



DIMENSIONS

ELAND PART NO.	NO. OF CORES	NOMINAL CROSS SECTIONAL AREA mm ²	NOMINAL DIAMETER OF CONDUCTOR mm	NOMINAL THICKNESS OF INSULATION mm	NOMINAL THICKNESS OF SHEATH mm	NOMINAL OVERALL DIAMETER mm	NOMINAL WEIGHT mm
A7X010015	1	1.5	1.60	0.70	0.92	5.4	66
A7X010025	1	2.5	2.00	0.70	0.92	5.8	70
A7X010040	1	4	2.50	0.70	0.92	6.3	74
A7X010060	1	6	3.00	0.70	0.92	6.8	95
A7X01010	1	10	4.10	0.70	0.92	7.9	138
A7X01016	1	16	5.25	0.70	0.92	9.1	199
A7X01025	1	25	6.60	0.90	0.92	10.8	288
A7X01035	1	35	7.50	0.90	0.92	11.7	381
A7X01050	1	50	9.25	1.00	0.92	13.7	526
A7X01070	1	70	11.20	1.10	0.92	15.8	720
A7X01095	1	95	12.50	1.10	1.00	17.3	941
A7X01120	1	120	14.00	1.20	1.00	19.0	1183
A7X01150	1	150	15.75	1.40	1.08	21.4	1456
A7X01185	1	185	18.20	1.60	1.12	24.2	1807
A7X01240	1	240	20.00	1.70	1.16	26.4	2295
A7X01300	1	300	23.10	1.80	1.16	29.7	2846
A7X01400	1	400	26.40	2.00	1.16	33.4	3681
A7X01500	1	500	29.70	2.00	1.24	37.3	4720
A7X01630	1	630	33.00	2.00	1.56	41.2	6176
A7X020015	2	1.5	1.6	0.70	1.24	10.0	147
A7X020025	2	2.5	2.0	0.70	1.24	10.8	179
A7X020040	2	4	2.5	0.70	1.24	11.8	226
A7X020060	2	6	3.0	0.70	1.24	12.8	281
A7X02010	2	10	4.1	0.70	1.24	15.2	412
A7X02016	2	16	5.25	0.70	1.24	17.5	577
A7X02025	2	25	6.6	0.90	1.24	21.4	858
A7X02035	2	35	7.50	0.90	1.24	23.2	1092
A7X02050	2	50	9.25	1.00	1.24	27.1	1503
A7X02070	2	70	11.20	1.10	1.24	31.6	2045
A7X02095	2	95	12.50	1.10	1.40	34.8	2643
A7X02120	2	120	14.00	1.20	1.48	38.6	3318
A7X02150	2	150	15.75	1.40	1.56	43.7	4146
A7X02185	2	185	18.20	1.60	1.64	49.8	5215
A7X02240	2	240	20.00	1.70	1.80	54.2	6491
A7X02300	2	300	23.00	1.80	1.80	60.8	8079
A7X02400	2	400	26.00	2.00	2.04	67.6	10390
A7X030015	3	1.5	1.6	0.70	1.24	10.5	165
A7X030025	3	2.5	2.00	0.70	1.24	11.3	206
A7X030040	3	4	2.50	0.70	1.24	12.4	266
A7X030060	3	6	3.00	0.70	1.40	13.5	337
A7X03010	3	10	4.10	0.70	1.48	16.1	503
A7X03016	3	16	5.25	0.70	1.56	18.6	718
A7X03025	3	25	6.60	0.90	1.64	22.7	1071
A7X03035	3	35	7.50	0.90	1.24	24.7	1388
A7X03050	3	50	9.25	1.10	1.24	29.1	1919



DIMENSIONS

ELAND PART NO.	NO. OF CORES	NOMINAL CROSS SECTIONAL AREA mm ²	NOMINAL DIAMETER OF CONDUCTOR mm	NOMINAL THICKNESS OF INSULATION mm	NOMINAL THICKNESS OF SHEATH mm	NOMINAL OVERALL DIAMETER mm	NOMINAL WEIGHT mm
A7X03070	3	70	11.20	1.10	1.32	34.0	2603
A7X03095	3	95	12.50	1.10	1.40	37.2	3423
A7X03120	3	120	14.00	1.20	1.48	41.2	4316
A7X03150	3	150	15.75	1.40	1.64	46.9	5397
A7X03185	3	185	18.20	1.60	1.72	53.4	6761
A7X03240	3	240	20.00	1.70	1.88	57.9	8483
A7X03300	3	300	23.00	1.80	2.04	65.3	10583
A7X03400	3	400	26.00	2.00	2.24	73.2	13671
A7X040015	4	1.5	1.60	0.70	1.24	11.3	193
A7X040025	4	2.5	2.00	0.70	1.24	12.2	243
A7X040040	4	4	2.50	1.10	1.24	13.4	320
A7X040060	4	6	3.00	0.70	1.24	14.6	411
A7X04010	4	10	4.10	0.70	1.24	17.5	620
A7X04016	4	16	5.25	0.70	1.24	20.3	895
A7X04025	4	25	6.60	0.90	1.24	24.9	1340
A7X04035	4	35	7.50	0.90	1.24	27.3	1752
A7X04050	4	50	9.25	1.00	1.32	32.0	2449
A7X04070	4	70	11.20	1.10	1.40	37.4	3379
A7X04095	4	95	12.50	1.10	1.48	41.2	4387
A7X04120	4	120	14.00	1.20	1.64	45.9	5561
A7X04150	4	150	15.75	1.40	1.72	51.9	7091
A7X04185	4	185	18.20	1.60	1.88	59.2	8681
A7X04240	4	240	20.00	1.70	2.04	64.4	10919
A7X04300	4	300	23.00	1.80	2.20	72.6	13618
A7X04400	4	400	26.00	2.00	2.28	80.8	17511
A7X050015	5	1.5	1.60	0.70	1.24	12.3	2154
A7X050025	5	2.5	2.00	0.70	1.24	13.4	3002
A7X050040	5	4	2.50	1.10	1.24	14.7	4121
A7X050060	5	6	3.00	0.70	1.24	16.2	5390
A7X05010	5	10	4.10	0.70	1.24	19.3	6782
A7X05016	5	16	5.25	0.70	1.24	22.4	8515
A7X05025	5	25	6.60	0.90	1.24	27.5	10679
A7X05035	5	35	7.50	0.90	1.32	30.1	2154
A7X05050	5	50	9.25	1.00	1.40	35.6	3002
A7X05070	5	70	11.20	1.10	1.48	41.6	4121
A7X05095	5	95	12.50	1.10	1.64	45.9	5390
A7X05120	5	120	14.00	1.20	1.72	50.9	6782
A7X05150	5	150	15.75	1.40	1.88	57.5	8515
A7X05185	5	185	18.20	1.60	2.04	65.8	10679
A7X05240	5	240	20.00	1.70	2.20	71.6	8515
A7X05300	5	300	23.00	1.80	2.24	80.2	10679



ELECTRICAL CHARACTERISTICS

Single Core

NOMINAL CROSS SECTIONAL AREA mm²	CURRENT CARRYING CAPACITY A				MAXIMUM CONDUCTOR RESISTANCE AT 20°C Ω/km
	IN CONDUIT		IN AIR		
	FLAT	TRIPLEX	FLAT	TRIPLEX	
1.5	20	23	-	-	13.3
2.5	28	31	-	-	7.98
4	66	54	56	40	4.95
6	82	67	73	53	3.3
10	104	86	91	73	1.91
16	132	109	122	97	1.21
25	170	142	164	132	0.780
35	207	173	206	165	0.524
50	243	205	250	202	0.386
70	298	251	318	257	0.272
95	355	301	392	319	0.206
120	404	341	457	370	0.161
150	451	384	525	425	0.129
185	510	436	607	492	0.106
240	592	505	727	588	0.0801
300	668	569	838	676	0.0641
400	764	649	987	792	0.0486
500	862	726	1138	905	0.0384
630	961	810	1200	986	0.0287

Multi Core

NOMINAL CROSS SECTIONAL AREA mm ²	CURRENT CARRYING CAPACITY A	MAXIMUM CONDUCTOR RESISTANCE AT 20°C Ω/km
	IN AIR	
1,5	24	13.3
2,5	32	7.98
4	40	4.95
6	50	3.30
10	69	1.91
16	91	1.21
25	126	0.780
35	155	0.554
50	189	0.386
70	240	0.272
95	296	0.206
120	344	0.161
150	395	0.129
185	455	0.106
240	534	0.0801
300	619	0.0641
400	724	0.0486



Christie Paterson Redevelopment

Air Handling Units Technical Submission

5th May 2021

Compiled	Checked	Revision	Date	Notes
CM	AA	P01	05.05.21	First Issue

This RDD Submission is compliant with the following supporting documents:

Document Number / Series	Title	Elements Illustrated
PRP-IES-ZZZ-ZZ-TS-M-0012	Flaktgroup Technical Submittal	AHU01,02,03,04,05,06,07,08,09,10,11,12,14,15,16,17,18
PRP-IES-ZZZ-ZZ-TS-M-0012	Flaktgroup Technical Submittal	MVHR01
PRP-IES-ZZZ-ZZ-TS-M-0012	Condair Datasheet	AHU01 Humidifier

Paterson Redevelopment Project

Equipment:	Ref:	Date:
Air Handling Units	PRP-IES-ZZZ-ZZ-TS-M-0012	05/05/2021
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	Product Selection
☐	☒	☒	☐	☒	☒

Technical Submission:

Introduction:

Flaktgroup Air Handling Units & MVHR
Condair Humidifier

Proposed product list:

AHU01,02,03,04,05,06,07,08,09,10,11,12,14,15,16,17,18
MVHR01
AHU01 Humidifier

Please provide your comments on the following proposals:

Documents 'Enclosed':

AHU 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:

1. 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).
2. 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:	10/05/2021	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:

TECHNICAL SUBMISSION

AIR HANDLING UNITS

Q120132871B11

PROJECT AVERAGE - SPECIFIC FAN POWER LEVELS

Q120132871B11 / P04 Schedules / Including G4 Panel Pre-Filters



AHU	Supply Volume		Extract Volume		Specific Fan Power (W//sec)		Absorbed power kW	
	m3/sec		m3/sec		Supply	Extract	Supply	Extract
AHU01 to AHU04, AHU06 to AHU12, AHU14 to AHU18 : PROJECT AVERAGE CALCULATION								
AHU01	2.5		N/A		1.61	N/A	4.03	N/A
AHU02	2.83		N/A		1.63	N/A	4.61	N/A
AHU03	4.99		N/A		1.34	N/A	6.69	N/A
AHU04	4.99		N/A		1.34	N/A	6.69	N/A
AHU06	3.79		3.61		0.98	0.76	3.71	2.74
AHU07	4.20		2.41		1.22	0.98	5.12	2.36
AHU08	2.04		1.83		1.06	0.84	2.16	1.54
AHU09	4.19		4.09		0.88	0.76	3.69	3.11
AHU10	6.09		4.19		1.14	0.83	6.94	3.48
AHU11	4.04		3.86		0.93	0.78	3.76	3.01
AHU12	2.30		2.45		0.91	0.69	2.09	1.69
AHU14	4.84		4.73		0.95	0.84	4.60	3.97
AHU15	5.77		5.25		1.11	0.88	6.40	4.62
AHU16	5.61		5.11		1.03	0.77	5.78	3.93
AHU17	5.65		4.79		0.98	0.73	5.54	3.50
AHU18	2.50		2.25		0.92	0.70	2.30	1.58
Project totals	66.33		44.57		Project Average ALL UNITS		74.11	35.53
	m3/sec		m3/sec		SFPv (W//sec)		Total kW	Total kW

Customer id

69028

Project

781

Project name

Document

Paterson Labs AHU

Project Average Specific Fan Power Levels
Air Handling Units AHU01-04, AHU06-12, AHU14-18



PROJECT AVERAGE - SPECIFIC FAN POWER LEVELS

Q120132871B11 / P04 Schedules / Including G4 Panel Pre-Filters



AHU	Supply Volume m3/sec	Extract Volume m3/sec	Specific Fan Power (W//l/sec)		Absorbed power kW	
			Supply	Extract	Supply	Extract
AHU01 - AHU05 (NOT INCLUDED IN PROJECT AVERAGE CALCULATION)						
AHU01	2.5	N/A	1.61	N/A	4.03	N/A
AHU02	2.83	N/A	1.63	N/A	4.61	N/A
AHU03	4.99	N/A	1.34	N/A	6.69	N/A
AHU04	4.99	N/A	1.34	N/A	6.69	N/A
AHU05	4.99	N/A	1.34	N/A	6.69	N/A
AHU06-12, 14-18 (INCLUDED IN PROJECT AVERAGE CALCULATION)						
AHU06	3.79	3.61	0.98	0.76	3.71	2.74
AHU07	4.20	2.41	1.22	0.98	5.12	2.36
AHU08	2.04	1.83	1.06	0.84	2.16	1.54
AHU09	4.19	4.09	0.88	0.76	3.69	3.11
AHU10	6.09	4.19	1.14	0.83	6.94	3.48
AHU11	4.04	3.86	0.93	0.78	3.76	3.01
AHU12	2.30	2.45	0.91	0.69	2.09	1.69
AHU14	4.84	4.73	0.95	0.84	4.60	3.97
AHU15	5.77	5.25	1.11	0.88	6.40	4.62
AHU16	5.61	5.11	1.03	0.77	5.78	3.93
AHU17	5.65	4.79	0.98	0.73	5.54	3.50
AHU18	2.50	2.25	0.92	0.70	2.30	1.58
Project totals	51.02 m3/sec	44.57 m3/sec	Project Average AHU06-12, 14-18		52.10 Total kW	35.53 Total kW
			SFPv (W//l/sec)			
			1.72			

Customer id

69028

Project

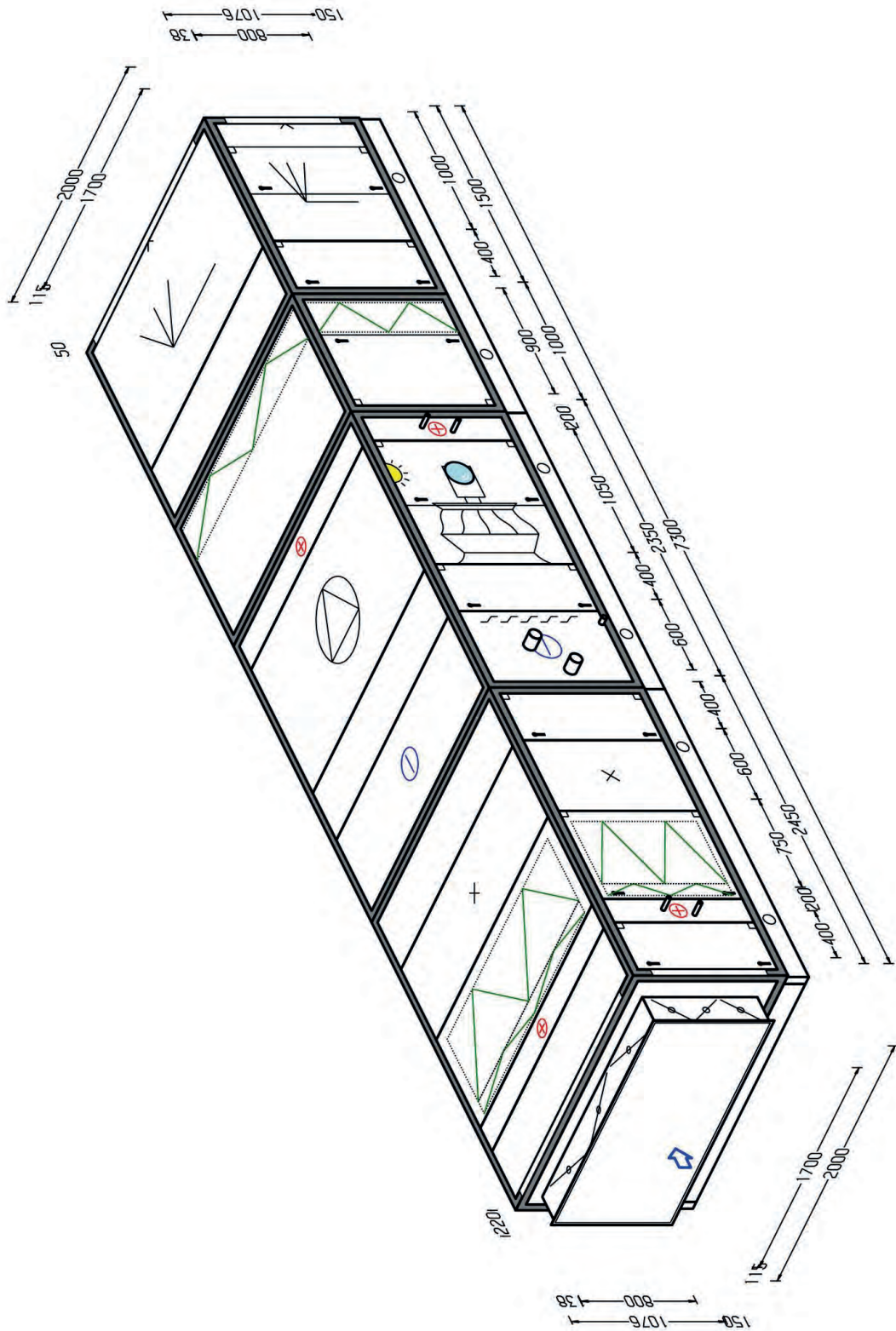
781

Project name

Document

Paterson Labs AHU

Project Average Specific Fan Power Levels
Supply & Extract AHUs 06-12, 14-18



Customer id
Project 69028
Unit 781
AOC 328
ACON-02792049

Project name
Unit name
Supply air
Exhaust air

eQ-041

(001-1) / AHU01 Surgery/Theatre
Paterson Labs AHU
2.50 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 3/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.50 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	470 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2041 kg
Specific el. power demand (SFPv)	1.51 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	2.50 m³/sec	Installation	Indoor horizontal
External static pressure	470 Pa	Material	AlZn sheet steel
Internal static pressure	533 Pa	Thermal insulation	T3
		Condensation insulation	TB3
		Leakage class	L1(M) / L2(R)*
		Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	44.2 %		
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	90 %		
Temperature in, supply air, summer	9 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	100 %	Air humidity in, extract air, summer	50 %
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	18.4 %	Air humidity in, extract air, winter	35 %
Mixing ratio at winter design temperature	0 %		
SFPv supply air	1.51 kW/(m³/s)	Total dry weight	2041 kg
SFPv total sum	1.51 kW/(m³/s)	Heaviest block	795 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

52 W/(m³/s)

0.9 %

	Supply air	Extract air	Unit
Filter energy classification	B		
Filter pressure drop, start	31		Pa
Filter area	1.8		m²
Filter cross section air velocity	1.4		m/s
Air flow	2.50		m³/sec
Total pressure rise	886		Pa
Fan fan system effect	0		Pa
Fan total efficiency	60.6		%
Fan system input power (absorbed electrical power) according to SFP	3.78		kW

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 4/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.50 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	470 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2041 kg
Specific el. power demand (SFPv)	1.51 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Preheater	28.8	-4.5/90	5/43.2	45/35		0.69	10.2	25
Air cooler	86.2	28.5/44.2	9/100	6/12		3.42	12.3	80
Air heater	33.2	5/20.7	16/10	45/35		0.8	10.6	25

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz
Power, supply flow	7.5 kW
Current, full load, supply flow	14.9 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	68	76	69	62	65	62	56	53	69
Supply air connection	76	81	75	78	76	69	62	55	80
To surroundings	61	66	56	44	48	47	41	30	55

*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	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 5/11

TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning 2 Pa

Casing end wall

Damper

Width cm : 170
Height in cm : 080
Tightness class : CEN 3
Connection: Flange
Function : Outdoor air
Location: externally end wall
Damper type: 200 mm blade
Material : ALZn

Empty section

Unit size : 041
Length: 040
Inspection side : right

Frost-protected air heater

Use as: frost coil +5 °C
Size: 41
Material, coil: Cu/Al, MS header
Material: galvanized sheet steel
Inspection side: right
Nom. pipe size 25
Pressure drop, dimensioning 11 Pa
Output 28.8 kW
Air temperature -4.5 / 5 °C
Water temperature 45 / 35 °C
Water flow 0.69 l/s
Pressure drop water 10.2 kPa

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters 3x592x592, 3x592x287
Pressure drop, start 53 Pa
Pressure drop, dimensioning 106 Pa
Pressure drop, end 160 Pa
Face area 1.6 m²
Face velocity 1.6 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Pressure range, second sensor: 0-250 Pa
Design: flush mounted in door

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 6/11

SUPPLY RUN AROUND - ECOTERM liquid-coupled heat exchangers

Size: 041
 Finned heat exchanger: supply air, heat exchanger
 Coil Calculation Variant: Modine
 Design: normal face area
 Number of the rows: 6
 Fin spacing: 2.5 mm
 Fluid passes: 24
 Material, coil: Cu/Al, Cu header
 Material: galvanized sheet steel
 Inspection side: right

Coil Data

Nom. pipe size	25
Ethylene glycol	30 %
Pressure drop, dimensioning	55 Pa

Output	42.8 kW
Air temperature	-4.5 / 9.6 °C
Water temperature	15.2 / 3.3 °C
Water flow	0.93 l/s
Pressure drop water	93 kPa

Empty section

Unit size : 041
 Length: 040
 Inspection side : right

Air cooler for chilled water

Size: 041
 Inspection side: right
 Material: galvanized sheet steel
 Droplet eliminator: with, plastic
 Design variant: version 3

Coil selection

Use as: Cooling Coil
 Calculation principle: input data
 Output variant: 8
 Fluid passes: 06
 Fin spacing: 2 mm
 Design: normal face area
 Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without	
Nom. pipe size	80
Liquid volume	55.8 l
Pressure drop, dimensioning	112 Pa
Pressure drop, wet coil	112 Pa
Pressure drop, dry coil	79 Pa
Output	86.2 kW
Air temperature	28.5 / 9 °C
Relative humidity	44.2 / 100 %
Face velocity	1.6 m/s
Water temperature	6 / 12 °C
Water flow	3.42 l/s
Water velocity	0.8 m/s
Pressure drop water	12.3 kPa

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 7/11

Empty section

Unit size : 041
Length: 040
Inspection side : right

Plenum fan

Inspection side: right

Fan selection

Impeller type: C-Steel Floor mounted
Fan size: size 3
Anti-vibration mountings: rubber

Motor selection

Motor type: FläktGroup IE3
IEC Size: 132

Motor control

Manufacture, type: FläktGroup separate
Housing protection: IP54
Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch
Length: 356

Dimensioning data

Speed	1363 Rpm
Max speed	1720 Rpm
Fan efficiency	70.8 %
Total efficiency	59.8 %
Total static pressure, dimensioning (wet coil)	1003 Pa
Dynamic pressure	30 Pa
Fan shaft power at dim. data	3.53 kW
Fan system input power (absorbed electrical power)	4.17 kW
Temperature rise	1.4 °C
K factor	9.45
Fan wheel size	063

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	3.78 kW
Pressure rise	886 Pa
Speed	1318 Rpm

Motor

Efficiency	87.1 %
Speed	1460 Rpm
Motor output	7.5 kW
Electric current	14.9 A
Number of Poles	4
Operating frequency at frequency control	46.7 Hz
Max frequency at frequency control	59 Hz
Max speed at frequency control	1720 Rpm
Output margin, minimum	35 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Bulkhead light

Type: LED
Delivery form: Lamp fitted with cable to outside of casing if there is a fixed panel.

Frequency converter

Motor accessories

Fan + AC motor

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 8/11

Air heater for hot water

Size: 041

Inspection side: right

Material: galvanized sheet steel

Coil selection

Calculation principle: input data

Output variant: 1

Fluid passes: 04

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Nom. pipe size

25

Liquid volume

6.6 l

Pressure drop, dimensioning

10 Pa

Output

33.2 kW

Air temperature

5 / 16 °C

Face velocity

1.5 m/s

Control principle for water heater

flow control

Water temperature

45 / 35 °C

Water flow

0.8 l/s

Water velocity

1.0 m/s

Pressure drop water

10.6 kPa

Oversizing

12.9 %

Absolute filter

Size: 041

Length: 900 mm

Location: positive pressure

Inspection side: right

Filter class: H14

Filter frame : stainless steel

Number of filters

Pressure drop, start

187 Pa

Pressure drop, dimensioning

237 Pa

Pressure drop, end

287 Pa

Face area

1.6 m²

Face velocity

1.5 m/s

Filter cassettes (set) for EQPF absolute filter

Size: 41

Filter class: H14

Filter frame : stainless steel

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-500 Pa

Design: bracket mounted on panel

Empty section

Unit size : 041

Length: 040

Inspection side : right

Humidifier

Unit size: 041

Length in cm: 100

Material: stainless sheet steel (AISI 304)

Inspection side: right

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 9/11

End connection frame

Pressure drop, dimensioning

0 Pa

Casing end wall

Duct connection piece

Width cm : 170

Height in cm : 80

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792049	
Unit	328 (001-1) / AHU01 Surgery/Theatre	2021/05/05
Size	041	Page 10/11

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-041-245-22-1-1-2-1-2-1-1 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 Frost-protected air heater Filter Special Unit Section Empty section	2500	2150	1396	7.5	634
EQGB-041-235-22-1-1-2-1-3-1-1 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) Air cooler for chilled water Empty section Plug fan floor mounted Air heater for hot water	2400	2150	1396	7.2	795
EQGB-041-100-22-1-1-2-1-3-1-1 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) Absolute filter	2550	2150	1396	7.65	612
				22.36	2041

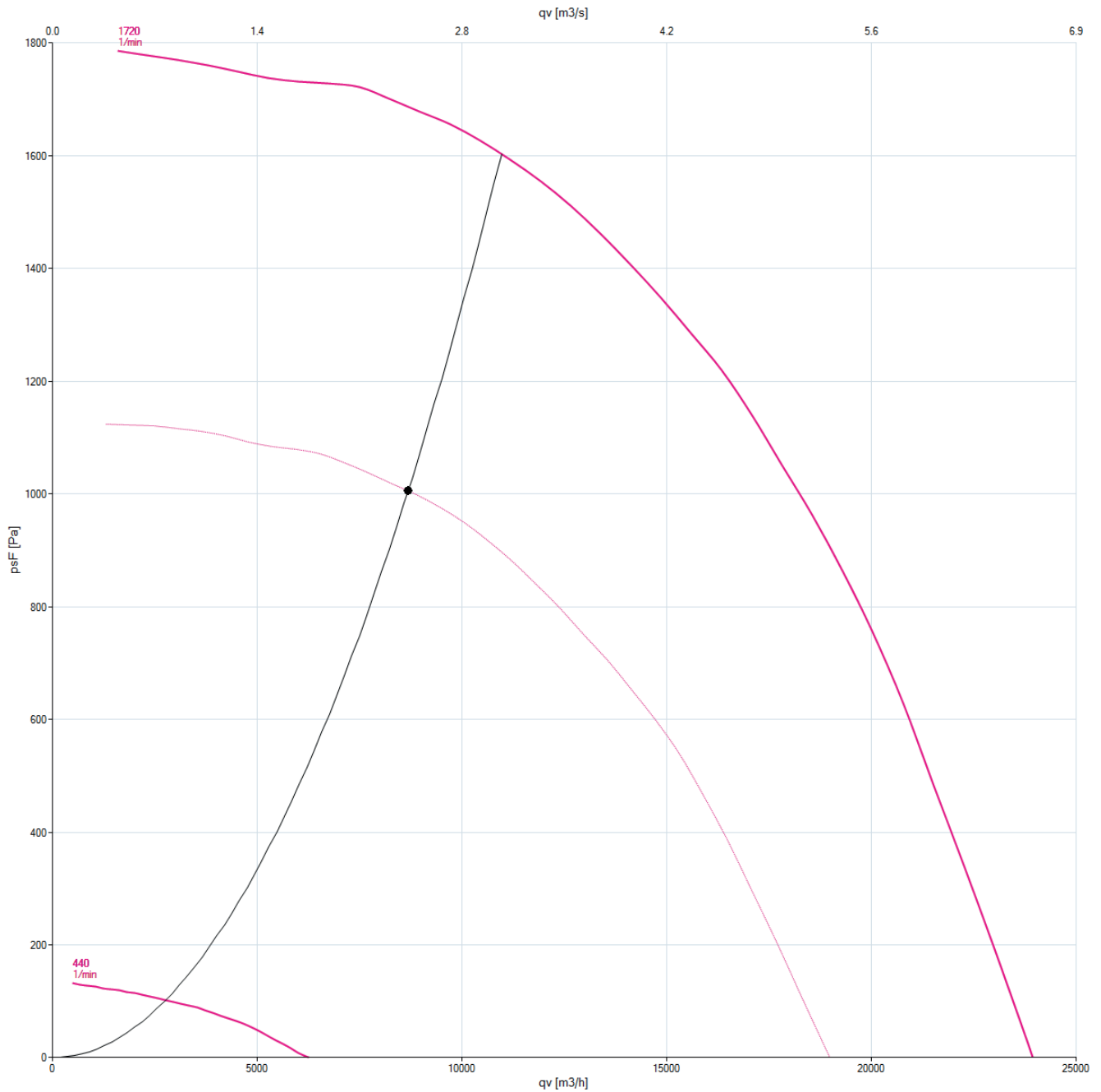
The dimensions are transport dimensions including packaging

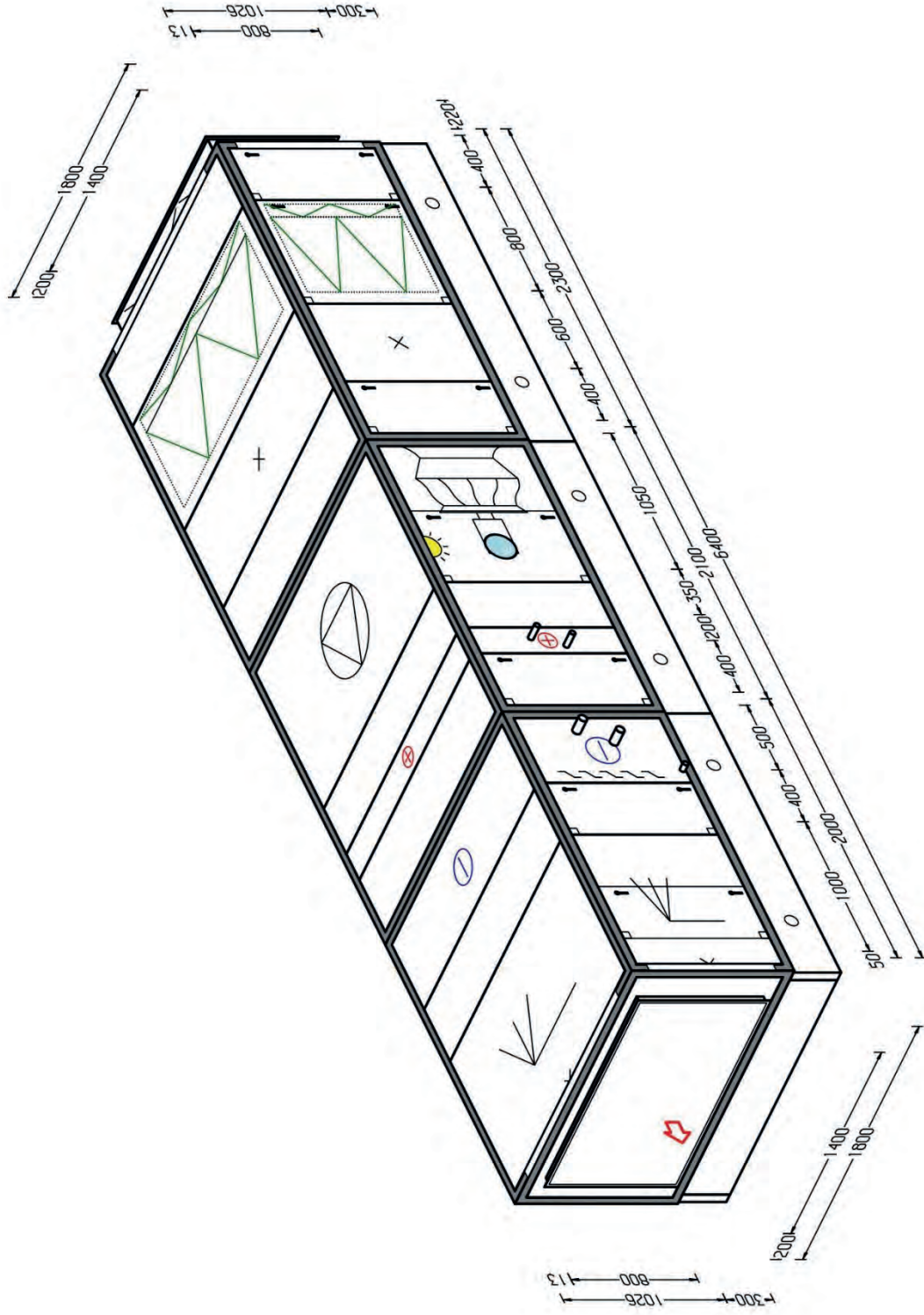
Project 781 () / Paterson Labs AHU
 AOC ACON-02792049
 Unit 328 (001-1) / AHU01 Surgery/Theatre
 Size 041

Acon 2.56.50391

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Fan chart - Supply air - EQLA-041-3-1-1-1-6-0-1-2-8-1-1





Customer id 69028
Project 781
Unit 330
AOC ACON-02792474

Project name
Unit name
Supply air
Exhaust air

eQ-032

Paterson Labs AHU
 (002-1) / AHU02 Cage Processing
 2.83 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 3/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.83 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	530 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 1609 kg
Specific el. power demand (SFPv)	1.47 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	2.83 m³/sec	Installation	Indoor horizontal
External static pressure	530 Pa	Material	AlZn sheet steel
Internal static pressure	453 Pa	Thermal insulation	T3
		Condensation insulation	TB3
		Leakage class	L1(M) / L2(R)*
		Casing strength	D1(M)
		Sum filtration supply air	ePM1 - 85.0%
Design outdoor temperature summer	28.5 °C		
Dim. humidity summer	44.2 %		
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	90 %		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	84.5 %	Air humidity in, extract air, summer	49.8 %
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	19.1 %	Air humidity in, extract air, winter	35 %
Mixing ratio at winter design temperature	0 %		
SFPv supply air	1.47 kW/(m³/s)	Total dry weight	1609 kg
SFPv total sum	1.47 kW/(m³/s)	Heaviest block	609 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

72 W/(m³/s)

0.6 %

	Supply air	Extract air	Unit
Filter energy classification	C		
Filter pressure drop, start	45		Pa
Filter area	1.6		m²
Filter cross section air velocity	1.8		m/s
Air flow	2.83		m³/sec
Total pressure rise	889		Pa
Fan fan system effect	0		Pa
Fan total efficiency	63.0		%
Fan system input power (absorbed electrical power) according to SFP	4.17		kW

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 4/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.83 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	530 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 1609 kg
Specific el. power demand (SFPv)	1.47 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	70.1	-4.5/31.5	16/7.3	45/35		1.69	12.0	32
Air cooler	56.9	28.5/44.2	16/80.4	6/12		2.26	19.3	50

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz
Power, supply flow	7.5 kW
Current, full load, supply flow	14.9 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	66	77	73	67	70	68	64	61	75
Supply air connection	76	79	77	80	79	73	66	59	82
To surroundings	57	64	56	45	48	48	43	31	55

*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-02792474
Unit 330 (002-1) / AHU02 Cage Processing
Size 032

Acon 2.56.50391

2021/05/05
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TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

3 Pa

Casing end wall

Damper

Width cm : 140
Height in cm : 080
Tightness class : CEN 3
Connection: Flange
Function : Outdoor air
Location: externally end wall
Damper type: 200 mm blade
Material : AlZn

Empty section

Unit size : 032
Length: 040
Inspection side : left

Filter

Inspection side: left

Filter selection

Filter class: F9 - ePM1 85%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters

4x392x792

Pressure drop, start

157 Pa

Pressure drop, dimensioning

232 Pa

Pressure drop, end

307 Pa

Face area

1.3 m²

Face velocity

2.3 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Pressure range, second sensor: 0-250 Pa
Design: flush mounted in door

SUPPLY RUN AROUND - ECOTERM liquid-coupled heat exchangers

Size: 032

Finned heat exchanger: supply air, heat exchanger

Coil Calculation Variant: Modine

Design: normal face area

Number of the rows: 6

Fin spacing: 2.5 mm

Fluid passes: 22

Material, coil: Cu/Al, Cu header

Material: galvanized sheet steel

Inspection side: left

Coil Data

Nom. pipe size

25

Ethylene glycol

30 %

Pressure drop, dimensioning

55 Pa

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 6/11

Output	44.1 kW
Air temperature	-4.5 / 8.4 °C
Water temperature	15.2 / 3.4 °C
Water flow	0.97 l/s
Pressure drop water	84 kPa

Empty section

Unit size : 032
Length: 040
Inspection side : left

Plenum fan

Inspection side: left

Fan selection

Impeller type: C-Steel Floor mounted
Fan size: size 3
Anti-vibration mountings: rubber

Motor selection

Motor type: FläktGroup IE3
IEC Size: 132

Motor control

Manufacture, type: FläktGroup separate
Housing protection: IP54
Design: on panel
Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch
Length: 356

Dimensioning data

Speed	1437 Rpm
Max speed	1720 Rpm
Fan efficiency	74.3 %
Total efficiency	63.8 %
Total static pressure, dimensioning (wet coil)	983 Pa
Dynamic pressure	41 Pa
Fan shaft power at dim. data	4.04 kW
Fan system input power (absorbed electrical power)	4.7 kW
Temperature rise	1.4 °C
K factor	9.45
Fan wheel size	063

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	4.17 kW
Pressure rise	889 Pa
Speed	1354 Rpm

Motor

Efficiency	88.5 %
Speed	1460 Rpm
Motor output	7.5 kW
Electric current	14.9 A
Number of Poles	4
Operating frequency at frequency control	49.2 Hz
Max frequency at frequency control	59 Hz
Max speed at frequency control	1720 Rpm
Output margin, minimum	35 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 7/11

Bulkhead light

Type: LED

Delivery form: Lamp fitted with cable to outside of casing if there is a fixed panel.

Frequency converter

Motor accessories

Fan + AC motor

Empty section

Unit size : 032

Length: 035

Inspection side : left

Air heater for hot water

Size: 032

Inspection side: left

Material: galvanized sheet steel

Coil selection

Calculation principle: input data

Output variant: 2

Fluid passes: 04

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Nom. pipe size

32

Liquid volume

11.0 l

Pressure drop, dimensioning

32 Pa

Output

70.1 kW

Air temperature

-4.5 / 16 °C

Face velocity

2.0 m/s

Control principle for water heater

flow control

Water temperature

45 / 35 °C

Water flow

1.69 l/s

Water velocity

1.2 m/s

Pressure drop water

12.0 kPa

Oversizing

19.6 %

Empty section

Unit size : 032

Length: 040

Inspection side : left

Air cooler for chilled water

Size: 032

Inspection side: left

Material: galvanized sheet steel

Droplet eliminator: with, plastic

Design variant: version 3

Coil selection

Use as: Cooling Coil

Calculation principle: input data

Output variant: 4

Fluid passes: 06

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size

50

Liquid volume

22.9 l

Pressure drop, dimensioning

89 Pa

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 8/11

Pressure drop, wet coil	89 Pa
Pressure drop, dry coil	64 Pa
Output	56.9 kW
Air temperature	28.5 / 16 °C
Relative humidity	44.2 / 80.4 %
Face velocity	2.2 m/s
Water temperature	6 / 12 °C
Water flow	2.26 l/s
Water velocity	1.1 m/s
Pressure drop water	19.3 kPa
Oversizing	17.7 %

Empty section

Unit size : 032
Length: 040
Inspection side : left

Humidifier

Unit size: 032
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: left

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 140
Height in cm : 80
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 9/11

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-032-230-22-1-1-2-1-2-1-1 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 Filter Special Unit Section Empty section	2350	1950	1496	6.86	545
EQGB-032-210-22-1-1-2-1-3-1-1 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) Plug fan floor mounted Empty section Air heater for hot water Empty section	2150	1950	1496	6.27	609
EQGB-032-200-22-1-1-2-1-4-1-1 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) Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	2050	1950	1496	5.98	455
				19.11	1609

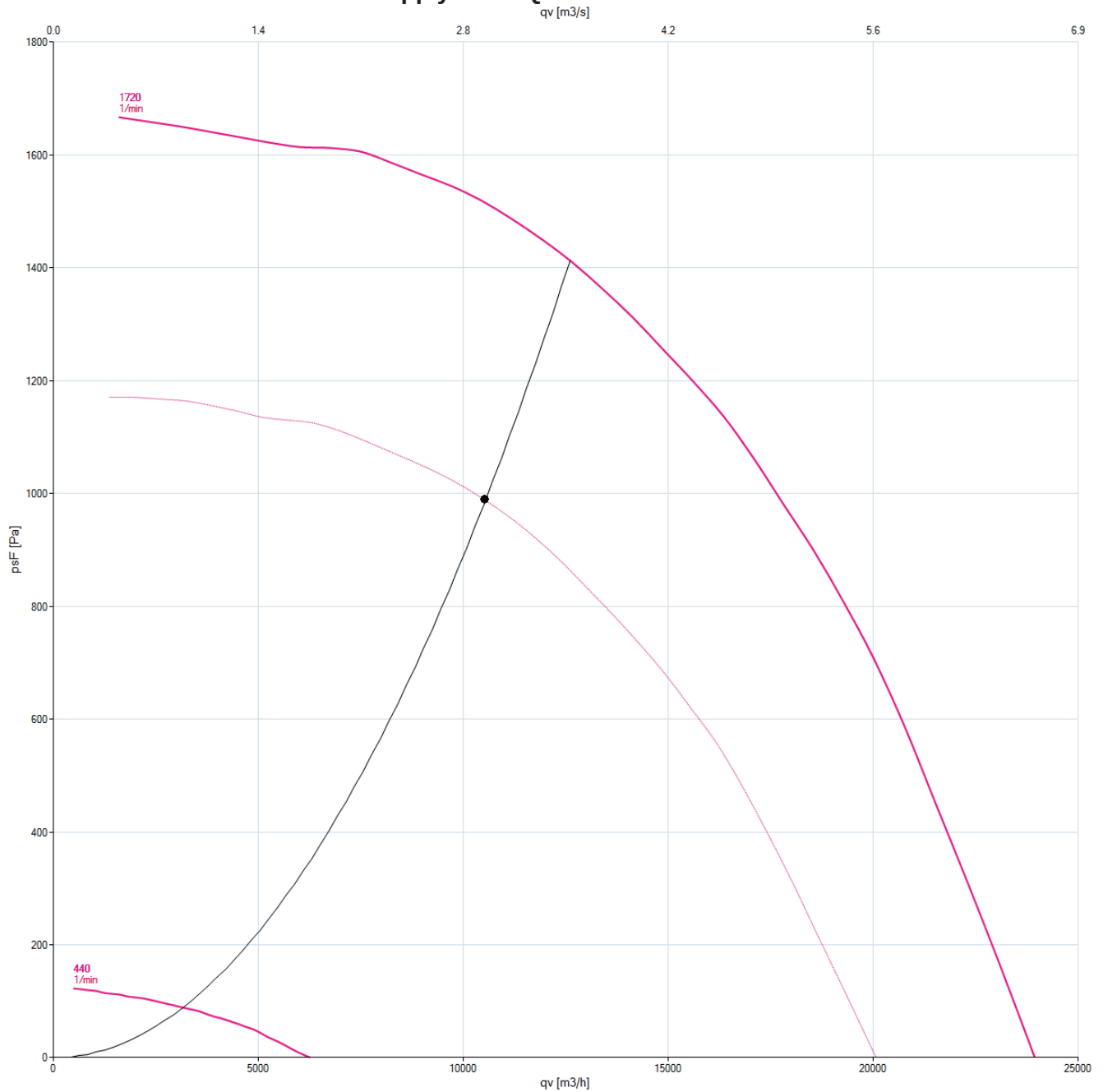
The dimensions are transport dimensions including packaging

Project 781 () / Paterson Labs AHU
 AOC ACON-02792474
 Unit 330 (002-1) / AHU02 Cage Processing
 Size 032

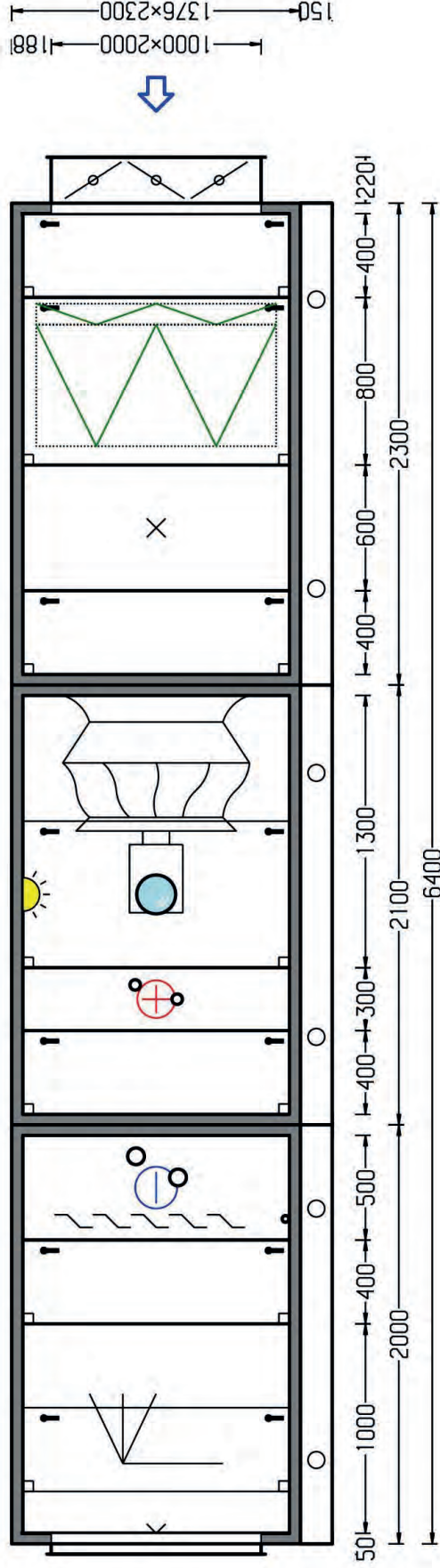
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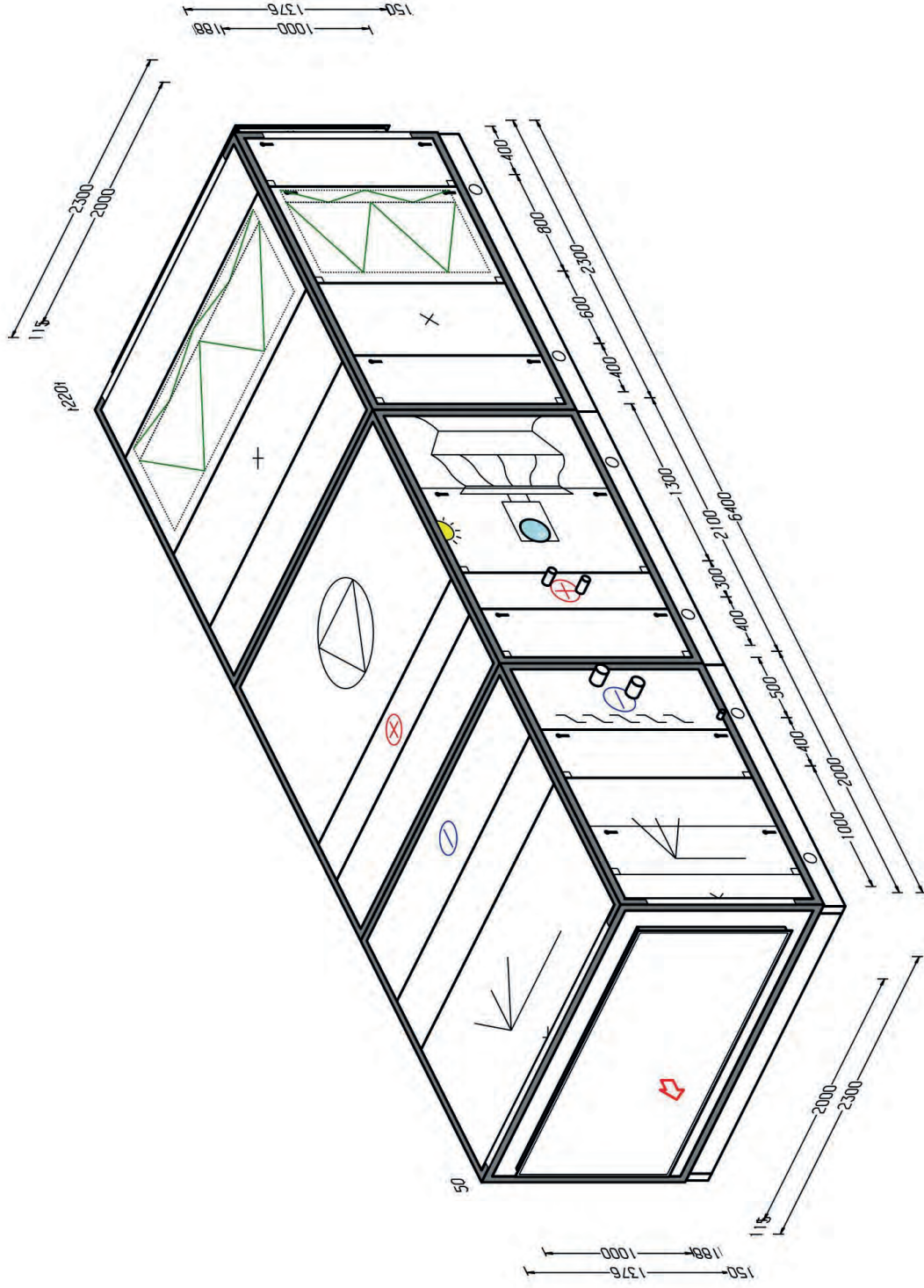
Fan chart - Supply air - EQLA-032-3-1-1-1-6-0-1-2-8-2-1



Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792474	
Unit	330 (002-1) / AHU02 Cage Processing	2021/05/05
Size	032	Page 11/11



From Inspection Side 2021/05/05 Acon 2.56.50391 Page 1/11	Customer id Project Unit AOC	69028 781 332 ACON-02792490	Project name Unit name Supply air Exhaust air	eQ-063	(003-1) / AHU03 BRU & Interstitial Paterson Labs AHU 4.99 m³/sec	FläktGroup
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Customer id
Project
Unit
AOC

69028
781
332
ACON-02792490

Project name
Unit name
Supply air
Exhaust air

eQ-063

(003-1) / AHU03 BRU & Interstitial
Paterson Labs AHU
4.99 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 3/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2201 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.99 m³/sec	Installation	Indoor horizontal
External static pressure	480 Pa	Material	AlZn sheet steel
Internal static pressure	406 Pa	Thermal insulation	T3
		Condensation insulation	TB3
		Leakage class	L1(M) / L2(R)*
		Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 85.0%
Dim. humidity summer	44.2 %		
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	90 %		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	82.6 %	Air humidity in, extract air, summer	49.8 %
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	19.1 %	Air humidity in, extract air, winter	35 %
Mixing ratio at winter design temperature	0 %		
SFPv supply air	1.22 kW/(m³/s)	Total dry weight	2201 kg
SFPv total sum	1.22 kW/(m³/s)	Heaviest block	866 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

66 W/(m³/s)

0.5 %

	Supply air	Extract air	Unit
Filter energy classification	C		
Filter pressure drop, start	45		Pa
Filter area	2.8		m²
Filter cross section air velocity	1.8		m/s
Air flow	4.99		m³/sec
Total pressure rise	795		Pa
Fan fan system effect	0		Pa
Fan total efficiency	67.4		%
Fan system input power (absorbed electrical power) according to SFP	6.11		kW

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 4/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2201 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	124	-4.5/31.4	16/7.2	45/35		2.98	14.6	50
Air cooler	99	28.5/44.2	16/81.2	6/12		3.93	11.9	80

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz
Power, supply flow	11 kW
Current, full load, supply flow	22.7 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	73	77	74	70	67	64	62	58	73
Supply air connection	76	79	77	81	75	70	65	58	81
To surroundings	64	64	57	48	45	44	41	30	54

*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-02792490
Unit 332 (003-1) / AHU03 BRU & Interstitial
Size 063

Acon 2.56.50391

2021/05/05

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TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

3 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Empty section

Unit size : 063

Length: 040

Inspection side : left

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Filter

Inspection side: left

Filter selection

Filter class: F9 - ePM1 85%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

130 Pa

Pressure drop, dimensioning

205 Pa

Pressure drop, end

280 Pa

Face area

2.5 m²

Face velocity

2.0 m/s

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 6/11

SUPPLY RUN AROUND - ECOTERM liquid-coupled heat exchangers

Size: 063
 Finned heat exchanger: supply air, heat exchanger
 Coil Calculation Variant: Modine
 Design: normal face area
 Number of the rows: 6
 Fin spacing: 2.5 mm
 Fluid passes: 18
 Material, coil: Cu/Al, Cu header
 Material: galvanized sheet steel
 Inspection side: left

Coil Data

Nom. pipe size	32
Ethylene glycol	30 % %
Pressure drop, dimensioning	88 Pa Pa
Output	79.4 kW kW
Air temperature	-4.5 / 8.6 °C °C
Water temperature	15.2 / 3.4 °C °C
Water flow	1.74 l/s l/s
Pressure drop water	84 kPa kPa

Empty section

Unit size : 063
 Length: 040
 Inspection side : left
Anti-slip protection
 Unit size : 063
 Function: Filter, Empty section
 Width: 1
 Material: aluminium
 Version: version 1

Plenum fan

Inspection side: left

Fan selection

Impeller type: Bluefin Floor mounted
 Fan size: size 3
 Anti-vibration mountings: steel spring

Motor selection

Motor type: FläktGroup IE3
 IEC Size: 160

Motor control

Manufacture, type: FläktGroup separate
 Housing protection: IP54
 Design: on panel
 Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch
 Length: 451

Dimensioning data

Speed	1130 Rpm
Max speed	1350 Rpm
Fan efficiency	79.1 %
Total efficiency	67.9 %
Total static pressure, dimensioning (wet coil)	886 Pa
Dynamic pressure	31 Pa

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 7/11

Fan shaft power at dim. data	5.99 kW
Fan system input power (absorbed electrical power)	6.98 kW
Temperature rise	1.1 °C
K factor	5.37
Fan wheel size	080

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	6.11 kW
Pressure rise	795 Pa
Speed	1061 Rpm

Motor

Efficiency	88.5 %
Speed	975 Rpm
Motor output	11 kW
Electric current	22.7 A
Number of Poles	6
Operating frequency at frequency control	58 Hz
Max frequency at frequency control	69 Hz
Max speed at frequency control	1350 Rpm
Output margin, minimum	10 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp fitted with cable to outside of casing if there is a fixed panel.

Anti-slip protection

Unit size : 063

Function: Plenum fan (EQLK)

Material: aluminium

Version: version 1

Frequency converter

Motor accessories

Fan + AC motor

Air heater for hot water

Size: 063

Inspection side: left

Material: galvanized sheet steel

Coil selection

Calculation principle: input data

Output variant: 2

Fluid passes: 04

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	28.4 l
Pressure drop, dimensioning	21 Pa
Output	124 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.5 m/s
Control principle for water heater	flow control
Water temperature	45 / 35 °C
Water flow	2.98 l/s
Water velocity	1.2 m/s
Pressure drop water	14.6 kPa
Oversizing	33.8 %

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 8/11

Empty section

Unit size : 063
 Length: 040
 Inspection side : left
Anti-slip protection
 Unit size : 063
 Function: Filter, Empty section
 Width: 1
 Material: aluminium
 Version: version 1

Air cooler for chilled water

Size: 063
 Inspection side: left
 Material: galvanized sheet steel
 Droplet eliminator: with, plastic
 Design variant: version 3
Coil selection
 Use as: Cooling Coil
 Calculation principle: input data
 Output variant: 4
 Fluid passes: 04
 Fin spacing: 2 mm
 Design: normal face area
 Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without	
Nom. pipe size	80
Liquid volume	46.2 l
Pressure drop, dimensioning	86 Pa
Pressure drop, wet coil	86 Pa
Pressure drop, dry coil	62 Pa
Output	99 kW
Air temperature	28.5 / 16 °C
Relative humidity	44.2 / 81.2 %
Face velocity	2.2 m/s
Water temperature	6 / 12 °C
Water flow	3.93 l/s
Water velocity	1.0 m/s
Pressure drop water	11.9 kPa
Oversizing	16.6 %

Empty section

Unit size : 063
 Length: 040
 Inspection side : left
Anti-slip protection
 Unit size : 063
 Function: Filter, Empty section
 Width: 1
 Material: aluminium
 Version: version 1

Humidifier

Unit size: 063
 Length in cm: 100
 Material: stainless sheet steel (AISI 304)
 Inspection side: left

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792490	
Unit	332 (003-1) / AHU03 BRU & Interstitial	2021/05/05
Size	063	Page 9/11

End connection frame

Pressure drop, dimensioning

1 Pa

Casing end wall

Duct connection piece

Width cm : 200

Height in cm : 100

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Project 781 () / Paterson Labs AHU
 AOC ACON-02792490
 Unit 332 (003-1) / AHU03 BRU & Interstitial
 Size 063

Acon 2.56.50391

2021/05/05

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BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-230-22-1-1-2-1-2-1-1 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 Filter Special Unit Section Empty section	2350	2450	1696	9.76	748
EQGB-063-210-22-1-1-2-1-3-1-1 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) Plug fan floor mounted Air heater for hot water Empty section	2150	2450	1696	8.93	866
EQGB-063-200-22-1-1-2-1-4-1-1 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) Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	2050	2450	1696	8.52	586
				27.22	2201

The dimensions are transport dimensions including packaging

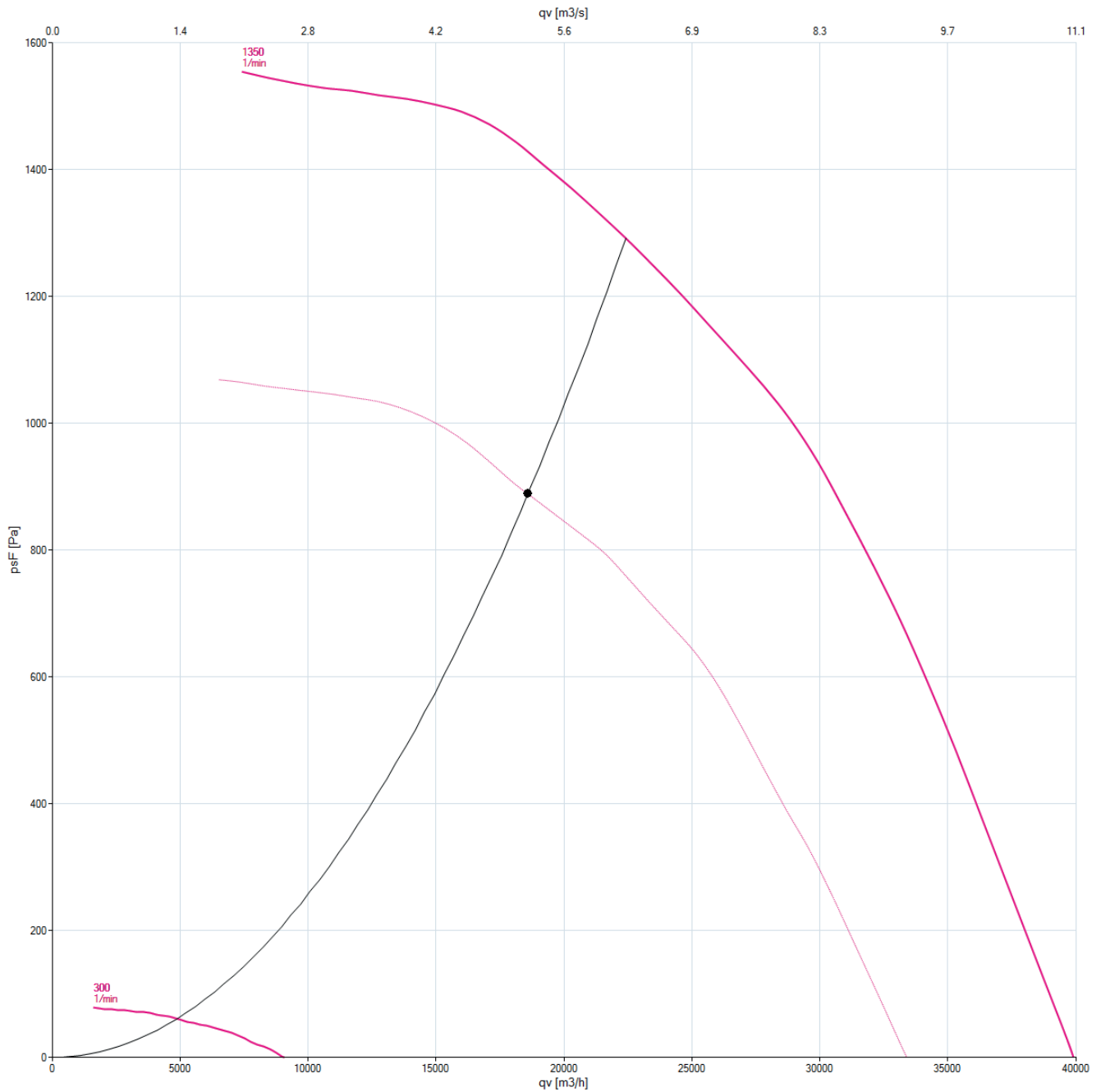
Project
AOC
Unit
Size

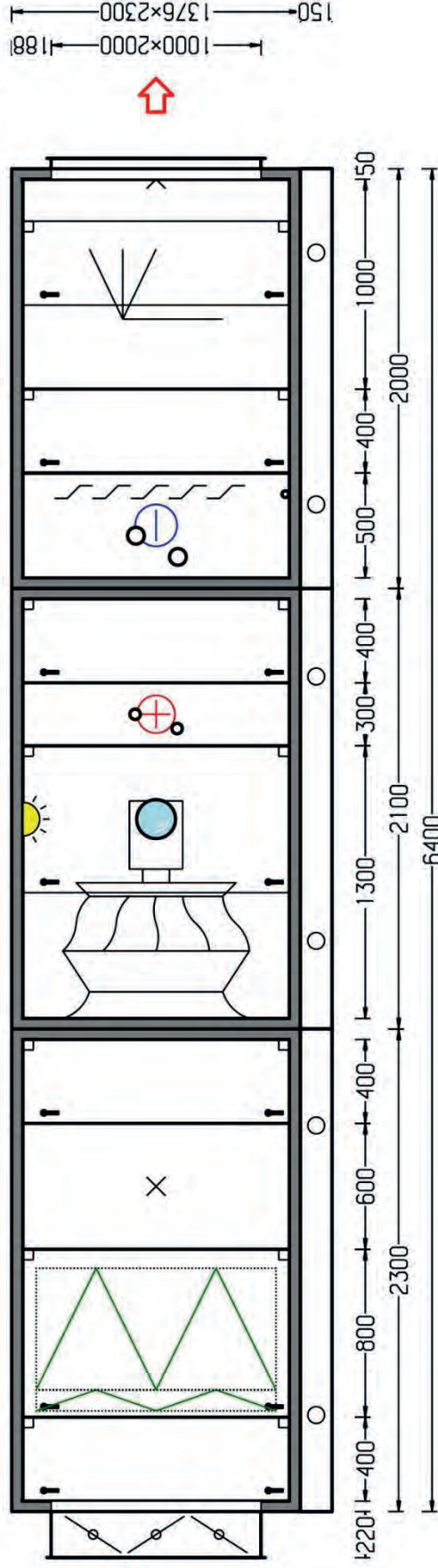
781 () / Paterson Labs AHU
ACON-02792490
332 (003-1) / AHU03 BRU & Interstitial
063

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Fan chart - Supply air - EQLA-063-3-0-1-2-5-0-1-2-8-2-1





Customer id	69028	Project name	Paterson Labs AHU (004-1) / AHU04 BRU & Interstitial 4.99 m³/sec	FläktGroup
	781			
	334			
	ACON-02792545			
Unit		Supply air	eQ-063	
AOC		Exhaust air		

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 3/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2201 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.99 m³/sec	Installation	Indoor horizontal
External static pressure	480 Pa	Material	AlZn sheet steel
Internal static pressure	406 Pa	Thermal insulation	T3
		Condensation insulation	TB3
		Leakage class	L1(M) / L2(R)*
		Casing strength	D1(M)
		Sum filtration supply air	ePM1 - 85.0%
Design outdoor temperature summer	28.5 °C		
Dim. humidity summer	44.2 %		
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	90 %		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	82.6 %	Air humidity in, extract air, summer	49.8 %
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	19.1 %	Air humidity in, extract air, winter	35 %
Mixing ratio at winter design temperature	0 %		
SFPv supply air	1.22 kW/(m³/s)	Total dry weight	2201 kg
SFPv total sum	1.22 kW/(m³/s)	Heaviest block	866 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

66 W/(m³/s)

0.5 %

	Supply air	Extract air	Unit
Filter energy classification	C		
Filter pressure drop, start	45		Pa
Filter area	2.8		m²
Filter cross section air velocity	1.8		m/s
Air flow	4.99		m³/sec
Total pressure rise	795		Pa
Fan fan system effect	0		Pa
Fan total efficiency	67.4		%
Fan system input power (absorbed electrical power) according to SFP	6.11		kW

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 4/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2201 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	124	-4.5/31.4	16/7.2	45/35		2.98	14.6	50
Air cooler	99	28.5/44.2	16/81.2	6/12		3.93	11.9	80

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz
Power, supply flow	11 kW
Current, full load, supply flow	22.7 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	73	77	74	70	67	64	62	58	73
Supply air connection	76	79	77	81	75	70	65	58	81
To surroundings	64	64	57	48	45	44	41	30	54

*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-02792545
Unit 334 (004-1) / AHU04 BRU & Interstitial
Size 063

Acon 2.56.50391

2021/05/05

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TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

3 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : ALZn

Empty section

Unit size : 063

Length: 040

Inspection side : right

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Filter

Inspection side: right

Filter selection

Filter class: F9 - ePM1 85%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

130 Pa

Pressure drop, dimensioning

205 Pa

Pressure drop, end

280 Pa

Face area

2.5 m²

Face velocity

2.0 m/s

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 6/11

SUPPLY RUN AROUND - ECOTERM liquid-coupled heat exchangers

Size: 063
 Finned heat exchanger: supply air, heat exchanger
 Coil Calculation Variant: Modine
 Design: normal face area
 Number of the rows: 6
 Fin spacing: 2.5 mm
 Fluid passes: 18
 Material, coil: Cu/Al, Cu header
 Material: galvanized sheet steel
 Inspection side: right

Coil Data

Nom. pipe size	32
Ethylene glycol	30 % %
Pressure drop, dimensioning	88 Pa Pa
Output	79.4 kW kW
Air temperature	-4.5 / 8.6 °C °C
Water temperature	15.2 / 3.4 °C °C
Water flow	1.74 l/s l/s
Pressure drop water	84 kPa kPa

Empty section

Unit size : 063
 Length: 040
 Inspection side : right

Anti-slip protection

Unit size : 063
 Function: Filter, Empty section
 Width: 1
 Material: aluminium
 Version: version 1

Plenum fan

Inspection side: right

Fan selection

Impeller type: Bluefin Floor mounted
 Fan size: size 3
 Anti-vibration mountings: steel spring

Motor selection

Motor type: FläktGroup IE3
 IEC Size: 160

Motor control

Manufacture, type: FläktGroup separate
 Housing protection: IP54
 Design: on panel
 Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch
 Length: 451

Dimensioning data

Speed	1130 Rpm
Max speed	1350 Rpm
Fan efficiency	79.1 %
Total efficiency	67.9 %
Total static pressure, dimensioning (wet coil)	886 Pa
Dynamic pressure	31 Pa

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 7/11

Fan shaft power at dim. data	5.99 kW
Fan system input power (absorbed electrical power)	6.98 kW
Temperature rise	1.1 °C
K factor	5.37
Fan wheel size	080

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	6.11 kW
Pressure rise	795 Pa
Speed	1061 Rpm

Motor

Efficiency	88.5 %
Speed	975 Rpm
Motor output	11 kW
Electric current	22.7 A
Number of Poles	6
Operating frequency at frequency control	58 Hz
Max frequency at frequency control	69 Hz
Max speed at frequency control	1350 Rpm
Output margin, minimum	10 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp fitted with cable to outside of casing if there is a fixed panel.

Anti-slip protection

Unit size : 063

Function: Plenum fan (EQLK)

Material: aluminium

Version: version 1

Frequency converter

Motor accessories

Fan + AC motor

Air heater for hot water

Size: 063

Inspection side: right

Material: galvanized sheet steel

Coil selection

Calculation principle: input data

Output variant: 2

Fluid passes: 04

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	28.4 l
Pressure drop, dimensioning	21 Pa
Output	124 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.5 m/s
Control principle for water heater	flow control
Water temperature	45 / 35 °C
Water flow	2.98 l/s
Water velocity	1.2 m/s
Pressure drop water	14.6 kPa
Oversizing	33.8 %

Project 781 () / Paterson Labs AHU
AOC ACON-02792545
Unit 334 (004-1) / AHU04 BRU & Interstitial
Size 063

Acon 2.56.50391

2021/05/05

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Empty section

Unit size : 063
Length: 040
Inspection side : right

Anti-slip protection

Unit size : 063
Function: Filter, Empty section
Width: 1
Material: aluminium
Version: version 1

Air cooler for chilled water

Size: 063
Inspection side: right
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3

Coil selection

Use as: Cooling Coil
Calculation principle: input data
Output variant: 4
Fluid passes: 04
Fin spacing: 2 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	80
Liquid volume	46.2 l
Pressure drop, dimensioning	86 Pa
Pressure drop, wet coil	86 Pa
Pressure drop, dry coil	62 Pa
Output	99 kW
Air temperature	28.5 / 16 °C
Relative humidity	44.2 / 81.2 %
Face velocity	2.2 m/s
Water temperature	6 / 12 °C
Water flow	3.93 l/s
Water velocity	1.0 m/s
Pressure drop water	11.9 kPa
Oversizing	16.6 %

Empty section

Unit size : 063
Length: 040
Inspection side : right

Anti-slip protection

Unit size : 063
Function: Filter, Empty section
Width: 1
Material: aluminium
Version: version 1

Humidifier

Unit size: 063
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: right

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 9/11

End connection frame

Pressure drop, dimensioning

1 Pa

Casing end wall

Duct connection piece

Width cm : 200

Height in cm : 100

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792545	
Unit	334 (004-1) / AHU04 BRU & Interstitial	2021/05/05
Size	063	Page 10/11

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-230-22-1-1-2-1-2-1-1 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 Filter Special Unit Section Empty section	2350	2450	1696	9.76	748
EQGB-063-210-22-1-1-2-1-3-1-1 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) Plug fan floor mounted Air heater for hot water Empty section	2150	2450	1696	8.93	866
EQGB-063-200-22-1-1-2-1-4-1-1 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) Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	2050	2450	1696	8.52	586
				27.22	2201

The dimensions are transport dimensions including packaging

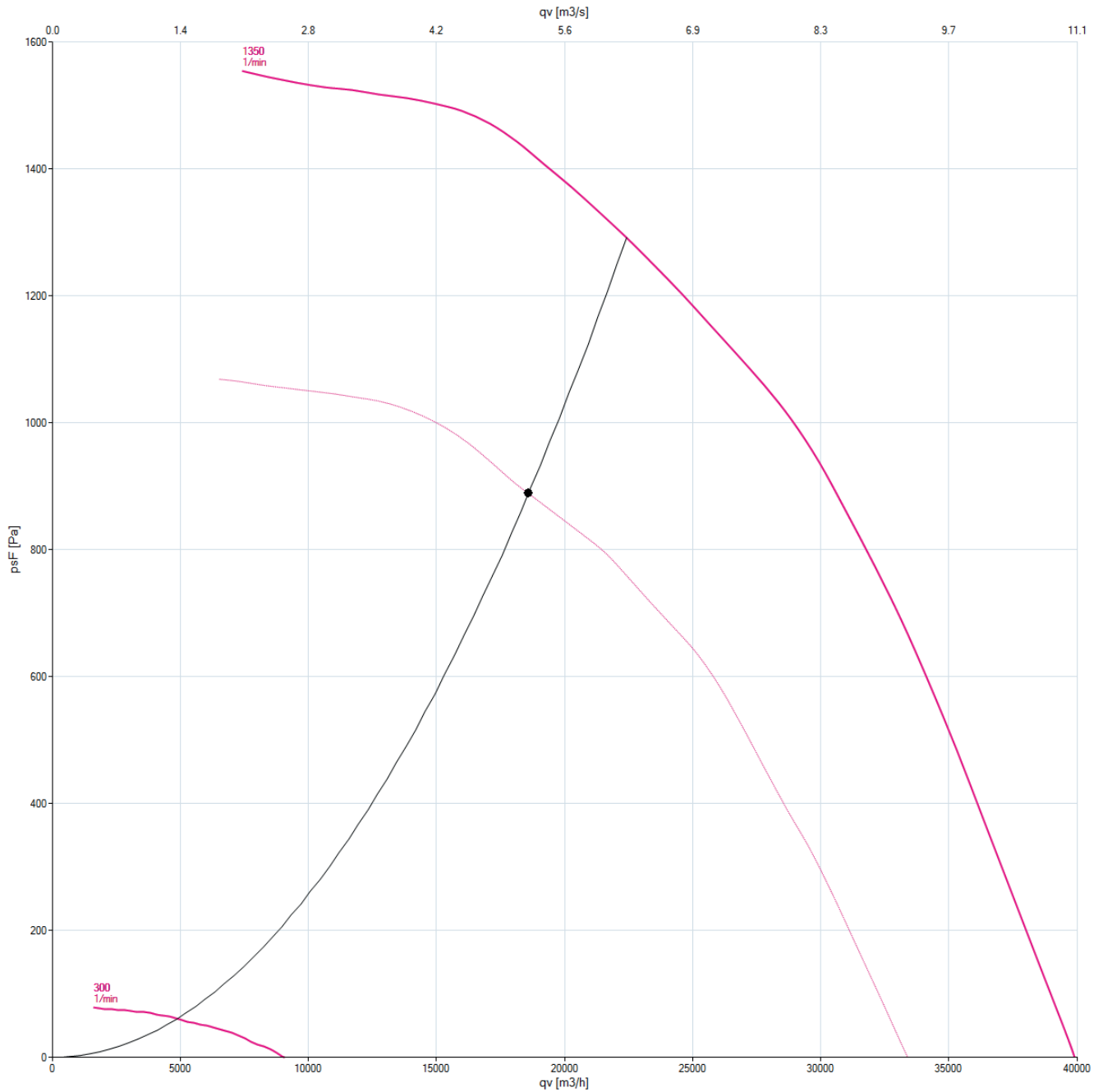
Project 781 () / Paterson Labs AHU
 AOC ACON-02792545
 Unit 334 (004-1) / AHU04 BRU & Interstitial
 Size 063

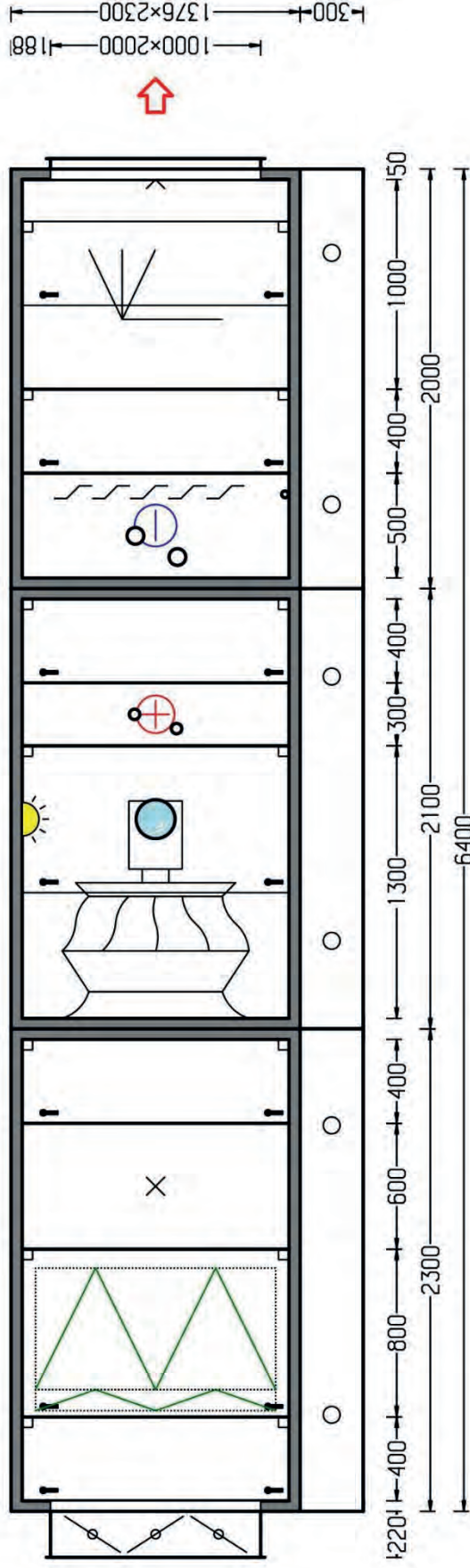
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Fan chart - Supply air - EQLA-063-3-0-1-2-5-0-1-2-8-1-1





From Inspection Side 2021/05/05 Acon 2.56.50391 Page 1/11	Customer id 69028 Project 781 Unit 335 AOC ACON-02792546	Project name Paterson Labs AHU Unit name (005-1) / AHU05 BRU & Interstitial Supply air Exhaust air eQ-063 4.99 m³/sec	FläktGroup
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Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792546	
Unit	335 (005-1) / AHU05 BRU & Interstitial	2021/05/05
Size	063	Page 3/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2324 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.99 m³/sec	Installation	Indoor horizontal
External static pressure	480 Pa	Material	AlZn sheet steel
Internal static pressure	406 Pa	Thermal insulation	T3
		Condensation insulation	TB3
		Leakage class	L1(M) / L2(R)*
		Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 85.0%
Dim. humidity summer	44.2 %		
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	90 %		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	82.6 %	Air humidity in, extract air, summer	49.8 %
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	19.1 %	Air humidity in, extract air, winter	35 %
Mixing ratio at winter design temperature	0 %		
SFPv supply air	1.22 kW/(m³/s)	Total dry weight	2324 kg
SFPv total sum	1.22 kW/(m³/s)	Heaviest block	909 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

66 W/(m³/s)

0.5 %

	Supply air	Extract air	Unit
Filter energy classification	C		
Filter pressure drop, start	45		Pa
Filter area	2.8		m²
Filter cross section air velocity	1.8		m/s
Air flow	4.99		m³/sec
Total pressure rise	795		Pa
Fan fan system effect	0		Pa
Fan total efficiency	67.4		%
Fan system input power (absorbed electrical power) according to SFP	6.11		kW

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792546	
Unit	335 (005-1) / AHU05 BRU & Interstitial	2021/05/05
Size	063	Page 4/11
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.99 m³/sec	Exhaust air volume flow rate 0.00 m³/sec
External static pressure	480 Pa	External static pressure 0 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2324 kg
Specific el. power demand (SFPv)	1.22 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	124	-4.5/31.4	16/7.2	45/35		2.98	14.6	50
Air cooler	99	28.5/44.2	16/81.2	6/12		3.93	11.9	80

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz
Power, supply flow	11 kW
Current, full load, supply flow	22.7 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	73	77	74	70	67	64	62	58	73
Supply air connection	76	79	77	81	75	70	65	58	81
To surroundings	64	64	57	48	45	44	41	30	54

*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-02792546
Unit 335 (005-1) / AHU05 BRU & Interstitial
Size 063

Acon 2.56.50391

2021/05/05

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TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

3 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : ALZn

Empty section

Unit size : 063

Length: 040

Inspection side : right

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Filter

Inspection side: right

Filter selection

Filter class: F9 - ePM1 85%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

130 Pa

Pressure drop, dimensioning

205 Pa

Pressure drop, end

280 Pa

Face area

2.5 m²

Face velocity

2.0 m/s

Anti-slip protection

Unit size : 063

Function: Filter, Empty section

Width: 1

Material: aluminium

Version: version 1

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

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 Size 063

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SUPPLY RUN AROUND - ECOTERM liquid-coupled heat exchangers

Size: 063
 Finned heat exchanger: supply air, heat exchanger
 Coil Calculation Variant: Modine
 Design: normal face area
 Number of the rows: 6
 Fin spacing: 2.5 mm
 Fluid passes: 18
 Material, coil: Cu/Al, Cu header
 Material: galvanized sheet steel
 Inspection side: right

Coil Data

Nom. pipe size	32
Ethylene glycol	30 % %
Pressure drop, dimensioning	88 Pa Pa
Output	79.4 kW kW
Air temperature	-4.5 / 8.6 °C °C
Water temperature	15.2 / 3.4 °C °C
Water flow	1.74 l/s l/s
Pressure drop water	84 kPa kPa

Empty section

Unit size : 063
 Length: 040
 Inspection side : right

Anti-slip protection

Unit size : 063
 Function: Filter, Empty section
 Material: aluminium
 Version: version 1

Plenum fan

Inspection side: right

Fan selection

Impeller type: Bluefin Floor mounted
 Fan size: size 3
 Anti-vibration mountings: steel spring

Motor selection

Motor type: FläktGroup IE3
 IEC Size: 160

Motor control

Manufacture, type: FläktGroup separate
 Housing protection: IP54
 Design: on panel
 Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch
 Length: 451

Dimensioning data

Speed	1130 Rpm
Max speed	1350 Rpm
Fan efficiency	79.1 %
Total efficiency	67.9 %
Total static pressure, dimensioning (wet coil)	886 Pa
Dynamic pressure	31 Pa
Fan shaft power at dim. data	5.99 kW

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Fan system input power (absorbed electrical power)	6.98 kW
Temperature rise	1.1 °C
K factor	5.37
Fan wheel size	080

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	6.11 kW
Pressure rise	795 Pa
Speed	1061 Rpm

Motor

Efficiency	88.5 %
Speed	975 Rpm
Motor output	11 kW
Electric current	22.7 A
Number of Poles	6
Operating frequency at frequency control	58 Hz
Max frequency at frequency control	69 Hz
Max speed at frequency control	1350 Rpm
Output margin, minimum	10 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp fitted with cable to outside of casing if there is a fixed panel.

Anti-slip protection

Unit size : 063

Function: Plenum fan (EQLK)

Width: 1

Material: aluminium

Version: version 1

Frequency converter

Motor accessories

Fan + AC motor

Air heater for hot water

Size: 063

Inspection side: right

Material: galvanized sheet steel

Coil selection

Calculation principle: input data

Output variant: 2

Fluid passes: 04

Fin spacing: 2 mm

Design: normal face area

Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	28.4 l
Pressure drop, dimensioning	21 Pa
Output	124 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.5 m/s
Control principle for water heater	flow control
Water temperature	45 / 35 °C
Water flow	2.98 l/s
Water velocity	1.2 m/s
Pressure drop water	14.6 kPa
Oversizing	33.8 %

Project 781 () / Paterson Labs AHU
AOC ACON-02792546
Unit 335 (005-1) / AHU05 BRU & Interstitial
Size 063

Acon 2.56.50391

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Empty section

Unit size : 063
Length: 040
Inspection side : right

Anti-slip protection

Unit size : 063
Function: Filter, Empty section
Width: 1
Material: aluminium
Version: version 1

Air cooler for chilled water

Size: 063
Inspection side: right
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3

Coil selection

Use as: Cooling Coil
Calculation principle: input data
Output variant: 4
Fluid passes: 04
Fin spacing: 2 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	80
Liquid volume	46.2 l
Pressure drop, dimensioning	86 Pa
Pressure drop, wet coil	86 Pa
Pressure drop, dry coil	62 Pa
Output	99 kW
Air temperature	28.5 / 16 °C
Relative humidity	44.2 / 81.2 %
Face velocity	2.2 m/s
Water temperature	6 / 12 °C
Water flow	3.93 l/s
Water velocity	1.0 m/s
Pressure drop water	11.9 kPa
Oversizing	16.6 %

Empty section

Unit size : 063
Length: 040
Inspection side : right

Anti-slip protection

Unit size : 063
Function: Filter, Empty section
Width: 1
Material: aluminium
Version: version 1

Humidifier

Unit size: 063
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: right

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Unit	335 (005-1) / AHU05 BRU & Interstitial	2021/05/05
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End connection frame

Pressure drop, dimensioning

1 Pa

Casing end wall

Duct connection piece

Width cm : 200

Height in cm : 100

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Project	781 () / Paterson Labs AHU	Acon 2.56.50391
AOC	ACON-02792546	
Unit	335 (005-1) / AHU05 BRU & Interstitial	2021/05/05
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BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-230-22-1-1-2-1-2-1-1 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 Filter Special Unit Section Empty section	2350	2450	1846	10.63	789
EQGB-063-210-22-1-1-2-1-3-1-1 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) Plug fan floor mounted Air heater for hot water Empty section	2150	2450	1846	9.72	909
EQGB-063-200-22-1-1-2-1-4-1-1 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) Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	2050	2450	1846	9.27	626
				29.62	2324
The dimensions are transport dimensions including packaging					

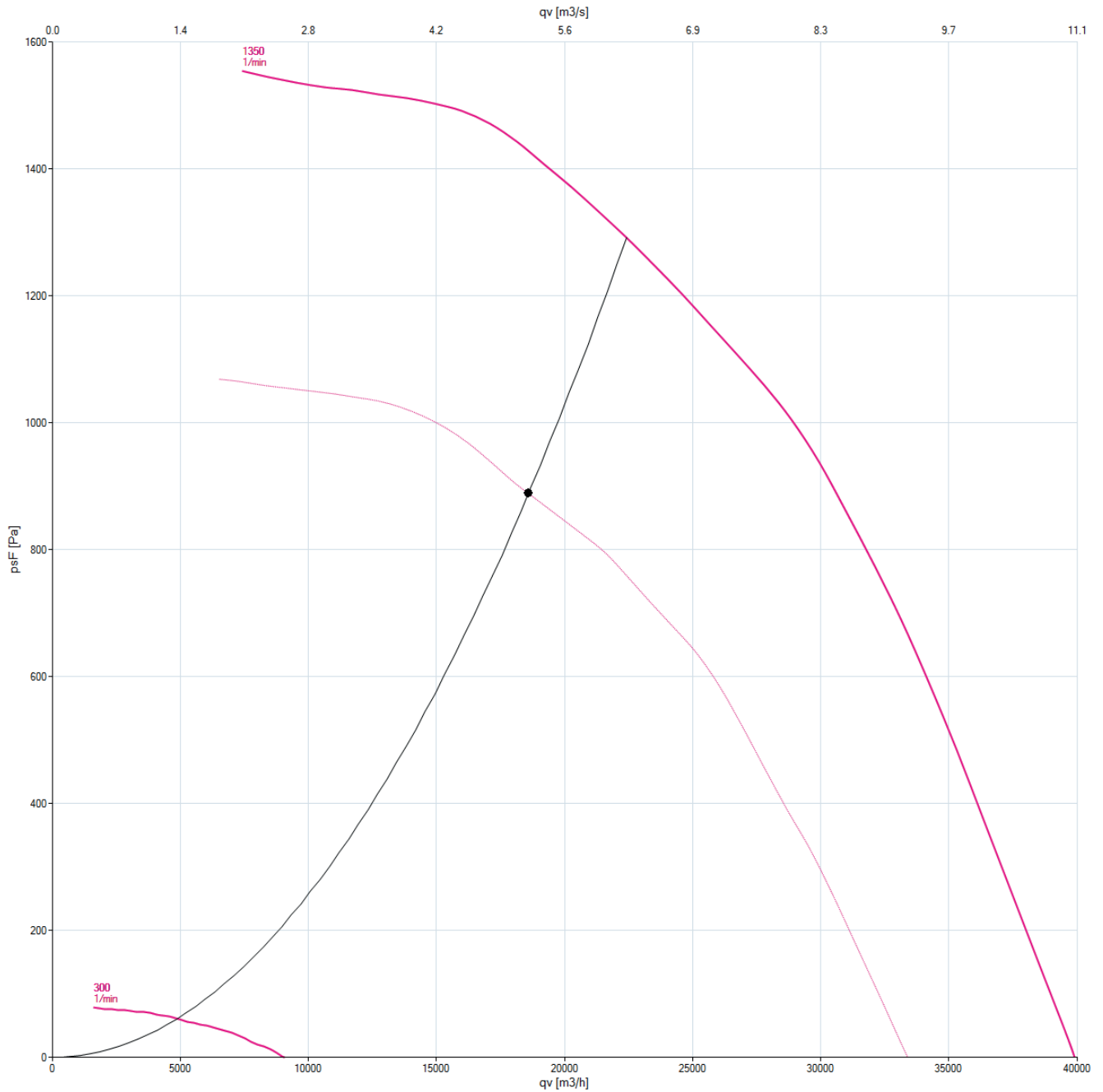
Project 781 () / Paterson Labs AHU
 AOC ACON-02792546
 Unit 335 (005-1) / AHU05 BRU & Interstitial
 Size 063

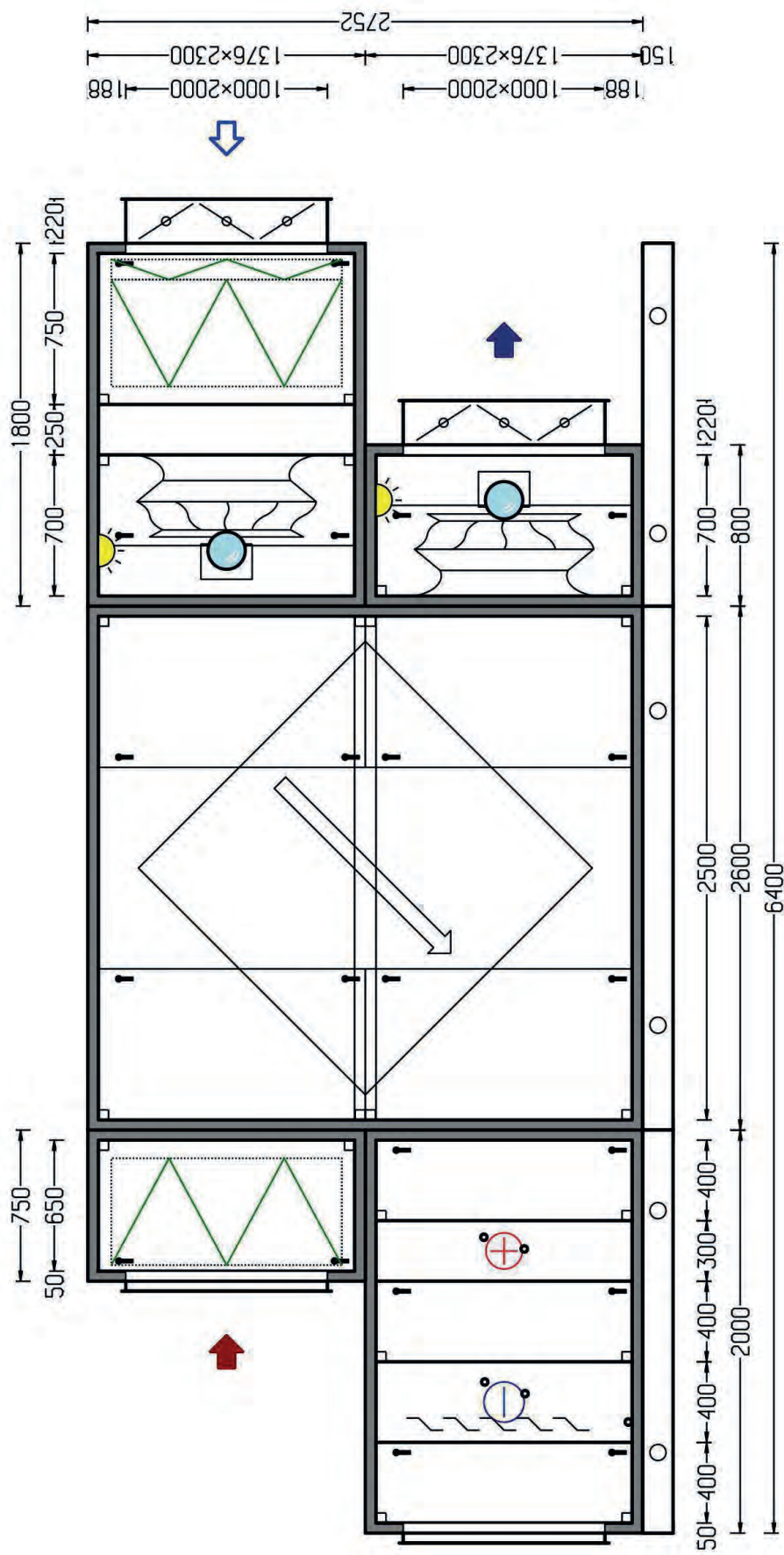
Acon 2.56.50391

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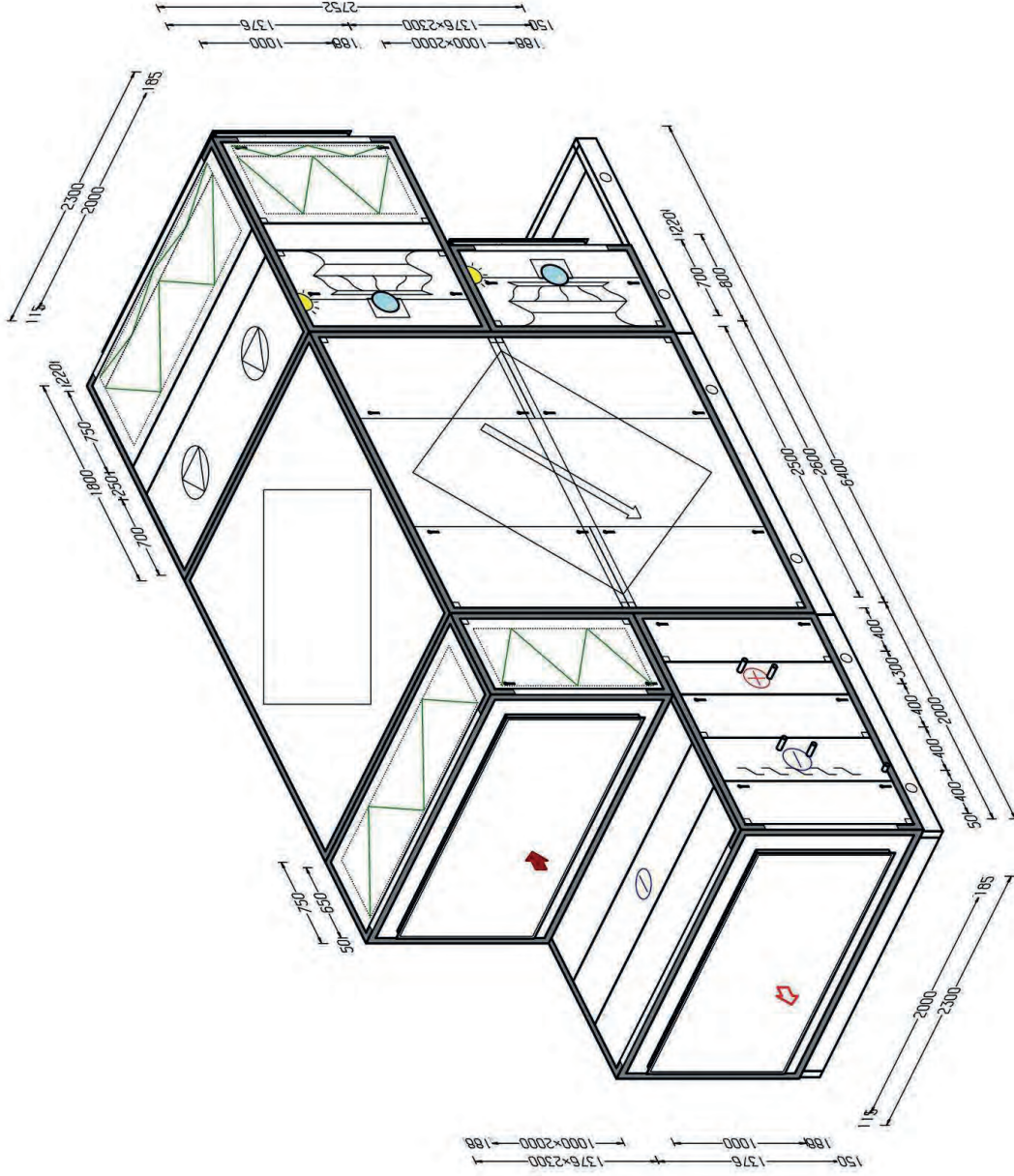
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Fan chart - Supply air - EQLA-063-3-0-1-2-5-0-1-2-8-1-1





From Inspection Side 2021/04/20 Acon 2.55.47452 Page 1/13	Customer id 69028 Project 781 Unit 367 AOC ACON-02793546	Project name Unit name Supply air Exhaust air eQ-063 eQ-063	Paterson Labs AHU (APRVL) / AHU06 Offices L1 & L2 3.79 m³/sec 3.61 m³/sec	FläktGroup
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Isometric South West
2021/04/20
Acon 2.55.47452
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Customer id
Project
Unit
AOC

69028
781
367
ACON-02793546

Project name
Unit name
Supply air
Exhaust air

eQ-063
eQ-063

Paterson Labs AHU
(APRVL) / AHU06 Offices L1 & L2
3.79 m³/sec
3.61 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 3/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	3.79 m³/sec	Exhaust air volume flow rate 3.61 m³/sec
External static pressure	450 Pa	External static pressure 380 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3577 kg
Specific el. power demand (SFPv)	1.71 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	3.79 m³/sec	Installation	Indoor horizontal
External static pressure	450 Pa	Material	AlZn sheet steel
Internal static pressure	250 Pa	Thermal insulation	T3
Exhaust air volume flow rate	3.61 m³/sec	Condensation insulation	TB3
External static pressure	380 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	158 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	22 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.2 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	20 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	15 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	72.3 %	Heat recovery capacity	77.8 kW
SFPv supply air	0.98 kW/(m³/s)	Total dry weight	3577 kg
SFPv exhaust air inlet	0.76 kW/(m³/s)		
SFPv total sum	1.71 kW/(m³/s)	Heaviest block	1771 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU

SFPint (2016: 1102 W/(m³/s), 2018: 822 W/(m³/s))

386 W/(m³/s)

Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)

74 %

External leakage rate

0.4 %

Internal leakage rate

0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	110	101	Pa
Filter energy classification	B	B	
Filter pressure drop, start	31	15	Pa
Filter area	2.8	2.8	m²
Filter cross section air velocity	1.4	1.3	m/s
Air flow	3.79	3.61	m³/sec
Total pressure rise	640	509	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	65.8	67.6	%
Fan system input power (absorbed electrical power) according to SFP	3.74	2.76	kW

Fan system effect is taken into account in fan performance

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AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 4/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	3.79 m³/sec	Exhaust air volume flow rate 3.61 m³/sec
External static pressure	450 Pa	External static pressure 380 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3577 kg
Specific el. power demand (SFPv)	1.71 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	112	-4.5/-8.4	20/6.4	70/50		1.37	10.5	32
Air cooler	21.2	25.5/18.4	22/16.8	6/12		0.84	7.5	32

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	2 x 3.4 kW	Power, extract flow	2 x 3.4 kW
Current, full load, supply flow	2 x 4.4 A	Current, full load, extract flow	2 x 4.4 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	71	83	71	65	64	61	55	53	71
Supply air connection	71	84	69	70	67	61	55	47	73
Extract connection	68	72	61	54	53	49	44	42	60
Exhaust connection	81	89	77	78	74	70	66	60	80
To surroundings	67	71	56	44	43	42	35	30	56

*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	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 5/13

TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

51 Pa

Pressure drop, dimensioning

102 Pa

Pressure drop, end

153 Pa

Face area

2.5 m²

Face velocity

1.6 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 063

Length: 025

Inspection side : left

Plenum fan

Inspection side: left

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: 451

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Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
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Dimensioning data

Two fan wheels in parallel	
Speed	1394 Rpm
Max speed	1610 Rpm
Total efficiency	64.4 %
Total static pressure, dimensioning (wet coil)	700 Pa
Dynamic pressure	10 Pa
Fan system input power (absorbed electrical power)	4.32 kW
Temperature rise	0.9 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	3.74 kW
Pressure rise	640 Pa
Speed	1315 Rpm

Motor

Motor output	2 x 3.4 kW
Electric current	2 x 4.4 A
Output margin, minimum	10 %

Inspection window

Design: standard

Bulkhead light

Type: LED
Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Plate heat exchanger, RECUTERM

Size: 63
Output variant: Standard
Recuterm - defrost: Level 1 By pass damper > -16°C
Fin material : Aluminium
Droplet eliminator: without
Control connections: no
Material: AZ sheet steel
Inspection side: left

Efficiency

Temperature efficiency according to standard EN 308	72.3 %
Temperature efficiency at 0°C outdoors	77.3 %
Cooling recovery	71.9 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	75.9 %

Supply air

	Summer	Winter
Pressure drop	113	103 Pa
Air temperature	29.4 / 24.1	-3.7 / 15.8 °C
Wet temperature	20 / 18.3	-4.9 / 6.3 °C wb
Capacity reduction	24	78 kW
Face velocity	1.5	1.5 m/s

Exhaust air

	Summer	Winter
Pressure drop	103	98 Pa
Air temperature	22 / 27.6	22 / 3.6 °C
Wet temperature	15.4 / 17.4	13.1 / 3.6 °C wb
Face velocity	1.4	1.4 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 7/13

Empty section

Unit size : 063
Length: 040
Inspection side : left

Air heater for hot water

Size: 063
Inspection side: left
Material: galvanized sheet steel

Coil selection

Calculation principle: input data
Output variant: 2
Fluid passes: 06
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Nom. pipe size	32
Liquid volume	24.7 l
Pressure drop, dimensioning	8 Pa
Output	112 kW
Air temperature	-4.5 / 20 °C
Face velocity	1.1 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	1.37 l/s
Water velocity	0.8 m/s
Pressure drop water	10.5 kPa
Oversizing	44.0 %

Empty section

Unit size : 063
Length: 040
Inspection side : left

Air cooler for chilled water

Size: 063
Inspection side: left
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3

Coil selection

Use as: Cooling Coil
Calculation principle: input data
Output variant: 2
Fluid passes: 06
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	32
Liquid volume	19.2 l
Pressure drop, dimensioning	23 Pa
Pressure drop, wet coil	23 Pa
Pressure drop, dry coil	13 Pa
Output	21.2 kW
Air temperature	25.5 / 22 °C
Wet temperature	18.4 / 16.8 °C wb
Face velocity	1.7 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
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Water temperature	6 / 12 °C
Water flow	0.84 l/s
Water velocity	0.6 m/s
Pressure drop water	7.5 kPa
Oversizing	98.8 %

Empty section

Unit size : 063
Length: 040
Inspection side : left

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 0 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	6x592x592, 2x287x592
Pressure drop, start	26 Pa
Pressure drop, dimensioning	53 Pa
Pressure drop, end	79 Pa
Face area	2.5 m ²
Face velocity	1.5 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Design: flush mounted in door

Plenum fan

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

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 9/13

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: 451

Dimensioning data

Two fan wheels in parallel	
Speed	1238 Rpm
Max speed	1610 Rpm
Total efficiency	67.4 %
Total static pressure, dimensioning (wet coil)	538 Pa
Dynamic pressure	9 Pa
Fan system input power (absorbed electrical power)	3.03 kW
Temperature rise	0.7 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	2.76 kW
Pressure rise	509 Pa
Speed	1187 Rpm

Motor

Motor output	2 x 3.4 kW
Electric current	2 x 4.4 A
Output margin, minimum	10 %

Inspection window

Design: standard

Bulkhead light

Type: LED
 Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning	2 Pa
-----------------------------	------

Casing end wall

Damper

Width cm : 200
 Height in cm : 100
 Tightness class : CEN 3
 Connection: Flange
 Function : extract air
 Location: externally end wall
 Damper type: 200 mm blade
 Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 10/13

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-180-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan wall mounted	1850	2450	1546	7.01	567
EQHB-063-260-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2650	2450	3072	19.94	1771
EQGB-063-200-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Casing end wall	2050	2450	1696	8.52	580
EQGB-063-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)*	800	2450	1546	3.03	206

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793546	
Unit	367 (APRVL) / AHU06 Offices L1 & L2	2021/04/20
Size	063	Page 11/13

Casing strength: D1(M)

Casing end wall

Filter

EQGB-063-080-22-1-1-2-1-4-1-1	850	2450	1696	3.53	453
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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)

Plug fan wall mounted

Casing end wall

42.03	3577
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The dimensions are transport dimensions including packaging

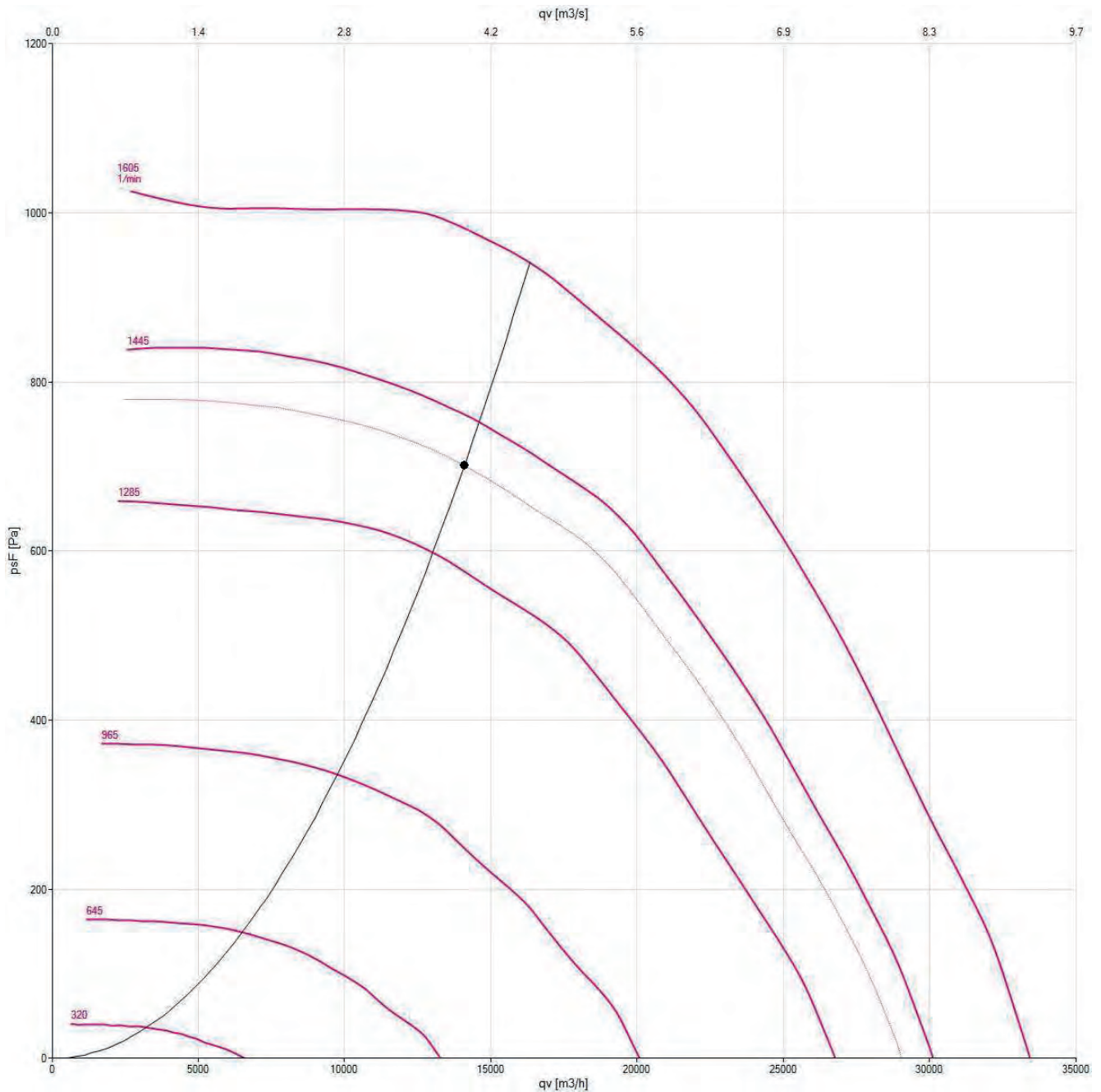
*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent. CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, 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-02793546
 Unit 367 (APRVL) / AHU06 Offices L1 & L2
 Size 063

Acon 2.55.47452

2021/04/20
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Fan chart - Supply air - EQLC-063-3-1-1-2-3-2-1-2-8-2-1

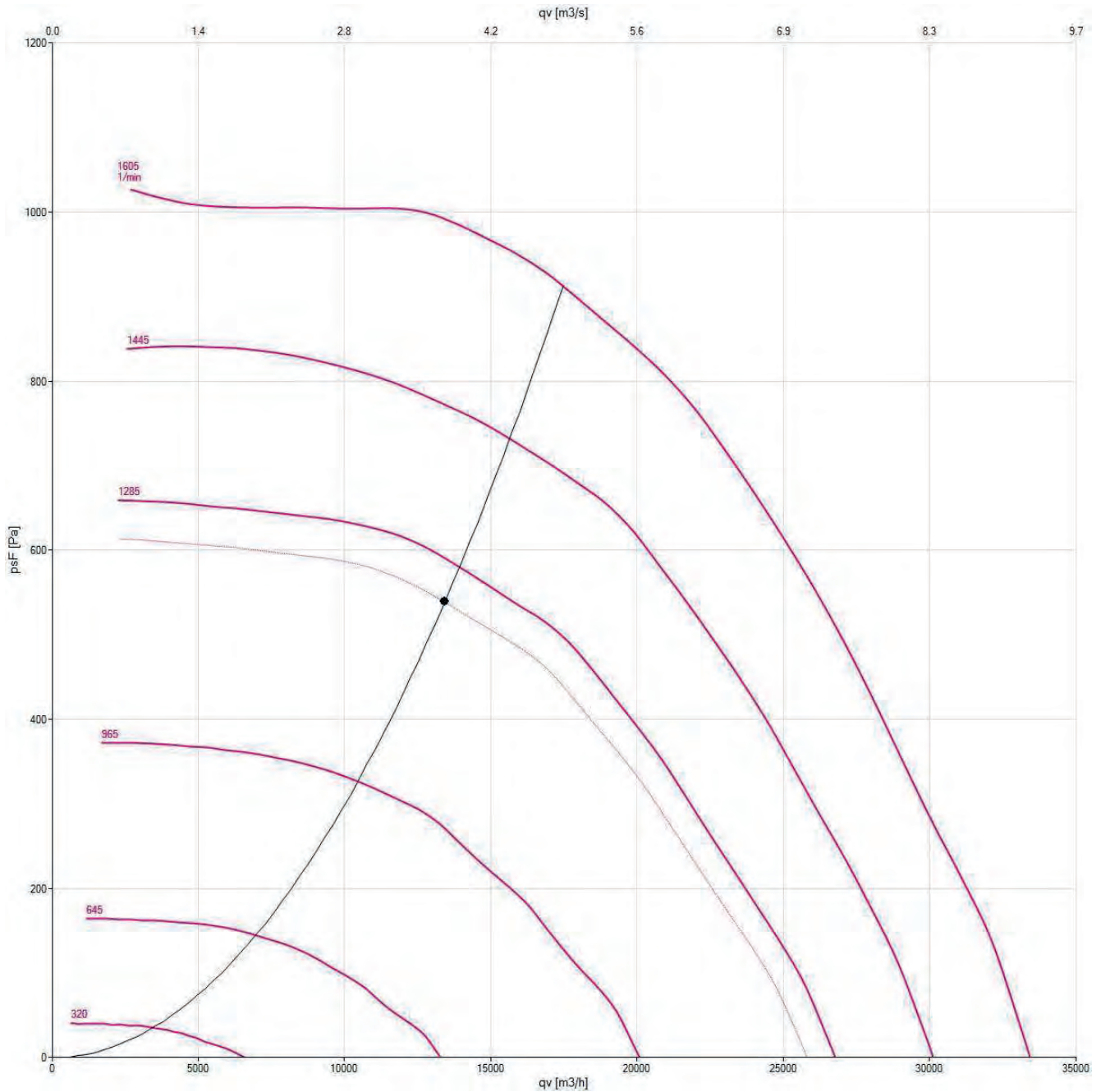


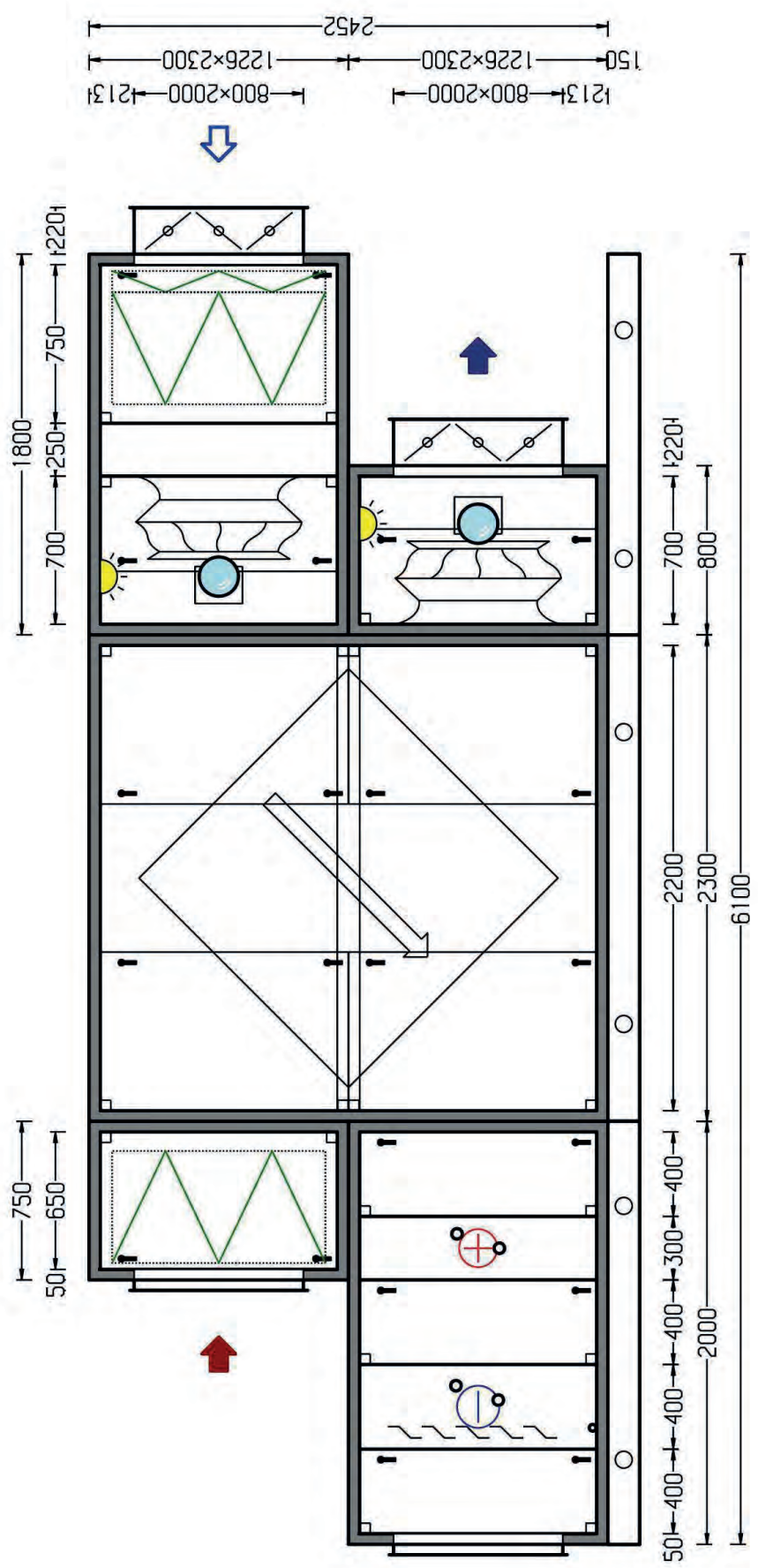
Project 781 () / Paterson Labs AHU
 AOC ACON-02793546
 Unit 367 (APRVL) / AHU06 Offices L1 & L2
 Size 063

Acon 2.55.47452

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Fan chart - Exhaust air inlet - EQLC-063-3-1-1-2-3-2-2-8-1-1





From Inspection Side 2021/04/20 Acon 2.55.47452 Page 1/13	Customer id 69028 Project 781 Unit 368 AOC ACON-02793547	Project name Paterson Labs AHU Unit name (APRVL) / AHU07 Lab Servs BRU Changing Supply air eQ-050 Exhaust air eQ-050	FläktGroup
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Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 3/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.20 m³/sec	Exhaust air volume flow rate 2.41 m³/sec
External static pressure	460 Pa	External static pressure 460 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3556 kg
Specific el. power demand (SFPv)	1.79 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.20 m³/sec	Installation	Indoor horizontal
External static pressure	460 Pa	Material	AlZn sheet steel
Internal static pressure	430 Pa	Thermal insulation	T3
Exhaust air volume flow rate	2.41 m³/sec	Condensation insulation	TB3
External static pressure	460 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	110 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.2 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	4.6 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	53.2 %	Heat recovery capacity	65.1 kW
SFPv supply air	1.22 kW/(m³/s)	Total dry weight	3556 kg
SFPv exhaust air inlet	0.98 kW/(m³/s)		
SFPv total sum	1.79 kW/(m³/s)	Heaviest block	1792 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU	
SFPint (2016: 1093 W/(m³/s), 2018: 813 W/(m³/s))	470 W/(m³/s)
Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)	73 %
External leakage rate	0.4 %
Internal leakage rate	0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	176	68	Pa
Filter energy classification	B	B	
Filter pressure drop, start	42	10	Pa
Filter area	2.5	2.5	m²
Filter cross section air velocity	1.7	1.0	m/s
Air flow	4.20	2.41	m³/sec
Total pressure rise	799	548	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	66.0	56.0	%
Fan system input power (absorbed electrical power) according to SFP	5.16	2.37	kW

Fan system effect is taken into account in fan performance

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 4/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.20 m³/sec	Exhaust air volume flow rate 2.41 m³/sec
External static pressure	460 Pa	External static pressure 460 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3556 kg
Specific el. power demand (SFPv)	1.79 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	104	-4.5/-7.8	16/4.8	70/50		1.27	5.5	50
Air cooler	61.7	25.5/18.4	16/14.1	6/12		2.45	11.2	50

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	2 x 4.6 kW	Power, extract flow	2 x 3.4 kW
Current, full load, supply flow	2 x 5.8 A	Current, full load, extract flow	2 x 4.4 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	71	87	74	67	67	65	59	56	75
Supply air connection	71	85	72	72	70	65	57	51	75
Extract connection	78	74	67	58	55	51	45	41	64
Exhaust connection	90	89	81	81	77	71	66	60	82
To surroundings	75	75	60	47	46	46	39	30	61

*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	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 5/13

TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

4 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 080

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

8x492x492

Pressure drop, start

88 Pa

Pressure drop, dimensioning

163 Pa

Pressure drop, end

238 Pa

Face area

2 m²

Face velocity

2.2 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 050

Length: 025

Inspection side : left

Plenum fan

Inspection side: left

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: 428

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 6/13

Dimensioning data

Two fan wheels in parallel	
Speed	1560 Rpm
Max speed	1780 Rpm
Total efficiency	65.4 %
Total static pressure, dimensioning (wet coil)	890 Pa
Dynamic pressure	12 Pa
Fan system input power (absorbed electrical power)	5.99 kW
Temperature rise	1.2 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	5.16 kW
Pressure rise	799 Pa
Speed	1462 Rpm

Motor

Motor output	2 x 4.6 kW
Electric current	2 x 5.8 A
Output margin, minimum	35 %

Inspection window

Design: standard

Bulkhead light

Type: LED
Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Plate heat exchanger, RECUTERM

Size: 50
Output variant: Standard
Recuterm - defrost: Level 1 By pass damper > -16°C
Fin material : Aluminium
Droplet eliminator: without
Control connections: no
Material: AZ sheet steel
Inspection side: left

Efficiency

Temperature efficiency according to standard EN 308	53.2 %
Temperature efficiency at 0°C outdoors	55.4 %
Cooling recovery	51.9 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	47.5 %

Supply air

	Summer	Winter
Pressure drop	181	164 Pa
Air temperature	29.7 / 25.7	-3.5 / 8.6 °C
Wet temperature	20.1 / 18.8	-4.8 / 2.5 °C wb
Capacity reduction	20	65 kW
Face velocity	1.9	1.9 m/s

Exhaust air

	Summer	Winter
Pressure drop	70	66 Pa
Air temperature	22 / 28.9	22 / 3.3 °C
Wet temperature	15.4 / 17.8	13.1 / 3.3 °C wb
Face velocity	1.1	1.1 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 7/13

Empty section

Unit size : 050
Length: 040
Inspection side : left

Air heater for hot water

Size: 050
Inspection side: left
Material: galvanized sheet steel
Coil selection
Calculation principle: input data
Output variant: 2
Fluid passes: 04
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	19.3 l
Pressure drop, dimensioning	19 Pa
Output	104 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.9 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	1.27 l/s
Water velocity	0.7 m/s
Pressure drop water	5.5 kPa
Oversizing	39.2 %

Empty section

Unit size : 050
Length: 040
Inspection side : left

Air cooler for chilled water

Size: 050
Inspection side: left
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3
Coil selection
Use as: Cooling Coil
Calculation principle: input data
Output variant: 3
Fluid passes: 04
Fin spacing: 2 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	50
Liquid volume	27.2 l
Pressure drop, dimensioning	61 Pa
Pressure drop, wet coil	61 Pa
Pressure drop, dry coil	43 Pa
Output	61.7 kW
Air temperature	25.5 / 16 °C
Wet temperature	18.4 / 14.1 °C wb
Face velocity	2.1 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 8/13

Water temperature	6 / 12 °C
Water flow	2.45 l/s
Water velocity	0.9 m/s
Pressure drop water	11.2 kPa
Oversizing	12.2 %

Empty section

Unit size : 050
Length: 040
Inspection side : left

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 80
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 0 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 80
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	8x492x492
Pressure drop, start	20 Pa
Pressure drop, dimensioning	39 Pa
Pressure drop, end	59 Pa
Face area	2 m ²
Face velocity	1.2 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Design: flush mounted in door

Plenum fan

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

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 9/13

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: 428

Dimensioning data

Two fan wheels in parallel	
Speed	1219 Rpm
Max speed	1610 Rpm
Total efficiency	56.2 %
Total static pressure, dimensioning (wet coil)	570 Pa
Dynamic pressure	4 Pa
Fan system input power (absorbed electrical power)	2.56 kW
Temperature rise	0.9 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	2.37 kW
Pressure rise	548 Pa
Speed	1173 Rpm

Motor

Motor output	2 x 3.4 kW
Electric current	2 x 4.4 A
Output margin, minimum	35 %

Inspection window

Design: standard

Bulkhead light

Type: LED
 Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning	1 Pa
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Casing end wall

Damper

Width cm : 200
 Height in cm : 080
 Tightness class : CEN 3
 Connection: Flange
 Function : extract air
 Location: externally end wall
 Damper type: 200 mm blade
 Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 10/13

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-050-180-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan wall mounted	1850	2450	1396	6.33	550
EQHB-050-230-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2350	2450	2772	15.96	1792
EQGB-050-200-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Casing end wall	2050	2450	1546	7.76	581
EQGB-050-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)*	800	2450	1396	2.74	198

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793547	
Unit	368 (APRVL) / AHU07 Lab Servs BRU Changing	2021/04/20
Size	050	Page 11/13

Casing strength: D1(M)

Casing end wall

Filter

EQGB-050-080-22-1-1-2-1-4-1-1	850	2450	1546	3.22	435
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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)

Plug fan wall mounted

Casing end wall

36.01	3556
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The dimensions are transport dimensions including packaging

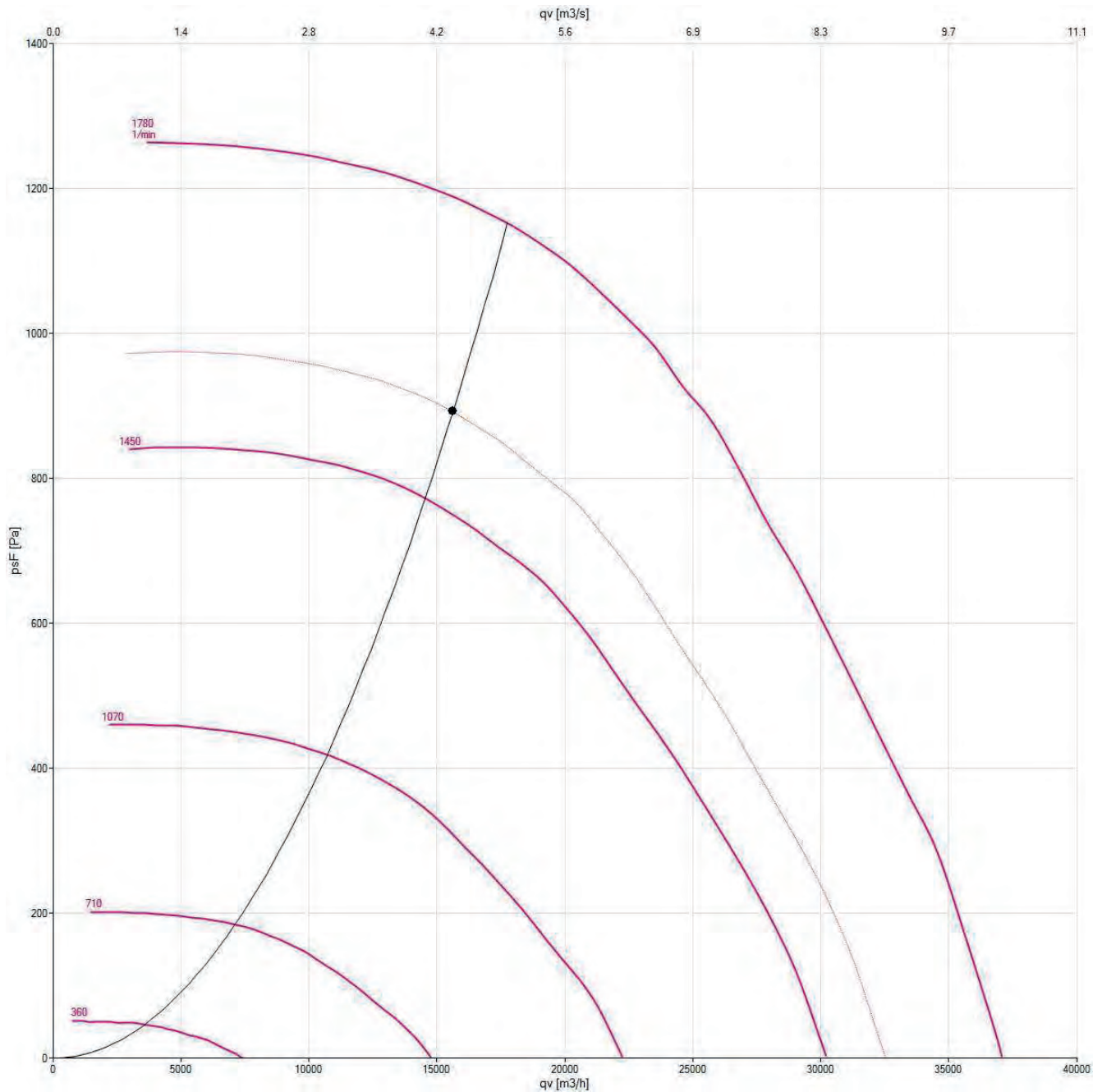
*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent. CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, 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-02793547
 Unit 368 (APRVL) / AHU07 Lab Servs BRU Changing
 Size 050

Acon 2.55.47452

2021/04/20
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Fan chart - Supply air - EQLC-050-3-1-1-2-4-2-1-2-8-2-1



Project
AOC
Unit
Size

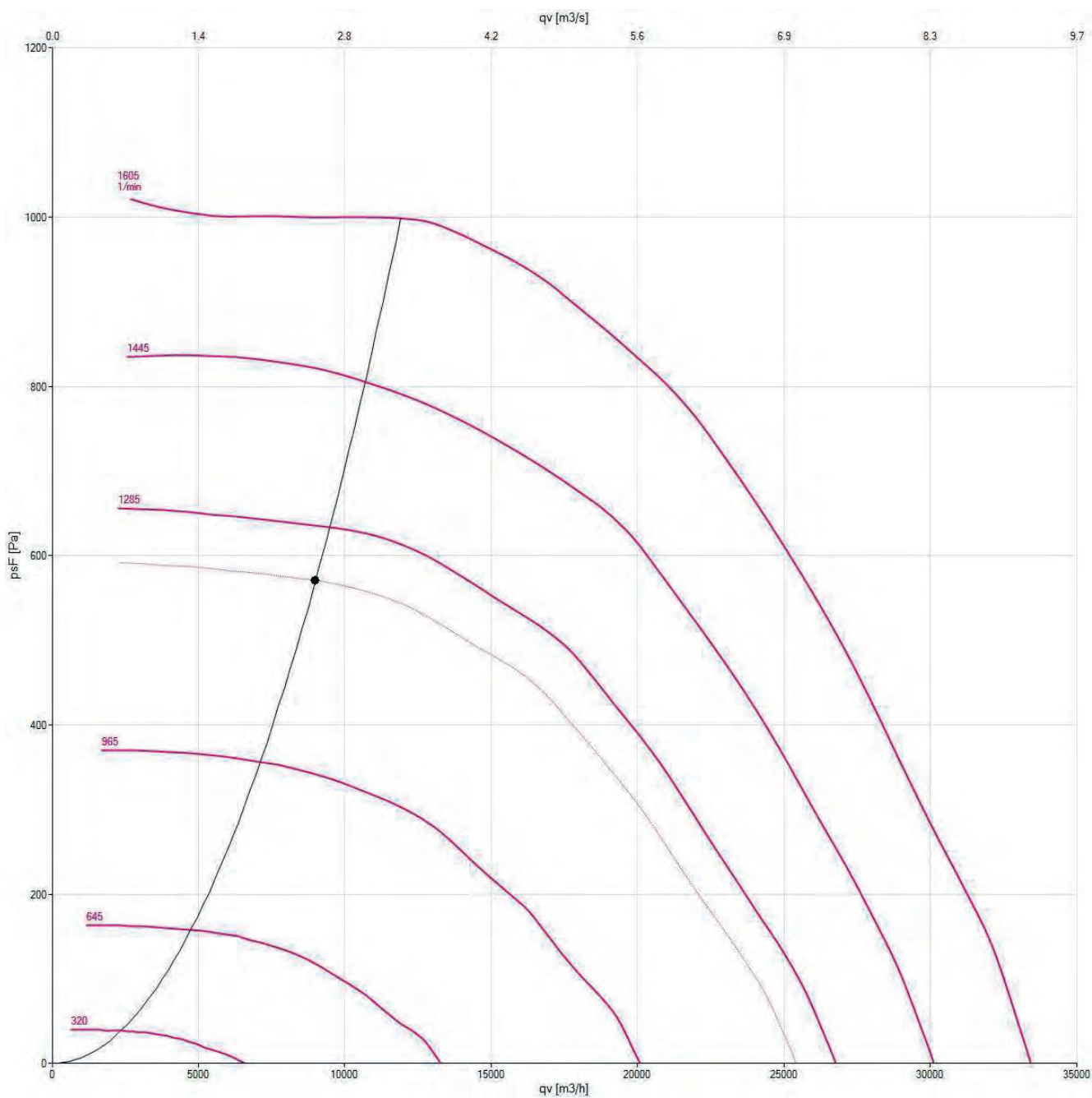
781 () / Paterson Labs AHU
ACON-02793547
368 (APRVL) / AHU07 Lab Servs BRU Changing
050

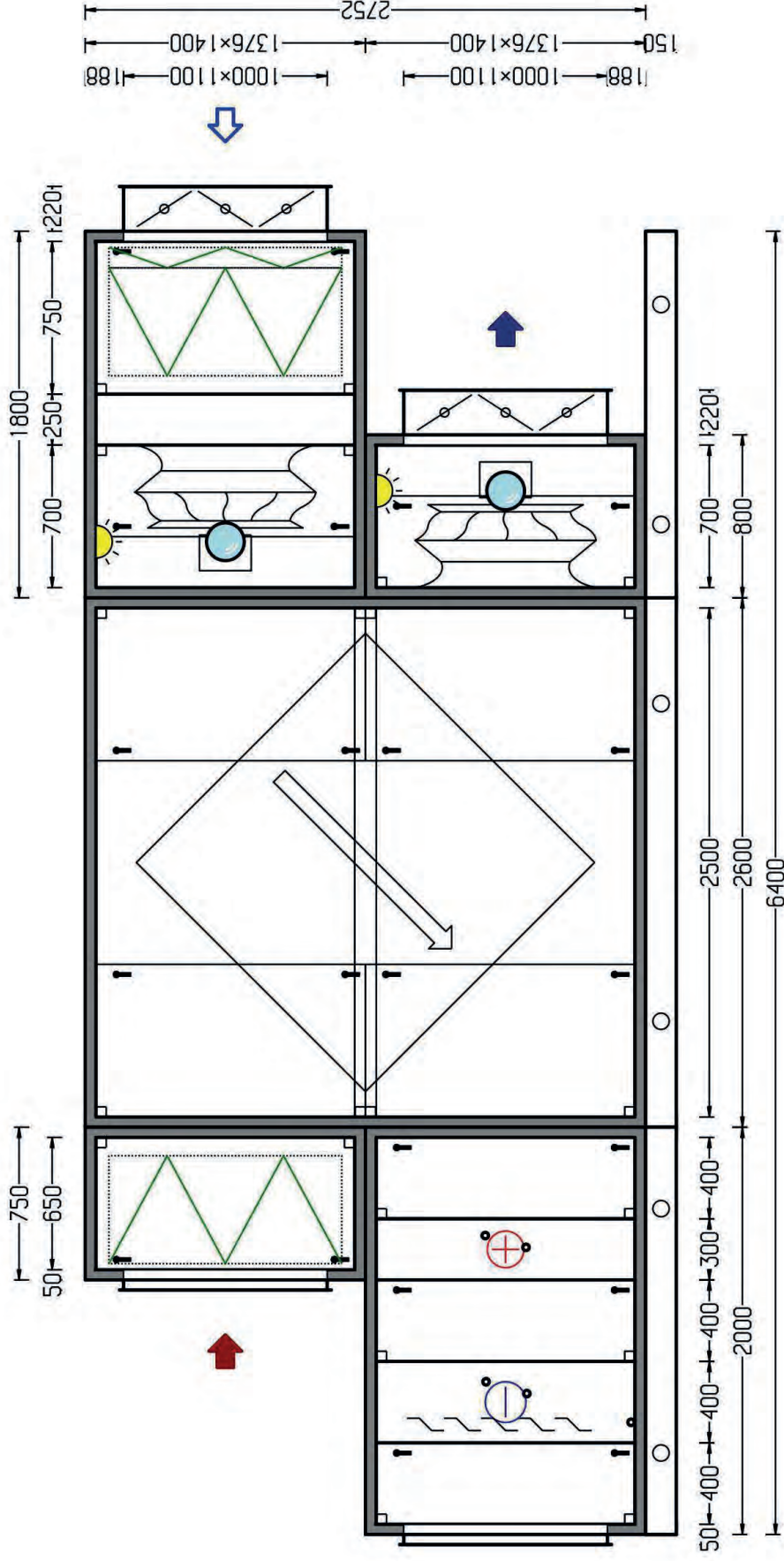
Acon 2.55.47452

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Fan chart - Exhaust air inlet - EQLC-050-3-1-1-2-3-2-2-8-1-1





From Inspection Side 2021/04/20 Acon 2.55.47452 Page 1/13	Customer id 69028 Project 781 Unit 369 AOC ACON-02793548	Project name Paterson Labs AHU (APRVL) / AHU08 Reception & General Unit name eQ-036 Supply air eQ-036 Exhaust air eQ-036	FläktGroup Paterson Labs AHU (APRVL) / AHU08 Reception & General 2.04 m³/sec 1.83 m³/sec
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Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
Size	036	Page 3/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.04 m³/sec	Exhaust air volume flow rate 1.83 m³/sec
External static pressure	460 Pa	External static pressure 400 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2403 kg
Specific el. power demand (SFPv)	1.82 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	2.04 m³/sec	Installation	Indoor horizontal
External static pressure	460 Pa	Material	AlZn sheet steel
Internal static pressure	229 Pa	Thermal insulation	T3
Exhaust air volume flow rate	1.83 m³/sec	Condensation insulation	TB3
External static pressure	400 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	128 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	22 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.6 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	20 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	15 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	70.8 %	Heat recovery capacity	41.1 kW
SFPv supply air	1.06 kW/(m³/s)	Total dry weight	2403 kg
SFPv exhaust air inlet	0.84 kW/(m³/s)		
SFPv total sum	1.82 kW/(m³/s)	Heaviest block	1136 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU

SFPint (2016: 1111 W/(m³/s), 2018: 831 W/(m³/s))

361 W/(m³/s)

Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)

74 %

External leakage rate

0.6 %

Internal leakage rate

0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	97	81	Pa
Filter energy classification	B	B	
Filter pressure drop, start	28	12	Pa
Filter area	1.7	1.7	m²
Filter cross section air velocity	1.2	1.1	m/s
Air flow	2.04	1.83	m³/sec
Total pressure rise	634	505	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	60.3	60.4	%
Fan system input power (absorbed electrical power) according to SFP	2.17	1.55	kW

Fan system effect is taken into account in fan performance

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
Size	036	Page 4/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	2.04 m³/sec	Exhaust air volume flow rate 1.83 m³/sec
External static pressure	460 Pa	External static pressure 400 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 2403 kg
Specific el. power demand (SFPv)	1.82 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	60.3	-4.5/-8.3	20/6.5	70/50		0.74	7.5	32
Air cooler	11.1	25.5/18.4	22/16.9	6/12		0.44	3.3	32

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	2 x 1.7 kW	Power, extract flow	2 x 1.7 kW
Current, full load, supply flow	2 x 2.2 A	Current, full load, extract flow	2 x 2.2 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	74	86	74	68	63	62	55	51	73
Supply air connection	71	83	71	69	67	61	51	45	72
Extract connection	69	75	63	56	53	51	44	40	62
Exhaust connection	78	87	78	76	74	70	62	58	79
To surroundings	69	74	58	47	43	43	35	30	59

*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	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
Size	036	Page 5/13

TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 110

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

4x592x592

Pressure drop, start

46 Pa

Pressure drop, dimensioning

93 Pa

Pressure drop, end

139 Pa

Face area

1.4 m²

Face velocity

1.5 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 036

Length: 025

Inspection side : left

Plenum fan

Inspection side: left

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: 356

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
Size	036	Page 6/13

Dimensioning data

Two fan wheels in parallel	
Speed	1678 Rpm
Max speed	1800 Rpm
Total efficiency	59.8 %
Total static pressure, dimensioning (wet coil)	689 Pa
Dynamic pressure	7 Pa
Fan system input power (absorbed electrical power)	2.46 kW
Temperature rise	1 °C
K factor	16.36
Fan wheel size	045

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	2.17 kW
Pressure rise	634 Pa
Speed	1588 Rpm

Motor

Motor output	2 x 1.7 kW
Electric current	2 x 2.2 A
Output margin, minimum	35 %

Inspection window

Design: standard

Bulkhead light

Type: LED
Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Plate heat exchanger, RECUTERM

Size: 36
Output variant: Standard
Recuterm - defrost: Level 1 By pass damper > -16°C
Fin material : Aluminium
Droplet eliminator: without
Control connections: no
Material: AZ sheet steel
Inspection side: left

Efficiency

Temperature efficiency according to standard EN 308	70.8 %
Temperature efficiency at 0°C outdoors	76.0 %
Cooling recovery	70.0 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	73.6 %

Supply air

	Summer	Winter
Pressure drop	100	91 Pa
Air temperature	29.5 / 24.3	-3.6 / 15.2 °C
Wet temperature	20 / 18.4	-4.9 / 6 °C wb
Capacity reduction	13	41 kW
Face velocity	1.4	1.4 m/s

Exhaust air

	Summer	Winter
Pressure drop	82	78 Pa
Air temperature	22 / 27.8	22 / 3.3 °C
Wet temperature	15.4 / 17.4	13.1 / 3.3 °C wb
Face velocity	1.2	1.2 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
Size	036	Page 7/13

Empty section

Unit size : 036
Length: 040
Inspection side : left

Air heater for hot water

Size: 036
Inspection side: left
Material: galvanized sheet steel

Coil selection

Calculation principle: input data
Output variant: 2
Fluid passes: 08
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Nom. pipe size	32
Liquid volume	12.4 l
Pressure drop, dimensioning	11 Pa
Output	60.3 kW
Air temperature	-4.5 / 20 °C
Face velocity	1.4 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	0.74 l/s
Water velocity	0.8 m/s
Pressure drop water	7.5 kPa
Oversizing	32.3 %

Empty section

Unit size : 036
Length: 040
Inspection side : left

Air cooler for chilled water

Size: 036
Inspection side: left
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3

Coil selection

Use as: Cooling Coil
Calculation principle: input data
Output variant: 2
Fluid passes: 08
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	32
Liquid volume	12.2 l
Pressure drop, dimensioning	21 Pa
Pressure drop, wet coil	21 Pa
Pressure drop, dry coil	12 Pa
Output	11.1 kW
Air temperature	25.5 / 22 °C
Wet temperature	18.4 / 16.9 °C wb
Face velocity	1.6 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
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Water temperature	6 / 12 °C
Water flow	0.44 l/s
Water velocity	0.4 m/s
Pressure drop water	3.3 kPa
Oversizing	98.8 %

Empty section

Unit size : 036
Length: 040
Inspection side : left

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 110
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 110
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : plastic
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	4x592x592
Pressure drop, start	21 Pa
Pressure drop, dimensioning	43 Pa
Pressure drop, end	64 Pa
Face area	1.4 m ²
Face velocity	1.3 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Design: flush mounted in door

Plenum fan

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

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
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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: 356

Dimensioning data

Two fan wheels in parallel	
Speed	1475 Rpm
Max speed	1800 Rpm
Total efficiency	60.3 %
Total static pressure, dimensioning (wet coil)	528 Pa
Dynamic pressure	6 Pa
Fan system input power (absorbed electrical power)	1.67 kW
Temperature rise	0.8 °C
K factor	16.36
Fan wheel size	045

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	1.55 kW
Pressure rise	505 Pa
Speed	1420 Rpm

Motor

Motor output	2 x 1.7 kW
Electric current	2 x 2.2 A
Output margin, minimum	35 %

Inspection window

Design: standard

Bulkhead light

Type: LED
 Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning	2 Pa
-----------------------------	------

Casing end wall

Damper

Width cm : 110
 Height in cm : 100
 Tightness class : CEN 3
 Connection: Flange
 Function : extract air
 Location: externally end wall
 Damper type: 200 mm blade
 Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
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BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-036-180-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan wall mounted	1850	1550	1546	4.43	392
EQHB-036-260-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2650	1550	3072	12.62	1136
EQGB-036-200-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Casing end wall	2050	1550	1696	5.39	423
EQGB-036-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)*	800	1550	1546	1.92	155

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793548	
Unit	369 (APRVL) / AHU08 Reception & General	2021/04/20
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Casing strength: D1(M)

Casing end wall

Filter

EQGB-036-080-22-1-1-2-1-4-1-1	850	1550	1696	2.23	297
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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)

Plug fan wall mounted

Casing end wall

26.59	2403
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The dimensions are transport dimensions including packaging

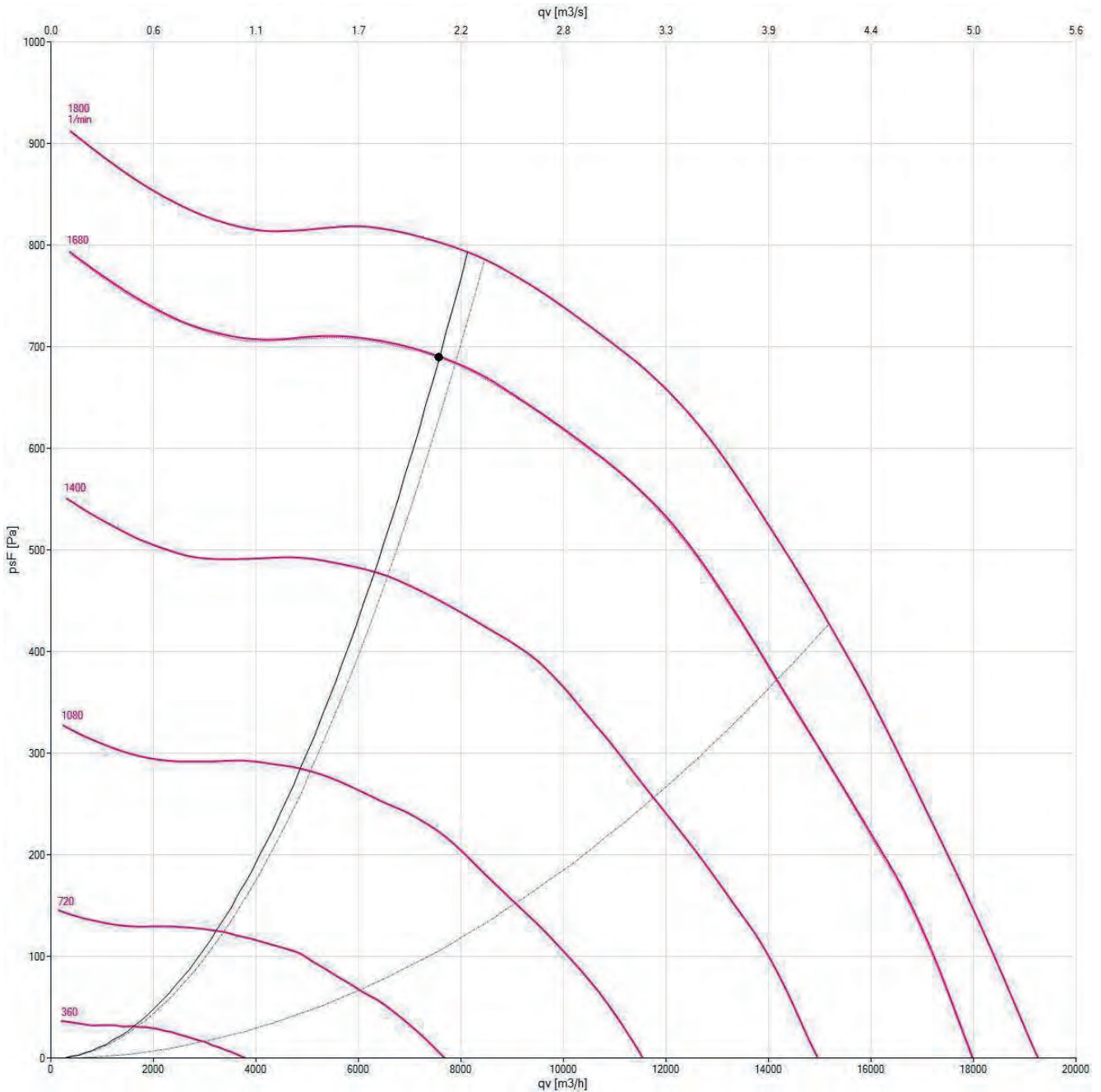
*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent. CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, 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-02793548
 Unit 369 (APRVL) / AHU08 Reception & General
 Size 036

Acon 2.55.47452

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Fan chart - Supply air - EQLC-036-3-3-1-2-3-2-1-2-8-2-1

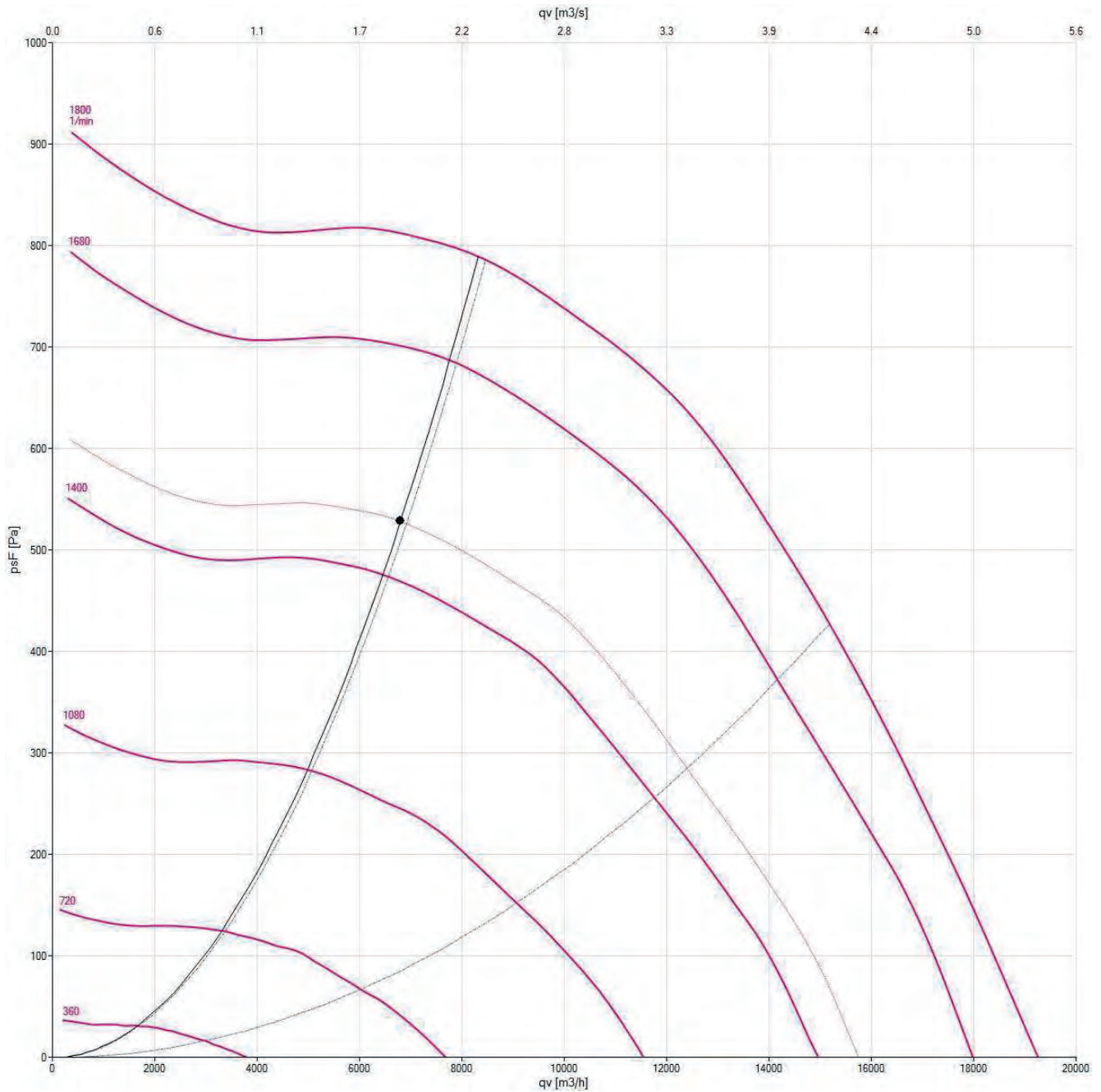


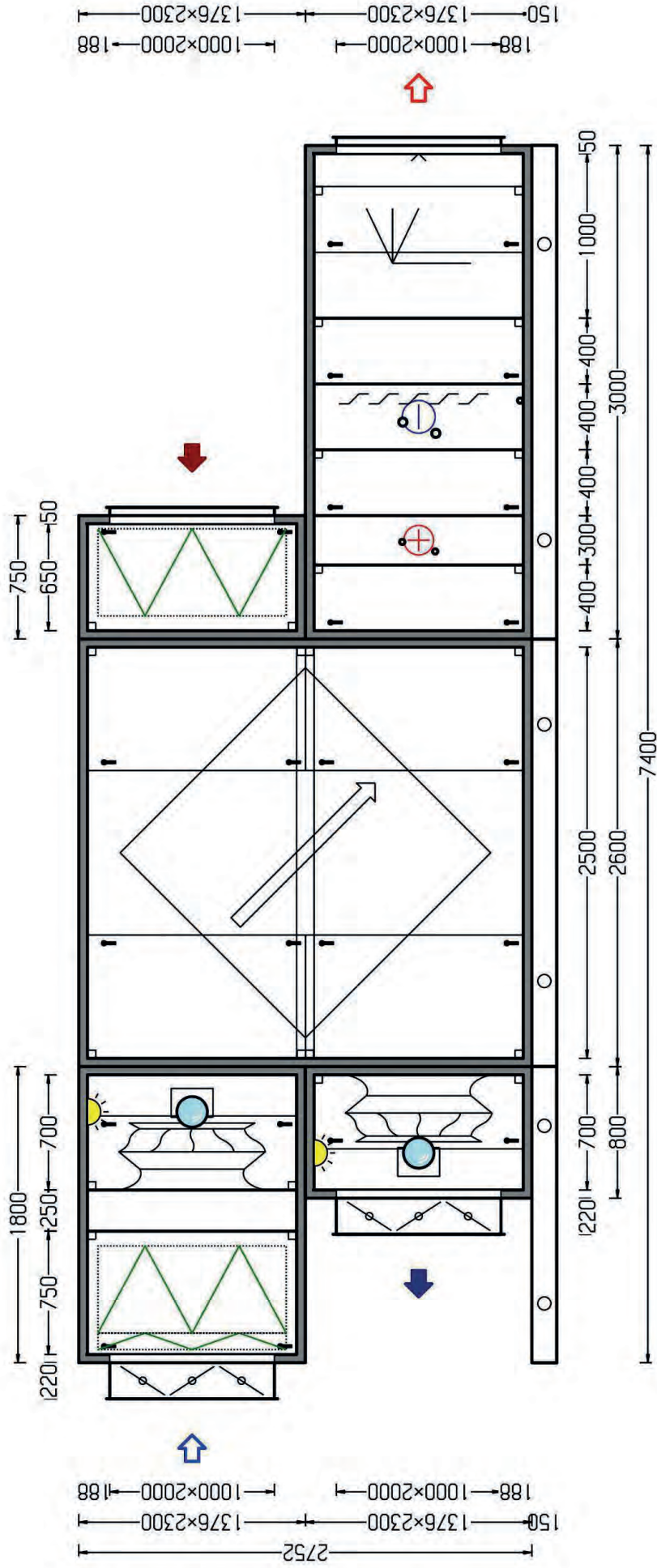
Project 781 () / Paterson Labs AHU
 AOC ACON-02793548
 Unit 369 (APRVL) / AHU08 Reception & General
 Size 036

Acon 2.55.47452

2021/04/20
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Fan chart - Exhaust air inlet - EQLC-036-3-3-1-2-3-2-2-8-1-1





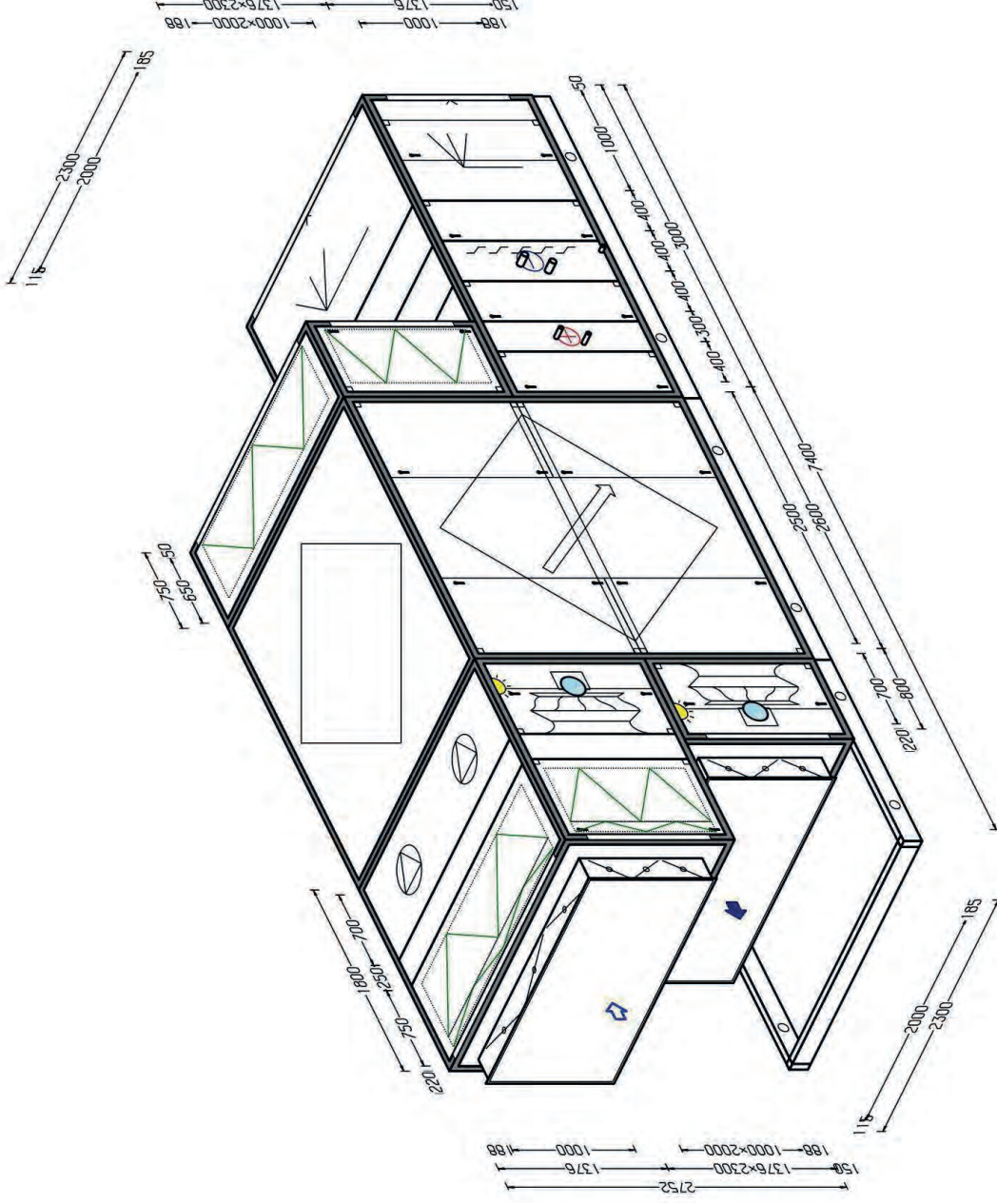
Paterson Labs AHU
(APRVL) / AHU09 Labs South L3 & L4
4.19 m³/sec
4.09 m³/sec

eQ-063
eQ-063

Project name
Unit name
Supply air
Exhaust air

Customer id
Project
Unit
AOC

From Inspection Side
2021/04/20
Acon 2.55.47452
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Customer id	69028	Project name	Paterson Labs AHU (APRVL) / AHU09 Labs South L3 & L4	FläktGroup
	781			
	370			
	ACON-02793549			
Project		Unit name		
Unit		Supply air	eQ-063	
AOC		Exhaust air	eQ-063	
				4.19 m³/sec 4.09 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
Size	063	Page 3/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.19 m³/sec	Exhaust air volume flow rate 4.09 m³/sec
External static pressure	350 Pa	External static pressure 360 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3801 kg
Specific el. power demand (SFPv)	1.63 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.19 m³/sec	Installation	Indoor horizontal
External static pressure	350 Pa	Material	AlZn sheet steel
Internal static pressure	318 Pa	Thermal insulation	T3
Exhaust air volume flow rate	4.09 m³/sec	Condensation insulation	TB3
External static pressure	360 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	195 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.3 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	4.6 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	72.6 %	Heat recovery capacity	86.5 kW
SFPv supply air	0.88 kW/(m³/s)	Total dry weight	3801 kg
SFPv exhaust air inlet	0.76 kW/(m³/s)		
SFPv total sum	1.63 kW/(m³/s)	Heaviest block	1771 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU

SFPint (2016: 1089 W/(m³/s), 2018: 809 W/(m³/s))

447 W/(m³/s)

Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)

73 %

External leakage rate

0.4 %

Internal leakage rate

0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	130	125	Pa
Filter energy classification	B	B	
Filter pressure drop, start	36	18	Pa
Filter area	2.8	2.8	m²
Filter cross section air velocity	1.5	1.5	m/s
Air flow	4.19	4.09	m³/sec
Total pressure rise	597	520	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	68.7	69.2	%
Fan system input power (absorbed electrical power) according to SFP	3.72	3.14	kW

Fan system effect is taken into account in fan performance

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
Size	063	Page 4/13
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.19 m³/sec	Exhaust air volume flow rate 4.09 m³/sec
External static pressure	350 Pa	External static pressure 360 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3801 kg
Specific el. power demand (SFPv)	1.63 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	104	-4.5/-8.4	16/4.4	70/50		1.26	8.8	32
Air cooler	61.9	25.5/18.4	16/14.1	6/12		2.46	9.1	50

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	2 x 3.4 kW	Power, extract flow	2 x 3.4 kW
Current, full load, supply flow	2 x 4.4 A	Current, full load, extract flow	2 x 4.4 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	69	81	70	64	62	59	54	53	69
Supply air connection	69	82	67	69	66	60	53	47	72
Extract connection	65	73	61	54	52	49	44	43	60
Exhaust connection	77	89	77	78	74	71	67	61	80
To surroundings	64	71	55	44	42	41	35	30	56

*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-02793549
Unit 370 (APRVL) / AHU09 Labs South L3 & L4
Size 063

Acon 2.55.47452

2021/04/20

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TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

60 Pa

Pressure drop, dimensioning

120 Pa

Pressure drop, end

180 Pa

Face area

2.5 m²

Face velocity

1.7 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 063

Length: 025

Inspection side : right

Plenum fan

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: 451

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
Size	063	Page 6/13

Dimensioning data

Two fan wheels in parallel	
Speed	1393 Rpm
Max speed	1610 Rpm
Total efficiency	67.7 %
Total static pressure, dimensioning (wet coil)	668 Pa
Dynamic pressure	12 Pa
Fan system input power (absorbed electrical power)	4.35 kW
Temperature rise	0.8 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	3.72 kW
Pressure rise	597 Pa
Speed	1306 Rpm

Motor

Motor output	2 x 3.4 kW
Electric current	2 x 4.4 A
Output margin, minimum	30 %

Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Plate heat exchanger, RECUTERM

Size: 63

Output variant: Standard

Recuterm - defrost: Level 1 By pass damper > -16°C

Fin material : Aluminium

Droplet eliminator: without

Control connections: no

Material: AZ sheet steel

Inspection side: right

Efficiency

Temperature efficiency according to standard EN 308	72.6 %
Temperature efficiency at 0°C outdoors	77.8 %
Cooling recovery	72.4 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	76.7 %

Supply air

	Summer	Winter
Pressure drop	134	123 Pa
Air temperature	29.3 / 24	-3.8 / 16 °C
Wet temperature	20 / 18.3	-4.9 / 6.4 °C wb
Capacity reduction	27	87 kW
Face velocity	1.6	1.6 m/s

Exhaust air

	Summer	Winter
Pressure drop	127	121 Pa
Air temperature	22 / 27.5	22 / 3.8 °C
Wet temperature	15.4 / 17.3	13.1 / 3.8 °C wb
Face velocity	1.6	1.6 m/s

Project 781 () / Paterson Labs AHU
 AOC ACON-02793549
 Unit 370 (APRVL) / AHU09 Labs South L3 & L4
 Size 063

Acon 2.55.47452

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Empty section

Unit size : 063
 Length: 040
 Inspection side : right

Air heater for hot water

Size: 063
 Inspection side: right
 Material: galvanized sheet steel
Coil selection
 Calculation principle: input data
 Output variant: 2
 Fluid passes: 06
 Fin spacing: 3 mm
 Design: normal face area
 Material, coil: Cu/Al, MS header

Nom. pipe size	32
Pressure drop, dimensioning	10 Pa
Output	104 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.3 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	1.26 l/s
Water velocity	0.8 m/s
Pressure drop water	8.8 kPa
Oversizing	65.8 %

Empty section

Unit size : 063
 Length: 040
 Inspection side : right

Air cooler for chilled water

Size: 063
 Inspection side: right
 Material: galvanized sheet steel
 Droplet eliminator: with, plastic
 Design variant: version 3
Coil selection
 Use as: Cooling Coil
 Calculation principle: input data
 Output variant: 3
 Fluid passes: 04
 Fin spacing: 2 mm
 Design: normal face area
 Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without	
Nom. pipe size	50
Liquid volume	30.5 l
Pressure drop, dimensioning	51 Pa
Pressure drop, wet coil	51 Pa
Pressure drop, dry coil	36 Pa
Output	61.9 kW
Air temperature	25.5 / 16 °C
Wet temperature	18.4 / 14.1 °C wb
Face velocity	1.8 m/s
Water temperature	6 / 12 °C
Water flow	2.46 l/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
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Water velocity	0.8 m/s
Pressure drop water	9.1 kPa
Oversizing	16.0 %

Empty section

Unit size : 063
Length: 040
Inspection side : right

Humidifier

Unit size: 063
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: right

Special Unit Section

Size: 063
Pressure drop, dimensioning 0 Pa
Insertion loss, regenerated noise included 0,0,0,0,0,0,0 dB

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : plastic
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	6x592x592, 2x287x592
Pressure drop, start	32 Pa
Pressure drop, dimensioning	65 Pa
Pressure drop, end	97 Pa
Face area	2.5 m ²
Face velocity	1.6 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa
Design: flush mounted in door

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
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Plenum fan

Inspection side: left

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: 451

Dimensioning data

Two fan wheels in parallel

Speed

1288 Rpm

Max speed

1610 Rpm

Total efficiency

69.1 %

Total static pressure, dimensioning (wet coil)

555 Pa

Dynamic pressure

12 Pa

Fan system input power (absorbed electrical power)

3.46 kW

Temperature rise

0.7 °C

K factor

10.14

Fan wheel size

056

SFP Calculation

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

3.14 kW

Pressure rise

520 Pa

Speed

1232 Rpm

Motor

Motor output

2 x 3.4 kW

Electric current

2 x 4.4 A

Output margin, minimum

30 %

Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : extract air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
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BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-180-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan wall mounted	1850	2450	1546	7.01	567
EQHB-063-260-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2650	2450	3072	19.94	1771
EQGB-063-300-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	3050	2450	1696	12.67	804
EQGB-063-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3	800	2450	1546	3.03	206

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793549	
Unit	370 (APRVL) / AHU09 Labs South L3 & L4	2021/04/20
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Condensation insulation: TB3

Leakage class: L2(R)*

Casing strength: D1(M)

Casing end wall

Filter

EQGB-063-080-22-1-1-2-1-4-1-1	850	2450	1696	3.53	453
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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)

Plug fan wall mounted

Casing end wall

46.19	3801
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The dimensions are transport dimensions including packaging

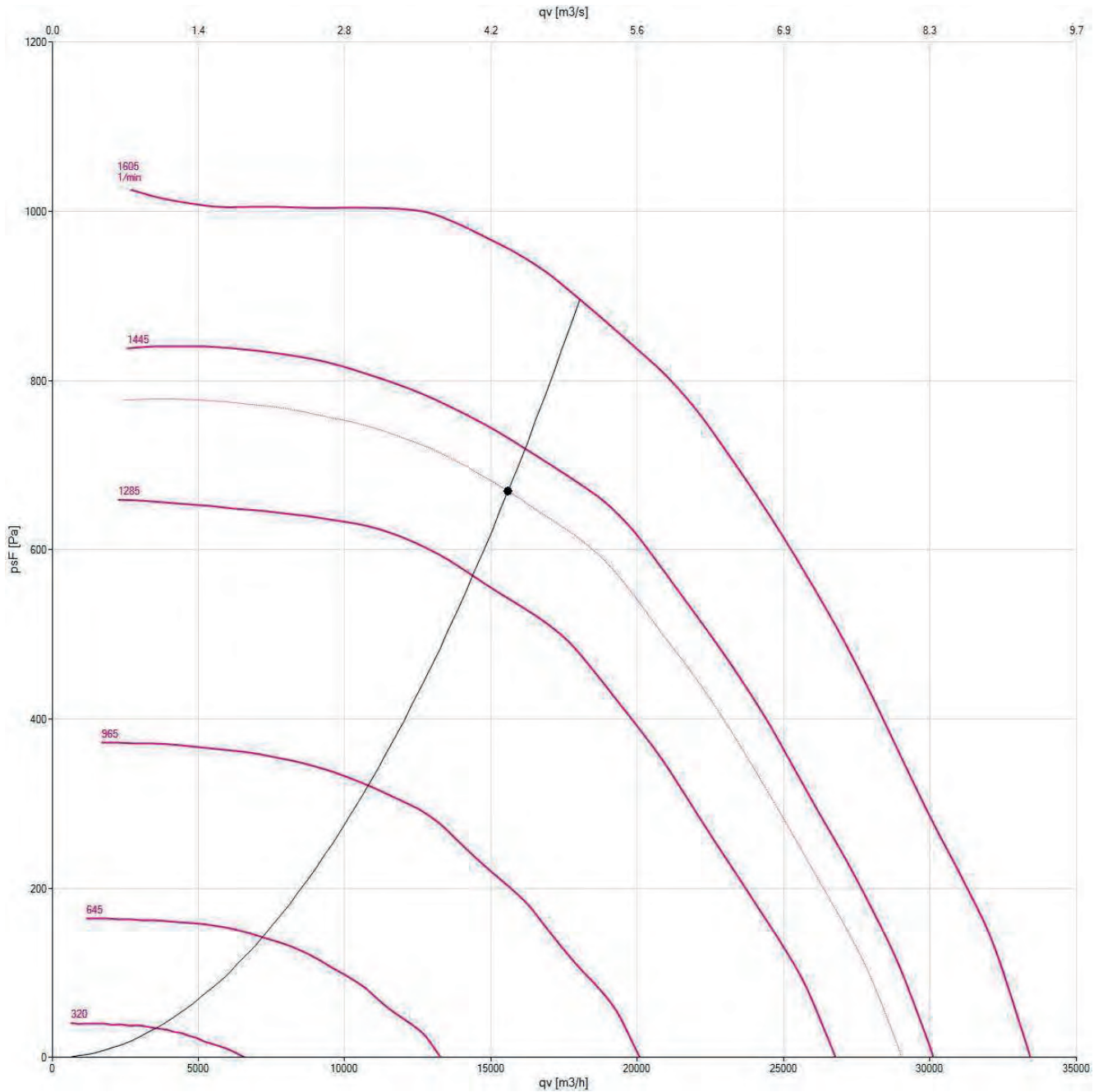
*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent. CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, 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.

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Fan chart - Supply air - EQLC-063-3-1-1-2-3-2-1-2-8-1-1

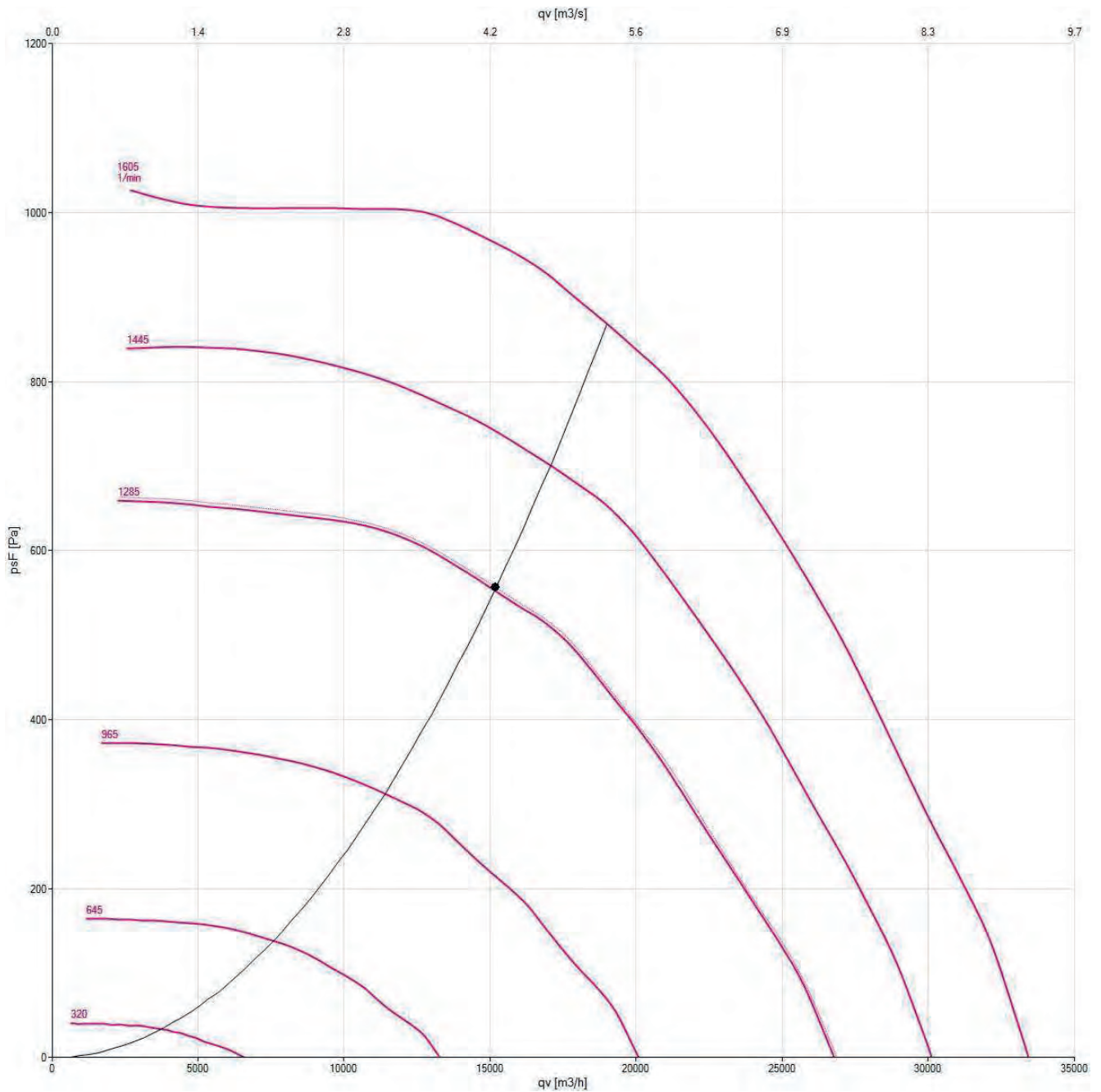


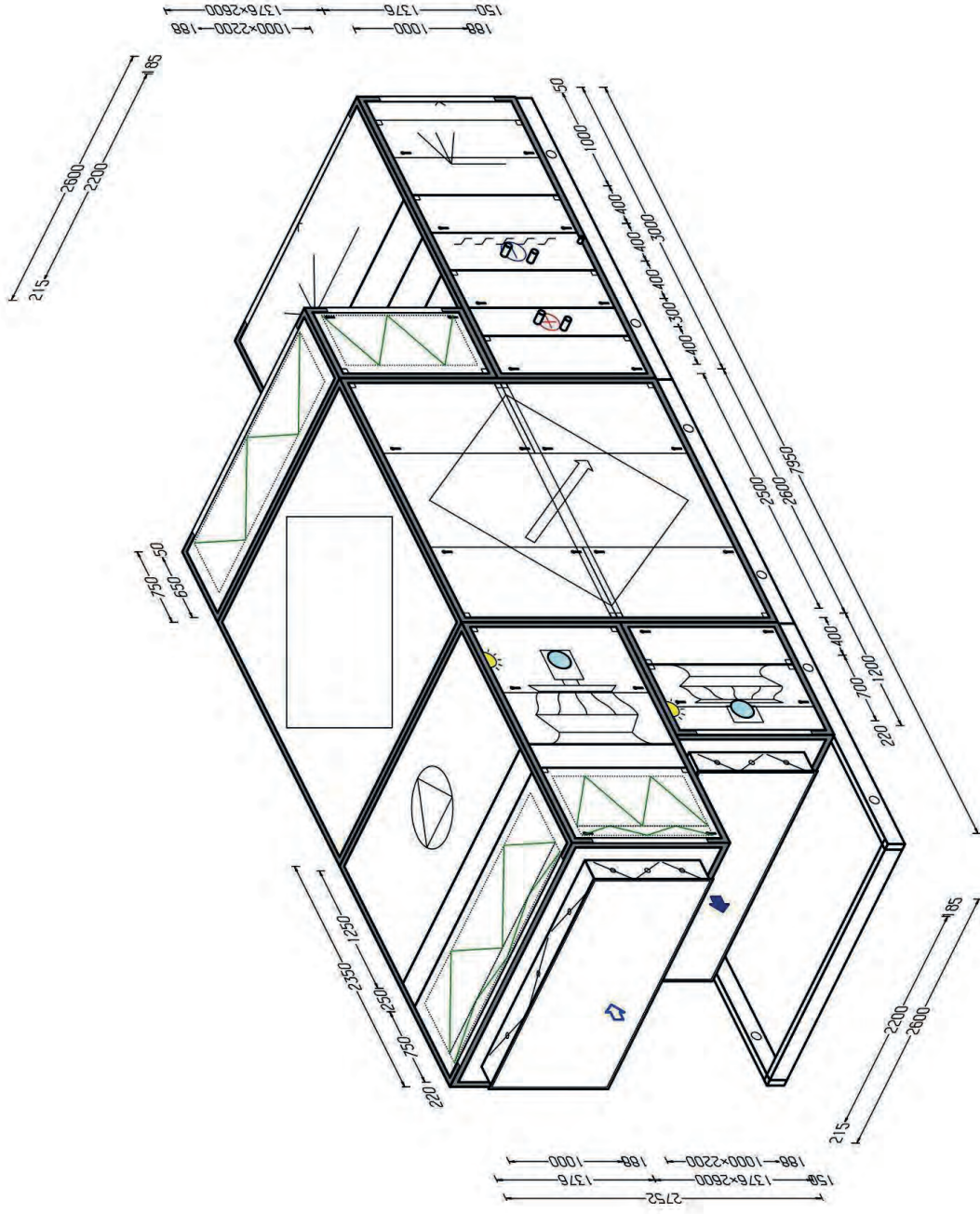
Project 781 () / Paterson Labs AHU
 AOC ACON-02793549
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Fan chart - Exhaust air inlet - EQLC-063-3-1-1-2-3-2-2-8-2-1





Isometric South West
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Customer id	69028	Project name	(APRVL) / AHU10 Labs Middle L3 & L4	Paterson Labs AHU	FläktGroup
	781				
	371				
	ACON-02793550				
Project	781	Unit name	eQ-072	Paterson Labs Middle L3 & L4	6.09 m³/sec
Unit	371	Supply air	eQ-072	Paterson Labs Middle L3 & L4	4.19 m³/sec
AOC	ACON-02793550	Exhaust air	eQ-072	Paterson Labs Middle L3 & L4	4.19 m³/sec

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 3/14
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	6.09 m³/sec	Exhaust air volume flow rate 4.19 m³/sec
External static pressure	410 Pa	External static pressure 430 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 4272 kg
Specific el. power demand (SFPv)	1.72 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	6.09 m³/sec	Installation	Indoor horizontal
External static pressure	410 Pa	Material	AlZn sheet steel
Internal static pressure	473 Pa	Thermal insulation	T3
Exhaust air volume flow rate	4.19 m³/sec	Condensation insulation	TB3
External static pressure	430 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	163 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.6 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	4.6 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	59.8 %	Heat recovery capacity	103 kW
SFPv supply air	1.14 kW/(m³/s)	Total dry weight	4272 kg
SFPv exhaust air inlet	0.83 kW/(m³/s)		
SFPv total sum	1.72 kW/(m³/s)	Heaviest block	1790 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU

SFPint (2016: 1056 W/(m³/s), 2018: 800 W/(m³/s))

512 W/(m³/s)

Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)

73 %

External leakage rate

0.4 %

Internal leakage rate

0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	197	104	Pa
Filter energy classification	B	B	
Filter pressure drop, start	49	15	Pa
Filter area	3.2	3.2	m²
Filter cross section air velocity	1.9	1.3	m/s
Air flow	6.09	4.19	m³/sec
Total pressure rise	788	564	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	72.5	69.1	%
Fan system input power (absorbed electrical power) according to SFP	7.0	3.49	kW

Fan system effect is taken into account in fan performance

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 4/14
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	6.09 m³/sec	Exhaust air volume flow rate 4.19 m³/sec
External static pressure	410 Pa	External static pressure 430 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 4272 kg
Specific el. power demand (SFPv)	1.72 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	151	-4.5/-8	16/4.6	70/50		1.84	9.6	50
Air cooler	95.3	25.5/18.8	16/14.3	6/12		3.78	22.2	50

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	15 kW	Power, extract flow	2 x 3.4 kW
Current, full load, supply flow	31 A	Current, full load, extract flow	2 x 4.4 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	66	77	73	70	69	66	64	62	74
Supply air connection	64	72	70	74	71	66	60	55	75
Extract connection	63	72	61	55	52	49	45	44	60
Exhaust connection	76	88	77	78	75	71	67	62	80
To surroundings	62	68	57	49	47	46	43	32	56

*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	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 5/14

TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

5 Pa

Casing end wall

Damper

Width cm : 220

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

8x592x592

Pressure drop, start

89 Pa

Pressure drop, dimensioning

164 Pa

Pressure drop, end

239 Pa

Face area

2.9 m²

Face velocity

2.2 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 072

Length: 025

Inspection side : right

Plenum fan

Inspection side: right

Fan selection

Impeller type: Bluefin Floor mounted

Fan size: size 3

Anti-vibration mountings: steel spring

Motor selection

Motor type: PM-motor IE4

IEC Size: 132

Motor control

Manufacture, type: FläktGroup separate

Housing protection: IP54

Design: on panel

Delivery options: mounted on current sub

Motor / VSD-accessories

Connection accessories: safety isolating switch

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 6/14

Length: 451

Dimensioning data

Speed	1190 Rpm
Max speed	1500 Rpm
Total efficiency	73.9 %
Total static pressure, dimensioning (wet coil)	883 Pa
Dynamic pressure	46 Pa
Fan system input power (absorbed electrical power)	7.92 kW
Temperature rise	1.1 °C
K factor	5.37
Fan wheel size	080

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	7.0 kW
Pressure rise	788 Pa
Speed	1122 Rpm

Motor

Motor output	15 kW
Electric current	31.0 A
Output margin, minimum	35 %

Frequency converter

Efficiency	97.0 %
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Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Fan + PM motor

Plate heat exchanger, RECUTERM

Size: 72

Output variant: Standard

Recuterm - defrost: Level 1 By pass damper > -16°C

Fin material : Aluminium

Droplet eliminator: without

Control connections: no

Material: AZ sheet steel

Inspection side: right

Efficiency

Temperature efficiency according to standard EN 308	59.8 %
Temperature efficiency at 0°C outdoors	63.9 %
Cooling recovery	58.2 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	58.0 %

Supply air

	Summer	Winter
Pressure drop	203	185 Pa
Air temperature	29.6 / 25.2	-3.6 / 11.3 °C
Wet temperature	20 / 18.7	-4.8 / 4 °C wb
Capacity reduction	32	103 kW
Face velocity	2.1	2.1 m/s

Exhaust air

	Summer	Winter
Pressure drop	106	101 Pa
Air temperature	22 / 28.4	22 / 3.1 °C
Wet temperature	15.4 / 17.6	13.1 / 3.1 °C wb
Face velocity	1.4	1.4 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 7/14

Empty section

Unit size : 072
Length: 040
Inspection side : right

Air heater for hot water

Size: 072
Inspection side: right
Material: galvanized sheet steel
Coil selection
Calculation principle: input data
Output variant: 2
Fluid passes: 04
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	24.6 l
Pressure drop, dimensioning	22 Pa
Output	151 kW
Air temperature	-4.5 / 16 °C
Face velocity	2.1 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	1.84 l/s
Water velocity	0.9 m/s
Pressure drop water	9.6 kPa
Oversizing	34.8 %

Empty section

Unit size : 072
Length: 040
Inspection side : right

Air cooler for chilled water

Size: 072
Inspection side: right
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3
Coil selection
Use as: Cooling Coil
Calculation principle: input data
Output variant: 3
Fluid passes: 04
Fin spacing: 2 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	50
Liquid volume	34.2 l
Pressure drop, dimensioning	76 Pa
Pressure drop, wet coil	76 Pa
Pressure drop, dry coil	51 Pa
Output	95.3 kW
Air temperature	25.5 / 16 °C
Wet temperature	18.8 / 14.3 °C wb
Face velocity	2.3 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
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Water temperature	6 / 12 °C
Water flow	3.78 l/s
Water velocity	1.3 m/s
Pressure drop water	22.2 kPa
Oversizing	7.7 %

Empty section

Unit size : 072
Length: 040
Inspection side : right

Humidifier

Unit size: 072
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: right

Special Unit Section

Size: 072
Pressure drop, dimensioning 0 Pa
Insertion loss, regenerated noise included 0,0,0,0,0,0,0 dB

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 220
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 220
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	8x592x592
Pressure drop, start	27 Pa
Pressure drop, dimensioning	54 Pa
Pressure drop, end	81 Pa
Face area	2.9 m²
Face velocity	1.5 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 9/14

Design: flush mounted in door

Empty section

Unit size : 072

Length: 040

Inspection side : left

Plenum fan

Inspection side: left

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: 451

Dimensioning data

Two fan wheels in parallel

Speed

1331 Rpm

Max speed

1610 Rpm

Total efficiency

69.1 %

Total static pressure, dimensioning (wet coil)

593 Pa

Dynamic pressure

12 Pa

Fan system input power (absorbed electrical power)

3.8 kW

Temperature rise

0.7 °C

K factor

10.14

Fan wheel size

056

SFP Calculation

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

3.49 kW

Pressure rise

564 Pa

Speed

1278 Rpm

Motor

Motor output

2 x 3.4 kW

Electric current

2 x 4.4 A

Output margin, minimum

30 %

Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 220

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 10/14

Height in cm : 100
Tightness class : CEN 3
Connection: Flange
Function : extract air
Location: externally end wall
Damper type: 200 mm blade
Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 11/14

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-072-235-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan floor mounted	2400	2750	1546	10.2	814
EQHB-072-260-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2650	2750	3072	22.39	1790
EQGB-072-300-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	3050	2750	1696	14.23	877
EQGB-072-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3	800	2750	1546	3.4	235

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793550	
Unit	371 (APRVL) / AHU10 Labs Middle L3 & L4	2021/04/20
Size	072	Page 12/14

Condensation insulation: TB3

Leakage class: L2(R)*

Casing strength: D1(M)

Casing end wall

Filter

EQGB-072-120-22-1-1-2-1-4-1-1	1250	2750	1696	5.83	556
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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)

Empty section

Plug fan wall mounted

Casing end wall

56.05	4272
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The dimensions are transport dimensions including packaging

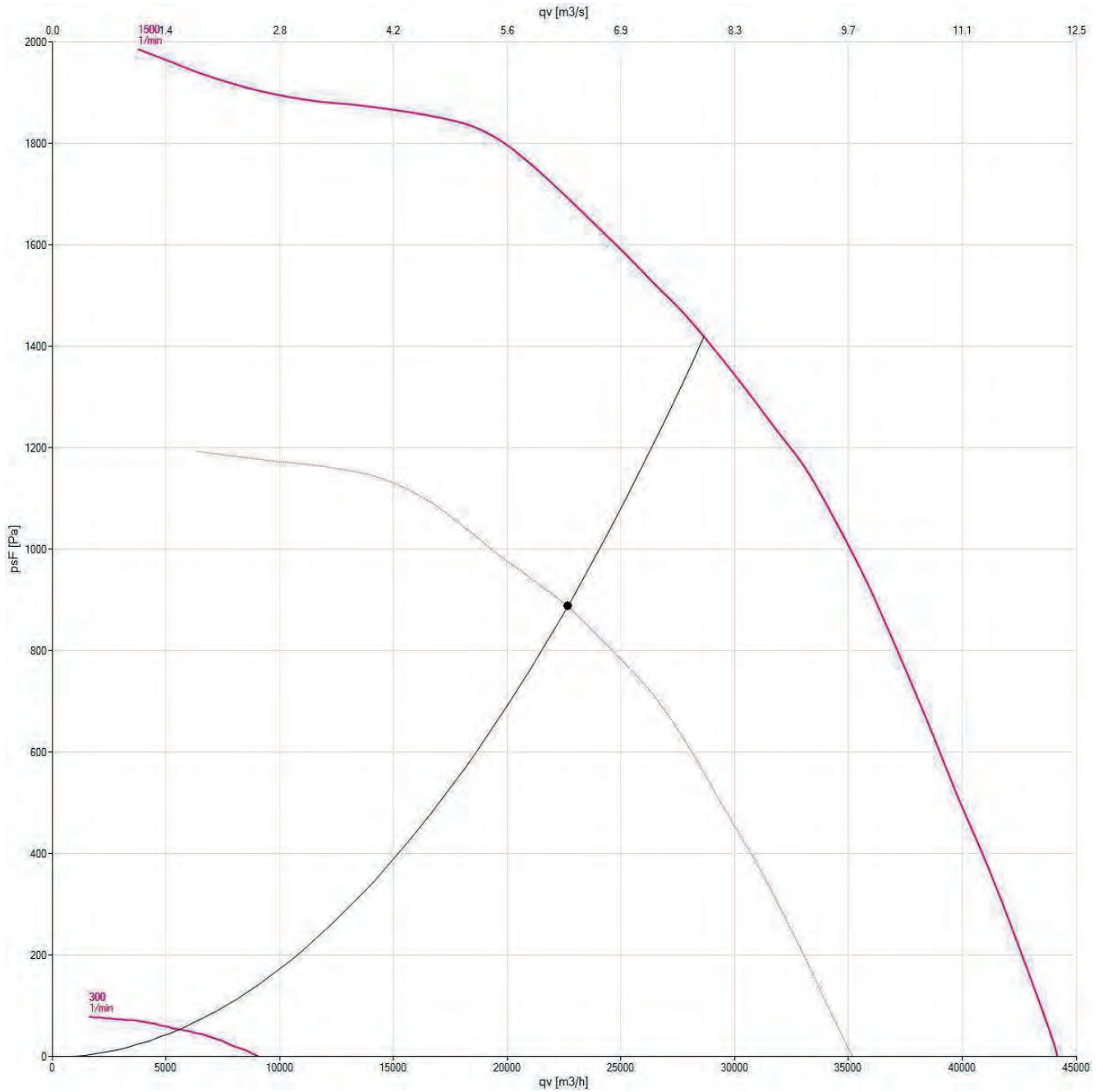
*Flakt Group eQ AHUs are leakage class L2 real unit as certified by Eurovent. CAL class @-400Pa and @+700Pa. For units where the casing has; (i) a customised or special design that differs from standard module box, (ii) nonstandard components penetrating the casing that is non-standard for a real unit, 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-02793550
 Unit 371 (APRVL) / AHU10 Labs Middle L3 & L4
 Size 072

Acon 2.55.47452

2021/04/20
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Fan chart - Supply air - EQLA-072-3-0-1-2-6-1-1-2-8-1-1

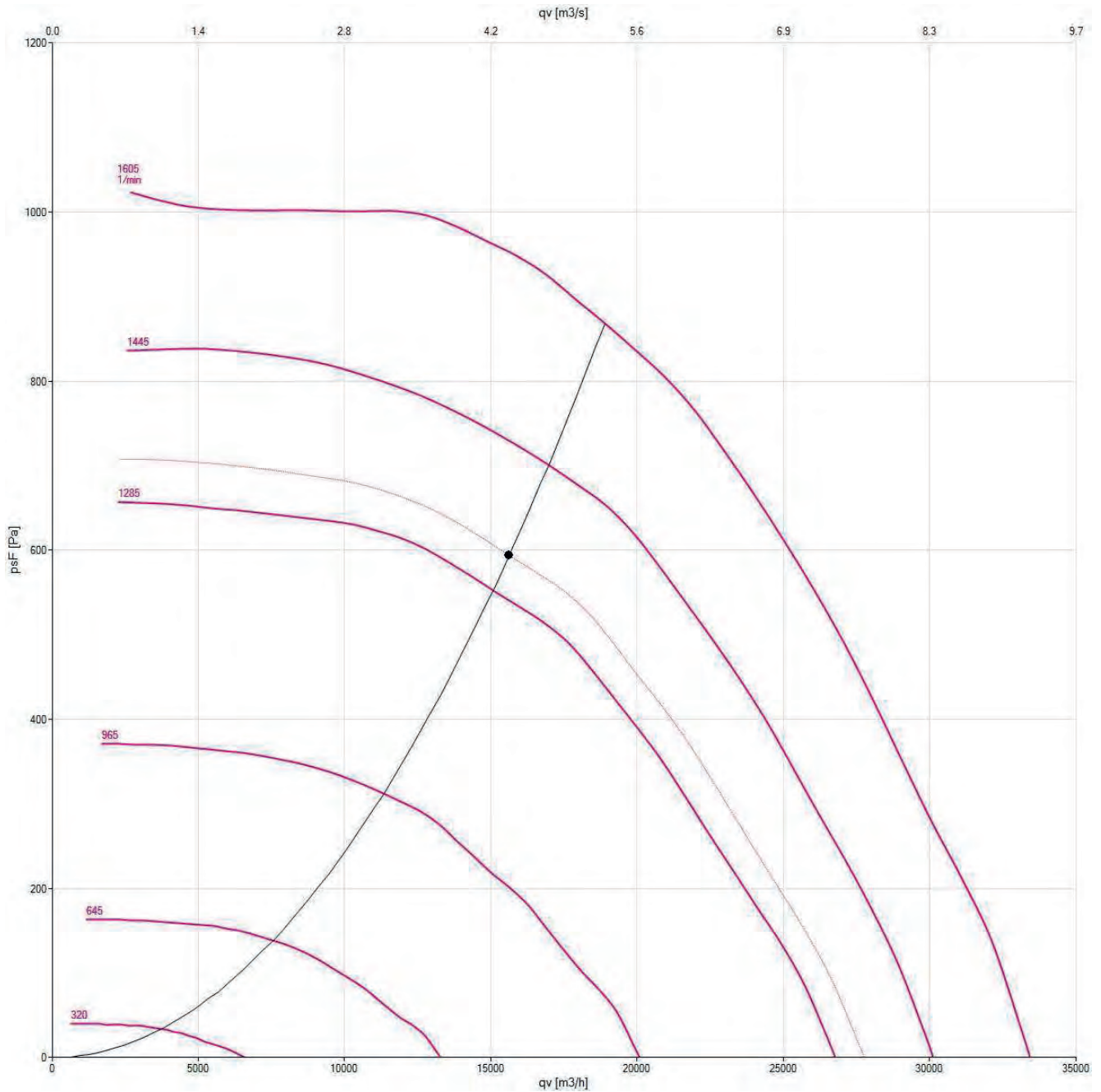


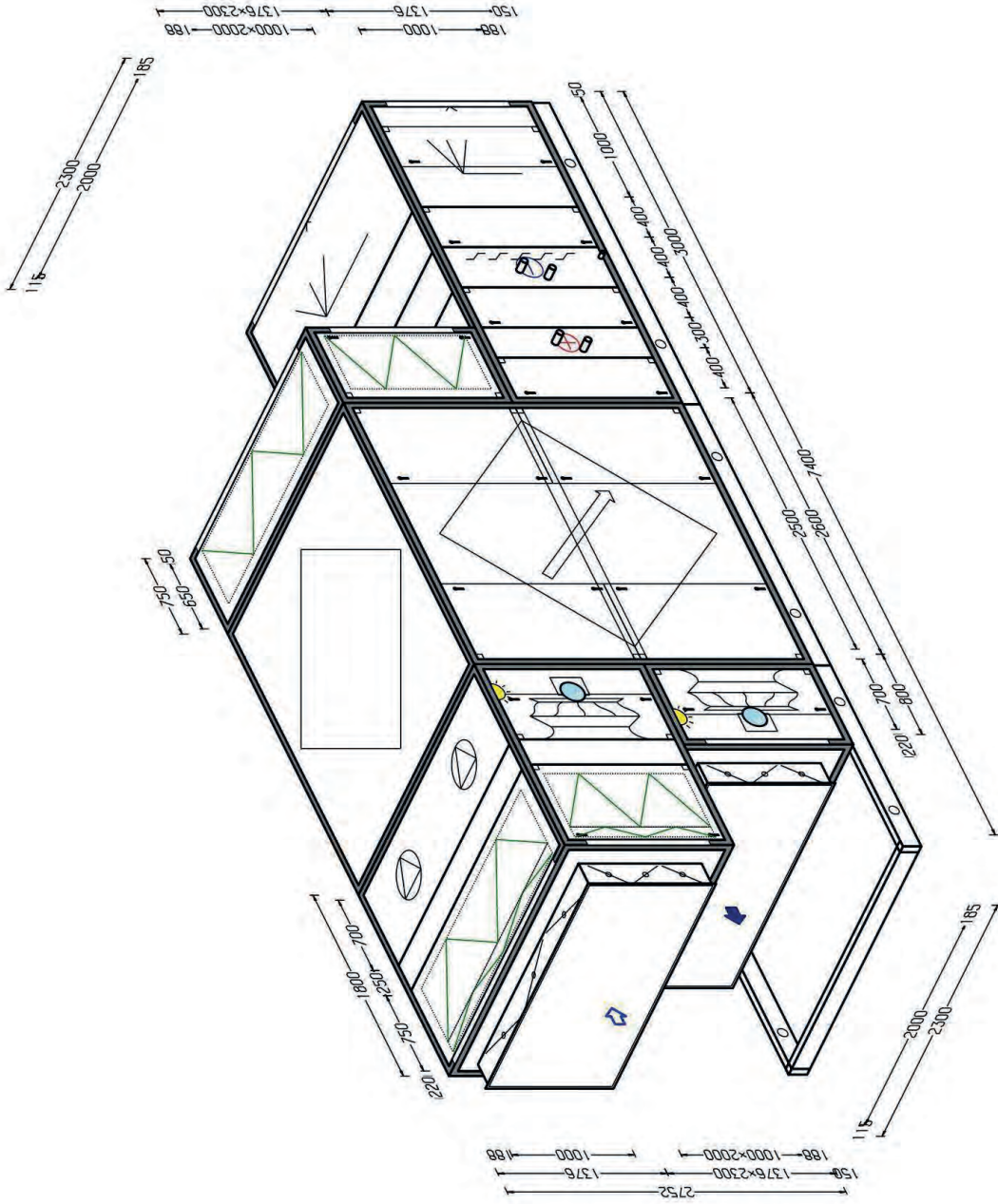
Project 781 () / Paterson Labs AHU
 AOC ACON-02793550
 Unit 371 (APRVL) / AHU10 Labs Middle L3 & L4
 Size 072

Acon 2.55.47452

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Fan chart - Exhaust air inlet - EQLC-072-3-1-1-2-3-2-2-8-2-1





Customer id	69028	Project name	Paterson Labs AHU (APRVL) / AHU11 Labs North L3 & L4	
	781	Unit name		4.04 m³/sec 3.86 m³/sec
	372	Supply air		
	ACON-02793551	Exhaust air		

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 3/14
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.04 m³/sec	Exhaust air volume flow rate 3.86 m³/sec
External static pressure	380 Pa	External static pressure 380 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3801 kg
Specific el. power demand (SFPv)	1.68 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air volume flow rate	4.04 m³/sec	Installation	Indoor horizontal
External static pressure	380 Pa	Material	AlZn sheet steel
Internal static pressure	310 Pa	Thermal insulation	T3
Exhaust air volume flow rate	3.86 m³/sec	Condensation insulation	TB3
External static pressure	380 Pa	Leakage class	L1(M) / L2(R)*
Internal static pressure	177 Pa	Casing strength	D1(M)
Design outdoor temperature summer	28.5 °C	Sum filtration supply air	ePM1 - 60.0%
Dim. humidity summer	19.7 °C wb	Sum filtration exhaust air	ePM1 - 60.0%
Design outdoor temperature winter	-4.5 °C		
Dim. humidity winter	-5.4 °C wb		
Temperature in, supply air, summer	16 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	14.2 °C wb	Air humidity in, extract air, summer	15.4 °C wb
Temperature in, supply air, winter	16 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	4.6 °C wb	Air humidity in, extract air, winter	13.1 °C wb
Mixing ratio at winter design temperature	0 %		
Temperature efficiency (EN308)	72.1 %	Heat recovery capacity	82.7 kW
SFPv supply air	0.93 kW/(m³/s)	Total dry weight	3801 kg
SFPv exhaust air inlet	0.78 kW/(m³/s)		
SFPv total sum	1.68 kW/(m³/s)	Heaviest block	1771 kg

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



Approved according to requirements 2018

Unit type: NRVU BVU	
SFPint (2016: 1094 W/(m³/s), 2018: 814 W/(m³/s))	420 W/(m³/s)
Dry temperature efficiency (balanced) (EN308) (2016: 67 %, 2018: 73 %)	73 %
External leakage rate	0.4 %
Internal leakage rate	0.5 %

	Supply air	Extract air	Unit
Heat exchanger pressure drop	122	113	Pa
Filter energy classification	B	B	
Filter pressure drop, start	34	16	Pa
Filter area	2.8	2.8	m²
Filter cross section air velocity	1.4	1.4	m/s
Air flow	4.04	3.86	m³/sec
Total pressure rise	621	525	Pa
Fan fan system effect	0	0	Pa
Fan total efficiency	67.6	68.3	%
Fan system input power (absorbed electrical power) according to SFP	3.78	3.02	kW

Fan system effect is taken into account in fan performance

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 4/14
Customer	Arup / Imtech	
Customers ref.		
Our ref.	Andy Window / Steve Dunleavy	
Supply air volume flow rate	4.04 m³/sec	Exhaust air volume flow rate 3.86 m³/sec
External static pressure	380 Pa	External static pressure 380 Pa
Mains electricity	3x400VAC±10%+N+PE, 50Hz	Weight 3801 kg
Specific el. power demand (SFPv)	1.68 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1.2 kg/m³	Ref. altitude above sea level 0 m

Coils

	Capacity [kW]	Air In [°C/°C wb]	Air Out [°C/°C wb]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	100	-4.5/-8.4	16/4.4	70/50		1.22	5.6	50
Air cooler	62.4	25.5/18.4	16/13.9	6/12		2.48	28.1	50

Fan power supply data

Voltage, supply flow	3x400VAC+PE, 50Hz	Voltage, extract flow	3x400VAC+PE, 50Hz
Power, supply flow	2 x 3.4 kW	Power, extract flow	2 x 3.4 kW
Current, full load, supply flow	2 x 4.4 A	Current, full load, extract flow	2 x 4.4 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	69	83	71	64	63	60	55	53	71
Supply air connection	69	83	68	69	66	61	54	47	72
Extract connection	67	73	62	54	53	49	44	43	61
Exhaust connection	79	89	77	78	75	71	67	61	81
To surroundings	65	72	56	44	43	41	35	30	57

*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	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 5/14

TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : AlZn

Filter

Inspection side: right

Filter selection

Filter class: F7 - ePM1 60%, glassfibre

Filter frame : galvanized sheet steel

Prefilter: G4 – coarse, synthetic

Design

Connection side : inlet in end wall

Location: negative pressure

Drain tray: without

Number of filters

6x592x592, 2x287x592

Pressure drop, start

57 Pa

Pressure drop, dimensioning

113 Pa

Pressure drop, end

170 Pa

Face area

2.5 m²

Face velocity

1.7 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Pressure range, second sensor: 0-250 Pa

Design: flush mounted in door

Empty section

Unit size : 063

Length: 025

Inspection side : right

Plenum fan

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: 451

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 6/14

Dimensioning data

Two fan wheels in parallel	
Speed	1402 Rpm
Max speed	1610 Rpm
Total efficiency	66.3 %
Total static pressure, dimensioning (wet coil)	690 Pa
Dynamic pressure	11 Pa
Fan system input power (absorbed electrical power)	4.42 kW
Temperature rise	0.9 °C
K factor	10.14
Fan wheel size	056

SFP Calculation

Fan system input power (absorbed electrical power) according to SFP	3.78 kW
Pressure rise	621 Pa
Speed	1316 Rpm

Motor

Motor output	2 x 3.4 kW
Electric current	2 x 4.4 A
Output margin, minimum	10 %

Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

Plate heat exchanger, RECUTERM

Size: 63
 Output variant: Standard
 Recuterm - defrost: Level 1 By pass damper > -16°C
 Fin material : Aluminium
 Droplet eliminator: without
 Control connections: no
 Material: AZ sheet steel
 Inspection side: right

Efficiency

Temperature efficiency according to standard EN 308	72.1 %
Temperature efficiency at 0°C outdoors	77.1 %
Cooling recovery	71.8 %

Frost protection

Temperature limit when frost protection starts:	0 °C
Winter dim. , regulated	75.7 %

Supply air

	Summer	Winter
Pressure drop	126	115 Pa
Air temperature	29.4 / 24.1	-3.7 / 15.8 °C
Wet temperature	20 / 18.3	-4.9 / 6.3 °C wb
Capacity reduction	26	83 kW
Face velocity	1.6	1.6 m/s

Exhaust air

	Summer	Winter
Pressure drop	115	110 Pa
Air temperature	22 / 27.6	22 / 3.7 °C
Wet temperature	15.4 / 17.4	13.1 / 3.7 °C wb
Face velocity	1.5	1.5 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 7/14

Empty section

Unit size : 063
Length: 040
Inspection side : right

Air heater for hot water

Size: 063
Inspection side: right
Material: galvanized sheet steel

Coil selection

Calculation principle: input data
Output variant: 2
Fluid passes: 04
Fin spacing: 3 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Nom. pipe size	50
Liquid volume	14.6 l
Pressure drop, dimensioning	18 Pa
Output	100 kW
Air temperature	-4.5 / 16 °C
Face velocity	1.7 m/s
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	1.22 l/s
Water velocity	0.6 m/s
Pressure drop water	5.6 kPa
Oversizing	58.2 %

Empty section

Unit size : 063
Length: 040
Inspection side : right

Air cooler for chilled water

Size: 063
Inspection side: right
Material: galvanized sheet steel
Droplet eliminator: with, plastic
Design variant: version 3

Coil selection

Use as: Cooling Coil
Calculation principle: input data
Output variant: 3
Fluid passes: 06
Fin spacing: 2 mm
Design: normal face area
Material, coil: Cu/Al, MS header

Shunt selection

Shunt control: without

Nom. pipe size	50
Liquid volume	30.5 l
Pressure drop, dimensioning	49 Pa
Pressure drop, wet coil	49 Pa
Pressure drop, dry coil	34 Pa
Output	62.4 kW
Air temperature	25.5 / 16 °C
Wet temperature	18.4 / 13.9 °C wb
Face velocity	1.8 m/s

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 8/14

Water temperature	6 / 12 °C
Water flow	2.48 l/s
Water velocity	1.3 m/s
Pressure drop water	28.1 kPa
Oversizing	21.6 %

Empty section

Unit size : 063
Length: 040
Inspection side : right

Humidifier

Unit size: 063
Length in cm: 100
Material: stainless sheet steel (AISI 304)
Inspection side: right

Special Unit Section

Size: 063
Pressure drop, dimensioning 0 Pa
Insertion loss, regenerated noise included 0,0,0,0,0,0,0 dB

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Duct connection piece

Width cm : 200
Height in cm : 100
Connection type: flange connection
Material: galvanized sheet steel / AlZn

Filter

Inspection side: left

Filter selection

Filter class: F7 - ePM1 60%, glassfibre
Filter frame : galvanized sheet steel
Prefilter: without

Design

Connection side : inlet in end wall
Location: negative pressure
Drain tray: without

Number of filters	6x592x592, 2x287x592
Pressure drop, start	29 Pa
Pressure drop, dimensioning	59 Pa
Pressure drop, end	88 Pa
Face area	2.5 m²
Face velocity	1.6 m/s

Differential pressure sensor type Dwyer Magnehelic

Pressure range, first sensor: 0-250 Pa

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
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Design: flush mounted in door

Plenum fan

Inspection side: left

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: 451

Dimensioning data

Two fan wheels in parallel

Speed

1273 Rpm

Max speed

1610 Rpm

Total efficiency

68.1 %

Total static pressure, dimensioning (wet coil)

557 Pa

Dynamic pressure

10 Pa

Fan system input power (absorbed electrical power)

3.32 kW

Temperature rise

0.7 °C

K factor

10.14

Fan wheel size

056

SFP Calculation

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

3.02 kW

Pressure rise

525 Pa

Speed

1219 Rpm

Motor

Motor output

2 x 3.4 kW

Electric current

2 x 4.4 A

Output margin, minimum

35 %

Inspection window

Design: standard

Bulkhead light

Type: LED

Delivery form: Lamp supplied loose

Frequency converter

Motor accessories

Frequency converter

Fan + EC motor

Help code fan + EC-motor

End connection frame

Pressure drop, dimensioning

2 Pa

Casing end wall

Damper

Width cm : 200

Height in cm : 100

Tightness class : CEN 3

Connection: Flange

Function : extract air

Location: externally end wall



AIR HANDLING UNIT eQ

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 10/14

Damper type: 200 mm blade
Material : AlZn

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 11/14

BLOCK LIST

	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	VOLUME (m³)	WEIGHT (kg)
EQGB-063-180-22-1-1-2-1-2-1-1 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 Filter Empty section Plug fan wall mounted	1850	2450	1546	7.01	567
EQHB-063-260-22-1-1-2-1-3-1-1 Unit casing (frame, unit) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3 Condensation insulation: TB3 Leakage class: L2(R)* Casing strength: D1(M) Plate heat exchanger, RECUTERM	2650	2450	3072	19.94	1771
EQGB-063-300-22-1-1-2-1-4-1-1 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) Empty section Air heater for hot water Empty section Air cooler for chilled water Empty section Humidifier Special Unit Section Casing end wall	3050	2450	1696	12.67	804
EQGB-063-075-22-1-1-2-1-2-1-1 Unit casing (frame, module) Model box code: EQ 2111 Material: AlZn sheet steel Thermal insulation: T3	800	2450	1546	3.03	206

Project	781 () / Paterson Labs AHU	Acon 2.55.47452
AOC	ACON-02793551	
Unit	372 (APRVL) / AHU11 Labs North L3 & L4	2021/04/20
Size	063	Page 12/14

Condensation insulation: TB3

Leakage class: L2(R)*

Casing strength: D1(M)

Casing end wall

Filter

EQGB-063-080-22-1-1-2-1-4-1-1	850	2450	1696	3.53	453
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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)

Plug fan wall mounted

Casing end wall

46.19	3801
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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.

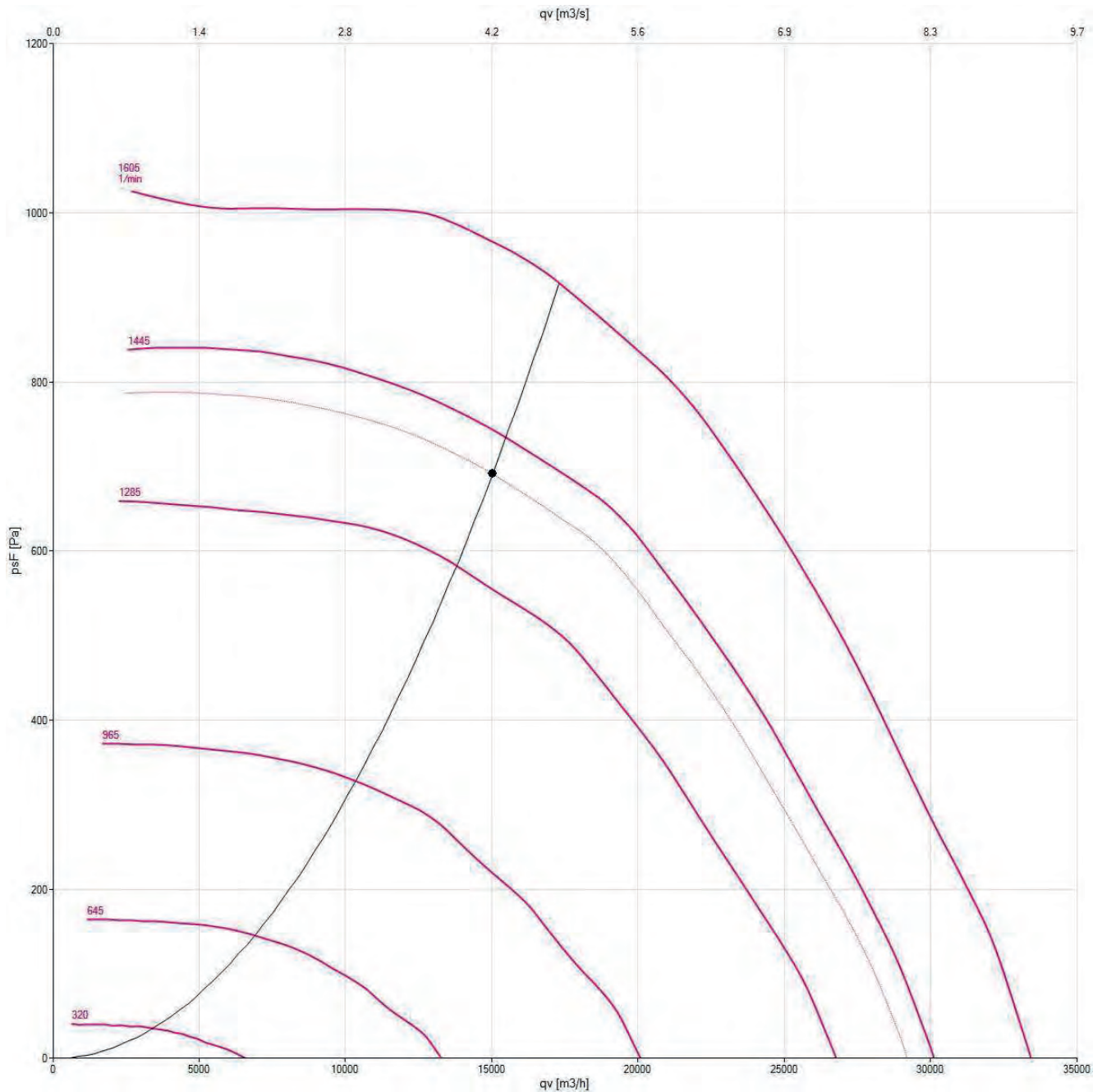
Project
AOC
Unit
Size

781 () / Paterson Labs AHU
ACON-02793551
372 (APRVL) / AHU11 Labs North L3 & L4
063

Acon 2.55.47452

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Fan chart - Supply air - EQLC-063-3-1-1-2-3-2-1-2-8-1-1



Project 781 () / Paterson Labs AHU
 AOC ACON-02793551
 Unit 372 (APRVL) / AHU11 Labs North L3 & L4
 Size 063

Acon 2.55.47452

2021/04/20
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Fan chart - Exhaust air inlet - EQLC-063-3-1-1-2-3-2-2-8-2-1

