

KWF –Water Wash Canopy with Supply Air



Photographer: Matti Lehto

SAME EXHAUST RATES, DIFFERENT RESULTS

The KWF is a highly effective kitchen ventilation canopy for the removal of contaminated air and excess heat given off from the cooking equipment.

The KWF has the added benefit of automated wash down of the grease filters, while still in the canopy. The washing cycle is fully automatic and programmable to suit different working conditions but can be manually overridden where required.

- Automatic cleaning of the KSA filters and exhaust plenum.
- Minimum maintenance and a reduction in the amount of required personnel time to clean the filters.
- High levels of hygiene are maintained.
- Protection against the build up of grease deposit which can constitute a serious fire hazard.
- Halton's Capture Jet™ technology, reduces the exhaust air flow volume required and increases the capture and containment efficiency of the canopy, while reducing energy use.
- Draft free air distribution directly into the working zone from the front face, low velocity supply diffuser.
- High efficiency grease filtration using Halton's KSA 'Multi-cyclone' filters – up to 95% removal of particles at a size of 8 microns or above - *UL and **NSF classified.
- Supplied as standard with lighting, balancing dampers on both supply and exhaust air connections and T.A.B.™ testing and balancing taps which allow accurate and simple balancing and commissioning of the canopy airflows from the underside of the canopy.
- Stainless steel, welded construction (AISI 304).

QUICK DATA

KWF-1

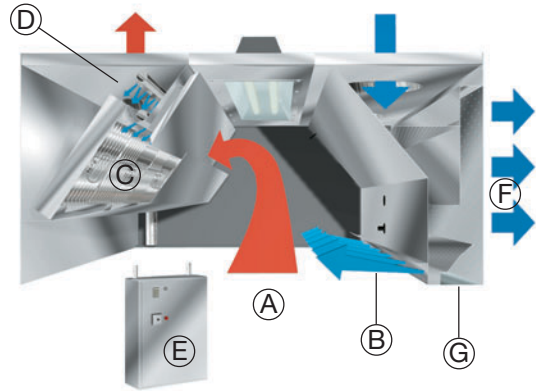
L	Recommended Exhaust air volumes		Recommended Supply air volumes H= 555 mm
	l/s	m³/h	
1500	140...300	504...1080	100...200 l/s / meter length or 360...720 m³/h / meter length LpA < 50 dB(A)
2000	310...580	1116...2088	
2500	420...770	1512...2772	
3000	420...770	1512...2772	

Exhaust air volumes indicated above are for a recommended pressure loss of KSA filter between 35...120 Pa

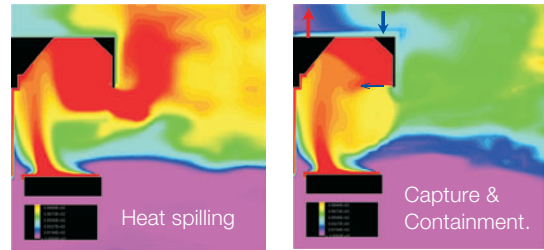
* UL = Underwriters Laboratories (UL is an independent organization founded by the insurance industry in the U.S.A, giving approvals to safety tested products).
 ** NSF = National Sanitation Foundation (promoting hygiene and sanitation in the U.S.A)

FUNCTION

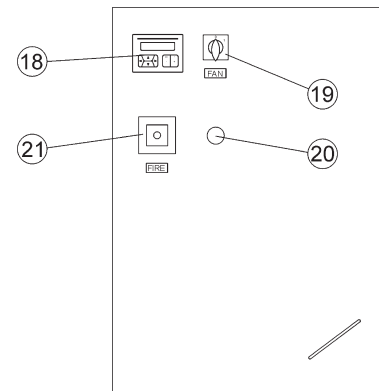
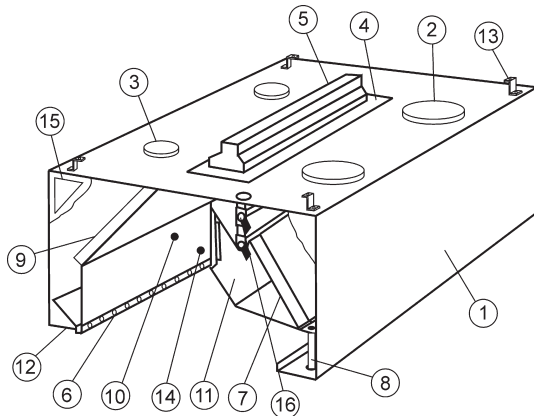
The canopy positioned above the cooking equipment collects the warm air and contaminants (A). The capture jets (B) direct the air towards the KSA grease filters (C) where the impurities and grease particles are separated from the exhaust air using the cyclone separation principle. The water and detergent mixture (D) is sprayed onto the filters during the washing cycle to help remove the contaminants. The dirty waste from the washing cycle is removed from the canopy via the drain connection. Mixing of the water and detergent before application is within a separate wall mounted control cabinet (E). Make up air is distributed at low velocity into the space through the front face of the canopy (F). Individual supply nozzles (G) can be adjusted to produce increased velocities in the working zone.



Computational Fluid Dynamics: CFD



CONSTRUCTION



- 1 Outer casing in stainless steel AISI 304
- 2 Exhaust air connection and damper plate
- 3 Supply air connection and damper plate
- 4 Installation hatch
- 5 Light fixture
- 6 Capture air nozzles
- 7 KSA grease filter
- 8 Drain connection
- 9 Thermal insulation
- 10 Adjustment wires for capture air
- 11 Washing module
- 12 Personal supply air nozzle
- 13 Hanging brackets
- 14 Adjustment of supply airflow pattern
- 15 General supply (GS) - optional
- 16 Spray nozzles

Control unit meets EMC standards
 Manufacture in stainless steel AISI 304.
 Pipe lines in cabinet copper / S. Steel.

- 18 Keyboard and screen as operator panel
- 19 Fan switch
- 20 Emergency switch
- 21 Fire switch – option

DIMENSIONS

Length	1000...3000
Width	1000...1700 2000...3400 for Island model-Two sections
Height	555

Contact your local Halton office or representative for special requirements.

ACCESSORIES - Refer to ACCESSORIES section

- General supply (GS)
- Cover Boards – where canopies are below ceiling level
- Infill Panels
- KSA grease filters
- Blind Filter in stainless steel
- Integrated light fixture - IP65 (high T°)
- Non-standard spigots sizes and position
- Exhaust / supply roof in stainless steel
- Booster pump when water pressure < 4 bars
- Shut off damper – actuator – fusible link
- Control cabinet – Manual version



DIMENSIONS (mm)

KWF – 1- Wall model

L	1000.....3000
B	1000.....1700
H	555
D1	250
D2	315
G	220
C	180

Note: dimensions above are for modular section only; larger canopies are assembled using a combination of separate modules, which makes transportation and site handling easier.

Light

A	115
P	190
F	190
E	390(B≤1100), 490(B>1100)
I	680 (L<1400, 2x18w), 1285 (L≥1400, 2x36w)

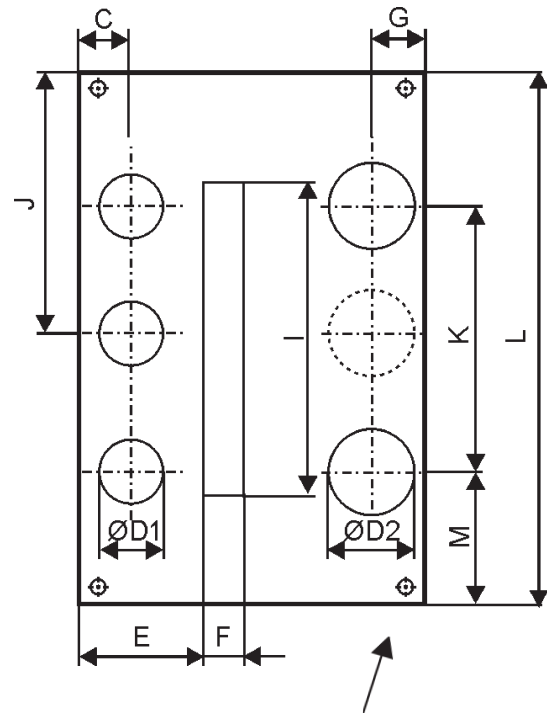
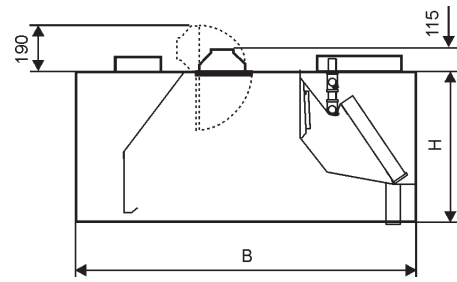
Location of Connections (mm)

For typical sizes

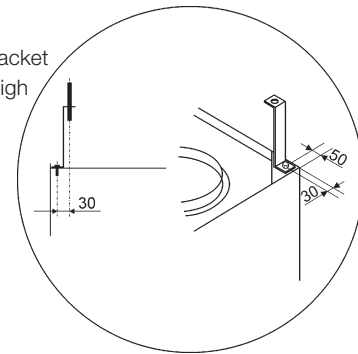
		Exhaust		Supply		
		2x315	1x315	2x250	3x250	3x250
L	M	K	J	K	J	K
1500	375	750	L/2	750	-	-
2000	500	1000	L/2	1000	L/2	1500
2500	500	1500	L/2	1500	L/2	1500
3000	500	2000	L/2	2000	L/2	2000

Weights (Kg)

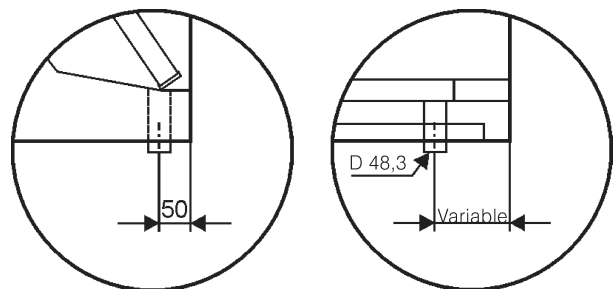
555 mm				
L/B	1100	1300	1500	1700
1500	96	101	106	111
2000	119	124	129	135
2500	141	148	154	161
3000	162	171	181	189



Mounting bracket
150 mm high



Position of Drain connection



DIMENSIONS (mm)

KWF- 2

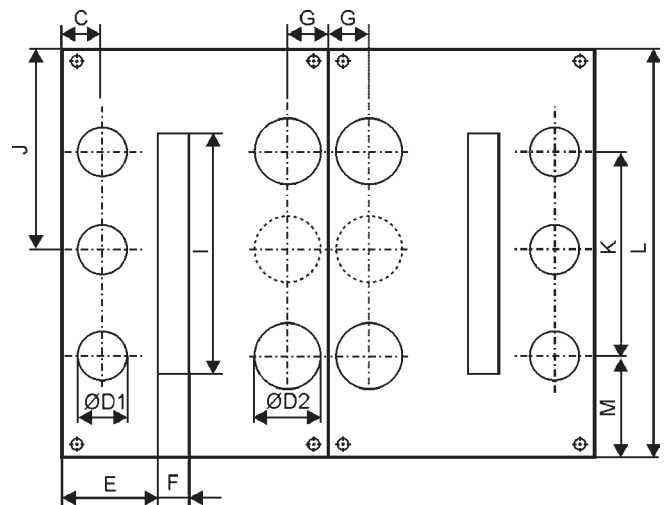
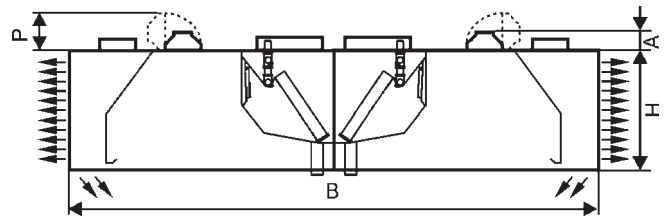
Island model- Two sections

L	1000.....3000
B	2000.....3400
H	555
D1	250
D2	315
G	220
C	180

Note: dimensions above are for modular section only; larger canopies are assembled using a combination of separate modules, which makes transportation and site handling easier.

Light

A	115
P	190
F	190
E	390(B≤2200), 490(B>2200)
I	680 (L<1400, 2x18w), 1285 (L≥1400, 2x36w)

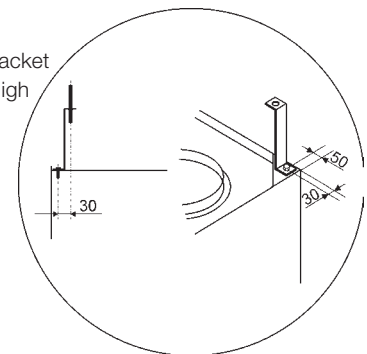


Location of Connections (mm)

For typical sizes

L	M	Exhaust		Supply		
		2x (2x315)	2x (1x315)	2x (2x250)	2x (3x250)	2x (3x250)
K	J	K	J	K	J	K
1500	375	750	L/2	750	-	-
2000	500	1000	L/2	1000	L/2	1500
2500	500	1500	L/2	1500	L/2	1500
3000	500	2000	L/2	2000	L/2	2000

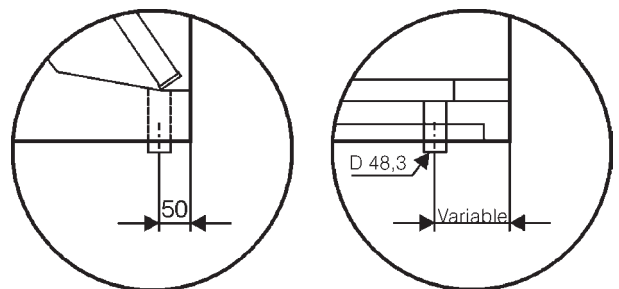
Mounting bracket
150 mm high



Weights (Kg)

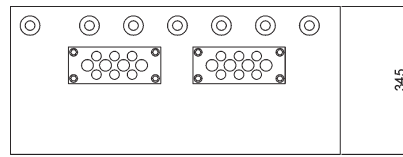
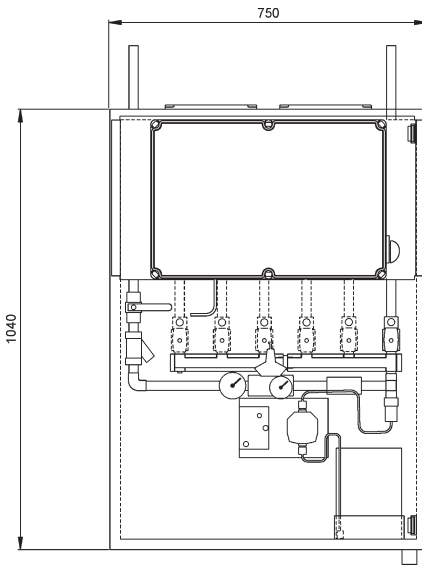
555 mm				
L/B	2200	2600	3000	3400
1500	192	201	212	222
2000	238	248	258	270
2500	282	296	308	322
3000	324	342	362	378

Position of Drain connection



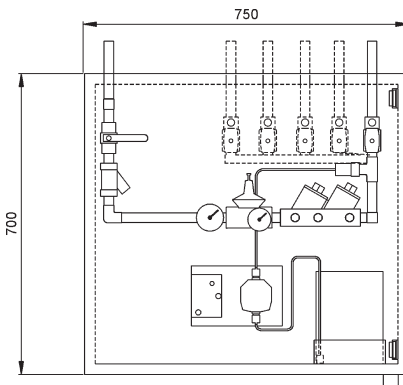
DIMENSIONS (mm)

CONTROL CABINET – Automatic version



Plumbing: Hot water inlet 28 mm / outlet 22 mm
Drain connection 1"

CONTROL CABINET – Manual version (optional)



Plumbing: Hot water inlet 28 mm / outlet 22 mm
Drain connection 1"

ENGINEERING DATA

Hot water requirement

Temperature:	55°C min – 75°C max
Flow pressure:	3 bar min – 6 bar max
Average water consumption:	35 l/m/day (4bar)
Average detergent consumption:	0.3 l/wash

Typical wash cycle is 2 to 4 minutes for light-duty equipment and 4 to 6 minutes for heavy-duty equipment.

Wash system

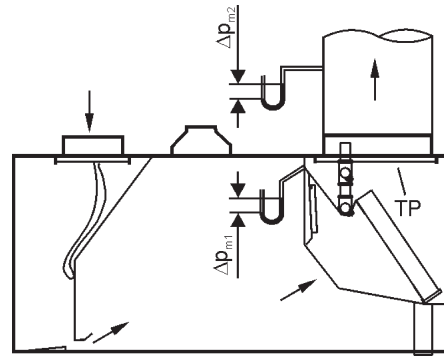
Pumps	Detergent pump Booster pump (option, when water pressure is <4bars) Back flow preventer
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PRESSURE DROP AND SOUND DATA , EXHAUST

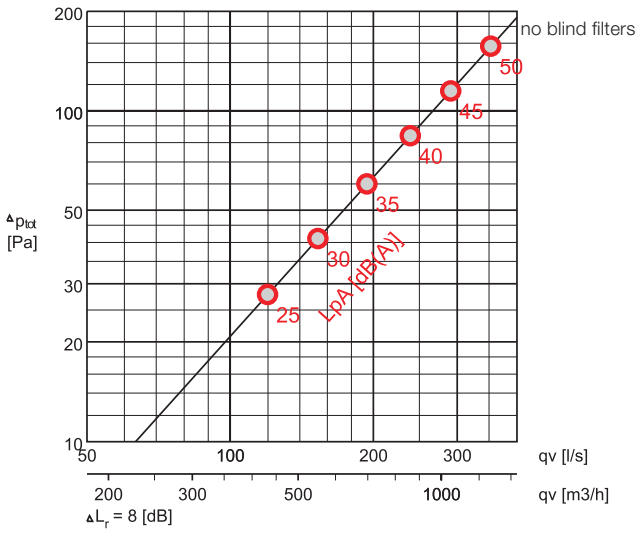
H= 555, HF= 330 (Std KSA filter)

- Δp_{m1} = Pressure loss of filters measured from measuring tap, minimum exhaust pressure loss when the damper plate is open
- Δp_{m2} = Maximum exhaust pressure loss when the damper plate is nearly closed.
- TP = Damper plate

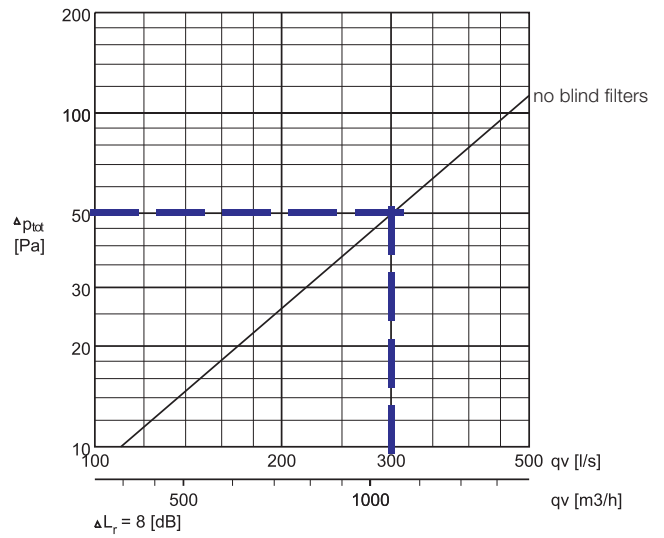


Recommended pressure loss of filter
 Δp_{m1} 35 – 120 Pa

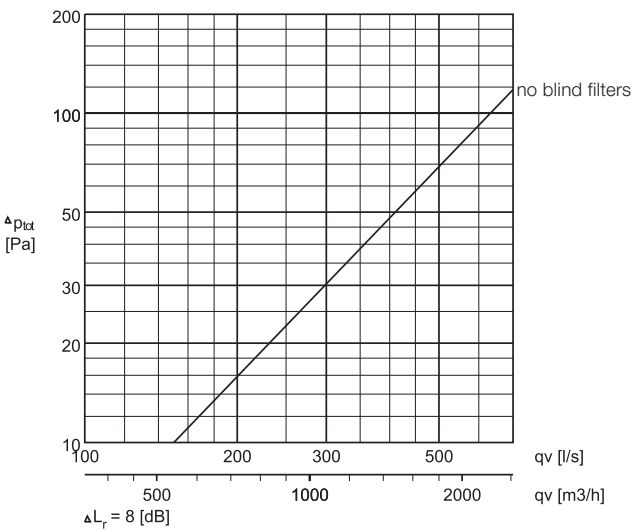
KWF 1500



KWF 2000



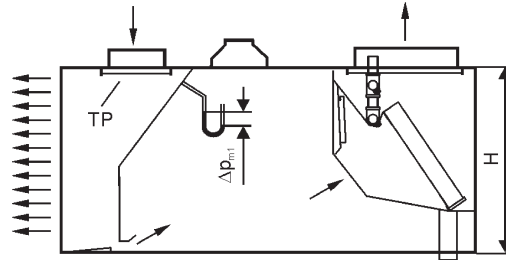
KWF 2500 - KVF 3000



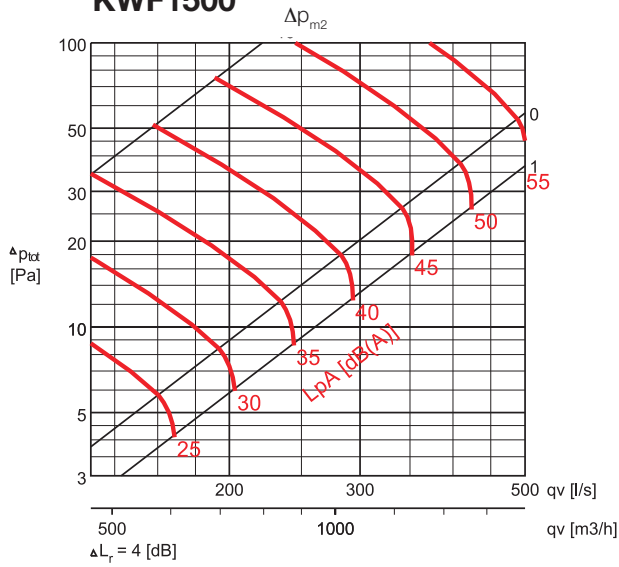
PRESSURE DROP AND SOUND DATA , SUPPLY

H= 555

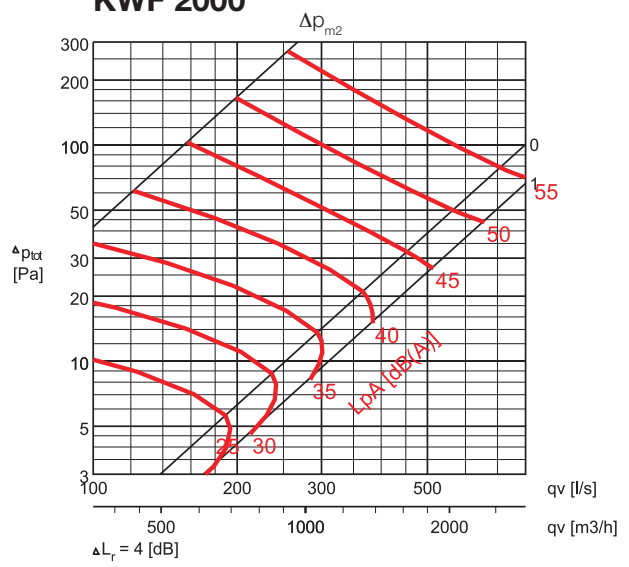
- Δp_{m1} = Measured pressure difference, Pa
- Δp_{m2} = Maximum supply pressure loss when the damper plate is nearly closed
- TP = Damper plate
- 0 = GS – Without General Supply
- 1 = GS – With General Supply



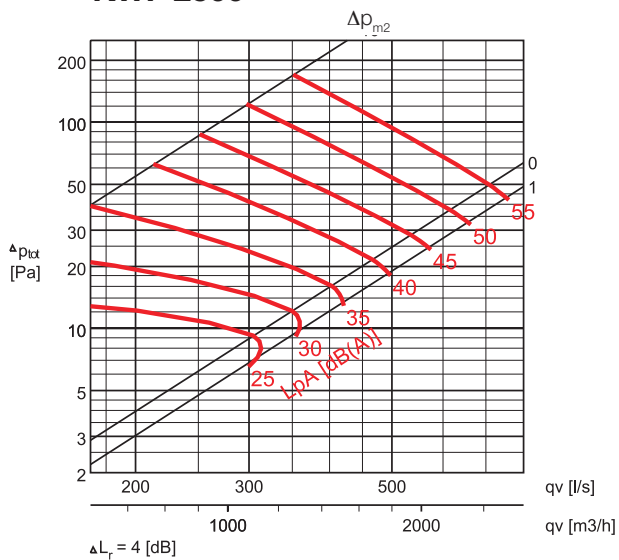
KWF1500



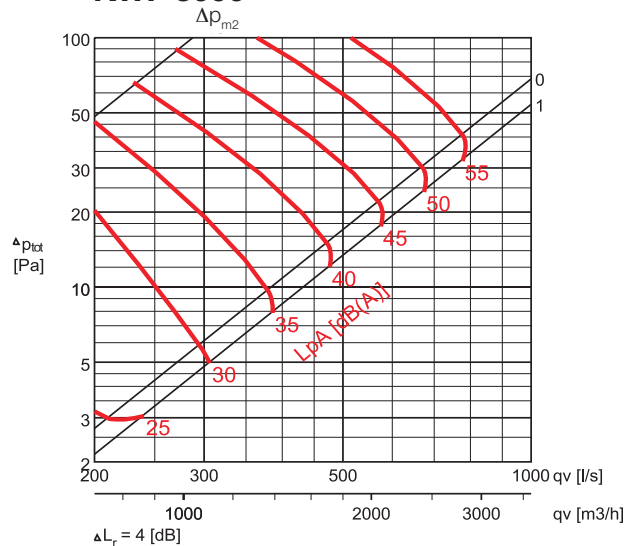
KWF 2000



KWF 2500

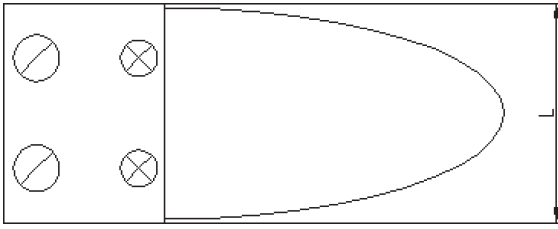


KWF 3000



THROW PATTERN

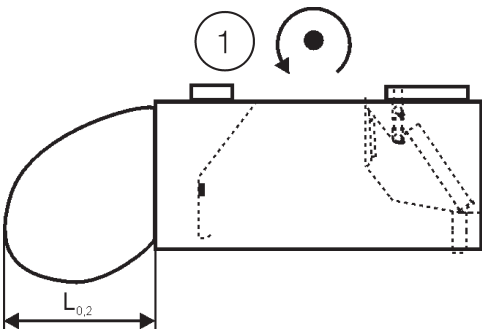
KWF, H = 555



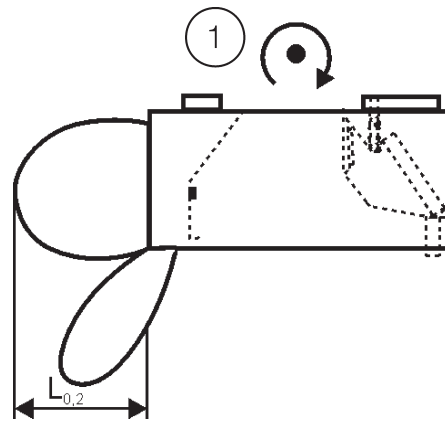
- Δt = 4°C, cooling
- $L_{(0,2)}$ = throw length, m
- q_v = air flow
- L = length of the unit, m
- H = height of the unit, mm

The total flow is adjusted by using the rotating knob (1) located within the canopy.

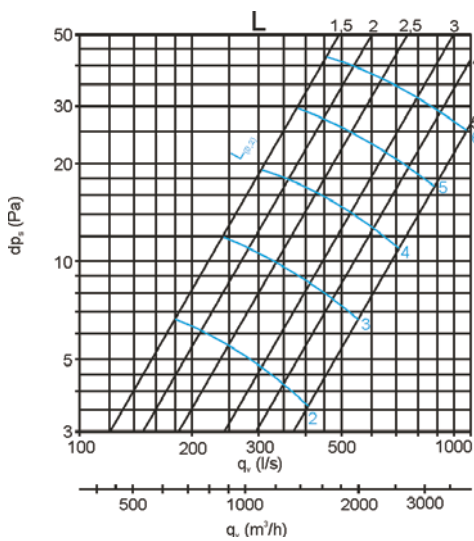
Turning it anti-clockwise produces an even supply pattern.



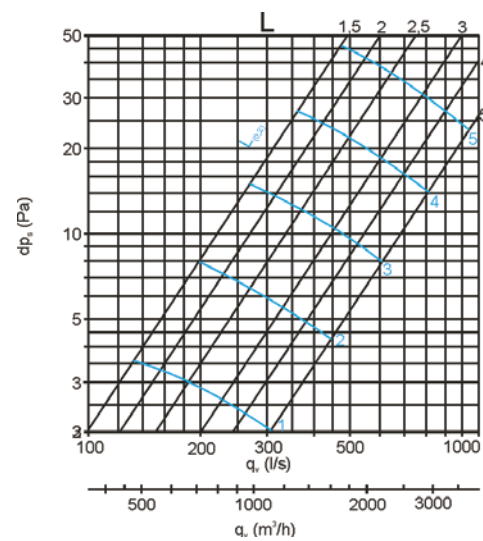
Turning it clockwise produces a bi-directional supply pattern.



One way pattern



Two way pattern



SPECIFICATION

General: The manufacture of all Halton kitchen canopies is to be controlled by an ISO9000 registered quality system, constructed from stainless steel to material specification AISI 304.

The kitchen canopies shall be supplied complete with outer casing/main body, supply air plenum, pressure measurement taps, supply and extract air spigot connections with damper plates, installation hatch, fluorescent light fixture, Capture Jets nozzles, grease filters, automatic washing module, perimeter drain channel, adjustment wires for supply air and hanging brackets, separate cabin unit.

Outer casing/Main body: Outer casing panels shall be constructed stainless steel sheet to AISI 304 in brushed satin finish. Each joint shall be spot-welded, riveted or machine stitched. The canopy shall be provided with a full perimeter condense channel and crush folded sloping edges, which are properly deburred. The joint of lower edge are fully welded, avoiding harmful dripping of water.

Washing module: filters shall be washed automatically with warm water and detergent via nozzles. The mixing of the detergent is within a separate control cabinet. The dirty mixture shall be removed from the canopy by a direct drain connection.

The Outer casing of the cabin unit shall be constructed in stainless steel sheet to AISI 304 and meet the EMC standard.

Supply Plenum Area: The supply air plenum shall be insulated with M0 sealed glass wool slab of density 95Kg/m³ and shall be provided with access by removal of main casing stainless steel front panels.

The main supply airflow shall be distributed through this panel.

The plenum roof panels (supply and exhaust) shall be constructed of galvanized steel.

Personal Supply Air Nozzles: The supply air nozzles shall be constructed from ABS plastic and shall be adjustable to provide directional airflow.

Capture jet: The hood shall be designed with capture jet technology (Halton patented), to reduce the exhaust air flow volume required and increases the capture and containment efficiency of the canopy, while reducing energy use.

Pressure Measurement Taps: The pressure measurement taps shall be located on the inside canopy for supply and extract airside.

Grease Filters: The grease filters shall be supplied in modular size 500 x 330 x 50mm and shall be removable via two folding handles

The grease filters shall be constructed from stainless steel to AISI 304 and shall be NSF and UL classified. High grease filter efficiency is achieved by a unique form (Halton patented) of honeycomb filter, which causes a spiraling of the airflow inside the honeycomb.

Spigot Connections: The spigot connections for supply and extract air shall be constructed from galvanized steel and shall be supplied with a sealing gasket and airflow balancing damper plate manufactured from galvanized steel. The exhaust and supply air dampers shall be adjustable via high tensile stranded wire cables

Fluorescent Light Fixture: Each canopy shall be provided with fluorescent light fixture to provide approximately 500 lux at the cooking appliances work surface. The light fixture shall be suitable for single-phase 230V supply and shall be constructed to protection standard IP65. Ballast and capacitor shall be located within the light fixture housing. The light fittings shall be hinged to allow access to canopy roof.

3x1 mm², core electrical cable connecting the light fitting to the conduit box containing multiple connectors shall be provided.

Access Hatch: Each canopy shall be provided with an access hatch of stainless steel AISI 304 with plain mill finish, surrounded by a tempered glass light diffuser. Heat tolerance of glass shall be -40 to +300° C. The hatch shall be hinged and held in position with screws.

PRODUCT CODE

KWF /S - L xB xH

Height of canopy - 555
 Width of canopy - 1000 to 1700, in any increments
 Length of canopy - 1000 to 3000, in any increments
 Location 1 = Wall installation
 2 = Island installation (2sections)

Specifics and accessories
 NF=, EC=, SC=, GS=, AC=

Accessories	CL/KWF = Cover list
	IL /KWF = Integrated light
	CB/KWF = Cover board
	IP /KWF = Infill panel

General supply	L = Left
	R = Right
	2 = Left and Right
	L2 = Left (2 pc)
	R2 = Right (2 pc)
	L3 = Left (2 pc) Right (1 pc)
	R3 = Left (1 pc) Right (2 pc)
	4 = Left (2 pc) Right (2 pc)

Number of supply connections - 2, 3

Number of exhaust connections - 1, 2, 3

Number of filters NF = 1, 2, 3, 4, 5

EXAMPLE
 KWF/1 - 1500x1100x400; EC=1; SC=2; KWF/1 - 1500x1100x400; AC=IP

INSTALLATION

Refer to 'Installation - Commissioning - Maintenance' manual

