

PROPOSED VENTILATION SYSTEM AT
2-3 Botley Road, Fair Oak, Eastleigh, SO50 7ZH



CONTENTS:

1.0 INTRODUCTION

2.0 PREAMBLE

3.0 INFORMATION ON PREMISES & TYPE OF OPERATION

4.0 PLANS AND DRAWINGS

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

- 5.1 Pre-filters
- 5.2 Electrostatic precipitators
- 5.3 Odour counteracting or neutralising system
- 5.4 Cooker Hood details
- 5.5 System operation
- 5.6 Flue design
- 5.7 Noise
- 5.8 Maintenance
- 5.9 Carbon Filters

6.0 ADDITIONAL NOTES FOR GUIDANCE

APPENDIX 1 – Cold Room and Air Conditioning compressor data sheets

APPENDIX 2 – Supporting Data sheets



1.0 INTRODUCTION:

The information contained within this document should be used as supporting information when applying for Change of Use Planning Approval and is based on the EMAQ publication guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (September 2018 & any subsequent revisions). This follows feedback from various Local Authorities who use the EMAQ publication as a guide when referring to the extract system as part of the application process.

Annex B advises that the aim of any ventilation/extraction is to ensure that no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise, to nearby properties.

Additionally, the visual appearance of the flue may be important and the flue itself may require a separate planning permission. Enquiries should be made to the Local Authority Planning Department regarding this matter.

A suitably qualified and experienced person with specialist knowledge of ventilation schemes should undertake the design and installation of a ventilation system.

Designing and installing appropriate ventilation systems may involve considerable expense.

In circumstances where the end user of the premises is unknown, or where the specific type of food to be cooked is unknown, the installation should be designed to achieve the highest level of odour control in order to cater for a worst-case scenario.

There are many different types of odour abatement available (carbon filters, electrostatic precipitation, high dilution and high velocity extraction) however not all types are suitable for all cooking methods. In each case, grease filters must be installed.

2.0 PREAMBLE

All work is carried out in accordance with the latest relevant British (or Irish regulations where applicable) and European Standards, statutory Regulation and ByeLaws together with the following publications:

- CIBSE Codes and guides to current practice
- Water Authority Bye Laws
- HVCA – DW143 Practical Guide to Ductwork Leakage Testing
- HVCA DW144 Specification for Sheet Metal Ductwork
- HVCA DW172 Guide to Good Practice for Kitchen Ventilation Systems
- HVCA – RUAG70 Guide to Good Practice Refrigeration
- The Building Regulations
- Gas Safety (Installation and Use) Regulations 1998

All plant, ducts, pipe cables etc. shall be adequately protected against accidental damage corrosion and external environment and shall be capable of safe decontamination and removal in the future without disturbing other services. Pipes and ducts shall be adequately sized, kept as short as practicable, leak-proof with a minimum number of joints and have provision for routine maintenance. All facilities shall be designed to prevent the ingress or egress of rodents, vermin, and insects.

The duct will be fixed to the shell of the unit using anti-vibration fixing mounts and under no circumstances will flexible ductwork be used other than the fan connections

The HVAC contractor shall supply the client with system design drawings, prior to manufacture and installation

For projects in England and Wales, the HVAC contractor shall also demonstrate compliance with Building Regulations Approved documents L2A & L2B. This will include:

- (a) Provision of details of the efficiency and controls of heating, cooling and ventilation systems in accordance with Non-Domestic Heating, Cooling and Ventilation compliance Guide (2006)
- (b) Provision of commissioning certificates including air leakage tests on the ductwork

Fire/smoke dampers shall be installed in all fire compartment walls to Building Control requirements

The HVAC contractor shall ensure that externally, the ductwork conforms to the supplied drawings in terms of its route, height and termination. These drawings will have formed part of the planning permission and must not be deviated from without prior consultation with the Project Manager / Architect.

Upon completion of the installation, all shall be fully tested and proved including airflows. The Contractor shall produce an Operating and Maintenance Manual which shall contain details of all equipment supplied; a record drawing of the complete mechanical services installation and copies of all Test Certificates. It shall contain a Maintenance Schedule based on the manufacturer's recommendations.



3.0 INFORMATION ON TYPE OF OPERATION

The proposed operation will produce approximately 100 meals on average per day.

The proposed hours of operation of the business and ventilation plant will be in accordance with the hours stated in the approved Change of Use

4.0 PLANS AND DRAWINGS

Please refer to drawing **13071-AEW-PJ004923-00-DR-0003** of the proposed premises which shows the indicative internal arrangement and location of the ventilation system.

Please refer to drawing **13071-AEW-PJ004923-XX-DR-0004** for proposed elevations of the unit which shows the external location of the ventilation system.

A schematic drawing produced by the HVAC Designer will be provided at a later date.

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

5.1 Pre-filters (fresh air system)

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- Manufacturer's name: **Jasun Filtration**
- Filter name and product code: **Type 90 and VL2 Panel Filter**
- Dimensions of the pre-filter: **45mm thick (rated airflow 2.0m/s) see data sheets**
- Nature of the filter media: **Disposable glass fibre media**
- Manufacturer's recommendations on the frequency and type of maintenance of the pre-filter having regard to the conditions that it will be used under: **3 monthly maintenance**

5.2 Electrostatic precipitators

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- Manufacturer's name: **Purified Air**
- ESP name and product code: **ESP 4500E**
- Dimensions of the ESP: **1473mm x 640mm x 630mm**
- Flow rate rating: **4500cfm (2.1m³/second)**
- Manufacturer's recommendation on the frequency and type of maintenance of the ESP having regard to the conditions that it will be used under: **12 monthly maintenance**



5.3 Odour counteracting or neutralising system

(NOT REQUIRED ON THIS SITE – REFER TO 5.9 CARBON FILTERS)

5.4 Cooker hood

The following information on the characteristics of the cooker hood should be supplied that clearly shows:

- The hood will be made of: **Stainless Steel construction with all visible joints to be welded, ground and polished and to incorporate a gutter around all edges with a plugged drain connection at lowest point.**
- Length that the cooker hood overhangs the appliances: **200mm all round**
- Face velocity at the cooker hood (metres per second): **0.25m/s**
- Dimensions of the opening of the cooker hood = 2m x 3.5m

The hood will include 6 no. mesh type grease filters, aluminium frame with mesh inserts:

- Manufacturer's name: **Jasun Filtration**
- Filter name and product code: **Model GF (approx. 450mm x 450mm)**

The extract system is predominantly removing heat and gas combustion fumes. Mesh filters are much more efficient at removing any fine particles which may be caught in the air flow.

There is not barrier to flame within the filter, and it is accepted that mesh filters cannot therefore be used on their own in applications where there is appreciable risk of fire. However, this does not apply in this operation.

5.5 System Operation

In addition to the specification of the components the following must be provided about the system:

- Proposed extract rate (expressed as m³/second): **1.5m³/s**
- Dwell time of the gases in the carbon filtration zone: **0.4 – 0.8s**
- Volume of the kitchen: **based on average prep area size of 100 -150cu/m**
- Efflux velocity: **11m/s**

Note: The system performance is dependant upon the extract rate of the air. Where the rate can be adjusted by the use of dampers or a variable speed fan, then the conditions under which the extract rate can be achieved must be described. **Variable fan with adjustment.**

5.6 Flue Design

The height and velocity of the final discharge are the two important factors. Generally, the greater the flue height, the better the dispersion and dilution of odours. The discharge of air should be at a minimum height of 1m above the roof ridge, especially if there are buildings nearby that may affect odour dispersion and dilution.

Where this is not possible (e.g. because of ownership or structural constraints), additional techniques will be required in order to reduce odours, such as an increase in efflux velocity and additional filters, etc. The final discharge should be vertically upwards, unimpeded by flue terminals. The number of bends in the ducting should be minimised and the ducting should have a smooth internal surface.

Details of proposal: 500mm dia. horizontal oven extract duct to travel internally above suspended ceiling before penetrating rear wall via existing window opening. PPC louvred wall grille (RAL 7043). Extract fan to be fixed to anti-vibration mounts and duct system to be fitted with noise attenuation dampers and atmospheric side silencers to M&E Specialist sub-contractor's design and detail. Extraction system to also be fitted with fine filtration and carbon filters in accordance with Purified Air report ref: RM28755-Eastleigh, Fair Oak - Rev 1 in accordance with latest EMAQ and Defra guidance.

5.7 Noise

Data on the noise produced by the system as a whole should be provided including:

- Sound power levels or sound pressure levels at given distances (the assumptions to this calculation must be clearly stated);
- An octave band analysis of the noise produced by the system should also be provided, where possible; and
- Hours of operation of the ventilation system (where this differs from the hours of opening).

This information is site dependent and can only be achieved once the system is designed and installed. Please refer to Appendix 1 for data sheets regarding the fans for more information.



5.8 Maintenance

A schedule of maintenance must be provided including details for:

- Cleaning of washable grease filters: **Weekly**
- Frequency of inspection and replacement of all filters (grease filters, pre-filters and carbon filters where proposed): **Monthly**
- Inspection and servicing of fans: **Bi-annually**

Please note that the HVAC contractor will provide 12 months spare filters at each new store.

5.9 Carbon Filters

Please refer to Purified Air risk assessment and specification document reference RM28755-Eastleigh, Fair Oak - Rev 1 dated 03/02/2023. Please contact Purified Air directly for any additional information with regards to oven extract filtration details / specification. Contact details as follows:

Contract: Rob Martin
Telephone: 0170 8755 414
Mobile: 07772524488
Email: rob@purifiedair.co.uk

6.0 Additional notes for guidance

The air inlets must not permit pests to enter the kitchen. Fly screens are an example of how this can be achieved.

Sufficient air must be permitted into the premises to replace air extracted. The method for supplying this make-up air should be detailed. The route of the air into the kitchen must not result in its contamination, for example passage through a toilet. Separate provision must be made for ventilation of a toilet.

There must be sufficient access points to permit adequate cleaning of all the ductwork.

Fresh air is introduced via a dedicated air handling unit to supply 80% of the extracted air, fresh air filtered to EU4 – tempered via a low pressure hot water coil - is introduced via ceiling mounted diffusers to the preparation / office and wash-up areas.



APPENDIX 1

COLDROOM AND AIR CONDITIONING COMPRESSORS

AIR CONDITIONING			COLD ROOM	
Model (typical unit)	Mitsubishi H.I. FDC 125VNX		Model (typical unit)	Techumseh Wint Sys WINAJ4519Z
Dimensions	W 970mm D 350mm H 1300mm		Dimensions	W 940 D 655 H 710
Weight	105 kg		Weight	66 kg
Airflow	1620 cu.m/h		Compressor	WINTSYS Outdoor 2HP HBP 50Hz Condensing Unit
Current	Start N/A Max running current 11.1A		Refrigerant Connections	Suction 5/8" Liquid 3/8"
Capacity	Cool 10.0 kW Heat 11.2 kW		Condenser Fan Motor	220-240V IPH 50Hz 1650 m ³ /hr Air Flow
Noise	50 dBA @ 1m		Watts	3kW
			Electrical Details	RLA 50Hz : 10.2
			Noise	32dBA



APPENDIX 2

PRODUCT DATA SHEETS

- Elta Jetflow SJMF315 (Fresh Air Supply Fan)
- System Air VBR 70-40-3 (Water Heated Air Handling Unit)
- JASUN Filtration PLC – Model GF mesh grease filters (Canopy Filters)
- System Air MUBT 042 400 EC (Extract Fan)



JETFLOW SJMF

Inline Mixed Flow Circular Fan

JETFLOW SJMF

Product Overview

- 6 standard sizes from 100mm to 315mm
- Air volume flow rates up to 0.815 m³/s
- Static pressures up to 677 Pa
- Suitable for operating temperatures up to +60°C
- Light weight galvanised sheet steel casing
- Low Specific Fan Powers
- Available in **EC**

Inline mixed flow circular fans with EC motors for low power consumption at high performance.

Construction

Manufactured with aluminium or cold rolled steel sheet, dependant on size.

Motor

Brushless EC motors are fitted as standard. The IPX4 motor contains sealed for life heavy duty NWB bearings. All motors are suitable for use in ambient air conditions up to +60°C.

Impeller

A high efficiency jet design double mixed flow impeller integrated and directly driven by an EC motor.

Electrical Connection

Electrical connection via 1.5 metre Mains lead complete with BS1363-1 UK 3-pin plug BS1361 fuse 3A.

Control

Supplied suitable for fixed speed operation. A Detachable 5 metre lead with 3.5mm jack connection to the unit is supplied for connection to a remote potentiometer, 0-10VDC or PWM Circuit.

Quality Management

Units are to be designed and manufactured with procedures as defined in BS EN ISO 9001.

Warranty

Each SJMF has a 24 month warranty.

Typical Applications

- Schools
- Colleges
- Shops
- Retail Parks
- Commercial
- Hotels
- Restaurants
- Cafes
- Cafeterias
- Pubs
- Offices
- General HVAC



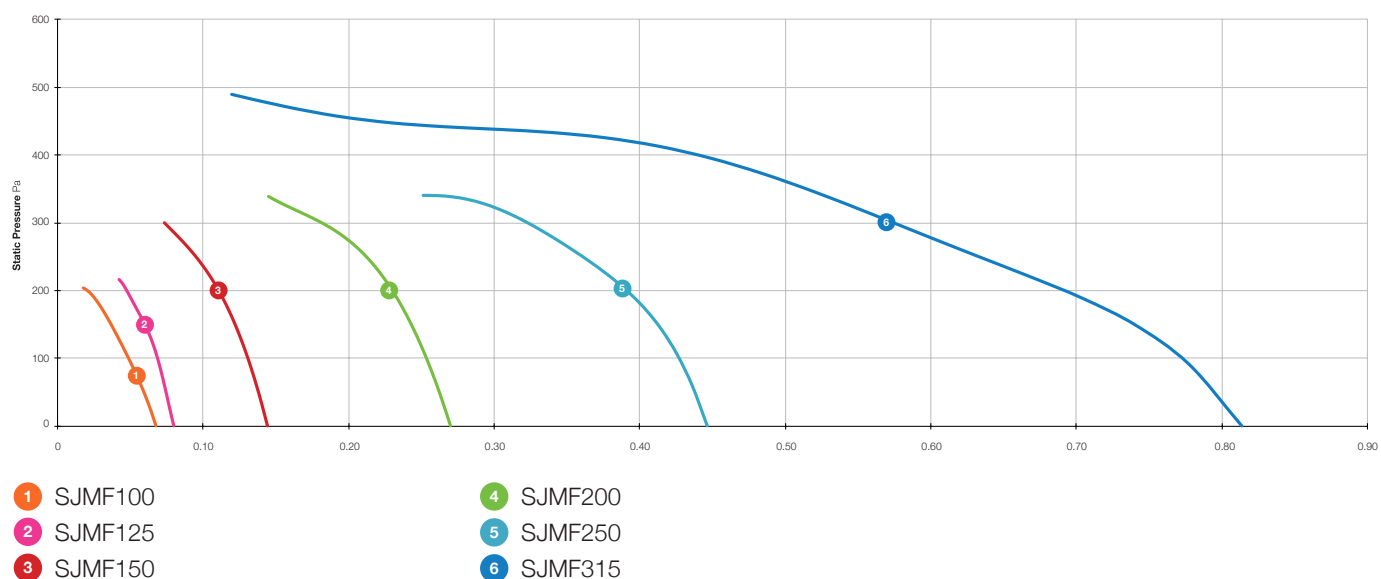
Contents

Page	Information
3	Performance Range Curves
4	Performance, SFP & Electrical Data
5	Sound Data
6	Dimensional Data
8	Accessories

JETFLOW SJMF



Performance Range Curves



JETFLOW SJMF



Performance, SFP & Electrical Data

Single Phase 220V to 240V / 50Hz or 60Hz

Product Code	Control Voltage V	Speed r/min	Airflow SFP	Airflow m³/s @ Static Pressure Pa												At Best Efficiency Point		Electrical Data		dBA @ 3m	
				0	25	50	75	100	150	200	250	300	350	400	Overall Eff %	Input kW	Peak Amps				
SJMF100	10	5000	m³/s	0.067	0.063	0.059	0.054	0.048	0.036	0.020	-	-	-	-	32.1	0.021	0.24	Inlet	46		
			W/(L/s)	0.31	0.33	0.36	0.40	0.45	0.57	0.94	-	-	-	-				Outlet	47		
	7.5	3750	m³/s	0.059	0.053	0.048	0.041	0.034	0.015	-	-	-	-	-	29.5	0.015	0.18	Inlet	42		
			W/(L/s)	0.25	0.27	0.31	0.36	0.42	0.87	-	-	-	-	-				Outlet	43		
	5	2500	m³/s	0.043	0.036	0.028	0.017	-	-	-	-	-	-	-	-	24.9	0.007	0.09	Inlet	36	
			W/(L/s)	0.17	0.21	0.27	0.40	-	-	-	-	-	-	-	Outlet				36		
SJMF125	10	5000	m³/s	0.080	0.077	0.074	0.071	0.068	0.059	0.047	-	-	-	-	42.7	0.027	0.26	Inlet	47		
			W/(L/s)	0.30	0.32	0.33	0.36	0.38	0.45	0.56	-	-	-	-				Outlet	48		
	7.5	3750	m³/s	0.069	0.066	0.062	0.058	0.053	0.040	-	-	-	-	-	41.9	0.018	0.18	Inlet	43		
			W/(L/s)	0.21	0.24	0.27	0.30	0.34	0.43	-	-	-	-	-				Outlet	44		
	5	2500	m³/s	0.051	0.046	0.041	0.032	-	-	-	-	-	-	-	-	34.4	0.009	0.09	Inlet	37	
			W/(L/s)	0.15	0.17	0.21	0.27	-	-	-	-	-	-	-	Outlet				37		
SJMF150	10	4980	m³/s	0.144	0.141	0.137	0.134	0.130	0.121	0.110	0.094	-	-	-	61.0	0.049	0.39	Inlet	50		
			W/(L/s)	0.28	0.30	0.32	0.34	0.36	0.40	0.44	0.52	-	-	-				Outlet	51		
	7.5	4245	m³/s	0.123	0.119	0.115	0.111	0.106	0.094	0.074	-	-	-	-	62.2	0.031	0.30	Inlet	46		
			W/(L/s)	0.20	0.23	0.25	0.27	0.29	0.33	0.41	-	-	-	-				Outlet	47		
	5	3195	m³/s	0.092	0.087	0.080	0.072	0.059	-	-	-	-	-	-	-	50.7	0.015	0.13	Inlet	40	
			W/(L/s)	0.15	0.16	0.18	0.21	0.26	-	-	-	-	-	-	Outlet				40		
SJMF200	10	3740	m³/s	0.269	0.266	0.262	0.257	0.253	0.242	0.229	0.211	0.180	-	-	64.9	0.100	0.79	Inlet	51		
			W/(L/s)	0.28	0.29	0.30	0.31	0.33	0.37	0.42	0.47	0.54	-	-				Outlet	52		
	7.5	3225	m³/s	0.232	0.227	0.221	0.215	0.208	0.191	0.162	0.110	-	-	-	61.5	0.060	0.59	Inlet	48		
			W/(L/s)	0.18	0.21	0.23	0.25	0.28	0.32	0.38	0.50	-	-	-				Outlet	49		
	5	2505	m³/s	0.179	0.172	0.164	0.153	0.136	-	-	-	-	-	-	-	58.0	0.030	0.25	Inlet	43	
			W/(L/s)	0.13	0.15	0.17	0.19	0.22	-	-	-	-	-	-	Outlet				43		
SJMF250	10	3195	m³/s	0.446	0.442	0.437	0.432	0.427	0.412	0.390	0.360	0.322	-	-	64.6	0.172	1.30	Inlet	55		
			W/(L/s)	0.29	0.30	0.31	0.33	0.34	0.38	0.42	0.47	0.53	-	-				Outlet	56		
	7.5	2725	m³/s	0.382	0.377	0.371	0.364	0.355	0.330	0.293	0.250	-	-	-	68.1	0.106	0.98	Inlet	51		
			W/(L/s)	0.21	0.22	0.24	0.25	0.27	0.31	0.36	0.43	-	-	-				Outlet	52		
	5	2040	m³/s	0.282	0.273	0.261	0.245	0.222	-	-	-	-	-	-	-	68.1	0.045	0.36	Inlet	45	
			W/(L/s)	0.13	0.14	0.16	0.18	0.20	-	-	-	-	-	-	Outlet				45		
SJMF315	10	3000	m³/s	0.815	0.806	0.796	0.785	0.773	0.741	0.694	0.633	0.569	0.508	0.440	53.0	0.375	2.71	Inlet	62		
			W/(L/s)	0.37	0.39	0.41	0.43	0.45	0.50	0.55	0.61	0.66	0.74	0.85				Outlet	62		
	7.5	2600	m³/s	0.715	0.695	0.675	0.655	0.634	0.589	0.539	0.480	0.401	-	-	54.5	0.254	1.96	Inlet	58		
			W/(L/s)	0.30	0.32	0.34	0.36	0.38	0.42	0.47	0.53	0.63	-	-				Outlet	58		
	5	1950	m³/s	0.537	0.506	0.476	0.445	0.414	0.346	-	-	-	-	-	-	56.0	0.109	0.91	Inlet	52	
			W/(L/s)	0.18	0.20	0.22	0.24	0.26	0.32	-	-	-	-	-	Outlet				52		

Data provided is at standard air density of 1.2 kg/m³.

ErP data in accordance with Regulation (EU) 1253/2014. Product category is NRVU. Measurement category used to determine energy efficiency: D.

A variable speed drive is integrated within the fan.

Peak Amps @ 230V / 1PH / 50Hz.

The overall A-weighted sound pressure level is at a distance of 3m with spherical free-field propagation. It is expressed in dB re-20µPa and is presented for comparative purposes only.

Suitable for operation from 2V control signal. For performance, refer to our selection software.

JETFLOW SJMF



Sound Data

Single Phase 220V to 240V / 50Hz or 60Hz

Product Code	Control Voltage V	Speed r/min		Sound Power Level dBW @ Octave Band Hz								Total dB
				63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
SJMF100	10	5000	Inlet	50	47	53	62	59	60	58	57	67
			Outlet	47	47	55	63	60	60	60	58	68
	7.5	3750	Inlet	43	44	51	58	55	57	54	53	63
			Outlet	47	44	52	59	55	57	56	53	64
	5	2500	Inlet	49	42	49	52	49	52	48	47	58
			Outlet	45	41	48	52	49	51	50	47	58
SJMF125	10	5000	Inlet	54	51	57	66	60	61	59	58	68
			Outlet	51	51	59	67	61	61	61	59	69
	7.5	3750	Inlet	47	48	55	62	56	58	55	54	64
			Outlet	51	48	56	63	56	58	57	54	65
	5	2500	Inlet	53	46	53	56	50	53	49	48	59
			Outlet	49	45	52	56	50	52	51	48	59
SJMF150	10	4980	Inlet	54	51	57	66	63	64	62	61	71
			Outlet	51	51	59	67	64	64	64	62	72
	7.5	4245	Inlet	47	48	55	62	59	61	58	57	67
			Outlet	51	48	56	63	59	61	60	57	68
	5	3195	Inlet	53	46	53	56	53	56	52	51	62
			Outlet	49	45	52	56	53	55	54	51	62
SJMF200	10	3740	Inlet	73	56	57	66	65	66	65	62	76
			Outlet	58	55	61	67	65	67	66	63	73
	7.5	3225	Inlet	57	50	57	61	62	63	61	57	69
			Outlet	52	53	60	64	62	64	62	59	70
	5	2505	Inlet	46	47	56	55	58	59	55	52	64
			Outlet	48	48	58	58	57	59	56	52	65
SJMF250	10	3195	Inlet	72	58	65	72	70	69	68	65	78
			Outlet	77	60	67	72	70	70	69	67	80
	7.5	2725	Inlet	54	57	64	66	66	66	64	60	73
			Outlet	53	58	70	66	66	67	65	62	75
	5	2040	Inlet	48	51	60	59	60	60	56	52	67
			Outlet	51	53	61	59	60	61	57	53	67
SJMF315	10	3000	Inlet	82	88	86	78	76	73	69	63	91
			Outlet	84	88	86	79	76	75	69	63	92
	7.5	2600	Inlet	80	87	79	74	74	69	65	59	89
			Outlet	81	87	79	74	73	71	65	59	89
	5	1950	Inlet	75	84	75	67	66	61	57	50	85
			Outlet	76	82	75	68	65	63	56	49	84

Data provided at standard air density of 1.2 kg/m³.
 Tests and preparation of the sound data have been carried out in accordance with BS 848 Part 2:1985 at 50% peak pressure.
 The Sound Power Level Spectra are in dB re-1pW.

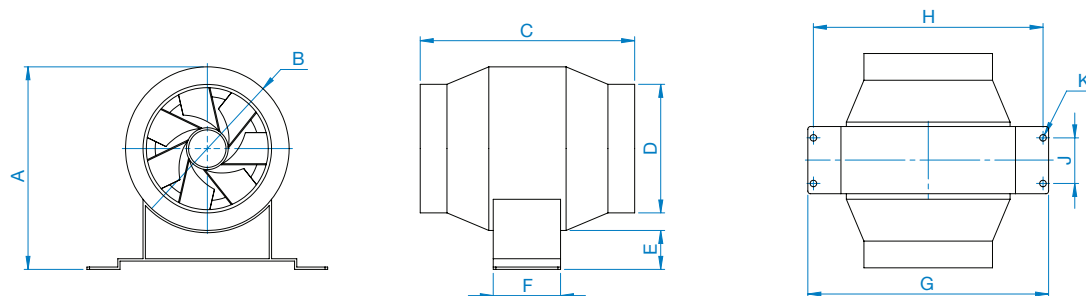
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Dimensional Data

Single Phase

Product Code	A	B	C	D	E	F	G	H	J	K	Weight kg
SJMF100	150	125	159	98	25	51	184	175	37	5	1.1
SJMF125	151	126	110	124	26	51	184	175	37	5	1.1
SJMF150	173	153	165	150	21	80	187	175	37	5 x 8 SLOT	1.6
SJMF200	223	203	220	200	22	105	221	210	39	5 x 8 SLOT	2.6
SJMF250	274	254	210	250	22	105	300	288	26	5 x 8 SLOT	3.7
SJMF315	356	317	290	313	39	164	360	336	68	9 x 14 SLOT	8.5



Dimensions are in mm.

JETFLOW SJMF

Accessories



Single Phase

Product Code	EC Electronic Controller	Fast Clamps (each)	Damper	Panel Filter	Electric Heater Battery
SJMF100	149-POT-10-MI	018-100-CLAMP	018-100-DAMPER	018-0100-FILT-P	018-CV10-06-1M
SJMF125	149-POT-10-MI	018-125-CLAMP	018-125-DAMPER	018-0125-FILT-P	018-CV12-12-1M
SJMF150	149-POT-10-MI	018-150-CLAMP	018-150-DAMPER	018-0150-FILT-P	018-CV15-27-1M
SJMF200	149-POT-10-MI	018-200-CLAMP	018-200-DAMPER	018-0200-FILT-P	018-CV20-30-1M
SJMF250	149-POT-10-MI	018-250-CLAMP	018-250-DAMPER	018-0250-FILT-P	018-CV25-30-1M
SJMF315	149-POT-10-MI	018-315-CLAMP	018-315-DAMPER	018-0315-FILT-P	018-CV31-30-1M
					018-CV31-45-1M
					018-CV31-90-3M

Product Code	Spigot Silencer 300mm Long	Spigot Silencer 600mm Long	Spigot Silencer 900mm Long	Spigot Silencer 1200mm Long	Wiring Diagram
SJMF100	068-0100-JF1	068-0100-JF2	068-0100-JF3	068-0100-JF4	152-553
SJMF125	068-0125-JF1	068-0125-JF2	068-0125-JF3	068-0125-JF4	152-553
SJMF150	068-0150-JF1	068-0150-JF2	068-0150-JF3	068-0150-JF4	152-553
SJMF200	068-0200-JF1	068-0200-JF2	068-0200-JF3	068-0200-JF4	152-553
SJMF250	068-0250-JF1	068-0250-JF2	068-0250-JF3	068-0250-JF4	152-553
SJMF315	068-0315-JF1	068-0315-JF2	068-0315-JF3	068-0315-JF4	152-553

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SJMF-07-2022 Issue C



BS EN ISO 9001:2015 FM 556465



A MEMBER OF  ELTA GROUP

VBR 70-40-3 Water heating batt

Item Number: [5476](#)

Water-heating battery

Water-heating battery for heating air in ventilation systems with rectangular ducts. Hot-zinc-coated casing, heat transmission element with copper tubes and aluminium fins. In cold conditions, a frost protection device with sensor should be fitted to reduce the risk of damage from freezing. The water-heating battery can be installed in a horizontal or vertical duct with an optional direction.



Technical parameters

Nominal data

Maximum operating temperature	150 °C
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Dimensions and weights

Rectangular, height, inlet	400 x 700	mm
Rectangular, width, inlet	400 x 700	mm
Rectangular, height, outlet	400 x 700	mm
Rectangular, width, outlet	400 x 700	mm
Weight	12.6	kg

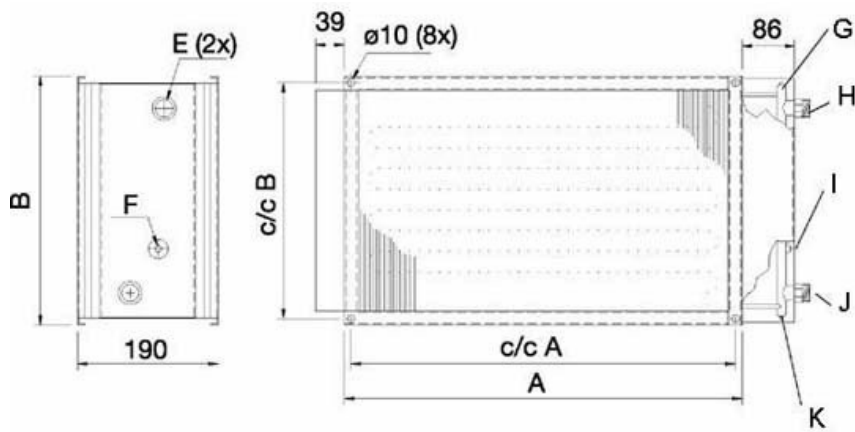
Others

Duct cooler/heater	Heater coil, water
Maximum operating pressure at water temperature 100 °C	1,600,000 Pa
Maximum operating pressure at water temperature 150 °C	1,000,000 Pa
Duct connection type	Rectangular

Performances

Air					Water		
VBR	Water temp. (in/out)	Flow (m3/h)	Pressure drop (Pa)	ΔT	Capacity (kW)	Flow (l/s)	Pressure drop (kPa)

Dimension



F= Thread G 1/4

G= Airing

H= Water out

I= Connection for immersion sensor

J= Water in

K= Draining

	A	c/c A	B	c/c B	E	
VBR 40-20-2	438	420	238	220	R 3/4"	5.5 kg
VBR 50-25-2	538	520	288	270	R 3/4"	7 kg
VBR 50-30-2	538	520	338	320	R 3/4"	8 kg
VBR 60-30-2	638	620	338	320	R 3/4"	9 kg
VBR 60-35-2	638	620	388	370	R 3/4"	10 kg
VBR 70-40-2	738	720	438	420	R 1"	12.5 kg
VBR 80-50-2	838	820	538	520	R 1"	16 kg
VBR 100-50-2	1038	1020	538	520	R 1"	18.5 kg

	A	c/c A	B	c/c B	E	
VBR 40-20-4	438	420	238	220	R 3/4"	7 kg
VBR 50-25-4	538	520	288	270	R 3/4"	9 kg
VBR 50-30-4	538	520	338	320	R 1"	10.5 kg
VBR 60-30-4	638	620	338	320	R 1"	11.5 kg
VBR 60-35-4	638	620	388	370	R 1"	13 kg

	A	c/c A	B	c/c B	E	
VBR 70-40-3	738	720	438	420	R 1"	15.5 kg
VBR 80-50-3	838	820	538	520	R 1"	19 kg
VBR 100-50-3	1038	1020	538	520	R 1"	22.5 kg

Accessories

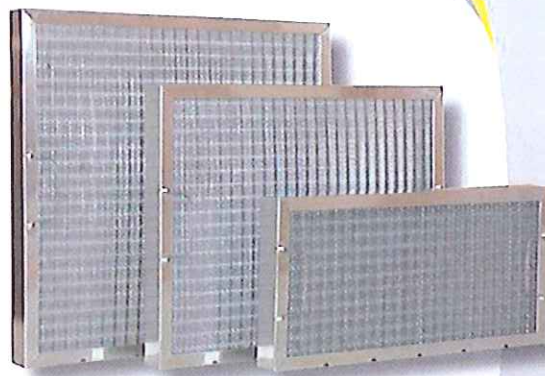
- AQUA 24TF Heat Regulator (5136)
- Optigo OP 10-230 (7283)
- RVAZ4 24A Actuator 0-10V (9862)
- TG-A130 Surface sensor 0-30°C (5159)
- TG-K330 Duct Sensor 0-30°C (5160)
- ZTV 20-6,0 2-way valve (9827)
- Optigo OP 10 (7282)
- Optigo OP 5 (13891)
- RVAZ4-24 Actuator 3points (9798)
- TG-D1/PT1000 Immersion sensor (6773)
- ZTR 20-6,0 valve 3-way (9679)

Documents

- Conformity_decl. PGK_VBR(PGV)_VBC(CWW)_CWK.pdf



Model GF Mesh Grease Filters



GENERAL DESCRIPTION

These filters are designed for use in commercial kitchens and ventilation from food preparation areas where their primary function is to reduce grease carry over from the cooking area.

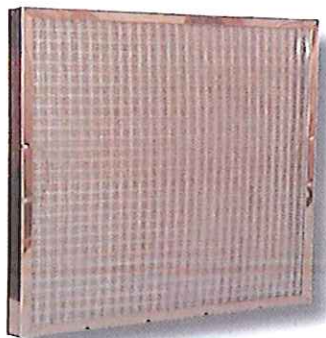
These Filters are rated at 1.5m/sec - where the pressure drop is 15Pa for 45mm filters and less than 10Pa for 20mm filters.

Construction

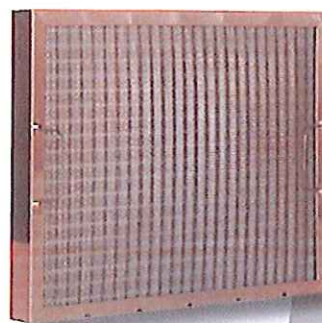
These filters are made from rolled channel frames, with safety edges. Sandwiched between the frame edges are layers of interwoven expanded mesh.

These Filters are available in the frame finishes below - mesh choice is either Galvanised Steel or Stainless Steel.

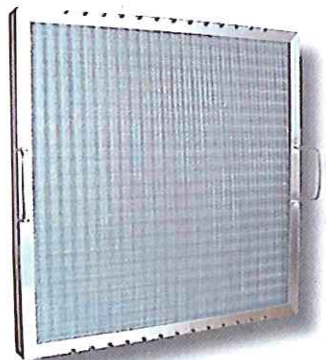
Stainless Steel



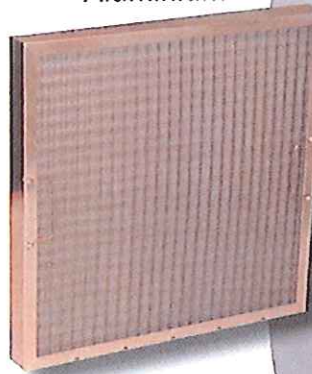
Brushed Stainless Steel



Galvanised Steel



Aluminium



ENVIRONMENT



EMS 81914
BS EN ISO 14001:2004

QUALITY



FM 29257
BS EN ISO 9001:2000

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[Http://www.jfilters.com](http://www.jfilters.com)

MUB/T 042 400EC

Centrifugal box fan, 120°C continuous, insulated

Item Number: [235389](#)

Variant: 230V 1~ 50/60Hz

- EC-motors, high level of efficiency
- 100% speed controllable
- Up to 120°C medium temperature, continuous operation
- Multi-functional use, e.g. for kitchen exhaust air
- Pre-assembled isolator is standard
- Low sound level
- Easy to maintain and reliable
- Motor outside the air stream
- Integrated motor protection
- Potentiometer included for ease of commissioning

EC technology is intelligent technology; using integral electronic control which eliminates the slip losses in the motor and ensures that the motor always runs at optimal load and guarantees that the proportion of energy utilized effectively is many times higher and the energy usage considerably lower compared with AC motors. EC fans are notable for their economical use of energy and excellent ease of control.

They can be varied in speed to match the airflow demand, and operate at high efficiency levels. For the same air volume, they consume distinctly less energy than AC fan drives. Another special feature of EC fans is their energy-saving potential not only at full load, but especially at part-load. When operating at part load, the energy used is much lower than with an asynchronous motor of equivalent output. Reduced energy usage guarantees a drop in operating costs. The power electronics are integrated in the motor housing.

All MUB/T-EC models have one potential-free terminal for error message. All motors are suitable to be used for 50/60Hz. The input voltage for single phase units can vary between 200 and 277V, for three phase units between 380 and 480V. Speed control by a 0-10V signal. The fans are delivered with a pre-wired potentiometer (0-10 V) that allows you to easily find the required working point. All MUB/T-EC fans have impellers with backward curved blades, manufactured from aluminium. The MUB/T-EC fans are suitable for medium temperatures up to 120°C continuously. The casing consists of an aluminium frame with fibreglass reinforced plastic corners and double skin, galvanised steel panels with a 30 mm mineral wool insulation. Panels are removable, allowing flexible ventilation solutions - the air direction (90°) can easily be changed. With quick lock access door. The MUB/T-EC bottom panel is shaped as a condensate tray and incorporates a pre-mounted 1" drain plug. An isolator switch is mounted on the casing. Several filter modules like f.e. activated carbon- or aluminum filters are available, calculated individually on the working point.



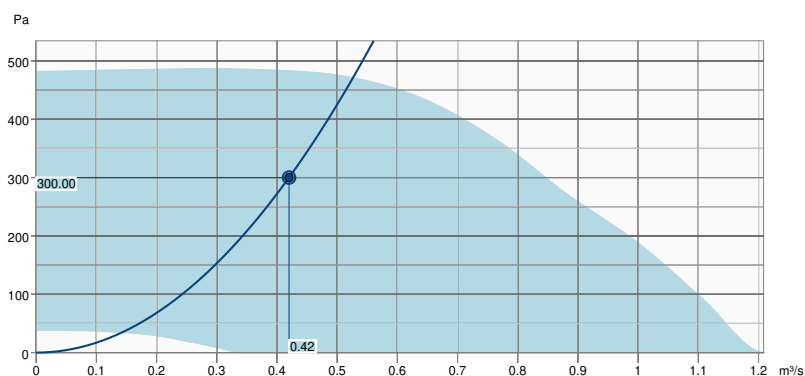
Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50; 60	Hz
Phase(s)	1~	
Input power	550	W
Input current	2.45	A
Impeller speed	1,512	rpm
Air flow	max 1.208	m³/s
Temperature of transported air	max 120	°C
Max temperature of transported air, when speed controlled	120	°C

Protection/Classification	
Enclosure class, motor	IP55
Insulation class	B
Data according to ErP	
ErP ready	Not ErP relevant
Dimensions and weights	
Weight	55.5 kg
Others	
Motor type	EC

Performance

Performance curve



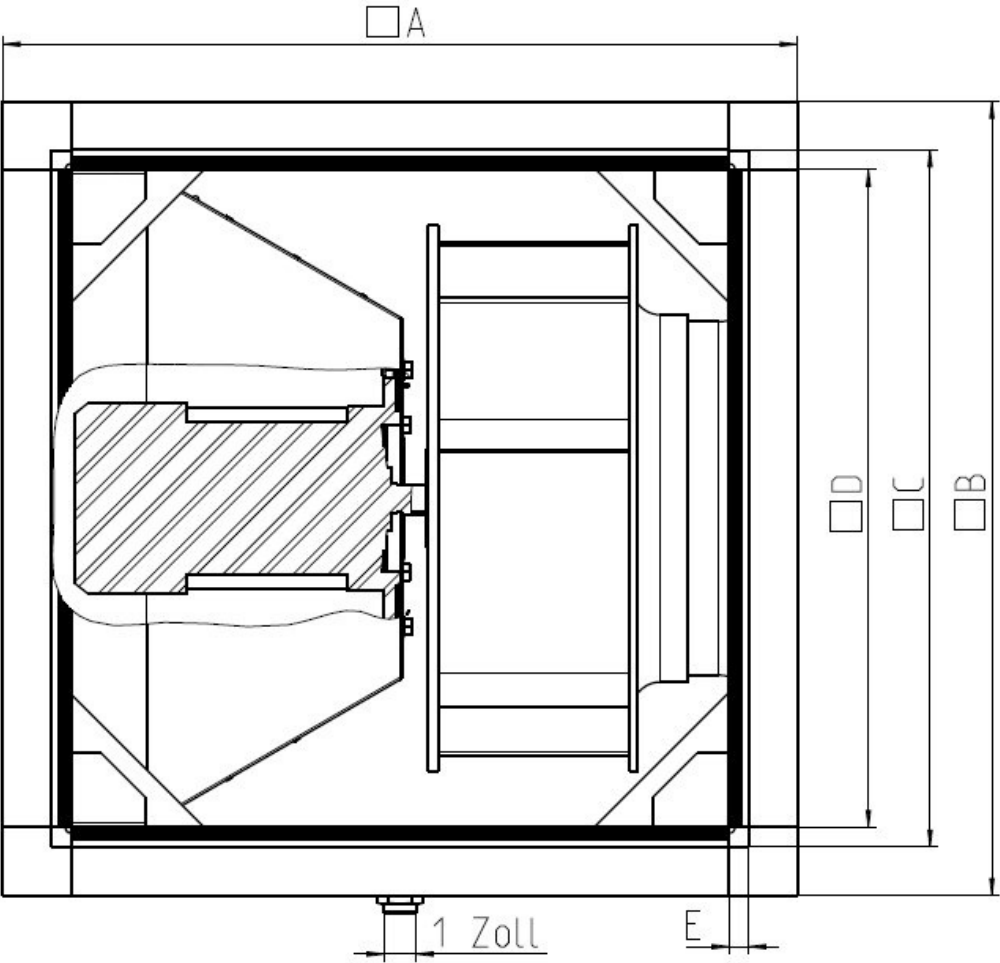
Hydraulic data

Required air flow	0.42 m³/s
Required static pressure	300 Pa
Working air flow	0.42 m³/s
Working static pressure	300 Pa
Air density	1.204 kg/m³
Power	269.5 W
Fan control - RPM	1197 rpm
Current	1.25 A
SFP	0.642 kW/m³/s
Control voltage	7.0 V
Supply voltage	230 V

Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	36	54	56	61	63	61	57	52	68
Outlet	dB(A)	38	55	57	62	65	63	58	53	69
Surrounding	dB(A)	16	35	31	31	34	34	26	17	41
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	34
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	20

Dimension

MUB/T 042	□A	□B	□C	□D	E
400/450/500	690	690	590	548	21



Acoustic

The Level of Casing-Breakout-Noise depends on the quality of shielding the acoustic inlet and outlet noises.

The shown Level of Casing-Breakout-Noise will be reached only in case of 100 % shielding the acoustic inlet and outlet noise and a correspondingly low environment noise.

Accessories

- CXE/AVC Modbus (37256)
- EC-Basic-H humidity (24807)
- EC-Basic-U universal 0-10V (24806)
- EC-Vent Room Unit (3018)
- M-SG 042/588x588 (301345)
- MTV-1/010 Controller 0..10V+ (30650)
- SD-MUB Vibration pad set (37324)
- TUNE-AHU-DE007-042-588x588-M0 (79881)
- UGS 042/500 adapter flex. (4357)
- WSG 042 MUB/T complete (36071)
- FGV 042/586-586 flex. 120°C (38361)
- Presence detector/IR24-P (6995)
- CCM inlet MUB042 d400 (311780)
- CCM outlet MUB042 d400 (311682)
- CCMI outlet 042 d400 KIT 30mm (239093)
- GRU 042 base frame h= 100mm (276661)
- KKF-ALU 042-filter-section (376815)
- KKF-CAR 062-filter-section (277347)
- KKF-KITCHEN 062-filter-section (277364)
- EC-Basic-CO2 and temperature (24808)
- EC-Basic-T temperature (24805)
- EC-Vent control board (3115)
- FGV 042/586-586 flex. conn. (4605)
- MTP 10, 10K, Speed control (32731)
- Potentiometer MTP 20, 0-10V (310220)
- Step switch S-5EC, 0-10V (76738)
- UGS 042/400 adapter flex 120°C (38368)
- WSD 042 (730x730x70) complete (31481)
- CO2RT-R-D Transmitter (6993)
- HR1 Room Humidistat (215150)
- RT 0-30 Room Thermostat (5151)
- CCM inlet MUB042 d500 (311781)
- CCM outlet MUB042 d500 (311683)
- CCMI outlet 042 d500 KIT 30mm (239094)
- KKF 30 042-filter-section (93311)
- KKF-CAR 042-filter-section (277346)
- KKF-KITCHEN 042-filter-section (277363)
- KKS 042 silencer-section (276851)

Documents

- Installation, Operation and Maintenance instruction_001
- UKCA DECLARATION OF CONFORMITY_THERMOFANS_EN_002.PDF
- COMMISSIONING REPORT_FANS_160628_EN_001.PDF
- MUB-T 042 400 EC-POTI_37202_DE-EN.PDF