



Project Name and No:	Manchester Metropolitan University Science & Engineering - 25716
Submission No:	1338B-NGB-ZZ-ZZ-TS-M-046 – Extract Fans
Material/Product Reference:	Extract Fans
Manufacturer's Name, Address and Contact No:	Flakt Group Ltd 6240 Bishops Court Solihull Parkway West Midlands B37 7YB Tel: 0845 608 4446
Proposed Location of Material/Plant on Project:	SF/B1/01 - Basement sprinkler pump room EF/GF/01 - Ground floor COSHH G.15 ceiling void EF/GF/02 - Ground floor Lobby G.WC.02 ceiling void EF/GF/03 - Ground floor Transformer room EF/GF/04 - Ground floor Transformer room EF/GF/05 - Ground floor G.ENG.02 Domestic Tank room EF/07/01 – Level 7 Roof West Core 3
Specification References	1388B-HOL-XX-XX-SP-V-000001 MEP Generals Spec (New Build) 1388B-HOL-XX-XX-SP-V-000002 MEP Performance Spec (New Build) MMU E-MAP 54 – No defined manufacturer
List of Attachments:	• Flakt Woods TQA • Flakt Woods Extract Fan Technical Submittal • EF_07_01 - Cased Axial Selection • EF_07_01 - 100JM.Bif Selection • MMU-NGB-00-SH-M-510012 – Schedule of Extract Fans P04
Sample Included (Y/N)	No
Compliant with Specification (Y/N) If No state Non-Compliance	No EF/07/01 A short cased axial has been selected on the basis of a significant decrease in noise and SFP against fan with motor out of air stream. IE. 1.31 SFP and 92 dBA @ 3m for the BI-furcated solution versus 0.92 SFP and 53 dBA @ 3m for the short cased axial fan option. DW 172 allows motor out of airstream. EF/GF/05 – specified noise breakout level slightly exceeded

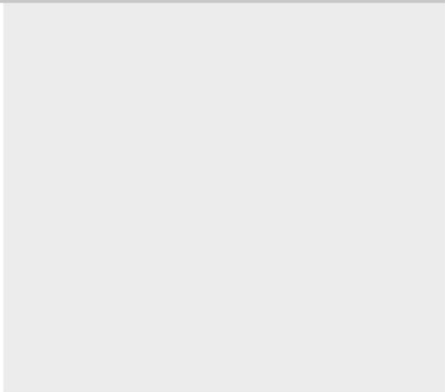
Date 19/07/2022	Name (Printed) David Morland On behalf of NG Bailey		
Approved/Approved with Comments	Name (Printed) XXX	Representative of: Hoare Lea	Date: XX/XX/2022



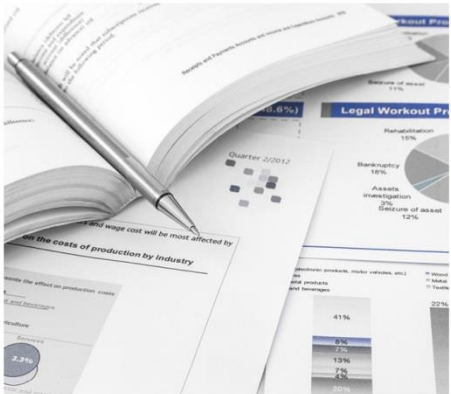
Comments:

NG BAILEY
Manchester Metropolitan University – Science & Engineering

Technical Submission
1338B-NGB-ZZ-ZZ-TS-M-046
Title: Extract Fans



**+BOWMER
KIRKLAND**



TECHNICAL SUBMISSION FOR – Extract Fans

SUMMARY

Technical Submission No.	1338B-NGB-ZZ-ZZ-TS-M-046 – Extract Fans
Revision:	Rev-O
Package Description:	Extract Fans
Package Equipment:	Extract Fans
Proposed Supplier:	Flakt Woods
Supplier Address:	Flakt Group Ltd 6240 Bishops Court Solihull Parkway West Midlands B37 7YB Tel: 0845 608 4446
Building Locations:	SF/B1/01 - Basement sprinkler pump room EF/GF/01 - Ground floor COSHH G.15 ceiling void EF/GF/02 - Ground floor Lobby G.WC.02 ceiling void EF/GF/03 - Ground floor Transformer room EF/GF/04 - Ground floor Transformer room EF/GF/05 - Ground floor G.ENG.02 Domestic Tank room EF/07/01 – Level 7 Roof West Core 3
Compliance with Specification:	No EF/07/01 A short cased axial has been selected on the basis of a significant decrease in noise and SFP against fan with motor out of air stream. IE. 1.31 SFP and 92 dBA @ 3m for the BI-furcated solution versus 0.92 SFP and 53 dBA @ 3m for the short cased axial fan option. DW 172 allows motor out of airstream. EF/GF/05 – specified noise breakout level slightly exceeded
NGB Contact:	David Morland
NGB Contact Tel:	07980 996878
NGB Contact E-mail:	David.morland@gbailey.co.uk
Raised By:	David Morland
Date Raised:	19/07/2022
Response Required By:	02/08/2022

SUPPORTING DOCUMENTS

SUPPORTING DOCUMENTS:

- Flakt Woods TQA
- Flakt Woods Extract Fan Technical Submittal
- EF_07_01 - Cased Axial Selection
- EF_07_01 - 100JM.Bif Selection
- MMU-NGB-00-SH-M-510012 – Schedule of Extract Fans P04

APPROVAL STATUS

COMMENTS:

STATUS:

A

B

C

(Please Circle)

MADE BY:

DATE:

STATUS KEY

A – Approved

B – Approved with comments

C – Rejected with comments

NG Bailey Manchester Metropolitan Science & Engineering New Build			
Project No:	25716	Company:	Flaktgroup
Package Description:	Extract Fans	Contact:	Andy Window
Date:	19/07/2022	Tel:	07801 723212
		E-Mail:	andy.window@flaktgroup.com
Compliance		Compliant with Scope Checklist:	COMPLIANT
Technical Section			
SF/BI/01 - Sprinkler Pump Room x 2	Basement		HT80JM/25/4/3/14
Vol m3/s including 10% margin (m3/s)	2.332	COMPLIANT	
PD including 21% margin (Pa)	181.5	COMPLIANT	
Fan Type	Axial	COMPLIANT	
Fan configuration	Duty/Standby	COMPLIANT	2 fans in series
Motor Power (Kw)	TBC	COMPLIANT	1.8
SFP (w/l/s)	0.5	COMPLIANT	0.5
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	400/3/50
FLC (A)	TBC	COMPLIANT	3.99
Noise breakout @ 3m (dBA)	55	COMPLIANT	45
Internal/External	Internal	COMPLIANT	
300 degC for 2 hrs	Y	COMPLIANT	
VSD included	Y	COMPLIANT	
EF/GF/01 - Dishwash/Potwash		Level 1 Plantroom	Estoc Targe 67-450-1
Vol m3/s including 10% margin (m3/s)	0.73	COMPLIANT	
PD including 21% margin (Pa)	387.2	COMPLIANT	
Fan Type	Mixed flow/centrif	COMPLIANT	Boxed centrif
Fan configuration	Duty	COMPLIANT	
Motor Power (Kw)	TBC	COMPLIANT	1
SFP (w/l/s)	N/A	COMPLIANT	This fan is considered part of the plant therefore excluded from Part L requirements
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	230/1/50
FLC (A)	TBC	COMPLIANT	4.6
Noise breakout @ 3m (dBA)	50	COMPLIANT	
Internal/External	Internal	COMPLIANT	
Motor out of airstream	HL Spec U12/300	COMPLIANT	
VSD included	Y	COMPLIANT	
EF/GF/02 - COSHH		Level 1 Plantroom	Estoc Targe 50-355-1
Vol m3/s including 10% margin	0.066	COMPLIANT	
PD including 21% margin	266.2	COMPLIANT	
Fan Type	Mixed flow/centrif	COMPLIANT	Boxed centrif
Fan configuration	Duty	COMPLIANT	
SFP	N/A	COMPLIANT	This fan is considered part of the plant therefore excluded from Part L requirements
Motor Power (Kw)	TBC	COMPLIANT	0.31
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	230/1/50
FLC (A)	TBC	COMPLIANT	1.4
Noise breakout @ 3m (dBA)	50	COMPLIANT	40
Internal/External	Internal	COMPLIANT	
Motor out of airstream	HL Spec U12/300	COMPLIANT	
VSD included	Y	COMPLIANT	
EF/GF/03 & 04 - Transformer Room x 2			ePowerbox 67-500-1-4
Vol m3/s including 10% margin	1.98	COMPLIANT	
PD including 21% margin	121	COMPLIANT	
Fan Type	TBC	COMPLIANT	Powerbox
Fan configuration	Duty	COMPLIANT	
SFP	0.5	COMPLIANT	0.47
Motor Power (Kw)	TBC	COMPLIANT	1.38
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	230/1/50
FLC (A)	TBC	COMPLIANT	6.22
Noise breakout @ 3m (dBA)	55	COMPLIANT	38
Internal/External	Internal	COMPLIANT	
Fan Inverter for fan over 0.75 Kw	Y	COMPLIANT	
EF/GF/05 - Domestic Tank Room Room		GF.ENG.02-01	Clima Plate BB-12073-10
Vol m3/s including 10% margin	0.704	COMPLIANT	
PD including 21% margin	60.5	COMPLIANT	
Fan Type plate axial	HL Spec U10/300	COMPLIANT	
Fan configuration	Duty	COMPLIANT	
SFP	0.5	COMPLIANT	0.35
Motor Power (Kw)	TBC	COMPLIANT	0.43
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	230/1/50
FLC (A)	TBC	COMPLIANT	3
Noise breakout @ 3m (dBA)	55	NON-COMPLIANT	58
Internal/External	Internal	COMPLIANT	
Speed controller	Y	COMPLIANT	
EF/07/01 - Roof (Kitchen Extract)		Level 7 Roof	90JM/25/4/9/14
Vol m3/s including 10% margin	5.5	COMPLIANT	
PD including 21% margin	605	COMPLIANT	
Fan Type	Bifurcated	NON-COMPLIANT	DW 172 allows motor in air stream. Short cased axial selected on the basis of a significant decrease in noise and SFP against fan with motor out of air stream. iE. 1.31 SFP and 92 dBA @ 3m for the Bi-furcated solution versus 0.92 SFP and 53 dBA @ 3m for the short cased axial fan option.
Fan configuration	Duty	COMPLIANT	
SFP	0.5	NON-COMPLIANT	0.92 - high system resistance
Motor Power (Kw)	TBC	COMPLIANT	7.5
Electrical Supply (v/ph/hz)	TBC	COMPLIANT	
FLC (A)	TBC	COMPLIANT	12.6
Noise breakout @ 3m (dBA)	59	COMPLIANT	
Internal/External	External	COMPLIANT	
2 hr fire rated motor out of airstream	HL Spec U12/300	COMPLIANT	
Fan Inverter for fan over 0.75 Kw	Y	COMPLIANT	
KEF tested to BS EN ISO5801 and BS EN ISO 5136 / BS EN ISO13347.	UoM Spec Design Requirements	COMPLIANT	

Notes on Selections

1. EF/B1/01 Has been selected on a HT 300/2 JM Aerofoil Fan. Run & Standby in Series with the idling losses for the standby fan included within the selection.
2. EF/B1/01 we have selected a Fan & Inverter Combination that is Certified to EN12101-3.
3. EF/GF/01 & 02 Have been selected on Internally Mounted Boxed Fans with Motors out of Airstream. The units have been selected with commissioning speed control (BMS).
4. EF/GF/03 & 04 Have been selected on Internally Mounted Boxed Fans. The units have been selected with commissioning speed control (BMS).
5. EF/GF/05 has been selected on a Plate Mounted Axial Flow Fan with commissioning speed control (BMS).
6. EF/07/01 has been selected on a short cased axial with motor in airstream and suitable inveter drive

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022



JM
BB-12073-1

HT80JM/25/4/3/14
EF/B1/01 Sprinkler Pump
Room

PRODUCT

Model Code	HT80JM/25/4/3/14
Fan Diameter	800 mm
Fan Speed	1362 rpm, 48 Hz [Max 1700, Min 284]
Impeller	3 Blades, 14° Angle
Installation	Type D - Form B
Fan Casing	Long - Horizontal

PERFORMANCE

Requested Duty	2.33 m³/s @ 182 Pa (Static)
Outlet Dynamic Pressure	12.9 Pa
Idling Losses	20.2 Pa
Velocity	4.64 m/s
Duty Shaft Power	0.822 kW
Max Shaft Power	0.926 kW [Used to size motor]
Efficiency (Total / Static)	60.4 % / 56.8 %

MOTOR

Motor Rating	1.80 kW [90S/L Frame - 4 Pole]
Full Load Current	3.99 A
Starting Current	20.3 A
Electrical Supply	380 - 415 Volts 50 Hz 3 Phase
Motor Winding	Standard
Motor Type	TEAR - Pad - IE2 - Class H Insulation

EFFICIENCY GRADES

ErP [FMEG] Rating	N 70 (ErP Compliance 2015) ✓
ErP [FMEG]	Target N 55.1
FMEG Blade Angle [Range]	18° [8° to 24°]
Measurement Category	D
VSD	Yes
Fan + Motor Efficiency	64.7% [5.05 m³/s @ 154 Pa]
Motor Input Power (ErP)	1.29 kW
SFP value	0.42 W/l/s @ Actual Duty

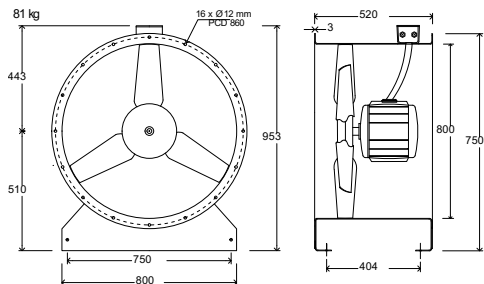
ENVIRONMENT

Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	300°C for 2hrs
Operating Environment	Normal

RUNNING COSTS

Power from mains	1.95 kWh
Energy Consumption	3,894.30 [2,000.00 h/year]
Running Cost / Year	£973.58
Co2 per Year	1,369.08 kgCO2e

PRODUCT DIMENSIONS



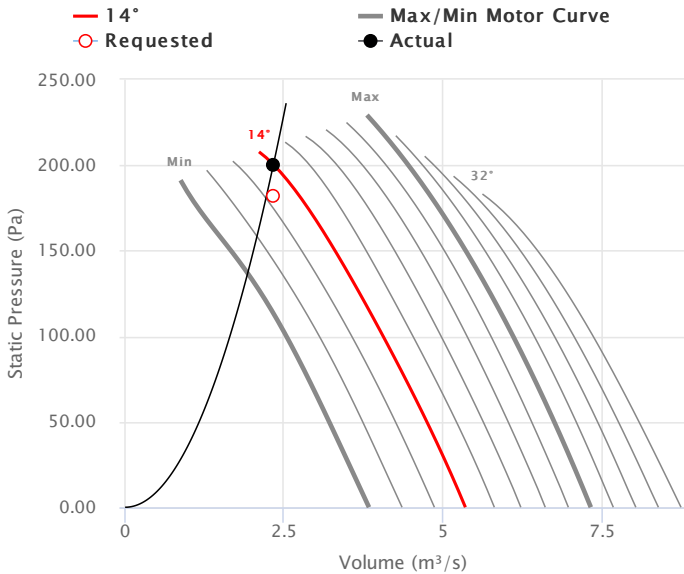
MECHANICAL

Casing	800mm Steel Casing
Impeller	Aluminium LM6 Hub, Aluminium LM6 Blades
Operating Temperatures	-20 °C to 50 °C [HT 300 °C]
Maximum Running Speed	1700 rpm [59 Hz]
Minimum Running Speed	284 rpm [10 Hz]
Weight	81kg

COMMENTS

Lang_SeriesIdleLossComments

FAN PERFORMANCE CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	90	83	84	85	84	80	77	74	94	88	68
Outlet	91	84	84	85	84	81	79	76	94	89	68
Breakout	81	63	58	60	59	53	59	53	81	65	45

Sound Data At Requested Duty.

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

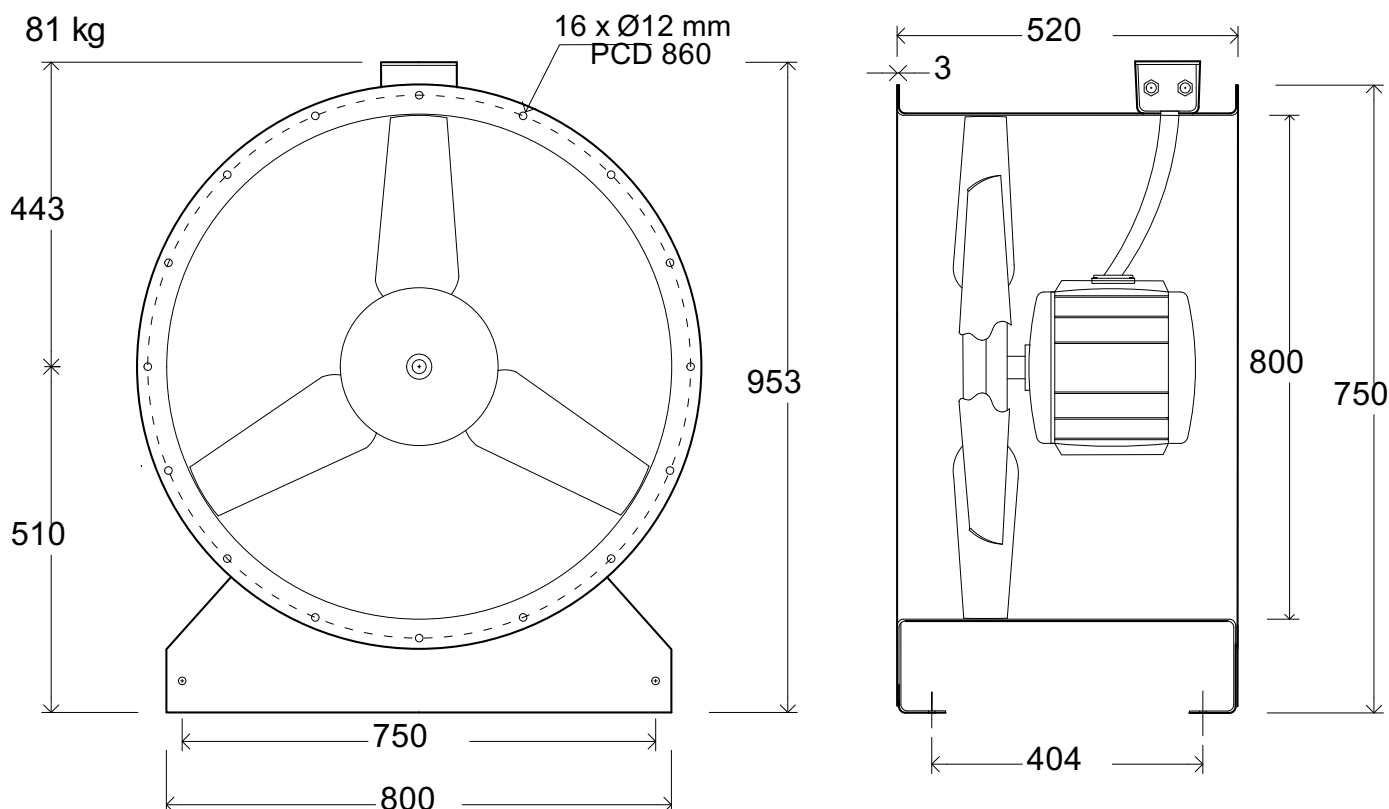
FAN & ACCESSORIES

Item Description	Part Number	Qty
HT80JM/25/4/3/14		2
Flexible Connector & Clips	AS040800	4
Matching Flange	74917	4
Mounting Feet Set 2	AS021112	4
Spring AV Set 4	AS035485	4
IDDXF54 - 3/3 - Inverter [EN12101-3 Certified]	EA901018	2

Project : MMU Science & Engineering
Quotation :

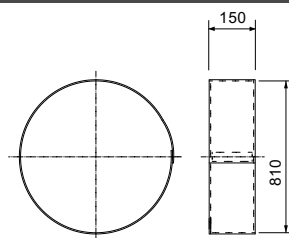
Project Code : BB-12073
Date : 10 June 2022

FAN DIMENSIONS

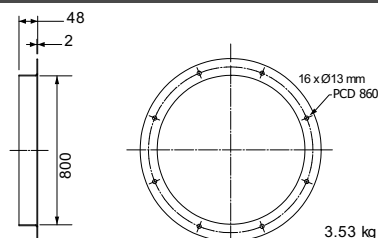


ACCESSORY DIMENSIONS

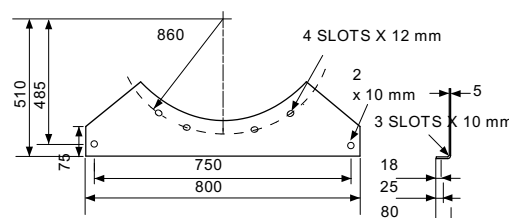
FLEXIBLE CONNECTOR & CLIPS



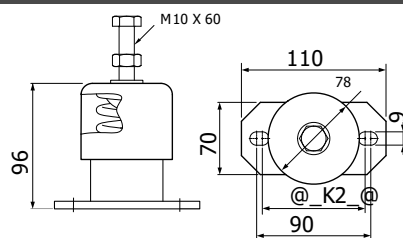
MATCHING FLANGE



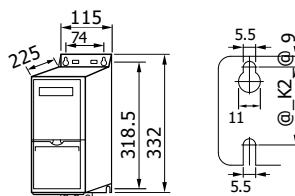
MOUNTING FEET SET 2



SPRING AV SET 4



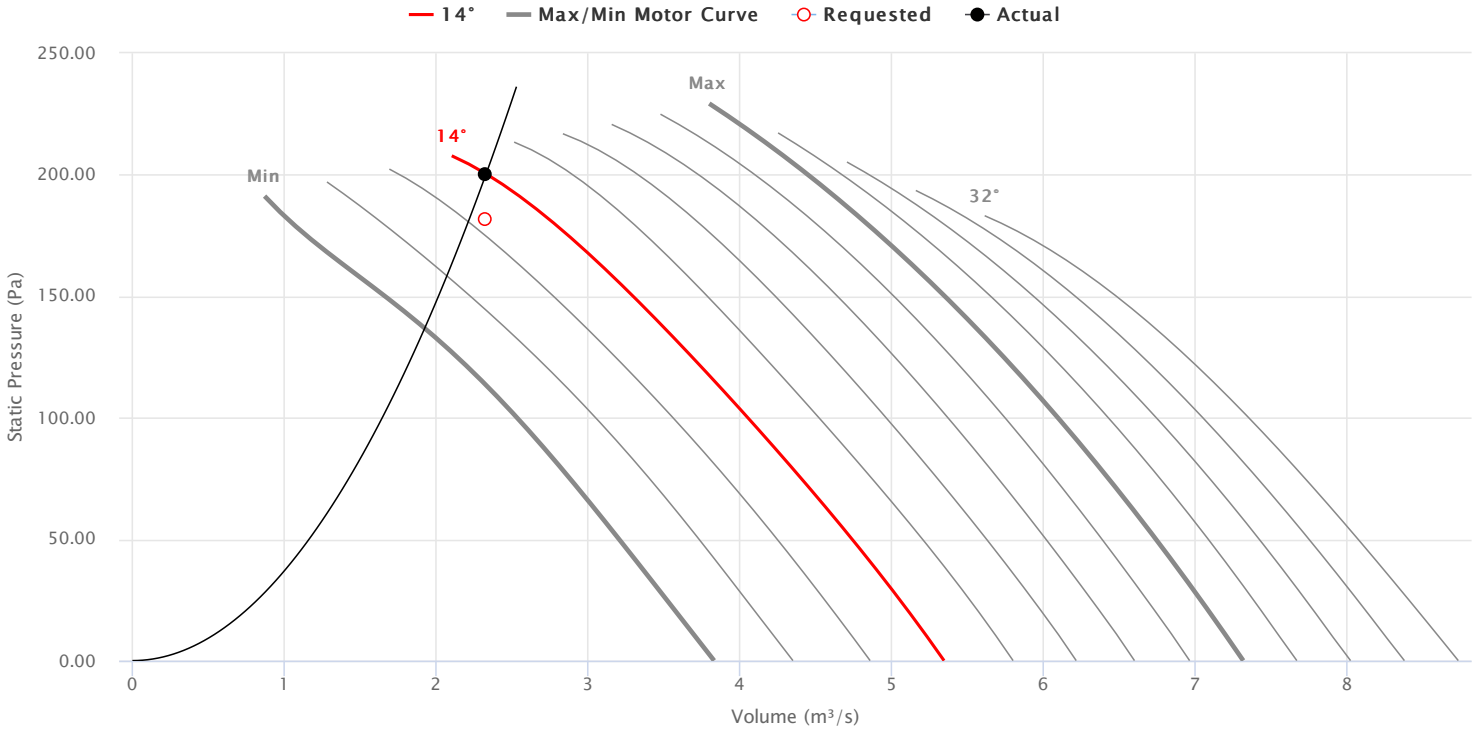
DDXF54 - 3/3 - INVERTER [EN12101-3 CERTIFIED]



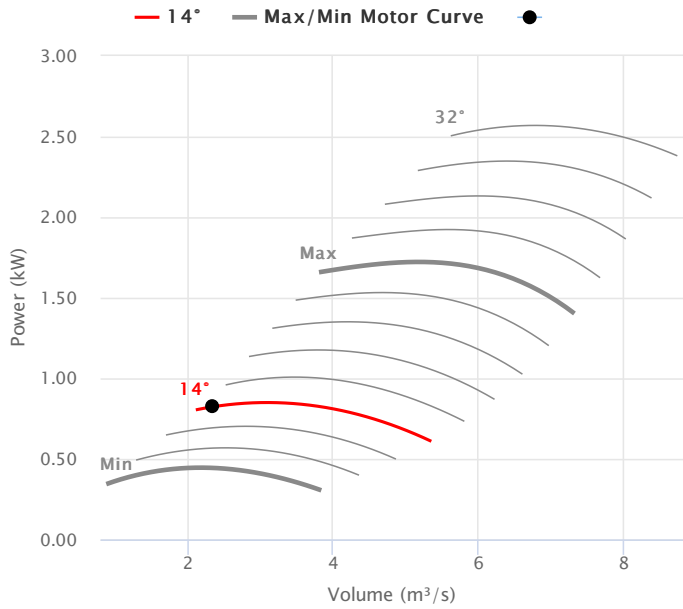
Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022

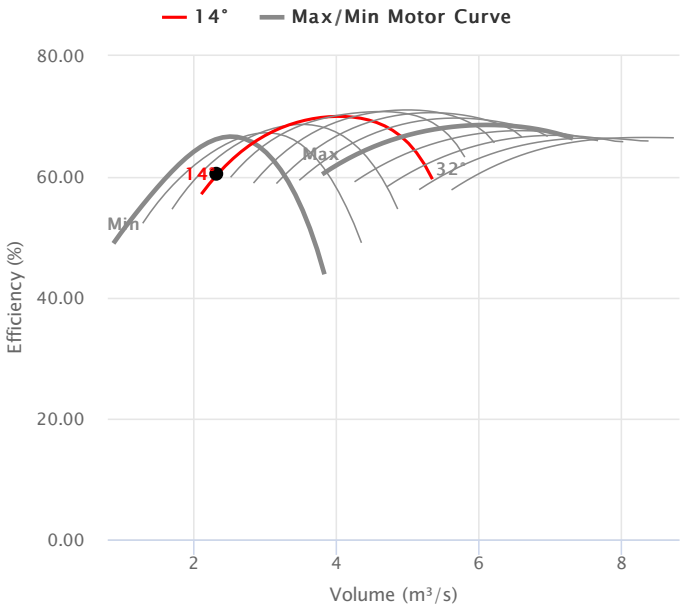
FAN PERFORMANCE CURVE



POWER CURVE



EFFICIENCY CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	90	83	84	85	84	80	77	74	94	68
Outlet	91	84	84	85	84	81	79	76	94	68
Breakout	81	63	58	60	59	53	59	53	81	45

Sound Data At Requested Duty .

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022



ESTOCTARGE
BB-12073-7

Estoc Targe (PowerBox)
67-450-1
EF/GF/01 Dish & Pot
Wash

PRODUCT

Model Code Estoc Targe (PowerBox) 67-450-1
Fan Diameter 450 mm
Installation Type D

PERFORMANCE

Requested Duty 0.730 m³/s @ 388 Pa (Static)
Outlet Dynamic Pressure 12.7 Pa
Velocity 4.60 m/s

MOTOR

Motor Rating 1.00 kW [Integral Frame]
Full Load Current 4.6 A
Starting Current 11.96 A
Electrical Supply 220 - 240 Volts 50 Hz 1 Phase
Motor Winding Standard
Motor Type Class F Insulation

EFFICIENCY GRADES

ErP [FMEG] Rating ErP Exempt
SFP value 1.10 W/l/s @ Actual Duty

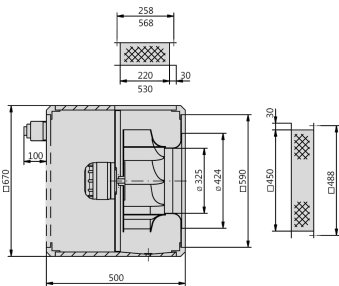
ENVIRONMENT

Air Density 1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting Standard
Operating Environment Normal

RUNNING COSTS

Power from mains 0.801 kWh
Energy Consumption 1,602.79 (2,000.00 h/year)
Running Cost / Year £400.70
Co2 per Year 563.48 kgCO2e

PRODUCT DIMENSIONS



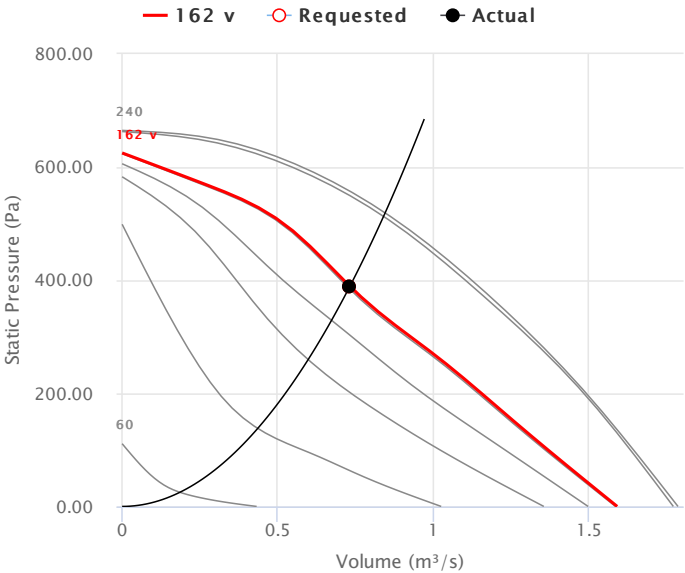
MECHANICAL

Operating Temperatures 0 °C to 80 °C

COMMENTS

Lang_SpeedContollerRequired

FAN PERFORMANCE CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	74	59	61	64	69	70	64	53	100	77	57
Outlet	77	64	65	67	73	72	69	56	103	80	60
Breakout	62	58	55	53	54	52	49	41	88	65	45

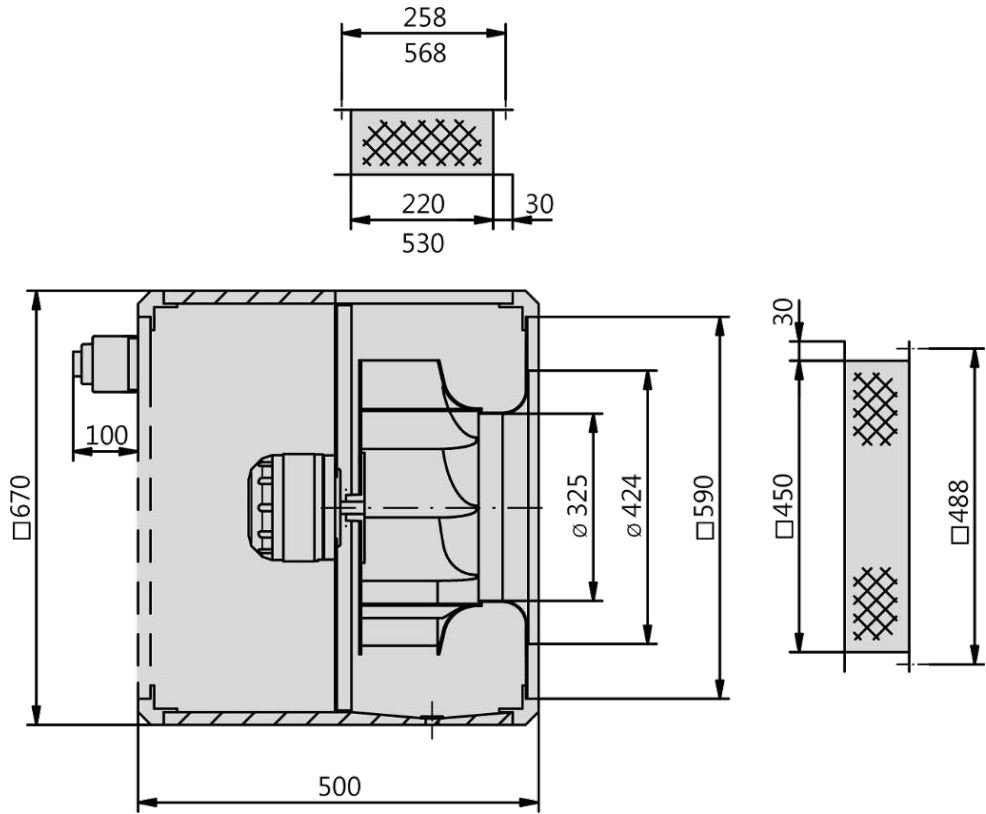
Sound Data At Requested Duty. * Lw dB re 10⁻¹² W ** dBA re 2x10⁻⁵ Pa

FAN & ACCESSORIES

Item Description	Part Number	Qty
Estoc Targe (PowerBox) 67-450-1	GF674501	1
Flexible Connector - H579 W603 L20	B101031	2

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 10 June 2022

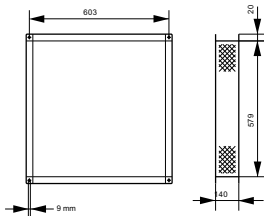
FAN DIMENSIONS



ACCESSORY DIMENSIONS

FLEXIBLE CONNECTOR - H579 W603 L20

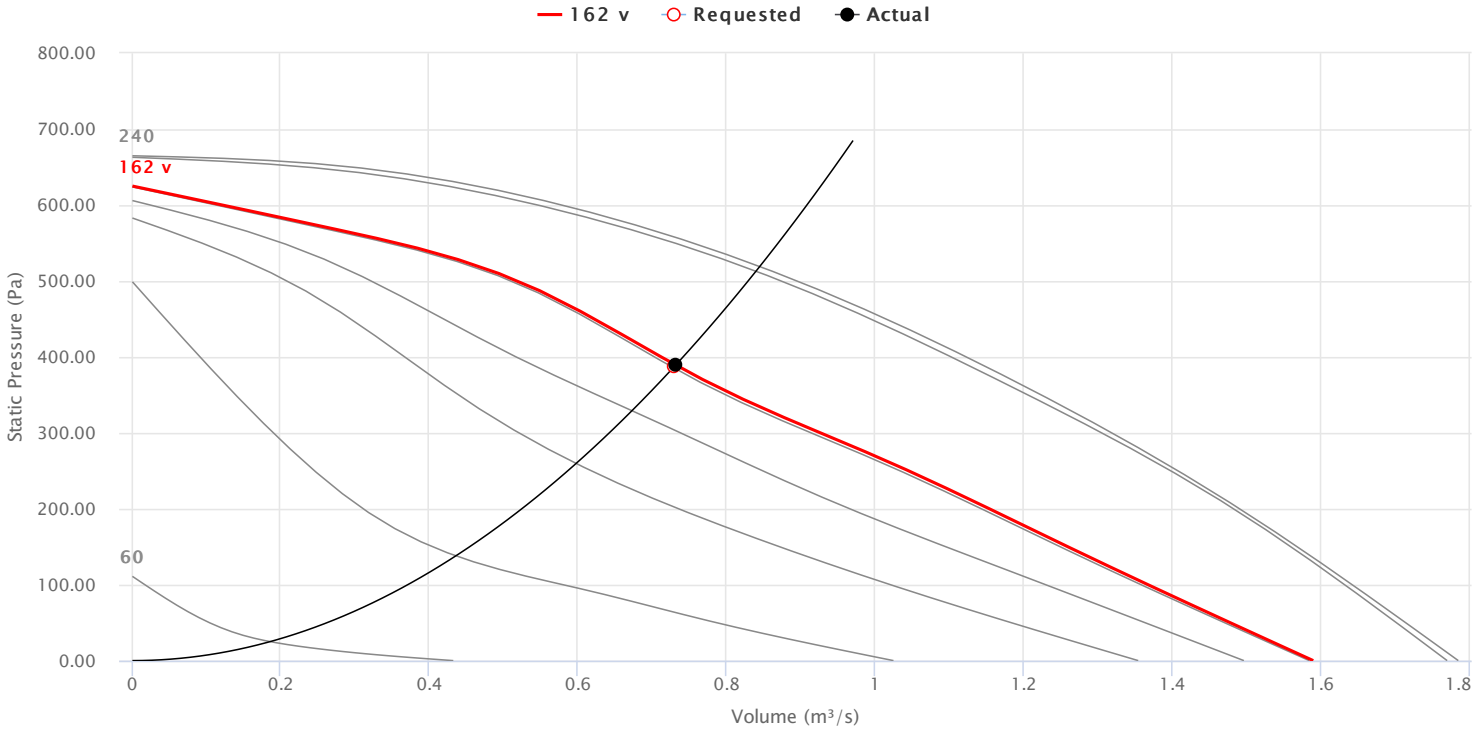
TEDS (SWITCHED - TRANSFORMER)



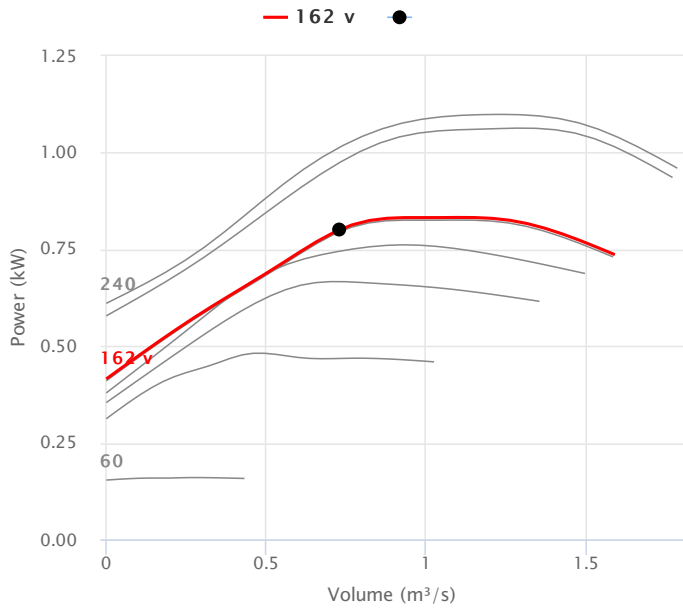
Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022

FAN PERFORMANCE CURVE



POWER CURVE



EFFICIENCY CURVE

ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	74	59	61	64	69	70	64	53	100	57
Outlet	77	64	65	67	73	72	69	56	103	60
Breakout	62	58	55	53	54	52	49	41	88	45

Sound Data At Requested Duty .

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022



ESTOCTARGE
BB-12073-8

Estoc Targe (PowerBox)
50-355-1
EF/GF/02 COSHH

PRODUCT

Model Code Estoc Targe (PowerBox) 50-355-1
Fan Diameter 355 mm
Installation Type D

PERFORMANCE

Requested Duty 0.070 m³/s @ 267 Pa (Static)
Outlet Dynamic Pressure 0.301 Pa
Velocity 0.71 m/s

MOTOR

Motor Rating 0.310 kW [Integral Frame]
Full Load Current 1.4 A
Starting Current 3.5 A
Electrical Supply 220 - 240 Volts 50 Hz 1 Phase
Motor Winding Standard
Motor Type Class F Insulation

EFFICIENCY GRADES

ErP [FMEG] Rating ErP Exempt
SFP value 2.01 W/l/s @ Actual Duty

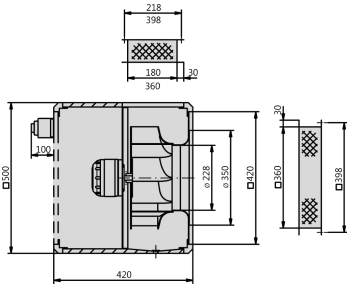
ENVIRONMENT

Air Density 1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting Standard
Operating Environment Normal

RUNNING COSTS

Power from mains 0.141 KWh
Energy Consumption 281.03 (2,000.00 h/year)
Running Cost / Year £70.26
Co2 per Year 98.80 kgCO2e

PRODUCT DIMENSIONS



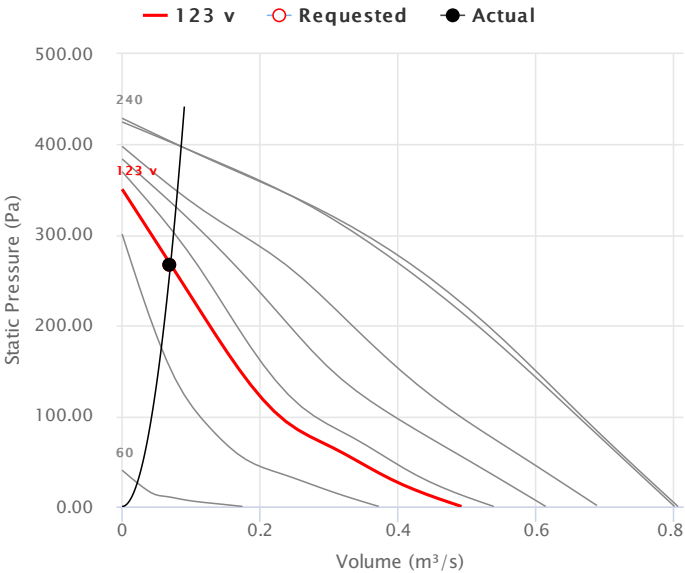
MECHANICAL

Operating Temperatures 0 °C to 110 °C

COMMENTS

Lang_SpeedContollerRequired

FAN PERFORMANCE CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	68	54	60	62	61	62	57	47	94	71	50
Outlet	70	54	62	63	65	64	56	48	96	73	53
Breakout	57	49	53	50	48	45	42	39	83	60	40

Sound Data At Requested Duty.

* Lw dB re 10⁻¹² W

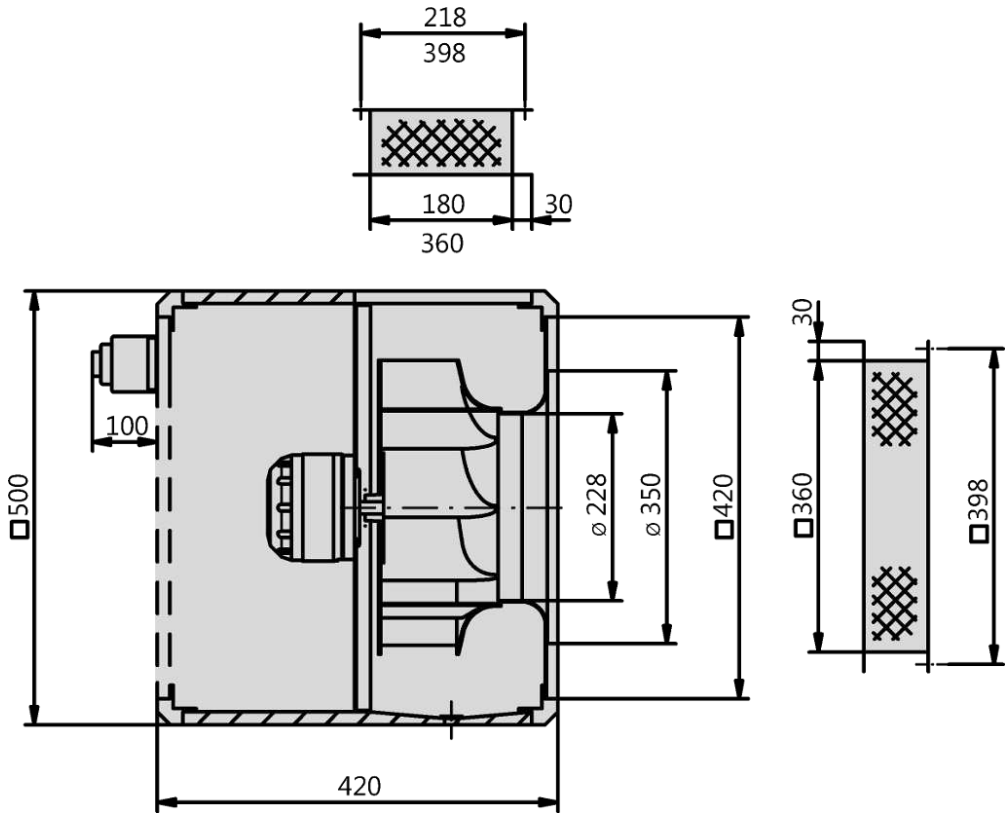
** dBA re 2x10⁻⁵ Pa

FAN & ACCESSORIES

Item Description	Part Number	Qty
Estoc Targe (PowerBox) 50-355-1	GF503551	1
Flexible Connector - W350 x H350 x D140	BI101074	2

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 10 June 2022

FAN DIMENSIONS

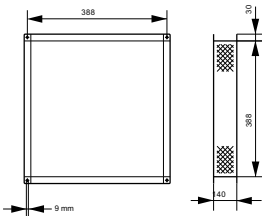


ACCESSORY DIMENSIONS

FLEXIBLE CONNECTOR - W350 X H350 X D140

MOUNTING TRACK

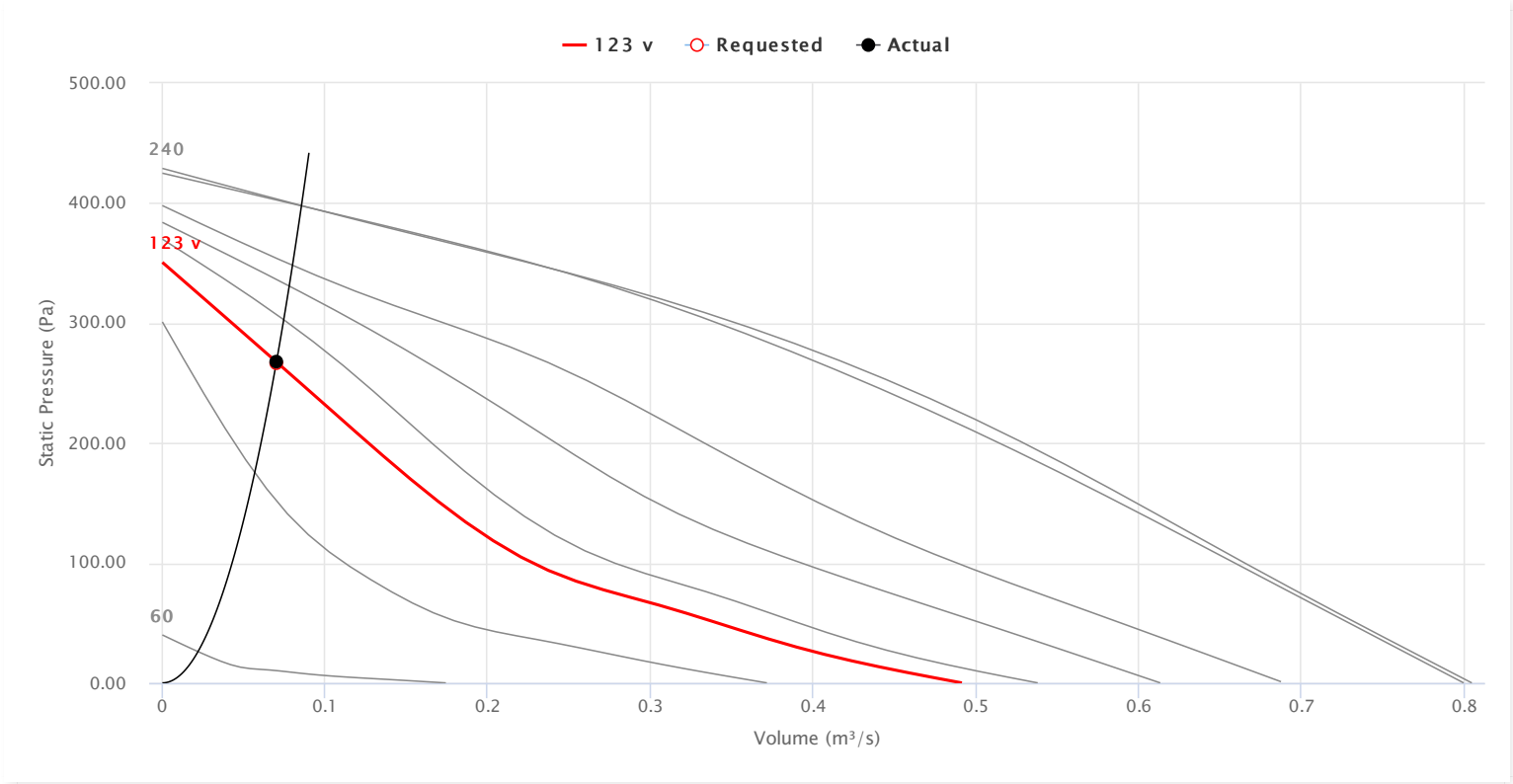
TEDS (SWITCHED - TRANSFORMER)



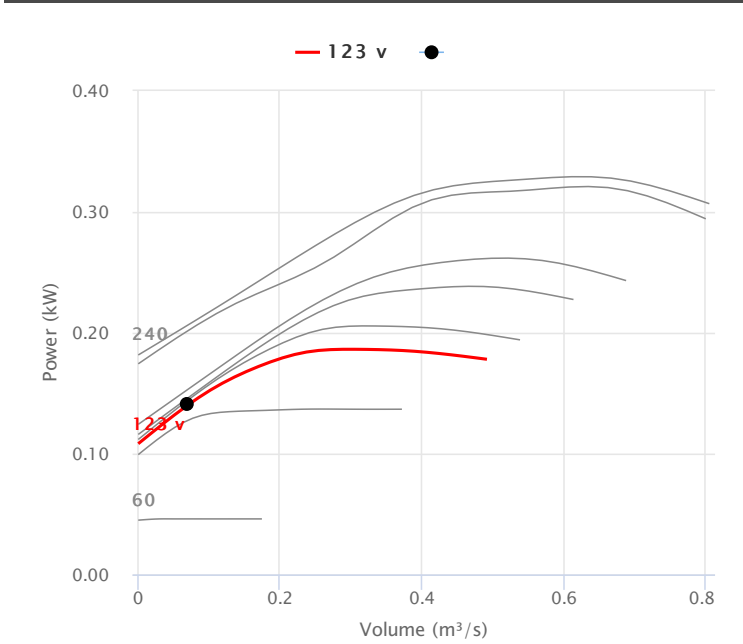
Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022

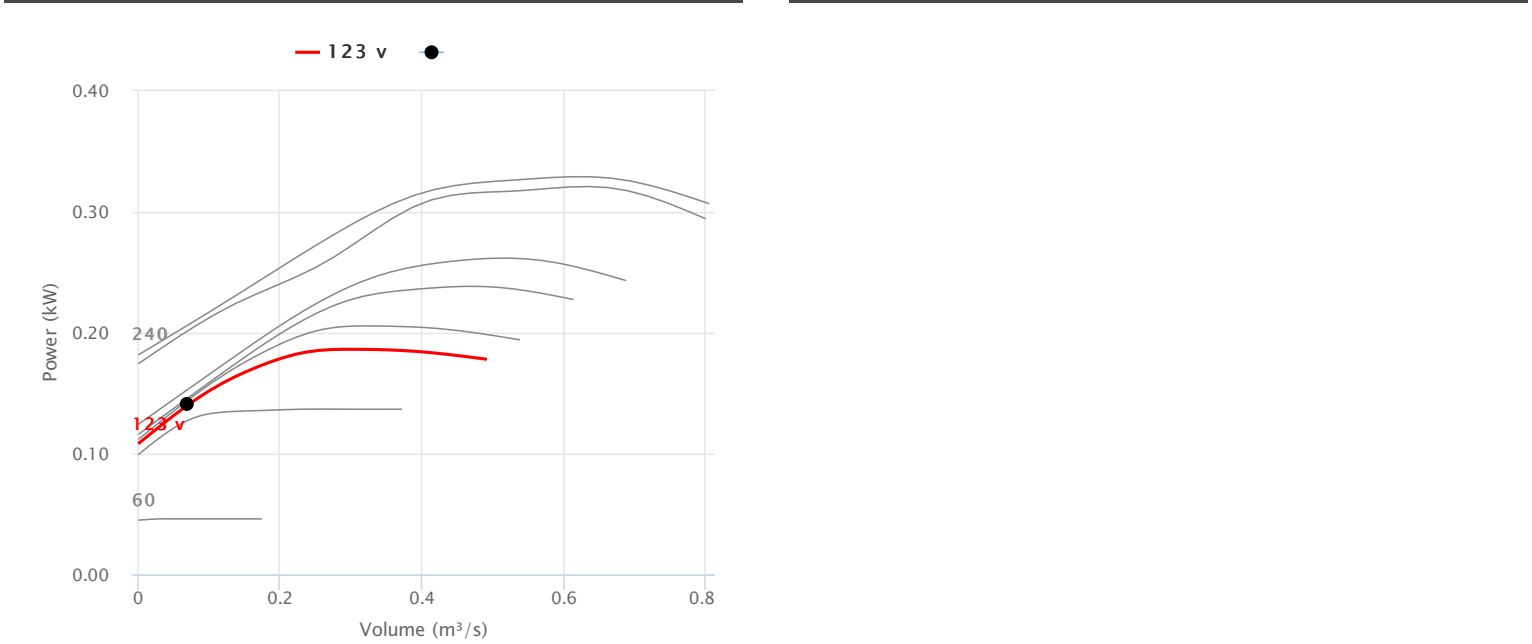
FAN PERFORMANCE CURVE



POWER CURVE



EFFICIENCY CURVE



ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	68	54	60	62	61	62	57	47	94	50
Outlet	70	54	62	63	65	64	56	48	96	53
Breakout	57	49	53	50	48	45	42	39	83	40

Sound Data At Requested Duty . * Lw dB re 10⁻¹² W ** dBA re 2x10⁻⁵ Pa

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022



ESTOC
BB-12073-9

ePowerBox 67-500-1-4
(6HF)
EF/GF/03 & 04

PRODUCT

Model Code ePowerBox 67-500-1-4 (6HF)
Fan Diameter 500 mm
Installation Type D

PERFORMANCE

Requested Duty 1.98 m³/s @ 121 Pa (Static)
Outlet Dynamic Pressure 62 Pa
Velocity 10.13 m/s

MOTOR

Motor Rating 1.38 kW [Integral Frame]
Full Load Current 6.22 A
Starting Current 19.9 A
Electrical Supply 220 - 240 Volts 50 Hz 1 Phase
Motor Winding Standard
Motor Type Class F Insulation

EFFICIENCY GRADES

Regulation 1253/2014
UVU Efficiency 53.5% (ErP Compliance 2018) ✓
Nominal Flow Rate 1.61 m³/s @ 461 Pa
Effective Input Power 1.38 kW
Nominal RPM 1383 rpm
Internal Fan Efficiency 53.5%
SFP value 0.47 W/l/s @ Actual Duty

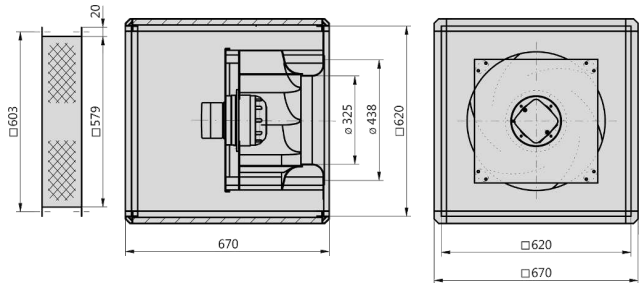
ENVIRONMENT

Air Density 1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting Standard
Operating Environment Normal

RUNNING COSTS

Power from mains 0.935 kWh
Energy Consumption 1,869.72 (2,000.00 h/year)
Running Cost / Year £467.43
Co2 per Year 657.32 kgCO2e

PRODUCT DIMENSIONS



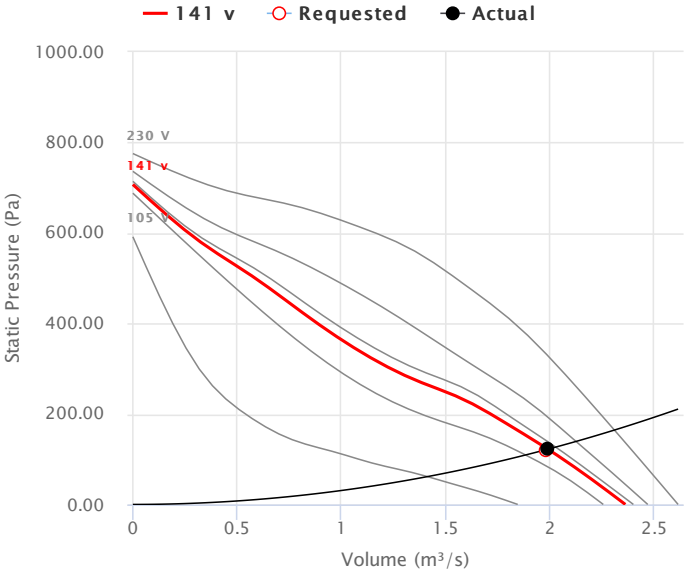
MECHANICAL

Operating Temperatures 0 °C to 40 °C

COMMENTS

Lang_SpeedContollerRequired

FAN PERFORMANCE CURVE



ACOUSTICS

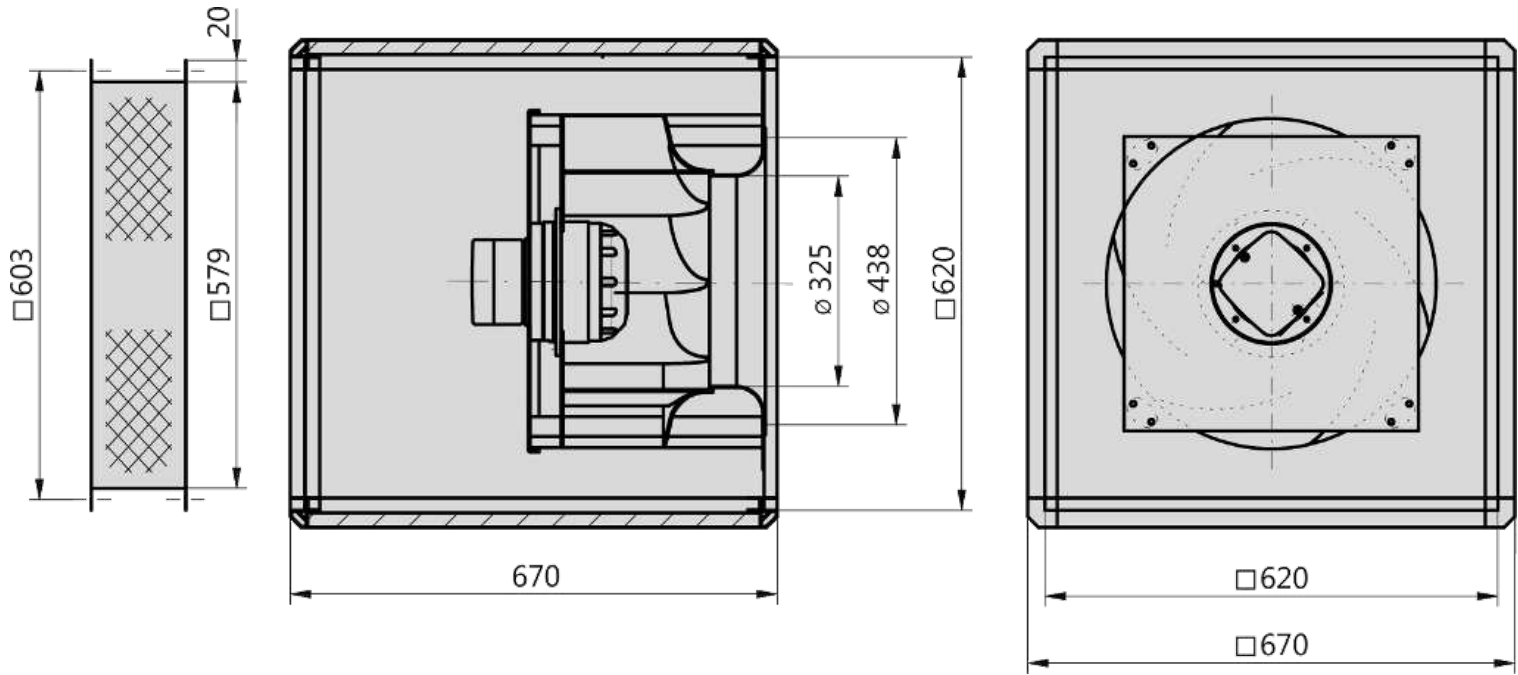
Sound Spectrum (Hz)									Overall		Distance (3 m)	
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **	
Inlet	49	60	67	67	67	64	60	54	81	73	52	
Outlet	47	73	75	73	73	67	63	58	90	80	59	
Breakout	41	57	54	43	39	29	23	<20	74	59	38	
Sound Data At Requested Duty.					* Lw dB re 10 ⁻¹² W					** dBA re 2x10 ⁻⁵ Pa		

FAN & ACCESSORIES

Item Description	Part Number	Qty
ePowerBox 67-500-1-4 (6HF)	BE500003	2
Flexible Connector - H579 W603 L20	B101031	4

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 10 June 2022

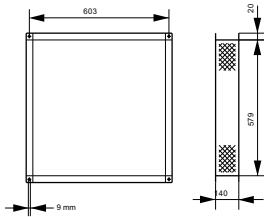
FAN DIMENSIONS



ACCESSORY DIMENSIONS

FLEXIBLE CONNECTOR - H579 W603 L20

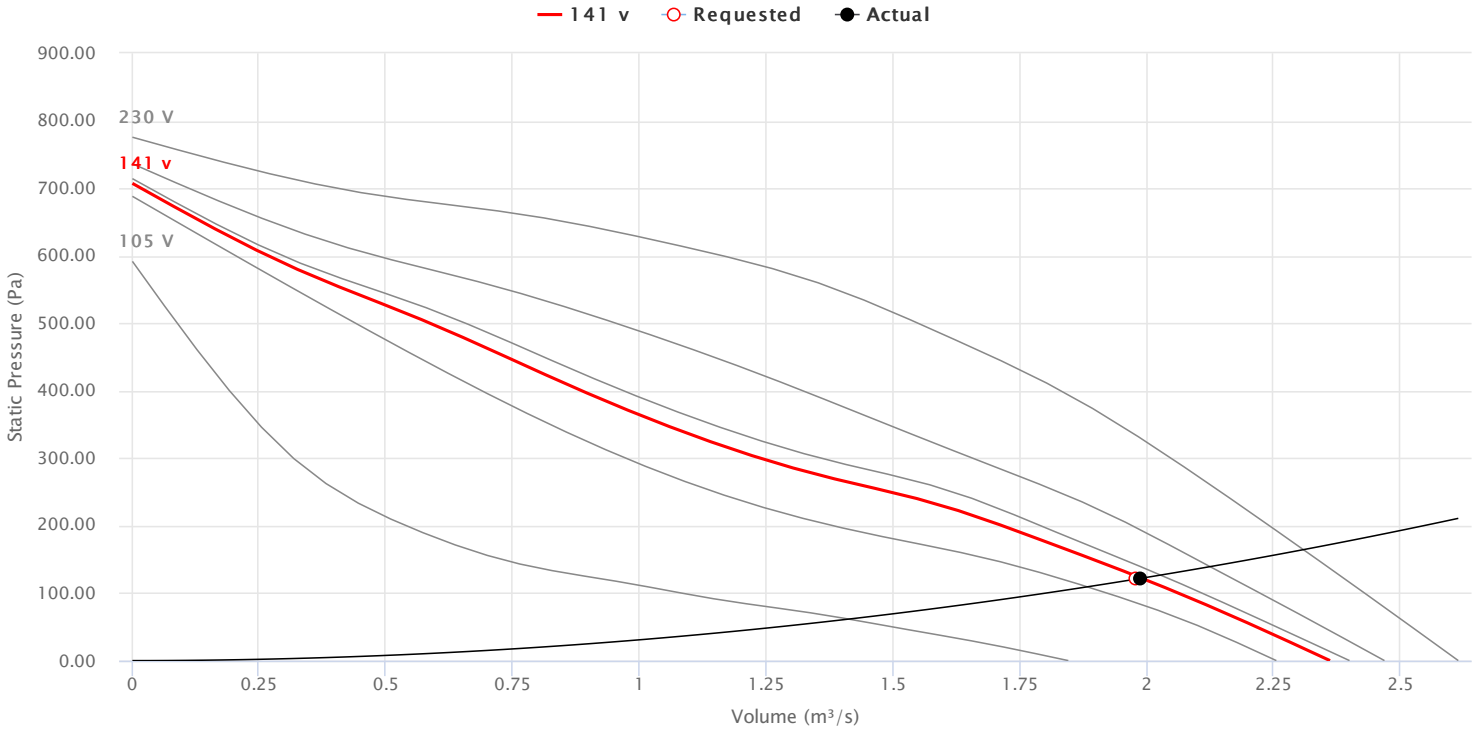
TEDS (SWITCHED - TRANSFORMER)



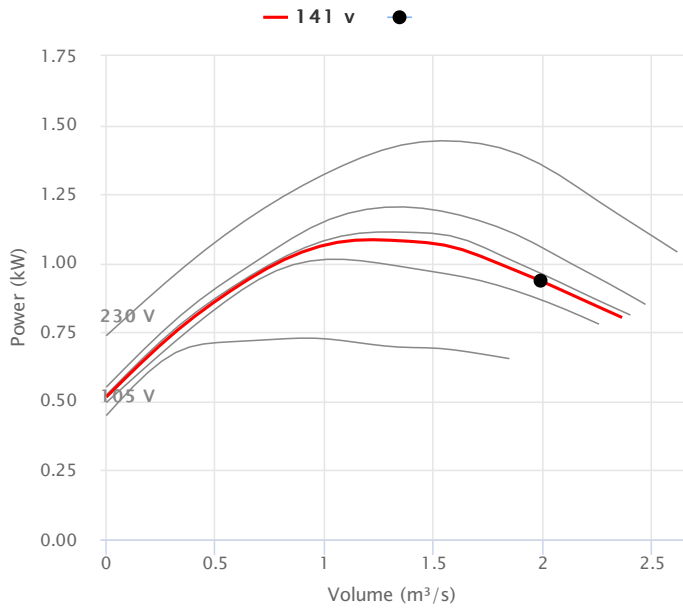
Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022

FAN PERFORMANCE CURVE



POWER CURVE



EFFICIENCY CURVE

ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	49	60	67	67	67	64	60	54	81	52
Outlet	47	73	75	73	73	67	63	58	90	59
Breakout	41	57	54	43	39	29	23	<20	74	38

Sound Data At Requested Duty .

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 10 June 2022



CLIMA-PLATE
BB-12073-10

56ACP/20/6/6/12
EF/GF/05 Tank Room

PRODUCT

Model Code	56ACP/20/6/6/12
Fan Diameter	560 mm
Fan Speed	900 rpm
Impeller	6 Blades, 12° Angle
Installation	Type A - Form A
Fan Casing	Horizontal

PERFORMANCE

Requested Duty	0.700 m³/s @ 61 Pa (Static)
Actual Duty	0.744 m³/s @ 69 Pa (Static)
Outlet Dynamic Pressure	5.48 Pa
Velocity	3.02 m/s
Duty Shaft Power	0.094 kW
Max Shaft Power	0.100 kW [Used to size motor]
Efficiency (Total / Static)	59.1 % / 54.8 %

MOTOR

Motor Rating	0.430 kW [CT9 Frame - 6 Pole]
Full Load Current	3 A
Starting Current	7.1 A
Electrical Supply	220 - 240 Volts 50 Hz 1 Phase
Motor Winding	Standard
Motor Type	Pad - Class F Insulation

EFFICIENCY GRADES

ErP [FMEG] Rating	N 40 (ErP Compliance 2015) ✓
ErP [FMEG]	Target N 40
FMEG Blade Angle [Range]	24° [8° to 24°]
Measurement Category	A
VSD	No
Fan + Motor Efficiency	31.2% (1.17 m³/s @ 93 Pa)
Motor Input Power (ErP)	0.351 kW
SFP value	0.35 W/l/s @ Actual Duty

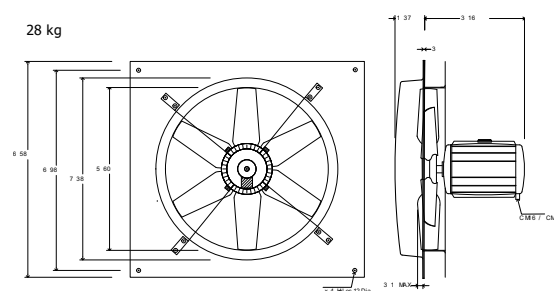
ENVIRONMENT

Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	Standard
Operating Environment	Normal

RUNNING COSTS

Power from mains	0.257 KWh
Energy Consumption	514.53 (2,000.00 h/year)
Running Cost / Year	£128.63
Co2 per Year	180.89 kgCO2e

PRODUCT DIMENSIONS

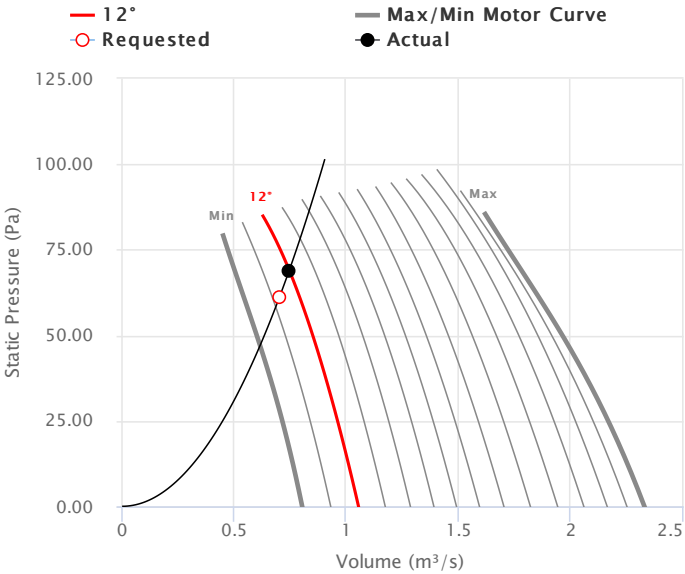


MECHANICAL

Casing	560mm Casing
Impeller	Aluminium LM6 Hub, Plastic Blades Blades
Operating Temperatures	-40 °C to 50 °C
Weight	28kg

COMMENTS

FAN PERFORMANCE CURVE



ACOUSTICS

Sound Spectrum (Hz)								Overall		Distance (3 m)	
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	72	75	78	75	72	68	61	55	82	77	56
Outlet	75	80	81	77	74	70	64	58	85	79	58

Sound Data At Requested Duty.

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

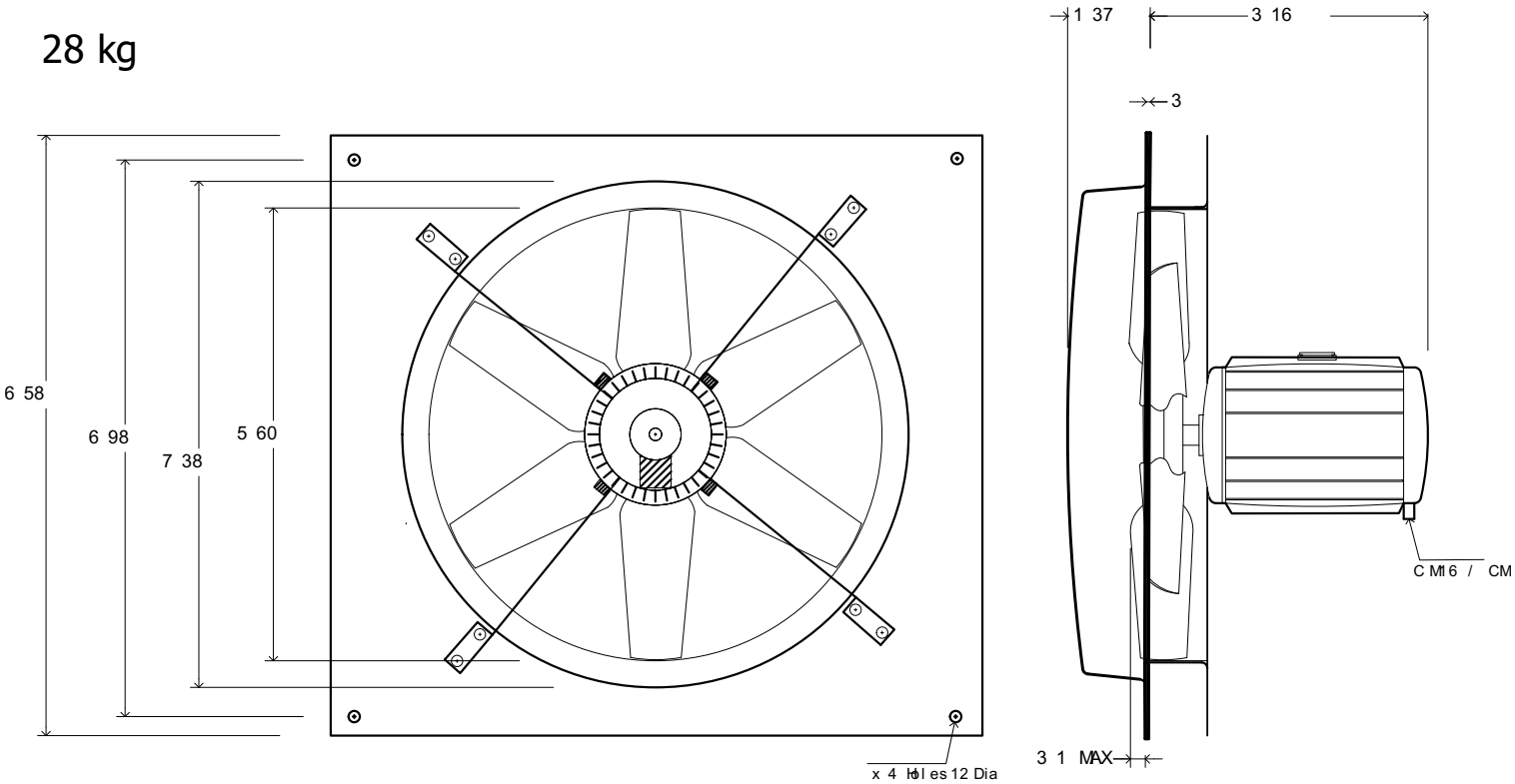
FAN & ACCESSORIES

Item Description	Part Number	Qty
56ACP/20/6/6/12		1

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 10 June 2022

FAN DIMENSIONS

28 kg



ACCESSORY DIMENSIONS

TEDS (SWITCHED - TRANSFORMER)

Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 19 July 2022



JM
List Price - UK [7.22s2.4]

90JM/25/4/9/14
EF/07/01

PRODUCT	
Model Code	90JM/25/4/9/14
Fan Diameter	900 mm
Fan Speed	1385 rpm, 48 Hz [Max 1549, Min 300]
Impeller	9 Blades, 14° Angle
Installation	Type D - Form B
Fan Casing	Long Case - Horizontal

PERFORMANCE	
Requested Duty	5.00 m³/s @ 500 Pa (Static)
Outlet Dynamic Pressure	37.1 Pa
Velocity	7.86 m/s
Duty Shaft Power	4.13 kW
Peak Power	4.52 kW [Used to size motor]
Efficiency (Total / Static)	65 % / 60.5 %

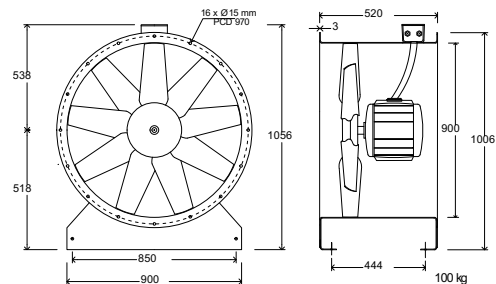
MOTOR	
Motor Rating	6.33 kW [112M Frame - 4 Pole]
Full Load Current	12.6 A
Starting Current	87.1 A
Electrical Supply	380 - 415 Volts 50 Hz 3 Phase
Motor Winding	Standard
Motor Type	TEAR - Pad - IE2 - Class F Insulation

EFFICIENCY GRADES	
ErP [FMEG] Rating	N 69 (ErP Compliance 2015) ✓
ErP [FMEG]	Target N 58
FMEG Blade Angle [Range]	20° [8° To 20°]
Measurement Category	D
VSD	Yes
Fan + Motor Efficiency	68.7% (8.57 m³/s @ 504 Pa)
Motor Input Power (ErP)	6.54 kW
SFP value	0.92 W/l/s @ Actual Duty

ENVIRONMENT	
Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	No Smoke Venting
Operating Environment	Normal

RUNNING COSTS	
Power from mains	4.61 kWh
Energy Consumption	9,217.46 (2,000.00 h/Year)
Running Cost / Year	£2,304.36
CO2 per Year	3,240.49 kgCO2e

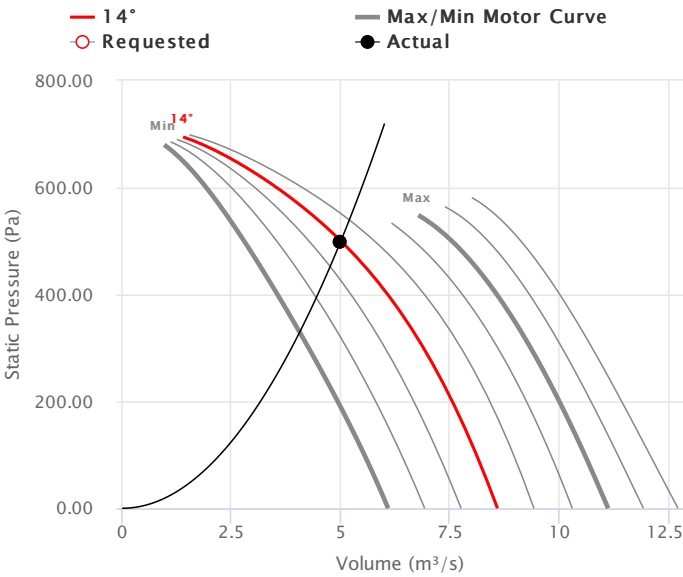
PRODUCT DIMENSIONS



MECHANICAL	
Casing	900mm Steel Casing
Impeller	Aluminium LM6 Hub, Aluminium LM6 Blades
Operating Temperatures	-20 °C to 50 °C
Maximum Running Speed	1549 rpm [54 Hz]
Minimum Running Speed	300 rpm [10 Hz]
Weight	100kg

COMMENTS

FAN PERFORMANCE CURVE



ACOUSTICS											
Sound Spectrum (Hz)									Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	91	88	94	95	95	92	88	82	101	99	78
Outlet	91	89	95	96	96	94	89	84	102	100	80
Breakout	81	66	67	69	69	65	68	61	82	74	53

Sound Data At Requested Duty.

* Lw dB re 10⁻¹² W

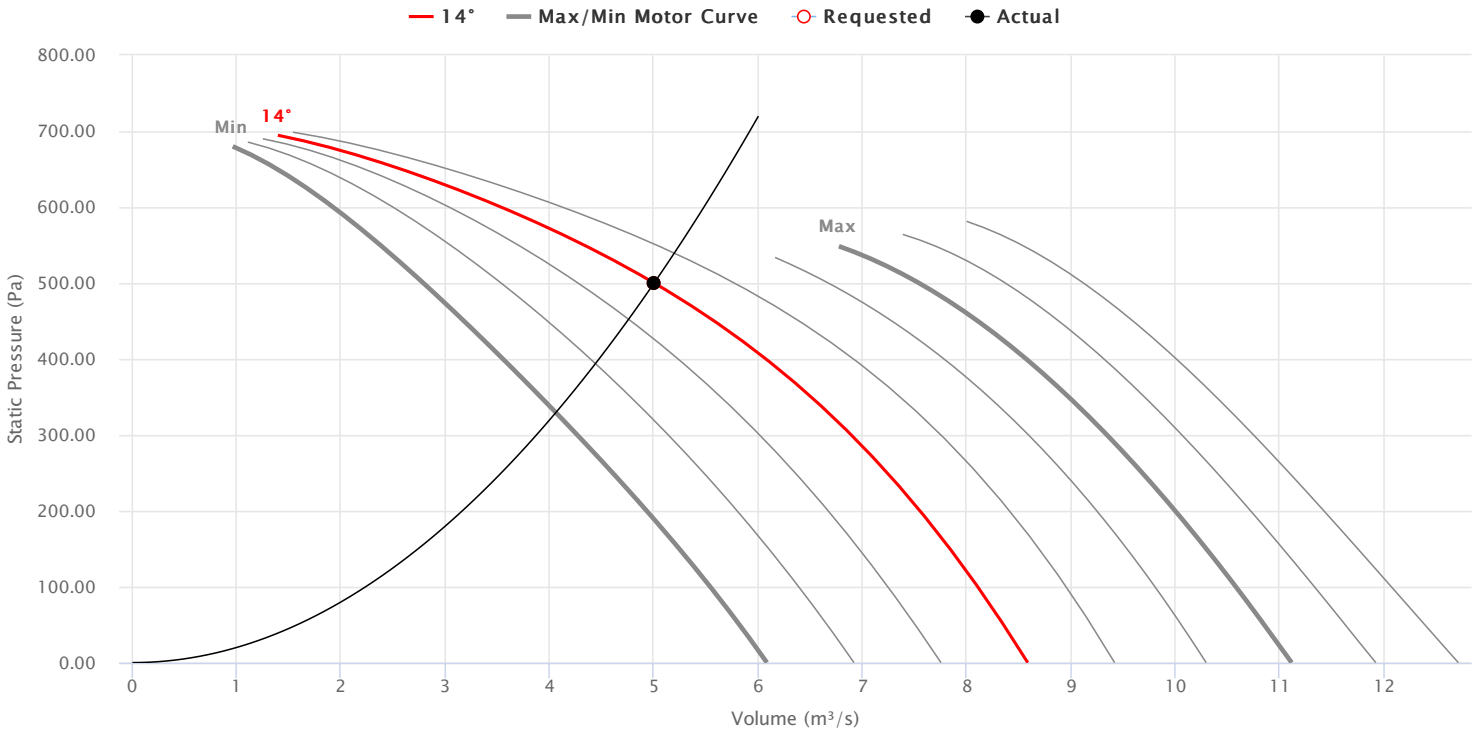
* Lw dB re 10⁻¹² W

FAN & ACCESSORIES

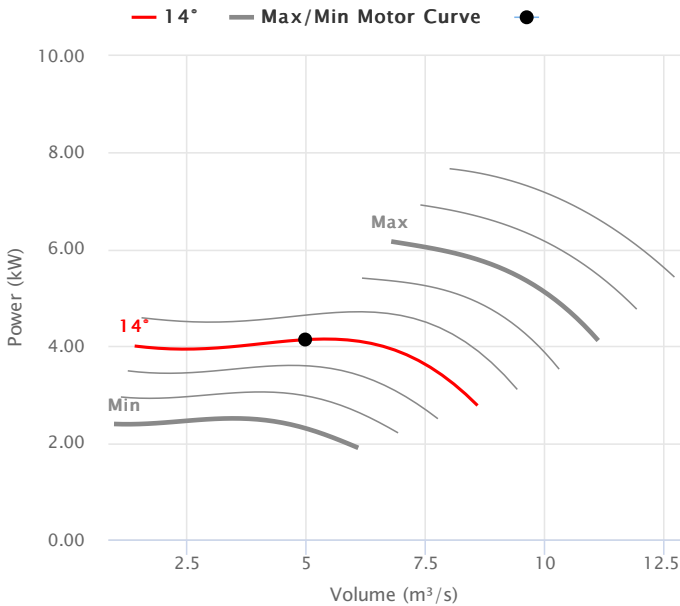
Item Description	Part Number	Qty
90JM/25/4/9/14	AJSL-100-17-14	1
Flexible Connector & Clips	AS040900	2
Matching Flange	404841	2
Mounting Feet Set 2	AS021114	1
Rubber AV Set 4	AS035478	1
IDDXF66 FC102 16 Amp Inverter	EA901078	1

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 19 July 2022

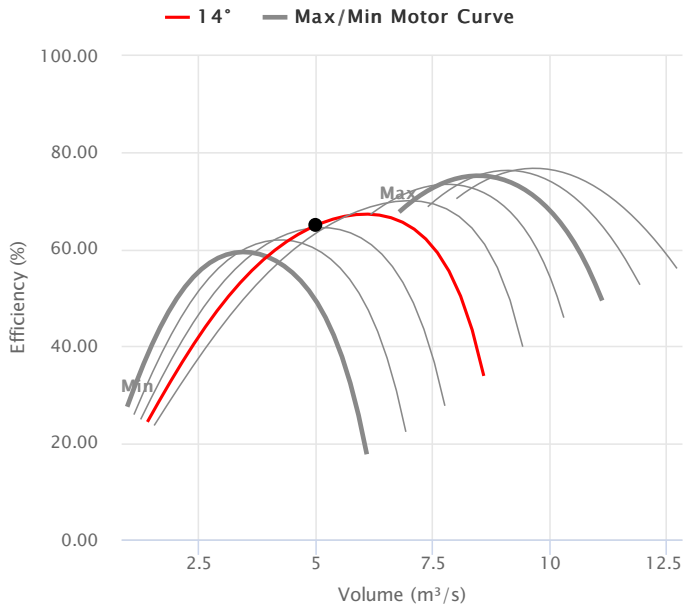
AERODYNAMIC



POWER CHART



EFFICIENCY CHART



ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	91	88	94	95	95	92	88	82	101	78
Outlet	91	89	95	96	96	94	89	84	102	80
Breakout	81	66	67	69	69	65	68	61	82	53

Sound Data At Requested Duty .

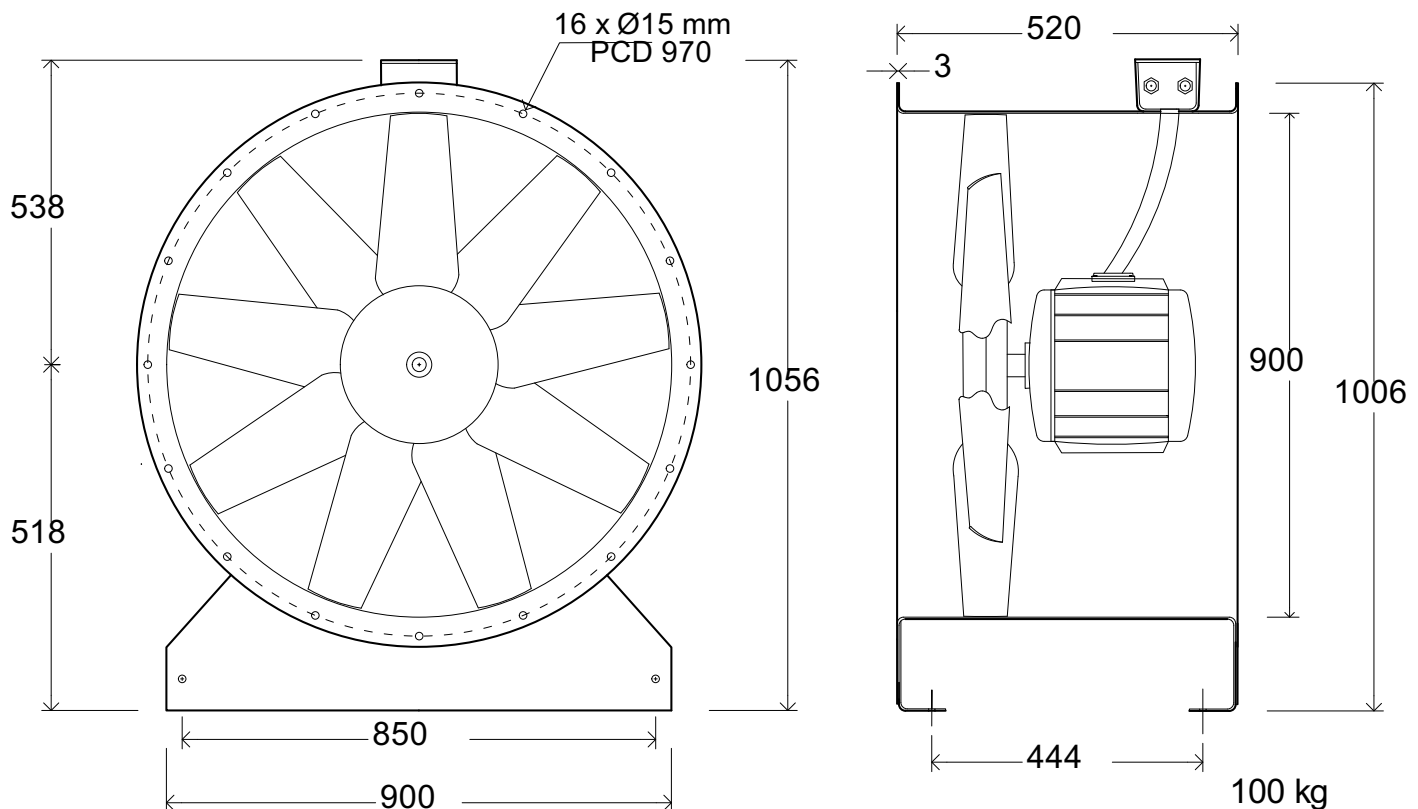
* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

Project : MMU Science & Engineering
Quotation :

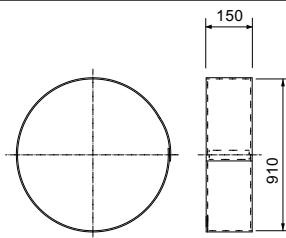
Project Code : BB-12073
Date : 19 July 2022

PRODUCT DIMENSIONS

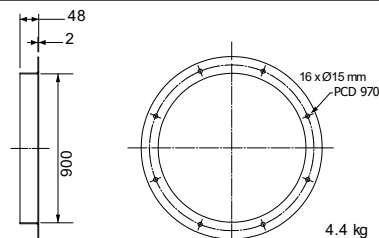


ACCESSORY DIMENSIONS

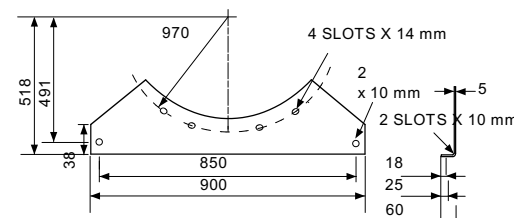
FLEXIBLE CONNECTOR & CLIPS



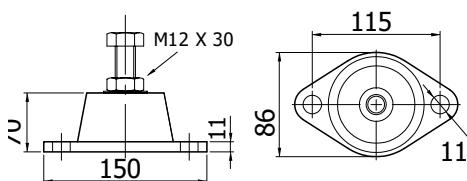
MATCHING FLANGE



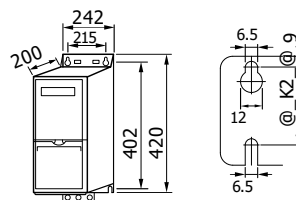
MOUNTING FEET SET 2



RUBBER AV SET 4



IDDXF66 FC102 16 AMP INVERTER



Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 19 July 2022



JMBIF

100JM.BIF/25/4/9/8
EF/07/01

PRODUCT

Model Code	100JM.BIF/25/4/9/8
Fan Diameter	1000 mm
Fan Speed	1470 rpm [Max 1500, Min 580]
Impeller	9 Blades, 8° Angle
Installation	Type D - Form B
Fan Casing	Long Case - Horizontal

PERFORMANCE

Requested Duty	5.00 m³/s @ 500 Pa (Static)
Actual Duty	4.84 m³/s @ 469 Pa (Static)
Outlet Dynamic Pressure	22.8 Pa
Velocity	6.17 m/s
Absorbed Power	4.36 kW
Peak Power	4.47 kW [Used to size motor]
Efficiency (Total / Static)	54.7 % / 52.1 %

MOTOR

Motor Rating	7.50 kW [132M Frame - 4 Pole]
Full Load Current	14.1 A
Starting Current	101.52 A
Electrical Supply	380 - 420 Volts 50 Hz 3 Phase
Motor Winding	Standard
Motor Type	Matching Flange - IE3 - Class F Insulation

EFFICIENCY GRADES

ErP [FMEG] Rating	ErP Exempt
SFP value	1.00 W/l/s @ Actual Duty

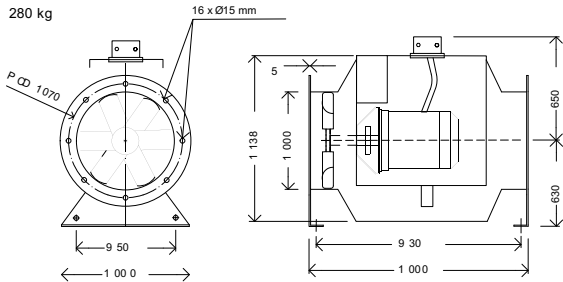
ENVIRONMENT

Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	No Smoke Venting
Operating Environment	Hot Air (Continuous)

RUNNING COSTS

Power from mains	4.86 kWh
Energy Consumption	9,727.92 (2,000.00 h/Year)
Running Cost / Year	£2,431.98
CO2 per Year	3,419.95 kgCO2e

PRODUCT DIMENSIONS

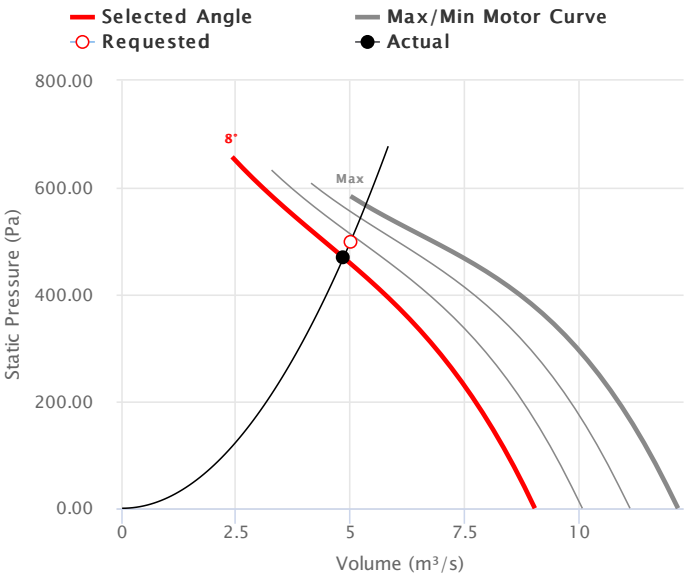


MECHANICAL

Casing	1000mm Steel Casing
Impeller	Aluminium LM6 Hub, Aluminium LM6 Blades
Operating Temperatures	100 °C to 200 °C
Maximum Running Speed	1500 rpm [51 Hz]
Minimum Running Speed	580 rpm [20 Hz]
Weight	280kg

COMMENTS

FAN PERFORMANCE CURVE



ACOUSTICS

Sound Spectrum (Hz)									Overall		Distance (3 m)
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	89	90	104	103	105	102	96	89	110	109	88
Outlet	91	91	106	103	105	103	97	91	111	109	89

Sound Data At Requested Duty.

* Lw dB re 10⁻¹² W

* Lw dB re 10⁻¹² W

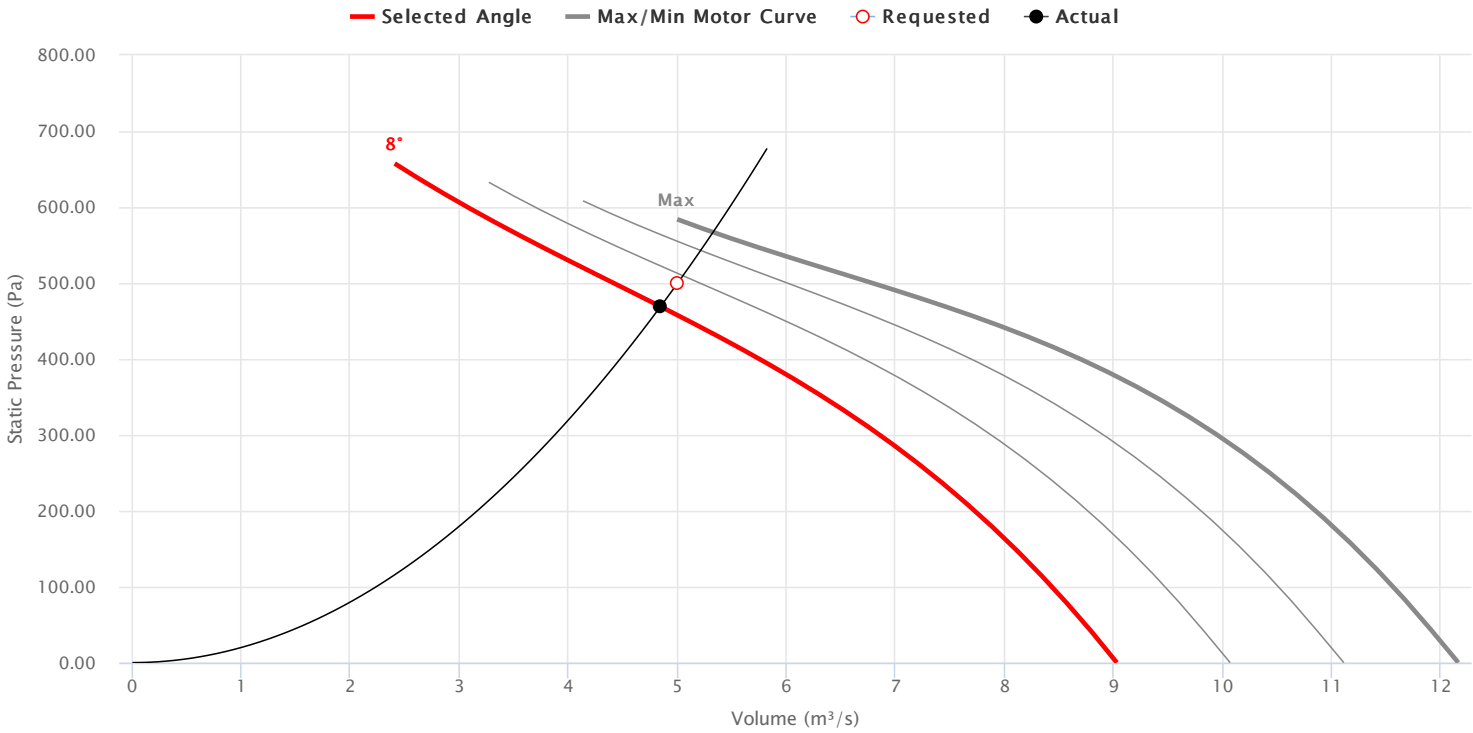
FAN & ACCESSORIES

Item Description	Part Number	Qty
100JM.BIF/25/4/9/8	JN139425	1

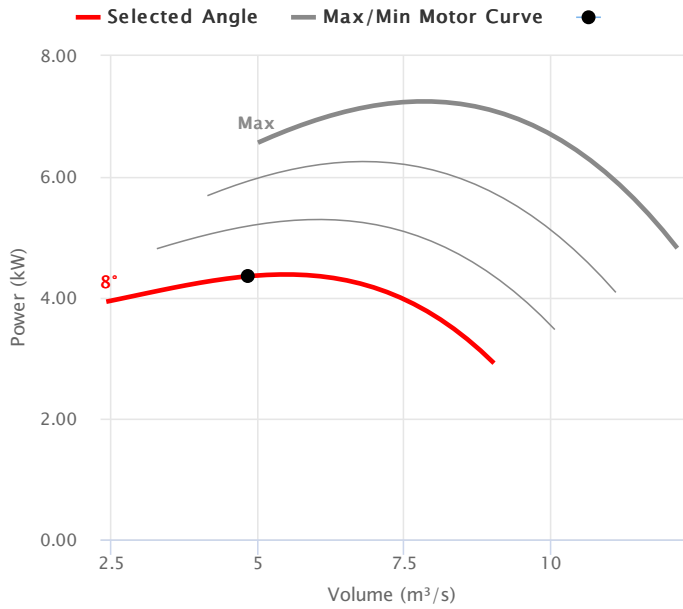
Project : MMU Science & Engineering
Quotation :

Project Code : BB-12073
Date : 19 July 2022

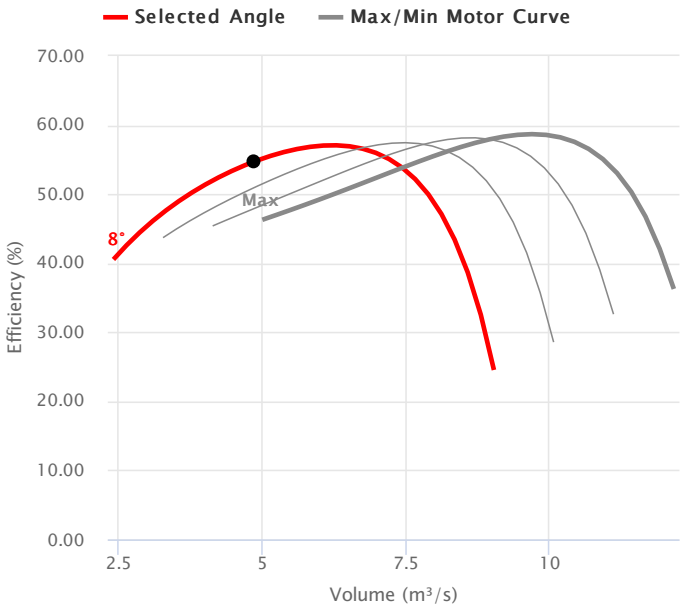
AERODYNAMIC



POWER CHART



EFFICIENCY CHART



ACOUSTICS

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m **
Inlet	89	90	104	103	105	102	96	89	110	88
Outlet	91	91	106	103	105	103	97	91	111	89

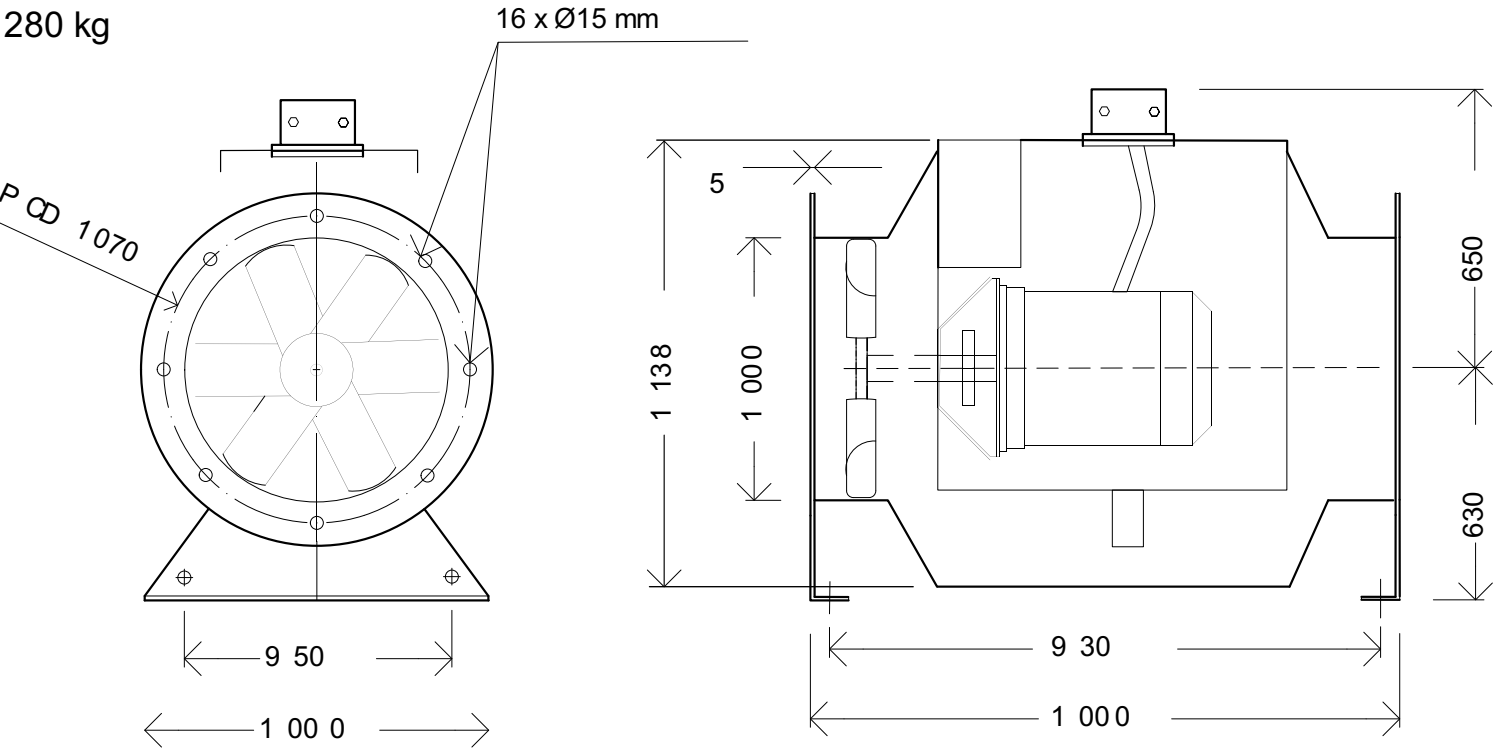
Sound Data At Requested Duty .

* Lw dB re 10⁻¹² W

** dBA re 2x10⁻⁵ Pa

Project	: MMU Science & Engineering	Project Code	: BB-12073
Quotation	:	Date	: 19 July 2022

PRODUCT DIMENSIONS



ACCESSORY DIMENSIONS

MMU-NGB-00-SH-M-510012 - Schedule of Extract Fans

Ref	Room Name	Level	Volume	Vol with 10% Margin	Pressure Drop External Static Pa	Pressure Drop External Static with 21% Margin Pa	Fan Type	Selection Ref	Specific Fan Power @ operating duty W/l/s	Motor Power (FLC) A	Motor	Electrical Supply V/ph/hz	Breqakout Noise @ 3m dBA	Comments
			m³/s	m³/s										
SF/B1/01	Sprinkler Pump Room	B1	2.120	2.332	150	181.5	Duty/standby	Axial	0.5	TBC	3 Phase	400/3ph/50 Hz	55	Fire rated axials, 300 degC for 1hr
EF/GF/01	Dishwash/Potwash	GF	0.660	0.730	320	387.2	Duty	Mixed Flow/Centrif	N/A	TBC	Single Phase	230/1ph/50 Hz	50	Mixed flow/centrif, motor out of airstream or tropicalised. This fan is considered part of the plant therefore excluded from Part L requirements
EF/GF/02	COSHH	GF	0.060	0.066	220	266.2	Duty	Mixed Flow/Centrif	N/A	TBC	Single Phase	230/1ph/50 Hz	50	Mixed flow/centrif, motor out of airstream or tropicalised. This fan is considered part of the plant therefore excluded from Part L requirements
EF/GF/03	Transformer Room	GF	1.800	1.980	100	121.0	Duty	Mixed Flow/Centrif	0.5	TBC	Single Phase	230/1ph/50 Hz	55	Volume calculated by ESD based on transformer manufacturer's heat rejection value of 20 Kw
EF/GF/04	Transformer Room	GF	1.800	1.980	100	121.0	Duty	Mixed Flow/Centrif	0.5	TBC	Single Phase	230/1ph/50 Hz	55	Volume calculated by ESD based on transformer manufacturer's heat rejection value of 20 Kw
EF/GF/05	Domestic Tank Room	GF	0.640	0.704	50	60.5	Duty	Palte Axial	0.5	TBC	Single Phase	230/1ph/50 Hz	55	Axial plate operated by local thermostat
EF/07/01	Roof	7	5.000	5.500	500	605.0	Duty	Bifurcated	0.5	TBC	3 Phase	400/3ph/50 Hz	59	Motor out of air stream

Notes:
1) Fans to be selected on the figures with margins
2) Final Fan pressure drops to be confirmed