ScotchPartners
Building Services Engineering | Sustainability | Acoustics

Camden (Buck Street) Market

LabTech

Kitchen Ventilation Design Report

including Acoustic Assessment and Odour Management Plan **P01**

10/09/2019

Scotch Partners LLP
Building Services Engineering | Sustainability | Acoustics

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Project Particulars

Client Name: LabTech

Project Name: Camden (Buck Street) Market

Project Number: 5230

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Revision History

Revision	Description	Date	Prepared By	Checked By
P01	Issued for Planning	10/9/19	MB	JQ

Contents

1 Introduction

The proposed development comprises re-purposed shipping containers arranged across three levels housing a mixture of A1 (retail) and A3 (food and beverage) outlets for a temporary five-year period.

A total of 27 food and beverage outlets are proposed, with one situated at ground floor level, 18 at first floor level and a further 8 located at second floor level. The food and beverage outlets range in size from approximately 7m² for the smallest units (kitchen and serving counter only) up to 29m² for the largest unit which also incorporates a small dining area. As a result, the food and beverage outlets are generally small street food style takeaway units with limited menus, selling food for consumption either within the common parts of the site or off-site.

This document is intended to set out our approach to ensuring no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise from our ventilation systems to nearby properties.

2 Information on Premises

A total of twenty-seven food and beverage outlets are proposed on the development. Information on each proposed food and beverage outlet is provided in the table below. The consented opening hours of the market are from 8am – 11.30pm, we expect that the kitchens of the food & beverage operators will be operating from approximately 10am – 10pm.

Unit	End user	Size of Kitchen	Cooking method(s)	Meal type(s)
1.18	Camden Coffee	Small	None	Coffee shop
2.01	Carib Swede Vegan	Small	Electric oven	Vegan bakery
2.02	Thai Express	Small	Wok cooking	Asian
2.03	Yakibox	Small	Griddle	Asian
2.04	Asando	Small	Grilling	Meat sandwiches
2.05	Unallocated	Small	Unknown	Unknown
2.06	Thai Brothers	Small	Wok cooking	Asian
2.07	Yolk Breaker	Small	Griddle	Breakfast
2.08	Camden Grocer	Small	None	Desserts
2.09	Pizaa	Small	None	Desserts
2.10	Unallocated	Small	Unknown	Unknown
2.11	Ladle	Small	None (keep warm)	Soup
2.12	Leggero	Small	Pasta cooker	European
2.13	The Green Dough	Small	None	Desserts
2.14	Bella Beets	Small	None	Juices and salads
2.15	Lord of Poke	Small	None	Sushi
2.16	Wildflower	Medium	Unknown (varied)	Modern European
2.22	Magic Falafel	Small	Deep frying	Falafel
2.23	Unallocated	Small	Unknown	Unknown
3.13	Lord of the Wings	Small	Deep frying	Chicken wings
3.14	Grate	Small	Deep frying	Potato rosti
3.15	Rico Burrito	Small	Griddle and deep frying	Mexican
3.16	Smoke and Bones	Small	Griddle and deep frying	BBQ
3.17	Ethika	Small	Unknown	Tapas
3.18	The Spirited	Small	None	Tapas
3.22	Afta Eats	Small	None	Desserts
3.23	Miguel Barclay	100	Unknown	Modern European

3 Risk Assessment for Odour

3.1 Risk Assessment Methodology

The EMAQ Guide (Control of Odour and Noise from Commercial Kitchen Exhaust Systems) advises that a risk assessment for odour to be carried for each premise to determine the level of odour control required.

The risk for each premises has been assessed using the following scoring methodology.

Impact Risk	Odour Control Requirement	Significance Score
Low to Medium	Low level of odour control	Less than 20
High	High level odour control	20 to 35
Very High	Very high level of odour control	More then 35

Criteria	Details	Score
A. Dispersion	Low level discharge	20
	< 10 m/s	15
	Between 10 m/s and 15 m/s	10
	> 15 m/s	5
B. Proximity of receptors	< 20m	10
	Between 20 and 100m	5
	> 100m	1
C. Size of kitchen	> 100 covers	5
	Between 30 and 100 covers	3
	< 30 covers	1
D. Cooking type (odour and grease loading)	Fried food, fish and chips	10
	Indian, Chinese, steakhouse	7
	Gas fired	4
	Mainly reheating and sandwiches	1

3.2 Risk Assessment Results

The risk assessment results for each food and beverage outlet are set out in the table below.

Units Served	End User	A	B	C	D	Total Score	Impact Risk
1.18	Camden Coffee	No extraction					
2.01	Carib Swede Vegan	5	10	1	1	17	Low
2.02	Thai Express	5	10	1	7	23	High
2.03	Yakibox	5	10	1	7	23	High
2.04	Asando	5	10	1	7	23	High
2.05	Unallocated	5	10	1	10	26	High
2.06	Thai Brothers	5	10	1	7	23	High
2.07	Yolk Breaker	5	10	1	7	23	High
2.08	Camden Grocer	5	10	1	1	17	Low
2.09	Pizaa	5	10	1	1	17	Low
2.10	Unallocated	5	10	1	1[1]	17	Low
2.11	Ladle	5	10	1	1	17	Low
2.12	Leggero	5	10	1	1	17	Low
2.13	The Green Dough	No extraction					
2.14	Bella Beets	No extraction					
2.15	Lord of Poke	No extraction					
2.16	Wildflower	5	10	3	4	22	High
2.22	Magic Falafel	5	10	1	7	23	High
2.23	Unallocated	5	10	1	10	23	High
3.13	Lord of the Wings	5	10	1	10	26	High
3.14	Grate	5	10	1	7	23	High
3.15	Rico Burrito	5	10	1	7	23	High
3.16	Smoke and Bones	5	10	1	10	26	High
3.17	Ethika	5	10	1	4	20	High
3.18	The Spirited	No extraction					
3.22	Afta Eats	5	10	1	1	17	Low
3.23	Miguel Barclay	5	10	1	4	20	High

[1] Unit lettings to be limited to tenants with no cooking or re-heat only

3.3 Risk Assessment Findings

3.3.1 Low Impact Risk

The units identified with low impact risk generally do not incorporate any cooking, with re-heat of dishes provided only. Based on our assessment of these units we anticipate a very low level of odour and grease loading in the exhaust air, and therefore have not proposed to provide enhanced odour or grease abatement measures to these units.

3.3.2 High Impact Risk

The units identified with high impact risk incorporate a variety of cooking methods with moderate to high odour potential, grease content and smoke content. On this basis we have proposed an odour abatement system providing a high level of grease and odour control:

- In-line single pass electrostatic precipitator (ESP)
- UV ozone system provided within kitchen canopies

This package of measures will provide a high level of odour and grease control in accordance with the EMAQ guidance.

4 Extraction Canopies

Where indicated, each commercial kitchen has been designed with an extraction system capable of maintaining the internal working environment within comfortable temperature, moisture, and air quality levels. The extraction systems have also been designed to avoid contributing more than 70dB of noise at the operator location in accordance with the Control of Noise at Work Regulations 2005.

Because each commercial kitchen is to be accommodated within a single steel intermodal container it is expected that the cooking equipment will produce an intensive output in a concentrated area. For this reason, all the commercial kitchen units are to be equipment with extraction canopies as opposed to ventilated ceilings.

Units 1.18, 2.13 – 15 and 3.18 will not be provided with extraction canopies as no cooking activities are to be carried out in these units.

4.1 Determining Flow Rates

Flow rates have been determined by the specialist catering consultant in accordance with the Thermal Convection Method set out in B&ES DW/172 for each kitchen type. Flow rates for each kitchen range from 0.5m³/s for the lightest duty kitchens and 1.4m³/s for the heaviest duty kitchens.

4.2 Make-up Air

The entrance to each food and beverage outlet is a roller shutter which will be permanently open during the hours of operation. The make-up air provision will therefore be entirely by natural infiltration.

4.3 Canopy Type and Dimensions

Each extraction canopy is to be an overhead wall type and has been designed to achieve the following.

- A maximum internal depth of 500mm
- A minimum 250mm exceedance of the plan dimensions of the catering equipment on each free side.
- A minimum canopy height of 1800mm (this is below the recommendation of between 2000 and 2100mm but cannot be increased due to the limited ceiling height).
- A minimum distance of 1000mm between the lowest edge of the grease filter and the cooking surface. (This is above 450mm minimum to minimise the risk of fire in the grease filter).

Canopies are generally small in footprint, with the smallest canopies (associated with the low impact risk units) measuring 1000 x 1000mm in plan area providing a cooking area of 500mm wide x 750mm deep. The units identified as high risk have canopies between 1400 – 2000mm wide, providing a cooking area of between 900 – 1500mm wide x 750mm deep.

5 System Operation

5.1 Units with Low Impact Risk

The extraction systems operate in the following stages.

- Cooking pollutants/emissions captured by kitchen canopy baffle type grease filters
- Acoustic box fans provide pressure rise to match system resistance
- Discharge attenuators to attenuate noise to meet Local Authority noise criteria
- High velocity discharge terminal

As noted in section 3.2, cooking in low impact risk units is generally limited to re-heating only and therefore no significant odour or grease loading is anticipated in the exhaust air. On this basis we have not proposed to provide enhanced odour or grease abatement measures to these units.

5.2 Units with High Impact Risk

The extraction systems operate in the following stages.

- Cooking pollutants/emissions captured by kitchen canopy baffle type grease filters
- Gaseous contaminants removed via integrated UV system in kitchen canopy
- Particulate containments removed using in line ESP
- Centrifugal fans provide pressure rise to match system resistance
- Discharge attenuators to attenuate noise to meet Local Authority noise criteria
- High velocity discharge terminal

5.3 Extract System Component Details

5.3.1 System Layouts

Refer to the provided drawings for the layout and locations of equipment, ductwork and exhaust discharge points.

5.3.2 Cooker Hood (Incorporating Grease Filters & UV system)

Product data for the cooker hood and grease filters is to be supplied by the kitchen consultant as standalone appendix to this document.

5.3.3 Electrostatic Precipitators (ESPs)

Single pass ESP units will be provided for all units with high impact risk. The ESP units are specifically designed for kitchen extract usage and incorporate integral sumps to collect the oil, grease and smoke particles filtered out of the exhaust. The ESPs will operate to separate particles down to 0.01 micron at an operating efficiency of up to 98%.

The manufacturer requires that the ESP units are internally inspected and cleaned at an interval ranging between 1 week and 3 months dependent on the operating conditions. We would propose that the units are initially inspected on a frequent (weekly) basis which can be relaxed to suit the actual operating conditions as they become apparent for each unit.

A schedule for the proposed ESPs is provided in appendix A

5.3.4 Fans

The kitchen extract fans have been selected in accordance with the following general requirements.

- Backward curved centrifugal impellers
- Out-of-airstream motors
- Mounted within acoustically lined box frame
- Frequency inverter speed control

Fan noise (breakout and induct) has been considered in the selection of the fans to ensure that the noise emissions of the systems do not exceed the levels set out in the Hoare Lea Noise Impact Assessment rev1 dated 18 May 2018 which was submitted with the consented planning application.

A schedule for the proposed extract fans is provided in appendix A.

5.3.5 Anti-vibration Mountings

All fixed building services equipment associated with the kitchen extract systems are to be provided with suitable anti-vibration mountings selected in accordance with CIBSE Guide B4.

All fans will be installed with spring type anti-vibration mounts achieving a minimum 25mm static deflection

6 Appendix A – Equipment Details

Please see overleaf details of the following equipment:

- Schedule of Electrostatic Precipitators (ESPs)
- Schedule of Extract Fans
- Typical Anti-vibration Mount for Fans

6.1 Schedule of Electrostatic Precipitators (ESP)

Ref	Tenant	Manufacturer's Reference	Dimensions W/H/D (mm)			Max AirFlow (m^3/s)	Pressure Drop (Pa)	Power Consumption (W)	Electricity Supply	Weight (kg)
ESP 2.02	Thai Express	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.03	Yakibox	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.04	Asando	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.05	Unallocated	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.06	Thai Brothers	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.07	Yolk Breaker	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.16	Wild Flower	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.22	Magic Falafel	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 2.23	Unallocated	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.13	Lord of the Wings	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.14	Grate	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.15	Rico Burrito	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.16	Smoke and Bones	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.17	Ethika	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85
ESP 3.23	Miguel Barklay	PurifiedAir ESP3000EI	900	630	640	1.4	200	30	220/240V 50Hz 1ph	85

6.2 Schedule of Extract Fans

Ref	Tenant	Fan Type	Required Duty		Required SFP (W/l/s)	Manufacture's Reference	Width (mm)	Height (mm)	Depth (mm)	Electrical Supply	Fan Input Power (kW)	Motor Full Load Current (A)	Motor Starting Current (A)
			Flow Rate (m^3/s)	Pressure Drop (Pa)									
EF 2.01	Carib Swede Vegan	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 2.02	Thai Express	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 2.03	Yakibox	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 2.04	Asando	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 2.05	Unallocated	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 2.06	Thai Brothers	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 2.07	Yolk Breaker	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 2.08	Camden Grocer	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 2.09	Pizaa	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 2.10	Unallocated	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 2.11	Ladle	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 2.12	Leggero	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0

Ref	Tenant	Fan Type	Required Duty		Required SFP (W/l/s)	Manufacture's Reference	Width (mm)	Height (mm)	Depth (mm)	Electrical Supply	Fan Input Power (kW)	Motor Full Load Current (A)	Motor Starting Current (A)
			Flow Rate (m^3/s)	Pressure Drop (Pa)									
EF 2.16	Wildflower	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 2.22	Magic Falafel	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 2.23	Unallocated	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 3.13	Lord of the Wings	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 3.14	Grate	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 3.15	Rico Burrito	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 3.16	Smoke and Bones	Centrifugal fan	1.53	550	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.8	3.3	0
EF 3.17	Ethika	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0
EF 3.22	Afta Eats	Centrifugal fan	0.64	300	1	S&P KABT/4/4000/355	550	500	600	400V, 50Hz, 3ph	0.4	1.4	0
EF 3.23	Miguel Barclay	Centrifugal fan	1.40	500	2	S&P KABT/4/9000/500	710	710	750	400V, 50Hz, 3ph	1.6	3.3	0

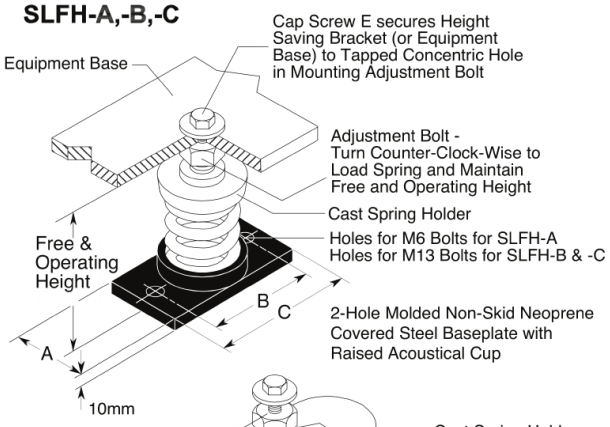
6.3 Typical Anti-Vibration Mount for Fans

MASON INDUSTRIES, Inc.
Manufacturers of Vibration Control Products
350 Rabro Drive, Hauppauge, NY 11788, 631/348-0282, FAX 631/348-0279, Info@Mason-Ind.com
2101 W. Crescent Ave., Suite D, Anaheim, CA 92801, 714/535-2727, FAX 714/535-5738, Info@MasonAnaheim.com
www.Mason-Ind.com

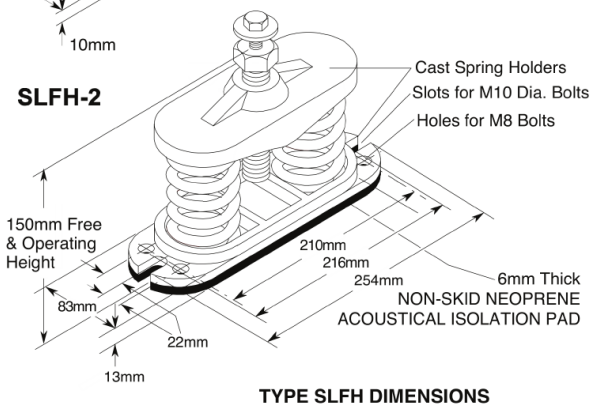
JOB NAME _____
CUSTOMER _____
CUSTOMER P.O. _____
MASON M.I. _____
DWG. NO. _____

TYPE **SLFH**
25mm Deflection A, B, C & 2 Series Mountings

SLFH-A,-B,-C



SLFH-2



TYPE SLFH RATINGS

Size	Rated Capacity (kg)	Rated Defl. (mm)	Mount Constant (kg/mm)	Spring Color/Stripe
SLFH-A-45	20	41	0.5	Blue
SLFH-A-75	34	38	0.9	Orange
SLFH-A-125	57	34	1.7	Brown
SLFH-A-200	91	29	3.1	Black
SLFH-A-310	141	25	5.5	Yellow
SLFH-A-400	181	25	7.1	Green
SLFH-A-510	231	25	9.1	Red
SLFH-A-625	283	25	11.2	White
SLFH-B-65	29	53	0.6	Brown
SLFH-B-85	39	53	0.7	White/Black
SLFH-B-115	52	51	1.0	Silver
SLFH-B-150	68	51	1.3	Orange
SLFH-B-280	127	41	3.1	Green
SLFH-B-450	204	33	6.1	Red
SLFH-B-750	340	28	12.0	White
SLFH-B-1000	454	25	17.9	Blue
SLFH-C-1000	454	25	17.9	Black
SLFH-C-1350	612	25	24.1	Yellow
SLFH-C-1750	794	25	31.3	Black*
SLFH-C-2100	953	25	37.5	Yellow*
SLFH-C-2385	1082	25	42.6	Yellow**
SLFH-C-2650	1202	25	47.3	Red*
SLFH-C-2935	1331	25	52.4	Red**
SLFH-2-2700	1225	25	48.2	Yellow
SLFH-2-3500	1588	25	62.5	Black
SLFH-2-4200	1905	25	75.0	Yellow*
SLFH-2-4770	2164	25	85.2	Yellow**

* with RED core spring ** with GREEN core spring
All springs have additional travel to solid equal to 50% of the Rated Deflection. Solid Spring Height = Free Height minus 1.5 times the Rated Deflection.

TYPE SLFH DIMENSIONS

Size	Free & Oper. Height	A	B	C	Locking Cap Screw
SLFH-A-45-400♦	108	57	76	92	3/8 x 1
SLFH-A-510-625	117	57	76	92	3/8 x 1
SLFH-B	150	70	105	133	1/2 x 1 1/4
SLFH-C	150	76	121	152	1/2 x 1 1/4
SLFH-2	-	-	-	-	1/2 x 1 1/4

SPRING DATA

Spring OD	Free HT	Ratio K_x/K_y	Ratio OD/OH
45	76	0.70-0.90	0.88-1.25
45	79 -86	0.50-0.60	0.74-0.82
60	102	0.70-0.90	0.80-1.25
60	105	0.90-1.00	0.92-0.94
73	105	0.90-1.00	0.92-0.94

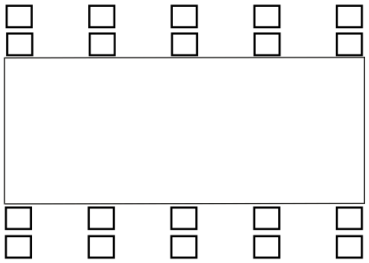
Multiple spring Mounts have C-size springs.
SLFH-2 indicates 2 springs.

♦ If using 45 thru 400 with 510 or 625, Free & Operating Height is 118.

PLAN VIEW OF MOUNT LOCATIONS

_____ **inch SPECIFIED DEFLECTION**

TAG : _____
UNIT : _____



1 :	6 :
2 :	7 :
3 :	8 :
4 :	9 :
5 :	10 :
Material for One Set :	Sets Required

FORM S-201m 09/2010	DWN:	CHKD:	DATE:	DWG. No.

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