



QA

Displacement air diffuser

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OVERVIEW OF PRODUCT VERSIONS

QA-V



QA-H



QA-R



FUNCTION AND USE

This sort of SCHAKO displacement air diffuser is ideal for industrial plants and laboratories which produce large amounts of hazardous substances. The supply air enters the room at a low velocity with a temperature difference of max -4 K in the cooling mode. The contaminated air is displaced by the low induction air flow. If the displacement air diffusers are used at floor level, the supply air spreads out across the floor and is directed upwards by the convection flow from heat sources. The return air should ideally be at high level when using displacement air diffusers. Make sure to distribute the displacement air diffusers evenly over the whole floor surface area to ensure effective floor flushing.

Especially in the presence of hazardous substances of high specific gravity, the displacement air diffuser can also be used in the occupied zone at a height of 3-4 metres. In these cases, the return air should be evacuated at floor level to about 50%.

The displacement air diffuser is available as type QA-V (quarter cylinder type, for installation in corners, 90° throw), type QA-H (half cylinder type, for wall and column mounting, 180° throw), or type QA-R (cylindrical type, for mid-room installation, 360° throw). The housing of the displacement air diffuser consists of a perforated sheet faceplate, a base and a connection spigot made of sheet steel or stainless steel. A filter pocket is fitted inside to ensure an even flow across the whole surface area. The filter pocket cleans the supply air and ensures a completely uniform intake of fresh air over the entire diffuser area of the grille. The perforated faceplate of the displacement air diffuser can be removed to replace the filter pocket.

The diagrams are only valid until the supply air meets a heat source due to laws of physics.

To simplify system regulation, a throttling element (DV1) can be installed at the connection spigot of the displacement air diffuser as an option.

MODELS

QA-V	Quarter cylinder, 90° throw, for corner installation
QA-H	Half cylinder, 180° throw, for installation on walls or columns
QA-R	Cylinder, 360° throw, for mid-room installation

PROCESSING

Housing

- consisting of base plate, round connection spigot and removable faceplate (perforated plate).
- Material and paint:
 - Galvanised sheet steel, without paint (-SV-0000) (standard).
 - sheet steel painted to RAL colour 9010 (white) (-SB-9010).
 - sheet steel painted to a different RAL colour, freely selectable (-SB-xxxx).
 - Stainless steel 1.4301 painted in the colour sand silver (-V2-SAND).

Attention: cannot be supplied in the aluminium version.

Filter pocket

- Synthetic fibre

ACCESSORIES

Rubber lip seal (-GD0 / -GD1)

- without rubber lip seal (-GD0) (standard)
- with rubber lip seal (-GD1) made of special rubber, at the connection spigot.

Damper (-DV0 / -DV1)

- without damper (-DV0) (standard).
- with adjustable damper (-DV1), connection without rubber lip seal, for air volume regulation, with side adjustment lever, made of the same material and painted to the same colour as the base plate / connection spigot.

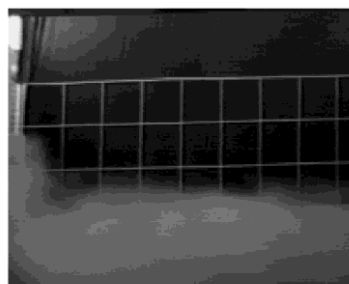
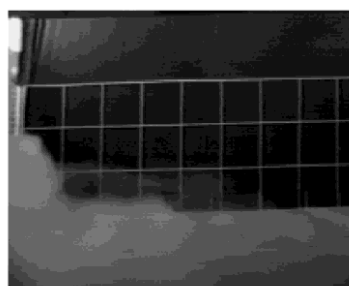
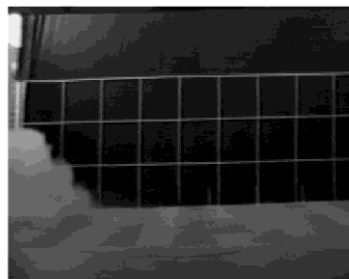
SMOKE TEST

Displacement air diffuser type QA-H-0600-0750-...

Cooling mode

$V_{zu} = 900 \text{ m}^3/\text{h}$ (or 250 l/s)

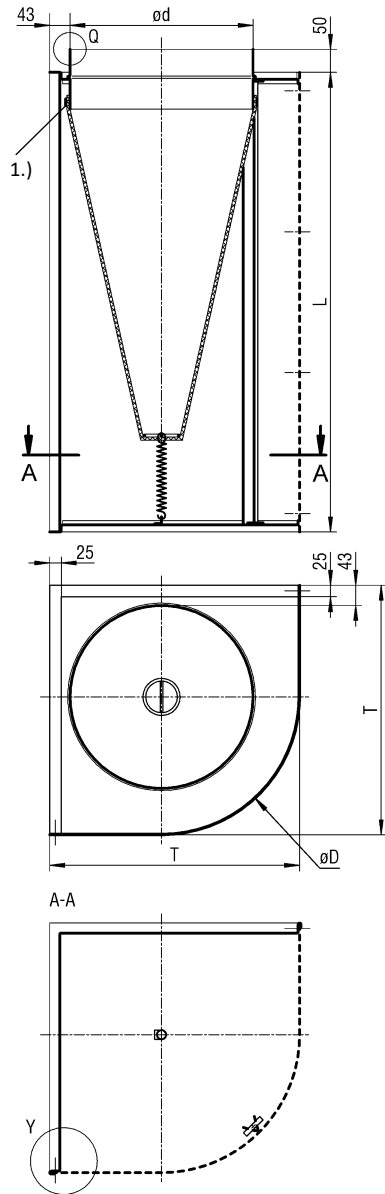
$\Delta T_o = -4 \text{ K}$



DIMENSIONS

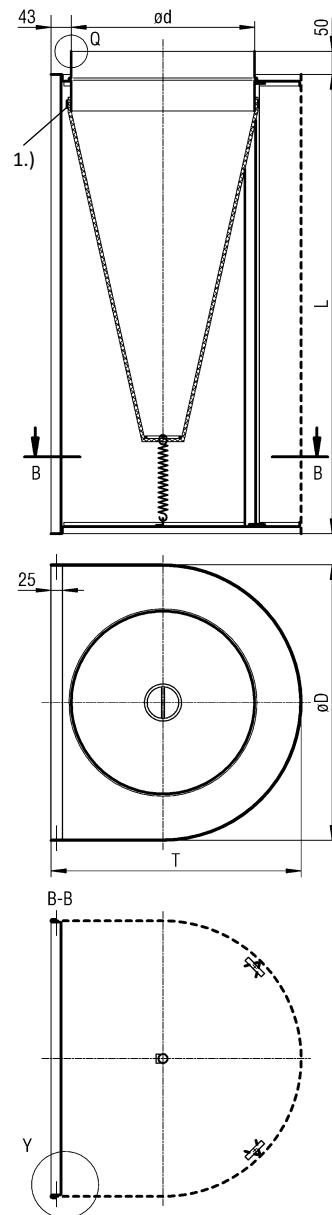
QA-V

Quarter cylinder, 90° throw,
for corner installation



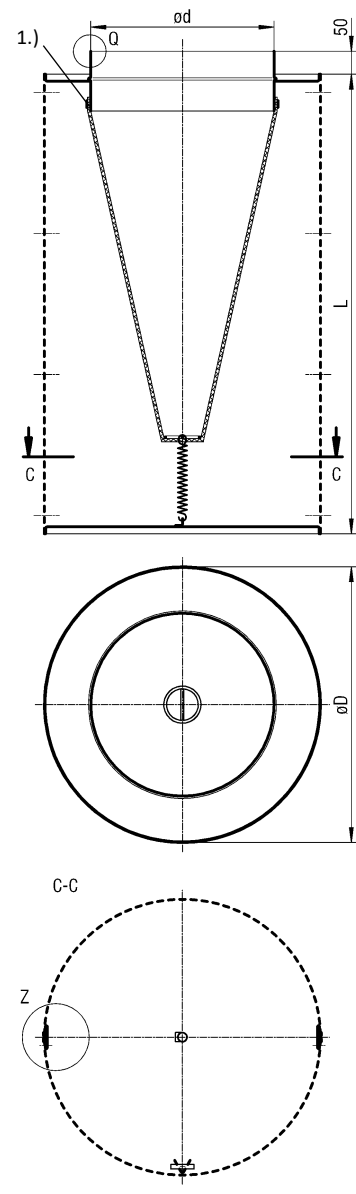
QA-H

Half cylinder, 180° throw,
for installation on walls or columns



QA-R

Cylinder, 360° throw,
for mid-room installation



Available sizes

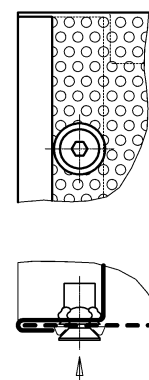
NW	ød	øD	T
0250	158	250	248
0300	198	300	293
0400	248	400	368
0450	298	450	418
0500	313	500	450
0600	398	600	543
0650	448	650	593
0700	498	700	643
0830	628	830	773
1000	628	1000	858

L
0500
0750
1000
1250
1500
2000

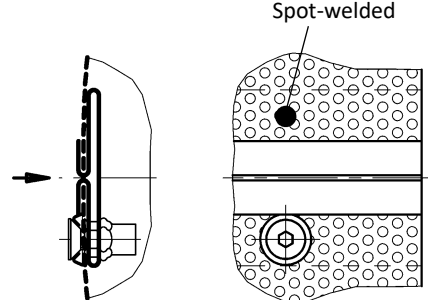
All dimensions in mm.

QA-R all sizes in 2 pieces around the circumference
Depending on the size, the length is in one or two pieces (see page 5)

Detail Y



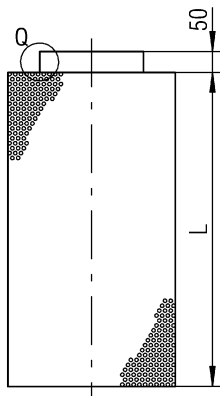
Detail Z



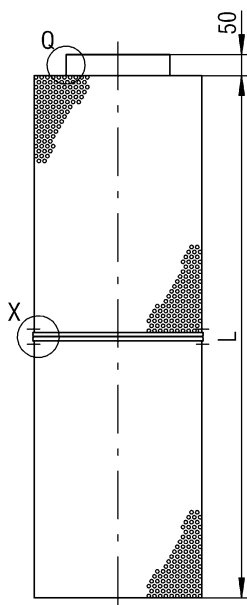
1.) ring with toggle-type fastener
Filter can be replaced by opening the toggle-type fastener

Available lengths

1-part



2-part



Available sizes

NW	1-part	2-part
0250	0500-1000	>1000-2000
0300	0500-1000	>1000-2000
0400	0500-2000	-
0450	0500-2000	-
0500	0500-2000	-
0600	0500-1250	>1250-2000
0650	0500-1250	>1250-2000
0700	0500-1250	>1250-2000
0830	0500-1250	>1250-2000
1000	0500-1250	>1250-2000

All dimensions in mm.

Detail X



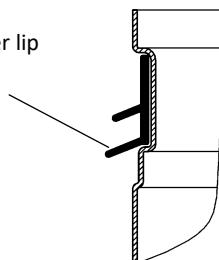
DIMENSIONS OF ACCESSORIES

Rubber lip seal (-GD0 / -GD1)

- without rubber lip seal (-GD0) (standard).
- with rubber lip seal (-GD1) made of special rubber, at the connection spigot.

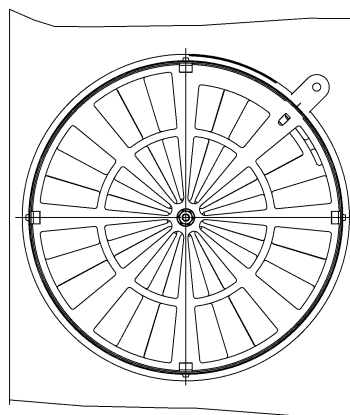
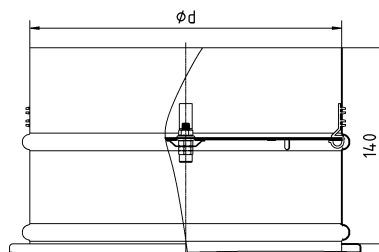
Detail Y

Rubber lip seal



Damper (-DV0 / -DV1)

- without damper (-DV0) (standard).
- with adjustable damper (-DV1), connection without rubber lip seal, for air volume regulation, with side adjustment lever, made of the same material and painted to the same colour as the base plate / connection spigot.



Available sizes of DV1

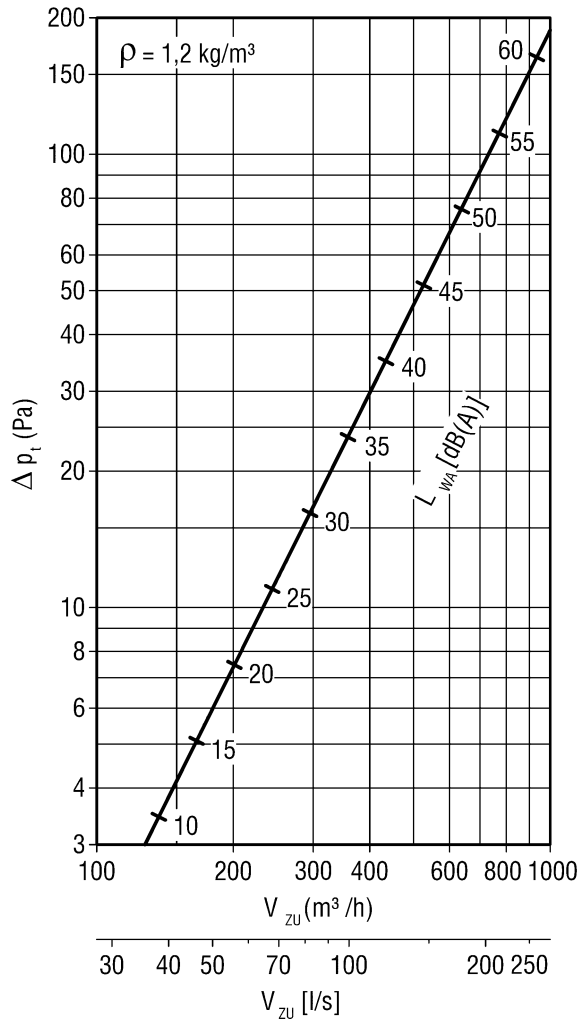
NW	ϕd
0250	158
0300	198
0400	248
0450	298
0500	313
0600	398
0650	448
0700	498
0830	628
1000	628

All dimensions in mm.

TECHNICAL DATA

Pressure loss and noise level

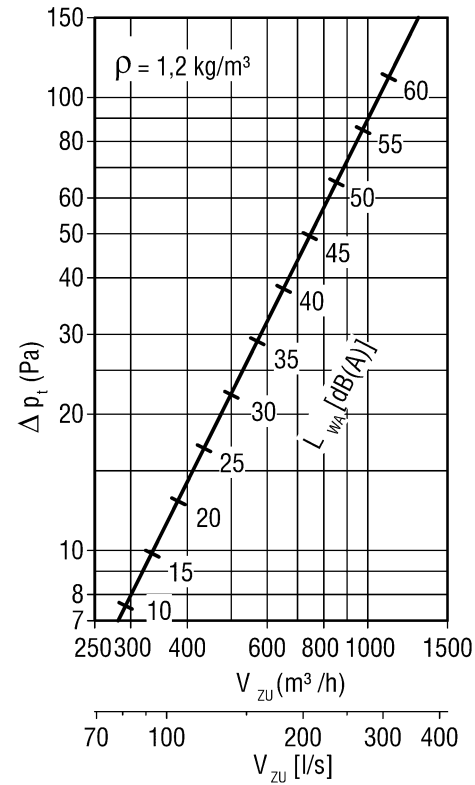
QA-R-0250-1000-...



Correction factor for pressure loss

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.9	x 1.45	x 1	x 0.87	x 0.74	x 0.64
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.08	x 1.6	x 1.1	x 0.95	x 0.81	x 0.7
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.26	x 1.73	x 1.19	x 1.03	x 0.88	x 0.76

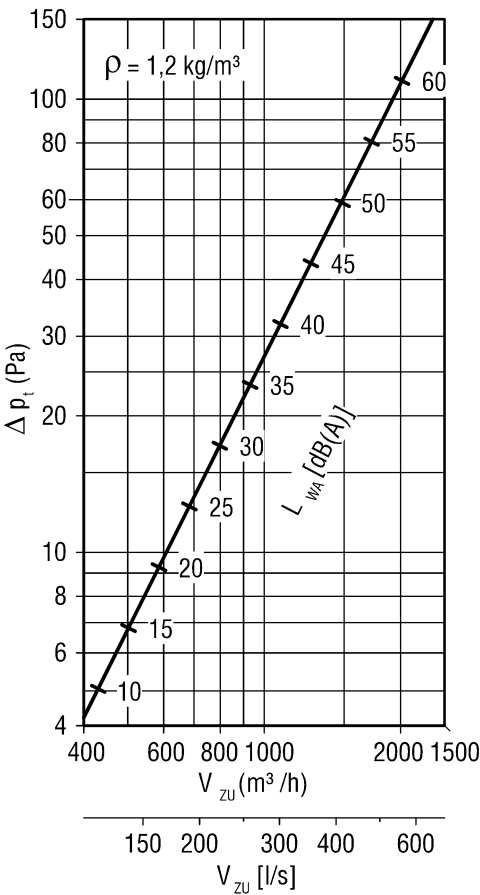
QA-R-0300-1000-...



Correction factor for volumetric flow

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.35	x 1.15	x 1	x 0.98	x 0.96	x 0.98
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.54	x 1.28	x 1.11	x 1.09	x 1.06	x 1.01
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.64	x 1.37	x 1.19	x 1.16	x 1.14	x 1.03

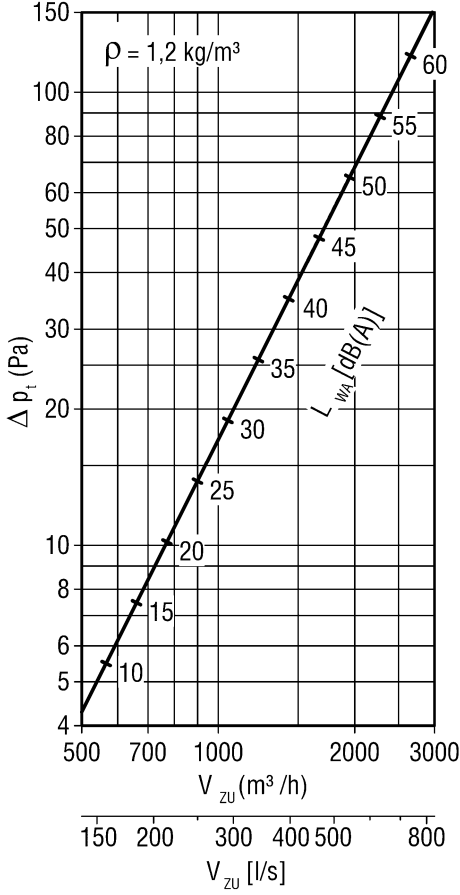
QA-R-0400-1000-...



Correction factor for pressure loss

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.9	x 1.45	x 1	x 0.87	x 0.74	x 0.64
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.08	x 1.6	x 1.1	x 0.95	x 0.81	x 0.7
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.26	x 1.73	x 1.19	x 1.03	x 0.88	x 0.76

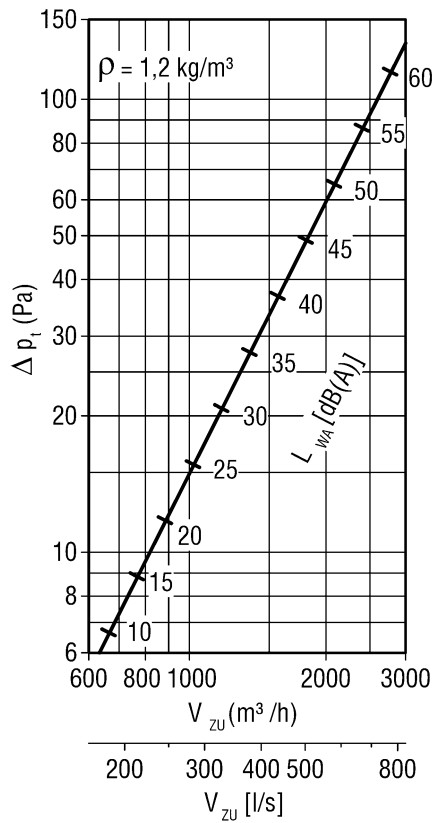
QA-R-0450-1000-...



Correction factor for volumetric flow

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.35	x 1.15	x 1	x 0.98	x 0.96	x 0.98
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.54	x 1.28	x 1.11	x 1.09	x 1.06	x 1.01
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.64	x 1.37	x 1.19	x 1.16	x 1.14	x 1.03

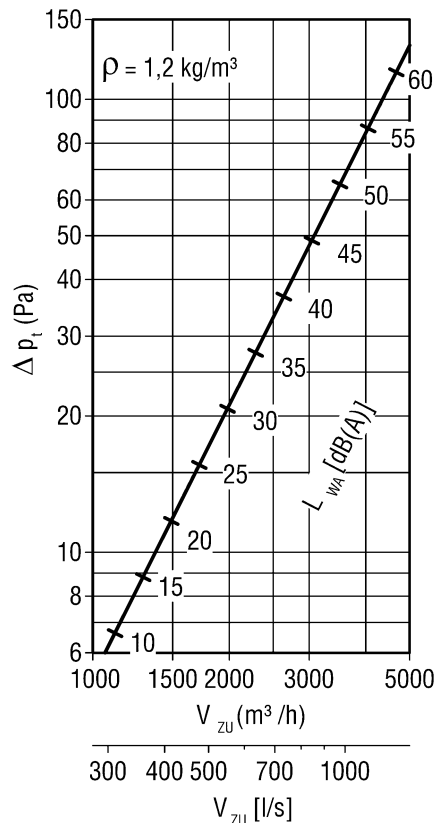
QA-R-0500-1000-...



Correction factor for pressure loss

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.9	x 1.45	x 1	x 0.87	x 0.74	x 0.64
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.08	x 1.6	x 1.1	x 0.95	x 0.81	x 0.7
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.26	x 1.73	x 1.19	x 1.03	x 0.88	x 0.76

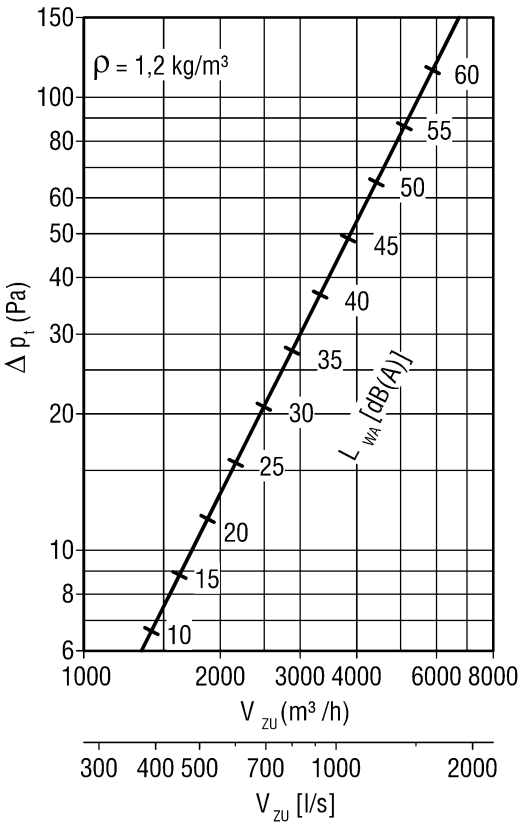
QA-R-0600-1000-...



Correction factor for volumetric flow

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.35	x 1.15	x 1	x 0.98	x 0.96	x 0.98
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.54	x 1.28	x 1.11	x 1.09	x 1.06	x 1.01
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.64	x 1.37	x 1.19	x 1.16	x 1.14	x 1.03

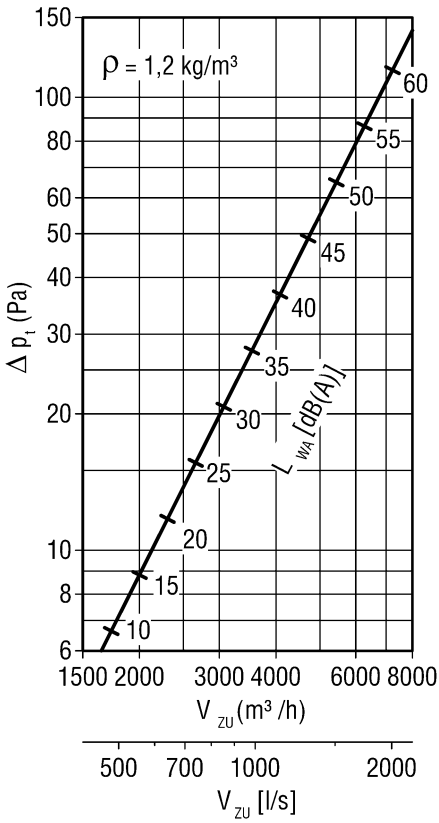
QA-R-0650-1000-...



Correction factor for pressure loss

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.9	x 1.45	x 1	x 0.87	x 0.74	x 0.64
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.08	x 1.6	x 1.1	x 0.95	x 0.81	x 0.7
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.26	x 1.73	x 1.19	x 1.03	x 0.88	x 0.76

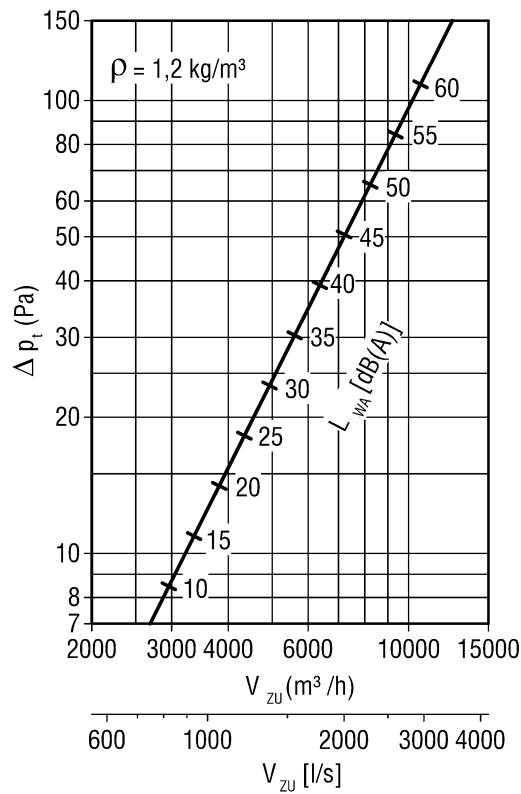
QA-R-0700-1000-...



Correction factor for volumetric flow

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.35	x 1.15	x 1	x 0.98	x 0.96	x 0.98
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.54	x 1.28	x 1.11	x 1.09	x 1.06	x 1.01
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.64	x 1.37	x 1.19	x 1.16	x 1.14	x 1.03

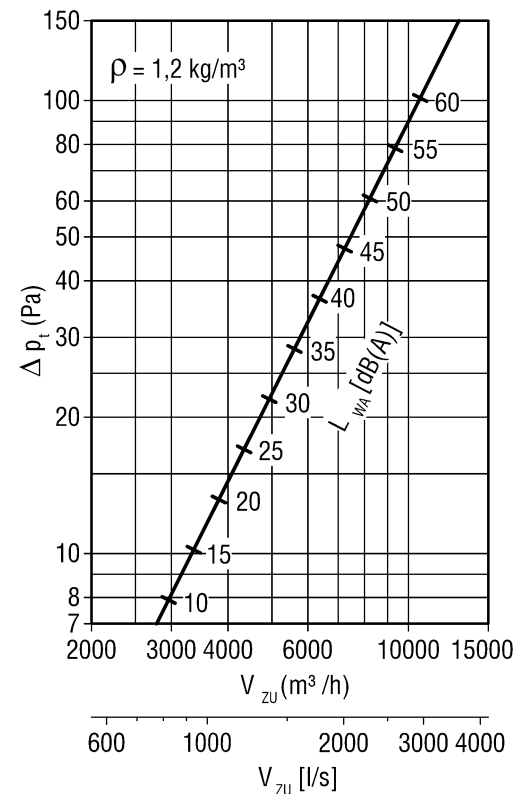
QA-R-0830-1000-...



Correction factor for pressure loss

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.9	x 1.45	x 1	x 0.87	x 0.74	x 0.64
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.08	x 1.6	x 1.1	x 0.95	x 0.81	x 0.7
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 2.26	x 1.73	x 1.19	x 1.03	x 0.88	x 0.76

QA-R-1000-1000-...



Correction factor for volumetric flow

QA-R	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.35	x 1.15	x 1	x 0.98	x 0.96	x 0.98
QA-H	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.54	x 1.28	x 1.11	x 1.09	x 1.06	x 1.01
QA-V	L	500	750	1000	1250	1500	2000
	KF (-)	x 1.64	x 1.37	x 1.19	x 1.16	x 1.14	x 1.03

Maximum end velocity of jet

Diagrams are valid up to a mounting height of 0.25 m from the bottom edge of the displacement air diffuser.

Isothermal $L = 750$

Correction factor for length

L (mm)	500	750	1000	1250	1500	2000
KF (-)	1.2	1.0	0.9	0.81	0.73	0.66

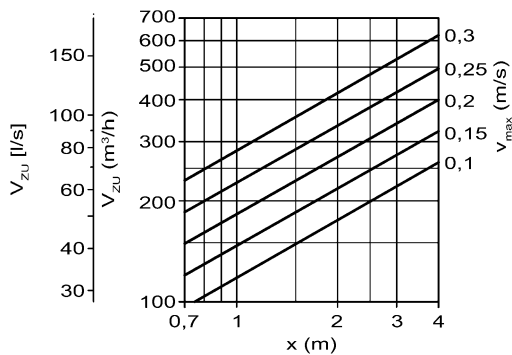
$$x \text{ (m)} = x_{750} \text{ (m)} \times \text{KF}$$

Correction factor for cooling

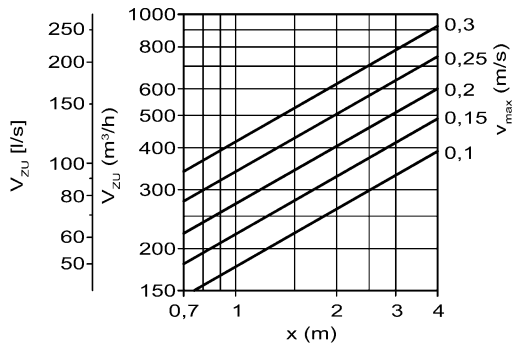
ΔT_o (K)	-1	-2	-3	-4
KF (-)	1.15	1.3	1.4	1.5

$$x_{\text{cooling}} \text{ (m)} = x_{\text{isothermal}} \text{ (m)} \times \text{KF}$$

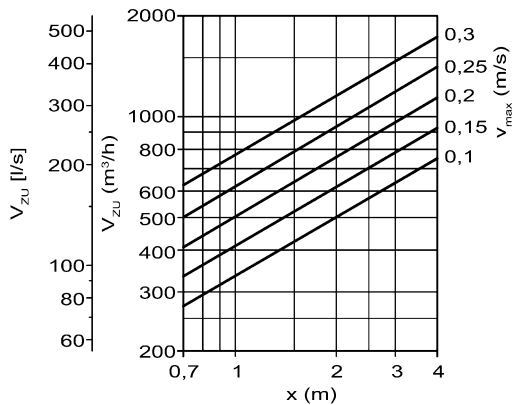
QA-V-0250-...



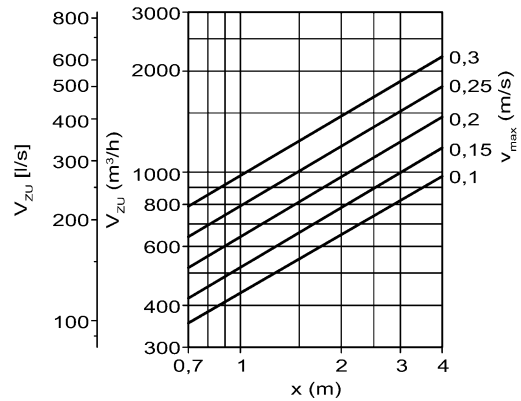
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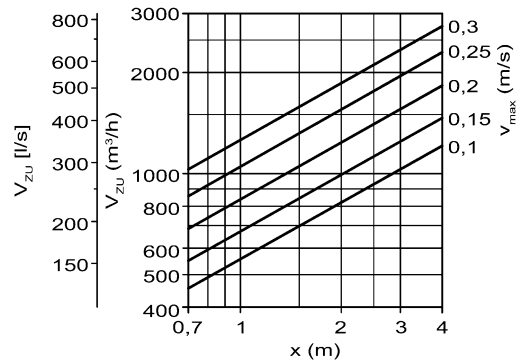
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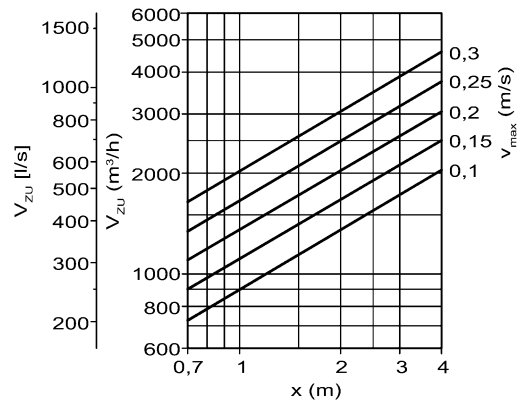
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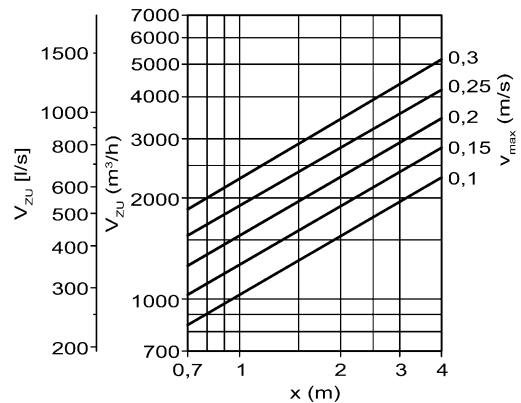
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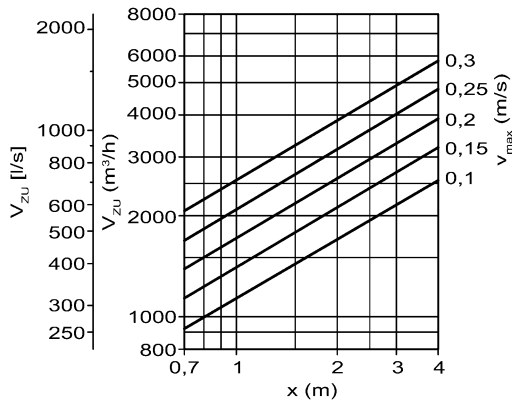
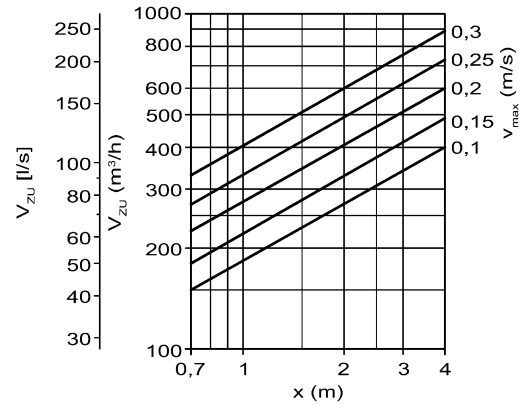
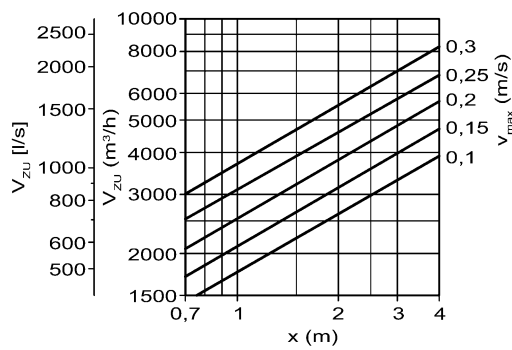
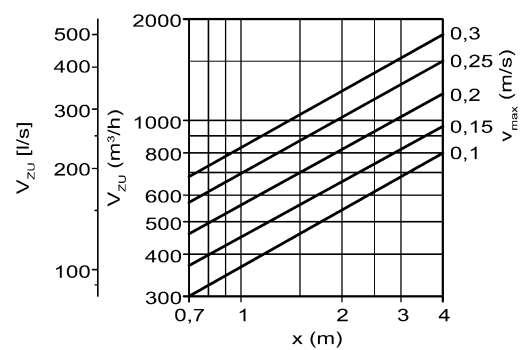
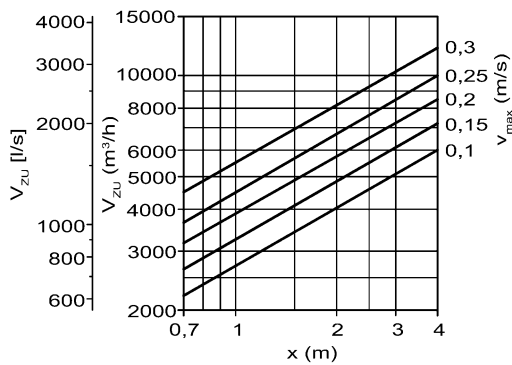
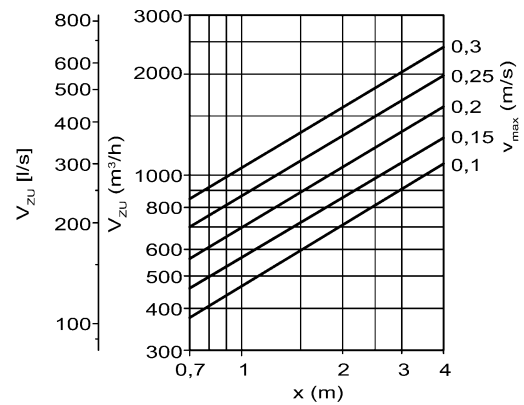
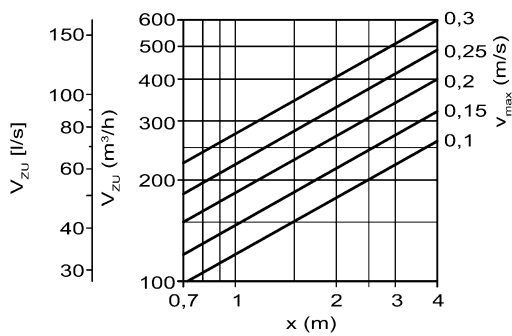
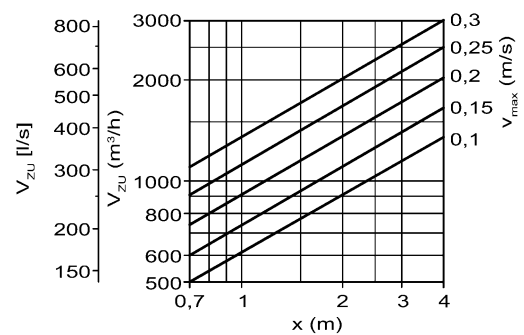


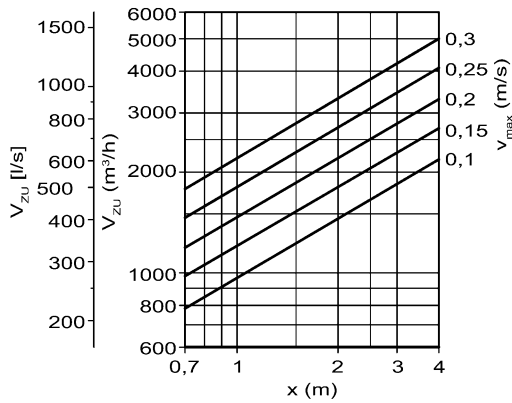
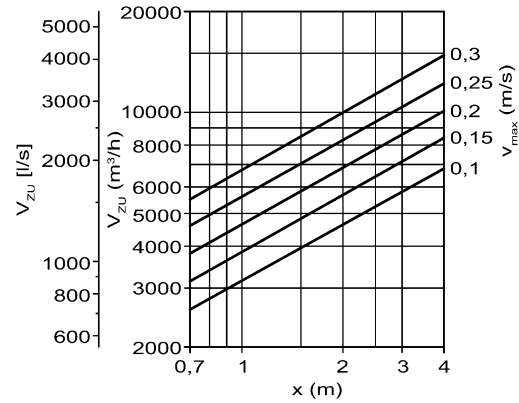
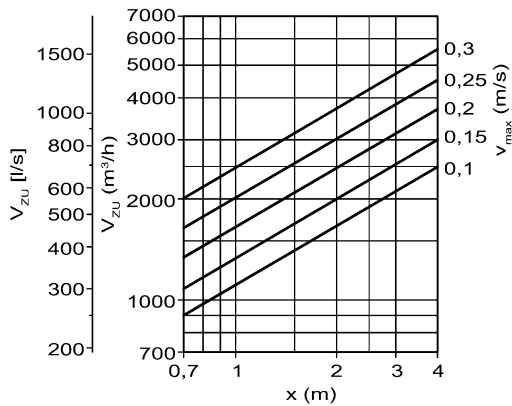
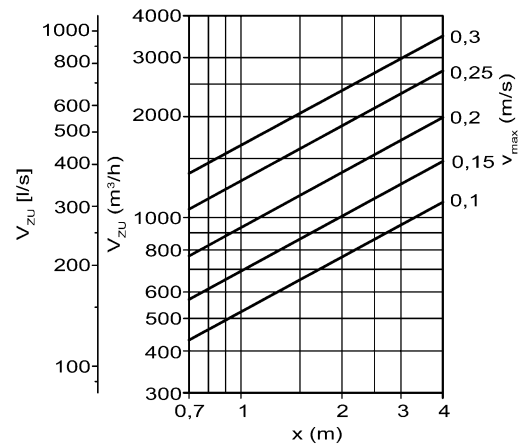
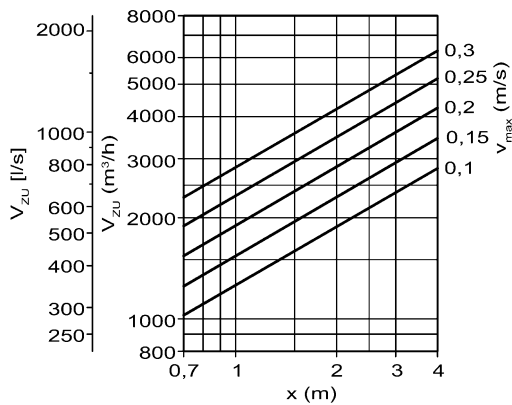
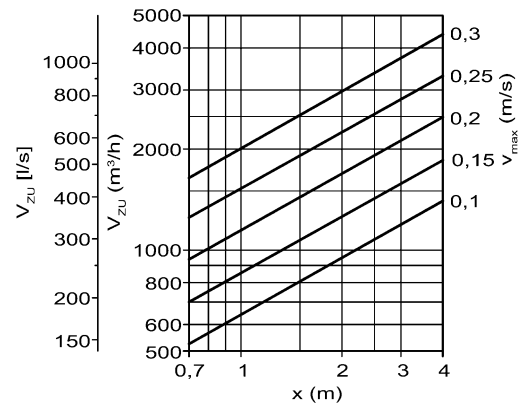
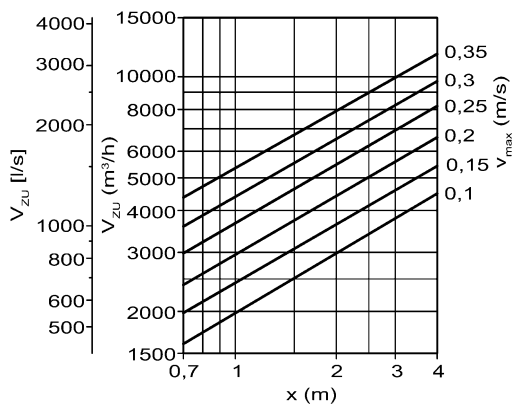
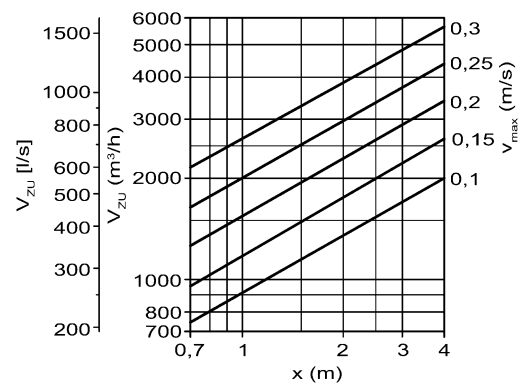
QA-V-0600-...

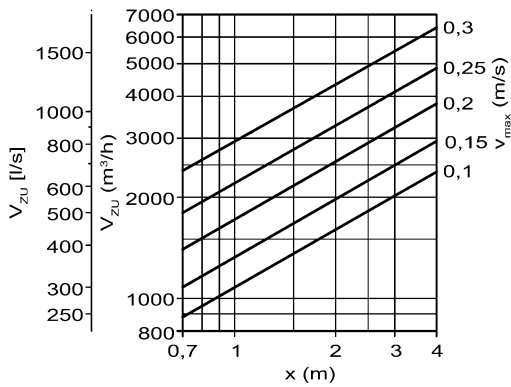
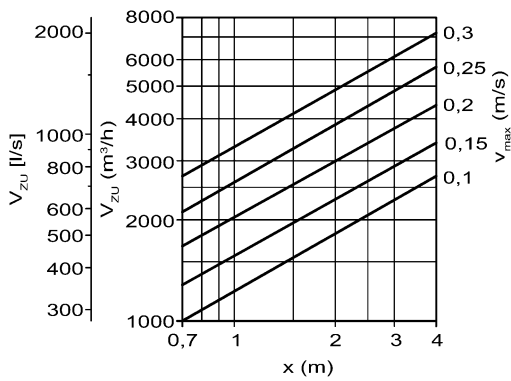
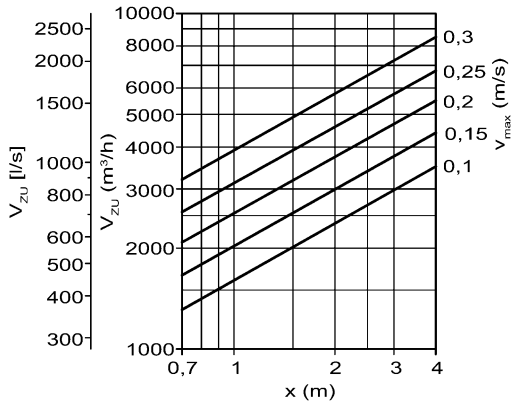
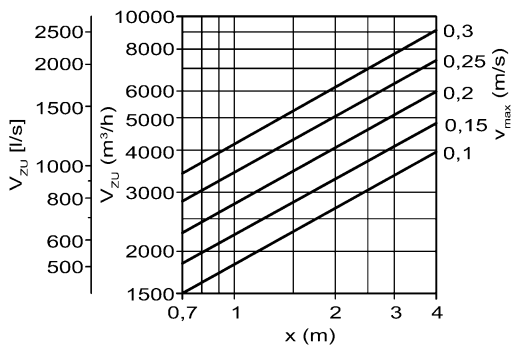
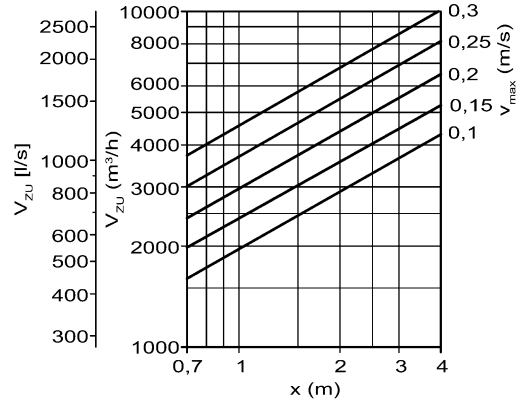
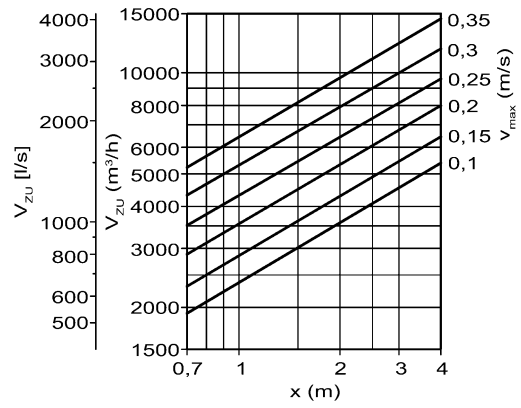
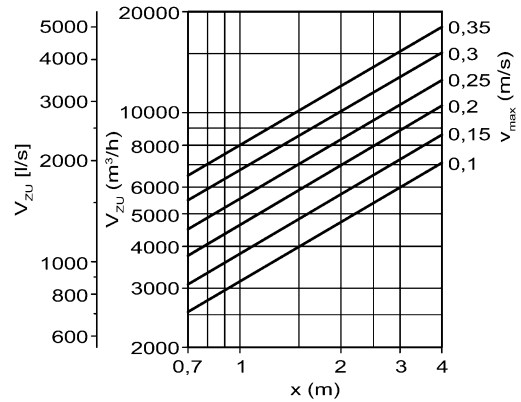


QA-V-0650-...



QA-V-0700-...

QA-H-0300-...

QA-V-0830-...

QA-H-0400-...

QA-V-1000-...

QA-H-0450-...

QA-H-0250-...

QA-H-0500-...


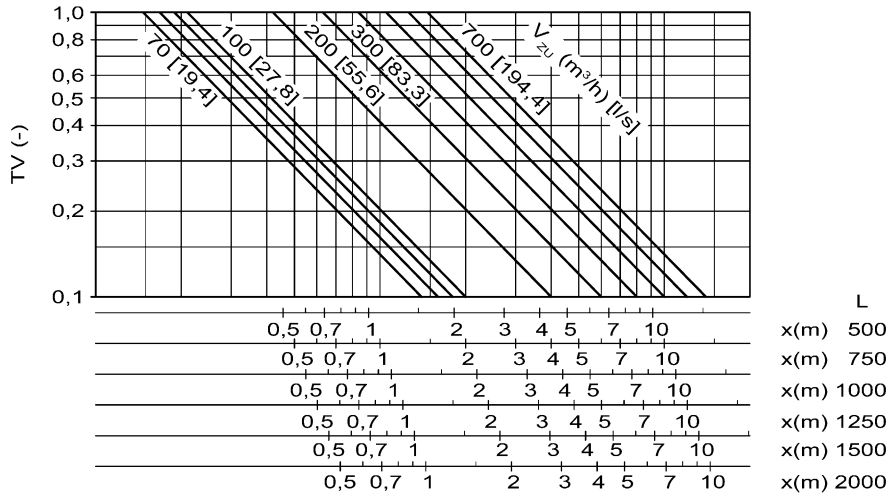
QA-H-0600-...

QA-H-1000-...

QA-H-0650-...

QA-R-0250-...

QA-H-0700-...

QA-R-0300-...

QA-H-0830-...

QA-R-0400-...


QA-R-0450-...

QA-R-0500-...

QA-R-0600-...

QA-R-0650-...

QA-R-0700-...

QA-R-0830-...

QA-R-1000-...


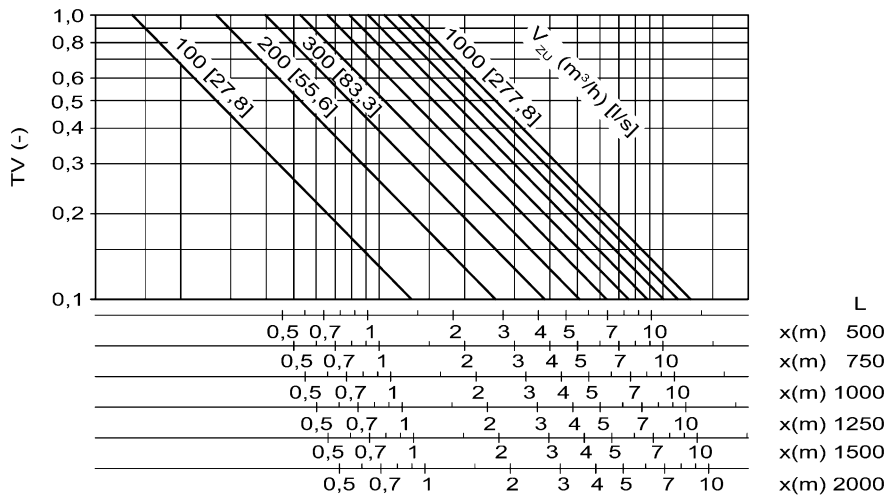
Temperature ratio

Diagrams are valid up to a mounting height of 0.25 m from the bottom edge of the displacement air diffuser.

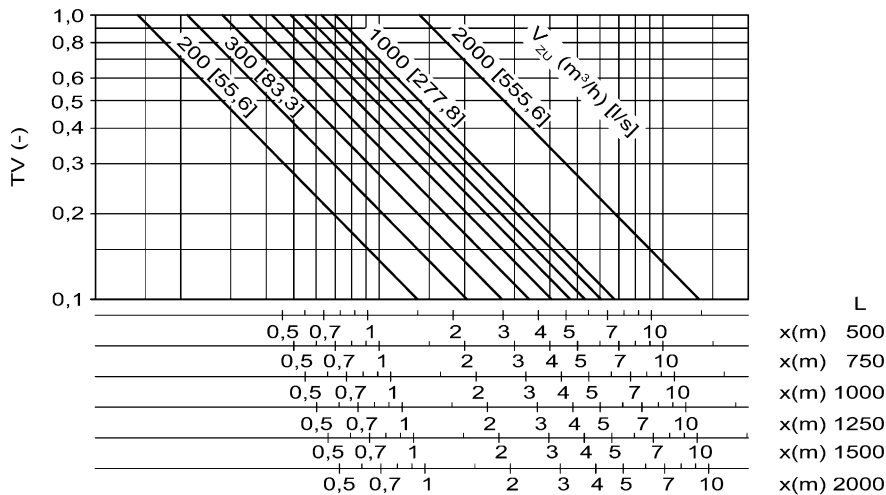
QA-V-0250-...



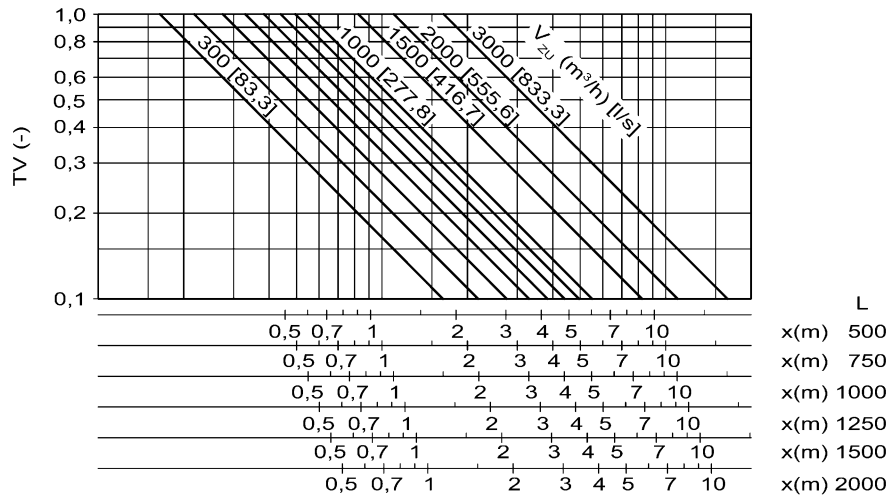
QA-V-0300-...



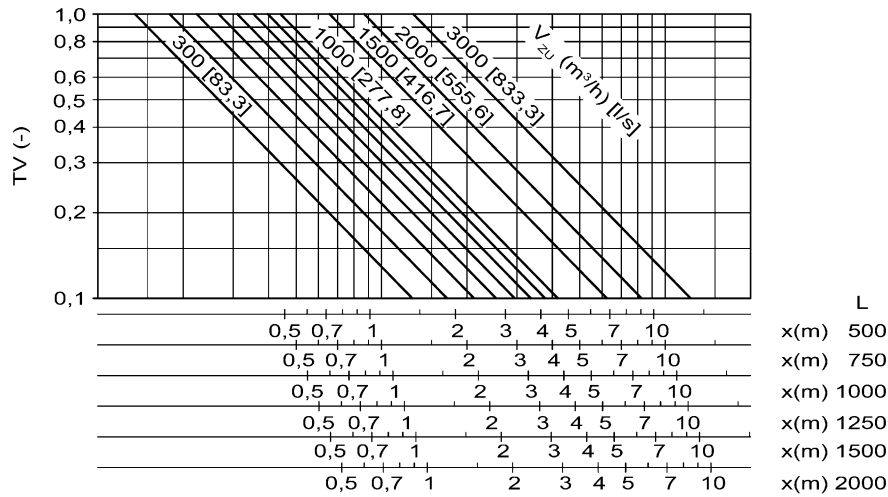
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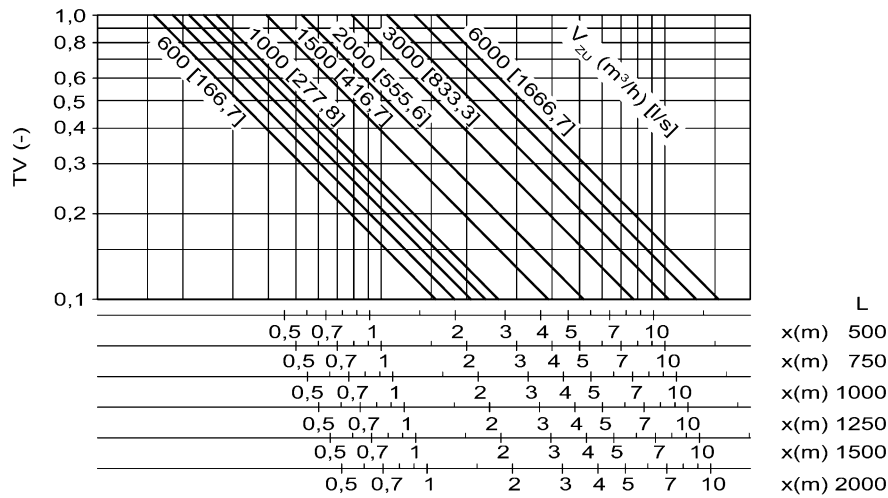
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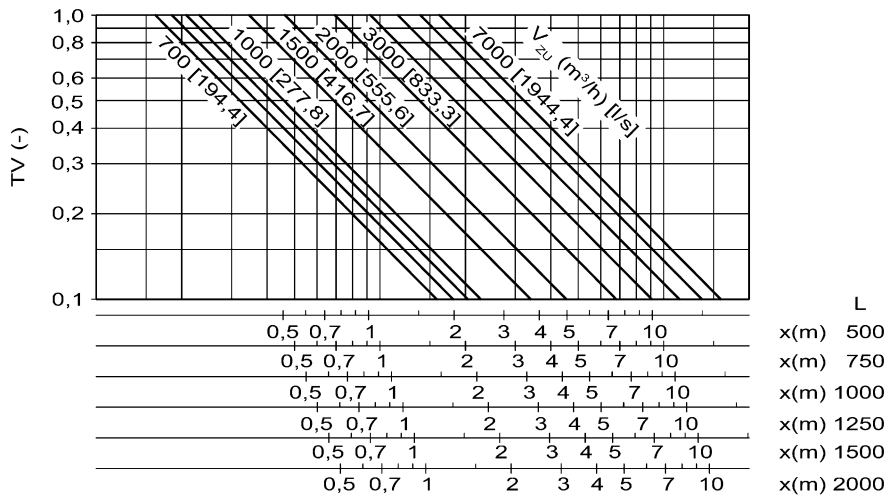
QA-V-0500-...



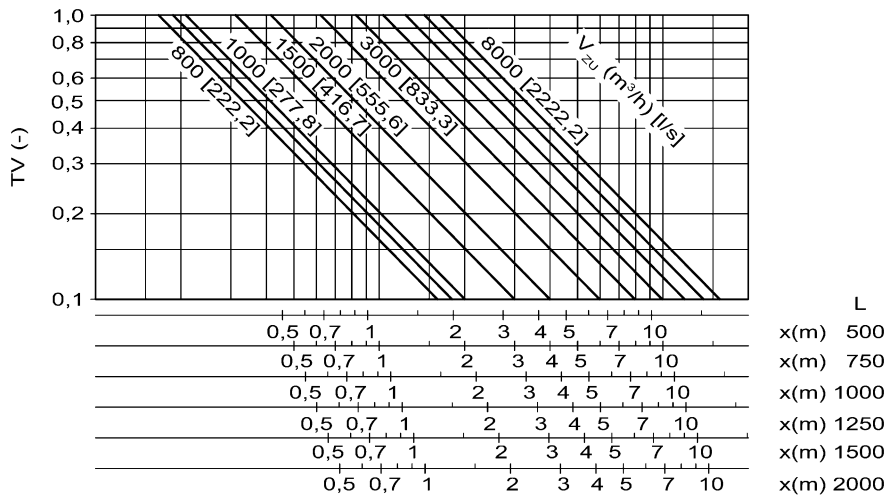
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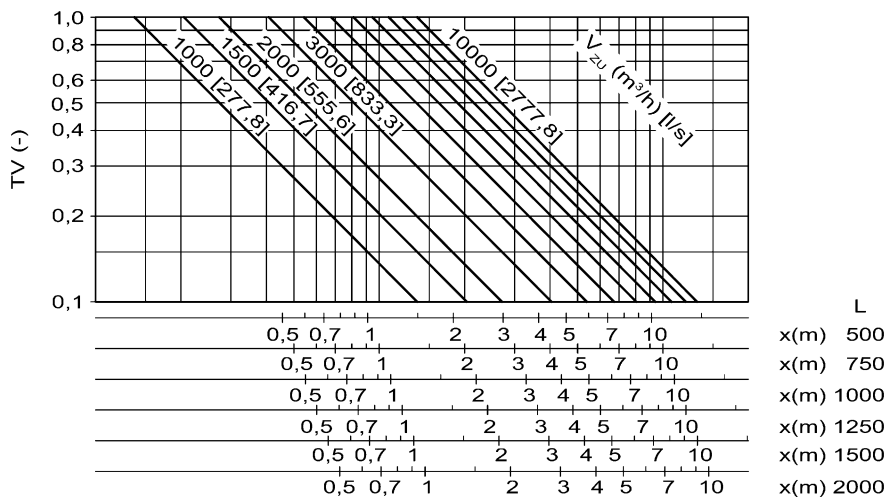
QA-V-0650-...



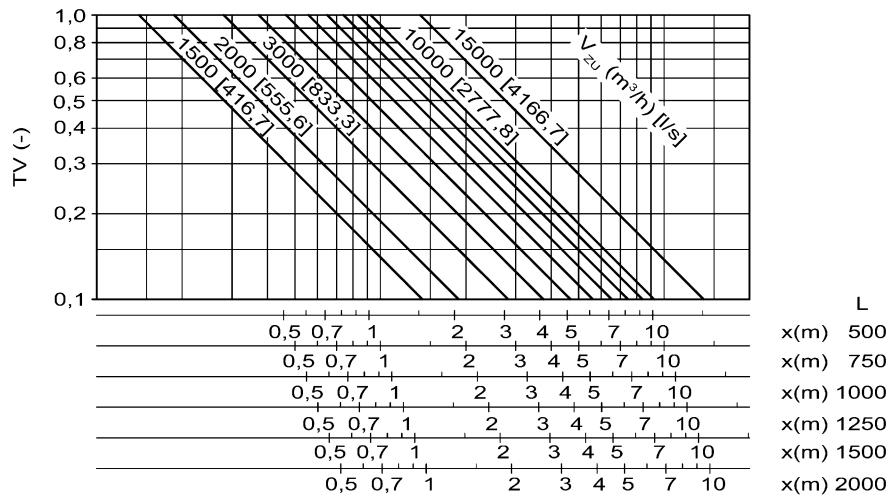
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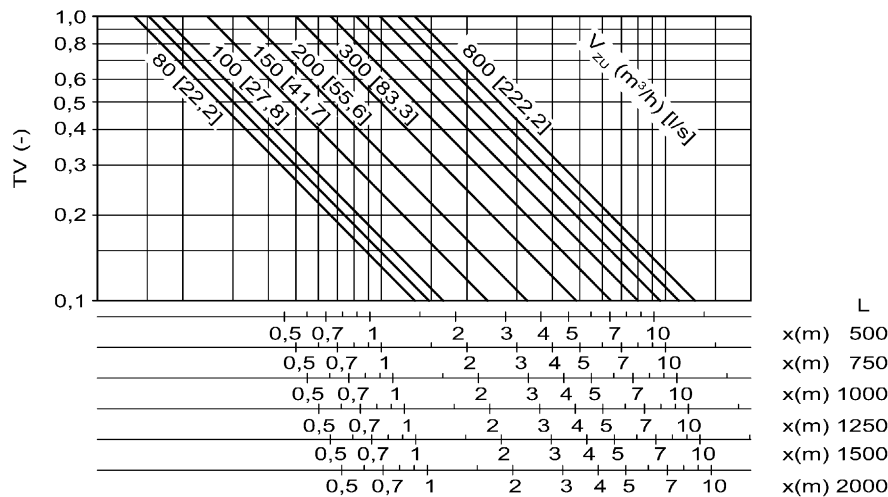
QA-V-0830-...



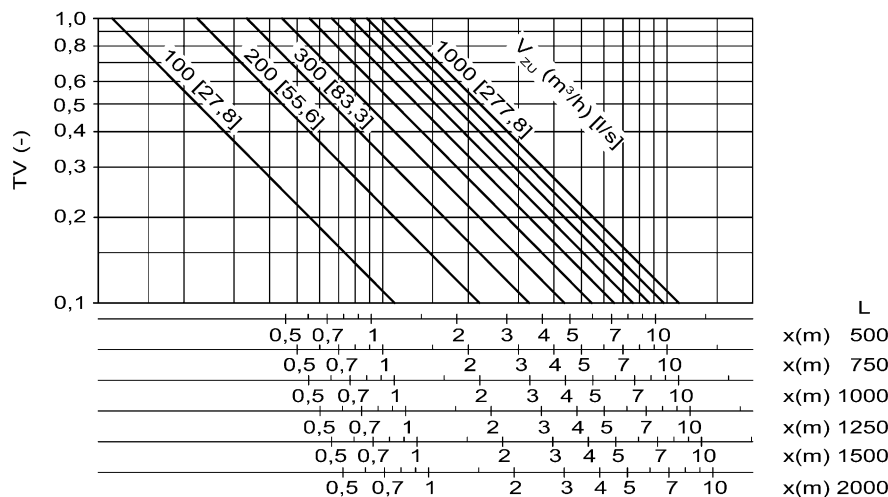
QA-V-1000-...



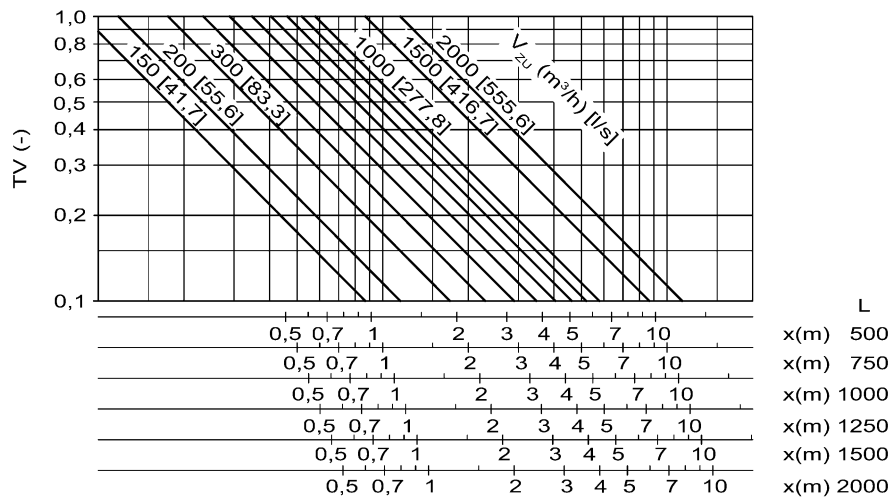
QA-H-0250-...



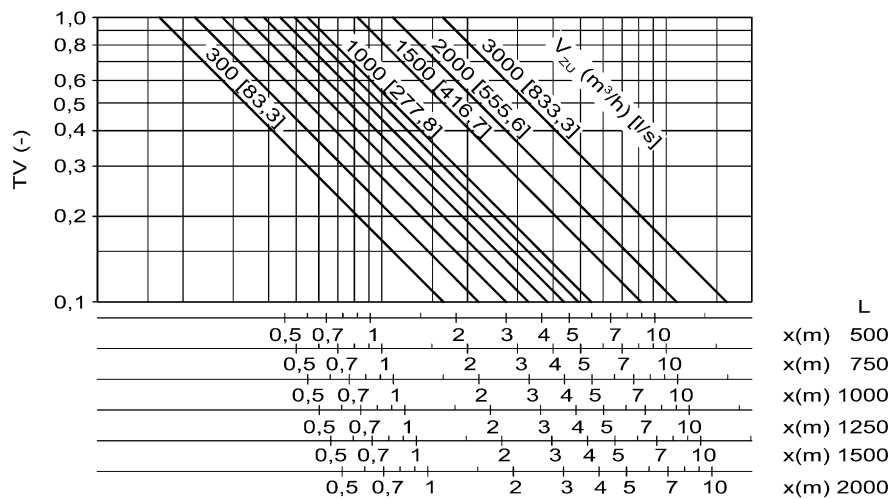
QA-H-0300-...



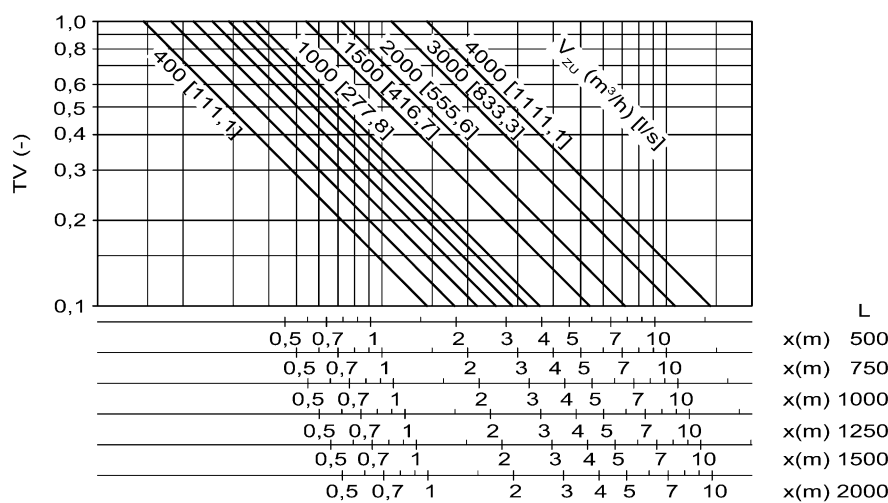
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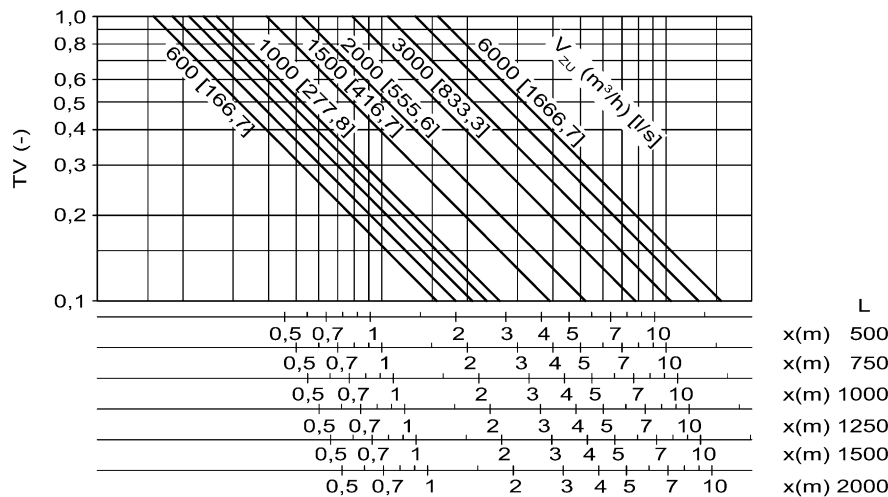
QA-H-0450-...



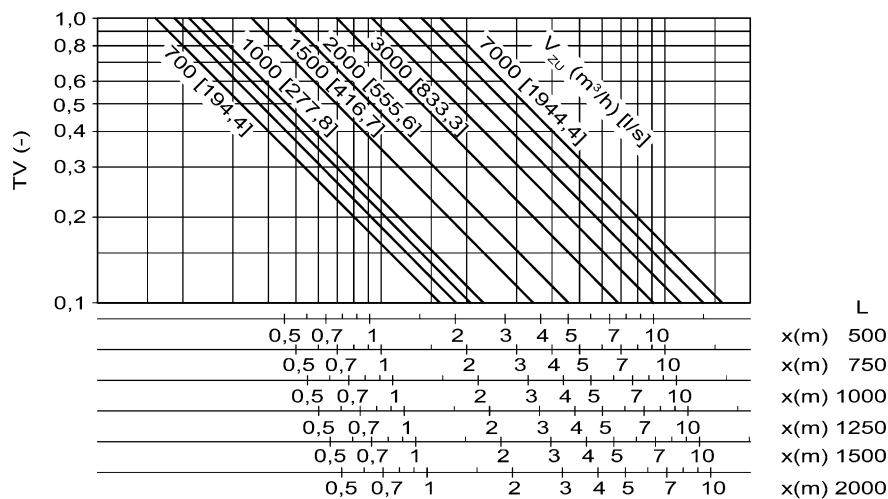
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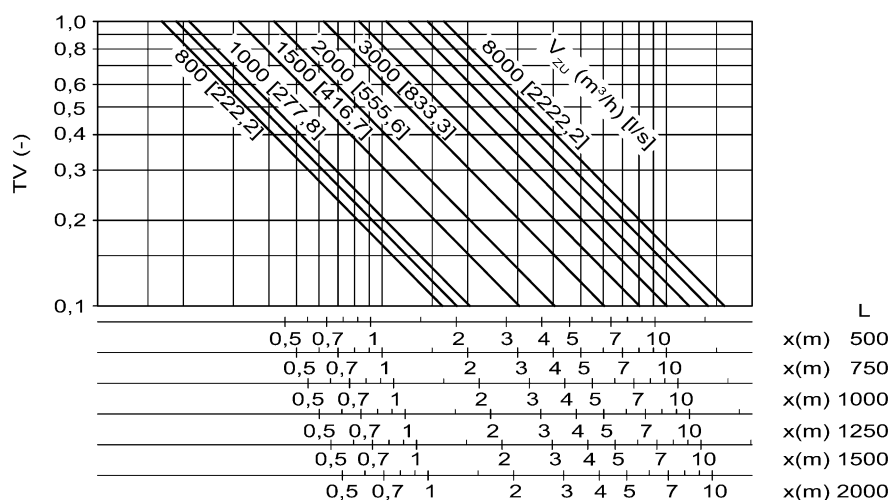
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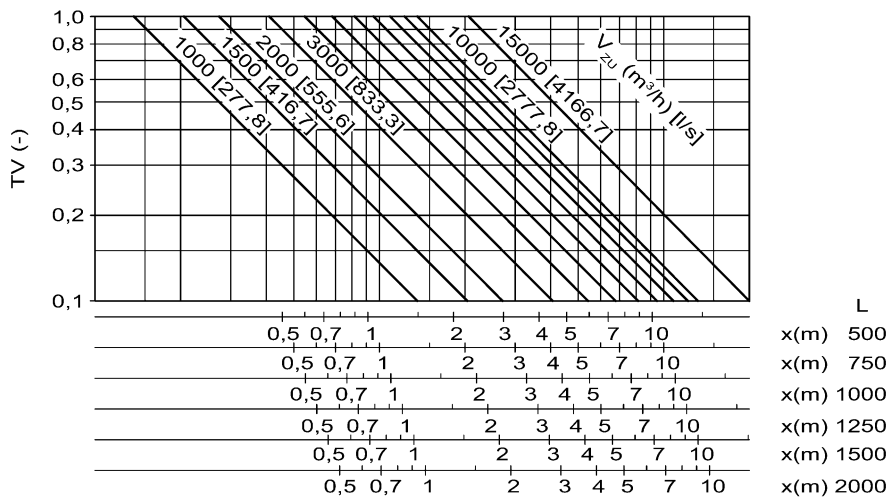
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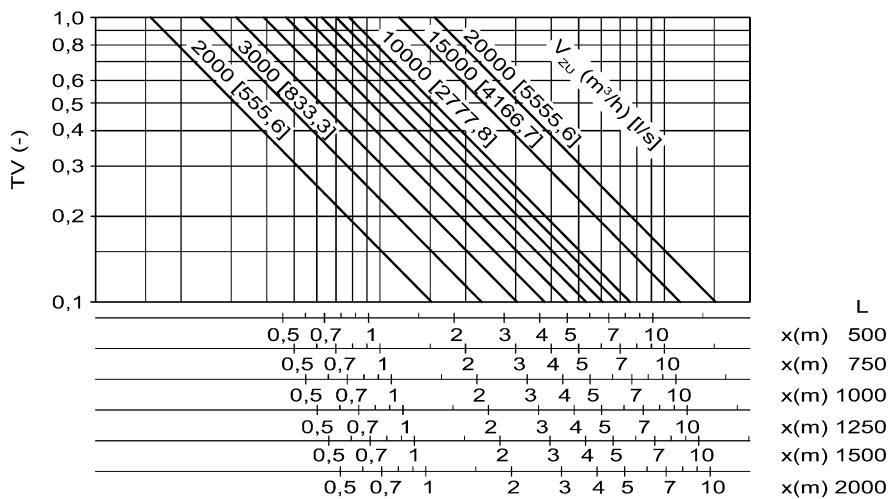
QA-H-0700-...



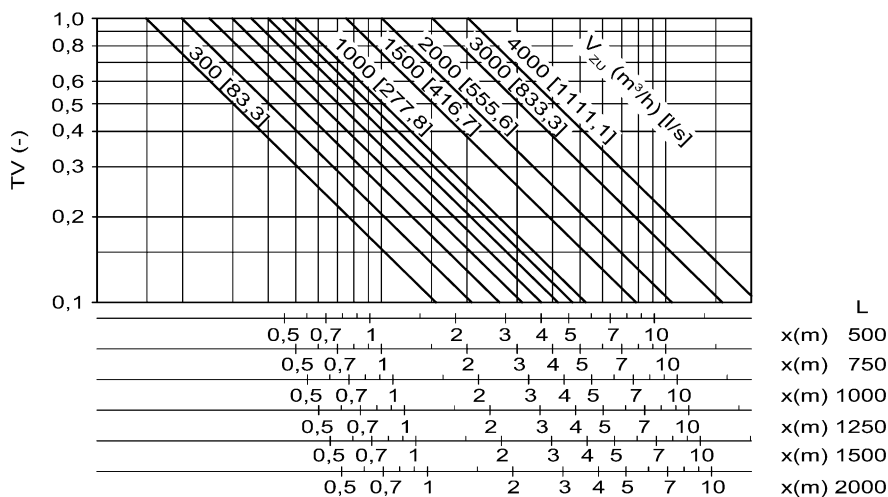
QA-H-0830-...



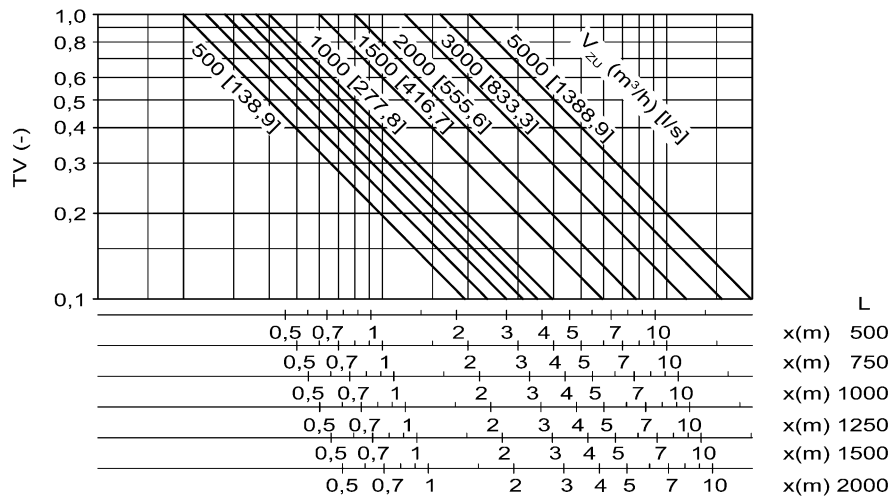
QA-H-1000-...



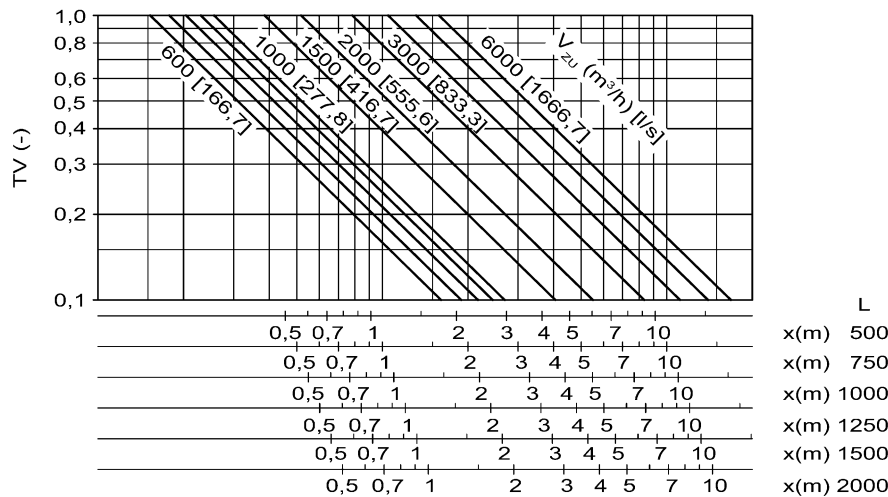
QA-R-0250-...



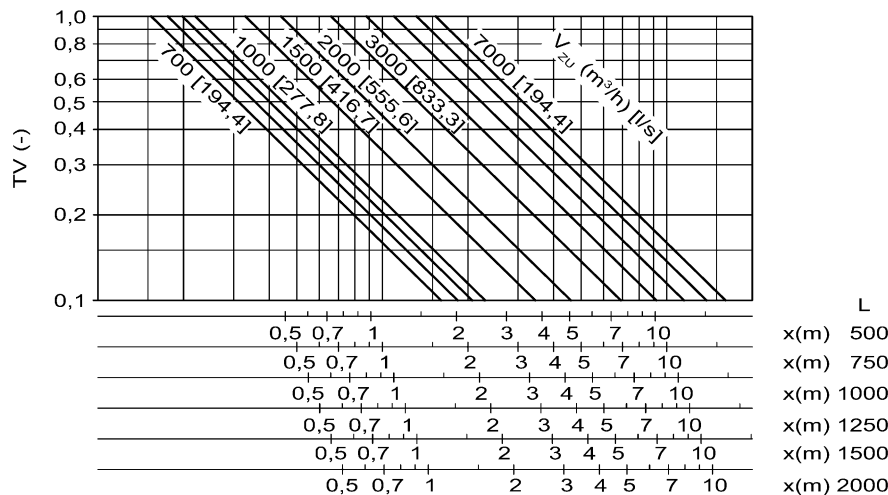
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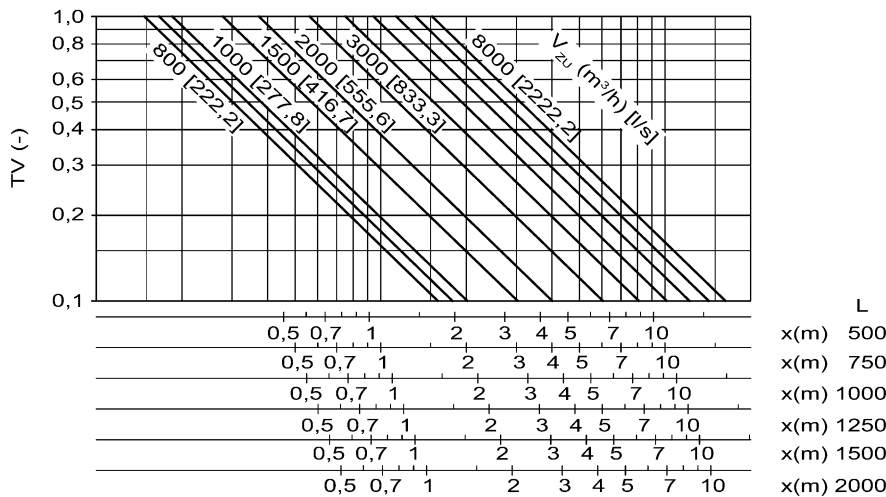
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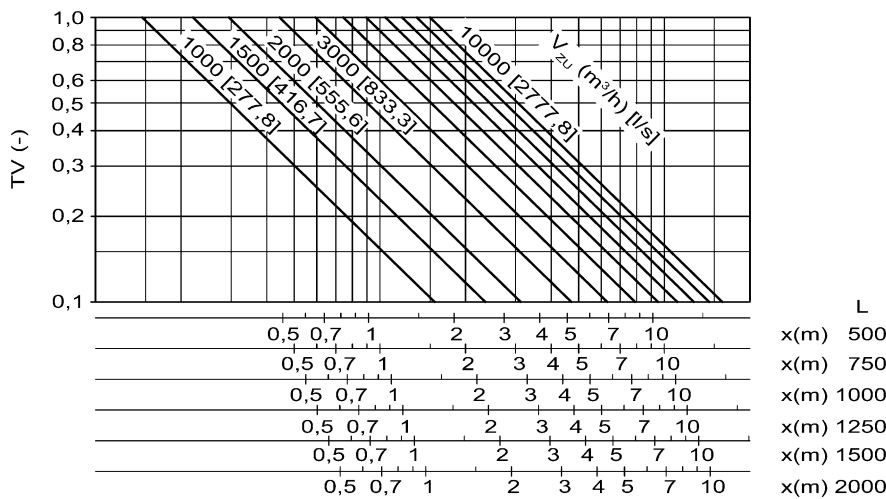
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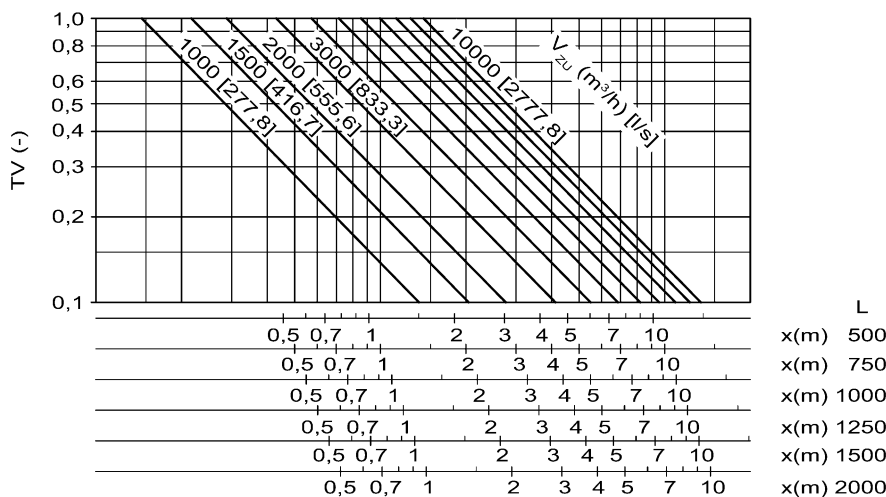
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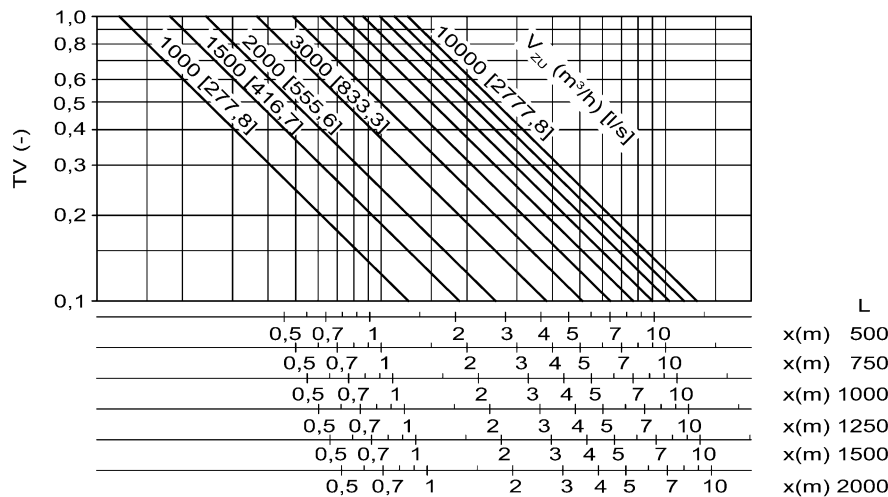
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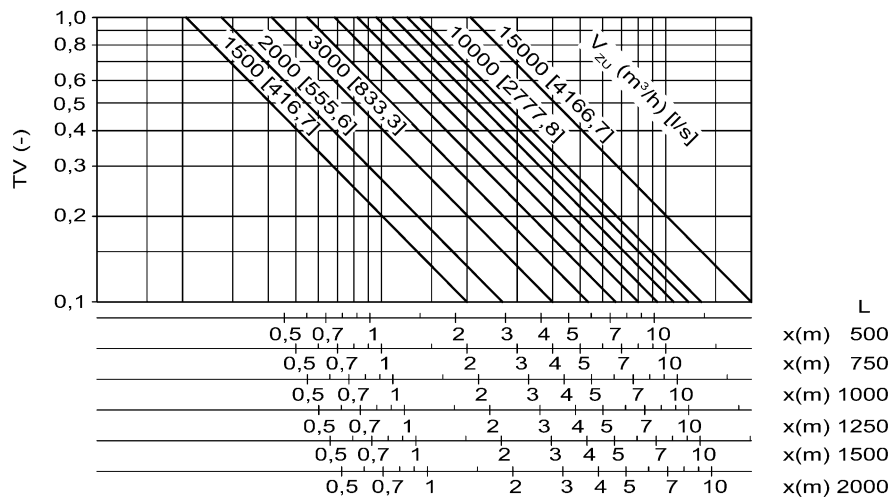
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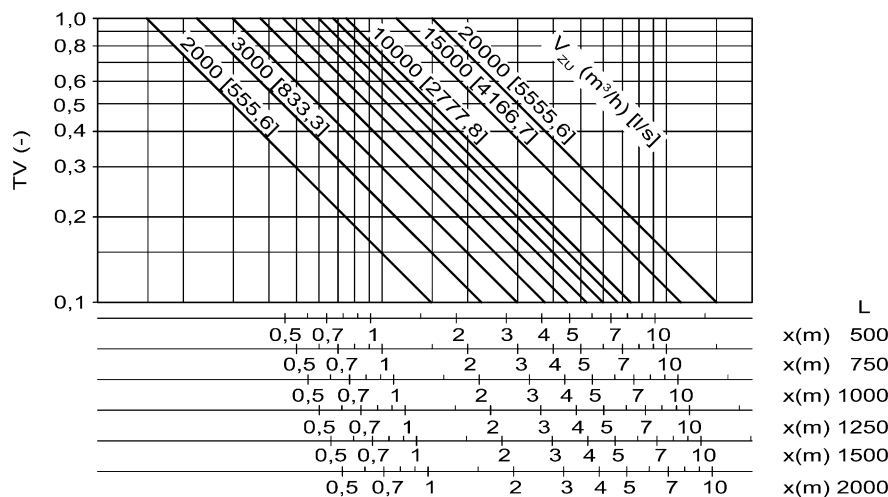
QA-R-0700-...



QA-R-0830-...



QA-R-1000-...



RELATIVE SOUND SPECTRUM

QA-R							
f _m	125	250	500	1000	2000	4000	8000
KF	0.9	-0.5	-2.3	-5.6	-9.7	-13.1	-16.2

QA-H							
f _m	125	250	500	1000	2000	4000	8000
KF	0.2	-1.6	-2.3	-4.6	-10.4	-14.2	-17.9

QA-V							
f _m	125	250	500	1000	2000	4000	8000
KF	-1.2	-1.1	-2.5	-4.4	-11	-14.8	-18.7

$L_W = L_{WA} + KF$

LEGEND

V_{ZU}	(m³/h) [l/s]	= Supply air volume
Δp_t	(Pa)	= pressure loss
ρ	(kg/m³)	= Density
L_{WA}	[dB(A)]	= A-weighted sound power level
x	(m)	= horizontal throw
KF	(-)	= Correction factor
f_m	(Hz)	= frequency
v_{max}	(m/s)	= Maximum end velocity of jet
TV	(-)	= Temperature ratio ($TV = \Delta T_x / \Delta T_o$)
ΔT_o	(K)	= Temperature difference between supply air and room temperature ($\Delta T_o = t_{ZU} - t_R$)
ΔT_x	(K)	= Temperature difference at point x
L	(mm)	= length
t_{ZU}	(°C)	= supply air temperature
t_R	(°C)	= room temperature

ORDER CODE QA

01	02	03	04	05	06	07	08
Type	Model	Nominal width	Length	Material	Paint	Rubber lip seal	Damper
Example							
QA	-R	-0300	-1000	-SB	-9010	-GD0	-DV0

All fields must be filled when ordering.

Sample

QA-R-0300-1000-SB-9010-GD0-DV0

Displacement air diffuser QA | cylindrical, 360° throw, for mid-room installation | nominal width 300 mm | length 1000 mm | sheet steel | painted to RAL colour 9010 | without rubber lip seal | without damper

ORDER DETAILS

01 - Type

QA = Displacement air diffuser QA

02 - Model

V = Quarter cylinder, 90° throw,
for corner installation.
H = Half cylinder, 180° throw,
for installation on walls or columns.
R = Cylinder, 360° throw,
for mid-room installation.

03 - Nominal width

0250 = ø250 mm
 0300 = ø300 mm
 0400 = ø400 mm
 0450 = ø450 mm
 0500 = ø500 mm
 0600 = ø600 mm
 0650 = ø650 mm
 0700 = ø700 mm
 0830 = ø830 mm
 1000 = ø1000 mm

04 - Length

0500 = 500 mm
 0750 = 750 mm
 1000 = 1000 mm
 1250 = 1250 mm
 1500 = 1500 mm
 2000 = 2000 mm

05 - Material

SV = galvanised sheet steel (standard)
 SB = sheet steel (standard with paint)
 V2 = Stainless steel 1.4301 (V2A)

06 - Paint

0000 = without paint (standard).
 SAND = painted in the colour sand silver (standard for stainless steel).
 9010 = painted to the colour RAL 9010 (white).
 xxxx = RAL colour can be freely selected (always with 4 digits).

07 - Rubber lip seal

GD0 = without rubber lip seal (standard)
 GD1 = with rubber lip seal

08 - Damper

DV0 = without damper (standard)
 DV1 = with damper

SPECIFICATION TEXT

Displacement air diffuser is ideal for industrial plants and laboratories which produce huge amounts of hazardous substances.

The supply air enters the room at a low velocity with a temperature difference of max -4 K in the cooling mode. The contaminated air is displaced by the low induction air flow. If the displacement air diffusers are used at floor level, the supply air spreads out across the floor and is directed upwards by the convection flow from heat sources.

The return air should ideally be at high level when using displacement air diffusers. Make sure to distribute the displacement air diffusers evenly over the whole floor surface area to ensure effective floor flushing.

Especially in the presence of hazardous substances of high specific gravity, the displacement air diffuser can also be used in the occupied zone at a height of 3-4 metres. In these cases, the return air should be evacuated at floor level to about 50%.

The housing consists of base plate, round connection spigot and removable faceplate (perforated plate) for easy cleaning according to VDI 6022. To achieve even air distribution, a removable synthetic fibre filter mat is installed.

- **Type QA-V**, Quarter cylinder, 90° throw, for corner installation.
Product: SCHAKO **type QA-V**
- **Type QA-H**, Half cylinder, 180° throw, for installation on walls or columns.
Product: SCHAKO **type QA-H**
- **Type QA-R**, Cylinder, 360° throw, for mid-room installation.
Product: SCHAKO **type QA-R**

Material and paint (housing):

- Galvanised sheet steel, without paint (-SV-0000) (standard).
- sheet steel painted to RAL colour 9010 (white) (-SB-9010).
- sheet steel painted to a different RAL colour, freely selectable (-SB-xxxx).
- Stainless steel 1.4301 painted in the colour sand silver (-V2-SAND).

Accessories:

- Rubber lip seal:
 - without rubber lip seal (-GD0) (standard).
 - with rubber lip seal (-GD1) made of special rubber, at the connection spigot.
- Damper:
 - without damper (-DV0) (standard).
 - with adjustable damper (-DV1), connection without rubber lip seal, for air volume regulation, with side adjustment lever, made of the same material and painted to the same colour as the base plate / connection spigot.