

PROJECT SUMMARY

Please refer to quote number H 902785 CA in all correspondence

Clients Name & Address

Mr Nabar Zadoyan
Ardmore Construction Ltd
Byrne House
54 Jeffreys Road
Brimsdown
Enfield
Middlesex
EN3 7UB

Quotation Number

H 902785 CA

Project Reference

11/07164
William Goodenough House
Goodenough College

Quotation Date

12-Jan-2012

Account Number

5660297-04

Nuaire Contact

Gareth Carr
Tel: 029 2085 8249

Your Sales Engineer

Keith Pearson
Tel: 07767 298 062

Contact Mr Nabar Zadoyan

Internal Sales

Steve Pearce
Tel: 0844 583 0044

Item	Code	Description	Duty m³/s	Duty Pa	Qty
Location 1 - TEF 01 -					
10	EST9H-X	NUAIRE ECOSMART HIGH PERFORMANCE TWIN FAN CIRCULAR SPIGOTS	0.615	250.0	1
11	CFC50	FLEXIBLE CONNECTOR TO SUIT 500 mm DIA SPIGOT			2
12	CA50L	CIRC ATTENUATOR-LONG			1
13	CA50LP	CIRC ATTENUATOR-LONG PODDED		2.0	1
73	CMF50	MATCHING FLANGE-50 AXUS CIRC AXIALS			2
Location 2 - TEF 02 -					
20	EST17C-X	Nuaire Ecosmart Twinfan EXT UNIT - BELT DRIVE c/w integrated frequency inverter with ECOSMART compatibility Circular spigots	1.2	300.0	1
21	CFC63	FLEXIBLE CONNECTOR-630mm AXUS CIRC AXIALS			2
22	CA63L	CIRC ATTENUATOR-LONG			1
23	CA63LP	CIRC ATTENUATOR-LONG PODDED		2.0	1
73	CMF63	MATCHING FLANGE-63 AXUS CIRC AXIALS			2
Location 3 - TEF 03 -					
30	EST9H-X	NUAIRE ECOSMART HIGH PERFORMANCE TWIN FAN CIRCULAR SPIGOTS	0.66	250.0	1
31	CFC50	FLEXIBLE CONNECTOR TO SUIT 500 mm DIA SPIGOT			2
32	CA50L	CIRC ATTENUATOR-LONG			1
33	CA50LP	CIRC ATTENUATOR-LONG PODDED		2.0	1
73	CMF50	MATCHING FLANGE-50 AXUS CIRC AXIALS			2
Location 4 - TEF 04 -					
40	EST18C-X	Nuaire Ecosmart Twinfan EXT UNIT - BELT DRIVE c/w integrated frequency inverter with ECOSMART compatibility Circular spigots	0.99	275.0	1
41	CFC50	FLEXIBLE CONNECTOR TO SUIT 500 mm DIA SPIGOT			2
42	CA50L	CIRC ATTENUATOR-LONG			1
43	CA50LP	CIRC ATTENUATOR-LONG PODDED		4.0	1
73	CMF50	MATCHING FLANGE-50 AXUS CIRC AXIALS			2
Location 5 - TEF 05 -					
50	EST17C-X	Nuaire Ecosmart Twinfan EXT UNIT - BELT DRIVE c/w integrated frequency inverter with ECOSMART compatibility Circular spigots	1.53	275.0	1
51	CFC63	FLEXIBLE CONNECTOR-630mm AXUS CIRC AXIALS			2
52	CA63L	CIRC ATTENUATOR-LONG			1
53	CA63LP	CIRC ATTENUATOR-LONG PODDED		9.0	1
73	CMF63	MATCHING FLANGE-63 AXUS CIRC AXIALS			2
Location 6 - TEF 06 -					
60	EST9H-X	NUAIRE ECOSMART HIGH PERFORMANCE TWIN FAN CIRCULAR SPIGOTS	0.72	275.0	1
61	CFC50	FLEXIBLE CONNECTOR TO SUIT 500 mm DIA SPIGOT			2
62	CA50L	CIRC ATTENUATOR-LONG			1
63	CA50LP	CIRC ATTENUATOR-LONG PODDED		2.0	1

continued ...

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Account Number

5660297-04

... continued

Item	Code	Description	Duty m³/s	Duty Pa	Qty
Location 6 - TEF 06 -					
73	CMF50	MATCHING FLANGE-50 AXUS CIRC AXIALS			2
Location 7 - EF 01 -					
70	ESX5ES	NUAIRE ECOSMART XTRACTOR INTERNAL UNIT - DIRECT DRIVE CIRCULAR SPIGOTS	0.17	250.0	1
71	CFC40	FLEXIBLE CONNECTOR TO SUIT 400 mm DIA SPIGOT			2
72	CA40SP	CIRC ATTENUATOR-STD PODDED			2
73	CMF40	MATCHING FLANGE-40 AXUS CIRC AXIALS			2

CONDITIONS OF SALE

INTERPRETATION

In these Conditions:

"Buyer"	means the person whose details are set out in the Order;
"Conditions"	means these conditions of sale and "Condition" shall be construed accordingly;
"Contract"	means a contract for the sale and purchase of Goods on these Conditions;
"Goods"	means the goods and where applicable, any services specified in the Order Confirmation;
"Incoterms"	means the rules published by the International Chamber of Commerce in force at the date when the Contract is made;

1. BASIS OF SALE

- 1.1. The Seller shall sell and the Buyer shall purchase the Goods subject to these Conditions to the exclusion of all other terms and conditions.
- 1.2. The Buyer acknowledges that it has not relied on any statement, promise or representation made by, or on behalf of, the Seller not set out in the Contract.
- 1.3. If performance of the Contract requires any government licence or permit, the Contract shall be conditional upon such licence or other permit being available.
- 1.4. Quotations submitted by the Seller are valid for a period of 30 days unless previously withdrawn.

2. CANCELLATION OF ORDERS

- 2.1. If the Buyer cancels an Order, it shall indemnify the Seller in full against all costs (including labour and materials) and expenses incurred by the Seller in the execution or anticipated execution of the Order.

3. DESCRIPTION AND SPECIFICATION

- 3.1. All samples, drawings, descriptions, specifications and advertising are issued to give an approximate idea of the Goods only. They shall not form part of the Contract and this is not a sale by sample.
- 3.2. The Seller reserves the right to change all samples, drawings, descriptions, specifications and advertising of the Goods from time to time.

4. PRICE OF THE GOODS

- 4.1. The Price is the price quoted by the Seller and excludes VAT and the cost of delivery which shall be paid separately.
- 4.2. In the event that the Buyer alters or cancels part of the Order after the date of the Order, the Seller reserves the right to vary the price of the Order and cancel any discounts that may have been offered to the Buyer in respect of the original Order and, if appropriate, recoup them from the Buyer.

5. TERMS OF PAYMENT

- 5.1. The Seller may invoice the Buyer on, or after, delivery. If the Buyer fails to take delivery, or fails to give the Seller adequate delivery instructions, the Seller may invoice for the Goods.
- 5.2. UK Buyers shall pay invoices within 30 days of the date of invoice.
- 5.3. Payment is deemed to have been made when the Seller has received cleared funds. The Buyer shall make all payments in full without any discount.
- 5.4. If the Buyer fails to pay on time, the Seller may without prejudice to its other rights or remedies:
 - 5.4.1. Cancel the Contract or suspend further deliveries to the Buyer, and/or
 - 5.4.2. Charge interest on the unpaid amount at the rate specified under the Late Payment of Commercial Debts (Interest) Act 1998.

6. DELIVERY

- 6.1. Delivery shall be made by the Seller delivering the Goods to the address specified in the Order and shall be deemed to be effected when the Goods are off-loaded from the delivery vehicle. The Buyer will arrange for goods to be offloaded unless otherwise agreed in advance with the Seller.
- 6.2. The Buyer shall at its own cost and in a timely manner obtain all statutory or regulatory consents, approvals, permits or licences required for delivery and offloading.
- 6.3. Time for delivery is not of the essence. If the Supplier is late for reasons other than due to reasons of force majeure, the Buyer is entitled to liquidated damages at the rate of 2% of the price of the delayed Goods for each full week of delay, subject to a maximum of 20% of the Price of the late goods only.
- 6.4. If the Buyer fails to take delivery or give the Seller adequate delivery instructions, the Seller may, without prejudice to its other rights or remedies, invoice and store the Goods until actual delivery and charge the Buyer for the costs of storage (including insurance) and re-delivery costs.
- 6.5. No Goods shall be returned to the Seller after delivery unless by prior written agreement.

7. NON-DELIVERY & DAMAGE

- 7.1. The quantity of any consignment as recorded by the Seller upon despatch shall be conclusive evidence of the quantity received by the Buyer on delivery, unless the Buyer can provide conclusive evidence to the contrary.
- 7.2. The Seller shall not be liable for non-delivery of Goods unless the Buyer gives written notice of non-delivery within 5 days of the date when they should have been received.
- 7.3. The Seller's liability for non-delivery in any event shall be limited to replacing the Goods within a reasonable time or issuing a credit note against future invoices.
- 7.4. No claim for loss of, or damage to, the Goods in transit will be accepted unless the Buyer notifies the Seller in writing within 5 days of delivery of the Goods and unless such loss or damage is noted on the delivery note for such Goods.

8. RISK AND PROPERTY

- 8.1. Risk in the Goods shall pass to the Buyer at the time of delivery or, if the Buyer wrongfully fails to take delivery, at the time when the Seller has tendered delivery of the Goods.
- 8.2. Notwithstanding delivery and the passing of risk, property in and title to the goods shall remain with the seller until the seller has received payment of the full price of (a) all Goods and/or Services the subject of the Contract and (b) all other goods and/or services supplied by the seller to the buyer under any contract whatsoever. Payment of the full price shall include, without limitation, the amount of any interest or other sum payable under the terms of this and all other contracts between the seller and the buyer.
- 8.3. The Buyer shall not be entitled to pledge or in any way charge by way of security for any indebtedness any of the Goods which remain the property of the Seller.

9. QUALITY, TESTING AND WARRANTY

- 9.1. The Seller carries out end of line testing on all products and the costs thereof are included within the contract price. If the Buyer requires additional tests or wishes to be present at any tests, then the Seller shall be entitled to recover any additional costs and/or any extensions of time to the Delivery dates to facilitate such tests.
- 9.2. The Seller warrants that, upon delivery and for a period of 12 months (or such other period as set out in the Seller's product literature), the Goods shall:
 - 9.2.1. conform to the requirements of the Contract;
 - 9.2.2. be within the tolerances allowed by relevant BSI and/or ISO standards;Provided that the Seller shall not be liable for defects arising from fair wear and tear, wilful damage, negligence, abnormal conditions, failure to follow instructions, misuse or unauthorised alteration or repair.
- 9.3. The Seller's liability for breach of the warranty in Condition 9.2 shall be limited to repairing or (at its option) replacing the Goods so that they comply with the terms of the warranty set out in Condition 9.1.
- 9.4. The Seller shall not be liable for a breach of the warranty in Condition 9.2:
 - 9.4.1. unless the Buyer gives the Seller written notice of the defect within 5 days of the time when the Buyer discovers, or ought to have discovered it;
 - 9.4.2. if the Buyer has breached any of its obligations as set out in the Seller's leaflet – Warranty Guidance Notes 671280 available from the Supplier or its website.
- 9.5. The Seller shall be given the opportunity of examining the Goods.

10. LIABILITY

- 10.1. These Conditions set out the entire liability of the Seller in respect of any breach of these Conditions, any use made, or resale by, the Buyer of the Goods, and any representation, statement or tortious act or omission.
- 10.2. All warranties, conditions and other terms implied by statute or common law (save for the condition implied by section 12 of the Sale of Goods Act 1979) are, to the fullest extent permitted by law, excluded from the Contract.
- 10.3. Nothing in these Conditions excludes or limits the liability of the Seller for death or personal injury caused by the Seller's negligence, fraud or fraudulent misrepresentation.
- 10.4. Subject to Conditions 10.3:
 - 10.4.1. the Seller's total liability in connection with the Contract shall be limited to the Price; and
 - 10.4.2. the Seller shall not be liable to the Buyer for any loss of profit, loss of contract, use or production, loss of business, or similar financial loss arising out of or in connection with the Contract or its termination.

11. INSOLVENCY AND BREACH

- 11.1. If the Buyer (i) calls a meeting of its creditors or makes a voluntary arrangement with them; (ii) becomes bankrupt or subject to an administration order; (iii) presents, or is subject to, a petition for its winding up; (iv) goes into liquidation (other than for amalgamation or reconstruction purposes); (v) has a receiver appointed over the whole or any part of its assets; (vi) ceases or threatens to cease to carry on business; or (vii) commits an irremediable breach of the Conditions; or
- 11.2. If the Seller reasonably considers that any of the events in Condition 11.1 is about to occur, it shall, without prejudice to its other rights or remedies, be entitled to cancel the Contract or suspend further deliveries thereunder without incurring any liability to the Buyer. If at that time, the Goods have been delivered but not paid for, payment shall become immediately due, notwithstanding any arrangements to the contrary.

12. EXPORT TERMS

- 12.1. Unless alternative methods are agreed between Buyer and Seller, payment shall be via an irrevocable letter of credit confirmed by a first class UK clearing bank with the Seller named as sole beneficiary.
- 12.2. Delivery terms will be interpreted in accordance with INCOTERMS. If there is any conflict between the provisions of INCOTERMS and these Conditions, these Conditions shall prevail.
- 12.3. The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties thereon or licences in connection therewith.
- 12.4. The Goods shall be delivered at the air or sea port of shipment and the Seller shall be under no obligation to give notice under section 32(3) of the Sale of Goods Act 1979.

13. FORCE MAJEURE

- 13.1. Neither party shall be liable to the other for any failure to perform its obligations under the Contract where the failure is due to circumstances beyond the reasonable control of the affected party, including, without limitation, lock-outs, strikes or labour disputes or adverse weather conditions. If the delaying event continues uninterrupted for 90 days, either party may give notice in writing to terminate the Contract. In the event of termination in accordance with this Condition 13, the Supplier shall be entitled to be paid all costs incurred prior to the date of termination.

14. GENERAL

- 14.1. These Conditions may only be varied with the prior written agreement of a Director of the Seller.
- 14.2. The Contract shall be governed by and interpreted in accordance with English law and the Seller and the Buyer both submit to the jurisdiction of courts of England and Wales.
- 14.3. The Buyer shall not assign any of its rights without the Seller's prior written consent.
- 14.4. Nothing in this Agreement shall create any rights for third parties under the Contracts (Rights of Third Parties) Act 1999.
- 14.5. Notices shall be in writing and addressed to a party at its registered office or principal place of business or such other notified address.
- 14.6. A failure by the Seller to act on a breach by the Buyer of the Contract shall not constitute a waiver of that breach or any other breach.
- 14.7. If a Condition is held by a competent authority to be invalid or unenforceable in whole or in part but would be valid and enforceable if part of it were deleted, that Condition shall be deemed to apply with such modifications as may be necessary to make it valid and enforceable, and any such modification shall not affect the validity of any other Condition and/or the Contract.

THE FOLLOWING SUPPLEMENTARY CLAUSES WILL APPLY IN ADDITION TO OUR STANDARD TERMS AND CONDITIONS WHERE THE CONTRACT INCLUDES SERVICES TO BE PROVIDED ON SITE BY THE COMPANY OR ITS SUB-CONTRACTORS.

15. SITE FACILITIES AND WORKING CONDITIONS

- 15.1. The Contract Price and any agreed time for completion of any work is based on the following conditions:
 - 15.1.1. The Buyer will provide suitable access to the area where services are to be performed within the time agreed;
 - 15.1.2. It is the Buyers responsibility to ensure adequate space is available to allow the works or services to be completed to the proposed design or specification and to coordinate all other building works and services to facilitate this and future maintenance.
 - 15.1.3. A mains electrical supply shall be provided by the Buyer free of charge and in reasonable time having regard to the agreed programme to allow for the setting to work of goods provided.
 - 15.1.4. Where necessary, the electrical equipment will be disconnected from the mains electricity by the Buyer free of charge and in reasonable time having regard to the time for the provision of any other services;
 - 15.1.5. No work will be carried out in unsuitable, unhealthy or unsafe conditions;
 - 15.1.6. Such equipment, craneage, stores, water and power, scaffolding, lighting, and heating will be available to the Seller on site and in reasonable time at no charge to the Seller;
 - 15.1.7. The Buyer will provide the Seller, free of charge, with closed or guarded premises to protect Goods against the theft and deterioration of the Seller's tools and equipment.

16. VARIATIONS

- 16.1. The price shall include only for the items specified in the Seller's quotation and as described therein. Any additional works required shall be subject to additional costs and quoted accordingly. Additional works will only be undertaken upon receipt of a signed purchase order or variation order from the Buyer.
- 16.2. The price quoted will be based on the building drawings and requirements issued by the Buyer at the time of quotation. If design changes are required subsequent to this, the Seller reserves the right to invoice for additional works as necessary, providing that in the Seller's opinion, the specification or requirements can still be achieved.

17. CONTRA CHARGES

- 17.1. Any proposed claim or contra charge shall be notified to the Seller by the Buyer in writing within 5 working days of it occurring to allow for proper investigation. Investigation does not constitute acceptance of any claim and unless there is conclusive evidence to the contrary, no liability shall be accepted.
- 17.2. The Seller reserves the right to invoice for additional costs in relation to delays, accelerations or disruptions to the programme that occur without reasonable notice.

18. LIABILITY

- 18.1. Notwithstanding any implied or express provisions of the Contract to the Contrary, whether express or implied, the parties hereby expressly agree as follows:
 - 18.1.1. The Seller shall have no liability, whether under the contract or by way of indemnity or otherwise for loss of contracts, loss of use, loss of profits or any similar financial loss.
 - 18.1.2. Save for personal injury or death, the aggregate liability of the Seller out of or in connection with this Order shall not exceed the Price.
 - 18.1.3. Any delay on the part of the Seller not caused by force majeure or any other event entitling the Buyer to an extension of time or relief shall entitle the Buyer to Liquidated damages at the rate of 2% of the Price per week of delay to a maximum of 20% of the Price.

19. DEFECTS LIABILITY

- 19.1. The Seller shall make good, by repair or replacement at its expense, any defect in the goods which may occur within 12 months from the date that the goods are delivered or 18 months from the date the Seller notifies the Buyer that the goods are available for despatch.
- 19.2. The Seller's liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality or fitness for any particular purpose of the goods.

20. SET-OFF

- 20.1. The Buyer shall have no right to set-off against monies due to the Seller under this Contract claims arising on any other Contract with the Seller.

21. TERMS OF PAYMENT

- 21.1. Payment shall be payable without further discounts and no retentions will be deducted.

22. BANK GUARANTEES AND COLLATERAL WARRANTIES

- 22.1. The Seller will not be required to provide any Bank Guarantees of any type nor enter into any collateral or similar contract with any third party.

23. PROTECTION OF WORKS

- 23.1. The Seller shall not be responsible for damage by others to the goods installed or assembled after handover or sign-off.

24. POSITIONING

- 24.1. Where products are to be assembled on site, the final positioning requirements for the complete assembly will be clearly marked by the Buyer and be free from obstruction.

25. ACCESS EQUIPMENT & SCAFFOLDING

- 25.1. It is the responsibility of the Buyer to ensure the inspection and safety of any scaffolding or other access equipment provided for use by the Seller during the course of the works.

26. BUYER'S RESPONSIBILITY FOR OBTAINING CONSENTS

- 26.1. The Buyer shall at its own cost and in a timely manner obtain all statutory or regulatory consents, approvals, permits or licences required for any part of any services.

27. HOURS OF WORK

- 27.1. The Seller's employees will work normal hours applicable to the engineering industry, Monday to Friday inclusive, local public holidays excepted. All night work, overtime and holiday working are specifically excluded.

28. EXTRA COST

- 28.1. Should the Seller incur extra cost or expense as a result of any breach by the Buyer of any of its obligations under these supplementary provisions, the Price will be increased to compensate for any cost and/or expense incurred by the Seller as a consequence.

29. INTELLECTUAL PROPERTY RIGHTS & OWNERSHIP

- 29.1. The Seller retains all intellectual property rights in the goods or Work to be supplied under the Contract whether pre-existing or developed specifically for the purposes of the Contract. The Buyer shall be granted a royalty free, non-assignable, non-transferable licence to use the Seller's IPR for the purposes of operation or maintenance of the goods or Work.

Our conditions of sale are available from our website on www.nuaire.co.uk/stc

Nuaire Limited, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
 UK Technical Enquiries Tel:029 2085 8200 Fax:029 2085 8300 International Enquiries Tel:+44 29 2085 8335 Fax:+44 29 2085 8278
 Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**
 Installation Manual Links: 671142
 Required Duty: 0.615 m³/s @ 250 Pa
 Addition for Ancillaries: +2 Pa
 Actual Duty: 0.755 m³/s @ 377 Pa
 Actual Duty inc Ancil's: 0.753 m³/s @ 377 Pa
 Actual at Required Flow: 0.615 m³/s @ 419 Pa

When Speed Controlled to Required Duty (81.6%):

Motor Input Power: 0.568 kW
Specific Fan Power: 0.923 W/(l/s)

Motor Input Power: 1.043 kW
 Specific Fan Power: 1.384 W/(l/s)
 Nominal Fan Speed: 1,065 RPM
 Electrical Supply: 1 Phase
 Nominal Motor Rating: 1.6 kW
 Motor Current: f.c: 9.4 A
 Motor Current: s.c: 9.4 A

Max. Operating Temp.: 40°C
 Weight: 162 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.
 Breakout Noise (dBA): 43 dBA @ 3m (90% of Max Pa)
 Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	86	81	68	63	58	57	52	46
Induct Outlet	86	81	74	69	66	63	61	56
Breakout	72	71	64	61	58	56	53	51

Above noise calculated speed controlled to required duty (81.6%)
 For 100% Speed: +1 +1 +2 +3 +4 +4 +4 +4
 Breakout Noise (dBA): +7 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for:
 Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA50L:

At all volumes -3 -4 -10 -14 -13 -10 -7

Option CA50LP:

At all volumes -7 -12 -25 -32 -26 -21 -17

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671142 on our website.

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 01 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. Fan assemblies incorporate forward curved centrifugal impellers directly driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC50

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA50L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA50LP

Padded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC50	Flexible connector
1 x CA50L	Long silencer
1 x CA50LP	Long padded silencer

CA50L - Long silencer

CA50LP - Long padded silencer

Resistance at Design: 2 Pa @ 0.615 m³/s
 Resistance at Actual: 2 Pa @ 0.753 m³/s

Nuaire Limited, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Technical Enquiries Tel:029 2085 8200 Fax:029 2085 8300 International Enquiries Tel:+44 29 2085 8335 Fax:+44 29 2085 8278

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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**

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Addition for Ancillaries: +2 Pa

Actual Duty: 0.755 m³/s @ 377 Pa

Actual Duty inc Ancil's: 0.753 m³/s @ 377 Pa

Actual at Required Flow: 0.615 m³/s @ 419 Pa

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Motor Input Power: **0.568 kW**

Specific Fan Power: **0.923 W/(l/s)**

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Specific Fan Power: 1.384 W/(l/s)

Project Details

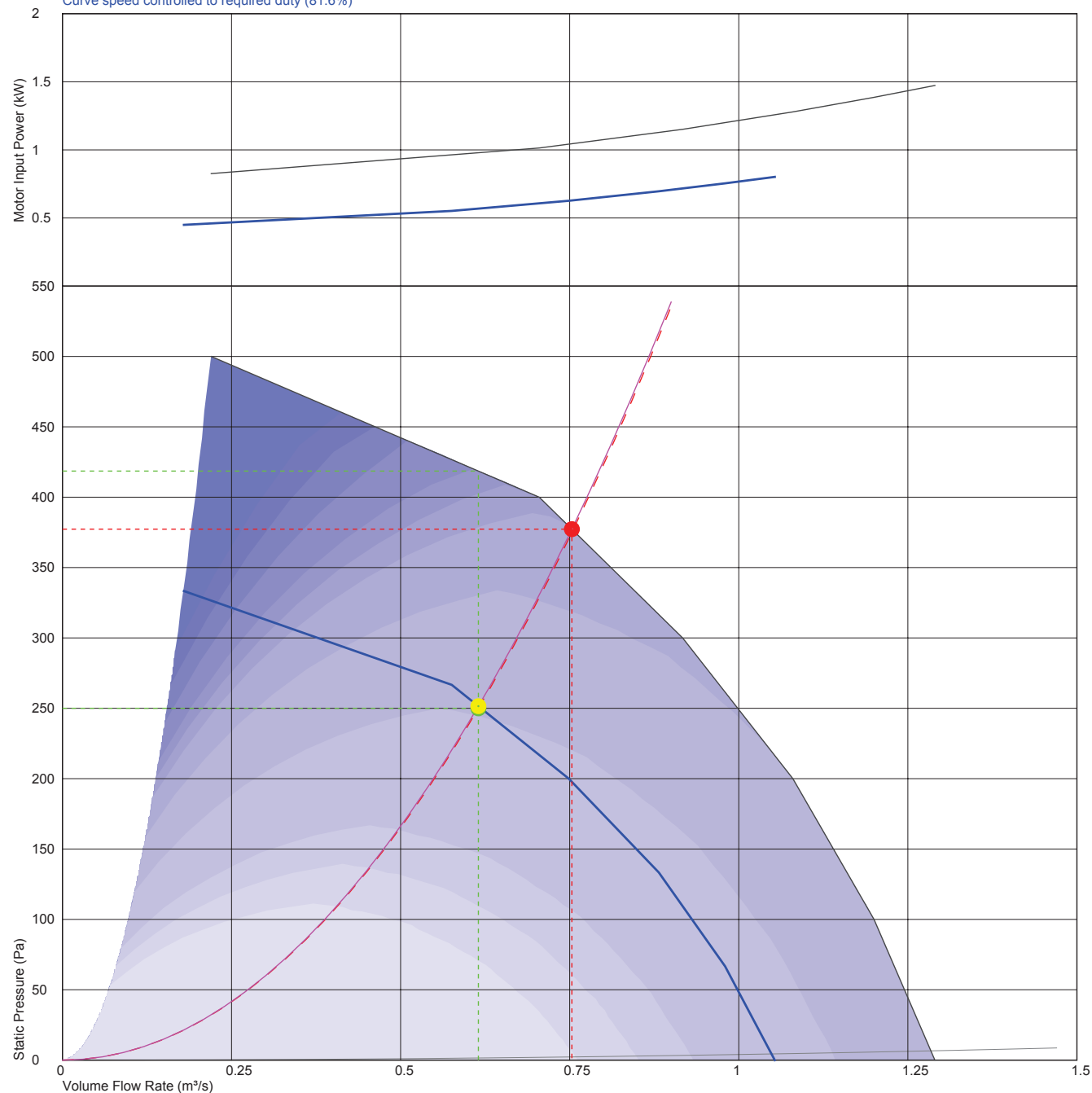
William Goodenough House

Goodenough College

Location: TEF 01 -

Performance Curve

Curve speed controlled to required duty (81.6%)



Nuaire Limited, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
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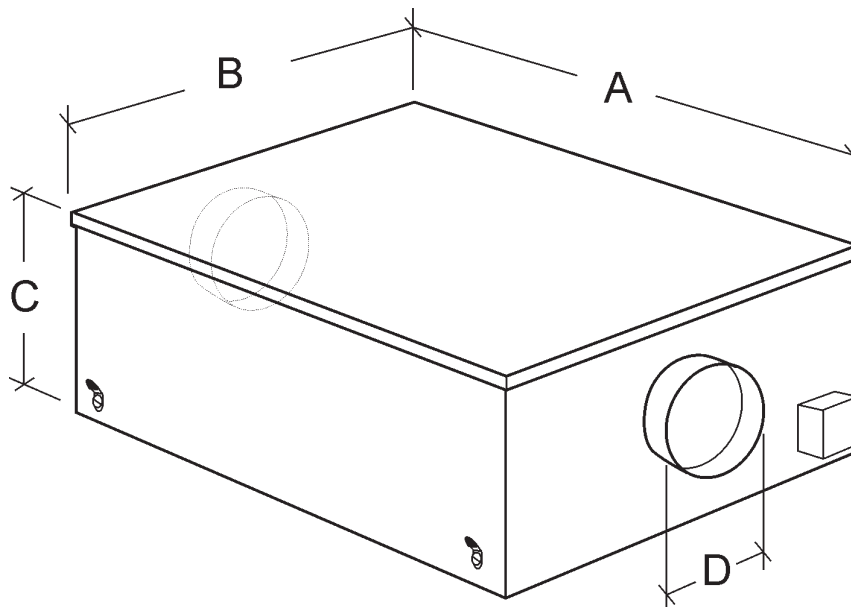
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
 Direct Drive, Single Phase**
 Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 01 -



A
1,495

B
1,125

C
710

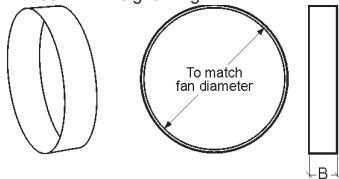
D
500

kg
162

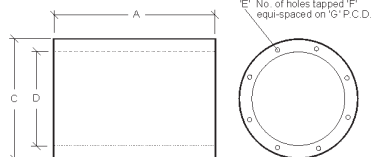
The drawing is for dimensional purposes only. Dimensions in mm.

Ancillary Dimensions

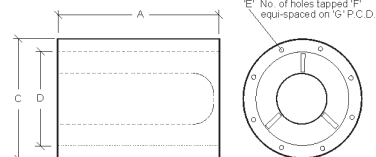
CFC50 - Flexible connector
 B=150 mm Weight: 1 kg



CA50L - Long silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 42 kg



CA50LP - Long podded silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 61 kg



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 Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST17C-X**
 Installation Manual Links: 671143
 Required Duty: 1.2 m³/s @ 300 Pa
 Addition for Ancillaries: +2 Pa
 Actual Duty: 1.602 m³/s @ 535 Pa
 Actual Duty inc Ancil's: 1.598 m³/s @ 536 Pa

When Speed Controlled to Required Duty (75%):

Fan Input Power: 1.062 kW
Motor Input Power: 1.224 kW
Specific Fan Power: 1.02 W/(l/s)

Motor Efficiency: 86 %
 Fan Efficiency: 35 %
 Fan Input Power: 2.507 kW
 Maximum Fan Input Power: 3.162 kW
 Motor Input Power: 2.89 kW
 Specific Fan Power: 1.808 W/(l/s)

Nominal Fan Speed: 4 Pole 1,160 RPM
 Electrical Supply: 3 Phase
 Nominal Motor Rating: 4 kW
 Motor Current: flc: 10 A
 Motor Current: sc: 10 A

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Max. Operating Temp.: 40°C
 Weight: 193.6 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.
 Breakout Noise (dBA): 54 dBA @ 3m (90% of Max Pa)
 Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	87	82	80	73	72	69	67	64
Induct Outlet	91	86	80	84	80	76	74	70
Breakout	86	79	75	75	67	60	55	48

Above noise calculated speed controlled to required duty (75%)
 For 100% Speed: +2 +2 +3 +4 +6 +6 +6 +6
 Breakout Noise (dBA): +7 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA63L:

At all volumes -3 -6 -13 -15 -13 -9 -6

Option CA63LP:

At all volumes -8 -13 -26 -34 -25 -22 -18

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671143 on our website.

Project Details

William Goodenough House

Goodenough College
 Location: TEF 02 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. (Sizes 20+ aluzinc panels on an aluminium Pentapost frame and not acoustically treated.) Fan assemblies incorporate forward curved centrifugal impellers belt driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC63

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA63L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA63LP

Podded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC63	Flexible connector
1 x CA63L	Long silencer
1 x CA63LP	Long podded silencer

CA63L - Long silencer

CA63LP - Long podded silencer

Resistance at Design: 2 Pa @ 1.2 m³/s
 Resistance at Actual: 4 Pa @ 1.598 m³/s

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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST17C-X**

Required Duty: 1.2 m³/s @ 300 Pa
 Addition for Ancillaries: +2 Pa
 Actual Duty: 1.602 m³/s @ 535 Pa
 Actual Duty inc Ancil's: 1.598 m³/s @ 536 Pa

When Speed Controlled to Required Duty (75%):

Fan Input Power: **1.062 kW**
 Motor Input Power: **1.224 kW**
 Specific Fan Power: **1.02 W/(l/s)**

Motor Efficiency: 86 %
 Fan Efficiency: 35 %
 Fan Input Power: 2.507 kW
 Maximum Fan Input Power: 3.162 kW
 Motor Input Power: 2.89 kW
 Specific Fan Power: 1.808 W/(l/s)

Project Details

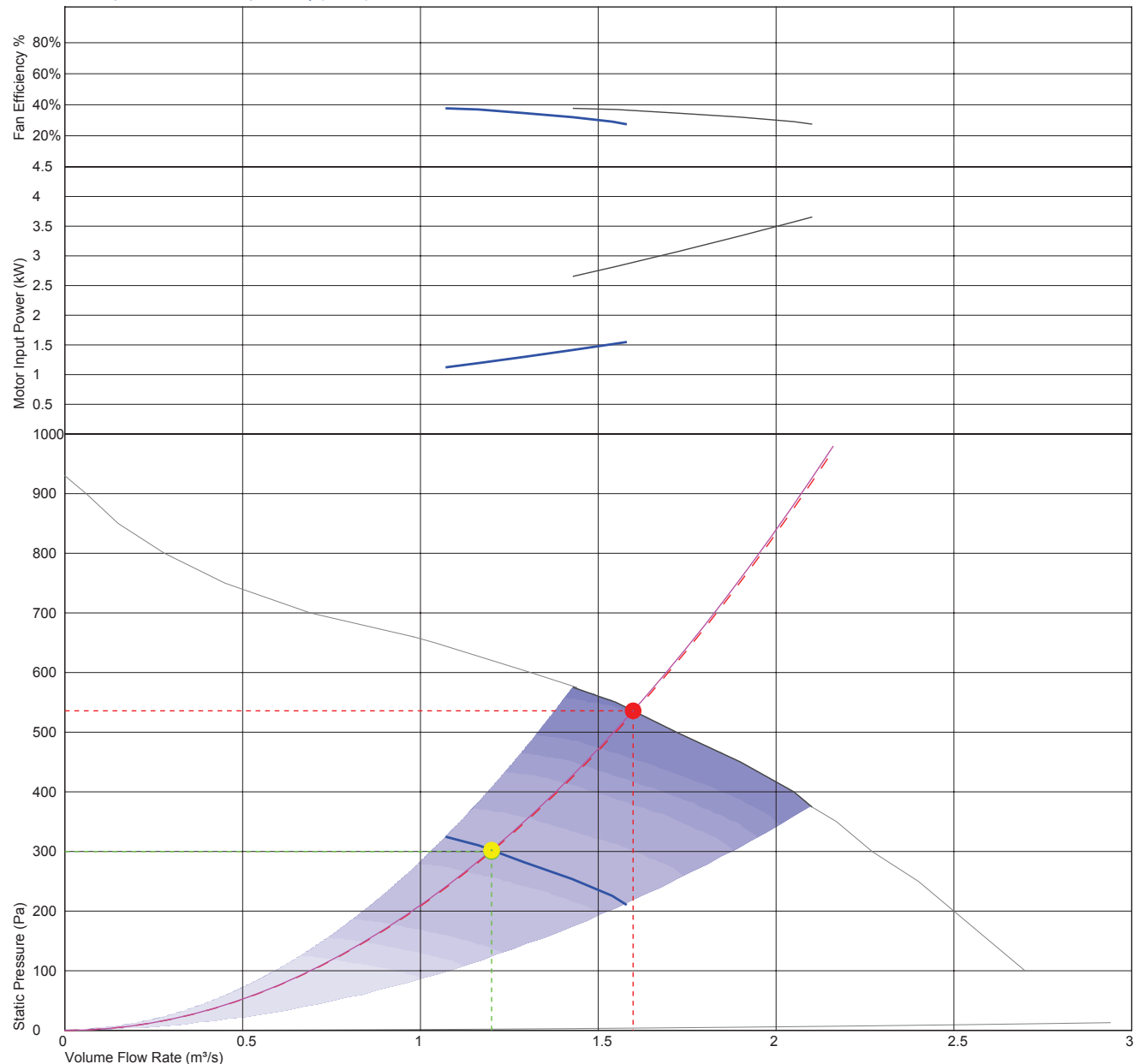
William Goodenough House

Goodenough College

Location: TEF 02 -

Performance Curve

Curve speed controlled to required duty (75.0%)



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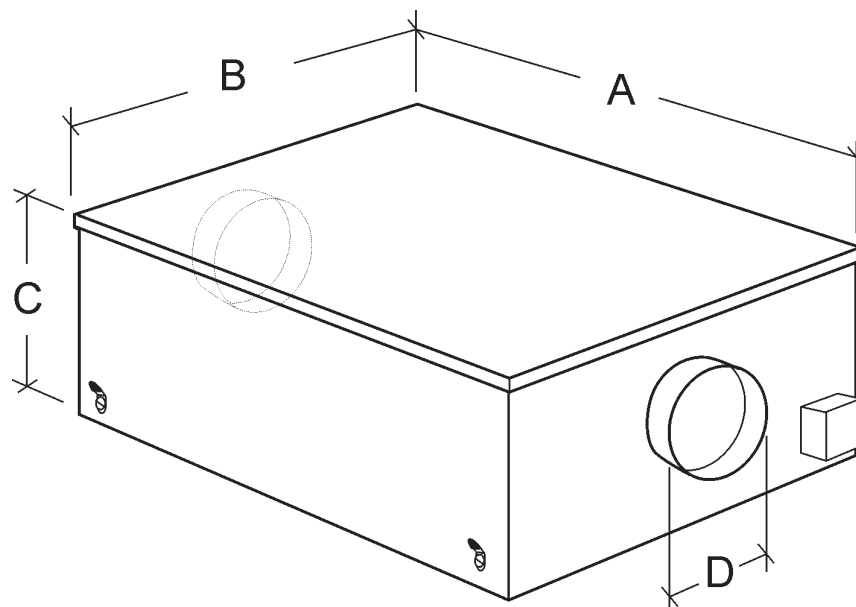
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
Belt Drive, Three Phase**
Ecosmart External Duct Mounted Twinfan

Fan Code: **EST17C-X**

Project Details

William Goodenough House
Goodenough College
Location: TEF 02 -



A
1,430

B
1,635

C
780

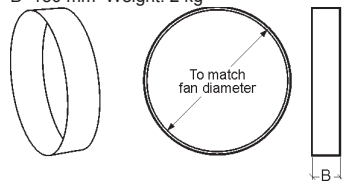
D
630

kg
193.6

The drawing is for dimensional purposes only. Dimensions in mm.

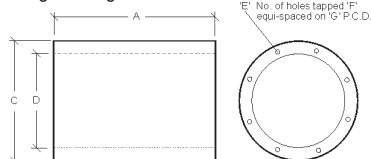
Ancillary Dimensions

CFC63 - Flexible connector
B=150 mm Weight: 2 kg



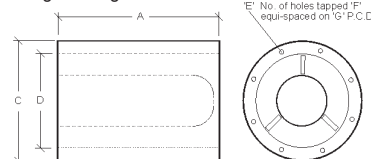
CA63L - Long silencer

A=1260 C=830 D=630 E=12 F=M10 G=690 mm
Weight: 56 kg



CA63LP - Long podded silencer

A=1260 C=830 D=630 E=12 F=M10 G=690 mm
Weight: 80 kg



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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan

Fan Code:	EST9H-X
Installation Manual Links:	671142
Required Duty:	0.66 m³/s @ 250 Pa
Addition for Ancillaries:	+2 Pa
Actual Duty:	0.791 m³/s @ 359 Pa
Actual Duty inc Ancil's:	0.789 m³/s @ 360 Pa
Actual at Required Flow:	0.66 m³/s @ 409 Pa

When Speed Controlled to Required Duty (83.6%):

Motor Input Power:	0.622 kW
Specific Fan Power:	0.943 W/(l/s)

Motor Input Power:	1.065 kW
Specific Fan Power:	1.349 W/(l/s)
Nominal Fan Speed:	1,065 RPM
Electrical Supply:	1 Phase
Nominal Motor Rating:	1.6 kW
Motor Current:	flc: 9.4 A
Motor Current:	sc: 9.4 A

Max. Operating Temp.: 40°C

Weight: 162 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.

Breakout Noise (dBA): 43 dBA @ 3m (90% of Max Pa)

Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	86	81	68	63	58	57	52	46
Induct Outlet	86	81	74	69	66	63	61	56
Breakout	72	71	64	61	58	56	53	51

Above noise calculated speed controlled to required duty (83.6%)

For 100% Speed: +1 +1 +2 +3 +4 +4 +4 +4

Breakout Noise (dBA): +7 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA50L:

At all volumes -3 -4 -10 -14 -13 -10 -7

Option CA50LP:

At all volumes -7 -12 -25 -32 -26 -21 -17

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671142 on our website.

Project Details

William Goodenough House

Goodenough College

Location: TEF 03 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. Fan assemblies incorporate forward curved centrifugal impellers directly driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC50

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA50L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hydroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA50LP

Padded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hydroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC50	Flexible connector
1 x CA50L	Long silencer
1 x CA50LP	Long padded silencer

CA50L - Long silencer

CA50LP - Long padded silencer

Resistance at Design: 2 Pa @ 0.66 m³/s

Resistance at Actual: 2 Pa @ 0.789 m³/s

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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan
 Fan Code: **EST9H-X**

Required Duty: 0.66 m³/s @ 250 Pa
 Addition for Ancillaries: +2 Pa
 Actual Duty: 0.791 m³/s @ 359 Pa
 Actual Duty inc Ancil's: 0.789 m³/s @ 360 Pa
 Actual at Required Flow: 0.66 m³/s @ 409 Pa

When Speed Controlled to Required Duty (83.6%):

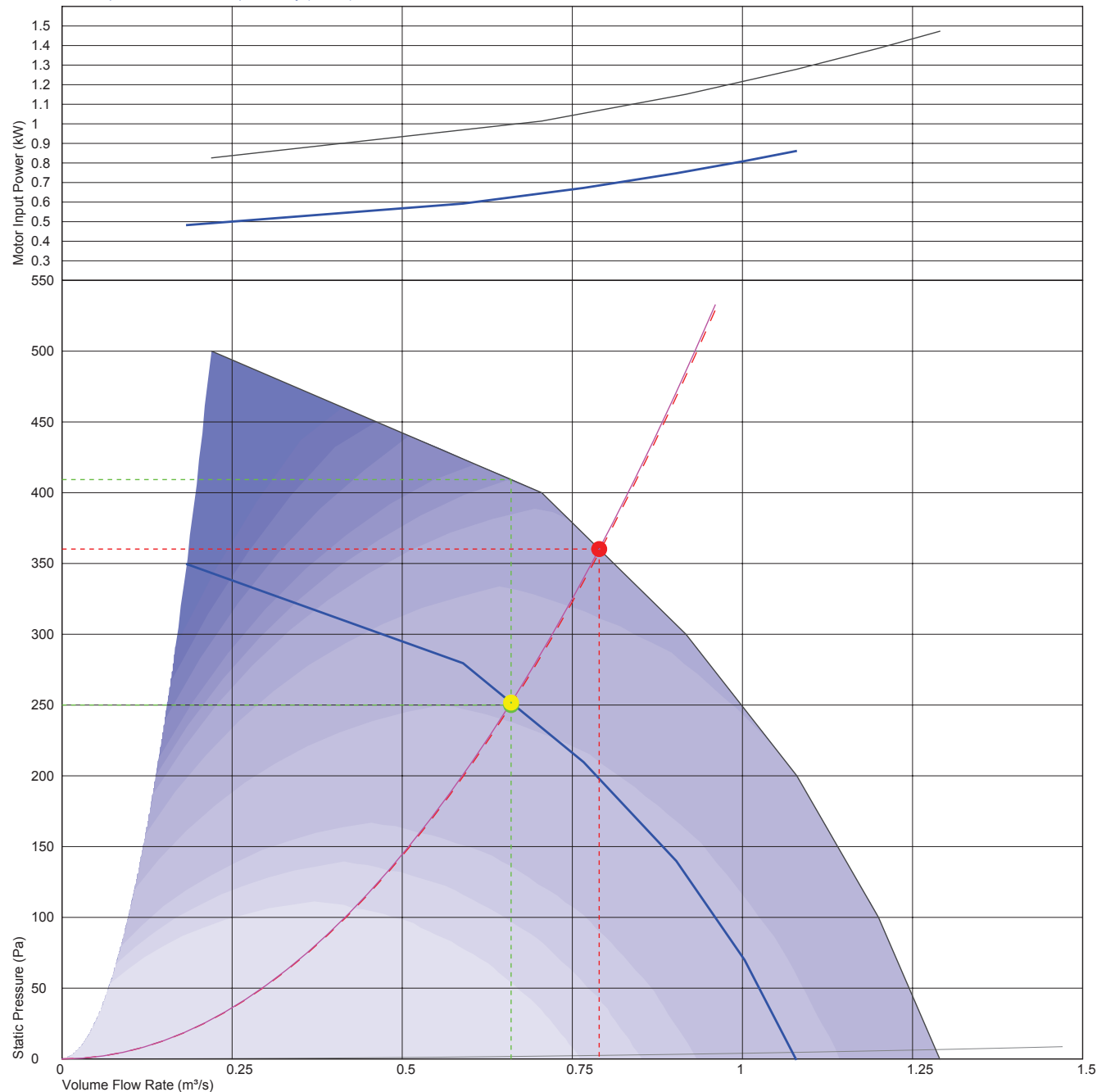
Motor Input Power: **0.622 kW**
 Specific Fan Power: **0.943 W/(l/s)**
 Motor Input Power: 1.065 kW
 Specific Fan Power: 1.349 W/(l/s)

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 03 -

Performance Curve

Curve speed controlled to required duty (83.6%)



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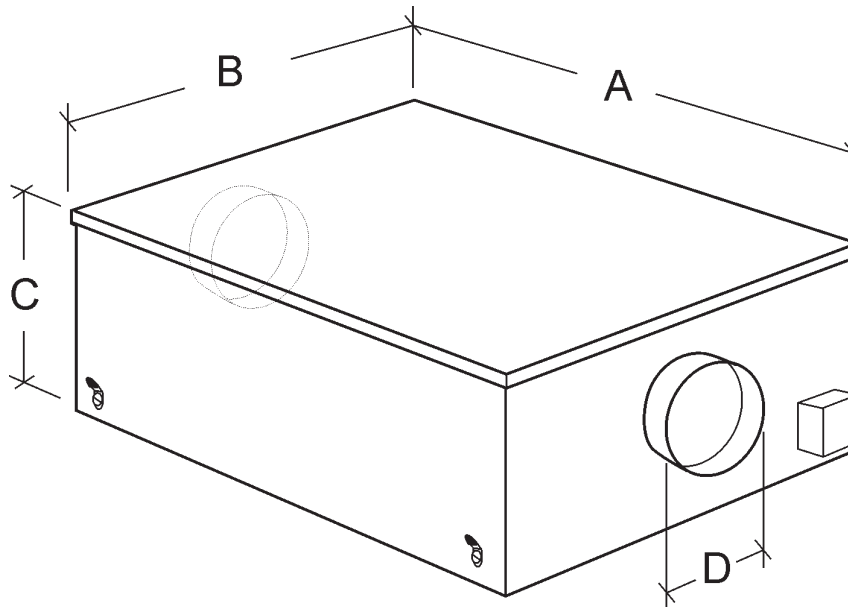
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
 Direct Drive, Single Phase**
 Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 03 -

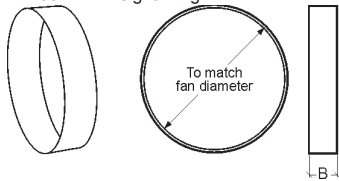


A	B	C	D	kg
1,495	1,125	710	500	162

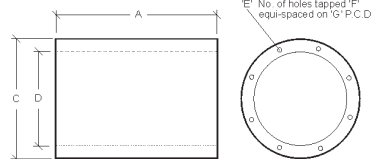
The drawing is for dimensional purposes only. Dimensions in mm.

Ancillary Dimensions

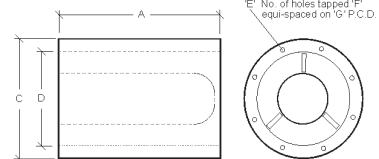
CFC50 - Flexible connector
 B=150 mm Weight: 1 kg



CA50L - Long silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 42 kg



CA50LP - Long podded silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 61 kg



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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST18C-X**
 Installation Manual Links: 671143
 Required Duty: 0.99 m³/s @ 275 Pa
 Addition for Ancillaries: +1 Pa
 Actual Duty: 1.557 m³/s @ 680 Pa
 Actual Duty inc Ancil's: 1.553 m³/s @ 681 Pa

When Speed Controlled to Required Duty (63.7%):

Fan Input Power: 0.75 kW
Motor Input Power: 0.866 kW
Specific Fan Power: 0.874 W/(l/s)

Motor Efficiency: 86 %
 Fan Efficiency: 37 %
 Fan Input Power: 2.899 kW
 Maximum Fan Input Power: 3.214 kW
 Motor Input Power: 3.343 kW
 Specific Fan Power: 2.152 W/(l/s)

Nominal Fan Speed: 4 Pole 1,260 RPM
 Electrical Supply: 3 Phase
 Nominal Motor Rating: 4 kW
 Motor Current: flc: 10 A
 Motor Current: sc: 10 A

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnecter is required to isolate the fan from the electrical supply.

Max. Operating Temp.: 40°C
 Weight: 193.6 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.
 Breakout Noise (dBA): 51 dBA @ 3m (90% of Max Pa)
 Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	87	81	78	72	70	67	64	59
Induct Outlet	91	85	76	81	75	73	69	66
Breakout	86	78	72	73	62	57	50	44

Above noise calculated speed controlled to required duty (63.7%)
 For 100% Speed: +2 +3 +5 +7 +10 +10 +10 +10
 Breakout Noise (dBA): +10 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA63L:
 At all volumes -3 -6 -13 -15 -13 -9 -6

Option CA63LP:
 At all volumes -8 -13 -26 -34 -25 -22 -18

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671143 on our website.

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 04 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. (Sizes 20+ aluzinc panels on an aluminium Pentapost frame and not acoustically treated.) Fan assemblies incorporate forward curved centrifugal impellers belt driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC63

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA63L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA63LP

Podded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC63	Flexible connector
1 x CA63L	Long silencer
1 x CA63LP	Long podded silencer

CA63L - Long silencer

CA63LP - Long podded silencer

Resistance at Design: 1 Pa @ 0.99 m³/s
 Resistance at Actual: 4 Pa @ 1.553 m³/s

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This data sheet produced on 12 Jan 2012 16:18 using software version 2.5.06 - 17 November 2011

Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST18C-X**

Required Duty: 0.99 m³/s @ 275 Pa

Addition for Ancillaries: +1 Pa

Actual Duty: 1.557 m³/s @ 680 Pa

Actual Duty inc Ancil's: 1.553 m³/s @ 681 Pa

When Speed Controlled to Required Duty (63.7%):

Fan Input Power: **0.75 kW**

Motor Input Power: **0.866 kW**

Specific Fan Power: **0.874 W/(l/s)**

Motor Efficiency: 86 %

Fan Efficiency: 37 %

Fan Input Power: 2.899 kW

Maximum Fan Input Power: 3.214 kW

Motor Input Power: 3.343 kW

Specific Fan Power: 2.152 W/(l/s)

Project Details

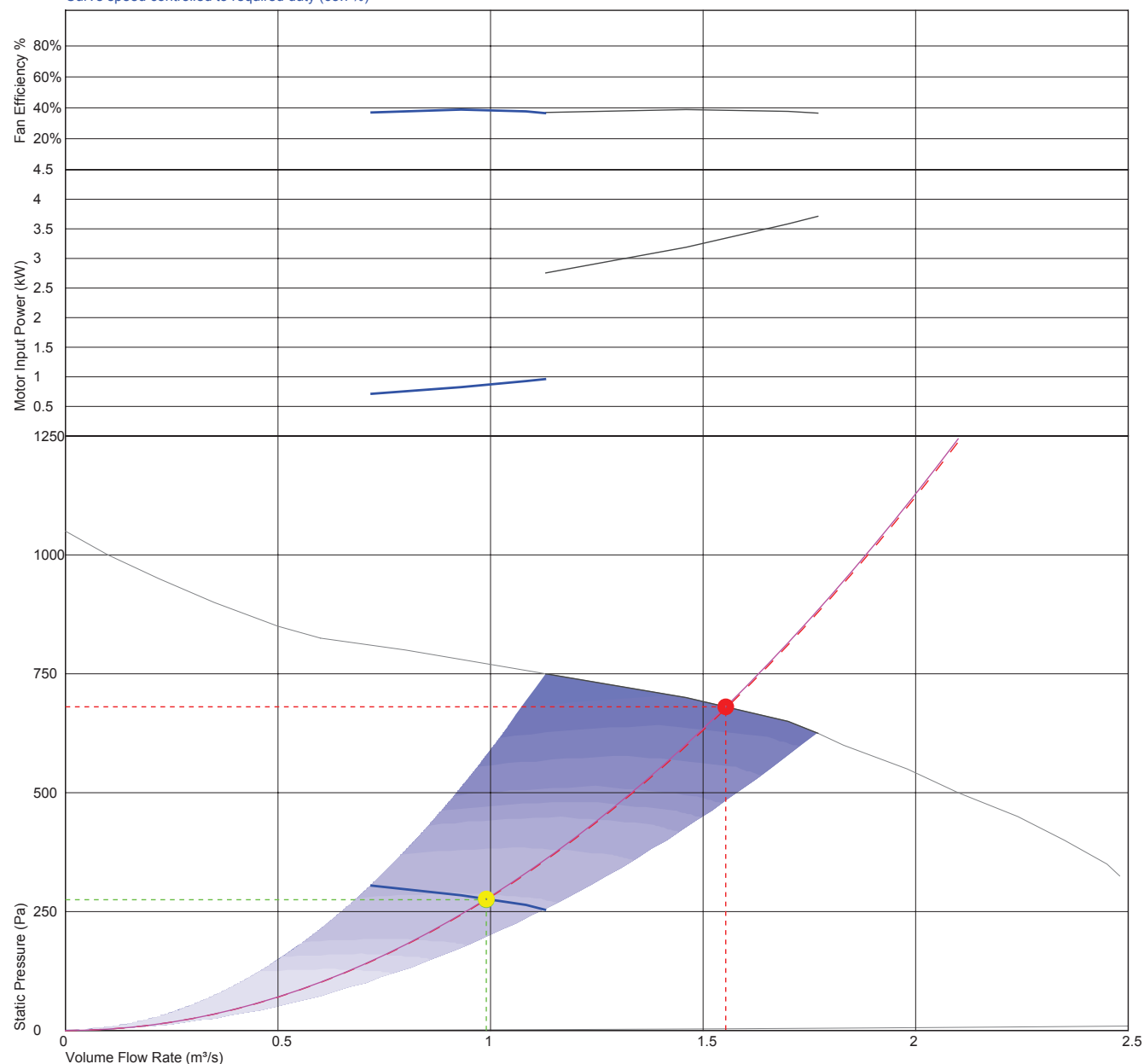
William Goodenough House

Goodenough College

Location: TEF 04 -

Performance Curve

Curve speed controlled to required duty (63.7%)



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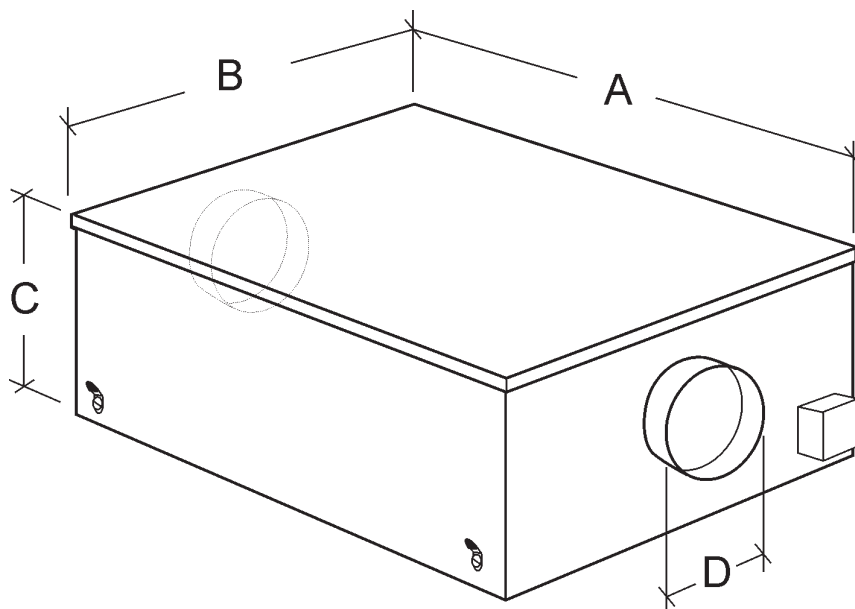
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
Belt Drive, Three Phase**
Ecosmart External Duct Mounted Twinfan

Fan Code: **EST18C-X**

Project Details

William Goodenough House
Goodenough College
Location: TEF 04 -



A
1,430

B
1,635

C
780

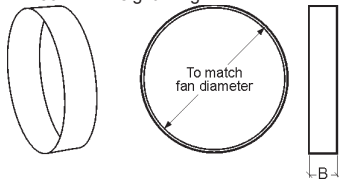
D
630

kg
193.6

The drawing is for dimensional purposes only. Dimensions in mm.

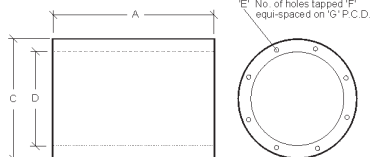
Ancillary Dimensions

CFC63 - Flexible connector
B=150 mm Weight: 2 kg



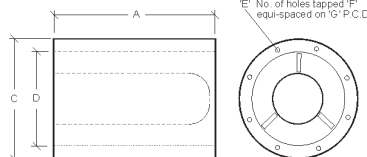
CA63L - Long silencer

A=1260 C=830 D=630 E=12 F=M10 G=690 mm
Weight: 56 kg



CA63LP - Long podded silencer

A=1260 C=830 D=630 E=12 F=M10 G=690 mm
Weight: 80 kg



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Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 12 Jan 2012 16:18 using software version 2.5.06 - 17 November 2011

Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code:	EST17C-X
Installation Manual Links:	671143
Required Duty:	1.53 m³/s @ 275 Pa
Addition for Ancillaries:	+4 Pa
Actual Duty:	1.933 m³/s @ 439 Pa
Actual Duty inc Ancil's:	1.926 m³/s @ 441 Pa
Actual at Required Flow:	1.53 m³/s @ 554 Pa

When Speed Controlled to Required Duty (79.4%):

Fan Input Power:	1.471 kW
Motor Input Power:	1.693 kW
Specific Fan Power:	1.107 W/(l/s)

Motor Efficiency:	86 %
Fan Efficiency:	30 %
Fan Input Power:	2.934 kW
Maximum Fan Input Power:	3.162 kW
Motor Input Power:	3.378 kW
Specific Fan Power:	1.754 W/(l/s)

Nominal Fan Speed:	4 Pole 1,160 RPM
Electrical Supply:	3 Phase
Nominal Motor Rating:	4 kW
Motor Current:	flc: 10 A
Motor Current:	sc: 10 A

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Max. Operating Temp.: 40°C

Weight: 193.6 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.

Breakout Noise (dBA): 55 dBA @ 3m (90% of Max Pa)

Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	88	82	81	74	73	70	68	65
Induct Outlet	92	86	81	85	81	77	75	71
Breakout	87	79	76	76	68	61	56	49

Above noise calculated speed controlled to required duty (79.4%)

For 100% Speed: +1 +2 +2 +3 +5 +5 +5 +5

Breakout Noise (dBA): +6 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA63L:

At all volumes	-3	-6	-13	-15	-13	-9	-6
----------------	----	----	-----	-----	-----	----	----

Option CA63LP:

At all volumes	-8	-13	-26	-34	-25	-22	-18
----------------	----	-----	-----	-----	-----	-----	-----

Project Details

William Goodenough House

Goodenough College

Location: TEF 05 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. (Sizes 20+ aluzinc panels on an aluminium Pentapost frame and not acoustically treated.) Fan assemblies incorporate forward curved centrifugal impellers belt driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC63

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA63L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA63LP

Podded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC63	Flexible connector
1 x CA63L	Long silencer
1 x CA63LP	Long podded silencer

CA63L - Long silencer

CA63LP - Long podded silencer

Resistance at Design:	4 Pa @ 1.53 m³/s
Resistance at Actual:	6 Pa @ 1.926 m³/s

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671143 on our website.

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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Belt Drive, Three Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST17C-X**

Required Duty: 1.53 m³/s @ 275 Pa

Addition for Ancillaries: +4 Pa

Actual Duty: 1.933 m³/s @ 439 Pa

Actual Duty inc Ancil's: 1.926 m³/s @ 441 Pa

Actual at Required Flow: 1.53 m³/s @ 554 Pa

When Speed Controlled to Required Duty (79.4%):

Fan Input Power: **1.471 kW**

Motor Input Power: **1.693 kW**

Specific Fan Power: **1.107 W/(l/s)**

Motor Efficiency: 86 %

Fan Efficiency: 30 %

Fan Input Power: 2.934 kW

Maximum Fan Input Power: 3.162 kW

Motor Input Power: 3.378 kW

Specific Fan Power: 1.754 W/(l/s)

Project Details

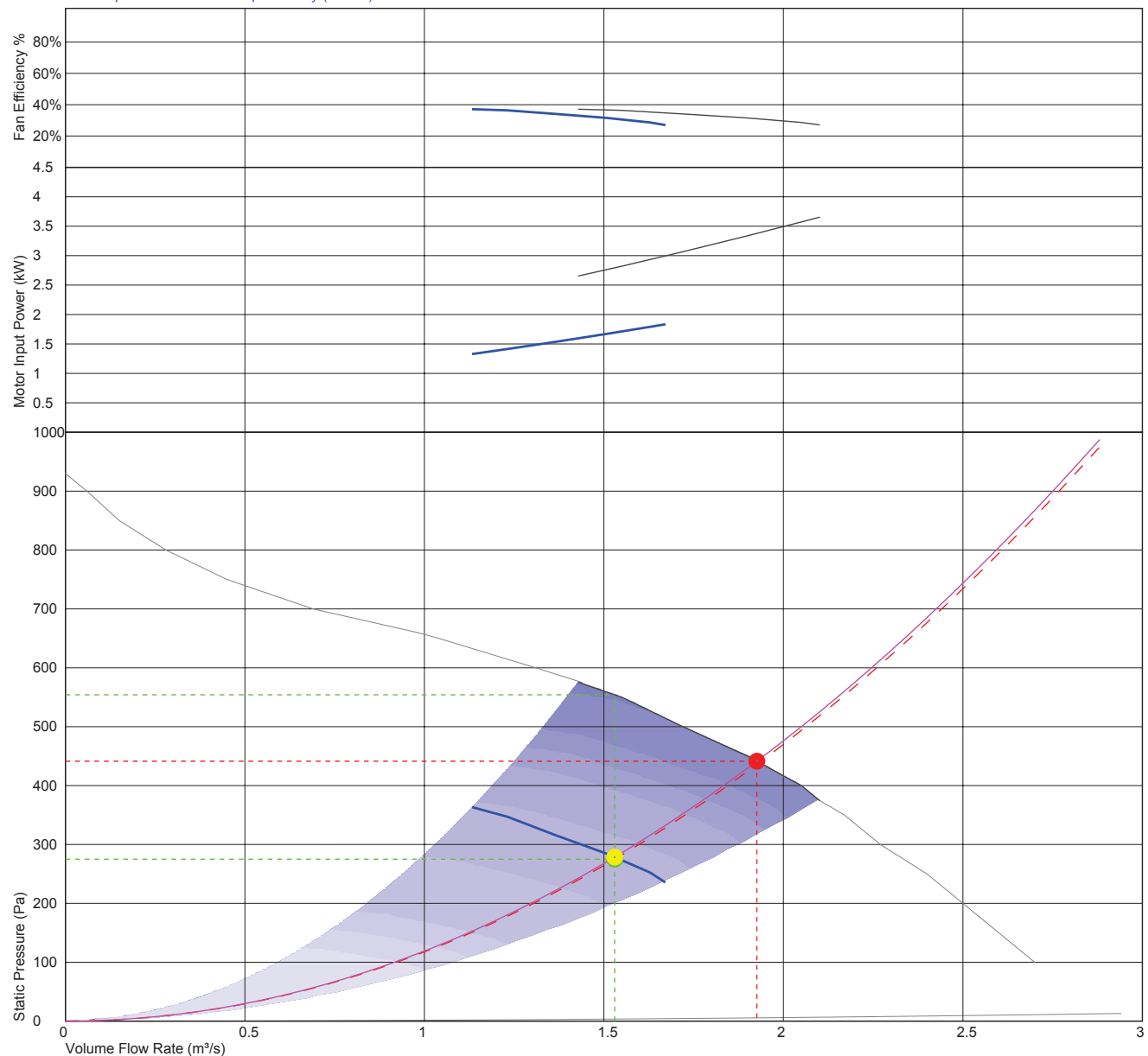
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Goodenough College

Location: TEF 05 -

Performance Curve

Curve speed controlled to required duty (79.4%)



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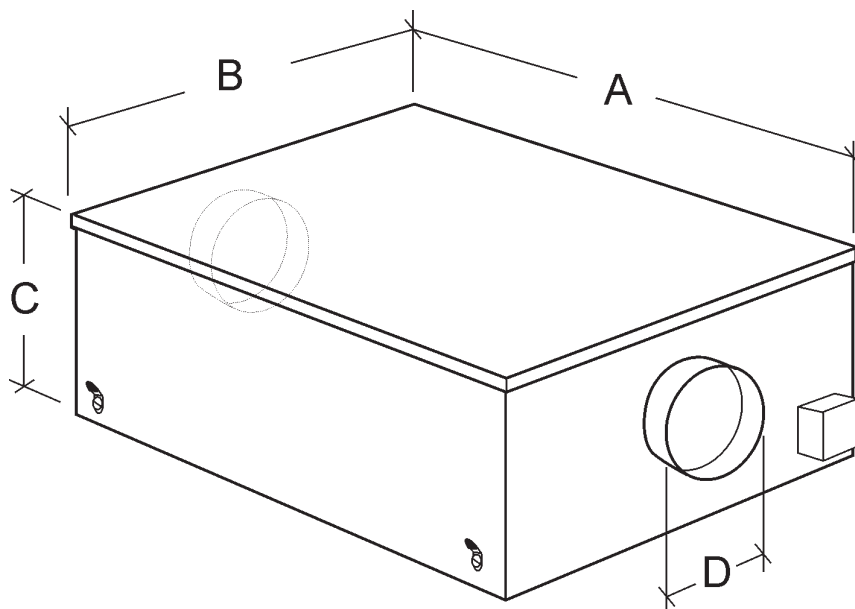
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
 Belt Drive, Three Phase**
 Ecosmart External Duct Mounted Twinfan

Fan Code: **EST17C-X**

Project Details

William Goodenough House
 Goodenough College
 Location: TEF 05 -



A
1,430

B
1,635

C
780

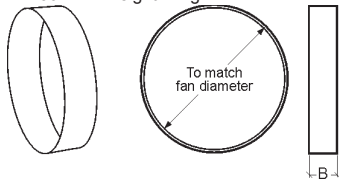
D
630

kg
193.6

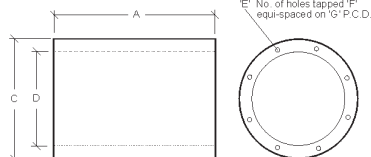
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Ancillary Dimensions

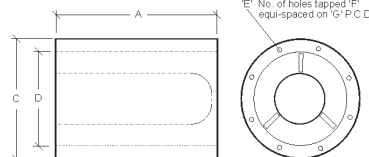
CFC63 - Flexible connector
 B=150 mm Weight: 2 kg



CA63L - Long silencer
 A=1260 C=830 D=630 E=12 F=M10 G=690 mm
 Weight: 56 kg



CA63LP - Long podded silencer
 A=1260 C=830 D=630 E=12 F=M10 G=690 mm
 Weight: 80 kg



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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan

Fan Code:	EST9H-X
Installation Manual Links:	671142
Required Duty:	0.72 m³/s @ 275 Pa
Addition for Ancillaries:	+2 Pa
Actual Duty:	0.812 m³/s @ 350 Pa
Actual Duty inc Ancil's:	0.81 m³/s @ 351 Pa
Actual at Required Flow:	0.72 m³/s @ 393 Pa

When Speed Controlled to Required Duty (88.9%):

Motor Input Power:	0.758 kW
Specific Fan Power:	1.052 W/(l/s)

Motor Input Power:	1.078 kW
Specific Fan Power:	1.331 W/(l/s)
Nominal Fan Speed:	1,065 RPM
Electrical Supply:	1 Phase
Nominal Motor Rating:	1.6 kW
Motor Current:	flc: 9.4 A
Motor Current:	sc: 9.4 A

Max. Operating Temp.: 40°C

Weight: 162 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.

Breakout Noise (dBA): 44 dBA @ 3m (90% of Max Pa)

Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	86	81	69	64	59	58	53	47
Induct Outlet	86	81	75	70	67	64	62	57
Breakout	72	71	65	62	59	57	54	52

Above noise calculated speed controlled to required duty (88.9%)

For 100% Speed: +1 +1 +1 +2 +3 +3 +3 +3

Breakout Noise (dBA): +6 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA50L:

At all volumes	-3	-4	-10	-14	-13	-10	-7
----------------	----	----	-----	-----	-----	-----	----

Option CA50LP:

At all volumes	-7	-12	-25	-32	-26	-21	-17
----------------	----	-----	-----	-----	-----	-----	-----

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671142 on our website.

Project Details

William Goodenough House

Goodenough College

Location: TEF 06 -

Specification

Ecosmart external ducted twin fan unit manufactured from aluzinc. All internal chamber surfaces are acoustically treated. Fan assemblies incorporate forward curved centrifugal impellers directly driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. The fan should be fitted with an Ecosmart control together with an inverter speed controller. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral auto-changeover/duty share, fans changeover every 12 hours of run time; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CFC50

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA50L

Unpadded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

CA50LP

Padded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC50	Flexible connector
1 x CA50L	Long silencer
1 x CA50LP	Long padded silencer

CA50L - Long silencer

CA50LP - Long padded silencer

Resistance at Design: 2 Pa @ 0.72 m³/s

Resistance at Actual: 3 Pa @ 0.81 m³/s

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Technical Data

EST-X - Ecosmart External Duct Mounted Twinfan, Direct Drive, Single Phase

Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**

Required Duty: 0.72 m³/s @ 275 Pa

Addition for Ancillaries: +2 Pa

Actual Duty: 0.812 m³/s @ 350 Pa

Actual Duty inc Ancil's: 0.81 m³/s @ 351 Pa

Actual at Required Flow: 0.72 m³/s @ 393 Pa

When Speed Controlled to Required Duty (88.9%):

Motor Input Power: **0.758 kW**

Specific Fan Power: **1.052 W/(l/s)**

Motor Input Power: 1.078 kW

Specific Fan Power: 1.331 W/(l/s)

Project Details

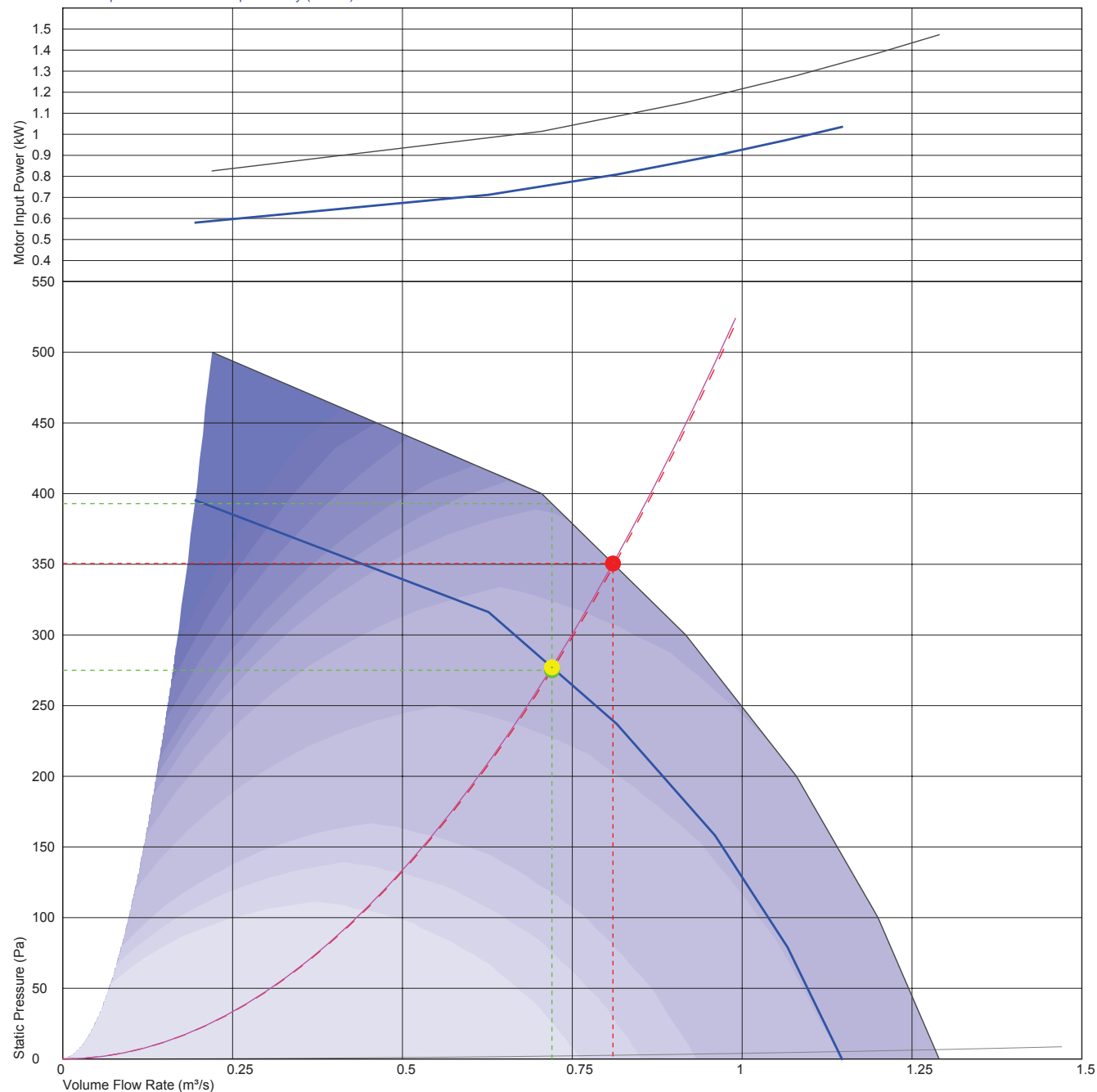
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Goodenough College

Location: TEF 06 -

Performance Curve

Curve speed controlled to required duty (88.9%)



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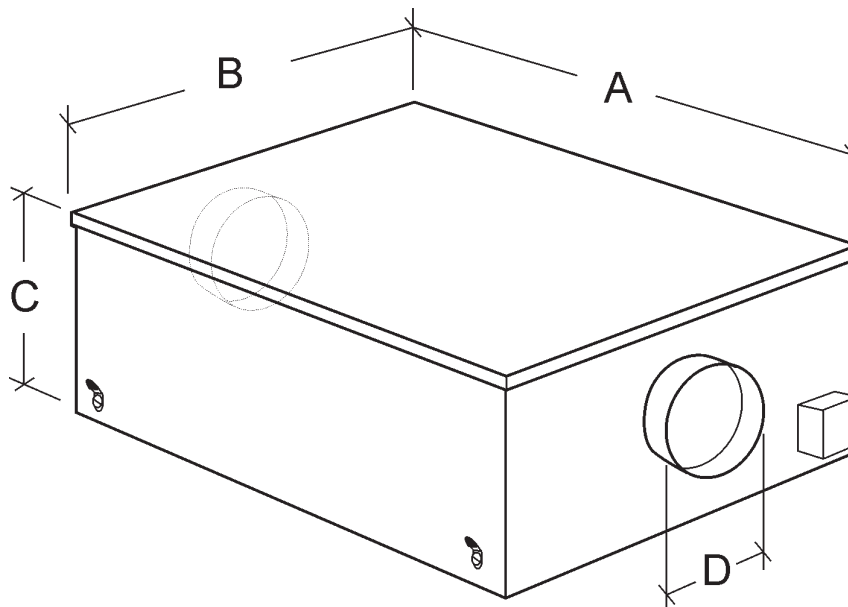
Technical Data

**EST-X - Ecosmart External Duct Mounted Twinfan,
 Direct Drive, Single Phase**
 Ecosmart External Duct Mounted Twinfan

Fan Code: **EST9H-X**

Project Details

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 Goodenough College
 Location: TEF 06 -

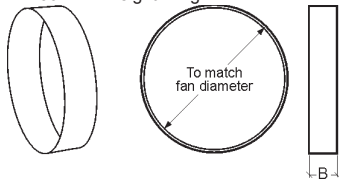


A	B	C	D	kg
1,495	1,125	710	500	162

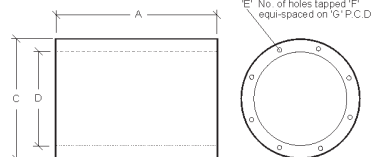
The drawing is for dimensional purposes only. Dimensions in mm.

Ancillary Dimensions

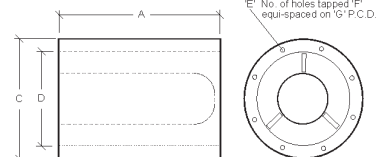
CFC50 - Flexible connector
 B=150 mm Weight: 1 kg



CA50L - Long silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 42 kg



CA50LP - Long podded silencer
 A=1000 C=700 D=500 E=12 F=M10 G=560 mm
 Weight: 61 kg



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Technical Data

ESX - Xtractor Internal Duct Mounted, Direct Drive, Single Phase Ecosmart Internal Duct Mounted

Fan Code: **ESX5ES**
 Installation Manual Links: 671158
 Required Duty: 0.17 m³/s @ 250 Pa
 Addition for Ancillaries: +0 Pa
 Actual Duty: 0.201 m³/s @ 349 Pa
 Actual Duty inc Ancil's: 0.201 m³/s @ 349 Pa
 Actual at Required Flow: 0.17 m³/s @ 358 Pa

When Speed Controlled to Required Duty (84.6%):

Motor Input Power: 0.201 kW
Specific Fan Power: 1.186 W/(l/s)

Motor Input Power: 0.332 kW
 Specific Fan Power: 1.654 W/(l/s)

Nominal Fan Speed: 1,110 RPM
 Electrical Supply: 1 Phase
 Nominal Motor Rating: 0.66 kW
 Motor Current: flc: 2.95 A
 Motor Current: sc: 2.95 A

Max. Operating Temp.: 40°C
 Weight: 75 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.
 Breakout Noise (dBA): 34 dBA @ 3m (90% of Max Pa)
 Breakout level is hemi-spherical. For spherical deduct 3 dBA.

Sound Power Levels re 1 pWatts (Hz):								
Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	72	67	56	47	45	46	44	39
Induct Outlet	80	75	66	62	64	64	61	56
Breakout	59	62	58	53	47	45	42	34

Above noise calculated speed controlled to required duty (84.6%)
 For 100% Speed: +1 +1 +2 +2 +4 +4 +4 +4
 Breakout Noise (dBA): +6 (90% of Max Pa)

Values shown are for inlet Lw and outlet Lw sound power levels for:
 Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Option CA40SP:

At all volumes -3 -7 -14 -18 -16 -11 -8

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671158 on our website.

Project Details

William Goodenough House
 Goodenough College
 Location: EF 01 -

Specification

Ecosmart internal ducted fan unit manufactured from recyclable galvanised steel to BS2989. All internal chamber surfaces are acoustically treated. Fan assemblies incorporate forward curved centrifugal impellers directly driven by BS5000 motors fitted with air flow fail monitors. Fans are suitable for operation in ambient temperatures up to 40°C. Unit may be installed up to a maximum angle of 5°. (Care must be taken to ensure the back draught dampers operate correctly).

CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

(ES)

Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

CA40SP

Podded attenuator shall be rigidly constructed from galvanised steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanised steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTME 477. Attenuator shall be suitable for internal and external use at any installed angle.

Selected Ancillaries

2 x CFC40 Flexible connector
 2 x CA40SP Standard podded silencer

CA40SP - Standard podded silencer

Resistance at Design: 0 Pa @ 0.17 m³/s (each)
 Resistance at Actual: 0 Pa @ 0.201 m³/s (each)

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Technical Data

ESX - Xtractor Internal Duct Mounted, Direct Drive, Single Phase

Ecosmart Internal Duct Mounted

Fan Code:

ESX5ES

Required Duty: 0.17 m³/s @ 250 Pa

Addition for Ancillaries: +0 Pa

Actual Duty: 0.201 m³/s @ 349 Pa

Actual Duty inc Ancil's: 0.201 m³/s @ 349 Pa

Actual at Required Flow: 0.17 m³/s @ 358 Pa

When Speed Controlled to Required Duty (84.6%):

Motor Input Power: 0.201 kW

Specific Fan Power: 1.186 W/(l/s)

Motor Input Power: 0.332 kW

Specific Fan Power: 1.654 W/(l/s)

Project Details

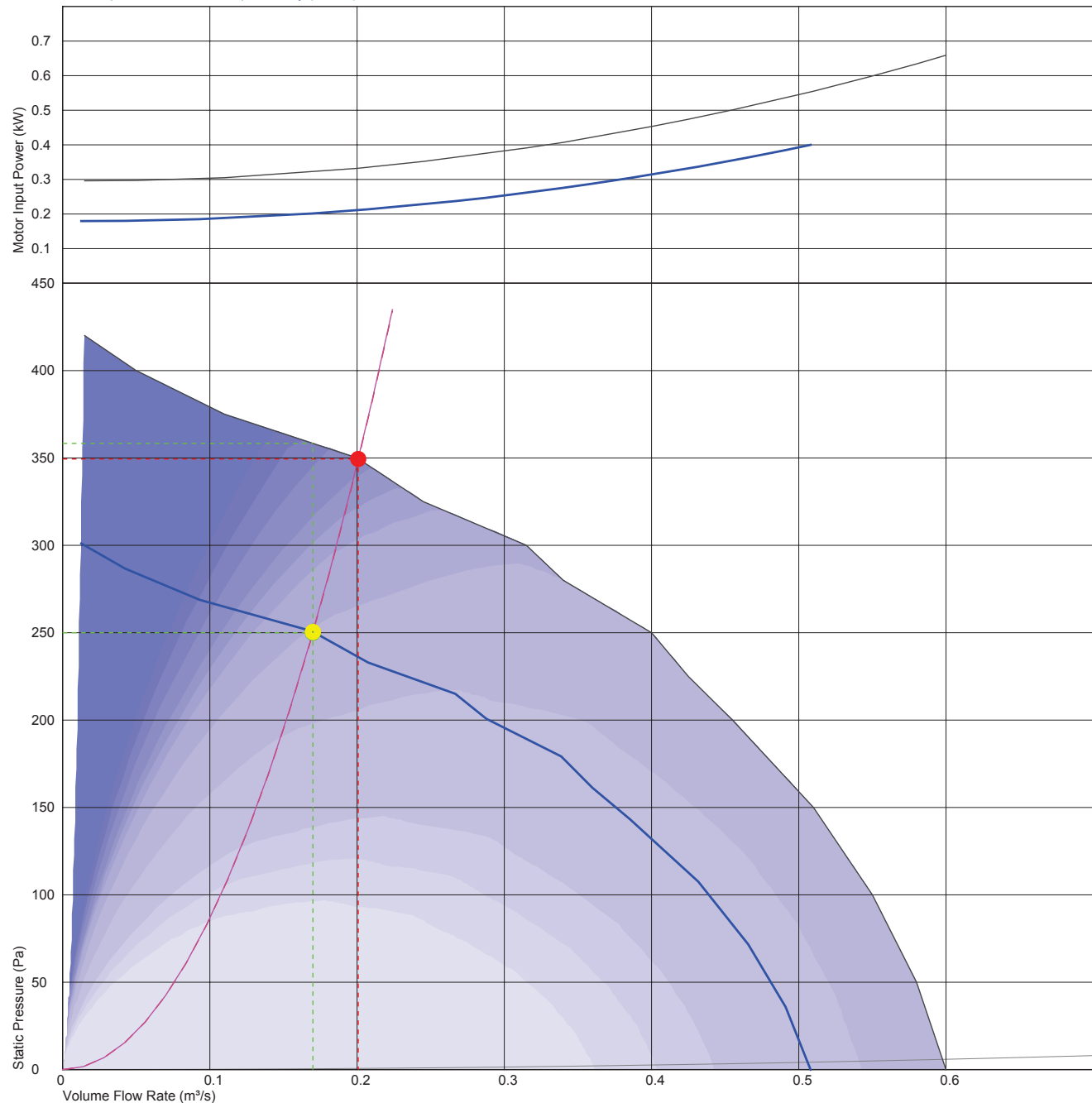
William Goodenough House

Goodenough College

Location: EF 01 -

Performance Curve

Curve speed controlled to required duty (84.6%)



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Technical Data

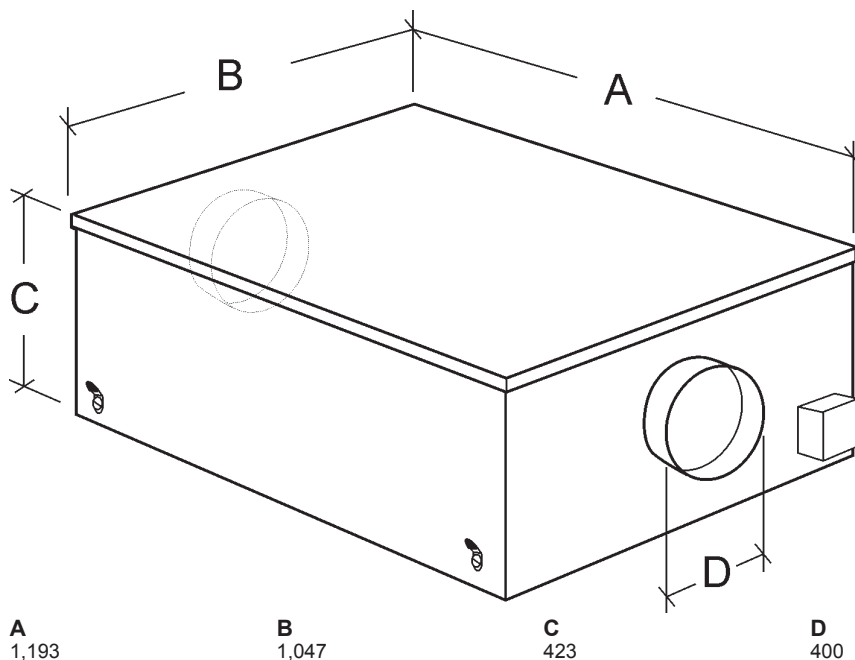
**ESX - Xtractor Internal Duct Mounted,
 Direct Drive, Single Phase**
 Ecosmart Internal Duct Mounted

Fan Code:

ESX5ES

Project Details

William Goodenough House
 Goodenough College
 Location: EF 01 -



A
1,193

B
1,047

C
423

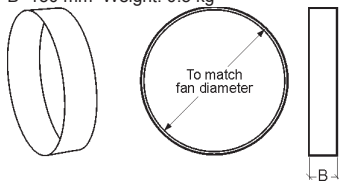
D
400

kg
75

The drawing is for dimensional purposes only. Dimensions in mm.

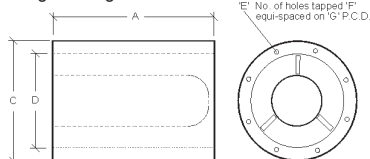
Ancillary Dimensions

CFC40 - Flexible connector
 B=150 mm Weight: 0.5 kg



CA40SP - Standard podded silencer

A=400 C=600 D=400 E=8 F=M10 G=450 mm
 Weight: 23 kg



Additional Supporting Documentation

The following pages contain these additional supporting documents:

The Ecosmart intelligent ventilation control panel from Nuaire.



ES-LCDM.
Simple touchscreen
navigation and control.

“The Ecosmart intelligent ventilation control panel from Nuaire. Who said nobody’s lifting a finger to save energy?”

Nuaire’s new intelligent control system, Ecosmart, represents the most flexible energy-saving ventilation control system on the market today.

With Ecosmart, there’s no wasted energy because air volume can be precisely set through the integrated speed control. You get ventilation on demand, only when a room is occupied, to achieve the maximum possible savings. There’s also a trickle function as standard enabling you to set a background ventilation rate to keep rooms fresh when unoccupied too while still conserving energy.

While integrated BMS features enable any central system to control and monitor the fan or air-handling unit. But that’s not all.

Because Ecosmart doesn’t just save energy.

With its state-of-the-art, easy to use touch screen control panel, it saves your client’s energy too. In fact, saving so much energy has never taken so little effort.

Ecosmart from Nuaire. It won’t cost you the earth.

ES-PIR2 (Passive Infra-Red)



ES-HUMIDISTAT2



ES-TEMP2 (Temperature Sensor)



ES-CO₂ Sensor



Call 02920 858 200 to arrange a demo
of the **NEW** Ecosmart ICP System.

