Air Flow Solutions

Industrial Fans
Blowers, hot air fans, dilution, OEM fans
We are all aware of the need for good ventilation in our homes and place of work to create a healthier environment and now there are regulations in place to ensure minimum efficiency requirements for industrial fans: regulation EU 327 / 2011 or ErP for short.

Airflow have a wide range of industrial fans incorporating and complying to this regulation, that will cover a wide range of applications.

**Stock and Standard**
A range of single inlet, double inlet AC and EC, compact and duplex fans and blowers for a wide range of air movement applications.

**OEM**
A range of bespoke, custom designed fans and blowers to suit specific customer requirements. Competitively priced and available in quantity batches.

**Flue Gas Dilution**
Mild or stainless steel fans for safe dispersal of CO₂.

**Hot Fans**
High temperature centrifugal fans for hot air applications.
Introduction

Airflow have been producing high quality air moving equipment and industrial fans for nearly 60 years. During the whole of this period Airflow has been in the forefront in developing new techniques and advanced designs. Today the results of this sustained effort can be clearly seen in the variety and quality of products available for all types of industrial air handling requirements.

Most of these industrial fans are available ex-stock direct from Airflow, or through our nationwide dealer network. Variants on the standard range can be made to meet specific needs for customers ordering larger quantities. Please contact Airflow to discuss your requirements.

Performance Testing

Airflow Developments Limited has its own air movement laboratory. Fans are performance tested in accordance with BS EN ISO 5801: 2008 and BS EN 848-1: 2007.


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BS EN 60335 – 1: 2012  - Household and similar electrical safety / general requirements

BS EN 13347 – 3 : 2004  - Industrial fan sound power levels under standardised lab conditions

BS848 – Part 2 : 1985  - Fans for general purposes, methods of noise testing

Single inlet fans

This range of fans has been developed to provide reasonable volumes of air against resistances to flow greater than can be achieved from small tube axial fans. As the name denotes these fans feature a single inlet to the fan scroll which enables them to achieve this greater volume performance. Compact overall dimensions have been achieved using forward curved, centrifugal impellers and two-pole (typically 2800 rev/min.) motors.

The range has fans covering flow rates from 2.8 l/sec to 130 l/sec and static pressures up to 500 Pa for the largest unit.

Double inlet fans

A range of fan units developed from the demands of the Domestic Warm Air Market where large volumes of air at low outlet velocities are required from very compact units.

All the fans feature two large inlets and a generous outlet, which, combined with low impeller speeds ensure that aerodynamic noise is kept to a minimum. Motor noise and mechanical vibration is reduced considerably by using a patented three-point resilient motor mounting.

All the fans in this range can be speed controlled to give a variety of duties, by voltage variation.

EC Single and EC Double inlet fans

A range of High Efficiency EC Motor Driven Single and Double inlet fans that can achieve from 93 l/sec to over 1200 l/sec and are fully compliant to the minimum efficiency regulation rates of ErP 327/2011 – 2013 and 2015. The fans incorporate integrated EC type motors with forward curved impellers dynamically balanced to grade 6.3 Din ISO 1940.

Construction

Apart from the three smallest fans in the Single Inlet range the fan casings (scrolls) are manufactured from zinc coated sheet steel components spot-welded together to provide a very rigid construction. They are painted blue using modern powder spraying techniques which give a tough durable finish. The impellers are created from a continuous strip of formed blades which are “roll seamed” and locked into a back plate and inlet ring to provide a rigid, concentric impeller wheel.

Maintenance

The fans are generally designed for use in "normal" air movement conditions. Filters should be used where contaminants and dust burdens. It is important periodic examination and if necessary, cleaning of the impeller is undertaken. This will avoid dust or dirt build-up on the blades which, if not removed, will impair the capabilities of the fan to move its designed air volume.

Technical general information

These Airflow Centrifugal Fans are ideal general purpose units for ventilation and cooling systems where ambient temperatures do not exceed 40°C, excepting the Flue Dilution fans.

A degree of speed control is possible with these ranges of fans, again excepting the Flue Dilution fans and Hot fan range.

Although more than adequately sealed and protected for general applications, these fans are unsuitable for handling explosive, inflammable, or highly corrosive gases or gas/air mixtures.

Hot fans

Specifically designed direct drive fans to handle hot air or the products of combustion from gas burning appliances up to temps of 250°C.

There is an intermediate cooling impeller (an Airflow pioneering design) which eliminates the problem of short motor/bearing life which is commonplace when operating at these temperatures. The range covers from 62 l/sec to 120 l/sec.

Flue Gas Dilution fans

With the main advantage of avoiding the use of unsightly or expensive flues. The Institute of Gas Engineers UP 10/ part 1 (issue 3) Regulations require that if the products of combustion are dispensed at low level then the CO₂ content must be 1% or less. Airflows flue dilution range achieves this by introducing fresh air into the boilers discharge flue duct and diluting these flue gases. In two ranges GBDF and SSDF with 5 sizes in each range allow selection for industrial and commercial boilers ranged up to 650 Kw (2,200,000 Btu) singly and can be selected in parallel for boiler sizes exceeding this.
A Fan for all Applications

Is your application here?
Our fans have been successfully used in many diverse applications. The following is offered as a typical guide to our industrial fans and their applications. However, we are happy to advise on selecting the correct fan for your application.

HVAC (Heating, Ventilating & Air Conditioning)
- Air cleaners and fanfilter units
  Moving air through electrostatic, carbon, HEPA and other filter media
  Single inlet and fans 40BTFL to 83F2WL, double inlet
- Air conditioning units
  Distribution of conditioned air
  Generally double inlet types
- Boiler combustion air fans (gas fired)
  Providing air or a gas/air mix to burners
  40BTFL
- Boiler/heater flue fans (gas fired) and gas fired overhead radiant tube heaters
  Assistance for exhausting the products of combustion to atmosphere
  46BTFR-HT, 52BTX-HT, 71BTX-HT
- Dehumidifiers (domestic & commercial)
  Distribution of dehumidified air in homes, timber warehouses etc.
  Typically impellers or fan parts sizes 27 to 71
- Door curtains
  Warm air "curtain" at doorways, retail and industrial premises
  Double Inlet fans, Duplex fans
- Fan coil units
  Passing air over heat exchangers for heating, typically offices
  Duplex fans
- Flue dilution fans
  Dilutes combustion products from gas fired boilers to low level discharge
  The flue dilution 46BT and 52DF ranges
- General air handling units (AHU’S)
  “Central” plant for distributing air into a ventilation system, heated, filtered etc
  Generally the ranges of double inlet fans
- General ventilation
  Simple distribution of air through combination of ducts, grilles etc
  Generally the ranges of double inlet fans
- Heat recovery units
  Fans used for supply and extract. Supply fan collects heat from exhaust air
  90G2WL, (4 and 6-pole) 102H2WL, 14
- Industrial warm air heating
  Distribution of warm air by fans, steam and gas fired heat exchangers
  Double inlet fans eg. 102H2WL
- Oil burners
  Provides combustion air for oil fired boilers
  Generally impellers only typically 45 and 52 sizes
- VAV (variable air volume) units
  Mixing of conditioned and recirculated air and distribution into offices
  Double Inlet fans 71E2T1W, 83F2WL, 90G2WL, 102H2WL

Production/process equipment
- Air conveying
  The transportation of lightweight product along ducts or channels
  71 size impellers, ACF 160x62, 57DTO590
- Laminar Flow cabinets
  Provide uniform, clean air flow across work stations, electronics mfgr. etc. 90G2WL, etc
- Packaging machinery
  Various functions inc. cooling shrunk wrap and polythene bag inflation
  30BTFL, 40BTFL, 46BTFL
- Plastic bottle manufacturing
  Cooling mass produced plastic bottles used in the soft drinks industry
  45BTFL, 52BTXL
- Plastic extrusion machines
  Cooling extrusion barrels
  45CTL, 52BTXL
- Printed circuit board manufacture
  Cooling, testing and solder finish extract
  52BXL
- Tank heaters
  Blowing hot combustion product down tubes for indirect heating of liquids
  52BTX
- Tunnel ovens
  Heating, cooling and mass produced products
  57BXL
- Vacuum forming machines
  Cooking large plastic components to speed up production cycle time
  52BTX
- Electronic, electronics & optical
  - Electronic component cooling, general
    To dissipate heat built up generally by components, within enclosures
    21ATXL, 40BTFL Duplex and larger. Could be any fan size/ type
  - Cooling of large motors & transformers
    Forced ventilation through machines to keep temperatures within limits
    5BTX, 57D5, 57DT
  - Photocounters
    Lamp cooling
    33BT or similar
  - Photographic processing equipment
    Drying film, film plans etc.
    46CTL, 52BTXL, 102H2WL
  - Projection equipment, theatre & disco lighting equipment
    Condenser lens cooling for conventional and laser light
    ACF 120H6W, 46BTFL
  - Telecommunications; mobile phone transmitter cabins
    Ventilation of cabins containing transmitter electronics
    90G2WL, 90G2WL4, 102H2WL

Laboratory & medical equipment
- Environmental chambers
  Circulation of conditioned air
  90G2WL, various impeller sizes
- Laboratory ovens
  Hot air circulation
  Radial oven impellers 46BT FR hot fans
- Medical isolation beds
  Supply of sterile air to highly contagious patients
  40 Duplex - Single Inlet fans

Leisure
- Bouncy castles
  Inflation and maintenance of pressure
  Impellers for robust and portable fans, typically 52, 57 and 71 sizes - Single Inlet fans
- Film & theatre special effects
  Smoke effect, flying effects etc.
  90G2WL, often used Double Inlet fans

Swimming pool domes
  Inflates and maintains plastic dome over outside swimming pools
  90G2WL, Double Inlet fans

Domestic equipment/appliances
- Cooker fans
  Circulation of hot air around oven cavity
- Commercial catering ovens
  Circulation of air warming and cooking overns
  26BT, 52BTXL (hot)
- Gas fire flue boosters
  Extract combustion products from “open” fires without a flue
  40BTFL, HT
- Microwave ovens (commercial)
  Cooling of the microwave magnetron
  26BT, 46BTFL, 45CTL
- Shower/steam cubicles
  Circulates warm air into shower
  21ATXL, Single Inlet fans

Miscellaneous
- Air tables for the clothing manufacturing industry
  Provides an air cushion to allow multiple layers of cloth to be moved for cutting
  64ES Stool fan / Double Inlet fans
- Commercial catering ovens
  Circulation of air warming and cooking ovens
  26BT, 52BTXL (hot)
- Commercial vehicle ventilation
  Part of the heating and ventilation system in truck cabs, coaches and vans
  40BTFL Duplex (less motor) 45 impellers
  Single Inlet fans
- Grain conditioning
  Permanent trickle ventilation in grain silos and “spot cooling” with a tube spear
  Double Inlet fans and 52BTXL for the spot cooling
- Hydraulic oil coolers
  Driving air through oil cooling heat exchangers on transport vehicles
  Impellers only 52 to 76
- Laundry equipment
  Ventilation of industry ironing boards
  52BTXL fans, 71D impellers
- Military
  Electronic cooling in sonar, radar equipment etc.
  40BTFL duplex, 90G2WL Double Inlet
- Vehicle washers
  Cooling pump motors
  57B impellers and cases - Single Inlet fans
Single Inlet
Small centrifugal fans

Key Features
- Ecodesign ErP 2013 / 2015 compliant
- Smaller sized direct drive fans
- Excellent air flow / pressure capability for size
- High velocity at discharge from larger models for localised ‘spot cooling’
- Easy installation
- Very low maintenance
- Quiet operation

Single Inlet fans
A comprehensive range of small single inlet fans primarily developed for the electronics market and manufacturing process. Suitable for handling ambient temperature to 40°C. Constructed in die cast metal, ABS plastic, or mild steel depending on model, the range can achieve from 5.1 l/sec up to 128 l/sec. The majority of fans are ex-stock. Variance for OEM applications are available on request against a minimum order normally 100 off. Please apply to customer services for non standard designs.

Applications
- Filter units
- Electronic internal component cooling
- IC testing
- Cooling large motors and transformers
- Photocopiers
- Photographic processing equipment
* Note - Fans are not suitable for EEXE, EEXD, ATEX or corrosive atmospheres

Specifications
Driven by either open frame shaded pole, ventilated voltage shaded pole or permanent capacitor type motors, very low maintenance is achieved by incorporating ‘sealed for life’ bearings typically offering bearing life L10. 25,000 hours in ideal conditions. Test data in accordance with BS848 Part1/ ISO 5801-2007.

Technical Data

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Capacitor value</th>
<th>Max running current</th>
<th>Start current (approx)</th>
<th>Max input watts</th>
<th>Max air flow</th>
<th>Min static pressure</th>
<th>Noise level</th>
<th>Speed at max air flow</th>
<th>Weight</th>
<th>Max ambient temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>21ATXL</td>
<td>230 V</td>
<td>50 Hz</td>
<td>N/a</td>
<td>0.12</td>
<td>0.155</td>
<td>15</td>
<td>5.1</td>
<td>0</td>
<td>34</td>
<td>2720</td>
<td>0.7</td>
<td>40°C</td>
</tr>
<tr>
<td>26BTML</td>
<td>230 V</td>
<td>50 Hz</td>
<td>N/a</td>
<td>0.12</td>
<td>0.155</td>
<td>15.5</td>
<td>18.2</td>
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<td>0.7</td>
<td>40°C</td>
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<td>26BTCL</td>
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<td>0.155</td>
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<td>40°C</td>
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<tr>
<td>33BTFL</td>
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<td>0.27</td>
<td>28.9</td>
<td>28.3</td>
<td>0</td>
<td>41</td>
<td>2360</td>
<td>1.3</td>
<td>40°C</td>
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<td>40BTFL</td>
<td>115 / 230 V</td>
<td>50 Hz</td>
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<td>0.75 / 0.375</td>
<td>1.08 / 0.54</td>
<td>37</td>
<td>49</td>
<td>0</td>
<td>55.5</td>
<td>2200</td>
<td>1.5</td>
<td>40°C</td>
</tr>
<tr>
<td>45CTL</td>
<td>115 / 230 V</td>
<td>50 Hz</td>
<td>N/a</td>
<td>1.8 / 0.9</td>
<td>2.4 / 1.2</td>
<td>130</td>
<td>86.5</td>
<td>0</td>
<td>56.5</td>
<td>2330</td>
<td>2.4</td>
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<td>52BTXL</td>
<td>23 V</td>
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<td>N/a</td>
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<td>144</td>
<td>116.5</td>
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<td>28305</td>
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<tr>
<td>57BXL</td>
<td>23 V</td>
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<td>N/a</td>
<td>0.81</td>
<td>2.35</td>
<td>144</td>
<td>116.5</td>
<td>0</td>
<td>50</td>
<td>28305</td>
<td>3.5</td>
<td>40°C</td>
</tr>
</tbody>
</table>

* A degree of speed control is available on models 33BTFL, 40BTFL, 45CTL by voltage variation. A range of Commercial Speed Controllers are available.

Dimensions

Performance
Double Inlet fans
A large range designed specifically for applications where low noise levels and space criticality are an issue. All models offer a good range of speed control via voltage variation. The range covers fans from the 57FTQR giving 125 l/sec to the 102H2WL/4 providing over 1600 l/sec.

Key Features
- Eco design ErP 2013 compliant - depending on model
- Large range of standard fans to suit all applications ex-stock
- Designed for low noise requirements
- Speed controllable
- Greater pressure capability available on some models for higher resistances
- Solution to space critical applications
- In-built thermal protection
- Vertical and horizontal discharge mounting

Applications
- Filter units
- VAV boxes
- Smaller AHUs
- Domestic heat recovery
- General ventilation
- Industrial warm air movement
- Telecommunications / phone transmitter cabins
- Environmental chambers
- Special effects for the film industry
- Swimming pool / tennis court domes
- Clean air flow across workstations

Specifications
All models in the range feature forward curved impellers constructed from aluminium or mild steel with cases fabricated from mild steel. For ease of installation all units have fitted outlet flanges pre drilled, and can be mounted vertically or horizontally. Supplied with flying leads (57FTQR) or pre wired capacitors with terminal block for connection to electrical supply. Low maintenance achieved by ‘sealed for life’ type bearings allowing a typical bearing life L10 – 25,000 hours at ideal conditions. Impellers balanced to ISO DIN 1940 Grade 6.3. Test data in accordance with BS848 Part1/ ISO 5801-2007.

Technical Data

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>Supply voltage (Volts)</th>
<th>Frequency (Hz)</th>
<th>Capacitor value (µF)</th>
<th>Max running current (A)</th>
<th>Max startup current (A)</th>
<th>Max input volts</th>
<th>Max static pressure (Pa)</th>
<th>Noise level (dbA)</th>
<th>Speed at max air flow (m³/hr)</th>
<th>Max input watts</th>
<th>Weight (kg)</th>
<th>Max ambient temp (°C)</th>
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</thead>
<tbody>
<tr>
<td>57FTQR/6</td>
<td>230</td>
<td>50</td>
<td>0</td>
<td>0.5</td>
<td>0.75</td>
<td>92</td>
<td>125</td>
<td>0</td>
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<td>1150</td>
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<td>40</td>
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<tr>
<td>230</td>
<td>50</td>
<td>2</td>
<td>0.8</td>
<td>0.8</td>
<td>1.5</td>
<td>105</td>
<td>235</td>
<td>0</td>
<td>45.5</td>
<td>850</td>
<td>6.7</td>
<td>40</td>
</tr>
<tr>
<td>83F2WL/5</td>
<td>230</td>
<td>50</td>
<td>6</td>
<td>1.75</td>
<td>2.95</td>
<td>375</td>
<td>685</td>
<td>0</td>
<td>50</td>
<td>810</td>
<td>8.0</td>
<td>40</td>
</tr>
<tr>
<td>90G2WL/6</td>
<td>230</td>
<td>50</td>
<td>10</td>
<td>3.2</td>
<td>6.0</td>
<td>700</td>
<td>1090</td>
<td>0</td>
<td>57</td>
<td>850</td>
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<tr>
<td>102H2WL/6</td>
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<td>6</td>
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<td>985</td>
<td>995</td>
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<td>102H2WL/4</td>
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<td>50</td>
<td>25</td>
<td>10.3</td>
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<td>2550</td>
<td>1700</td>
<td>0</td>
<td>65.5</td>
<td>1280</td>
<td>24.5</td>
<td>40</td>
</tr>
</tbody>
</table>

Dimensions

Performance

Controls and Accessories
- A range of Commercial Speed Controllers are available.

Customer Services 01494 560800
Compact Fans
Narrow, high performance centrifugal fans

Key Features
- Ecodesign ErP 2013 / 2015 compliant - depending on fan size
- ‘Compact’ Direct drive fans
- External rotor motor
- Engineered for significant benefits in performance and pressure development
- Designed for handling air within ‘space critical’ equipment
- Temperature up to 65°C

ACF Compact fans
A range of compact direct drive fans that can achieve from 83 l/sec to 146 l/sec where space is at a premium. The fans incorporate external rotor motors with integral tab lock constructed forward curved impellers dynamically balanced to grade 6.3 DIN ISO 1940. Constructed from mild steel with a robust paint finish, each fan casing is fitted with an outlet flange incorporating fixing holes for ease of insulation. Variance for OEM applications is available on request against a minimum order normally 100 off. Please apply to customer services for non standard designs.

Applications
- Compact cooling in electronics / server cabinets
- Lighting and cinema equipment
- Smaller air conveying systems
- Fume cupboards
- Museum interactive displays
- Plastic manufacturing
- Any application demanding ‘space critical’ air movement
- Car washers

Specifications
The fans in this range are eminently suitable for speed control via voltage variation due to the use of external rotor motors and come supplied with flying leads for flexible electrical connection. Very low maintenance achieved by use of sealed for life bearings in the motors, typically offering bearing life L10-25,000 hours in ideal conditions and can be universally mounted. Test data in accordance with BS848 Part1/ ISO 5801-2007.

Technical Data

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<tr>
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<th>Max running current</th>
<th>Start current (approx)</th>
<th>Max input watts</th>
<th>Max air flow</th>
<th>Min static pressure</th>
<th>Noise level (at 1 metre)</th>
<th>Max speed at max air flow</th>
<th>Weight</th>
<th>Max ambient temp</th>
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<tr>
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<td>0.6</td>
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<td>ACF160X62 L2</td>
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<td>0.9</td>
<td>1.1</td>
<td>210</td>
<td>146</td>
<td>0</td>
<td>58</td>
<td>1900</td>
<td>3.2</td>
<td>65</td>
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</table>

* at 1 metre

Dimensions

Performance

Controls and Accessories
A range of Commercial Speed Controllers are available.
Duplex Blower
Wider discharge centrifugal fan

Key Features
- Eco design ErP 2013 / 2015 compliant
- Twin scroll duplex arrangement
- Designed to deliver a volume where a wider discharge footprint is required
- Higher volumes achieved with quiet sound level from 41 dB(A)
- Low fan profile
- Excellent air velocity for process and electrical cooling

Applications
- Air curtains
- Laminar flow / clean air cabinets
- Fan coil units / heat exchangers
- Air convection systems
- Filtration systems
* Note - Fans not suitable for EEXE, EEXD, ATEX or corrosive atmospheres

Specifications
Driven by 2 pole dual voltage, motor, with impeller constructed from aluminium within mild steel casing. Electrical connection is via flying lead on terminal block for ease of installation, normally via the pre-drilled outlet flanges, very low maintenance achieved by use of sealed for life bearings allowing a typical bearing life L10 – 25,000 hours in ideal conditions. Test data in accordance with BS848 Part1/ ISO 5801-2007.

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<th>Max air flow</th>
<th>Min static pressure</th>
<th>Noise level</th>
<th>Speed of max air flow</th>
<th>Weight</th>
<th>Max ambient temp</th>
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<tbody>
<tr>
<td>40B2TX/2DUP</td>
<td>230 Volts</td>
<td>50 Hz</td>
<td>µF Ampere</td>
<td>1.12 Ampere</td>
<td>1.6 Ampere</td>
<td>154 Watts</td>
<td>151 Litres/s</td>
<td>0 Pascal</td>
<td>55.5 dBA</td>
<td>2000 RPM</td>
<td>3.2 kg</td>
<td>40ºC</td>
</tr>
</tbody>
</table>

* at 1 metre

Thermal Protection

Dimensions

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
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<td>118</td>
<td>57</td>
<td>98</td>
<td>310</td>
<td></td>
</tr>
</tbody>
</table>

Controls and Accessories
A range of Commercial Speed Controllers are available.

*Note - Fans not suitable for EEXE, EEXD, ATEX or corrosive atmospheres
**Why Buy EC Fans?**

**ErP "Ecodesign" Directive EU 327 / 2011 - A few questions and choices explained**

The European Union has adopted the Kyoto agreement and through the Regulation of Energy Related Products (ErP) and environmentally friendly design (Ecodesign) aims to reduce CO₂ emissions from their 1990 level by 20% by 2020.

If you imagine you have to blow some air into a room with a standard AC fan (current technology), you have to use a certain amount of energy to do it. This is how to explain how efficient the fan is. With an EC fan (new technology) you use a lot less energy to do the same job and are therefore MORE efficient!

**Minimum efficiency levels for commercial fans with an input power of between 125 Watts and 500 Kilowatts in the EU marketplace.**

**What does the Regulation cover?**

**What are AC and (DC) EC motors?**

Electric motors can be divided into two types: alternating current (AC) electric motors and direct current (DC) electric motors. A DC electric motor will not run when supplied with AC current, nor will an AC motor run with DC current. However if you Electrically Commutate (EC) a DC motor it will operate, hence the term EC motor.

**AC type fans – use AC or Alternating Current motors.**

Of these types, brush electric motors are by far the most common. They are easy to build and very cost effective. Their major drawback is that they use carbon brushes to physically transfer electrical current to the rotating parts, In this transfer typical AC motors have losses in terms of power consumption (copper + iron losses), slippage and frictional losses (mechanical power). They are fairly inefficient because they have to use more power to overcome these losses to maintain their performance.

**EC type fans – use Electrically Commutated motors.**

EC stands for Electronically Commutated and it combines AC and DC voltages, bringing the best of both technologies. A permanent-magnet brushless DC motor within the rotor is driven by electronic switches (which replace the carbon brushes), controlled by a microcontroller, and as such are electrically commutated. EC motors have no slippage thereby reducing losses and increasing efficiency to a high level.

**What is Efficiency**

If you imagine you have to blow some air into a room with a standard AC fan (current technology), you have to use a certain amount of energy to do it. This is how to explain how efficient the fan is. With an EC fan (new technology) you use a lot less energy to do the same job and are therefore MORE efficient!

**Which types of Commercial fans are affected?**

Fans and motors of all types (axial, centrifugal with forward or backward curved impellers, and mixed flow fans) with an input power between 125W and 500Kw are affected.

**When does the regulation come into force?**

1st Tier started in January 2013 with a set level of efficiency requirements.

2nd Tier starts January 2015 with a higher level of efficiency requirements.

**A Fan for all Applications**

Our new EC range of single and double inlet fans are fully compliant with the regulation and use up to 80% less energy that standard AC fans would for the same job.

So you can now replace your existing single or double Inlet AC fan easily, with one of the range of NEW Airflow EC fans, or you can simply choose an EC fan for your new application.

Whichever way you choose to use our EC fans as you would expect from Airflow, thanks to the union of high efficiency EC motors and impeller design you can be assured of finding the correct Industrial ErP compliant fan for your application from our range, making Airflow the “natural” choice.

**Airflows EC fans**

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EC Single Inlet Fans
Small voltage controlled EC centrifugal fans

Key Features
- Ecodesign ErP 2013 / 2015 compliant
- Compact size direct drive fans
- EC high efficiency motor
- Engineered for significant benefits in performance and pressure development
- Designed for handling air within ‘space critical’ equipment
- Tachometer output 0-10V
- Temperature up to 40°C
- EC motor variable speed control via voltage 0-10V Input
- Range of EC single fans - ex-stock

EC Single Inlet fans
A range of compact high efficiency driven EC fans that achieve from 83 l/s to 115 l/s and fully comply to the minimum efficiency Regulation rates of ErP 327/2011 – 2013 and 2015. The fans incorporate integrated EC type motors with tablock constructed forward curved impellers dynamically balanced to grade 2.5 din ISO 1940. Constructed from mild steel with a robust paint finish, each fan casing is fitted with an outlet flange incorporating fitting holes for ease of installation. Simply choose a compliant EC fan for your new high efficiency application.

OEM variants - are available on request against a minimum order normally 100 off.

Applications
- Compact cooling in electronics / server cabinets
- Lighting and cinema equipment
- Smaller air conveying systems
- Fume cupboards
* Note - Fans are not suitable for EEXE, EEXD, ATEX or corrosive atmospheres

Specifications
The fans in this range are eminently suitable for speed control via voltage variation 0-10V input and come supplied with direct flying lead 230V and 0-10V connection to the motor. Very low maintenance achieved by use of sealed for life bearings in the EC motors, typically offering bearing life L10. 25,000 hours in ideal conditions and can be universally mounted via flange. Test data in accordance with BS848 Part1/ ISO 5801-2007.

Technical Data

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Control voltage</th>
<th>Speed at Max input watts</th>
<th>Noise level</th>
<th>Min static pressure</th>
<th>Max air flow</th>
<th>Weight</th>
<th>Max ambient temp</th>
<th>IP</th>
<th>ErP 2013/2015</th>
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</thead>
<tbody>
<tr>
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<td>50 / 60</td>
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<td>58</td>
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<td>SIEC 160x x 62</td>
<td>230</td>
<td>50 / 60</td>
<td>0-10v</td>
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<td>58</td>
<td>0</td>
<td>115</td>
<td>3.2</td>
<td>IP 40</td>
<td>24</td>
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</tr>
</tbody>
</table>

Dimensions are for guidance only - certified drawings available

Dimensions

Performance

Customer Services 01494 560800
EC Double Inlet Fans
Higher volume voltage controlled EC centrifugal fans

Key Features
- Ecodesign ErP 2013 / 2015 compliant
- Large range of standard fans to suit many applications - ex-stock
- EC high efficiency motor
- Designed for low noise requirements
- Speed controllable 0-10V input
- Excellent pressure capability throughout the range
- Solution to space critical applications
- Tachometer output 0-10V
- Vertical and horizontal discharge mounting

Applications
- VAV boxes
- Smaller AHUs
- General ventilation
- Industrial warm air movement
- Telecommunications / phone transmitter cabins
- Environmental chambers
- Special effects for the film industry
- Swimming pool / tennis court domes
- Clean air flow across workstations

Specifications
These fans feature EC driven forward curved impellers constructed from mild steel with cases fabricated from mild steel. For ease of installation all units have fitted outlet flanges, and can be mounted vertically or horizontally. Supplied with connection to terminal box from electrical supply. Low maintenance achieved by ‘sealed for life’ type bearings allowing a typical bearing life L10 – 25,000 hours at ideal conditions. Impellers balanced to ISO DIN 1940 Grade 2.5. Test data in accordance with BS848 Part1 / ISO 5801-2007.

Technical Data

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>Supply voltage</th>
<th>Frequency</th>
<th>Replaces Airflow Fan</th>
<th>Control voltage</th>
<th>Max air flow</th>
<th>Min static pressure</th>
<th>Noise level</th>
<th>Weight</th>
<th>Max ambient temp</th>
<th>IP</th>
<th>ErP 2013/2015</th>
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<td>542SR</td>
<td>0-10</td>
<td>165</td>
<td>0</td>
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<td>465</td>
<td>0</td>
<td>50</td>
<td>9</td>
<td>50</td>
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<td>50/60</td>
<td>9S2GWL/LS</td>
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<td>60</td>
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<td>230</td>
<td>50/60</td>
<td>102FWR/4</td>
<td>0-10</td>
<td>1300</td>
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<td>50/60</td>
<td>79EZW/L4</td>
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<td>83F2WL/4</td>
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Dimensions

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<th>F</th>
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<th>I</th>
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<th>K</th>
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<tr>
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<td>320</td>
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<td>178</td>
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<td>230</td>
<td>148</td>
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<tr>
<td>DIEC-215</td>
<td>313</td>
<td>366</td>
<td>149</td>
<td>207</td>
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<td>DIEC-222</td>
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<td>389</td>
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<td>DIEC-215/2</td>
<td>322</td>
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<td>275</td>
<td>270</td>
<td>212</td>
<td>138</td>
<td>353</td>
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</table>

Performance
Flue Gas Dilution

CO₂ safe dispersal ventilation

**Key Features**

- Multi size flue dilution fans
- Eco design ErP 2013 / 2015 compliant
- Easy electrical installation
- Safe operation - internal differential pressure switch for boiler shut off
- Avoid unsightly or expensive discharge flues
- Quiet and efficient
- 1% CO₂ content at outlet
- High levels of corrosion resistance allow use with condensation boilers
- Eco design EuP compliant IE2
- Dynamically balanced to DIN ISO 1940 – Grade 6.3

**Flue Dilution GBDF & SSDF fans**

Their main advantage is avoiding the use of unsightly and expensive flues as shown below. The 1993 Clean Air Act and Institute of Gas Engineers UPE 10/part 1 (issue 3) Regulations requires that if the products of combustion are dispensed at low level then the CO₂ content must be 1% or less. Airflows' flue dilution range achieves this by introducing fresh air into the boilers discharge flue and diluting these flue gases. All fans dynamically balanced to ISO DIN 1940 – Grade 6.3.

**Safety**

A differential pressure safety switch ensures boiler shutdown in the event of fan failure on blocked flue, the switch consists of a relay circuit which will fall safe and prevent operation of the gas burner under the following conditions.

- Loss of fan air supply (blocked intake / fan motor inlet)
- Stalled fan motor

Choosing the Correct Size and Type of Fan

Where possible there should be at least 2 metres of flue ducting from the fan to the outlet. To ensure a maximum of 1% CO₂ content at the outlet, the volume flow rate of diluted flue gases necessary for a given boiler can be calculated as follows:

Flow rate in l/sec = 2.69 x rated input of boiler in kW.

Where 2 metres of discharge ducting is not possible then the calculation is:

Flow rate in l/sec = 4.44 x rated input of boiler in kW.

**Applications**

- Flue dilution
- Condensate air handling

The range of dilution fans come in two variations, GBDF for standard atmospheric installations and SSDF for enhanced corrosion resistance especially in use with high condensate content and or condensation boilers. 5 sizes in each range allow selection for industrial and commercial boilers rated up to 650 Kw (2,200,000 Btu).

When the specification of regulations call for stainless steel ducting and when higher efficiency condensate boilers on modular burners are more likely to produce condensation the SSDF range should be selected due to its Aisi 316 stainless steel case construction. Test data in accordance with BSS848 Part1/ ISO 5801-2007.

Choosing the Correct Size and Type of Fan

The volume flow rate provided by the fan will depend on the static pressure imposed by the size and length of flue ducting and the number of bends, louveres etc. comprising the installation. The performance table below enables selection of the correct dilution fan based on the flow rate requirement and the fans ability to overcome duct system resistance.

(Note: if LPG or Butane are being used then the factors above should be increased to 3.23 and 5.33 respectively. These flue dilution fans must not be used for any other fuels).

**Performance Table at 20°C**

<table>
<thead>
<tr>
<th>Fan size</th>
<th>Static Pressure (Pascals)</th>
<th>Free Air</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>50</th>
<th>65</th>
<th>70</th>
<th>80</th>
<th>90</th>
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<th>120</th>
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<tr>
<td>GBDF 2</td>
<td>Volume litres</td>
<td>300</td>
<td>290</td>
<td>280</td>
<td>270</td>
<td>260</td>
<td>250</td>
<td>240</td>
<td>230</td>
<td>190</td>
<td>140</td>
<td>80</td>
<td>40</td>
<td>0</td>
<td>0</td>
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<tr>
<td>SSDF 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>GBDF 4</td>
<td>Volume litres</td>
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<td>960</td>
<td>940</td>
<td>920</td>
<td>900</td>
<td>880</td>
<td>860</td>
<td>840</td>
<td>820</td>
<td>680</td>
<td>520</td>
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<tr>
<td>GBDF 5</td>
<td>Volume litres</td>
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<td>1370</td>
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<tr>
<td>GBDF 6</td>
<td>Volume litres</td>
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<td>1600</td>
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Dimensions are for guidance only - certified drawings available

<table>
<thead>
<tr>
<th>Fan size</th>
<th>Units</th>
<th>GBDF 2</th>
<th>GBDF 3</th>
<th>GBDF 4</th>
<th>GBDF 5</th>
<th>GBDF 6</th>
<th>SSDF 2</th>
<th>SSDF 3</th>
<th>SSDF 4</th>
<th>SSDF 5</th>
<th>SSDF 6</th>
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<td>2.6 Amps</td>
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<td>2.3 Amps</td>
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<tr>
<td>Maximum boiler input rating</td>
<td>kW</td>
<td>90</td>
<td>100</td>
<td>270</td>
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<tr>
<td>Minimum inlet duct diameter</td>
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<td>305</td>
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<td>457</td>
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<td>Maximum discharge duct diameter</td>
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<td>345</td>
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<td>437</td>
<td>254</td>
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<td>Minimum discharge grille size</td>
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<td>400x400</td>
<td>500x500</td>
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<td>345</td>
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</tr>
<tr>
<td>Total static pressure loss in system</td>
<td>Pa</td>
<td>70</td>
<td>90</td>
<td>130</td>
<td>160</td>
<td>180</td>
<td>70</td>
<td>90</td>
<td>130</td>
<td>160</td>
<td>180</td>
</tr>
<tr>
<td>Maximum flue velocity</td>
<td>m/s</td>
<td>5.5</td>
<td>7.3</td>
<td>7.8</td>
<td>10.7</td>
<td>10.7</td>
<td>5.5</td>
<td>7.3</td>
<td>7.8</td>
<td>10.7</td>
<td>10.7</td>
</tr>
</tbody>
</table>

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**Electrical Installation**

In all classes of installation, it is essential that the pressure safety switch is connected into the supply circuit of the appliance gas valve so that the gas valve is shut off in the event of a fan failure or flue system blockage. As the fan has been installed and electrically connected, a check should be made to ensure that the pressure safety switch causes the boiler to be switched off when failure or blockage is simulated.

**Flue Assistance**

The GBDF range can also be used for flue assistance rather than flue dilution (ie: the fan handles all the products of combustion). It is important that the air into the motor side of the fan is ducted from outside the building. The maximum temperature allowed at the inlet of the non drive side of the fan is 110ºC (230ºF) to maintain acceptable motor bearing and winding temperature. Experience has shown that if a fan is chosen to give a maximum CO2 concentration of 2% that this maximum temperature will not be exceeded. Should you wish to use any of our fans purely as an induction fan WITHOUT dilution then the volume rate needed will be:

\[
\text{Flow rate (induction only) in l/sec} = 1.35 \times \text{rated input of boiler in kW.}
\]

**Safety and Ease of Use**

- Differential pressure safety switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
- 6 or 10 pole plug and socket for easy wiring and installation.

**The Range**

The Airflow range of Ecodesign ErP 2013/2015 Compliant flue dilution fans is available in 5 sizes to satisfy the dilution needs of industrial and commercial boilers rated up to 650 kW (2,200,000 Btu) input. Each size is available in standard form (GBDF series) for atmospheric boilers and water heaters of circa 75% efficiency. If excessive corrosion causing the failure of a GBDF series unit is due to the presence of residual condensate, then this will not be covered by our warranty. Enhanced corrosion resistance versions (SSDF series) with stainless steel fan cases are also available for installation where regulations or the specification calls for stainless steel ducting, and when higher efficiency boilers such as modular designs are likely to produce condensation. SSDF’s are therefore recommended for installations where condensation will occur.

**Typical Installations**

Important when designing and installing a dilution system incorporating Airflow flue dilution fans, attention should be paid to the latest edition of the following standards and guides.

(i) BS6644: 2005 Installation of gas fired hot water boilers of rated input between 60 kW and 2 MW.


The boiler is connected by a vertical flue to a header which is open to the "outside" air at both ends. One end of the header acts as the primary air intake for the dilution air and the other as the discharge. The fan is located on the discharge side of the header duct.
HT Fans
High temperature centrifugal fans

Key Features
- Can move air at temperature up to 250°C
- Eco design ErP 2013 / 2015 compliant
- Wide range of installation positions
- Intermediate cooling impeller minimises heat to motor and bearings ensuring long life
- Polyester high temperature paint
- Gas ‘Tight’ casing option available

High Temperature fans
Specifically designed direct drive fans to handle hot air or the products of combustion from gas burning appliances up to temperature of 250°C. The intermediate cooling impeller, an Airflow pioneering design, eliminates the problem of short motor/bearing life. The range covers from 62 l/sec to 120 l/sec. Variant OEM Applications – are available on a made to order basis, (depending on quantities required) please apply to customer services for non standard designs.

Applications
- Overhead radiant tube heating
- Domestic and commercial ovens
- Boiler / heater flue fans
- Gas fire flue boosters
- Overhead radiant tube heating
- Hot air extraction
- Domestic and commercial ovens
- UV lamp cooling for printing
- Boiler / heater flue fans
- Tunnel curing
- Gas fire flue boosters

Specifications
Aluminium or mild steel impellers, housed in Zintec mild steel casing, finished in black polyester high temperature paint. Totally enclosed motors with integrated cooling impeller ensuring extended trouble free motor life, fitted with motor guard arrangement as standard. Able to be mounted from outlet flange or threaded inserts incorporated into the inlet face of the fan casing. Motors either shaded pole or permanent capacitor type using low maintenance sealed for life bearings ensuring a typical bearing life L10 – 25,000 in ideal conditions. Electrical connection is via 3 core cable for ease of installation. Test data in accordance with BS848 Part1/ ISO 5801-2007.

Technical Data

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>Supply Voltage</th>
<th>Frequency</th>
<th>Capacitor Value</th>
<th>Max Starting Current</th>
<th>Start Current (approx)</th>
<th>Max Input Watts</th>
<th>Max Air Flow</th>
<th>Min Static Pressure</th>
<th>Noise矢量</th>
<th>Speed at Max Air Flow</th>
<th>Weight</th>
<th>Max Ambient Temp</th>
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<tbody>
<tr>
<td>45BTFHT</td>
<td>230</td>
<td>50</td>
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<td>0.75</td>
<td>85</td>
<td>60</td>
<td>35</td>
<td>50</td>
<td>2200</td>
<td>2.4</td>
<td>45ºC</td>
</tr>
<tr>
<td>52BTXHT</td>
<td>230</td>
<td>50</td>
<td>2</td>
<td>0.53</td>
<td>1.03</td>
<td>125</td>
<td>100</td>
<td>54</td>
<td>58</td>
<td>2000</td>
<td>3.3</td>
<td></td>
</tr>
</tbody>
</table>

*at 1 metre

Thermal Protection

Dimensions

Performance
Always Innovating

Our constant search for new and better ways to save energy, improve the indoor environment and provide you with high quality, reliable and easy to use products that contribute to a low carbon future continues.

visit: airflow.com

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Customer Services : 01494 560800
Technical Support : 01494 560950

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