



**SUPPORTING INFORMATION**

**ON THE**

**PROPOSED EXTRACTION SYSTEM AND PLANT**

**AT**

**43 THEOBALDS ROAD HOLBORN WC1X 8SP**

## **1.0 PREMISES**

Papa John's (GB) Ltd operate a national network of 400 plus take-away pizza outlets.

Our business is restricted to the preparation and cooking of pizza and "sides" such as chicken wings. All products are designed to be oven-cooked and, consequently, the only cooking equipment employed in a Papa John's outlet is a conveyor oven. The current model being installed in new stores is the gas fired Middleby Marshall PS 740.

## **2.0 PLANS AND DRAWINGS**

In order to assist with your understanding of the relationship between the property and the ventilation system, we refer you to the drawings of the property which form part of the application to which this document is attached. In addition, we draw your attention to the schematic drawing no. PES/04 – Mechanical Extract Scheme D (Carbon Filter system) of the ventilation system in Appendix A. The plans and elevations in the planning application show the proposed positions and layout of equipment as it is proposed to be installed while the schematic drawing of the ventilation system assists your understanding of the system's make up.

## **3.0 SYSTEM DESIGN CRITERIA**

The extraction system is designed to performance criteria set out by the manufacturer of the ovens, Middleby Marshall. The required airflow at the canopy is 2310cfm or 65m<sup>3</sup>/m. This is achieved by selection of an in-line fan with the appropriate duty to meet these criteria on a site specific basis. In order to balance environmental conditions in the kitchen, make-up (also referred to as "supply") air is provided to supply the ovens with combustion air and ventilate the demise while the ovens and extract fans are running. The fresh air is fed from outside and is distributed around the oven by 4no ceiling mounted air supply grilles and provide up to 80% of extract volumes. All systems to comply with DW172 specification .

## **4.0 EXTRACT HOOD**

The extract hood is a stainless steel (grade 304) island canopy with integral stainless steel grease baffle filters.

The dimensions of the hood are dictated by the size of the oven and, in the instance of the PS740, will be a maximum 2.4m x 2m. The size of hood allows for a 300mm overhang to all sides of the oven unit in order to comply with current gas safety regulations.

## **5.0 EXTERNAL DUCTWORK AND GRILLS**

In this scheme, the extraction system is designed to discharge at high level; the definition of which is generally accepted as being 1m above eaves. This includes the reuse of the 200mm dia ductwork to the elevation of the property terminating 1m above eaves level.

Our system also requires make-up air and this will be provided by way of a 600mmx600mm anodised aluminium louvre grill mounted on the elevation of the property.

## 6.0 FILTRATION AND ODOUR ABATEMENT

As mentioned above, the extract hood is fitted with grease baffle filters which are manufactured in stainless steel and are fully washable.

We propose the installation of the following odour control measures:

For **HIGH LEVEL** specification - standard odour control which consists of a 3-stage carbon filtration unit including pre-filter, carbon bag filter and activated carbon filter with dwell time of 0.4 seconds.

Such filtration measures are sufficient to comply with DEFRA guidance on odour control and the “risk” calculation is shown below:

DEFRA Guidance Document Annexe C Calculation – See Appendix E:

Criteria	Description	Score	Detail
Dispersion	Good	5	Discharge 1m above ridge
Proximity of receptor	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
Size of kitchen	Small	1	Less than 30 covers or small take away.
Cooking type	Low	4	Most pubs, Italian, French, Pizza or Steakhouse
<b>Total</b>		<b>15</b>	

## 7.0 FANS

The fans specified for use in the extraction installations are Woods Powerbox (see Appendix C below) together with a 500JM woods axial fan for the supply Air. However, the contractor is permitted to install equal approved units from alternative manufacturers and, as the contractor is responsible for the design of the installation, they are required to meet noise criteria as part of that approval. When installed, all plant is mounted on anti-vibration mountings in order to isolate them from the structure and double flange flexible connectors between the flue and fan equipment to minimise vibration.

It is the contractor's responsibility to make sure the correct volumes required are installed

Our installations are designed to include podded 2D silencers compatible with the fans which reduce the sound break-out levels on both fans by 15db. 2D Silencers must be designed to provide the requested noise output volumes (site specific) but should always remain lower than 40db@ 3mtrs on external risers. Product information for the proposed fans is included in Appendix C.

In this scheme, it is the intention to install all equipment externally, due to restrictions in the internal building envelope

This airflow criteria results in a minimum efflux velocity of 10 meters per second (m/s).

## 8.0 CONDENSING UNIT

A condensing unit is required to operate the internal cold store at the premises. Papa John's use Glendon for their cold store installations, including the operating plant. The unit specified for installation at this store is a Wintsys R404-A (WIN4517Z or WIN4519Z) and the product information is included in Appendix D of this pack.

When installed, the condenser plant is fixed externally on wall mounting bracket incorporating anti-vibration mountings.

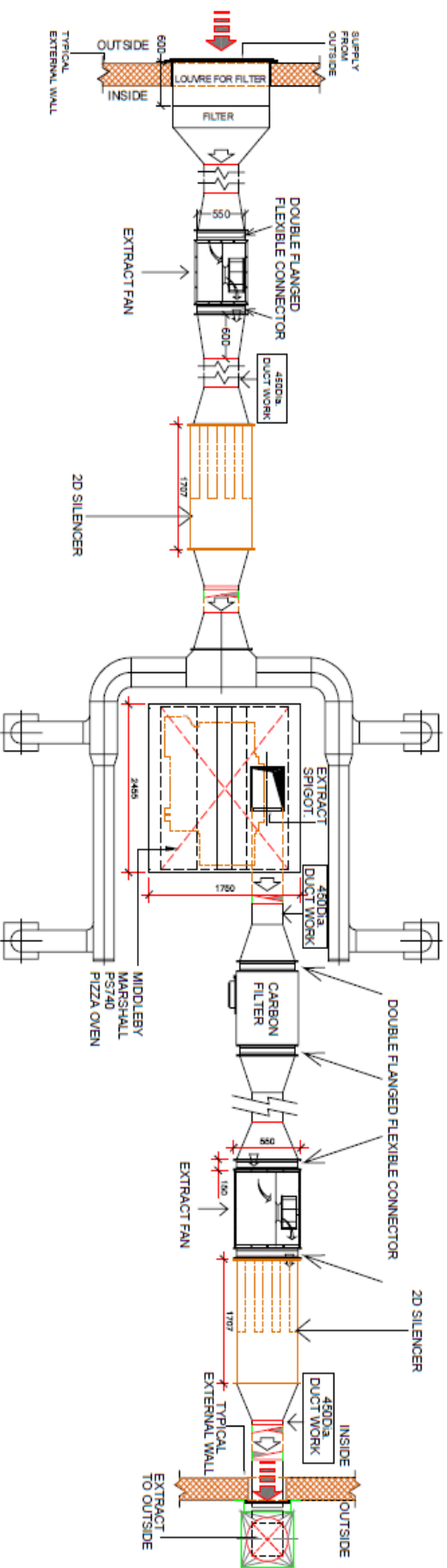
## 9.0 MAINTENANCE

Each completed Papa John's store is provided with a Health and Safety File which is kept on site by the operator. The file, amongst other things, provides details on the operation and maintenance of the ventilation equipment. To summarise, the maintenance requirements are summarise as follows:

- The grease baffle filters are removable and washable. This can be done at any given time by the operator. The minimum recommended cleaning interval is once a week.
- The Carbon filters are changed as per the manufacturer's recommendation and no less than twice a year.
- pre-filters must be changed on a monthly basis to prolong the life span of the carbon filter and fan motor
- The fans are to be serviced bi- annually as recommended by the manufacturers.
- All replacement filters and parts can be purchased direct from Extract Provider company.

## **APPENDIX A - DRAWINGS**

# SCHEME D REVISION D Extract & Supply System (Carbon Filter Method)



**NOTES:**  
 All Schemes With  
 3KW Entrance Door Heater.  
 The Equipment Specified Is Recommended But Alternative  
 Manufacturers Can Be Used.  
 The Selection Of The Fan Will Depend On Each Site  
 (i.e. Length Of Duct Runs Etc)  
 All Supply And Extract Fans To Be Fitted On Anti-Vibration  
 Mountings.

PROJECT	ADDRESS	CLIENT	COMPANY	
MECHANICAL EXTRACTION	VARIOUS SITES			
LIST OF REVISIONS				
REVISION	DATE	DESCRIPTION	ISSUED BY	APPROVED BY
5	01/08/20	STANDARD DRAWING		
DRAWING TITLE				
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## **APPENDIX B – FILTER MEDIA**

## Grease Baffle Filters within Canopy :



Stainless Steel Grease baffle type filters are recommended

For canopies, standard dimension being 495mm x 495mm x 45mm but can differ dependant on canopy depth

Baffle Type Grease Filters are manufactured in Stainless Steel (Mirrored Finish Stainless Steel Grade 430. Housed in a channel framework, with a series of vertical air baffles which are strategically aligned to change the direction of the grease-laden air. This action causes the deposition of the grease quickly, without re-entrainment onto the baffles, whilst the grease-free air passes through the filter.

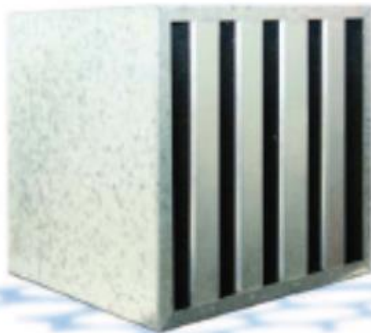


## Active Carbon Filters:



### Carbon Filters for Odour Removal

Activated carbon has for many years been used to reduce airborne odours and contaminants. Its use has expanded considerably improving conditions in line with environmental awareness. Carbon is commonly used to control extract emissions from kitchens, factories and chemical processes, but is equally effective on supply air odours, improving the air quality for the occupants of buildings located in the vicinity of airports, car parks, sewerage works and rubbish tips.



#### ACE Type ACD

ACE Type ACD carbon units are completely disposable, self contained units. They comprise of chemically bonded carbon panels assembled in a "V" formation and permanently sealed within a galvanised steel casing. Grade 207C carbon is used as standard, but special carbon can be provided to suit specific requirements. The filters can be manufactured to any reasonable size to suit existing ductwork or air handling units. Sizes and carbon weights can also be adjusted to suit existing installations or other units on the market. All ACD units are delivered sealed in polythene to prevent the carbon absorbing contaminants from the atmosphere.

#### Activated Carbon Panels

There are many applications for carbon filters where the air volume is such that a single carbon panel will be effective. Carbon panels are manufactured using grade 207C carbon granules which are chemically bonded to form a uniform panel. The panels have a cloth covering which makes them clean to handle and the uniform panel structure ensures an even air resistance across the face. One advantage of this construction when compared to "loose fill" panels, is that there is no possibility of settlement of the carbon which can create air bypass. The panels are usually fitted with an aluminium frame.



**Please Note:** Because the absorption capacity of activated carbon is dependent on a variety of operating conditions, we recommend that you discuss your requirements with our Sales Office who will be delighted to answer your questions and advise you on the use of carbon filters.

**APPENDIX C – FAN SPECIFICATION SHEETS**

## POWERBOX FANS - ESTOC

### FEATURES

- Sizes from 355 to 710 mm diameter
- Air flow up to 5.2 m<sup>3</sup>/s
- Static pressures up to 1130 Pa
- Speed controllable external rotor motors
- Multiple outlet orientations
- All panels interchangeable to offer flexible outlet position

### ELECTRICAL SUPPLY

220-240V/50Hz/1 $\phi$   
380-420V/50Hz/3 $\phi$

### TEMPERATURE RANGE

Maximum temperature from +40°C to +70°C (depending on the model)

### SIZES

355, 400, 450, 500, 560, 630 and 710.

### FEATURES AND CONSTRUCTION

The Estoc casing is made from galvanized sheet steel with PentaPost construction and acoustic insulation made from mineral wool with a thickness of 20 mm.

### IMPELLER

The Estoc has a backward curved centrifugal impellers made of plastic with galvanised steel support plates for those up to 450 mm. Fans with a diameter of 500 mm and larger have high efficiency backward curved centrifugal impellers made of aluminium.

### MOTOR

The impellers together with the external rotor motors are dynamically balanced to quality standard G2,5 DIN ISO 19410

### SPEED CONTROLLERS

Speed is 100% infinitely variable using auto transformers or inverter control (please see pages 219-267).

NB: Performance reduction in straight through configuration. Please refer to performance curve



### PRODUCT CODE

Estoc 50-355-3

- ESTOC - Product Name
  - 50 = Box Size
  - 355 = Spigot Diameter size
  - 1 = 1 $\phi$  or 3 = 3 $\phi$
- l<sub>0</sub>, 50 = 500mm; 67 = 670mm;  
80 = 800mm; 102 = 1020mm

### ACCESSORIES (Pages 143-150) - CONTROLLERS (Pages 219-267)

The range of accessories include dampers, flexible connectors, service doors, outlet covers, guards, side covering and insulating connections. A quick reference guide is shown below.



## PRODUCT AND ELECTRICAL DETAILS



Product Code	Product Number	Speed rpm	Motor Frame	Electrical Supply	Electrical Current			Wiring Diagrams	**Speed Controllers Transformer	Maximum Operating Temp°C	Breakout *Sound Level dB(A) (3m)
					Motor (kW)	Full Load Current (A)	Starting Current (A)				
ESTOC 50-355-1	UB503514	1325	Integral	220-240 V-50 Hz-1 Ph	0.29	1.25	2.5	C03028	TE10 1.5	55	33
ESTOC 67-400-1	UB674414	1360	Integral	220-240 V-50 Hz-1 Ph	0.53	2.4	4.9	C03028	TE10 2.2	45	45
ESTOC 67-450-1	UB674514	1270	Integral	220-240 V-50 Hz-1 Ph	0.76	3.5	7.35	C03028	TE10 3.5	45	41
ESTOC 67-500-1	UB675514	1310	Integral	220-240 V-50 Hz-1 Ph	1.57	7.3	18.79	C03028	TE10 7.5	40	45
ESTOC 50-355-3	8101216	1355	Integral	380-420V-50 Hz-3 Ph	0.3	0.66	2.18	C03030	IDDXF54 2.2	50	37
ESTOC 67-400-3	8101217	1335	Integral	380-420V-50 Hz-3 Ph	0.48	0.9	2.88	C03030	IDDXF54 2.2	50	34
ESTOC 67-450-3	8101218	1240	Integral	380-420V-50 Hz-3 Ph	0.67	1.33	3.46	C03030	IDDXF54 2.2	50	37
ESTOC 67-500-3	8101219	1380	Integral	380-420V-50 Hz-3 Ph	1.8	3.7	17.76	C03030	IDDXF54 3.7	40	44
ESTOC 80-560-3	8101220	1350	Integral	380-420V-50 Hz-3 Ph	2.5	4.8	20.16	C03030	IDDXF54 5.3	40	47
ESTOC 80-630-3	8101221	1380	Integral	380-420V-50 Hz-3 Ph	3.85	6.6	27.72	C03030	IDDXF54 7.2	45	55
ESTOC 102-710-3	8101222	890	Integral	380-420V-50 Hz-3 Ph	2.45	4.7	18.8	C03030	IDDXF54 5.3	45	49

\*Sound power levels are average dBA at 3 metres distance over sphere, under free field conditions and are presented for comparative purposes only. Values shown are those at the mid-point of the performance curve.

\*\* For speed controllers, please see pages 219-267. For ErP efficiency ratings and grades please refer to our Fan Selector for more information.



# Northern Fan Supplies Ltd

## Performance Chart

JM Aerofoil



Project Name : jm single phase pdf

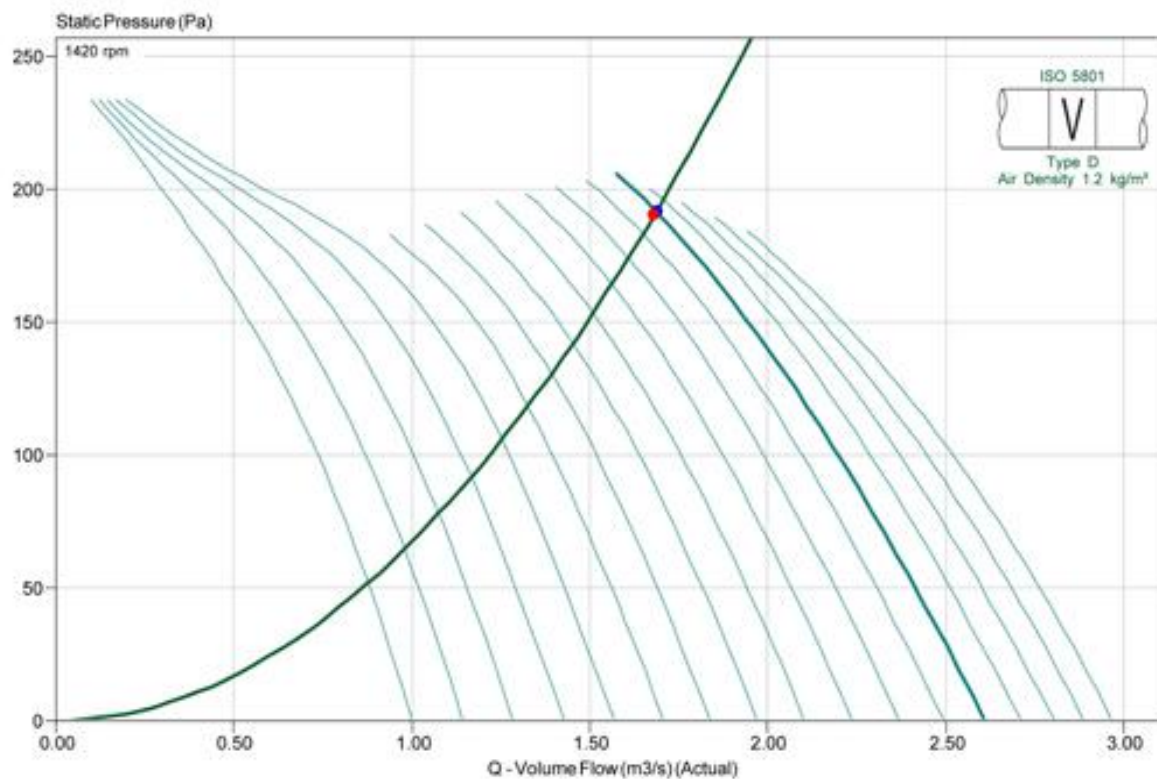
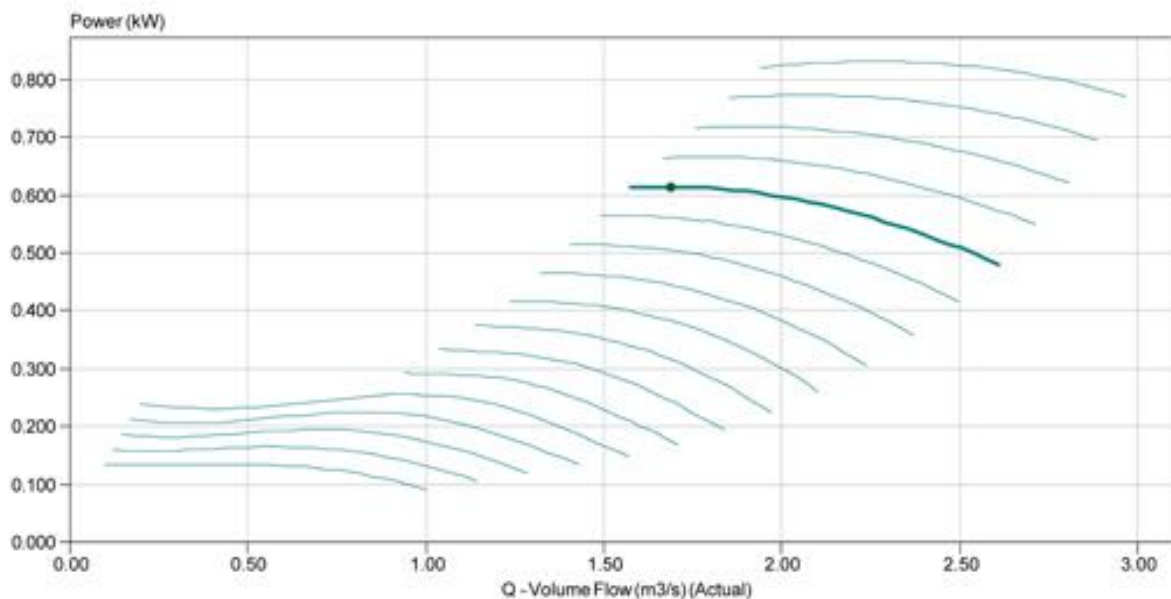
Quotation Number :

Customer : nfs

Date : Saturday, August 20, 2011

Fan Code : 50JM/20/4/6/32

Item Reference :



**APPENDIX D – CONDENSING UNIT SPECIFICATION SHEET**

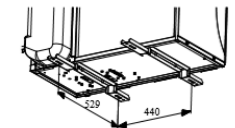
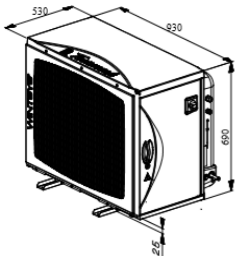
Groupe de condensation / Condensing unit  
 Code tension / Voltage code : FZ

WINAJ4519Z

Froid commercial et industriel positif (HP)  
 Commercial & industrial application (HBP)  
 R404A

220 - 240V / 50 Hz - 1 -  
 N°6377-TT ind b

Conditions	fréquence	Prod frigorifique nominale* / nominal refriger capacity*			Puiss. sonore
Conditions	frequency	Watts	Kcal/h	BTU/h	Sound level
EN13215*	50 Hz	4516	3884	15409	63 dBA



**Poids net / Net weight :** 65 Kg  
**Détente / Expansion device :** à Détendeur  
**Débit d'air / Air flow :** 1260 m<sup>3</sup>/h

**Intensité / Current**  
 nom. / Rated current RLA : 10.2 A  
 max. / Max current : 15.5 A  
 dém. / Start current LRA : 45 A

**Ap. Electrique / Electrical equipment :** CSR

**Fiche technique compresseur / Compressor technical data sheet :** 224ST-FZ

**Ventilateur / Fan motor :**  
 Vitesse / R.P.M. : 830 tr/min  
 Puiss. mécanique / Shaft power : 65 W  
 Diam. hélice / Fan blade dia. : Ø 360 mm  
 Protection / Protection : Protecteur/Overload IP44

**Condenseur / Condenser :** 360/14100

**Réservoir de liquide / Receiver :**  
 Volume / Capacity : 2.35 L  
 PMS / Max. service pressure : 32 Bars

\* EN13215: T° Amb +32°C / T° Evap. +5°C / T° gas aspirés. +20°C / Sous refroidissement. 3K  
 \* EN 13215 : Amb. T° +32°C / Evap. T° +5°C / Return gas T° +20°C / Subcooling. 3K

		Pour conduite Ø ext / For tubing O.D.	
Aspirat* 1 / Suction 1	Tube / Tube	15.9 (5/8")	à Bresser/Brazed
Départ liquide 2 / Liquid line 2	Tube / Tube	9.5 (3/8")	à Bresser/Brazed

Les caractéristiques données dans cette fiche technique peuvent évoluer sans avis préalable, avec les améliorations que "Tecumseh" entend toujours apporter à sa production.  
 \*Tecumseh\*, in a constant endeavour to improve its products reserves the right to change any information contained in this leaflet without prior warning.

WINAJ4519Z	Tension FZ : 220 - 240V 1~ 50 Hz	R404A	N°6377	Ind b
Les performances sont données dans les conditions EN 13215 :				
			Gas aspirés :	20°C
			Sous refroidissement :	3°K
The performance data are in EN 13215 conditions :				
			Return gas :	20°C
			Subcooling :	3°K

50 Hz R404A													
S/F	ambiance	E/E	évaporation	(°C)	-25	-20	-15	-10	-5	0	5	10	15
25	1	P	frigorigé	(W)	1862	2143	2640	3195	3781	4407	5074	5789	6564
	2	P	absorbée	(W)	1196	1323	1483	1662	1759	1896	2063	2239	2423
	3	I	absorbée	(A)	5.88	6.06	6.81	7.22	7.9	8.64	9.44	10.29	11.18
	4	Tc	(°C)	32.3	34.5	38.4	38.5	40.6	42.7	44.3	46.7	48.5	
32	1	P	frigorigé	(W)	1868	2154	2649	3197	3827	4476	5149	5844	
	2	P	absorbée	(W)	1199	1330	1484	1673	1854	2043	2250	2464	
	3	I	absorbée	(A)	6.13	6.77	7.46	8.2	9.01	9.87	10.77	11.71	
	4	Tc	(°C)	40.3	42.2	44.1	46.2	48.2	50.1	51.9	53.5		
43	1	P	frigorigé	(W)	1892	2254	2719	3199	3628	4135	4709		
	2	P	absorbée	(W)	1650	1735	1921	2119	2319	2528	2741		
	3	I	absorbée	(A)	6.97	7.79	8.64	9.58	10.51	11.5	12.51		
	4	Tc	(°C)	51.2	53.1	55	56.8	58.5	60	61.3			

Note : Les caractéristiques données dans cette fiche technique peuvent évoluer sans avis préalable, avec les améliorations que "Tecumseh" entend toujours apporter à sa production.  
 Note : "Tecumseh", in a constant endeavour to improve its products reserves the right to change any information contained in this leaflet without prior warning.

		Pour conduite Ø ext / For tubing O.D.	
Aspirat* 1 / Suction 1	Tube / Tube	15.9 (5/8")	à Bresser/Brazed
Départ liquide 2 / Liquid line 2	Tube / Tube	9.5 (3/8")	à Bresser/Brazed

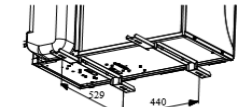
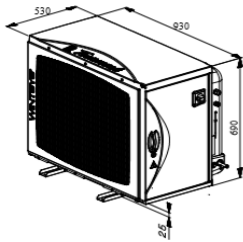
Groupe de condensation / Condensing unit  
 Code tension / Voltage code : FZ

WINAJ4519Z

Froid commercial et industriel positif (HP)  
 Commercial & industrial application (HBP)  
 R404A

220 - 240V / 50 Hz - 1 -  
 N°6377-TT ind b

Conditions	fréquence	Prod frigorifique nominale* / nominal refriger capacity*			Puiss. sonore
Conditions	frequency	Watts	Kcal/h	BTU/h	Sound level
EN13215*	50 Hz	4516	3884	15409	63 dBA



**Poids net / Net weight :** 65 Kg  
**Détente / Expansion device :** à Détendeur  
**Débit d'air / Air flow :** 1260 m<sup>3</sup>/h

**Intensité / Current**  
 nom. / Rated current RLA : 10.2 A  
 max. / Max current : 15.5 A  
 dém. / Start current LRA : 45 A

**Ap. Electrique / Electrical equipment :** CSR

**Fiche technique compresseur / Compressor technical data sheet :** 224ST-FZ

**Ventilateur / Fan motor :**  
 Vitesse / R.P.M. : 830 tr/min  
 Puiss. mécanique / Shaft power : 65 W  
 Diam. hélice / Fan blade dia. : Ø 360 mm  
 Protection / Protection : Protecteur/Overload IP44

**Condenseur / Condenser :** 360/14100

**Réservoir de liquide / Receiver :**  
 Volume / Capacity : 2.35 L  
 PMS / Max. service pressure : 32 Bars

\* EN13215: T° Amb +32°C / T° Evap. +5°C / T° gas aspirés. +20°C / Sous refroidissement. 3K  
 \* EN 13215 : Amb. T° +32°C / Evap. T° +5°C / Return gas T° +20°C / Subcooling. 3K

		Pour conduite Ø ext / For tubing O.D.	
Aspirat* 1 / Suction 1	Tube / Tube	15.9 (5/8")	à Bresser/Brazed
Départ liquide 2 / Liquid line 2	Tube / Tube	9.5 (3/8")	à Bresser/Brazed

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WINAJ4519Z	Tension FZ : 220 - 240V 1~ 50 Hz	R404A	N°6377	Ind b
Les performances sont données dans les conditions EN 13215 :				
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50 Hz R404A													
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	2	P	absorbée	(W)	1199	1330	1484	1673	1854	2043	2250	2464	
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	4	Tc	(°C)	51.2	53.1	55	56.8	58.5	60	61.3			

Note : Les caractéristiques données dans cette fiche technique peuvent évoluer sans avis préalable, avec les améliorations que "Tecumseh" entend toujours apporter à sa production.  
 Note : "Tecumseh", in a constant endeavour to improve its products reserves the right to change any information contained in this leaflet without prior warning.

		Pour conduite Ø ext / For tubing O.D.	
Aspirat* 1 / Suction 1	Tube / Tube	15.9 (5/8")	à Bresser/Brazed
Départ liquide 2 / Liquid line 2	Tube / Tube	9.5 (3/8")	à Bresser/Brazed

Les caractéristiques données dans cette fiche technique peuvent évoluer sans avis préalable, avec les améliorations que "Tecumseh" entend toujours apporter à sa production.  
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## **APPENDIX E – A/C EQUIPMENT**



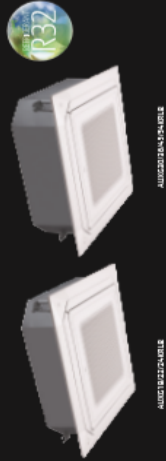


AIR CONDITIONING

New Product Release!  
Split Air Conditioner

# Cassette

**Indoor unit**  
AUXYG1B2Z254/30/36/45/54/60/65/72/78/40/46/54/55/64/81/87B  
**Outdoor unit**  
[Single phase] AOVG1B2Z254/30/36/45/54/60/65/72/78/40/46/54/55/64/81/87B  
[3 phase] AOVG3B6M5/54/81/87A



## High efficiency and unique circular flow design

Cassette type realizes circular flow to deliver a large airflow in 360° direction by mounting high performance DC fan motor, turbo fan and unique seamless airflow louver design.

## Individual louvre control

Each louvre can be set individually by Touch Panel Wired Remote Controller to enjoy the comfort of different directional airflows according to various room layouts.  
\*Touch Panel Wired RC (UTY-RN1VZ2&3) only

Point  
SEER  
A++  
SCOP  
7.00  
4.40  
(10.22 model)  
(12 model)



## Compact and lightweight outdoor unit

Easier range installation by use of compact and lightweight outdoor unit.



## Cassette grille + Controller



ERGONOMY  
With touch panel wired remote controller

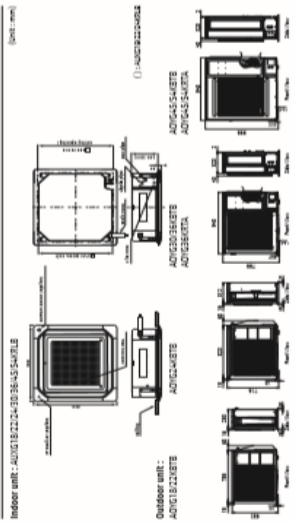
Model:

- AUXYG1B2Z254/30/36/45/54/60/65/72/78/40/46/54/55/64/81/87B
- [Single phase] AOVG1B2Z254/30/36/45/54/60/65/72/78/40/46/54/55/64/81/87B
- [3 phase] AOVG3B6M5/54/81/87A

### Optional parts

- Wired Remote Controller: VTY-A01001, VTY-A01002, VTY-A01003
- Simple Remote Controller: VTY-A01004, VTY-A01005
- IR Remote RC: VTY-A01006, VTY-A01007
- Wired LAN Interface: VTY-A01008, VTY-A01009
- Wired Sensor RC: VTY-A01010, VTY-A01011
- Custom grille: VTY-A01012, VTY-A01013, VTY-A01014, VTY-A01015
- Wide Panel: VTY-A01016, VTY-A01017
- Flush fit indoor unit: VTY-A01018, VTY-A01019
- Insulation kit for high ceiling: VTY-A01020
- External input and output PCB (with lead): VTY-A01021, VTY-A01022
- External control kit: VTY-A01023

### Dimensions



Model No.	Indoor unit		Outdoor unit		Supplyable RSE No.											
	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit		
<b>Power Source</b>	Cooling		Heating		Cooling		Heating		Cooling		Heating		Cooling		Heating	
<b>Cassette</b>	598		598		350		350		350		350		350		350	
<b>UTP/3P/4P/5P/6P/7P/8P/9P/10P/11P/12P/13P/14P/15P/16P/17P/18P/19P/20P/21P/22P/23P/24P/25P/26P/27P/28P/29P/30P/31P/32P/33P/34P/35P/36P/37P/38P/39P/40P/41P/42P/43P/44P/45P/46P/47P/48P/49P/50P/51P/52P/53P/54P/55P/56P/57P/58P/59P/60P/61P/62P/63P/64P/65P/66P/67P/68P/69P/70P/71P/72P/73P/74P/75P/76P/77P/78P/79P/80P/81P/82P/83P/84P/85P/86P/87P/88P/89P/90P/91P/92P/93P/94P/95P/96P/97P/98P/99P/100P/101P/102P/103P/104P/105P/106P/107P/108P/109P/110P/111P/112P/113P/114P/115P/116P/117P/118P/119P/120P/121P/122P/123P/124P/125P/126P/127P/128P/129P/130P/131P/132P/133P/134P/135P/136P/137P/138P/139P/140P/141P/142P/143P/144P/145P/146P/147P/148P/149P/150P/151P/152P/153P/154P/155P/156P/157P/158P/159P/160P/161P/162P/163P/164P/165P/166P/167P/168P/169P/170P/171P/172P/173P/174P/175P/176P/177P/178P/179P/180P/181P/182P/183P/184P/185P/186P/187P/188P/189P/190P/191P/192P/193P/194P/195P/196P/197P/198P/199P/200P/201P/202P/203P/204P/205P/206P/207P/208P/209P/210P/211P/212P/213P/214P/215P/216P/217P/218P/219P/220P/221P/222P/223P/224P/225P/226P/227P/228P/229P/230P/231P/232P/233P/234P/235P/236P/237P/238P/239P/240P/241P/242P/243P/244P/245P/246P/247P/248P/249P/250P/251P/252P/253P/254P/255P/256P/257P/258P/259P/260P/261P/262P/263P/264P/265P/266P/267P/268P/269P/270P/271P/272P/273P/274P/275P/276P/277P/278P/279P/280P/281P/282P/283P/284P/285P/286P/287P/288P/289P/290P/291P/292P/293P/294P/295P/296P/297P/298P/299P/300P/301P/302P/303P/304P/305P/306P/307P/308P/309P/310P/311P/312P/313P/314P/315P/316P/317P/318P/319P/320P/321P/322P/323P/324P/325P/326P/327P/328P/329P/330P/331P/332P/333P/334P/335P/336P/337P/338P/339P/340P/341P/342P/343P/344P/345P/346P/347P/348P/349P/350P/351P/352P/353P/354P/355P/356P/357P/358P/359P/360P/361P/362P/363P/364P/365P/366P/367P/368P/369P/370P/371P/372P/373P/374P/375P/376P/377P/378P/379P/380P/381P/382P/383P/384P/385P/386P/387P/388P/389P/390P/391P/392P/393P/394P/395P/396P/397P/398P/399P/400P/401P/402P/403P/404P/405P/406P/407P/408P/409P/410P/411P/412P/413P/414P/415P/416P/417P/418P/419P/420P/421P/422P/423P/424P/425P/426P/427P/428P/429P/430P/431P/432P/433P/434P/435P/436P/437P/438P/439P/440P/441P/442P/443P/444P/445P/446P/447P/448P/449P/450P/451P/452P/453P/454P/455P/456P/457P/458P/459P/460P/461P/462P/463P/464P/465P/466P/467P/468P/469P/470P/471P/472P/473P/474P/475P/476P/477P/478P/479P/480P/481P/482P/483P/484P/485P/486P/487P/488P/489P/490P/491P/492P/493P/494P/495P/496P/497P/498P/499P/500P/501P/502P/503P/504P/505P/506P/507P/508P/509P/510P/511P/512P/513P/514P/515P/516P/517P/518P/519P/520P/521P/522P/523P/524P/525P/526P/527P/528P/529P/530P/531P/532P/533P/534P/535P/536P/537P/538P/539P/540P/541P/542P/543P/544P/545P/546P/547P/548P/549P/550P/551P/552P/553P/554P/555P/556P/557P/558P/559P/560P/561P/562P/563P/564P/565P/566P/567P/568P/569P/570P/571P/572P/573P/574P/575P/576P/577P/578P/579P/580P/581P/582P/583P/584P/585P/586P/587P/588P/589P/590P/591P/592P/593P/594P/595P/596P/597P/598P/599P/600P/601P/602P/603P/604P/605P/606P/607P/608P/609P/610P/611P/612P/613P/614P/615P/616P/617P/618P/619P/620P/621P/622P/623P/624P/625P/626P/627P/628P/629P/630P/631P/632P/633P/634P/635P/636P/637P/638P/639P/640P/641P/642P/643P/644P/645P/646P/647P/648P/649P/650P/651P/652P/653P/654P/655P/656P/657P/658P/659P/660P/661P/662P/663P/664P/665P/666P/667P/668P/669P/670P/671P/672P/673P/674P/675P/676P/677P/678P/679P/680P/681P/682P/683P/684P/685P/686P/687P/688P/689P/690P/691P/692P/693P/694P/695P/696P/697P/698P/699P/700P/701P/702P/703P/704P/705P/706P/707P/708P/709P/710P/711P/712P/713P/714P/715P/716P/717P/718P/719P/720P/721P/722P/723P/724P/725P/726P/727P/728P/729P/730P/731P/732P/733P/734P/735P/736P/737P/738P/739P/740P/741P/742P/743P/744P/745P/746P/747P/748P/749P/750P/751P/752P/753P/754P/755P/756P/757P/758P/759P/760P/761P/762P/763P/764P/765P/766P/767P/768P/769P/770P/771P/772P/773P/774P/775P/776P/777P/778P/779P/780P/781P/782P/783P/784P/785P/786P/787P/788P/789P/790P/791P/792P/793P/794P/795P/796P/797P/798P/799P/800P/801P/802P/803P/804P/805P/806P/807P/808P/809P/810P/811P/812P/813P/814P/815P/816P/817P/818P/819P/820P/821P/822P/823P/824P/825P/826P/827P/828P/829P/830P/831P/832P/833P/834P/835P/836P/837P/838P/839P/840P/841P/842P/843P/844P/845P/846P/847P/848P/849P/850P/851P/852P/853P/854P/855P/856P/857P/858P/859P/860P/861P/862P/863P/864P/865P/866P/867P/868P/869P/870P/871P/872P/873P/874P/875P/876P/877P/878P/879P/880P/881P/882P/883P/884P/885P/886P/887P/888P/889P/890P/891P/892P/893P/894P/895P/896P/897P/898P/899P/900P/901P/902P/903P/904P/905P/906P/907P/908P/909P/910P/911P/912P/913P/914P/915P/916P/917P/918P/919P/920P/921P/922P/923P/924P/925P/926P/927P/928P/929P/930P/931P/932P/933P/934P/935P/936P/937P/938P/939P/940P/941P/942P/943P/944P/945P/946P/947P/948P/949P/950P/951P/952P/953P/954P/955P/956P/957P/958P/959P/960P/961P/962P/963P/964P/965P/966P/967P/968P/969P/970P/971P/972P/973P/974P/975P/976P/977P/978P/979P/980P/981P/982P/983P/984P/985P/986P/987P/988P/989P/990P/991P/992P/993P/994P/995P/996P/997P/998P/999P/1000P</b>																

\* Specifications and design are subject to change without notice for further improvement.  
\* Actual product colors may be different from the photos shown in this printed material.  
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FUJITSU GENERAL AIR CONDITIONING (UK)

Unit: 150 Generalist Park, Generalist Avenue, Exeter, Hants, W05 35G  
www.fujitsu-general.com  
Tel: +44 (0) 208 731 3450 Fax: +44 (0) 208 731 3451

**APPENDIX F – DEFRA GUIDANCE DOCUMENT ANNEXE C**

## Appendix 3: Risk Assessment for Odour

Odour control must be designed to prevent odour nuisance in a given situation. The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach. The odour control requirements considered here are consistent with the performance requirements listed in this report.

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

\* based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type:

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s.
	Moderate	10	Discharging 1m above eaves at 10 -15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge <sup>1</sup> .
Size of kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away <sup>1</sup> .
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips. <i>Turkish, Middle Eastern or any premises cooking with solid fuel</i>
	High	7	<i>Vietnamese, Thai, Indian, Japanese, Chinese, steakhouse</i>
	Medium	4	<i>Cantonese, Italian, French, Pizza (gas fired),</i>
	Low	1	<i>Most pubs (no fried food, mainly reheating and sandwiches etc), Tea rooms<sup>1</sup></i>

**Note 1: A planner may take a pragmatic view when assessing whether certain low risk kitchens require any odour abatement to be fitted. In reaching this decision the Planner may consider the nature of the food being cooked and/or the size of kitchen and/or its location.**