KW3 GALLEY WATER WASH HOOD

With Capture Jet™ 3 technology

APPLICATIONS

The Halton KW3 is a galley water wash hood designed for marine and offshore applications. Utilizing the advanced Halton Capture Jet™ 3 technology, this highly efficient hood operates with up to 45% lower exhaust airflow rates compared to traditional hoods. The KW3 galley hood features an automatic washing system that cleans the grease filters without the need for their removal from the hood. The washing cycle is fully automated and programmable to accommodate various operating conditions, and there's an option to manually override the process if needed.

MATERIALS

PART	MATERIAL	NOTE
Front and side walls	Stainless steel EN 1.4301 (AISI 304)*	Available as an option: stainless steel EN 1.4404 (AISI 316L)
Main body	Stainless steel EN 1.4301 (AISI 304)*	Available as an option: stainless steel EN 1.4404 (AISI 316L)
Light fixture	Painted steel	-
Wash piping	Stainless steel, brass	-
Cables	Halogen-free	-

* Thickness 1.25 mm

KW3 CONSTRUCTION

The KW3 hood consists of a Capture Jet™ air supply module, a light fixture, adjustment dampers, airflow measurement taps, and KSA grease filters. All components are made from polished stainless steel EN 1.4301 (AISI 304), with watertight joints at the lower edges. The exhaust plenum is equipped with a drain pipe connection, facilitating the removal of grease, dirt extracted by the KSA multi-cyclone filters, and the drainage of washing water. The Capture Jet™ supply plenum is thermally insulated with mineral wool material to prevent condensation on the inner face above the cooking equipment.

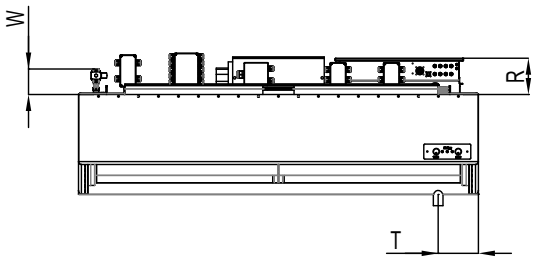
FEATURES

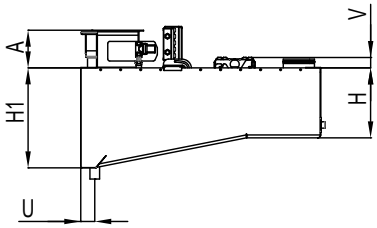
- Halton Capture Jet™ 3 technology, significantly reducing exhaust airflow rates, improving capture and containment efficiencies, and minimizing energy consumption.
- Designed in accordance with USPHS guidelines.
- Automatic periodic cleaning of the exhaust plenum and KSA grease filters (and UV tubes, where applicable).
- Low maintenance requirements, reducing the workload for personnel cleaning the filters and ductwork.
- Ensures a high level of hygiene and prevents the buildup of grease deposits, which could pose a serious fire hazard.
- Equipped with Halton KSA multi-cyclone filters for highly efficient grease filtration.
- Standard features include lighting, balancing dampers for both capture and exhaust air, and T.A.B.™ airflow measurement taps, enabling accurate and effective balancing of airflows, as well as efficient commissioning.
- Constructed with durable welded stainless steel.
- Option to include UV-light filtration technology.
- Option for a modulating Halton fire damper or shut-off damper in the exhaust connection.

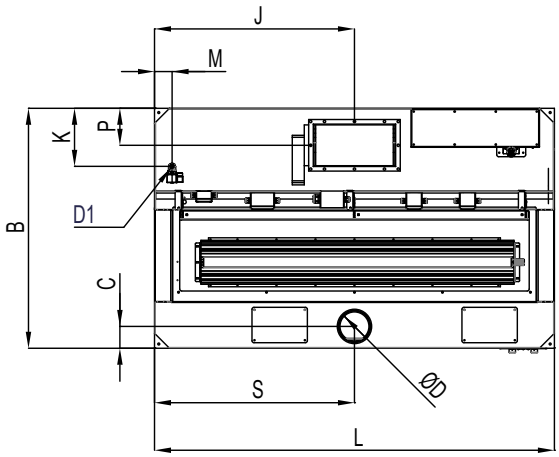
KW3 PRODUCT OPTIONS

- Non-standard spigots: customers can choose from different sizes and positions to meet specific requirements.
- UV-light filtration: an option to combine KSA filter, mesh filter, and ultraviolet-light technology for enhanced filtration.
- Option for construction using EN 1.4404 (AISI 316L) stainless steel.
- Option for a modulating fire damper made of either EN 1.4301 (AISI 304) or EN 1.4404 (AISI 316L), or a shut-off damper in the exhaust connection.
- Option to include a wet chemical fire suppression system for added safety.
- An option for a M.A.R.V.E.L. demand-based ventilation system for optimized airflow and energy efficiency.

GENERAL KW3 DRAWINGS







KW3 DIMENSIONS (mm)			
A	195	L	1000-3000
B	1100-1900	M	87
C	110	P	185
D	100-200	S	1/2L
D1	3/4"	T	100-200
H	350	U	70
H1	500	R	185
J	1/2L	V	max 50
K	291	W	~130

WEIGHTS

KW3 HOODS (KG)

B/L	1200	1600	2000	2500	3000
1100	107	130	156	182	211
1300	112	137	163	191	220
1500	118	144	171	199	230
1700	124	150	178	208	240
1900	130	158	189	218	250

The table above provides an indication of the average weights of different sizes of KW3 hoods. Please note that the weight mentioned does not include the fire damper.

KW3 HOODS WITH UV-LIGHT TECHNOLOGY (KG)

B/L	1250	1600	2000	2500	3000
1100	132	155	183	215	249
1300	137	162	191	223	258
1500	143	169	198	232	268
1700	149	175	206	240	278
1900	155	183	217	251	288

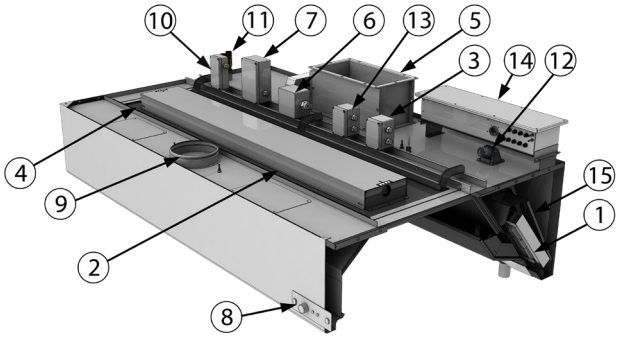
The table above provides an indication of the average weights of different sizes of KW3 hoods with UV-light technology. Please note that the weight mentioned does not include the fire damper.

KW3 PARTS

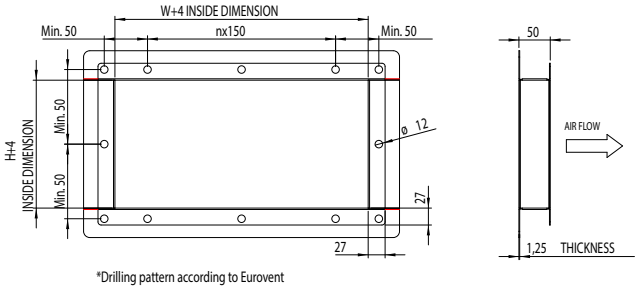
1. KSA grease filters; 2. Lighting fixture; 3. Lighting fixture power supply junction box; 4. Maintenance hatch; 5. Exhaust air connection, fire damper, or shut-off damper* (available as an option) and adjustment damper; 6. Fire damper junction box; 7. Actuator power and fuse info junction box; 8. Damper switch and indication (available as an option); 9. Capture air connection and adjustment damper; 10. Washing solenoid valve junction box; 11. Water wash piping connection R3/4" (G3/4" solenoid valve as an option); 12. UV system (available as an option); 13. UV power supply junction box (available as an option); 14. UV control junction box (location may vary, available as an option); 15. Mesh filter (available as an option).

*If fire or shut-off damper is located at the duct, Halton suggests two default solutions for duct connection:

- Eurovent-collar with flange
- Welded L-collar

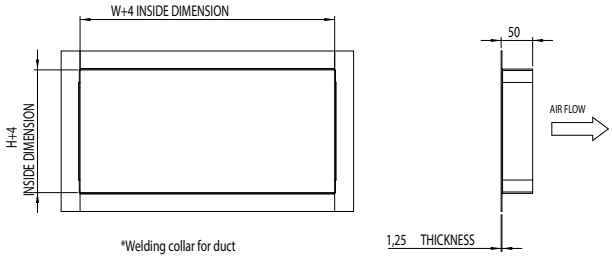


EUROVENT-COLLAR WITH FLANGE



*Drilling pattern according to Eurovent

WELDED L-COLLAR



*Welding collar for duct

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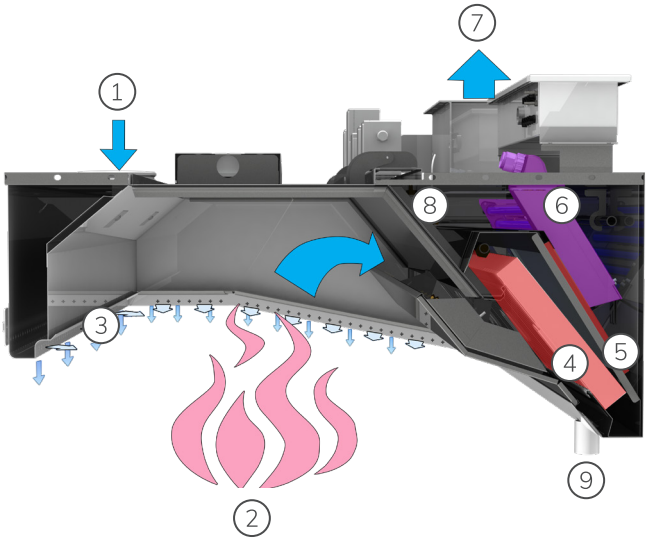
KW3 FUNCTION

1. Supply air enters the Capture Jet™ plenum.
2. Contaminated air and heat rise from the cooking appliances.
3. Halton's patented Capture Jet™ technology directs contaminated air into the hood from three different sides.
4. The KSA multi-cyclone filters efficiently remove grease and contaminants from the air stream using centrifugal force. Independent laboratory tests have proven KSA to be the most efficient mechanical grease filter on the market.
5. The optional mesh filter helps balance airflow inside the exhaust plenum and provides additional air filtration. When combined with the KSA filter, filtration efficiency is doubled.
6. The scheduled maintenance includes the use of UV-light technology, which combines Halton's patented highly efficient Capture Jet™ solution with advanced mechanical KSA filter technology. The UV-light system keeps the plenum and duct virtually grease-free, reducing cooking odor and emissions. Grease vapor and effluents not captured by the high-efficiency filters pass over the lamps, causing a chemical reaction that converts the grease into carbon dioxide and water vapor. This chemical action continues into the duct, helping to keep it and the exhaust fan clean. UV-filtration is available as an option.
7. The cleaned exhaust air contains small amounts of ozone, which further cleans the ducts downstream. Any excess ozone reverts back into oxygen.
8. During scheduled times, the washing control cabinet halts the hood's operation and initiates a washing cycle. Hot water with a mild detergent is pumped into the hood's spray nozzles, effectively cleaning the essential components of the exhaust plenum, including UV-lights and filters. To achieve an improved washing result, it is necessary to modulate the fire or shut-off damper of the hood to minimal airflow during the washing cycle. Subsequently, the waste from the washing cycle is drained from the hood via the drain connection.



SUGGESTED SPECIFICATIONS

The water wash galley hoods shall be constructed using stainless steel EN 1.4301 (AISI 304). Each galley hood will be supplied complete with an outer casing/main body, Capture Jet™ plenum, airflow measurement taps, supply and exhaust air spigot connections with adjustment dampers, maintenance hatch, light fixture, capture air jet, grease filters, drain connection, and an automatic washing system controlled by a separate control cabinet with interfaces to the ship's safety systems. Additionally, classified fire dampers shall be installed in each exhaust connection. The manufacturing process of all galley hoods shall adhere to ISO 3834-2:2005, ISO 9001, ISO 14001, and OHSAS 18001 standards. Furthermore, the design of the hoods shall be in accordance with USPHS guidelines.

CONSTRUCTION

All parts of the hoods shall be constructed using stainless steel sheet EN 1.4301 (AISI 304) with a polished finish and a thickness of 1.25 mm. The inside corners of the hood shall be rounded to ensure easy cleanability as per USPHS guidelines. The joints at the lower edges of the device shall be welded watertight. Visible screws shall be of the thumb screw type. A drain connection shall be integrated into the hood for the removal of dirty water. Maintenance hatches shall be present in each hood, allowing easy access above the hood for maintenance purposes.

WASHING MODULE

The grease filters shall have an automatic washing cycle that utilizes warm water and detergent through nozzles. Detergent mixing will take place within a separate control cabinet. The wastewater resulting from the washing cycle shall be efficiently removed from the hood through a direct drain connection. The casing of the control cabinet shall be constructed using stainless steel sheet EN 1.4301 (AISI 304).

CAPTURE JET™ PLENUM

The Capture Jet™ plenum shall be insulated with sealed mineral wool. Maintenance hatches shall provide access to the plenum when required.

CAPTURE JET™ SYSTEM

The hood shall be designed with Capture Jet™ technology to reduce the required exhaust airflow rate and increase the capture and containment efficiencies of the hood while also reducing energy consumption.

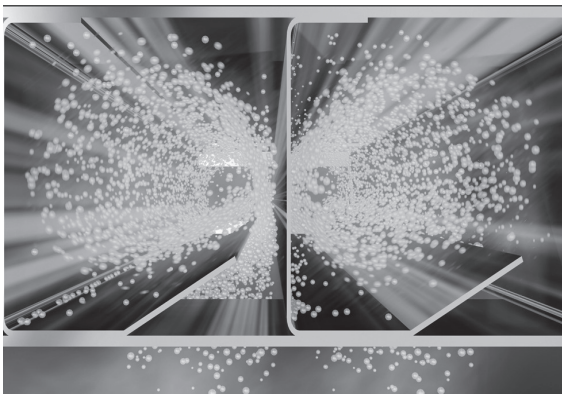
AIRFLOW MEASUREMENT TAPS

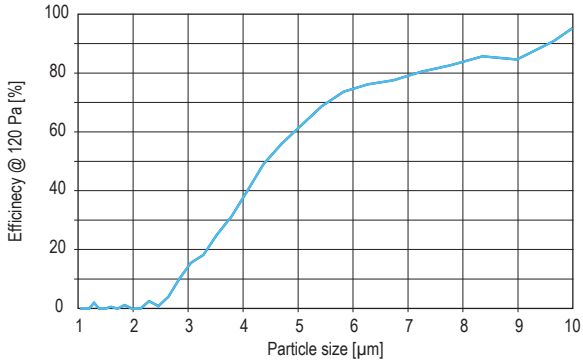
Measurement taps shall be located on top of the hood to facilitate the measurement of capture air and exhaust air.

HALTON KSA FILTER

- Minimisation of grease deposits in the ducts
- Enhanced hygiene and safety

The KSA grease filters shall be constructed using stainless steel EN 1.4301 (AISI304). These grease filters shall be supplied in a modular size of 500x330x50 mm and designed to be easily removable via two folding handles. The honeycomb design of the grease filters shall ensure high grease filtration efficiency through the use of centrifugal effect within the filter honeycombs.





Mechanical filtration is recommended for hoods with low utilization rates and cooking processes that primarily produce large grease particles (> 8 microns), such as food prepared with gas fryers, griddles, and broilers (source ASHRAE).

UV-LIGHT FILTRATION

Halton's UV-light technology is the most efficient solution for hoods with medium to high utilization rates and cooking processes that produce all sizes of grease particles, including food prepared with electric ranges, griddles, and all types of broilers. In the UV-light concept, most of the grease particles are initially filtered using mechanical filtration (type KSA). The mesh filter behind the KSA spreads the airflow, allowing the remaining grease particles inside the hood chamber to be more effectively captured. This enhances filtration efficiency by up to 50% for grease particles sized between 5-8 microns. Leveraging Halton's patented highly efficient Capture Jet™ solution and advanced mechanical KSA filter technology, the UV-light technology, with scheduled maintenance, ensures the plenum and duct remain virtually grease-free, effectively mitigating cooking odors and emissions.

Any grease vapor and effluents not captured by the high-efficiency filters pass over the lamps, resulting in a chemical reaction that converts the grease into carbon dioxide and water vapor. This chemical action extends into the duct, significantly contributing to the cleanliness of both the duct and the exhaust fan.

DUCT CONNECTIONS

Duct connections and adjustment dampers for supply and exhaust air shall be constructed using stainless steel. The dampers shall be adjustable.

LIGHT FIXTURES

Each hood shall be delivered with energy-efficient LED light fixtures, providing an average illuminance of approximately 500 lux at the work surfaces of the cooking appliances. The light fixtures shall be designed for a single-phase 230-VAC power supply and have a protection class of IP67. The ballast and capacitor shall be located within the light frame, and the core electric cables connecting the light fixture to the junction box shall be provided. The light fixture shall be installed on a hinged maintenance hatch, allowing access to the hood roof.

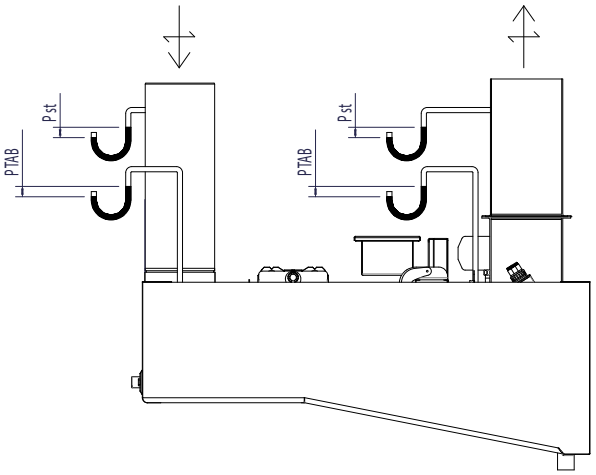
LED LIGHT FIXTURE SIZES

HOOD DIMENSION	LENGTH	WIDTH
L < 1400 mm, 1x28 W	720 mm	175 mm
L ≥ 1400 mm, < 2000 mm, 1x42 W	1020 mm	175 mm
L ≥ 2000 mm, 1x69 W	1620 mm	175 mm

MAINTENANCE HATCH

Each hood shall be equipped with a maintenance hatch made of stainless steel EN 1.4301 (AISI 304) with a shock-resistant plastic window capable of withstanding temperatures up to +115 °C. The hatch shall be easily opened and closed, and the size of the maintenance/ light fixture hatch shall be as large as the construction allows.

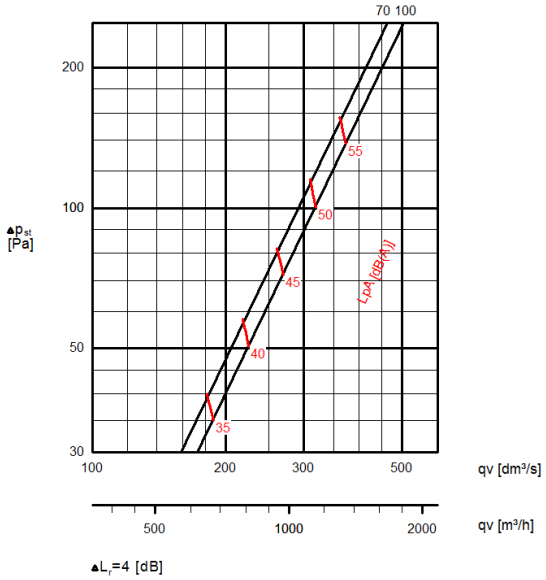
AIRFLOW MEASUREMENT



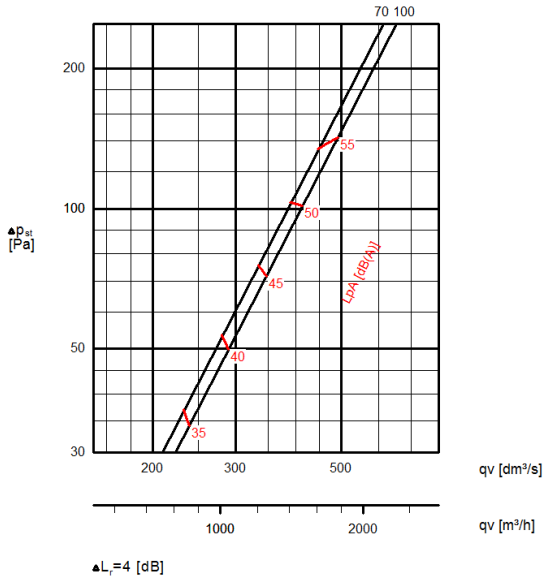
ΔP_{st} = Static pressure loss
ΔP_{TAB} = TAB pressure for airflow rate measurement
70, 100 = Damper opening in %

PRESSURE DROP AND SOUND DATA WITH RECOMMENDED EXHAUST CONNECTION SIZE

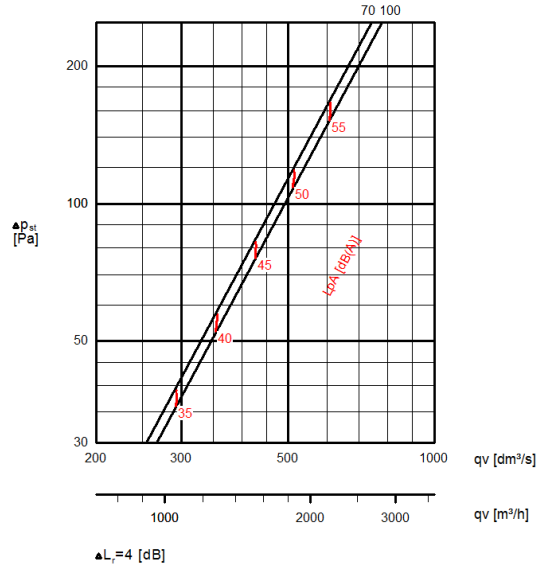
KW3, section 1000, static pressure loss and sound data



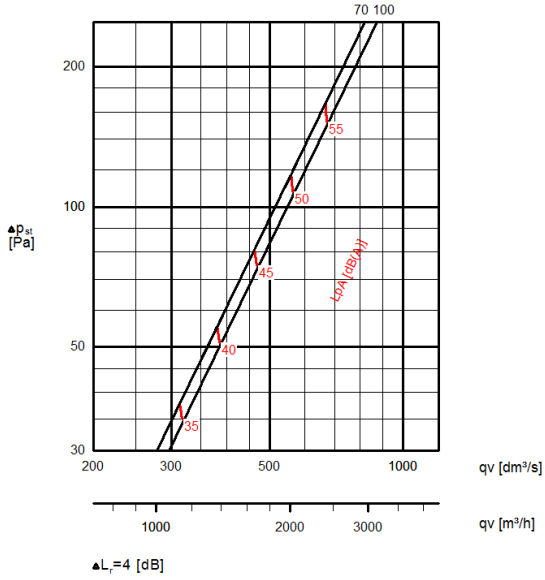
KW3, section 1500, static pressure loss and sound data



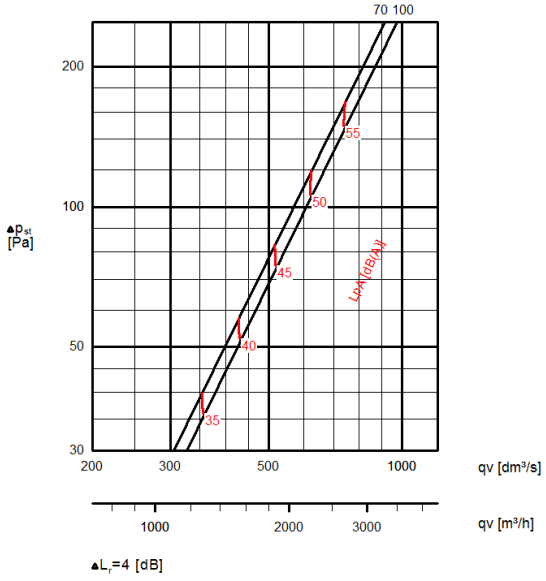
KW3, section 2000, static pressure loss and sound data



KW3, section 2500, static pressure loss and sound data



KW3, section 3000, static pressure loss and sound data



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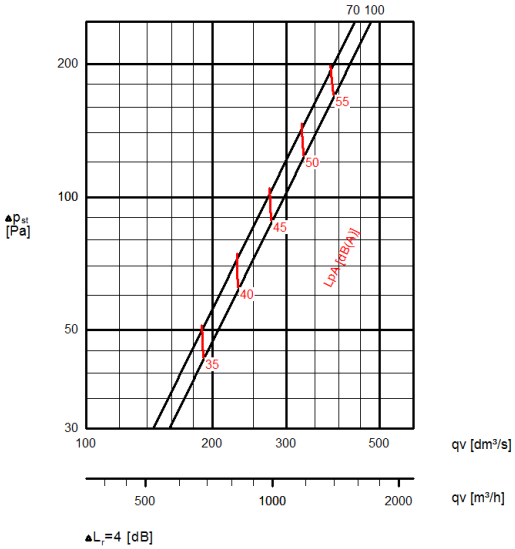
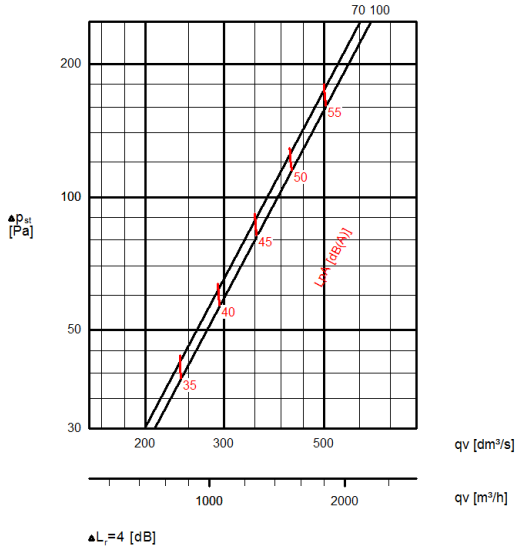
PRESSURE DROP AND SOUND DATA WITH RECOMMENDED EXHAUST CONNECTION SIZE

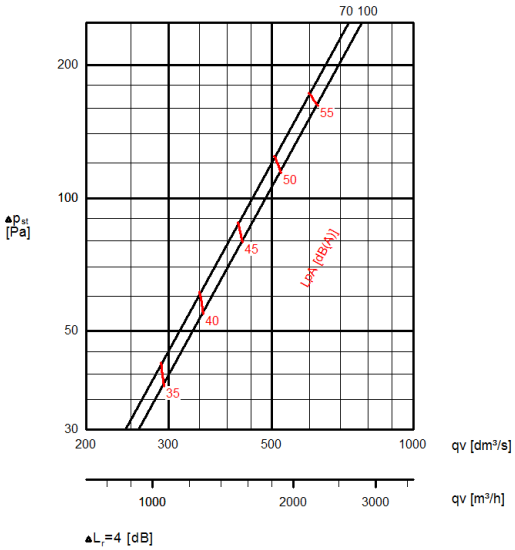
KW3 with UV-light technology, section 1000, static pressure loss and sound data



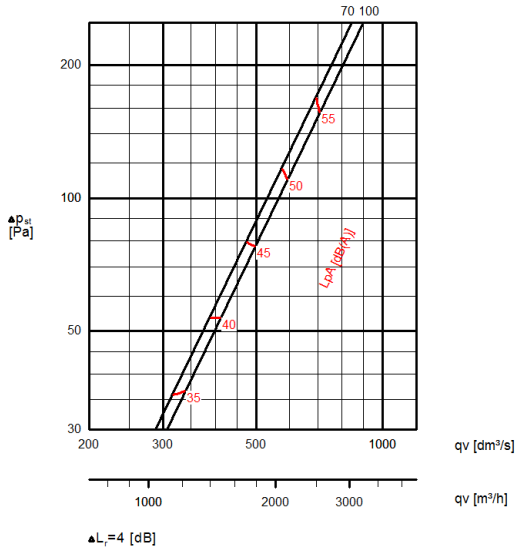
KW3 with UV-light technology, section 1500, static pressure loss and sound data



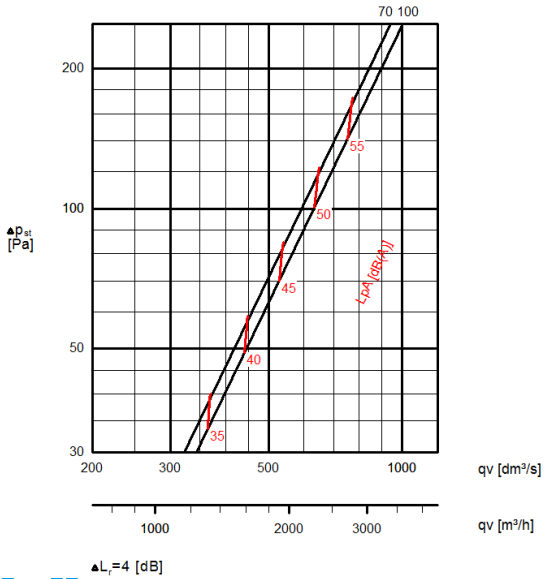
KW3 with UV-light technology, section 2000, static pressure loss and sound data



KW3 with UV-light technology, section 2500, static pressure loss and sound data



KW3 with UV-light technology, section 3000, static pressure loss and sound data



Δp_{st} = exhaust static pressure loss
70, 100 = damper opening in %
ΔL_r = room attenuation

EXHAUST AIRFLOW RATE MEASUREMENT USING K-FACTORS

KSA (NUMBER OF FILTERS)	KW3 HOOD K-FACTOR (m^3/h)	KW3 HOOD K-FACTOR (l/s)	KW3 WITH UV K-FACTOR (m^3/h)	KW3 WITH UV K-FACTOR (l/s)
1	105.7	29.4	88.1	24.5
2	133.2	37.0	121.3	33.7
3	170.3	47.3	158.4	44.0
4	211.3	58.7	197.5	54.9
5	232.9	64.7	229.3	63.7
6	262.4	72.9	261.7	72.7

With the T.A.B. pressure measurement, it is also possible to check the exhaust airflow with the following formula. Above values are with recommended exhaust connection size.

$q_{v,e} = k \times \sqrt{\Delta P_{TAB}\ [Pa]}$
$q_{v,e}$ = Airflow
k = K-factor
ΔP_{TAB} = Pressure difference

RECOMMENDED EXHAUST AIRFLOW FOR KW3

NUMBER OF KSA FILTERS	MINIMUM l/s	MAXIMUM l/s	MINIMUM m^3/h	MAXIMUM m^3/h
1	130	201	468	724
2	259	402	932	1447
3	389	602	1400	2167
4	518	803	1865	2891
5	648	1004	2333	3614
6	778	1205	2801	4338

Note: KSA filter size 500x330x50 mm

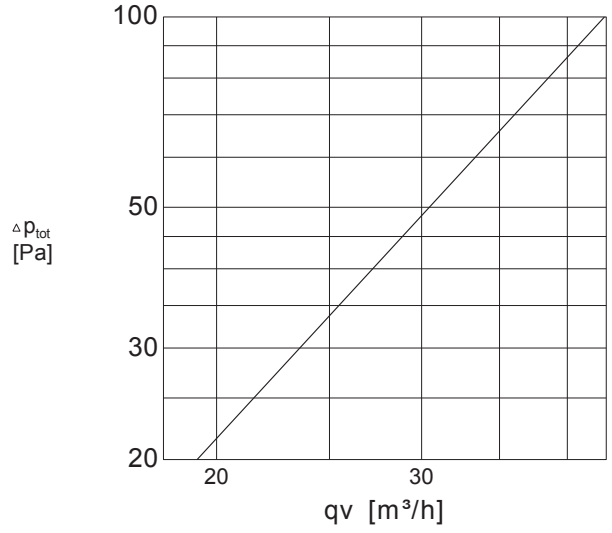
KW3 CAPTURE FOR ONE METER

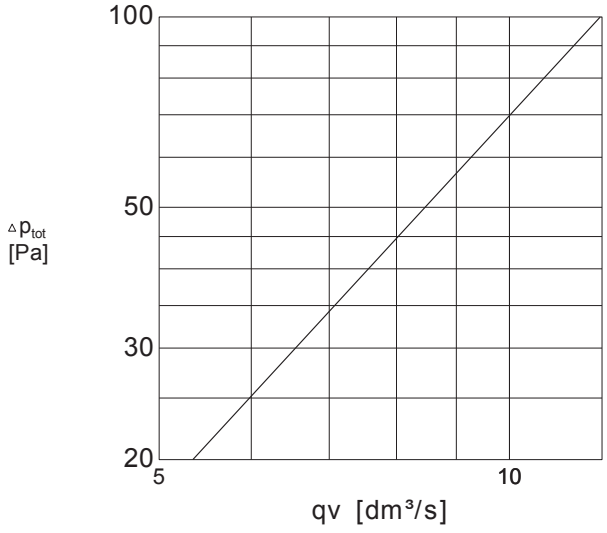
STATIC PRESSURE		TAB PRESSURE	
K-FACTOR (m^3/h)	K-FACTOR (l/s)	K-FACTOR (m^3/h)	K-FACTOR (l/s)
4.23	1.18	4.35	1.21

Recommended pressure for capture is 60Pa, corresponding approximately 34 m3/h (9,5l/s) for one meter of capture chamber.

$q_{v,e} = k \times l_{eff} \times \sqrt{\Delta P_m\ [Pa]}$
$q_{v,e}$ = Airflow
k = K-factor
l_{eff} = Lenght of effective capture
ΔP_m = Pressure difference

KW3 CAPTURE DIAGRAMS FOR ONE METER





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