

Let's move the air together!



NORDcanopy
Kitchen ventilation

 **ETS NORD**

General

The NORDcanopy product portfolio consists of canopies and related air treatment products for use in commercial and industrial kitchen ventilation to create a comfortable and hygienic work environment.

Our products combine stylish design with highly effective grease, steam, heat and odor removal performance for your project. Thanks to our highly efficient HFK centrifugal filters, 95% of cooking greases can be eliminated from the kitchen exhaust airstream. A further reduction of grease and odor, as well as many other benefits, can be realized with the use of our optional ozone module.

We at ETS Nord know that no projects are exactly alike. We have designed our canopies to be modular, so we can custom design and manufacture a NORDcanopy solution to meet your each and every project requirement or technical need.

NORDcanopy products are manufactured from stainless steel according to standards EVS-EN 10088-2:2014, EN 1.4301 or AISI 304 (AISI 304, surface 2K).

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Kitchen canopy selection

When choosing a canopy, the first question is whether grease or steam is to be extracted.

For air volume (supply/exhaust) calculations, the heat, steam and other impurity loads caused by cooking equipment should be taken into account.

Extraction air capacities are determined according to the table below, where air volume depends on cooking equipment extraction coefficient K_e [l/(s*kW)], electrical power P [kW] and coincidence factor K_s .

	Extraction coefficient K_e		Total power P/kW	Coincidence factor $K_s(0,5-1,0)$ l/(s*kW)	Exhaust air volume $M_p=K_e*P*K_s$ M_p (l/s)
	Electric	Gas			
Automatic sauce maker	18				
Bain marie	35				
Baking cabinet	27				
Baking oven	33				
Boiling pan	10	12			
Ceramic stove	25				
Coal grill		60			
Coffee maker	5				
Combi oven	10				
Convection oven	10				
Dishwasher	20				
Dishwasher (heat recovery)	10				
Food mixer	10				
Fryer	25				
Frying pan	32	35			
Griddle	32	35			
Grill drawers	30				
Grilling pan/ Fry	35				
Halogen cooker	20				
Heat level	28				
Hot air oven	13				
Induction cooker	20				
Induction wok	40				
Kebab grill	33	35			
Lava stone grill	35				
Microwave oven	5				
Multi-cooker	30				
Oven	20				
Pasta cooker	10				
Pizza oven	15				
Pressure cooking cabinet	12				
Salamander grill	35	33			
Smoke oven	12				
Steam cooker	15				
Tandoor oven		35			
Toaster oven	33	35			
Vario cooking center	25				
Wok		60			

K_s values:

- restaurant kitchens $K_s= 0,8...1,0$ l/(s*kW)
- canteens $K_s= 0,5...0,8$ l/(s*kW)

Total volume of kitchen exhaust air is calculated by multiplying the total product of cooking equipment extraction coefficient and electrical load coefficient with cooking equipment coincident coefficient:

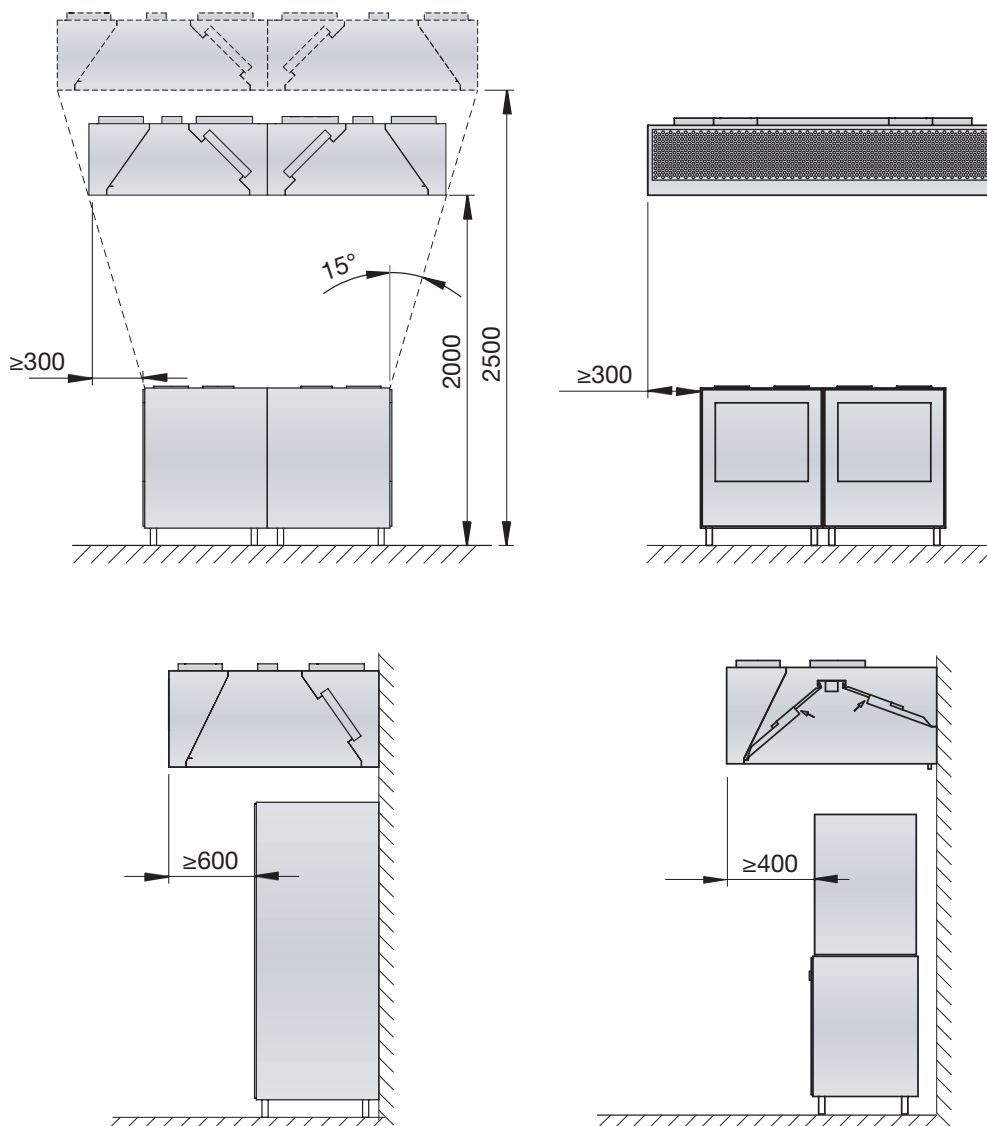
Example: $\sum M_p = \sum (K_e * P) * K_s$, l/s

	P	K_e	K_s	
Stove	8 kW	30	0,5	$M_p = 8 * 30 * 0,5 = 120$
Stem cooker	12 kW	10	0,8	$M_p = 12 * 10 * 0,8 = 96$
Combination oven	40 kW	10	0,6	$M_p = 40 * 10 * 0,6 = 240$
Total exhaust volume				$\sum M_p = 456$ l/s

General exhaust air is about 10 % of the total volume	= $0,1 * 456 = 46$ l/s
Total extraction air flow	= $46 + 456 = 502$ l/s
Intake air volume is 70-90% of extraction volume	= $0,9 * 502 = 452$ l/s

Installation position

The canopy is positioned over the cooking equipment, with an overhang distance of 300-400 mm vertically between the edges of appliances. Canopies installed over ovens should be deeper than the oven by at least 600 mm, to ensure elimination of the entire steam volume from the air released when the oven door is opened. The recommended height of canopies from the floor is 2000 mm (2000-2500 mm).



HKR Kitchen Canopy for supply and exhaust air



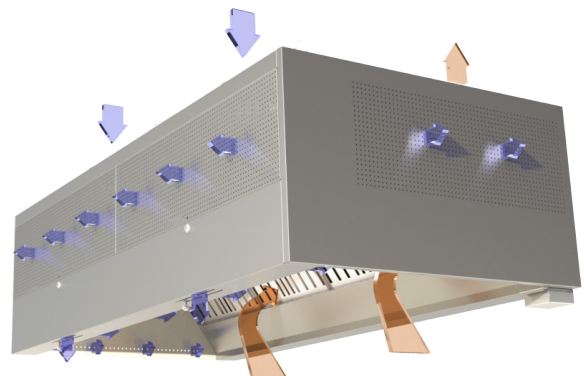
The HKR Kitchen Canopy ensures a clean, hygienic and comfortable work environment by removing pollutants, excessive heat and grease from your commercial kitchen operation. The same unit supplies fresh, replacement air into the room to provide ultimate worker comfort.

Features

- Replacement room air provided through front panel
- High efficiency HFK centrifugal filters
- Adjustable supply air for working area
- Airflow measurement and adjusting unit
- "Turbo Grip" air intake system

Operation

The HKR kitchen canopy removes excess heat, grease and other particles from your commercial kitchen operation. Supply air is fed into the room through the perforations in the front panel, as well as through extra nozzles in the working area. Air supplied by the "Turbo Grip" air intake system along the lower perimeter of the canopy helps route kitchen effluent into the grease filters to remove grease and other pollutants. The grease then drains from the filter down and into the grease collection channel of the canopy and into a grease collection container. Replacement air directed to the working area can easily be individually adjusted.

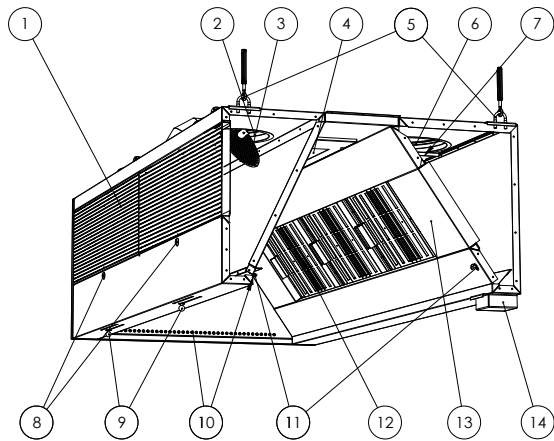


Recommended Data

Lenght L	Extraction air flow (E1, E2), l/s (Δp_{tot} 14-48 Pa)	Supply air flow per linear meter of panel, l/s			
		SPx1+ "Turbo Grip"	SPx2+ "Turbo Grip"	SPx3+ "Turbo Grip"	Side panel
1500	210-390				
2000	280-520	10-61 Pa	10-40 Pa	10-28 Pa	10-40 Pa
2500	350-650	71-175 l/s	110-220 l/s	165-275 l/s	22-40 l/s
3000	420-780				

Construction and Dimensions

The canopy is made from 1 mm thick stainless steel (AISI 304, surface 2K). Duct connections are equipped with rubber gaskets, and supply air chambers are heat insulated to prevent condensation of steam on the inner surface of the canopy. Heavy duty U-bolts are installed on each top corner of the canopy for hanging. We at ETS Nord know that no two kitchens are exactly alike. We have designed our kitchen canopies to be modular, so we can custom design and manufacture a NORDcanopy solution to meet your each and every project requirement or technical need.



- 1- Front panel
- 2- Supply air connection
- 3- Supply air regulating plate
- 4- Lighting
- 5- Suspension points
- 6- Exhaust air connection
- 7- Exhaust air regulating plate
- 8- Front panel lock
- 9- Auxiliary supply air openings
- 10- "Turbo Grip" air nozzle system
- 11- Airflow measuring nipples
- 12- HFK grease filters
- 13- Blind panel for grease filter rail
- 14- Grease collection container

HKR Standard canopy dimensions, mm	
L Lenght	600, 700, ..., 2800, 2900
B Width	900 (No lighting) 1000, 1100, ..., 1700, 1800 (1 modul) 2000, 2200, ..., 3400, 3600 (2 moduls)
H Height	400, 550, 400/550

Lighting

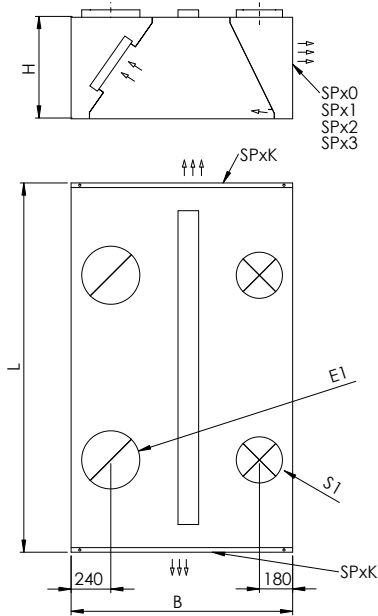
Professional kitchens require functional lighting to ensure that employees have a safe and effective work environment. ETS NORD professional kitchen canopies use next generation, energy efficient LED lights, which can save as much as 50% more energy compared to older technology fluorescent lights. Grease removal canopies include light fixtures integrated into their ceilings, protected by an aluminum and glass casing. Condensation canopies use surface mounted lighting, protected by a fiberglass-reinforced plastic casing. Their electrical protection class is IP66.

The size and number of light fixtures are determined by the size of the canopy, to ensure there is enough light output for the entire workspace.

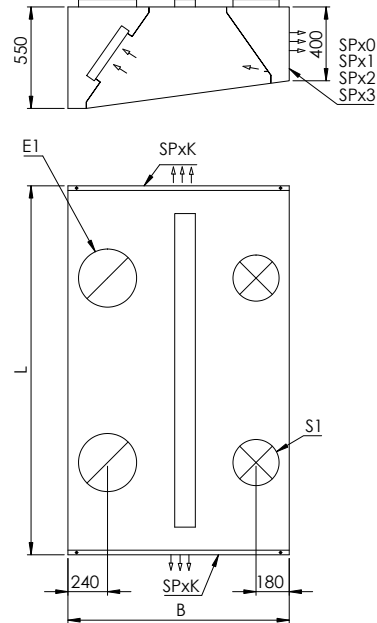
Luminaries:

Canopy length (mm)	Lighting length (mm)	Energy use (W)	Light color	Color temperature (K)	Color rendering index (Ra)	Flux (lm)
1000 ≤ L < 1600	LED770	20	840	4000	80	2250
1600 ≤ L < 1900	LED1370	37	840	4000	80	4900
L ≥ 1900	LED1670	53	840	4000	80	6750

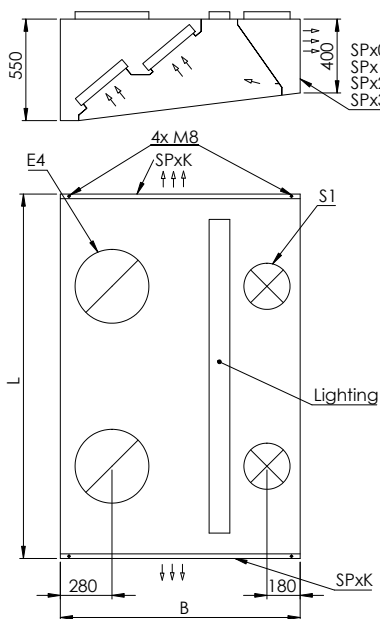
HKR Wall installation, 1-part	
L Length	600,700, ..., 2800, 2900
B Width	B=900 (No lighting) B=1000,1100, ..., 1800
H Height	400, 550
S1	160, 200, 250
E1	200, 250, 315



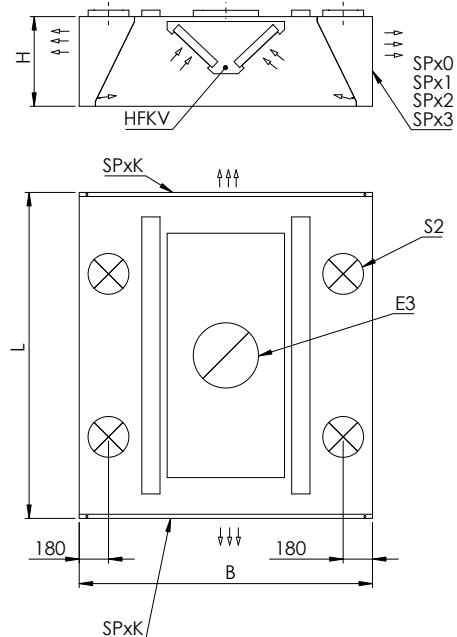
HKR Wall installation, 1-part (trapezoid)	
L Length	600,700, ..., 2800, 2900
B Width	B=900 (No lighting) B=1000,1100, ..., 1800
H Height	400/550
S1	160, 200, 250
E1	200, 250, 315



HKR Wall installation, 1-part, E4	
L Length	600,700, ..., 2800, 2900
B Width	B=1200 (No lighting) B=1300,1400, ..., 1800
H Height	400/550, 550
S1	160, 200, 250
E4	200, 250, 315, 400

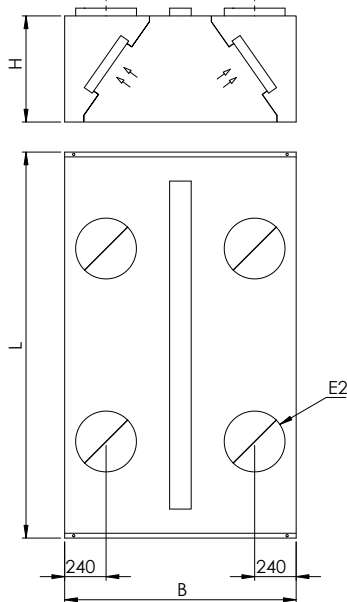


HKR Island installation, 1-part (with HFKV modul)	
L Length	600,700, ..., 2800, 2900
B Width	B=1500 (No lighting) B=1600,1700 (1 row lightings) B=1800, 1900, ..., 2900 (2 row lightings)
H Height	400, 550
S2	160, 200, 250
E3	200, 250, 315, 400 (HFKV modul)



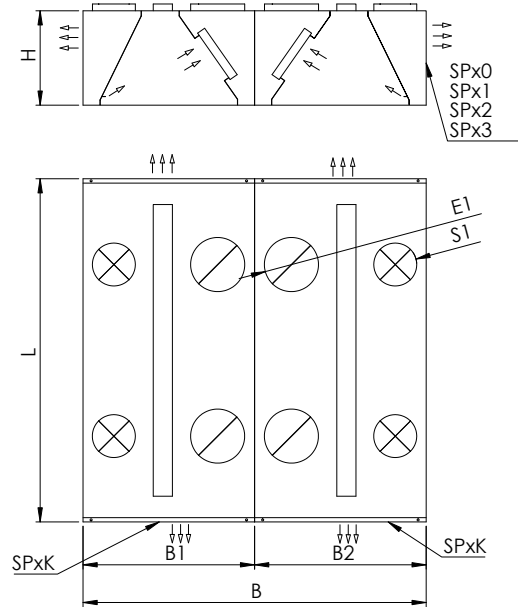
HKR Extraction canopy, 1-part

L Length	600, 700, ..., 2800, 2900
B Width	B=1000 (No lighting) B=1100,1200, ..., 1700, 1800
H Height	400, 550
E2	200, 250, 315



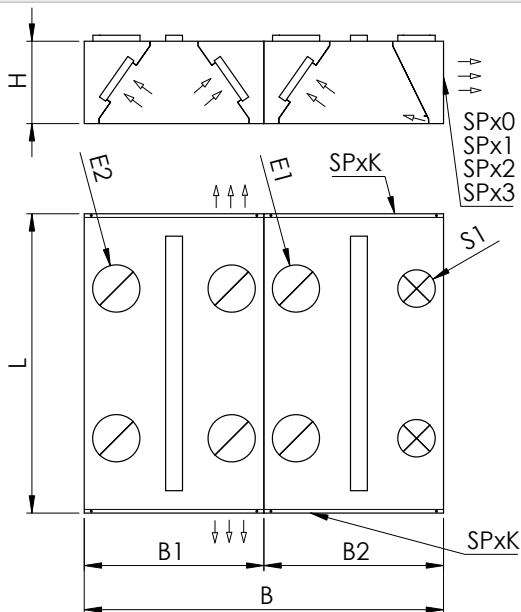
HKR-2 Island installation, 2-parts

L Length	600, 700, ..., 2800, 2900
B Width	B=1800, 1900 (No lighting) B=2000, 2200, ..., 3400, 3600
B1/B2 Width	900 (No lighting) 1000,1100, ..., 1800
H Height	400, 550, 400/550
S1	160, 200, 250
E1	200, 250, 315



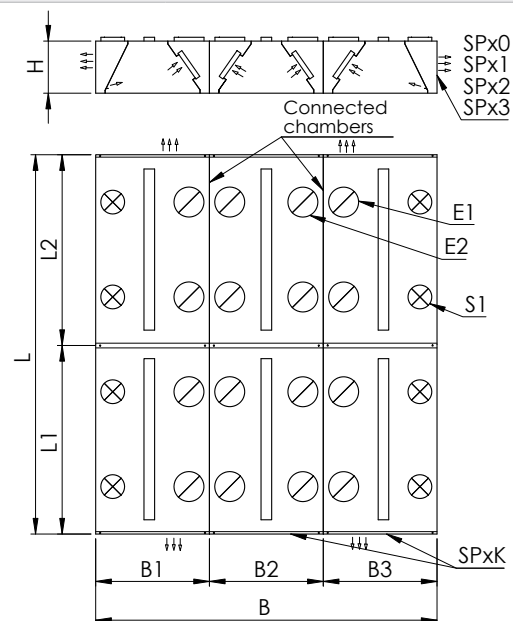
HKR-2 Island installation, 2-parts

L Length	600, 700, ..., 2800, 2900
B Width	B=1900 (No lighting) B=2000 (1 row lighting) B=2100, 2200, ..., 3400, 3600
B1/B2 Width	900 (No lighting) 1000,1100, ..., 1800
H Height	400, 550
S1	160, 200, 250
E1, E2	200, 250, 315



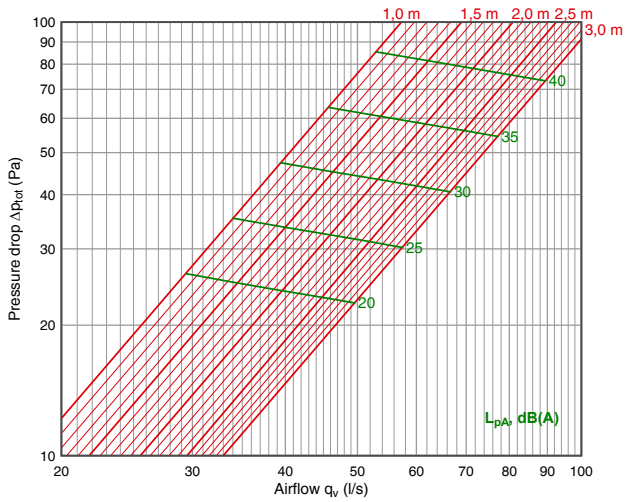
HKR-3 Island installation, 3-parts (Width B)

L1/L2 Length	600, 700, ..., 2800, 2900
B Width	2800 (No lighting) 2900 (1 row lighting) 3000 (2 rows lighting) 3100, 3200, ..., 5300, 5400
H Height	400, 550
S1	160, 200, 250
E1, E2	200, 250, 315

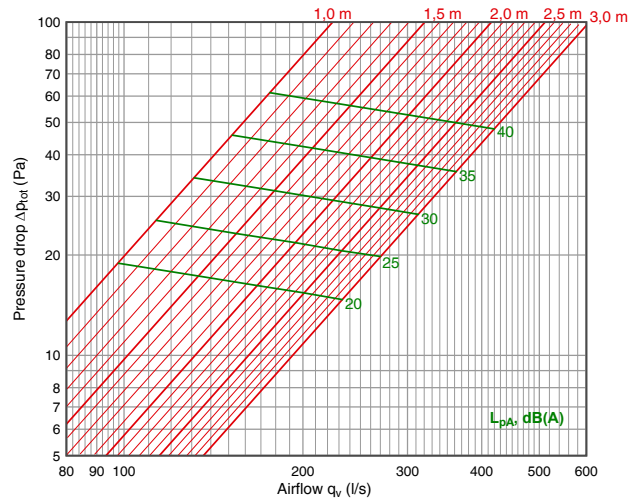


Technical data

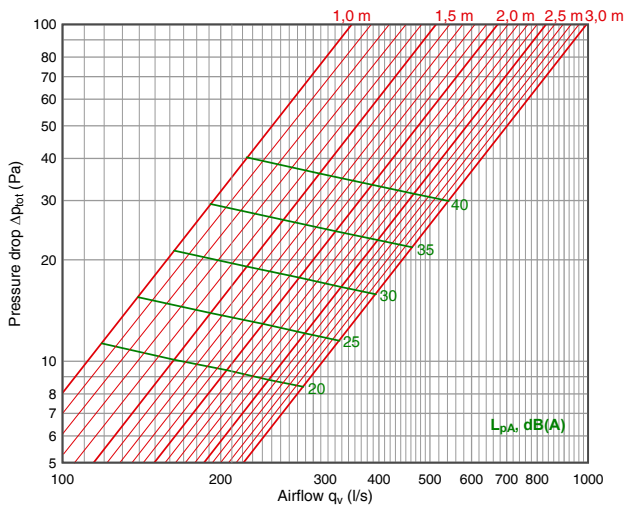
Supply air: "Turbo Grip"



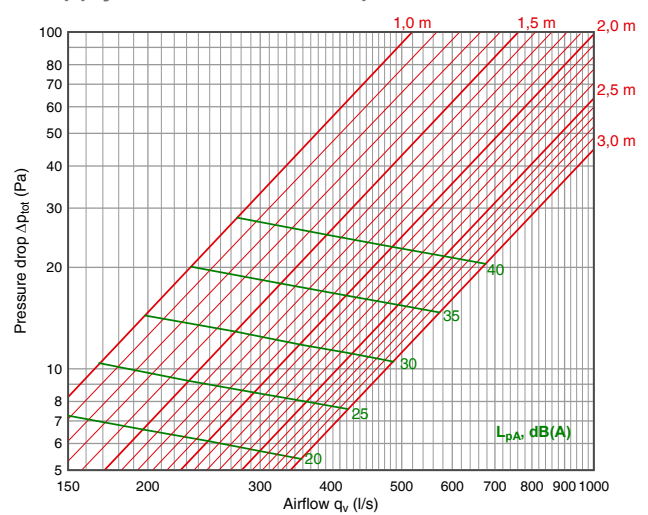
Supply air: SP1+"Turbo Grip"



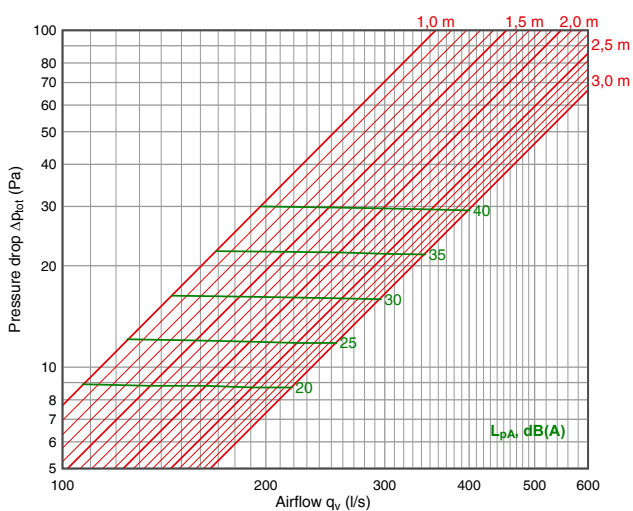
Supply air: SP2+"Turbo Grip"



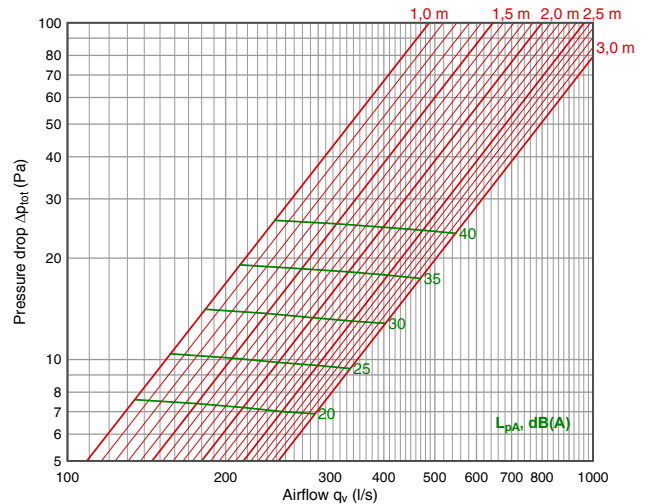
Supply air: SP3+"Turbo Grip"



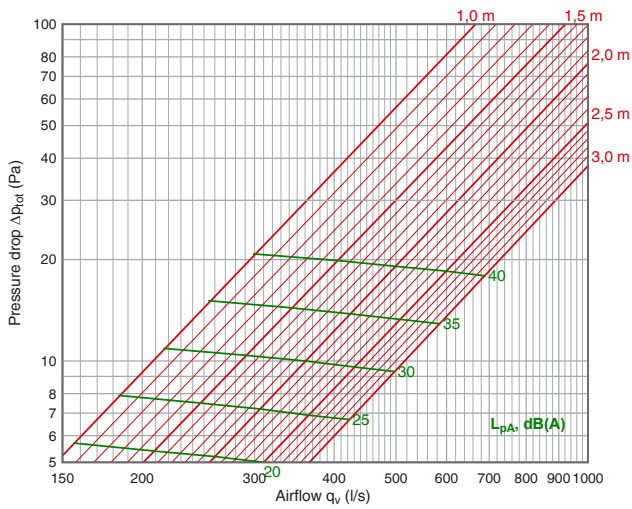
Supply air: SP1+"Turbo Grip"+side panels



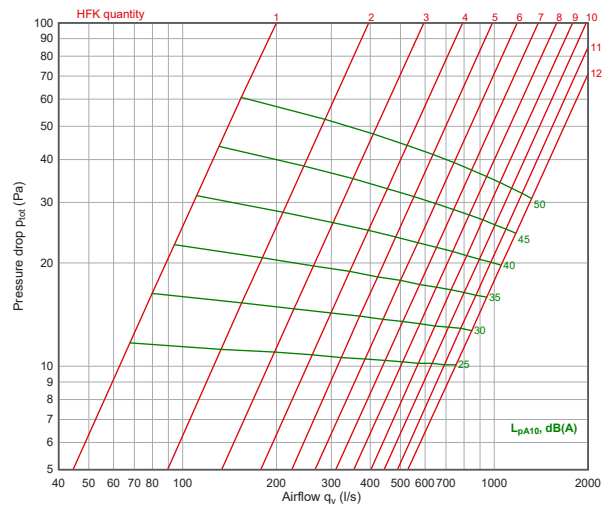
Supply air: SP2+"Turbo Grip"+side panels



Supply air: SP3+"Turbo Grip"+side panels



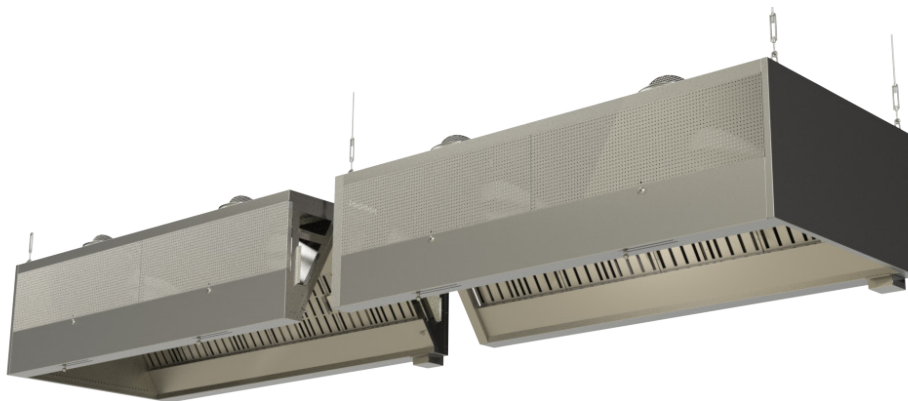
HFK -grease filter



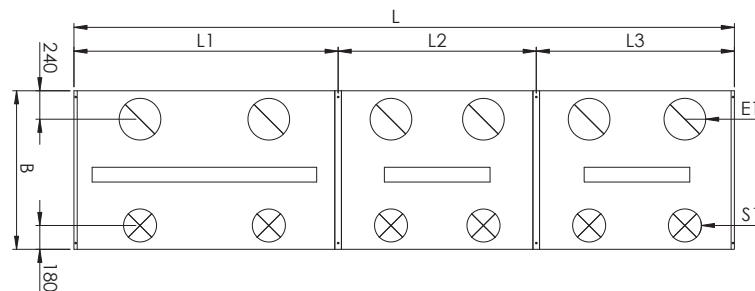
Acoustic data

Supply air	Correction of sound level K_{okt} (dB)							
	(Hz)							
	63	125	250	500	1000	2000	4000	8000
"Turbo Grip"	-6	-8	-5	-3	0	-1	-7	-20
SPx1 + "Turbo Grip"	-1	0	3	2	-1	-3	-11	-23
SPx2 + "Turbo Grip"	0	1	5	4	-1	-8	-20	-27
SPx3 + "Turbo Grip"	7	5	6	4	-2	-13	-21	-30
SPx1+"Turbo Grip"+side panels	-1	-1	2	2	0	-5	-15	-28
SPx2+"Turbo Grip"+side panels	3	1	5	4	-1	-9	-21	-27
SPx3+"Turbo Grip"+side panels	8	5	6	4	-3	-13	-22	-30
	± 4 dB	± 4 dB	± 4 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB

Canopy lengthening with modular sections



Preferred length dimensions are 1000, 1500, 2000 mm



Product marking

Marking - Dimensions - Supply air - Exhaust air - Front panel - Grease filters - Lighting

<p>Marking</p> <p>HKR - 1 module in width HKR-2 -2 modules in width HKR-3 -3 modules in width</p> <p>Dimensions</p> <p>L - Length B - Width H - Height</p> <p>Supply air</p> <p>S1 - Supply air chamber on one side S2 - Supply air chambers on two sides Diameter of supply air connection Quantity of supply air connections</p> <p>Exhaust air</p> <p>E1 - One exhaust air chamber E2 - Two exhaust air chambers E3 - HFKV exhaust air module E4 - HFK filters in dual row Diameter of exhaust air connection Quantity of exhaust air connections</p> <p>Front panel</p> <p>SPx0 - No Perforation, only "Turbo Grip" supply air curtain system SPx1 - Perforation pattern 1 - (per L=1000mm) 130 l/s, 40 Pa, 40 dB(A) SPx2 - Perforation pattern 2 - (per L=1000mm) 190 l/s, 37 Pa, 40 dB(A) SPx3 - Perforation pattern 3 - (per L=1000mm) 250 l/s, 25 Pa, 40 dB(A) SPxK - Perforation pattern on L/R side panels - (SPxKL, SPxKR, SPxKLR) SPxF - No Perforation, fixed surface without access lock</p> <p>Grease filters</p> <p>HFK Grease filter quantity</p> <p>Lighting</p> <p>LED770 - L=769, 20W LED1370 - L=1369, 37W LED1670 - L=1669, 53W Quantity of lighting fixtures</p>	
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Example: **HKR-2 3500x2400x550 - S1=250x8 - E1=315x4 - SPx3 - HFKx12 - LED1370x4**

Blind plates: Blind plates are blank panels used to replace filters in cases of low air volumes. By using blind plates the canopy system can maintain sufficient pressure and air velocity for proper filter operation.

Masking plates:
 Mounted in the area between canopy and ceiling, when conduits and other components are to be concealed.

HKZ Ozonator Canopy



The HKZ Ozonator Canopy combines effective grease removal with stylish design to thoroughly clean your kitchen exhaust airstream and remove excess heat from the kitchen.

In addition to mechanically separating grease with our highly efficient HFK grease filters, this canopy also includes an integrated ozonator and smart control system to further reduce grease and odor. Ozone treatment is simply chemical oxidation, whereby grease and odor are broken down to water vapor and dry minerals, thereby providing many advantages including:

Ozonator Canopy Advantages:

-  **Effective two-phase cleaning**
Phase 1: Mechanical grease separation
Phase 2: Ozone treatment by oxidation
-  **Notably improved fire safety**
-  **Up to 95% reduced odor**
-  **Enables heat recovery**
-  **Low operating cost**
-  **No consumable parts**
-  **Maintenance service available**

Canopy construction complies with the standard EN 16282-2 Equipment for commercial kitchens – Kitchen ventilation hoods; design and safety requirements.

Ozonator technology used in the canopy complies with standard EN 16282-8 Equipment for commercial kitchens – Installations for treatment of aerosol. Requirements and testing.

Recommended Data

Length L	Extraction air flow (E1, E2), l/s (Δp_{tot} 14-48 Pa)	Supply air flow per linear meter of panel, l/s			
		SPx1+ "Turbo Grip"	SPx2+ "Turbo Grip"	SPx3+ "Turbo Grip"	Side panel
1500	210-390				
2000	280-520	10-61 Pa	10-40 Pa	10-28 Pa	10-40 Pa
2500	350-650	71-175 l/s	110-220 l/s	165-275 l/s	22-40 l/s
2900	420-780				

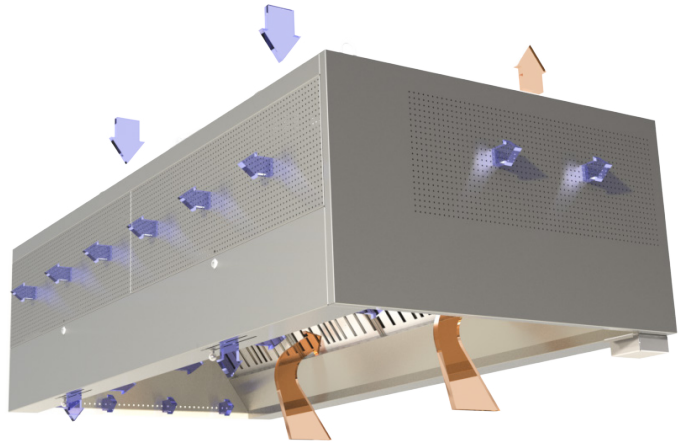
Function

Hot and greasy air is sucked through mechanical grease filters into the exhaust air chamber. The mechanical filters collect most of the larger grease particles, which drip down into the grease collection container.

Our ozonator module is installed inside the supply air chamber, thereby provided with clean air for its reliable production of ozone. Its ozonated air is then drawn into and mixed with the exhaust air, at which point the simple and natural process of chemical oxidation takes over to break down odor and grease particles remaining in the air stream even further.

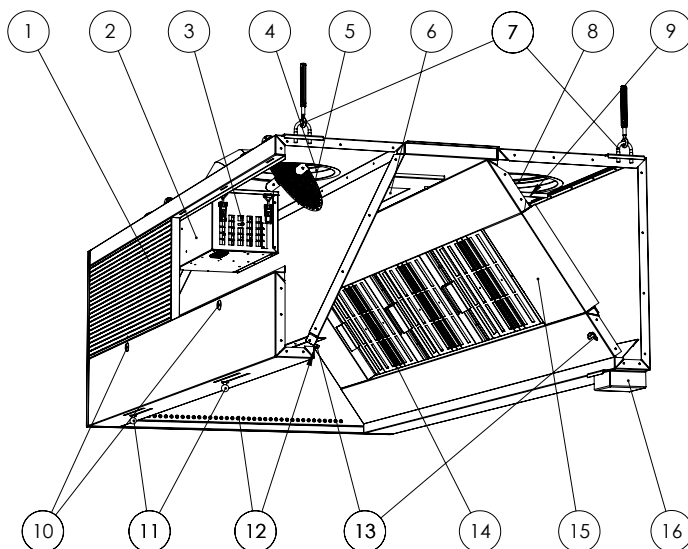
Supply air is replenished and balanced into the kitchen in two ways:

First, our "Turbo Grip" air curtain directs the greasy air rising up from the kitchen appliances into the canopy cavity and toward the grease filters. Second, supply air is delivered through perforations in the front plate, as well as through adjustable air vents on the bottom surface of the supply air module.



Construction and Dimensions

The canopy is made from 1 mm thick stainless steel (AISI 304, surface 2K). Duct connections are equipped with rubber gaskets, and supply air chambers are heat insulated to prevent condensation of steam on the inner surface of the canopy. Heavy duty U-bolts are installed on each top corner of the canopy for hanging. We at ETS Nord know that no two kitchens are exactly alike. We have designed our kitchen canopies to be modular, so we can custom design and manufacture a NORDcanopy solution to meet your each and every project requirement or technical need.



- 1- Front panel
- 2- Ozonator
- 3- Regulating damper
- 4- Supply air connection
- 5- Supply air regulating plate
- 6- Lighting
- 7- Suspension points
- 8- Exhaust air connection
- 9- Exhaust air regulating plate
- 10- Front panel lock
- 11- Auxiliary supply air openings
- 12- "Turbo Grip" air nozzle system
- 13- Airflow measuring nipples
- 14- HFK grease filters
- 15- Blind panel for grease filter rail
- 16- Grease collection container

Lighting

Professional kitchens require functional lighting to ensure that employees have a safe and effective work environment. ETS NORD professional kitchen canopies use next generation, energy efficient LED lights, which can save as much as 50% more energy compared to older technology fluorescent lights.

Grease removal canopies include light fixtures integrated into their ceilings, protected by an aluminum and glass casing. Condensation canopies use surface mounted lighting, protected by a fiberglass-reinforced plastic casing. Their electrical protection class is IP66.

The size and number of light fixtures are determined by the size of the canopy, to ensure there is enough light output for the entire workspace.

Luminaries

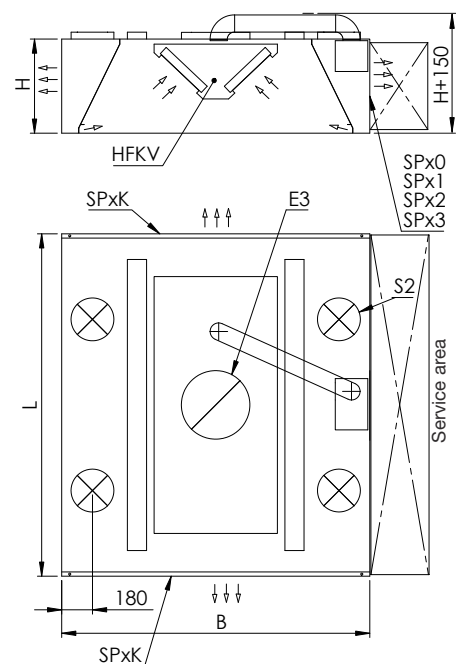
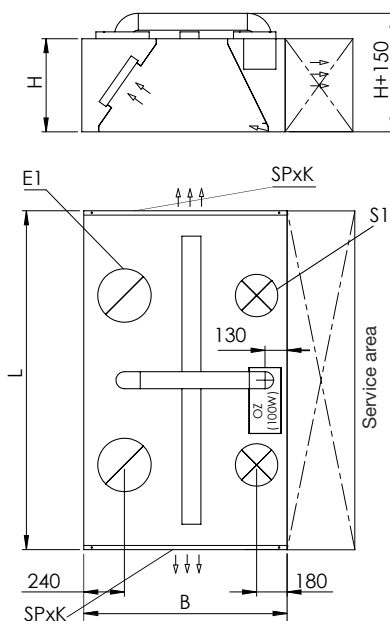
Canopy length (mm)	Marking	Light Fixture length (mm)	Energy use (W)	Light color	Color temperature (K)	Color rendering index (Ra)	Flux (lm)
1000 ≤ L < 1600	LED770	769	20	840	4000	80	2250
1600 ≤ L < 1900	LED1370	1369	37	840	4000	80	4900
L ≥ 1900	LED1670	1669	53	840	4000	80	6750

Dimensions

HKZ Dimensions, mm	
L Length	600, 700, ..., 2800, 2900
B Width	900, 1000, ..., 1700, 1800 (1 part) 1800, 1900, ..., 3500, 3600 (2 parts)
H Height	400, 550, 400/550

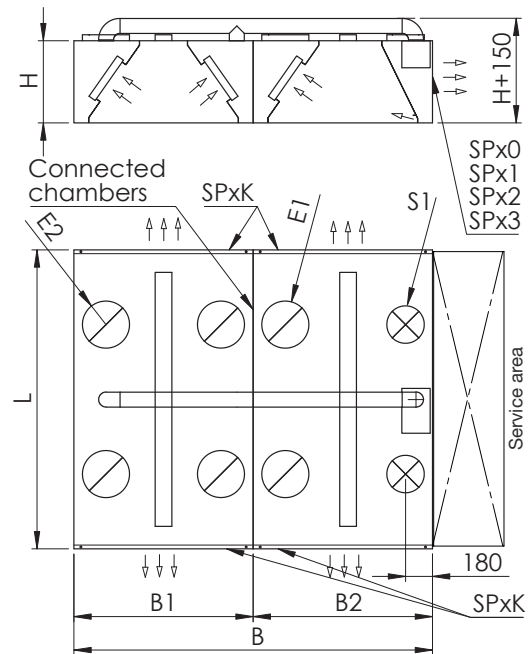
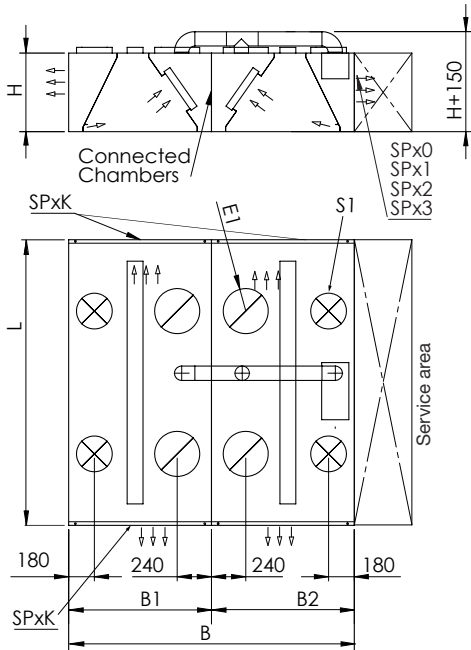
HKZ-1 Wall installation, 1-part	
L Length	600, 700, ..., 2800, 2900
B Width	B=900 (No lighting) B=1000, 1100, ..., 1800
H Height	400, 550
S0, S1	160, 200, 250
E1	200, 250, 315

HKZ-1 Island installation, 1-part (with HFKV modul)	
L Length	600, 700, ..., 2800, 2900
B Width	B=1500 (No lighting) B=1600, 1700 (1 row of lights) B=1800, ..., 2900 (2 row of lights)
H Height	400, 550
S2	160, 200, 250
E3	200, 250, 315, 400 (HFKV modul)

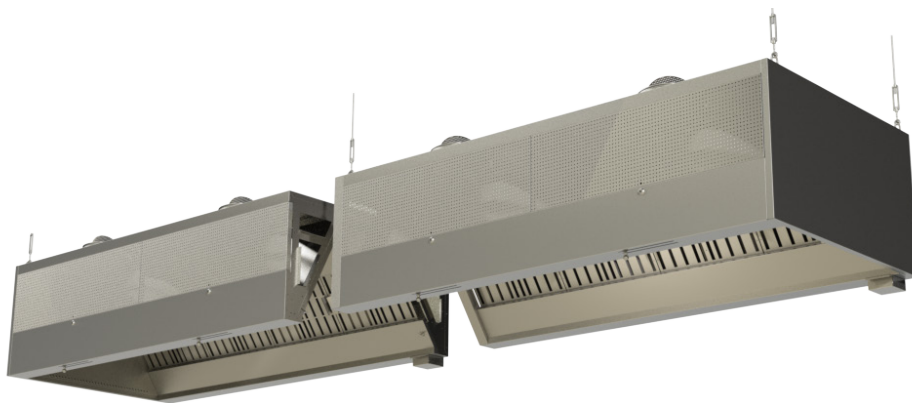


HKZ-2 Island installation, 2-parts	
L Length	600, 700, ..., 2800, 2900
B Width	B=1800 (No lighting) B=1900 (1 row of lights) B=2000, 2200, ..., 3400, 3600
B1/B2 Width	900 (No lighting) 1000, 1100, ..., 1800
H Height	400, 550
S1	160, 200, 250
E1	200, 250, 315

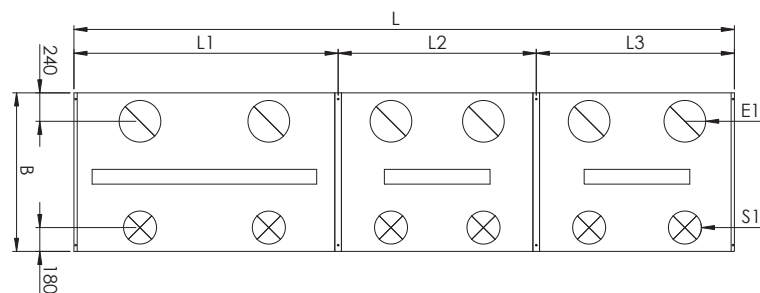
HKZ-2 Island installation, 2-parts	
L Length	600, 700, ..., 2800, 2900
B Width	B=1900 (No lighting) B=2000 (1 row of lights) B=2100, 2200, ..., 3500, 3600
B1/B2 Width	900 (No lighting) 1000, 1100, ..., 1800
H Height	400, 550
S1	160, 200, 250
E1,E2	200, 250, 315



Hood lengthening with modular sections

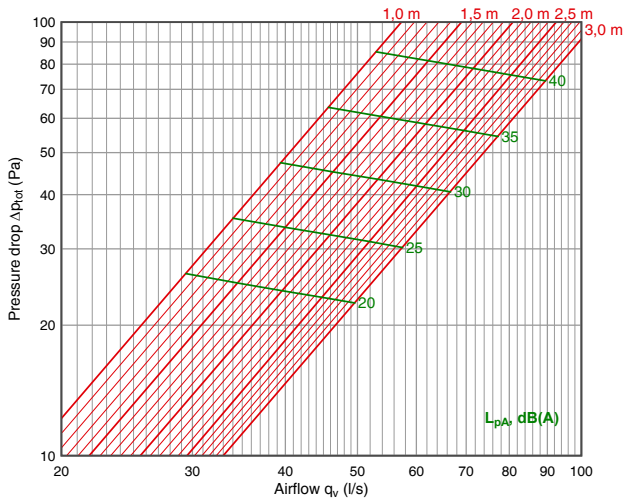


Preferred length dimensions are 1000, 1500, 2000 mm

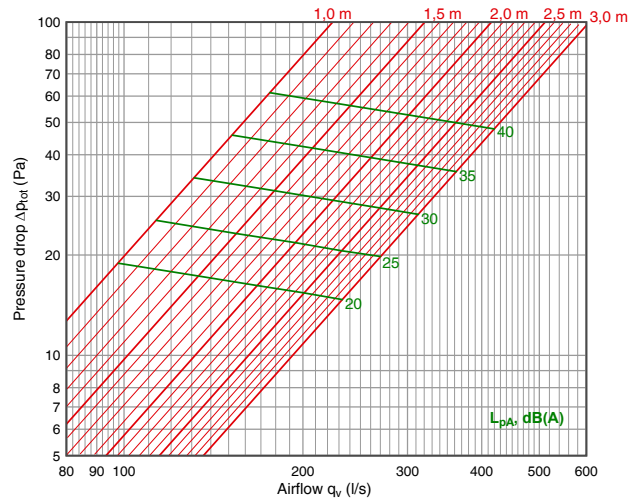


Technical data

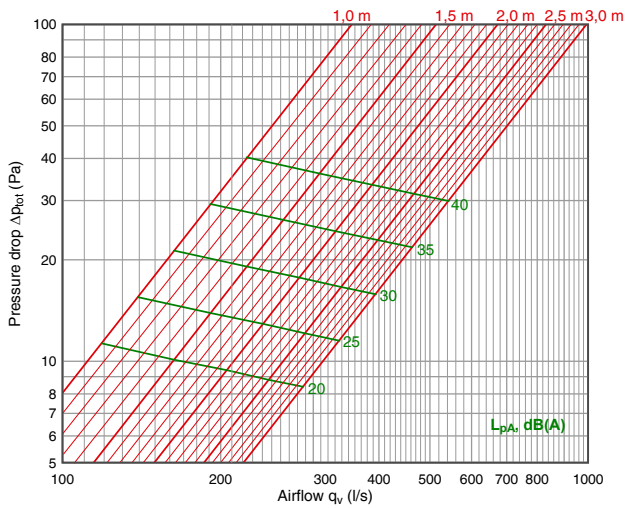
Supply air: "Turbo Grip"



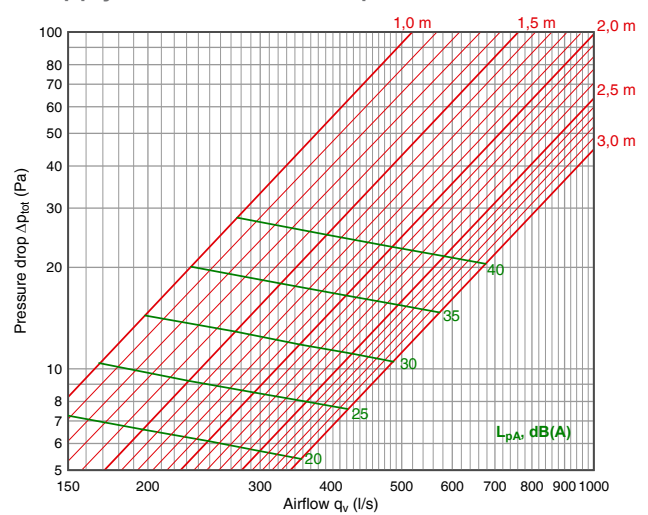
Supply air: SP1+"Turbo Grip"



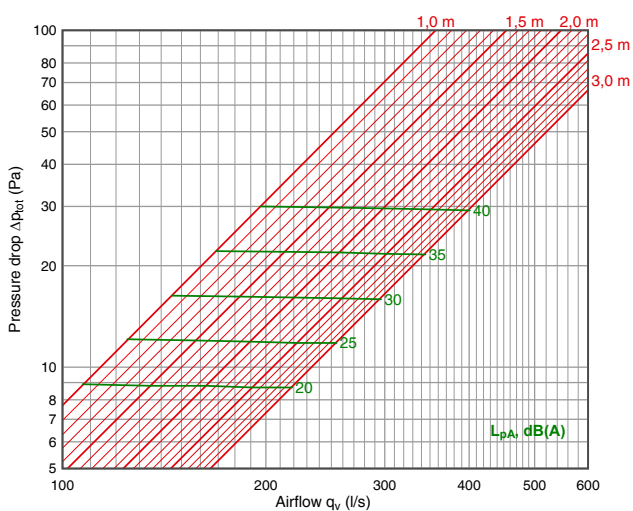
Supply air: SP2+"Turbo Grip"



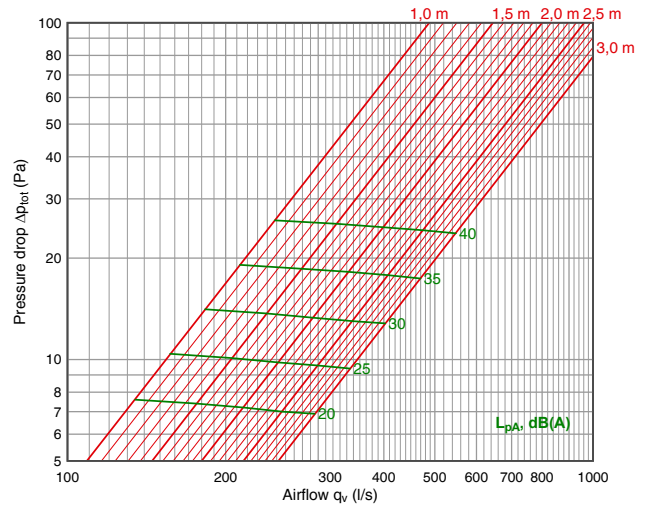
Supply air: SP3+"Turbo Grip"



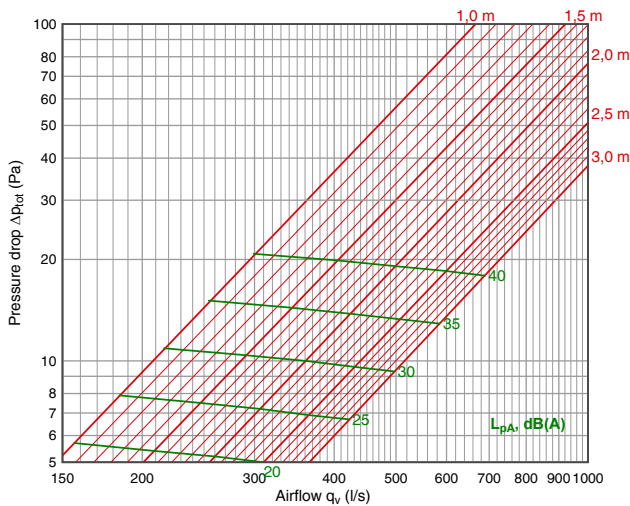
Supply air: SP1+"Turbo Grip"+side panels



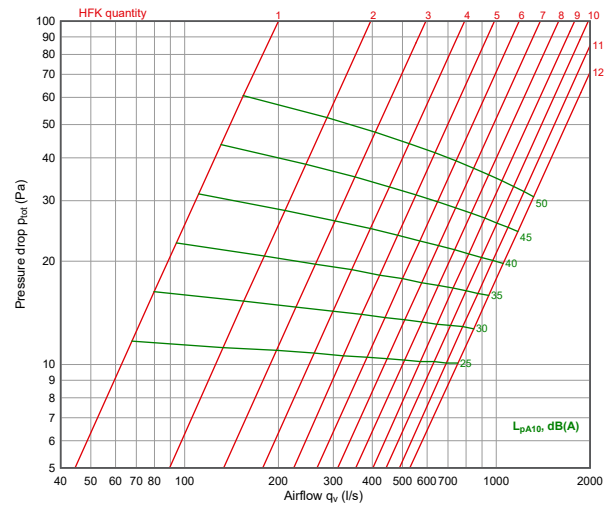
Supply air: SP2+"Turbo Grip"+side panels



Supply air: SP3+"Turbo Grip"+side panels



HFK -grease filter



Acoustic data

Supply air	Correction of sound level K_{okt} (dB)							
	(Hz)							
	63	125	250	500	1000	2000	4000	8000
"Turbo Grip"	-6	-8	-5	-3	0	-1	-7	-20
SPx1 + "Turbo Grip"	-1	0	3	2	-1	-3	-11	-23
SPx2 + "Turbo Grip"	0	1	5	4	-1	-8	-20	-27
SPx3 + "Turbo Grip"	7	5	6	4	-2	-13	-21	-30
SPx1+"Turbo Grip"+side panels	-1	-1	2	2	0	-5	-15	-28
SPx2+"Turbo Grip"+side panels	3	1	5	4	-1	-9	-21	-27
SPx3+"Turbo Grip"+side panels	8	5	6	4	-3	-13	-22	-30
	± 4 dB	± 4 dB	± 4 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB

Facts about Ozone

Ozone is a colorless gas with a pungent smell that can often be detected by any person at a concentration of 0,02 ppm (0,4 mg/m³). The smell of ozone is similar to chlorine like in a swimming pool.

Local protection legislations must be followed when using ozone. In Sweden, for example, the Swedish Work Environment Authority issues the following hygienic limits for ozone:

- 0,1 ppm (during a working day, 8 hours)
- 0,3 ppm (during 15 minutes)

At acute exposure ozone can cause following injuries:

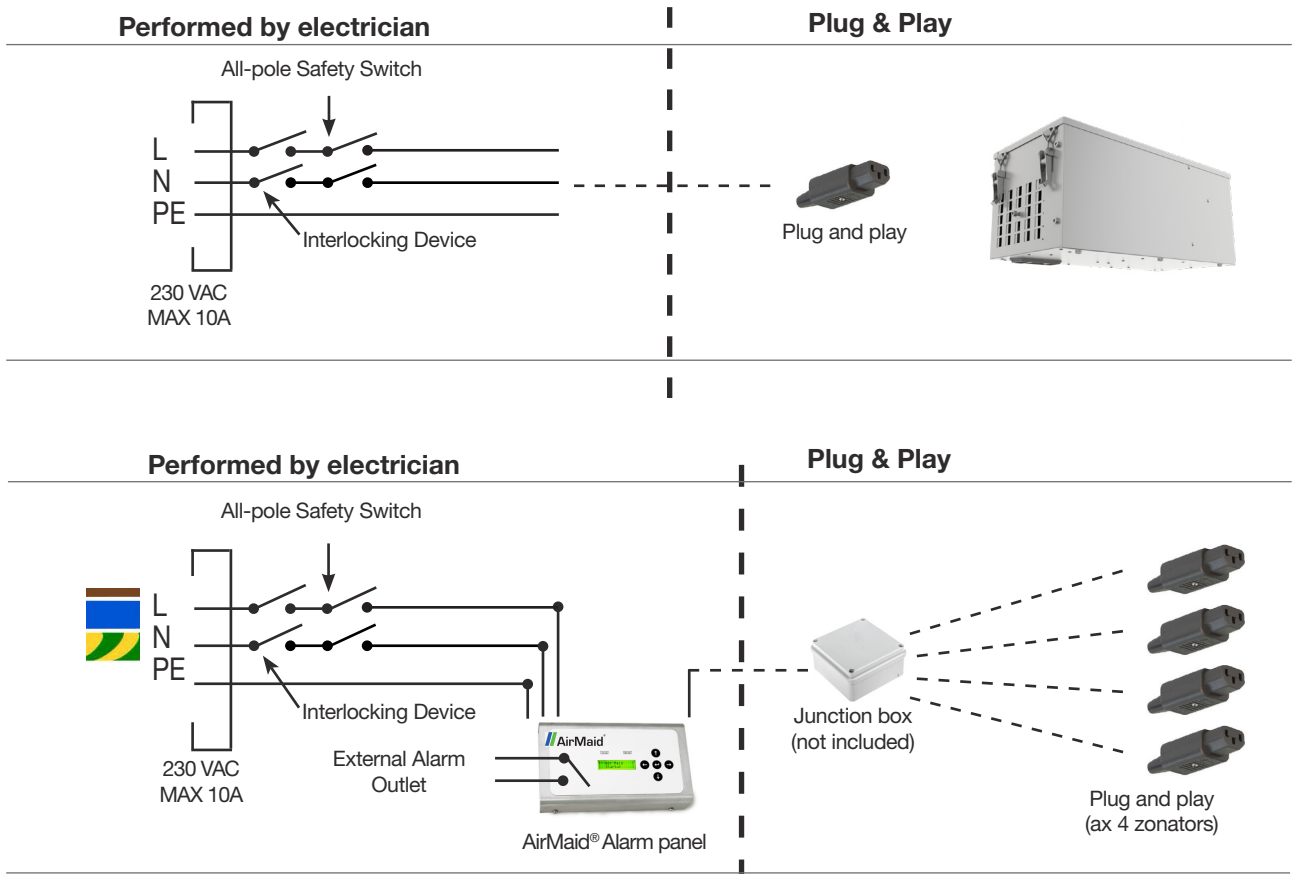
- On skin: Irritation and burning feeling
- In eyes: Severe irritation, burn injuries and reduced vision
- In lungs: Irritation to respiratory organs and breathing difficulty

Always take corrective action and safety precautions if ozone is detected in an indoor environment.

Ozonator Electrical Connections

Ozonator installation must be performed by an authorized electrician and the installation must meet all national, regional and local standards and regulations. The interlock displayed in the graph below is mandatory and intended to cut off power to the ozonator when the exhaust fan is not functioning. An all-pole safety switch with a break length of at least 3 mm must be installed as well.

The ozonator requires 230 VAC / 50 Hz. Each alarm panel must be connected to its own slow 10A breaker.



Product marking

Marking - Dimensions - Supply air - Exhaust air - Front panel - Grease filters - Lighting

<p>Marking</p> <p>HKZ - 1 module in width HKZ-2 -2 modules in width</p> <p>Dimensions</p> <p>L - Length B - Width H - Height</p> <p>Supply air</p> <p>S0 - Supply air only for ozonator S1 - Supply air chamber on one side S2 - Supply air chambers on two sides Diameter of supply air connection Quantity of supply air connections</p> <p>Exhaust air</p> <p>E1 - One exhaust air chamber E2 - Two exhaust air chambers E3 - HFKV exhaust air module E4 - HFK filters in dual row Diameter of exhaust air connection Quantity of exhaust air connections</p> <p>Front panel</p> <p>SPx0 - No Perforation, only "Turbo Grip" supply air curtain system SPx1 - Perforation pattern 1 - (per L=1000mm) 130 l/s, 40 Pa, 40 dB(A) SPx2 - Perforation pattern 2 - (per L=1000mm) 190 l/s, 37 Pa, 40 dB(A) SPx3 - Perforation pattern 3 - (per L=1000mm) 250 l/s, 25 Pa, 40 dB(A) SPxK - Perforation pattern on L/R side panels - (SPxKL, SPxKR, SPxKLR) SPxF - No Perforation, fixed surface without access lock</p> <p>Grease filters</p> <p>HFK Grease filter quantity</p> <p>Lighting</p> <p>LED770 - L=769, 20W LED1370 - L=1369, 37W LED1670 - L=1669, 53W Quantity of lighting fixtures</p>	
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Example: **HKZ-2 3500x2400x550 - S1=250x8 - E1=315x4 - SPx3 - HFKx12 - LED1370x4**

Blind plates: Blind plates are blank panels used to replace filters in cases of low air volumes. By using blind plates the canopy system can maintain sufficient pressure and air velocity for proper filter operation.

Masking plates:

Mounted in the area between canopy and ceiling, when conduits and other components are to be concealed.

HFK Grease Filter

HFK is a high efficiency grease filter designed for use in ventilation hoods of commercial kitchens or other food production facilities. They are positioned in the hood exhaust plenum above cooking appliances (stoves, grills, etc.) and separate grease and other particles out from the exhaust air stream.

The ETS Nord HFK grease filter is protected by utility patent no. 01310.



- High efficiency captures 97% of 10 micron particles
- Functions well even with variable air volume systems
- Low pressure drop provides energy-efficient operation
- Flame resistance class A according to DIN 18869-5
- Easy to maintain

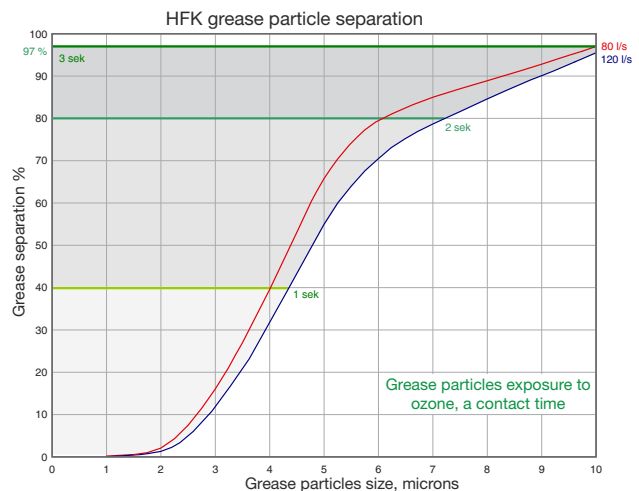
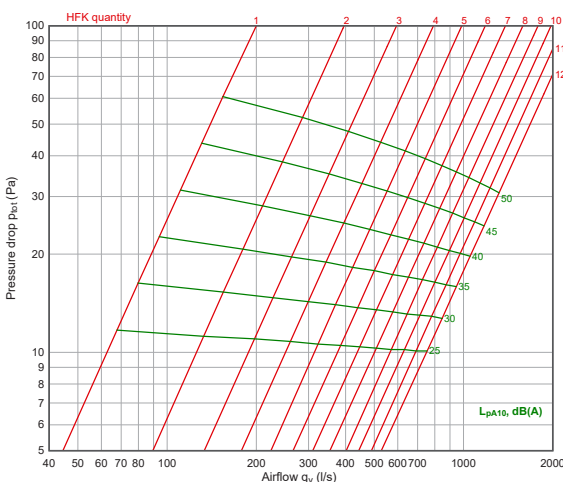
Material and Design

HFK filters are manufactured from AISI 304 stainless steel. They are assembled with rivets to ensure their durability through many years of use in challenging kitchen environments.

Operation

The greasy effluent from cooking appliances is pulled through the openings in the front panel of the filter. Our patented double-triangular cross-section within the chamber causes a high speed centrifugal swirling of the air. The rapid change of trajectory of the grease particles causes them to collide with the filter surfaces, resulting in their effective separation from the air stream. The grease then drains from the filter down and into the grease collection channel of the hood. The filtered air continues on into the kitchen exhaust system through the top and bottom orifices of the filter.

The optimal operating conditions of the HFK Grease Filter are under a pressure drop from 12-48 Pa with an airflow through each filter from 70-130 l/s, ensuring an energy efficient operation.



Installation

HFK Grease Filters are easily inserted into the filter installation rails extending across the entire length of the hood.

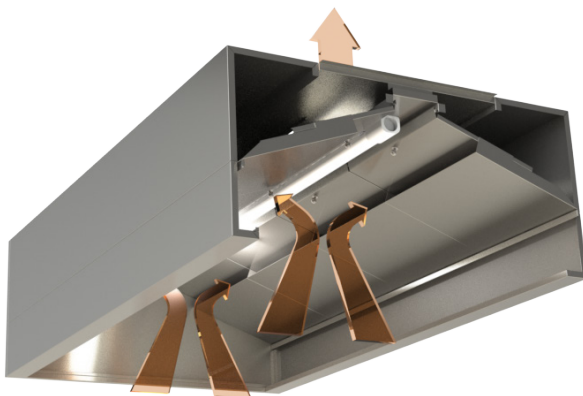
HKU Condensate Canopy



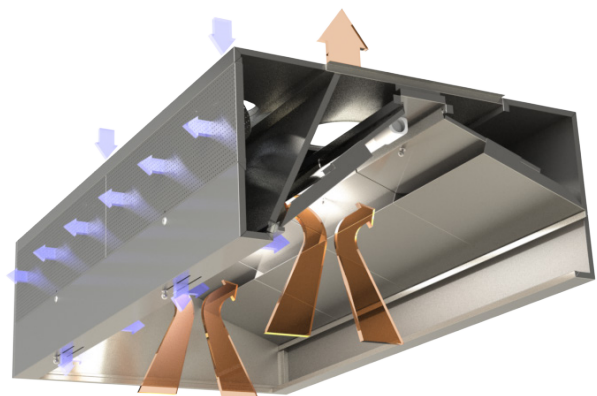
Condensate canopy is designed for installation above dishwashers. Ensures a clean, hygienic and comfortable kitchen environment by removing steam produced by dishwashers. Supply air is conducted to room through the unit's front panel.

Operation

Temperature difference raises vapour into the top of the hood where it condenses on the surface of blades and flows along the side plates into condensate channel and drainage pipe. The condensation plates are removable for washing and adjusting the hood.



Steam trap, without supply air

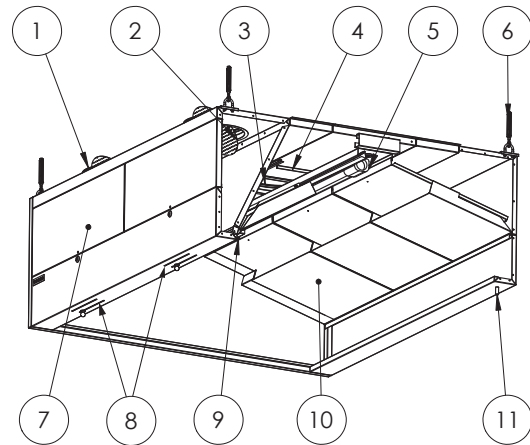


Steam trap, with supply air

Construction and Dimensions

Manufactured of stainless steel (AISI 304). Duct connections are manufactured of galvanized steel sheet and equipped with gaskets. Each hood can be provided with a surface-mounted luminary (available as accessory).

HKU dimensions (mm)	
L Length	600, 700, ... , 2800, 2900
B Width	1000, 1100, ..., 1700, 1800
H Height	400, 550
S	160, 200, 250
E	200, 250, 315



- 1 - Supply air connection
- 2 - Supply air regulating plate
- 3 - Exhaust air connection
- 4 - Adjusting plate for exhaust air
- 5 - Lighting
- 6 - Suspension points
- 7 - Front panel
- 8 - Auxiliary supply air openings
- 9 - Air flow measuring nipples
- 10 - Condensation plates (removable)
- 11 - Condensate drain connection

Exhaust air volume

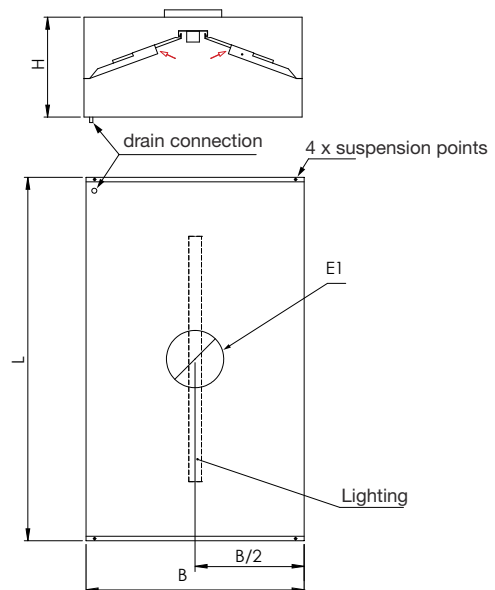
Recommended exhaust air volume through one 315 mm exhaust connection is max 300 l/s when air flow speed in the duct is 3,8 m/s.

Recommended supply airflow

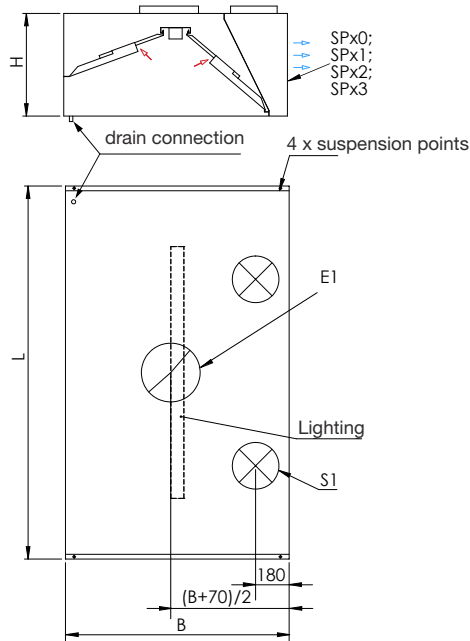
	SPx1+"Turbo Grip"	SPx2+"Turbo Grip"	SPx3+"Turbo Grip"
Supply air flow l/s, per linear meter of front panel	10-61 Pa 70-175 l/s	10-40 Pa 110-220 l/s	10-28 Pa 165-275 l/s

HKU canopy, without supply air

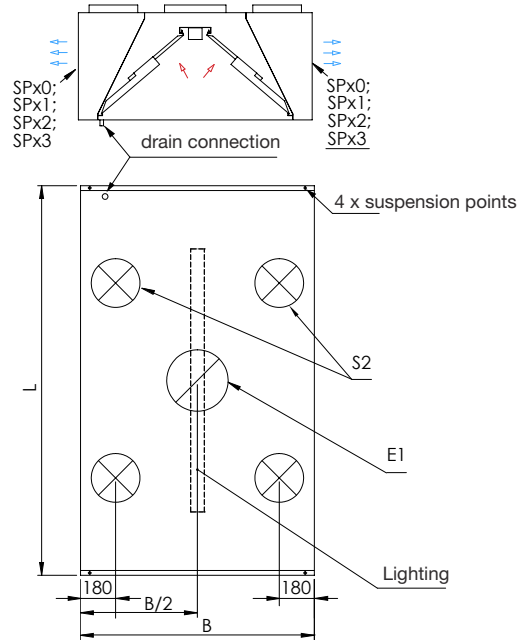
L Length	600, 700, ... , 2800, 2900
B Width	1000, 1100, ..., 1800
H Height	400, 550
E1	200, 250, 315



HKU canopy, with supply air	
L Length	600, 700, ... , 2800, 2900
B Width	1000, 1100, ..., 1800
H Height	400, 550
S1	160, 200, 250
E1	200, 250, 315



HKU canopy, with supply air	
L Length	600, 700, ... , 2800, 2900
B Width	1400, 1500, ..., 1800
H Height	400, 550
S2	160, 200, 250
E1	200, 250, 315



Lighting

Professional kitchen requires functioning lighting, which guarantees the employees good working conditions. ETS NORD professional kitchen canopies use next generation energy efficient LED lights, which can save up to 50% more energy compared to older fluorescent lights.

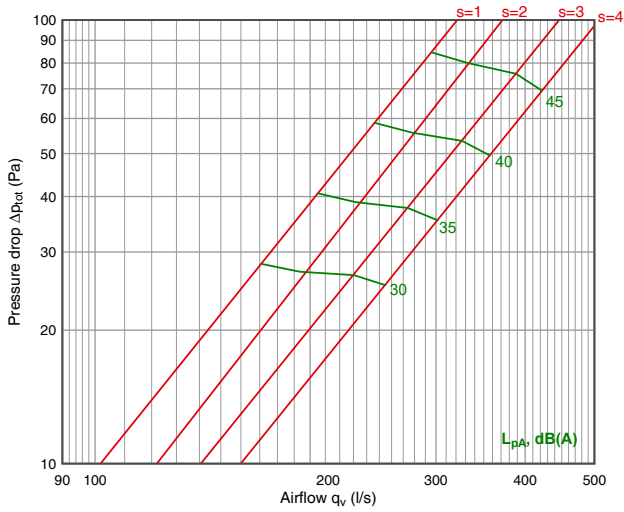
The size and number of lights is determined based on the size of the canopy, so that there is enough light output for the working space.

Luminaries:

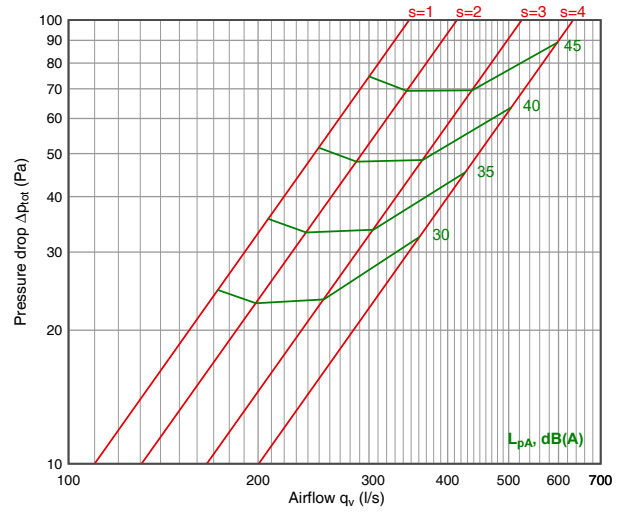
Canopy length (mm)	Lighting length (mm)	Energy use (W)	Light color	Color temperature (K)	Color rendering index (Ra)	Flux (lm)
1000 ≤ L < 1600	LED770	20	840	4000	80	2250
1600 ≤ L < 1900	LED1370	37	840	4000	80	4900
L ≥ 1900	LED1670	53	840	4000	80	6750

Technical data

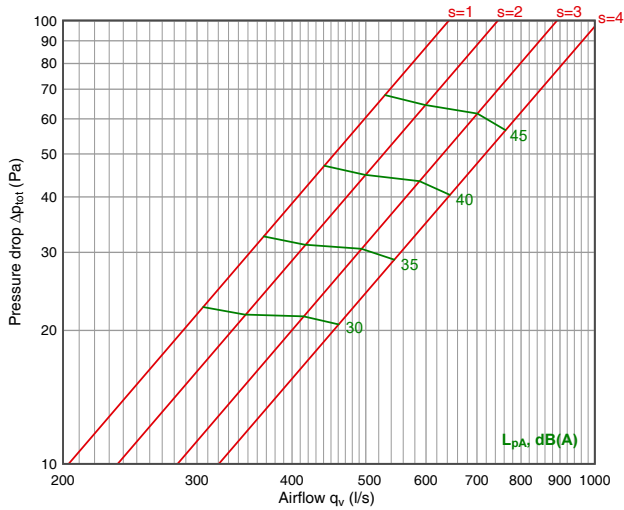
Exhaust air: HKU L=1000...1400



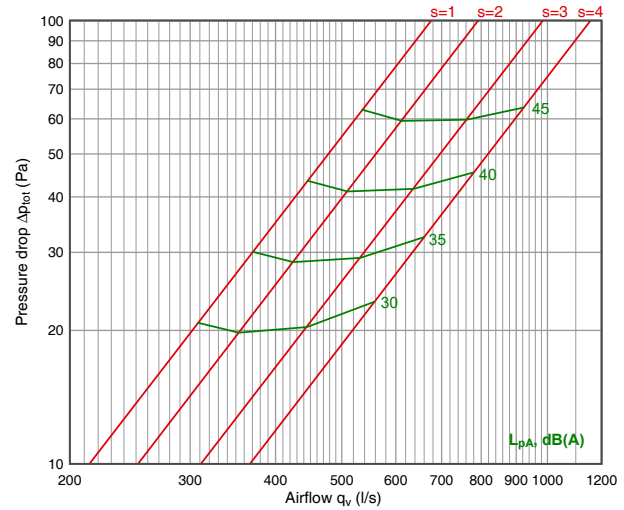
Exhaust air: HKU L=1500...1900



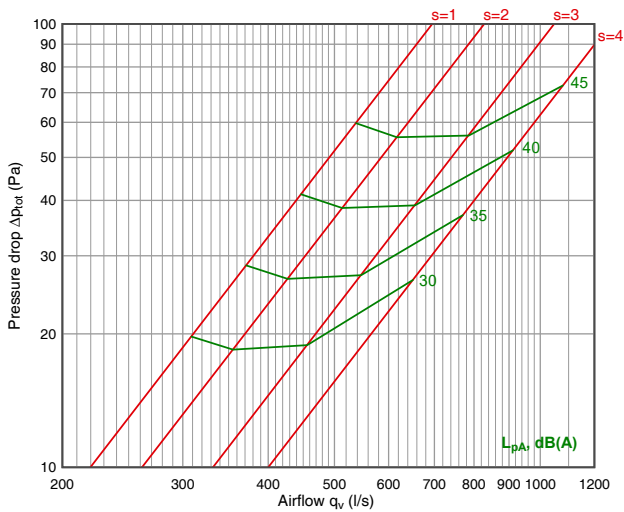
Exhaust air: HKU L=2000...2400



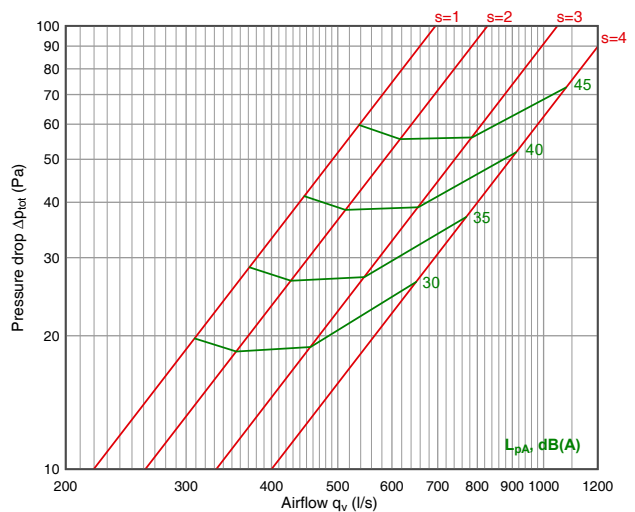
Exhaust air: HKU L=2500...2900



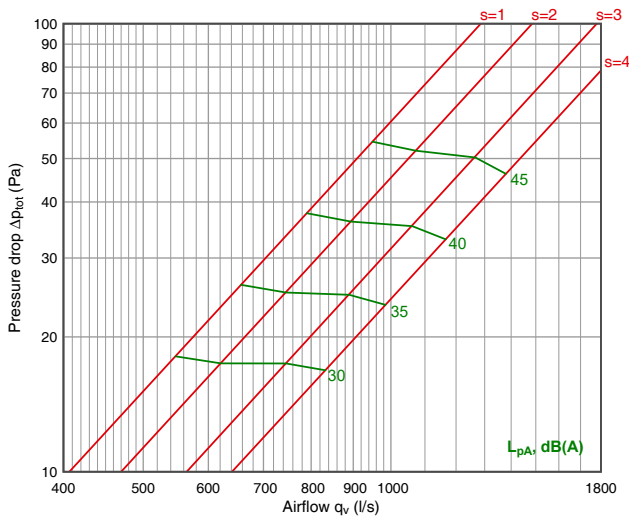
Exhaust air: HKU L=3000...3400



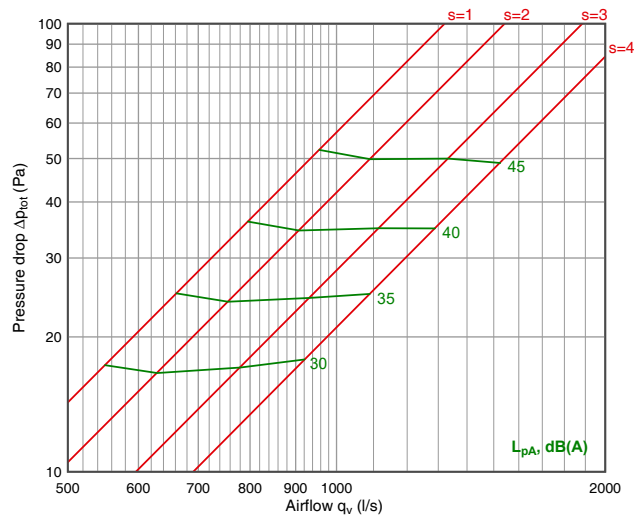
Exhaust air: HKU L=3500...3900



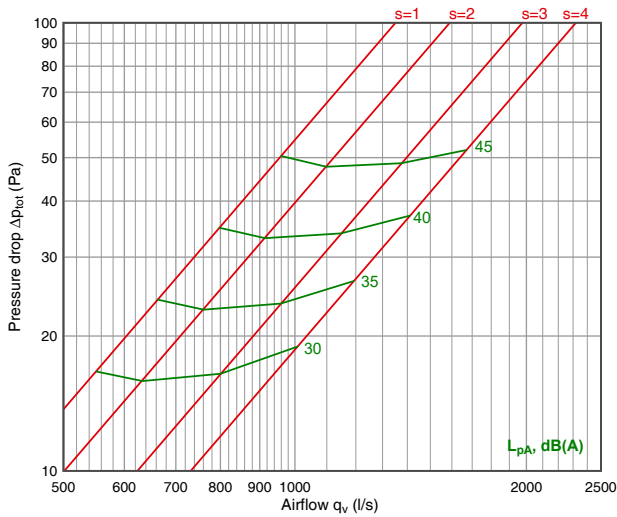
Exhaust air: HKU L=4000...4400



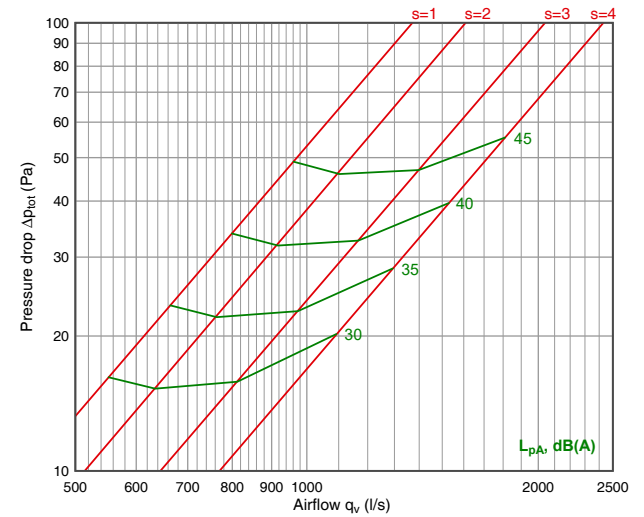
Exhaust air: HKU L=4500...4900



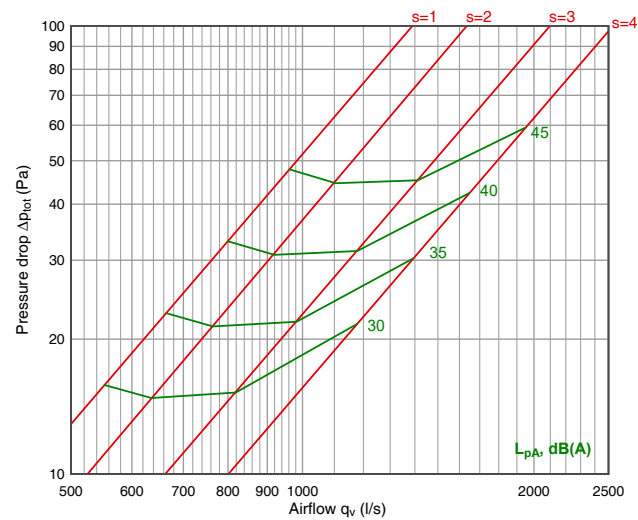
Exhaust air: HKU L=5000...5400



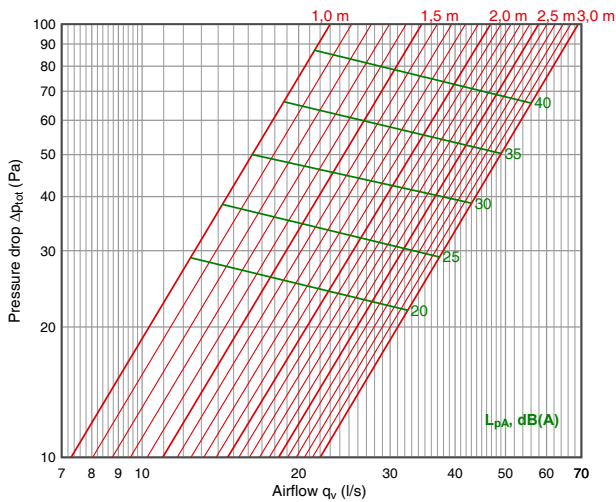
Exhaust air: HKU L=5500...5900



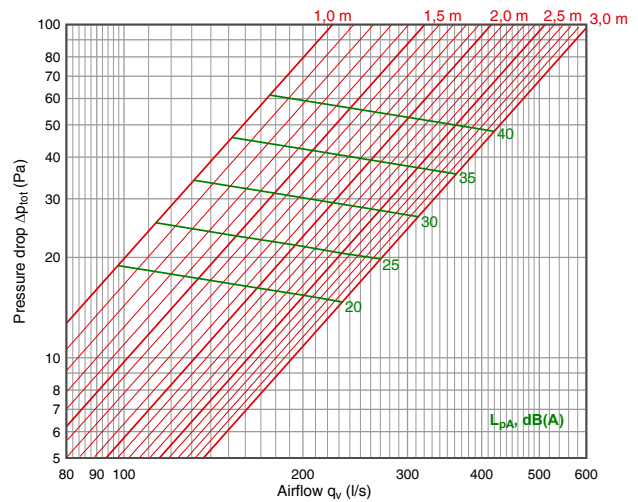
Exhaust air: HKU L=6000



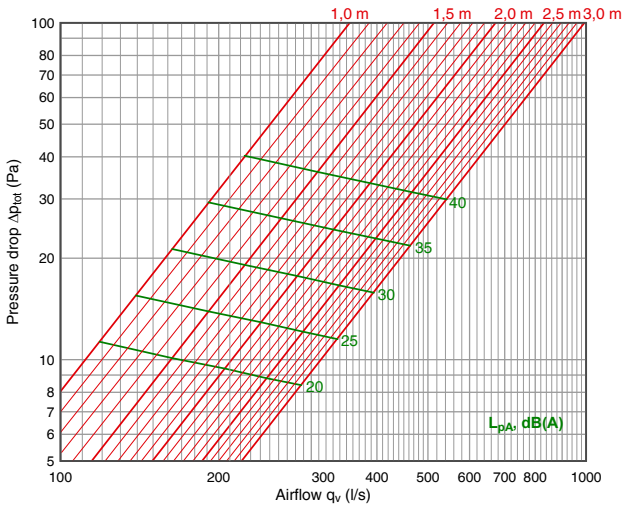
Supply air: "Turbo Grip"



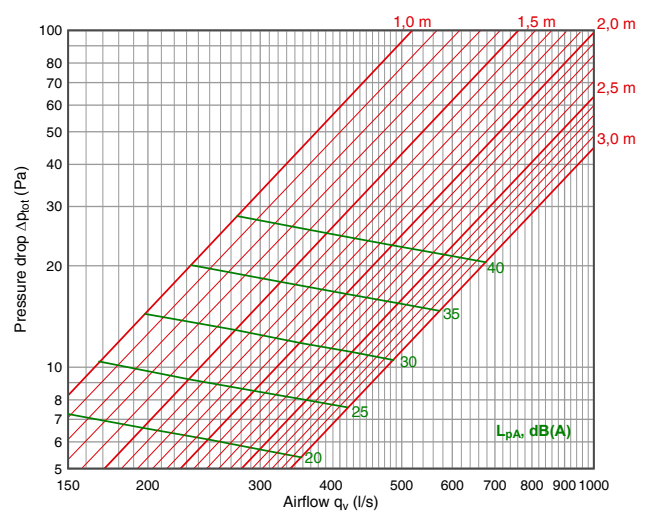
Supply air: SP1+"Turbo Grip"



Supply air: SP2+"Turbo Grip"



Supply air: SP3+"Turbo Grip"



Acoustic data

$$L_w = L_{p10A} + K_{okt}$$

Exhaust air Adjusting plate position	Correction of sound level K_{okt} (dB)							
	(Hz)							
	63	125	250	500	1k	2k	4k	8k
s = 1	10	12	6	3	-4	-13	-22	-24
s = 2	11	12	6	3	-3	-10	-18	-22
s = 3	10	13	5	3	-3	-9	-16	-21
s = 4	10	13	5	3	-4	-8	-15	-20

Supply air	Correction of sound level K_{okt} (dB)							
	(Hz)							
	63	125	250	500	1000	2000	4000	8000
"Turbo Grip"	-6	-8	-5	-3	0	-1	-7	-20
SPx1 + "Turbo Grip"	-1	0	3	2	-1	-3	-11	-23
SPx2 + "Turbo Grip"	0	1	5	4	-1	-8	-20	-27
SPx3 + "Turbo Grip"	7	5	6	4	-2	-13	-21	-30
	± 4 dB	± 4 dB	± 4 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB

Product marking

Marking - Dimensions - Supply air - Exhaust air - Front panel - Lighting

<p>Marking _____</p> <p>HKU - Canopy</p>	<p>Dimensions _____</p> <p>L - Length B - Width H - Height</p>	<p>Supply air _____</p> <p>S1 - Supply air chamber on one side S2 - Supply air chambers on two sides Diameter of supply air connection Quantity of supply air connections</p>	<p>Exhaust air _____</p> <p>E1 - One exhaust air chamber Diameter of exhaust air connection Quantity of exhaust air connections</p>	<p>Front panel _____</p> <p>SPx0 - No Perforation, only "Turbo Grip" supply air curtain system SPx1 - Perforation pattern 1 - (per L=1000mm) 130 l/s, 40 Pa, 40 dB(A) SPx2 - Perforation pattern 2 - (per L=1000mm) 190 l/s, 37 Pa, 40 dB(A) SPx3 - Perforation pattern 3 - (per L=1000mm) 250 l/s, 25 Pa, 40 dB(A)</p>	<p>Lighting _____</p> <p>LED770 - L=769, 20W LED1370 - L=1369, 37W LED1670 - L=1669, 53W Quantity of lighting fixtures</p>
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Example: **HKU 2000x1000x550 - S2=200x4 - E1=315x1 - SPx1 - LED770x1**

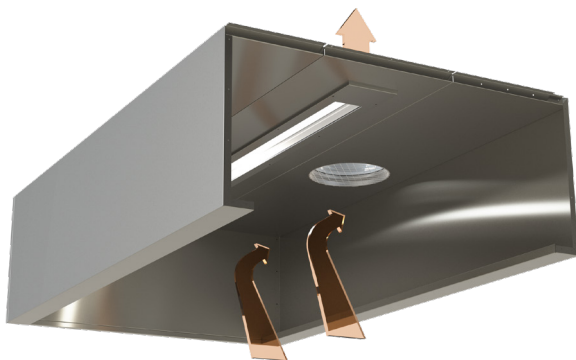
Masking plates:

Mounted in the area between canopy and ceiling, when conduits and other components are to be concealed.

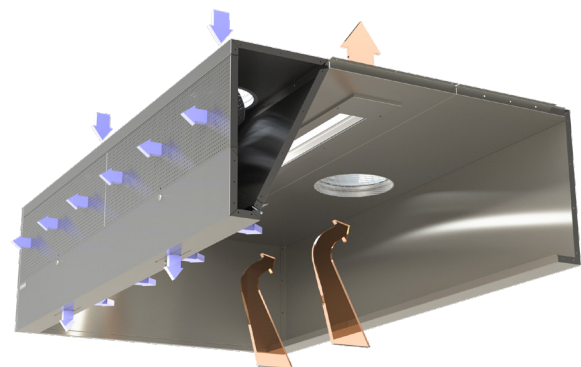
HKN Canopy



The HKN Canopy ensures a clean, hygienic and comfortable work environment by removing pollutants and excess heat from your commercial or industrial operations. HKN is available with or without integrated supply air.



HKN without supply air



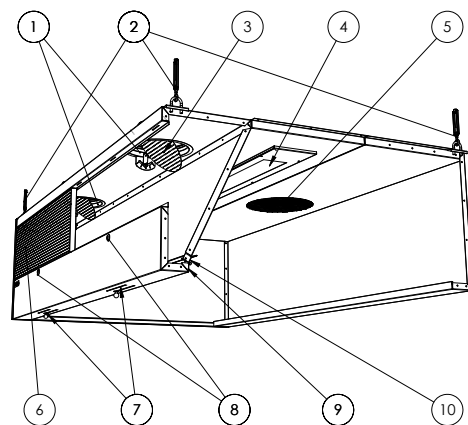
HKN with supply air

Construction and Dimensions

The canopy is made from 1 mm thick stainless steel (AISI 304, surface 2K). Duct connections are equipped with rubber gaskets, and supply air chambers are heat insulated to prevent condensation of steam on the inner surface of the canopy. Heavy duty U-bolts are installed on each top corner of the canopy for hanging.

We at ETS Nord know that no two projects have exactly the same requirements. We have therefore designed our canopies to be modular, so we can custom design and manufacture a NORDcanopy solution to meet your each and every project requirement or technical need.

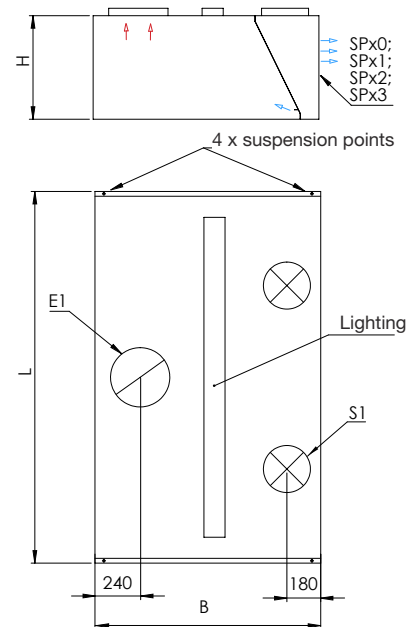
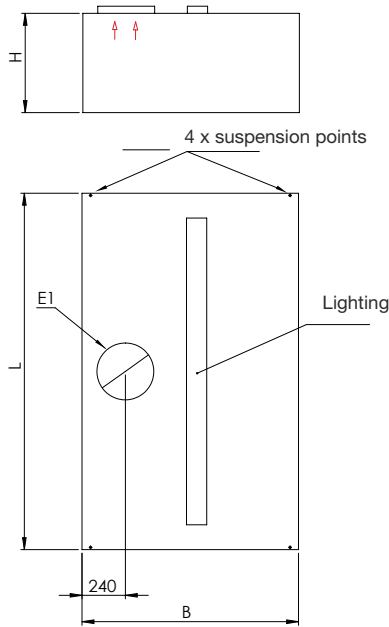
HKN dimensions	mm
L Length	500, 600, ..., 2800, 2900
B Width	B=800, 900 (No lighting) B=1000,1100, ..., 1700, 1800
H Height	400, 550
S	100, 125, 160, 200, 250
E	200, 250, 315



- 1 - Supply air connection
- 2 - Suspension points
- 3 - Supply air regulating plate
- 4 - Lighting
- 5 - Exhaust air connection
- 6 - Front panel
- 7 - Auxiliary supply air openings
- 8 - Front panel lock
- 9 - "Turbo Grip" air nozzle system
- 10 - Airflow measuring nipples

HKN canopy without supply air	
L Length	500, 600, ..., 2800, 2900
B Width	B=500, 600 (No lighting) B=700,800, ..., 1700, 1800
H Height	400, 550
E1	200, 250, 315

HKN canopy with supply air	
L Length	500, 600, ..., 2800, 2900
B Width	B=800, 900 (No lighting) B=1000,1100, ..., 1700, 1800
H Height	400, 550
S1	100, 125, 160, 200, 250
E1	200, 250, 315



Lighting

Professional kitchens require functional lighting to ensure that employees have a safe and effective work environment. ETS NORD professional kitchen canopies use next generation, energy efficient LED lights, which can save as much as 50% more energy compared to older technology fluorescent lights.

The size and number of light fixtures are determined by the size of the canopy, to ensure there is enough light output for the entire workspace.

Luminaries:

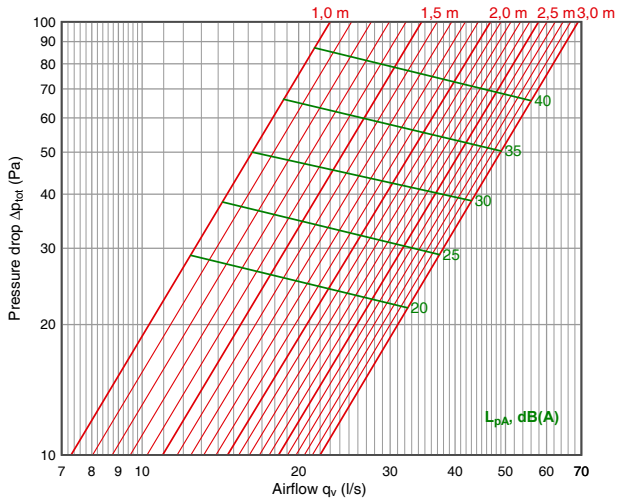
Canopy length (mm)	Lighting length (mm)	Energy use (W)	Light color	Color temperature (K)	Color rendering index (Ra)	Flux (lm)
1000 ≤ L < 1600	LED770	20	840	4000	80	2250
1600 ≤ L < 1900	LED1370	37	840	4000	80	4900
L ≥ 1900	LED1670	53	840	4000	80	6750

Recommended supply airflow

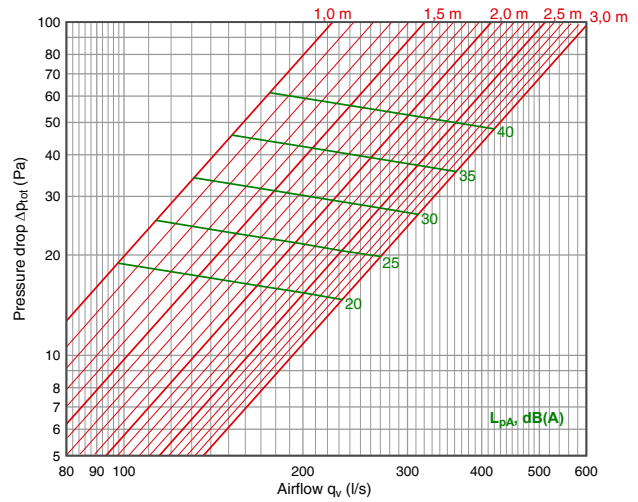
Supply airflow per linear meter of front panel, l/s		
SPx1+ Turbo Grip	SPx2+ Turbo Grip	SPx3+ Turbo Grip
10-61 Pa 70-175 l/s	10-40 Pa 110-220 l/s	10-28 Pa 165-275 l/s

Technical data

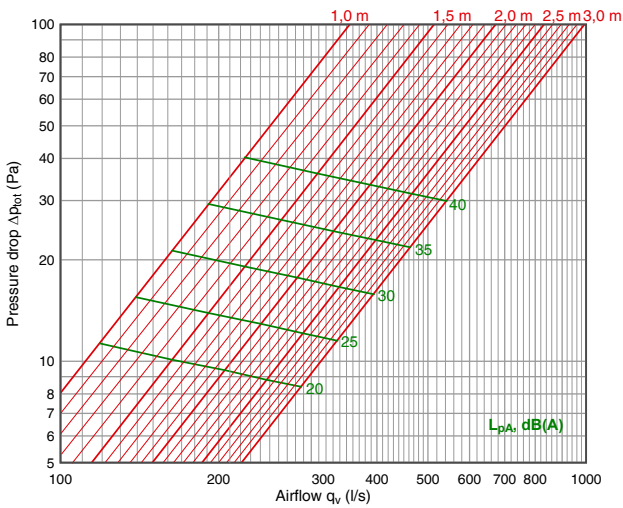
Supply air: "Turbo Grip"



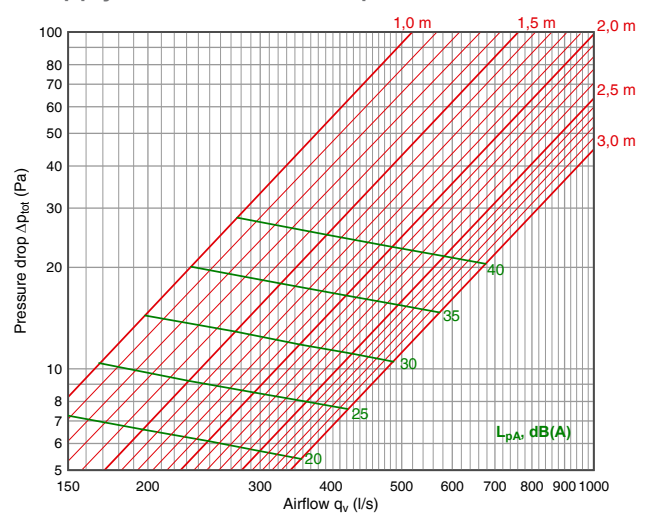
Supply air: SP1+"Turbo Grip"



Supply air: SP2+"Turbo Grip"



Supply air: SP3+"Turbo Grip"

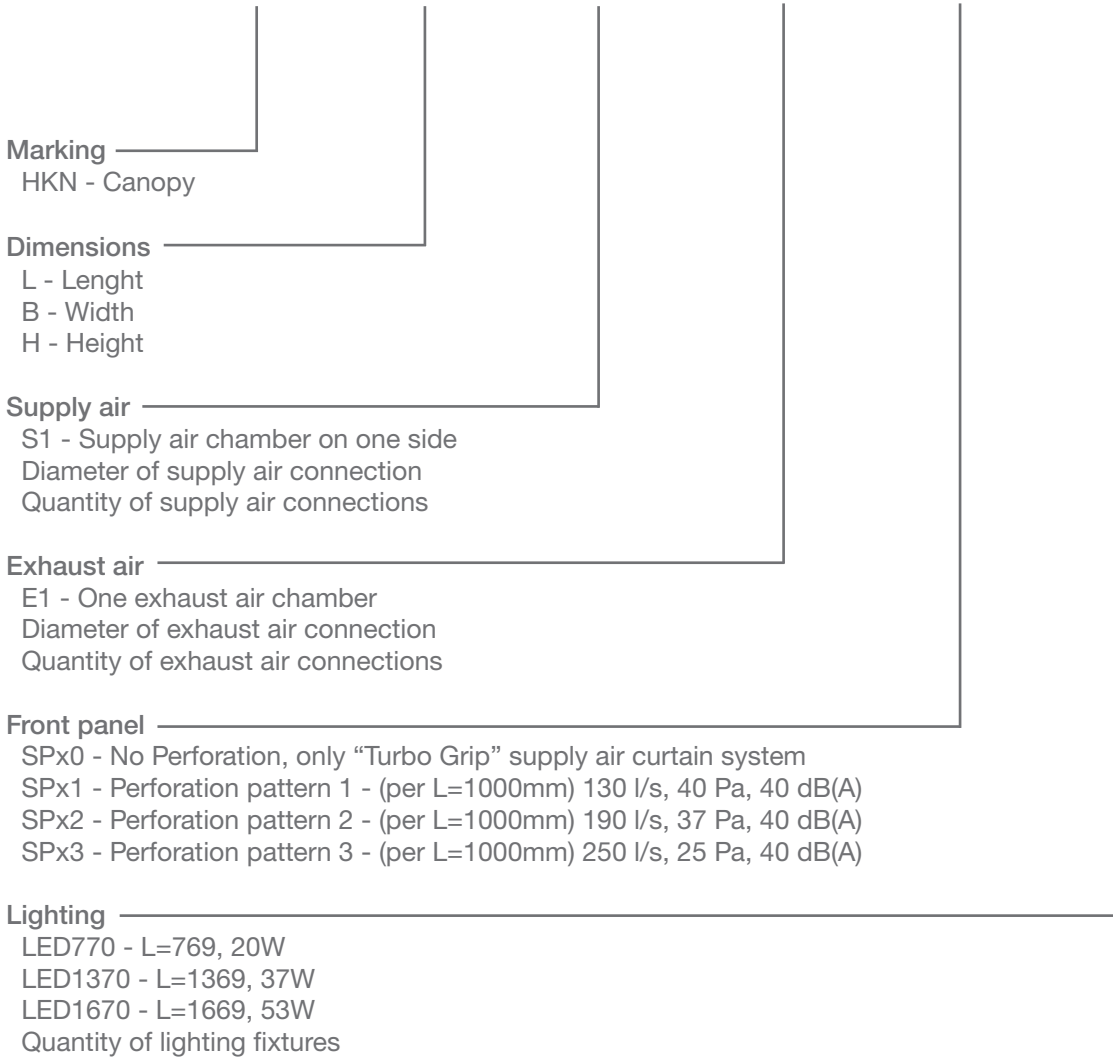


Acoustic data

Supply air	Correction of sound level K_{okt} (dB)							
	(Hz)							
	63	125	250	500	1000	2000	4000	8000
"Turbo Grip"	-6	-8	-5	-3	0	-1	-7	-20
SPx1 + "Turbo Grip"	-1	0	3	2	-1	-3	-11	-23
SPx2 + "Turbo Grip"	0	1	5	4	-1	-8	-20	-27
SPx3 + "Turbo Grip"	7	5	6	4	-2	-13	-21	-30
	± 4 dB	± 4 dB	± 4 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB

Product marking

Marking - Dimensions - Supply air - Exhaust air - Front panel - Lighting



Example: HKN 2000x1000x550 - S1=200x4 - E1=315x1 - SPx1 - LED770x1

HKT Canopy



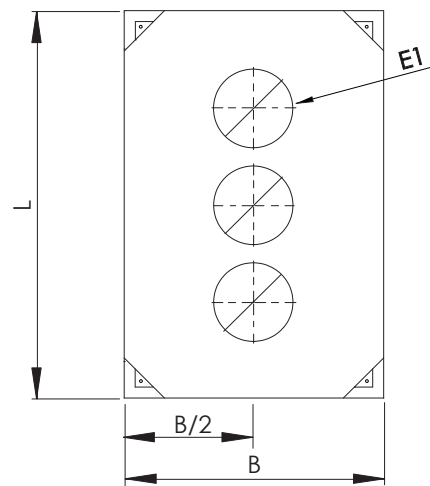
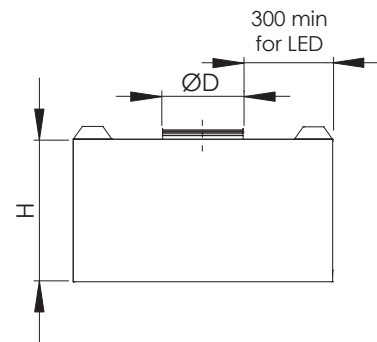
The HKT Canopy is our most basic canopy for removing airborne particles and excess heat, ensuring a clean, hygienic and comfortable work environment. It is most suitable for industrial applications.

Material and dimensions

The canopy is made standard from galvanized steel (DX51D+Z275) but can optionally be constructed from other materials.

We at ETS Nord know that no two customer requirements are exactly alike. We have designed our canopies to be modular, so we can custom design and manufacture a NORDcanopy solution to meet your each and every project requirement or technical need.

HKT Dimensions	mm
L Length	500 ... 3000
B Width	500, ..., 800 (No lighting) 900, 1000, ... 2900, 3000
H Height	200 ... 1000
E1	100, 125, 160, 200, 315, 400



Lighting

ETS NORD canopies use next generation, energy efficient LED lights, which can save as much as 50% more energy compared to older technology fluorescent lights.

The light fixtures are integrated into their ceilings, protected by aluminum and glass casings.

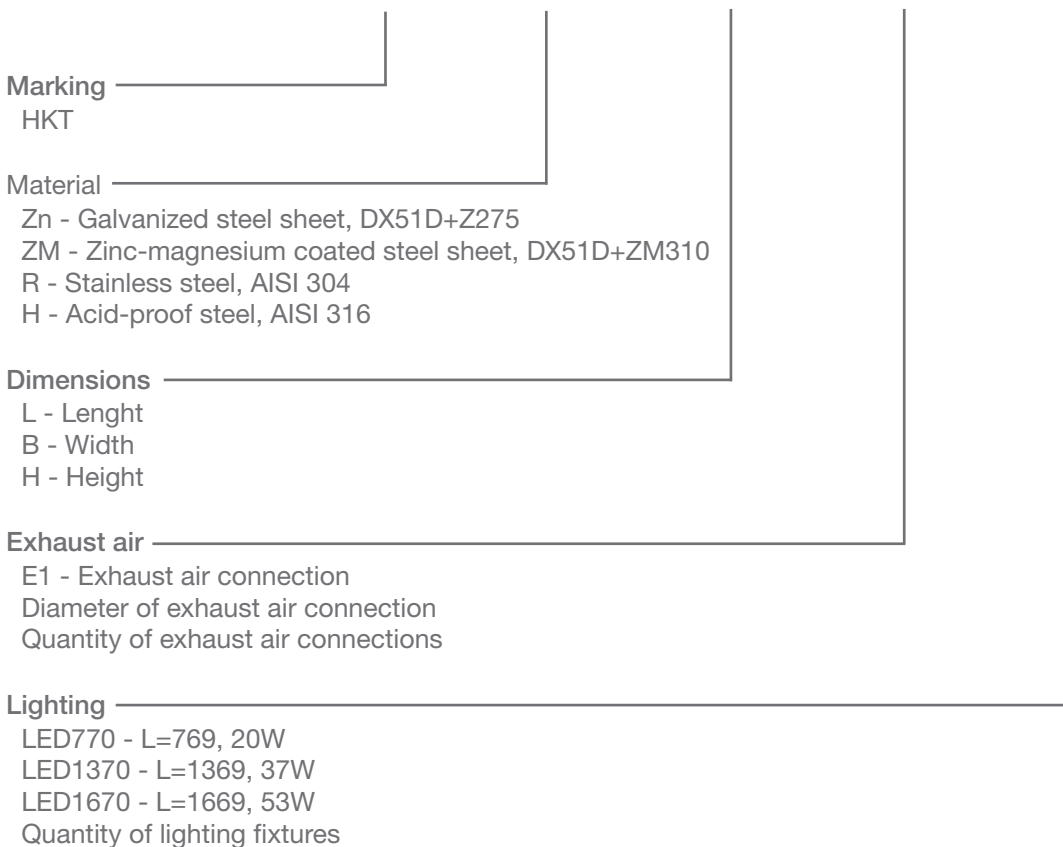
The size and number of light fixtures are determined by the size of the canopy, to ensure there is enough light output for the entire workspace.

Luminaries

Canopy length (mm)	Lighting length (mm)	Energy use. (W)	Light color	Color temperature (K)	Color rendering index (Ra)	Flux (lm)
1000 ≤ L < 1600	LED770	20	840	4000	80	2250
1600 ≤ L < 1900	LED1370	37	840	4000	80	4900
L ≥ 1900	LED1670	53	840	4000	80	6750

Product marking

Marking - Material - Dimensions - Exhaust air - Lighting



Example: **HKT-Zn 2000x1000x550 - E=315x1 - LED770x1**

Masking plates:

Mounted in the area between canopy and ceiling, when conduits and other components are to be concealed.



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