

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

21/06/2021

Gas Properties :

Barom Pressure : 101325 pa
Operating Temp : 20 Deg.C.
Humidity : 38 %
Specific Gravity : 1.0
Inlet Density : 1.2001 Kg/m3
Dust Load : 0 g/m3

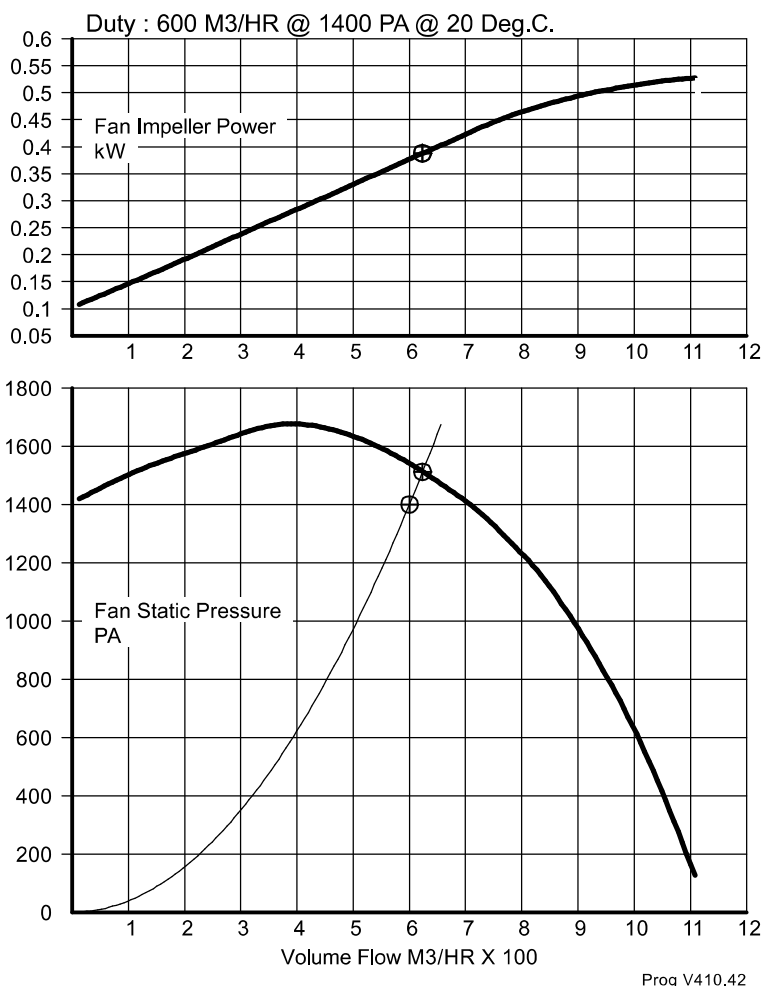
Duty Required :

Inlet Volume Flow : 600 m3/hr
Fan Static Pressure: -0 pa
Inlet Pressure : -0 pa
Outlet Pressure : 1400 pa

Fan Selected :

SWSI-BCP108-340/100-70
Speed : 2800 Rpm
Impeller Ø : 340 mm
Fan Class : 1

Impeller Power :
@ 20 Deg C : 0.388 kW
@ Duty Temp : 0.388 kW
Tip Speed : 49.8 m/s
Inlet Velocity : 5.1 m/s
Outlet Velocity : 5.8 m/s
Temp Rise : 1.9 Deg.C.



Noise Details :

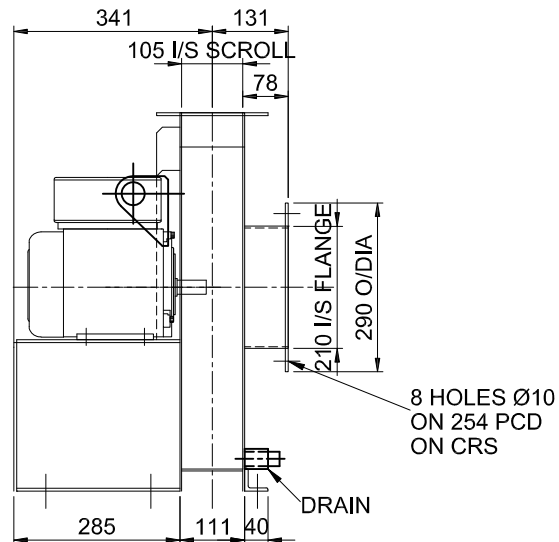
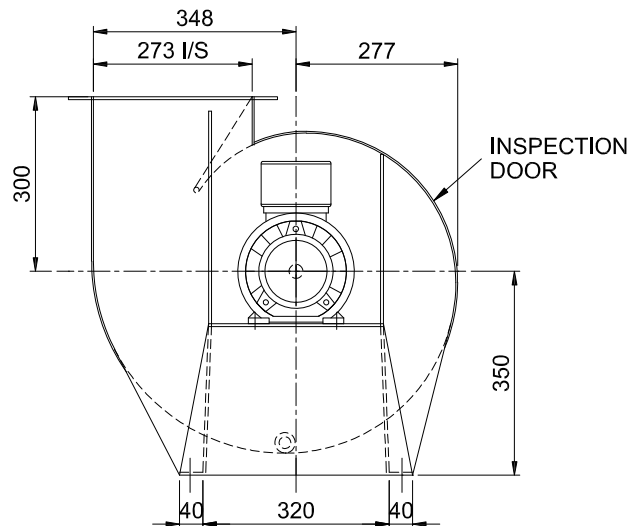
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	85	83	83	90	86	79	75	69	93
Free Inlet SPL dBA	30	44	57	73	75	69	65	57	78
Free Outlet SPL dBA	29	43	56	73	75	69	65	57	78
Outside Casing dBA	35	42	46	59	58	52	48	38	62

Motor noise is NOT included in the figures above.

Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

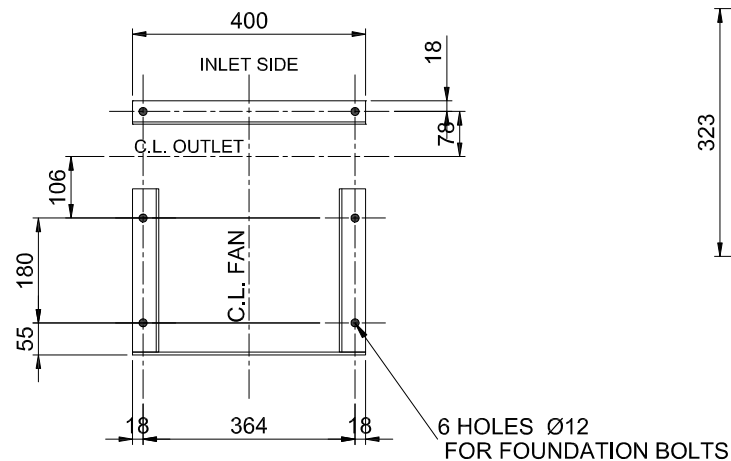
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



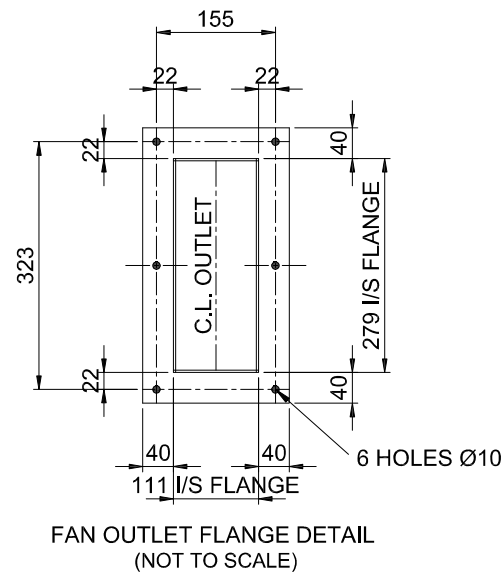
CLIENT :
 TAG :
 DUTY
 INLET VOLUME :
 STATIC PRESSURE :
 TEMPERATURE : 20 °C
 SPEED : 2900 RPM
 POWER :
 MOTOR : 1.5 kW 2 POLE
 FRAME D90S
 415-3-50Hz

FOUNDATION LOADS
 OUT OF BALANCE : NORMAL : 13.31 N
 MAXIMUM : 1107.20 N
 AXIAL THRUST : 18.66 N
 TOTAL WEIGHT : 78 KG
 ACCESSORIES :

INSPECTION DOOR & DRAIN
 SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
 FOUNDATION BOLT HOLE DRILLING



Type : S-RNZ9/250/315/1**TECHNICAL DATA**

Volume flow rate	V	m ³ /h	2,600
Static pressure at $\rho = 1.2 \text{ kg/m}^3$	Δp_{sf}	Pa	800
Total pressure at $\rho = 1.2 \text{ kg/m}^3$	Δp_t	Pa	930
Static pressure at $\rho =$	Δp_{sf}	Pa	
Total pressure at $\rho =$	Δp_t	Pa	
Rated speed	n	1/min	2,853
Impeller power at $\rho = 1.2 \text{ kg/m}^3$	Pr	kW	0.92
Impeller power at $\rho =$	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	46-3m
for installation type D (ISO) calculated acc. to VDI 3731			
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		33
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐Ex-protection ☒ II 3G / 3G IIC - - / Dc, PTB 03 ATEX D076☐ for speed control: block resonance frequencies, max speed see above**INSTALLATION TYPE according to ISO 13349**

- ☐ A -Free inlet, free outlet
- ☐ B -Free inlet, ducted outlet
- ☒ C -Ducted inlet, free outlet
- ☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**Make **Zone 2 IE3 motor**Type/Size **IE3-W41R 80 GY2 / 80G**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2885
Rated power P	kW (acc. eff.-cl.)	1.1
Design/protection class		B3 / IP55
Motor weight approx.	kg	18
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx. A		2.15 / 7.8-times
efficiency motor / cos phi		82.7 % / 0.89

☒ Ex-protection **Exna IIC**

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 5	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12	21/06/2021 11:48:04 / gareth.berry 50-Centrifugal Witt	

Fan type : S-RNZ9/250/315/1
Input data :

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 2600.00
Mass flow rate	m [kg/h]: 3119.66
Static pressure	pst = pt-pd2 [Pa]: 800.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: -
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3

Selection data :

Flow rate	V [m ³ /h]	2,600
Static pressure	pst = pt-pd2 [Pa]	800
Total pressure	pt [Pa]	930
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,853
Impeller power	Pw [kW]	0.92
Rated motor power	PM [kW]	1.1
Efficiency at operating point	Eta [%]	72.94
Impeller power (Rho1.2)	Pw [kW]	0.92
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	800
Total pressure (Rho1.2)	pt [Pa]	930
Sound pressure 1m (ISO-D)	Lp [dB(A)]	54(59)*
Sound power	Lw [dB(A)]	88
Blade frequency	f [Hz]	428
Tip speed	u2 [m/s]	47.06
Inlet speed	c1 [m/s]	14.71
Outlet speed	c2 [m/s]	14.71
Temperature increase	dT [°C]	1.05
Impeller power (Vol=0)	Pw [kW]	
Compressibility coeff.	k [-]	0.997
Fan flow-rate coeff.	phi [-]	0.197
Pressure coeff.	psi [-]	0.783
Improve-/Devalue-factor [-]	[]	0.892
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	0.07
Appx. starting time	ta [s]	5
ca. Standard Rundown time	td [s]	40

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:

Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021**PROJECT:** College Manchester**Y/DESC.:** Lev 08/12**Item:**

5

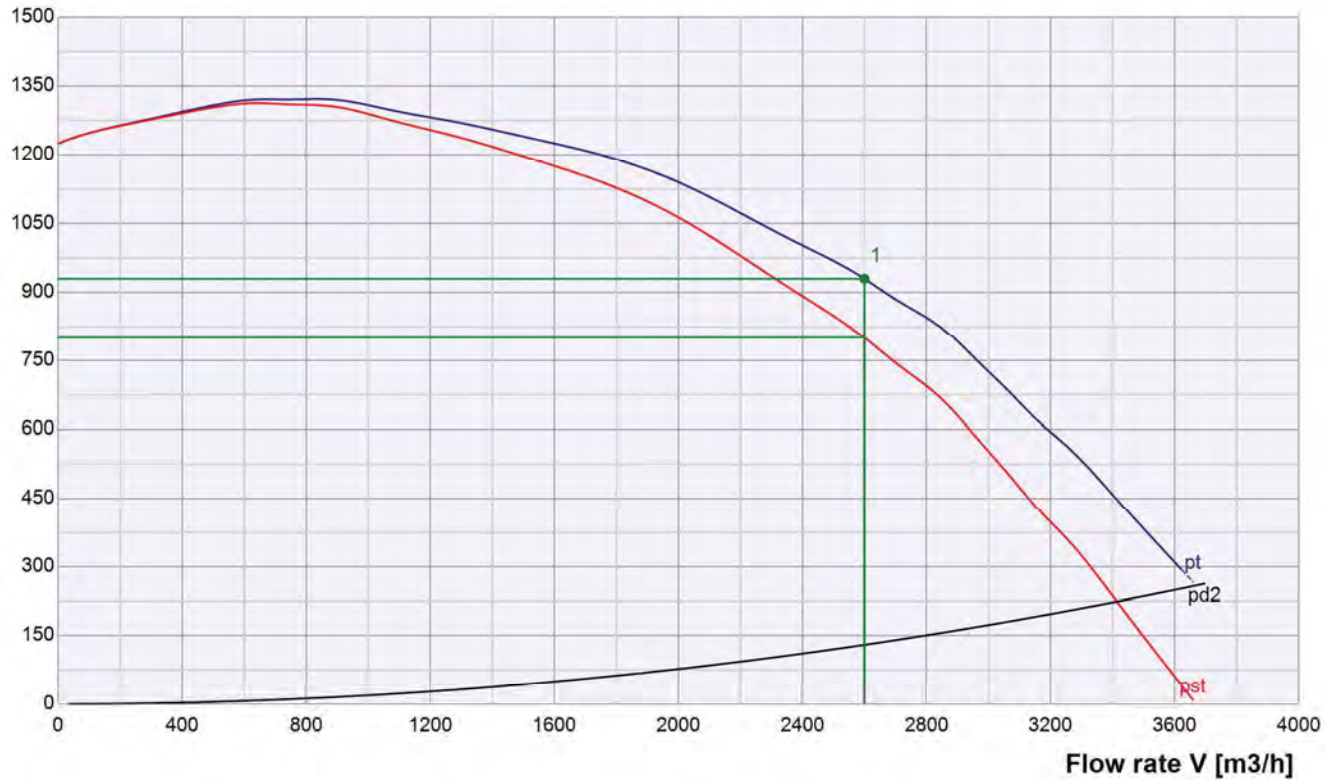
TENDER No.:**21062109GH_R3****Units:**

2

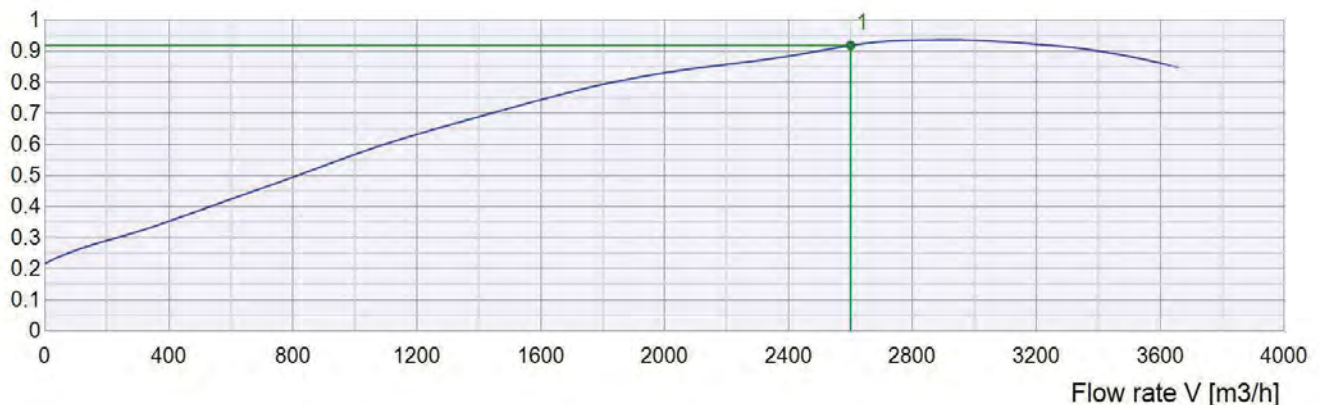
Handled by: Gareth Berry**+44 (78 43) 46 24 50**

21/06/2021 11:48:04 / gareth.berry

50-Centrifugal Witt

Fan type : S-RNZ9/250/315/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m³/h]	2,600				
Inlet density	Rho [kg/m³]	1.200				
Fan speed	n [1/min]	2,853				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

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	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12	21/06/2021 11:48:04 / gareth.berry 50-Centrifugal Witt	

Fan type : S-RNZ9/250/315/1

Fan speed	2,853 1/min	Flow rate	2,600 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.21 -
Inlet pressure	101.320 kPa	Blade frequency	428 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	88							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.8	1.7	3.3	6.7	13	27	54
Rel. spectrum	dB	-16	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	73	77	80	85	82	81	79	76
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	47	61	71	82	82	82	80	75

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **88 dB(A) re 10⁻¹² W**
Motor sound power level **72 dB(A) re 10⁻¹² W**

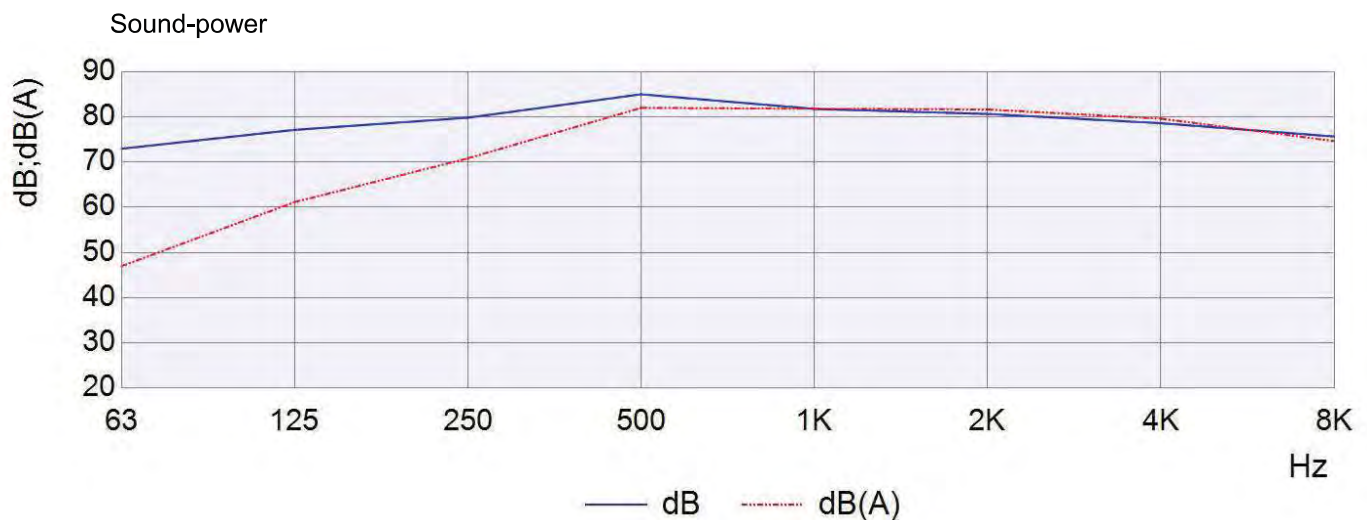
Free inlet/outlet sound power level **87 dB(A) re 10⁻¹² W**
Free inlet/outlet sound pressure level, free field 1m/45° **79 dB(A) re 20 µPa**
Free inlet/outlet sound pressure level, free field 3m/45° **70 dB(A) re 20 µPa**

Casing break-out noise, sound power level ¹⁾ **66(71) dB(A) re 10⁻¹² W**
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **54(59) dB(A) re 20 µPa**
Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **46(51) dB(A) re 20 µPa**

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **7 dB(A) re 20 µPa**

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

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	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,853 l/min	Flow rate	2,600 m³/h
Inlet density	1.200 kg/m³	Rel.flow rate V/Vopt	1.21 -
Inlet pressure	101.320 kPa	Blade frequency	428 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			47	61	71	82	82	82	80	75	88 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			40	50	54	61	58	59	58	51	66 dB(A) re 10 ⁻¹² W
Motor sound power level											72 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 274 L=600 W=375

Insertion losses silencer	-3	-5	-10	-15	-19	-16	-13	-12			dB(A)
Total Fan-Sound power level in duct	44	56	61	67	63	66	67	63			73 dB(A) re 10 ⁻¹² W
Free outlet sound power level											73 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											65 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											55 dB(A) re 20 µPa
potential nozzle reflection									at diameter 250 mm		-1 dB

<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	2670 M3/HR		
<i>Pressure:</i>	4000 pa		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	510 bcp		
<i>Absorbed Power:</i>	4.1		KW
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	5.5 kw 2 pole		
<i>Fan Speed:</i>	2900 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

23/06/2021

Gas Properties :

Barom Pressure : 101325 pa
 Operating Temp : 20 Deg.C.
 Humidity : 38 %
 Specific Gravity : 1.0
 Inlet Density : 1.2001 Kg/m3
 Dust Load : 0 g/m3

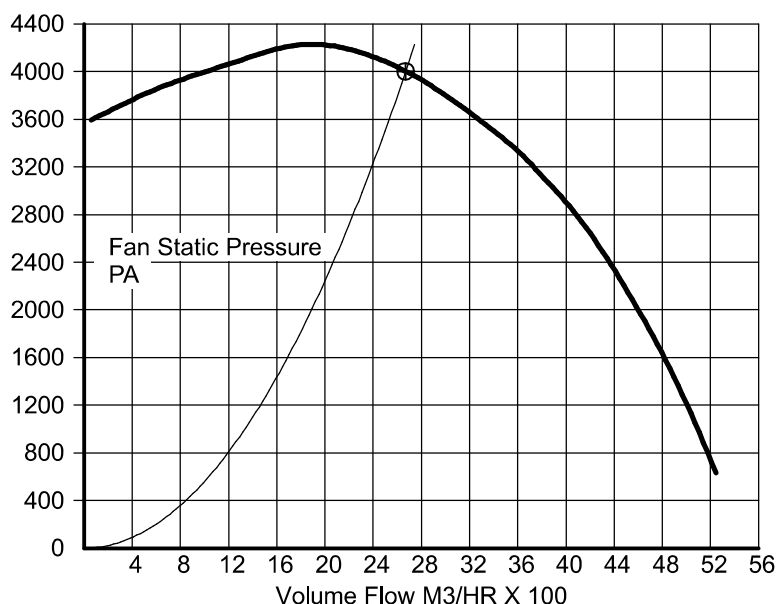
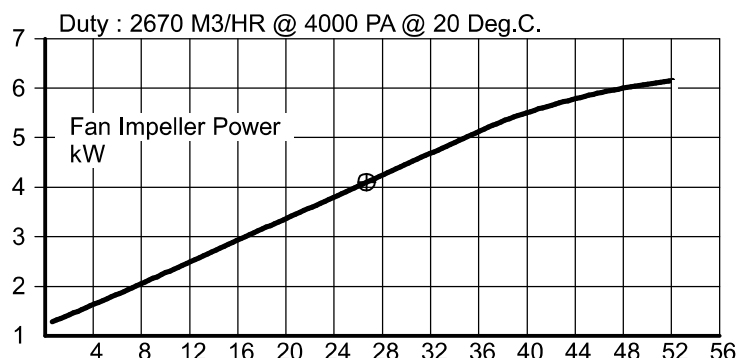
Duty Required :

Inlet Volume Flow : 2670 m3/hr
 Fan Static Pressure: -0 pa
 Inlet Pressure : -0 pa
 Outlet Pressure : 4000 pa

Fan Selected :

SWSI-BCP108-510/100-95
 Speed : 2900 Rpm
 Impeller Ø : 510 mm
 Fan Class : 3

Impeller Power :
 @ 20 Deg C : 4.10 kW
 @ Duty Temp : 4.10 kW
 Tip Speed : 77.4 m/s
 Inlet Velocity : 10.1 m/s
 Outlet Velocity : 11.4 m/s
 Temp Rise : 4.6 Deg.C.



Prog V410.42

Noise Details :

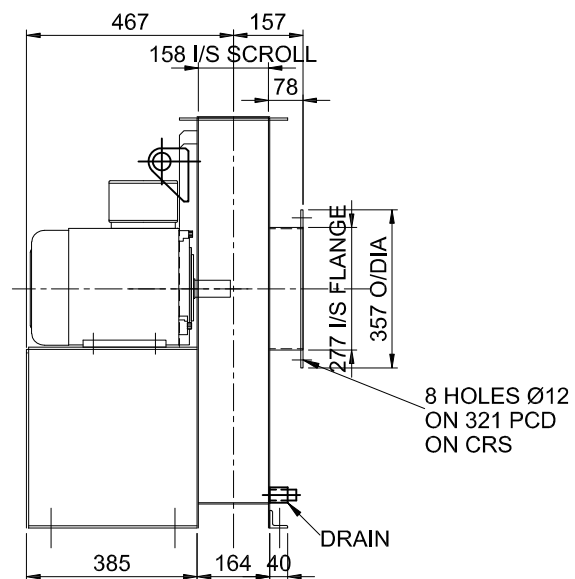
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	98	97	97	101	97	92	89	85	106
Free Inlet SPL dBA	46	61	73	86	86	82	79	73	90
Free Outlet SPL dBA	46	61	72	85	86	82	79	73	90
Outside Casing dBA	51	59	63	73	72	68	65	57	77

Motor noise is NOT included in the figures above.

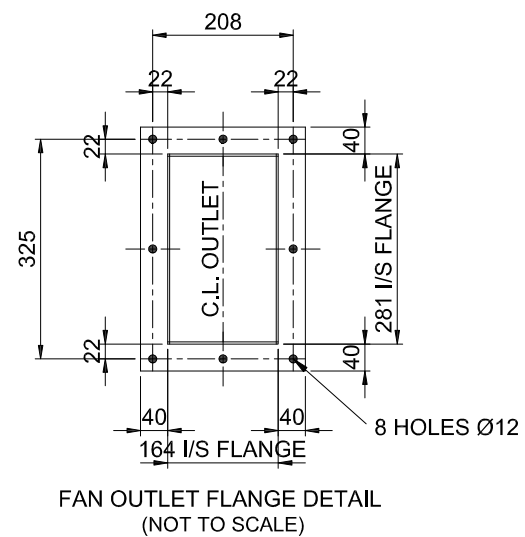
Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
 Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
FOUNDATION BOLT HOLE DRILLING

Date: 21/06/2021

DATA SHEET FOR CENTRIFUGAL FAN

FAN SYSTEMS
WITT

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 694999 Fax:

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:02 / gareth.berry	

Type : S-133CRB9/79/330/1**TECHNICAL DATA**

Volume flow rate	V	m³/h	300
Static pressure at $\rho = 1.2$ kg/m³	Δp_{sf}	Pa	1,200
Total pressure at $\rho = 1.2$ kg/m³	Δp_t	Pa	1,374
Static pressure at $\rho =$ kg/m³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m³	Δp_t	Pa	
Rated speed	n	1/min	2,787
Impeller power at $\rho = 1.2$ kg/m³	Pr	kW	0.21
Impeller power at $\rho =$ kg/m³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	45-3m
for installation type D (ISO) calculated acc. to VDI			3731
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		186
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐
 Ex-protection ☒ II 3G / 3G Ex d IIC - - / Dc, PTB 03 ATEX D076

☐ for speed control: block resonance frequencies, max speed see above

INSTALLATION TYPE according to ISO 13349

- ☐ A -Free inlet, free outlet
☐ B -Free inlet, ducted outlet
☒ C -Ducted inlet, free outlet
☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**

Make **Zone 2 IE3 motor**
 Type/Size **W22 / 71**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2800
Rated power P	kW (acc. eff.-cl.)	0.75
Design/protection class		B3 / IP55
Motor weight approx.	kg	15
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx.		1.48 / 7.7-times
efficiency motor / cos phi		80.7 % / 0.88

- ☒ Ex-protection **Exna IIC**
☐ Multi speed
☒ Direct-Connection ☐ with fan
☐ Thermistor protection 3-times ☐ Bearing with external lubrication
☐ Space heater
☒ terminal box on Top /loc. Mid, A o.B side
☒ without separate rating plate
☒ Standard paint system

OTHER REQUIREMENTS**CENTRIFUGAL FAN**

- ☒ Single inlet
☒ Direct drive, impeller mounted on motor shaft
☐ Belt drive
☐ Drive through elastic coupling
☐ Enclosed bearing lubr. for life
☒ Outdoor installation
☒ 1 x Shaft seal Anti spark
☐ Split casing
☒ 1 x Inlet spigot
☒ 1 x Anti-spark lining
☒ 1 x Inspection opening ST

MAIN MATERIALS

Impeller, main mat.	Mild Steel 43A
Casing	Mild Steel 43A
Base frame/support	Mild Steel 43A

SURFACE TREATMENT

Impeller	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Casing outside	powder coated
color/corr.-cl.	- / -
Casing inside	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Base frame/support	powder coated
color/corr.-cl.	- / -

Contract basis: Without obligation. Tolerances acc. to ISO 13348, AN3.0

Fan Systems Terms and Conditions

Payment terms conditional on positive credit rating

Date: 21/06/2021

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	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:03 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1
Input data :

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 300.00
Mass flow rate	m [kg/h]: 359.96
Static pressure	pst = pt-pd2 [Pa]: 1200.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: -
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3.0

Selection data :

Flow rate	V [m ³ /h]	300
Static pressure	pst = pt-pd2 [Pa]	1,201
Total pressure	pt [Pa]	1,374
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,787
Impeller power	Pw [kW]	0.21
Rated motor power	PM [kW]	0.75
Efficiency at operating point	Eta [%]	54.78
Impeller power (Rho1.2)	Pw [kW]	0.21
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	1,201
Total pressure (Rho1.2)	pt [Pa]	1,374
Sound pressure 1m (ISO-D)	Lp [dB(A)]	53(58)*
Sound power	Lw [dB(A)]	86
Blade frequency	f [Hz]	418
Tip speed	u2 [m/s]	48.16
Inlet speed	c1 [m/s]	17.00
Outlet speed	c2 [m/s]	17.00
Temperature increase	dT [°C]	2.06
Impeller power (Vol=0)	Pw [kW]	0.03
Compressibility coeff.	k [-]	0.995
Fan flow-rate coeff.	phi [-]	0.020
Pressure coeff.	psi [-]	0.959
Improve-/Devalue-factor [-]	[]	1.000
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	1.00
Appx. starting time	ta [s]	85
ca. Standard Rundown time	td [s]	2,320

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:

Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021**PROJECT:** College Manchester**Y/DESC.:** Lev 5/6/14**Item:**

3

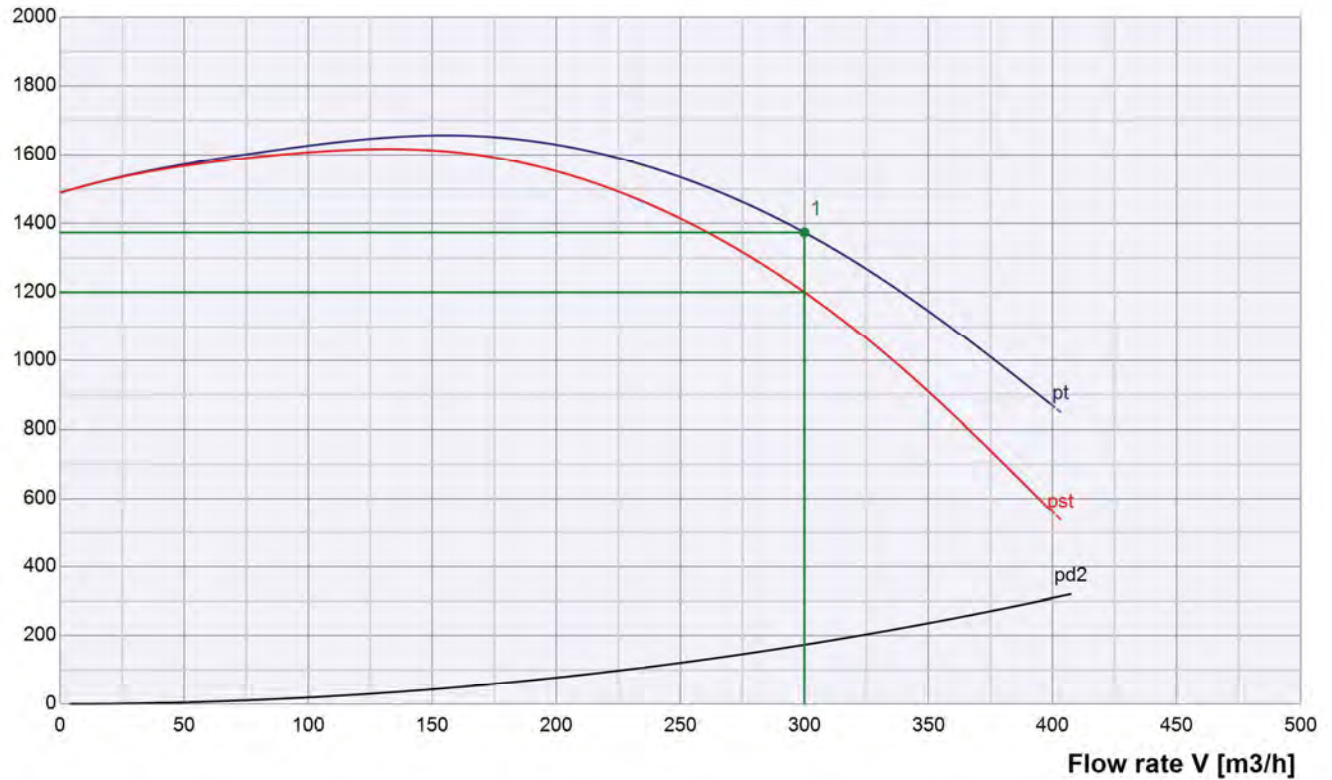
TENDER No.:**21062109GH_R3****Units:**

3

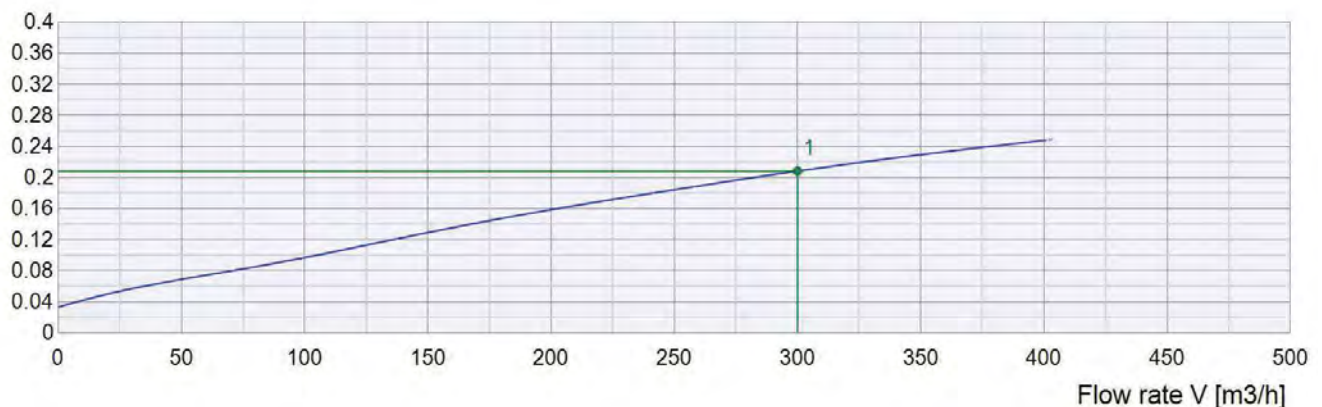
Handled by: Gareth Berry**+44 (78 43) 46 24 50**

21/06/2021 11:48:03 / gareth.berry

75-Radial Alldays Peacock

Fan type : S-133CRB9/79/330/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	300				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	2,787				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:04 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	46	60	69	81	80	80	78	73

with reference to the definitions in DIN 45 635 Part 38 :

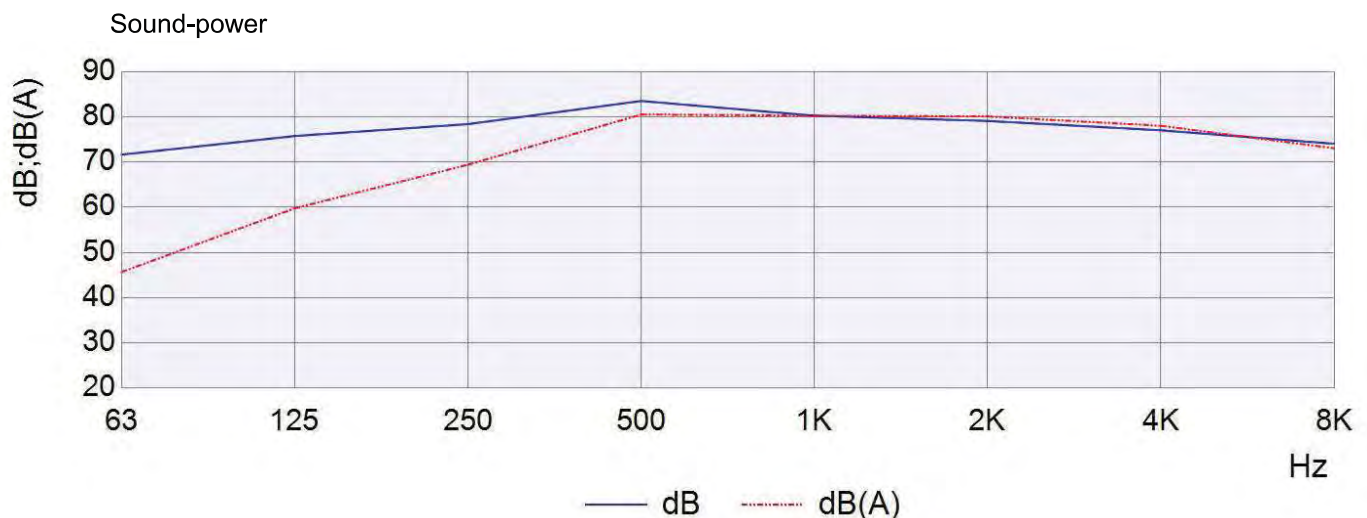
Sound power level radiated into duct	86 dB(A) re 10 ⁻¹² W
Motor sound power level	61 dB(A) re 10 ⁻¹² W

Free inlet/outlet sound power level	84 dB(A) re 10 ⁻¹² W
Free inlet/outlet sound pressure level, free field 1m/45°	76 dB(A) re 20 µPa
Free inlet/outlet sound pressure level, free field 3m/45°	66 dB(A) re 20 µPa
Casing break-out noise, sound power level ¹⁾	65(70) dB(A) re 10 ⁻¹² W
Casing break-out noise, average sound pres. level, free field 1m ¹⁾	53(58) dB(A) re 20 µPa
Casing break-out noise, average sound pres. level, free field 3m ¹⁾	45(50) dB(A) re 20 µPa

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **1** dB(A) re 20 µPa

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			46	60	69	80	80	80	78	73	86 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			39	49	53	60	58	58	57	51	65 dB(A) re 10 ⁻¹² W
Motor sound power level											61 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 284 L=600 W=400

Insertion losses silencer	-3	-4	-8	-13	-15	-12	-10	-10			dB(A)
Total Fan-Sound power level in duct	43	56	61	67	65	68	68	63			74 dB(A) re 10 ⁻¹² W
Free outlet sound power level											74 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											66 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											57 dB(A) re 20 µPa
potential nozzle reflection									at diameter 79 mm		-2 dB

Date: 21/06/2021

DATA SHEET FOR CENTRIFUGAL FAN

FAN SYSTEMS
WITT

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 694999 Fax:

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:02 / gareth.berry	

Type : S-133CRB9/79/330/1**TECHNICAL DATA**

Volume flow rate	V	m³/h	300
Static pressure at $\rho = 1.2$ kg/m³	Δp_{sf}	Pa	1,200
Total pressure at $\rho = 1.2$ kg/m³	Δp_t	Pa	1,374
Static pressure at $\rho =$ kg/m³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m³	Δp_t	Pa	
Rated speed	n	1/min	2,787
Impeller power at $\rho = 1.2$ kg/m³	Pr	kW	0.21
Impeller power at $\rho =$ kg/m³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	45-3m
for installation type D (ISO) calculated acc. to VDI			3731
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		186
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐
 Ex-protection ☒ II 3G / 3G Ex d IIC - - / Dc, PTB 03 ATEX D076

☐ for speed control: block resonance frequencies, max speed see above

INSTALLATION TYPE according to ISO 13349

- ☐ A -Free inlet, free outlet
☐ B -Free inlet, ducted outlet
☒ C -Ducted inlet, free outlet
☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**

Make **Zone 2 IE3 motor**
 Type/Size **W22 / 71**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2800
Rated power P	kW (acc. eff.-cl.)	0.75
Design/protection class		B3 / IP55
Motor weight approx.	kg	15
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx.		1.48 / 7.7-times
efficiency motor / cos phi		80.7 % / 0.88

- ☒ Ex-protection **Exna IIC**
☐ Multi speed
☒ Direct-Connection ☐ with fan
☐ Thermistor protection 3-times ☐ Bearing with external lubrication
☐ Space heater
☒ terminal box on Top /loc. Mid,A o.B side
☐ without separate rating plate
☒ Standard paint system

OTHER REQUIREMENTS**CENTRIFUGAL FAN**

- ☒ Single inlet
☒ Direct drive, impeller mounted on motor shaft
☐ Belt drive
☐ Drive through elastic coupling
☐ Enclosed bearing lubr. for life
☒ Outdoor installation
☒ 1 x Shaft seal Anti spark
☐ Split casing
☒ 1 x Inlet spigot
☒ 1 x Anti-spark lining
☒ 1 x Inspection opening ST

MAIN MATERIALS

Impeller, main mat.	Mild Steel 43A
Casing	Mild Steel 43A
Base frame/support	Mild Steel 43A

SURFACE TREATMENT

Impeller	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Casing outside	powder coated
color/corr.-cl.	- / -
Casing inside	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Base frame/support	powder coated
color/corr.-cl.	- / -

Contract basis: Without obligation. Tolerances acc. to ISO 13348, AN3.0

Fan Systems Terms and Conditions

Payment terms conditional on positive credit rating

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:03 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1
Input data :

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 300.00
Mass flow rate	m [kg/h]: 359.96
Static pressure	pst = pt-pd2 [Pa]: 1200.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: -
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3.0

Selection data :

Flow rate	V [m ³ /h]	300
Static pressure	pst = pt-pd2 [Pa]	1,201
Total pressure	pt [Pa]	1,374
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,787
Impeller power	Pw [kW]	0.21
Rated motor power	PM [kW]	0.75
Efficiency at operating point	Eta [%]	54.78
Impeller power (Rho1.2)	Pw [kW]	0.21
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	1,201
Total pressure (Rho1.2)	pt [Pa]	1,374
Sound pressure 1m (ISO-D)	Lp [dB(A)]	53(58)*
Sound power	Lw [dB(A)]	86
Blade frequency	f [Hz]	418
Tip speed	u2 [m/s]	48.16
Inlet speed	c1 [m/s]	17.00
Outlet speed	c2 [m/s]	17.00
Temperature increase	dT [°C]	2.06
Impeller power (Vol=0)	Pw [kW]	0.03
Compressibility coeff.	k [-]	0.995
Fan flow-rate coeff.	phi [-]	0.020
Pressure coeff.	psi [-]	0.959
Improve-/Devalue-factor [-]	[]	1.000
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	1.00
Appx. starting time	ta [s]	85
ca. Standard Rundown time	td [s]	2,320

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:

Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021**PROJECT:** College Manchester**Y/DESC.:** Lev 5/6/14**Item:**

3

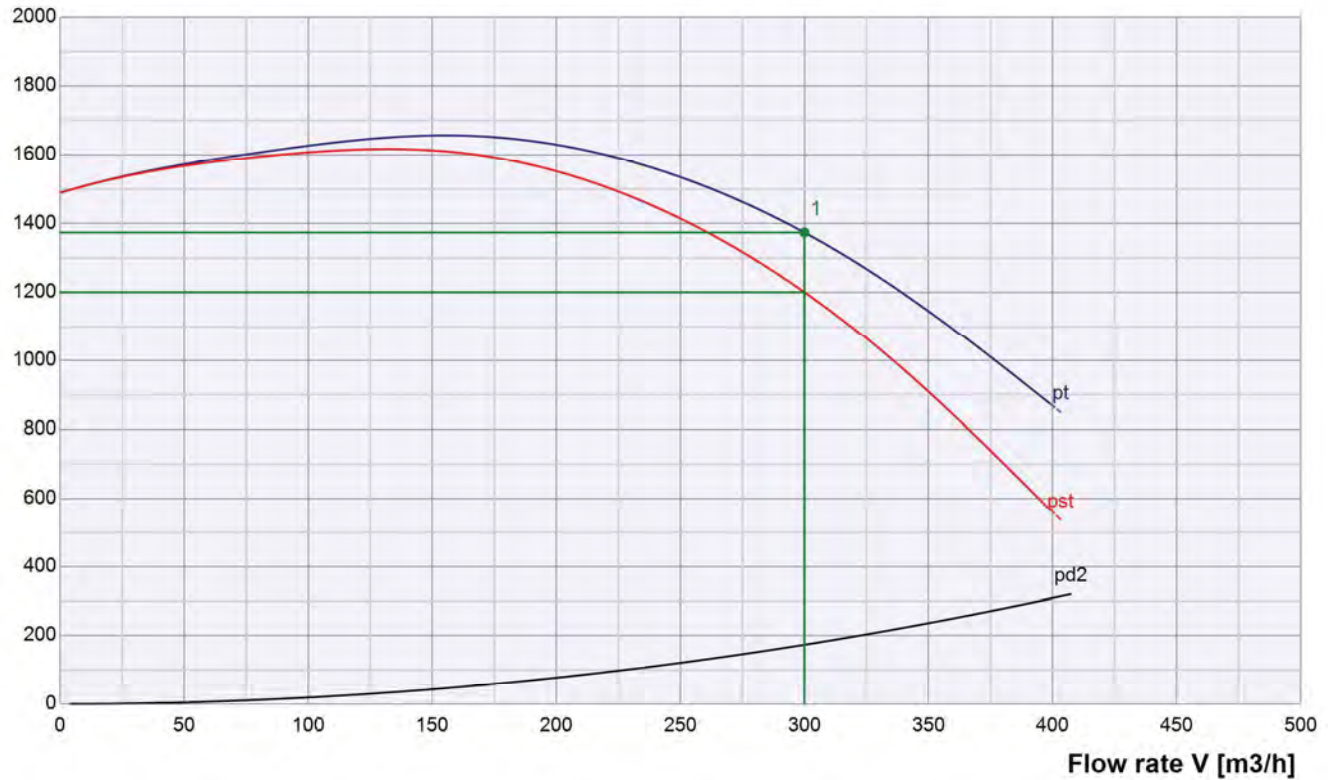
TENDER No.:**21062109GH_R3****Units:**

3

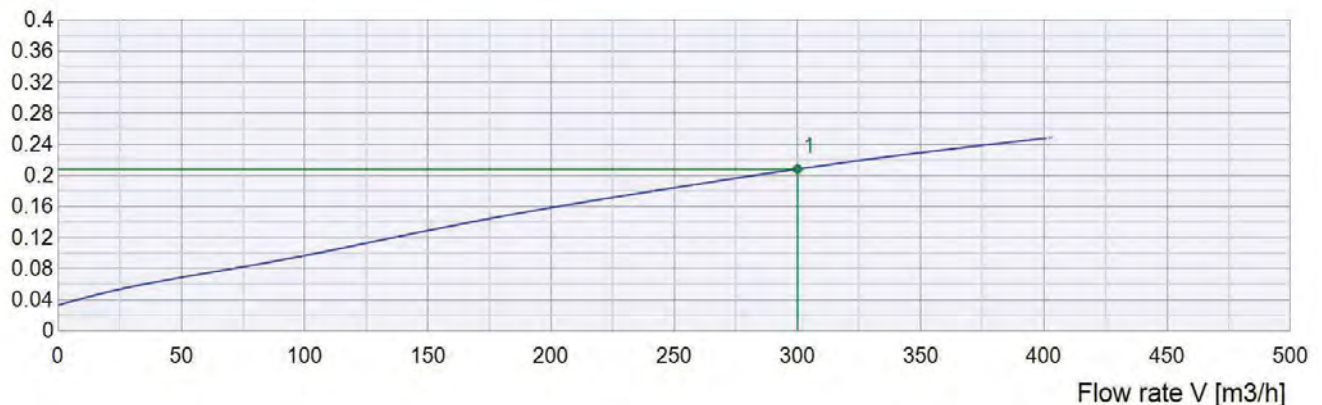
Handled by: Gareth Berry**+44 (78 43) 46 24 50**

21/06/2021 11:48:03 / gareth.berry

75-Radial Alldays Peacock

Fan type : S-133CRB9/79/330/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	300				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	2,787				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:04 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	46	60	69	81	80	80	78	73

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **86 dB(A) re 10⁻¹² W**
Motor sound power level **61 dB(A) re 10⁻¹² W**

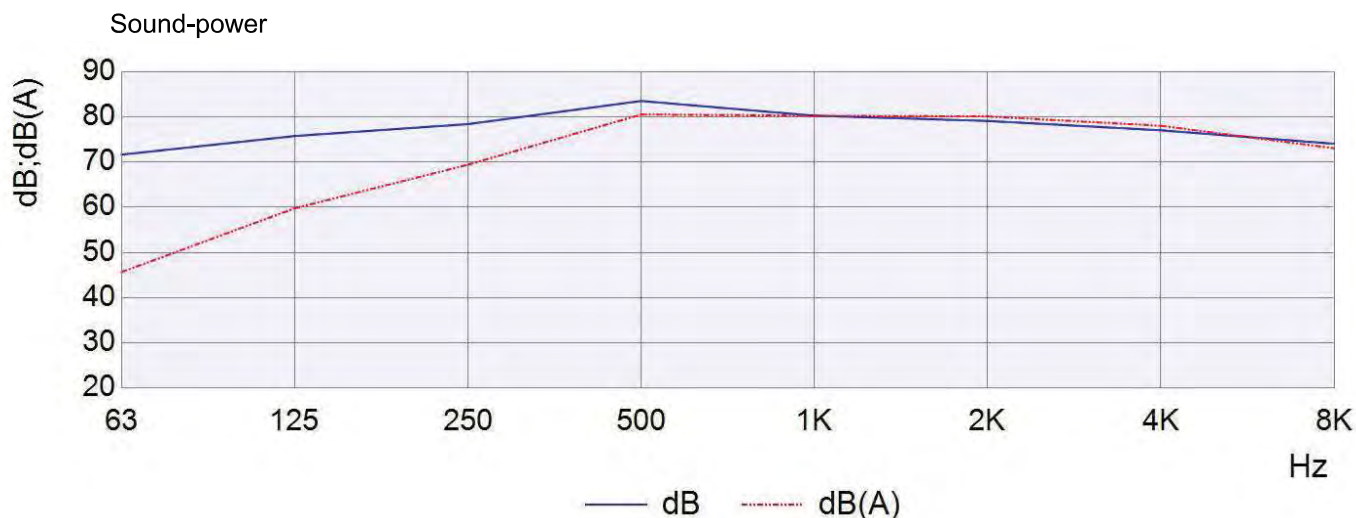
Free inlet/outlet sound power level **84 dB(A) re 10⁻¹² W**
Free inlet/outlet sound pressure level, free field 1m/45° **76 dB(A) re 20 µPa**
Free inlet/outlet sound pressure level, free field 3m/45° **66 dB(A) re 20 µPa**

Casing break-out noise, sound power level ¹⁾ **65(70) dB(A) re 10⁻¹² W**
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **53(58) dB(A) re 20 µPa**
Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **45(50) dB(A) re 20 µPa**

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **1 dB(A) re 20 µPa**

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			46	60	69	80	80	80	78	73	86 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			39	49	53	60	58	58	57	51	65 dB(A) re 10 ⁻¹² W
Motor sound power level											61 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 284 L=600 W=400

Insertion losses silencer	-3	-4	-8	-13	-15	-12	-10	-10			dB(A)
Total Fan-Sound power level in duct	43	56	61	67	65	68	68	63			74 dB(A) re 10 ⁻¹² W
Free outlet sound power level											74 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											66 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											57 dB(A) re 20 µPa
potential nozzle reflection									at diameter 79 mm		-2 dB

<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	2200 M3/HR		
<i>Pressure:</i>	3800 PA		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	510 BCP		
<i>Absorbed Power:</i>	3.3	KW	
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	4 KW 2 POLE		
<i>Fan Speed:</i>	2900 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

21/06/2021

Gas Properties :

Barom Pressure : 101325 pa
 Operating Temp : 20 Deg.C.
 Humidity : 38 %
 Specific Gravity : 1.0
 Inlet Density : 1.2001 Kg/m3
 Dust Load : 0 g/m3

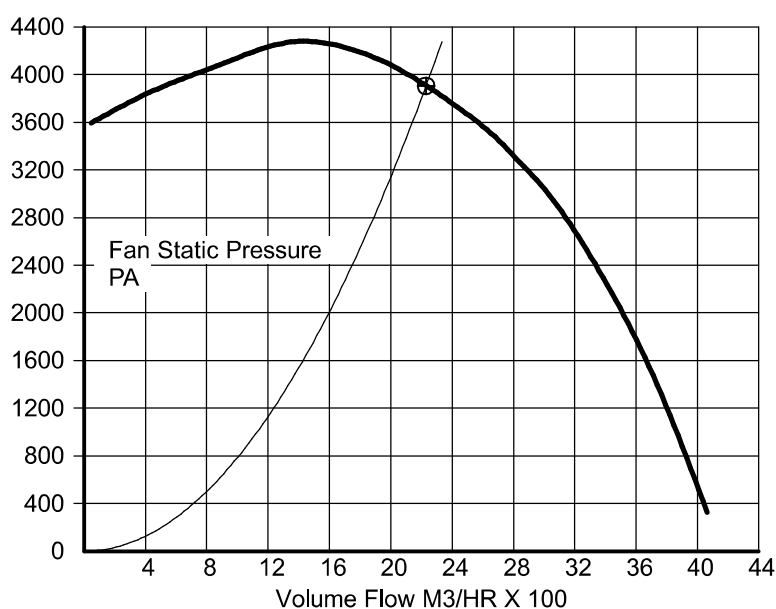
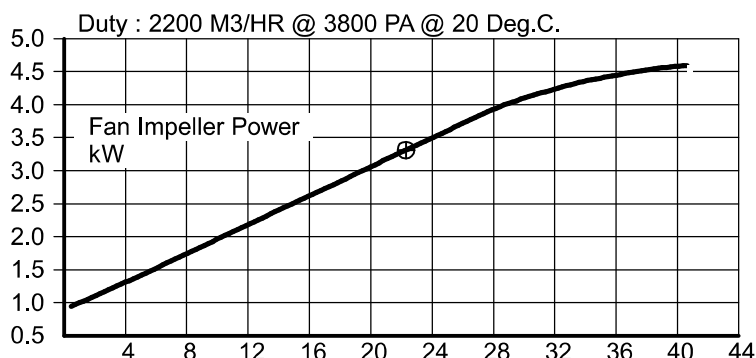
Duty Required :

Inlet Volume Flow : 2200 m3/hr
 Fan Static Pressure: -0 pa
 Inlet Pressure : -0 pa
 Outlet Pressure : 3800 pa

Fan Selected :

SWSI-BCP108-510/100-70
 Speed : 2900 Rpm
 Impeller Ø : 510 mm
 Fan Class : 3

Impeller Power :
 @ 20 Deg C : 3.31 kW
 @ Duty Temp : 3.31 kW
 Tip Speed : 77.4 m/s
 Inlet Velocity : 8.3 m/s
 Outlet Velocity : 9.4 m/s
 Temp Rise : 4.5 Deg.C.



Prog V410.42

Noise Details :

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	97	95	95	101	97	91	87	83	105
Free Inlet SPL dBA	45	59	71	86	86	81	77	71	90
Free Outlet SPL dBA	45	59	70	85	86	81	77	71	90
Outside Casing dBA	50	57	61	73	72	67	63	55	77

Motor noise is NOT included in the figures above.

Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
 Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

All values are averages. Free Inlet assumes that outlet is ducted and vice versa.

Type : S-RNZ9/500/630/1**TECHNICAL DATA**

Volume flow rate	V	m ³ /h	7,500
Static pressure at $\rho = 1.2$ kg/m ³	Δp_{sf}	Pa	1,200
Total pressure at $\rho = 1.2$ kg/m ³	Δp_t	Pa	1,267
Static pressure at $\rho =$ kg/m ³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m ³	Δp_t	Pa	
Rated speed	n	1/min	1,400
Impeller power at $\rho = 1.2$ kg/m ³	Pr	kW	3.08
Impeller power at $\rho =$ kg/m ³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	56-3m
for installation type D (ISO) calculated acc. to VDI 3731			
Sound pressure at free inlet	L _p	dB(A)	77-3m
Fan weight (without motor) approx.		kg	142
Inlet temperature t		°C	20
maximum inlet temperature t _{max}		°C	

Flow medium ☒ Air ☒ Dust free ☐Ex-protection ☒ II 3G / 3G IIC - - / Dc, PTB 03 ATEX D076☐ for speed control: block resonance frequencies, max speed see above**INSTALLATION TYPE according to ISO 13349**

- ☐ A -Free inlet, free outlet
- ☐ B -Free inlet, ducted outlet
- ☒ C -Ducted inlet, free outlet
- ☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**Make **Zone 2 IE3 motor**Type/Size **IE3-W41R 100 LZ4 / 112**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	1455
Rated power P	kW (acc. eff.-cl.)	4
Design/protection class		B3 / IP55
Motor weight approx.	kg	50
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx. A		6.4 / 8.6-times
efficiency motor / cos phi		87.7 % / 0.77

☒ Ex-protection**Exna**☐ Multi speed☒ Direct-Connection☒ with fan☒ Thermistor protection 3-times☐ Bearing with external lubrication☐ Space heater☒ terminal box on Top /loc. Mid, A o.B side☒ without separate rating plate☒ Standard paint system**OTHER REQUIREMENTS**

Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 23/06/2021	Item: 4	TENDER No.: 23062111GH_R4
	PROJECT: College Manchester	Units: 1	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 07	23/06/2021 10:19:48 / gareth.berry 50-Centrifugal Witt	

Fan type : S-RNZ9/500/630/1

Input data :

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 7500.00
Mass flow rate	m [kg/h]: 9002.57
Static pressure	pst = pt-pd2 [Pa]: 1200.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: 0.00
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3

Selection data :

Flow rate	V [m ³ /h]	7,500
Static pressure	pst = pt-pd2 [Pa]	1,200
Total pressure	pt [Pa]	1,267
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.360
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	1,400
Impeller power	Pw [kW]	3.08
Rated motor power	PM [kW]	4
Efficiency at operating point	Eta [%]	85.30
Impeller power (Rho1.2)	Pw [kW]	3.08
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	1,199
Total pressure (Rho1.2)	pt [Pa]	1,267
Sound pressure 1m (ISO-D)	Lp [dB(A)]	64(69)*
Sound power	Lw [dB(A)]	91
Blade frequency	f [Hz]	210
Tip speed	u2 [m/s]	46.18
Inlet speed	c1 [m/s]	10.61
Outlet speed	c2 [m/s]	10.61
Temperature increase	dT [°C]	1.22
Impeller power (Vol=0)	Pw [kW]	
Compressibility coeff.	k [-]	0.996
Fan flow-rate coeff.	phi [-]	0.145
Pressure coeff.	psi [-]	0.980
Improve-/Devalue-factor [-]	[]	1.006
Rough approximation of starting time :		
Appx. impeller weight	[kg]	26.0
Appx. mass moment of inertia [	kg m ²] []	1.50
Appx. starting time	ta [s]	7
ca. Standard Rundown time	td [s]	59

*Values in brackets for aluminium casing.

Date: 23/06/2021

CUSTOMER:

Duscovent Engineering Ltd

ENQUIRY: from 23/06/2021**PROJECT:** College Manchester**Y/DESC.:** Lev 07**Item:**

4

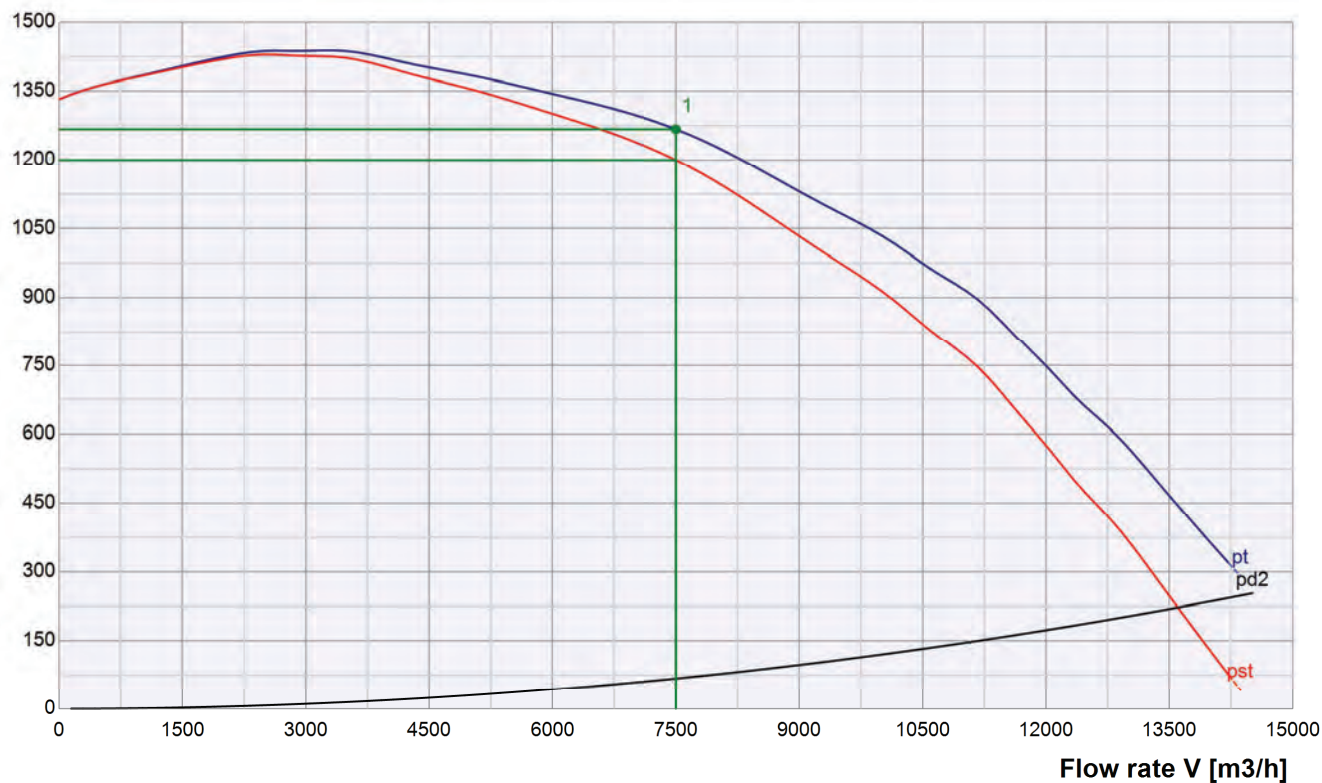
TENDER No.:**23062111GH_R4****Units:**

1

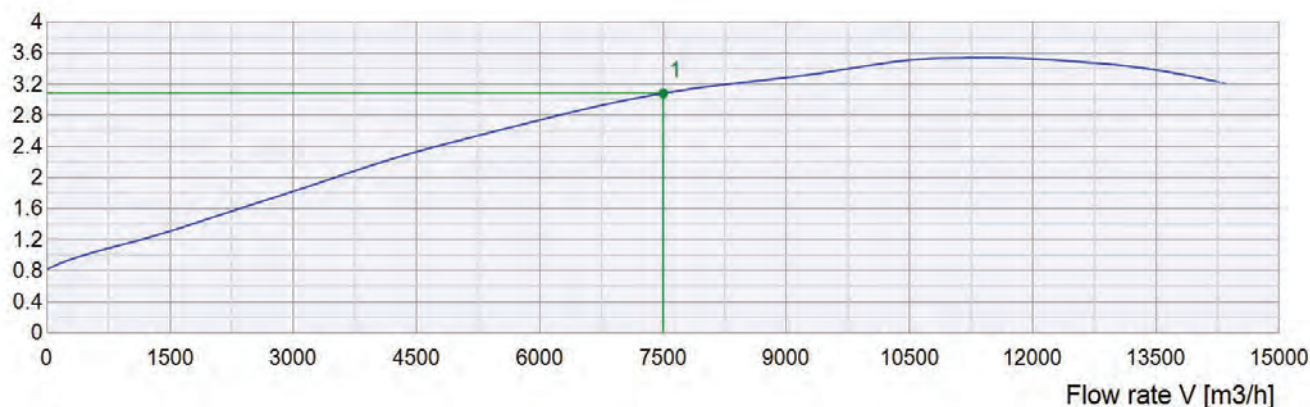
Handled by: Gareth Berry
+44 (78 43) 46 24 50

23/06/2021 10:19:48 / gareth.berry

50-Centrifugal Witt

Fan type : S-RNZ9/500/630/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.4 0.8 1.2 1.6 2 2.4 2.8 3.2 3.6 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	7,500				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	1,400				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 23/06/2021	Item: 4	TENDER No.: 23062111GH_R4
	PROJECT: College Manchester	Units: 1	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 07		23/06/2021 10:19:48 / gareth.berry 50-Centrifugal Witt

Fan type : S-RNZ9/500/630/1

Fan speed	1,400 1/min	Flow rate	7,500 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	0.89 -
Inlet pressure	101.360 kPa	Blade frequency	210 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	94							
Correction V/Vopt	dB	0							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	3	0	0	0	0	0
Strouhal-Number	dB	0.9	1.7	3.4	6.8	14	27	55	109
Rel. spectrum	dB	-11	-9	-6	-7	-8	-10	-13	-17
Octave-power-lev.	dB	83	85	90	87	86	84	81	77
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	57	69	81	84	86	85	82	76

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **91** dB(A) re 10⁻¹² W
Motor sound power level **58** dB(A) re 10⁻¹² W

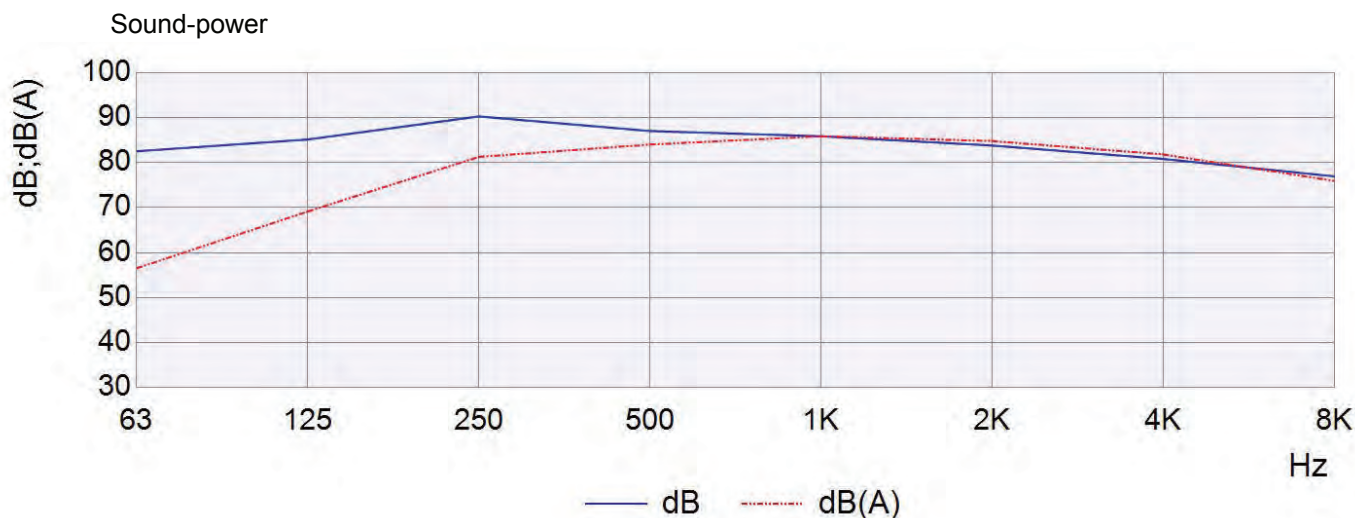
Free inlet/outlet sound power level **91** dB(A) re 10⁻¹² W
Free inlet/outlet sound pressure level, free field 1m/45° **83** dB(A) re 20 µPa
Free inlet/outlet sound pressure level, free field 3m/45° **73** dB(A) re 20 µPa

Casing break-out noise, sound power level ¹⁾ **77(82)** dB(A) re 10⁻¹² W
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **64(69)** dB(A) re 20 µPa
Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **57(62)** dB(A) re 20 µPa

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **0** dB(A) re 20 µPa

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 23/06/2021	Item: 4	TENDER No.: 23062111GH_R4
	PROJECT: College Manchester	Units: 1	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 07		23/06/2021 10:19:48 / gareth.berry

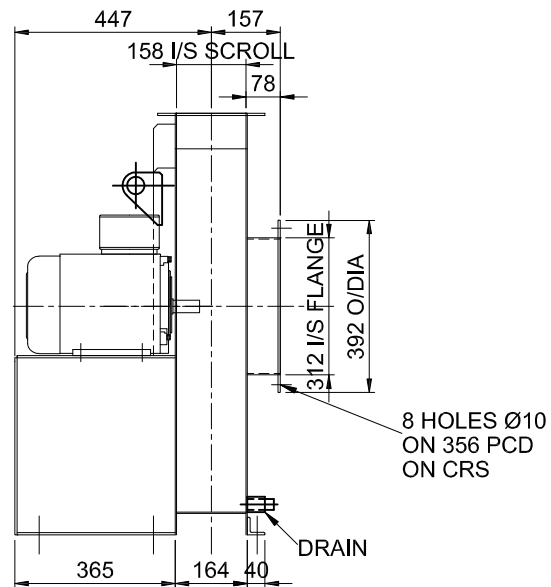
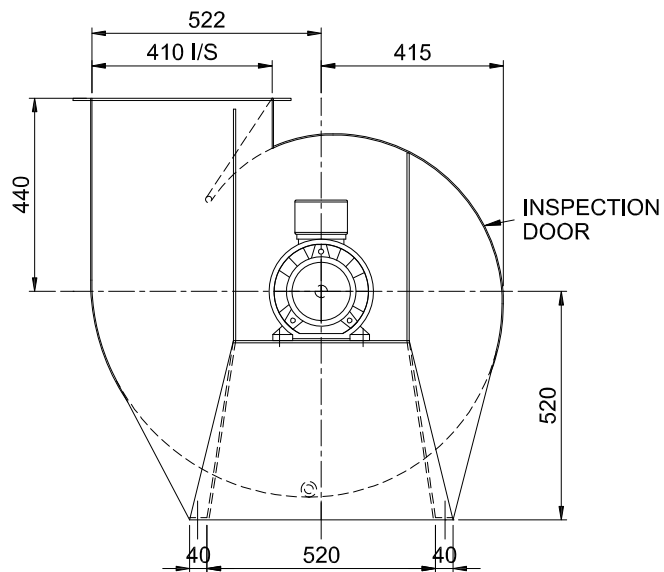
Fan type :

Fan speed	1,400 1/min	Flow rate	7,500 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	0.89 -
Inlet pressure	101.360 kPa	Blade frequency	210 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			56	69	81	84	86	85	82	76	91 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			52	62	70	70	71	70	68	61	77 dB(A) re 10 ⁻¹² W
Motor sound power level											58 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 374 L=900 W=375

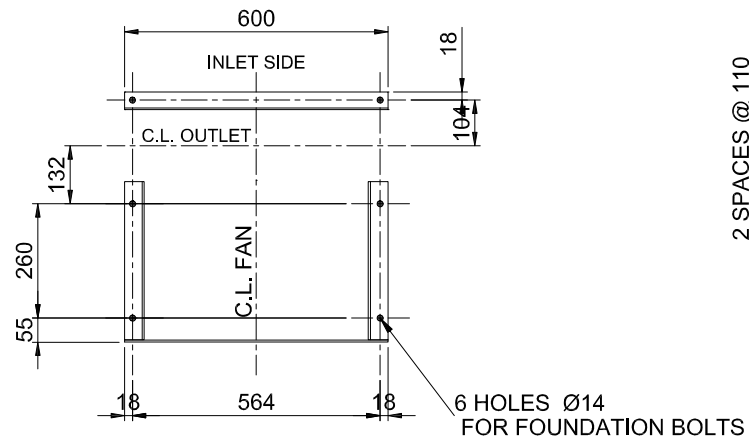
Insertion losses silencer	-5	-7	-14	-22	-26	-21	-15	-14			dB(A)
Total Fan-Sound power level in duct	51	62	67	62	60	64	67	62			73 dB(A) re 10 ⁻¹² W
Free outlet sound power level											73 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											65 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											55 dB(A) re 20 µPa
potential nozzle reflection									at diameter 500 mm		-1 dB



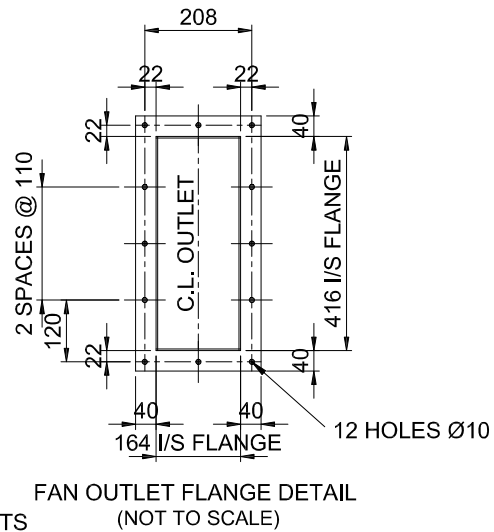
CLIENT :
 TAG :
 DUTY
 INLET VOLUME :
 STATIC PRESSURE :
 TEMPERATURE : 20 °C
 SPEED : 2900 RPM
 POWER :
 MOTOR : 4 kW 2 POLE
 FRAME D112M
 415-3-50Hz

FOUNDATION LOADS
 OUT OF BALANCE : NORMAL : 20.01 N
 MAXIMUM : 2496.40 N
 AXIAL THRUST : 161.08 N
 TOTAL WEIGHT : 151 KG
 ACCESSORIES :

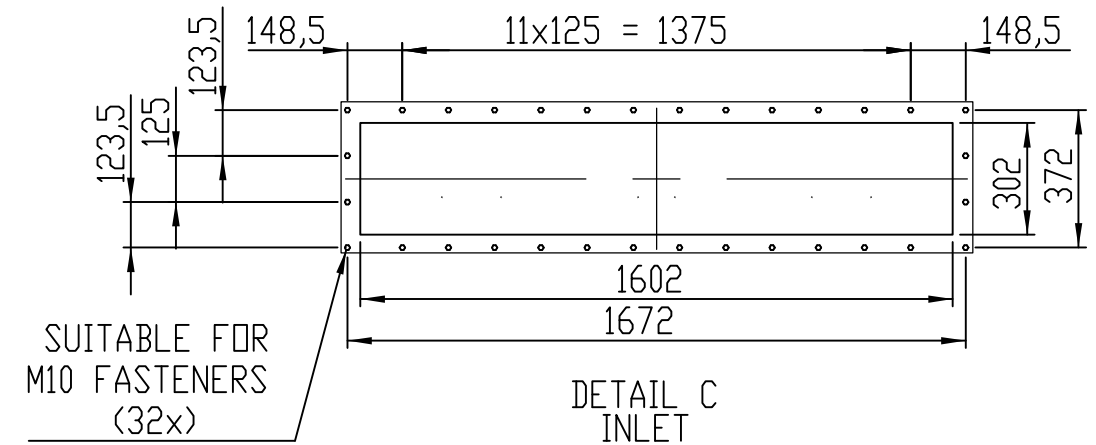
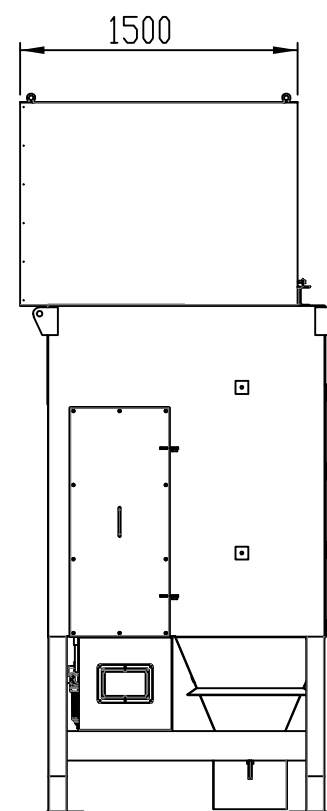
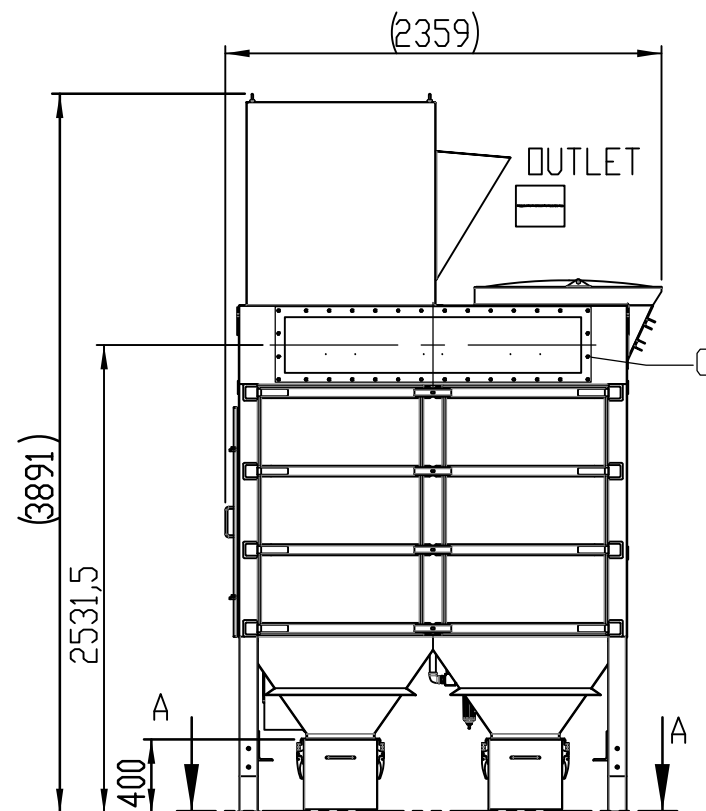
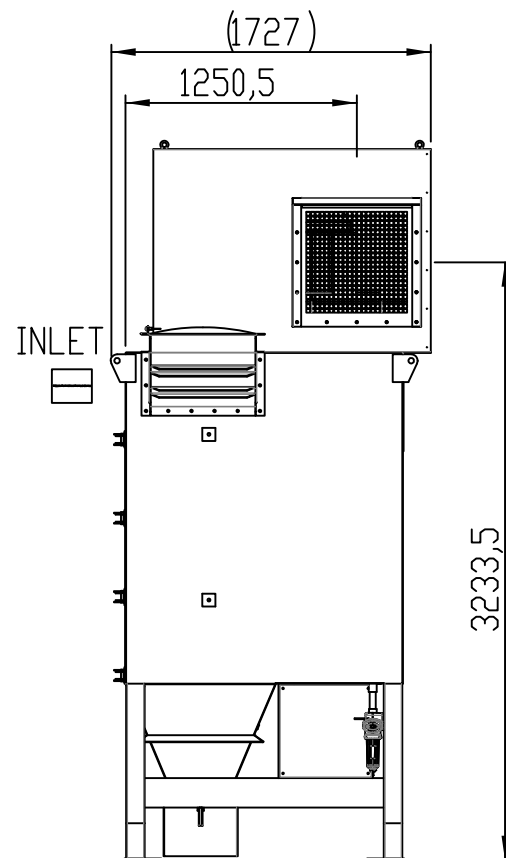
INSPECTION DOOR & DRAIN
 SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
 FOUNDATION BOLT HOLE DRILLING



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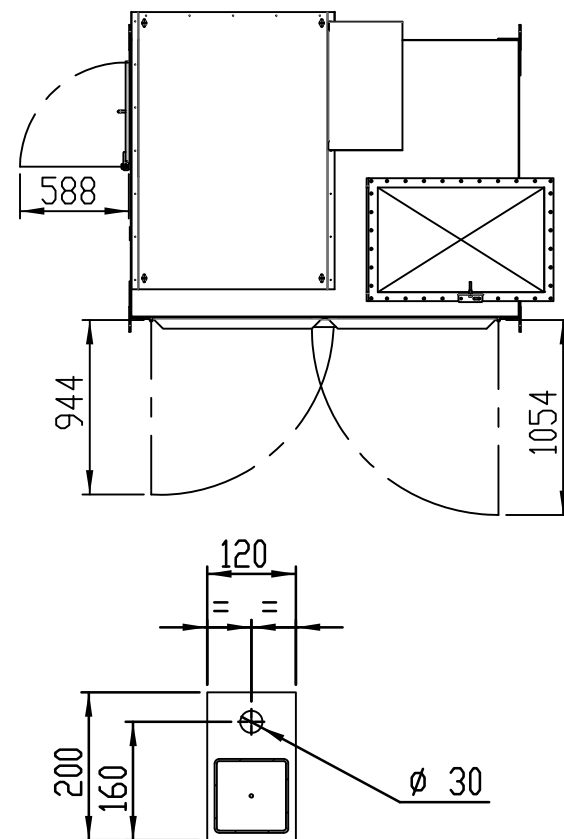
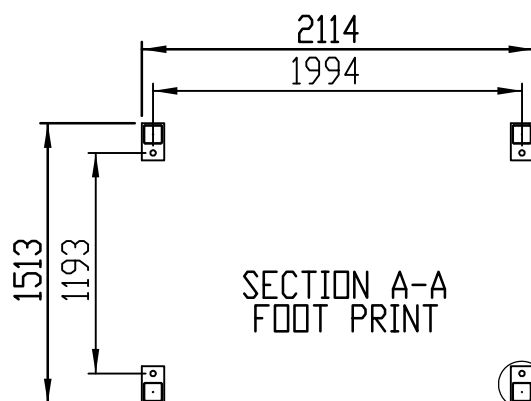
NOTE:
FOR DETAILED SPECIFICATIONS, SEE QUOTATION SPECIFICATION SHEET (QSS)
<http://intranet.dci.com/ind/iaf/emea/eng/pdt/Shared%20Documents/AW0296601.xlsm>

THIS DRAWING IS FOR QUOTATION PURPOSES ONLY

PAINT SPEC: —		TITLE: PROPOSAL DRAWING DFPRO12-R	
THICKNESS:			
MATERIAL:			
WEIGHT: 1595.40 kg	RELEASE NR	NUMBER: AW0296601	REVISION: 0
USED ON:	DR. BD 10/06/2021		
GENERAL TOLERANCES UNLESS OTHERWISE SPECIFIED: For linear, angular dimensions and form and location. ISO 2768 mK	APP. AH 10/06/2021	SCALE: N.T.S.	SHEET: 1 OF 2
For welded constructions. EN ISO 13920 BF	FIRST ANGLE PROJECTION	C/C SW: SolidWorks	SIZE: A3
GENERAL ROUGHNESS UNLESS OTHERWISE SPECIFIED: 3.2	DO NOT SCALE		COPYRIGHT DONALDSON COMPANY, INC.



Europe
IAF



DETAIL B
FOOT PLATE

ALL BURRS AND SHARP EDGES TO BE REMOVED				
CORROSION PROTECTION ACCORDING TO PURCHASE ORDER				
WELDING STANDARD ACCORDING TO I.S. EN ISO 2553:2013 ALL WELDS PATTERN TO BE REMOVED, USE OF SILICONE BASED REMOVER IS NOT ALLOWED				
GASKET/CAULKING AREA TO BE DECREASED BEFORE APPLICATION				
ALL DIMENSIONS ARE IN MILLIMETRES				
FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS, ETC. SEE: BS 8888				

DR.	DATE	REV.	REV. N°	CHANGE DESCRIPTION
		0		

Re: UMA 253 - Wood Waste + HEPA

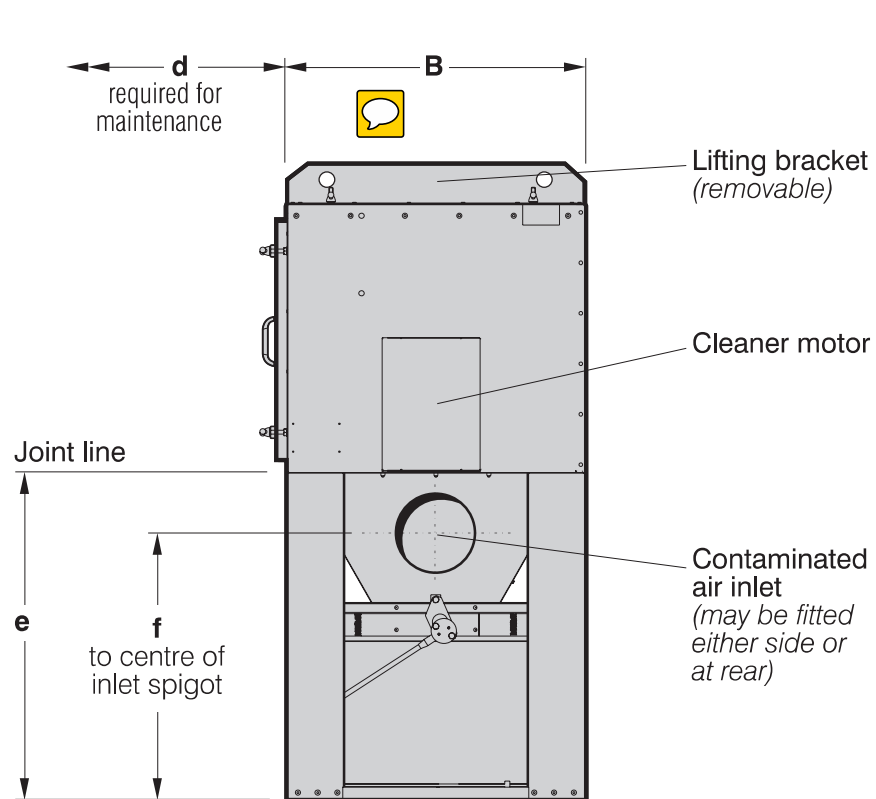
Many thanks for your recent enquiry as discussed with Philip McHale. Please see below our quotation for the filter unit to serve the above. Please provide flange detail for clean air outlet spigot.

Application Details

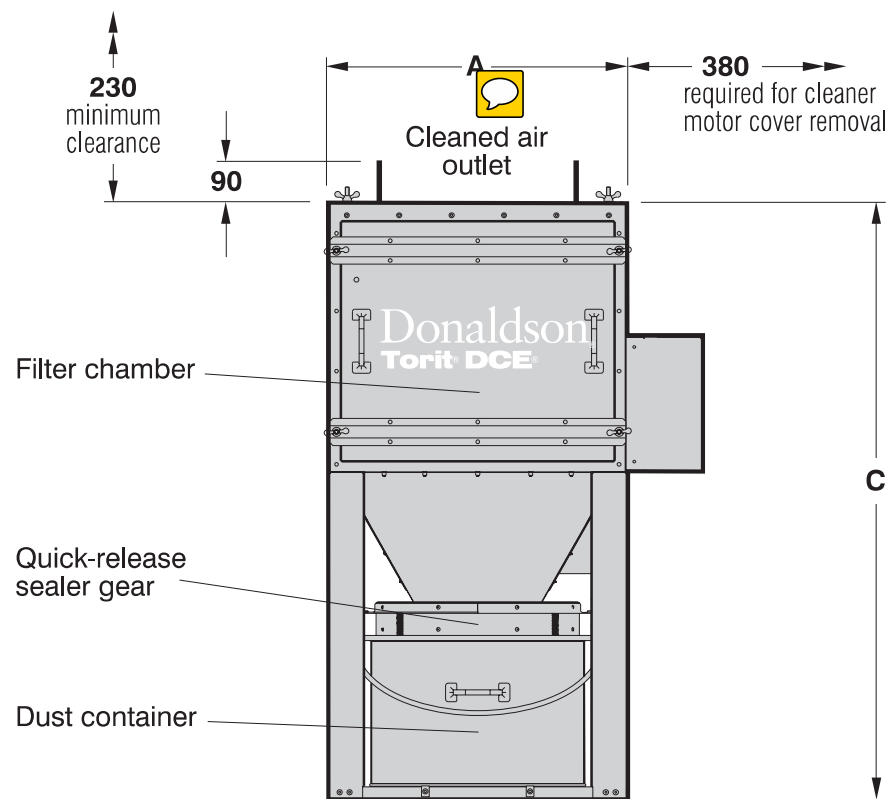
Application	:	Wood Dust
Air volume	:	2,670m ³ /hr
Dust Type	:	Wood
Explosion Class	:	KST: 199bar/m-1, Pmax: 6bar, MIE: > 3 mJ
Filtration Velocity	:	2.13m/min
Inlet Temperature	:	Ambient
Power Requirements	:	400 Volts 3 Phase 50 Hz
Paint Finish	:	Capri Blue RAL 5019

Filter

To handle this duty we propose our Donaldson Unimaster UMA 253 V unit dust collector manufactured in mild steel, complete with Dura-Life filter media, rear explosion relief with detection switch, anti-static filter and earthing, 80 litre bin, bin balance connection, absolute filter and housing, dial manometer, special filter to fan discharge spigot, weatherproofing, and UCS venting unit controller, all as outlined in the attached filter specification.



SIDE ELEVATION



FRONT ELEVATION

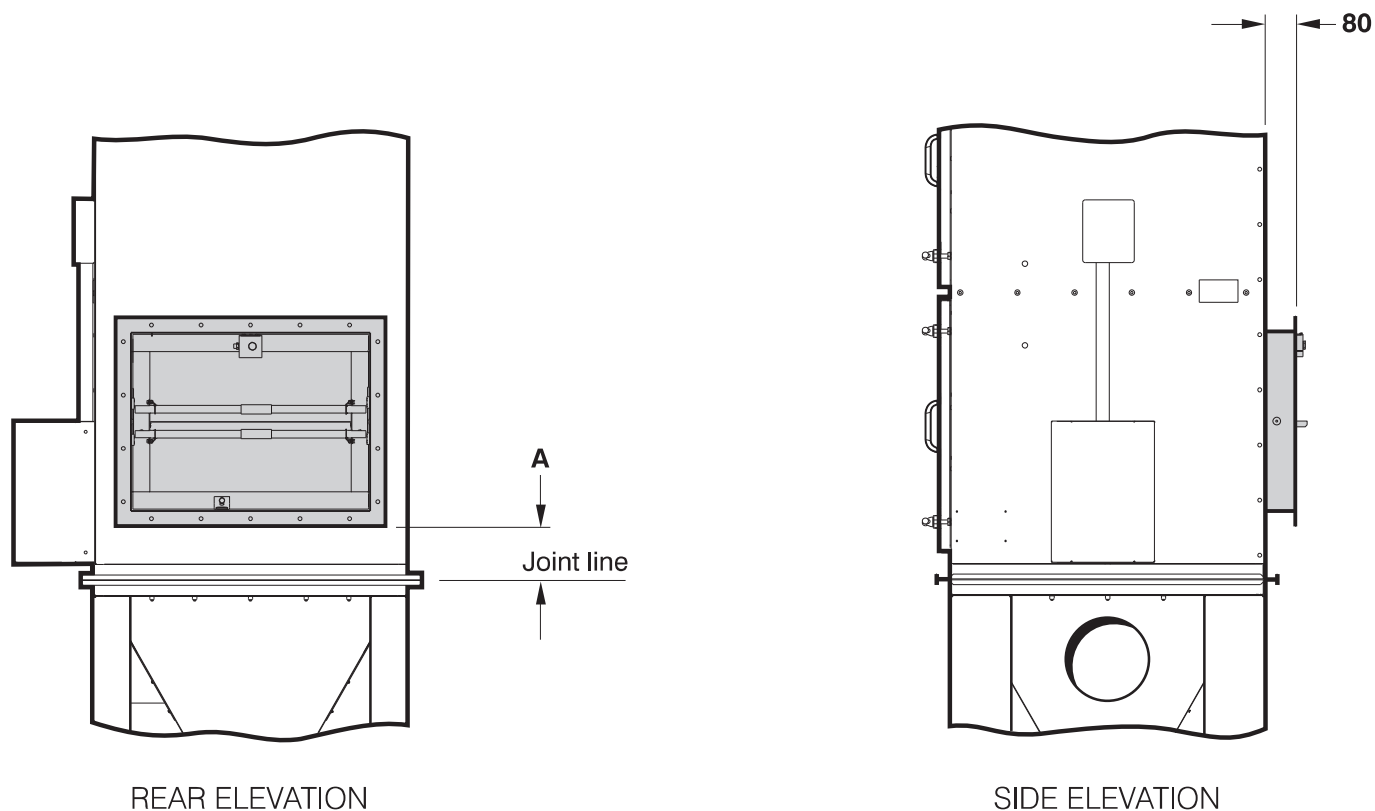
UNIMASTER VENTING TYPE DUST COLLECTOR WITH DUST CONTAINER

UMA 153V illustrated. Suitable for inside locations and outside when fitted with optional weather cowl.

SPECIFICATION

Type	Filtration area	DIMENSIONS in mm						Inlet spigot (inside dia.) mm	Dust container	Net weight (approx.)
		A	B	C	d	e	f			
UMA 72V	6.23 m ²	575	575	1369	560	729	648	Ø 101	55 litre	126 kg
UMA 103V	9.29 m ²	765	575	1485	560	845	685	Ø 203	80 litre	174 kg
UMA 153V	13.94 m ²	765	765	1542	760	845	685	Ø 203	80 litre	199 kg
UMA 253V	22.67 m ²	1146	765	1758	760	1061	883	Ø 254	80 litre	265 kg

Unimaster Dust Collectors – Series UMA 70-250



POSITION OF OPTIONAL EXPLOSION RELIEF FLANGE

UMA 153 illustrated

UMA type:	72	103	153	253	70H	100H	150H	250H	70V	100V	150V	250V	72V	103V	153V	253V
Dimension A in mm:	76	114	171	105	114	114	171	105	114	114	171	105	76	76	133	67

If a vent duct is not connected to the explosion relief flange, then a minimum clearance of 500 mm should be made to the rear of the collector to ensure efficient operation of the explosion venting process. Consideration should be given to the local surrounding area in regards to the pressure and flame effects.

Re: UMA 253 - Wood Waste

Many thanks for your recent enquiry as discussed with Eddie Wall. Please see below our quotation for the filter unit to serve the above.

Application Details

Application	:	Wood Dust
Air volume	:	2,670m ³ /hr
Dust Type	:	Wood
Explosion Class	:	KST: 199bar/m-1, Pmax: 6bar, MIE: > 3 mJ
Inlet Temperature	:	Ambient
Filtration Velocity	:	2.13m/min
Power Requirements (C200)	:	105-115V AC or 200-240V AC 50/60 Hz or 24 volt DC
Paint Finish	:	Capri Blue RAL 5019

Filter

To handle this duty we propose our Donaldson Unimaster UMA 253 V unit dust collector manufactured in mild steel complete with Dura-Life filter media with dial manometer, explosion relief with detection switch, hopper, support, 80 litre bin, bin balance connection, weatherproofing and UCS venting unit controller all as outlined in the attached filter specification.

EU_UNIMASTER

Process temperature within standard range -10 °C to +60 °C = Yes

Is the unit handling interior explosive atmosphere? = Yes

Which interior explosive atmosphere? = Dust

Dust Kst [bar m/s] = 199.0

Dust Pmax [bar] = 6.0

Interior dust cloud ignition temperature = ≥ 203 °C

Interior layer ignition temperature = ≥ 210 °C

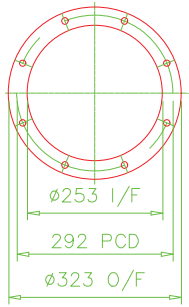
Unit size = 253

Unit type = Venting 3 cu ft bin

Media = Dura-Life (Standard)

Paint finish = Standard

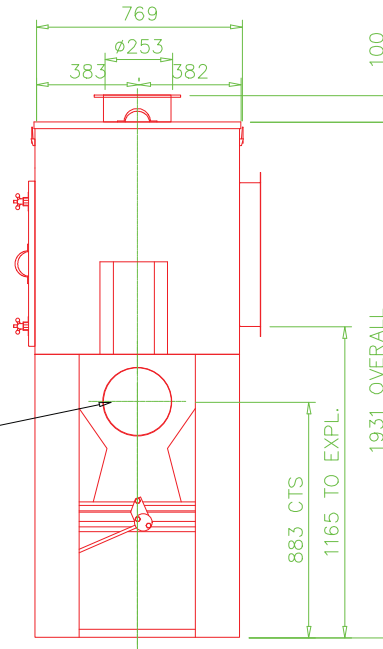
Standard - 895 line = RAL 5019 - Capri Blue



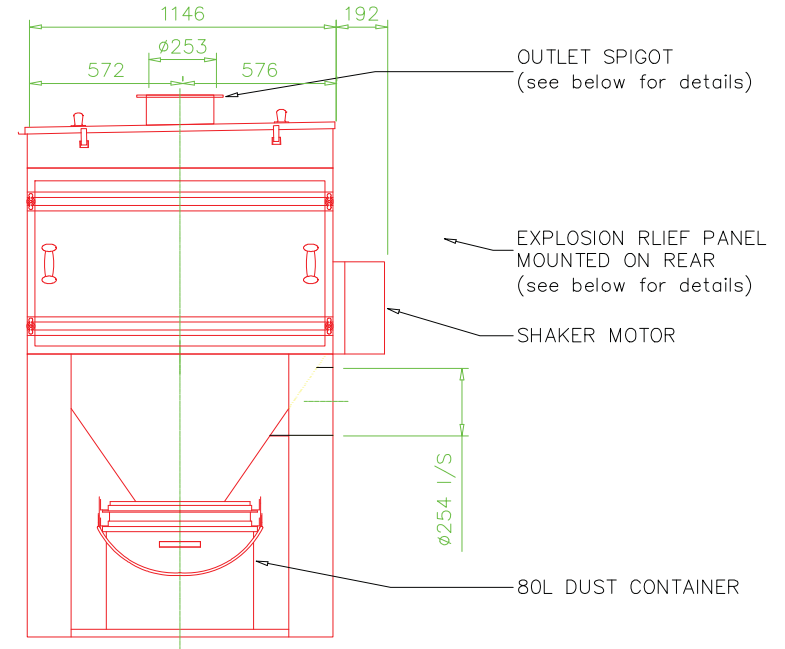
8-OFF $\phi 12$ mm
HOLES ON 292 PCD

OUTLET SPIGOT DETAILS

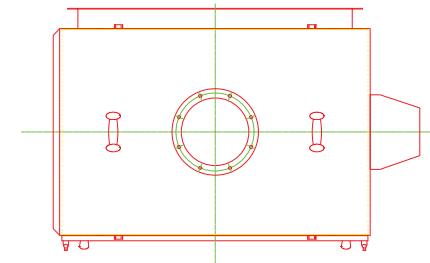
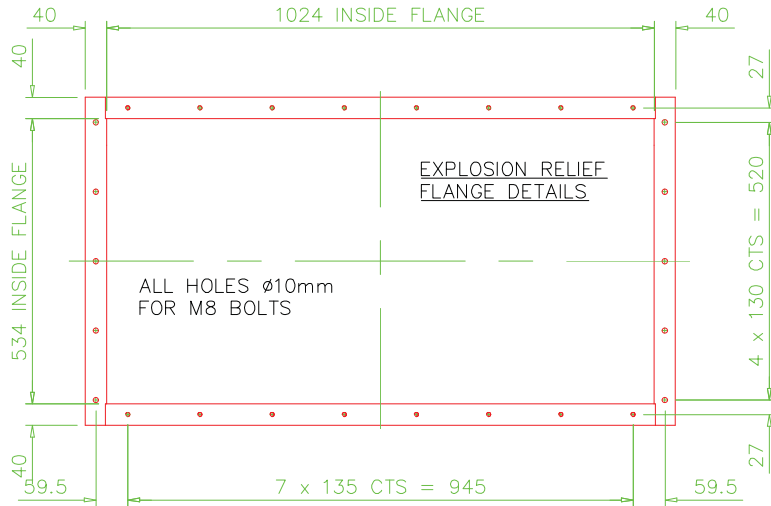
CONTAMINATED AIR INLET
 $\phi 254$ mm INSIDE SPIGOT



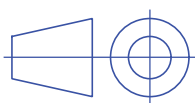
SIDE ELEVATION



FRONT ELEVATION



PLAN VIEW



DIMENSIONS IN MILLIMETRES		DO NOT SCALE
FABRICATION TOLERANCES UNLESS OTHERWISE STATED		
0-300mm	± 1.0 mm	
301-1000mm	± 2.0 mm	
Over 1000mm	± 3.0 mm	
Hole Centres	± 1.0 mm	

WELDING SYMBOLS
TO BS. 499

SURFACE FINISH
 $\frac{3.2}{\sqrt{R}}$ METRIC = $\frac{125}{\sqrt{R}}$ IMPERIAL
EXCEPT AS STATED

FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS ETC., SEE BS. 308

SQUARENESS - FABRICATED & SHEET METAL PARTS
DIAGONAL DIMENSIONS UNDER 600mm TO BE WITHIN 1mm OF EACH OTHER
DIAGONAL DIMENSIONS OVER 600mm TO BE WITHIN 2mm OF EACH OTHER

ALL THREAD FORMS TO BS. SPECIFICATION

DRN. BY

PMH

CH'D

NAME

TITLE

UMA 253 V ARRANGEMENT

DATE

DATE

ORIGINAL SCALE

1:20 + 1:10

FOR

DUSCOVENT

REV.

A

CONTRACT REF.

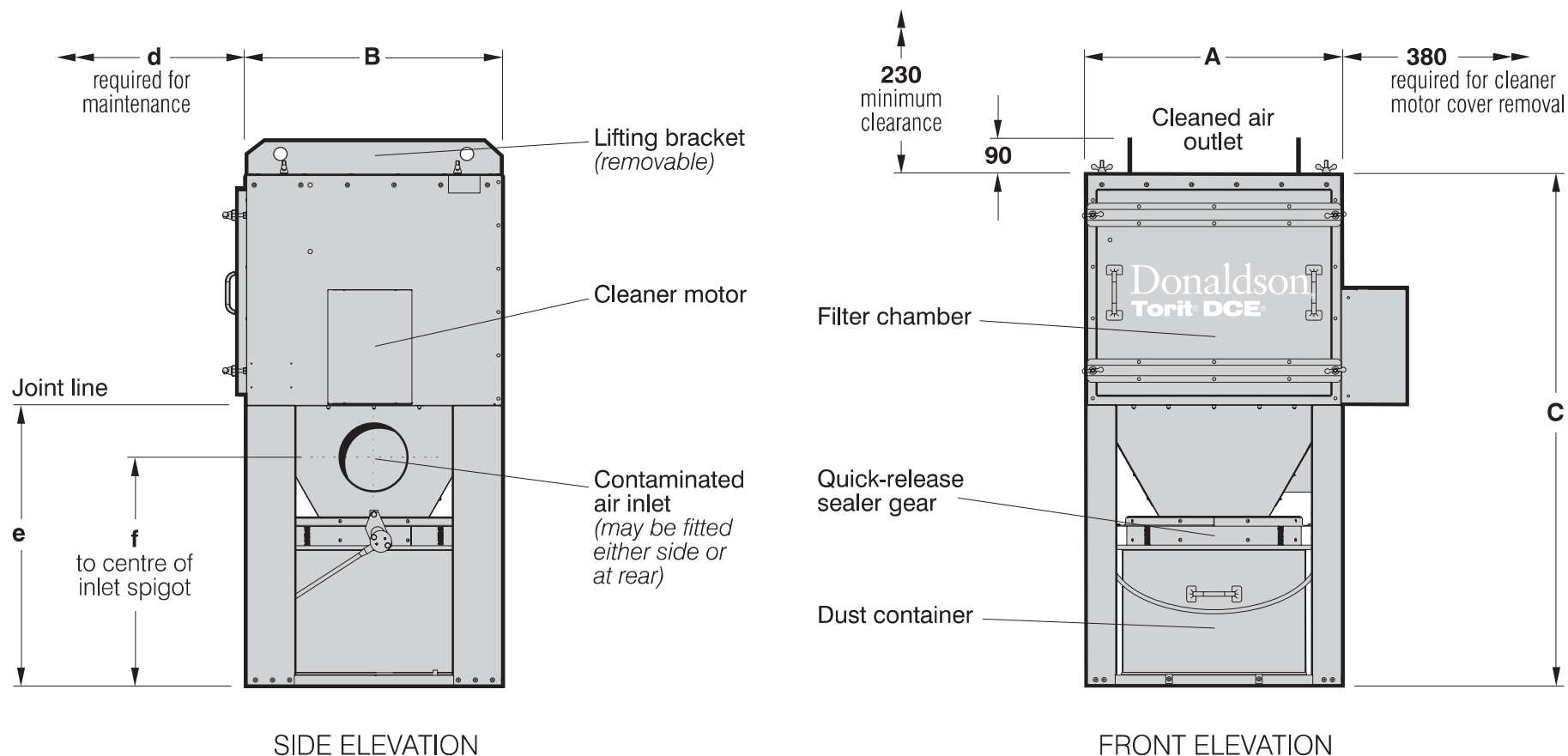
15394604

DRAWING NUMBER

001

OUTLET FLANGE
REQUIRED BY
CUSTOMER

REV



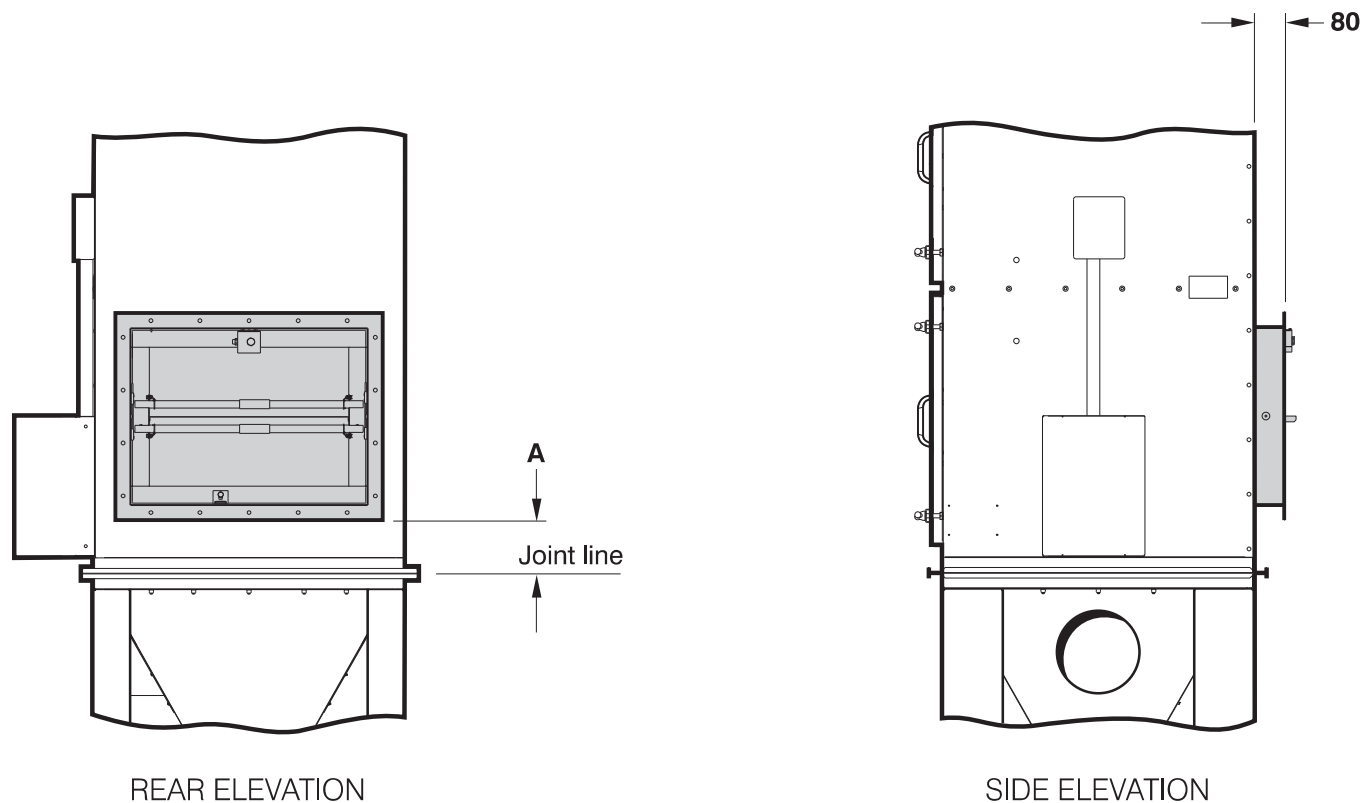
UNIMASTER VENTING TYPE DUST COLLECTOR WITH DUST CONTAINER

UMA 153V illustrated. Suitable for inside locations and outside when fitted with optional weather cowl.

SPECIFICATION

Type	Filtration area	DIMENSIONS in mm						Inlet spigot (inside dia.) mm	Dust container	Net weight (approx.)
		A	B	C	d	e	f			
UMA 72V	6.23 m ²	575	575	1369	560	729	648	Ø 101	55 litre	126 kg
UMA 103V	9.29 m ²	765	575	1485	560	845	685	Ø 203	80 litre	174 kg
UMA 153V	13.94 m ²	765	765	1542	760	845	685	Ø 203	80 litre	199 kg
UMA 253V	22.67 m ²	1146	765	1758	760	1061	883	Ø 254	80 litre	265 kg

Unimaster Dust Collectors – Series UMA 70-250



POSITION OF OPTIONAL EXPLOSION RELIEF FLANGE

UMA 153 illustrated

UMA type:	72	103	153	253	70H	100H	150H	250H	70V	100V	150V	250V	72V	103V	153V	253V
Dimension A in mm:	76	114	171	105	114	114	171	105	114	114	171	105	76	76	133	67

If a vent duct is not connected to the explosion relief flange, then a minimum clearance of 500 mm should be made to the rear of the collector to ensure efficient operation of the explosion venting process. Consideration should be given to the local surrounding area in regards to the pressure and flame effects.

SUPPORT SYSTEMS

PRODUCT DATA SHEET Pump House *flexi* Foot



The *flexi* foot supports small pipework and runs of cable tray, and can also be used to mount a/c condensing units, air source heat pumps and a variety of outdoor equipment.

The *flexi* foot with steel strut

Available in four sizes 250mm, 400mm, 600mm and 1000mm supplied with 41mm x 21mm galvanised steel strut pre-adhered to the rubber.

The *flexi* foot universal

Supplied with three M10 threaded inserts moulded into the rubber. Available in one standard size 250mm.



	Material
Rubber	Compression moulded using milled, sieved and graded, recycled rubber bound with high quality adhesive. Density 1.0g/cm ³ . Working temperature range -10°C to +75°C
Strut	41mm x 21mm x 1.5mm galvanised steel
Inserts	M10 (metric course thread) x 20mm, zinc plated steel, through inserts. Maximum torque 15 Nm. Maximum Load 25kg

Part Code	Description	Length	Width	Height	Weight	Max. Load*
FF-250-S	FLEXI FOOT – 250 mm Strut	250 mm	185 mm	100 mm	2.8 kg	125 kg
FF-400-S	FLEXI FOOT – 400 mm Strut	400 mm	185 mm	100 mm	4.6 kg	200 kg
FF-600-S	FLEXI FOOT – 600 mm Strut	600 mm	185 mm	100 mm	7.6 kg	300 kg
FF-1000-S	FLEXI FOOT – 1000 mm Strut	1000 mm	185 mm	100 mm	12.0 kg	500 kg

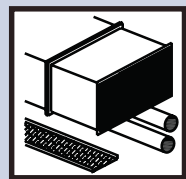
Part Code	Description	Length	Width	Height	Weight	Max. Load*
FF-250-UNI	FLEXI FOOT – 250 mm Universal	250 mm	185 mm	100 mm	2.8 kg	125 kg

* The maximum loads quoted in the above tables are based on loads applied over the top surface, and have been tested with a 4:1 safety ratio. On the universal the maximum load per insert is 25kg, tested with a 4:1 safety ratio.

- It is the installer's responsibility to ensure that equipment weights do not exceed the safe working loads quoted and that the roof structure onto which these products are being applied is sufficiently sound to withstand the weight and point loading. If these products are used in contact with a pvc roof membrane the installer should seek advice from the membrane manufacturer on the possible migration of plasticizers, and the effect of this on the roof guarantee. These products should not be used for any purpose other than that for which they have been designed, and the products must not be modified in any way. Pump House accepts no liability for damage caused by the incorrect application or installation of these products.

Pump House
Glaisdale Drive East, Nottingham, NG8 4LY
Tel ~ 0115 900 5858 Fax ~ 0115 929 4468

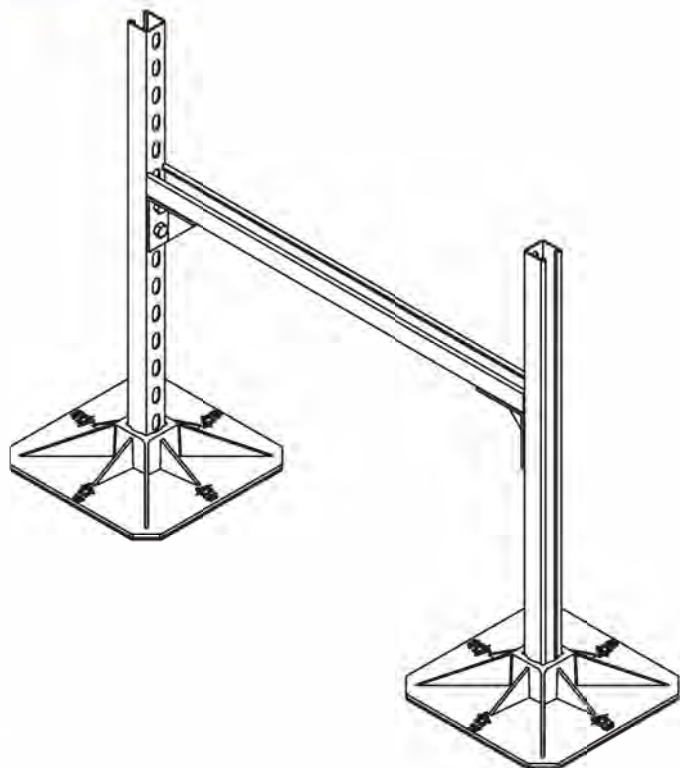
Email ~ sales@pumphousepumps.com Website ~ www.pumphousepumps.com



everyday

flexi everyday - *flexi* H-frame kits

H-frame kits to support ducts, pipes and electrical containment

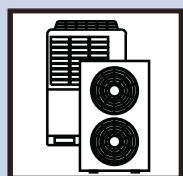


Features & Benefits

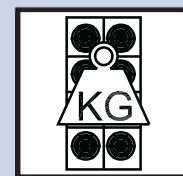
- Non-penetrative support
- Flexible design to accommodate late design changes
- Fast and simple installation
- Hot dip galvanised bracketry
- Rubber mats adhered to feet
- Two foot sizes available
- The kit comes supplied in a box
- Full AutoCAD drawing support
- Load management and wind calculations available
- Full on-site support and surveying services



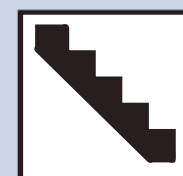
Pump House
Glaisdale Drive East
Nottingham
NG8 4LY
Tel: 0115 900 5858
www.flexisupportsystems.co.uk
sales@flexisupportsystems.co.uk



light



heavy



access



solar



Flexi

flexi H-frame kits

Our H-frame kits offer the installer full flexibility by providing a solution where they can supply their own strut to suit their installation requirements. The H-frame kits are supplied with a pair of either our 320mm feet, most widely used in the majority of installations or where heavier more demanding loads are present, then our 500mm foot version kit is available. All kits are supplied with hot dip galvanised angle brackets together with all the necessary fixings to assist the installer in a low cost, versatile and fast assembly solution on site.

Typical duct installation



What's in the box



Part Code - F-HF-320 (shown above)

Part Code	Description	Foot Size	Recommended Max Load	Weight
F-HF-320	Flexi H Frame Set - 2 square black feet and fittings	320 mm x 320 mm	250 kg	4 kg
F-HF-500	Flexi H Frame Set - 2 square black feet and fittings	500 mm x 500 mm	600 kg	6 kg



Flexi

Specification Extract

Duct/pipe/tray services will be supported on flexi everyday H-frame kits utilising (add required foot size) and with adhered rubber mats. Contact Pump House: 0115 900 5858

Application

Suitable for everyday installation of ductwork including associated attenuators. Small to medium sized flow and return pipework and electrical containment e.g. cable trays or cable ladders.

Material Specification

- Foot - 320mm & 500mm square UV stabilised 90% polypropylene, 10% grp
- Mat - 100% natural rubber, (mat is adhered to the feet)
- Fixings - M10 ZP sets, sprung washers and nuts.
- Angle brackets - mild steel, hot dip galvanised BS EN ISO 1461:1999
- This product is supplied boxed. Kit does NOT include strut (frame) metalwork.

Our service offers you

- Quotation upon request
- Full AutoCAD drawings support
- Site support and site surveys
- Load management calculations
- 20 years experience in flat roof design and providing support systems to building services
- Fast delivery
- Experienced in-house technical staff
- Friendly, family run business