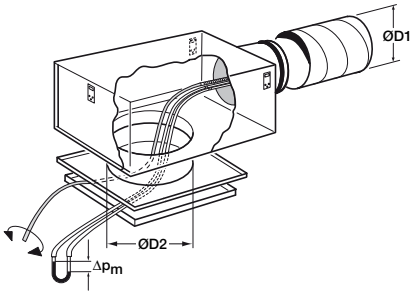
Regulation of air flow

March 2007



$$q = k\sqrt{\Delta p_m} \quad (l/s) \quad (Pa)$$

$$q = 3{,}6\ k\sqrt{\Delta p_m} \quad (m^3/h) \quad (Pa)$$

$$\Delta p_m = \left(\frac{q\ (l/s)}{k}\right)^2 \quad (Pa)$$

$$\Delta p_m = \left(\frac{q\ (m^3/h)}{3{,}6\ k}\right)^2 \quad (Pa)$$

FläktWoods

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Definitions of symbols

Symbol	Description	Unit
q_v	air volume flow	l/s, m^3/s, m^3/h
Δp_m	pressure difference	Pa
k	k-factor ($q_v = k \times \sqrt{\Delta p_m}$)	
D. d	diameter	mm
a. s	slot, position, opening	mm
L	safety distance to source of disturbance	m
n	factor of safety distance	-
m_2	inaccuracy of measurement method (error of method)	%
ρ_t	air density at the moment of measurement	kg/m^3

Methods of measurement

1. Measurement of pressure drop (Δp_m) in calibrated valves by means of measuring probe (KSO, KTS. STH...).
   The regulation is carried out by adjusting the valve opening (a) or number of holes.

2. Measurement of pressure drop (Δp_m) at a supply/exhaust valve equipped with an installed, calibrated probe SVQ...).
   The regulation is achieved by means of regulating strings by changing the damper position, at exhaust valves EHC by adjusting the slot.

3. Measurement of pressure drop (Δp_m) at a supply/exhaust valve equipped with an installed, calibrated probe (FMC, FMK...).
   The regulation is achieved by means of a separate device.

4. Measurement of pressure drop (Δp_m) at measuring devices installed permanently in the duct (IRIS).

Use of measurement and regulation guide

The guide contains the k-factors for standard products of Fläkt Woods (if necessary, the product information is also available as diagrams). For each product, information about deviating safety distances, correction factors as well as measurement and regulation actions are given in the guide.

Product-specific data of diffusion patterns. sound attenuation etc. is available in product catalogues of Fläkt Woods.
Factor k has been defined on the basis of the air volume flow unit l/s

$$q_v = k \times \sqrt{\Delta p_m} \qquad \Delta p_m = (q_v / k)^2$$

If other units of air volume flow are used. the following correction has to be made:

m^3/s: $q_v = 0.001 \times k\sqrt{\Delta p_m}$ $\Delta p_m = (q_v / (0.001 \times k))^2$

m^3/h: $q_v = 3.6 \times k\sqrt{\Delta p_m}$ $\Delta p_m = (q_v / (3.6 \times k))^2$

Example:

KSO-125. position a=+5. has to be adjusted for air volume flow $q_v = 30$ l/s
- read correction k on page 53 and 54
- insert k = 3.3 in the formula to get the pressure difference

$$\Delta p_m = (30 / 3.3)^2 = 82 \text{ Pa}$$

- adjust the valve to achieve the required pressure difference

Evaluation of measurement errors

$$m = \pm \sqrt{c_1^2 m_1^2 + c_2^2 m_2^2 + c_3^2 m_3^2 + ... + c_n^2 m_n}$$

m	relative inaccuracy of the result of measurement %
m_1	inaccuracy of the measuring instrument (device error) %
m^2	inaccuracy of the measuring method (error of method) %
m_3	reading inaccuracy of the instrument (error of observation) %
m_n	other possible inaccuracies %
$c_{1...n}$	factors for taking into account the influence of different inaccuracies on the final result. The formula takes into account the influence of random errors as well as of minor systematic errors of unknown direction. Error percentages small in comparison with other factors may be disregarded. their influence on the value of m being negligible.

Example of evaluation of the total amount of error:

m_1 = ± 4 % (information from the instrument manufacturer)
c_1 = 1/2 (measurement of pressure drop. $qv = k \times \sqrt{\Delta pm}$) *)
m_2 depends on measurement method and means of installation
c_2 = 1
m_3 = 4 % (depends on the instrument and pressure range)
c_3 = 1/2 (measurement of pressure drop) *)

*) E.g. an error of 10 % in pressure difference has an effect of about 5 % on the air volume flow.

$$m = \pm\sqrt{(1/2)^2 \times 42 + 1 \times m_2^2 + (1/2)^2 \times 4^2} = \pm \sqrt{8 + m_2^2}$$

By inserting various values on the error of method m_2. the following table is achieved:

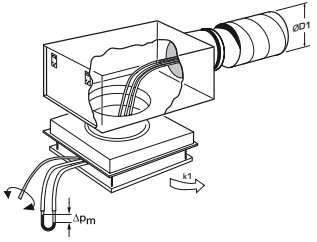
m_2=	5	7	10	12	15	20	%
m =	5.8	7.6	10.4	12.3	15.3	20.2	%

Effect of the air density on measuring results

The k values given in the Manual are valid under normal conditions (20 °C and 101,3 kPa).
Should the measuring conditions deviate from these values, the actual air volume flow (q_{vt}) can be deduced from the air volume flow (q_v) calculated by means of the k factor as follows:

$$q_{vt} = q_v \times \sqrt{(1{,}2 \,/\, \rho_t)}$$

ROKA, RPKA+ATTB



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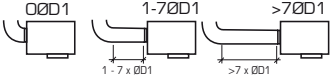
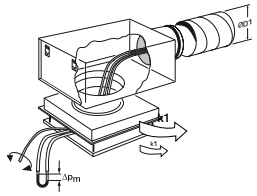


RSKO, RSKP+ATTB



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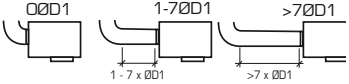
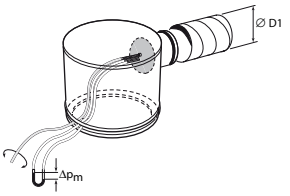


ROFA, RPFA



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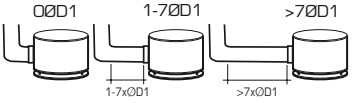

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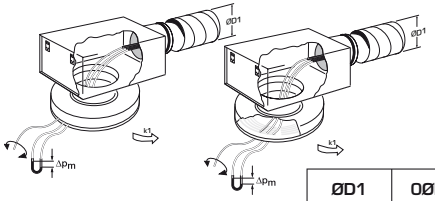

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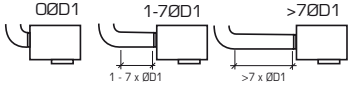
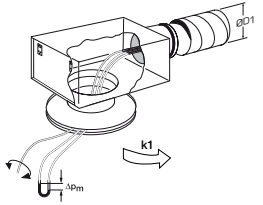


RSRO, RSRP+ATTB



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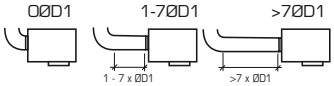
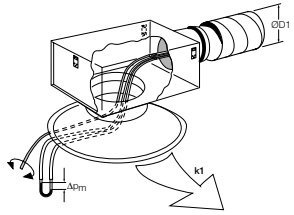
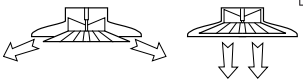


KH+ATTB





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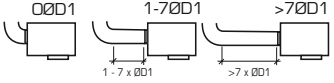
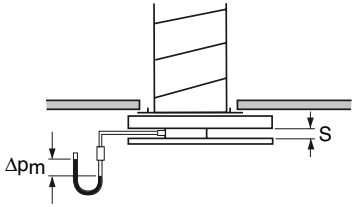
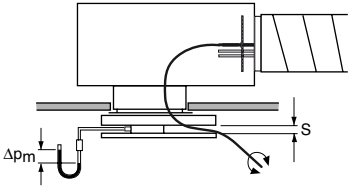


CTPB



CTPB	s. mm	20	25	30	35
125	k	5.7	6.3	6.9	7.6
CTPB	s. mm	25	30	35	40
160	k	8.8	9.3	10.5	11.4

CTPB+ATTB



ØD1	0ØD1	1-7ØD1	>7ØD1
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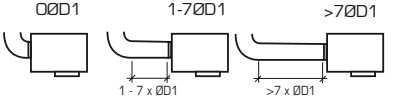
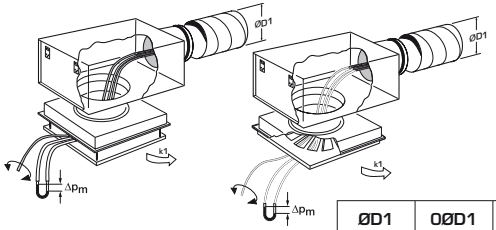


VFKA+ATTB



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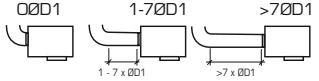
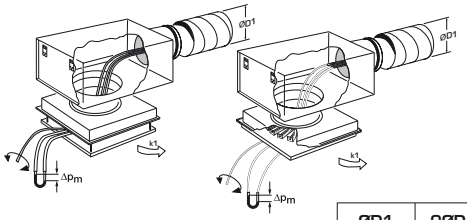


VSKA+ATTB



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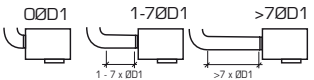

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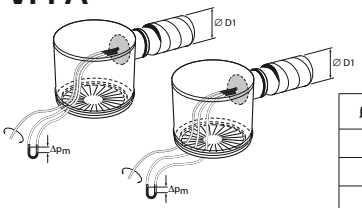

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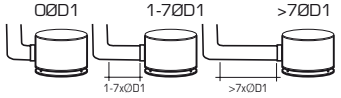
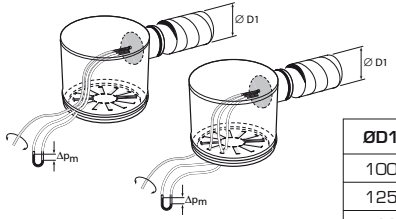


VSFA



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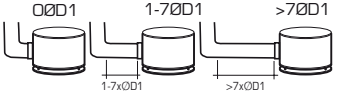
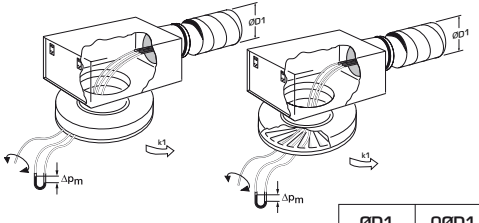


VFSA+ATTB



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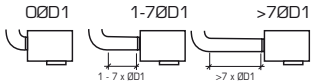
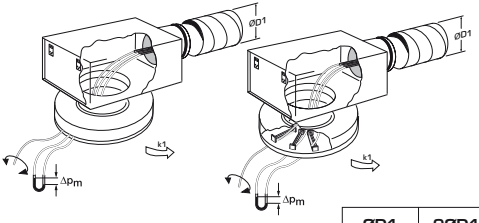


VSSA+ATTB



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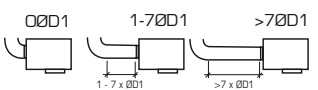
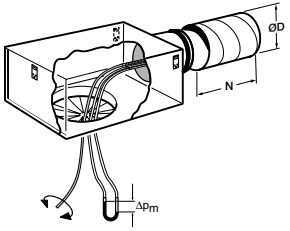
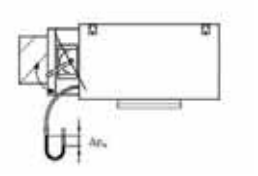


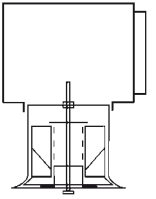
NWPPlus



ØD. mm	k	Nmin. mm
125	13.0	500
160	25,3	500
200	38,0	500
250	63,5	750
315	97,0	750

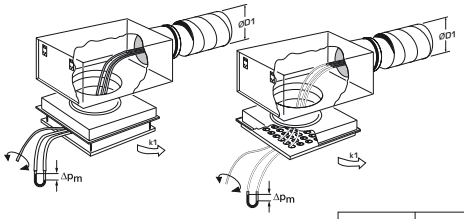
SDZ





The air fllow is measured with a flow variator and adjusted with a duct damper alternatively with a adjustable damper in a connection box.

DYCB, DYKB



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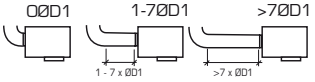

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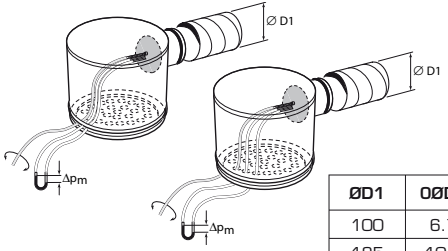

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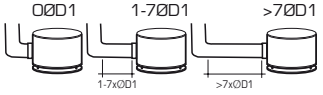
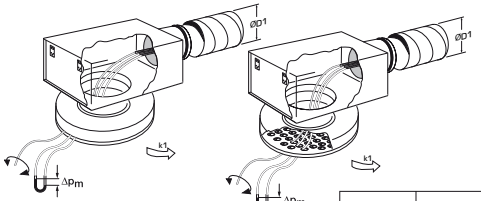
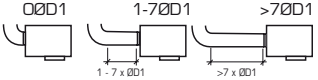


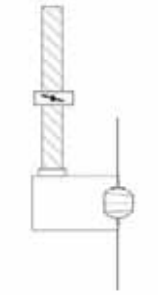
DYSB



ØD1	0ØD1	1-7ØD1	>7ØD1
100	6.7	7.0	6.3
125	10.6	11.7	10.7
160	17.6	20.0	18.5
200	26.9	31.6	29.2
250	44.8	50.5	46.7
315	75.0	80.0	80.0

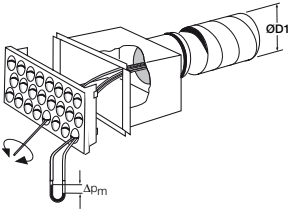


DD, DK, DK-O, DS

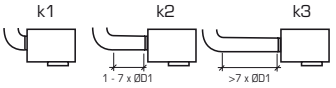


Adjusted with duct damper.

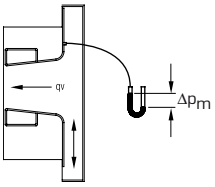
DYVB



DYVB	ØD	k1	k2	k3
100	100	6.7	7.0	6.3
125	125	10.6	11.7	10.7
160	160	17.6	20.0	18.5
200	200	26.9	31.6	29.2

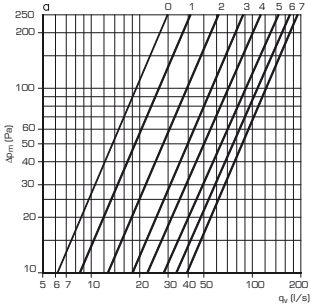


EHC

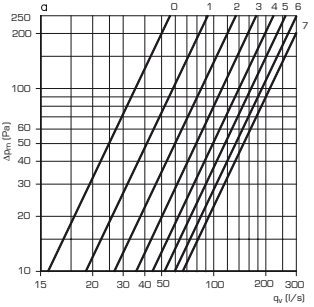


	k		
a	300x150	500x150	800x150
0	1.9	3.5	6.0
1	2.6	5.8	10.8
2	4.0	8.5	14.6
3	5.7	11.2	19.0
4	7.1	14.0	23.9
5	8.9	16.4	28.3
6	10.8	19.0	32.9
7	12.4	21.0	35.4

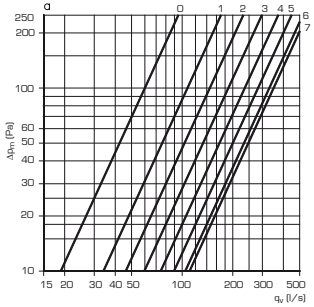
EHC-300x150



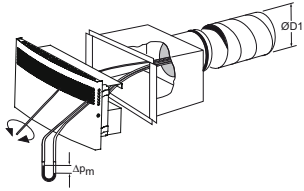
EHC-500x150



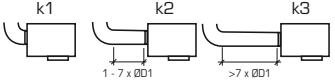
EHC-800x150



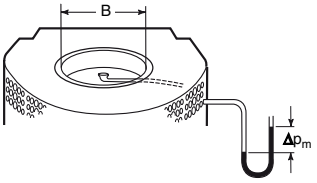
SVQC



SVQC	ØD	k1	k2	k3
100	100	6.7	7.0	6.3
125	125	10.6	11.7	10.7
160	160	17.6	20.0	18.5
200	200	26.9	31.6	29.2

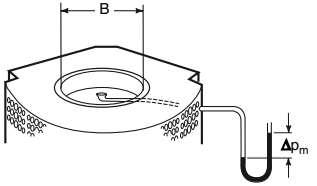


DVHA



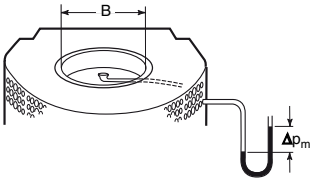
B	k
100	8
125	13
160	21
200	38
250	53
315	89
400	132
500	208

DVQA



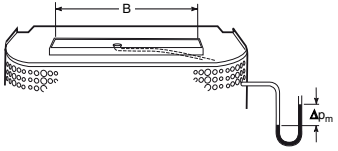
B	k
100	8
125	13
160	20
250	52
315	85
400	138

DVRA



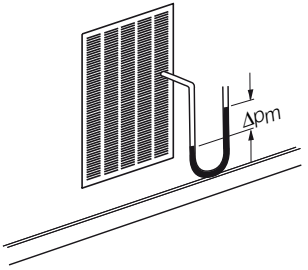
B	k
125	13
160	21
250	58
315	83
400	134
630	332

DVPA



B	k
300	16
400	41
700	113
1200	264
1300	440

DVCA

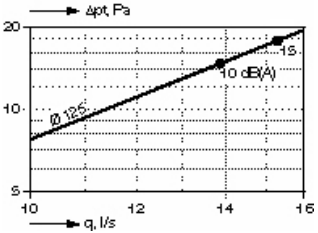


k ⇒ DVCA

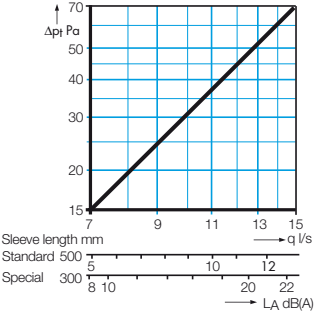
DVCA	k
300-60	17
400-80	22

GFB, DASH, DUSH

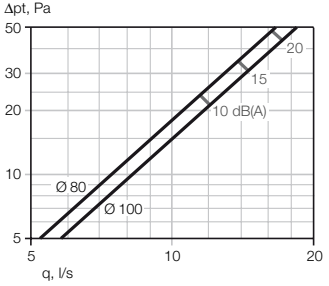
DUSH



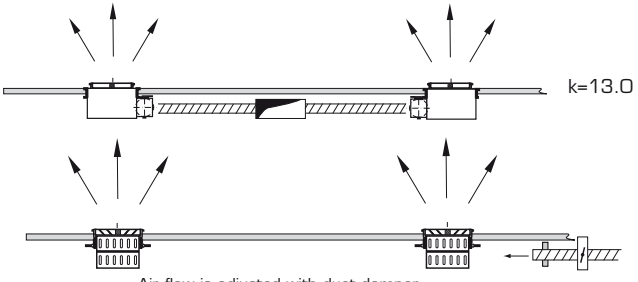
GFB



DASH

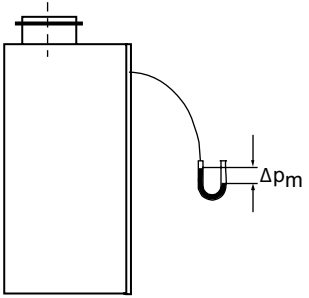


PW1



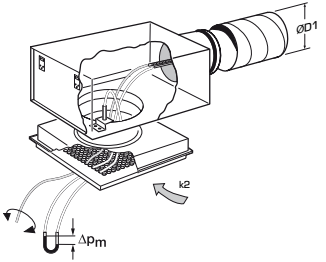
Air flow is adjusted with duct damper

PNA-A



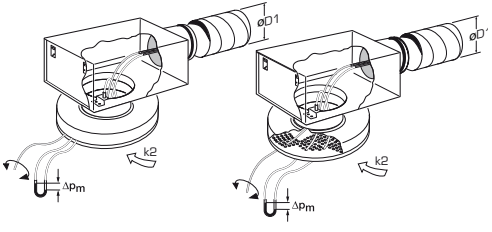
PNA-A	Cord colour		
	Closing	Opening	k
160	Orange-white	white	28
200	Blue-white	white	57
250	Green-white	white	77
315	Black	white	98
400	Black	white	176

HPKA+ATTB



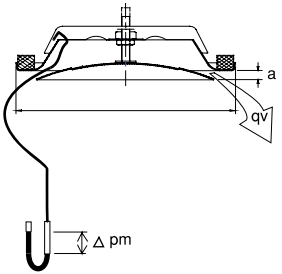
ØD	k2
100	14.6
125	18.6
160	27.8
200	38.5
250	48.9

HPSA+ATTB



ØD1	k2
100	16.8
125	24.9
160	31.1
200	44.1

NE



a	2	4	6	9	12
ø80	0.8	1.3	1.9	2.8	3.0

a	2	4	6	9	12
ø100	0.8	1.4	2.1	3.2	4.0
9.1.06 →	0.8	1.4	2.1	3.0	4.0

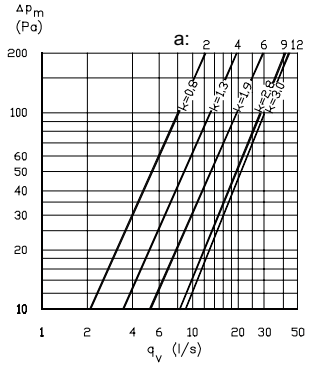
a	3	5	7	9	12	15
ø125	1.5	2.3	3.1	4.0	5.3	6.8
9.1.06 →	1.4	2.3	3.2	4.1	5.4	6.7

a	4	6	9	12	15	20
ø150	2.2	3.3	4.8	6.4	8.2	10.6
9.1.06 →	2.2	3.3	4.8	6.4	8.0	10.6

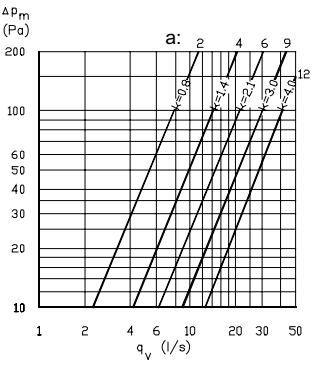
a	4	6	9	12	15	20
ø160	2.9	3.4	5.0	6.7	8.6	11.7
9.1.06 →	2.2	3.3	4.7	6.2	7.6	10.0

a	5	6	9	12	15	20
ø200	3.8	4.4	6.3	8.2	10.2	13.6
13.2.06 →	4.0	4.7	6.6	8.6	10.5	13.6

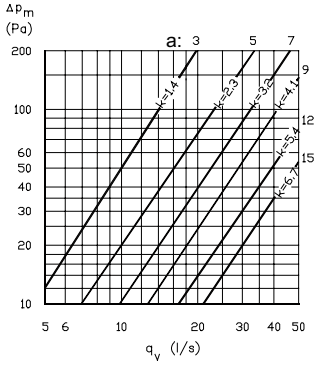
NE-80



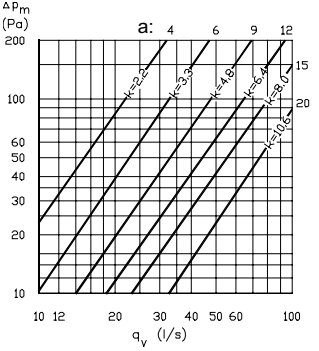
NE-100



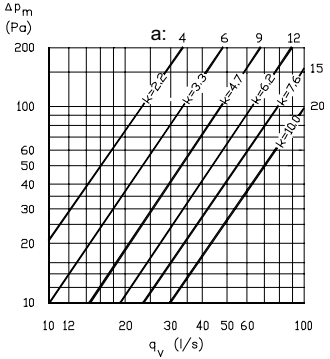
NE-125



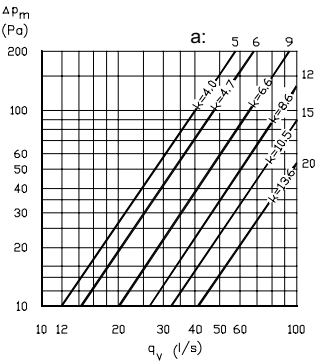
NE-150



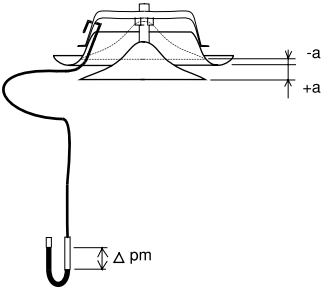
NE-160


Δpm
(Pa)
a:
4
6
9
12
15
20
200
100
60
50
40
30
20
10
k=2,2
k=3,3
k=4,7
k=6,2
k=7,6
k=10,0
10 12
20
30
40
50 60
100
qv (l/s)

NE-200


Δpm
(Pa)
a:
5
6
9
12
15
20
200
100
60
50
40
30
20
10
k=4,0
k=4,7
k=5,6
k=8,6
k=10,5
k=13,6
10 12
20
30
40
50 60
100
qv (l/s)

KE



a	-3	-2	0	3	6	9
ø80	0.3	0.5	0.9	1.6	2.3	2.8

a	-3	-2	0	2	4	6	8	10
ø100	0.5	0.7	1.2	1.8	2.5	3.2	4.1	4.9
9.1.06 →	0.6	0.9	1.4	1.9	2.5	3.0	3.6	4.1

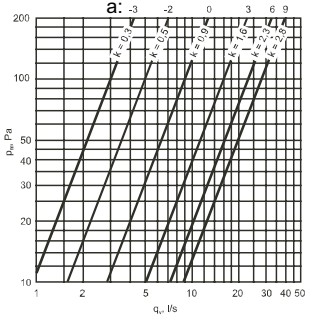
a	-7	-3	0	3	6	9	12	15
ø125	1.6	2.4	3.0	4.1	5.3	6.8	8.7	10.0
9.1.06 →	1.0	2.2	3.2	4.2	5.2	6.2	7.2	8.2

a	-5	-3	0	3	6	10	15
ø150	2.3	3.0	4.2	5.7	7.4	9.9	12.0
9.1.06 →	2.2	3.0	4.2	5.4	6.6	8.4	10.3

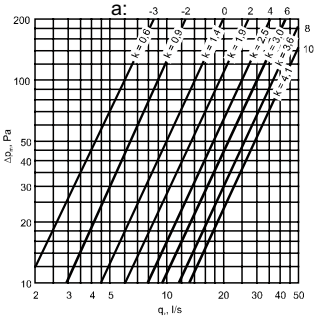
a	-10	-5	0	5	10	15
ø160	1.4	2.7	4.4	6.9	9.9	14.0
9.1.06 →	1.0	2.7	4.4	6.2	7.8	9.5

a	-3	0	3	6	9	12	15	20
ø200	1.5	3.0	4.7	6.6	8.8	11.1	13.5	17.3
13.2.06 →	1.4	3.4	5.4	7.4	9.4	11.2	13.2	16.6

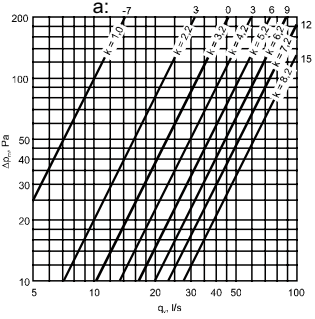
KE-80



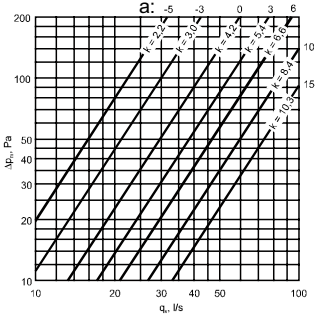
KE-100



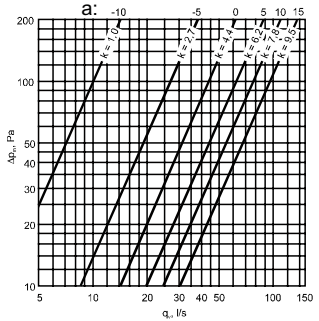
KE-125



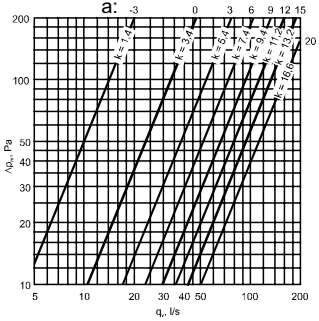
KE-150



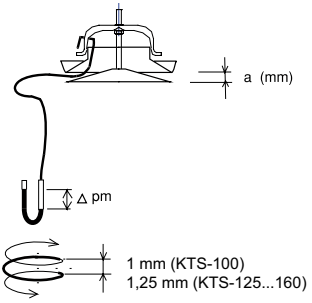
KE-160


a:
-10
-5
0
5
10
15
200
100
50
40
30
20
10
Δp$_{tot}$, Pa
k = 1,0
k = 2,7
k = 4,1
k = 5,2
k = 6,2
k = 7,0
k = 9,1
5
10
20
30
40
50
100
150
q$_v$, l/s

KE-200


a:
-3
0
3
6
9
12
15
20
200
100
50
40
30
20
10
Δp$_{tot}$, Pa
k = 1,9
k = 3,4
k = 5,4
k = 7,4
k = 9,4
k = 11,2
k = 13,2
k = 16,6
5
10
20
30
40
50
100
200
q$_v$, l/s

KTS

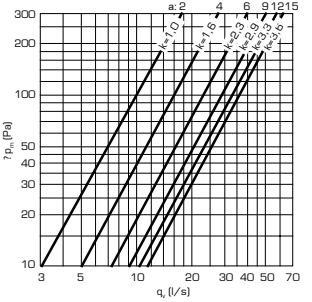


KTS-100			
a (mm)		06.2006 →	
2	0.9	1.0	1.1
4	1.5	1.6	2.0
6	1.9	2.3	2.7
9	2.3	2.9	4.0
12	2.8	3.3	5.1
15	3.3	3.6	-

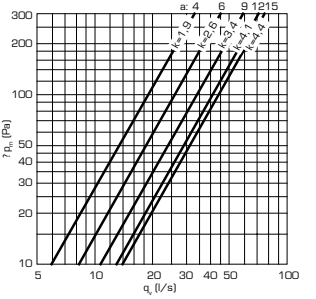
KTS-125			
a (mm)		06.2006 →	
4	2.0	1.9	2.2
6	2.6	2.6	3.1
9	3.3	3.4	4.2
12	3.8	4.1	5.5
15	4.4	4.4	7.0

KTS-160			
a (mm)		06.2006 →	
4	2.7	2.3	3.0
6	3.4	3.3	4.2
10	4.8	4.5	6.4
15	5.8	6.4	8.9
20	7.0	7.2	11.2

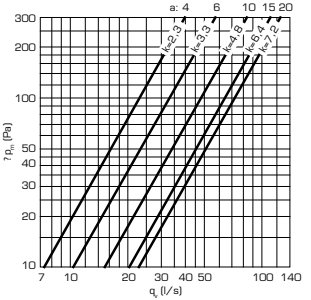
KTS-100



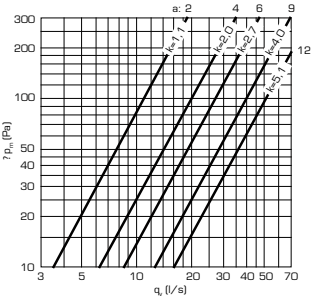
KTS-125



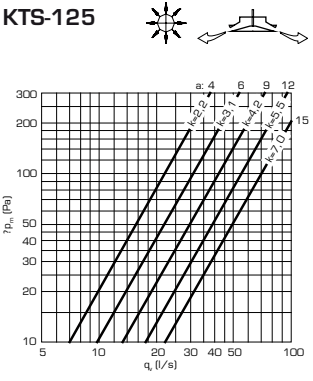
KTS-160



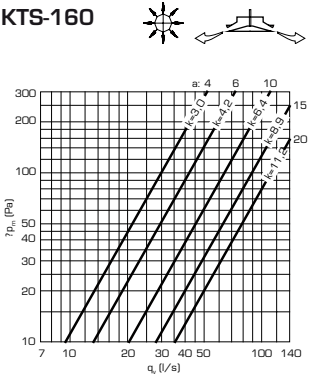
KTS-100



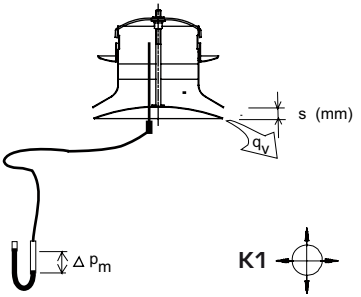
KTS-125



KTS-160



KTI



KTI-100

s (mm)	k1	k2	k3
2	1.0	1.1	0.8
3	1.6	1.5	1.1
4	2.0	1.8	1.4
6	3.0	2.5	1.7
8	3.8	3.2	2.2
10	4.8	3.9	2.6
12	5.6	4.2	3.0
16	-	-	3.6

KTI-125

s (mm)	k1	k2	k3
2	0.7	1.0	0.8
3	1.1	1.6	1.1
4	2.0	1.9	1.5
6	3.4	2.8	2.1
8	4.8	3.8	2.7
10	6.0	4.7	3.3
12	7.1	5.5	3.8
16	9.0	7.0	5.0

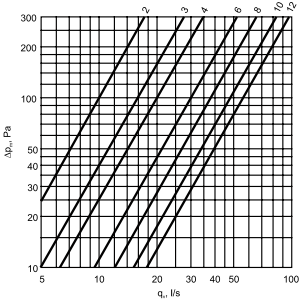
KTI-160

s (mm)	k1	k2	k3
2	1.6	-	-
3	2.4	2.3	1.6
4	3.2	2.7	2.1
6	4.7	3.8	2.9
8	6.3	5.0	3.6
10	7.7	6.1	4.4
12	9.1	7.1	4.9
16	11.8	9.2	6.5
20	14.3	11.2	7.8

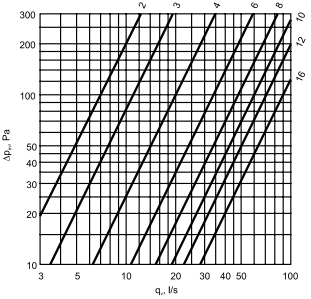
KTI-200

s (mm)	k1	k2	k3
3	2.9	2.5	1.8
4	3.8	3.0	2.7
6	5.7	4.4	3.6
8	7.4	5.7	4.5
10	9.3	7.1	5.4
12	11.0	8.3	6.4
16	14.6	11.0	8.0
20	17.9	13.5	9.8
25	21.9	16.2	11.7

KTI-100



KTI-125



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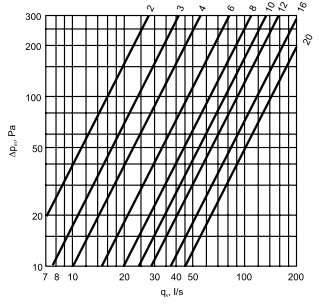
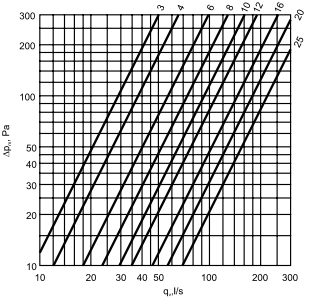
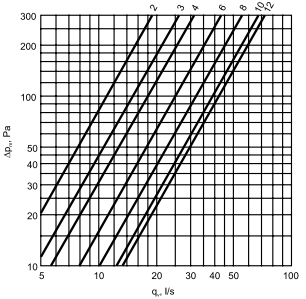


KTI-200



KTI-100



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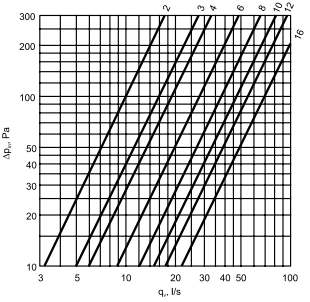

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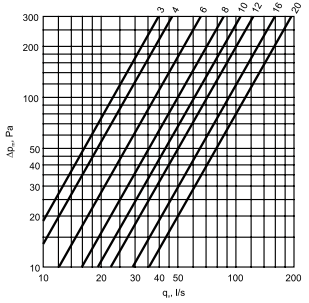

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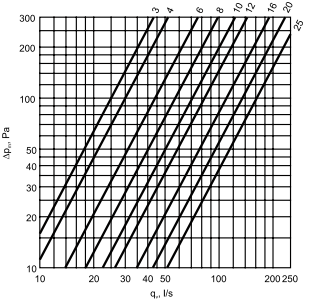
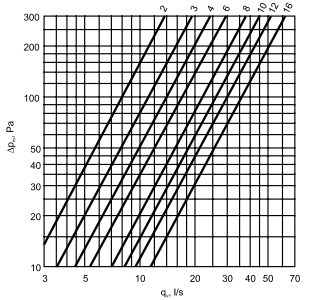
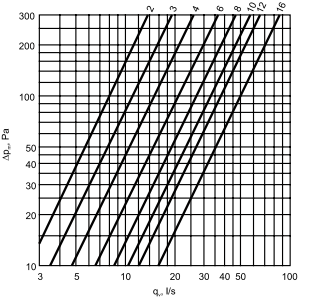


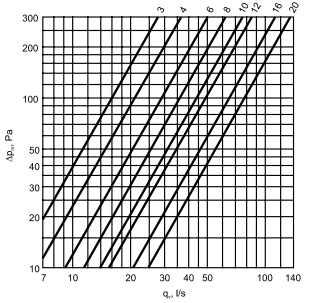
KTI-100



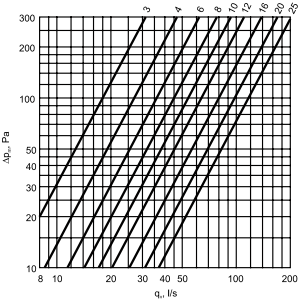
KTI-125



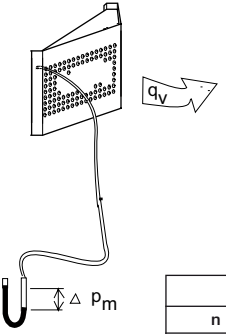
KTI-160

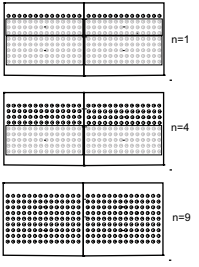


KTI-200



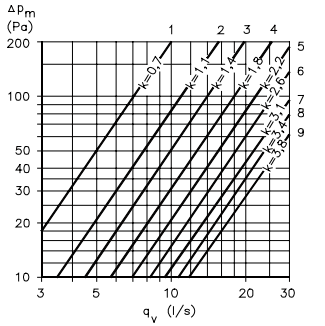
STH



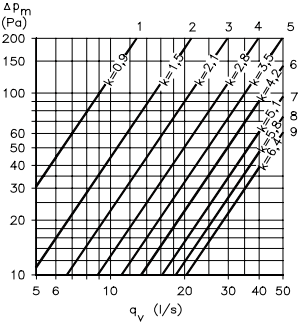


k		
n	100	125
1	0.7	0.9
2	1.1	1.5
3	1.4	2.1
4	1.8	2.8
5	2.2	3.5
6	2.6	4.2
7	3.1	5.1
8	3.4	5.8
9	3.8	6.4

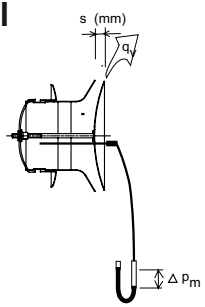
STH-100



STH-125

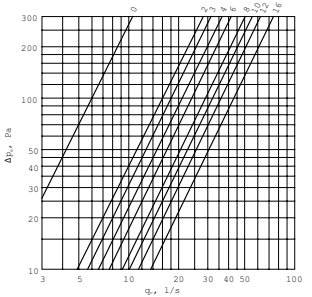


STI

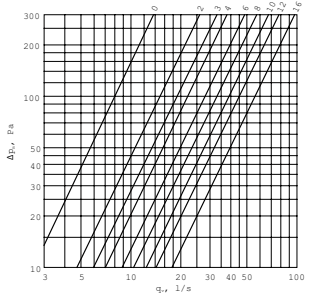


s	100	125	160	200
0	0.6	0.8	1.0	1.8
2	1.6	1.5	2.1	3.0
3	1.8	1.9	2.6	3.2
4	2.1	2.2	3.1	3.8
6	2.4	2.8	4.1	4.9
8	2.9	3.3	4.9	6.3
10	3.2	3.9	5.6	7.5
12	3.6	4.5	6.5	8.5
16	4.3	5.6	7.7	10.3
20	-	-	-	12.1
25	-	-	-	14.6

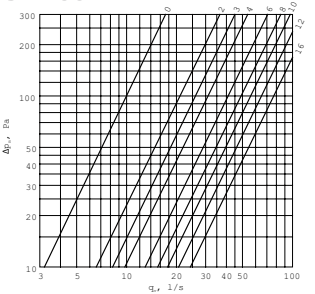
STI-100



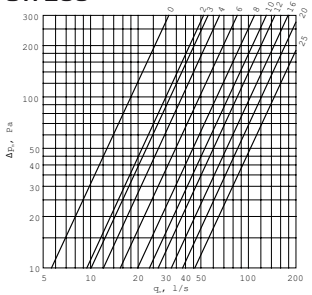
STI-125



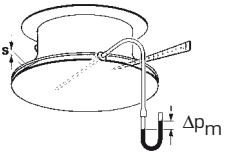
STI-160



STI-200

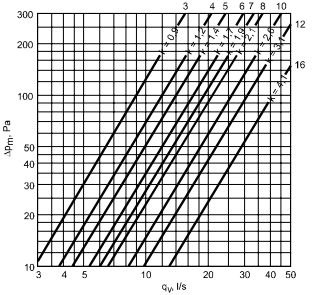


CTVB

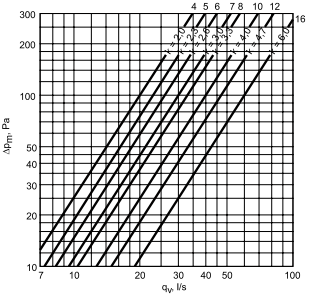


s	3	4	5	6	7	8	10	12	16	20
100	0.9	1.2	1.4	1.7	1.9	2.1	2.6	3.1	4.1	-
125	-	2.0	2.3	2.6	3.0	3.3	4.0	4.7	6.0	-
160	-	-	2.6	3.1	3.5	3.9	4.6	5.4	6.9	8.3

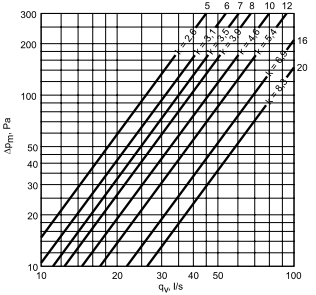
CTVB-100



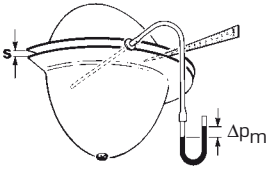
CTVB-125



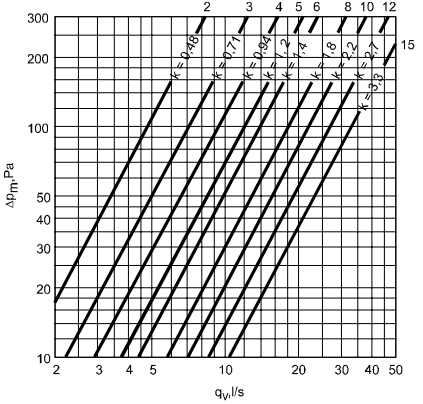
CTVB-160



CTVK



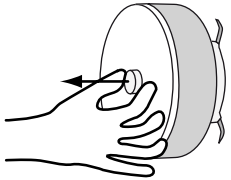
s	2	3	4	5	6	8	10	12	15
100 / 125	0.48	0.71	0.94	1.2	1.4	1.8	2.2	2.7	3.3

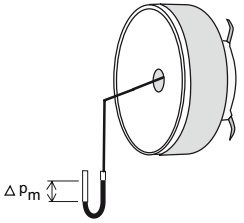


KGER

k = 0.08 0.16 0.24 0.32

VST

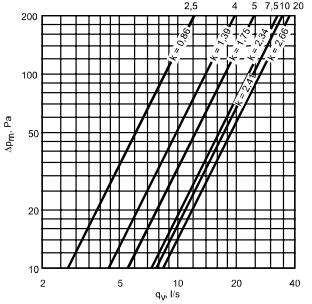




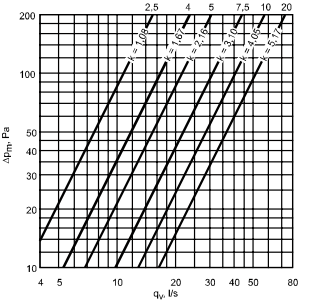
a	2.5	4	5	7.5	10	20
ø80	0.86	1.39	1.75	2.34	2.41	2.66
ø100	1.08	1.67	2.16	3.10	4.05	5.17
ø125	1.15	1.96	2.92	3.73	4.79	7.59
ø160	1.86	2.75	3.43	4.81	6.62	10.32

a	2.5	4	5	7.5	10	20
ø80	0.83	1.00	1.31	1.73	2.05	-
ø100	0.90	1.13	1.55	2.25	3.00	3.50
ø125	1.62	1.93	2.34	3.85	4.15	4.91
ø160	1.89	2.26	3.19	4.27	5.29	6.11

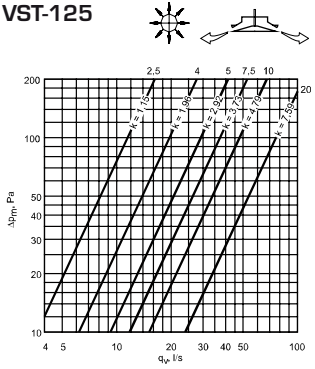
VST-80



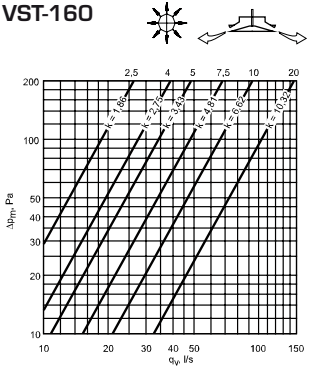
VST-100



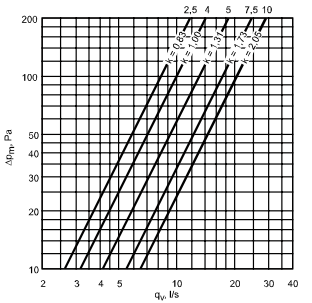
VST-125



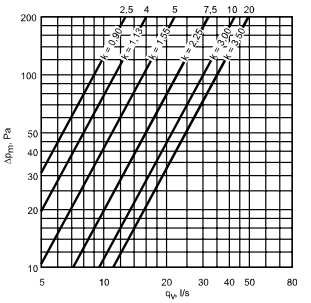
VST-160



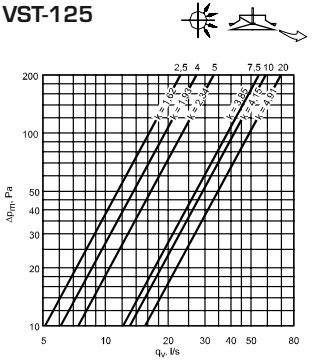
VST-80



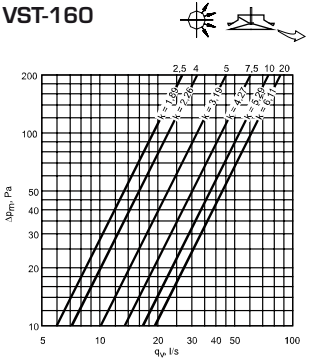
VST-100



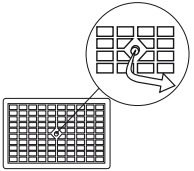
VST-125

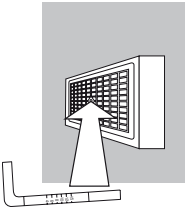


VST-160

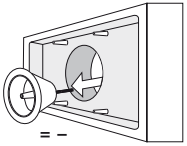


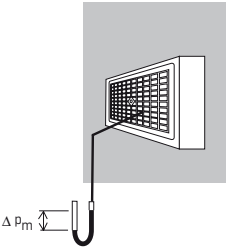
VLC





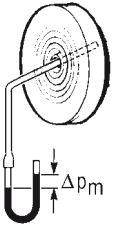
	K-factor
4	1.19
6	1.61
8	1.90
12	2.43
15	2.73
–	3.88

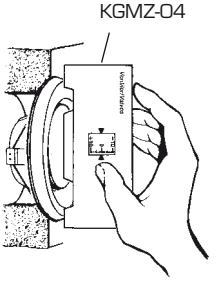




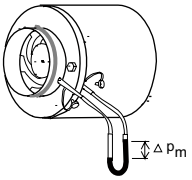
Antal varv öppna	4	6	8	12	15	Ej strypdon
k-faktor	1.19	1.61	1.90	2.43	2.73	3.88

VDTA



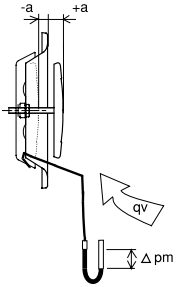


EHI



a (mm)	1	2	3	4	5	6	7	8
315	118.0	70.0	58.7	45.1	37.0	30.0	21.8	15.8
400	131.0	102.0	88.3	67.3	52.7	38.5	28.4	15.5

NK



a	-12	-9	-6	-3	0	3	6
ø80	0.4	0.6	0.9	1.1	1.4	1.7	1.9

a	-14	-12	-9	-5	0	5
ø100	0.4	0.5	0.9	1.4	2.1	2.7
9.1.2006 →	0.5	0.7	1.1	1.5	2.1	2.7

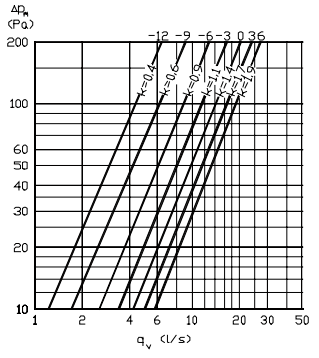
a	-17	-15	-12	-9	-6	-3	0	5
ø125	1.1	1.4	1.8	2.3	2.7	3.1	3.6	4.3
9.1.2006 →	1.1	1.4	1.8	2.3	2.7	3.2	3.7	4.4

a	-15	-12	-9	-3	3	9
ø150	2.1	2.6	3.2	4.2	5.3	6.4
9.1.2006 →	1.9	2.4	3.0	4.1	5.2	6.4

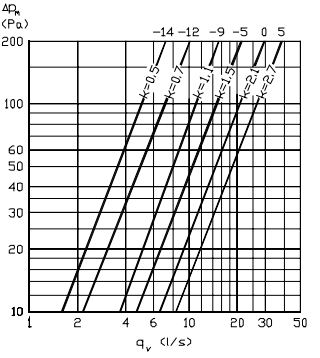
a	-20	-18	-15	-10	-5	0	6	10	12
ø160	1.7	2.0	2.7	3.6	4.5	5.5	6.7	-	-
9.1.2006 →	1.0	1.4	1.9	2.9	3.8	4.8	5.9	6.6	7.0

a	-25	-20	-15	-10	0	10	20
ø200	1.8	2.9	4.1	5.3	7.8	10.1	12.7
13.2.2006 →	2.4	3.6	4.8	6.0	8.4	10.8	13.2

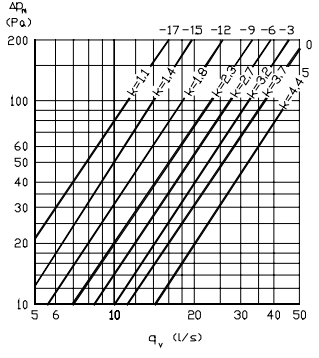
NK-80



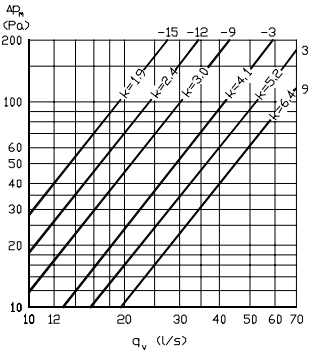
NK-100



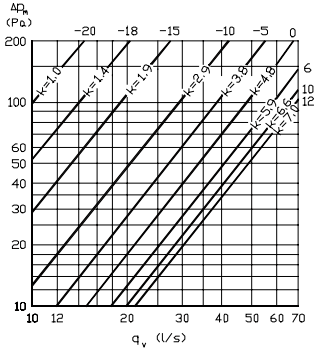
NK-125



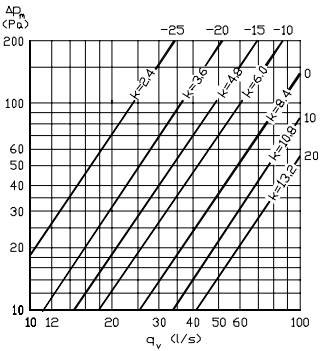
NK-150



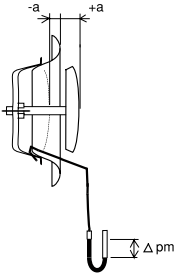
NK-160


ΔPt (Pa)
−20 −18 −15 −10 −5 0
200
100
60
50
40
30
20
10
k=1.0
k=1.4
k=1.9
k=2.9
k=3.8
k=4.8
k=5.9
k=6.6
k=7.5
6
10
12
10 12 20 30 40 50 60 70
qv (l/s)

NK-200


ΔPt (Pa)
−25 −20 −15 −10
200
100
60
50
40
30
20
10
k=2.4
k=3.6
k=4.8
k=6.0
k=8.4
k=10.8
k=13.2
0
10
20
10 12 20 30 40 50 60 100
qv (l/s)

KK



a	-12	-10	-6	-3	0	3	6	9
ø80	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1

a	-10	-8	-5	0	5	10
ø100	0.5	0.7	1.0	1.7	2.3	2.9
9.1.2006 →	0.5	0.7	1.1	1.7	2.3	2.9

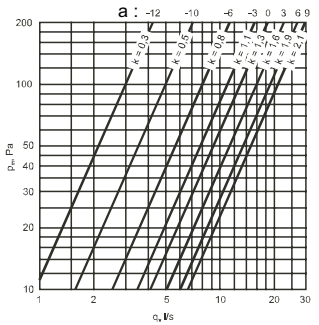
a	-17	-15	-12	-9	-6	-3	0	3	6	9
ø125	0.7	1.1	1.5	2.0	2.5	2.9	3.4	3.9	4.3	4.8

a	-15	-13	-10	-5	0	5	10
ø150	2.1	2.4	2.9	3.9	4.8	5.6	6.7
9.1.2006 →	1.8	2.1	2.7	3.6	4.5	5.4	6.3

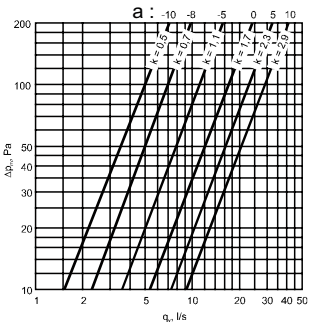
a	-20	-18	-15	-10	-5	0	5	10	12
ø160	1.4	1.7	2.3	3.3	4.3	5.3	6.3	-	-
9.1.2006 →	0.7	1.1	1.6	2.6	3.6	4.5	5.4	6.3	6.7

a	-25	-20	-15	-10	-5	0	10	20
ø200	1.4	2.5	3.7	4.9	6.1	7.3	9.8	12.5
13.2.2006 →	1.5	2.8	4.0	5.2	6.5	7.7	10.2	12.7

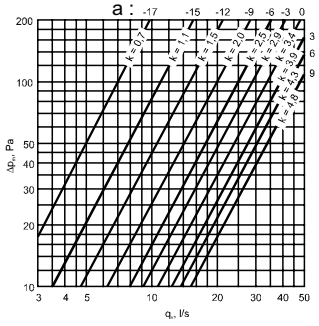
KK-80



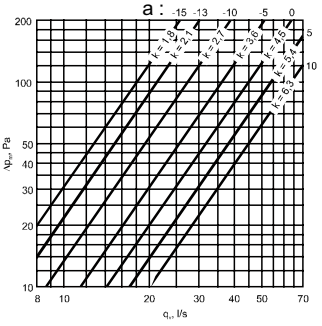
KK-100



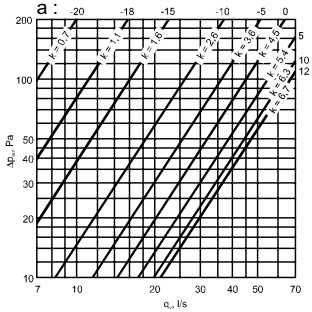
KK-125



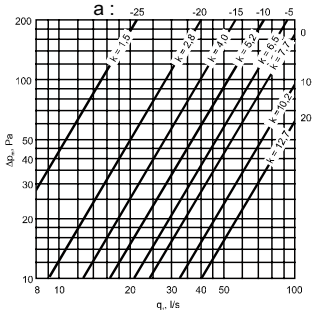
KK-150



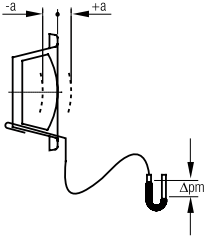
KK-160

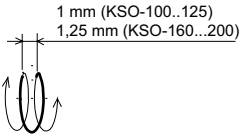

a :
-20
-18
-15
-10
-5
0
K = 0.7
K = 1.1
K = 1.6
K = 2.6
K = 3.8
K = 4.5
K = 5.4
K = 6.3
K = 7.1
5
10
12
200
100
50
40
30
20
10
ΔpT, Pa
7
10
20
30
40
50
70
qv, l/s

KK-200


a :
-25
-20
-15
-10
-5
K = 1.6
K = 2.6
K = 4.0
K = 5.3
K = 6.9
K = 7.7
K = 10.2
K = 12.7
0
10
20
200
100
50
40
30
20
10
ΔpT, Pa
8
10
20
30
40
50
100
qv, l/s

KSO, KSO-P, KSO-V+DBL





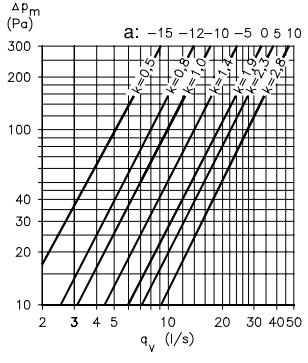
KSO-100 a	k
-15	0.5
-12	0.8
-10	1.0
-5	1.4
0	1.9
5	2.3
10	2.8

KSO-125 a	k
-10	1.5
-5	2.1
0	2.7
5	3.3
10	4.0

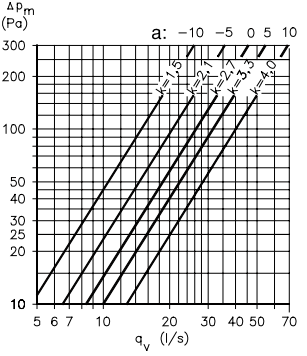
KSO-160 a	k
-10	2.0
-5	2.8
0	3.6
5	4.4
10	5.3
15	6.2

KSO-200 a	k
-3	1.8
0	2.4
5	3.8
10	5.0
15	6.3
20	7.5
25	8.6

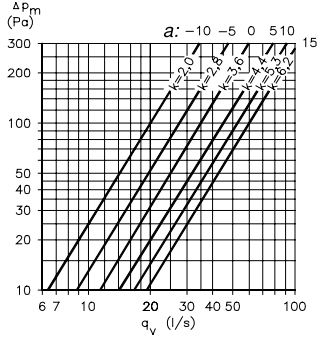
KSO-100



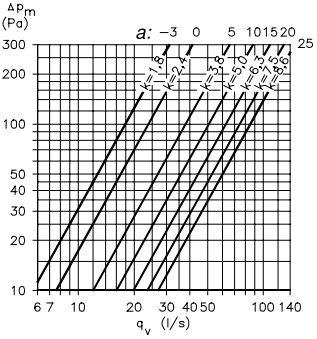
KSO-125



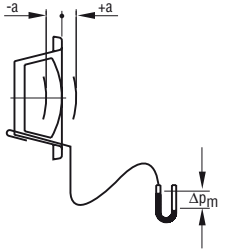
KSO-160



KSO-200



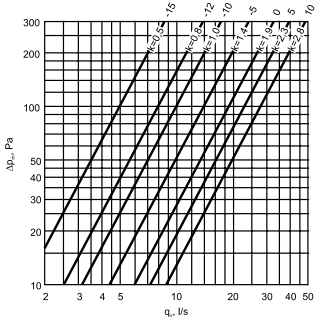
KSO-M, KSO-MH



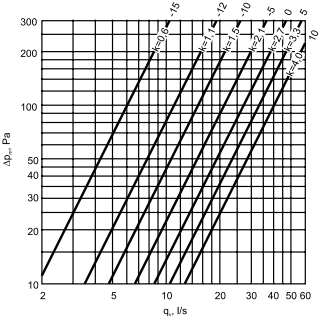
ø100 a	k
-15	0.5
-12	0.8
-10	1.0
-5	1.4
0	1.9
5	2.3
10	2.8

ø125 a	k
-15	0.6
-12	1.1
-10	1.5
-5	2.1
0	2.7
5	3.3
10	4.0

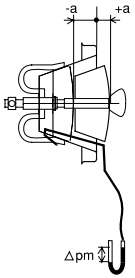
KSO-M-100



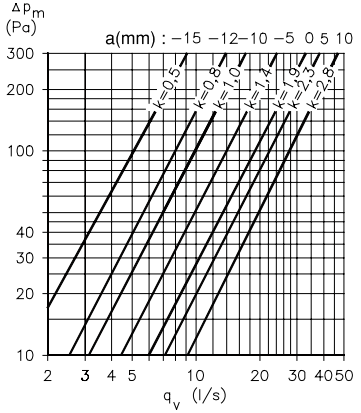
KSO-M-125



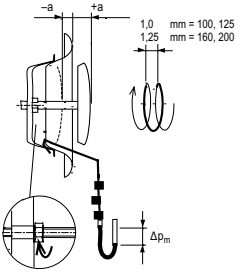
KSO-S



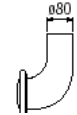
KSO-S Opening a	k
-15	0.5
-12	0.8
-10	1.0
-5	1.4
0	1.9
5	2.3
10	2.8



GPDF, GPDB



GPDF = 100-160
GPDB = 200



ØD	a, mm	-12	-9	-5	0	5	8	12
100	k	0.4	0.7	1.1	1.8	2.4	2.7	3.2

ØD	a, mm	-12	-9	-5	0	5	8	12
100	k	0.4	0.7	1.2	1.8	2.4	2.7	3.2

ØD	a, mm	-17	-13	-9	-6	-3	0	5	10	15
125	k	0.8	1.3	1.9	2.4	2.8	3.2	3.9	4.7	5.6

ØD	a, mm	-18	-14	-10	-5	0	6	12
	k	1.8	2.7	3.3	4.4	4.9	6.3	7.5
160	k*)	1.5	2.3	3.1	4.2	5.1	6.3	7.6
	k**)	1.1	1.9	2.7	3.6	4.5	5.6	6.8

*) 1.9.2003
**) 1.5.2006

ØD	a, mm	-12	-9	-5	0	5	8	12
100	k	0.4	0.8	1.3	1.9	2.5	2.8	3.2

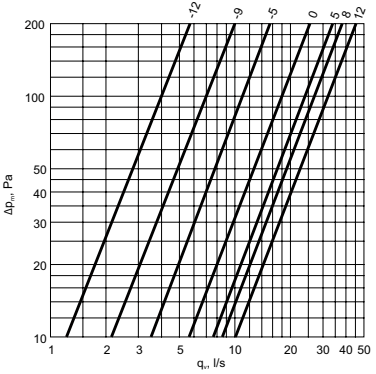
ØD	a, mm	-17	-13	-9	-6	-3	0	5	10	15
125	k	0.7	1.3	1.9	2.4	2.8	3.3	4.0	4.8	5.7

ØD	a, mm	-18	-14	-10	-5	0	6	12
	k	1.8	2.6	3.4	4.6	5.4	6.6	7.8
160	k*)	1.5	2.3	3.1	4.2	5.1	6.3	7.6
	k**)	1.1	1.9	2.7	3.6	4.5	5.6	6.8

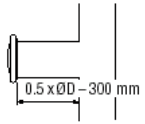
*) 1.9.2003
**) 1.5.2006

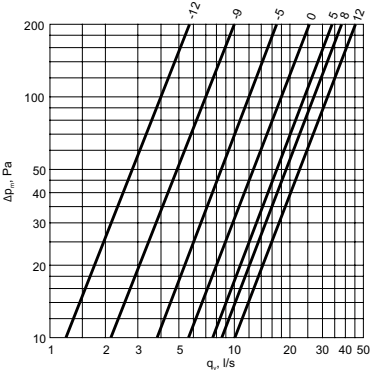
ØD	a, mm	-23	-18	-15	-10	-5	0	10	20
	k	2.1	2.9	3.7	5.0	6.1	7.4	9.9	12.7
200	k**)	2.2	3.3	4.0	5.2	6.4	7.6	10.0	12.5

GPDF-100

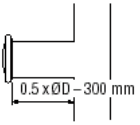


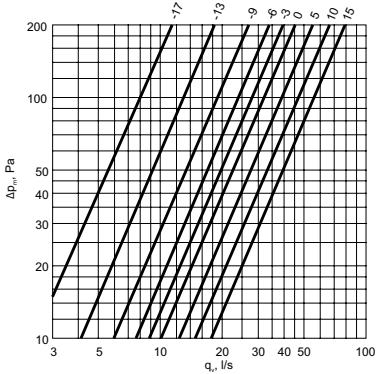
GPDF-100





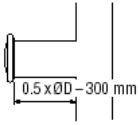
GPDF-125

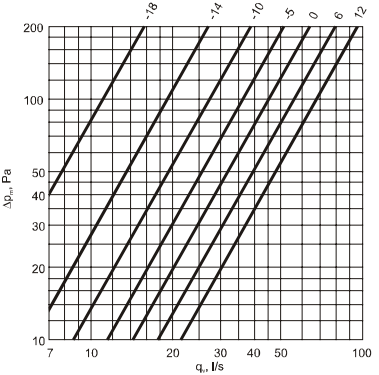




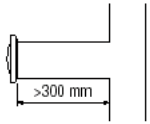
GPDF-160

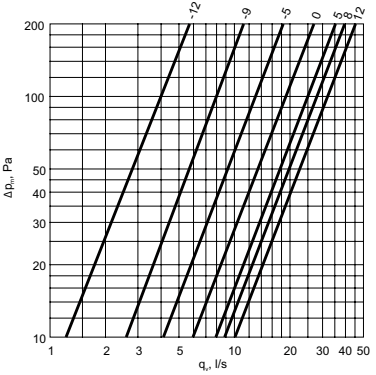
**) 1.5.2006 →



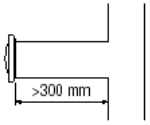


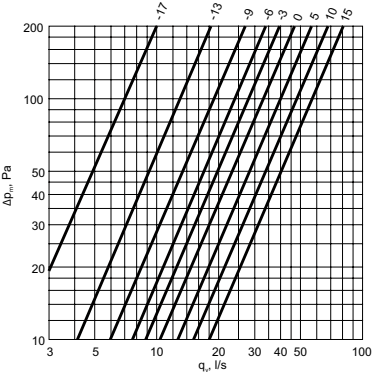
GPDF-100





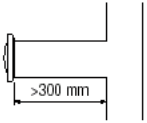
GPDF-125

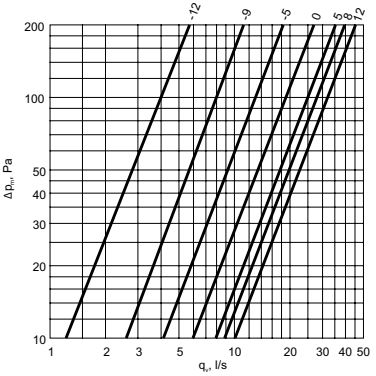




GPDF-160

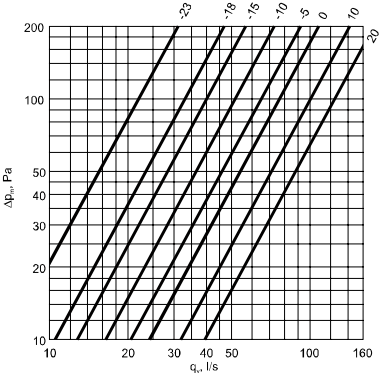
**) 1.5.2006 →



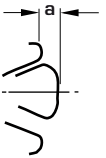


GPDF-200

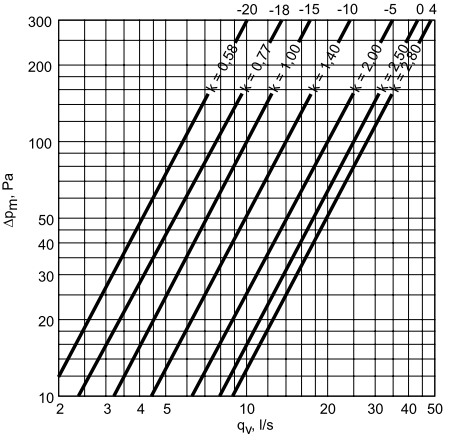
**) 1.5.2006 →



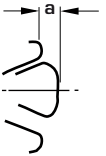
KGEA



a	-20	-18	-15	-10	-5	0	+4
k	0.58	0.77	1.0	1.4	2.0	2.5	2.8



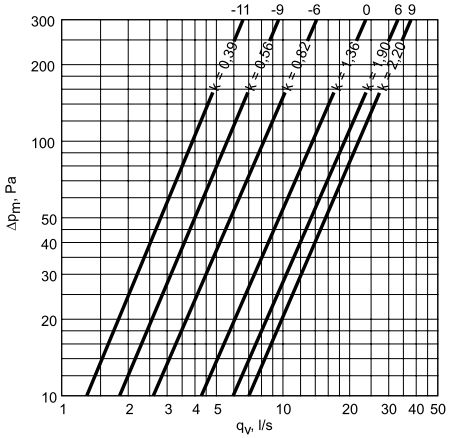
KGEB



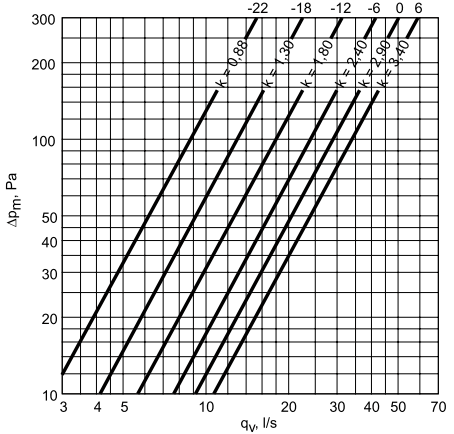
ø100	a	-11	-9	-6	0	+6	+9
	k	0.39	0.56	0.82	1.36	1.9	2.2
ø125	a	-22	-18	-12	-6	0	+6
	k	0.88	1.3	1.8	2.4	2.9	3.4
ø160	a	-24	-18	-12	-6	0	+6
	k	1.8	2.5	3.1	4.1	4.4	5.0
	k *)	1.8	2.5	3.1	3.9	4.6	5.4

*) 1.1.2003

KGEB-100

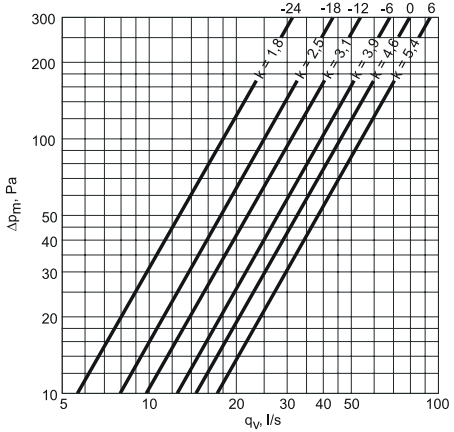


KGEB-125

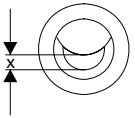


KGEB-160

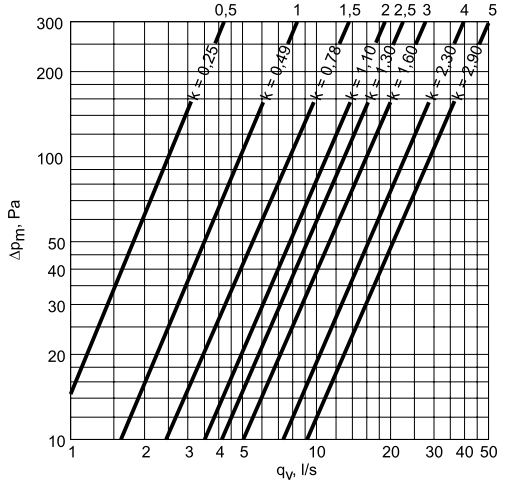
1.1.2003 ->



KGFC



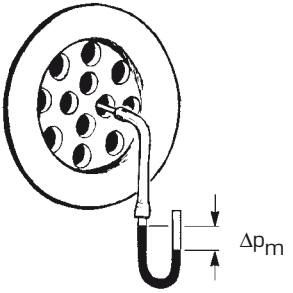
x	0.5	1	1.5	2	2.5	3	4	5
k	0.25	0.49	0.78	1.1	1.3	1.6	2.3	2.9



BYBA

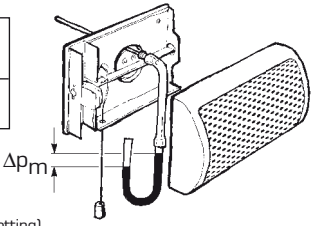
a	1	2	3	4	5	6
k	0.24	0.42	0.59	0.80	0.98	1.2

a	7	8	9	10	11	12
k	1.5	1.6	1.8	2.1	2.3	2.5



BYFA

k-factor	BYFA-3	BYFA-4		
		Pos. 1 [1]	2 [2]	3 [3]
Basic air flow	1.10	0.70	0.80	0.90
Forced air flow	4.70	3.00	3.00	3.00



[1] Position 1 = 2 plugs in the damper (delivery setting)

[2] Position 2 = 1 plug removed

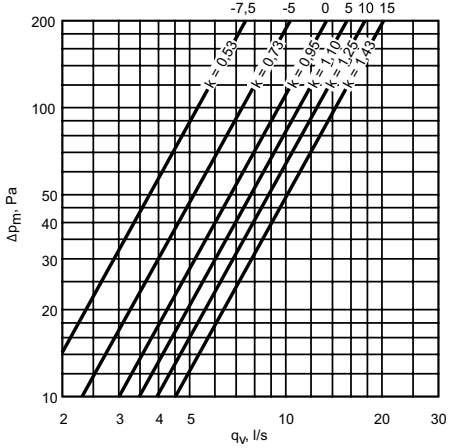
[3] Position 3 = 2 plugs removed

VEF, VEF-S

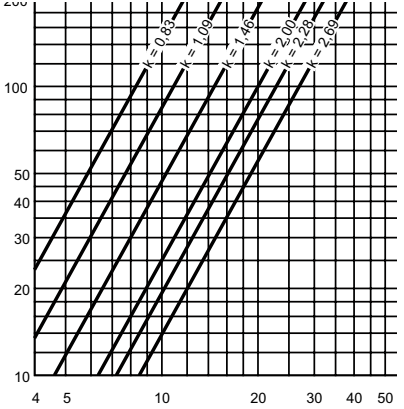
a	-7.5	-5	0	5	10	15
ø80	0.53	0.73	0.95	1.10	1.25	1.43
ø100	0.83	1.09	1.46	2.00	2.28	2.69
ø125	0.85	1.11	1.63	2.15	2.41	3.45

a	-2.5	0	5	10	15	20
ø160	2.02	2.63	3.93	4.53	6.08	7.56
ø200	-	3.47	4.61	5.97	6.60	7.66

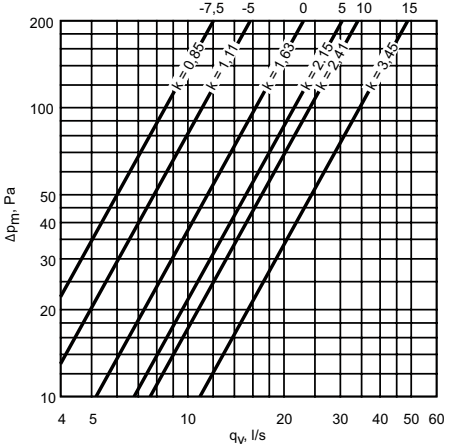
VEF-80



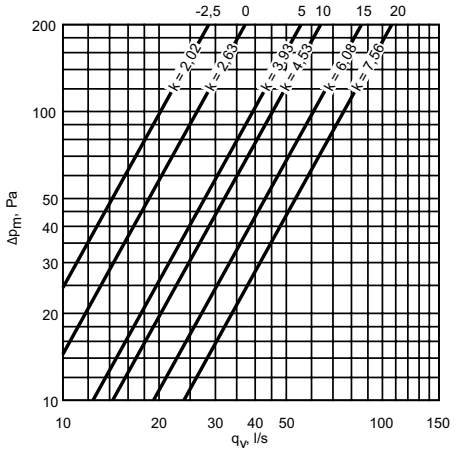
VEF-100



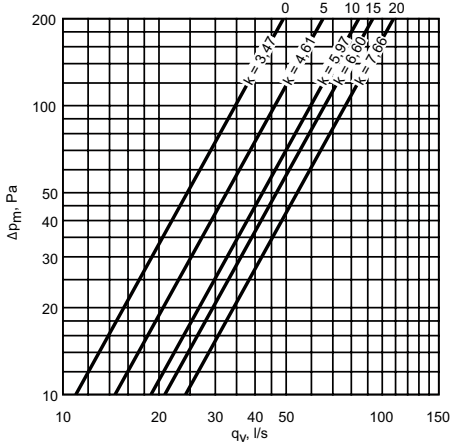
VEF-125



VEF-160



VEF-200

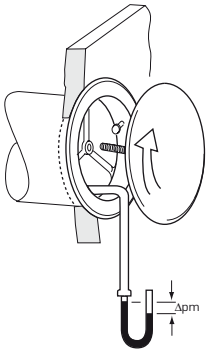


VEL

Model	a, mm	-5	-0	+5	+10	+15	forced
0	k-factor	0.58	1.46	2.29	3.09	3.47	–
1	k-factor	0.66	0.95	1.30	1.79	2.59	3.59

Model	a, mm	-5	-3	0	forced
2	k-factor	0.65	0.98	1.52	2.90

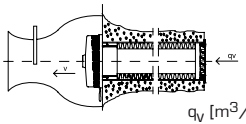
RK-T



Size	a, mm	0	+5	+10	+15
80	k-factor	0.95	1.10	1.25	1.43
100	k-factor	1.46	2.00	2.28	2.69
125	k-factor	1.63	2.15	2.41	3.45

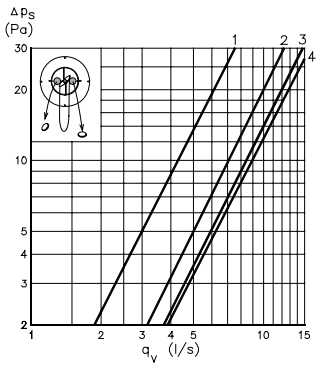
Size	a, mm	+5	+10	+15	+20
160	k-factor	3.93	4.53	6.08	7.56
200	k-factor	4.61	5.97	6.60	7.66

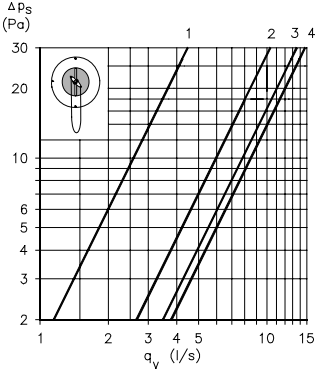
KIV



$v = q_V / 0.015$ $q_V = v * 0.015$

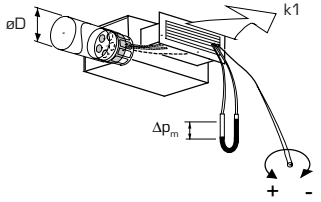
KIV-125



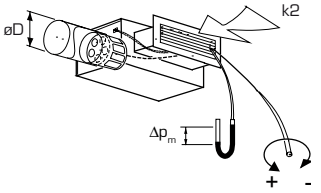


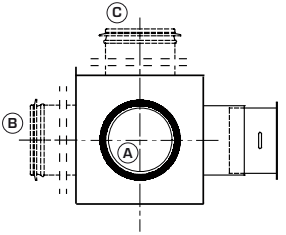
TG/TGE, AVS, SV, USR

TG



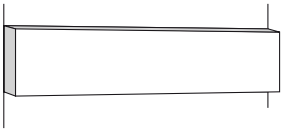
TGE

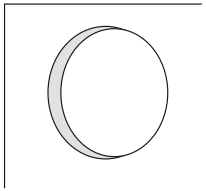


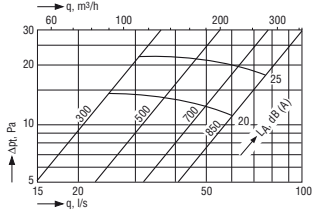


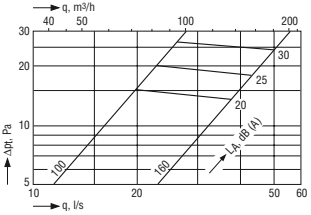
B x H	ØD	k1 TG	k2 (AVS) TGE			k2 (SV-2) TGE			k2 (USR) TGE		
			A	B	C	A	B	C	A	B	C
200x100	125	13.0	9	11	10	11	13	11	11	13	11
300x100	160	15.9	15	17	16	19	21	19	19	21	19
400x100	160	15.9	22	22	22	25	31	26	25	31	26
500x100	200	24.5	34	28	25	34	37	36	34	37	36
600x100	250	37.7	-	-	-	-	-	-	-	-	-
800x100	250	37.7	-	-	-	-	-	-	-	-	-
1000x100	250	37.7	-	-	-	-	-	-	-	-	-
300x150	200	24.5	25	27	20	25	34	24	25	34	24
400x150	250	37.7	32	34	36	45	46	39	45	46	39
500x150	250	37.7	43	47	42	50	52	48	50	52	48
600x150	250	37.7	53	53	53	65	92	62	65	92	62
800x150	315	64.8	74	77	73	86	90	82	86	90	82
1000x150	315	64.8	-	-	-	-	-	-	-	-	-
400x200	250	37.7	45	52	43	47	63	45	47	63	45
500x200	315	64.8	60	63	63	74	74	61	74	74	61
600x200	315	64.8	75	77	71	80	89	70	80	89	70
800x200	315	64.8	82	107	104	105	131	107	105	131	107
1000x200	315	64.8	-	-	-	-	-	-	-	-	-

BYSE, BYSO

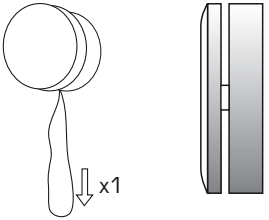


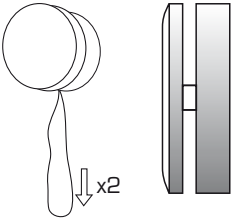


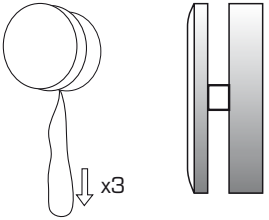


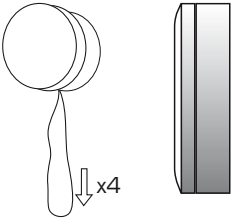


VFLC

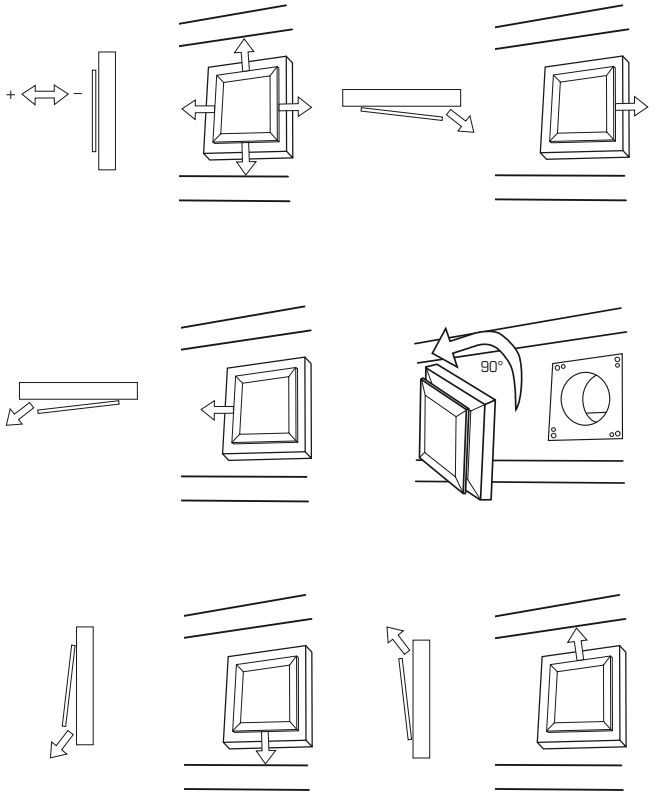




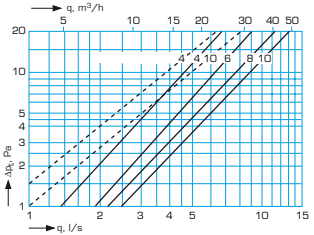




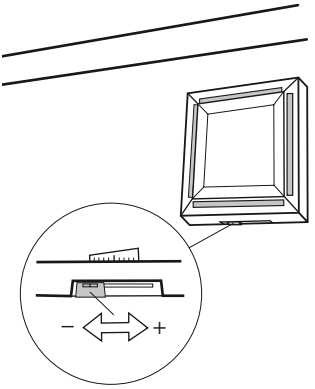
VFLH



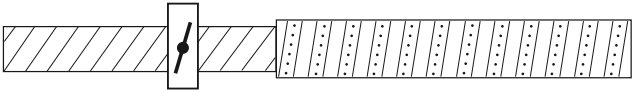
VFLR



--- Pos. (1-10) + VFZ-08
— Pos. (1-10) + VFZ-07



Activent



The air flow is adjusted with a damper

Diameter	k-factors for nozzle duct				
	2x60 º	180 º	240 º	300 º	360 º
		2x90	2x120		
Ø200	2.83	4.24	5.66	7.0	8.49
Ø250	3.38	5.0	6.76	8.27	10.14
Ø315	4.47	6.71	8.94	11.31	13.42
Ø400	5.66	8.45	11.31	14.0	16.90
Ø500	6.76	10.14	13.52	16.90	20.28

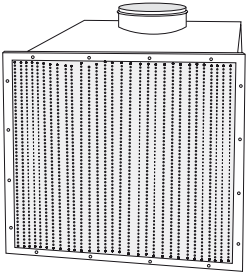
The k-values are applicable for 1m duct

UNO

nozzle/m	3	4	8	16
k-value	1.3	1.9	3.6	7.2

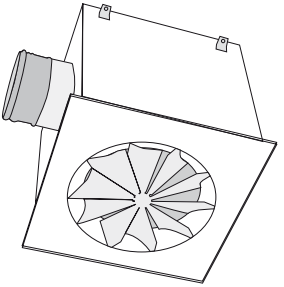
k-value is valid for air flow per m.

SPW



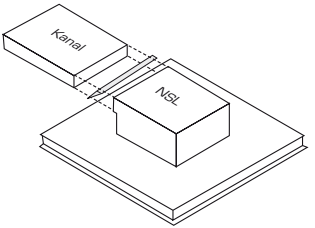
The air flow is adjusted with damper and measurement nipples.

SPN



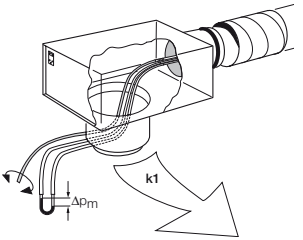
The air flow is adjusted with damper and measurement nipples.

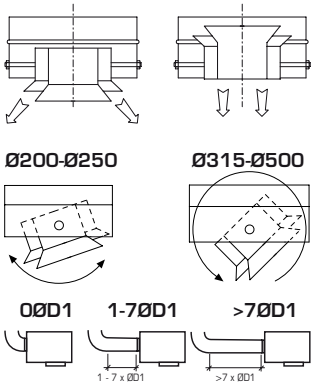
NSL



The air flow is adjusted with damper and measurement nipples.

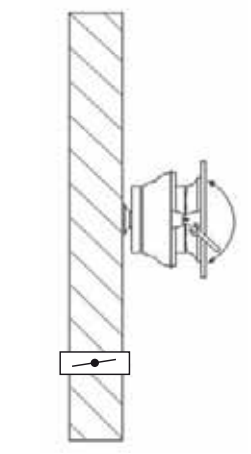
KHD (ATTB)





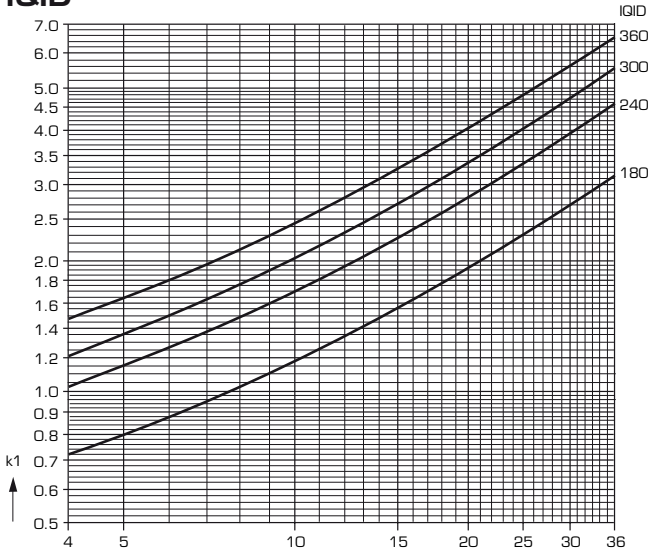
KHD	ØD1	0ØD1	1-7ØD1	>7ØD1
200	160	17.6	20.0	18.5
250	200	26.9	31.6	29.2
315	250	44.8	50.5	46.7
400	315	75.0	80.0	80.0
500	–	–	–	–

UDZ

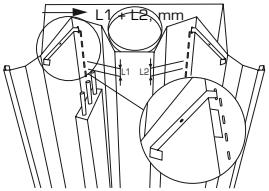


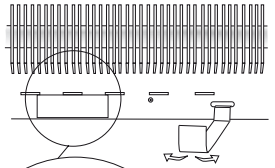
The air flow is adjusted with a damper

IQID

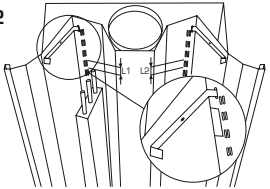

IQID
360
300
240
180
k1
7.0
6.0
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.8
1.6
1.4
1.2
1.0
0.9
0.8
0.7
0.6
0.5
4
5
10
15
20
25
30
36

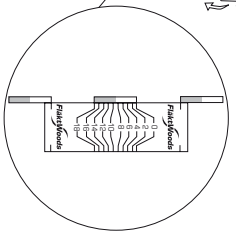
k1


L1 + L2 mm
L1
L2

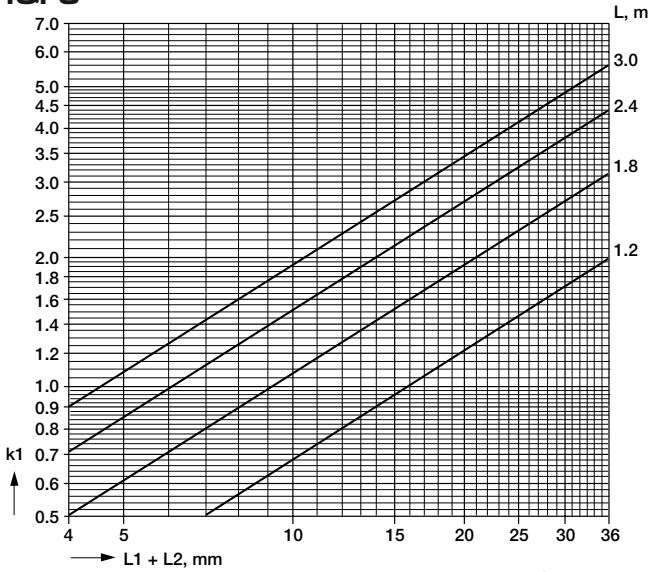


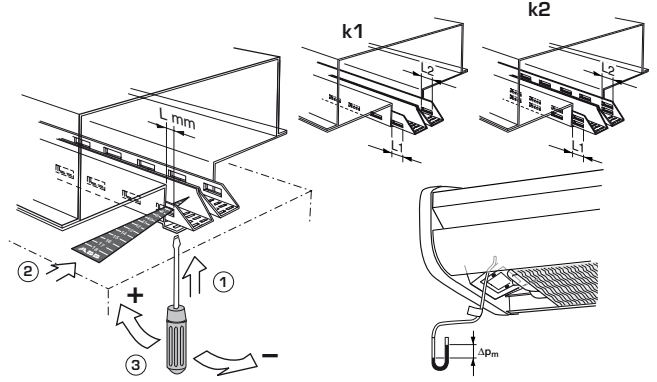
k2


L1
L2

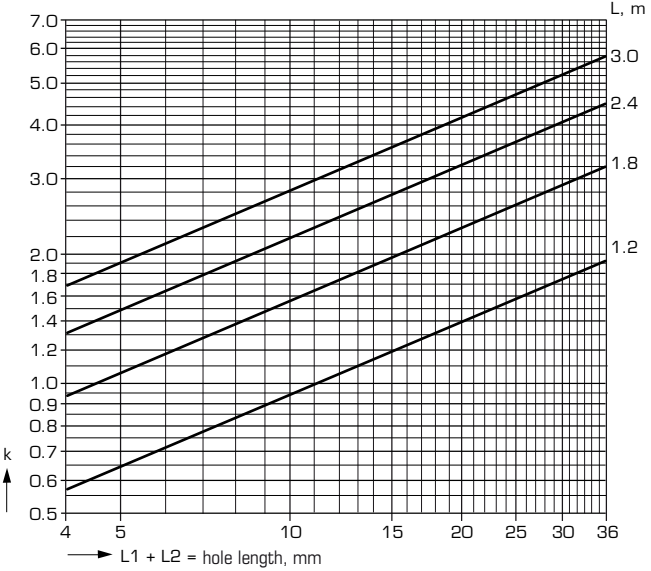

FläktWoods
FläktWoods

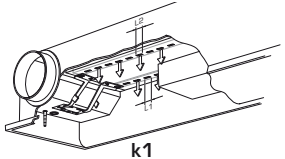
IQFC



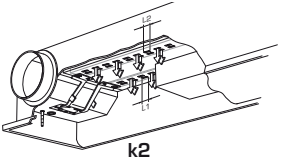


IQSA



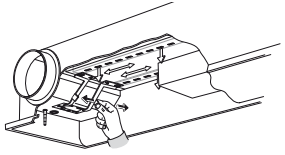


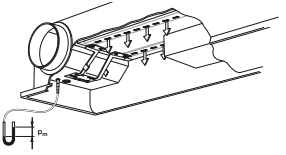
k1



k2

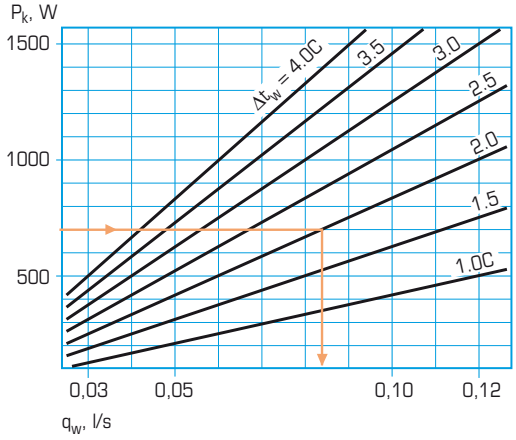
k2 = k1x2



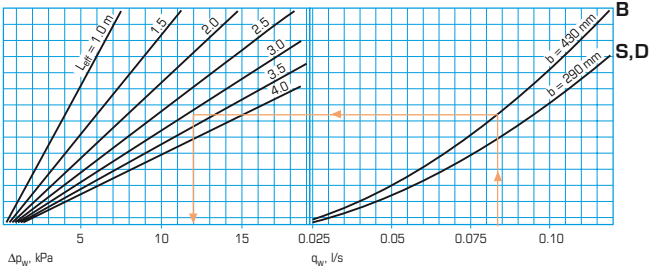


QP(S,B,D,)A

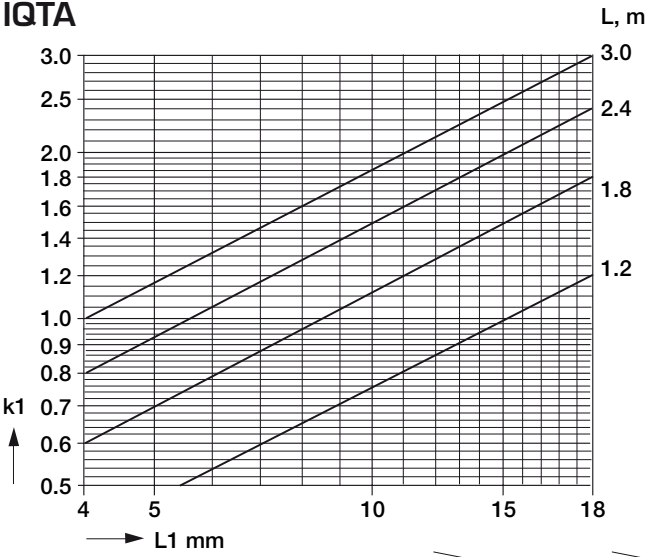
Water flow

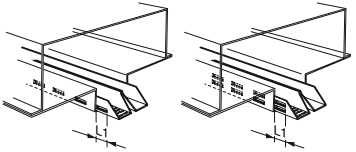


Pressure drop water, kPa



IQTA

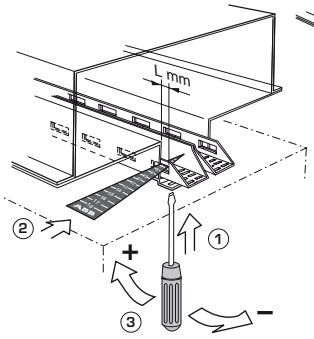


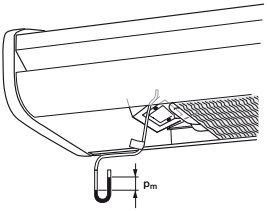


k1

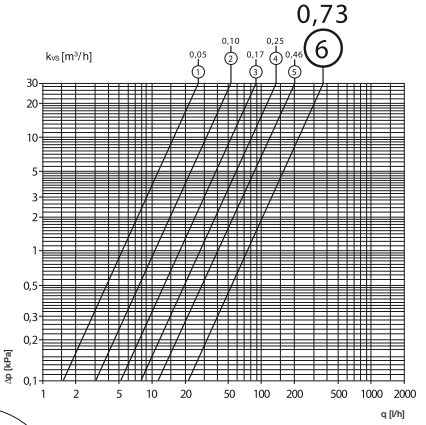
k2

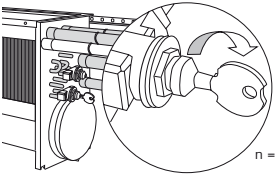
k2 = k1x2



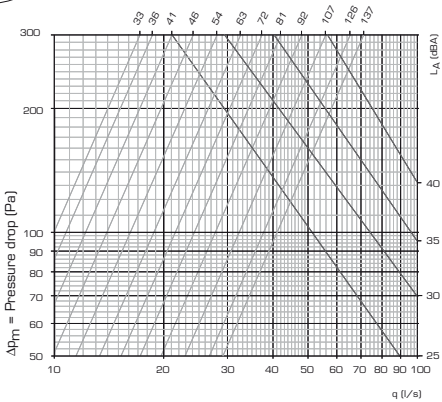


QVFB

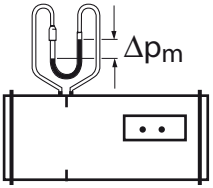




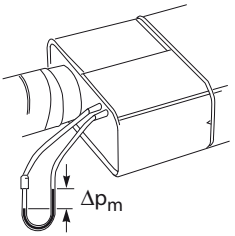
n = number of open nozzles



Flow variators, flow measuring unit



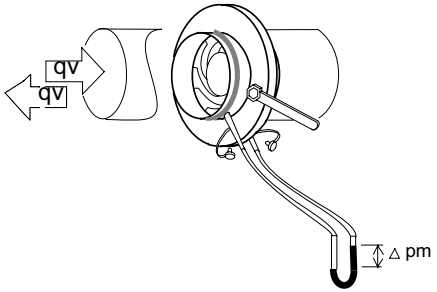
EMSF
EMSS, EMSD



EMOE, EMOS

Size	100	125	160	200	250	315	400	500	630
Flow variator									
EMOE, EMOS	5.18	10.0	19.0	31.0	46.0	75.0	117	–	–
EMSS, EMSD	5.18	10.0	19.0	31.0	46.0	75.0	117	171	240
Flow measuring unit									
EMSF	5.18	10.0	19.0	31.0	46.0	75.0	117	171	240

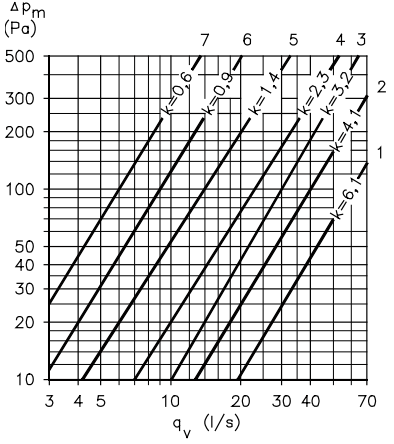
IRIS, IRIS-S



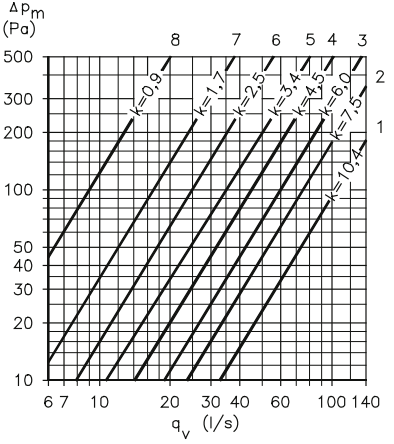
Ø	a							
	1	2	3	4	5	6	7	8
80	6.1	4.1	3.2	2.3	1.4	0.9	0.6	-
100	10.4	7.5	6.0	4.5	3.4	2.5	1.7	0.9
125	13.8	8.8	6.5	4.7	3.5	2.7	1.5	-
150	24.1	16.5	13.4	11.0	8.9	6.9	5.2	3.7
160	22.1	14.8	12.5	10.7	8.5	6.8	4.9	3.5
200	44.2	30.9	23.2	18.2	14.0	11.0	8.4	5.0
250	64.4	45.6	38.7	30.7	24.1	18.4	12.8	8.9
315	118.0	70.0	58.7	45.1	37.0	30.0	21.8	15.8
400	131.0	102.0	88.3	67.3	52.7	38.5	28.4	15.5
500	230.0	177.0	146.0	112.0	88.5	66.6	48.0	30.0
630	451.0	297.0	238.0	169.0	127.0	91.6	62.8	35.1
800	489.0	402.0	344.0	267.0	217.0	170.0	122.0	73.7

Ø	a						
	1.5	2.5	3.5	4.5	5.5	6.5	7.5
100	7.9	6.6	5.2	3.8	2.9	2.1	1.2
125	10.4	7.3	5.5	4.0	3.1	2.2	-
150	20.0	14.9	12.0	10.0	7.9	6.0	4.4
160	17.2	13.4	11.5	9.5	7.5	5.6	4.0
200	36.6	26.9	20.6	15.9	12.3	9.6	6.5
250	53.5	41.8	34.5	27.3	21.4	15.8	10.9
315	88.3	64.5	53.0	42.4	33.3	25.9	19.0

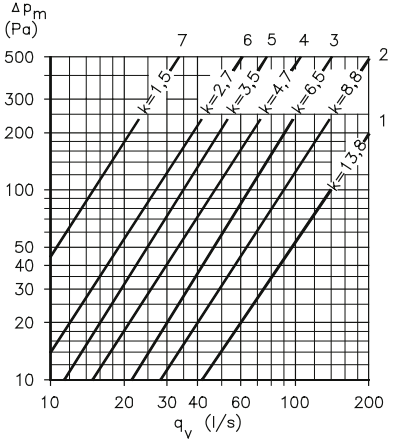
IRIS-080



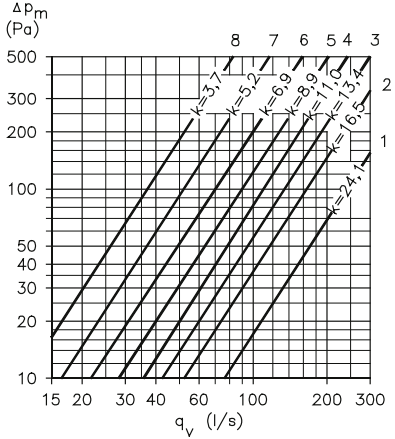
IRIS-100



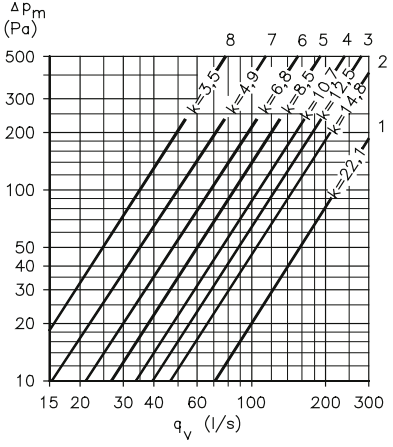
IRIS-125



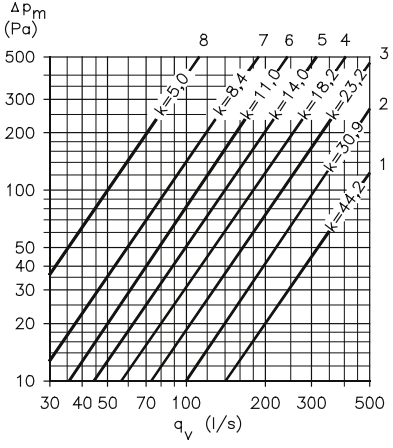
IRIS-150



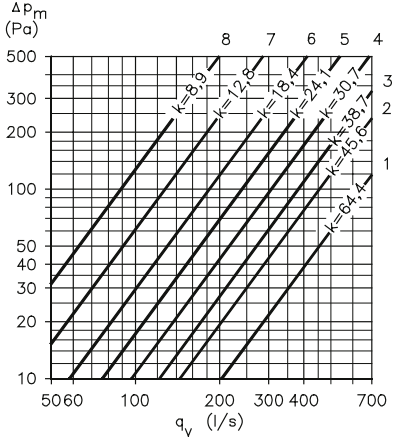
IRIS-160



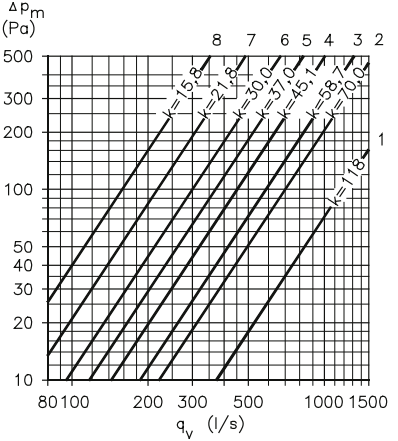
IRIS-200



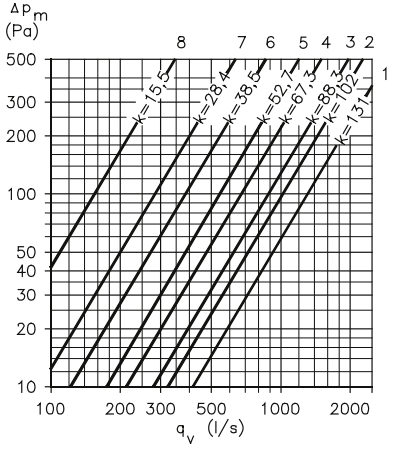
IRIS-250



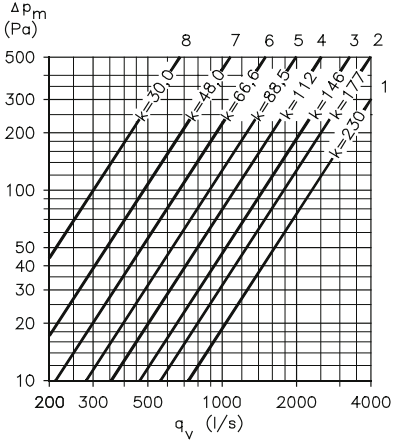
IRIS-315



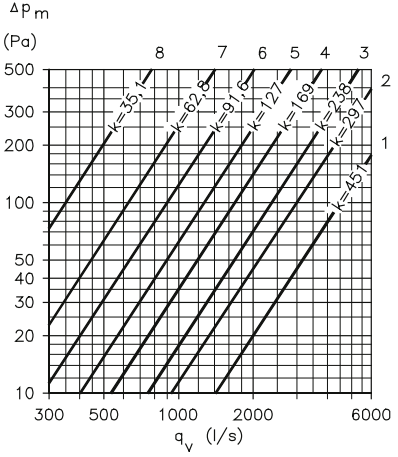
IRIS-400



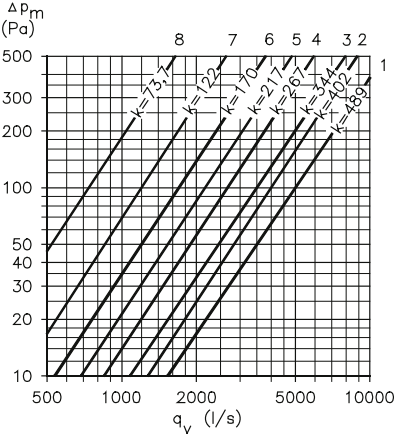
IRIS-500



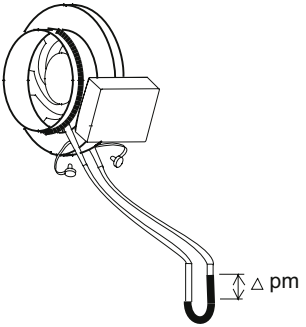
IRIS-630



IRIS-800



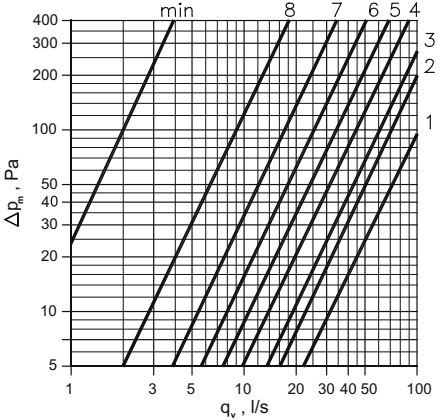
IRIS-M



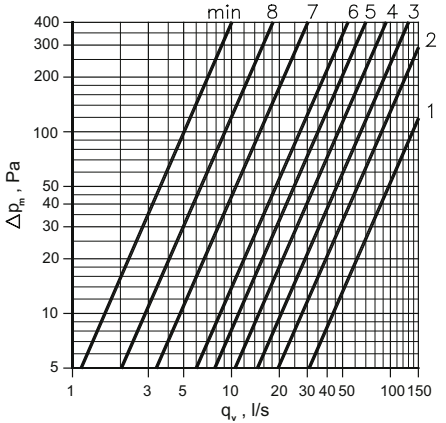
Ø	a								
	1	2	3	4	5	6	7	8	min
100	10.4	7.5	6.0	4.5	3.4	2.5	1.7	0.9	0.2
125	13.8	8.8	6.5	4.7	3.5	2.7	1.5	0.9	0.5
160	22.1	14.8	12.5	10.7	8.5	6.8	4.9	3.5	2.1
200	44.2	30.9	23.2	18.2	14.0	11.0	8.4	5.0	1.1
250	64.4	45.6	38.7	30.7	24.1	18.4	12.8	8.9	3.2
315	118.0	70.0	58.7	45.1	37.0	30.0	21.8	15.8	10.3

Ø	a							
	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5
100	7.9	6.6	5.2	3.8	2.9	2.1	1.2	0.4
125	10.4	7.3	5.5	4.0	3.1	2.2	1.0	-
160	17.2	13.4	11.5	9.5	7.5	5.6	4.0	2.6
200	36.6	26.9	20.6	15.9	12.3	9.6	6.5	3.0
250	53.5	41.8	34.5	27.3	21.4	15.8	10.9	6.1
315	88.3	64.5	53.0	42.4	33.3	25.9	19.0	12.9

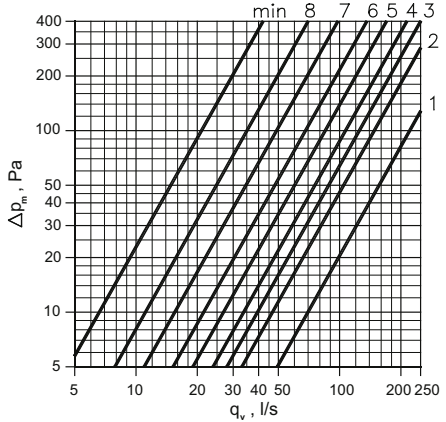
IRIS-M-100



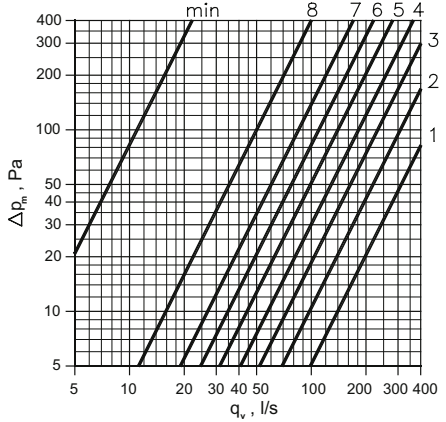
IRIS-M-125



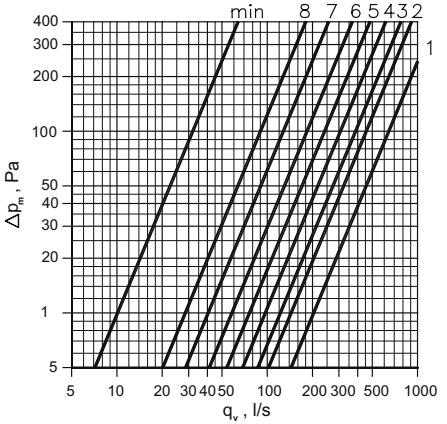
IRIS-M-160



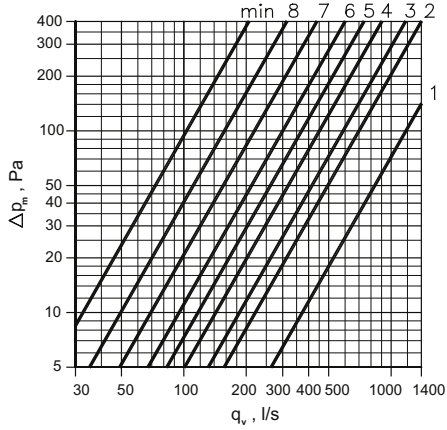
IRIS-M-200



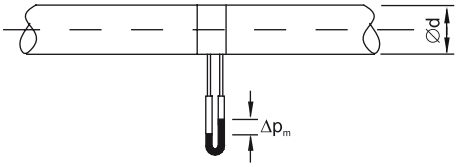
IRIS-M-250



IRIS-M-315

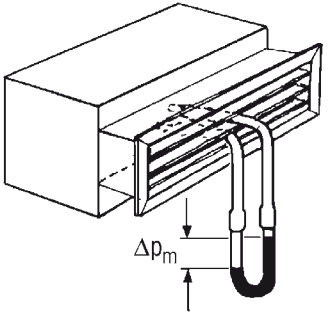


MR, MRS



MR	MRS	k
100	100	4.0
125	125	7.4
160	160	13.6
200	200	23.4
250	250	40
315	315	66
400	-	114
500	-	180
630	-	294
800	-	481
1000	-	764
1250	-	1330

Supply air grille BVCA, BVDA
Exhaust air grille BVFA, BVGA
with connection box BVCZ-13



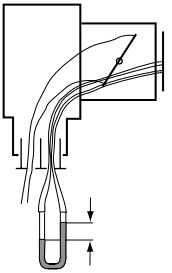
Size	Supply air BVCA BVDA k-factor
020–10	9.60
030–10	14.5
040–10	19.3
050–10	24.1
060–10	29.0
080–10	38.6
100–10	48.3
030–15	21.7
040–15	28.9
050–15	36.2
060–15	43.4
080–15	57.9
100–15	73.4
040–20	38.6
050–20	48.2
060–20	57.9
080–20	77.2
100–20	96.5

Size	Exhaust air BVFA BVGA k-factor
020–10	8.40
030–10	12.6
040–10	16.8
050–10	20.9
060–10	25.1
080–10	33.5
100–10	41.9
030–15	18.8
040–15	25.1
050–15	31.4
060–15	37.7
080–15	50.3
100–15	62.9
040–20	33.5
050–20	41.9
060–20	50.3
080–20	67.0
100–20	83.8

CTAA

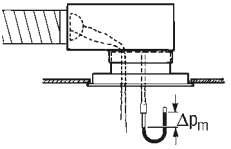
(delivered before September 1996)

Number of slots	k1
1, 2 3, 4	16.8 26.9



CTBA with measuring function in the device

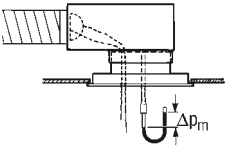
(delivered before September 1996)



Size	b = 1	b = 2, 5	b = 3	b = 4	b = 4
16–b	3.70	6.30	8.20	8.20	7.50
20–b	6.00	11.2	12.9	14.3	11.1
25–b	9.30	14.1	14.4	15.2	14.4
31–b	12.7	19.9	22.4	24.3	21.7
40–b	16.2	28.3	32.9	32.9	30.2
50–b	20.9	38.3	46.9	50.3	39.7

CTCA with measuring function in the device

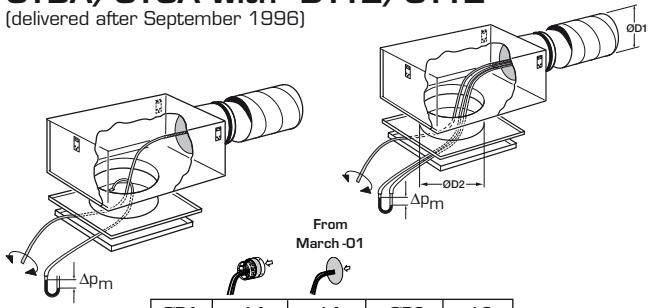
(delivered before September 1996)



Size	b = 1	b = 2, 5	b = 3	b = 4	b = 4
16–b	2.70	5.10	6.00	6.80	6.00
20–b	6.00	10.6	12.7	11.6	9.80
25–b	9.00	12.5	14.1	14.2	14.1
31–b	14.3	22.4	25.0	27.0	23.9
40–b	18.6	28.3	32.4	36.5	35.9
50–b	20.6	37.5	51.6	60.3	47.4

CTBA/CTCA with DTTZ/CTTZ

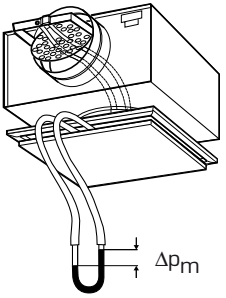
(delivered after September 1996)



ØD1	k1	k1	ØD2	k2
100	7.40	7.40	160	13.7
125	13.0	13.0	200	20.0
160	25.3	21.5	250	28.5
200	38.0	36.0	315	35.4
250	63.5	63.5	400	43.0
315	97.0	97.0	500	80.0

Remaining diffusers with measuring function in the connection box, type CTTZ

(delivered after September 1996

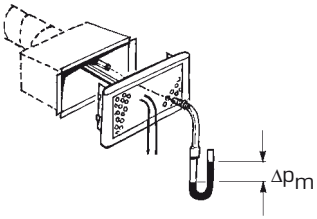


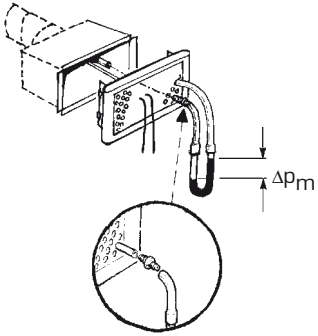
Applies for following products

CTEL	**DRAD**	**DRAR**	**CTUR**
CTFA	**DRAE**	**DRAK**	**UKH**
CTFB	**DRBA**	**DRBR**	**m fl.**
CTTZ	**DRBE**	**DRBK**	

Size	Connection dimension ØD1	k-factor	
		Supply	Exhaust
10	100	6.60	5.60
12	125	10.3	8.80
16	160	16.8	14.3
20	200	26.9	22.9
25	250	41.8	35.5
31	315	64.5	54.8

CTF(A,B,J)





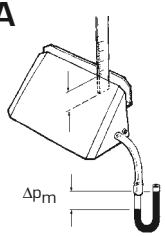
Older version with one measuring point

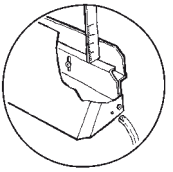
Size	k1
08	4.50
10	7.90
12	10.6
16	12.2

With two measuring points
Delivered until August 1996

Size	k1
08	3.80
10	6.60
12	10.3
16	16.8
20	26.8

CTHA

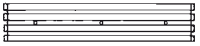


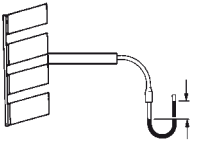


Slot	k1
0	1.43
5	2.12
10	2.83
15	3.53
20	4.32

CTJA, CTJB

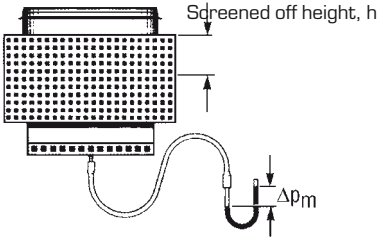
$$\frac{\Delta p_1 + \Delta p_2 \ldots \Delta p_n = \Delta p}{n}$$





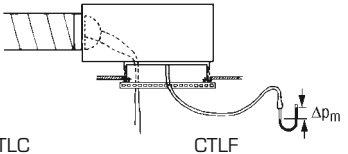
Size	CTJA Covered area %	CTJA k-factor	CTJB Number of closed throttling discs	CTJB k-factor
025–25	0	4.50	0	3.90
	10	4.20		
	20	3.80		
	30	3.50		
	40	3.20		
050–05	0	8.80	0	7.50
	10	7.90	2	6.90
	20	7.20	4	6.10
	30	6.60		
	40	6.00		
050–10	0	17.7	0	15.9
	10	16.2	2	14.4
	20	14.9	4	12.4
	30	13.8		
	40	12.3		
	50	11.0		
080–10	0	31.2	0	24.4
	10	28.3	2	23.4
	20	26.0	4	21.3
	30	23.9	6	19.8
			8	17.8
080–15	0	46.5	0	36.5
	10	42.6	2	34.8
	20	39.2	4	31.8
	30	36.3	6	29.5
			8	26.5
120–15	0	71.1	0	55.5
	10	64.6	3	51.6
	20	59.6	6	47.1
	30	54.6	9	43.3
			12	42.4

CTKA



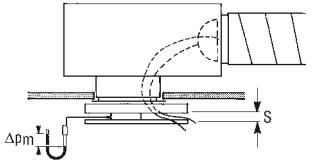
Size	h	1–v	2–v	3–v	4–v
031	0	30.8	53.4	65.0	84.8
	50	25.6	45.5	58.9	77.1
	100	18.4	35.0	50.0	64.5
	125	14.1	27.6	39.4	51.6
	150	11.2	21.4	31.0	39.7
050	0	72.1	134	159	203
	100	49.6	95.4	134	177
	175	32.8	68.0	94.0	129
	200	28.8	58.6	80.0	111
	225	23.8	48.6	64.8	84.4
080	0	159	305	363	527
	150	120	231	309	453
	200	100	194	260	387
	250	83.0	165	232	335
	300	69.0	134	194	275
	350	51.0	100	144	206

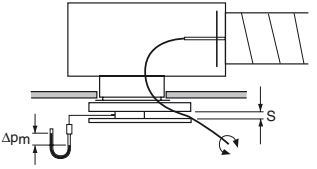
CTLC, CTLF



Size	CTLC				CTLF
025–020	7.30	8.70	8.90	9.40	9.30
031–025	12.5	15.2	–	–	14.1
035–031	13.3	20.0	21.5	23.3	23.9
045–040	17.7	29.3	33.0	35.8	38.2
065–040	20.0	29.5	33.0	35.8	38.2
065–050	26.4	44.7	51.6	53.5	60.3

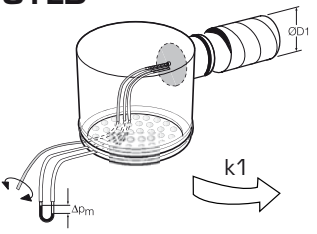
CTPB





Size	Measuring function in the device					Function in the ATTA-box
125	slot width	20	25	30	35	ØD1 = 100 mm
	k-factor	5.70	6.30	6.90	7.60	k1 = 7.40
160	slot width	25	30	35	40	ØD1 = 125 mm
	k-factor	8.80	9.30	10.5	11.4	k1 = 13.0

CYLD

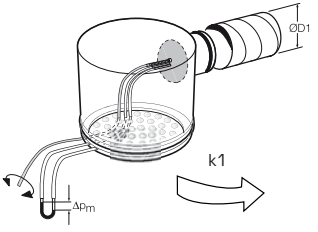


ATTA

From March -01 **From March -03**

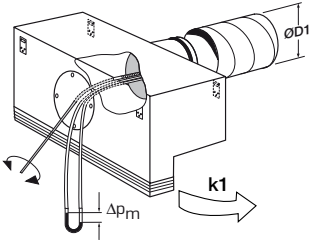
Size	ØD	k1	k1
100	100	7.4	7.4
125	125	13.0	13.0
160	160	21.5	15.9
200	200	36.0	24.5
250	250	63.5	37.7
315	315	97.0	64.8

CYLP, CYLO



	DTTZ	ATTA	
	From Sept -96	From March -01	From March -03
ØD1	k1	k1	k1
100	7.4	7.4	7.4
125	13.0	13.0	13.0
160	25.3	21.5	15.9
200	38.0	36.0	24.5
250	63.5	63.5	37.7
315	97.0	97.0	64.8

DAAD, DAAP



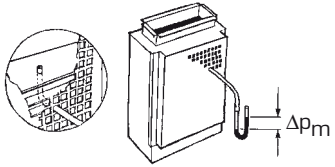
DAAD

Size	Number of slots	k1 From March -01	k1
06, 09	1	7.40	7.40
12, 15	1	13.0	13.0
06, 09	2	13.0	13.0
12, 15	2	25.3	21.5
All	3	25.3	21.5

DAAP

Size	k1
06	4.00
09	4.00
12	7.40
15	7.40

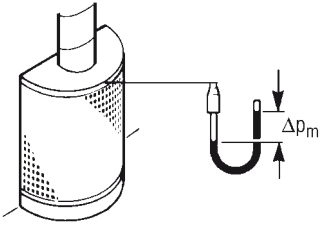
DEA(A,B), FUP, FIP



Size		DEAA FUP	DEAB FIP
05	080–200	91.0	43.0
06	110–200	122	65
07	160–200	182	86
08	220–200	244	130

DEH(A,B)

(Delivered before November 1990)

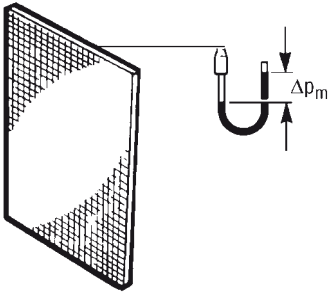


Size	Type DEHA k-factor	DEHB k-factor
12–075	8.80	4.70
20–075	22.5	11.3
31–090	55.8	22.0
40–150	125	54.8

Size	Type DEHA k-factor	DEHB k-factor
40–200	125	54.8
50–150	155	81.6
50–200	155	81.6
63–200	251	128

DEP(A,B)

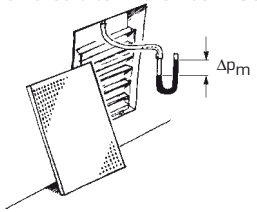
(Delivered before November 1990)



Size	Type DEPA k-factor	DEPB k-factor
30–30	6.6	–
50–30	10.3	–
30–70	11.7	6.3
50–50	15.3	–
50–70	19.5	9.1
50–90	23.3	10.8

DEP(A,B) FUC, FIC

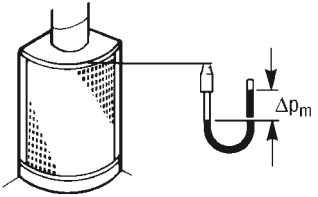
(Delivered after November 1990)



Size	DEPA, FUC k-factor	DEPB, FIC k-factor
30–30	6.4	–
50–30	10.6	–
30–70	9.6	6.3
50–50	14.2	–
50–70	19.2	9.1
50–90	22.3	10.8

DEQ(A,B)

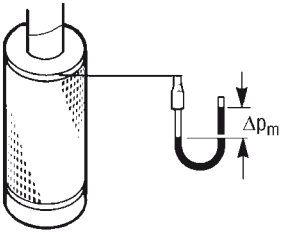
(Delivered before November 1990)



	Type	
Size	DEQA k-factor	DEQB k-factor
10–075	5.60	–
16–075	14.4	6.90
25–090	35.2	20.1
40–150	125	54.8

DER(A,B)

(Delivered before November 1990)

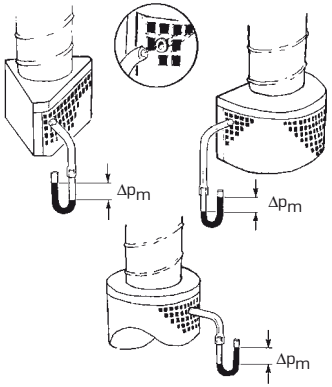


	Type	
Size	DERA k-factor	DERB k-factor
10–055	5.60	–
16–075	14.4	6.90
25–075	35.2	20.1
40–090	125	54.8

	Type	
Size	DERA k-factor	DERB k-factor
50–150	155	81.6
63–150	251	125
63–200	251	125
80–200	474	–

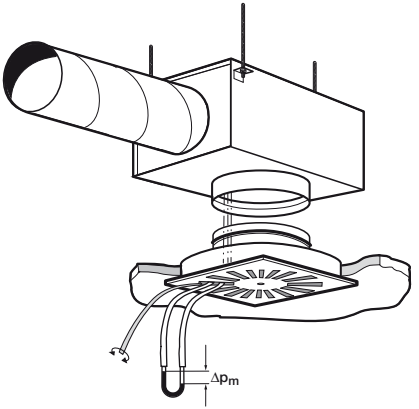
DFQ(A,B), DFH(A,B), DFR(A,B) FUK, FIK, FUH, FIH, FUR, FIR

(Delivered after November 1990)



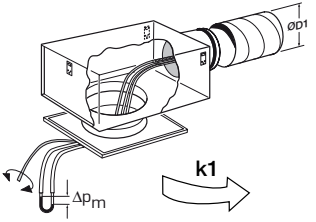
Size connection dimension	DFQA, FUK DFHA, FUH DFRA, FUR	DFQB, FIK DFHB, FIH DFRB, FIR
10	7.80	2.90
12	11.8	4.60
16	20.5	7.20
20	30.0	11.9
25	45.0	18.3
31	73.5	28.0
40	128	52.0
50	198	79.5
63	325	115
80	512	–

DS(K,R)S, DS(K,R)F



ØD	k1
160	15.9
200	24.5
250	37.7

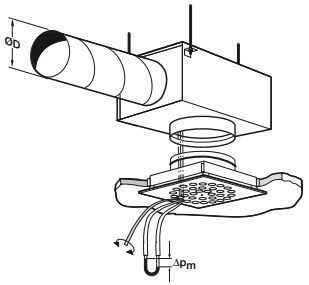
DV(K,R)F, DV(K,R)S



From March -01

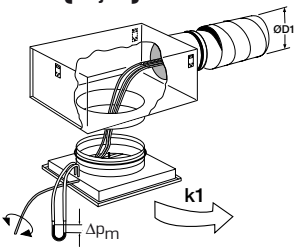
ØD1	k1	k1	k2
160	25,3	21,5	16,0
200	38,0	36,0	27,0
250	63,5	63,5	40,4

DYKA, DYCA



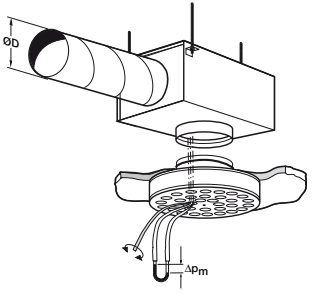
ØD	k1
100	7.4
125	13.0
160	15.9
200	24.5
250	37.7
315	64.8

DYK(C,K)



ØD1	k1	k1
125	13.0	13.0
160	25.3	21.5
200	38.0	36.0
250	63.5	63.5
315	97.0	97.0

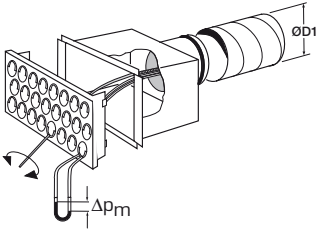
DYSA



ØD	k1
100	7.4
125	13.0
160	15.9
200	24.5
250	37.7
315	64.8

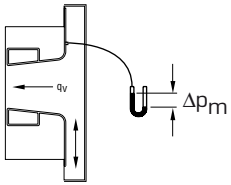
DYVA

Delivered after May -98



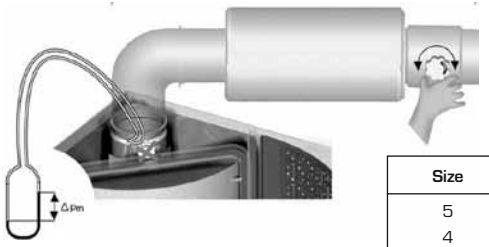
	DTTZ	ATTA	
	From May -98	From March -01	From March -03
ØD1	k1	k1	k1
100	7.4	7.4	7.4
125	13.0	13.0	13.0
160	25.3	21.5	15.9
200	38.0	36.0	24.5

Exhaust air device EHC (UHC)



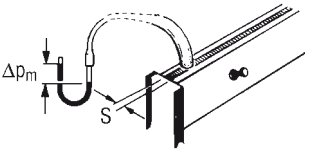
Position	k2		
	300 x 150	500 x 150	800 x 150
0	1.90	3.50	6.00
1	2.60	5.80	10.8
2	4.00	8.50	14.6
3	5.70	11.2	19.0
4	7.10	14.0	23.9
5	8.90	16.4	28.3
6	10.8	19.0	32.9
7	12.4	21.0	35.4

ELEA Professional, Care, Choice



Size	k
5	31.0
4	19.0
3	5.18

FEA(B,C)

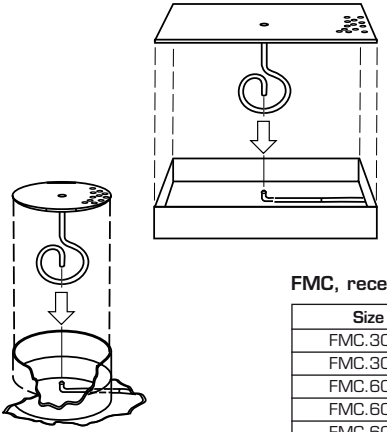


Slot width s	2	3	4	5	6	7	8
k-factor	0.74	0.95	1.30	1.70	1.90	2.20	2.50

Measuring probe and stick are included in measuring kit MLS-01.

Floormaster FM-90

with measuring disc



FMC, recessed terminal

Size	k-factor
FMC.303	3.16
FMC.306	3.16
FMC.603	8.27
FMC.606	8.27
FMC.608	11.0

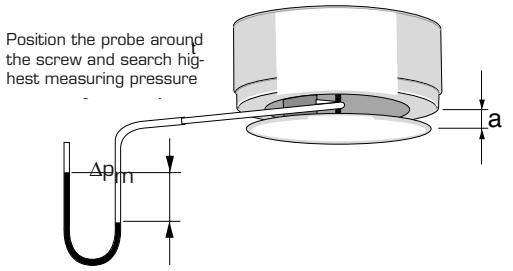
FMK, quarter-cylindrical terminal
FMH, semi-cylindrical terminal
FMR, cylindrical terminal

Connection diameter, mm	k-factor
80	2.31
100	3.60
125	5.63
160	9.24
200	14.4
250	22.6
315	35.8
400	57.7
500	90.3
630	143
800	231
1000	360

FMP, flat terminal

Size	Height		
	600	1200	2000
FMP.03	6.88		
FMP.04	9.19		
FMP.05	13.8	27.5	
FMP.06	18.4	41.3	
FMP.07	23.0	48.3	
FMP.08	32.1	64.2	110
FMP.09	41.3	82.7	138
FMP.10	48.3	101	179
FMP.11	68.8	129	220

GEF



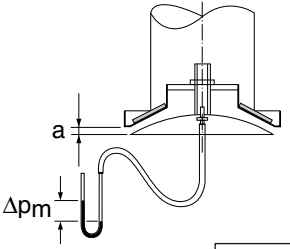
With baffle plate

"a" mm	1	2	3	4	5	10	15
k-factor	0.50	0.70	0.90	1.08	1.31	1.74	1.99

Without baffle plate

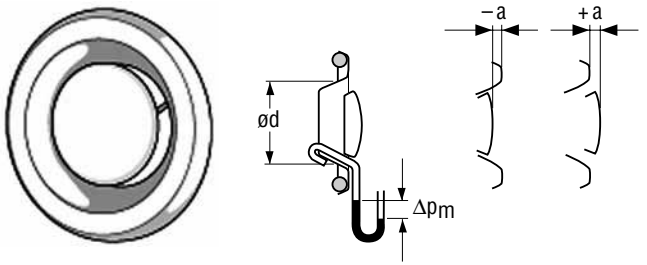
"a" mm	1	2	3	4	5	6	8	10	12	14
k-factor	0.50	0.90	1.34	1.77	2.24	2.65	3.38	3.87	4.26	4.74

GEH



"a" mm	2	4	6	8	10	12
k-factor	0.69	1.10	1.39	1.68	1.94	2.12

Exhaust air device GPD, GPE, GMF, GMG



Installed in a angle duct ø 80 mm

Size	"a" mm	–12	–9	–6	–3	0	3	6	9	12
10	k-factor	0.90	1.19	1.60	2.02	2.24	2.60	3.00	3.22	3.56

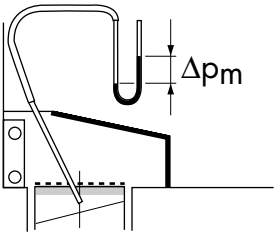
Installed with short mounting ring, 0,5 x ø d – 300 mm

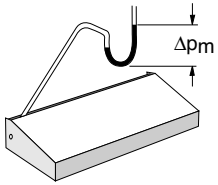
Size	"a" mm	–12	–9	–6	–3	0	3	6	9	12
10	k-factor	0.85	1.20	1.52	1.90	2.21	2.53	2.83	3.16	3.54
12	k-factor	0.90	1.28	1.64	2.06	2.26	2.61	2.98	3.23	3.59
16	k-factor	3.46	4.18	4.70	5.20	5.80	6.36	6.76	7.50	8.08

Installed with long mounting ring, > 300 mm

Size	"a" mm	–12	–9	–6	–3	0	3	6	9	12
10	k-factor	0.89	1.28	1.64	2.02	2.24	2.60	2.96	3.35	3.53
12	k-factor	0.90	1.28	1.64	2.06	2.26	2.61	2.96	3.23	3.59
16	k-factor	3.58	4.14	4.74	5.22	5.59	6.36	6.76	7.50	8.10

GGK





Search for highest measuring pressure on the back sly with a cannula probe.

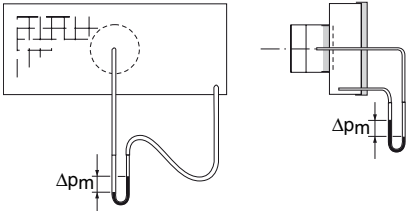
With throttling disc

Strypbricka	0	A	B	C	D	E	F
k-factor	5.77	2.67	2.37	1.76	1.61	1.32	1.13

Without throttling disc

k-factor	3.20

GKK



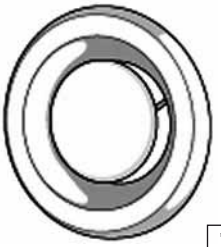
With throttling disc

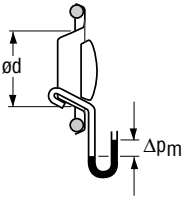
Throttling disc	A	B	C	D	E	F
k-factor	3.96	2.12	1.58	1.50	1.24	1.14

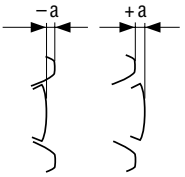
Without throttling disc

k-factor	3.96

Supply air device GPD.010

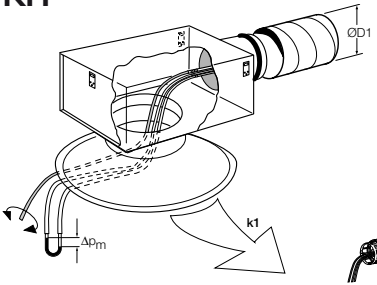






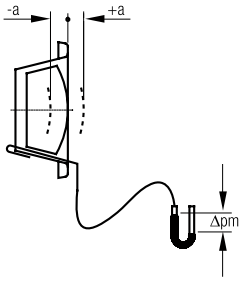
"a" mm	–15	–10	–5	0	5	10
k-factor	0.60	0.78	0.90	1.08	1.20	1.32

KH



Size	ød	øD	k1	k1	k1
100	100	100	7.40	7.40	7.40
125	100	125	7.40	7.40	7.40
125	125	125	13.0	13.0	13.0
160	125	160	13.0	13.0	13.0
160	160	160	25.3	21.5	15.9
200	160	200	25.3	21.5	15.9
200	200	200	38.0	36.0	24.5
250	200	250	38.0	36.0	24.5
250	250	250	63.5	63.5	37.7
315	250	315	63.5	63.5	37.7
315	315	315	97.0	97.0	64.8
400	315	400	97.0	97.0	64.8

KS



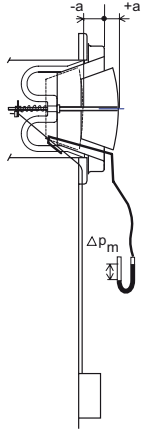
KS-100 Opening a	k
-9	0.6
-6	0.75
-3	0.95
0	1.2
3	1.45
6	1.75
9	2.0
12	2.2

KS-125 Opening a	k
-12	1.7
-9	1.95
-6	2.25
-3	2.7
0	2.95
6	3.8
9	4.25

KS-150 Opening a	k
-12	2.3
-6	2.9
0	3.9
6	5.0
12	6.4

KS-160 Opening a	k
-12	1.4
-9	1.8
-6	2.3
-3	2.8
0	3.3
3	3.8
6	4.2

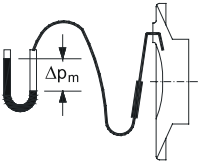
KVM



KVM-100 Opening a	k
-15	0.5
-12	0.8
-10	1.0
-5	1.4
0	1.9
5	2.3
10	2.8

KVM-125 Opening a	k
-10	1.5
-5	2.1
0	2.7
5	3.3
10	4.0

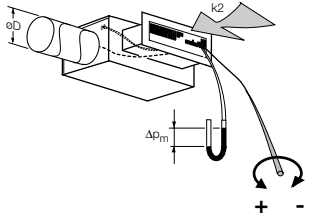
SE



SE-100 Open holes	k
3	1.1
4	1.3
5	1.5
6	1.6
7	1.9

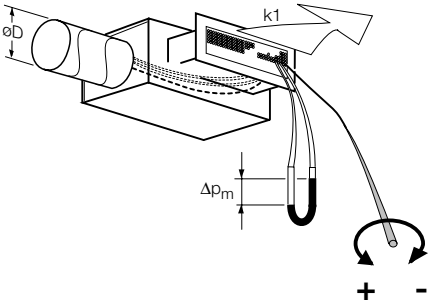
SE-125 Open holes	k
3	1.7
4	2.2
5	2.6
6	3.1
7	3.3

Exhaust air device SVE



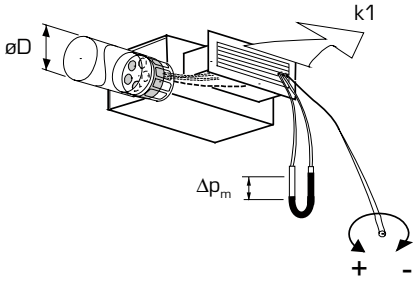
Size	Grille dim.	k2	
	B x H	s = 30 mm	s = 0 mm
100	366 x 128	9.30	7.0
125	516 x 128	15.2	11.8
160	616 x 128	20.1	18.0
200	716 x 178	44.6	34.1

SVQ



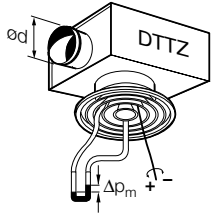
ØD	B x H	k1	k1	k1
100	366 x 128	7.40	7.40	7.40
125	516 x 128	13.0	13.0	13.0
160	616 x 128	25.3	21.5	15.9
200	716 x 178	38.0	36.0	24.5

TG



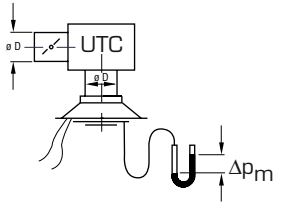
B x H	ØD	k1 → 3.2001	k1 3.01 - 2.03
200x100	125	13.0	13.0
300x100	160	25.3	21.5
400x100	160	25.3	21.5
500x100	200	38.0	36.0
600x100	250	63.5	63.5
800x100	250	63.5	63.5
1000x100	250	63.5	63.5
300x150	200	38.0	36.0
400x150	250	63.5	63.5
500x150	250	63.5	63.5
600x150	250	63.5	63.5
800x150	315	97.0	97.0
1000x150	315	97.0	97.0
400x200	250	63.5	63.5
500x200	315	97.0	97.0
600x200	315	97.0	97.0
800x200	315	97.0	97.0
1000x200	315	97.0	97.0

UKH + CTTZ



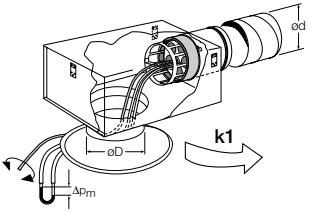
Size			
UKH	CTTZ	ød	k1
10	–	–	–
12	10-12	100	6.60
16	12-16	125	10.3
20	16-20	160	16.8
25	20-25	200	26.9
31	25-31	250	41.8
40	31-40	315	64.5

UKH + UTC-box



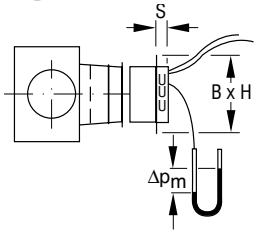
Size	k1	
	hor. air flow	ver. air flow
10	8.70	5.70
12	10.9	6.10
16	17.3	10.6
20	25.7	24.0
25	42.2	40.9
31	59.2	50.0
40	79.7	81.5

UKH + UTD



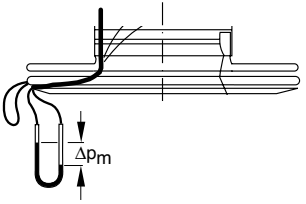
Size				
UKH	UTD	ød	øD	k1
10	–	–	100	–
12	10	100	125	7.40
16	12	125	160	13.0
20	16	160	200	25.3
25	20	200	250	38.0
31	25	250	315	63.5
40	31	315	400	97.0

URQ



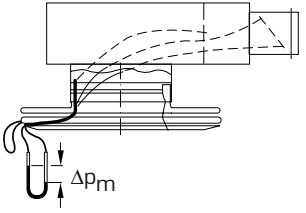
Size	B x H	k1	
		s = 30 mm	s = 0 mm
10	366 x 128	6.80	5.80
12	516 x 128	11.8	9.70
16	616 x 128	16.2	14.4
20	716 x 178	27.1	24.7

URU



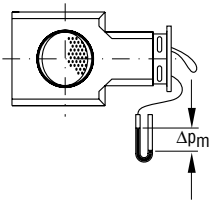
Size	k1
10	6.40
12	11.0
16	17.4
20	25.8
25	36.2

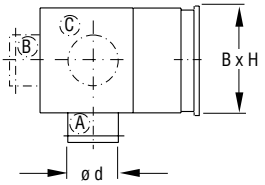
URU-F



Size	k2
10	8.80
12	17.5
16	23.1
20	39.4
25	45.3

Supply air grille UAS, USV + box UTG





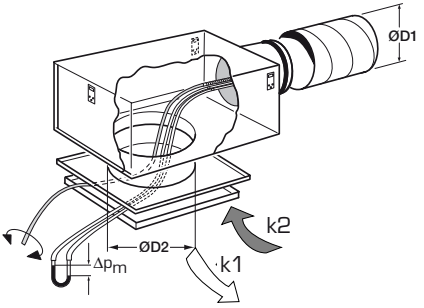
		UAS			USV.2		
B x H	**d**	**A**	**B**	**C**	**A**	**B**	**C**
200 x 100	124	10.0	10.0	8.00	10.0	11.0	9.00
300 x 100	159	15.0	17.0	11.0	15.0	16.0	11.0
400 x 100	159	22.0	29.0	12.0	21.0	23.0	16.0
500 x 100	199	28.0	28.0	19.0	33.0	28.0	19.0
300 x 150	199	25.0	27.0	21.0	25.0	29.0	20.0
400 x 150	249	30.0	35.0	28.0	38.0	37.0	28.0
500 x 150	249	42.0	38.0	27.0	45.0	48.0	41.0
600 x 150	249	60.0	48.0	28.0	50.0	59.0	35.0
800 x 150	314	78.0	59.0	42.0	59.0	71.0	44.0
400 x 200	249	46.0	47.0	35.0	44.0	54.0	32.0
500 x 200	314	54.0	57.0	48.0	66.0	66.0	45.0
600 x 200	314	54.0	70.0	50.0	73.0	75.0	48.0
800 x 200	314	117	94.0	52.0	100	97.0	56.0

Exhaust air grille UAS, USV + box UTF

		UAS			USV.2		
B x H	**d**	**A**	**B**	**C**	**A**	**B**	**C**
200 x 100	124	9.00	11.0	10.0	11.0	13.0	11.0
300 x 100	159	15.0	17.0	16.0	19.0	21.0	19.0
400 x 100	159	22.0	22.0	22.0	25.0	31.0	26.0
500 x 100	199	34.0	28.0	25.0	34.0	37.0	36.0
300 x 150	199	25.0	27.0	20.0	25.0	34.0	24.0
400 x 150	249	32.0	34.0	36.0	45.0	46.0	39.0
500 x 150	249	43.0	47.0	42.0	50.0	52.0	48.0
600 x 150	249	53.0	53.0	53.0	65.0	92.0	62.0
800 x 150	314	74.0	77.0	73.0	86.0	90.0	82.0
400 x 200	249	45.0	52.0	43.0	47.0	63.0	45.0
500 x 200	314	60.0	63.0	63.0	74.0	74.0	61.0
600 x 200	314	75.0	77.0	71.0	80.0	89.0	70.0
800 x 200	314	82.0	107	104	105	131	107

Varimix with connection box ATTA/ATFA

CTDK (CTDA) **RHRO = RSRO + ATTA**
CTDL (CTDB) **RHRP = RSRP + ATTA**
CTEK (CTEA) **RHKO = RSKO + ATTA**
CTEL (CTEB) **RHKP = RSKP + ATTA**



	DTTZ	ATTA		ATFA	
	From Sept -96	From March -01	From March -03		
ØD1	**k1**	**k1**	**k1**	**ØD2**	**k2** [1)]
100	7.4	7.4	7.4	125	–
125	13.0	13.0	13.0	160	12.2
160	25.3	21.5	15.9	200	19.7
200	38.0	36.0	24.5	250	26.0
250	63.5	63.5	37.7	315	31.5
315	97.0	97.0	64.8	400	46.0

1) These values are applicable for devices with 25 mm slot.

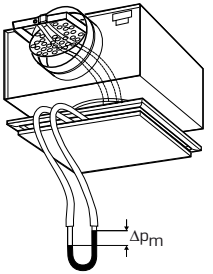
Varimix with connection box CTTZ

(delivered from August 1994 – until August 1996)

CTDK	**(CTDA)**	**RHRO =**	**RSRO + DTTZ**
CTDL	**(CTDB)**	**RHRP =**	**RSRP + DTTZ**
CTEK	**(CTEA)**	**RHKO =**	**RSKO + DTTZ**
CTEL	**(CTEB)**	**RHKP =**	**RSKP + DTTZ**

Conenction box CTTZ

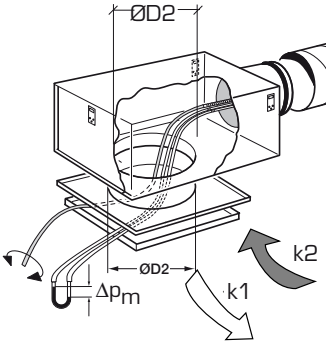
ØD1	k1	k2
100	6.60	5.60
125	10.3	8.80
160	16.8	14.3
200	26.9	22.9
250	41.8	35.5
315	64.5	54.8



Varimix with measuring function in the connection box with connection box DTTZ

(delivered after September 1996

RHRO = RSRO + DTTZ **RHKO = RSKO + DTTZ**
RHRP = RSRP + DTTZ **RHKP = RSKP + DTTZ**



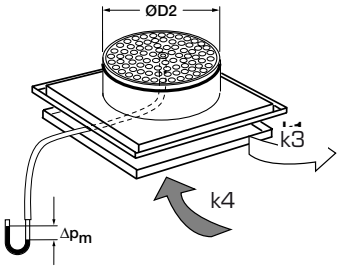
From March -01

DTTZ

ØD1	k1	k1	ØD2	k2
100	7.40	7.40	125	–
125	13.0	13.0	160	22.5
160	25.3	21.5	200	33.7
200	38.0	36.0	250	52.0
250	63.5	63.5	315	74.6
315	97.0	97.0	400	97.0

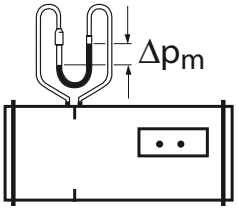
Varimix with measuring function in the device

CTDA, CTDB, CTEA, CTEB

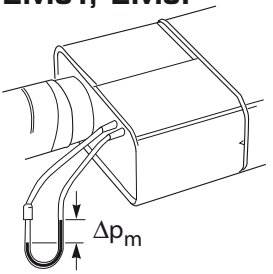


	ØD2	k3	k3	k3	k3	k4
CTDA	125	6.50	7.60	7.50	7.80	–
	160	8.90	10.7	11.3	12.4	–
	200	13.7	16.9	16.1	17.4	–
	250	18.2	22.4	21.4	23.4	–
	315	25.9	32.4	29.7	34.5	–
	400	–	38.2	34.2	40.1	–
CTDB	125	5.90	6.50	6.80	7.10	6.40
	160	7.70	9.40	9.80	10.5	9.90
	200	13.2	16.9	15.5	17.6	14.6
	250	19.0	23.8	21.4	25.0	20.0
	315	24.8	31.8	28.5	34.2	33.0
	400	–	39.8	30.0	41.3	53.2
CTEA	125	6.90	7.90	7.90	8.30	–
	160	10.4	12.9	13.2	14.1	–
	200	13.7	16.9	16.1	17.4	–
	250	19.0	22.5	21.3	24.6	–
	315	26.6	33.6	31.2	36.4	–
	400	–	43.6	37.8	45.7	–
CTEB	125	6.60	7.30	7.50	7.80	6.40
	160	10.0	11.6	12.3	13.1	9.90
	200	12.4	15.9	15.2	16.6	14.6
	250	16.8	22.0	19.9	23.9	20.0
	315	27.5	31.0	30.2	36.4	33.0
	400	–	38.8	36.6	44.6	53.2

Flow variators, flow measuring devices EMSM, EM(J,P)(B,C), EMJT, EMJF



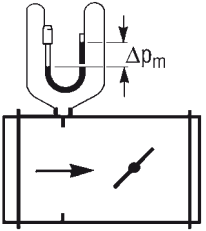
EMSM



EM(J,P)(B,C)
EMJT, EMJF

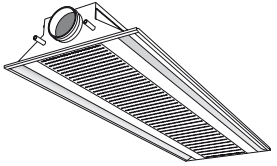
Storlek	080	100	125	160	200	250	315	400	500
Flödesgivarenhet EMSM	–	5.18	10.0	18.9	32.9	52.1	90.8	142	224
Flödesvariator EM(J.P)(B.C)	–	5.18	10.0	18.9	32.9	52.1	90.8	142	–
EMJ(T.F)	–	3.70	5.90	10.7	19.5	34.5	64.8	117	–

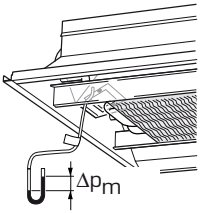
EHCA, EHCB

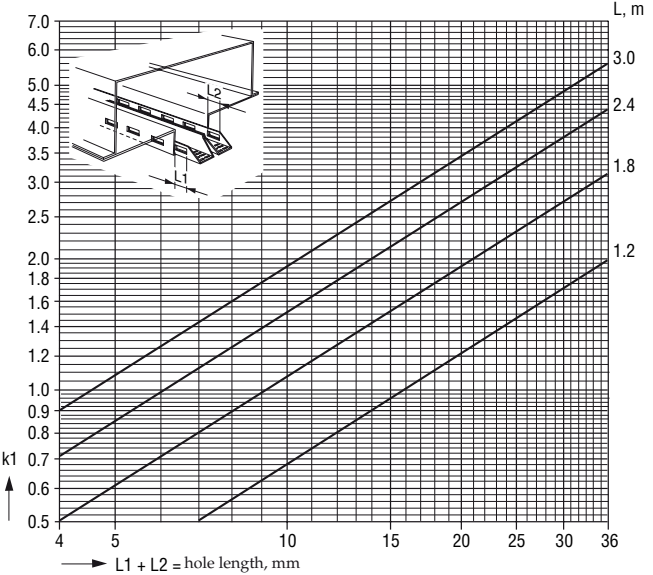


Size Flow variator	008	010	012	016	020	025	031	040	050
EHC(A,B)	2.54	5.18	10.0	18.9	32.9	52.1	90.8	142	224

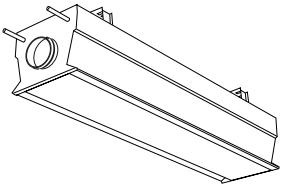
Chilled Beam IQIB/IQIC

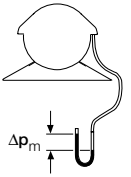


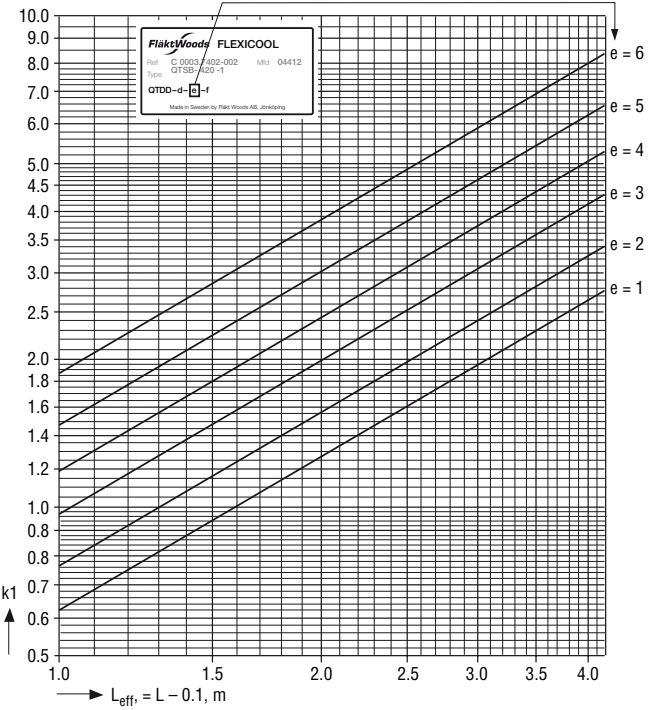




Chilled Beam QTSB (QTSS also)







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