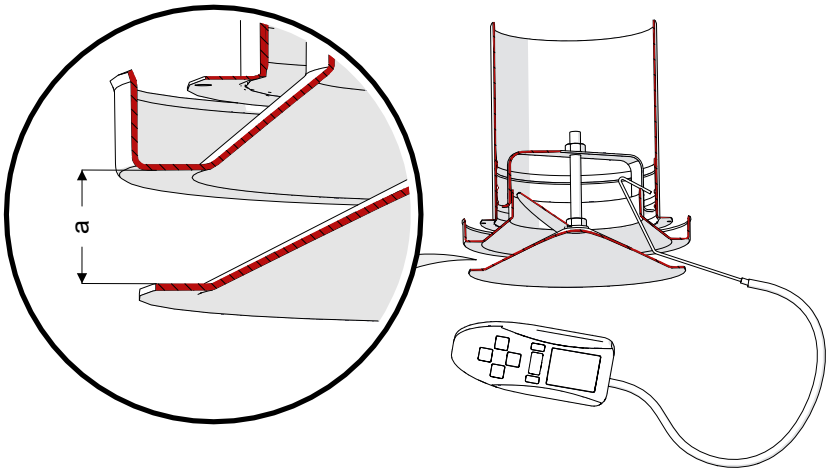
Commissioning guide

ETS NORD

ETS NORD®

Content

DSS



$$Q_v = k\sqrt{\Delta p_m}$$

K-value

Valid until 06.2024

DSS 100

a, mm	3	6	9	12	15
k-value	1,3	2,5	3,8	5,0	5,3

DSS 125

a, mm	3	6	9	12	15
k-value	1,6	3,3	4,9	6,3	8,1

DSS 160

a, mm	3	6	9	12	15
k-value	1,8	4,1	6,2	8,2	10,6

DSS 100 (with sector plate)

a, mm	3	6	9	12	15
k-value	1,2	1,9	2,3	2,7	3,2

DSS 125 (with sector plate)

a, mm	3	6	9	12	15
k-value	1,5	2,7	3,3	4,2	4,6

DSS 160 (with sector plate)

a, mm	3	6	9	12	15
k-value	2,3	3,9	4,9	5,8	6,6

Valid from 06.2024

DSS 100

a, mm	3	6	9	12	15
k-value	1,69	2,55	3,76	4,56	5,15

DSS 125

a, mm	3	6	9	12	15
k-value	2,02	3,49	4,76	6,09	7,44

DSS 160

a, mm	3	6	9	12	15
k-value	2,45	4,61	6,39	8,3	10,1

DSS 100 (with sector plate)

a, mm	3	6	9	12	15
k-value	1,34	2,03	2,42	2,83	3,12

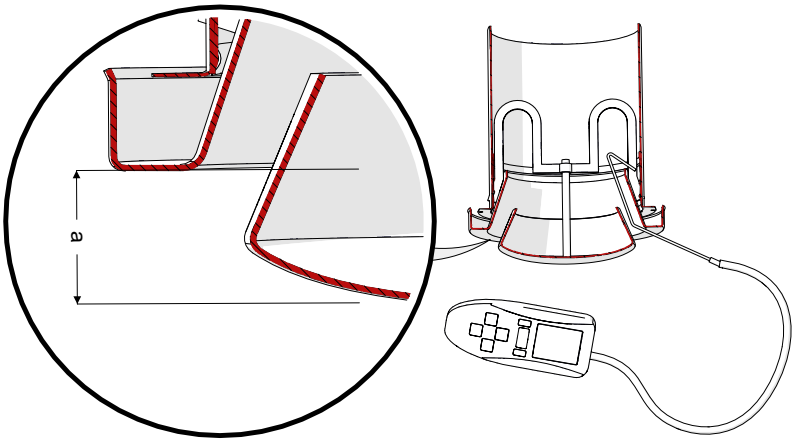
DSS 125 (with sector plate)

a, mm	3	6	9	12	15
k-value	1,79	2,99	3,54	4,14	4,66

DSS 160 (with sector plate)

a, mm	3	6	9	12	15
k-value	2,25	3,7	4,83	5,94	6,45

DSE



$Q_v=k\sqrt{\Delta p_m}$

K-value

Valid until 06.2024

DSE 100

a, mm	-9	-6	-3	0	3	6	9	12
k-value	0,79	1,08	1,36	1,65	1,94	2,25	2,55	2,81

DSE 125

a, mm	-12	-9	-6	-3	0	3	6	9	12
k-value	0,6	0,95	1,3	1,65	2	2,4	2,8	3,2	3,6

DSE 160

a, mm	-12	-9	-6	-3	0	3	6	9	12	15
k-value	1,1	1,55	2	2,45	2,9	3,5	4,1	4,65	5,2	5,7

DSE 200

a, mm	-6	-3	0	3	6	9	12	15	18	20
k-value	0,48	1,07	1,66	2,41	3,16	3,94	4,72	5,48	6,24	6,79

Valid from 06.2024

DSE 100

a, mm	-9	-6	-3	0	3	6	9	12
k-value	0,55	0,86	1,18	1,47	1,75	2,08	2,42	2,68

DSE 125

a, mm	-9	-6	-3	0	3	6	9	12
k-value	1,10	1,41	1,81	2,13	2,58	2,96	3,36	3,74

DSE 160

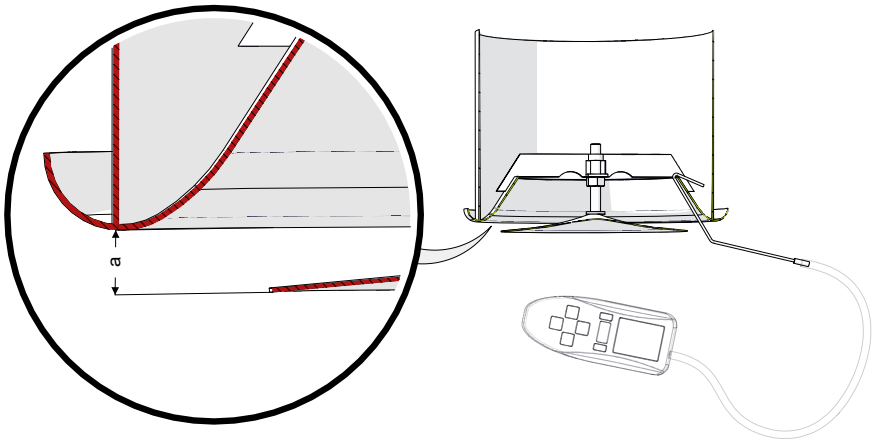
a, mm	-12	-9	-6	-3	0	3	6	9	12	15
k-value	1,12	1,56	2,02	2,57	3,05	3,58	4,03	4,59	5,07	5,69

DSE 200

a, mm	-6	-3	0	3	6	9	12	15	18	20
k-value	0,93	1,67	2,40	3,15	3,90	4,64	5,37	6,13	6,96	7,29

NB! Before measuring the valve, check the k-values on the DSE valve at the site.

DVP

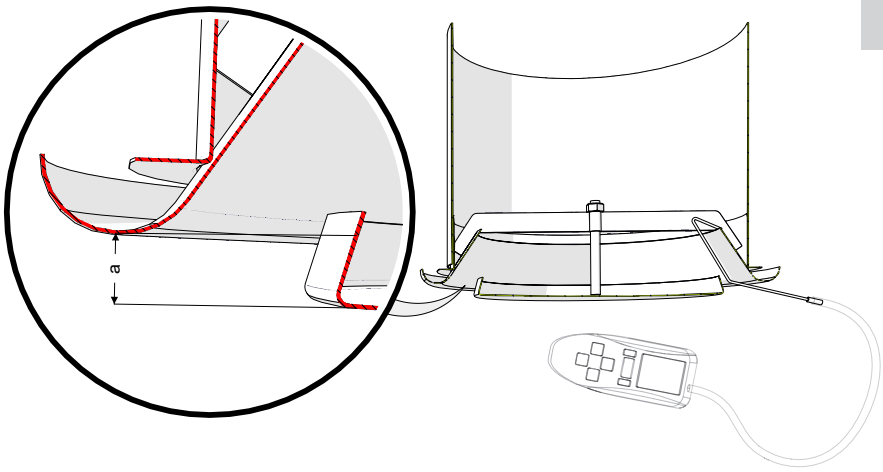


$Q_v = k\sqrt{\Delta p_m}$

K-value

a, mm	0	3	6	9	12	15	18	21
DVP 100	1,45	2,50	3,10	3,95	4,10			
DVP 125	2,50	3,65	4,40	5,45	6,40	7,45		
DVP 160	4,40	5,30	7,30	8,70	9,95	11,85		
DVP 200	4,05	6,05	8,25	10,25	12,00	15,30	17,45	
DVP 250	6,15	8,90	10,90	12,95	15,25	18,05	20,75	23,85

DVS

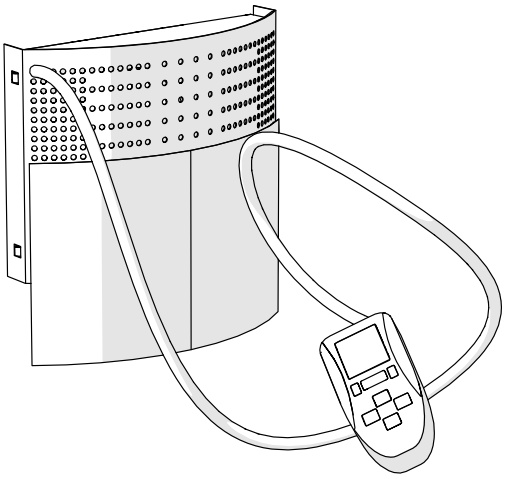


$Q_v = k\sqrt{\Delta p_m}$

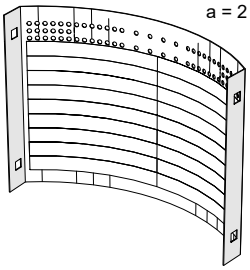
K-value

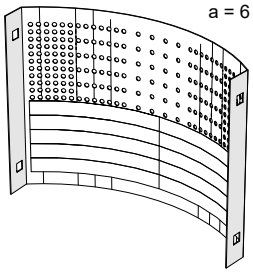
a, mm	-12	-9	-6	-3	0	3	6	9	12
DVS 100		0,45	0,80	1,20	1,50	1,80	2,25	2,65	2,95
DVS 125	0,80	1,25	1,65	2,10	2,60	3,00	3,45	4,00	4,50
DVS 160	2,10	2,35	3,00	3,70	4,20	4,95	5,45	6,25	6,90
DVS 200	3,15	3,90	4,75	5,15	6,25	7,40	8,25	8,95	10,00
DVS 250	5,85	6,95	8,05	9,45	10,30	10,85	12,35	13,75	15,50

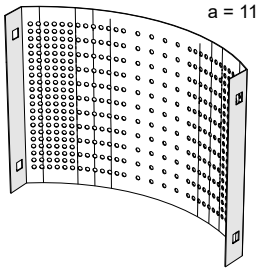
DSK/DSK-P



$Q_v = k\sqrt{\Delta p_m}$







K-value

a	11	9	7	5	3	2
DSK-P 100	5,34	4,32	3,12	2,15	1,30	0,87

a	9	7	5	3	2
DSK-P2 100	2,16	1,56	1,08	0,65	0,49

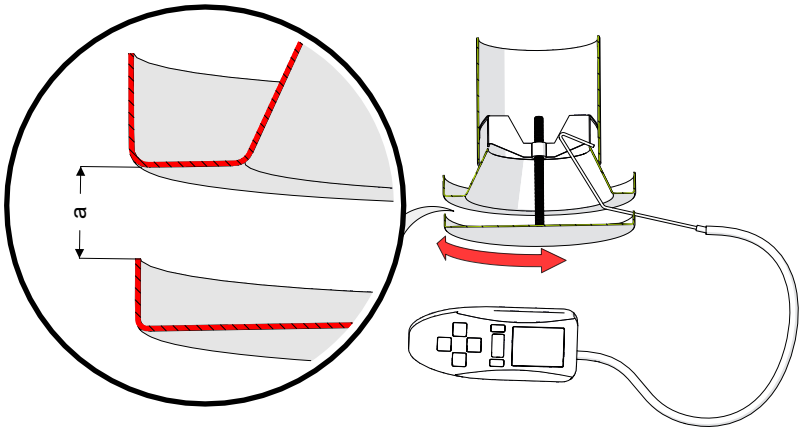
a	10	9	7	5	3	2
DSK-P 125	4,68	3,95	3,08	2,16	1,30	0,89

a	16	14	12	10	8	6	4	2
DSK 160	13,58	11,59	9,85	8,13	6,54	4,76	3,17	1,59

a	19	16	13	10	7	4
DSK 200	17,47	14,95	11,72	8,92	6,09	3,47

SFU

$Q_v = k\sqrt{\Delta p_m}$



K-value

SFU 100, supply air

a, mm	6	9	12
k-value	2,40	3,70	4,25

SFU 125, supply air

a, mm	6	9	12	15	18
k-value	2,45	3,80	4,70	5,60	6,85

SFU 160, supply air

a, mm	6	9	12	15	18
k-value	3,50	5,55	6,70	8,55	9,80

SFU 200, supply air

a, mm	6	9	12	15	18
k-value	4,75	7,05	8,50	9,75	11,05

SFU 100, exhaust air

a, mm	6	9	12	15	18
k-value	1,90	2,95	4,00	4,35	4,40

SFU 125, exhaust air

a, mm	6	9	12	15	18
k-value	2,15	3,60	4,20	5,30	6,35

SFU 160, exhaust air

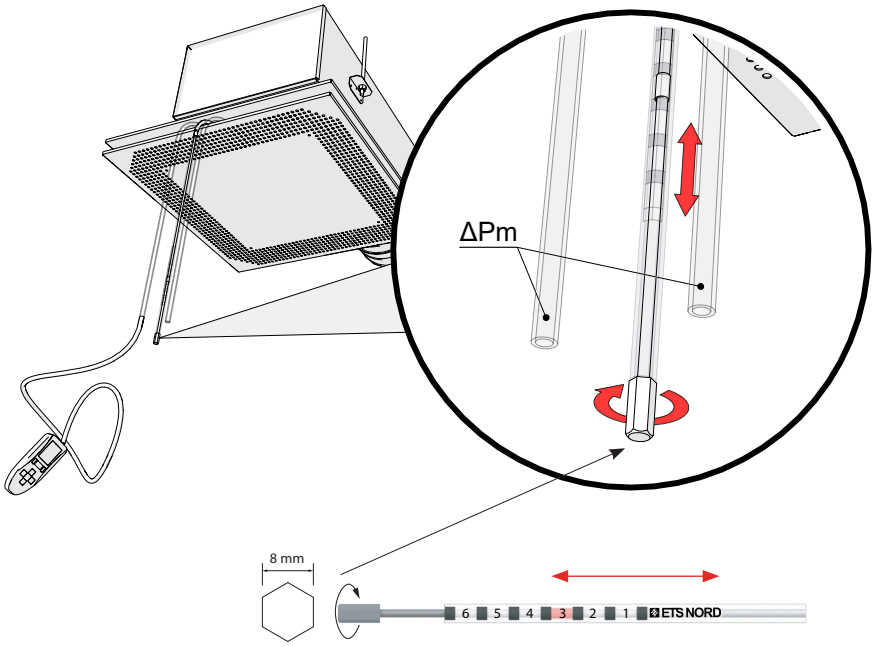
a, mm	6	9	12	15	18
k-value	3,55	5,00	6,40	7,60	8,55

SFU 200, exhaust air

a, mm	6	9	12	15	18
k-value	4,30	6,40	7,85	9,75	11,20

DEK

$Q_v = k\sqrt{\Delta p_m}$

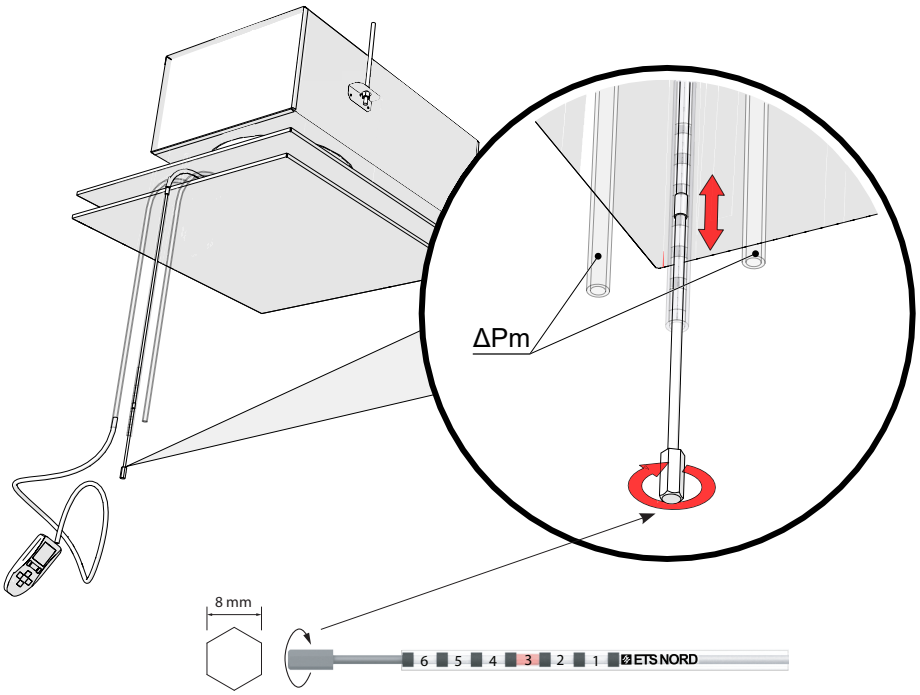


DEK + SKDM k-value

Nominal size	Position							
	1	2	3	4	5	6	7	8
DEK 100 + SKDM 100/100	2	3,8	5,4	6,6				
DEK 125 + SKDM 100/125	2	3,8	5,4	6,6				
DEK 160 + SKDM 125/160	2,1	4	5,8	7,4	8,8	10		
DEK 200 + SKDM 160/200	3,5	6,7	9,6	12,2	14,6	16,7		
DEK 250 + SKDM 200/250	5,5	10,5	15,1	19,2	22,9	26,1		
DEK 315 + SKDM 250/315	6,4	12,5	18,1	23,4	28,3	32,8		
DEK 400 + SKDM 315/400	7,5	14,7	21,5	28	34,2	40,1	45,8	50,9

DEP

$$Q_v = k\sqrt{\Delta p_m}$$



Supply

DEP + SKDM k-value

Nominal size	Position							
	1	2	3	4	5	6	7	8
DEP 125 + SKDM 100/125	2,15	3,92	5,43	6,46				
DEP 160 + SKDM 125/160	2,38	4,18	5,86	7,26	8,43	9,22		
DEP 200 + SKDM 160/200	3,6	6,68	9,45	11,7	13,8	15,5		
DEP 250 + SKDM 200/250	4,85	9,51	14,4	19,3	23,8	27,6		
DEP 315 + SKDM 250/315	6,69	12,4	17,9	22,7	26,4	29		
DEP 400 + SKDM 315/400	6,98	14	20,6	26,9	31,9	36,5	40,1	43,2

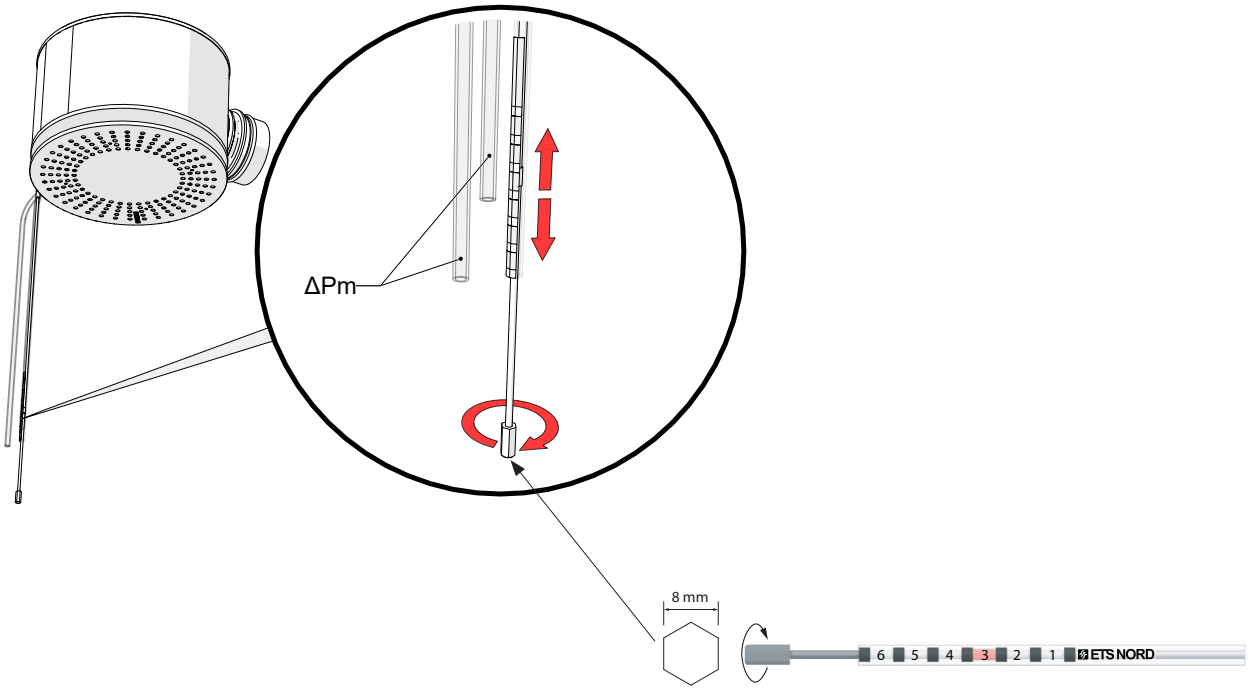
Exhaust

DEP + SKDM K-value

Nominal size	Position							
	1	2	3	4	5	6	7	8
DEP 125 + SKDM 100/125	2,12	4,07	6,08	8,16				
DEP 160 + SKDM 125/160	2,22	4,19	6,33	8,65	11,2	13,2		
DEP 200 + SKDM 160/200	3,37	6,73	10,4	14,1	17,9	21		
DEP 250 + SKDM 200/250	5,16	9,83	14,2	17,9	20,8	22,3		
DEP 315 + SKDM 250/315	6,73	12,3	18,5	24,4	30,3	32,4		
DEP 400 + SKDM 315/400	5,76	14,8	21,5	28,3	34,8	40,6	45,2	48,1

DEN

$$Q_v = k\sqrt{\Delta p_m}$$

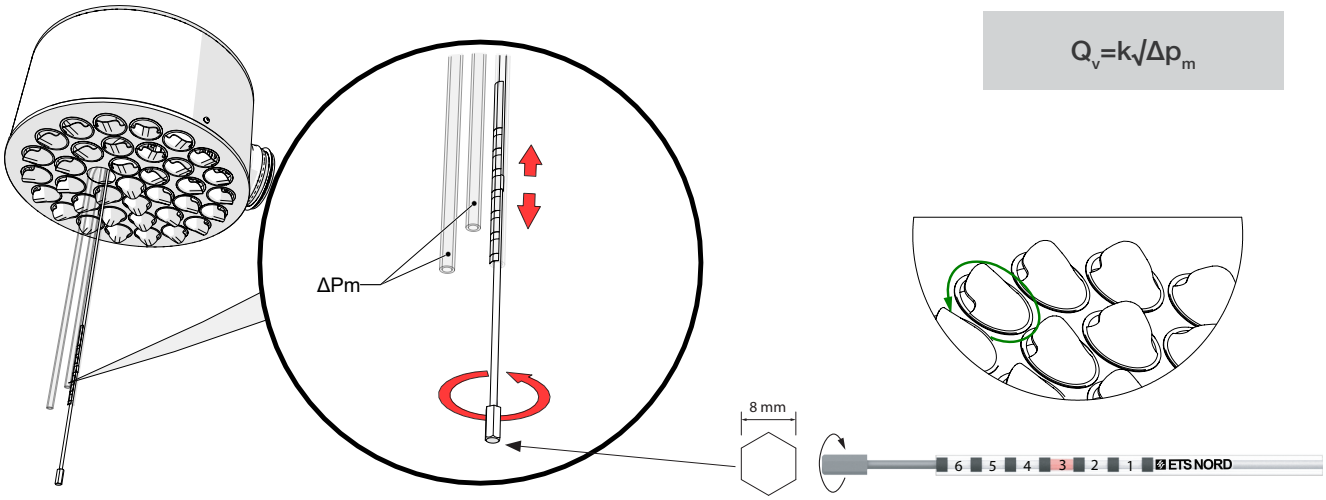


K-value

Nominal size	Position							
	1	2	3	4	5	6	7	8
DEN 100	2,2	3,7	5,4	6,7				
DEN 125	1,85	3,65	5,35	7,25	8,60	9,80		
DEN 160	3,3	5,6	9,1	13	14,7	17		
DEN 200	5,2	10	15,1	21,3	26,1	29,3		
DEN 250	8,7	16,6	24,2	33,7	40,6	43,5		
DEN 315	7,8	18	27,9	36,1	47,5	56,5	86,4	91,3

DEZ

$Q_v = k\sqrt{\Delta p_m}$

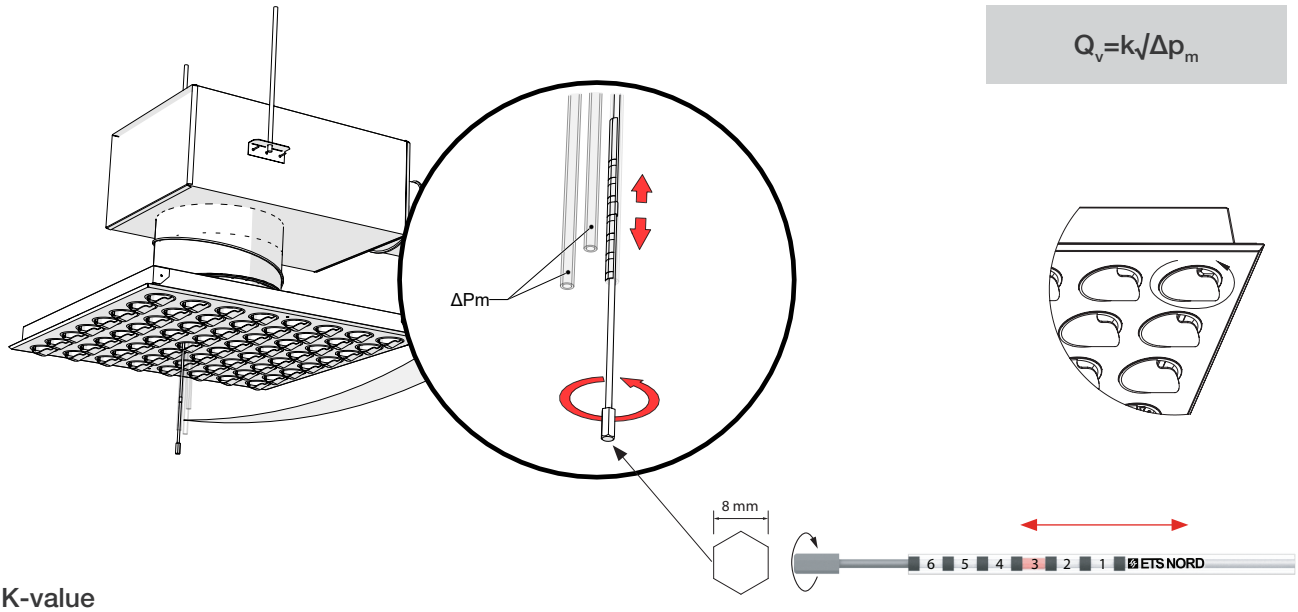


K-value

Nominal size	Position							
	1	2	3	4	5	6	7	8
DEZ 100	2,0	4,0	5,9	7,5				
DEZ 125	2,1	4,1	6,0	7,9	9,5	10,7		
DEZ 160	3,5	6,7	9,9	12,9	15,6	17,7		
DEZ 200	5,1	9,9	14,7	19,4	23,6	26,8		
DEZ 250	6,3	12,5	18,5	24,4	30,0	35,3		
DEZ 315	7,4	14,2	21,5	29,0	36,0	43,1	50,0	56,4

DKZ

$Q_v = k\sqrt{\Delta p_m}$

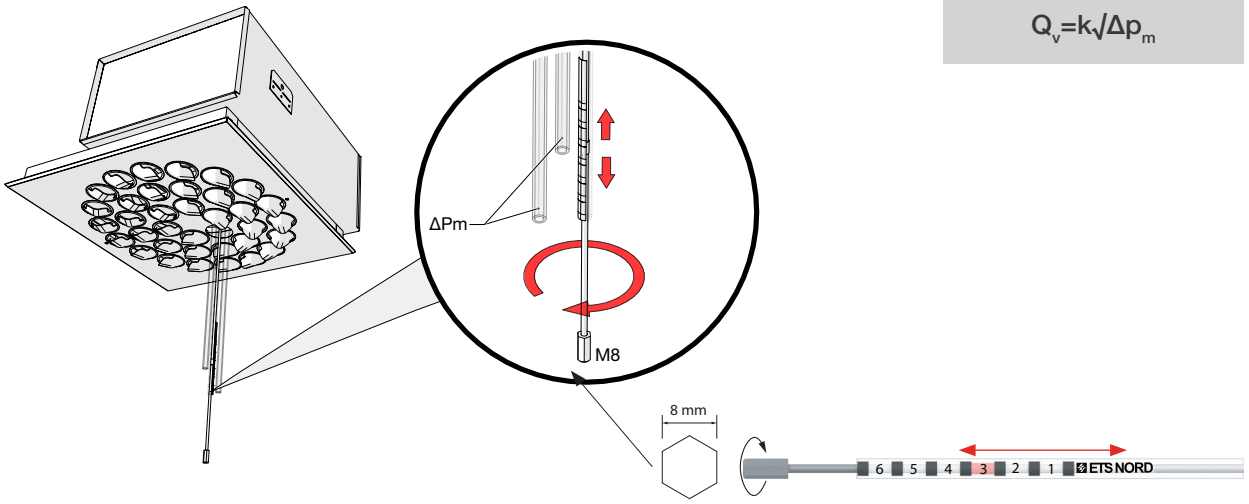


K-value

DKZ+SKDM	Position							
	1	2	3	4	5	6	7	8
DKZ 125-300/450/600 + SKDM 100/125	2,1	3,8	5,2	6,3				
DKZ 160-300/450/600 + SKDM 125/160	2,2	4,1	5,8	7,3	8,5	9,6		
DKZ 200-450/600 + SKDM 160/200	3,6	6,8	9,6	12,1	14,2	15,9		
DKZ 250-600 + SKDM 200/250	5,6	10,7	15,1	19,0	22,2	24,9		
DKZ 315-600+SKDM 250/315	6,6	12,8	18,4	23,5	28,1	32,1		
DKZ 400-600+ SKDM 315/400	7,8	15,1	22,0	28,4	34,5	40,1	45,2	49,9

DOZ

$Q_v = k\sqrt{\Delta p_m}$

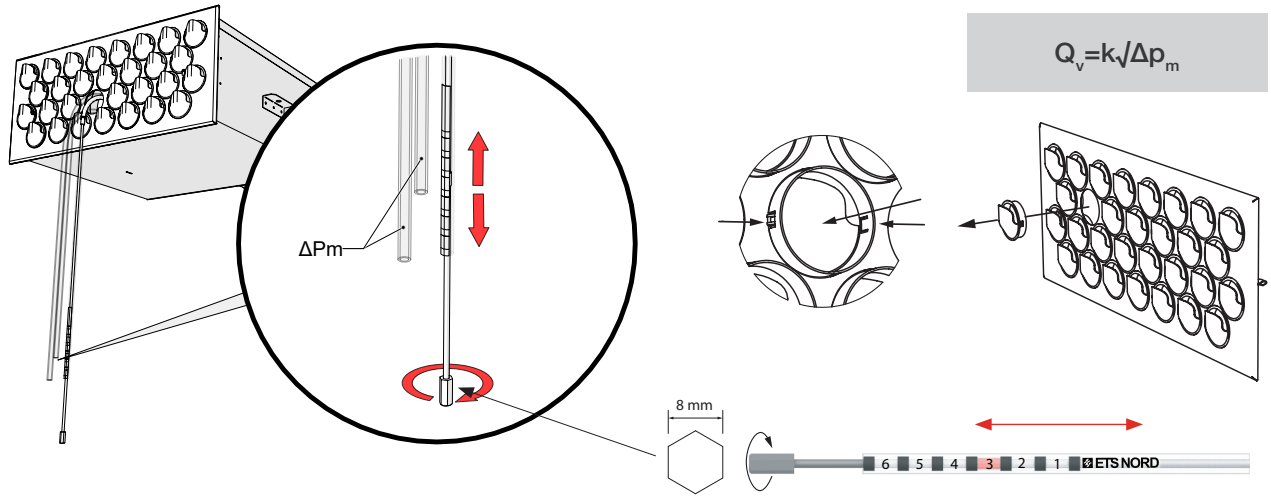


K-value

DOZ+SKDM	Position							
	1	2	3	4	5	6	7	8
DOZ 125-450/600 + SKDM 100/125	2,19	3,93	5,43	6,38				
DOZ 160-450/600 + SKDM 125/160	2,39	4,17	5,87	7,27	8,44	9,11		
DOZ 200-450/600 + SKDM 160/200	3,25	6,57	9,38	11,9	13,9	15,0		
DOZ 250-600 + SKDM 200/250	5,44	9,95	14,3	18,3	21,4	23,3		
DOZ 315-600 + SKDM 250/315	6,03	12,4	17,7	22,9	27,0	29,5		
DOZ 400-600 + SKDM 315/400	8,09	14,4	21,0	27,0	32,6	37,2	40,5	43,7

DRZ

$Q_v = k\sqrt{\Delta p_m}$



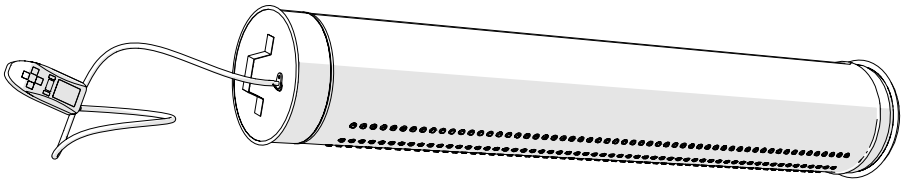
K-value

DRZ BxH	Position					
	1	2	3	4	5	6
400x150	2,1	3,8	5,4	6,9		
400x200	2,2	4,0	5,7	7,3	8,9	10,4
500x200	3,6	6,7	9,5	12,2	14,8	17,2
600x250	5,5	10,0	14,2	18,2	22,1	25,8
750x300	6,9	12,7	18,1	23,2	28,1	32,9

DSP

$q_v = \sqrt{\Delta p} \times 0{,}030 \times \text{quantity}$

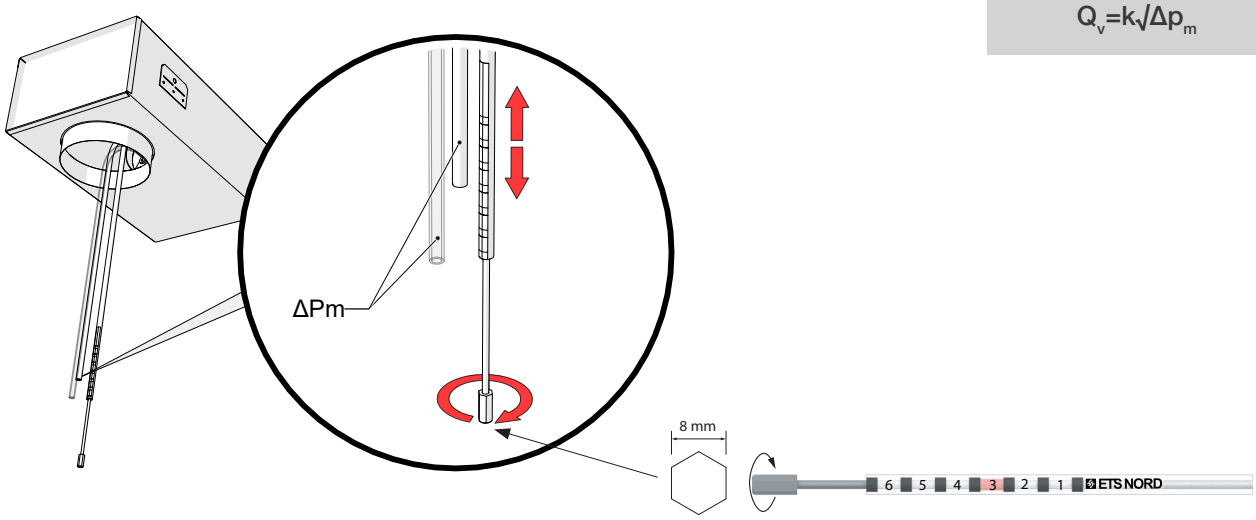
qv = l /s
√Δp = measured pressure difference,
Pa k-value = 0,030
Qty = number of open nozzles

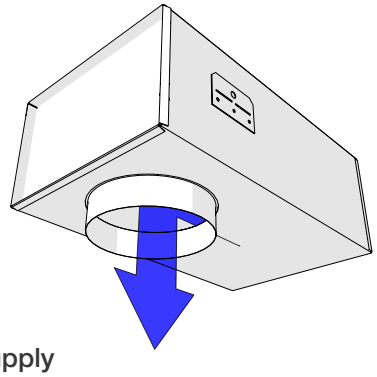


Nominal size	Quantity of nozzles
DSP 160-600	96
DSP 200-600	144
DSP 250-600	192
DSP 315-600	240
DSP 400-600	288
DSP 500-600	336
DSP 160-1250	236
DSP 200-1250	354
DSP 250-1250	472
DSP 315-1250	590
DSP 400-1250	708
DSP 500-1250	826

SKDM

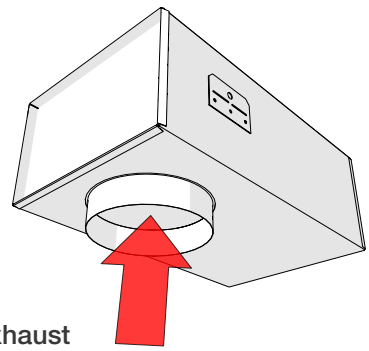
$$Q_v = k\sqrt{\Delta p_m}$$





SKDM Supply

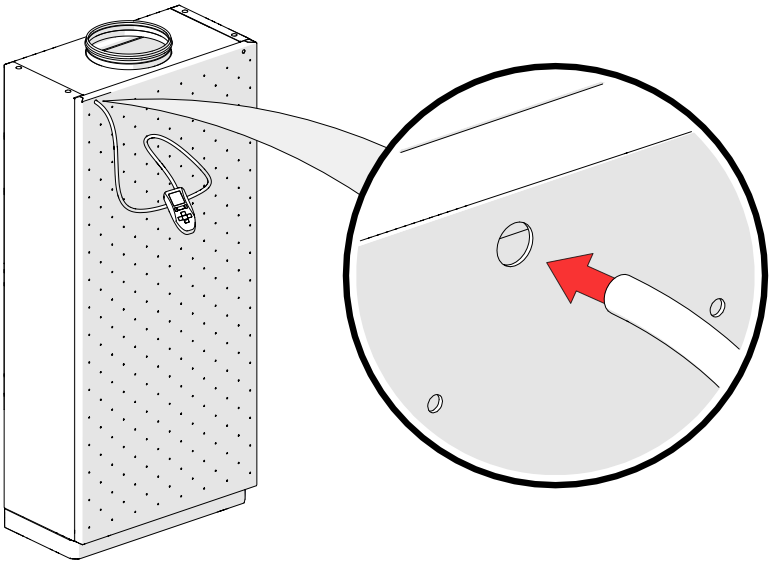
Ød	Position														
	s=1	s=1,5	s=2	s=2,5	s=3	s=3,5	s=4	s=4,5	s=5	s=5,5	s=6	s=6,5	s=7	s=7,5	s=8
100	1,6	2,3	2,9	3,8	4,6	5,5	6,3								
125	1,7	2,4	3,0	3,9	4,7	5,6	6,4	7,2	8,0	8,7	9,3				
160	3,0	4,6	6,2	7,8	9,4	10,9	12,3	13,5	14,6	15,7	16,7				
200	5,0	7,8	10,5	12,7	14,9	16,9	18,8	20,3	21,7	22,7	23,6				
250	5,6	10,6	15,5	19,3	23,0	26,9	30,7	34,6	38,4	42,2	46,0				
315	9,5	13,9	18,3	22,5	26,6	31,1	35,5	40,0	44,4	47,7	51,0	54,3	57,5	60,3	63,0



SKDM Exhaust

Ød	Position														
	s=1	s=1,5	s=2	s=2,5	s=3	s=3,5	s=4	s=4,5	s=5	s=5,5	s=6	s=6,5	s=7	s=7,5	s=8
100	2,14	3,1	4,1	5,1	6,13	7,1	8,04								
125	2,23	3,2	4,19	5,2	6,24	7,4	8,54	9,7	10,8	11,9	12,9				
160	3,39	5,1	6,72	8,5	10,3	12,2	14,1	15,9	17,7	19,5	21,2				
200	4,87	7,2	9,62	12,1	14,6	17,2	19,7	22,2	24,6	26,9	29,1				
250	6,64	9,6	12,5	15,5	18,4	21,4	24,3	27,1	29,9	30,5	31,1				
315	5,84	9,9	14	17,4	20,7	23,7	26,6	29,4	32,1	35,1	38	41,9	45,7	53	59,3

LTF

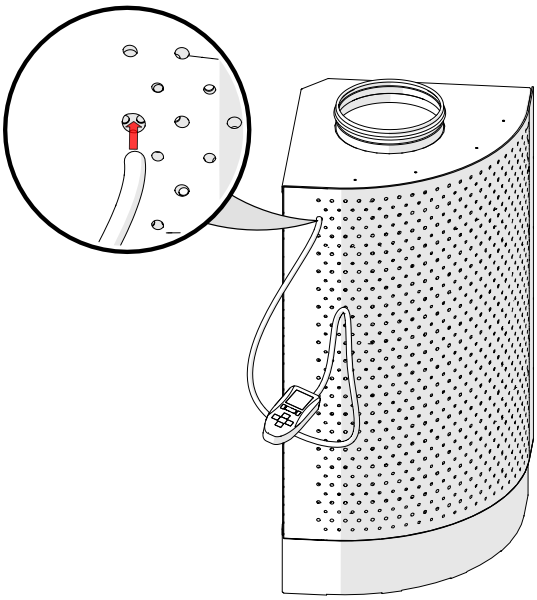


$Q_v = k\sqrt{\Delta p_m}$

K-value

Nominal size	
LTF 160	18,3
LTF 200	34,6
LTF 250	58,9
LTF 315	84,2
LTF 400	157

LDC

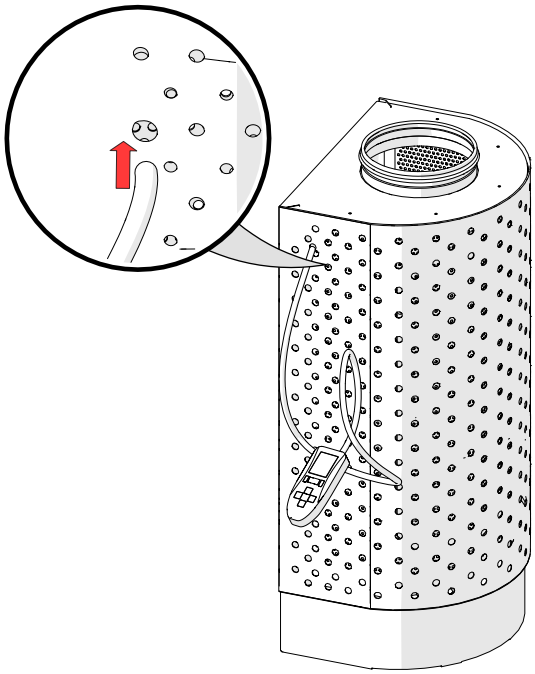


$Q_v = k\sqrt{\Delta p_m}$

K-value

Nominal size	
LDC 125	12,5
LDC 160	20,7
LDC 200	35,7
LDC 250	53,9
LDC 315	99,3
LDC 400	144

LDW



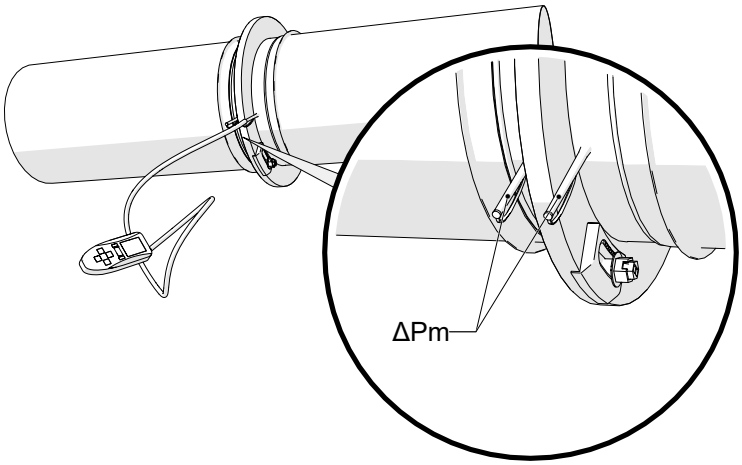
$$Q_v = k\sqrt{\Delta p_m}$$

K-value

Nominal size	
LDW 125	12,6
LDW 160	21,9
LDW 200	36,4
LDW 250	55,9
LDW 315	103
LDW 400	166

KRI

$$Q_v = k\sqrt{\Delta p_m}$$

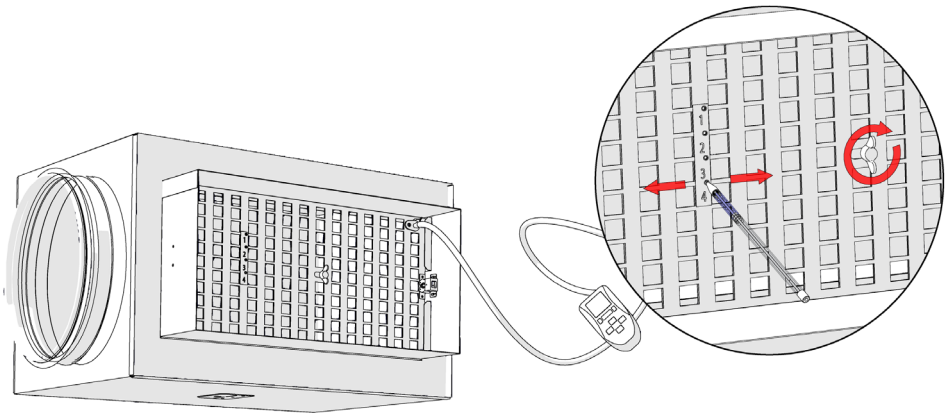


K-value

d	Position							
	1	2	3	4	5	6	7	8
KRI 100	8,30	6,69	5,56	3,95	3,10	2,44	1,70	1,28
KRI 125	13,36	9,21	7,28	5,33	4,07	3,13	1,87	-
KRI 160	24,59	17,13	14,75	12,32	9,63	7,68	5,62	4,52
KRI 200	50,06	34,92	25,94	20,38	15,15	11,74	8,69	5,12
KRI 250	71,29	51,58	43,48	34,13	25,96	20,23	15,43	12,04
KRI 315	120,63	70,06	58,67	45,15	37,96	30,98	22,53	17,10
KRI 400	136,92	107,28	92,46	69,22	54,08	40,41	32,29	23,16
KRI 500	232,76	182,76	151,46	118,60	94,41	71,93	55,31	38,02
KRI 630	456,76	313,77	254,76	172,55	130,95	97,35	74,27	56,13
KRI 800	523,64	438,36	368,57	314,43	228,73	177,91	137,23	104,82

SKRM with RSP/RSV grille

$Q_v = k\sqrt{\Delta p_m}$



RSP+SKRM supply air

Position				
AxB	s = 1	s = 2	s = 3	s = 4
200x100	10,5	7,7	5,1	3,7
200x150	16,1	11,5	7,3	5
300x100	16,2	11,6	7,5	5,2
300x150	25,3	17,9	11,1	7,3
300x200	35,3	24,8	15,2	9,9
400x100	21,9	15,6	9,9	6,7
400x150	34,6	24,3	14,9	9,7
400x200	48,2	33,6	20,4	13,1
500x150	43,9	30,7	18,7	12
500x200	61	42,4	25,6	16,2
600x150	49,9	35	21,4	13,8
600x200	69,4	48,4	29,4	18,7
800x150	68,5	47,8	29	18,5
800x200	95,1	66	39,8	25
1000x200	120,8	83,6	50,2	31,4

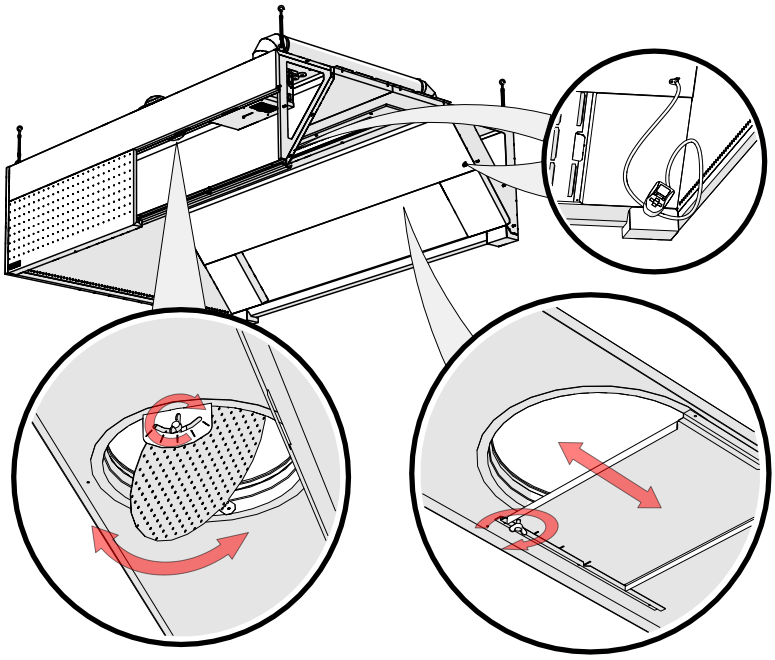
RSP/RSV+SKRM exhaust air

Position				
AxB	s = 1	s = 2	s = 3	s = 4
200x100	6,9	5,6	4,2	3,2
200x150	10,5	8,4	6,1	4,5
300x100	10,5	8,5	6,2	4,6
300x150	16,2	12,9	9,2	6,6
300x200	22,3	17,7	12,5	8,9
400x100	14,2	11,3	8,2	6
400x150	22	17,4	12,3	8,7
400x200	30,1	23,8	16,8	11,7
500x150	27,7	21,9	15,4	10,8
500x200	38	30	21	14,6
600x150	32,2	25,5	17,9	12,5
600x200	44	34,8	24,4	16,9
800x150	43,7	34,5	24,2	16,8
800x200	59,8	47,1	32,9	22,6
1000x200	75,5	59,4	41,4	28,4

HR/HZ

NORDcanopy canopies are fitted with measuring nozzles located inside the canopy

$$Q_v = k\sqrt{\Delta p_m}$$



ATTN : During measurement all HFK grease filters and blind plates must be in place and the front panel must be closed.

The supply airflow can be adjusted from the adjustment plate.
The exhaust airflow adjustment plate is located behind the HFK grease filters in the exhaust chamber.
Lock the adjustment plate in place by using the butterfly nuts.

K-value for measuring airflow

Exhaust k-value = 16,6 (per 1 filter)

Supply air	K-value, per 1 m of front panel				
	SPx0	SPx1	SPx2	SPx3	SPxK
Front panel*	-	19,2	32,3	50,4	-
AirGrip	2,4	-	-	-	-
Side panel*	-	-	-	-	6,6

* The supply panel k-values above include the “AirGrip” air capture system k-value.
* If the side panel has perforation, add the side panel k-value to the front panel k-value.

Calculation example:

Supply air canopy L=2 meter with SPx2 front panel.

Calculation of the supply air volume:

Pressure in the supply air chamber is 25 Pa
Front panel SPx2 k-value is 32,3

$$Qs = 2 \times 32{,}3 \times \sqrt{25} = 323 \text{ l/s}$$

Calculation of the exhaust air volume:

Pressure in the exhaust air chamber is 25 Pa
4 x HFK grease filter k-value is 16,6

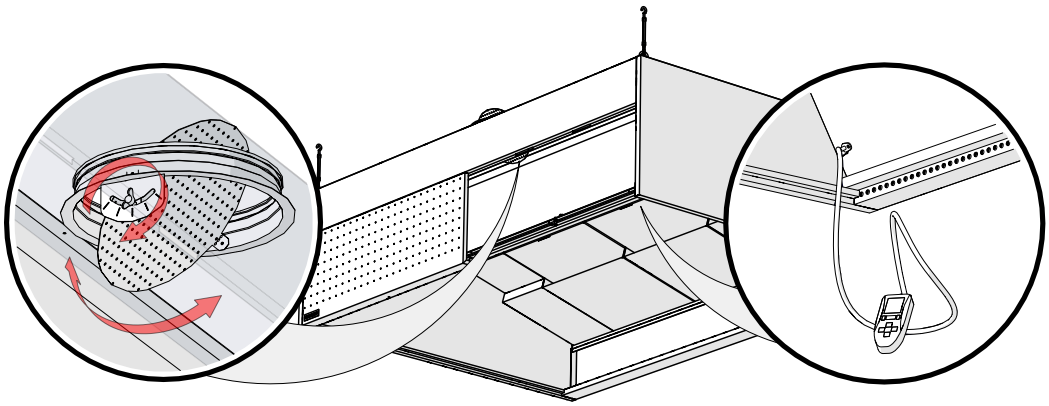
$$Qe = 4 \times 16{,}6 \times \sqrt{25} = 332 \text{ l/s}$$

HU

NORDcanopy canopies are fitted with measuring nozzles located inside the canopy.

ATTN: During measurement, HFU steam filters must be fitted and front panel must be closed

Adjust the supply airflow from the adjustment plate.
The supply airflow adjustment plate is located in the supply chamber.



*The supply panels k-value contain the “AirGrip” air nozzle system k-value.

Calculation example:
Supply air canopy L=2 meter with SPx2 front panel.

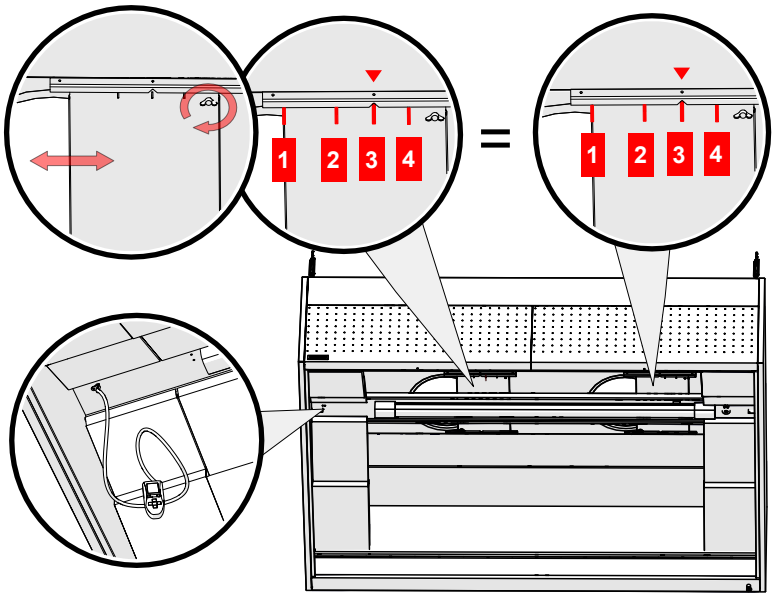
Calculation of the supply air volume:
Pressure in the supply air chamber is 25 Pa
Front panel SPx2 k-value is 32,3
Q_s = 2 x 32,3 x √25 = 323 l/s

$$Q_v = k\sqrt{\Delta p_m}$$

Front panel per 1m	k-value
SPx0	-
SPx1*	19,2
SPx2*	32,3
SPx3*	50,4
AirGrip	2,4

NB! Adjusting plate located behind HFU condensation plates is used for adjusting exhaust airflow. For fixing the regulating plate, lock the butterfly nuts!

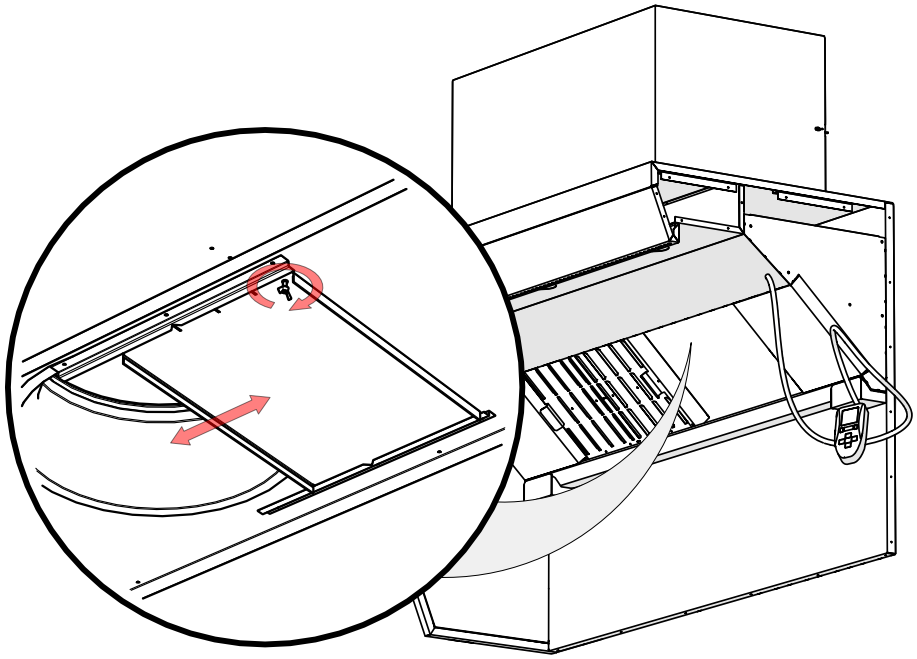
L	k-value			
	s=1	s=2	s=3	s=4
1000	38,9	34,4	29,1	25,7
1500	43,8	37,6	30,9	27,0
2000	77,9	68,7	58,1	51,5
2500	83,8	72,7	60,5	53,1
3000	87,7	75,2	61,9	54,0
3500	123,2	107,4	89,7	79,0
4000	155,7	137,5	116,2	102,9
4500	162,3	142,0	118,9	104,8
5000	167,6	145,4	120,9	106,2
5500	171,9	148,2	122,5	107,2
6000	175,3	150,4	123,8	108,0



HG

NORDcanopy canopies are fitted with measuring nozzles located inside the canopy.

$$Q_v = k\sqrt{\Delta p_m}$$



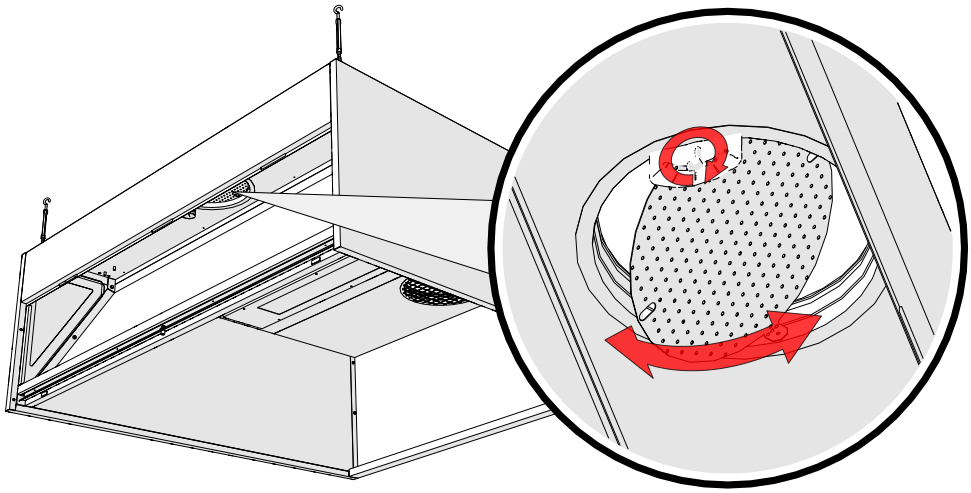
ATTN: During measurement all HFK grease filters and blind plates must be in place and the front panel must be closed

The exhaust airflow can be adjusted from the adjustment plate.
The exhaust airflow adjustment plate is located behind the HFK grease filters in the exhaust chamber.
Lock the adjustment plate in place by using the butterfly nuts.

Exhaust k-value = 16,6 (per filter)

HN

Adjust the supply airflow from the adjustment plate.
The supply airflow adjustment plate is located in the supply chamber.
Lock the adjustment plate in place by using the butterfly nuts.



*The supply panels k-value contain the “AirGrip” air nozzle system k-value.

Calculation example:
Supply air canopy L=2 meter with SPx2 front panel.

Calculation of the supply air volume:
Pressure in the supply air chamber is 25 Pa
Front panel SPx2 k-value is 32,3

Qs = 2 x 32,3 x √25 = 323 l/s

$$Q_v = k\sqrt{\Delta p_m}$$

Front panel per 1m	k-value
SPx0	-
SPx1*	19,2
SPx2*	32,3
SPx3*	50,4
AirGrip	2,4

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Let's move the air ***together!***