KWH GALLEY WATER WASH HOOD

With Capture Jet™ technology

APPLICATIONS

The Halton KWH is a galley water wash hood designed for use in marine and offshore applications. This highly efficient hood uses Halton Capture Jet™ technology, allowing it to operate with up to 30% lower exhaust airflow rates compared to traditional hoods. The KWH galley hood automatically washes down the grease filters without the need for their removal. The washing cycle, controlled by a CCW-M or WR control cabinet, is fully automatic and programmable for various operating conditions. The washing process can also be manually overridden if necessary.

MATERIALS

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

* Thickness 2.0 mm
** Thickness 1.25 mm

CONSTRUCTION

The KWH 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 to facilitate the removal of grease and dirt extracted by the KSA multi-cyclone filters, as well as the drainage of washing water. The Capture Jet™ supply plenum is thermally insulated with mineral wool material to prevent condensation on the inner surface above the cooking equipment.

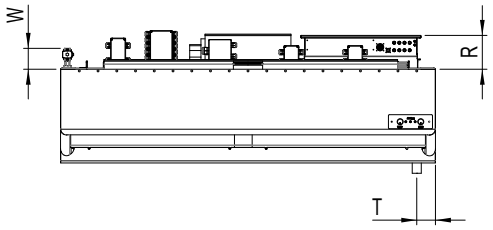
FEATURES

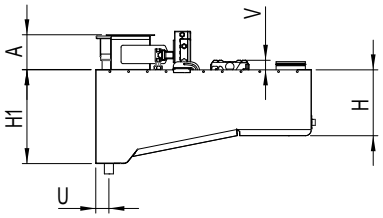
- The hood utilises Halton Capture Jet™ technology, significantly reducing exhaust airflow rates, improving capture and containment efficiency, and minimising energy consumption.
- Designed in accordance with USPHS guidelines.
- Automatic periodic cleaning of the exhaust plenum and KSA grease filters (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 build-up 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.

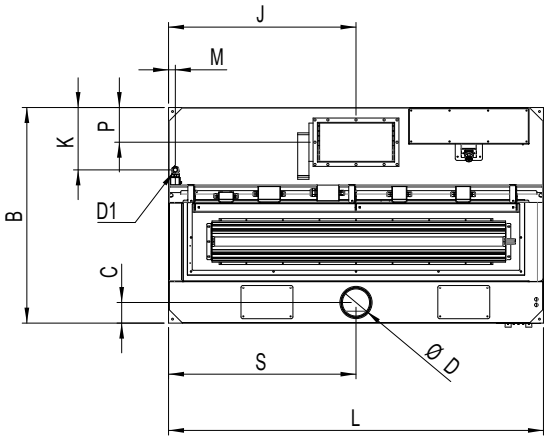
PRODUCT OPTIONS

- 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 certified fire damper made of either EN 1.4301 (AISI 304) or EN 1.4404 (AISI 316L)
- 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 DRAWINGS







KWH DIMENSIONS (mm)			
A	195	L	1000-3000
B	1100-1900	M	37
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	332	W	~130

Note: The maintenance/light fixture hatch is as large as the construction allows. The minimum length with UV-light technology is 1250 mm.

WEIGHTS

KWH HOODS (KG)

B/L	1200	1600	2000	2500	3000
1100	105	127	148	176	203
1300	110	133	155	184	212
1500	116	140	162	193	221
1700	122	146	169	201	230
1900	127	153	177	209	240

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

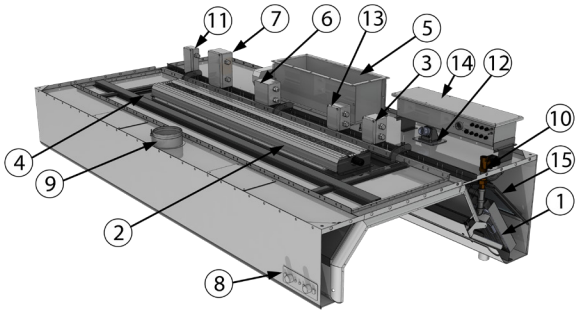
KWH HOODS WITH UV-LIGHT TECHNOLOGY (KG)

B/L	1250	1600	2000	2500	3000
1100	149	172	198	232	264
1300	155	179	205	240	274
1500	161	185	212	249	283
1700	166	192	220	257	292
1900	172	198	227	265	301

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

KWH PARTS

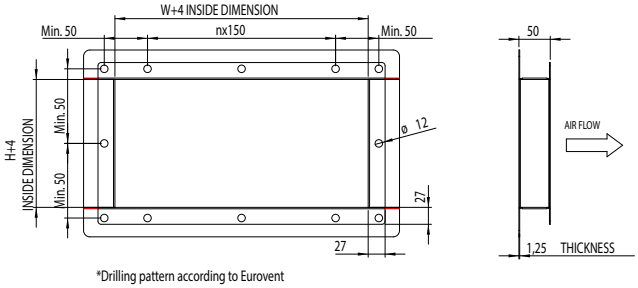
1. KSA grease filters; 2. Lighting fixture; 3. Lighting fixture power supply junction box; 4. Maintenance hatch; 5. Exhaust air connection, fire damper, or shut-off damper* (available as an option) and adjustment damper; 6. Fire damper junction box; 7. Actuator power and fuse info junction box; 8. Damper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

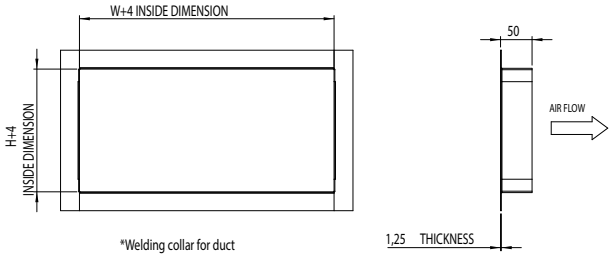
- Eurovent-collar with flange
- Welded L-collar

EUROVENT-COLLAR WITH FLANGE



*Drilling pattern according to Eurovent

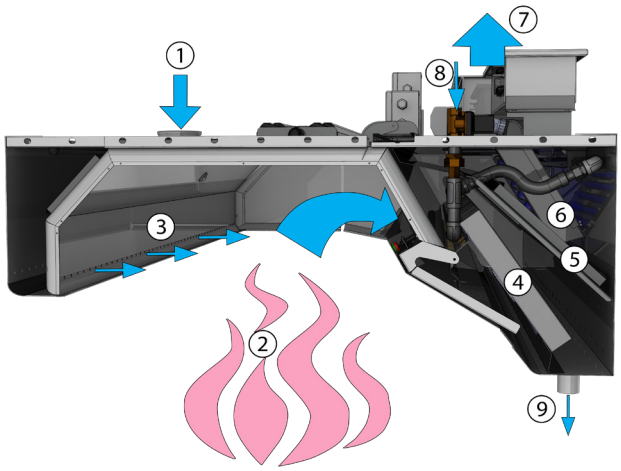
WELDED L-COLLAR



*Welding collar for duct

FUNCTION

1. Capture 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.
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. Based on Halton's patented highly efficient Capture Jet™ solution and advanced mechanical KSA filter technology, the UV-light technology, with scheduled maintenance, keeps the plenum and duct virtually grease-free and mitigates cooking odours 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.
9. 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 from stainless steel EN 1.4301 (AISI 304). The galley hoods shall be supplied complete with an outer casing/main body, Capture Jet™ plenum, airflow measurement taps, supply and exhaust air spigot connections with an adjustment damper, maintenance hatch, light fixture, capture air jet, grease filters, drain connection, and automatic washing system controlled by a separate control cabinet with interfaces to the ship's safety systems. Each exhaust connection shall include a classified fire damper. The manufacture of all galley hoods shall adhere to ISO 9001, ISO 3834-2, ISO 14001, and ISO 45001 standards. The design of the hoods shall comply with USPHS guidelines.

CONSTRUCTION

All parts shall be constructed of stainless steel sheet EN 1.4301 (AISI 304) with a thickness of 1.25-2.0 mm and a polished finish. The inside corners of the hood shall be rounded for easy cleanability, in accordance with USPHS guidelines. The joints at the lower edges of the device shall be welded watertight. All visible screws shall be of the thumb screw type. The hood shall be equipped with a drain connection for removing dirty water. Each hood shall have a maintenance hatch for easy access.

WASHING MODULE

Grease filters shall have an automatic washing cycle utilising warm water and detergent via nozzles. The detergent shall be mixed within a separate control cabinet. Wastewater shall be removed from the hood via a direct drain connection. The casing of the control cabinet shall be constructed of stainless steel sheet EN 1.4301 (AISI 304).

CAPTURE JET™ PLENUM

The Capture Jet™ plenum shall be insulated with sealed mineral wool. The plenum shall be accessible through maintenance hatches.

CAPTURE JET™ SYSTEM

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

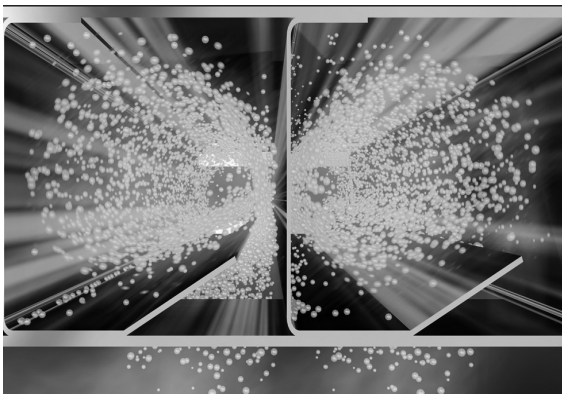
AIRFLOW MEASUREMENT TAPS

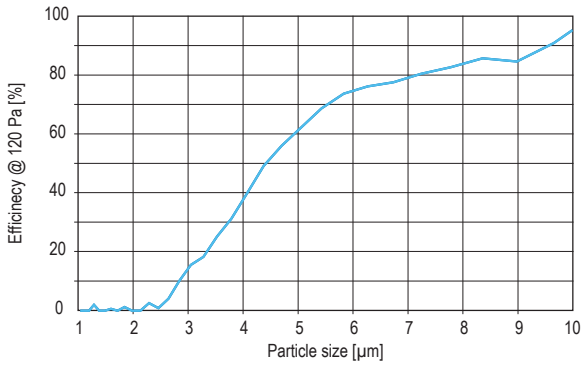
Measurement taps shall be located on top of the hood for capture air and exhaust air measurement.

HALTON KSA FILTER

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

The KSA grease filters shall be constructed of stainless steel EN 1.4301 (AISI 304). The grease filters shall be supplied in a modular size of 500 x 330 x 50 mm and shall be removable via two folding handles. The grease filters shall have a honeycomb design to allow high grease filtration efficiency via the centrifugal effect in filter honeycombs.





Mechanical filtration is recommended for hoods with low utilisation rates and cooking processes producing mainly large grease particles (> 8 microns), e.g., 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 utilisation rates and cooking processes producing all sizes of grease particles, e.g., food prepared with electric ranges, griddles, and all types of broilers. In the UV-light concept, most grease particles are first filtered with mechanical filtration (type KSA). The mesh filter behind the KSA spreads the airflow and the remaining grease particles inside the hood chamber, increasing filtration efficiency up to 50% for grease particle sizes between 5-8 microns. Based on Halton's patented highly efficient Capture Jet™ solution and advanced mechanical KSA filter technology, the UV-light technology, with scheduled maintenance, keeps the plenum and duct virtually grease-free and mitigates cooking odours and emissions. The grease vapour and effluents not collected by high-efficiency filters pass over the lamps, causing a chemical reaction that destroys the grease and converts it into carbon dioxide and water vapour. The chemical action carries over into the duct, helping to keep the duct and exhaust fan clean.

DUCT CONNECTIONS

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

LIGHT FIXTURES

Each hood shall be delivered with energy-efficient LED light fixtures providing approximately an average illuminance of 500 lux at the work surfaces of the cooking appliances. The light fixtures shall be suitable for a single-phase 230-VAC power supply and manufactured to protection class IP67. The ballast and capacitor shall be located within the light frame. 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.

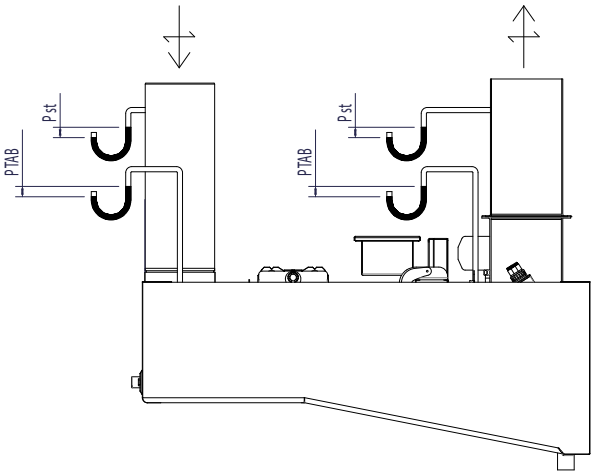
LED LIGHT FIXTURE SIZES

HOOD DIMENSION	LENGTH	WIDTH
L < 1250 mm, 1x28 W	720 mm	175 mm
L > 1250 mm, < 2000 mm, 1x42 W	1020 mm	175 mm
L > 2000 mm, 1x69 W	1620 mm	175 mm

MAINTENANCE HATCH

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

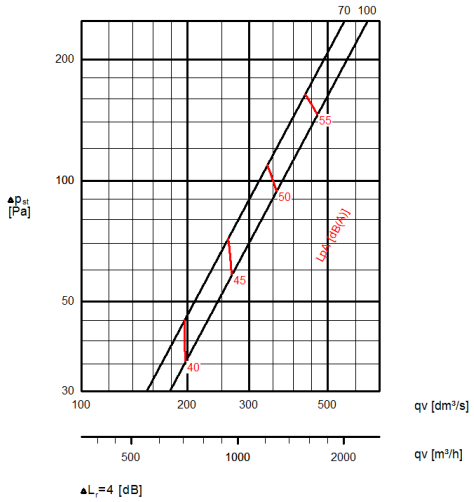
AIRFLOW MEASUREMENT



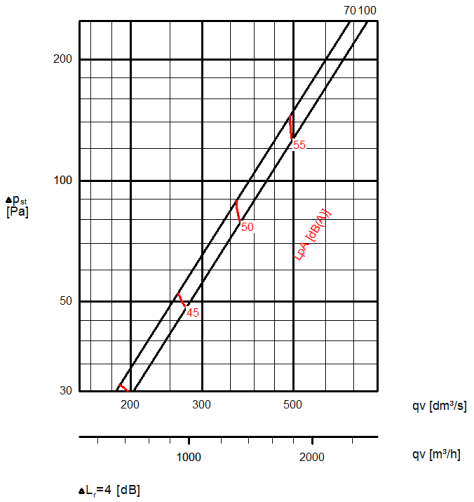
ΔP_{st} = Static pressure loss
ΔP_{TAB} = TAB pressure for airflow rate measurement
70, 100 = Damper opening in %

PRESSURE DROP AND SOUND DATA WITH RECOMMENDED EXHAUST CONNECTION SIZE

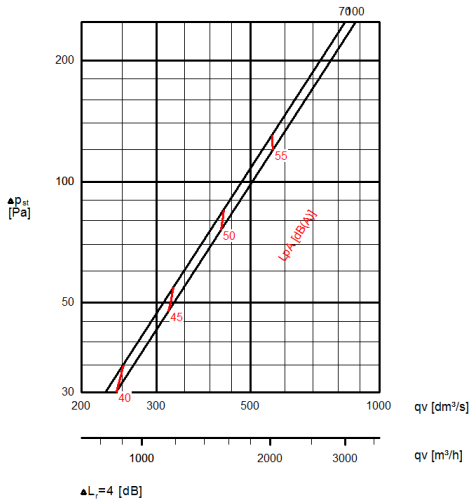
KWH, section 1000, static pressure loss and sound data



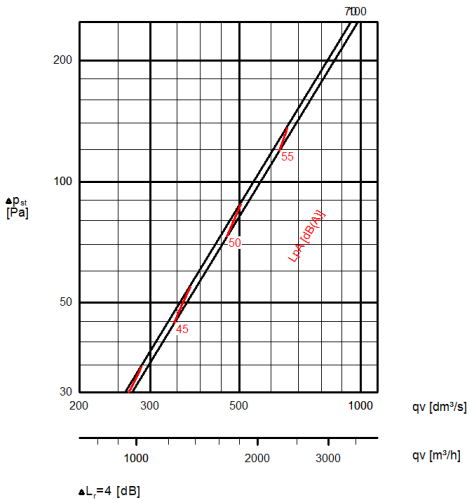
KWH, section 1500, static pressure loss and sound data



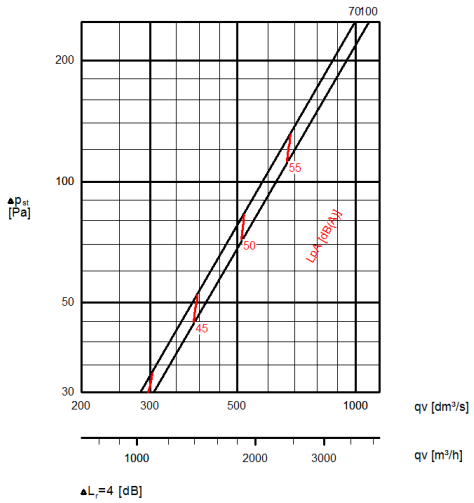
KWH, section 2000, static pressure loss and sound data



KWH, section 2500, static pressure loss and sound data

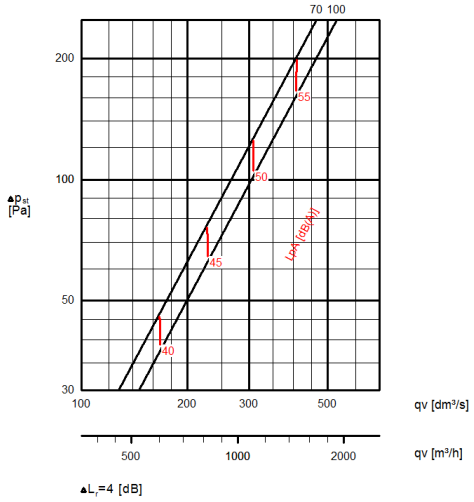


KWH, section 3000, static pressure loss and sound data

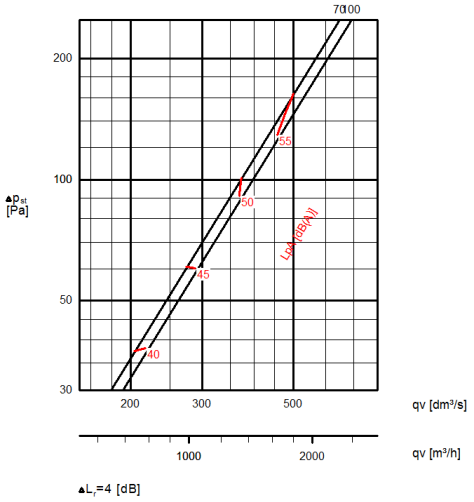


PRESSURE DROP AND SOUND DATA WITH RECOMMENDED EXHAUST CONNECTION SIZE

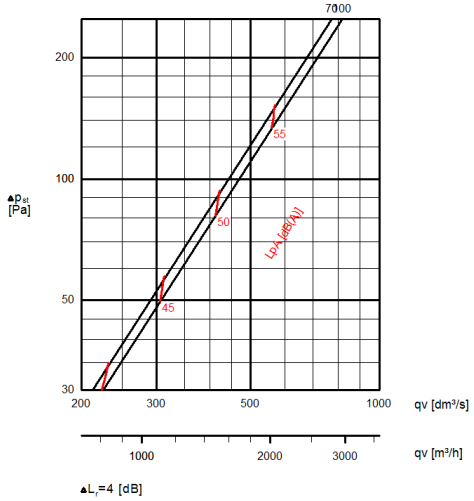
KWH with UV-light technology, section 1000, static pressure loss and sound data



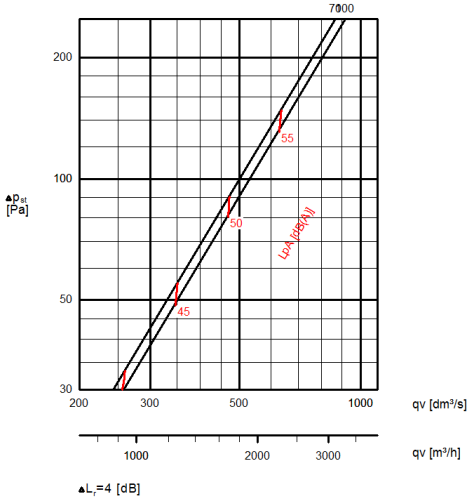
KWH with UV-light technology, section 1500, static pressure loss and sound data



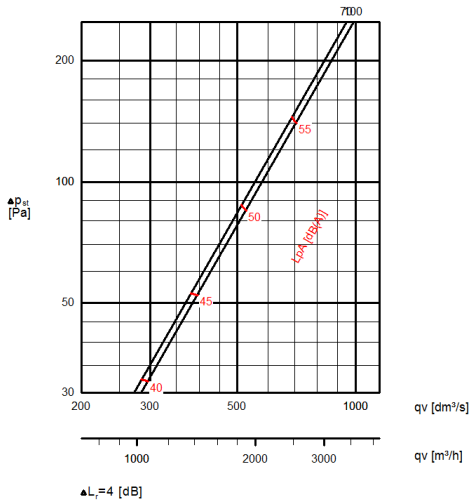
KWH with UV-light technology, section 2000, static pressure loss and sound data



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



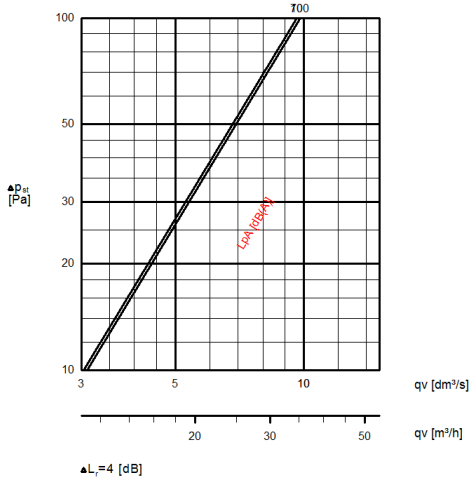
KWH with UV-light technology, section 3000, static pressure loss and sound data



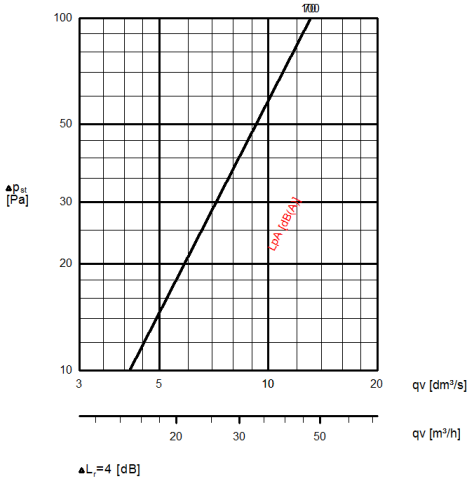
Δpst = exhaust static pressure loss
70, 100 = damper opening in %
ΔLr = room attenuation

PRESSURE DROP AND SOUND DATA WITH RECOMMENDED CAPTURE CONNECTION SIZE

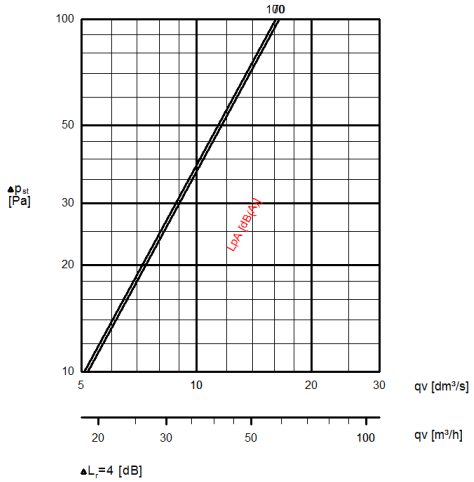
KWH, section 1000, static pressure loss and sound data



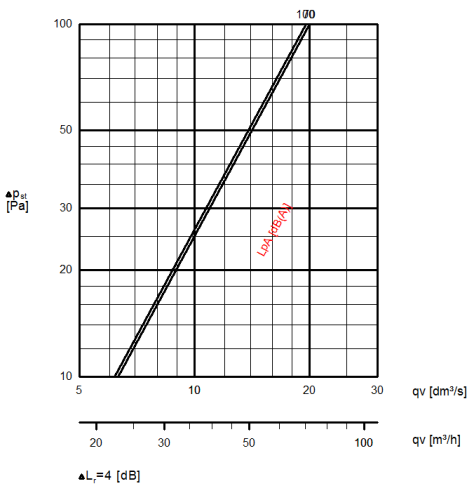
KWH, section 1500, static pressure loss and sound data



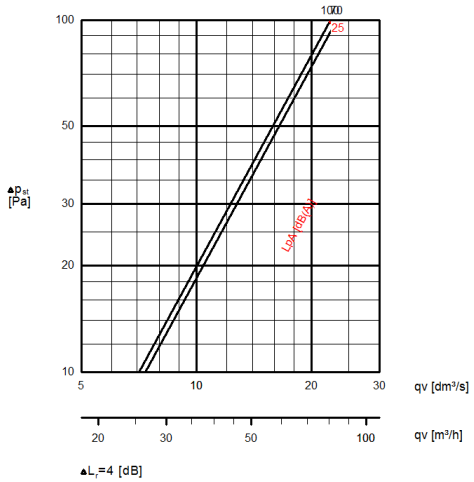
KWH, section 2000, static pressure loss and sound data



KWH, section 2500, static pressure loss and sound data



KWH, section 3000, static pressure loss and sound data



Δpst = exhaust static pressure loss
70, 100 = damper opening in %
ΔLr = room attenuation

EXHAUST AIRFLOW RATE MEASUREMENT USING K-FACTORS

KSA (NUMBER OF FILTERS)	KWH HOOD k factor [m3/h]	KWH HOOD k factor [l/s]	KWH WITH UV k factor [m3/h]	KWH WITH UV k factor [l/s]
1	116.3	32.3	77.6	21.5
2	142.9	39.7	117.9	32.8
3	169.4	47.1	158.3	44.0
4	203.2	56.4	198.0	55.0
5	237.3	65.9	232.5	64.6
6	269.2	74.8	259.6	72.1

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 KWH

NUMBER OF KSA FILTERS	MINIMUM l/s	MAXIMUM l/s	MINIMUM m3/h	MAXIMUM m3/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 500 x 330 x 50 mm