

SUPPORTING INFORMATION
ON THE
PROPOSED EXTRACTION SYSTEM AND PLANT
AT
36 High Street, Haverhill

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. PJES/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 65m³/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 low level. This includes the installation of a 600 x 600mm anodised aluminium louvre grille on the rear elevation.

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 **LOW LEVEL** discharge - in-line 'active' 2 stage carbon filtration system as attached (refer to Appendix B) . The filtration system comprises a primary (or pre) filter and the main (or secondary) filter with a maximum dwell time of 0.2 seconds

DEFRA Guidance Document Annexe C Calculation – See Appendix E:

Criteria	Description	Score	Detail
Dispersion	Very Poor	20	Low level discharge
Proximity of receptor	Close	10	Closest sensory receptor less than 20m 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
Total		35	

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 internally and the acoustic properties of the building envelope means the fans will be further insulated from noise breakout to neighbouring properties.

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. Using the information in Appendix D, The example below is the calculation used to determine the db level which for the condensers used above give us 30db over 10m

To calculate the pressure level in free field, you can use this calculation :

$L_p = L_w - 11$ (At one meter)

$L_p = L_w - 31$ (At 10meters)

L_p : level pressure and L_w : Sound level

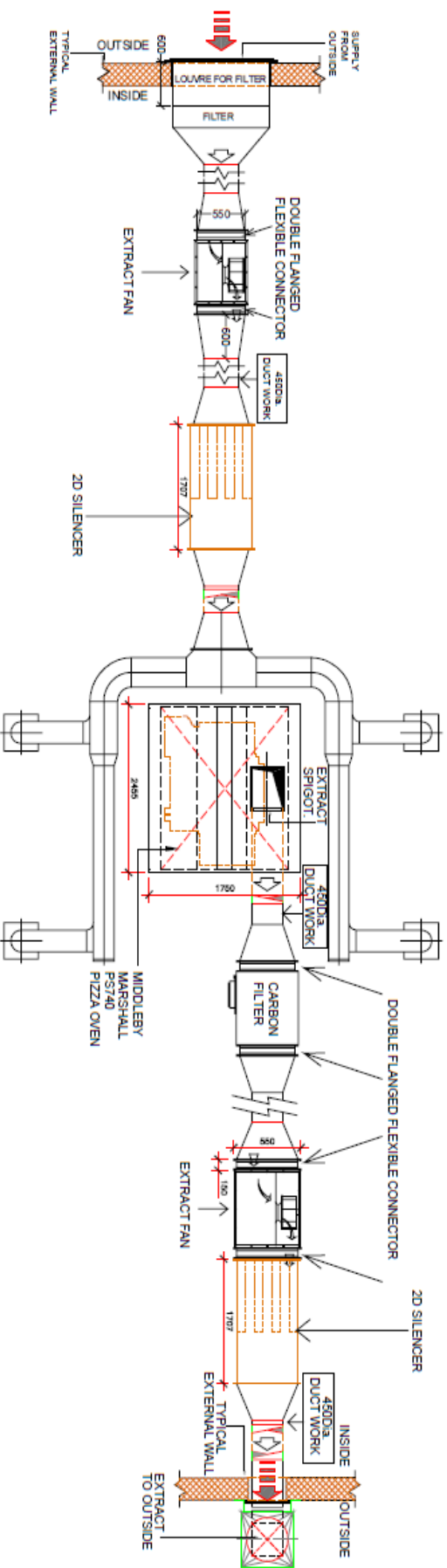
9.0 MAINTENANCE

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	DRAWING NUMBER	REVISION DATE
5	01/08/20			
DRAWING TITLE				
SCHEME D				
DRAWN BY	JC	DATE	04/08/2020	SCALE
CHECKED BY	PJM	DATE	04/08/2020	SCALE
NTS				
PJM/04				
Rev D				

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

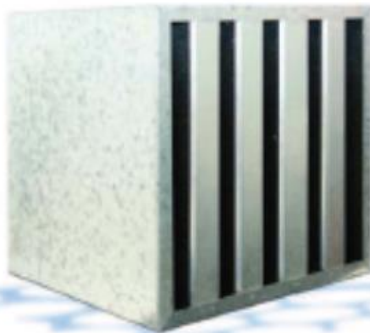
Baffle Type Grease Filters are manufactured in Stainless Steel (Mirrored Finish Stainless Steel Grade 430. Housed in a channel framework, with a series of vertical air baffles which are strategically aligned to change the direction of the grease-laden air. This action causes the deposition of the grease 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.

External Louvre Grills:

60mm Weather Louvres

Description

For intake or extract air, the 45° blades are fixed at 60mm centres and have excellent integral rain defence features. Suitable for external mounting and is economically priced.

Construction

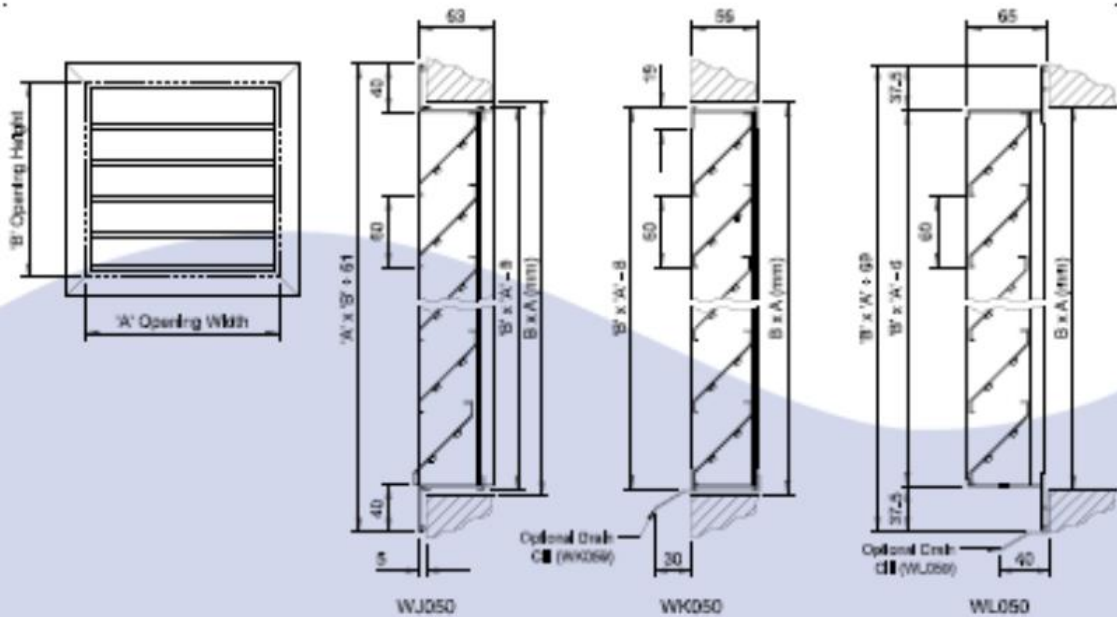
From extruded aluminium sections, frame and blades 1.6mm thick. Hairline mitre mechanically held, fitted as standard with rear galvanised steel bird mesh screen.

Size and Weight

From 300 x 300 up to 2500 x 1800. Coanodised rear mullions when width exceeds 1200mm. Weight approximately 12kg/m². Free area 48%.

Product Specification

State Quantity, the product coding and the size Width x Height e.g. 10 Qty WJ050+0C 1500 x 1000.



Frame Style	Panel Options	Mesh Options	Accessories
WJ 40mm Flange	0 Single Panel	5 Bird Mesh	0 None
WK Recessed Frame		7 Insect Mesh	9 Drain CII
WL Reversed Angle Frame		0 None	

+

Fixings	Finish
0 None	D Mill Finish
1 Flange Holes	C PPC BS / RAL Colour
4 Rear Fixing Lug	

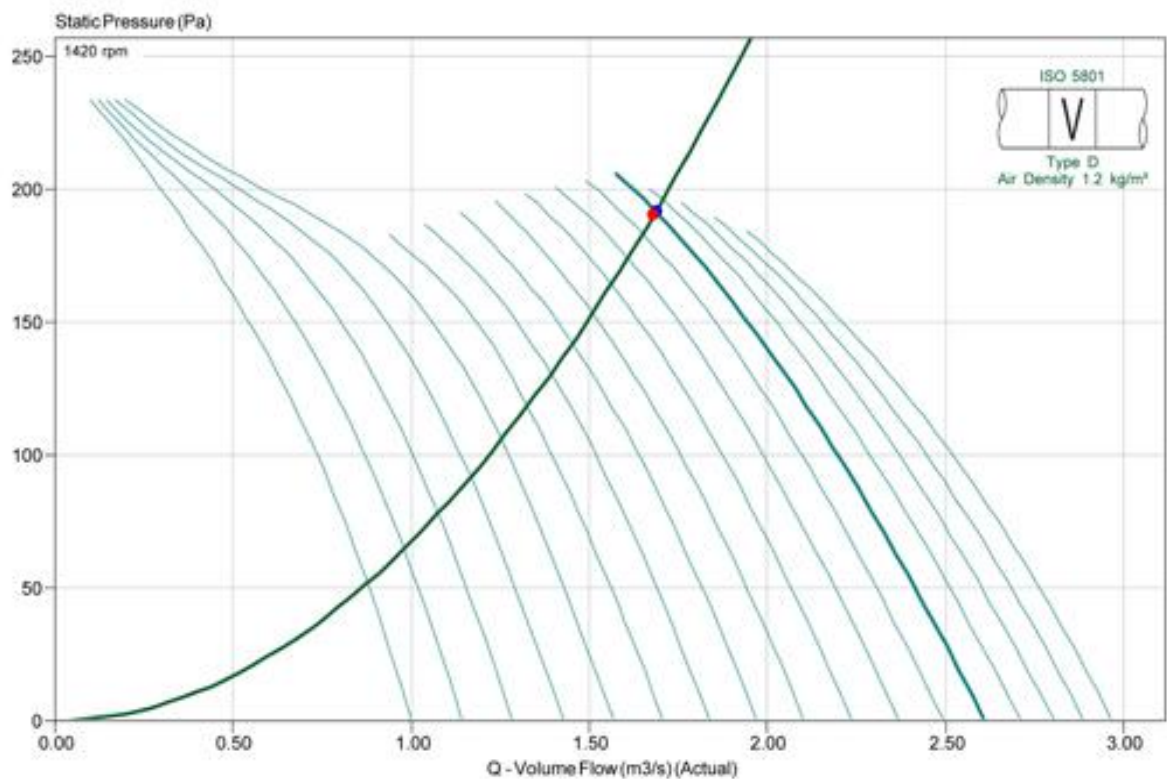
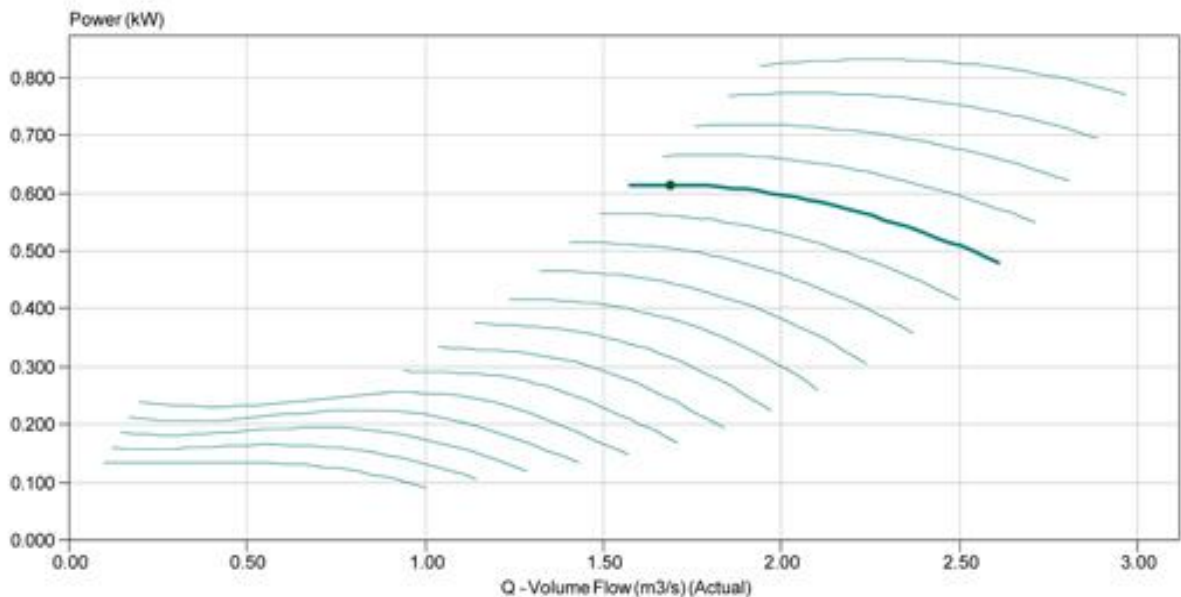
APPENDIX C – FAN SPECIFICATION SHEETS

Northern Fan Supplies Ltd
Performance Chart
JM Aerofoil

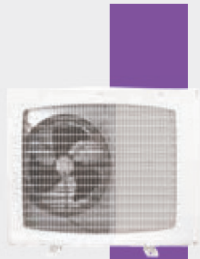


Project Name : jm single phase pdf
Quotation Number :
Customer : nfs

Date : Saturday, August 20, 2011
Fan Code : 50JM/20/4/6/32
Item Reference :



APPENDIX D – CONDENSING UNIT SPECIFICATION SHEET



Wintsys®

MHBP

R452A

MODEL NUMBER	REFRIGERATION OUTPUT 32° amb., 10K superheating, 3K subcooling, Mid/Mid							REFRIG. OUTPUT EN13215 Evap. T -10°C		Acc. P db(A) @10m	Air flow m3/h	Liq. Rec. Vol.	Diam. for tubing O. D.		Net/ Gross weight kg	No. Dim	Maximum current according to voltage code	
	Evaporation temperature (°C):							Perf. (W)	COP (W/W)				Suc.	Liqu. Line			FZ	TZ
	-25°	-15°	-10°	-5°	0°	5°	15°											
WINAE4450Z	368	638	805	1004	1237	1506	2167	820	1.78	27	1650	0.75	3/8"	1/4"	53/71	S	5.6	na
WINAE4460Z	470	771	957	1178	1436	1795	2470	981	1.84	28	1650	0.75	3/8"	1/4"	53/71	S	6.4	na
WINAE4470Z	474	833	1056	1324	1641	2019	3067	1081	1.86	29	1650	0.75	3/8"	1/4"	53/71	S	7.6	na
WINAJ9480Z	607	1027	1286	1590	1943	2348	3329	1316	1.90	30	1650	1.50	1/2"	3/8"	62/80	S	7.3	3.7
WINAJ9510Z	758	1263	1571	1934	2352	2839	3988	1614	1.93	30	1650	1.50	5/8"	3/8"	63/81	S	8.9	4.1
WINAJ9513Z	914	1568	1968	2432	2933	3566	5005	2021	2.08	30	1650	1.50	5/8"	3/8"	65/83	S	11.8	4.9
WINAJ4517Z	1008	1689	2094	2562	3097	3711	5216	2171	1.96	30	1650	2.35	5/8"	3/8"	65/83	S	13.2	4.7
WINAJ4519Z	1130	2099	2596	3171	3828	4587	6519	2708	1.72	32	1650	2.35	5/8"	3/8"	65/83	S	15.5	6.7
WINFH4524Z	1219	2439	3122	3911	4807	5821	8236	3213	1.83	39	2750	2.35	5/8"	1/2"	79/100	M	20.3	8.4
WINFH4531Z	1797	3150	3947	4868	5922	7129	10089	4092	1.90	41	2750	3.90	7/8"	1/2"	83/104	M	23.1	9.7
WINAW4538Z	2174	3851	4814	5877	7027	8267	11132	5008	2.98*	47	2750	3.90	7/8"	1/2"	79/100	M	27.0*	9.7*

Statement of the seasonal COP / na: not applicable / ^a voltage code XC, ^b voltage code XG, ^c voltage code YZ, ^d voltage code MZ



Wintsys®

MHBP

R404A

MODEL NUMBER	REFRIGERATION OUTPUT 32° amb., 10K superheating, 3K subcooling							REFRIG. OUTPUT EN13215 Evap. T -10°C		Acc. P db(A) @10m	Air flow m3/h	Liq. Rec. Vol.	Diam. for tubing O. D.		Net/ Gross weight kg	No. Dim	Maximum current according to voltage code	
	Evaporation temperature (°C):							Perf. (W)	COP (W/W)				Suc.	Liqu. Line			FZ	TZ
	-25°	-15°	-10°	-5°	0°	5°	15°											
WINAE4450Z	370	627	790	980	1199	1450	2065	870	1.81	27	1650	0.75	3/8"	1/4"	53/70	S	5.6	na
WINAE4460Z	476	762	942	1152	1394	1673	2354	1039	1.87	28	1650	0.75	3/8"	1/4"	53/70	S	6.4	na
WINAE4470Z	547	888	1096	1334	1605	1912	2648	1209	1.87	29	1650	0.75	3/8"	1/4"	53/70	S	7.6	na
WINAJ9480Z	614	1014	1266	1556	1888	2265	3172	1396	1.92	30	1650	2.35	1/2"	3/8"	62/79	S	7.3	3.7
WINAJ9510Z	768	1248	1549	1894	2286	2730	3793	1710	1.95	30	1650	2.35	5/8"	3/8"	63/80	S	8.9	4.1
WINAJ9513Z	924	1548	1938	2382	2881	3440	4759	2143	2.10	30	1650	2.35	5/8"	3/8"	65/82	S	11.8	4.9
WINAJ4517Z	1016	1671	2066	2512	3012	3575	4941	2296	1.97	30	1650	2.35	5/8"	3/8"	65/82	S	13.2	4.7
WINAJ4519Z	1223	2068	2562	3108	3719	4408	6141	2860	1.73	32	1650	2.35	5/8"	3/8"	65/82	S	15.5	6.7
WINFH4524Z	1316	2397	3064	3817	4658	5593	7793	3405	1.84	39	2750	3.90	5/8"	1/2"	79/100	M	20.3	8.4
WINFH4531Z	1809	3112	3892	4767	5747	6847	9517	4333	1.91	41	2750	3.90	7/8"	1/2"	83/104	M	23.1	9.7
WINAW4538Z	2203	3774	4704	5724	6828	8007	10621	5239	2.97*	47	2970	3.90	7/8"	1/2"	79/100	M	27.0*	9.7*

Statement of the seasonal COP / na: not applicable / ^a voltage code XC, ^b voltage code XG, ^c voltage code YZ, ^d voltage code MZ

For information, the cooling capacity of fluids R449A and R448A: at the evaporation point To = -30°C, SH10K, apply the multiplier ratio 0.94 to the cooling capacities read with R404A.



Tecumseh

Condensing unit
Voltage Code : FZ

WINAJ4517Z-FZ

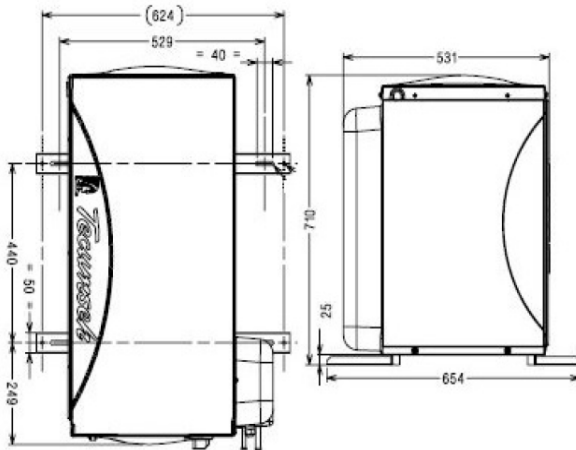
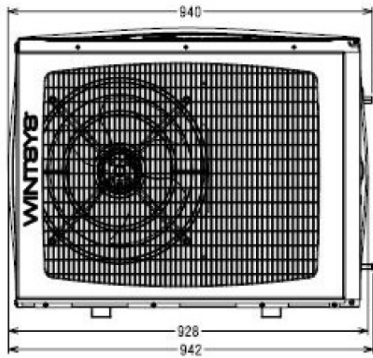
High Temp. Commercial (HP)

220 - 240V 1~ 50 Hz

R452A / R404A / R448A / R449A

WINAJ4517Z-FZ

Conditions	Frequency	Nominal Cooling Capacity		Sound Power ISO3745 / ISO 3743-1
		Watts	BTU/h	
EN13215 / R452A	50 Hz	2190	7470	61 dBA
EN13215 / R404A	50 Hz	2296	7830	61 dBA
EN13215 / R448A	50 Hz	2003	6831	61 dBA
EN13215 / R449A	50 Hz	2004	6835	61 dBA



* EN13215 : T°Ambient 32.0°C / T°Evap. -10.0°C / T°Return gas temp.. 20.0°C
T°Subcooling. 3.0K

Net Weight (Kg)	65.0
Expansion device	Expansion_Valve
Air Flow (m³/h)	1650
Compo Data Sheet	224LT-FZ
Elec Comp Type	CSR
Current (Amp)	
Load Rated Amp	7.6
Max Cont Current	13.2
Lock Rotor Amp	39
Fan	
Speed (rpm)	546
Power (W)	65.0
Diameter (mm)	360
Protection	Overload
IP Level	IP44
Condenser	360/14100
Liquid Receiver	
Capacity (L)	2.35
Maximum Pressure (Bars)	32.0
Suction Line	
Suction Type	Tube / Tube
For Tubing Out Diam	15.9 (5/8")
Suction Connection Type	Brased
Liquid Line	
Liquid Line Type	Tube
For Tubing Out Diam	9.5 (3/8")
Liquid Connecton Type	Brased
Connection Type	TT
Fan Guard	maille < à 8mm

Note : Tecumseh reserves the right to change information contained in this document without notification.



Tecumseh

Condensing unit
Voltage Code : FZ

WINAJ4519Z-FZ

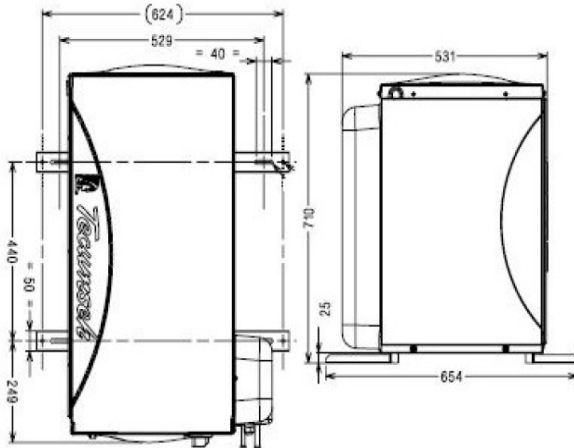
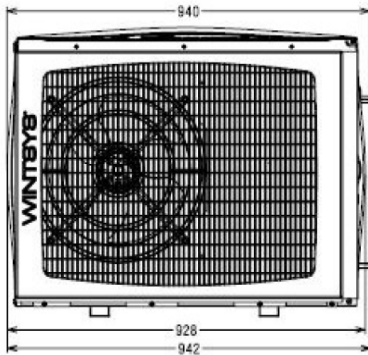
High Temp. Commercial (HP)

220 - 240V 1~ 50 Hz

R452A / R404A / R448A / R449A

WINAJ4519Z-FZ

Conditions	Frequency	Nominal Cooling Capacity		Sound Power ISO3745 / ISO 3743-1
		Watts	BTU/h	
EN13215 / R452A	50 Hz	2729	9306	63 dBA
EN13215 / R404A	50 Hz	2860	9754	63 dBA
EN13215 / R448A	50 Hz	2501	8528	63 dBA
EN13215 / R449A	50 Hz	2502	8532	63 dBA



* EN13215 : T°Ambient 32.0°C / T°Evap. -10.0°C / T°Return gas temp.. 20.0°C
T°Subcooling. 3.0K

Net Weight (Kg)	65.0
Expansion device	Expansion_Valve
Air Flow (m³/h)	1650
Compo Data Sheet	224ST-FZ
Elec Comp Type	CSR
Current (Amp)	
Load Rated Amp	10.2
Max Cont Current	15.5
Lock Rotor Amp	45
Fan	
Speed (rpm)	546
Power (W)	65.0
Diameter (mm)	360
Protection	Overload
IP Level	IP44
Condenser	360/14100
Liquid Receiver	
Capacity (L)	2.35
Maximum Pressure (Bars)	32.0
Suction Line	
Suction Type	Tube / Tube
For Tubing Out Diam	15.9 (5/8")
Suction Connection Type	Brased
Liquid Line	
Liquid Line Type	Tube
For Tubing Out Diam	9.5 (3/8")
Liquid Connecton Type	Brased
Connection Type	TT
Fan Guard	maille < à 8mm

Note : Tecumseh reserves the right to change information contained in this document without notification.

APPENDIX E – 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 ¹ .
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 ¹ .
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	Vietnamese, Thai, Indian, <i>Japanese, Chinese, steakhouse</i>
	Medium	4	Cantonese, <i>Italian, French, Pizza (gas fired),</i>
	Low	1	Most pubs (<i>no fried food, mainly reheating and sandwiches etc</i>), <i>Tea rooms¹</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.