pharmaceutical
Flood recovery
Warehouse
Agricultural
Tank drying
Industrial
Many more

Works in low ambient temperatures

DESICCANT DEHUMIDIFIER - KT6000

Extraction rate (max)	1,550 litres / 24hr
Nominal extraction duty at 75% RH @ 20°C	936 litres / 24hr
Air flow (max)	6,000 m^3/h
Keep dry area (typical)	20,600 m^3
Dry out area (typical)	10,300 m^3
Power supply	415 V 3 ph N+E 50 Hz Run 76.5 A
Plug type	BS4343 5 pin 125 A
Generator size	70 kVA
Duct length (max)	48 metres
Noise level (max)	94 dBA @ 3 metres
Weight	1,400 kg
Dimensions (L x W x H)	2,790 x 1,700 x 2,130 mm
Control	Manual (humidistat option)
Average power consumption	23 kW/h
Duct diameters	Wet out 300 mm, Dry out 600 mm, Process in 600 mm, Regeneration 300 mm

Suitable applications include:

Construction
Pharmaceutical
Flood recovery
Warehouse
Agricultural
Tank drying
Industrial
Many more

Works in low ambient temperatures

At Andrews, we understand the importance of adequate air circulation which is why we offer our customers a full range of cooling, extraction and ventilation fans. Our equipment ensures that confined spaces and hazardous working environments are safe from contaminants and that fresh air is circulated throughout a specific application. It's not uncommon that two high capacity industrial fans are used simultaneously during a project – one to remove dangerous fumes or gases and the other to replace the affected area with safe, clean air.

As far as air extraction is concerned, it is imperative that enough openings are present within the area in which your fan is installed. We have genuine expertise of virtually every type of ventilation project which is why we offer such a broad range of equipment to suit requirements of any nature. We are constantly proposing ventilation hire packages for tunnels, sewers and similarly restricted environments where the availability of clean air is limited.

While effective fume and dust extraction is of critical importance in the above scenarios, it is just as important to take steps to ensure there is sufficient fresh air ventilation to replace what has been removed - particularly when workmen are on site.

Our fans are frequently deployed to assist specialist processes, whether that be welding, tank cleaning, sewage work, excavation, painting or even demolition. Additionally, our fans are also suitable for the temporary storage of agricultural products and livestock.

When warm temperatures strike, it is very common that our free blowing fans are positioned in exhibition centres, classrooms, exam halls and meeting rooms, providing comfort cooling to those inside.

The free-blowing fans are also excellent for creating cool tents, parties, exhibitions, sports halls, theatres, meeting rooms, canteens, offices, etc. (On average, the content of a house has to be refreshed four times an hour). The following table shows the most common ventilation rates and standards:

Ventilation rates per hour			
Type of space	Ventilation Rates	Type of space	Ventilation Rates
Cafés	10-12	Sports Halls	2-3
Garages	4 -6	Theatres	5-8
Foundaries	8-15	Spray Paint Workshops	20-50
Canteens	6-8	Meeting Rooms	5-10
Laboratories	5 -15	Workshops	6-10
Engineering	15-30	Fume Cupboards	40-50
Storage	3-6	Offices	4-8
Restaurants	6-10		

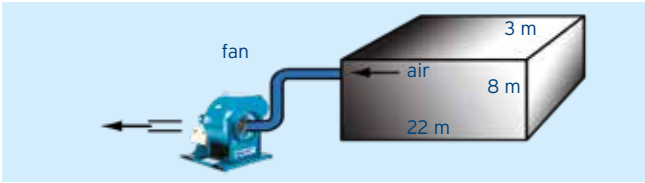
Useful tips on calculation and sizing for the correct Andrews ventilation fan

The selection of the correct fan can be achieved with the help of the following calculation:

1. Calculate the volume of the room which needs to be ventilated (W x L x H)
2. Select the recommended number of air changes per hour
3. Multiply the results of 1 by result 2, this will give the required air volume per hour

Example
An engine room which is 3 metres high x 8 metres wide x 22 metres long requires ventilation due to heat and fume build-up. From the chart we can see that the recommended air change is between 15 and 30 depending on the intensity of the application. This case is fairly intense so on the side of caution we can use the ratio of 30 changes per hour.

To calculate;
3 m x 8 m x 22 m = 528 m^3 x 30 changes = 15,840 m^3 per hour
In this situation a model FV900 which has a capacity of 16,500 m^3 per hour would be most suitable.

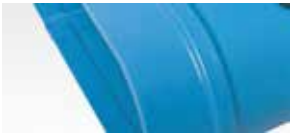


Important note on using ducted units
If it is necessary to use long lengths of ducting or involve several bends in the ducting, it must be remembered that the resistance in the ducting will increase and the air volume provided will decrease drastically.

Due to high resistance, certain fans can become useless, although the stated air volume at low pressure would not indicate this at first sight. The Andrews FV fans do have high pressure capacity and can be used with several lengths of ducting.

In some applications it may be better to blow rather than suck the air out, or use a combination of the two. When used in sensitive environments or handling ignitable fumes, special precautions and equipment must be used. If the application is sensitive, complicated or long lengths of ducting need to be used, you should consult your local Andrews specialist who will be able to provide advice on all types of installations.

CARPET DRYER - TURBO DRYER



Air flow (max)	4,500 m^3/h
Power supply	230 V 1 ph 50 Hz Run 1.9 A
Plug type	BS1363 230 V
Noise level (max)	67.5 dBA @ 1 metre
Weight	12.4 kg
Dimensions (L x W x H)	510 x 380 x 470 mm
Control	Manual variable speed
Average power consumption	440 W/h

Suitable applications include:

Office
Flood recovery
Shops
Restaurants
Hotels
Construction
Many more

Plug and play

Air flow (max)	3,600 m^3/h
Power supply	230 or 110 V 1ph 50 Hz Run 1.15/3 A BS1363 230 V BS4343 16 A 110 V
Plug type	
Noise level (max)	67.5 dBA @ 1 metre
Weight	10 kg
Dimensions (L x W x H)	640 x 300 x 640 mm
Control	Manual variable speed
Power consumption	265 W/h

Suitable applications include:

Offices
Gyms
Workshops
Retail
Events
Warehouses
Restaurants
Many more

Plug and play

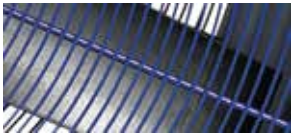
COOLING FAN - ASF50

Air flow (max)	7,600 m^3/h
Power supply	230 or 110 V 1ph 50 Hz Run 3.7/6.1 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Noise level (max)	80 dBA @ 1 metre
Weight	21 kg
Dimensions (L x W x H)	840 x 345 x 820 mm
Control	Manual variable speed
Power consumption	851 W/h

Suitable applications include:

Offices
Gyms
Workshops
Retail
Events
Warehouses
Restaurants
Many more

- Plug and play



Air flow (max)	37,000 m^3/h
Power supply	230 or 110 V 1ph 50 Hz Run 10/21 A BS1363 230 V BS4343 32 A 110 V
Plug type	
Noise level (max)	85 dBA @ 1 metre
Weight	85 kg
Dimensions (L x W x H)	1,050 x 440 x 1,170 mm
Control	Manual variable speed (230 V versions only)
Power consumption	2.3 kW/h

Suitable applications include:

Warehouses
Workshops
Construction
Industrial
Factories
Events
Sports
Many more

- Plug and play

VENTILATION/EXTRACTION FAN - VAF200

Air flow (max)	1,350 m^3/h
Power supply	110 V 1 ph 50 Hz Run 2.6 A
Plug type	BS4343 16 A 110 V
Generator size	3 kVA min
Transformer size	3 kW min
Duct length (max)	32 metres
Duct size	200 mm
Noise level (max, with duct)	72 dBA @ 1 metre
Weight	7.5 kg
Dimensions (L x W x H)	330 x 250 x 370 mm
Control	Manual

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Marquees
Many more

Large air flow

VENTILATION FAN - AF3900

Air flow (max)	3,900 m^3/h
Power supply	230 V 1 ph 50 Hz Run 1.6 A
Plug type	BS1363 230 V
Duct length (max)	16 Metres (outlet only)
Duct size	300 mm
Noise level (max, with duct)	69/87 dBA/LWA @ 3 metres
Weight	16 kg
Dimensions (L x W x H)	470 x 380 x 450 mm
Control	Manual
Power consumption	368 W/h
IP Rating	IP55 (suitable for outdoor use)

Suitable applications include:

Offices
Gyms
Workshops
Retail
Events
Warehouses
Restaurants
Many more

Large air flow

VENTILATION/EXTRACTION FAN - FV100 DV

Air flow (max)	1,700 m^3/h
Power supply	230/110 V 1 ph 50 Hz Run 5/10.5 A
Plug type	BS1363 230 V BS4343 16 A 110 V
Generator size	5 kVA min
Duct length (max)	16 Metres x 200 mm
Noise level (max, with duct)	78.6 dBA @ 1 metre
Weight	27 kg
Dimensions (L x W x H)	605 x 440 x 535 mm
Control	Manual
Power consumption	1.15 kW/h

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Marquees
Many more

- Large air flow
- Dual voltage

VENTILATION/EXTRACTION FAN - FV300

Air flow (max)	4,930 m³/h
Power supply	110 V 1 ph 50 Hz Run 17 A
Plug type	BS4343 32 A 110 V
Generator size	7 kVA min
Transformer size	5 kW min
Duct length (max)	40 metres
Duct size	300 mm
Noise level (max, with duct)	86.9 dBA @ 1 metre
Weight	130 kg
Dimensions (L x W x H)	920 x 720 x 1,045 mm
Control	Manual
Power consumption	1.8 kW/h

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Marquees
Many more

Large air flow

VENTILATION/EXTRACTION FAN - FV300 S2

Air flow (max)	5,100 m^3/h
Power supply	230 / 110 V 1 ph 50 Hz Run 6 / 11.4 A
Plug type	BS4343 16 A 110 V
Generator size	5 kVA min
Transformer size	5 kW min
Duct length (max)	40 metres
Duct size	300 mm
Noise level (max, with duct)	72 dBA @ 1 metre
Weight	95 kg
Dimensions (L x W x H)	631 x 822 x 1,054 mm
Control	Manual
Power consumption	1.25 kW/h

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Marquees
Many more

Large air flow

VENTILATION/EXTRACTION FAN - FV900

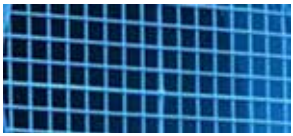
ANDREWS VENTILATION

Air flow (max)	16,500 m^3/h
Power supply	415 V 3 ph 50 Hz Run 10 A
Plug type	BS4343 3 ph 5 pin 415 V 16 A
Generator size	35 kVA
Duct length (max)	40 metres
Duct size	Inlet 600 mm Outlet 450 mm
Noise level (max, with duct)	86.6 dBA @ 1 metre
Weight	295 kg
Dimensions (L x W x H)	1,230 x 1,170 x 1,500 mm
Control	Manual
Power consumption	6.6 kW/h

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Warehouses
Many more

Large air flow



Air flow (max)	19,000 m^3/h
Power supply	415 V 3 ph 50 Hz Run 11.3 A
Plug type	BS4343 3 ph 5 pin 415 V 32 A
Generator size	35 kVA
Duct length (max)	40 metres
Duct size	Inlet 600 mm Outlet 450 mm
Noise level (max, with duct)	74 dBA @ 1 metre
Weight	465 kg
Dimensions (L x W x H)	1,552 x 1,152 x 1,965 mm
Control	Manual
Power consumption	6.6 kW/h
Inverter control	Optional

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Warehouses
Many more

Large air flow

VENTILATION/EXTRACTION FAN - FV1800 WITH INVERTER

Air flow (max)	38,000 m^3/h
Power supply	415 V 3 ph 50 Hz Run 28 A
Plug type	BS4343 3 ph 5 pin 415 V 63 A
Generator size	75 kVA
Duct length (max)	40 metres
Duct size	Inlet 600 mm Outlet 600 mm
Noise level (max, with duct)	80 dBA @ 1 metre
Weight	1,110 kg
Dimensions (L x W x H)	2,208 x 2,090 x 2,005 mm
Control	Manual
Power consumption	11.6 kW/h
Inverter control	Optional

Plug type with inverter can be 3ph 5 pin 32 A

Suitable applications include:

Construction
Tunnelling
Agricultural
Tank cleaning
Ventilation
Events
Warehouses
Many more

Large air flow

ACCESSORIES FOR VENTILATION

Electrical extension leads available in a variety of lengths and sizes complete with plug and sockets to suit different voltages and currents

Heavy duty flexible ducting available in various lengths and diameters to suit our range of extraction and ventilation units

Dust collection bags to collect airborne particles when using fans on dust extraction applications

Filter boxes can be provided on request for long term hires where dust pollution is high, or fine filtration is required

Transformers and distribution boards are available to hire in a variety of sizes, for different voltages and multiple connections

Call us on **0800 211 611** if you require specialist filtration systems. We often provide tailored solutions to meet specific requirements.

Far from still being regarded a non-essential, air quality control equipment is now a highly sought-after provision due to a sharp upturn in businesses proactively searching for ways to create a safe environment for staff, customers or visitors.

With demand only increasing, Andrews Sykes has taken the initiative and introduced a range of units specifically designed to remove pollutants from the atmosphere.

Air Purifiers
Our air purifiers will extract harmful contaminants and particles from the air by trapping and neutralising them inside a built-in reactor chamber.

Featuring core technology that has been specifically tested against ozone release, hazardous gases and VOCs, our units ensure the inactivation of potentially dangerous bacteria and simultaneously reduce the likelihood of viruses being transmitted between people.

Air Cleaners
These units are intended for more industrial applications although the concept behind their deployment is very similar to that of an air purifier.

Intended for use inside factories, warehouses or even healthcare facilities, our air cleaners incorporate a HEPA 14 filtration system which traps toxins and particles as small as 0.1 microns.

Their compact design enables the units to be easily relocated whenever necessary, offering a flexible yet robust air quality control solution suited to a broad spectrum of environments.

AIR PURIFICATION UNIT - AP103

Air flow (max)	609 m^3/h
Typical area coverage	100 m^2
Power supply	230 V 1 ph 50 Hz Run 1.2 A
Plug type	BS1363 230 V 13 A
Noise level (max)	49 dBA / 54 LWA @ 1 metre
Weight	38kg
Dimensions (L x W x H)	320 x 320 x 1,570 mm
Pre-filter	G4 Pre-filter
Main filter	2 x HEPA 13 filters
TiO2 Hexagon grade of filter	70
UV Purification	8 cells plus activated carbon filter
Control	Digital
Average power consumption	210 W/h
filter lifespan	6000 hours 25 months @ 8 hours a day

Suitable applications include:

Hospitals
Offices
Schools
Restaurants
Hotels
Leisure Centre
Events
Many more

- H13 Hepa filters

AIR PURIFICATION UNIT - AP104

Air flow (max)	720 m^3/h
Typical area coverage	130 m^2
Power supply	230 V 1 ph 50 Hz Run 1.3 A
Plug type	BS1363 230 V 13 A
Noise level (max)	45 dBA / 50 LWA @ 1 metre
Weight	13.5 kg
Dimensions (L x W x H)	430 x 127 x 1,021 mm
Negative Ions generated	24 million per second
UV purification	4 cells plus activated carbon
Control	Wifi enabled
Average power consumption	224 W/h
Reactor / filter lifespan	1,500 hours (alarm) 6 months @ 8 hours per day

Suitable applications include:

Hospitals
Offices
Schools
Restaurants
Hotels
Leisure Centre
Events
Many more

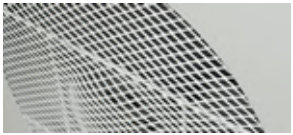
H13 Hepa filters

Air flow (max)	1600 m^3/h
Typical area coverage	150 m^2
Power supply	230 V 1 ph 50 Hz Run 1.1 A
Plug type	BS1363 230 V 13 A
Noise level (max)	60 dBA / 75 LWA @ 10 metres
Weight	24 kg
Dimensions (L x W x H)	390 x 580 x 420 mm
Filters	G4 Pre filter & HEPA
Control	14 Hours run counter
Power consumption	253 W/h
Operating temperature	1 - 34°C
Duct length (max)	Total 16 metres
Duct size	200 mm

Suitable applications include:

Offices
Hospitals
Schools
Hotels
Restaurants
Healthcare
Gyms
Many more

- Hepa filtration
- Plug and play



Duty Rated 30% rh. 21°C	2.5 l/h
Air flow (max)	800 m^3/h
Power supply	230 V 1 ph 50 Hz Run 0.23 A
Noise level	29 dBA @ 1 metres
Weight	18.8 kg empty 52.8 kg full
Dimensions (L x W x H)	625 x 316 x 720 mm
Reservoir capacity	34 litres
Average Power consumption	53 W/h
Control	Integral humidistat

Suitable applications include:

Offices
Hospitals
Schools
Hotels
Museums
Art Galleries
Server rooms
Many more

- Plug and play

Air flow (max)	3000 m^3/h
Weight (without filters)	19 kg
Weight (with filters)	23 kg
Dimensions (L x W x H)	650 x 780 x 620 mm
Filters	ATEX G4, Particulate Filter, Activated Carbon Filter, H14 HEPA filter
Filter Configurations	Welding: ATEX G4 Pre Filter and an Activated Carbon Filter Dust: ATEX G4 Pre Filter and Particulate Filter HEPA: ATEX G4 Pre Filter and H14 HEPA Filter
Filter Size	592 x 592 mm
Duct size	300 mm

Suitable applications include:

Hospitals & Healthcare
Water Treatment
ATEX Atmospheres
Stone Works
Quarrying Works
Construction
Tunnelling
Welding
Civil Works
Cutting Works

- Hepa filtration
- Plug and play
- 2 stage filtration

Air flow (max)	2500 m^3/h
Weight (without filters)	50 kg
Weight (with filters)	100 kg
Dimensions (L x W x H)	1150 x 730 x 740 mm
Filters	ATEX G4, Particulate Filter, Activated Carbon Filter, H14 HEPA filter
Filter Configurations	Welding: ATEX G4 Pre Filter and an Activated Carbon Filter Dust: ATEX G4 Pre Filter and Particulate Filter Paint: ATEX G4 Pre Filter and Particulate Filter and an Activated Carbon Filter HEPA: ATEX G4 Pre Filter and H14 HEPA Filter
Filter Size	592 x 592 mm
Duct size	300 mm

Suitable applications include:

Hospitals & Healthcare
Water Treatment
ATEX Atmospheres
Stone Works
Quarrying Works
Construction
Tunnelling
Welding
Civil Works
Cutting Works

- Hepa filtration
- Plug and play
- 3 stage filtration

Helping you deal with low humidity in modern environments.

It is widely advised that relative humidity (RH) in the workplace, or indeed most environments, should be maintained between 40-60%. The need to keep indoor air at an optimal moisture level is now globally accepted, with extensive health implications of overtly dry air.

Ranging from sore throats and eye irritations to dermatitis and respiratory conditions, the effects of inadequate humidity monitoring can leave people under your direct care exposed to avoidable ailments.

It is also now known that RH levels kept in the recommended parameters will help minimise the risk of virus transmission within the workplace, reducing the time contagious viruses are airborne.

As experts in the provision of temporary humidification solutions, we have an authoritative voice on how best to tackle whichever humidity-related requirements you might encounter.

Offices
The modern-day office facility is usually a sealed environment which relies heavily on HVAC systems for heating and cooling. The lack of natural ventilation which make these systems extremely efficient has a negative effect when trying to maintain a stable RH. Our small portable humidifiers are easy to position and with their discrete design. easily blend into most office environments to instil a more comfortable and safer environment for staff.

Machinery
Although people are most commonly considered, the impact that low RH may have on machinery and electrical equipment should also not be overlooked. There are many scenarios in which low moisture content in the air can cause damage, affect productivity, or otherwise inhibit your business or process.

Industries such as commercial printers are more than aware of the consequences of not maintaining a suitable RH level, when properly addressed good humidity levels can directly contribute to less downtime. This is due to the assurance of fewer paper jams and less paper sticking together, among other reasons. With proper humidity control, the quality of printing improves too as it helps get rid of paper distortion and prevents static electricity from causing further issues.

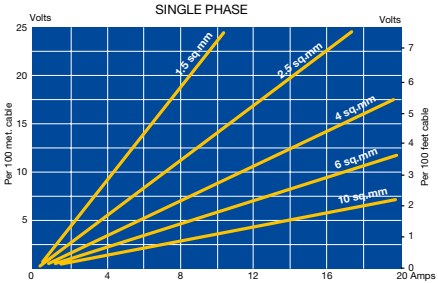
Art galleries & Museums

Fine art and artifacts may perish when humidity levels are too low. Our portable humidifiers are regularly rented by art galleries and museums to stop priceless masterpieces cracking and ensure the preservation of significant historical items.

Andrews' range of portable humidifiers are used in a multitude of applications. In addition to the above sectors, our equipment is used in:

- Document storage
- Film & TV
- Hospitals & healthcare
- Hotels & Hospitality
- Laboratories
- Server rooms & data centres
- Facilities management.

For more information, please call our expert team on 0800 211 611 or visit our website where you can read more about our humidification services. Alternatively, you can watch our short informative video: www.andrews-sykes.com/humidifier-hire/



Standard electrical supplies in the UK

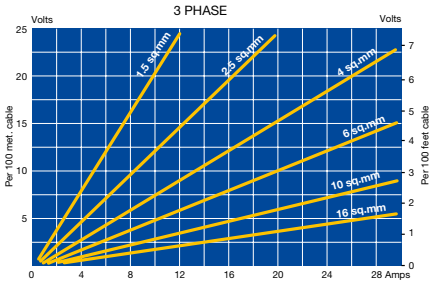
110 volt single phase (110/1/50) standard voltage found on construction sites for small tools and portable appliances usually only available up to 32 amp.

415 volt three phase (415/3/50) standard voltage on site and within industry for the larger equipment that is not portable.

240 volt single phase (240/1/50) standard domestic voltage used for household appliances, retail and light industrial.

Power = kilowatts (kW)
Current = Amps (A)
Voltage = Volts (V)

	Single Phase	Three Phase
kW =	$\frac{\text{Volts x Amps x Eff \%}}{1000 \times 100}$	$\frac{\text{Volts x Amps x Eff \% x PF x 1.73}}{1000 \times 100}$



Voltage drop

The amount of voltage lost when using long cable lengths, causes cable to get hot and become unsafe. The motor will also draw excessive current causing overloads to trip and motor to overheat the maximum permissible voltage drop over a length of cable is 2.5%.

To calculate voltage drop, use the appropriate single phase or three phase table, or use the following formula

$$\frac{\text{Voltage drop} = \text{Length of cable (m)} \times 0.018\ (\text{resist}) \times \text{Amps} \times 1.73}{\text{Cross sectional area of cable (mm}^2\text{)}}$$

The above will give the voltage lost in cable length (v) divide by the supply voltage will give the % drop which must not exceed 2.5%

Example
16 Amp 3 phase 415 volt pump using 60 metres of 2.5mm cable
$\frac{60 \times 0.018 \times 16 \times 1.73}{2.5\text{mm}^2} = 11.96$
11.96 volt / 415 volt = 2.8% Therefore a larger cable is required as the volt drop exceeds 2.5%

Inches	x	25.4	=	mm	x	0.0394	=	Inches
Feet	x	0.3048	=	m	x	3.281	=	Feet
Yards	x	0.9144	=	m	x	1.0936	=	Yards
Miles	x	1.609	=	km	x	0.6214	=	Miles
Ft^2	x	0.0929	=	m^2	x	10.764	=	Ft^2
$Miles^2$	x	2.59	=	km^2	x	0.3861	=	$Miles^2$
In^3	x	16387	=	mm^3	x	0.000061	=	In^3
Ft^3	x	0.02832	=	m^3	x	35.31	=	Ft^3
Gals (Imp)	x	4.546	=	L	x	0.22	=	Gals (Imp)
Gals (Imp)	x	0.004546	=	$m^·$	x	220	=	Gals (Imp)
btu	x	0.000293	=	kW	x	3412	=	btu
LBS	x	0.4536	=	kg	x	2.2046	=	LBS
Tons	x	1016	=	kg	x	0.000984	=	Tons
CFM	x	1.701	=	m^3 / h	x	0.5878	=	CFM
L / sec	x	3.6	=	m^3 / h	x	0.277	=	L / sec
PSI	x	0.06895	=	Bar	x	14.504	=	PSI
HP	x	0.7457	=	kW	x	1.341	=	HP

MAXIMUM 23°C

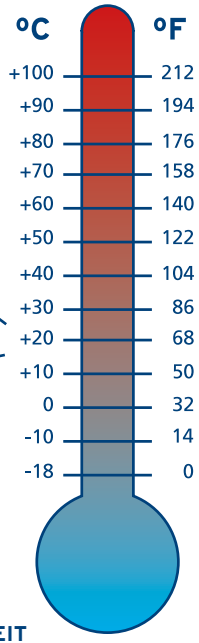
Recommended by Chartered Institute of Building Services Engineers

CALL ANDREWS AIR CONDITIONING HIRE

MINIMUM 16°C

Legal minimum Health & Safety Executive Act of 1963

CALL ANDREWS HEAT FOR HIRE



CONVERSION CENTIGRADE TO FAHRENHEIT

°C x 1.8+32=**°F**

°F - 32÷1.8= **°C**

R.H.
Relative Humidity is the relationship between the amount of water vapour in air at any temperature and the maximum amount of water vapour which the air could absorb before condensation takes place. Relative humidity is expressed as a percentage.

Dew Point
The temperature at which water vapour in the air condenses out.

Vapour pressure
The partial pressure in the air due to the presence of water.

Condensation
When humid air cools, the water vapour becomes liquid.

Cold Bridge
An area of physical contact between a warm and cold surface where condensation occurs.

Surface area
L x B = m^2

Volume
L x B x H = m^3

Latent Heat
The heat required to evaporate or condense water with no change in temperature.

K-factor
Heat transmission coefficient.

Wet Bulb Temperature
Temperature of humid air with a thermometer with a wet covering around the mercury reservoir, at an air speed of +/-3 m/sec.

Dry Bulb Temperature
Temperature of humid air, measured with a normal thermometer.

Absolute Humidity
Amount of water vapour, expressed in kg, which is present per kg. of dry air.

Psychrometric Diagram
A diagram in which a relation is given between the absolute and relative humidity at a specified pressure for each temperature.

Pressure
Force per surface unit (n/m^2 - PA).

The past, present and future of pumping in the UK.

Established for over 160 years, Sykes is the UK's largest specialist hire company. Solutions focused, our industry experienced teams provide 24/7 planned and preventative pumping and specialist fluid moving, via a network of nationwide locations. Our unique structure enables us to reach any UK destination within four hours and our commitment to delivering the finest equipment, service and expertise is unrivalled within the industry.

Businesses rely on us whether safeguarding against equipment failure, which can have a detrimental impact on people and service, or providing the right conditions to ensure maximum productivity.

From straightforward hire services to full solution provision including design, planning, project management, installation and running of complex temporary and permanent solutions. We can provide an extensive range of diesel, electric, submersible, hydraulic and air pumps to withstand the toughest applications and the most demanding environments.

With an impressive and varied client portfolio, our ability to provide a competitive and engineered solution for every pumping requirement, coupled with bespoke, flexible contract terms to suit, provides ultimate peace of mind and makes us the preferred choice when it comes to business critical equipment hire.

The Andrews Sykes name stretches far beyond the UK.

In Europe, Andrews Sykes continues to grow. Since opening our first mainland Europe depot in Holland over 55 years ago, we now have depots throughout Belgium, Luxembourg, Switzerland, Italy and Germany, with partnerships in both the Republic of Ireland and Northern Ireland.

We have been established in the Middle East for more than 50 years, marking half a century of operation in the region. Our Khansaheb Sykes subsidiary is recognised as the market leader in dewatering and pump hire across the Middle East, supported by our rapidly expanding cooling and ventilation division, Andrews Sykes Climate Rental. We operate from Dubai, Sharjah, Abu Dhabi, Oman, Saudi Arabia, Bahrain, Qatar, Kuwait and Iraq. From our early involvement in the Dubai Creek crossings to our participation in many of the region's most significant development projects, we have remained a trusted partner throughout the GCC's remarkable growth.

The Andrews Sykes brand is well known worldwide. In North America, we work with distributors, mainly for sales. Recently we have provided equipment for major projects in Asia, Africa and South America. No matter your location or whereabouts, Andrews Sykes can offer safe, reliable and efficient hire solution for many applications.

For further information on our worldwide locations, visit our website: www.andrews-sykes.com/world-locations

NOTES

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NOTES

Nationwide Depot Network

Ashford
Birmingham
Bovey Tracey
Bristol
Charlton
Cornwall
Doncaster
Farnborough
Glasgow
Grangemouth
Inverness
Liverpool
North West
Nottingham
Penrith
Peterborough
Pontypridd
Sedgefield
Suffolk

We also have operations in Europe and the Middle East

Scan Me for the Latest Version

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Hire · Sales · Service · Install

0800 211 611

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