

Testing and Balancing Guide 2015

Halton Säästöopas

Guide de mesure et d'équilibrage

Handbuch für Einregulierung und Prüfung

Halton Injusteringsguide

Инструкция по регулированию

Diffusers and terminal units
Hajottimet ja pääteyksiköt
Diffuseurs et unités terminales
Zuluftdurchlässe und Anschlussteile
Tilluftsdon

Диффузоры и воздухораспределители

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Grilles

Säleiköt

Grilles

Gitter

Galler

Решетки

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Plenums

Liitântälaatikot

Plénums

Balken

Lådor

Статические камеры

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Valves

Venttiilit

Bouches petit débit

Ventile

Ventiler

Клапаны

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Chilled beams

Ilmastointi- ja jäähdytyspalkit

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Охладительные блоки

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CCE / CHB	29
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Air flow management

Ilmavirtojen hallinta

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Luftstromsteuerung

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Регулирование воздушных потоков

PRA	32
MSA / MSD	35
HFR / BOX	36
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Kitchen ventilation/Keittiöilmanvaihto

Ventilation des cuisines

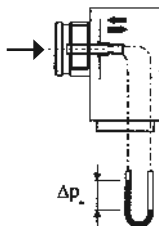
Küchenlüftung/Köксventilation

Кухонная вентиляция

KVF	39
UVF	40
KVI	43
UVI	44
KVL	45
KSK	46
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KVV / KVD	46
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KCJ / KCW	50
KCF	54
KCE	56
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SLL+PLL
SLL+ PLD
SLN+PLL
SLN+PLD

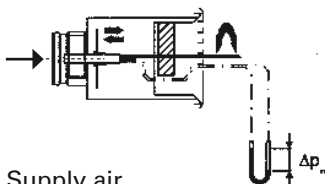


Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток

Pituus Längd Lenght Longueur Länge Длина	Rako Spalt Slot Fente Schlitz Щель	ø D	>6xD k	min. 3xD k
572	1	1 x 160	19	22
	2-3	1 x 200	28	32
	4	1 x 250	49	51
872	1	1 x 160	19	22
	2-3	1 x 200	28	32
	4	1 x 250	49	51
1172	1	1 x 160	19	22
	2-3	1 x 200	28	32
	4	1 x 250	49	51
1472	1	2 x 160	19	22
	2-3	2 x 200	28	32
	4	2 x 250	49	51
1772	1	2 x 160	19	22
	2-3	2 x 200	28	32
	4	2 x 250	49	51

$$q_v = k \times \sqrt{\Delta p_m}$$

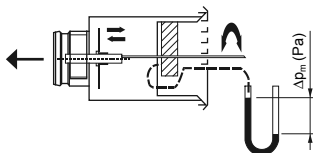
TLB



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток

	$> 8 \times D$	$\min 3 \times D$
TLB/B TLB/E	k	k
80	3,8	4,3
100	6,2	6,8
125	10,5	12,9
160	18,8	22,4
200	27,8	32,9

TLB



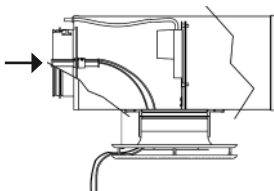
Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

TLB/C	k
100	5,1
125	8,2
160	9,7
200	12,1
250	21,5

TLB/F	k
80	5,2
100	8,2
125	9,2
160	13,4
200	23,5

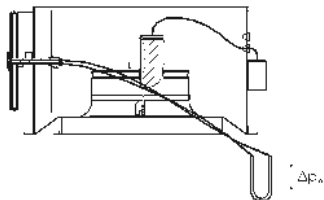
$$q_v = k \times \sqrt{\Delta p_m}$$

VHB / VHD



VHB/VHD	k
160	15,9
200	26,2
250	44,5

VHC

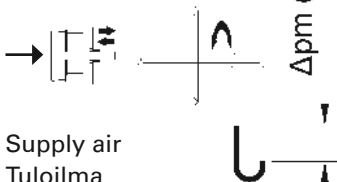


VHC	$k > 8 \cdot D$
125	9,5
160	18,0
200	28,6
250	44,6

VHC	$k \min 3 \cdot D$
125	12,6
160	22,2
200	32,9
250	49,0

$$q_v = k \times \sqrt{\Delta p_m}$$

TLD



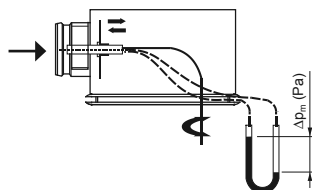
Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



TLD ø D	k	k
100	5,8	6,4
125	9,4	12,6
160	16,1	22,0
200	26,9	32,7

$$q_v = k \times \sqrt{\Delta p_m}$$

TBV

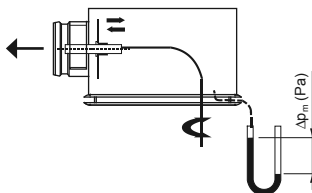


Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



TBV ø D	k	k
100	6,0	8,5
125	10,0	13,0
160	17,1	22,8
200	27,5	32,1
250	47,9	55,5

TBV

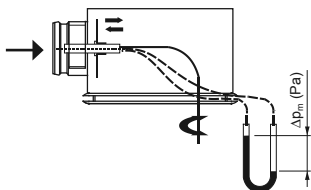


Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

TBV ø D	k
100	8,8
125	21,8
160	21,8
200	51,2
250	53,2

$$q_v = k \times \sqrt{\Delta p_m}$$

TCV, DRV



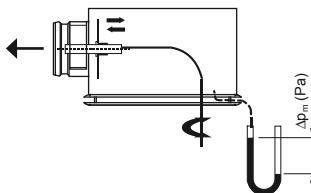
Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



TCV DRV ø D	k	k
100	6,0	8,5
125	10,0	13,0
160	17,1	22,8
200	27,5	32,1
250	47,9	55,5

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TCV

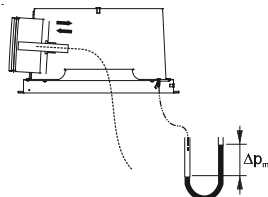


Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

TCV ø D	k
100	8,7
125	21,6
160	21,6
200	53,1
250	53,1

$$q_v = k \times \sqrt{\Delta p_m}$$

DCS



A

A = Conical with centre plate

A = Kartio, jossa on keskilevy

A = Directionnel avec plaque centrale

A = Abgeschrägt mit Mittelplatte

A = Konisk med central platta

A = Конический с центральной пластиной

Neck	K-value	K-value 0-opening
340	33,1	27,7
250	26,6	$0.07 \times D + 2.82$
160	13,8	11,3
125	8,2	6,6

C

(C = Conical, C = Kartio, C = Directionnel, C = Abgeschrägt, C = Konisk, C = Конический)

Neck	Directioning	K-value	K-value 0-opening
340	R4	52,9	$0.24 \times D - 31.75$
340	R3	49,7	$0.24 \times D - 31.75$
340	R2	44	$0.24 \times D - 31.75$
250	R4	32	$0.08 \times D + 2.73$
250	R3	32,6	$0.08 \times D + 2.73$
250	R2	29,2	$0.08 \times D + 2.73$
160		14,5	11,4
125		8,3	6,6

Supply air
Tuloilma
Soufflage
Zuluft
Tilluft

J

(J = Swirl, J = Pyörre, J = Jet rotatif,

J = Wirbel, J = Virvel, J = Вихревой)

Neck	K-value	K-value 0-opening
340	33,1	26,3
250	26,1	$0.06 \times D + 4.31$
160	14,1	11,4
125	8,4	6,6

$$q_v = k \times \sqrt{\Delta p_m}$$

N

(N = Nozzle, N = Suutin, N = Buse, N = Düse, N = Dysa, N = Сопло)

Neck	Directioning	K-value	K-value 0-opening
80	315, 250	48,1	0.18 x D - 13.12
80	200	40,5	0.18 x D - 13.12
36		27,4	0.08 x D + 2.37
16		13,2	0.06 x D + 1.00

P

(P = Perforated, P = Rei'itetty, P = Perforé, P = perforiert, P = Perforerad, P = Перфорированный)

Neck	Directioning	K-value	K-value 0-opening
340	R4	50,6	0.22 x D - 26.91
340	R3	47,7	0.22 x D - 26.91
340	R2	46,3	0.22 x D - 26.91
250	R4	30,3	0.08 x D + 3.94
250	R3	29,6	0.08 x D + 3.94
250	R2	28,6	0.08 x D + 3.94
160		13,4	11,1
125		8	6,3

A, C, J, N, P = Type of front panel

A, C, J, N, P = Etulevy malli

A, C, J, N, P = Type de panneau de façade

A, C, J, N, P = Art des Frontpaneels

A, C, J, N, P = Typ av frontpanel

A, C, J, N, P = Тип передней панели

ATTN: D = diameter of duct connection in mm

Huom: D = Lähtökauluksen halkaisija millimetreissä

ATTN : D = diamètre de la connection réseau en mm

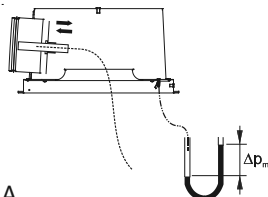
ATTN: D = Durchmesser des Kanalanschlusses in mm

Obs: D = kanalanslutningsdiameter i mm

ATTN : D =Размер соединительного патрубка мм

$$q_v = k \times \sqrt{\Delta p_m}$$

DCS



A

A = Conical with centre plate

A = Kartio, jossa on keskilevy

A = Directionnel avec plaque centrale

A = Abgeschrägt mit Mittelplatte

A = Konisk med central platta

A = Конический с центральной пластиной

Ø	k
340	32,3
250	27,9
160	17,6
125	9,7

J

(J = Swirl, J = Pyörre, J = Jet rotatif,

J = Wirbel, J = Virvel, J = Вихревой)

Ø	k
340	28,9
250	21,2
160	13,6
125	8

A, C, J, N, P = Type of front panel

A, C, J, N, P = Etulevy malli

A, C, J, N, P = Type de panneau de façade

A, C, J, N, P = Art des Frontpaneels

A, C, J, N, P = Typ av frontpanel

A, C, J, N, P = Тип передней панели

$$q_v = k \times \sqrt{\Delta p_m}$$

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

C

(C = Conical, C = Kartio, C = Directionnel,

C = Abgeschrägt, C = Konisk, C = Конический)

Ø	k
340	69,6
250	47,2
160	21,4
125	11,1

N

(N = Nozzle, N = Suutin, N = Buse, N = Düse,

N = Dysa, N = Сопло)

Ø	k
80	52,8
36	27,2
16	12,9

P

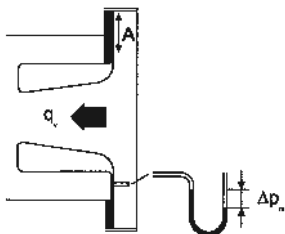
(P = Perforated, P = Rei'itetty,

P = Perforé, P = perforiert, P = Perforerad,

P = Перфорированный)

Ø	k
340	79,3
250	51,8
160	23,2
125	12

EVA



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

300 x 150

A	k
0	1,90
1	2,68
2	4,02
3	5,77
4	7,07
5	9,00
6	10,61
7	12,50

500 x 150

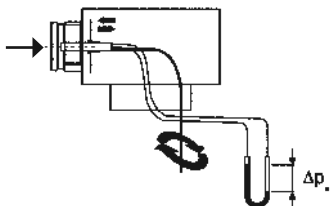
A	k
0	3,54
1	5,66
2	8,49
3	11,18
4	14,14
5	16,43
6	18,97
7	21,00

800 x 150

A	k
0	6,00
1	10,95
2	14,61
3	18,26
4	23,57
5	28,00
6	32,27
7	35,00

$$q_v = k \times \sqrt{\Delta p_m}$$

TRI / S

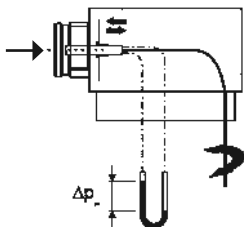


TRI ø D	k	k
100	6,0	7,5
125	9,9	12,6
160	16,9	21,9
200	28,3	32,0
250	47,9	51,5
315	78,6	-

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$$q_v = k \times \sqrt{\Delta p_m}$$

PRI / S



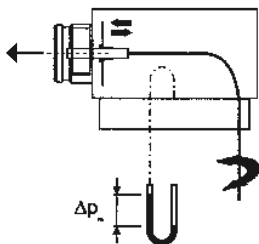
Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



PRI/S	k	k
200x100 ø 125	10,1	12,6
300x100 ø 160	17,0	21,7
400x100 ø 160	17,0	21,7
500x100 ø 200	27,7	33,9
300x150 ø 200	27,8	33,9
400x150 ø 250	47,2	55,5
500x150 ø 250	46,2	50,1
600x150 ø 250	45,8	51,1
800x150 ø 315	80,8	83,3
400x200 ø 250	51,2	55,5
500x200 ø 315	92,9	83,3
600x200 ø 315	82,7	93,1
800x200 ø 315	79,3	83,3

$$q_v = k \times \sqrt{\Delta p_m}$$

PRI / E

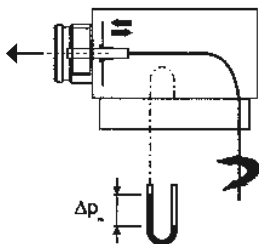


Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

A	PRI/E + AGC k
300x100 ø 160	17,9
400x150 ø 250	40,5
400x200 ø 250	58,0
500x100 ø 250	30,8
500x200 ø 315	71,7
600x200 ø 315	88,9

$$q_v = k \times \sqrt{\Delta p_m}$$

PRI / E

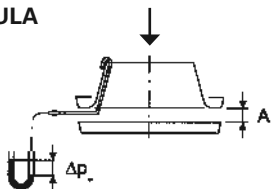


Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка

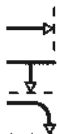
PRI/E	PRI/E + WDD/WTS k	PRI/E + ALE/FLU k
200x100 ø 125	12,4	9,9
300x100 ø 160	19,7	14,2
400x100 ø 160	26,9	18,3
500x100 ø 200	33,1	19,1
300x150 ø 200	31,1	21,9
400x150 ø 250	43,3	30,7
500x150 ø 250	54,5	39,0
600x150 ø 250	61,9	52,6
800x150 ø 315	86,9	54,9
400x200 ø 250	53,7	39,9
500x200 ø 315	64,3	62,9
600x200 ø 315	85,6	72,3
800x200 ø 315	116,4	84,2

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



ø 100 360°

A	k
3	1,40
6	3,09
9	4,52
12	5,61

ø 100 180°

A	k
3	0,82
6	1,65
9	2,33
12	3,00

ø 100 360°

A	k
3	1,41
6	3,05
9	4,38
12	5,31

ø 100 180°

A	k
3	0,90
6	1,64
9	2,31
12	2,90

ø 100 360°

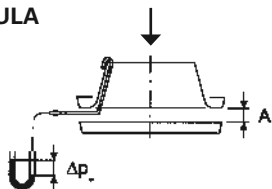
A	k
3	1,41
6	3,06
9	4,40
12	5,36

ø 100 180°

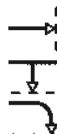
A	k
3	0,90
6	1,63
9	2,31
12	2,95

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



ø 125 360°

A	k
3	1,61
6	3,52
9	5,39
12	8,25

ø 125 180°

A	k
3	1,04
6	1,98
9	2,82
12	4,45

ø 125 360°

A	k
3	1,60
6	3,51
9	5,33
12	8,07

ø 125 180°

A	k
3	1,03
6	1,95
9	2,84
12	4,46

ø 125 360°

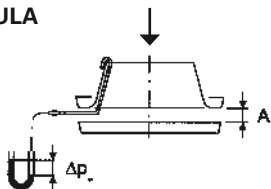
A	k
3	1,60
6	3,51
9	5,33
12	8,07

ø 125 180°

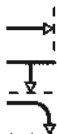
A	k
3	1,03
6	1,95
9	2,84
12	4,46

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



ø 160 360°

A	k
3	2,00
6	4,11
9	6,61
12	8,78
18	12,92

ø 160 180°

A	k
3	1,18
6	2,41
9	3,47
12	4,55
18	6,65

ø 160 360°

A	k
3	2,01
6	4,13
9	6,78
12	8,86
18	12,85

ø 160 180°

A	k
3	1,23
6	2,42
9	3,41
12	4,39
18	6,68

ø 160 360°

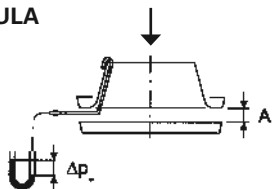
A	k
3	2,01
6	4,13
9	6,78
12	8,86
18	12,85

ø 160 180°

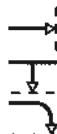
A	k
3	1,23
6	2,42
9	3,41
12	4,39
18	6,68

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приток



ø 200 360°

A	k
3	2,46
6	5,11
9	8,01
12	10,96
20	17,90

ø 200 180°

A	k
3	1,39
6	2,96
9	4,37
12	5,78
20	9,30

ø 200 360°

A	k
3	2,44
6	5,16
9	8,00
12	10,69
20	17,65

ø 200 180°

A	k
3	1,44
6	3,06
9	4,36
12	5,79
20	9,26

ø 200 360°

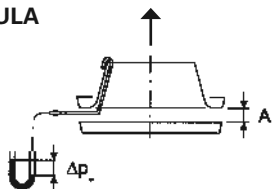
A	k
3	2,44
6	5,16
9	8,00
12	10,69
20	17,65

ø 200 180°

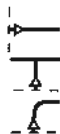
A	k
3	1,44
6	3,06
9	4,36
12	5,79
20	9,26

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка



ø 100



A	k
3	1,43
6	2,63
9	3,52
12	4,16

ø 125



A	k
3	1,65
6	2,99
9	3,96
15	5,85

ø 100



A	k
3	1,44
6	2,64
9	3,52
12	4,14

ø 125



A	k
3	1,65
6	2,99
9	3,97
15	5,85

ø 100



A	k
3	1,45
6	2,63
9	3,53
12	4,17

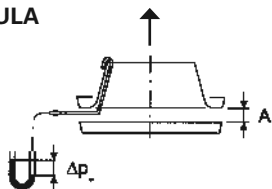
ø 125



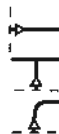
A	k
3	1,65
6	2,99
9	3,97
15	5,85

$$q_v = k \times \sqrt{\Delta p_m}$$

ULA



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка



Testing and Balancing Guide 10/2015

ø 160



A	k
3	1,58
6	3,61
9	5,19
15	7,56

ø 200



A	k
3	2,53
6	4,72
9	6,48
15	10,11

ø 160



A	k
3	1,54
6	3,60
9	5,19
15	7,58

ø 200



A	k
3	2,28
6	4,80
9	6,55
15	10,13

ø 160



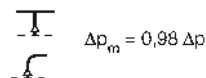
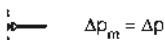
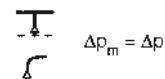
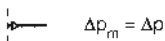
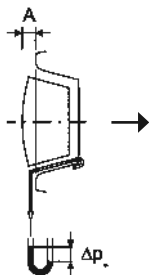
A	k
3	1,54
6	3,60
9	5,19
15	7,58

ø 200

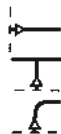


A	k
3	2,40
6	4,75
9	6,60
15	10,13

$$q_v = k \times \sqrt{\Delta p_m}$$



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка



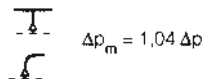
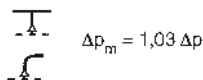
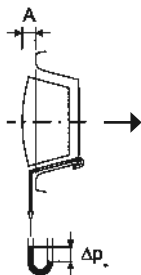
ø 100

A	k
-15	0,43
-12	0,63
-9	0,83
-6	1,02
-3	1,22
0	1,42
3	1,65
6	1,88
9	2,11
12	2,33

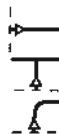
ø 125

A	k
-15	0,65
-12	0,92
-9	1,22
-6	1,53
-3	1,84
0	2,17
3	2,52
6	2,83
9	3,14
12	3,46
15	3,77

$$q_v = k \times \sqrt{\Delta p_m}$$



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка



ø 150

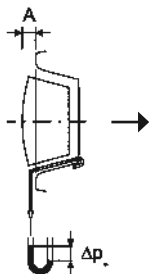
A	k
-12	1,17
-9	1,53
-6	1,91
-3	2,34
0	2,73
3	3,16
6	3,58
9	4,01
12	4,46
15	4,87
18	5,28

ø 160

A	k
-12	1,16
-9	1,51
-6	1,90
-3	2,31
0	2,75
3	3,25
6	3,73
9	4,22
12	4,67
15	5,12
18	5,58

$$q_v = k \times \sqrt{\Delta p_m}$$

URH, FDV

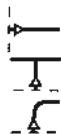


$$\Delta p_m = \Delta p$$

$$\Delta p_m = 1,04 \Delta p$$

$$q_v = k \times \sqrt{\Delta p_m}$$

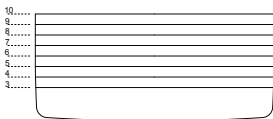
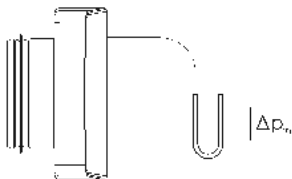
Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжка



ø 200

A	k
3	1,78
6	2,46
9	3,24
12	3,97
15	4,69
20	5,88
25	6,95

BOS



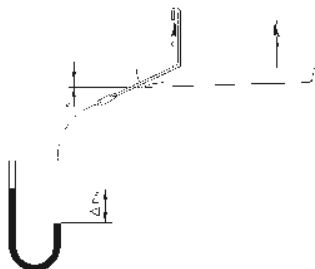
BOS-100/125

kuristinlevy
trimming plate
justeringsplatta
plaque de fixation
einstellplatte
регулирующая пластина

	k
10	1,60
9	1,80
8	2,11
7	2,39
6	2,66
5	2,91
4	3,22
3	3,45
Auki/open/öppet/ouvert/geöffnet/открыто	4,08

$$q_v = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

ULC



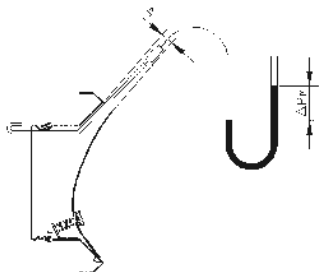
ULC-100

A	k
3	0,75
4	1,11
5	1,56
6	1,90
8	2,32
10	2,77
11	3,16
12	3,53
13	3,88

ULC-125

A	k
4	1,34
6	1,98
8	2,71
10	3,40
12	4,01
14	4,43
16	4,69
18	5,01
20	5,49

ULE



ULE-100

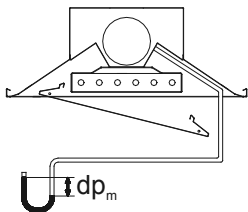
A	k
3	0,80
4	1,05
5	1,30
6	1,49
7	1,74
8	1,98
10	2,48
12	2,96
15	3,50

ULE-125

A	k
4	1,11
6	1,63
8	2,21
10	2,77
12	3,33
14	3,92
16	4,42
18	4,86
20	5,75

$$q_v = k \times \sqrt{\Delta p_m}$$

Halton Rex 600 Basic

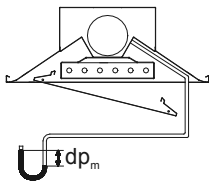


R6B	k / m
A	0,71
B	0,99
C	1,36
D	2,09
E	3,33

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$$q_v = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

Halton Rex 600



RE6	k / m
A	0,71
B	0,99
C	1,36
D	2,09
E	3,33

$$q_{v1} = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

RE6 & HAQ

$$q_{v2} = a \times k \times \sqrt{\Delta p_m}$$

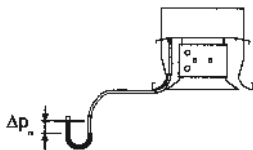
a = HAQ position
a = HAQ asento
a = HAQ position

a = HAQ position
a = HAQ позиция

$$q_v = q_{v1} + q_{v2}$$

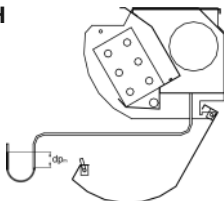
HAQ airflow rate
HAQ ilman tilavuusvirta
HAQ débit d'air

HAQ luftflödet
HAQ расход воздуха

CBD

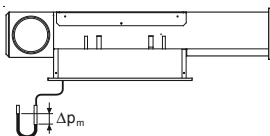
CBD	k / m
CBD/A	0,71
CBD/B	0,99
CBD/C	1,33
CBD/D	2,00

$$q_v = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

CBH

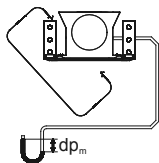
CBH	k / m
CBH/F,K	0,73
CBH/G,M	1,04

$$q_v = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

CHH

CHH	k
CHH/A	2,11
CHH/B	3,03
CHH/C	4,15

$$q_v = k \times \sqrt{\Delta p_m}$$

CCE

$$q_{v1} = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

CCE	k / m
CCE/A	0,67
CCE/B	0,96
CCE/C	1,31
CCE/D	1,92

CCE & HAQ

$$q_{v2} = a \times 0,17 \times \sqrt{\Delta p_m}$$

a = HAQ position

a = HAQ asento

a = HAQ position

a = HAQ position

$$q_v = q_{v1} + q_{v2}$$

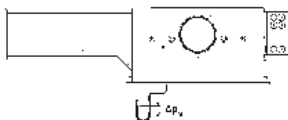
HAQ airflow rate

HAQ ilman tilavuusvirta

HAQ débit d'air

HAQ luftflödet

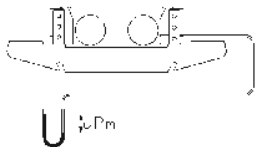
HAQ расход воздуха

CHB

$$q_v = k \times \sqrt{\Delta p_m}$$

CHB	k [l/s]
CHB/A-1000	2,14
CHB/A-1200	2,83
CHB/A-1400	3,59
CHB/B-1000	2,93
CHB/B-1200	3,90
CHB/B-1400	4,97
CHB/C-1000	4,00
CHB/C-1200	5,39
CHB/C-1400	6,94

CBQ



$$q_{v1} = k \times l_{\text{eff}} \sqrt{\Delta p_m}$$

CBQ	k / m
CBQ/A	0,72
CBQ/B	0,98
CBQ/C	1,38
CBQ/D	1,94

CBQ & HAQ

$$q_{v2} = a \times 0,31 \times \sqrt{\Delta p_m}$$

a = HAQ position

a = HAQ position

a = HAQ asento

a = HAQ position

$$q_v = q_{v1} + q_{v2}$$

HAQ airflow rate

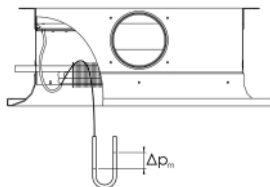
HAQ ilman tilavuusvirta

HAQ débit d'air

HAQ luftflödet

HAQ расход воздуха

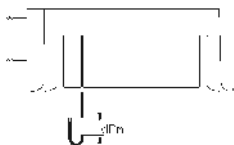
CBX



$$q_v = k \times \sqrt{\Delta p_m}$$

Nozzle	Size	k
A	600	0,64
A	1200	1,30
B	600	0,85
B	1200	1,47
C	600	1,16
C	1200	1,93
D	600	1,73
D	1200	2,95
E	600	2,87
E	1200	4,75

CSW



CSW	k
k1	0,73
k2	0,097

$$q_{v1} = (k1 + k2 \times N) \times \sqrt{\Delta p_m}$$

CSW & HAQ

$$q_{v2} = a \times k \times \sqrt{\Delta p_m}$$

a = HAQ position

a = HAQ asentot

a = HAQ position

a = HAQ position

$$q_v = q_{v1} + q_{v2}$$

HAQ airflow rate

HAQ ilman tilavuusvirta

HAQ débit d'air

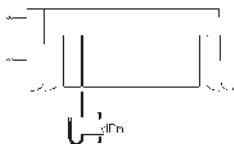
HAQ luftflödet

HAQ расход воздуха

Nozzle	k
k1	0.73
k2	0.097
$q_{v1} = (k1 + k2 \times N) \times \sqrt{\Delta P_m}$	
k1 = 24 small nozzles	
k2 = 1 big nozzles	
N = number of open big nozzles	

CSW + HAQ
$q_{v2} = a \times k \times \sqrt{\Delta P_m}$
a = HAQ position
HAQ k = 0.08
$q_v = q_{v1} + q_{v2}$

CSW exhaust



Exhaust air

Poistoilma

Extraction

Abluft

Frånluft

Вытяжка

HAQ exhaust	
q_v	$\frac{k \times (a_1 + a_2) \times \sqrt{\Delta p_m}}{a_1}$
a_1	HAQ ₁ position

a_2	HAQ ₂ position
k	0,165

$$q_v = k \times \sqrt{\Delta p_m}$$



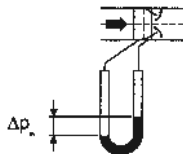
100 ... 315

ø 100

A	k
1	1,8
1,5	2,1
2	2,4
2,5	2,7
3	3,1
3,5	3,6
4	4,1
4,5	4,7
5	5,5
5,5	6,4
6	7,8

ø 160

A	k
1	4,5
1,5	5,1
2	5,7
2,5	6,7
3	7,6
3,5	8,9
4	10,3
4,5	12,2
5	14,2
5,5	17,7
6	21,2



ø 125

A	k
1	2,5
1,5	2,9
2	3,3
2,5	3,8
3	4,4
3,5	5,0
4	5,9
4,5	6,8
5	7,9
5,5	9,5
6	11,6

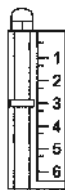
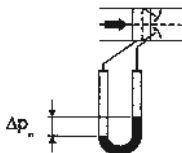
ø 200

A	k
1	7,1
1,5	8,0
2	8,8
2,5	10,0
3	11,4
3,5	13,1
4	15,1
4,5	17,5
5	20,5
5,5	24,2
6	29,0

$$q_v = k \times \sqrt{\Delta p_m}$$



100 ... 315



350 ... 1000

ø 250

A	k
1	10,5
1,5	11,9
2	13,8
2,5	16,1
3	18,9
3,5	22,0
4	25,6
4,5	30,1
5	35,8
5,5	42,9
6	52,8

ø 315

A	k
1	18,3
1,5	21,8
2	26,0
2,5	30,7
3	36,5
3,5	43,3
4	51,3
4,5	61,5
5	74,3
5,5	92,6
6	120,2

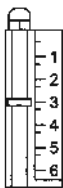
ø 350

A	k
1	17,6
2	24,3
3	35,2
4	50,0
5	71,6
6	99,0

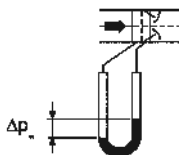
ø 400

A	k
1	20,5
2	26,5
3	36,0
4	55,0
5	86,0
6	137,0

$$q_v = k \times \sqrt{\Delta p_m}$$



350 ... 1000



ø 500

A	k
1	27,5
2	39,0
3	59,0
4	86,0
5	123,0
6	175,0

ø 630

A	k
1	65,0
2	90,0
3	115,0
4	154,0
5	202,0
6	295,0

ø 800

A	k
1	98,0
2	137,0
3	198,0
4	280,0
5	393,0
6	570,0

ø 1000

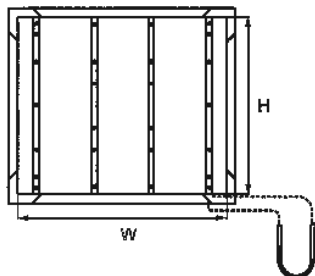
A	k
1	144,0
2	220,0
3	310,0
4	440,0
5	620,0
6	890,0

$$q_v = k \times \sqrt{\Delta p_m}$$

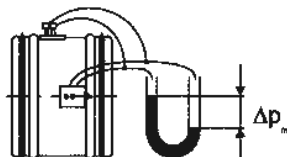
MSA

$$q_v = k \times \sqrt{\Delta p_m}$$

$$k = W \text{ (mm)} \times H \text{ (mm)} \times 0,001054$$



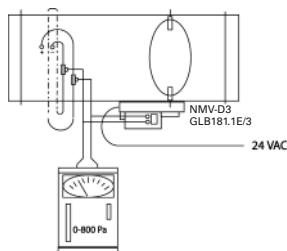
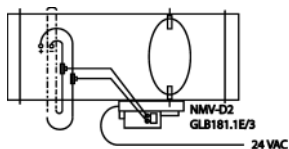
MSD



MSD	k
100	5,7
125	9,4
160	17,2
200	27,8
250	43,9
315	72,3
400	127,00
500	200,00

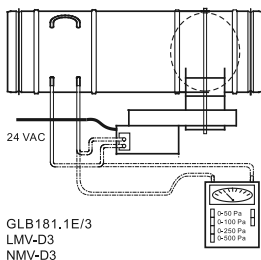
$$q_v = k \times \sqrt{\Delta p_m}$$

HFR / BOX



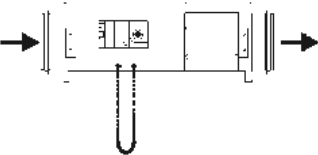
HFR	k	BOX	k
100	6,0	100	6,5
125	9,9	125	10,6
160	17,0	160	18,3
200	27,44	200	27,4
250	44,00	250	44,0
315	71,33	315	71,3
355	91,42	355	91,4
400	117,01	400	117,0
500	185,07	500	185,1

HFB

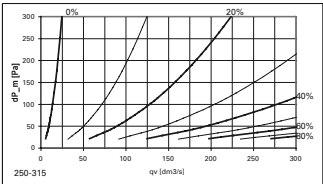
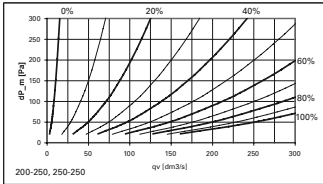
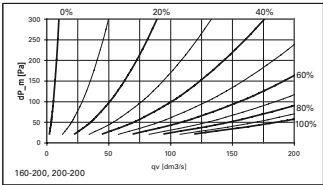
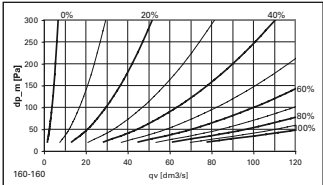


HFB	k
100	5,7
125	9,4
160	17,2
200	27,8
250	43,9
315	72,3
400	127,00
500	200,00

$$q_v = k \times \sqrt{\Delta p_m}$$



Unit size	Position %, (Indicator value)					
	0% (1)	20%	40%	60%	80%	100% (0)
160-160	0.4	4.0	6.8	9.9	13.5	17.3
160-200, 200--200	0.7	8.6	13.1	17.8	21.8	24.7
200-250, 250-250	0.7	11.5	18.0	24.3	30.1	35.1
250-315	0.8	20.1	30.6	42.0	54.3	66.7

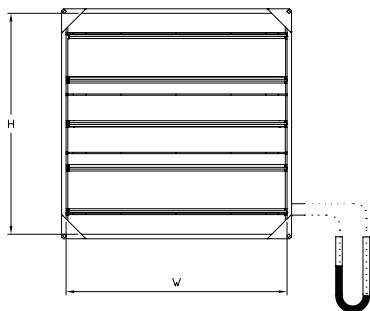


$q_v = k \times \sqrt{\Delta p_m}$

UKV

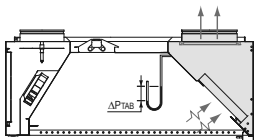
$$q_v = k \times \sqrt{\Delta p_m}$$

$$k = W \text{ (mm)} \times H \text{ (mm)} \times 0,001054$$

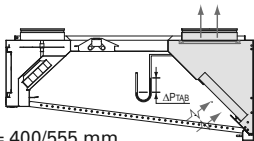


$$q_v = k \times \sqrt{\Delta p_m}$$

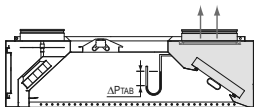
KVF (Canopies)



H = 555 mm



H = 400/555 mm



H = 400 mm

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

Number of filter(s)

Suodattimien määrä

Nombre de filtre(s)

Anzahl der Filter

Filter kvantitet

Число фильтра (ов)

k k
[m³/h] [l/s]

2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

Filter Height = 330 mm

Suodattimen korkeus = 330 mm

Hauteur de Filtre = 330 mm

Bauhöhe des Filters = 330 mm

Filter höjd = 330 mm

Высота фильтра = 330 mm

Minimum pressure loss over filter = 50 Pa

Minimi painehäviö filterin yli = 50 Pa

Perte de charge minimale des filtres = 50 Pa

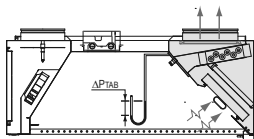
Minimum an Druckverlust am Filter = 50 Pa

Minimum tryckfall över filtret = 50 Pa

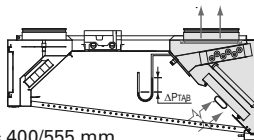
Минимальная потеря давления на фильтре = 50 Па

$$q_v = k \times \sqrt{\Delta p_m}$$

UVF (Canopies)



H = 555 mm



H = 400/555 mm

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной
воздух

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	99,4	27,6
3	149,1	41,4
4	198,8	55,1
5	248,5	68,9
6	298,2	82,7

Filter Height = 330 mm

Suodattimen korkeus = 330 mm

Hauteur de Filtre = 330 mm

Bauhöhe des Filters = 330 mm

Filter höjd = 330 mm

Высота фильтра = 330 mm

Minimum pressure loss over filter = 105 Pa

Minimi painehäviö filterin yli = 105 Pa

Perte de charge minimale des filtres = 105 Pa

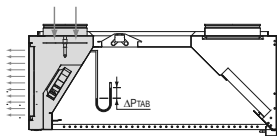
Minimum an Druckverlust am Filter = 105 Pa

Minimum tryckfall över filtret = 105 Pa

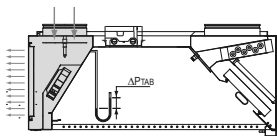
Минимальная потеря давления на фильтре = 105 Па

$$q_v = k \times \sqrt{\Delta p_m}$$

KVF / UVF (Canopies)



KVF - H = 555 mm



UVF - H = 555 mm

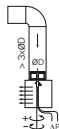
Length of the hood Huuvan pituus Longueur de la hotte Länge der Haube Längden av kåpan Длина зонты	k [m ³ /h]	k [l/s]
1000	121,7	33,8
1500	182,6	50,7
2000	243,4	67,6
2500	304,2	84,5
3000	365,1	101,4

Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приточный
воздух

- Supply airflow rate measurement using k factors
- Tuloilmavirranmittaus k-kertoimien avulla
- Mesure du débit soufflé à l'aide des facteurs k
- Messung des Zuluftstroms unter Verwendung des K-Faktors
- Tilluftflöde mätt med k faktor
- Измерение расхода приточного воздуха, используя k факторы

$$q_s = k \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

- Supply airflow rate measurement using MSM
- Tuloilmavirranmittaus MSM:n avulla
- Mesure du débit soufflé à l'aide des MSM
- Messung des Zuluftstroms unter Verwendung eines MSM
- Tilluftflöde mätt med MSM
- Измерение расхода приточного воздуха, используя MSM



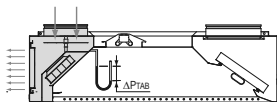
MSM 250

$$q_s \text{ [l/s]} = 51 \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

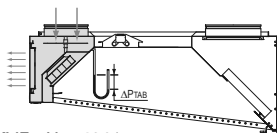
$$q_s \text{ [m}^3\text{/h]} = 183,6 \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

$$q_v = k \times \sqrt{\Delta p_m}$$

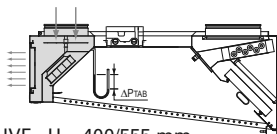
KVF / UVF (Canopies)



KVF - H = 400 mm



KVF - H = 400/555 mm



UVF - H = 400/555 mm

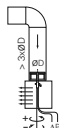
Length of the hood Huvvan pituus Longueur de la hotte Länge der Haube Längden av kåpan Длина зонты	k [m ³ /h]	k [l/s]
1000	95,5	26,5
1500	143,3	39,7
2000	191	53,1
2500	238,7	66,3
3000	286,5	79,6

Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приточный воздух

- Supply airflow rate measurement using k factors
- Tuloilmavirranmittaus k-kertoimien avulla
- Mesure du débit soufflé à l'aide des facteurs k
- Messung des Zuluftstroms unter Verwendung des K-Faktors
- Tilluftflöde mätt med k faktor
- Измерение расхода приточного воздуха, используя k факторы

$$q_s = k \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

- Supply airflow rate measurement using MSM
- Tuloilmavirranmittaus MSM:n avulla
- Mesure du débit soufflé à l'aide des MSM
- Messung des Zuluftstroms unter Verwendung eines MSM
- Tilluftflöde mätt med MSM
- Измерение расхода приточного воздуха, используя MSM



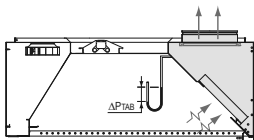
MSM 250

$$q_s \text{ [l/s]} = 51 \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

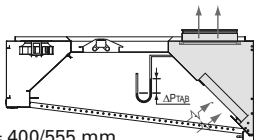
$$q_s \text{ [m}^3\text{/h]} = 183,6 \times \sqrt{\Delta P_{TAB}} \text{ [Pa]}$$

$$q_v = k \times \sqrt{\Delta p_m}$$

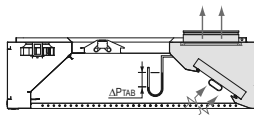
KVI (Canopies)



H = 555 mm



H = 400/555 mm



H = 400 mm

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной
воздух

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

Filter Height = 330 mm

Suodattimen korkeus = 330 mm

Hauteur de Filtre = 330 mm

Bauhöhe des Filters = 330 mm

Filter höjd = 330 mm

Высота фильтра = 330 мм

Minimum pressure loss over filter = 50 Pa

Minimi painehäviö filterin yli = 50 Pa

Perte de charge minimale des filtres = 50 Pa

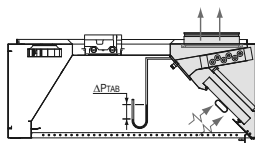
Minimum an Druckverlust am Filter = 50 Pa

Minimum tryckfall över filtret = 50 Pa

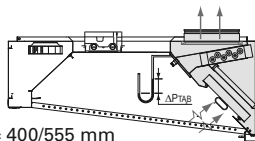
Минимальная потеря давления на фильтре = 50 Па

$$q_v = k \times \sqrt{\Delta p_m}$$

UVI (Canopies)



H = 555 mm



H = 400/555 mm

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной
воздух

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	99,4	27,6
3	149,1	41,4
4	198,8	55,1
5	248,5	68,9
6	298,2	82,7

Filter Height = 330 mm

Suodattimen korkeus = 330 mm

Hauteur de Filtre = 330 mm

Bauhöhe des Filters = 330 mm

Filter höjd = 330 mm

Высота фильтра = 330 mm

Minimum pressure loss over filter = 105 Pa

Minimi painehäviö filterin yli = 105 Pa

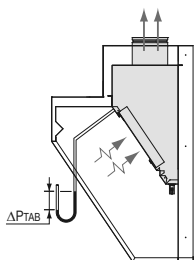
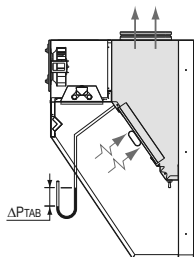
Perte de charge minimale des filtres = 105 Pa

Minimum an Druckverlust am Filter = 105 Pa

Minimum tryckfall over filtret = 105 Pa

Минимальная потеря давления на фильтре = 105 Па

$$q_v = k \times \sqrt{\Delta p_m}$$



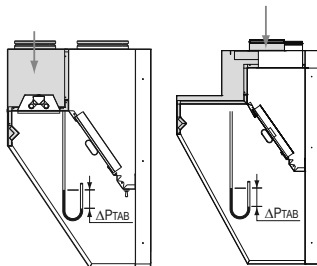
Exhaust air Poistoilma Extraction Abluft Frånluft Вытяжной воздух

Filter Height = 330 mm
Suodattimen korkeus = 330 mm
Hauteur de Filtre = 330 mm
Bauhöhe des Filters = 330 mm
Filter höjd = 330 mm
Высота фильтра = 330 mm

Minimum pressure loss over filter = 50 Pa
Minimi painehäviö filterin yli = 50 Pa
Perte de charge minimale des filtres = 50 Pa
Minimum an Druckverlust am Filter = 50 Pa
Minimum tryckfall over filtret = 50 Pa
Минимальная потеря давления на фильтре = 50 Па

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

$$q_v = k \times \sqrt{\Delta p_m}$$

KVL (Canopies)

Capture Jets
Sieppausilma
Jets de Capture
Capture Jets
Ejektorluft
Захватные Струи

Required running pressure = 140 Pa

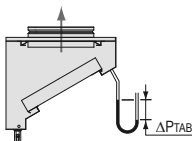
Tarvittava painetaso = 140 Pa

Pression de fonctionnement requise = 140 Pa

Erforderlicher kontinuierlicher Druck = 140 Pa

Erforderligt drifttryck = 140 Pa

Необходимое рабочее давление = 140 Па

KSK (Canopies)

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

Number of filter(s)

Suodattimien määrä

Nombre de filtre(s)

Anzahl der Filter

Filter kvantitet

Число фильтра (ов)

k
[m³/h]

k
[l/s]

2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

Filter Height = 330 mm

Suodattimien korkeus = 330 mm

Hauteur de Filtre = 330 mm

Bauhöhe des Filters = 330 mm

Filter höjd = 330 mm

Высота фильтра = 330 мм

Minimum pressure loss over filter = 50 Pa

Minimi painehäviö filterin yli = 50 Pa

Perte de charge minimale des filtres = 50 Pa

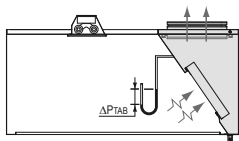
Minimum an Druckverlust am Filter = 50 Pa

Minimum tryckfall över filtret = 50 Pa

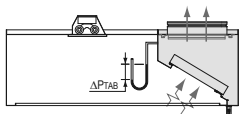
Минимальная потеря давления на фильтре = 50 Па

$$q_v = k \times \sqrt{\Delta p_m}$$

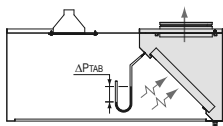
KVX (Canopies)



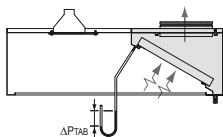
H = 555 mm / KSA 330



H = 400 mm / KSA 330



H = 555 mm / KSA 500



H = 400 mm / KSA 500

Exhaust air Poistoilma Extraction Abluft Frånluft Вытяжной воздух

Minimum pressure loss over filter = 50 Pa

Minimi painehäviö filterin yli = 50 Pa

Perte de charge minimale des filtres = 50 Pa

Minimum an Druckverlust am Filter = 50 Pa

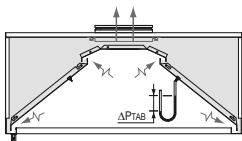
Minimum tryckfall over filtret = 50 Pa

Минимальная потеря давления на фильтре = 50 Па

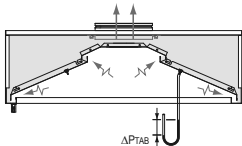
Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	KSA 330	
	k [m ³ /h]	k [l/s]
2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	KSA 500	
	k [m ³ /h]	k [l/s]
2	180	50
3	270	75
4	360	100
5	450	125
6	540	150

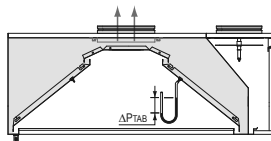
$$q_v = k \times \sqrt{\Delta p_m}$$

KVV / KVD (Canopies)

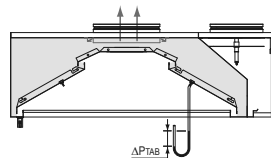
KVV / H = 555 mm



KVV / H = 400 mm



KVD / H = 555 mm



KVD / H = 400 mm

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

Huvun pituus

Length of the hood

Longueur de la hotte

Länge der Haube

Längden av kåpan

Длина зонта

KVV / KVD

k

k

[m³/h]

[l/s]

1000

178,9

49,7

1500

268,6

74,6

2000

357,8

99,4

2500

447,1

124,2

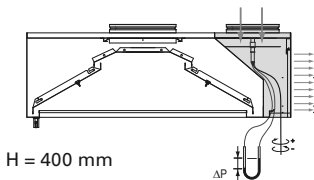
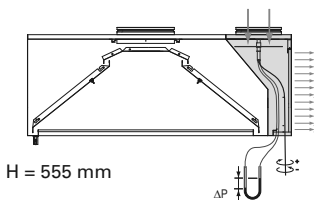
3000

536,8

149,1

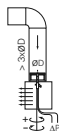
$$q_v = k \times \sqrt{\Delta p_m}$$

KVD (Canopies)



Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приточный воздух

- Supply airflow rate measurement using MSM
- Tuloilmavirranmittaus MSM:n avulla
- Mesure du débit soufflé à l'aide des MSM
- Messung des Zuluftstroms unter Verwendung eines MSM
- Tilluftflöde mätt med MSM
- Измерение расхода приточного воздуха, используя MSM



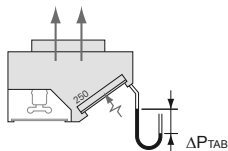
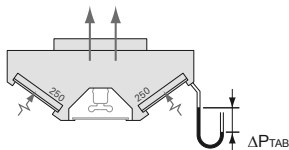
MSM 250

$$q_s \text{ [m}^3/\text{h]} = 183,6 \times \sqrt{\Delta P_{\text{TAB}} \text{ [Pa]}}$$

$$q_s \text{ [l/s]} = 51 \times \sqrt{\Delta P_{\text{TAB}} \text{ [Pa]}}$$

$$q_v = k \times \sqrt{\Delta p_m}$$

KCJ (Ventilated ceilings)



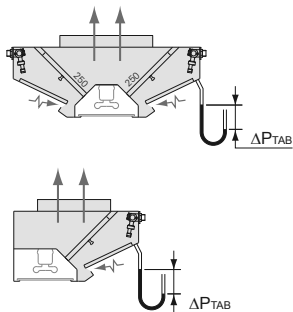
Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

Filter Height = 250 mm
Suodattimen korkeus = 250 mm
Hauteur de Filtre = 250 mm
Bauhöhe des Filters = 250 mm
Filter höjd = 250 mm
Высота фильтра = 250 mm

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	KSA 250 (50<ΔP<120 Pa)		FC 250 (15<ΔP<40 Pa)		TFC 250 (30<ΔP<65 Pa)	
	k [m³/h]	k [l/s]	k [m³/h]	k [l/s]	k [m³/h]	k [l/s]
1	63	17,5	54,5	15,2	46,1	12,8
2	126	35	109	30,2	92,2	25,6
3	189	52,5	163,5	45,3	138,3	38,4
4	252	70	218	60,4	184,4	51,2
5	315	87,5	272,5	75,5	230,5	64
6	378	105	327	90,6	276,6	76,8
7	441	122,5	381,5	105,7	322,7	89,6
8	504	140	436	120,8	368,8	102,4
9	567	157,5	490,5	135,9	414,9	115,2
10	630	175	545	151	461	128
11	693	192,5	599,5	166,1	507,1	140,8
12	756	210	654	181,2	553,2	153,6
13	819	227,5	708,5	196,3	599,3	166,4
14	882	245	763	211,4	645,4	179,2

$$q_v = k \times \sqrt{\Delta p_m}$$

KCW (Ventilated ceilings)



Exhaust air Poistoilma Extraction Abluft Frånluft Вытяжной воздух

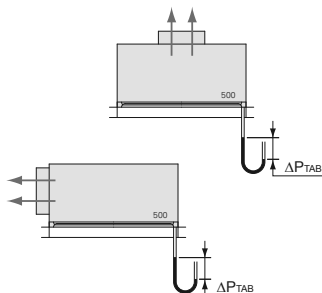
Filter Height = 250 mm
Suodattimen korkeus = 250 mm
Hauteur de Filtre = 250 mm
Bauhöhe des Filters = 250 mm
Filter höjd = 250 mm
Высота фильтра = 250 mm

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	FC 250	
	k [m ³ /h]	k [l/s]
1	44,5	12,4
2	89	24,8
3	133,5	37,2
4	178	49,6
5	222,5	62
6	267	74,4
7	311,5	86,8

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	FC 250	
	k [m ³ /h]	k [l/s]
8	356	99,2
9	400,5	111,6
10	445	124
11	489,5	136,4
12	534	148,8
13	578,5	161,2
14	623	173,6

$$q_v = k \times \sqrt{\Delta p_m}$$

Extraction Box (Ventilated ceilings)



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

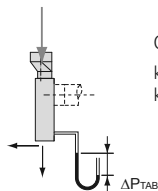
Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	FC 250 (15<ΔP<40 Pa)	
	k [m³/h]	k [l/s]
1	54,5	15,2
2	109	30,2
3	163,5	45,3
4	218	60,4
5	272,5	75,5

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	FC 350 (15<ΔP<40 Pa)	
	k [m³/h]	k [l/s]
1	72	20
2	144	40
3	216	60
4	288	80
5	360	100

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	FC 500 (15<ΔP<40 Pa)	
	k [m³/h]	k [l/s]
1	92,8	25,8
2	185,6	51,6
3	278,4	77,4
4	371,2	103,2
5	464	129

$$q_v = k \times \sqrt{\Delta p_m}$$

KCJ/KCW (Ventilated ceilings)



CJ/B

$k [m^3/h] = 7,8$

$k [l/s] = 2,2$

Capture Jets (S1/S2)

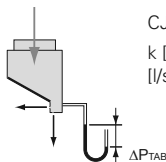
Sieppausilma

Jets de Captation

Capture Jets

Ejektorluft

Захватные Струи

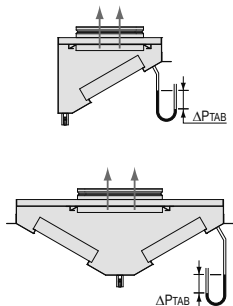


CJ/D

$k [m^3/h] = 8,5$

$[l/s] = 2,4$

$$q_v = k \times \sqrt{\Delta p_m}$$

KCF (Ventilated ceilings)

Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

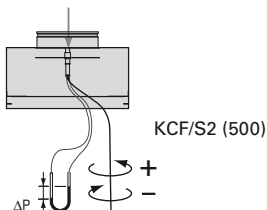
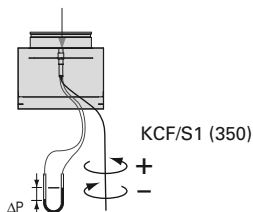
Minimum pressure loss over filter = 50 Pa
 Minimi painehäviö filterin yli = 50 Pa
 Perte de charge minimale des filtres = 50 Pa
 Minimum an Druckverlust am Filter = 50 Pa
 Minimum tryckfall over filtret = 50 Pa
 Минимальная потеря давления на фильтре = 50 Па

Filter Height = 250 mm
 Suodattimen korkeus = 250 mm
 Hauteur de Filtre = 250 mm
 Bauhöhe des Filters = 250 mm
 Filter höjd = 250 mm
 Высота фильтра = 250 mm

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	129,6	36
3	194,4	54
4	259,2	72
5	324	90
6	388,8	108

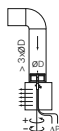
Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	129,6	36
3	194,4	54
4	259,2	72
5	324	90
6	388,8	108
7	453,6	126
8	518,4	144
9	583,2	162
10	684	180
11	712,8	198
12	777,6	216

$$q_v = k \times \sqrt{\Delta p_m}$$

KCF (Ventilated ceilings)

Supply air
Tuloilma
Soufflage
Zuluft
Tilluft
Приточный воздух

- Supply airflow rate measurement using MSM
- Tuloilmavirrannmittaus MSM:n avulla
- Mesure du débit soufflé à l'aide des MSM
- Messung des Zuluftstroms unter Verwendung eines MSM
- Tilluftflöde mätt med MSM
- Измерение расхода приточного воздуха, используя MSM



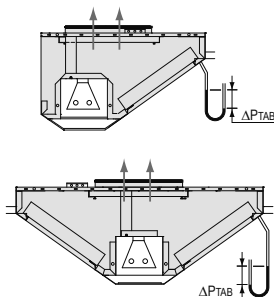
MSM 250

$$q_s \text{ [m}^3/\text{h]} = 183,6 \times \sqrt{\Delta P_{\text{TAB}} \text{ [Pa]}}$$

$$q_s \text{ [l/s]} = 51 \times \sqrt{\Delta P_{\text{TAB}} \text{ [Pa]}}$$

$$q_v = k \times \sqrt{\Delta p_m}$$

KCE (Ventilated ceilings)



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

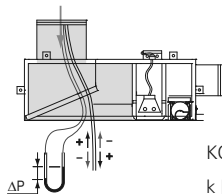
Minimum pressure loss over filter = 50 Pa
Minimi painehäviö filterin yli = 50 Pa
Perte de charge minimale des filtres = 50 Pa
Minimum an Druckverlust am Filter = 50 Pa
Minimum tryckfall over filtret = 50 Pa
Минимальная потеря давления на фильтре = 50 Па

Filter Height = 330 mm
Suodattimen korkeus = 330 mm
Hauteur de Filtre = 330 mm
Bauhöhe des Filters
Filter höjd = 330 mm
Высота фильтра = 330 mm

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6

Number of filter(s) Suodattimien määrä Nombre de filtre(s) Anzahl der Filter Filter kvantitet Число фильтра (ов)	k [m ³ /h]	k [l/s]
2	143,5	39,9
3	215,2	59,8
4	287	79,7
5	358,8	99,7
6	430,5	119,6
7	501,5	139,3
8	573,1	159,2
9	644,8	179,1
10	716,4	199
11	788	218,9
12	859,7	238,8

$$q_v = k \times \sqrt{\Delta p_m}$$

KCE (Ventilated ceilings)

KCE/S1

 $k \text{ [m}^3/\text{h}] = 88,9$ $k \text{ [l/s]} = 24,7$

Supply air

Tuloilma

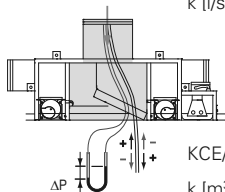
Soufflage

Zuluft

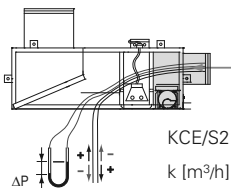
Tilluft

Приточный

воздух



KCE/S2

 $k \text{ [m}^3/\text{h}] = 88,9$ $k \text{ [l/s]} = 24,7$ 

KCE/S2

 $k \text{ [m}^3/\text{h}] = 29,9$ $k \text{ [l/s]} = 8,3$

Capture Jets (S1/S2)

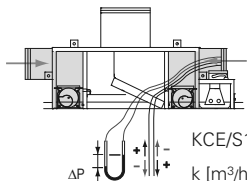
Sieppausilma

Jets de Captation

Capture Jets

Ejektorluft

Захватные Струи

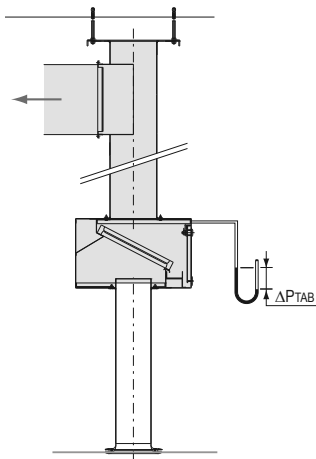


KCE/S1

 $k \text{ [m}^3/\text{h}] = 29,9$ $k \text{ [l/s]} = 8,3$

$$q_v = k \times \sqrt{\Delta p_m}$$

JES (Jet Extraction System)



Exhaust air
Poistoilma
Extraction
Abluft
Frånluft
Вытяжной воздух

Number of nozzle(s) Suodattimien imputki(et) Nombre de tuyère(s) Anzahl der Düsen Antalet dysor Тип сопла(ел)	k [m ³ /h]	k [l/s]
1	62	17,2
2	124	34,4
3	186	51,6

$$q_v = k \times \sqrt{\Delta p_m}$$

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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