

Christie Paterson Redevelopment

Fans Technical Submission

8th October 2021
PRP-IES-ZZZ-ZZ-TS-M-0056

Compiled	Checked	Revision	Date	Notes
GT	SD	P01	08/10/21	First Issue

Paterson Redevelopment Project

Equipment:	Ref:	Date:
Fans	PRP-IES-ZZZ-ZZ-TS-M-0056	08/10/2021

Drawing Ref:	Specification Ref:
N/A	PRP-ARUP-Z01-ZZ-SP-M-0001

The Information Enclosed Within This Technical Submission Is Issued for:

Tender	Information	Comment	Procurement	Construction
☐	☒	☒	☐	☒

Issued to (where applicable):

Main Contractor	BMS Specialist	Drawing Coordinator	O&M Technical Author	ARUP	Other.....
☒	☐	☐	☐	☒	☐

Information provided encompasses the following elements (where applicable)

Building Work Requirements	Drainage Requirements	Electrical Requirements	Mechanical Requirements	BMS Requirements	Asset Register / Maintenance Required
☐	☐	☐	☐	☐	☐
Sample	Install Info	Co-ordination Info	O&M Info	Acoustic Info	Other.....
☐	☒	☐	☒	☐	☐

Technical Submission:**Introduction:**

Fans

Proposed product list:*Please provide your comments on the following proposals:***Documents 'Enclosed':**

Fans technical submission.

Compliance/VE statement(s):**Add / delete as required**

The equipment 'detailed' above is specification/ER's compliant and there are no cost (£nil) implications associated with this proposal.

Notes:

- Please be advised that in the absence of a response by the 'due date' stated below, it is our intention to proceed with the ordering/installation of the materials/equipment/systems in accordance with the enclosed technical details/quotation(s)/drawings/catalogue pages/sample(s).
- We believe that we have provided sufficient information for you to fully appraise our proposal(s), however, should you require anything further or would like to meet to discuss/review the enclosed details then please contact us.

Response required by:	15/10/2021	Raised By:	Calum Martin
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Response: (Please Feel Free To Mark Up Drawings With Any Comments)

A) No Comments	B) Minor Comments, Proceed	C) Rejected
☐	☐	☐

Response Date:	Completed By:	Signed:
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Technical Submission Register



Description	System	Location	Manufacturer	Product Reference
EF04	Nitrogen Store Extract Fan	Liquid Nitrogen Store 54-00-079	FlaktGroup	56JM/20/4/6/16
TEF01	Toilet Extract Fan	Plant 54-08-011	FlaktGroup	ACON-02793590



Fläkt Woods Limited

Technical Data Sheet

JM Aerofoil



Quotation Number : Q120132458B03
 Project Name : Q120132458B03 - Paterson Fans
 Item Reference: : EF04

Project Code : BO-2561-18
 Customer : Imtech
 Date: : Monday, March 1, 2021

Fan Code 56JM/20/4/6/16
 Fan Diameter / Size 560 Size / mm
 Blades 6
 Fan Speed 1339 rpm (Speed Controlled)
 Max / Min Motor Speed 1814 rpm (64Hz) / 558 rpm (20Hz)
 Velocity 6.6 m/s
 Blade Angle 16°
 Installation Type / Form of Running D / B (Horizontal)
 Fan Casing Long

Design Duty. 1.48m³/s @ 110 Pa (static)
 Selection Duty inc Margins. 1.63m³/s @ 133 Pa (static)
 Outlet Dynamic Pressure 26 Pa

Duty Shaft Power 0.341 kW
 Max Shaft Power 0.387 kW

Motor Frame 90S [Class F]
 Motor Rating 1.32 kW [IE2] 3 Ph
 Full Load Current 2.84 A
 Starting Current 15.6 A
 Inverter Frequency 47.14 Hz
 Motor Mounting Pad
 Electrical Supply 380-420 Volts 50 Hz 3 Phase
 Start Type DOL
 Speed Control IDDXF66 - 3/3 - Inverter
 Motor Winding Standard
 Enclosure Standard All

ErP [FMEG] Rating N 64 (ErP Compliant 2015)
 ErP [FMEG] Target N 64
 FMEG Blade Angle [Range] 28° [10° - 32°]
 Measurement Category D (Total)
 VSD Y
 Motor Input Power (ErP) 0.833 kW

SFP value 0.28 W/(l/s) @ Requested Duty
 Power from mains 0.46 kW

Air Density 1.2 kg/m³ / 20 °C / 0 m / 50% RH
 Smoke Venting Non Smoke Venting
 Product Number EJ591478

SUITABLE FOR INTERNAL/EXTERNAL MOUNTING

UNIT CONTROLS SUPPLIED LOOSE FOR WIRING ON SITE (SUITABLE FOR EXTERNAL MOUNTING)

THE SELECTION INCLUDES THE RELEVANT 110% ON FLOW RATE & 121% ON PRESSURE

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3m**
Inlet*	66	76	73	72	71	66	64	59	80	55
Outlet*	68	77	74	72	71	66	64	60	81	55
Breakout*	58	56	48	47	46	39	45	36	61	31

* Lw dB re 10-12W ** dBA re 2x10-5 Pa
 Sound data at requested duty.

Description	Qty
Fan	
56JM/20/4/6/16	1
Accessories	
897722 - Set of Mounting Feet (2)	1
AS035471 - Rubber Anti Vibration Mounts (set)	1
501355 - Matching Flange	2
414901 - Flex connector c/w 2 clips (less Flanges)	2
Controllers & Sensors	
EA901073 - IDDXF66 - 3/3 - Inverter	1
Estimated Despatch : 4 Weeks	

Website: www.flaktwoods.co.uk/woods

Email: andy.window@flaktgroup.com

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Selection Engine: 3.1.3.45p-x(1)(UK.3.6.0)

Printed on 01 March 2021



Fläkt Woods Limited

Speed Controller Sheet

JM Aerofoil



Quotation Number : Q120132458B03
Project Name : Q120132458B03 - Paterson Fans
Item Reference: : EF04

Project Code : BO-2561-18
Customer : Imtech
Date: : Monday, March 1, 2021

Selection	94%
Percentage compared to 50/60 Hz	94 %
Frequency Hz	47.14 Hz
Fan Speed rpm	1339 rpm
Velocity m/s	6.6 m/s
Speed Ratio	94 %
Actual Duty m ³ /s / Pa (static)	1.63 @ 133
Outlet Dynamic Pressure Pa	26
Duty Shaft Power kW	0.341
SFP W(l/s)	0.28

Power Consumption and Emissions	
Energy Consumption kW/h	1393
Running Cost / Year	£167
Co2 Emissions (Tonnes)	794 kg

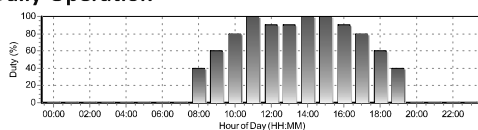
Savings	
Power Savings kWh	196
Co2 Savings (Tonnes)	112 kg

Sound Levels Hz	Inlet	Outlet
63	66	68
125	76	77
250	73	74
500	72	72
1k	71	71
2k	66	66
4k	64	64
8k	59	60
Lw	80	80
LpA @ 3m	55	55

Fan Details	
Fan Code	56JM/20/4/6/16
Diameter / Size	560 Size / mm
Blades	6
Blade Angle	16°
Form of Running	B
Fan Casing	Long

Motor Details	
Motor Frame	90S
Motor Efficiency	IE2
Motor Rating	1.32 kW
Full Load Current	2.84 A
Starting Current	15.6 A
Electrical Supply	380-420 Volts 50 Hz 3 Phase

Daily Operation



Inverter Drive

Inverter Type	IDDXF66 - 3/3 - Inverter
Inverter Power	1.50 kW
Inverter Current	3.70 Amps
Inverter FW Order Code	EA901073

Savings and Operation

Annual Savings	£72
Life Cost (12 Years)	£5263
Payback Period	19.4 years
Co2 per Year	562 kg



Website: www.flaktwoods.co.uk/woods

Email: andy.window@flaktgroup.com

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Selection Engine: 3.1.3.45p-x(1)(UK.3.6.0)

Tel: 07801 723212 Fax: 0161 969 4612

Printed on 01 March 2021

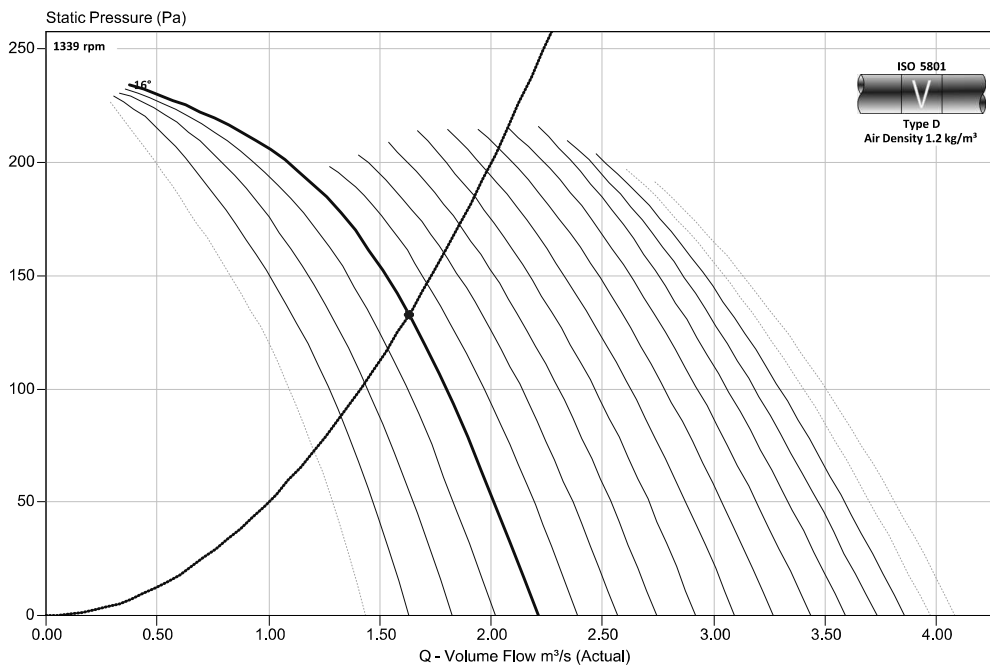
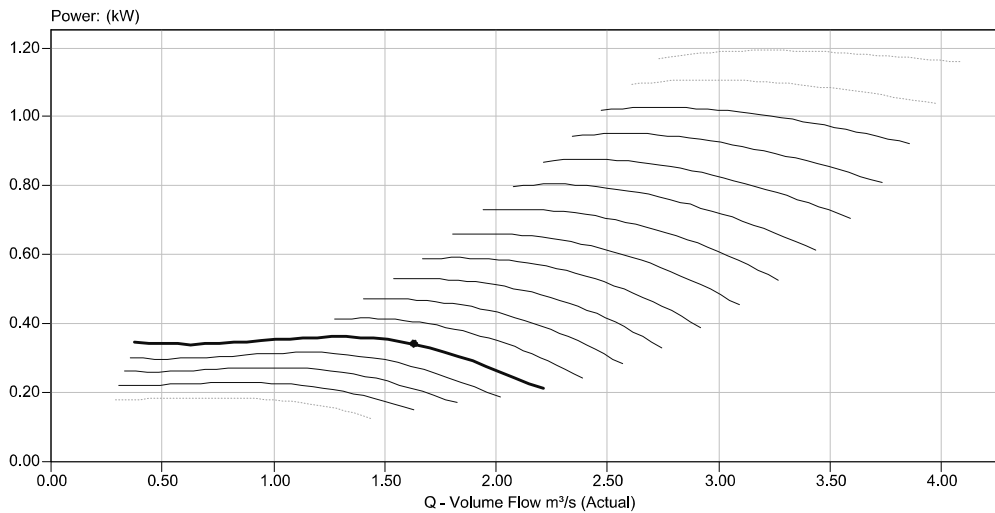


Fläkt Woods Limited
Performance Chart
JM Aerofoil



Quotation Number : Q120132458B03
Project Name : Q120132458B03 - Paterson Fans
Item Reference: : EF04

Project Code : BO-2561-18
Customer : Imtech
Date: : Monday, March 1, 2021
Fan Code : 56JM/20/4/6/16



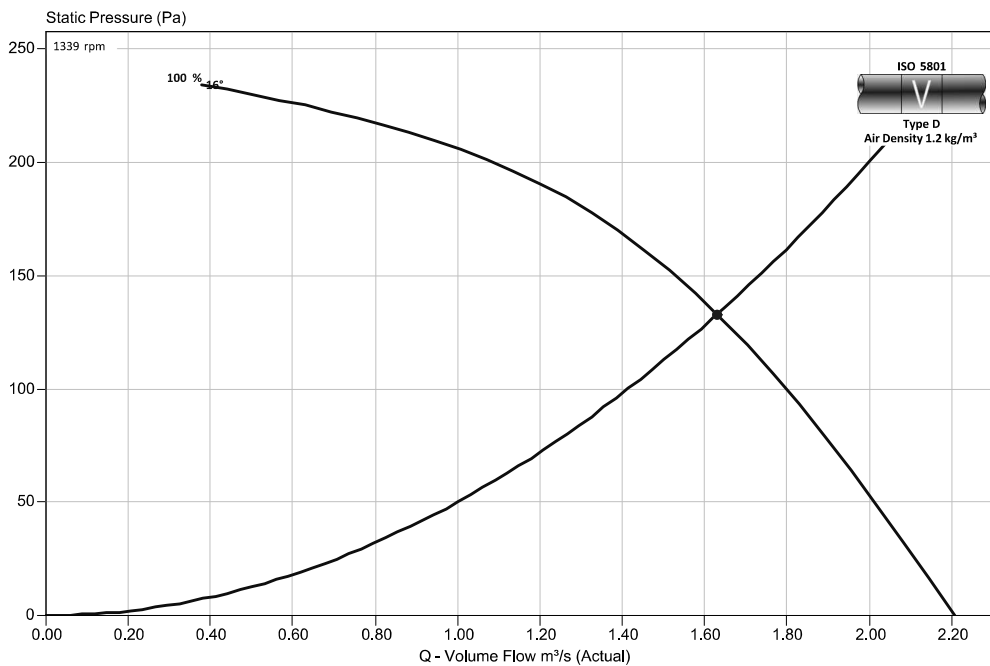
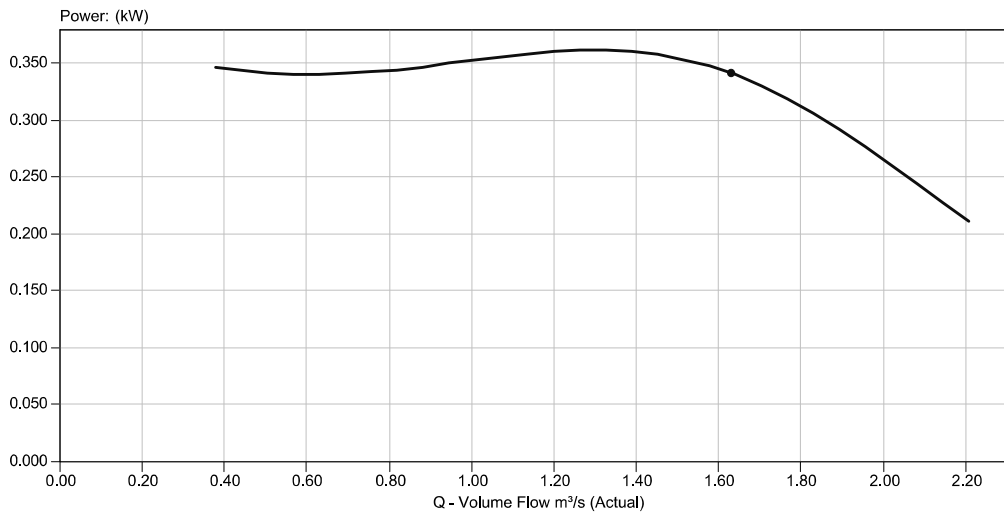


Fläkt Woods Limited
Speed Control Chart
JM Aerofoil



Quotation Number : Q120132458B03
Project Name : Q120132458B03 - Paterson Fans
Item Reference: : EF04

Project Code : BO-2561-18
Customer : Imtech
Date: : Monday, March 1, 2021
Fan Code : 56JM/20/4/6/16





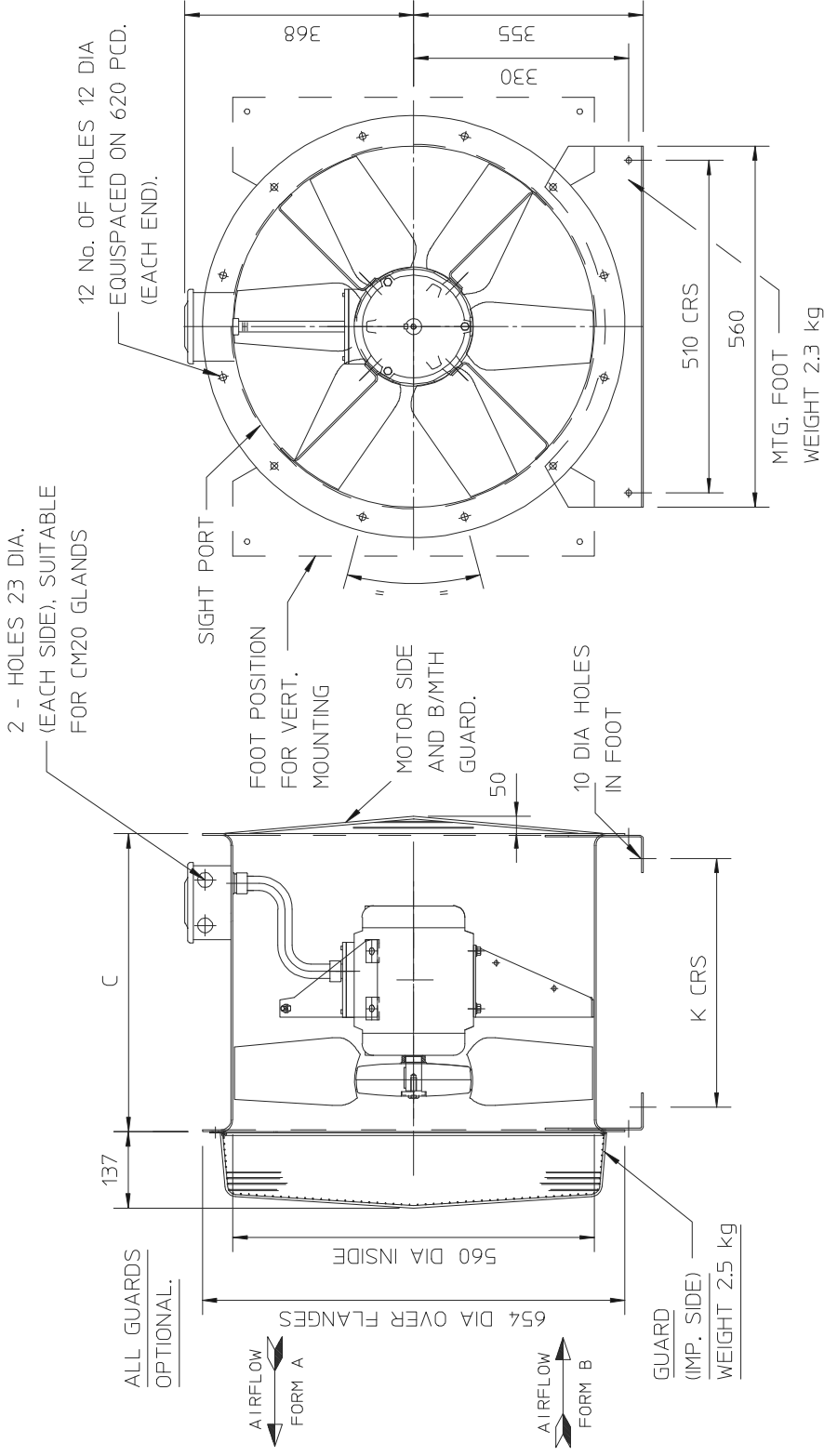
Fläkt Woods Limited
Drawing and Dimensions
JM Aerofoil



Quotation Number : Q120132458B03
Project Name : Q120132458B03 - Paterson Fans
Item Reference: : EF04

Fan Code : 56JM/20/4/6/16
Customer : Imtech
Date: : Monday, March 1, 2021

C 520
K 424
Weight (kg) 55

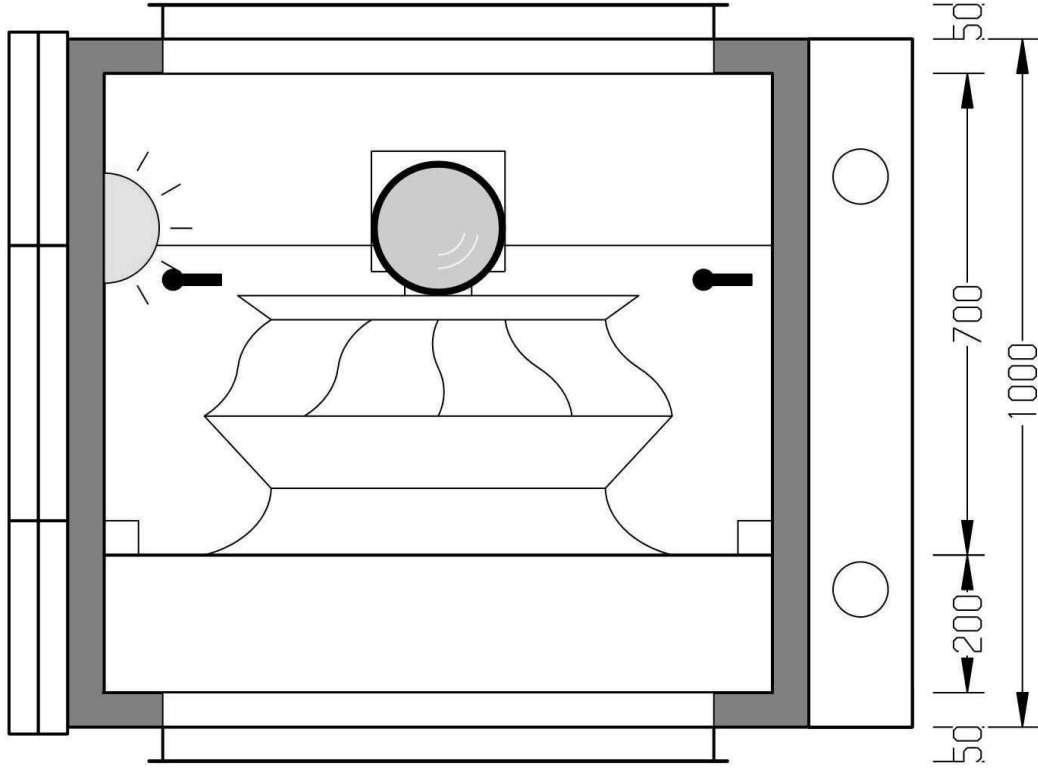


Notes : Dimensions shown in mm / Weight in kg

This drawing shows dimensions that should be used as a guide only and are subject to change. Certified drawings are available on request.

Reference :D275256

150
1076×1400
800×1100
138



800×1100
138



Customer id
Project 69028
Unit 781
AOC 337
ACON-02793490

Project name
Unit name
Supply air
Exhaust air

eQ-027

Paterson Labs AHU
TEF01 (Option 2)
2.08 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793490	
Unit	337 () / TEF01 (Option 2)	2021-04-13
Size		Page 3/8
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	0.00 m³/sec	Exhaust air volume flow rate 2.08 m³/sec
External static pressure	0 Pa	External static pressure 450 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 262 kg
Specific el. power demand (SFPv)	0.67 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

		Installation	Outdoor horizontal
		Material	AlZn sheet steel
		Thermal insulation	T3
Exhaust air volume flow rate	2.08 m³/sec	Condensation insulation	TB3
External static pressure	450 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	1 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28 °C		
Dim. humidity summer	20.4 °C wb		
Design outdoor temperature winter	-5 °C		
Dim. humidity winter	-5.2 °C wb		
Temperature in, supply air, summer	15 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	9.7 °C wb	Air humidity in, extract air, summer	14.7 °C wb
Temperature in, supply air, winter	20 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	12.4 °C wb	Air humidity in, extract air, winter	14.7 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	0.0 %	Heat recovery capacity	0.00 kW
Total dry weight	262 kg		
SFPv exhaust air inlet	0.67 kW/(m³/s)		
SFPv total sum	0.67 kW/(m³/s)	Heaviest block	262 kg

ErP (according to (EU) directive 1253/2014)



Approved according to requirements 2018

Unit type: NRVU UVU

SFPint (2016: 250 W/(m³/s), 2018: 230 W/(m³/s))

External leakage rate

31 W/(m³/s)

0.2 %

	Supply air	Extract air	Unit
Filter energy classification			
Filter pressure drop, start		21	Pa
Filter area		1.3	m²
Filter cross section air velocity		1.6	m/s
Air flow		2.08	m³/sec
Total pressure rise		451	Pa
Fan fan system effect		0	Pa
Fan total efficiency		68.1	%
Fan system input power (absorbed electrical power) according to SFP		1.41	kW

Fan system effect is taken into account in fan performance

Fan power supply data

Voltage, extract flow 3x400VAC+PE, 50Hz
Power, extract flow 2 x 2.1 kW

AIR HANDLING UNIT eQ

Project 781 () / Paterson Labs AHU Acon 2.55.47452
 AOC ACON-02793490
 Unit 337 () / TEF01 (Option 2) 2021-04-13
 Size Page 4/8

Customer Arup / Imtech
 Customers ref.
 Our ref. Andy Window / Steve Dunleavy

Supply air volume flow rate	0.00 m³/sec	Exhaust air volume flow rate	2.08 m³/sec
External static pressure	0 Pa	External static pressure	450 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight	262 kg
Specific el. power demand (SFPv)	0.67 kW/(m³/s)	Dimensioned for wet condition	
Ref. density	1.2 kg/m³	Ref. altitude above sea level	0 m

Current, full load, extract flow 2 x 2.7 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

Octave band (Hz)	Lw per octave band (dB)								LwA
	63	125	250	500	1k	2k	4k	8k	dB(A)
Extract connection	64	76	69	68	63	61	58	54	70
Exhaust connection	67	82	74	76	74	69	65	60	78
To surroundings	52	60	47	39	34	34	30	30	46

*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent.

CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, and (iii) where holes or penetrations are made in casing after delivery to site, the leakage class cannot be guaranteed. This also includes damage to the unit from handling and transportation.

Project 781 () / Paterson Labs AHU
 AOC ACON-02793490
 Unit 337 () / TEF01 (Option 2)
 Size

Acon 2.55.47452

2021-04-13

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TECHNICAL SPECIFICATION (components listed in direction of air flow)

EXHAUST AIR

End connection frame

Pressure drop, dimensioning

1 Pa

Casing end wall

EQVA-027-1-1-22-1-1

Duct connection piece

EQAZ-26-110-080-2-1-1

Width cm : 110

Height in cm : 80

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Empty section

EQTC-027-020-0-0-0-0-0-1-2

Unit size : 027

Length: 020

Inspection side : right

Plenum fan

EQLC-027-3-3-1-2-3-2-2-1-8-1-1

Inspection side: right

Fan selection

Impeller type: Bluefin (composite)

Fan size: size 3

Anti-vibration mountings: wall mounted

Motor selection

Motor type: EC-motor

Motor control

Manufacture, type: EC-motor ZA

Housing protection: IP55

Design: on motor

Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety switch with quick connection

Length: 308

Dimensioning data

Two fan wheels in parallel

Speed

1646 Rpm

Max speed

2360 Rpm

Total efficiency

68.2 %

Total static pressure, dimensioning (wet coil)

451 Pa

Dynamic pressure

12 Pa

Fan system input power (absorbed electrical power)

1.43 kW

Temperature rise

0.6 °C

K factor

20

Fan wheel size

040

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP

1.41 kW

Pressure rise

451 Pa

Speed

1633 Rpm

Motor

Motor output

2 x 2.1 kW

Electric current

2 x 2.7 A

Inspection window

EQAZ-01-1-1

Design: standard

Bulkhead light

EQAZ-09-027-2-1-2-2

Type: LED

Delivery form: Lamp supplied loose

Project 781 () / Paterson Labs AHU
AOC ACON-02793490
Unit 337 () / TEF01 (Option 2)
Size

Acon 2.55.47452

2021-04-13

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Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Duct connection piece

Width cm : 110

Height in cm : 80

Connection type: flange connection

Material: galvanized sheet steel / AlZn

STRR-2-4-0027-3-0-3-9-51-1

APAC-6-4-6-0-1-0027-308-4-0-0

STRR-4-4-0027-3-0-3-9-51-1

GAEC-040-0210-4-0-1-0-00-0-1-1

AQEA-040-0210-0-1-0-02-1-000-1

EQAZ-26-110-080-2-1-1

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793490	
Unit	337 () / TEF01 (Option 2)	2021-04-13
Size		Page 7/8

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-027-100-22-1-1-2-1-1-2-1	1100	1550	1481	2.53	262
Unit casing (frame, module)					
Model box code: EQ 2111					
Material: AlZn sheet steel					
Thermal insulation: T3					
Condensation insulation: TB3					
Leakage class: L2(R)*					
Casing strength: D1(M)					
Casing end wall					
Empty section					
Plug fan wall mounted					
				2.53	262

The dimensions are transport dimensions including packaging

*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent.

CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, and (iii) where holes or penetrations are made in casing after delivery to site, the leakage class cannot be guaranteed. This also includes damage to the unit from handling and transportation.

Project 781 () / Paterson Labs AHU
 AOC ACON-02793490
 Unit 337 () / TEF01 (Option 2)
 Size

Acon 2.55.47452

2021-04-13

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Fan chart - Exhaust air inlet - EQLC-027-3-3-1-2-3-2-2-1-8-1-1

