VU90-HOT

Rectangular HOT 400/30 smoke control damper.

CE
1322

Rf-t

Rf-Technologies nv • Lange Ambachtstraat 40 • 9860 Oosterzele • Belgium • Tel +32 9 362 31 71 • Fax +32 9 362 33 07 • info@rft.be

www.rft.be

V23-EN-C 02/2020

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Explanation of the abbreviations and pictograms

Wn = nominal width
Hn = nominal height
Sn = free air passage
E = integrity
I = thermal insulation
S = smoke leakage
60/120 = fire resistance time
Pa = pascal
o -> i = meets the criteria from the outside (o) to the inside (i)
i <-> o = fire side not important
AA = automatic activation
multi = multi compartment
1500 = pressure level 3 (1500Pa)
ved = vertical duct
hod = horizontal duct
vew = vertical wall penetration
V = volt
W = watt
V AC = Volt alternating current
V DC = Volt direct current
E.TELE = power supply magnet
E.ALIM = power supply motor
Auto = automatic
Tele = remote controlled
Pnom = nominal capacity
Pmax = maximum capacity
DAS MOD = modular product
OP = option (delivered with the product)
KIT = kit (delivered separately for repair or upgrade)
PG = connection flange to the duct
GKB (type A) / GKF (type F): "GKB" stands for standard plasterboards (type A according to EN 520) while "GKF" plasterboards offer a higher fire resistance for a similar plate thickness (type F according to EN 520)
Cal-Sil = calcium silicate
ζ [-] = pressure loss coefficient
Q = air flow
ΔP = static pressure drop
v = air speed in the duct
Lwa = A-weighted sound power level
ME = motorised
H = habitat

HOT 400/30 EN1366-2 EN1366-10	HOT 400/30 performance (cycling for 30 minutes at 400°C)		suitable for built-in installation
	intermediate dimensions on request		

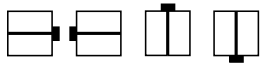
DECLARATION OF PERFORMANCE

CE_DoP_Rf-t_V23_EN A-04-2015

1. Unique identification code of the product-type:	**VU90-HOT**
2. Intended use/es:	Smoke control damper HOT 400/30 to be used in conjunction with partitions to maintain fire compartments.
3. Manufacturer:	Rf-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
4. System/s of AVCP:	System 1
5. Harmonised standard / European Assessment Document; notified body / European Technical Assessment, Technical Assessment Body, notified body; certificate of constancy of performance:	EN 12101-8:2011, IBS with identification number 1322;
6. Declared performance according to EN 12101-8:2011	(fire resistance according to EN 1366-10, classification according to EN 13501-4)

Essential characteristics					Performance
Range	Wall type	Wall	Sealing	Installation	Classification
200x200 mm ≤ VU90-HOT ≤ 1200x800 mm	Rigid wall	Aerated concrete ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	1	EI 90 (v_e i ↔ o) S HOT 400/30 MULTI
	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	1	EI 90 (v_e i ↔ o) S HOT 400/30 MULTI
	Rigid floor	Aerated concrete ≥ 150 mm	Stone wool + coating ≥ 140 kg/m³	1	EI 90 (h_o i ↔ o) S HOT 400/30 MULTI

1 Type of installation: built-in 0/90/180/270°



Harmonised standard EN 12101-8:2011

Nominal activation conditions/sensitivity:	Pass
Response delay (response time): closure time	Pass
Operational reliability: cycling	B(L)E - 10000 cycles
Durability of response delay:	Pass
Durability of operational reliability:	Pass
High operational temperature (HOT 400/30):	Pass

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:
Barbara Willems, Technical Manager

Oosterzele, 04-2015

Product presentation VU90-HOT

Product presentation VU90-HOT

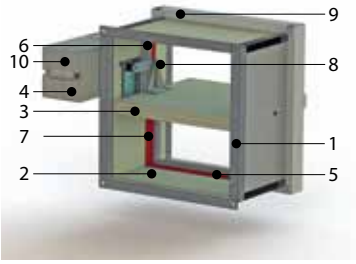
Rectangular VU90-HOT smoke control damper, with a fire resistance up to 90 minutes. The refractory tunnel is made of moisture-resistant and asbestos-free plates. The HOT 400/30 classification ensures the continued operation (opening and closing of the blade) at a temperature up to 400°C during the first 30 minutes of a fire. The VU90-HOT was developed in accordance with the European product standard EN 12101-8 and tested according to EN 1366-10.

Smoke control shutters and dampers are suitable for use in ventilating protected lobbies, venting to shafts either naturally or mechanically. They open to evacuate smoke in emergency situations whilst maintaining fire resistant integrity in standby position.

- ☑ minimal pressure loss
- ☑ HOT 400/30 performance (cycling for 30 minutes at 400°C)

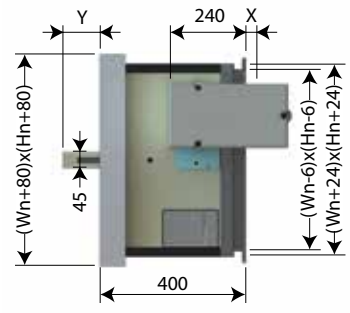
- tested according to EN 1366-10 HOT test
- tested according to EN 1366-2 up to 500 Pa
- suitable for built-in installation
- suitable for rigid wall, rigid floor and light wall (metal stud gypsum plasterboard wall)
- operating mechanism outside the wall
- maintenance-free
- for indoor use
- intermediate dimensions on request
- operating temperature: max. 50°C
- sealing with fire resistant stone wool boards allowed, also for asymmetric opening
- air tightness in accordance with EN 1751: class B (class C in option)

1. connection flange PG30
2. casing made of refractory material
3. damper blade
4. operating mechanism
5. sealing cold smoke
6. blade bumper
7. intumescent strip
8. transmission with locking (open/closed)
9. thermal protection for the connection flange
10. thermal housing for the operating mechanism



Range and dimensions VU90-HOT

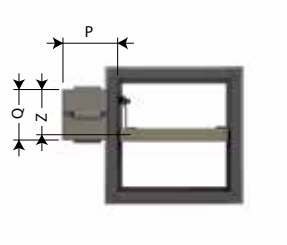
Wn/Hn per step of 50 mm; intermediate dimensions are subject to extra cost (heights between ≥ 275 and ≤ 299 mm are not possible).
Exceeding blade: X = on the mechanism side, Y = on the wall side



Hn [mm]	300	350	400	450	500	550	600	650	700	750	800
x	-	-	-	-	-	1	26	51	76	101	126
y	2	27	52	77	102	127	152	177	202	227	252

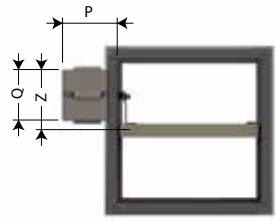
	≥	≤
(Wn x Hn) mm	200x200	1200x800

Hn < 300 mm



	BLE	BE
P	174	174
Q	194	194
Z	125	125

Hn ≥ 300 mm



	BLE	BE
P	174	174
Q	194	194
Z	225	225

Evolution - kits

	KITS BLE24	BLE 24V actuator for smoke control dampers
	KITS BLE24-ST	BLE 24V actuator for smoke control dampers with plug (ST)
	KITS BLE230	BLE 230V actuator for smoke control dampers
	KITS BE24	BE 24V actuator for smoke control dampers
	KITS BE24-ST	BE 24V actuator for smoke control dampers with plug (ST)
	KITS BE230	BE 230V actuator for smoke control dampers

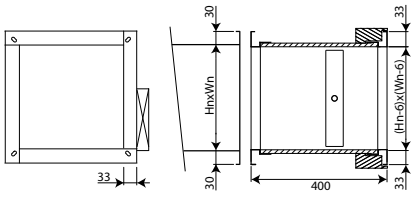
Options - at the time of order

	MECT	Testbox for mechanisms 24/48 V (magnet, motor, beginning and end of range switches)
	KITS EQ	Kit equipotential connection (per set of 5 pieces)
	KITS BOX	Kit thermal housing HOT

Options - at the time of order

	UL	Inspection shutter (set of 2)
	EQ	Equipotential connection
	EN1751_C	Air-tightness class C (H>600 or W>800)

Flange types - at the time of order

	PG30	Connection to ducts with 30 mm flanges. The four corners of the non-insulated frame are provided with elliptical holes Ø 8,5 x 16 mm.

Storage and handling

As this product is a safety element, it should be stored and handled with care.

Avoid:

- any kind of impact or damage
- contact with water
- deformation of the casing

It is recommended:

- to unload in a dry area
- not to flip or roll the product to move it
- not to use the damper as a scaffold, working table, etc.
- not to store smaller dampers inside larger ones

Installation

General points

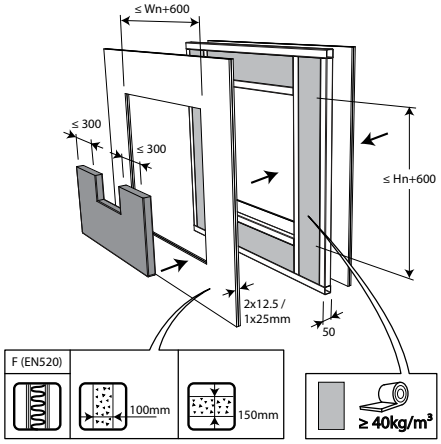
- The installation must comply with the installation manual and the classification report.
- The installation of the shaft must comply with the classification report delivered by the shaft manufacturer.
- Axis orientation: see the declaration of performance.
- Avoid the obstruction of adjoining shafts.
- Verify if the blade can move freely.
- Rf-t smoke dampers may be applied to ducts that have been tested according to EN 1366-8 and EN 1366-9 as appropriate, constructed from similar materials with a fire resistance, thickness and density equal or superior to these of the tested materials.
  - ⚠ Caution: when fitting, the product should be handled with care and remain protected from any sealing products.
  - ⚠ Caution: before putting the installation into operation, clean off all the dust and dirt.
  - ⚠ Caution: bear in mind the blade's clearance inside the smoke evacuation duct.

Installation in rigid wall and floor and in flexible wall (metal stud gypsum plasterboard wall)

The product was tested and approved in:

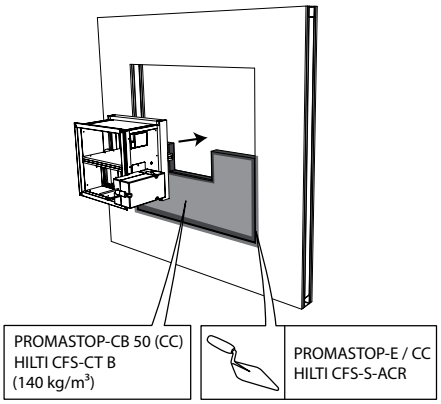
Range	Wall type		Sealing	Classification
200x200 mm ≤ VU90-HOT ≤ 1200x800 mm	Rigid wall	Aerated concrete ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	EI 90 (v_e i ↔ o) S HOT400/30 MULTI
200x200 mm ≤ VU90-HOT ≤ 1200x800 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	EI 90 (v_e i ↔ o) S HOT 400/30 MULTI
200x200 mm ≤ VU90-HOT ≤ 1200x800 mm	Rigid floor	Aerated concrete ≥ 150 mm	Stone wool + coating ≥ 140 kg/m³	EI 90 (h_o i ↔ o) S HOT 400/30 MULTI

1



1. The opening around the damper is sealed with 2 layers of 50 mm-thick mineral wool panels with fire resistant coating on one side (type PROMASTOP-CB 50 / PROMASTOP-CB/CC 50 / HILTI CFS-CT B).

2



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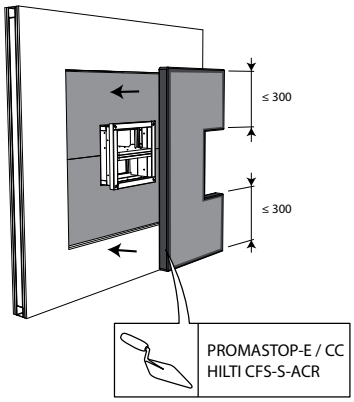

3. The joints on these 2 layers must be installed staggered and covered all around the edge with coating (type PROMASTOP-E / PROMASTOP-CC / HILTI CFS-S-ACR).

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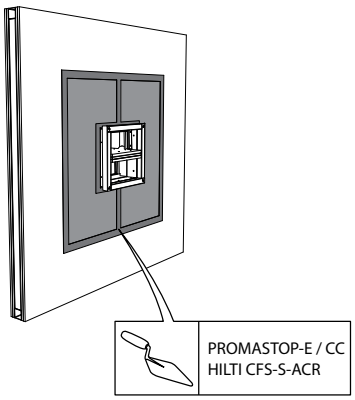

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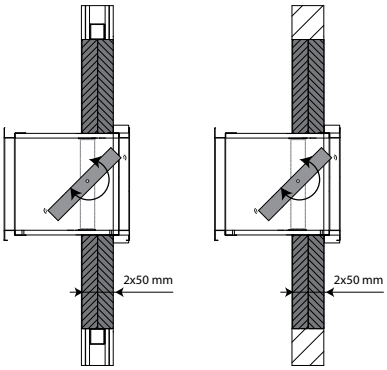

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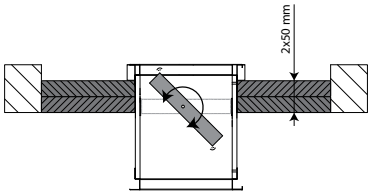


Maintenance

- No specific maintenance required.
- Schedule at least two running visual checks each year.
- Remove dust and all other particles before start-up.
- Follow the local maintenance regulations (i.e. BS9999 Annex V; NF S 61-933) and EN13306.

Operation and mechanisms

Operation and mechanisms

BLE Actuator for remote control of smoke control dampers

The actuator B(L)E is specially designed to remotely control smoke control dampers. The BLE model is intended for VU90-HOT dampers with small dimensions (W+H < 1800 mm) and for VU120 and VUW120 dampers.

1. access for manual resetting
2. plug (ST)

Unlocking

- **manual unlocking**: VUW120: turn the enclosed handle clockwise / VU120 - VU90-HOT: turn the enclosed handle anti-clockwise.
- **remote unlocking**: power cables 1 and 2.

Caution:

⚠ Do not use a drill or screwing machine.

Resetting

- **manual resetting**: VUW120: turn the enclosed handle anti-clockwise / VU120 - VU90-HOT: turn the enclosed handle clockwise.
- **motorised resetting**: power cables 1 and 3.

Caution:

⚠ Do not use a drill or screwing machine.

BE Actuator for remote control of smoke control dampers

The actuator B(L)E is specially designed to remotely control smoke control dampers. The BE model is intended for dampers with large dimensions (W+H ≥ 1800 mm).

1. access for manual resetting
2. plug (ST)

Unlocking

- **manual unlocking**: turn the enclosed handle clockwise.
- **remote unlocking**: power cables 1 and 2.

Caution:

⚠ Do not use a drill or screwing machine.

Resetting

- **manual resetting**: turn the enclosed handle anti-clockwise.
- **motorised resetting**: power cables 1 and 3.

Caution:

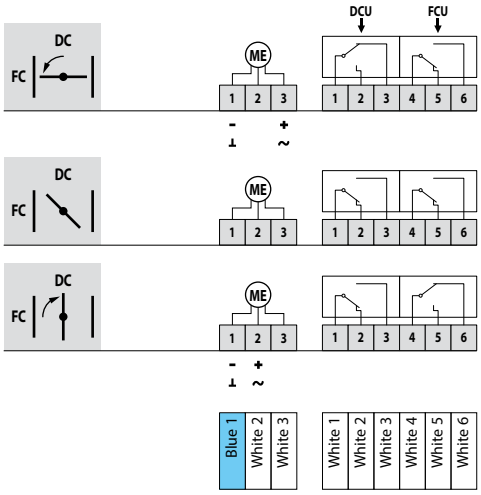
⚠ Do not use a drill or screwing machine.

Caution:

⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.

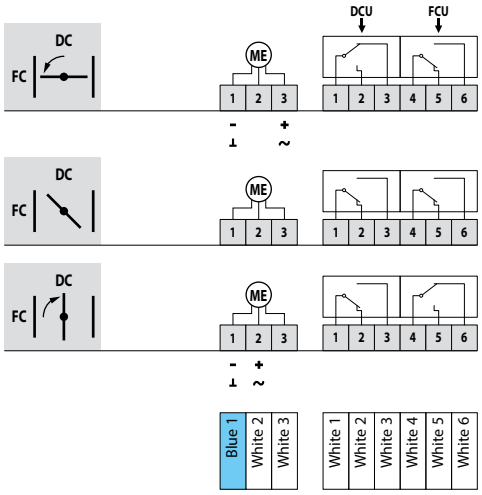
Electrical connection

BLE



DC : Switch closed position smoke evacuation shutter
FC : Switch open position smoke evacuation shutter

BE



DC : Switch closed position smoke evacuation shutter
FC : Switch open position smoke evacuation shutter

MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	Standard switches
BLE24	24 V AC/DC	N/A	0,5W	7,5W	1mA...3A, DC 5V...AC 250V
BLE24-ST	24 V AC/DC	N/A	0,5W	7,5W	1mA...3A, DC 5V...AC 250V
BLE230	230 V AC	N/A	1W	5W	1mA...3A, DC 5V...AC 250V
BE24	24 V AC/DC	N/A	0,5W	12W	1mA...6A, DC 5V...AC 250V
BE24-ST	24 V AC/DC	N/A	0,5W	12W	1mA...6A, DC 5V...AC 250V
BE230	230 V AC	N/A	0,5W	8W	1mA...6A, DC 5V...AC 250V

MEC	Resetting time motor	Running time spring	Noise level motor	Cable supply / control	Cable auxiliary switch	Protection class
BLE24	< 30 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BLE24-ST	< 30 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	1 m, 6 x 0.75 mm² (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	IP 54
BLE230	< 30 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BE24	< 60 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BE24-ST	< 60 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	1 m, 6 x 0.75 mm² (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	IP 54
BE230	< 60 s (90°)	N/A	ca. 62 dB (A)	1 m, 3 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54

Weights

Weights

VU90-HOT + BLE

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	kg	11,8	13,0	14,2	15,4	16,6	17,7	18,9	20,1	21,3	22,5	23,6	24,8	26,0	27,2	28,4	29,5	30,7	30,3	31,5	32,7	33,8
250	kg	13,0	14,2	15,5	16,7	17,9	19,2	20,4	21,7	22,9	24,2	25,4	26,7	27,9	29,2	30,4	31,6	31,3	32,5	33,8	35,0	36,3
300	kg	14,1	15,4	16,7	18,0	19,3	20,6	22,0	23,3	24,6	25,9	27,2	28,5	29,8	31,1	32,4	32,1	33,5	34,8	36,1	37,4	38,7
350	kg	15,2	16,6	18,0	19,4	20,7	22,1	23,5	24,9	26,2	27,6	29,0	30,4	31,7	33,1	32,9	34,3	35,6	37,0	38,4	39,8	41,1
400	kg	16,4	17,8	19,2	20,7	22,1	23,6	25,0	26,4	27,9	29,3	30,8	32,2	33,6	33,5	34,9	36,4	37,8	39,2	40,7	42,1	43,6
450	kg	17,5	19,0	20,5	22,0	23,5	25,0	26,5	28,0	29,5	31,0	32,5	34,0	33,9	35,5	37,0	38,5	40,0	41,5	43,0	44,5	46,0
500	kg	18,6	20,2	21,7	23,3	24,9	26,5	28,0	29,6	31,2	32,7	34,3	34,3	35,9	37,4	39,0	40,6	42,1	43,7	45,3	46,9	48,4
550	kg	19,7	21,4	23,0	24,6	26,3	27,9	29,6	31,2	32,8	34,5	34,5	36,1	37,8	39,4	41,0	42,7	44,3	45,9	47,6	49,2	50,9
600	kg	20,9	22,6	24,3	26,0	27,7	29,4	31,1	32,8	34,5	34,6	36,3	38,0	39,7	41,4	43,1	44,8	46,5	48,2	49,9	51,6	-
650	kg	22,0	23,8	25,5	27,3	29,1	30,8	32,6	34,4	34,5	36,3	38,1	39,8	41,6	43,4	45,1	46,9	48,7	50,4	52,2	-	-
700	kg	23,1	24,9	26,8	28,6	30,4	32,3	34,1	34,3	36,2	38,0	39,8	41,7	43,5	45,3	47,2	49,0	50,8	52,7	-	-	-
750	kg	24,2	26,1	28,0	29,9	31,8	33,7	34,0	35,9	37,8	39,7	41,6	43,5	45,4	47,3	49,2	51,1	53,0	-	-	-	-
800	kg	25,4	27,3	29,3	31,3	33,2	33,6	35,5	37,5	39,5	41,4	43,4	45,4	47,3	49,3	51,2	53,2	-	-	-	-	-

VU90-HOT + BE

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
550	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
600	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54,5
650	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55,2	56,9
700	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55,7	57,5	59,4
750	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,1	58,0	59,9	61,8
800	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,4	58,3	60,3	62,3	64,2

Selection data

$$\Delta p = 0{,}6 * v^2 * \zeta$$

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	ζ [-]	3,42	2,92	2,64	2,46	2,34	2,25	2,18	2,12	2,07	2,04	2,01	1,98	1,96	1,94	1,92	1,9	1,89	1,88	1,86	1,85	1,84
250	ζ [-]	1,91	1,58	1,39	1,27	1,19	1,13	1,08	1,05	1,02	0,99	0,97	0,96	0,94	0,93	0,92	0,91	0,9	0,89	0,88	0,88	0,87
300	ζ [-]	1,31	1,05	0,91	0,82	0,75	0,71	0,67	0,65	0,62	0,61	0,59	0,58	0,57	0,56	0,55	0,54	0,54	0,53	0,53	0,52	0,52
350	ζ [-]	1,01	0,79	0,66	0,59	0,54	0,5	0,47	0,45	0,43	0,42	0,41	0,4	0,39	0,38	0,37	0,37	0,36	0,36	0,35	0,35	0,35
400	ζ [-]	0,82	0,63	0,52	0,46	0,41	0,38	0,36	0,34	0,32	0,31	0,3	0,29	0,29	0,28	0,27	0,27	0,26	0,26	0,26	0,25	0,25
450	ζ [-]	0,7	0,53	0,43	0,37	0,33	0,31	0,28	0,27	0,26	0,24	0,24	0,23	0,22	0,22	0,21	0,21	0,2	0,2	0,2	0,19	0,19
500	ζ [-]	0,62	0,46	0,37	0,32	0,28	0,25	0,24	0,22	0,21	0,2	0,19	0,18	0,18	0,17	0,17	0,17	0,16	0,16	0,16	0,15	0,15
550	ζ [-]	0,56	0,41	0,32	0,27	0,24	0,22	0,2	0,19	0,18	0,17	0,16	0,15	0,15	0,14	0,14	0,14	0,13	0,13	0,13	0,13	0,13
600	ζ [-]	0,51	0,37	0,29	0,24	0,21	0,19	0,17	0,16	0,15	0,14	0,14	0,13	0,13	0,12	0,12	0,12	0,11	0,11	0,11	0,11	0,11
650	ζ [-]	0,47	0,34	0,26	0,22	0,19	0,17	0,15	0,14	0,13	0,13	0,12	0,11	0,11	0,11	0,1	0,1	0,1	0,1	0,09	0,09	0,09
700	ζ [-]	0,44	0,31	0,24	0,2	0,17	0,15	0,14	0,13	0,12	0,11	0,11	0,1	0,1	0,09	0,09	0,09	0,09	0,08	0,08	0,08	0,08
750	ζ [-]	0,42	0,29	0,23	0,18	0,16	0,14	0,13	0,12	0,11	0,1	0,1	0,09	0,09	0,08	0,08	0,08	0,08	0,07	0,07	0,07	0,07
800	ζ [-]	0,4	0,28	0,21	0,17	0,15	0,13	0,12	0,11	0,1	0,09	0,09	0,08	0,08	0,08	0,07	0,07	0,07	0,07	0,06	0,06	0,06

VU90-HOT - A-weighted sound power level in the duct

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	
200	Sn [m²]	0,0195	0,0255	0,0314	0,0374	0,0433	0,0493	0,0552	0,0612	0,0671	0,0731	0,0790	
	Sn [%]	51,85	53,80	55,08	55,99	56,67	57,20	57,62	57,96	58,24	58,48	58,69	
	Q [m³/h]	940,00	1.170,00	1.390,00	1.610,00	1.830,00	2.060,00	2.280,00	2.500,00	2.730,00	2.950,00	3.170,00	**45 dB**
	Δp [Pa]	87,32	74,13	65,70	60,35	56,65	54,48	52,35	50,68	49,70	48,55	47,60	
	Q [m³/h]	790,00	970,00	1.160,00	1.340,00	1.530,00	1.710,00	1.900,00	2.080,00	2.270,00	2.450,00	2.640,00	**40 dB**
	Δp [Pa]	61,67	50,95	45,76	41,80	39,60	37,54	36,36	35,08	34,36	33,49	33,01	
	Q [m³/h]	650,00	810,00	960,00	1.120,00	1.270,00	1.430,00	1.580,00	1.730,00	1.890,00	2.040,00	2.200,00	**35 dB**
	Δp [Pa]	41,75	35,53	31,34	29,20	27,29	26,25	25,14	24,27	23,82	23,22	22,92	
	Q [m³/h]	540,00	670,00	800,00	930,00	1.060,00	1.190,00	1.310,00	1.440,00	1.570,00	1.700,00	1.830,00	**30 dB**
	Δp [Pa]	28,82	24,31	21,76	20,14	19,01	18,18	17,28	16,82	16,44	16,12	15,86	
	Q [m³/h]	450,00	560,00	670,00	770,00	880,00	990,00	1.090,00	1.200,00	1.310,00	1.420,00	1.520,00	**25 dB**
	Δp [Pa]	20,01	16,98	15,27	13,80	13,10	12,58	11,97	11,68	11,44	11,25	10,94	
250	Sn [m²]	0,0277	0,0362	0,0446	0,0531	0,0615	0,0700	0,0784	0,0869	0,0953	0,1038	0,1122	
	Sn [%]	58,55	60,75	62,19	63,22	63,99	64,58	65,06	65,44	65,76	66,04	66,27	
	Q [m³/h]	1.130,00	1.400,00	1.660,00	1.920,00	2.190,00	2.450,00	2.710,00	2.980,00	3.240,00	3.510,00	3.770,00	**45 dB**
	Δp [Pa]	45,15	36,64	31,54	28,35	26,41	24,80	23,58	22,78	22,00	21,48	20,93	
	Q [m³/h]	940,00	1.160,00	1.380,00	1.600,00	1.820,00	2.040,00	2.260,00	2.480,00	2.700,00	2.920,00	3.140,00	**40 dB**
	Δp [Pa]	31,24	25,15	21,80	19,69	18,24	17,19	16,40	15,78	15,28	14,86	14,52	
	Q [m³/h]	790,00	970,00	1.150,00	1.330,00	1.510,00	1.700,00	1.880,00	2.060,00	2.240,00	2.430,00	2.610,00	**35 dB**
	Δp [Pa]	22,07	17,59	15,14	13,60	12,56	11,94	11,35	10,88	10,51	10,29	10,03	
	Q [m³/h]	650,00	810,00	960,00	1.110,00	1.260,00	1.410,00	1.560,00	1.720,00	1.870,00	2.020,00	2.170,00	**30 dB**
	Δp [Pa]	14,94	12,26	10,55	9,47	8,74	8,21	7,81	7,59	7,33	7,11	6,94	
	Q [m³/h]	540,00	670,00	800,00	920,00	1.050,00	1.180,00	1.300,00	1.430,00	1.550,00	1.680,00	1.810,00	**25 dB**
	Δp [Pa]	10,31	8,39	7,32	6,51	6,07	5,75	5,43	5,25	5,03	4,92	4,83	

Selection data

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	
300	Sn [m²]	0,0359	0,0469	0,0578	0,0688	0,0797	0,0907	0,1016	0,1126	0,1235	0,1345	0,1454	
	Sn [%]	62,97	65,33	66,89	67,99	68,82	69,46	69,97	70,38	70,73	71,02	71,27	
	Q [m³/h]	1.320,00	1.630,00	1.930,00	2.230,00	2.540,00	2.840,00	3.150,00	3.450,00	3.750,00	4.060,00	4.360,00	45 dB
	Δp [Pa]	29,41	23,00	19,32	17,04	15,63	14,50	13,75	13,08	12,55	12,17	11,80	
	Q [m³/h]	1.100,00	1.350,00	1.610,00	1.860,00	2.110,00	2.370,00	2.620,00	2.870,00	3.120,00	3.380,00	3.630,00	40 dB
	Δp [Pa]	20,42	15,78	13,44	11,85	10,78	10,10	9,51	9,05	8,69	8,44	8,18	
	Q [m³/h]	920,00	1.130,00	1.340,00	1.550,00	1.760,00	1.970,00	2.180,00	2.390,00	2.600,00	2.810,00	3.020,00	35 dB
	Δp [Pa]	14,29	11,05	9,31	8,23	7,50	6,98	6,58	6,28	6,03	5,83	5,66	
	Q [m³/h]	760,00	940,00	1.110,00	1.290,00	1.460,00	1.640,00	1.810,00	1.990,00	2.160,00	2.340,00	2.510,00	30 dB
	Δp [Pa]	9,75	7,65	6,39	5,70	5,16	4,84	4,54	4,35	4,16	4,04	3,91	
	Q [m³/h]	640,00	780,00	930,00	1.070,00	1.220,00	1.360,00	1.510,00	1.650,00	1.800,00	1.950,00	2.090,00	25 dB
	Δp [Pa]	6,91	5,27	4,48	3,92	3,61	3,33	3,16	2,99	2,89	2,81	2,71	
350	Sn [m²]	0,0441	0,0576	0,0710	0,0845	0,0979	0,1114	0,1248	0,1383	0,1517	0,1652	0,1786	
	Sn [%]	66,11	68,58	70,22	71,38	72,24	72,91	73,45	73,89	74,25	74,55	74,82	
	Q [m³/h]	1.510,00	1.860,00	2.200,00	2.550,00	2.890,00	3.230,00	3.580,00	3.920,00	4.260,00	4.600,00	4.950,00	45 dB
	Δp [Pa]	21,67	16,44	13,51	11,82	10,61	9,74	9,15	8,64	8,24	7,91	7,67	
	Q [m³/h]	1.260,00	1.550,00	1.830,00	2.120,00	2.400,00	2.690,00	2.980,00	3.260,00	3.550,00	3.830,00	4.120,00	40 dB
	Δp [Pa]	15,09	11,41	9,35	8,17	7,32	6,76	6,34	5,98	5,72	5,49	5,32	
	Q [m³/h]	1.050,00	1.290,00	1.530,00	1.760,00	2.000,00	2.240,00	2.480,00	2.710,00	2.950,00	3.190,00	3.430,00	35 dB
	Δp [Pa]	10,48	7,91	6,54	5,63	5,08	4,69	4,39	4,13	3,95	3,81	3,68	
	Q [m³/h]	870,00	1.070,00	1.270,00	1.470,00	1.670,00	1.860,00	2.060,00	2.260,00	2.460,00	2.650,00	2.850,00	30 dB
	Δp [Pa]	7,19	5,44	4,50	3,93	3,54	3,23	3,03	2,87	2,75	2,63	2,54	
	Q [m³/h]	730,00	890,00	1.060,00	1.220,00	1.390,00	1.550,00	1.710,00	1.880,00	2.040,00	2.210,00	2.370,00	25 dB
	Δp [Pa]	5,06	3,76	3,14	2,71	2,45	2,24	2,09	1,99	1,89	1,83	1,76	
400	Sn [m²]	0,0523	0,0683	0,0842	0,1002	0,1161	0,1321	0,1480	0,1640	0,1799	0,1959	0,2118	
	Sn [%]	68,44	71,01	72,70	73,90	74,80	75,49	76,05	76,50	76,88	77,19	77,46	
	Q [m³/h]	1.700,00	2.090,00	2.470,00	2.850,00	3.240,00	3.620,00	4.000,00	4.380,00	4.770,00	5.150,00	5.530,00	45 dB
	Δp [Pa]	17,21	12,72	10,27	8,79	7,85	7,14	6,62	6,21	5,92	5,66	5,44	
	Q [m³/h]	1.420,00	1.740,00	2.060,00	2.380,00	2.690,00	3.010,00	3.330,00	3.650,00	3.970,00	4.280,00	4.600,00	40 dB
	Δp [Pa]	12,01	8,82	7,14	6,13	5,41	4,94	4,59	4,32	4,10	3,91	3,76	
	Q [m³/h]	1.180,00	1.450,00	1.710,00	1.980,00	2.240,00	2.510,00	2.770,00	3.040,00	3.300,00	3.560,00	3.830,00	35 dB
	Δp [Pa]	8,29	6,12	4,92	4,24	3,75	3,43	3,17	2,99	2,83	2,70	2,61	
	Q [m³/h]	980,00	1.200,00	1.430,00	1.650,00	1.870,00	2.090,00	2.310,00	2.530,00	2.750,00	2.970,00	3.190,00	30 dB
	Δp [Pa]	5,72	4,19	3,44	2,94	2,61	2,38	2,21	2,07	1,97	1,88	1,81	
	Q [m³/h]	820,00	1.000,00	1.190,00	1.370,00	1.550,00	1.740,00	1.920,00	2.100,00	2.280,00	2.470,00	2.650,00	25 dB
	Δp [Pa]	4,00	2,91	2,38	2,03	1,80	1,65	1,52	1,43	1,35	1,30	1,25	
450	Sn [m²]	0,0605	0,0790	0,0974	0,1159	0,1343	0,1528	0,1712	0,1897	0,2081	0,2266	0,2450	
	Sn [%]	70,26	72,89	74,63	75,86	76,78	77,49	78,06	78,52	78,91	79,24	79,52	
	Q [m³/h]	1.900,00	2.320,00	2.740,00	3.160,00	3.580,00	4.010,00	4.430,00	4.850,00	5.270,00	5.690,00	6.110,00	45 dB
	Δp [Pa]	14,52	10,39	8,25	6,97	6,13	5,56	5,11	4,77	4,50	4,28	4,10	
	Q [m³/h]	1.580,00	1.930,00	2.280,00	2.630,00	2.980,00	3.330,00	3.680,00	4.030,00	4.380,00	4.730,00	5.080,00	40 dB
	Δp [Pa]	10,04	7,19	5,71	4,83	4,24	3,83	3,53	3,29	3,11	2,96	2,84	
	Q [m³/h]	1.310,00	1.610,00	1.900,00	2.190,00	2.480,00	2.770,00	3.060,00	3.350,00	3.650,00	3.940,00	4.230,00	35 dB
	Δp [Pa]	6,90	5,00	3,97	3,35	2,94	2,65	2,44	2,28	2,16	2,05	1,97	
	Q [m³/h]	1.090,00	1.340,00	1.580,00	1.820,00	2.070,00	2.310,00	2.550,00	2.790,00	3.030,00	3.280,00	3.520,00	30 dB
	Δp [Pa]	4,78	3,46	2,74	2,31	2,05	1,84	1,69	1,58	1,49	1,42	1,36	
	Q [m³/h]	910,00	1.110,00	1.320,00	1.520,00	1.720,00	1.920,00	2.120,00	2.320,00	2.520,00	2.730,00	2.930,00	25 dB
	Δp [Pa]	3,33	2,38	1,91	1,61	1,41	1,27	1,17	1,09	1,03	0,99	0,94	

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	
500	Sn [m²]	0,0687	0,0897	0,1106	0,1316	0,1525	0,1735	0,1944	0,2154	0,2363	0,2573	0,2782	
	Sn [%]	71,70	74,39	76,16	77,42	78,36	79,09	79,67	80,14	80,53	80,87	81,15	
	Q [m³/h]	2.090,00	2.550,00	3.010,00	3.470,00	3.930,00	4.390,00	4.850,00	5.310,00	5.760,00	6.220,00	6.680,00	45 dB
	Δp [Pa]	12,54	8,81	6,90	5,76	5,02	4,49	4,11	3,81	3,57	3,38	3,23	
	Q [m³/h]	1.740,00	2.120,00	2.510,00	2.890,00	3.270,00	3.650,00	4.030,00	4.410,00	4.800,00	5.180,00	5.560,00	40 dB
	Δp [Pa]	8,69	6,09	4,80	4,00	3,47	3,11	2,84	2,63	2,48	2,35	2,24	
	Q [m³/h]	1.450,00	1.770,00	2.080,00	2.400,00	2.720,00	3.040,00	3.360,00	3.670,00	3.990,00	4.310,00	4.620,00	35 dB
	Δp [Pa]	6,04	4,24	3,29	2,76	2,40	2,15	1,97	1,82	1,71	1,63	1,55	
	Q [m³/h]	1.200,00	1.470,00	1.740,00	2.000,00	2.260,00	2.530,00	2.790,00	3.060,00	3.320,00	3.580,00	3.850,00	30 dB
	Δp [Pa]	4,13	2,93	2,30	1,91	1,66	1,49	1,36	1,27	1,19	1,12	1,07	
	Q [m³/h]	1.000,00	1.220,00	1.440,00	1.660,00	1.880,00	2.100,00	2.320,00	2.540,00	2.760,00	2.980,00	3.200,00	25 dB
	Δp [Pa]	2,87	2,02	1,58	1,32	1,15	1,03	0,94	0,87	0,82	0,78	0,74	
550	Sn [m²]	0,0769	0,1004	0,1238	0,1473	0,1707	0,1942	0,2176	0,2411	0,2645	0,2880	0,3114	
	Sn [%]	72,88	75,61	77,42	78,69	79,65	80,39	80,98	81,46	81,86	82,20	82,49	
	Q [m³/h]	2.280,00	2.780,00	3.280,00	3.780,00	4.270,00	4.770,00	5.270,00	5.760,00	6.260,00	6.750,00	7.250,00	45 dB
	Δp [Pa]	11,11	7,68	5,94	4,91	4,22	3,75	3,41	3,14	2,94	2,77	2,64	
	Q [m³/h]	1.900,00	2.310,00	2.730,00	3.140,00	3.560,00	3.970,00	4.380,00	4.790,00	5.210,00	5.620,00	6.030,00	40 dB
	Δp [Pa]	7,71	5,30	4,11	3,39	2,93	2,60	2,36	2,17	2,04	1,92	1,82	
	Q [m³/h]	1.580,00	1.920,00	2.270,00	2.620,00	2.960,00	3.300,00	3.650,00	3.990,00	4.330,00	4.670,00	5.020,00	35 dB
	Δp [Pa]	5,33	3,66	2,84	2,36	2,03	1,80	1,64	1,51	1,41	1,33	1,26	
	Q [m³/h]	1.310,00	1.600,00	1.890,00	2.180,00	2.460,00	2.750,00	3.030,00	3.320,00	3.600,00	3.890,00	4.170,00	30 dB
	Δp [Pa]	3,67	2,54	1,97	1,63	1,40	1,25	1,13	1,04	0,97	0,92	0,87	
	Q [m³/h]	1.090,00	1.330,00	1.570,00	1.810,00	2.050,00	2.290,00	2.520,00	2.760,00	3.000,00	3.240,00	3.470,00	25 dB
	Δp [Pa]	2,54	1,76	1,36	1,13	0,97	0,87	0,78	0,72	0,68	0,64	0,60	
600	Sn [m²]	0,0851	0,1111	0,1370	0,1630	0,1889	0,2149	0,2408	0,2668	0,2927	0,3187	0,3446	
	Sn [%]	73,86	76,63	78,46	79,75	80,72	81,47	82,07	82,56	82,96	83,30	83,60	
	Q [m³/h]	2.470,00	3.010,00	3.550,00	4.080,00	4.620,00	5.150,00	5.680,00	6.220,00	6.750,00	7.280,00	7.810,00	45 dB
	Δp [Pa]	10,03	6,84	5,23	4,26	3,65	3,22	2,90	2,67	2,48	2,33	2,20	
	Q [m³/h]	2.050,00	2.500,00	2.950,00	3.400,00	3.840,00	4.290,00	4.730,00	5.170,00	5.620,00	6.060,00	6.500,00	40 dB
	Δp [Pa]	6,91	4,72	3,61	2,96	2,52	2,23	2,01	1,84	1,72	1,61	1,53	
	Q [m³/h]	1.710,00	2.080,00	2.460,00	2.830,00	3.200,00	3.570,00	3.940,00	4.300,00	4.670,00	5.040,00	5.410,00	35 dB
	Δp [Pa]	4,81	3,26	2,51	2,05	1,75	1,55	1,40	1,27	1,19	1,11	1,06	
	Q [m³/h]	1.420,00	1.730,00	2.040,00	2.350,00	2.660,00	2.970,00	3.270,00	3.580,00	3.890,00	4.190,00	4.500,00	30 dB
	Δp [Pa]	3,32	2,26	1,73	1,41	1,21	1,07	0,96	0,88	0,82	0,77	0,73	
	Q [m³/h]	1.180,00	1.440,00	1.700,00	1.960,00	2.210,00	2.470,00	2.720,00	2.980,00	3.230,00	3.490,00	3.740,00	25 dB
	Δp [Pa]	2,29	1,56	1,20	0,98	0,84	0,74	0,66	0,61	0,57	0,53	0,50	
650	Sn [m²]	0,0933	0,1218	0,1502	0,1787	0,2071	0,2356	0,2640	0,2925	0,3209	0,3494	0,3778	
	Sn [%]	74,69	77,49	79,34	80,65	81,63	82,38	82,99	83,48	83,89	84,24	84,53	
	Q [m³/h]	2.660,00	3.240,00	3.810,00	4.390,00	4.960,00	5.530,00	6.100,00	6.670,00	7.240,00	7.810,00	8.380,00	45 dB
	Δp [Pa]	9,20	6,19	4,66	3,79	3,21	2,81	2,52	2,30	2,13	2,00	1,89	
	Q [m³/h]	2.210,00	2.690,00	3.170,00	3.650,00	4.130,00	4.600,00	5.080,00	5.550,00	6.020,00	6.500,00	6.970,00	40 dB
	Δp [Pa]	6,35	4,27	3,23	2,62	2,23	1,95	1,75	1,60	1,48	1,38	1,30	
	Q [m³/h]	1.840,00	2.240,00	2.640,00	3.040,00	3.430,00	3.830,00	4.220,00	4.620,00	5.010,00	5.400,00	5.800,00	35 dB
	Δp [Pa]	4,40	2,96	2,24	1,82	1,54	1,35	1,21	1,11	1,02	0,95	0,90	
	Q [m³/h]	1.530,00	1.870,00	2.200,00	2.530,00	2.860,00	3.190,00	3.510,00	3.840,00	4.170,00	4.500,00	4.820,00	30 dB
	Δp [Pa]	3,04	2,06	1,55	1,26	1,07	0,94	0,84	0,76	0,71	0,66	0,62	
	Q [m³/h]	1.280,00	1.550,00	1.830,00	2.100,00	2.380,00	2.650,00	2.920,00	3.200,00	3.470,00	3.740,00	4.010,00	25 dB
	Δp [Pa]	2,13	1,42	1,07	0,87	0,74	0,65	0,58	0,53	0,49	0,46	0,43	

Selection data

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	
700	Sn [m²]	0,1015	0,1325	0,1634	0,1944	0,2253	0,2563	0,2872	0,3182	0,3491	0,3801	0,4110	
	Sn [%]	75,40	78,23	80,09	81,41	82,40	83,17	83,78	84,27	84,69	85,04	85,34	
	Q [m³/h]	2.850,00	3.470,00	4.080,00	4.690,00	5.300,00	5.910,00	6.520,00	7.120,00	7.730,00	8.330,00	8.940,00	45 dB
	Δp [Pa]	8,54	5,68	4,24	3,40	2,87	2,50	2,23	2,03	1,87	1,74	1,64	
	Q [m³/h]	2.370,00	2.880,00	3.400,00	3.900,00	4.410,00	4.920,00	5.420,00	5.930,00	6.430,00	6.930,00	7.430,00	40 dB
	Δp [Pa]	5,90	3,91	2,94	2,35	1,99	1,73	1,54	1,41	1,29	1,20	1,13	
	Q [m³/h]	1.970,00	2.400,00	2.830,00	3.250,00	3.670,00	4.090,00	4.510,00	4.930,00	5.350,00	5.770,00	6.190,00	35 dB
	Δp [Pa]	4,08	2,72	2,04	1,63	1,37	1,20	1,07	0,97	0,90	0,84	0,79	
	Q [m³/h]	1.640,00	2.000,00	2.350,00	2.700,00	3.050,00	3.400,00	3.750,00	4.100,00	4.450,00	4.800,00	5.150,00	30 dB
	Δp [Pa]	2,83	1,89	1,41	1,13	0,95	0,83	0,74	0,67	0,62	0,58	0,54	
	Q [m³/h]	1.370,00	1.660,00	1.960,00	2.250,00	2.540,00	2.830,00	3.120,00	3.410,00	3.700,00	3.990,00	4.280,00	25 dB
	Δp [Pa]	1,97	1,30	0,98	0,78	0,66	0,57	0,51	0,46	0,43	0,40	0,38	
750	Sn [m²]	0,1097	0,1432	0,1766	0,2101	0,2435	0,2770	0,3104	0,3439	0,3773	0,4108	0,4442	
	Sn [%]	76,01	78,86	80,74	82,08	83,07	83,84	84,46	84,96	85,38	85,73	86,03	
	Q [m³/h]	3.040,00	3.700,00	4.350,00	5.000,00	5.640,00	6.290,00	6.930,00	7.570,00	8.210,00	8.850,00	9.490,00	45 dB
	Δp [Pa]	8,00	5,26	3,90	3,11	2,59	2,25	2,00	1,81	1,66	1,54	1,44	
	Q [m³/h]	2.530,00	3.080,00	3.620,00	4.160,00	4.700,00	5.230,00	5.770,00	6.300,00	6.830,00	7.370,00	7.900,00	40 dB
	Δp [Pa]	5,54	3,65	2,70	2,15	1,80	1,56	1,38	1,25	1,15	1,07	1,00	
	Q [m³/h]	2.100,00	2.560,00	3.010,00	3.460,00	3.910,00	4.350,00	4.800,00	5.240,00	5.690,00	6.130,00	6.570,00	35 dB
	Δp [Pa]	3,82	2,52	1,86	1,49	1,25	1,08	0,96	0,87	0,80	0,74	0,69	
	Q [m³/h]	1.750,00	2.130,00	2.500,00	2.880,00	3.250,00	3.620,00	3.990,00	4.360,00	4.730,00	5.100,00	5.470,00	30 dB
	Δp [Pa]	2,65	1,74	1,29	1,03	0,86	0,75	0,66	0,60	0,55	0,51	0,48	
	Q [m³/h]	1.460,00	1.770,00	2.080,00	2.400,00	2.700,00	3.010,00	3.320,00	3.630,00	3.940,00	4.240,00	4.550,00	25 dB
	Δp [Pa]	1,84	1,20	0,89	0,72	0,59	0,52	0,46	0,42	0,38	0,35	0,33	
800	Sn [m²]	0,1179	0,1539	0,1898	0,2258	0,2617	0,2977	0,3336	0,3696	0,4055	0,4415	0,4774	
	Sn [%]	76,55	79,42	81,31	82,66	83,66	84,44	85,05	85,56	85,98	86,34	86,64	
	Q [m³/h]	3.230,00	3.920,00	4.610,00	5.300,00	5.980,00	6.660,00	7.340,00	8.020,00	8.700,00	9.380,00	10.050,00	45 dB
	Δp [Pa]	7,55	4,90	3,60	2,86	2,37	2,04	1,81	1,63	1,49	1,38	1,29	
	Q [m³/h]	2.690,00	3.270,00	3.840,00	4.410,00	4.980,00	5.540,00	6.110,00	6.670,00	7.240,00	7.800,00	8.360,00	40 dB
	Δp [Pa]	5,23	3,41	2,50	1,98	1,65	1,41	1,25	1,13	1,03	0,96	0,89	
	Q [m³/h]	2.240,00	2.720,00	3.190,00	3.670,00	4.140,00	4.610,00	5.080,00	5.550,00	6.020,00	6.490,00	6.960,00	35 dB
	Δp [Pa]	3,63	2,36	1,72	1,37	1,14	0,98	0,87	0,78	0,71	0,66	0,62	
	Q [m³/h]	1.860,00	2.260,00	2.660,00	3.050,00	3.450,00	3.840,00	4.230,00	4.620,00	5.010,00	5.400,00	5.790,00	30 dB
	Δp [Pa]	2,50	1,63	1,20	0,95	0,79	0,68	0,60	0,54	0,49	0,46	0,43	
	Q [m³/h]	1.550,00	1.880,00	2.210,00	2.540,00	2.870,00	3.190,00	3.520,00	3.840,00	4.170,00	4.490,00	4.820,00	25 dB
	Δp [Pa]	1,74	1,13	0,83	0,66	0,55	0,47	0,42	0,37	0,34	0,32	0,30	

Hn\Wn [mm]		750	800	850	900	950	1000	1050	1100	1150	1200		
200	Sn [m²]	0,0850	0,0909	0,0969	0,1028	0,1088	0,1147	0,1207	0,1266	0,1326	0,1385		
	Sn [%]	58,87	59,02	59,16	59,28	59,39	59,49	59,58	59,66	59,73	59,80		
	Q [m³/h]	3.400,00	3.620,00	3.840,00	4.070,00	4.290,00	4.510,00	4.730,00	4.960,00	5.180,00	5.400,00		45 dB
	Δp [Pa]	47,06	46,34	45,71	45,38	44,89	44,44	44,04	43,86	43,53	43,23		
	Q [m³/h]	2.830,00	3.010,00	3.200,00	3.380,00	3.570,00	3.750,00	3.940,00	4.120,00	4.310,00	4.500,00		40 dB
	Δp [Pa]	32,60	32,04	31,74	31,30	31,08	30,73	30,56	30,26	30,14	30,02		
	Q [m³/h]	2.350,00	2.510,00	2.660,00	2.810,00	2.970,00	3.120,00	3.280,00	3.430,00	3.590,00	3.740,00		35 dB
	Δp [Pa]	22,48	22,28	21,93	21,63	21,51	21,27	21,18	20,98	20,91	20,73		
	Q [m³/h]	1.960,00	2.090,00	2.210,00	2.340,00	2.470,00	2.600,00	2.730,00	2.860,00	2.980,00	3.110,00		30 dB
	Δp [Pa]	15,64	15,45	15,14	15,00	14,88	14,77	14,67	14,58	14,41	14,34		
	Q [m³/h]	1.630,00	1.740,00	1.840,00	1.950,00	2.060,00	2.160,00	2.270,00	2.380,00	2.480,00	2.590,00		25 dB
	Δp [Pa]	10,82	10,71	10,50	10,42	10,35	10,19	10,14	10,10	9,98	9,94		

Hn\Wn [mm]		750	800	850	900	950	1000	1050	1100	1150	1200		
250	Sn [m²]	0,1207	0,1291	0,1376	0,1460	0,1545	0,1629	0,1714	0,1798	0,1883	0,1967		
	Sn [%]	66,47	66,65	66,80	66,94	67,06	67,17	67,27	67,36	67,45	67,52		
	Q [m³/h]	4.030,00	4.300,00	4.560,00	4.820,00	5.090,00	5.350,00	5.620,00	5.880,00	6.140,00	6.410,00		45 dB
	Δp [Pa]	20,47	20,17	19,82	19,51	19,32	19,07	18,92	18,72	18,54	18,44		
	Q [m³/h]	3.360,00	3.570,00	3.790,00	4.010,00	4.230,00	4.450,00	4.670,00	4.890,00	5.110,00	5.330,00		40 dB
	Δp [Pa]	14,23	13,90	13,69	13,51	13,34	13,20	13,07	12,95	12,84	12,75		
	Q [m³/h]	2.790,00	2.970,00	3.160,00	3.340,00	3.520,00	3.700,00	3.890,00	4.070,00	4.250,00	4.430,00		35 dB
	Δp [Pa]	9,81	9,62	9,52	9,37	9,24	9,12	9,07	8,97	8,88	8,81		
	Q [m³/h]	2.320,00	2.480,00	2.630,00	2.780,00	2.930,00	3.080,00	3.230,00	3.390,00	3.540,00	3.690,00		30 dB
	Δp [Pa]	6,78	6,71	6,59	6,49	6,40	6,32	6,25	6,22	6,16	6,11		
	Q [m³/h]	1.930,00	2.060,00	2.190,00	2.310,00	2.440,00	2.570,00	2.690,00	2.820,00	2.940,00	3.070,00		25 dB
	Δp [Pa]	4,70	4,63	4,57	4,48	4,44	4,40	4,34	4,31	4,25	4,23		
300	Sn [m²]	0,1564	0,1673	0,1783	0,1892	0,2002	0,2111	0,2221	0,2330	0,2440	0,2549		
	Sn [%]	71,49	71,68	71,84	71,99	72,12	72,24	72,35	72,45	72,54	72,62		
	Q [m³/h]	4.660,00	4.970,00	5.270,00	5.580,00	5.880,00	6.180,00	6.490,00	6.790,00	7.090,00	7.400,00		45 dB
	Δp [Pa]	11,49	11,27	11,04	10,88	10,70	10,54	10,42	10,29	10,18	10,10		
	Q [m³/h]	3.880,00	4.130,00	4.390,00	4.640,00	4.890,00	5.140,00	5.400,00	5.650,00	5.900,00	6.160,00		40 dB
	Δp [Pa]	7,97	7,79	7,66	7,52	7,40	7,29	7,22	7,13	7,05	7,00		
	Q [m³/h]	3.230,00	3.440,00	3.650,00	3.860,00	4.070,00	4.280,00	4.490,00	4.700,00	4.910,00	5.120,00		35 dB
	Δp [Pa]	5,52	5,40	5,30	5,21	5,12	5,05	4,99	4,93	4,88	4,83		
	Q [m³/h]	2.690,00	2.860,00	3.040,00	3.210,00	3.390,00	3.560,00	3.740,00	3.910,00	4.090,00	4.260,00		30 dB
	Δp [Pa]	3,83	3,73	3,67	3,60	3,56	3,50	3,46	3,41	3,39	3,35		
	Q [m³/h]	2.240,00	2.380,00	2.530,00	2.670,00	2.820,00	2.960,00	3.110,00	3.250,00	3.400,00	3.550,00		25 dB
	Δp [Pa]	2,66	2,59	2,54	2,49	2,46	2,42	2,39	2,36	2,34	2,32		
350	Sn [m²]	0,1921	0,2055	0,2190	0,2324	0,2459	0,2593	0,2728	0,2862	0,2997	0,3131		
	Sn [%]	75,04	75,24	75,42	75,57	75,71	75,84	75,95	76,05	76,15	76,23		
	Q [m³/h]	5.290,00	5.630,00	5.980,00	6.320,00	6.660,00	7.010,00	7.350,00	7.690,00	8.030,00	8.380,00		45 dB
	Δp [Pa]	7,44	7,24	7,10	6,95	6,82	6,72	6,61	6,52	6,43	6,37		
	Q [m³/h]	4.400,00	4.690,00	4.970,00	5.260,00	5.540,00	5.830,00	6.110,00	6.400,00	6.680,00	6.970,00		40 dB
	Δp [Pa]	5,15	5,03	4,90	4,81	4,72	4,65	4,57	4,51	4,45	4,41		
	Q [m³/h]	3.660,00	3.900,00	4.140,00	4.370,00	4.610,00	4.850,00	5.090,00	5.320,00	5.560,00	5.800,00		35 dB
	Δp [Pa]	3,56	3,48	3,40	3,32	3,27	3,22	3,17	3,12	3,08	3,05		
	Q [m³/h]	3.050,00	3.250,00	3.440,00	3.640,00	3.840,00	4.040,00	4.230,00	4.430,00	4.630,00	4.820,00		30 dB
	Δp [Pa]	2,47	2,41	2,35	2,30	2,27	2,23	2,19	2,16	2,14	2,11		
	Q [m³/h]	2.540,00	2.700,00	2.860,00	3.030,00	3.190,00	3.360,00	3.520,00	3.690,00	3.850,00	4.010,00		25 dB
	Δp [Pa]	1,72	1,67	1,62	1,60	1,56	1,54	1,52	1,50	1,48	1,46		
400	Sn [m²]	0,2278	0,2437	0,2597	0,2756	0,2916	0,3075	0,3235	0,3394	0,3554	0,3713		
	Sn [%]	77,70	77,91	78,09	78,25	78,39	78,52	78,64	78,74	78,84	78,93		
	Q [m³/h]	5.910,00	6.290,00	6.670,00	7.060,00	7.440,00	7.820,00	8.200,00	8.580,00	8.960,00	9.340,00		45 dB
	Δp [Pa]	5,26	5,10	4,97	4,86	4,76	4,67	4,59	4,52	4,45	4,39		
	Q [m³/h]	4.920,00	5.240,00	5.550,00	5.870,00	6.190,00	6.500,00	6.820,00	7.140,00	7.460,00	7.770,00		40 dB
	Δp [Pa]	3,64	3,54	3,44	3,36	3,30	3,23	3,17	3,13	3,08	3,04		
	Q [m³/h]	4.090,00	4.360,00	4.620,00	4.880,00	5.150,00	5.410,00	5.680,00	5.940,00	6.200,00	6.470,00		35 dB
	Δp [Pa]	2,52	2,45	2,38	2,32	2,28	2,24	2,20	2,16	2,13	2,11		
	Q [m³/h]	3.400,00	3.620,00	3.840,00	4.060,00	4.280,00	4.500,00	4.720,00	4.940,00	5.160,00	5.380,00		30 dB
	Δp [Pa]	1,74	1,69	1,65	1,61	1,58	1,55	1,52	1,50	1,48	1,46		
	Q [m³/h]	2.830,00	3.020,00	3.200,00	3.380,00	3.560,00	3.750,00	3.930,00	4.110,00	4.290,00	4.480,00		25 dB
	Δp [Pa]	1,21	1,18	1,14	1,12	1,09	1,07	1,05	1,04	1,02	1,01		

Selection data

Hn\Wn [mm]		750	800	850	900	950	1000	1050	1100	1150	1200		
450	Sn [m²]	0,2635	0,2819	0,3004	0,3188	0,3373	0,3557	0,3742	0,3926	0,4111	0,4295		
	Sn [%]	79,76	79,97	80,15	80,32	80,47	80,60	80,72	80,83	80,93	81,02		
	Q [m³/h]	6.530,00	6.950,00	7.360,00	7.780,00	8.200,00	8.620,00	9.040,00	9.460,00	9.880,00	10.300,00		45 dB
	Δp [Pa]	3,95	3,83	3,71	3,61	3,53	3,45	3,39	3,33	3,28	3,23		
	Q [m³/h]	5.430,00	5.780,00	6.130,00	6.480,00	6.830,00	7.170,00	7.520,00	7.870,00	8.220,00	8.570,00		40 dB
	Δp [Pa]	2,73	2,65	2,57	2,50	2,45	2,39	2,34	2,30	2,27	2,23		
	Q [m³/h]	4.520,00	4.810,00	5.100,00	5.390,00	5.680,00	5.970,00	6.260,00	6.550,00	6.840,00	7.130,00		35 dB
	Δp [Pa]	1,89	1,83	1,78	1,73	1,69	1,66	1,62	1,60	1,57	1,55		
	Q [m³/h]	3.760,00	4.000,00	4.240,00	4.480,00	4.720,00	4.970,00	5.210,00	5.450,00	5.690,00	5.930,00		30 dB
	Δp [Pa]	1,31	1,27	1,23	1,20	1,17	1,15	1,13	1,10	1,09	1,07		
	Q [m³/h]	3.130,00	3.330,00	3.530,00	3.730,00	3.930,00	4.130,00	4.330,00	4.530,00	4.730,00	4.940,00		25 dB
	Δp [Pa]	0,91	0,88	0,85	0,83	0,81	0,79	0,78	0,76	0,75	0,74		
500	Sn [m²]	0,2992	0,3201	0,3411	0,3620	0,3830	0,4039	0,4249	0,4458	0,4668	0,4877		
	Sn [%]	81,40	81,61	81,80	81,97	82,12	82,26	82,38	82,49	82,59	82,69		
	Q [m³/h]	7.140,00	7.590,00	8.050,00	8.510,00	8.960,00	9.420,00	9.880,00	10.330,00	10.790,00	11.250,00		45 dB
	Δp [Pa]	3,10	2,99	2,89	2,81	2,74	2,68	2,62	2,57	2,52	2,48		
	Q [m³/h]	5.940,00	6.320,00	6.700,00	7.080,00	7.460,00	7.840,00	8.220,00	8.600,00	8.980,00	9.360,00		40 dB
	Δp [Pa]	2,15	2,07	2,01	1,95	1,90	1,85	1,81	1,78	1,75	1,72		
	Q [m³/h]	4.940,00	5.260,00	5.570,00	5.890,00	6.200,00	6.520,00	6.840,00	7.150,00	7.470,00	7.790,00		35 dB
	Δp [Pa]	1,49	1,43	1,39	1,35	1,31	1,28	1,26	1,23	1,21	1,19		
	Q [m³/h]	4.110,00	4.370,00	4.640,00	4.900,00	5.160,00	5.430,00	5.690,00	5.950,00	6.210,00	6.480,00		30 dB
	Δp [Pa]	1,03	0,99	0,96	0,93	0,91	0,89	0,87	0,85	0,84	0,82		
	Q [m³/h]	3.420,00	3.640,00	3.860,00	4.080,00	4.300,00	4.510,00	4.730,00	4.950,00	5.170,00	5.390,00		25 dB
	Δp [Pa]	0,71	0,69	0,67	0,65	0,63	0,61	0,60	0,59	0,58	0,57		
550	Sn [m²]	0,3349	0,3583	0,3818	0,4052	0,4287	0,4521	0,4756	0,4990	0,5225	0,5459		
	Sn [%]	82,74	82,96	83,15	83,32	83,47	83,61	83,74	83,85	83,95	84,05		
	Q [m³/h]	7.740,00	8.240,00	8.730,00	9.220,00	9.720,00	10.210,00	10.710,00	11.200,00	11.690,00	12.190,00		45 dB
	Δp [Pa]	2,52	2,42	2,34	2,26	2,20	2,15	2,10	2,05	2,01	1,98		
	Q [m³/h]	6.440,00	6.850,00	7.260,00	7.670,00	8.080,00	8.500,00	8.910,00	9.320,00	9.730,00	10.140,00		40 dB
	Δp [Pa]	1,74	1,67	1,62	1,57	1,52	1,49	1,45	1,42	1,39	1,37		
	Q [m³/h]	5.360,00	5.700,00	6.040,00	6.380,00	6.730,00	7.070,00	7.410,00	7.750,00	8.090,00	8.430,00		35 dB
	Δp [Pa]	1,21	1,16	1,12	1,08	1,06	1,03	1,00	0,98	0,96	0,95		
	Q [m³/h]	4.460,00	4.740,00	5.030,00	5.310,00	5.600,00	5.880,00	6.160,00	6.450,00	6.730,00	7.020,00		30 dB
	Δp [Pa]	0,84	0,80	0,78	0,75	0,73	0,71	0,69	0,68	0,67	0,66		
	Q [m³/h]	3.710,00	3.950,00	4.180,00	4.420,00	4.660,00	4.890,00	5.130,00	5.370,00	5.600,00	5.840,00		25 dB
	Δp [Pa]	0,58	0,56	0,54	0,52	0,51	0,49	0,48	0,47	0,46	0,45		
600	Sn [m²]	0,3706	0,3965	0,4225	0,4484	0,4744	0,5003	0,5263	0,5522	0,5782	0,6041		
	Sn [%]	83,85	84,07	84,27	84,44	84,60	84,74	84,86	84,98	85,08	85,18		
	Q [m³/h]	8.340,00	8.870,00	9.410,00	9.940,00	10.470,00	11.000,00	11.530,00	12.060,00	12.590,00	13.120,00		45 dB
	Δp [Pa]	2,10	2,01	1,94	1,88	1,82	1,77	1,72	1,69	1,65	1,62		
	Q [m³/h]	6.940,00	7.380,00	7.830,00	8.270,00	8.710,00	9.150,00	9.590,00	10.030,00	10.470,00	10.910,00		40 dB
	Δp [Pa]	1,45	1,39	1,34	1,30	1,26	1,22	1,19	1,17	1,14	1,12		
	Q [m³/h]	5.780,00	6.140,00	6.510,00	6.880,00	7.240,00	7.610,00	7.980,00	8.350,00	8.710,00	9.080,00		35 dB
	Δp [Pa]	1,01	0,96	0,93	0,90	0,87	0,85	0,83	0,81	0,79	0,77		
	Q [m³/h]	4.810,00	5.110,00	5.420,00	5.720,00	6.030,00	6.330,00	6.640,00	6.940,00	7.250,00	7.550,00		30 dB
	Δp [Pa]	0,70	0,67	0,64	0,62	0,60	0,59	0,57	0,56	0,55	0,54		
	Q [m³/h]	4.000,00	4.250,00	4.510,00	4.760,00	5.010,00	5.270,00	5.520,00	5.780,00	6.030,00	6.280,00		25 dB
	Δp [Pa]	0,48	0,46	0,45	0,43	0,42	0,41	0,40	0,39	0,38	0,37		

Hn\Wn [mm]		750	800	850	900	950	1000	1050	1100	1150	1200		
650	Sn [m²]	0,4063	0,4347	0,4632	0,4916	0,5201	0,5485	0,5770	0,6054	0,6339	0,6623		
	Sn [%]	84,79	85,02	85,21	85,39	85,55	85,69	85,82	85,93	86,04	86,13		
	Q [m³/h]	8.940,00	9.510,00	10.080,00	10.640,00	11.210,00	11.780,00	12.340,00	12.910,00	13.480,00	14.040,00		45 dB
	Δp [Pa]	1,79	1,71	1,64	1,58	1,53	1,49	1,45	1,41	1,38	1,35		
	Q [m³/h]	7.440,00	7.910,00	8.380,00	8.860,00	9.330,00	9.800,00	10.270,00	10.740,00	11.210,00	11.680,00		40 dB
	Δp [Pa]	1,24	1,18	1,14	1,10	1,06	1,03	1,00	0,98	0,96	0,94		
	Q [m³/h]	6.190,00	6.580,00	6.980,00	7.370,00	7.760,00	8.150,00	8.540,00	8.940,00	9.330,00	9.720,00		35 dB
	Δp [Pa]	0,86	0,82	0,79	0,76	0,73	0,71	0,69	0,68	0,66	0,65		
	Q [m³/h]	5.150,00	5.480,00	5.800,00	6.130,00	6.460,00	6.780,00	7.110,00	7.430,00	7.760,00	8.090,00		30 dB
	Δp [Pa]	0,59	0,57	0,54	0,53	0,51	0,49	0,48	0,47	0,46	0,45		
	Q [m³/h]	4.290,00	4.560,00	4.830,00	5.100,00	5.370,00	5.640,00	5.910,00	6.180,00	6.460,00	6.730,00		25 dB
	Δp [Pa]	0,41	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,32	0,31		
700	Sn [m²]	0,4420	0,4729	0,5039	0,5348	0,5658	0,5967	0,6277	0,6586	0,6896	0,7205		
	Sn [%]	85,60	85,82	86,02	86,20	86,36	86,50	86,63	86,75	86,85	86,95		
	Q [m³/h]	9.540,00	10.140,00	10.750,00	11.350,00	11.950,00	12.550,00	13.150,00	13.760,00	14.360,00	14.960,00		45 dB
	Δp [Pa]	1,55	1,48	1,42	1,36	1,32	1,28	1,24	1,21	1,18	1,15		
	Q [m³/h]	7.940,00	8.440,00	8.940,00	9.440,00	9.940,00	10.440,00	10.940,00	11.440,00	11.950,00	12.450,00		40 dB
	Δp [Pa]	1,07	1,02	0,98	0,94	0,91	0,88	0,86	0,84	0,82	0,80		
	Q [m³/h]	6.600,00	7.020,00	7.440,00	7.850,00	8.270,00	8.690,00	9.100,00	9.520,00	9.940,00	10.350,00		35 dB
	Δp [Pa]	0,74	0,71	0,68	0,65	0,63	0,61	0,59	0,58	0,56	0,55		
	Q [m³/h]	5.490,00	5.840,00	6.190,00	6.530,00	6.880,00	7.230,00	7.570,00	7.920,00	8.270,00	8.610,00		30 dB
	Δp [Pa]	0,51	0,49	0,47	0,45	0,44	0,42	0,41	0,40	0,39	0,38		
	Q [m³/h]	4.570,00	4.860,00	5.150,00	5.440,00	5.730,00	6.010,00	6.300,00	6.590,00	6.880,00	7.170,00		25 dB
	Δp [Pa]	0,36	0,34	0,33	0,31	0,30	0,29	0,28	0,28	0,27	0,26		
750	Sn [m²]	0,4777	0,5111	0,5446	0,5780	0,6115	0,6449	0,6784	0,7118	0,7453	0,7787		
	Sn [%]	86,29	86,52	86,72	86,90	87,06	87,21	87,34	87,45	87,56	87,66		
	Q [m³/h]	10.130,00	10.770,00	11.410,00	12.050,00	12.690,00	13.320,00	13.960,00	14.600,00	15.240,00	15.870,00		45 dB
	Δp [Pa]	1,36	1,30	1,24	1,19	1,15	1,11	1,08	1,05	1,02	1,00		
	Q [m³/h]	8.430,00	8.960,00	9.490,00	10.020,00	10.550,00	11.090,00	11.620,00	12.150,00	12.680,00	13.210,00		40 dB
	Δp [Pa]	0,94	0,90	0,86	0,82	0,79	0,77	0,75	0,73	0,71	0,69		
	Q [m³/h]	7.010,00	7.460,00	7.900,00	8.340,00	8.780,00	9.220,00	9.660,00	10.100,00	10.550,00	10.990,00		35 dB
	Δp [Pa]	0,65	0,62	0,59	0,57	0,55	0,53	0,52	0,50	0,49	0,48		
	Q [m³/h]	5.840,00	6.200,00	6.570,00	6.940,00	7.310,00	7.670,00	8.040,00	8.410,00	8.770,00	9.140,00		30 dB
	Δp [Pa]	0,45	0,43	0,41	0,40	0,38	0,37	0,36	0,35	0,34	0,33		
	Q [m³/h]	4.860,00	5.160,00	5.470,00	5.770,00	6.080,00	6.380,00	6.690,00	6.990,00	7.300,00	7.600,00		25 dB
	Δp [Pa]	0,31	0,30	0,29	0,27	0,26	0,25	0,25	0,24	0,23	0,23		
800	Sn [m²]	0,5134	0,5493	0,5853	0,6212	0,6572	0,6931	0,7291	0,7650	0,8010	0,8369		
	Sn [%]	86,90	87,13	87,34	87,52	87,68	87,82	87,95	88,07	88,18	88,28		
	Q [m³/h]	10.730,00	11.400,00	12.070,00	12.750,00	13.420,00	14.090,00	14.760,00	15.440,00	16.110,00	16.780,00		45 dB
	Δp [Pa]	1,22	1,15	1,10	1,05	1,01	0,98	0,95	0,92	0,90	0,87		
	Q [m³/h]	8.920,00	9.480,00	10.040,00	10.600,00	11.160,00	11.720,00	12.280,00	12.840,00	13.400,00	13.960,00		40 dB
	Δp [Pa]	0,84	0,80	0,76	0,73	0,70	0,68	0,66	0,64	0,62	0,60		
	Q [m³/h]	7.420,00	7.890,00	8.360,00	8.820,00	9.290,00	9.750,00	10.220,00	10.680,00	11.150,00	11.610,00		35 dB
	Δp [Pa]	0,58	0,55	0,53	0,50	0,49	0,47	0,45	0,44	0,43	0,42		
	Q [m³/h]	6.180,00	6.560,00	6.950,00	7.340,00	7.730,00	8.110,00	8.500,00	8.890,00	9.280,00	9.660,00		30 dB
	Δp [Pa]	0,40	0,38	0,36	0,35	0,34	0,32	0,31	0,31	0,30	0,29		
	Q [m³/h]	5.140,00	5.460,00	5.780,00	6.110,00	6.430,00	6.750,00	7.070,00	7.400,00	7.720,00	8.040,00		25 dB
	Δp [Pa]	0,28	0,26	0,25	0,24	0,23	0,22	0,22	0,21	0,21	0,20		

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level for the respective dimension.

Approvals and certificates

Approvals and certificates

All our products are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of the products.

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