



Quick Selection

2nd extended edition



TROX[®] TECHNIK

The art of handling air

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Why Quick Selection?

This Quick Selection Guide was designed to help you select the products you require quickly and easily. It provides an overview of the various product designs and dimensions for selected TROX products.

Full product and system details can be found on our website www.troxtechnik.com, on CD ROM, and in our technical leaflets and catalogues Klima 1, Klima 2 and Filter.

TROX Products for ventilation and air conditioning technology:

Components

- Air terminal devices
- Air terminal units
- Fire and smoke protection components
- Sound attenuators
- Dampers and external louvres
- Filter units and filter elements

Systems

- Air-water systems
- Laboratory ventilation systems
- Communication systems for fire and smoke protection
- High density cooling solutions for data centres (AITCS)

In ventilation technology, two criteria are of particular importance:

- the air velocity in the occupied zone and
- the sound pressure level in the room

Air velocity

The air velocity depends on variables such as

- flow rate in combination with type and size of the diffuser
- arrangement of the diffusers within the room
- the height of the room

The flow pattern provided by the diffuser (swirl, linear or displacement) also influences the maximum possible air change rate.

Drafts are caused by excessive air velocity in the occupied zone. The configuration tables in this Quick Selection Guide have been chosen to meet the most critical comfort criteria at a level exceeding that required by European Standards.

Sound pressure level

A defined sound pressure level, depending on the type of room involved, should not be exceeded. The following components of the ventilation system influence the sound pressure level:

- fans
- fire dampers
- air terminal units
- diffusers

The Quick Selection Guide contains the necessary data for calculating the sound power levels. The Guide also allows selection of the necessary attenuators.

Generally, the sound power level per diffuser is limited to 40 dB(A) without room attenuation.

The table below provides an overview of the TROX products to be used depending on the air change rates per hour.

Room height up to 4 m						
Air change rates/h	Flow rate control	Grille	Slot diffuser	Swirl diffuser	Blade diffuser	Perforated diffuser
≤ 10	KVS	++	++	++	++	++
	VVS	+	+	++	+	+
10 – 20	KVS	–	++*	++	++	++
	VVS	–	++*	++	+	+
20 – 30	KVS	–	–	++	–	–
	VVS	–	–	++	–	–

Legend

KVS Constant volume system

VVS Variable volume system

++ very suitable

+ suitable

– unsuitable

* flow discharge alternating horizontal!



ASL



SL



AT



TR



VAT



TRS

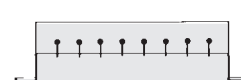
Basic construction A without rear assembly



ASL-A/SL-A

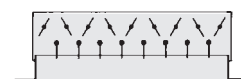
AT-A/TR-A**VAT-A/TRS-A**

Constructions with rear assembly



-AG

-D



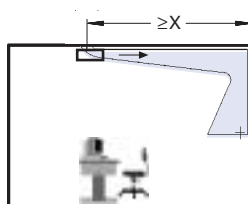
-AS

-DG

Flow rate and throw distance

Type	H (mm)	Flow rate Throw distance	Length (mm)							
			225	325	425	525	625	825	1025	1225
VAT, TRS	75	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)	45...90 1.5...3	70...140 2...4	90...180 2...4	120...240 2.5...5	140...280 2.5...5	190...380 3...6	230...460 3.5...7	280...560 4...8
ASL, AT, VAT, SL, TR, TRS	125	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)	90...180 2...4	140...280 2.5...5	190...380 3...6	230...460 3.5...7	280...560 4...8	370...740 4...8	470...940 5...10	560...1120 6...12
ASL, AT, VAT, SL, TR, TRS	225	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)	190...380 3...4	280...560 4...8	370...740 4...8	470...940 5...10	560...1120 6...12	740...1480 7...14	920...1840 8...16	1110...2220 10...18
ASL, AT, VAT, SL, TR, TRS	325	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)		410...820 5...10	560...1120 6...12	700...1400 7...14	840...1680 8...16	1110...2220 9...18	1390...2780 10...20	1660...3320 10...20
ASL, AT, VAT, SL, TR,	425	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)					1110...2220 9...18	1480...2960 10...20	1850...3700 10...20	2220...4440 10...20
ASL, AT, VAT, SL, TR,	525	$\dot{V}_{\min} - \dot{V}_{\max}$ X (m)							2300...4600 10...20	2770...5540 10...20

Installation situation



Nomenclature

$\dot{V}_{\min}$ in m³/h = Minimum flow rate

 $\dot{V}_{\max}$ in m³/h = Maximum flow rate

$\dot{V}_{\max}$ in m^3/min = Maximum flow rate

Note

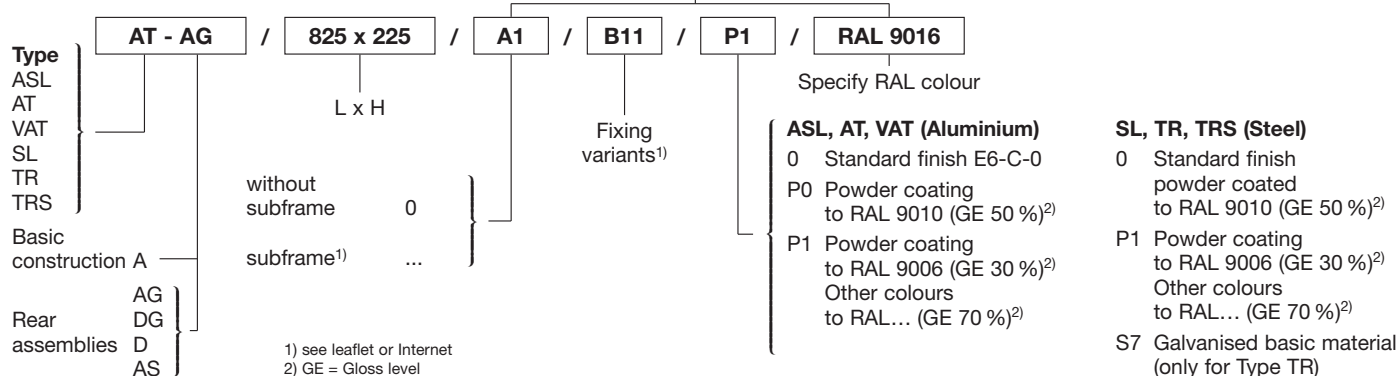
In all cases, the max. sound power level is $L_{WA} = 35$ dB(A) per diffuser and the max. pressure drop $\Delta p_t = 30$ Pa.

Selection valid for ceiling height ≥ 2.7 m.

Values lying between these can be calculated by interpolation.

Order Code

These codes need not be completed for standard products

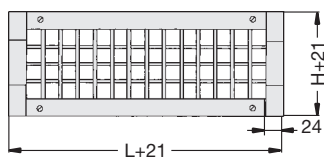




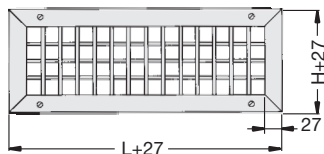
TRS-R



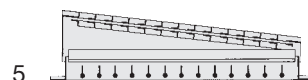
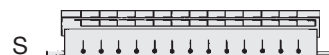
TRS-K



CIRCULAR duct · TRS-R...



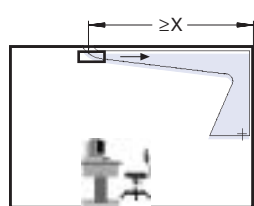
RECTANGULAR duct · TRS-K...



Flow rate and throw distance

Type	H (mm)	Flow rate Throw distance	Length (mm)							
			225	325	425	525	625	825	1025	1225
TRS-K/TRS-R	75	$\dot{V}_{min} - \dot{V}_{max}$ X (m)	45...90 1.5...3	70...140 2...4	90...180 2...4	120...240 2.5...5	140...280 2.5...5	190...380 3...6	230...460 3.5...7	280...560 4...8
TRS-K/TRS-R	125	$\dot{V}_{min} - \dot{V}_{max}$ X (m)	90...180 2...4	140...280 2.5...5	190...380 3...6	230...460 3.5...7	280...560 4...8	370...740 4...8	470...940 5...10	560...1120 6...12
TRS-K/TRS-R	225	$\dot{V}_{min} - \dot{V}_{max}$ X (m)	190...380 3...4	280...560 4...8	370...740 4...8	470...940 5...10	560...1120 6...12	740...1480 7...14	920...1840 8...16	1110...2220 10...18
TRS-K	325	$\dot{V}_{min} - \dot{V}_{max}$ X (m)		410...820 5...10	560...1120 6...12	700...1400 7...14	840...1680 8...16	1110...2220 9...18	1390...2780 10...20	1660...3320 10...20

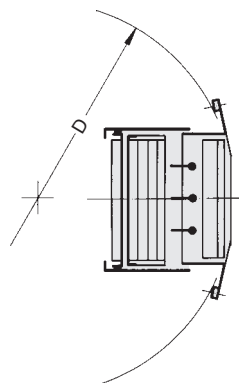
Installation situation



TRS-R

H (mm)	D* (mm)
75	150 to 400
125	300 to 900
225	600 to 2400

* Duct diameter



Nomenclature

$\dot{V}_{min}$ in m³/h = Minimum flow rate

$\dot{V}_{max}$ in m³/h = Maximum flow rate

X in m = Throw distance to wall depending on $\dot{V}$

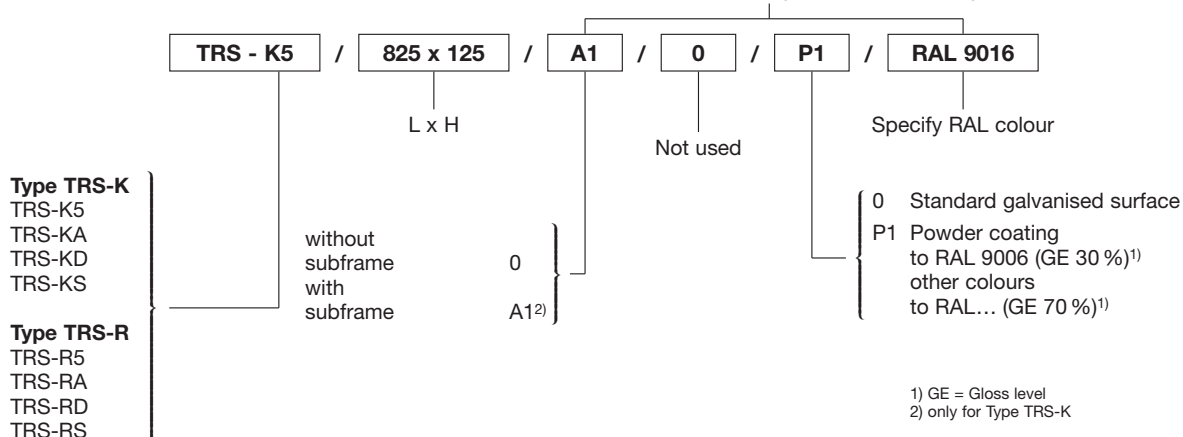
Note

In all cases, the max. sound power level is $L_{WA} = 35$ dB(A) per diffuser and the max. pressure drop is $\Delta p_t = 30$ Pa. Selection valid for ceiling height ≥ 2.7 m.

Values lying between these can be calculated by interpolation.

Order Code

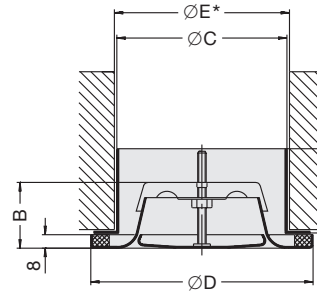
These codes need not be completed for standard products



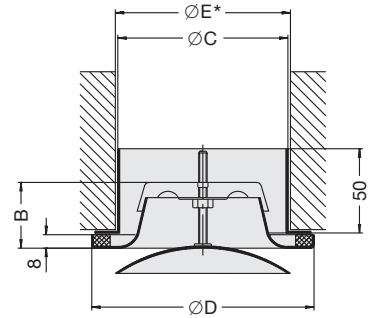


LVS

Z-LVS



Installation LVS



Installation Z-LVS

Flow rate LVS	
Size	$\dot{V}$ (m³/h)
100	110
125	180
160	250
200	360

Flow rate Z-LVS	
Size	$\dot{V}$ (m³/h)
100	100
125	160
160	230
200	280

Dimensions (mm)				
Size	B	ØC	ØD	ØE*
100	40	99	132	104
125	46	124	162	129
160	54	159	205	164
200	61	199	245	204

* Dimension "E" must be adjusted according to the ducts used.

Nomenclature

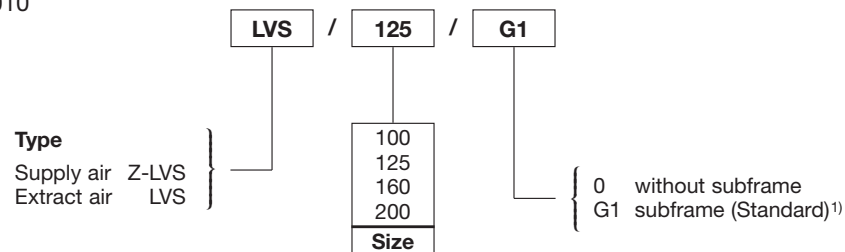
$$\dot{V} \text{ in m}^3/\text{h} = \text{Flow rate per air valve}$$

Note

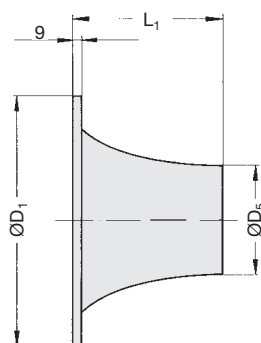
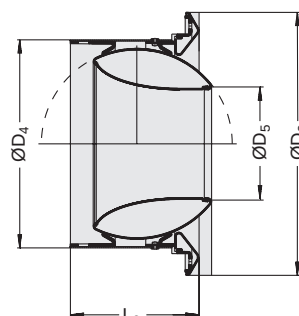
The sound power level is $L_{WA} \leq 40$ dB(A) in all cases.

Order Code

Standard finish RAL 9010



1) Unless otherwise specified on order,
equipment is delivered with subframe (G1).


DUK

DUK-F

DUK-V

Throw distance and pressure drop										
$\dot{V}$ (m³/h)	75	100	150	250	400	600	800	1000	1250	1500
Size	X (m)	X (m)	X (m)	X (m)	X (m)	X (m)	X (m)	X (m)	X (m)	X (m)
	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)	Δp_t (Pa)
100	8	11								
	50	100								
125	6	9	11							
	25	50	100							
160	5	6	9	12						
	10	20	40	100						
200		5	7	9	18					
		10	15	40	100					
250			5	7	15	22				
			5	15	40	90				
315				5	11	17	23	28		
				5	15	30	60	90		
400					8	13	18	23	28	32
					5	10	15	25	40	60

Dimensions (mm)						
Size	ØD ₁	ØD ₃	ØD ₄	ØD ₅	L ₁	L ₂
100	136	146	98	50	94	78
125	159	169	123	64	112	86
160	225	200	158	82	122	98
200	265	257	198	108	153	117
250	315	302	248	136	187	155
315	400	384	313	174	224	183
400	485	467	398	230	287	208

Nomenclature

X in m = Throw distance

Δp_t in Pa = Total pressure drop

Dimension of recess = ØD₄ + 15 mm

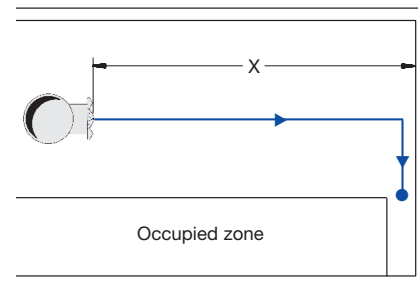
Note

The combinations of flow rate and size as shown in the table produce a sound power level:

L_{WA} = 35 dB(A) for axial connection

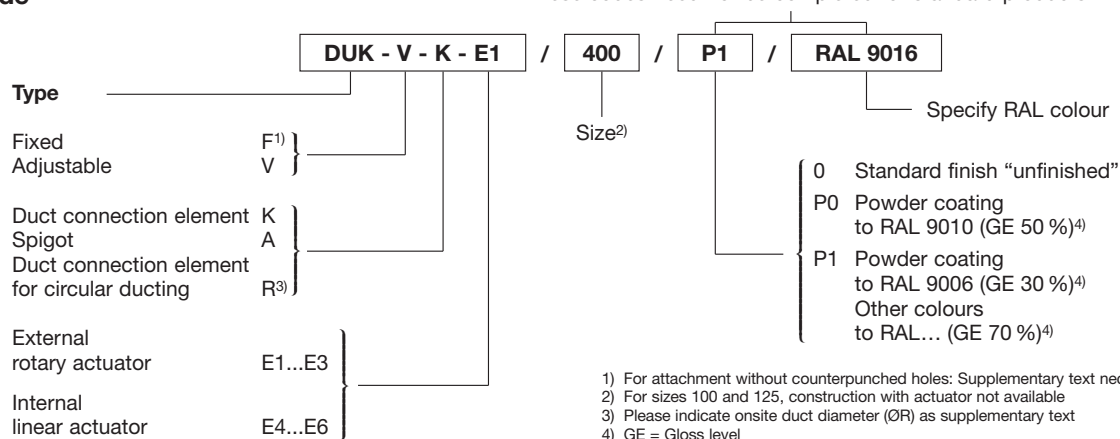
L_{WA} = 43 dB(A) for lateral connection

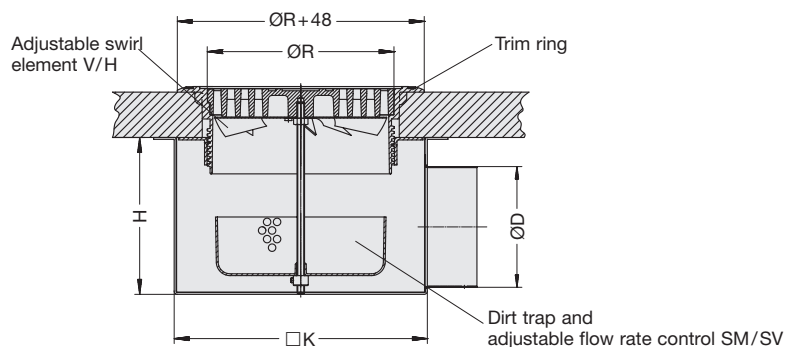
Installation situation – isotherm –



Order Code

These codes need not be completed for standard products



**FB**

Plastic		
Type	vertical $\dot{V}_{\max}$ (m³/h)	horizontal $\dot{V}_{\max}$ (m³/h)
FBK-150	100	50
FBK-200	135	90

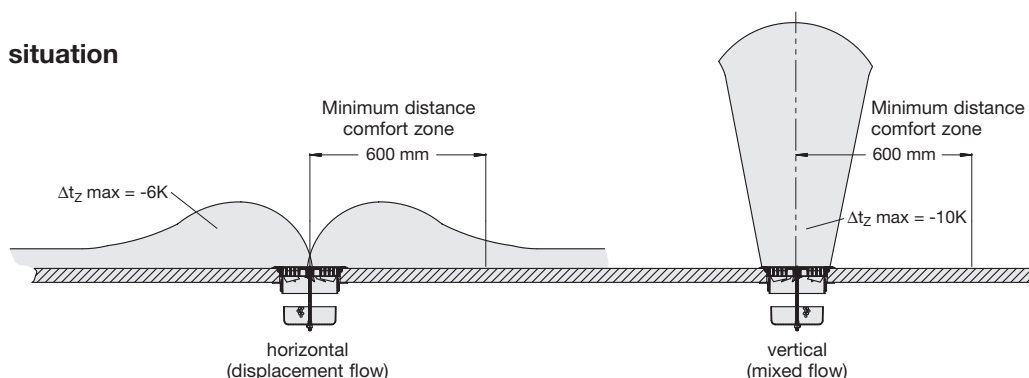
Aluminium		
Type	vertical $\dot{V}_{\max}$ (m³/h)	horizontal $\dot{V}_{\max}$ (m³/h)
FBA-150	110	60
FBA-200	135	90

Dimensions (mm)				
Size	ØD	ØR	□K	H
150	98	150	200	125
200	123	200	250	150

Sound power level is $L_{WA} \leq 35$ dB(A) in all cases

Total pressure drop $\Delta p_t \leq 40 \text{ Pa}$

Discharge situation

**Order Code**

FBA - 1 - V - K - SM - A / **150**

Type

Surface of diffuser core and trim ring:

- Die cast and deburred 1
- Die cast, deburred, tumble fettled black stove enamel, face skimmed 3
- Die cast, deburred, face skimmed 4

Adjustable swirl element²⁾ for discharge control

- vertical V
- horizontal H

Size

A Plenum box

SM Dirt trap including adjustable flow rate control at rear

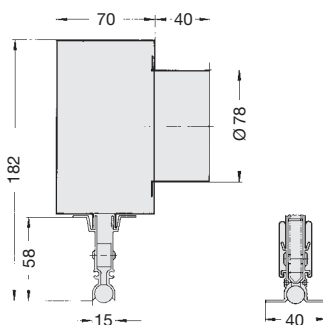
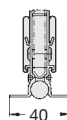
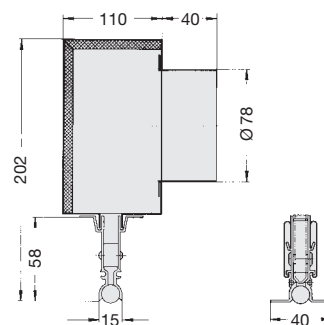
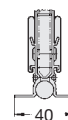
SV Dirt trap including adjustable flow rate control at face

K¹⁾ Trim ring

FBK - 1 - V - K - SM - A		150	V00
Type		Size	
Surface of diffuser, core and trim ring:			
Dusty grey similar to RAL 7037	1	Standard Plastic (PA6)	0
Black similar to RAL 9005	2	flame retardant V00 (PA6-V0)	
Adjustable swirl element ²⁾ for discharge control		A	Plenum box
vertical	V	SM	Dirt trap including adjustable flow rate control at rear
horizontal	H	SV	Dirt trap including adjustable flow rate control at front
		K ¹⁾	Trim ring

1) For orders without trim ring, a spacing ring is provided for technical performance reasons and to ensure correct height

2) For orders without adjustable swirl element, the discharge direction is vertical


VSD15

VSD15-A

VSD15-A-Z0

VSD15-D

VSD15-D-Z0

VSD15 flow discharge alternating horizontal

Flow rate ranges (m³/h)

L ₁																			
600		700		800		900		1000		1100		1200		1300		1400		1500	
$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
20	40	20	50	20	50	30	60	30	70	40	80	40	80	50	90	60	100	60	110

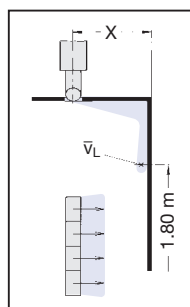
Throw distance X (m) · VSD15

flow discharge horizontal, one direction

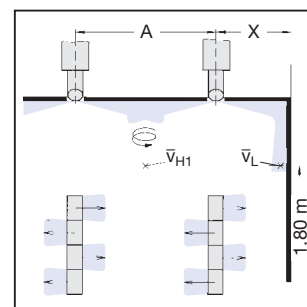
$\dot{V}$	L ₁ (mm)									
	600	700	800	900	1000	1100	1200	1300	1400	1500
20	1.0	1.0	1.0							
30	2.9	1.7	1.2	1.0	1.0					
40		4.2	2.9	2.0	1.5	1.0	1.0			
50				4.0	2.9	2.2	1.7	1.2		
60					4.7	3.8	2.9	2.3	1.9	1.5
70							4.4	3.6	2.9	2.5
80									4.2	3.6
90										4.7

Diffuser Layout

flow discharge horizontal, one direction



flow discharge alternating horizontal



Nomenclature

$\dot{V}$ in m³/h = Flow rate
X in m = Throw distance
L₁ in mm = Length of plenum box
A in m = Distance between 2 diffusers
 $\bar{v}_{H1}$ in m/s = Time average upstream velocity between 2 diffusers
 $\bar{v}_L$ in m/s = Time average upstream velocity at the wall

Note

Room height = 3 m

$\bar{v}_{H1}/\bar{v}_L = 0.17$ m/s

Sound power level is $L_{WA} \leq 35$ dB(A) in all cases

Pressure drop $\Delta p_t \leq 30$ Pa

If desired, the length of the diffuser face can be greater than the length of the plenum box.

Order Code

These codes need not be completed for standard products

VSD15 - A - M - Z0 - L / **900** / **A9** / **0** / **P1** / **RAL 9016** / **WH** / **WW**

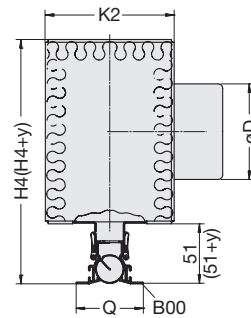
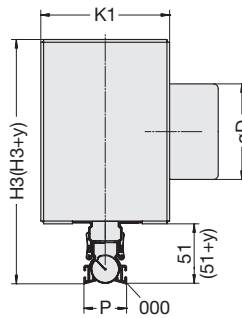
Plenum box A }
 Plenum box with lining D }
 Adjustable flow rate control M
 Integral border Z0
 Spigot with lip seal L

L₁ (mm)
 End caps²⁾

Not used
 Specify colour
 HL Horizontal left
 HR Horizontal right
 WH Alternating horizontal (standard construction)
 0 Standard finish
 VSD15 Black RAL 9005
 VSD15-Z0 E6-C-0
 P0 Powder coated to RAL 9010 (GE 50 %)¹)
 P1 Powder coated to RAL 9006 (GE 30 %)¹)
 Other colours to RAL ... (GE 70 %)¹)

0 Standard black control blades
 WW white control blades

1) GE = Gloss level
 2) see leaflet or Internet



VSD35

VSD35-1...4-AK

VSD35-1...4-DK

Nomenclature

$\dot{V}$ in m^3/h = Flow rate

X in m = Throw distance

L_1 in mm = Length of plenum box

A in m = Distance between 2 diffusers

$\bar{v}_{H1}$ in m/s = Time average air velocity between 2 diffusers

$\bar{v}_L$ in m/s = Time average upstream velocity at the wall

Note

Room height = 3 m

$\bar{v}_{H1} = 0.15 - 0.17 \text{ m/s}$

$\bar{v}_L = 0.34 - 0.37 \text{ m/s}$

Sound power level is $L_{WA} \leq 40 \text{ dB(A)}$ in all cases

Pressure drop $\Delta p_t \leq 30 \text{ Pa}$

If required, the length of the diffuser face can be greater than the length of the plenum box.

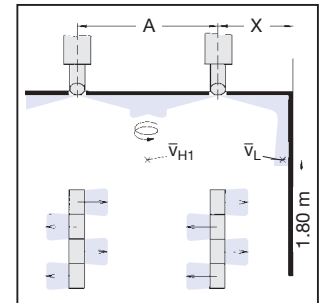
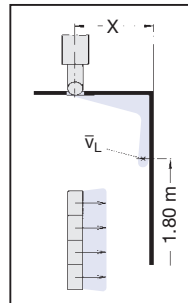
Dimensions (mm)

No. of slots	K_1	K_2	$H_1^{1)}$	$H_2^{1)}$	$H_3^{2)}$	$H_4^{2)}$	$P^{3)}$	Q	$\varnothing D$
1	100	138	228	248	202	223	35	55	98 123
2	138	176	258	278	233	253	62	82	123 138
3	176	214	276	296	251	271	89	109	138 158
4	214	254	308	328	283	303	116	136	158 198

Diffuser layout

flow discharge horizontal, one direction

flow discharge alternating horizontal



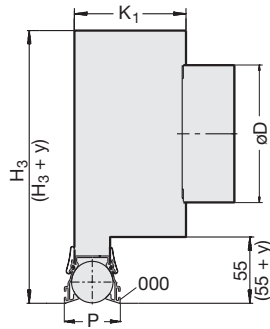
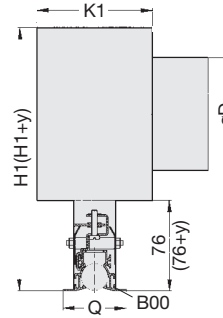
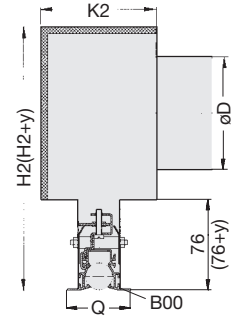
Order Code

These codes need not be completed for standard products

Type	VSD35 - 1 - AK - M - L	/	900x98 x y	/	C6	/	B00	/	P1	/	RAL 9016	/	WH	/	WW
No. of slots	1 2 3 4		$L_1 \times D \times y^{1)+2)}$		End cape ⁴⁾						Specify RAL colour				0 black control blades WW white control blades
See leaflet for plenum box constructions	AK DK AA AS DS						000 ³⁾ B00								
Adjustable flow control	M														
Lip seal	L														
			Front without edge flange Integral edge flange								Horizontal left Horizontal right Alternating horizontal	HL HR WH			
			Standard finish E6-C-0 Powder coating P0 to RAL 9010 (GE 50 %) Powder coating to RAL 9006 (GE 30 %) Other colours to RAL... (GE 70 %)						0 P1						

- 1) with concealed screw fix if $y = 0$ (Standard), further possible values for $y = 30, 55, 80$ and 104 mm
 2) with screw fix if $y = 0$ (Standard), further possible values for $y = 30, 55, 80, 105$ and 129 mm
 3) not with concealed slot fixture AS and DS
 4) see leaflet or Internet

Slot Diffusers Type VSD35


VSD35

VSD35-1...4-AA

VSD35-1...4-AS

VSD35-1...4-DS
Throw distance X (m) · VSD35-1

flow discharge horizontal, one direction

$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
40	2.2									
50	4.2	2.2								
60	6.4	3.7	2.2							
70	8.2	5.4	3.4	2.2						
80		7.6	4.9	3.2	2.2					
90		8.7	6.4	4.5	3.1	2.2				
100			7.2	5.7	4.1	3.0	2.2			
110				7.2	5.3	3.9	2.9	2.2		
120				7.7	6.5	4.9	3.7	2.9	2.2	
140					8.2	7.1	5.4	4.3	3.4	2.8
160						8.5	7.6	6.0	4.9	3.9
180							8.7	8.1	6.4	5.4
200								8.8	8.1	6.9
220										7.5

Throw distance X (m) · VSD35-2

flow discharge horizontal, one direction

$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
80	5.5									
100	8.3	5.5	3.2							
120		7.5	5.5	3.2						
140			7.1	5.5	3.4					
160				6.7	5.5	3.6				
180				8.8	6.4	5.5	3.7			
200					8.3	6.2	5.5	3.8		
220						7.8	6.1	5.5	3.9	
240							7.5	5.9	5.5	3.9
260								7.3	5.8	5.5
280								8.7	7.1	5.8
300									8.3	6.9
320										8.0

Throw distance X (m) · VSD35-3

flow discharge horizontal, one direction

$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
100	5.1									
120	7.9	4.7								
140		6.7	4.1							
160			6.0							
180			7.9	5.4						
200				7.0	5.1					
220				8.8	6.4	4.8				
240					7.9	6.0				
260					7.2	5.6				
280					8.5	6.7	5.3			
300						7.9	6.3	5.1		
320							7.3	6.0	4.9	
340							8.4	6.9	5.7	
360								7.9	6.5	
380									7.3	
400										8.3

Throw distance X (m) · VSD35-4

flow discharge horizontal, one direction

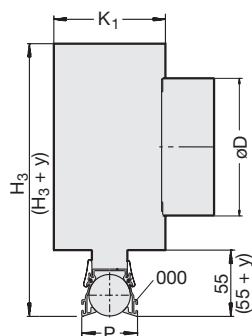
$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
120	5.6									
140	8.1	4.8								
160		6.6								
180		8.7	5.6							
200			8.2	5.0						
220			8.7	6.4	4.5					
240				7.8	5.6					
260				8.8	6.9	5.2				
280					8.1	6.1	4.8			
300					8.4	7.2	5.6	4.5		
320						8.4	6.6	5.2		
340						8.6	7.6	6.1	4.9	
360							8.7	6.9	5.6	4.7
380								7.9	6.4	5.3
400								8.8	7.2	6.0
420									8.1	6.7
440										7.5
460										8.3

VSD35 flow discharge alternating horizontal

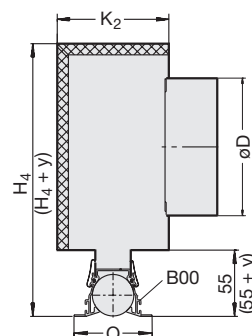
No. of slots "n"	Flow rate ranges (m³/h)																			
	L_1 (mm)																			
	600		750		900		1050		1200		1350		1500		1650		1800		1950	
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
1	40	70	50	90	60	110	70	120	80	140	90	160	100	180	110	200	120	220	140	240
2	80	100	100	120	120	160	140	180	160	220	180	240	200	260	220	300	240	320	260	340
3	100	120	140	160	160	180	180	220	200	240	220	280	260	320	280	340	300	380	320	420
4	120	140	140	180	180	220	200	260	220	300	240	340	280	360	300	400	340	440	360	480



VSD50



VSD50-1...2-AK



VSD50-1...2-DK

Nomenclature

 $\dot{V}$ in m^3/h = Flow rate

X in m = Throw distance

$$L_1 \text{ in mm} = \text{Length of plenum box}$$

A in m = Distance between 2 diffusers

$$\bar{v}_{H1} \text{ in m/s} = \frac{\text{Distance between 2 diffusers}}{\text{Time average upstream velocity between 2 diffusers}}$$
$$\bar{v}_1 \text{ in m/s} = \text{Time average upstream velocity at the wall}$$

Note

Room height = 3 m

$$\bar{v}_{H1} = 0.15 - 0.17 \text{ m/s}$$
$$\bar{v}_l = 0.34 - 0.37 \text{ m/s}$$

Sound power level is $L_{WA} \leq 40$ dB(A) in all cases

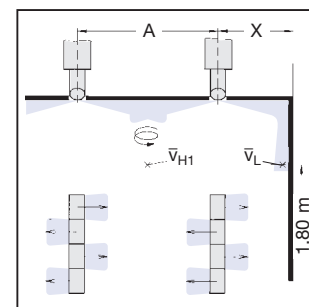
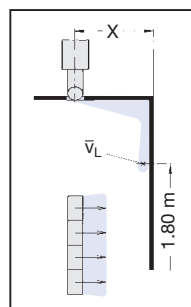
Pressure drop $\Delta p_t \leq 30 \text{ Pa}$

If required, the length of the diffuser face can be greater than the length of the plenum box.

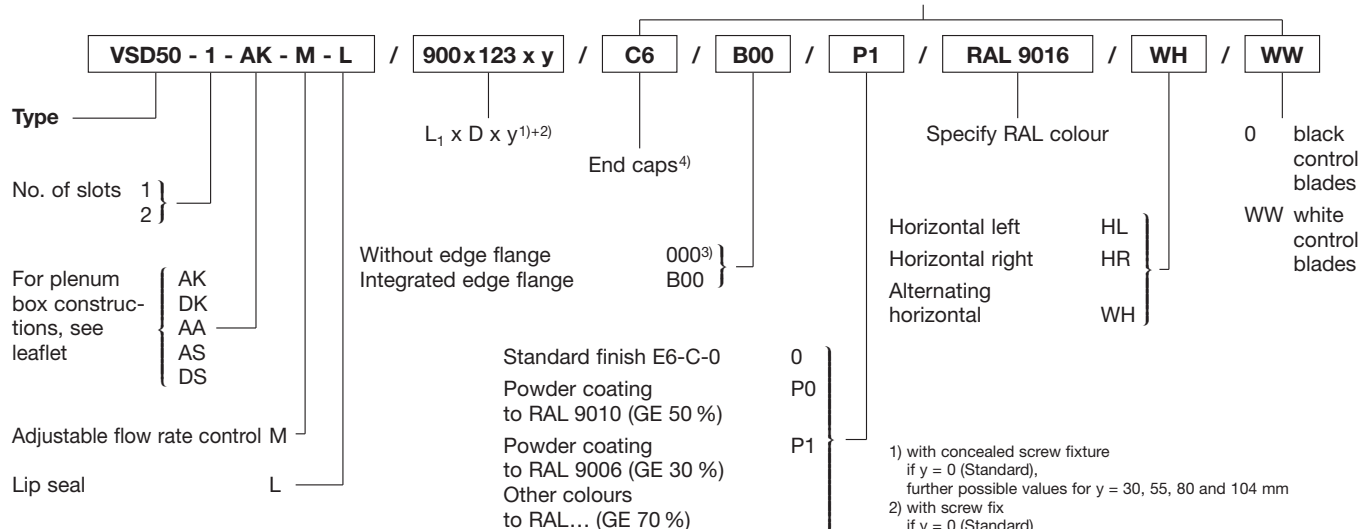
Diffuser Layout

flow discharge horizontal, one direction

flow discharge alternating horizontal

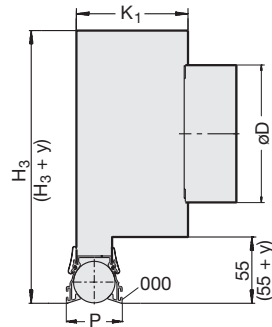
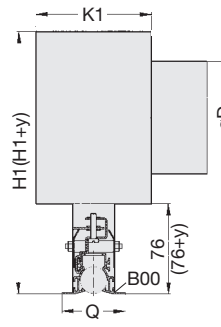
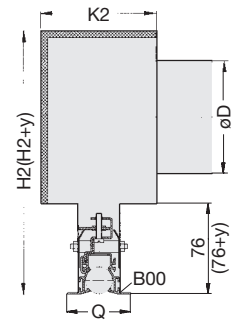
**Order Code**

These codes need not be completed for standard products



- 1) with concealed screw fixture
if $y = 0$ (Standard),
further possible values for $y = 30, 55, 80$ and 104 mm
- 2) with screw fix
if $y = 0$ (Standard)
further possible values for $y = 30, 55, 80, 105$ and 129 mm
- 3) not with concealed slot fixture AS and DS
- 4) see leaflet or Internet

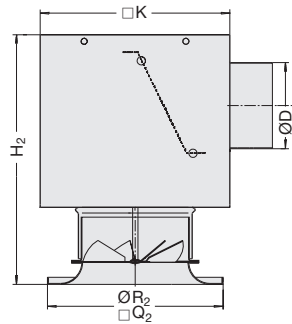
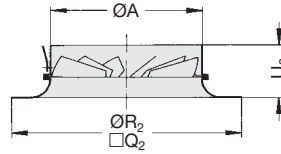
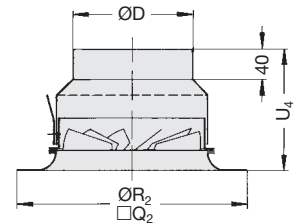
Slot Diffusers Type VSD50


VSD50

VSD50-1...2-AA

VSD50-1...2-AS

VSD50-1...2-DS

Throw distance X (m) · VSD50-1										
flow discharge horizontal, one direction										
$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
40	3.0									
50	3.0	3.0								
60	4.0	3.0	3.0							
70	5.5	3.4	3.0	3.0						
80	7.1	4.6	3.2	3.0	3.0					
90		5.8	4.0	3.0	3.0	3.0				
100		7.1	5.0	3.6	3.0	3.0	3.0			
110		8.7	6.0	4.4	3.5	3.0	3.0	3.0		
120			7.1	5.3	4.0	3.2	3.0	3.0	3.0	
140				7.1	5.5	4.3	3.5	3.0	3.0	3.0
160					7.1	5.7	4.6	3.7	3.2	3.0
180						7.1	5.8	4.8	4.0	3.3
200						8.8	7.1	5.9	5.0	4.3
220							8.7	7.1	6.0	5.2
240								8.5	7.1	6.1
260									8.3	7.1
280										8.3

Throw distance X (m) · VSD50-2										
flow discharge horizontal, one direction										
$\dot{V}$	L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
80	3.0									
90	5.5									
100	6.8	3.0								
110	8.1	5.3	3.0							
120		6.2	3.0	3.0						
140		8.4	5.9	3.0						
160			7.7	5.6	3.0					
180				7.1	5.5	3.0				
200				8.7	6.8	5.3	3.0			
220					8.1	6.5	5.3	3.0		
240						7.7	6.2	5.1	3.0	
260							7.3	6.1	5.0	
280							8.4	7.0	5.9	3.0
300								8.0	6.8	5.8
320									7.7	6.5
340									8.6	7.4
360										8.3

VSD50 flow discharge alternating horizontal																					
No. of slots "n"	Flow rate ranges (m³/h)																				
	L_1 (mm)																				
	600		750		900		1050		1200		1350		1500		1650		1800		1950		
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{max}$
1	40	90	50	100	60	120	70	140	80	180	90	200	100	200	110	240	120	260	140	280	
2	90	120	110	140	140	180	160	220	180	240	200	280	220	300	240	320	260	360	300	380	


RFD-Q

RFD-Q/R-D-A

RFD-Q/R-D-K

RFD-Q/R-D-US
Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
125	126	120	100	105	115	125	125
160	180	160	140	140	150	170	180
200	250	250	170	170	190	210	240
250	395	395	210	210	220	240	280
315	610	610	310	310	330	360	410
400	820	870	350	370	410	470	520

Dimensions (mm)

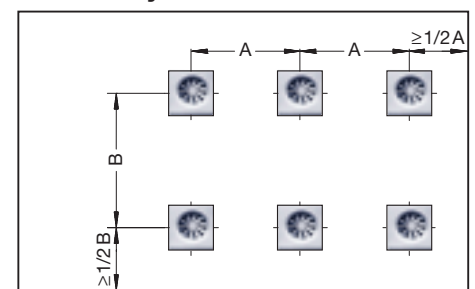
Size	ØA	ØD	H2	U2	U4	□Q2	ØR2	□K
125	123	98	284	75	153	198	200	216
160	158	123	309	78	158	248	250	266
200	198	158	339	78	161	248	300	290
250	248	198	384	75	166	298	350	476
315	313	248	444	88	183	398	450	567
400	398	313	509	88	193	498	580	615

Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
125	2.4	55	55	65	80	90	105
160		75	75	90	105	125	140
200		100	100	115	135	160	170
250		115	115	125	165	185	205
315				185	230	270	300
400					290	330	370
125	3.0	75	75	80	85	100	115
160		100	100	105	110	130	150
200		125	125	135	145	170	190
250		155	155	165	165	200	220
315		220	220	240	240	300	320
400				290	260	370	410
125	3.6	95	90	95	100	115	125
160		130	120	125	125	150	170
200		160	150	160	170	190	210
250		200	190	190	200	210	240
315		280	270	280	290	290	360
400		310	310	330	350	370	480
125	4.2	120	105	105	115	125	125
160		160	140	140	150	170	180
200		200	170	170	190	210	250
250		240	210	210	220	240	260
315		350	310	310	330	360	380
400		370	350	380	420	480	480

Minimum flow rate

Size	$\dot{V}_{min}$
125	35
160	50
200	60
250	110
315	180
400	250

Diffuser layout


Nomenclature

$\dot{V}$ in m³/h = Flow rate
 $\dot{V}_{min}$ in m³/h = Minimum flow rate
 A, B in m = Distance between two diffusers

Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_t \leq 45$ Pa.

Selection valid for ceiling height 2.7 m to 3 m.

These codes need not be completed for standard products

Order Code

Type

square
circular

Nozzle

Collar

Top entry plenum
Plenum box

Q
R

D

K

US

A

RFD - Q - D - A

Size

400

0

0

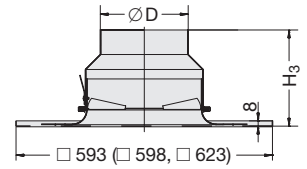
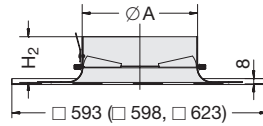
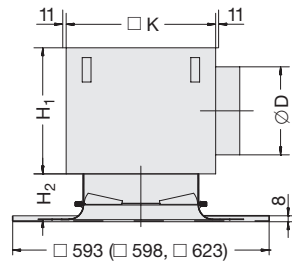
P1

RAL 9016

Specify RAL colour

- 0 Standard finish powder coated to RAL 9010 (GE 50 %)¹⁾
- P1 Powder coating to RAL 9006 (GE 30 %)¹⁾
- Other colours to RAL... (GE 70 %)¹⁾

¹⁾ GE = Gloss level



DCS-P

DCS-P-...-A resp. -AK

DCS-P-...-K

DCS-P-...-US

Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
125	90	90	90	90	90	90	90
160	140	140	120	120	130	140	140
200	210	180	150	150	170	190	210
250	290	220	190	190	210	240	280
315	440	310	270	270	290	350	400
400	650	310	290	310	360	400	430

Dimensions (mm)

Size	ØA	ØD	H ₁	H ₂	H ₃	□K
125	123	98	156	76	154	180
160	158	123	180	79	159	215
200	198	158	215	79	162	255
250	248	198	255	76	167	305
315	313	248	305	89	184	370
400	398	313	361	89	194	454

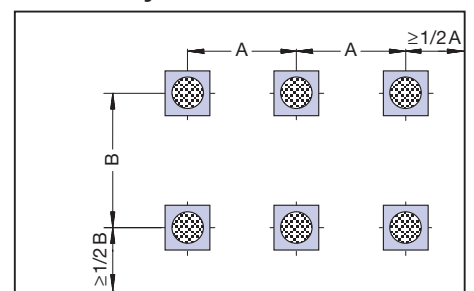
Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
125	2.4	60	60	65	70	80	90
160		90	90	90	95	105	120
200		110	110	115	115	135	150
250		135	135	135	145	165	185
315		200	200	210	210	230	260
400						250	310
125	3.0	70	70	70	80	90	90
160		90	90	95	110	120	130
200		110	110	115	150	150	170
250		135	140	140	170	180	210
315		200	200	210	250	250	290
400						280	360
125	3.6	80	75	80	90	90	90
160		110	105	105	110	115	140
200		140	135	135	140	150	190
250		170	160	170	170	170	240
315		240	230	230	250	250	330
400		280	250	250	280	280	400
125	4.2	90	90	90	90	90	90
160		140	120	120	135	140	140
200		170	150	150	170	190	200
250		210	190	190	210	240	240
315		290	260	260	290	340	340
400		310	290	310	360	400	435

Minimum flow rate

Size	$\dot{V}_{min}$
125	35
160	50
200	60
250	110
315	180
400	250

Diffuser layout



Nomenclature

$\dot{V}$ in m³/h = Flow rate

$\dot{V}_{min}$ in m³/h = Minimum flow rate

A, B in m = Distance between two diffusers

Note

The sound power level is $L_{WA} \leq 40$ dB(A) per diffuser in all cases and the pressure drop $\Delta p_t \leq 45$ Pa.

Selection valid for ceiling height = 2.7...3 m.

These codes need not be completed for standard products

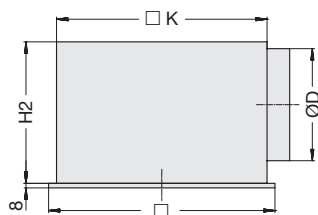
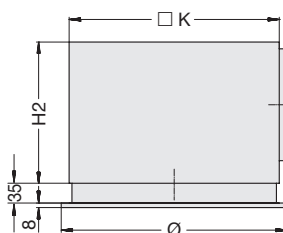
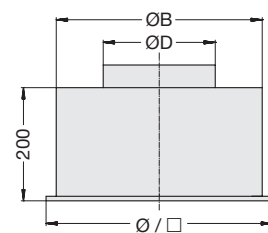
Order Code

Type	DCS - P - V - AK	/	593 ²⁾ x 315	/	P1	/	RAL 9016
Face plate:			Size				Specify RAL colour
Perforated	P						
Non-perforated	N						
with discharge nozzle ring	C						
T-box:							
Visible	V						
Hidden	H						
Collar	K						
Top entry plenum	US						
Plenum box	A						
Plenum box with acoustic insulation	AK						

1) GE = Gloss level

2) 593 x ... with face plates ...-V

598 x ... and 623 x ... with face plates ...-H


FD-Q

FD-Q-...-H

FD-R-...-H

FD-Q/R-...-V
Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300	200	200	200	200	200	200	200
400	395	360	310	330	330	395	395
500	520	430	360	380	380	490	520
600	590	460	400	430	430	540	590
625	590	460	400	430	430	540	590

Dimensions (mm)

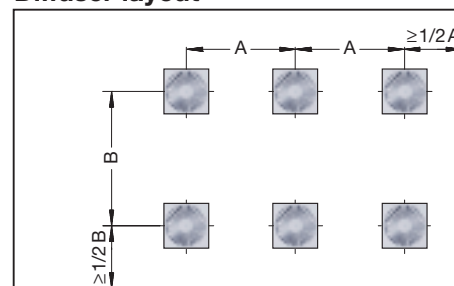
Size	□	Ø	ØB	ØD	H ₂	□ K
300	298	300	280	158	250	290
400	398	400	364	198	295	372
500	498	500	462	198	295	476
600	598	600	559	248	345	567
625	623	623	559	248	345	567

Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
300	3.0	170	150	160	170	200	200
400		250	220	230	230	290	340
500		300	260	270	280	350	400
600		330		290	300	380	430
625		330		290	300	380	430
300	3.6	200	180	190	200	200	200
400		300	270	280	290	290	395
500		360	320	330	350	350	490
600		390	340	360	370	370	540
625		390	340	360	370	370	540
300	4.2	200	200	200	200	200	200
400		350	310	330	330	395	395
500		430	370	390	400	490	490
600		460	400	430	430	540	540
625		460	400	430	430	540	540

Minimum flow rate

Size	$\dot{V}_{min}$
300	110
400	180
500	215
600	290
625	290

Diffuser layout


Nomenclature

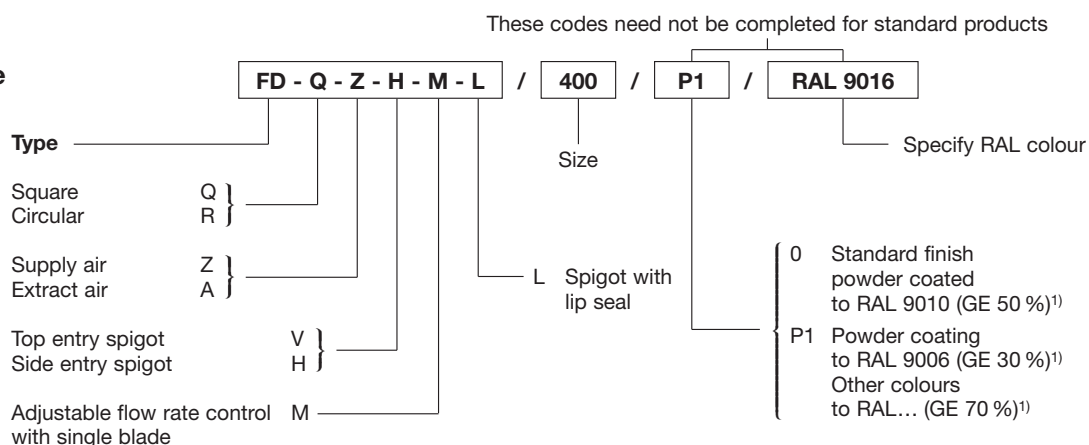
$\dot{V}$ in m³/h = Flow rate
 $\dot{V}_{min}$ in m³/h = Minimum flow rate
 A, B in m = Distance between two diffusers

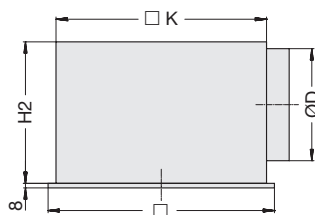
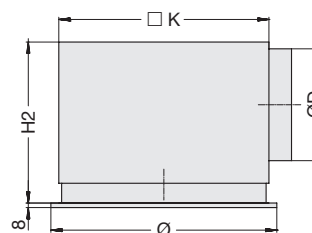
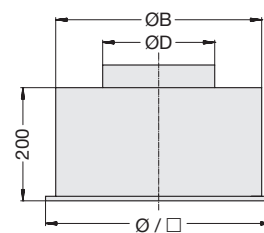
Note

In all cases, the sound power level $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_i \leq 30$ Pa.

Selection valid for ceiling height = 2.7...3 m.

Order Code




TDF-SA-Q-...

TDF-SA-Q-...-H

TDF-SA-R-...-H

TDF-SA-Q/R-...-V
Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300	230	230	230	230	230	230	230
400	430	260	260	260	260	260	280
500	510	390	400	400	400	400	420
600	650	470	470	470	470	470	500
625	650	470	470	470	470	470	500

Dimensions (mm)

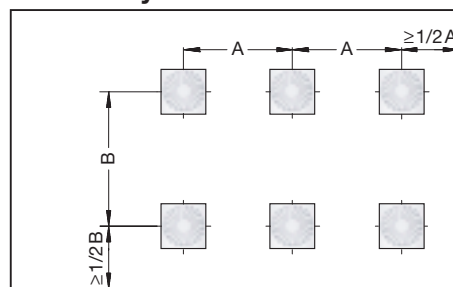
Size	□	Ø	ØB	ØD	H ₂	□ K
300	298	300	280	158	250	290
400	398	400	364	198	295	372
500	498	500	462	198	295	476
600	598	600	559	248	345	567
625	623	623	559	248	345	587

Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
300	3.0	180	180	180	180	190	230
400		230	230	230	230	240	260
500		290	290	290	290	340	390
600		360	360	360	360	410	470
625		360	360	360	360	410	470
300	3.6	200	200	200	200	200	230
400		240	240	250	270	270	270
500		340	330	330	330	340	400
600		400	380	380	380	400	470
625		400	380	380	380	400	470
300	4.2	230	230	230	230	230	230
400		260	270	260	270	270	350
500		390	390	390	390	390	440
600		470	470	470	470	470	500
625		470	470	470	470	470	500

Minimum flow rate

Size	$\dot{V}_{min}$
300	110
400	180
500	215
600	290
625	290

Diffuser layout

Nomenclature
 $\dot{V}$ in m³/h = Flow rate

 $\dot{V}_{min}$ in m³/h = Minimum flow rate

A, B in m = Distance between two diffusers

Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_i \leq 40$ Pa.

Selection valid for ceiling height = 2.7...3 m.

These codes need not be completed for standard products

Order Code
TDF-SA - Q - Z - M - L / **400** / **P1** / **RAL 9016**
Type

Square
Circular

Q }
R }

Supply air
Extract air

Z }
A }

Adjustable flow rate control
with single blade

M }

Spigot with lip seal

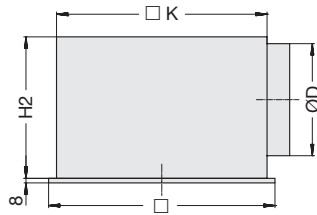
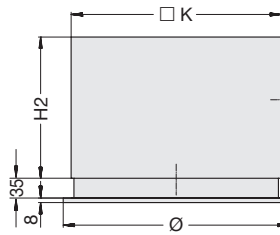
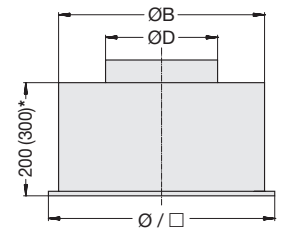
L

Size

Specify RAL colour

- 0 Standard finish powder coated to RAL 9010 (GE 50 %)¹⁾
- P1 Powder coating to RAL 9006 (GE 30 %)¹⁾
Other colours to RAL... (GE 70 %)¹⁾

¹⁾ GE = Gloss level


VDW-Q

VDW-Q-...-H

VDW-R-...-H

VDW-Q/R-...-V

* Size: 600 x 48 / 625 x 54

Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300 x 8	250	210	190	200	210	250	250
400 x 16	390	280	280	300	310	390	390
500 x 24	460	350	330	340	340	430	460
600 x 24	660	400	400	430	460	570	660
600 x 48	820	500	450	500	500	650	760
625 x 24	660	400	400	430	460	570	660
625 x 54	830	530	500	540	560	710	840

Dimensions (mm)

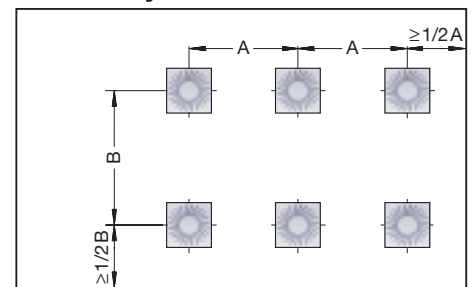
Size	□	Ø	ØB	ØD	H ₂	□ K
300 x 8	298	300	280	158	250	290
400 x 16	398	400	364	198	295	372
500 x 24	498	500	462	198	295	476
600 x 24	598	600	559	248	345	567
600 x 48	598	600	580	248	345	590
625 x 54	623	–	605	248	345	615

Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
300 x 8	3.0	155	140	150	160	190	210
400 x 16		200	200	210	230	290	330
500 x 24		240	220	230	300	300	330
600 x 24		290	290	310	350	420	490
600 x 48		360	360	360	360	450	530
625 x 24		290	290	310	350	420	490
625 x 54						510	590
300 x 8	3.6	180	170	180	190	230	250
400 x 16		240	240	250	290	320	390
500 x 24		290	270	290	290	420	450
600 x 24		340	340	380	420	500	580
600 x 48		420	390	420	450	500	650
625 x 24		340	340	380	420	500	580
625 x 54				460	500	560	710
300 x 8	4.2	210	190	200	210	250	250
400 x 16		280	270	300	320	390	390
500 x 24		350	330	340	340	450	460
600 x 24		400	400	430	480	570	660
600 x 48		500	470	500	530	670	780
625 x 24		400	400	430	480	570	660
625 x 54		540	500	540	590	710	820

Minimum flow rate

Size	$\dot{V}_{min}$
300 x 8	54
400 x 16	108
500 x 24	144
600 x 24	216
600 x 48	360
625 x 54	432

Diffuser layout


Nomenclature

$\dot{V}$ in m³/h = Flow rate

$\dot{V}_{min}$ in m³/h = Minimum flow rate

A, B in m = Distance between two diffusers

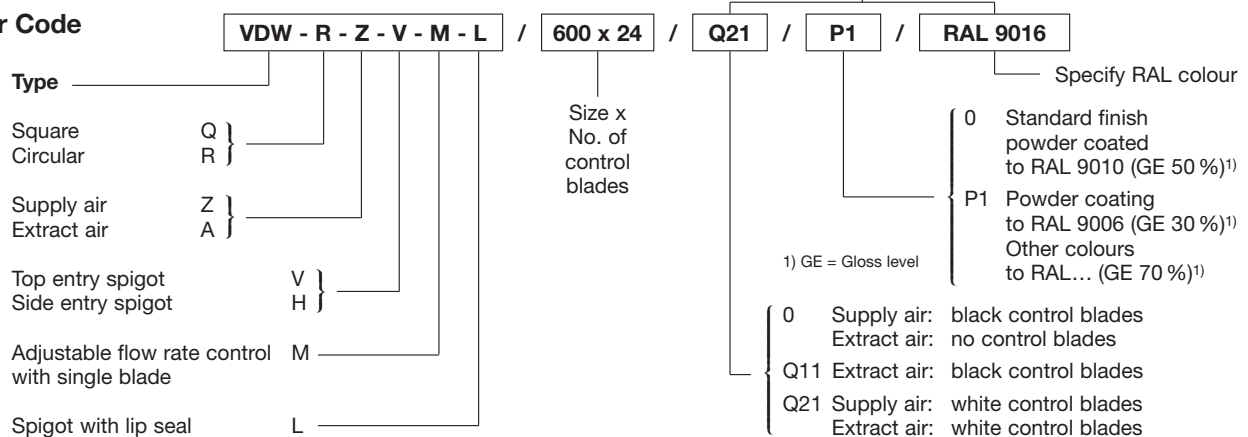
Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_t \leq 40$ Pa.

Selection valid for ceiling height = 2.7...3 m.

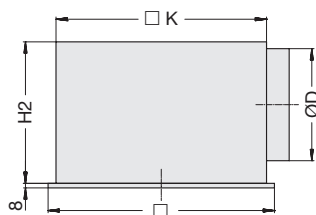
These codes need not be completed for standard products

Order Code

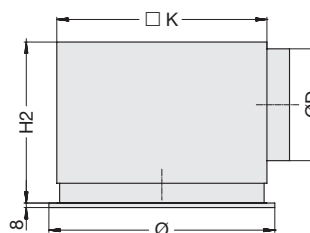




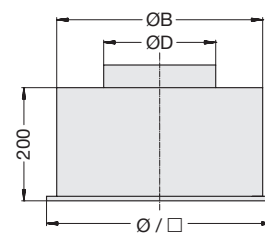
TDV-SA-Q-...



TDV-SA-Q-...-H



TDV-SA-R-...-H



TDV-SA-Q/R-...-V

Flow rate (m³/h) – Arrangement single-row

Size	A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300	270	270	270	270	270	270	270
400	420	340	340	340	340	340	370
500	570	420	420	420	420	420	440
600	800	490	490	490	490	500	530
625	800	490	490	490	490	500	530

Dimensions (mm)

Size	□	Ø	ØB	ØD	H ₂	□ K
300	298	300	280	158	250	290
400	398	400	364	198	295	372
500	498	500	462	198	295	476
600	598	600	559	248	345	567
625	623	623	559	248	345	567

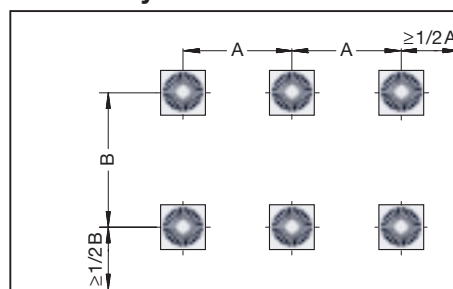
Flow rate (m³/h) – Arrangement square/rectangular

Size	B (m)	A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
300	3.0	190	190	190	170	230	270
400		250	250	250	250	300	340
500		300	300	300	300	360	420
600		360	360	360	360	430	490
625		360	360	360	360	430	490
300	3.6	220	220	220	220	220	270
400		300	300	300	300	310	340
500		360	360	360	330	370	420
600		430	430	430	400	430	500
625		430	430	430	400	430	500
300	4.2	270	270	270	270	270	270
400		340	340	340	340	340	390
500		420	420	420	420	420	470
600		490	490	490	490	500	540
625		490	490	490	490	500	540

Minimum flow rate

Size	$\dot{V}_{min}$
300	110
400	180
500	215
600	340
625	340

Diffuser layout



Nomenclature

$\dot{V}$ in m³/h = Flow rate

$\dot{V}_{min}$ in m³/h = Minimum flow rate

A, B in m = Distance between two diffusers

Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_i \leq 42$ Pa.

Selection valid for ceiling height = 2.7...3 m.

These codes need not be completed for standard products

Order Code

TDV-SA - Q - Z - V - M - L / 400 / Q21 / P1 / RAL 9016

Type

Square
Circular

Q
R

Supply air
Extract air

Z
A

Top entry spigot
Side entry spigot

V
H

Adjustable flow rate control
with single blade

M

Spigot with lip seal

L

Size

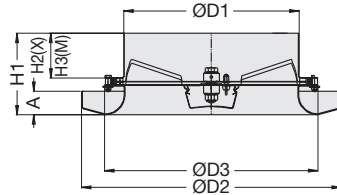
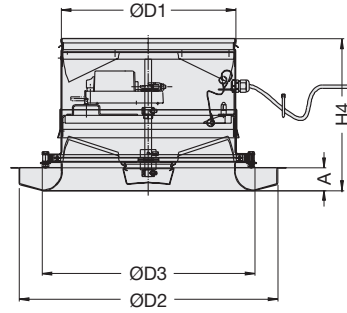
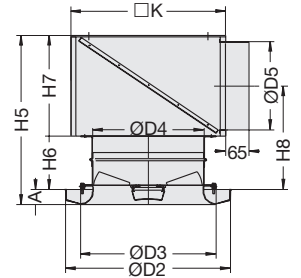
Specify RAL colour

0 Standard finish
powder coated
to RAL 9010 (GE 50 %)¹⁾

P1 Powder coating
to RAL 9006 (GE 30 %)¹⁾
Other colours
to RAL... (GE 70 %)¹⁾

¹⁾ GE = Gloss level

0 Supply air: black control blades
Extract air: no control blades
Q11 Extract air: black control blades
Q21 Supply air: white control blades
Extract air: white control blades


VDL

VDL-...-F

VDL-...-V

VDL-...-H
Dimensions (mm)

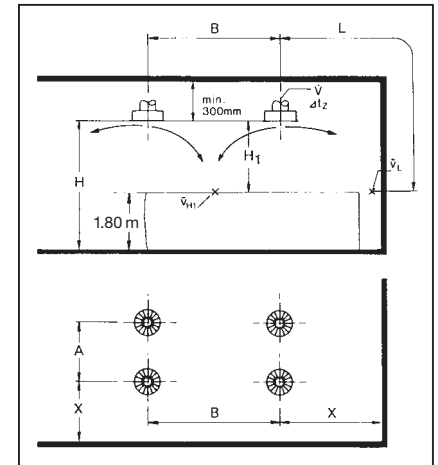
Size	A	ØD ₁	ØD ₂	ØD ₃	ØD ₄	ØD ₅	H ₁	H ₂	H ₃	H ₄	H ₅	H ₆	H ₇	H ₈	□K
315	42	313	464	381	317	248	145	92	80	215	474	150	282	290	435
400	45	398	567	468	402	313	157	101	89	236	581	168	368	351	500
630	51	628	871	700	628	398	204	117	105	367	812	293	468	526	750
800	55	798	1077	871	798	498	229	123	111	538	1081	458	568	741	1000

Technical Data

VDL-...-H				Heating mode	Cooling mode	
Size	L _{WA}	$\dot{V}$	Δp_t	H ₁	H = 3.8 A _{min}	H > 6.8 A _{min}
315	40	400	29	1.2	2.0	2.0
	50	550	52	2.0	2.0	2.0
	60	750	95	3.0	2.0	2.0
400	40	800	37	2.5	2.0	2.0
	50	1100	75	3.5	2.3	2.0
	60	1550	140	5.0	3.5	2.0
630	40	1500	30	2.8	2.5	2.0
	50	2100	60	5.0	4.0	2.0
	60	3250	125	7.5	5.3	2.7
800	40	2000	23	3.0	2.7	2.0
	50	2750	47	5.0	4.5	2.1
	60	3750	90	6.5	5.0	2.7

Minimum flow rate

Size	$\dot{V}_{min}$
315	252
400	450
630	828
800	1152

Diffuser layout


Nomenclature

$\dot{V}$ in m³/h = Flow rate
 $\dot{V}_{min}$ in m³/h = Minimum flow rate
 H in m = Room height
 H_1 in m = Distance between discharge level and occupied zone
 H_1 in m = jet penetration distance, vertical discharge, in heating operation
 A_{min} B in m = Distance between 2 diffusers
 X_{min} in m = Distance from wall
 $\bar{v}_{H1}$ in m/s = time average air velocity between 2 diffusers
 $\bar{v}_L$ in m/s = time average air velocity at the wall
 L_{WA} in dB(A) = Sound power level
 Δp_t in Pa = Pressure drop

Note

$B \geq 5$ m
 $\bar{v}_{H1} < 0.2$ m/s
 $\bar{v}_L = 0.4$ m/s
 $X_{min} = 2$ m

Selection valid for ceiling height 3.8 m to 6.8 m

Order code

These codes need not be completed for standard products

VDL - B - H - L - D - S - E3 / 400 / 0 / 0 / P1 / RAL 9016

Discharge ring without flange A }
 Discharge ring with flange B }

Side entry spigot H
 Top entry spigot V
 Diffuser face only F

With lip seal L¹⁾

Diffuser face not removable N¹⁾
 Diffuser face removable D¹⁾

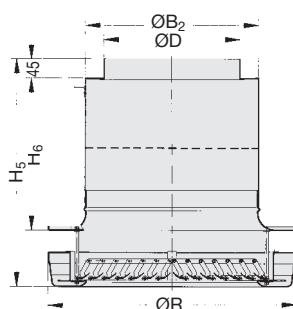
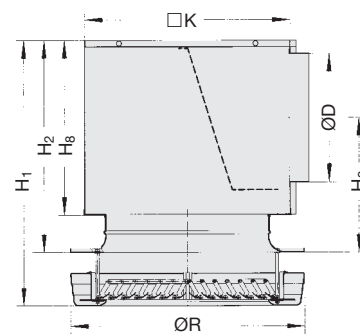
With square collar K²⁾
 With protection grid S²⁾

M manually adjustable
 E1 electric actuator, 230 V, 50 Hz
 E2 electric actuator, 24 V, 50 Hz
 E3 electric actuator, 24 V, 50 Hz, 2...10 V
 X fixed blades (for horizontal flow discharge only)

Specify colour

0 Standard finish powder coated to RAL 9010 (GE 50 %)³⁾
 P1 Powder coating to RAL 9006 (GE 30 %)³⁾
 Other colours to RAL... (GE 70 %)³⁾

1) only in combination with constructions H and V
 2) only in combination with discharge ring B
 3) GE = Gloss level


VDR

VDR-...-V

VDR-...-H

Technical Data						
VDR-...-H			Heating mode	Cooling mode		
Size	L _{WA}	$\dot{V}$	Δp_t	H ₁ (+ 10 K)	H=3.8 A _{min}	H>6.8 A _{min}
315	40	782	40	4.5	3.0	2.0
	50	1080	70	7.0	4.5	2.3
400	40	1152	35	5.5	4.0	2.0
	50	1584	65	6.0	6.0	3.0
630	40	2232	40	6.0	5.5	2.5
	50	2952	70	10.0	7.0	3.2
800	40	3060	30	10.0	6.0	3.0
	50	4500	65	12.0	8.3	4.0

Dimensions (mm)									
Size	ØB ₂	ØD	H ₁	H ₂	H ₃	H ₅	H ₆	H ₈	ØR
315	314	248	570	457	301	427	270	350	415
400	399	313	667	537	348	550	375	425	500
630	629	398	807	632	401	670	450	490	750
800	799	498	965	754	473	790	535	590	920

Nomenclature

$\dot{V}$ in m³/h = Flow rate
 H in m = Room height
 H₁ in m = Distance between discharge level and occupied zone
 H₁ in m = Vertical penetration depth of air current in heating operation
 A_{min}, B in m = Distance between 2 diffusers
 X_{min} in m = Distance from wall
 $\bar{v}_{H1}$ in m/s = Time average upstream velocity between 2 diffusers
 $\bar{v}_L$ in m/s = Time average upstream velocity at the wall
 L_{WA} in dB(A) = Sound power level
 Δp_t in Pa = Pressure drop

Note

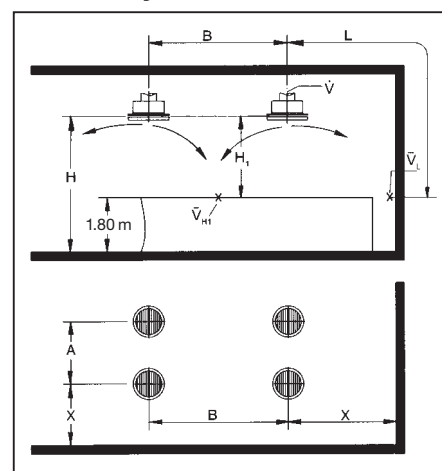
B = > 5 m
 $\bar{v}_{H1}$ = < 0.2 m/s
 $\bar{v}_L$ = 0.4 m/s
 X_{min} = 3 m

Selection valid for ceiling height 3.8 m to 6.8 m

Minimum flow rate

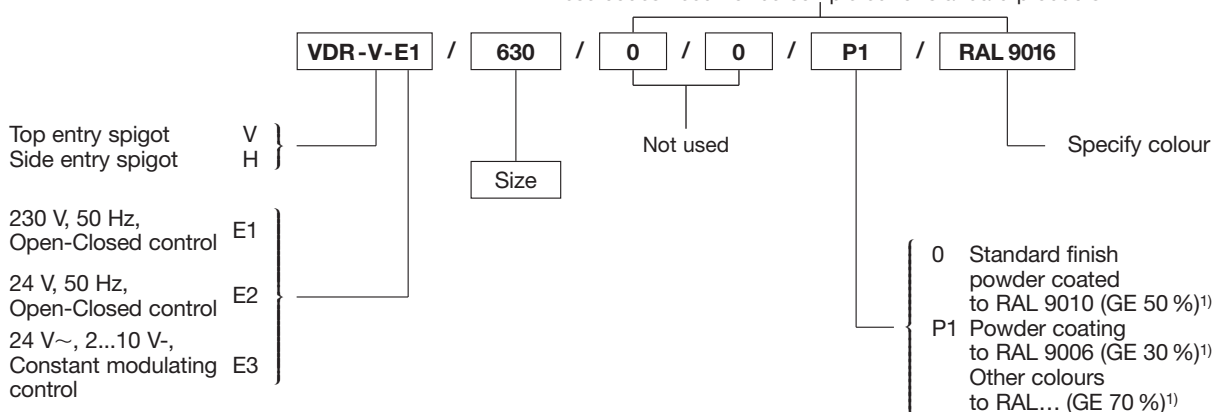
Size	$\dot{V}_{min}$
315	640
400	910
630	1770
800	2510

Diffuser layout



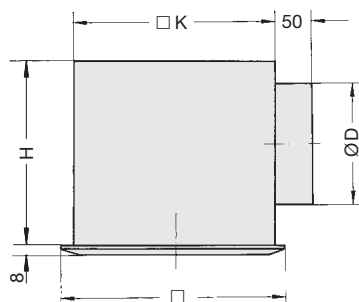
Order Code

These codes need not be completed for standard products





DLQ

**DLQ-AK**

Minimum distance between two diffusers (A)														
Size	Flow rate $\dot{V}$ (m³/h)													
	110	145	180	280	420	485	540	720	820	900	1080	1200	1400	1800
250	2.0	2.5	3.2	4.7										
300		2.0	2.2	3.3	4.8									
400				2.4	3.4	4.2	4.8	5.7	6.4					
500						3.0	3.5	4.6	4.8	5.3	6.3	6.5	7.5	
600									4.0	4.6	5.5	6.5	6.5	8.0
625									4.0	4.6	5.5	6.5	6.5	8.0

Dimensions (mm)				
Size	□	ØD	H	□K
250	248	158	262	216
300	298	158	262	266
400	398	198	307	372
500	498	248	357	476
600	598	313	420	567
625	623	313	420	567

Nomenclature

$$\dot{V} \quad \text{in m}^3/\text{h} = \text{Flow rate}$$
 $\dot{V}_{\min}$ in m^3/h = Minimum flow rate

A in m = Minimum distance between two diffusers

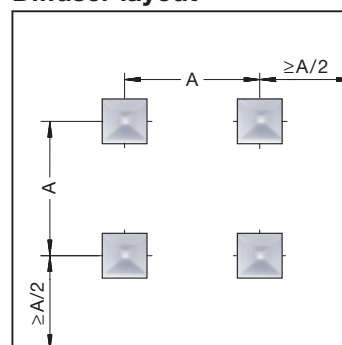
Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_t \leq 28$ Pa.

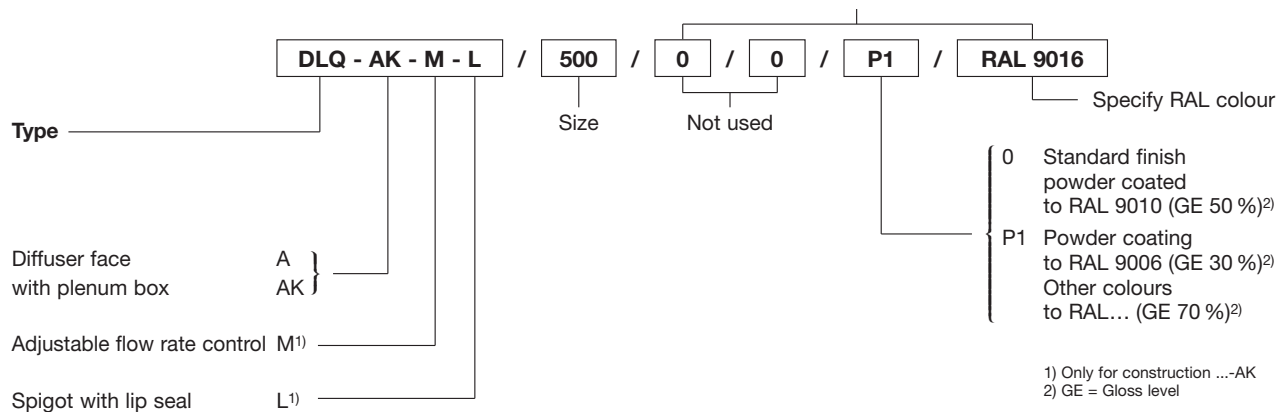
Selection valid for ceiling height = 2.7...3 m.

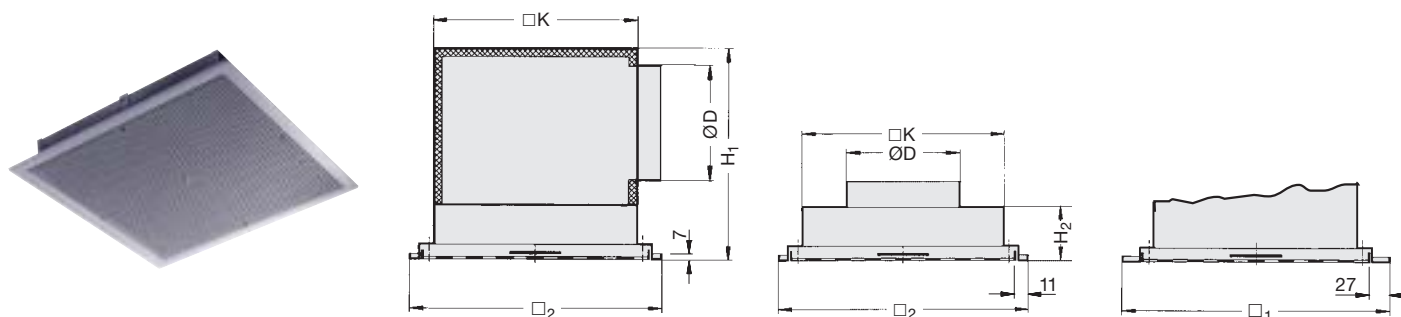
Diffuser layout

Minimum flow rate	
Size	$\dot{V}_{\min}$
250	110
300	145
400	280
500	485
600	820
625	820

**Order Code**

These codes need not be completed for standard products




DLQL
DLQL-P-H
DLQL-P-V
DLQL-K-...

Minimum distance between two diffusers (A)													
Size	Flow rate $\dot{V}$ (m³/h)												
	150	175	200	250	300	350	400	450	500	550	600	650	700
300	1.6	2.0	2.4										
400				2.2	2.6	2.8							
500					2.0	2.4	2.6	3.0	3.2	3.6	4.0		
600										3.0	3.2	3.6	4.0
625										3.0	3.2	3.6	4.0

Dimensions (mm)						
Size	$\square_1$	$\square_2$	H_1	H_2	$\varnothing D$	$\square K$
300	330	298	280	50	158	243
400	430	398	320	65	198	343
500	530	498	370	65	248	443
600	630	598	435	80	313	543
625	-	623	435	80	313	568

Nomenclature

$\dot{V}$ in m³/h = Flow rate

$\dot{V}_{min}$ in m³/h = Minimum flow rate

A in m = Minimum distance between two diffusers

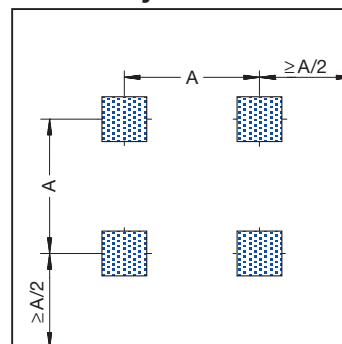
Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop Δp_t 25 Pa.

Selection valid for ceiling height = 2.7...3 m.

Minimum flow rate	
Size	$\dot{V}_{min}$
300	150
400	250
500	300
600	550
625	550

Diffuser layout



Order Code

These codes need not be completed for standard products

DLQL - P - H - D - M - L / 500 / 0 / 0 / P1 / RAL 9016

Type

Cover border (face width 27 mm) Q }
 Flush border (face width 11 mm) P }

Top entry spigot V }
 Side entry spigot H }

Acoustic lining D¹⁾

Adjustable flow rate control M¹⁾

L Spigot with lip seal

Size

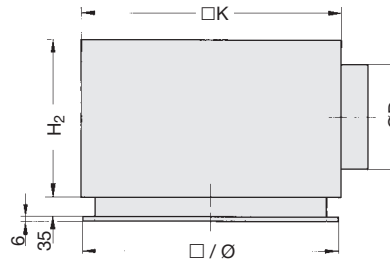
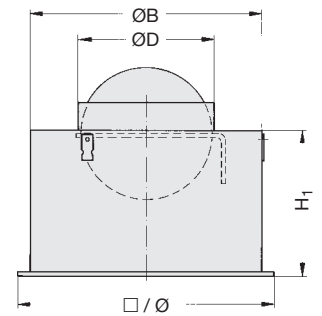
Not used

Specify RAL colour

0 Standard finish powder coated to RAL 9010 (GE 50 %)²⁾
 P1 Powder coating to RAL 9006 (GE 30 %)²⁾
 Other colours to RAL... (GE 70 %)²⁾

1) only possible with side entry spigot
 2) GE = Gloss level


ADLR-Q

ADLR

ADLR-...-H

ADLR-...-V-M

Minimum distance between two diffusers (A)																		
Size	Flow rate $\dot{V}$ (m³/h)																	
	70	110	150	180	210	300	360	430	500	650	790	830	900	1000	1080	1295	1585	1800
1	1.2	2.0	2.3	2.5	2.7													
2		1.2	2.0	2.2	2.4	2.9	3.2	3.5										
3				1.2	2.3	2.8	3.0	3.3	3.5	4.1								
4					1.8	2.7	3.0	3.3	3.5	4.0	4.3	4.3						
5								2.5	3.5	3.8	4.2	4.3	4.4	4.6	4.8			
6									2.5	3.7	4.1	4.2	4.4	4.6	4.7	5.1		
7										2.5	3.9	4	4.2	4.4	4.6	5	5.4	
8											3.8	3.9	4.1	4.4	4.5	4.9	5.4	5.7

Dimensions (mm)					
Size	Ø	ØB	ØD	H ₂	□K
1	244	202	123	220	266
2	300	258	158	250	290
3	356	314	198	295	372
4	412	370	248	345	476
5	468	426	248	345	476
6	542	482	313	410	567
7	598	538	313	410	590
8	654	594	313	410	615

Nomenclature

$\dot{V}$ in m³/h = Flow rate

$\dot{V}_{min}$ in m³/h = Minimum flow rate

A in m = minimum distance between two diffusers

Note

In all cases, the sound power level is $L_{WA} \leq 40$ dB(A) per diffuser and the pressure drop $\Delta p_t \leq 45$ Pa.

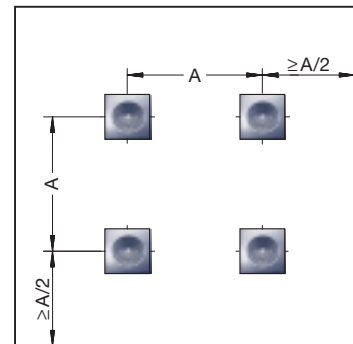
Selection valid for ceiling height = 2.7...3 m.

Available dimensions

Diffuser face ADLR-Q = □ 593, 598, 618 and 623 mm

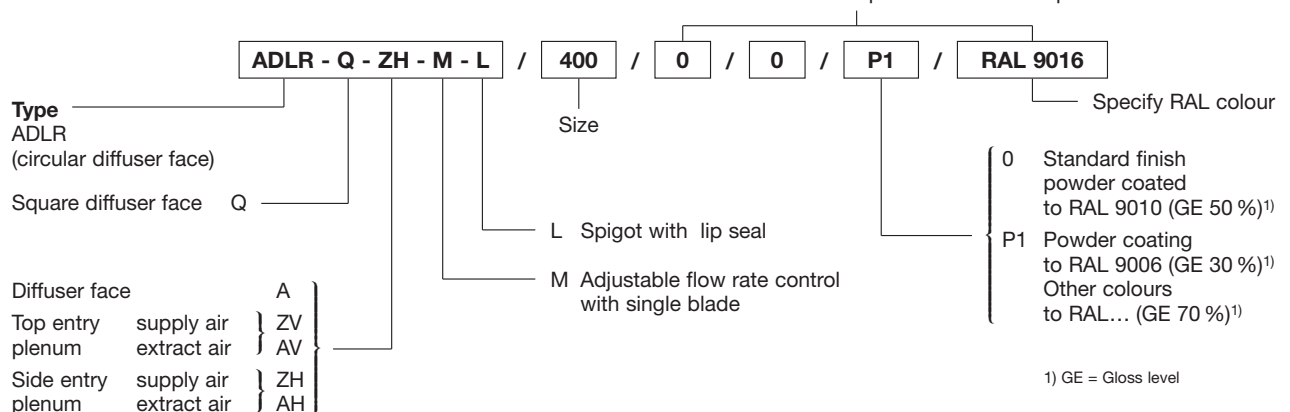
Minimum flow rate	
Size	$\dot{V}_{min}$
1	70
2	110
3	180
4	300
5	400
6	500
7	650
8	800

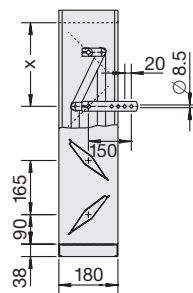
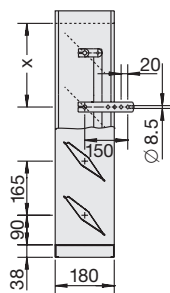
Diffuser layout



Order Code

These codes need not be completed for standard products





JZ-A · JNE-A

Description

JZ-A

- Casing and blades made from galvanised rolled steel sheet, casing flanges with holes in the corners on both sides
- Blade spindles and external linkage made from galvanised steel
- Plain bearings made from special plastic
- Parallel blade operation
- Drive arm may be located on any blade
- Temperature resistant to 100 °C

JNE-A

- Casing, blades and external linkage made from stainless steel, type No. 1.4301, casing flanges with holes in the corners on both sides
- Blade spindles made from stainless steel, type No. 1.4305
- Plain bearings made from special plastic
- Parallel blade operation
- Drive arm may be located on any blade
- Temperature resistant to 100 °C

JZ-B

- Same as Type JZ-A, except:
- Opposed blade operation

JNE-B

- Same as Type JNE-A, except:
- Opposed blade operation

JZD-B

- Same as Type JZ-B, except:
- Additional seals on long blade sides
- Temperature resistant to 90 °C

JZ-L (airtight to DIN 1946)*

- Same as Type JZ-B, except:
- Seals on long blade sides made from special plastic, side seals made from foam plastic
- Drive arm may be located on every 2nd blade
- Temperature resistant to 90 °C

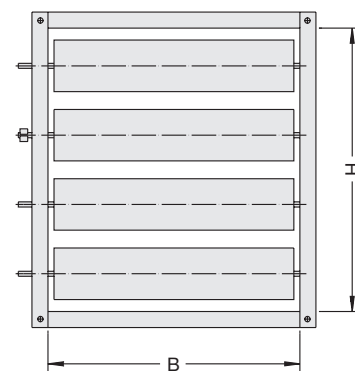
* Leakage < 10 m³/h / m² blades closed at pressure differential of 100 Pa

JZ-B · JNE-B · JZD-B · JZ-L · JNE-L

JNE-L (airtight to DIN 1946)*

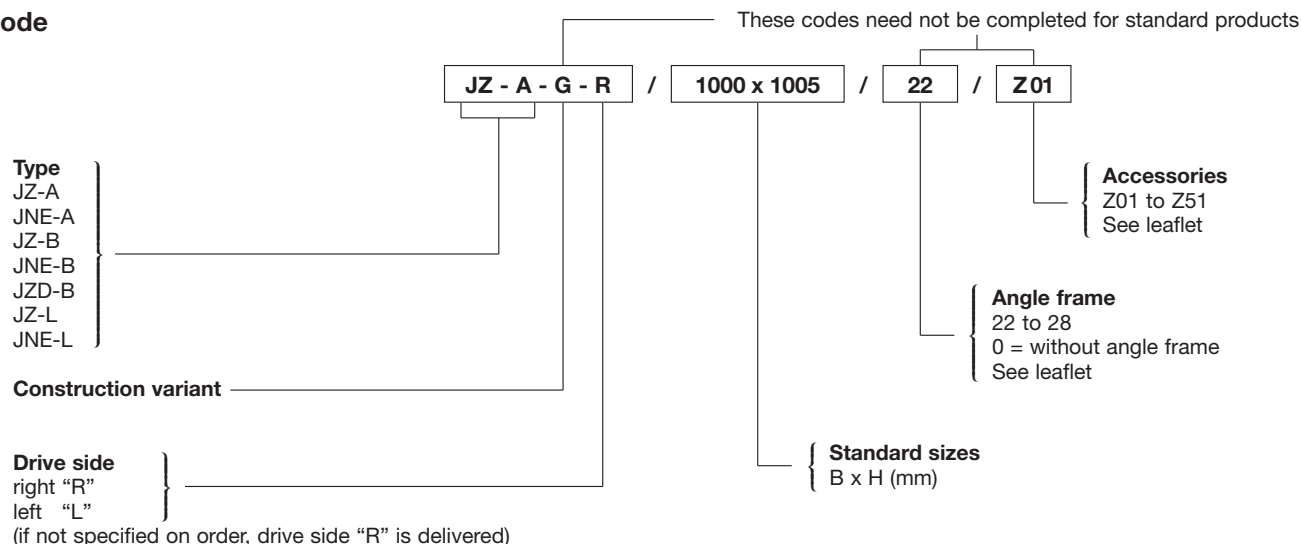
- Same as Type JZ-L, except:
- Casing, blades and external linkage made from stainless steel, type No. 1.4301, casing flanges with holes in the corners on both sides
- Blade spindles made from stainless steel, type No. 1.4305

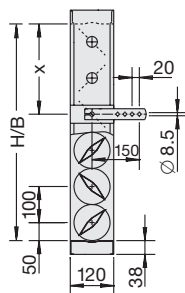
Standard sizes	
B (mm)	H (mm)
400	345
600	510
800	675
1000	840
1200	1005
1400	1170
1600	1335
1800	1500
2000	1665
	1830
	1995



All combinations of B and H dimensions can be supplied. Within the standard dimension range, all intermediate dimensions (B dimension and/or H dimension) available. Multileaf damper variants outside the standard dimension range are supplied subdivided on B or H dimension.

Order Code





JZ-G · JZD-G

Description

JZ-G

- Casing and blades of extruded aluminium sections, casing flanges with holes in the corners on both sides
- Blade spindles made from galvanised steel
- Gears made from special anti-static plastic
- Galvanised steel drive arm
- Blades interconnected by gears located at each end of the blade
- Temperature resistant to 90°C

JZD-G (airtight to DIN 1946)*

- Casing and blades of extruded aluminium sections, casing flanges with holes in the corners on both sides
- Blade spindles (from H = 800 mm, 2 sections with coupling rods) made from galvanised steel
- Gears made from special anti-static plastic
- Drive arm, locking quadrant and position indicator made from galvanised steel
- Seals on the long blade sides and bearings made from special plastic
- Blades interconnected by internal gears
- Temperature resistant to 50°C

* Leakage < 10 m³/h / m² blades closed against pressure differential of 100 Pa

Standard sizes

B (mm)	H (mm)
200	100
250	150
300	200
350	250
400	300
450	350
500	400
550	450
600	500
650	550
700	600

Standard sizes

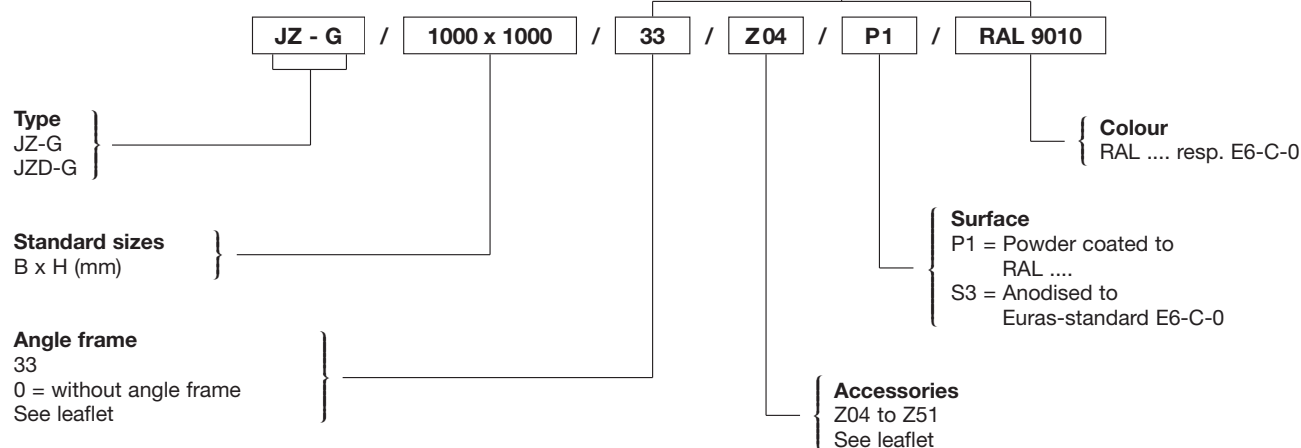
B (mm)	H (mm)
750	650
800	700
850	750
900	800
950	850
1000	900
1050	950
1100	1000
1150	
1200	

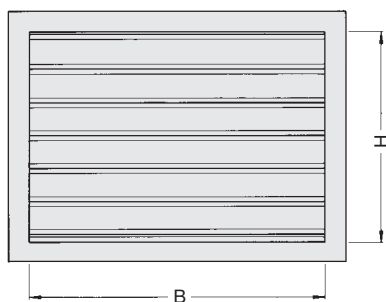
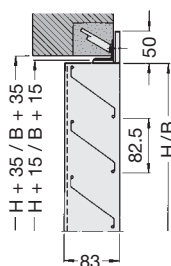
All combinations of B and H dimensions can be supplied.

All intermediate B dimensions within the standard dimension range can be supplied.

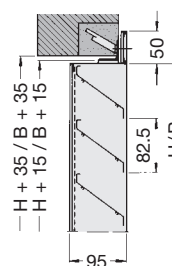
Order Code

These codes need not be completed for standard products

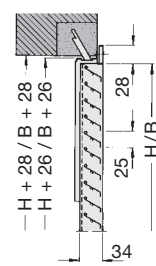



WG

WG


Opening size without
angle frame
 $B + 15 / H + 15$

WG · WGE


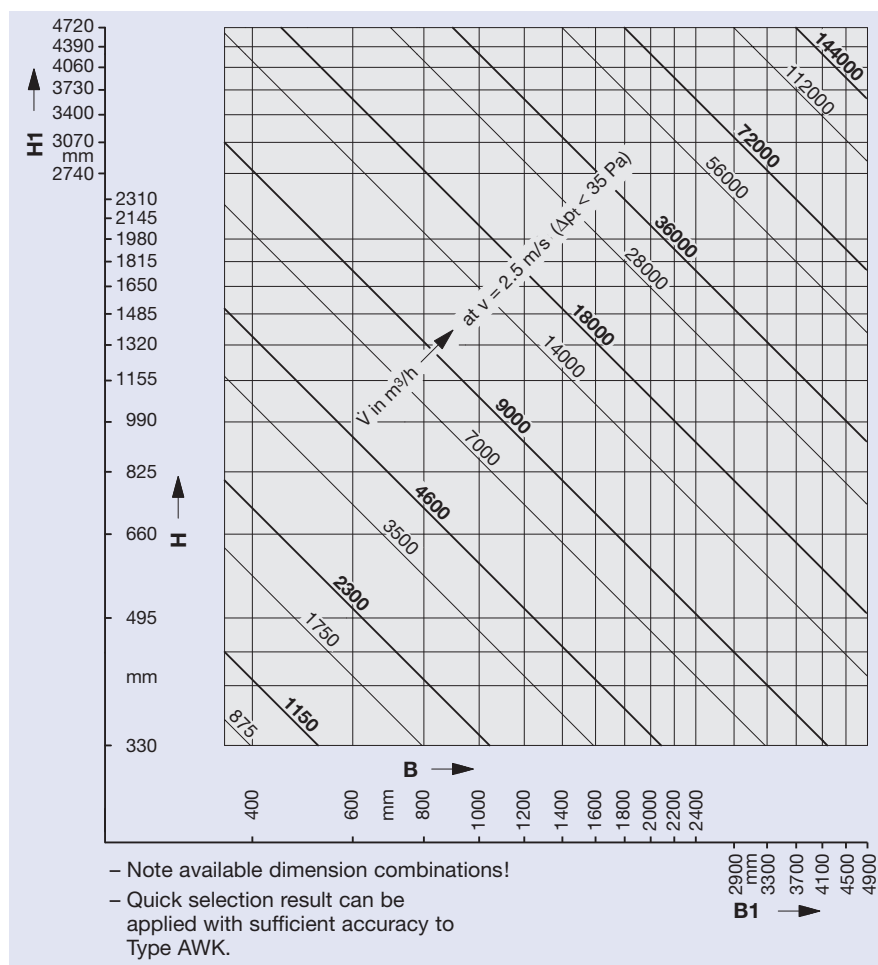
Opening size without
angle frame
 $B + 15 / H + 15$

AWG


Opening size without
angle frame
 $B + 10 / H + 10$

AWK

WG · AWG · WGE



Description

WG

- Frames and blades of formed, galvanised steel sheet
- Bird screen using 20 x 20 mm galvanised wire mesh
- Flange drilled as standard
- Free cross section approx. 60 % rel. to $B \times (H - 0.085 \text{ m})$

AWG

- Frames and blades of extruded aluminium sections
- Bird screen using 20 x 20 mm galvanised wire mesh
- Flange drilled as standard
- Free cross section approx. 60 % rel. to $B \times (H - 0.085 \text{ m})$

WGE

- Frames, blades and bird screen (mesh size 20 x 20 mm) in stainless steel, type No. 1.4301
- Flange drilled as standard
- Free cross section approx. 60 % rel. to $B \times (H - 0.085 \text{ m})$

AWK

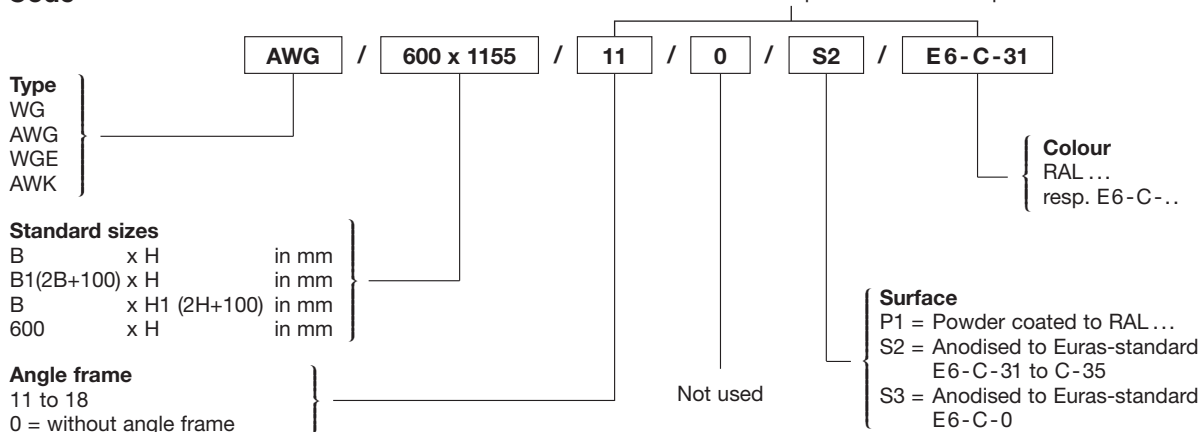
- Frames and blades of extruded aluminium sections, natural anodised (E6-C-0)
- Bird screen using 6 x 6 mm galvanised wire mesh
- Flange drilled as standard
- Free cross section approx. 60 % rel. to $B \times (H - 0.028 \text{ m})$

Nomenclature

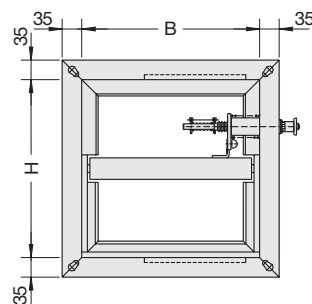
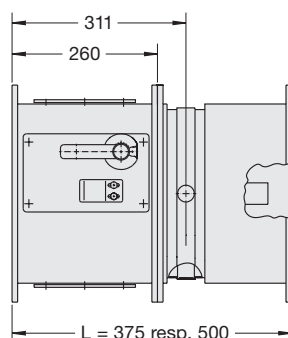
$\dot{V}$ in m^3/h = Flow rate
 v in m/s = Upstream velocity
 Δp_t in Pa = Total pressure drop

Order Code

These codes need not be completed for standard products



Rectangular Fire Dampers Type FK-K90


FK-K90

Flow rate (m³/h) at $\Delta p_t < 35$ Pa

H (mm)	L _{WA} (dB[A])	B (mm)																				
		200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200	1300	1400	1500	
200	35	650	850	1050	1250	1400	1600	1750	1950	2100	2300	2450	2600	2800	1950	2150	2400	2650	2850	3100	3300	
	45	950	1200	1450	1750	2000	2250	2500	2700	2950	3200	3450	3650	3900	2750	3100	3400	3750	4050	4400	4700	
250	35	900	1150	1400	1650	1900	2150	2350	2600	2800	3050	3250	3450	3700	2800	3150	3450	3800	4150	4450	4800	
	45	1300	1650	2000	2300	2650	3000	3300	3600	3950	4250	4550	4850	5150	4000	4450	4950	5400	5850	6350	6800	
300	35	1150	1450	1750	2050	2350	2650	2950	3200	3500	3750	4050	4300	4550	3650	4100	4500	4950	5350	5800	6200	
	45	1600	2050	2500	2900	3300	3700	4100	4500	4850	5250	5650	6000	6400	5200	5800	6400	7050	7650	8250	8850	
350	35	1400	1750	2100	2450	2800	3150	3500	3800	4150	4450	4800	5100	5400	4500	5050	5550	6050	6600	7100	7650	
	45	1950	2450	2950	3450	3950	4400	4850	5350	5800	6250	6700	7150	7550	6400	7150	7900	8650	9400	10100	10850	
400	35	1600	2050	2450	2850	3250	3650	4050	4400	4800	5150	5500	5900	6250	5350	5950	6550	7200	7800	8450	9050	
	45	2250	2850	3450	4000	4550	5100	5650	6150	6700	7200	7700	8250	8750	7600	8450	9350	10200	11100	12000	12850	
450	35	1250	1650	1850	2200	2550	2950	3300	3650	4000	4350	4700	5100	5450	6150	6850	7600	8300	9000	9700	10450	
	45	1800	2400	2600	3150	3650	4150	4650	5200	5700	6200	6700	7200	7750	8750	9750	10800	11800	12800	13800	14850	
500	35	1550	2100	2100	2500	2900	3300	3700	4150	4550	4950	5350	5750	6150	6950	7800	8600	9400	10200	11000	11800	
	45	2200	2950	2950	3550	4150	4700	5300	5850	6450	7050	7600	8200	8750	9900	11050	12200	13350	14500	15650	16800	
550	35				2350	2800	3250	3700	4150	4600	5050	5500	5950	6450	6900	7800	8700	9600	10500	11400	12300	13150
	45				3300	3950	4600	5250	5900	6550	7200	7850	8500	9150	9800	11050	12350	13600	14900	16200	17450	18750
600	35				2600	3100	3600	4100	4600	5100	5600	6100	6600	7100	7600	8600	9600	10550	11550	12550	13550	14550
	45				3650	4400	5100	5800	6550	7250	7950	8650	9400	10100	10800	12200	13600	15050	16450	17850	19250	20650
650	35				2850	3400	3950	4500	5050	5600	6150	6650	7200	7750	8300	9400	10500	11550	12650	13750	14800	15900
	45				4000	4800	5600	6350	7150	7950	8700	9500	10250	11050	11800	13350	14900	16450	17950	19500	21050	22600
700	35				3050	3650	4250	4850	5450	6050	6650	7250	7850	8450	9000	10200	11350	12550	13700	14900	16050	17250
	45				4350	5200	6050	6900	7750	8600	9450	10300	11150	12000	12800	14500	16150	17850	19500	21150	22850	24500
750	35				3300	3950	4600	5250	5900	6550	7200	7800	8450	9100	9700	11000	12250	13550	14800	16050	17300	18600
	45				4700	5650	6550	7450	8400	9300	10200	11100	12000	12900	13800	15650	17450	19250	21050	22800	24600	26400
800	35				3550	4250	4950	5650	6350	7000	7700	8400	9050	9750	10450	11800	13150	14500	15850	17200	18550	19900
	45				5050	6050	7050	8000	9000	9950	10950	11900	12900	13850	14850	16750	18700	20600	22550	24450	26400	28300

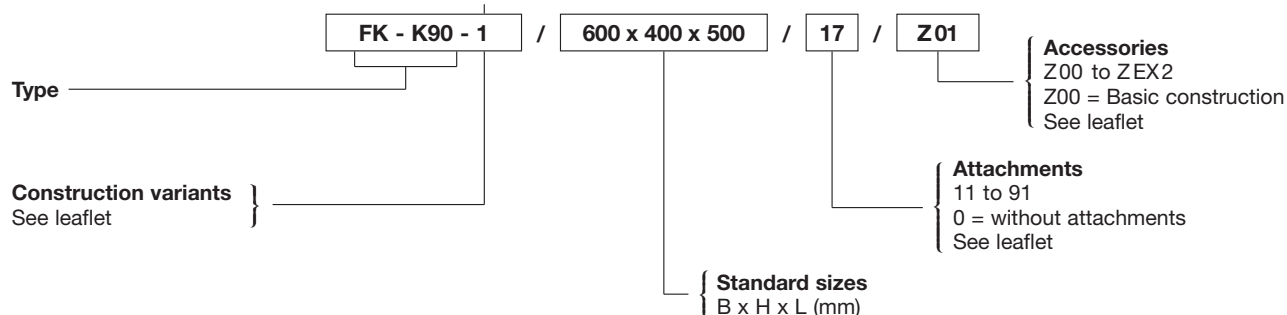
Nomenclature
 $\dot{V}$ in m³/h = Flow rate

 Δp_t in Pa = Total pressure drop

L_{WA} in dB(A) = Sound pressure level

Order Code

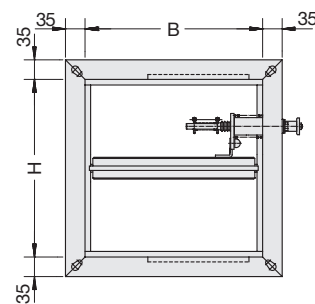
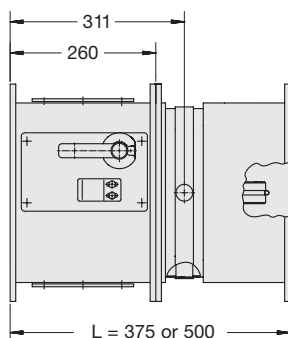
These codes need not be completed for standard products



Rectangular Fire Dampers Type FK-K90-LD



FK-K90-LD



Flow rate (m³/h) at $\Delta p_t < 35$ Pa														
H (mm)	L _{WA} (dB[A])	B (mm)												
		200	250	300	350	400	450	500	550	600	650	700	750	800
200	35	650	850	1050	1250	1400	1600	1750	1950	2100	2300	2450	2600	2800
	45	950	1200	1450	1750	2000	2250	2500	2700	2950	3200	3450	3650	3900
250	35	900	1150	1400	1650	1900	2150	2350	2600	2800	3050	3250	3450	3700
	45	1300	1650	2000	2300	2650	3000	3300	3600	3950	4250	4550	4850	5150
300	35	1150	1450	1750	2050	2350	2650	2950	3200	3500	3750	4050	4300	4550
	45	1600	2050	2500	2900	3300	3700	4100	4500	4850	5250	5650	6000	6400
350	35	1400	1750	2100	2450	2800	3150	3500	3800	4150	4450	4800	5100	5400
	45	1950	2450	2950	3450	3950	4400	4850	5350	5800	6250	6700	7150	7550
400	35	1600	2050	2450	2850	3250	3650	4050	4400	4800	5150	5500	5900	6250
	45	2250	2850	3450	4000	4550	5100	5650	6150	6700	7200	7700	8250	8750

Nomenclature

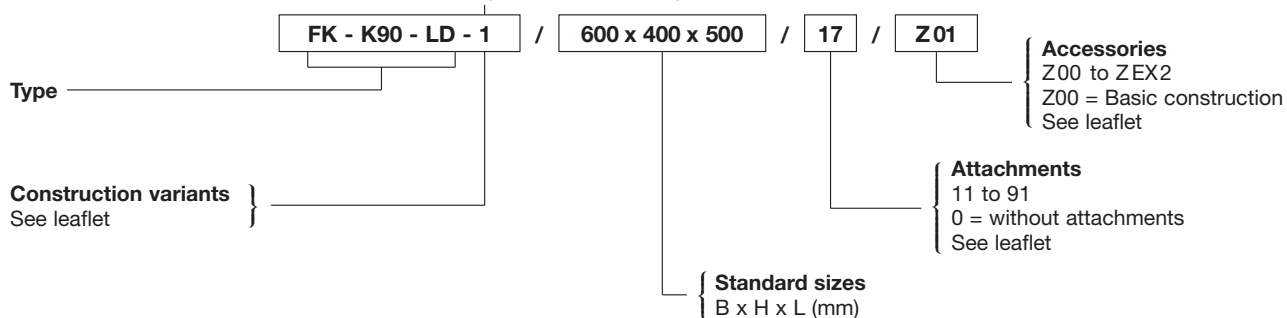
$\dot{V}$ in m³/h = Flow rate

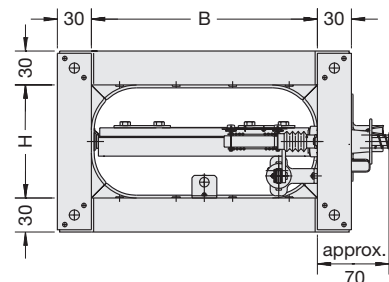
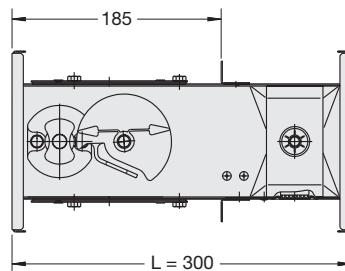
Δp_t in Pa = Total pressure drop

L_{WA} in dB(A) = Sound power level

Order Code

These codes need not be completed for standard products





FKS-EU

Flow rate (m³/h) at $\Delta p_t < 25 \text{ Pa}^*$								
H (mm)	L_{WA} (dB[A])	B (mm)						
		200	300	400	500	600	700	800
100	30	250	400	550	700	900	1050	1200
	35	300	500	700	850	1050	1250	1450
	40	350	550	800	1000	1250	1450	1700
125	30	350	550	750	950	1200	1400	1650
	35	450	650	900	1150	1400	1700	1950
	40	500	750	1100	1350	1700	2000	2300
150	30	450	700	1000	1250	1550	1850	2100
	35	550	850	1150	1500	1800	2150	2500
	40	650	1000	1400	1750	2150	2550	2950
160	30	500	750	1100	1350	1700	2000	2300
	35	600	900	1300	1600	2000	2350	2750
	40	700	1050	1500	1900	2350	2800	3250
200	30	700	1050	1500	1850	2300	2700	3200
	35	800	1250	1750	2200	2750	3200	3750
	40	1000	1450	2100	2600	3250	3800	4450

* v_A is limited to 12 m/s

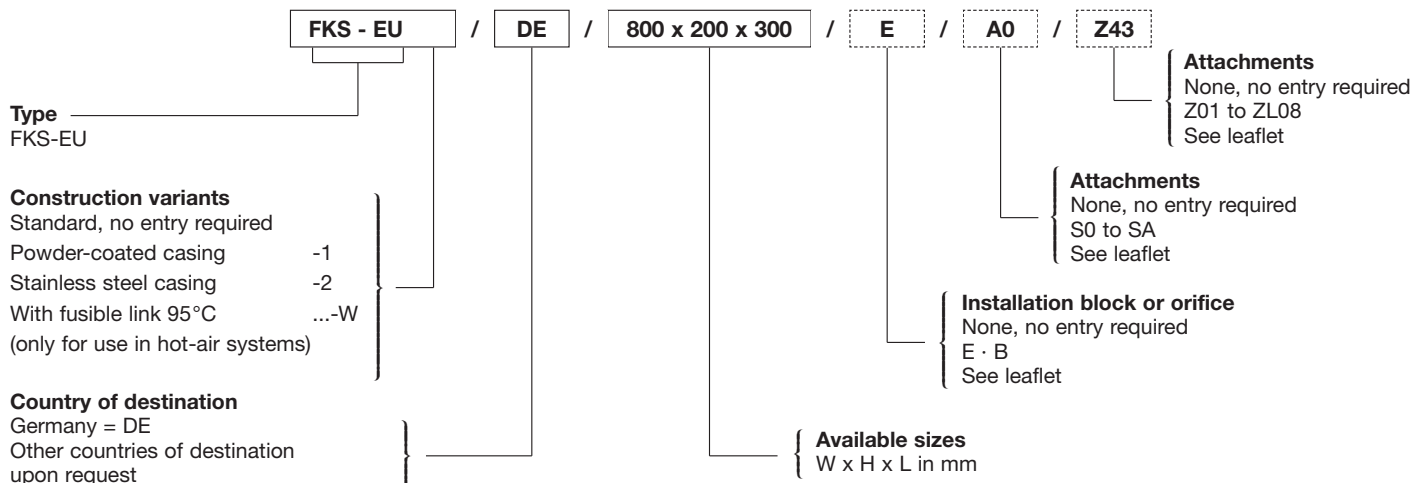
Nomenclature

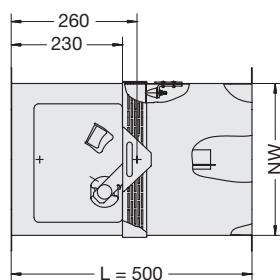
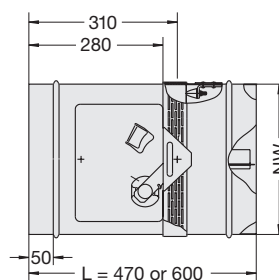
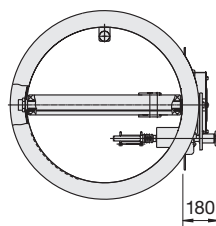
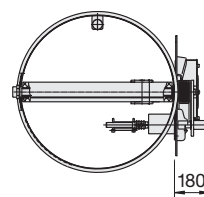
$\dot{V}$ in m³/h = Flow rate

Δp_t in Pa = Total pressure drop

L_{WA} in dB(A) = Sound power level

Order Code




FKR-01-K90

FKR-02-K90


Flow rate (m³/h)							
NW	L _{WA} (dB[A])	$\dot{V}$ (m³/h)	Δp_t (Pa)	NW	L _{WA} (dB[A])	$\dot{V}$ (m³/h)	Δp_t (Pa)
200	35	500	12	400	35	2250	4
	40	650	21		40	2700	6
	45	800	32		45	3300	9
224	35	700	11	450	35	2750	4
	40	850	16		40	3350	5
	45	1050	25		45	4050	8
250	35	900	9	500	35	3300	3
	40	1100	13		40	4050	5
	45	1300	19		45	4900	7
280	35	1150	7	560	35	4050	3
	40	1400	11		40	4950	4
	45	1700	16		45	6000	6
315	35	1400	6	630	35	4900	2
	40	1750	9		40	5950	3
	45	2100	13		45	7200	5
355	35	1750	5	710	35	6050	2
	40	2150	8		40	7350	3
	45	2600	11		45	8900	4

Nomenclature

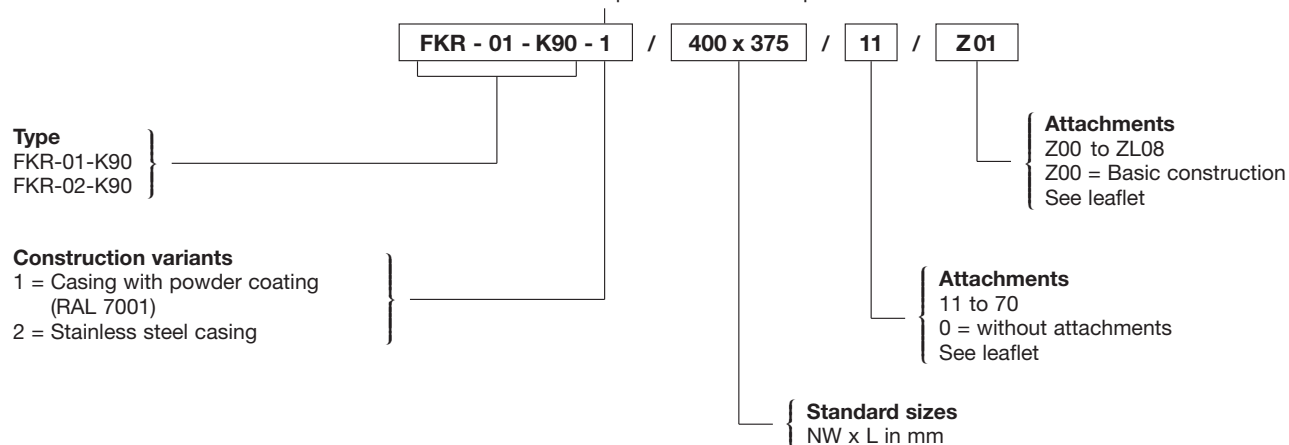
$\dot{V}$ in m³/h = Flow rate

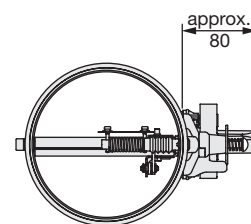
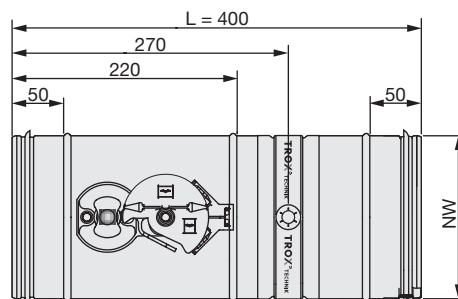
Δp_t in Pa = Total pressure drop

L_{WA} in dB(A) = Sound power level

Order Code

These codes need not be completed for standard products





FKRS-EU

Flow rate (m³/h)			
NW	L _{WA} (dB[A])	$\dot{V}$ (m³/h)	Δp_t (Pa)
100	25	80	9
	35	130	24
	45	160	36
125	25	160	9
	35	240	20
	45	310	34
150	25	250	7
	35	380	17
	45	540	35
160	25	290	7
	35	450	16
	45	650	34
200	25	500	5
	35	750	12
	45	1070	25
224	25	610	6
	35	890	14
	45	1250	27
250	25	780	6
	35	1140	12
	45	1600	23
280	25	1010	5
	35	1460	10
	45	2050	19
315	25	1300	4
	35	1890	8
	45	2650	15

Nomenclature

$\dot{V}$ in m³/h = Flow rate

Δp_t in Pa = Total pressure drop

L_{WA} in dB(A) = Sound power level

Order Code

Type
FKRS-EU

Construction variants

Standard, no entry required

Powder-coated casing

Stainless steel casing

Coated damper blade

Powder-coated casing and
Coated damper blade

Stainless steel casing and
Coated damper blade

Country of destination

Germany = DE

Other countries of destination
upon request

FKRS - EU / DE / 160 / ER / A0 / Z43

-1
-2
-7
-1-7
-2-7

100
125
150
160
200
224
250
280
315

Nominal size

Attachments

None, no entry required
Z01 to ZL08
See leaflet

Attachments

None, no entry required
S0 to SA
See leaflet

Installation block

None, no entry required
ER · EQ
See leaflet

Construction or variant	Combination with	Code			Fire Dampers Type				
		-K90 -EU 1)	-K90-1 -EU-1 2)	-K90-2 -EU-2 3)	FK-K90	FK-K90-LD	FKS-EU	FKR-01-K90 FKR-02-K90	FKRS-EU
With one circular entry spigot on the connecting frame side	–	11	61		X	X	–	–	–
With two circular entry spigots 4) 7)	–	12	62		X	X	–	–	–
With one cover grille on the connecting frame side 4)	–	17	67		X	X	–	–	–
With one cover grille on the wall frame side 4) 7)	–	43	93		X	X	–	–	–
With one flexible connectors on the connecting frame side 4)	–	19	69		X	X	–	–	–
With two flexible connectors 5) 7)	–	20	70		X	X	–	–	–
With one surface subframe	Parts kit for board cladding 6)	22	72		X	X	–	–	–
	Parts kit for board cladding 7)	41	91		X	X	–	–	–
With one installation kit and the appropriate fastening elements 7)	–	24			X	X	–	–	–
With one flexible connector on the operating side 8)	–	S0			–	–	X	–	X
	One cover grille on the installation side and the corresponding extension piece 9)	SA			–	–	X	–	X
With one flexible connector on the installation side and the appropriate extension piece 8) 9)	–	0S			–	–	X	–	X
	One cover grille on the operating side	AS			–	–	X	–	X
With flexible connectors on both sides 8) 9)	–	SS			–	–	X	–	X
With one cover grille on the operating side 9)	–	A0			–	–	X	–	X
With a cover grille on the installation side and the appropriate extension piece 9)	–	0A			–	–	X	–	X
With a lip seal on both sides	–	10			–	–	–	X	–
With one cover grille on the drive side 4)	–	11	61		–	–	–	X	–
With one cover grille on the installation side 4) 10)	–	12	62		–	–	–	X	–
With one flexible connectors on the drive side 4)	–	14	64		–	–	–	X	–
With one flexible connectors on the installation side 4) 10)	–	15	65		–	–	–	X	–
With two flexible connectors 5) 10)	–	16	66		–	–	–	X	–
With one installation kit 10)	–	17			–	–	–	X	–
	One flexible connector on the drive side 4)	18	68		–	–	–	X	–
	One flexible connector on the installation side 4)	19	69		–	–	–	X	–
	Two flexible connectors 5)	20	70		–	–	–	X	–
With circular installation block	–	ER			–	–	–	–	X
With square installation block	–	EQ			–	–	–	–	X

1) Code for attachments only for galvanised fire dampers (e. g. ...-K90, ...-EU).

The attachments (exception: flexible connectors) are supplied in galvanised construction.
Flexible connectors are identical for all construction variants.

2) Code for attachments only for fire dampers with powder coating RAL 7001 (e. g. ...-K90-1, ...-EU-1).

The attachments are supplied with powder coating RAL 7001.
Flexible connectors are identical for all construction variants.

3) Code for attachments only for stainless steel fire dampers (e. g. ...-K90-2, ...-EU-2).

The attachments are supplied with powder coating RAL 7001, exception: extension pieces for Type FKS-EU are supplied in stainless steel construction.
Flexible connectors are identical for all construction variants.

4) ... and the corresponding extension piece (if required, depending on height and size).

5) ... and the corresponding extension pieces (if required, depending on height and size).

6) Only for casing length L = 375 mm.

7) Only for casing length L = 500 mm.

8) The flexible connectors are supplied loose.

9) The fire dampers are supplied with pre-mounted extension piece and/or with pre-mounted cover grille.

10) Only for casing lengths L = 500 mm (FKR-01-K90) and L = 600 mm (FKR-02-K90).

For further information on attachments, see leaflet.

Construction	Combination with	Code	Fire Dampers Type				
			FK-K90	FK-K90-LD	FKS-EU	FKR-01-K90 FKR-02-K90	FKRS-EU
with fusible link 72 °C or 95 °C (Basic construction)	1) –	Z00	X	X	X	X	X
	Limit switch indicates blade "CLOSED"	Z01	X	X	X	X	X
	Limit switch indicates blade "OPEN"	Z02	X	X	X	X	X
	Limit switch indicates blade "CLOSED" and "OPEN"	Z03	X	X	X	X	X
with spring return actuator Types BLF or BF and thermo-electric release mechanism BAE72A-S, manufactured by Belimo (power off to close)	2) 3)						
Type BLF230-T TR (with integrated limit switches) U = AC 230 V, 50...60 Hz, Protection Class IP 54	4) –	Z43	X	X	X	–	X
Type BF230-T TR (with integrated limit switches) U = AC 230 V, 50...60 Hz, Protection Class IP 54	–	Z43	X	X	–	X	–
Type BLF24-T-ST TR (with integrated limit switches) U = AC 24 V, 50...60 Hz resp. DC 24 V, Protection Level IP 54	4) –	Z45	X	X	X	–	–
	AS-EM/B module, TROXNETCOM AS-Interface	5) ZA03	X	X	X	–	X
	LON-WA1/B2, TROXNETCOM LON	5) ZL06	X	X	X	–	X
	LON-WA1/B2-AD, TROXNETCOM LON	5) ZL07	X	X	X	–	X
	LON-WA1/B2-AD230, TROXNETCOM LON	5) ZL08	X	X	X	–	X
Type BF24-T-ST TR (with integrated limit switches) U = AC 24 V, 50...60 Hz resp. DC 24 V, Protection Level IP 54	–	Z45	X	X	–	X	–
	AS-EM/B module, TROXNETCOM AS-Interface	5) ZA03	X	X	–	X	–
	LON-WA1/B2, TROXNETCOM LON	5) ZL06	X	X	–	X	–
	LON-WA1/B2-AD, TROXNETCOM LON	5) ZL07	X	X	–	X	–
	LON-WA1/B2-AD230, TROXNETCOM LON	5) ZL08	X	X	–	X	–
With spring return actuator (explosion-proof), thermal-Electrical release mechanism (explosion-proof) and terminal box (explosion-proof)	–	ZEX1	X	X	–	–	–
	AS-Interface module	ZEX2	X	X	–	–	–

1) Fusible link 95 °C only licensed for Types FK-K90 · FK-K90-LD · FKS-EU.

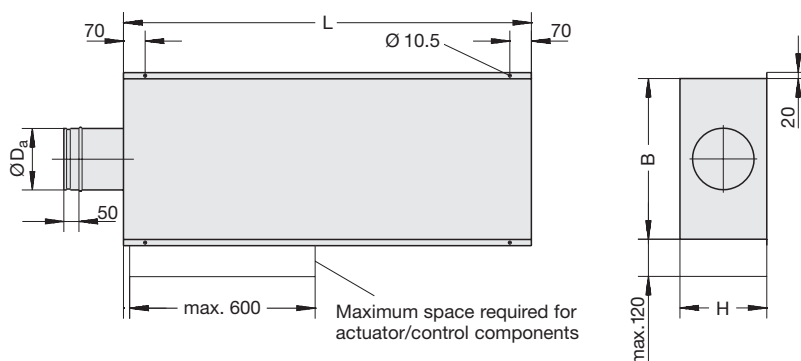
2) The ambient temperature for storage and operation must remain within the permissible ranges –20 °C to +50 °C (–30 °C to +50 °C for spring return actuator Type BLF).

3) Contacts in silver, gold-plated; Cable halogen-free.

4) Spring return actuator Type BLF for dimension combinations up to B x H = 800 x 400 mm (Types FK-K90 · FK-K90-LD).

5) TROXNETCOM elements mounted on the fire damper. Information on the TROXNETCOM communications solutions for the control of fire dampers on the basis of LON and AS Interface can be found on our website under Products/Automation and Systems Technology.

For further information on accessories, see leaflet.



TVZ

Sound pressure level (dB[A])

Size	ØD _a (mm)	Flow rate range (m³/h)	v v=5m/s (m³/h)	Δp _{st} = 100 Pa				Δp _{st} = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				without silencer	with silencer	without acoustic cladding	with acoustic cladding	without silencer	with silencer	without acoustic cladding	with acoustic cladding
				L _{pA}	L _{pA1} Type TS	L _{pA2}	L _{pA3}	L _{pA}	L _{pA1} Type TS	L _{pA2}	L _{pA3}
125	124	54 – 540	220	22	19	21	15	25	15	25	16
160	159	90 – 900	360	28	23	22	16	29	17	25	18
200	199	144 – 1458	580	20	17	24	18	22	13	28	20
250	249	216 – 2214	880	17	14	23	18	20	12	28	20
315	314	378 – 3690	1400	19	15	23	17	23	14	29	21
400	399	612 – 6048	2260	18	13	25	19	22	15	31	23

Nomenclature

Δp_{st} in Pa = Static pressure differential

v in m/s = Air velocity in circular spigot

L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account

L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with TX silencer, system attenuation taken into account

L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account

L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

All sound pressure levels are based on 20 μPa.

System attenuation: See leaflet 5/1/EN/...

Dimensions (mm)

Size	TVZ · TVA			TVZD · TVAD*		
	B	H	L	B	H	L
125	300	236	1035	380	316	1075
160	410	236	1035	490	316	1075
200	560	281	1320	640	361	1360
250	700	311	1440	780	391	1480
315	900	361	1440	980	441	1480
400	1000	446	1820	1080	526	1860

* with acoustic cladding

Order Code

Type

Supply air box TVZ
with acoustic cladding TVZD
Extract air device TVA
with acoustic cladding TVAD

Size

Accessories

Basic construction 00
Lip seal D1

TVZ / 160 / 00 / BC0 / E0 / 200 - 900 m³/h

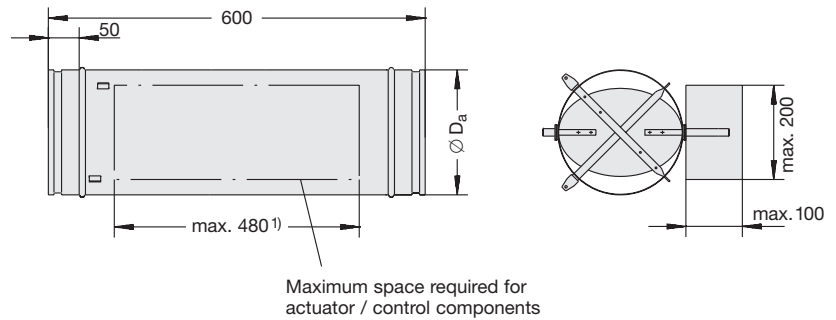
Flow rate control¹⁾
State flow rate range
and units

Operating mode¹⁾
M. Master
S. Slave
E. Single
F. Constant value

Attachments¹⁾
Explanations and additional charges
for control components

Control
components
see
leaflet

¹⁾ If not otherwise specified in order, TVZ-Easy · TVA-Easy is delivered.



TVR

Sound pressure level (dB[A])											
Size	ØD _a (mm)	Flow rate range (m³/h)	v v=5m/s (m³/h)	Δp _g = 100 Pa				Δp _g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding	without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding
				L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}	L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}
100	99	36 – 349	140	42	24	25	22	47	29	26	19
125	124	54 – 551	220	43	21	25	19	48	33	27	19
160	159	90 – 900	360	46	27	27	21	51	37	30	21
200	199	144 – 1451	560	45	29	28	18	50	37	30	17
250	249	223 – 2221	880	44	28	28	19	49	37	35	19
315	314	371 – 3700	1400	45	33	35	22	50	39	40	22
400	399	605 – 6034	2260	44	33	36	22	49	37	40	23

Nomenclature

Δp_g in Pa = Total pressure differential

v in m/s = Air velocity

L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account

L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with CS silencer, system attenuation taken into account

L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account

L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

All sound pressure levels are based on 20 μPa.

System attenuation: See leaflet 5/3/EN/...

Order Code

Type

VAV Controller TVR
with acoustic cladding TVRD

Material

Basic construction steel, galv. 00
Surface powder coated P1
Colour RAL 7001

Flange

WITHOUT 00
with flange both ends FL¹⁾

Size

Accessories

NONE 00
Matching flange both ends G2
Lip seal both ends D2

TVR - 00 - 00 / 160 / 00 / BC0 / E0 / 200 - 900 m³/h

Flow rate control¹⁾
State flow rate range and units

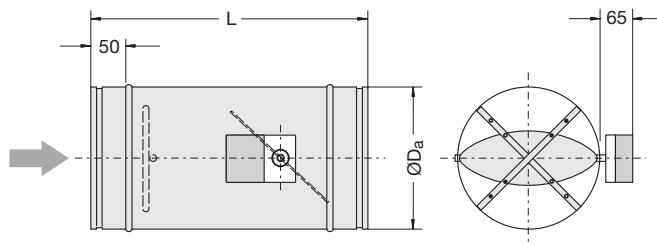
Operating mode

M. Master
S. Slave
E. Single
F. Constant value

Control components¹⁾
Explanations and additional charges for control components

Control components see leaflet

¹⁾ not on TVRD with powder coating.



TVR-Easy

Sound pressure level (dB[A])

Size	ØD _a (mm)	Flow rate range (m³/h)	v v=5m/s (m³/h)	Δp _g = 100 Pa				Δp _g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding	without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding
				L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}	L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}
100	99	36 – 349	140	42	24	25	22	47	29	26	19
125	124	54 – 551	220	43	21	25	19	48	33	27	19
160	159	90 – 900	360	46	27	27	21	51	37	30	21
200	199	144 – 1451	560	45	29	28	18	50	37	30	17
250	249	223 – 2221	880	44	28	28	19	49	37	35	19
315	314	371 – 3700	1400	45	33	35	22	50	39	40	22
400	399	605 – 6034	2260	44	33	36	22	49	37	40	23

Nomenclature

Δp_g in Pa = Total pressure differential

v in m/s = Upstream velocity

L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account

L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with CS silencer, system attenuation taken into account

L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account

L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

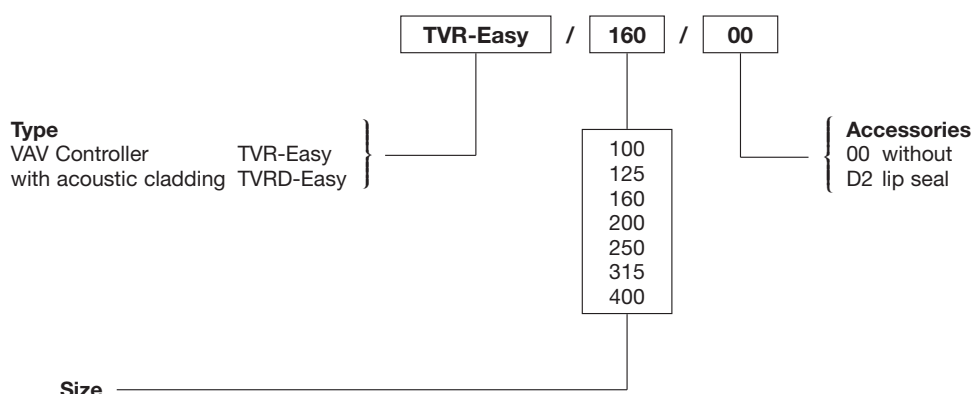
All sound pressure levels are based on 20 μPa.

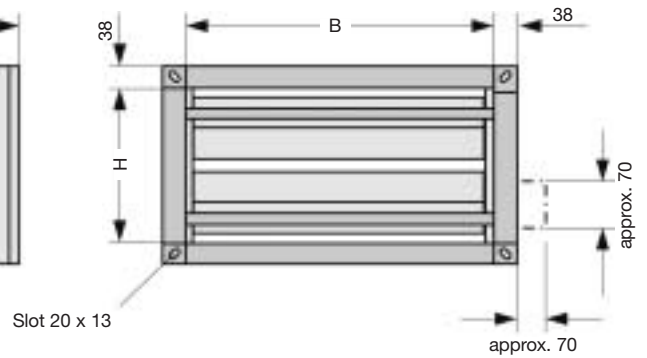
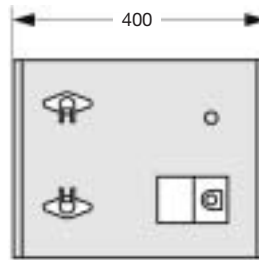
System attenuation: See leaflet 5/3.5/EN/...

Dimensions (mm)

Size	ØD _a	L
100	99	310
125	124	310
160	159	400
200	199	400
250	249	400
315	314	500
400	399	500

Order Code





TVJ · TVT-Easy

Sound pressure level (dB[A])											
B x H		Flow rate range (m³/h)	ṽ v=5m/s (m³/h)	Δp _g = 100 Pa				Δp _g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				without silencer	with silencer	without acoustic cladding	with acoustic cladding	without silencer	with silencer	without acoustic cladding	with acoustic cladding
				L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}	L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}
200	100	126– 648	360	40	24	32	24	46	27	36	28
		198– 972	540	41	25	33	25	47	28	37	29
		252– 1296	720	42	26	34	26	48	29	38	30
		324– 1620	900	43	27	35	27	49	30	39	31
		396– 1944	1080	44	28	36	28	50	31	40	32
200	200	252– 1296	720	39	23	35	27	46	27	39	31
		396– 1944	1080	40	24	36	28	47	28	40	32
		522– 2592	1440	41	25	37	29	48	29	41	33
		648– 3222	1800	42	26	38	30	49	30	42	34
		774– 3870	2160	43	27	39	31	50	31	43	35
200	300	900– 4500	2520	44	28	40	32	51	32	44	36
		1026– 5166	2880	44	28	40	32	51	32	44	36
		630– 3168	1620	40	24	37	30	46	28	42	34
		846– 4230	2160	41	25	38	31	47	29	43	35
		1062– 5292	2700	42	26	39	32	48	30	44	36
200	400	918– 6354	3240	43	27	40	33	49	31	45	37
		1476– 7398	3780	44	28	41	34	50	32	46	38
		1692– 8460	4320	44	28	41	34	50	32	46	38
		1908– 9522	4860	45	29	42	35	51	33	47	39
		2124– 10584	5400	45	29	42	35	51	33	47	39
200	500	1170– 5886	2880	41	25	39	32	47	29	44	36
		1476– 7344	3600	42	26	40	33	48	30	45	37
		1764– 8820	4320	43	27	41	34	49	31	46	38
		2052– 10296	5040	44	28	42	35	50	32	47	39
		2358– 11754	5760	44	28	42	35	50	32	47	39
200	600	2646– 13230	6480	45	29	43	36	51	33	48	40
		2934– 14706	7200	45	29	43	36	51	33	48	40
		1710– 8514	4500	41	26	41	34	48	30	46	38
		2052– 10224	5400	42	27	42	35	49	31	47	39
		2394– 11934	6300	43	28	43	36	50	32	48	40
200	800	2718– 13626	7200	43	28	43	36	50	32	48	40
		3060– 15336	8100	44	29	44	37	51	33	49	41
		3402– 17046	9000	44	29	44	37	51	33	49	41
		2538– 12690	6480	42	27	43	36	49	31	48	40
		3384– 16920	8640	43	28	44	37	50	32	49	41
200	1000	4230– 21168	10800	44	29	45	38	51	33	50	42
		4698– 23526	11520	41	25	46	39	47	30	51	43
		5886– 29394	14400	42	26	47	40	48	31	52	44
		7524– 37638	18000	42	26	48	41	48	31	53	45

Order Code

Type

VAV Controller TVJ-Easy
 with acoustic cladding TVJD-Easy
 VAV Controller, airtight TVT-Easy
 with acoustic cladding TVTD-Easy

TVJ-Easy

/ 600 x 400

B x H

Nomenclature

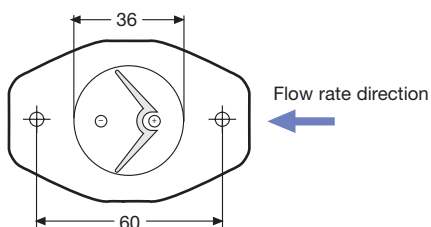
Δp_g in Pa = Total pressure differential
 v in m/s = Upstream velocity
 L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account
 L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with TX silencer, system attenuation taken into account
 L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account
 L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account
 All sound pressure levels are based on 20 μPa.
 System attenuation: See leaflet 5/4.1/EN/...



VAV-EasySet



Differential pressure device

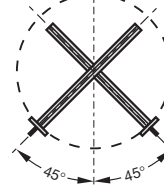


Differential pressure sensor

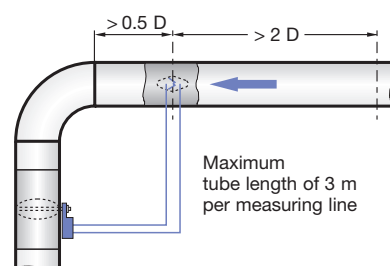
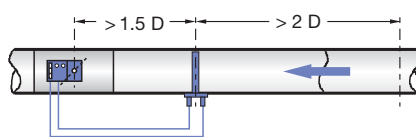
Duct system
D = 100 ... 250



Air line
D = 280 ... 400



Measuring location



TROX VAV-EasySet is an assembly consisting of control components to refurbish VAV terminal units. VAV-EasySet is suitable for systems with a circular duct system.

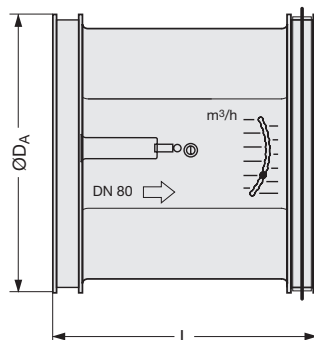
- Differential pressure sensor to measure the flow rate.
- TROX Compact Controller as casing unit for flow rate controller and actuator.
- Adjustment of $\dot{V}_{\min}$ and $\dot{V}_{\max}$ flow rates by potentiometers with graduated scales. No adjustment tool required.
- Functional check by indicator light.

Nominal flow rates

D	$\dot{V}_{\text{Nom}}$ (m ³ /h)
100	350
125	550
140	702
160	900
200	1450
224	1890
250	2220
315	3700
400	6035

Order Code

VAV-EasySet
 Type _____


VFL

Dimensions (mm)		
Size	Ø D _a	L
80	78	86
100	98	100
125	122	118
160	156	148
200	196	175
250	246	220

Sound pressure level L _{pA} (dB[A])			
Size	Flow rate range (m³/h)	$\dot{V}$ (m³/h)	$\Delta p_g = 50 \text{ Pa}$ db(A)
80	15 – 90	35	27
100	15 – 120	70	31
125	40 – 205	100	35
160	50 – 350	150	32
200	60 – 570	290	29
250	125 – 900	450	29

Flow rate adjustable on site

Differential pressure range 30–300 Pa

Nomenclature

$\dot{V}$ in m³/h = Flow rate

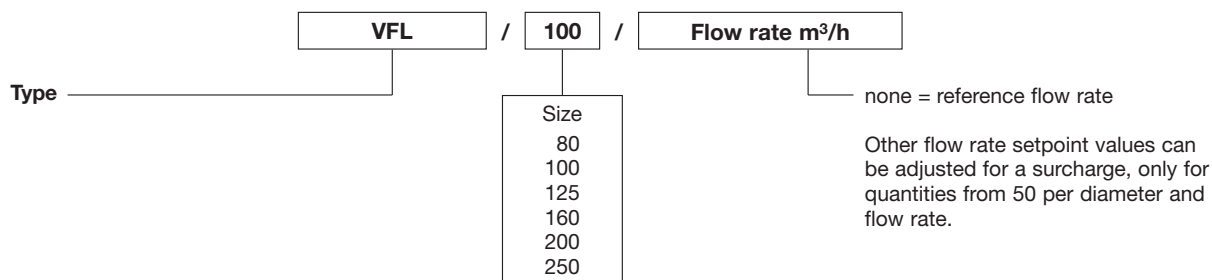
Δp_g in Pa = Total pressure differential

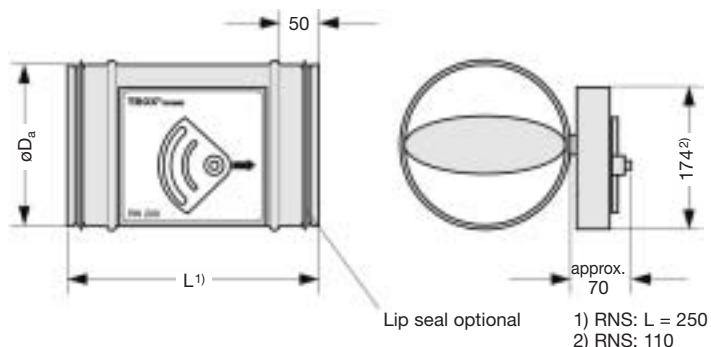
L_{pA} in dB(A) = All sound pressure levels are based on 20 µPa).

A-weighted sound pressure level of air-regenerated noise in the room, including duct and reflection and 8 dB/oct. room attenuation.

Reference flow rate (m³/h)					
Size					
80	100	125	160	200	250
35	70	100	150	290	450

Order Code





Dimensions (mm)		
D	ØDa	L
80	79	310
100	99	310
125	124	310
160	159	310
200	199	310
250	249	400
315	314	400
400	399	400

RN

Sound pressure level (dB[A])

Size	ØDa (mm)	Flow rate range (m³/h)	v v=5m/s (m³/h)	Δp _g = 100 Pa				Δp _g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding	without silencer	with silencer Type CS (L = 1000 mm)	without acoustic cladding	with acoustic cladding
				L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}	L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}
80	79	40 – 162	90	39	16	22	<	43	20	26	<
100	99	80 – 324	140	39	19	19	<	43	23	23	<
125	124	126 – 504	220	41	25	17	<	45	29	21	<
160	159	216 – 864	360	44	30	31	<	48	34	35	<
200	199	324 – 1296	560	42	26	30	<	46	30	34	<
250	249	522 – 2088	880	41	27	31	<	45	31	35	<
315	314	828 – 3312	1400	40	27	32	<	44	31	36	15
400	399	1260 – 5040	2260	46	34	46	16	50	38	50	20

< stands for values <15

Nomenclature

Δp_g in Pa = Total pressure differential

v in m/s = Upstream velocity

L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account

L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with CS silencer, system attenuation taken into account

L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account

L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

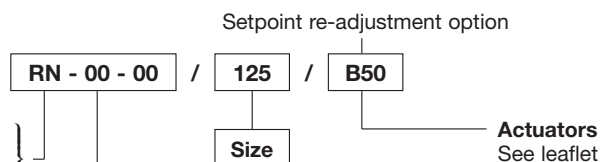
All sound pressure levels are based on 20 μPa.

System attenuation: See leaflet 5/9/EN/...

Order Code RN

Type
Volume flow controller
with acoustic cladding

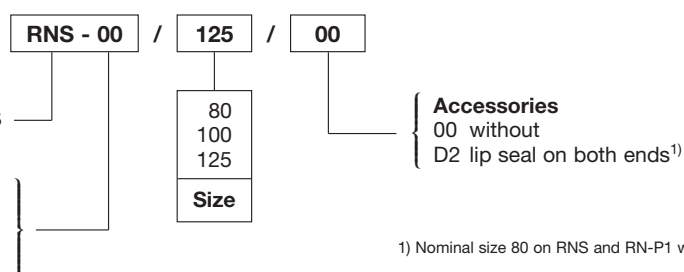
Material
Basic construction, steel, galv. 00
Surface powder-coated P1
Colour RAL 7001



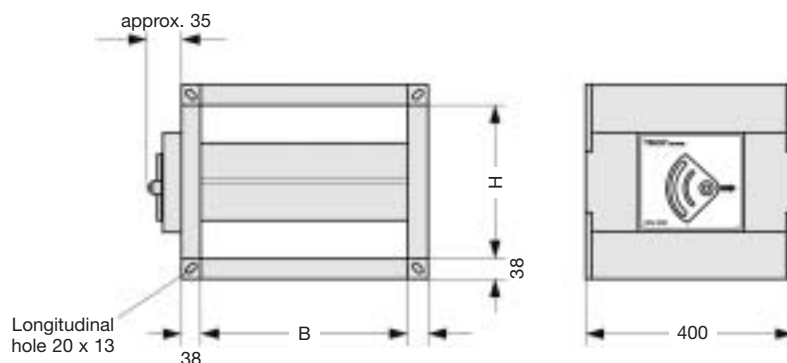
Order Code RNS

Type
Volume flow controller

Material
Basic construction, steel, galv. 00
Surface powder-coated P1
Colour RAL 7001



¹⁾ Nominal size 80 on RNS and RN-P1 with adapter


EN


Sound pressure level (dB[A])

B x H		Flow rate range (m³/h)		v=5m/s V̇ (m³/h)	Δp _g = 100 Pa				Δp _g = 200 Pa			
					Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
					without silencer	with silencer	without acoustic cladding	with acoustic cladding	without silencer	with silencer	without acoustic cladding	with acoustic cladding
					Type TX L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}	Type TX L _{pA}	L _{pA1}	L _{pA2}	L _{pA3}
200	100	144–	576	360	40	30	32	27	48	35	38	32
300		234–	936	540	42	31	34	29	49	36	41	34
300	150	378–	1512	810	42	29	34	27	49	35	40	32
300	200	460–	1872	1080	43	27	34	25	52	35	42	33
400		756–	3024	1440	40	24	33	25	49	33	41	32
500		828–	3312	1800	38	23	31	23	47	31	39	31
600		918–	3672	2160	36	23	31	24	44	31	39	32
400	250	792–	3168	1800	41	26	34	25	51	34	42	33
500		1080–	4320	2250	39	23	32	23	48	32	40	31
600		1152–	4608	2700	38	24	32	24	47	32	40	33
400	300	1134–	4536	2160	44	27	37	27	52	35	44	35
500		1350–	5400	2700	41	25	35	26	49	33	42	33
600		1512–	6048	3240	39	24	32	24	47	31	40	31
400	400	1512–	6048	2880	46	29	39	30	54	37	47	37
500		1656–	6624	3600	43	26	37	27	52	34	45	35
600		1836–	7344	4320	41	26	36	27	49	34	44	34
500	500	2160–	8640	4500	46	28	40	30	54	36	48	38
600		2034–	9216	5400	43	28	39	29	51	36	47	37
600	600	3024–	12096	6480	45	28	41	31	53	36	48	38

Nomenclature

Δp_g in Pa = Total pressure differential

v in m/s = Upstream velocity

L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account

L_{pA1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with TX silencer, system attenuation taken into account

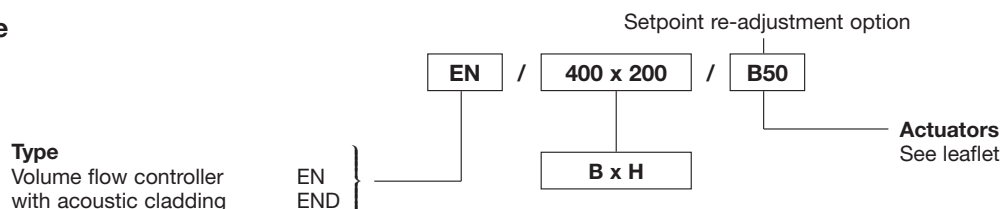
L_{pA2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account

L_{pA3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

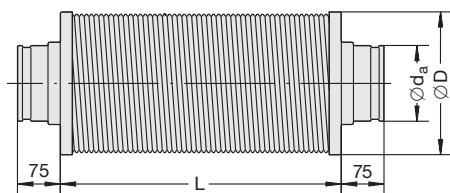
All sound pressure levels are based on 20 μPa.

System attenuation: See leaflet 5/9.1/EN/...

Order Code



Construction with plug type spigots (Standard)



Dimensions (mm)

D	Flow rate upstream cross section (m ²)	Ø d _a (mm)	Ø d _s (mm)	Insulation thickness	
				25 mm Ø D (mm)	50 mm Ø D (mm)
80	0.005	79	80	135	191
100	0.008	99	100	160	211
125	0.012	124	125	191	235
160	0.020	159	160	221	271
200	0.031	199	200	261	311
250	0.050	249	250	311	366
315	0.079	314	315	376	476
400	0.126	399	400	461	511

CA

CF

CA100; Insulation thickness = 100 mm

Insertion loss (dB) for L = 500 mm								
D	f _{m, oct.} (Hz)							
	63	125	250	500	1k	2k	4k	8k
100	4	9	12	18	35	33	26	14
125	4	7	10	17	31	26	19	11
160	3	6	9	15	28	20	13	8
200	3	5	8	15	25	16	9	7
250	2	4	7	14	21	13	6	5
315	2	3	6	13	18	10	4	4
400	1	3	6	12	17	8	3	3

CF050.../CS050; Insulation thickness = 50 mm

Insertion loss (dB) for L = 500 mm								
D	f _{m, oct.} (Hz)							
	63	125	250	500	1k	2k	4k	8k
80	4	5	11	20	30	27	16	12
100	3	4	9	17	24	21	12	10
125	2	3	7	14	20	16	11	9
160	2	2	6	12	17	14	8	6
200	1	2	5	12	16	11	6	5
250	1	2	4	12	15	8	5	4
315	1	1	3	9	12	6	4	3
400	1	1	3	7	9	6	4	3

Insertion loss (dB) for L = 1500 mm								
D	f _{m, oct.} (Hz)							
	63	125	250	500	1k	2k	4k	8k
250	4	11	21	37	41	27	15	12
315	3	9	18	34	35	21	10	9
400	3	7	16	32	31	16	7	7
450	2	6	15	31	29	14	6	6
500	2	6	14	30	27	13	5	6
560	2	5	13	29	25	11	4	5
630	2	5	12	28	23	10	4	4
710	2	5	11	27	22	9	3	4
800	2	4	11	26	20	8	2	3

Insertion loss (dB) for L = 1500 mm								
D	f _{m, oct.} (Hz)							
	63	125	250	500	1k	2k	4k	8k
80	11	14	33	48	50	50	47	37
100	10	11	27	44	50	50	37	30
125	7	9	21	41	50	46	33	27
160	5	7	17	37	48	42	24	19
200	4	6	14	37	48	34	18	15
250	3	5	11	35	45	25	14	11
315	2	4	10	26	35	19	12	10
400	2	4	9	20	26	17	11	8

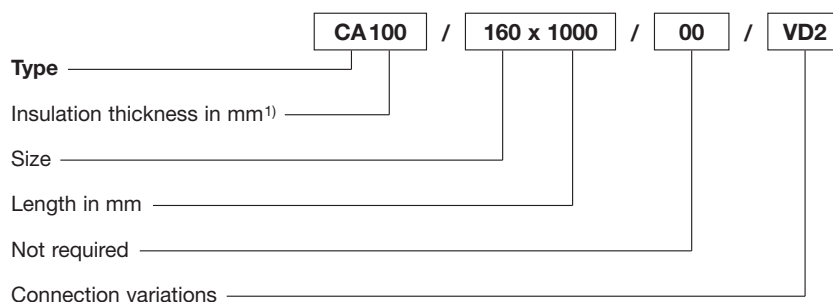
Nomenclature

f_{m, oct.} in Hz = Octave band centre frequency

NW = Size

L = Length

Order Code

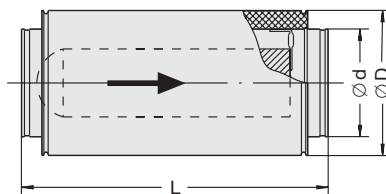


000 = Plug type spigots
VD2 = Lip seal on both ends

1) Insulation thickness 25 and 50 mm available. (If the insulation thickness is not specified on the order, thickness 50 mm is delivered as standard.)



Construction with plug type spigots (Standard)



Insulation thickness 50 mm: $\varnothing D = \varnothing d + 100$ mm
 Insulation thickness 100 mm: $\varnothing D = \varnothing d + 200$ mm

1) Low-leakage performance to DIN V 24194 Part 2, Class II without additional on-site seals. Available up to and including size 400

CB

CB

CB100; Insulation thickness = 100 mm

Insertion loss (dB) for L = 1000 mm								
D	$f_{m, oct.}$ (Hz)							
	63	125	250	500	1k	2k	4k	8k
250	5	10	17	30	47	50	50	36
315	4	9	15	27	44	45	39	27
400	3	7	13	25	40	38	29	21
450	3	7	12	24	39	35	26	18
500	2	6	12	23	38	33	24	17
560	2	6	11	22	36	31	21	15
630	2	5	11	21	34	29	19	13
710	2	5	10	20	33	27	17	12
800	2	5	9	19	31	25	14	10
900	2	4	9	18	30	23	13	9
1000	2	4	8	17	29	22	12	8

Insertion loss (dB) for L = 1500 mm								
D	$f_{m, oct.}$ (Hz)							
	63	125	250	500	1k	2k	4k	8k
250	7	14	22	41	50	50	50	44
315	7	12	20	37	50	50	50	34
400	6	10	17	33	50	50	40	26
450	5	9	16	31	50	50	36	23
500	5	9	16	30	50	50	33	21
560	4	8	15	30	50	48	29	19
630	4	8	14	29	50	44	26	16
710	4	7	13	28	50	41	23	14
800	3	6	13	26	49	37	20	12
900	3	6	12	24	47	34	17	11
1000	3	6	11	23	45	33	16	10

Nomenclature

$f_{m, oct.}$ in Hz = Octave band centre frequency

NW = Size

L = Length

Order Code

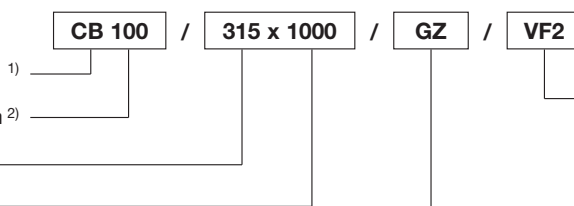
Example:

Type

Insulation thickness in mm ²⁾

Size

Length in mm



Connection variations

000 = Plug-type spigots

VF2 = Flange on both ends³⁾

VD2 = Lip seal both ends⁴⁾

Matching flange(s)

00 = none

GZ = both ends

1) On Type CB: Coned end = air inlet end

2) Insulation thickness 50 mm possible up to size 400 (if no insulation thickness is specified on order, thickness 100 mm is delivered as standard)

3) Flange on both ends: L-20 mm

4) Lip seal on both ends available for size 100...400

Dimensions (mm)					
D	Upstream cross section (m²)	Ø d (mm)	Plain flange in acc with DIN 24154 Part 1		
			Ø k (mm)	b x s (mm)	no. of holes
100	0.008	99	132	25 x 3	4
125	0.012	124	157	25 x 3	4
160	0.020	159	192	25 x 4	6
200	0.031	199	233	25 x 4	6
250	0.050	249	283	25 x 4	6
315	0.079	314	352	30 x 4	8
400	0.126	399	438	30 x 4	8
450	0.158	448	488	30 x 4	8
500	0.198	498	538	30 x 4	8
560	0.251	558	600	35 x 4	12
630	0.316	628	670	35 x 4	12
710	0.397	708	750	35 x 4	12
800	0.499	798	840	35 x 4	16
900	0.628	898	940	35 x 4	16
1000	0.785	998	1041	35 x 4	16

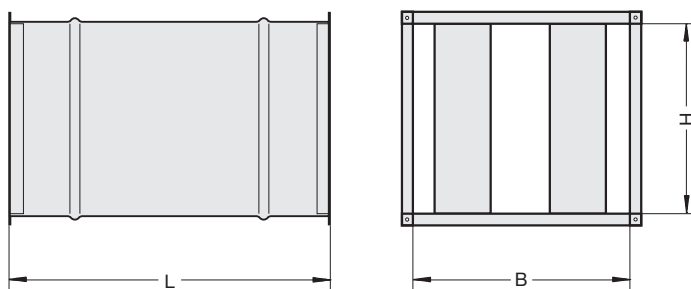
Selection table						
D	Flow rate $\dot{V}$		Upstream velocity	Airway-velocity	Δp_t	L_{WA}
	l/s	m³/h	m/s	m/s	Pa	dB(A)
250	287	1035	6	9.9	41	44
315	459	1651	6	9.9	37	45
400	743	2674	6	9.9	33	45
450	942	3390	6	9.9	32	46
500	1164	4190	6	9.9	31	46
560	1462	5263	6	9.9	30	46
630	1853	6669	6	9.9	29	47
710	2355	8480	6	9.9	28	47
800	2993	10776	6	9.9	27	47
900	3792	13650	6	9.9	27	48
1000	4684	16863	6	9.9	26	48

Δp_t in Pa = Total pressure loss for L = 1000 mm

Splitter Attenuator Type MSA 200



MSA 200

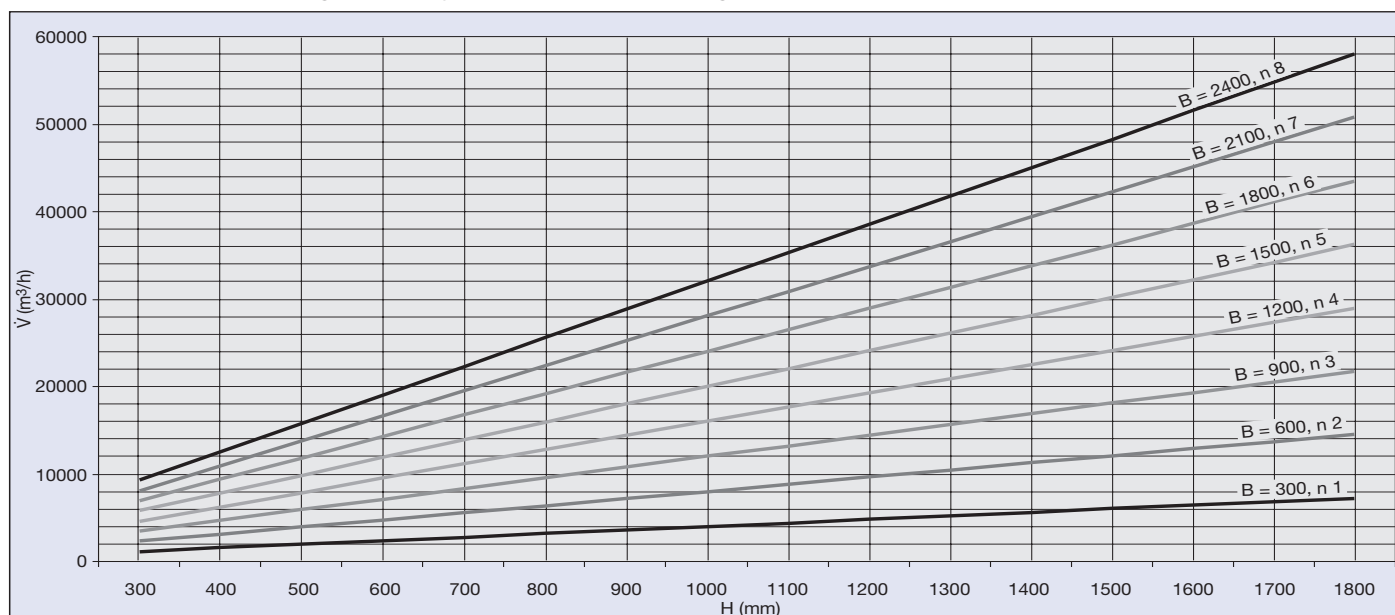


MSA 200

Insertion loss (dB) for airway width $s = 100$ mm

L (mm)	f_m (Hz)							
	63	125	250	500	1000	2000	4000	8000
500	2	4	12	12	15	11	9	8
1000	4	10	22	23	26	19	13	11
1500	5	14	31	33	36	25	16	13
2000	6	19	41	43	46	30	18	16
2500	8	24	49	50	50	37	22	18
3000	10	30	50	50	50	43	26	19

Combination (Width/Height) at Δp_t approx. 50 Pa; Air-regenerated noise max. 46 dB(A) per m^2 at $L = 1500$ mm



n = number of splitters

Nomenclature

f_m in Hz = Octave band centre frequency

Δp_t in Pa = Total pressure drop

$\dot{V}$ in m^3/h = Flow rate

Order Code Splitter Attenuator

MSA200 - 100 - 3 - PF / 900 x 600 x 1500

Type _____

Splitter thickness in mm _____

Airway width s in mm _____

No. of adjacent splitters n ; adjacent in attenuator on direction of dimension B } _____

1) Standard hygienic design
2) Partitioned attenuators obligatory for division of the B and/or H dimension

Length L in mm _____

Height H in mm _____

Width B in mm _____

Max. four digits each

Splitter surface

{ F = Glass fibre fabric¹⁾
L = Glass fibre fabric under perforated plate }

Connecting frame

{ P = Air duct section 30 mm¹⁾
W = Rectangular frame 35 x 3 mm²⁾ }

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