PROPOSED VENTILATION SYSTEM AT:

103 Portland Street
Manchester
M1 6DF

Prepared by:
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1.0 INTRODUCTION:

This document has been prepared by **Combi-Vent Engineering Limited** who are Manchester based specialists in HVAC design, manufacture and installation.

The information contained within this document should be used as supporting information when applying for Planning Approval and is based on:

'*DEFRA Annex B – Guidance on the control of odour and noise from Commercial* Kitchen *Exhaust system – Jan 05'*.

This follows feedback from various Local Authorities who use Annex B as a guide when referring to the extract system as part of the application process.

Annex B advises:

- 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 extract 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 all cases, a suitable grease filtration system must be installed.

2.0 PREAMBLE TO SYSTEM SPECIFICATION

The proposed restaurant will be preparing and cooking Chinese food. Chinese cooking produces a lot of oily smoke and steam - consequently the kitchen extraction system has been designed to provide a high level of grease filtration to collect particles as small as 4µm, combined with effective removal of cooking odours from the discharged air. The unique canopy and rotary grease filter incorporated within the proposal, represents the latest in grease filtration technology.
The products will provide a kitchen ventilation system that can discharge at Street Level (4m from pavement level) - without causing a public nuisance. *Following feedback from Manchester City Planning and Environmental Health Department, this system will now discharge at high level.*
NB: For size comparison, a human red blood cell is about 5 microns across. A human hair is about 75 microns across (depending on the person).

All work is carried out in accordance with the latest relevant British and European Standards, statutory Regulation and Byelaws together with the following publications:

- CIBSE Codes and guides to current practice
- 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
- 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.

All ductwork will be fixed to the building structure using anti-vibration fixing mounts and under no circumstances will flexible ductwork be used.

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 any subsequent Planning Approval and must not be deviated from without express permission from the Project Manager.
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 PREMISES AND TYPE OF COOKING OPERATIONS

The proposed kitchen is situated in the basement of a mixed use high rise development at the corner of Portland Street and Princess Street, Manchester City Centre.

For your information, the method of preparation and cooking is predominantly Steam and Flash Frying (Chinese Wok).

The proposed hours of operation of the business and ventilation plant will be: XXXXX - XXXXX

4.0 PLANS AND DRAWINGS

Please refer to Hattrells drawing No. 2306-02-05B and 2306-02-05C of the proposed premises which is scaled at 1:100 and shows the indicative internal and external arrangements and location of the ventilation system. Please refer to this drawing for elevations of the unit.

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

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

5.1 Extract Fan Unit

To handle the duty required to overcome the system resistance, the following **acoustic** fan will be installed:

Model: Systemair MUB/T 062 630 D4-IE2



DATA SHEET AVAILABLE –
Ref: Systemair Multi-Box Acoustic Fan Data Sheet

Duty: 3.0m³/s @ 350Pa (Maximum)

Handling: Fan to be supplied in "*straight through*" mounting configuration (to maximise air volume).

Fan Specification: All MUB/T fans have impellers with backward curved blades, manufactured from aluminium, and IEC standard motors outside the air stream with efficiency class IE2 for all 400V three phase motors from 0.75 kW. The MUB/T fans are suitable for medium temperatures up to 120°C continuously.
Motor protection by cold conductors or thermal contact, to be connected to an external motor protection device.
The casing consists of an aluminium frame with fibreglass reinforced plastic corners and double skin, galvanised steel panels with a 20 mm mineral wool insulation. Panels are removable, allowing flexible ventilation solutions - the air direction can easily be changed. With quick lock access door. The MUB bottom panel is shaped as a grease tray and incorporates a pre-mounted 1" drain plug. An isolator switch is mounted on the casing.
Weight: 111kg

5.2 Extract Fan Controls: Frequency Inverter Systemair FRQ5-10A.



DATA SHEET AVAILABLE –
Ref: FRQ-5 Frequency Inverter Data Sheet

5.3 Extract System Noise Levels

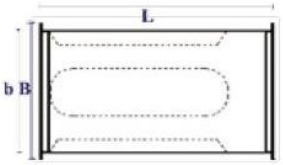
Sound Pressure Level at 3m (without attenuation): 68 dB(A) Refer to manufacturer's data below

Attenuator 1200mm (fitted to fan outlet): 1 – No. MUBSIL 062 1200

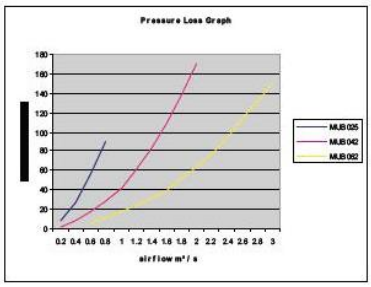
MUB SIL Multibox Silencer

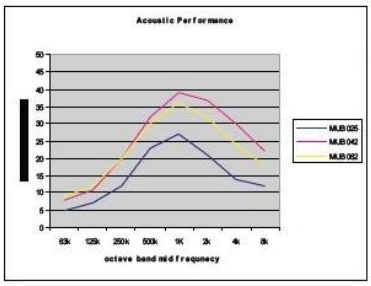


Inlet- outlet silencer
Suitable for MUB-fans – all 1200 mm long inc 300 mm plenum.



MUB	b	B	L	kg
025	378	418	1200	19
042	548	588	1200	39
062	678	718	1200	57
100	878	918	1200	enq





FANS & SPARES

DbA Calculator

Octave Band Frequency	63	125	250	500	1000	2000	4000	8000
Fan Sound Power Level	75	77	81	83	82	79	74	67
Losses (ie.Silencers etc.) *(Losses must be entered as a minus figure)*								

DbA @ 1m	78	DbA @ 7m	61
DbA @ 2m	72	DbA @ 8m	60
DbA @ 3m	**68**	DbA @ 9m	59
DbA @ 4m	66	DbA @ 10m	58
DbA @ 5m	64	DbA @ 15m	55
DbA @ 6m	62	DbA @ 20m	52

Data entry in Yellow Only

MUB 062 630D4 IE2 MULTIBOX FAN ONLY OUTLET

Anticipated Sound Pressure Level at 3m (with attenuation): 40 dB(A)

Anticipated Noise Reduction: - 28 dB(A)

(Please refer to manufacturers Fan Sound Power Level table below)

FANS & SPARES

DbA Calculator

Octave Band Frequency	63	125	250	500	1000	2000	4000	8000
Fan Sound Power Level	75	77	81	83	82	79	74	67
Losses (ie.Silencers etc.) *(Losses must be entered as a minus figure)*	-8	-12	-20	-30	-36	-32	-24	-18

DbA @ 1m	50	DbA @ 7m	33
DbA @ 2m	44	DbA @ 8m	32
DbA @ 3m	**40**	DbA @ 9m	31
DbA @ 4m	38	DbA @ 10m	30
DbA @ 5m	36	DbA @ 15m	27
DbA @ 6m	34	DbA @ 20m	24

Data entry in Yellow Only

MUB 062 630D4 IE2 MULTIBOX FAN ONLY OUTLET
FITTED WITH 1250 LG SILENCER

5.4 Extract Fan Maintenance:

Due to the high efficiency of the Rotary Grease Filter, cleaning for the fan unit will be minimal.

Supporting Evidence Provided – See Finnish duct cleaning report reference: Ukon Ilma Oy
Dated: 18th March 2014

The fan manufacturer recommends the following routine maintenance:

- The fan motor should be inspected periodically - at least 1/year.
- The fan bearings are maintenance free and should only be replaced if damaged.
- When inspecting, make sure the fan impeller's balance weights are not moved or the fan impeller distorted.
- Listen for abnormal operating noise.

5.5 Extract System Pre-Filter

DUE TO THE EFFICIENCY OF THE CANOPY GREASE FILTERS, PRE-FILTERS ARE NOT REQUIRED FOR THIS SYSTEM.

5.6 Extract System Electrostatic Precipitators

DUE TO THE EFFICIENCY OF THE CANOPY GREASE FILTERS, ELECTROSTATIC PRECIPITATORS ARE NOT REQUIRED FOR THIS SYSTEM.

5.7 Extract System Activated Carbon Filtration

DUE TO THE EFFICIENCY OF THE CANOPY GREASE FILTERS, CARBON FILTRATION IS NOT REQUIRED FOR THIS SYSTEM.

5.8 Odour counteracting or neutralising system

SYSTEM IS DISCHARGING AT HIGH LEVEL – NO ODOUR CONTROL REQUIRED

6.0 Turbo Hood Specification

6.1 Turbo-Hood with Rotary Grease Filter

The Turbo-Hood has been designed for kitchens where a comfortable, productive and healthy indoor climate is required.
The Turbo-Hood is equipped with exhaust, supply and direction air with damper plates and measurement taps.
Supply air is introduced into the kitchen by supply air columns fitted to the outside edges of the canopy.
The Rotary grease filtering solution was developed for separating grease in professional kitchens.
The fast rotating separation plate isolates even the smallest particles and throws them at high speed onto the outer edges of the separation chamber, from which grease and other impurities drain into the collection basin.
The Rotary Grease Filter contains a perforated disk that rotates at high speed. When the air goes through the holes on the disk, the grease particles are removed.
Normal filters can only remove big particles, but the Rotary Filter removes the small ones as well - so the air is much cleaner.

The grease and impurities are then removed by means of a tap. During the bi-annual clean, the outer dome and separation plate, and also the supply air columns can all be easily removed and washed in a commercial dishwasher.

6.2 Cooker Hood Material & Design Criteria:

The cooker hood will be manufactured from:

AISI Stainless Steel 1.0mm/304g construction with all visible joints to be welded, ground and polished and incorporates a gutter around all edges with a plugged drain connection at lowest point.

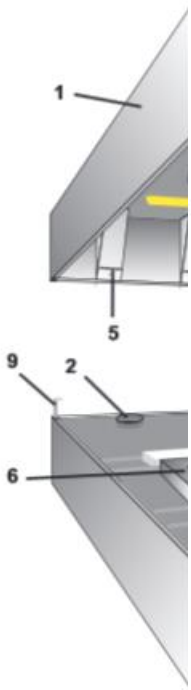
Length that the canopy overhangs the appliances:	300mm (either end)
Face velocity at the canopy (expressed in metres/second):	0.5 m/s
Dimensions of the canopy:	4000mm x 1500mm x 540mm

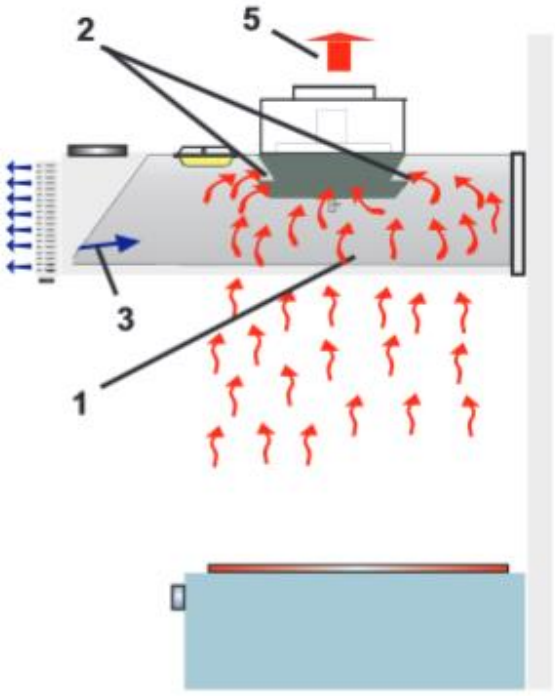
6.3 Turbo Hood - Functioning Principle and Ventilation Efficiency

1. Dirty air rises due to temperature differences against the ceiling of the hood and it is exhausted immediately through the Rotary Grease Filters.
2. Since the air intake on the filter is placed close to the ceiling, the warmest dirty air is always exhausted through it. Ventilation efficiency is of the highest rate because of the correct position of the rotary filter with respect to the kitchen equipment.
3. Direction air prevents air leakages from the supply air hood and directs steam and impurities into the filter air intake.
4. Fresh and draught-free supply air is brought into the kitchen through the supply air columns placed on the outside walls of the supply air hood. This results in very effective ventilation in the kitchen.
5. The air, which is now clean, is exhausted into the ducts.

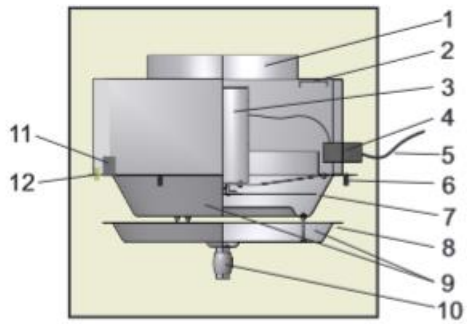
6.4 Parts of the Turbo-Hood

1. Outer casing
2. Supply air connection and damper unit
3. Light fixture with cable
4. Grease filters and measurement tap for exhaust air
5. Direction air unit with measurement tap for the supply air
6. Exhaust air connection and damper plate
7. Personal supply air nozzle
8. Supply air unit (detachable)
9. Hanging bracket





6.5 Structure of the Rotary Grease Filter



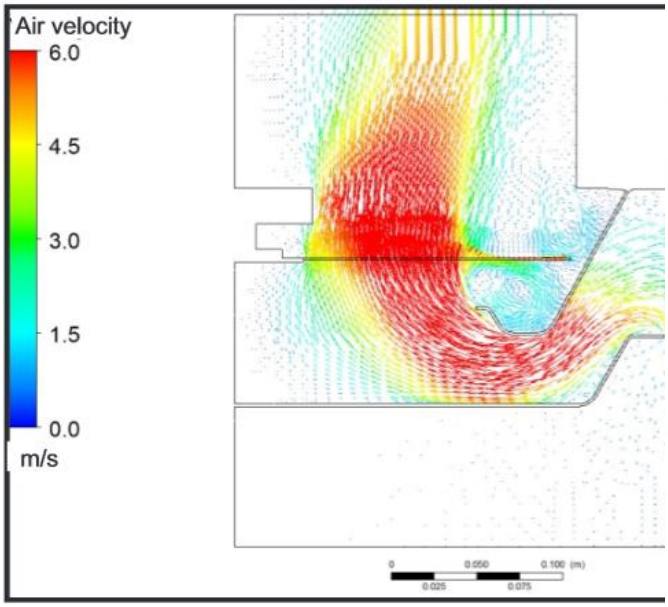
1. Collar saddle
2. Damper
3. Motor
4. Motor connection box
5. Motor cable
6. Dome fixing
7. Separation plate
8. Airflow measuring tap
9. Protective domes
10. Tap
11. Limit switch
12. Signal light

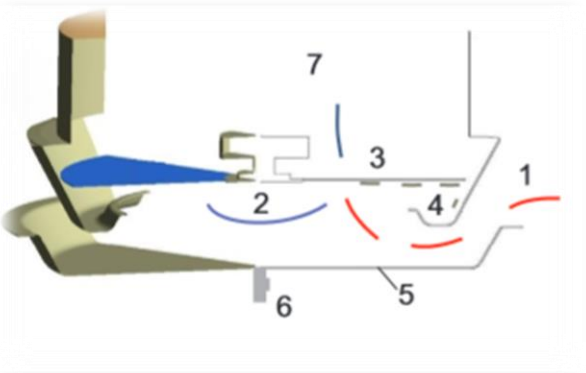
6.6 Functioning Principle of the Rotary Grease Filter

1. Dirty air enters the Rotary Filter (1)
2. The separation plate rotates (2)
3. Grease and impurities are separated (3)
4. Grease moves (4) to the edges of the separation chamber from where they drain into the collection basin (5).
5. Liquid grease can be removed through the tap (6).
6. Clean air exits to ducts (7)

6.7 Air Flow through the Rotary Filter

The following image shows the velocity of the air flowing through the Rotary Filter. Different colours and arrows are used to describe different airflow speeds and directions in different areas. All of the dirty air flows through the fast rotating separation plate.
A sealing flow with vortices is formed on the edge of the separation plate, preventing the dirty air from doing a short-circuiting flow into the exhaust.





6.8 Grease Filtering Efficiency

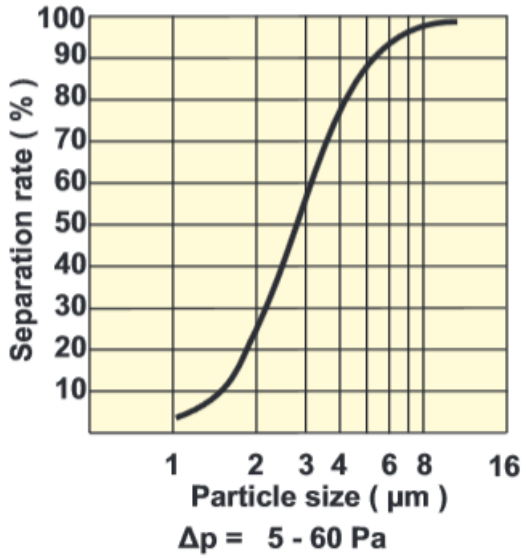
The Rotary Filter's high separation rate is achieved through its fast rotating separation plate.

In the separation plate the grease particles collide with the surfaces of the plate holes and separate from the air flow, sticking to the separation plate surface for a moment.
From the nano-coated separation plate the particles are thrown onto the walls of the separation chamber by the centrifugal forces.
The sealing flows forming on the edges of the separation plate prevent short-circuit flows.
The Rotary Filter also filters some grease in steam and gas form under normal air pressure, because the grease is condensed on the rotating separation plate due to the thin limit layers of the flow and the fast variations of the static pressure on the plate's surface.

Rotary Filter - Separation Rate
(Standard VDI 2052 Part 1)

6.9 Key Benefits of Using Turbo-Hood with Rotary Grease Filters

- ✓ Hood efficiency 94-97 %
- ✓ Flexible design
- ✓ Easy to clean and long working life
- ✓ Controlled and flexible distribution of the supply air



- ✓ Works efficiently with variable airflow systems
- ✓ High saving levels render the fastest return of investment
- ✓ Rotary filters for very efficient grease extraction
- ✓ The air is left clean enough for heat recovery
- ✓ The ventilation ducts stay clean
- ✓ Easy measuring of air flows

7.0 System Operation
In addition to the specification of the components the following must be provided about the operation of the extraction system:
Extract Rate (expressed as m³/s) at the proposed rate of extract: 3.0m³/s @ 350Pa (Max Volume)
Volume of the Kitchen: See supplied drawing

Minimum Efflux Velocity (expressed as m/s): 9 m/s

The system performance is dependent upon the extraction 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:

Under Normal Cooking Conditions: As the Rotary Grease Filter works perfectly with variable airflows, this means that, unlike Baffle Filters - which rely on speed of air to separate the grease particles from the air stream - you do not need to have the extraction system on full power when the kitchen is not busy.

NB: The Air Input Fan speed setting should mirror the Extract Speed at all times.

7.1 Flue Design and Position

It is proposed to run the 800mm x 200mm extract flue from the stairwell then up to ceiling height above the emergency exit under the archway. The duct will run tight to the underside of the Archway (away from the iron gates) before transforming to 450mm Dia circular duct rising vertically up to the parapet wall approximately four stories high. At this point the duct will set over to the left 45° to take the termination point away from the Penthouse Roof Garden – see Fig. 1 (Hattrells drawing reference 2306-02-04 to be altered accordingly).

Finally the duct will correct back to 90° and terminate with a high velocity expulsion cowl.

Anti-vibration mountings are to be used throughout.

The Acoustic Fan will be situated within the restaurant premises.

Internally the duct will run tight to ceiling descending down the kitchen stairwell, through the door header into the back service corridor where the fan and silencer set will be fitted, and then connecting to the canopy extract plenum – as per Hattrells drawing reference: 2306-02-08

NB: Build-up of grease particulate in the ductwork will not be a factor with the proposed rotary grease filtration. This will minimise the cleaning and maintenance regimen required for the external ductwork.

7.2 Rotary Filter Maintenance and Cleaning

Once a week:

Open the tap on the filter to let the grease out (takes 20 seconds)

Once - Twice a year:

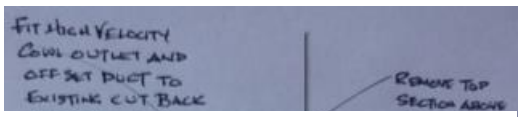
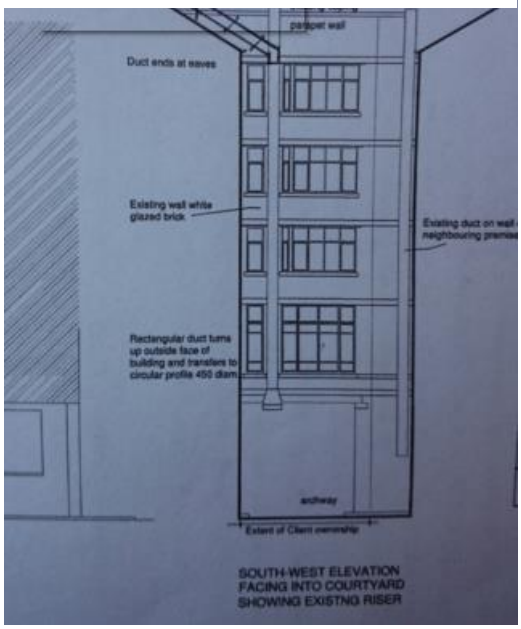


Figure 1: Alteration to duct route at high level



Open the thumbscrews to remove the outer dome and put in a dishwasher.

NB: No tools are needed for maintenance. Takes no longer than 5 minutes and there are no parts to replace.

Therefore no specialist maintenance contract is required - **No complications can be caused by neglect.**

7.3 Cleaning of Extract Ductwork:

Although no ductwork cleaning program is required with this system, we recommend that the ductwork is checked at 12 month intervals and will have inspection doors fitted accordingly.

Supporting Evidence Provided – See Finnish duct cleaning report reference: Ukon Ilma Oy
Dated: 18th March 2014

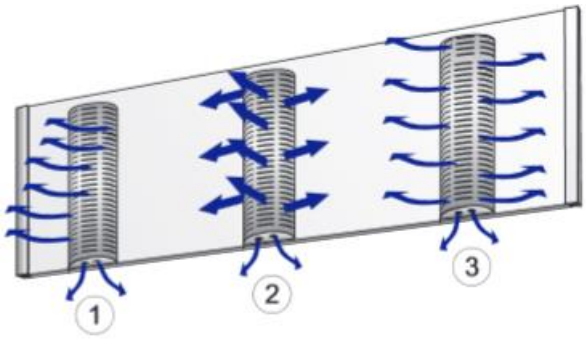
8.0 Additional notes for guidance – Fresh Air Input Systems

- The air inlets must not permit pests to enter the kitchen.
- Fly screens fitted to all inlet points.
- Sufficient air must be permitted into the premises to replace the 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.

8.1 Kitchen Make-Up Air

Fresh air is introduced via a dedicated input fan unit to supply 85% of the extracted air.
Fresh air - filtered to EU4 - is introduced into the kitchen through the canopy fresh air plenum.
Supply air columns deliver a controlled and flexible distribution of the supply air.
It is possible to wash the supply air columns in a dish-washer and the inside of the supply air chambers is easy to clean.
These columns allow individual adjustment of air patterns and airflows, which means a better indoor climate for the kitchen staff.

1) Uni-directional throw pattern
2) Displacement throw pattern



3) Bi-directional throw pattern

In addition to the supply columns fitted in the canopy, ceiling mounted diffusers will be fitted in the kitchen ceiling connecting to the ducted system with Fan, Silencer and Bag Filter Cassette fitted in the duct line.
Air will be drawn in via external Weather Louvre manufactured from extruded aluminium and pre-fitted with anti-vermin mesh screen.

8.2 Air Input Fan (80% of Extract Duty)

To provide the required amount of make-up air, a mechanical ventilation system using two rectangular 'A' Wheel Fans with external rotor motors will be utilised (one x Kitchen/one x Seating & Dining).

Model: 2 – No. Systemair RS70-40 L1

DATA SHEET AVAILABLE –
Ref: Air Input Fans RS70-40 L1

Duty: 1.11m³/s @ 200Pa (per fan)

Handling: Fan to be mounted for *straight through* connection in the horizontal duct line inside the premises.

8.3 Air Input Fan Specification:

The RS models have impellers with backward-curved blades and external rotor motors. The motor and impeller are mounted on the access cover to facilitate easy maintenance. To protect the motor from overheating the RS has integral thermal contacts with external leads for connection to a motor protection device. The fan can be installed in any position and is easy to connect using the DS flexible connections. The casing is manufactured from galvanised sheet steel.
Unit Weight: 39.6 kg

8.4 Air Input Fan Controls:
Model: RTRE3 Systemair Auto Transformer with built-in thermal protection rated to 3A.
Description: RTRE is a single-phase transformer which controls the fan speed by altering the supply voltage in five fixed steps. The steps are adjusted manually, using the control knob on the front of the unit. An integral motor protection device is included which cuts the supply voltage to the fan if the thermal contact in the fan motor is activated. The unit is reset by turning the knob to "0" for 10 seconds, after which the unit restarts.
The unit has input terminals for room thermostat RT, which stops the supply voltage to the fan when the circuit is broken. These terminals are linked before delivery. The transformer has 230V terminals for operating dampers, electric water-heater batteries or other external equipment. These terminals have no current when the transformer knob is in position 0, or when the TK or RT input is open. The indicator lamp on the front shows when the transformer is in operation. The fuse may be reset from outside. The RTRE has a self-extinguishing thermoplastic casing. Supply voltage: 230V 50/60Hz.

8.5 Air Input System – Noise Control & Sound Levels
Fitted to the outlet side of the fresh air input fan will be a 950mm Long Silencer.

8.6 Sound Attenuation:
Model: 1 – No. Systemair LDR70-40 950mm Long Attenuator fitted to outlet of fan unit. **Description:** Systemair LDR silencers are made from Galvanised Steel and lined with Mineral Wool 70kg/m³.



LDR 70-40 Silencer

Art no: 5074

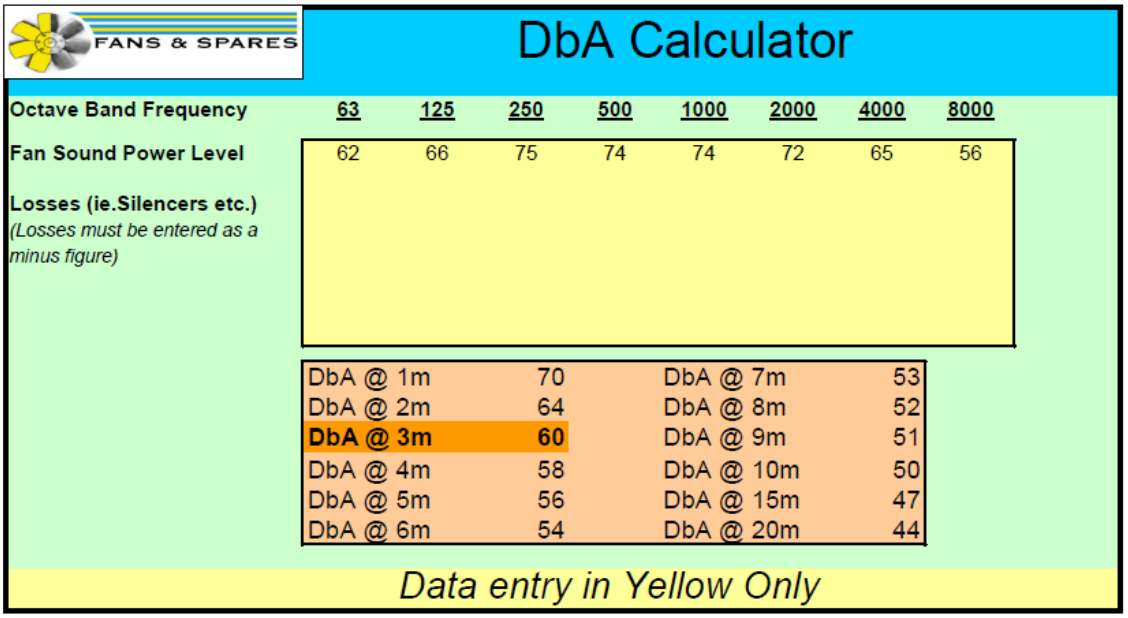
Silencer

Easily-fitted silencer immediately before or after the KE, KT, RS and RSI rectangular duct fans. Effectively suppresses noise transmitted to the duct. The silencer should be used together with an insulated fan where there is a requirement for noise suppression both in the duct and in the surroundings as a whole. All silencers are supplied with a universal flange suitable for PG flange or Metu profile.

Anticipated (Internal) Sound Pressure Level at 3m (without attenuation): 60 dB(A)

Anticipated (Internal) Sound Pressure Level at 3m (with attenuation): 48 dB(A)

Noise Reduction: -12 dB(A)
(Refer to manufacturers Fan Sound Power Level reports below)



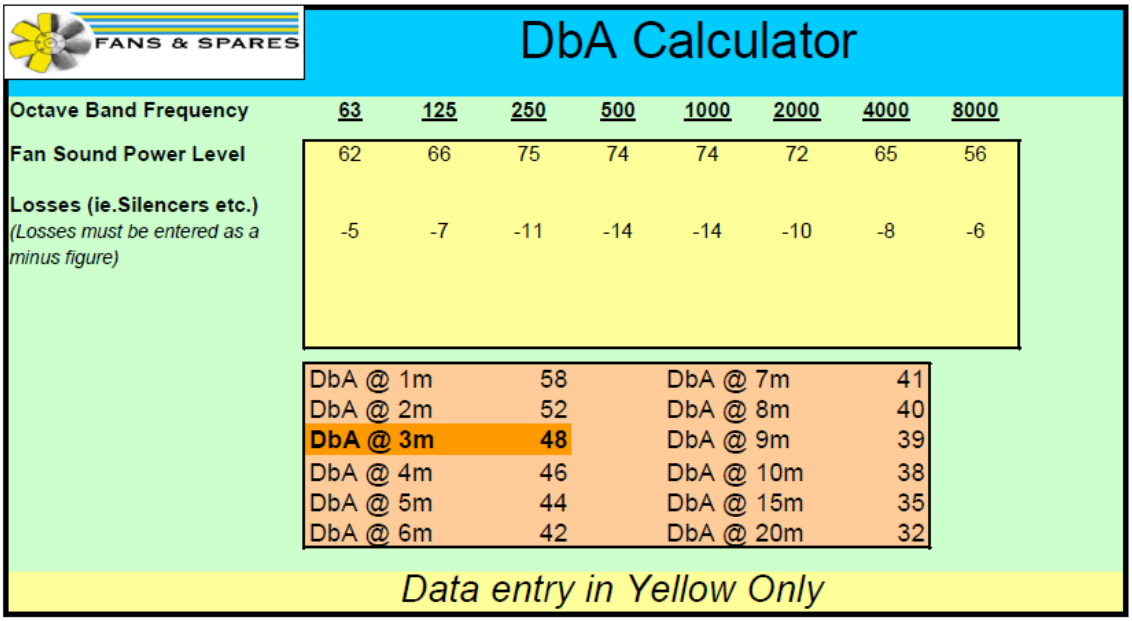
DbA Calculator

Octave Band Frequency	63	125	250	500	1000	2000	4000	8000
Fan Sound Power Level	62	66	75	74	74	72	65	56
Losses (ie.Silencers etc.) *(Losses must be entered as a minus figure)*								

DbA @ 1m	70	DbA @ 7m	53
DbA @ 2m	64	DbA @ 8m	52
DbA @ 3m	**60**	DbA @ 9m	51
DbA @ 4m	58	DbA @ 10m	50
DbA @ 5m	56	DbA @ 15m	47
DbA @ 6m	54	DbA @ 20m	44

Data entry in Yellow Only

RS 70-40L1 FAN OUTLET



DbA Calculator

Octave Band Frequency	63	125	250	500	1000	2000	4000	8000
Fan Sound Power Level	62	66	75	74	74	72	65	56
Losses (ie.Silencers etc.) *(Losses must be entered as a minus figure)*	-5	-7	-11	-14	-14	-10	-8	-6

DbA @ 1m	58	DbA @ 7m	41
DbA @ 2m	52	DbA @ 8m	40
DbA @ 3m	**48**	DbA @ 9m	39
DbA @ 4m	46	DbA @ 10m	38
DbA @ 5m	44	DbA @ 15m	35
DbA @ 6m	42	DbA @ 20m	32

Data entry in Yellow Only

RS 70-40L1 FAN OUTLET WITH SILENCER

8.7 Air Input Fan Maintenance:

The fan should be cleaned when necessary, at least 1/year to avoid imbalance and unnecessary damage to the impeller and bearings. A filter will prolong the time interval between each cleaning of the fan. (It is sometimes recommended to install a filter guard). The fan bearings are maintenance free and should only be replaced if damaged. Do not use a high-pressure cleaner (steam jet) when cleaning the fan. Make sure the fan impeller's balance weights are not moved or the fan impeller distorted. Listen for abnormal operating noise.

8.8. Air Input Filtration

Within the duct line will be a galvanised steel bag filter cassette containing:

1 – No. Multi-Pocket Bag Filter F7/EU7 specification to meet EN779:2012.

Filter Cassette Reference: Systemair FFK70-40

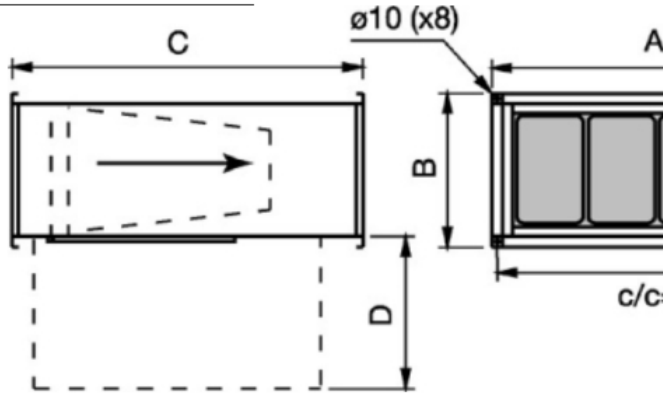
Description:

A filter cassette designed for bag filters standard type F5 or F7. The cassette housing is manufactured from galvanised sheet steel. It has a hinged cover underneath fitted with a quick release latch, which makes it easy to replace the filter. The filter cassette can be connected directly on to the duct and should always be fitted in a flat or vertical position. If fitted vertically, the direction of the air flow must be downwards so that the filter bags do not collapse. BFK filter media, in the F5 or F7 filter classes, are ordered separately and supplied individually. The recommended final pressure drop is 200 Pa for the F5 filter and 250 Pa for the F7 filter. The cassette is fitted with connections for connecting to a pressure sensor.



Filter Cassette Dimensions: Please refer to manufacturers data shown below.

	A	B	C	D	E	F
FFK 30-15	340	190	402	250	320	170
FFK 40-20	440	240	502	350	420	220
FFK 50-25	540	290	532	350	520	270
FFK 50-30	540	340	562	350	520	320
FFK 60-30	640	340	642	350	620	320
FFK 60-35	640	390	717	350	620	370
FFK 70-40	740	440	787	420	720	420
FFK 80-50	840	540	882	530	820	520
FFK 100-50	1040	540	882	530	1020	520



Multi-Pocket Bag Filter Reference: Systemair BFK 70-40

Technical parameters

Use for	FFK 70-40	
Filter class	EU7/F7	
Required number of filters	1	psc/unit
Width	687	mm
Height	393	mm
Depth	625	mm
Number of bags	9	

Air Input System – Filter Maintenance Intervals

Manufacturer's recommendations on the frequency and type of maintenance of the bag filter having regard to the conditions that it will be used under:

Filter Change Interval: Every 6 Months (subject to use)

9.0 Gas Interlock System

The kitchen will have a Merlin Current Monitoring Gas Interlock System fitted:

This model acts as an interlock between the ventilation system and the gas solenoid valve. The system has a built in power monitor which is a method used for interlocking a kitchens gas supply to ensure ***BS6173:2009*** compliance.



Unit to be supplied with Gas Solenoid Valve (up to 2") and Remote Emergency Shut Off (Break Glass or Mushroom Type).

Gas Control Panel will be electrically interlocked to Fans, Controllers, and Gas Solenoid Valve –thus preventing any cooking taking place without Supply/Extract Fans and Odour Control in operation.

DATA SHEET AVAILABLE –
Ref: Merlin CT1250 Gas Interlock System Data Sheet

10.0 Fresh Air Input System – Seating & Dining Area (100 People)

A fresh air input system will be provided to meet building occupancy levels of 100 people to serve the restaurant seating and dining areas.

Air will be drawn in via Aluminium Weather Louvre fitted to the external wall local to the basement kitchen.

A Pre-Filter Cassette will be fitted in the duct line to match the specification of the kitchen air input filter (see above).

A ducted system will transport the air throughout the Seating & Dining Area via a series of ceiling mounted diffusers.

We have selected the same fan unit as the kitchen air input fan (RS-70-40 L1).

Please refer to technical data listed above.

11.0 Toilet Ventilation Systems – Extract System (Foul Air)

In the basement area are the Ladies/Gents/Staff toilets.

A dedicated extraction system will be provided to meet building regulations comprising:

- Mixed Flow Fan Unit with Timer
- Metal Ductwork and Fittings
- Ceiling Mounted Extract Valves

Extract Fan Model: Soler & Palau TD -200/T Mixed Vent Series (Mixed Flow) with Run-on Timer.
Controls: To be wired into toilet lighting circuits with pre-set run on time.

DATA SHEET AVAILABLE –
Ref: Basement Toilet Extract System TD-200 S&P Mix Vent Series

APPENDIX 1

SYSTEM MAINTENANCE SCHEDULE

IT IS IMPORTANT THAT YOU MAINTAIN YOUR VENTILATION SYSTEM FOR THE FOLLOWING REASONS:

1. **TO KEEP FLUE EMISSIONS TO A MINIMUM.**
2. **TO KEEP YOUR COOKING EQUIPMENT AND EXTRACT SYSTEM WORKING CORRECTLY.**

EVERY 7 DAYS

- Rotary grease filters to be drained
- Canopy surfaces to be wiped clean when necessary

EVERY 6 MONTHS

- Replace Air Input Filters in Restaurant and Kitchen Filter Cassettes
- Rotary Filter Domes to be removed and washed through dishwasher or in hot soapy water

EVERY 12 MONTHS

- Inspect ductwork, fans and louvres – clean as necessary
- Rotary Filter Domes to be removed and washed through dishwasher or in hot soapy water

APPENDIX 2

DATA SHEETS & SUPPORTING EVIDENCE

The system specification references the following
Product Data Sheets & Supporting Evidence:
(Data sheets are accessible directly via embedded document hyperlinks or submitted separately as indicated below)

- SECTION 5.1 SYSTEMAIR MUB/T 062 630 D4-IE2 (EMBEDDED HYPERLINK)
- SECTION 5.2 SYSTEMAIR FRQ-5 FREQUENCY INVERTER (EMBEDDED HYPERLINK)
- SECTION 5.4 & 7.3 DUCT CLEANING REPORT REFERENCE: UKON-ILMA OY (SUBMITTED SEPARATELY TO THIS DOCUMENT)
- SECTION 5.8 FRANKE ECOVENT EXHAUST TREATMENT UNIT (EMBEDDED HYPERLINK)
- SECTION 8.2 SYSTEMAIR AIR RS70-40 L1 (EMBEDDED HYPERLINK)
- SECTION 9.0 MERLIN CT1250 (EMBEDDED HYPERLINK)
- SECTION 11.0 S&P TD200/T MIX VENT SERIES (EMBEDDED HYPERLINK)

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