

**displacement diffuser
PUSH**



Ferdinand Schad KG
Steigstraße 25 - 27
78600 Kolbingen
Telefon (07463) 980 - 0
Telefax (07463) 980 - 200
info@schako.de

PUSH

displacement diffuser

contents

Description	3
Construction	4
Model	4
Accessories	4
Fixing	4
features	4
Models and dimensions	
air pattern	6
Dimensions	7
Accessories - dimensions	10
Fixing possibilities	11
Technical data	
Pressure loss and noise level	12
Maximum end velocity	14
Critical throw	16
Maximum penetration	18
Legend	19
Order details	20
Specification texts	21

PUSH displacement diffuser

Model

- PUSH-1 - upper baffle plate with cable operated adjustment, closed base
- PUSH-2 - Upper and lower baffle plates individually adjustable with chain operated adjustment.
- PUSH-3 - Upper and lower baffle plates, block adjustment with chain operated adjustment.
- PUSH-4 - Upper baffle plate with chain and lower baffle by electric actuator
- PUSH-5A - upper baffle plate adjusted by thermo cylinder, based closed
- PUSH-5B - Lower baffle plate by thermo cylinder, upper plate fix
- PUSH-5C - Upper baffle plate adjustable by thermo cylinder, base adjustable by chain
- PUSH-6 - Upper baffle plate adjustable using adjustment rod - closed base

Accessories

- 1/4 blanking plate (-AD) - galvanised sheet steel
- locking plate (-AW) - galvanised sheet steel
- painted RAL 9010 (white) (for PUSH -1 / -2 / -3 / -4 / -5C)
- bowden cable (-BZ) - for PUSH -1 / -2 / -3 / -4 / -5C
- damper (-DV) - galvanised sheet steel
- rubber gasket (-GD) - special rubber
- adjustment rod (-ST) - for PUSH -6
- equalising mesh (-WG) - plastic (only sizes 250 - 450 available)

Fixing

- standard - the displacement diffuser can be fitted directly to exposed ductwork

features

quick selection (horizontal throw)

NW	250	315	350/355	400	450	560	630
L_{WA} (dB[A])	45	45	45	45	45	45	45
Δp_t (Pa)	48	41	32	28	32	32	39
V_{zu} (m ³ /h)	730	1400	1450	1900	2400	3600	4500
V_{zu} [l/s]	200	390	400	530	670	1000	1250

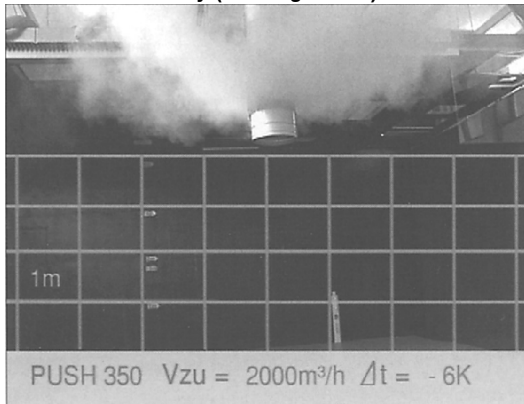
range of air volumes

NW	250	315	350/355	400	450	560	630
V_{zu} min.	600	1200	1200	1500	2000	3000	3800
(m ³ /h) max.	2200	4300	4500	6000	6800	11000	13000
V_{zu} min.	170	330	330	420	560	830	1060
[l/s] max.	610	1190	1250	1670	1890	3060	3610

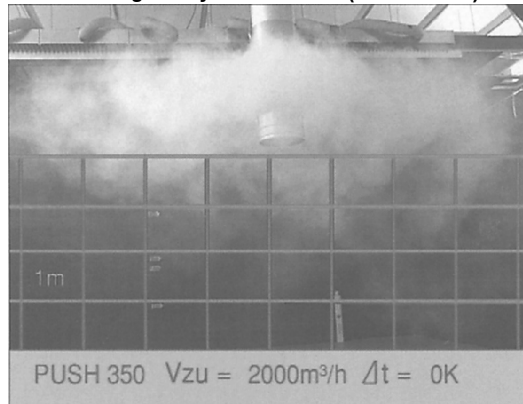
PUSH

displacement diffuser

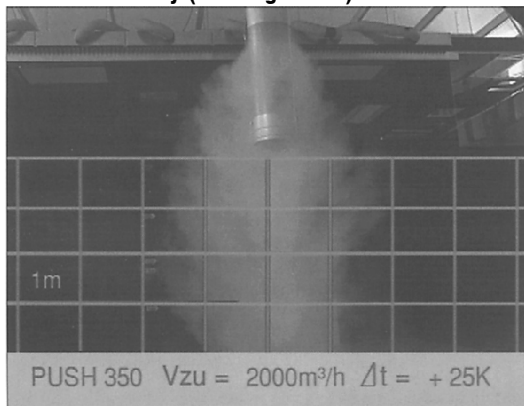
throw: horizontally (cooling mode)



throw: diagonally downwards (isothermal)



throw: vertically (heating mode)



PUSH displacement diffuser

Models and dimensions

air pattern

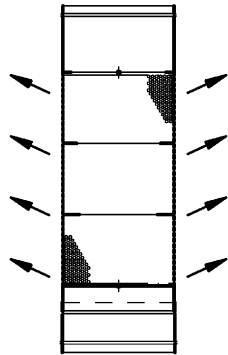
possible throw settings

	PUSH-1	PUSH-2	PUSH-3	PUSH-4	PUSH-5A	PUSH-5B	PUSH-5C	PUSH-6
⌑	←→	←→	←→	←→	←→	←→	←→	←→
	↙↘	↙↘		↙↘	↙↘		↙↘	↙↘
		↓↓	↓↓	↓↓		↓↓	↓↓	↓↓

Different air distribution patterns are achieved by adjusting the baffle plates with the chain. Intermediate settings are also possible.

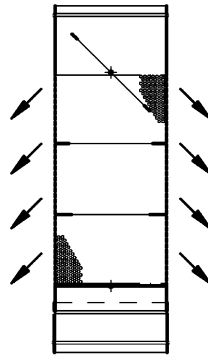
LF = air pattern

horizontal throw: cooling mode



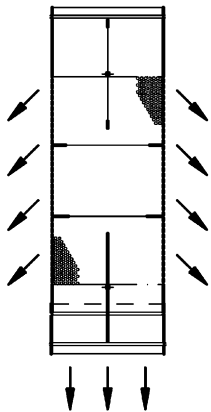
for PUSH -1 / -2 / -3 / -4 / -5A / -5B / -5C / -6

diagonally downward throw: isothermal



for PUSH -1 / -2 / -4 / -5A / -5C / -6

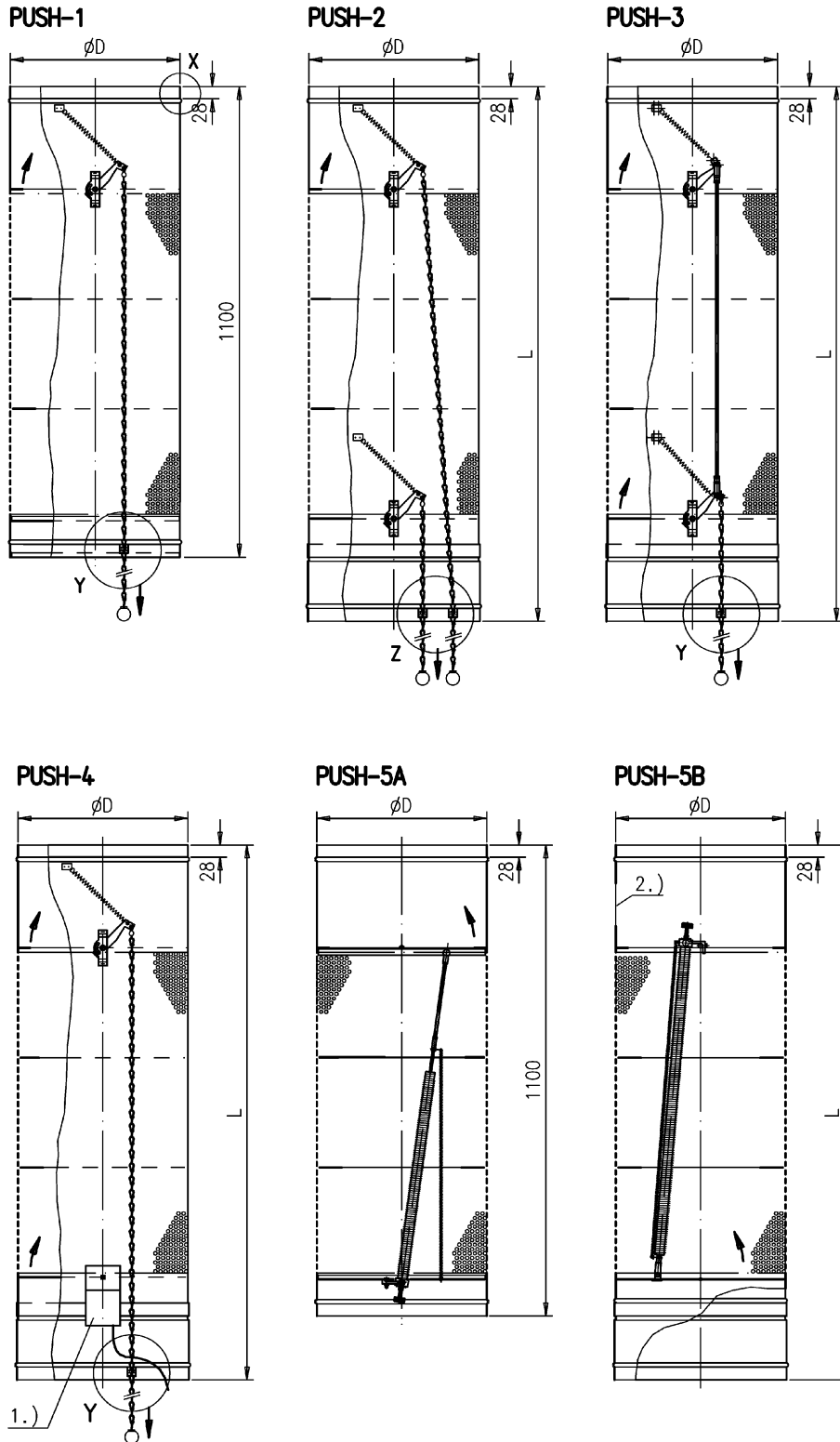
vertical throw: heating mode



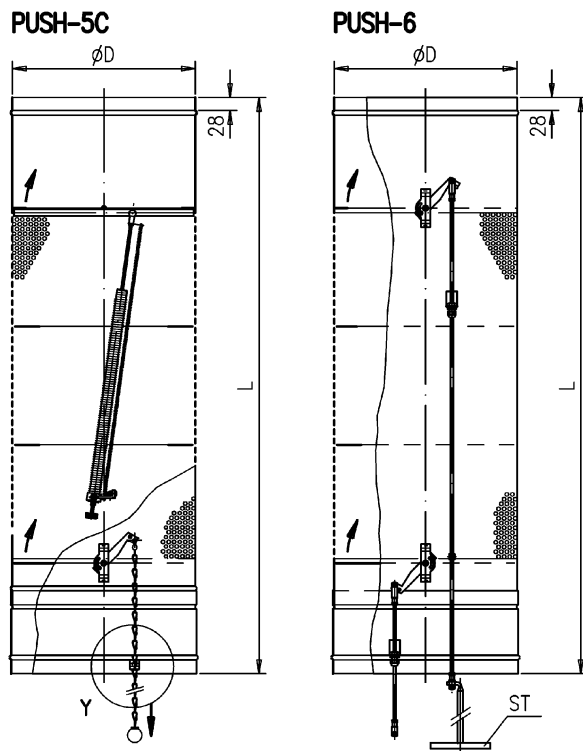
applies to: PUSH -2 / -3 / -4 / -6

PUSH displacement diffuser

Dimensions



PUSH displacement diffuser



- 1.) electric actuator
- 2.) opening for inspection
- ST adjustment rod (at extra cost)

available sizes

NW	ϕD	L
250	248	1220
315	313	1220
350	348	
355	353	
400	398	1250
450	448	
560	558	1300
630	628	1350

air direction setting

fitted to diffuser casing:
adjusted by chain. 3m long from underside of diffuser.

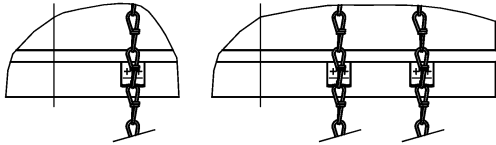
PUSH

displacement diffuser

locking mechanism (-AA)

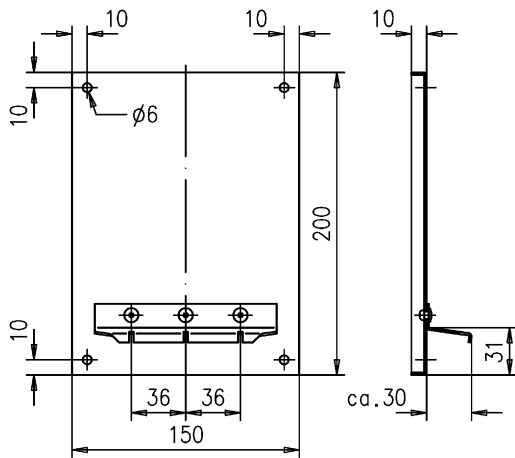
for PUSH-1/-3/-4/-5C for PUSH-2

Detail Y Detail Z



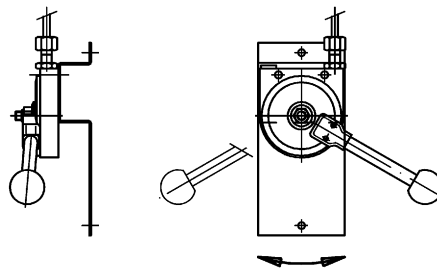
Locking plate (-AW)

for PUSH-1/ -2/ -3/ -4 / -5C



bowden cable (-BZ)

for PUSH-1 / -2/ -3/ -4/ -5C



Wall / column installation:

Adjustable with chain/rope

3 m long from underside of diffuser.

Chain length approx. 30 cm

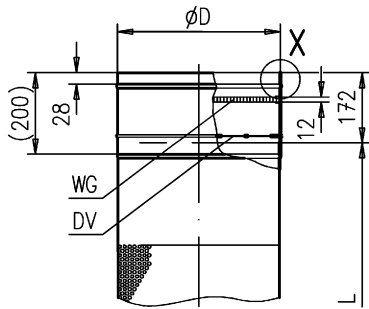
PUSH

displacement diffuser

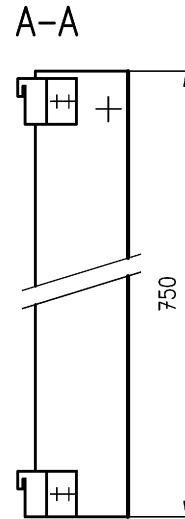
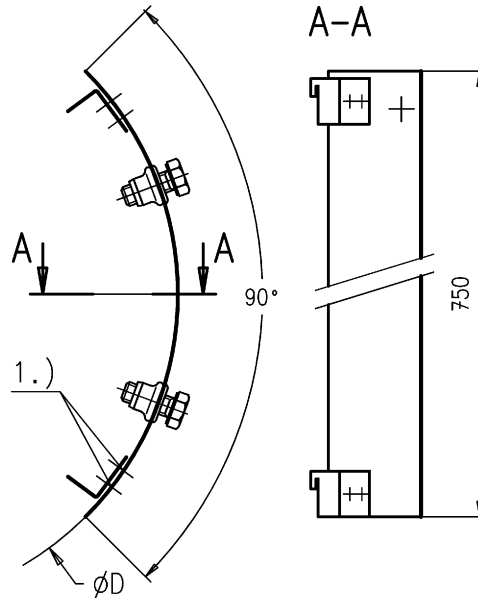
Accessories - dimensions

adjustable damper (-DV)

equalising mesh (-WG)



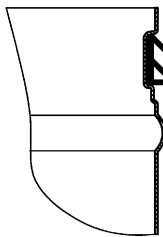
1/4 blanking plate (-AD)



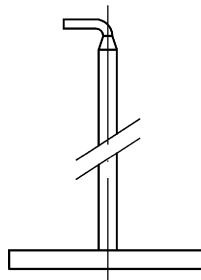
The equalising mesh (-WG) can be fitted directly into the diffuser or damper. the equalising mesh is fitted into its own casing from size 560 upwards.

BN = hidden rivet

rubber gasket (GD)
detail X



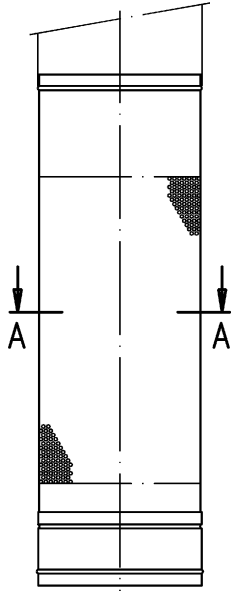
adjustment rod (-ST), for PUSH -6



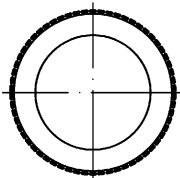
PUSH displacement diffuser

Fixing possibilities

possible types of installation
suspended (-F)

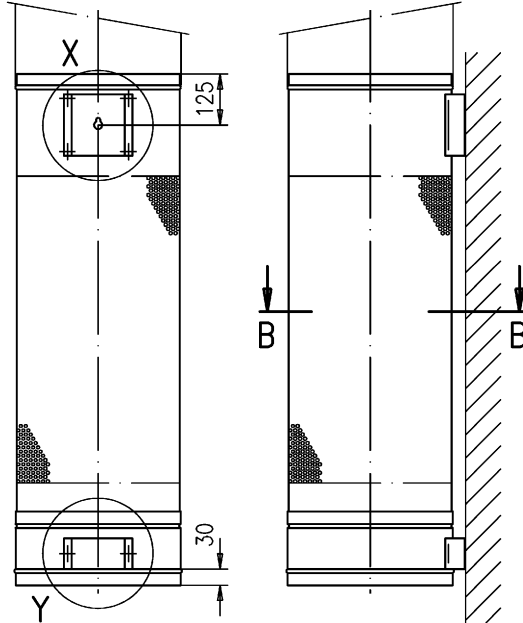


section A-A

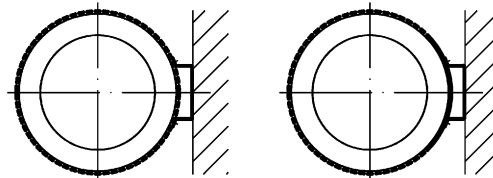


360° throw

wall / column installation (-W)

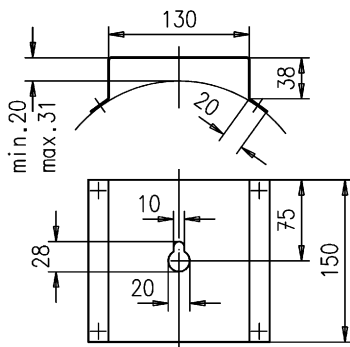


section B-B

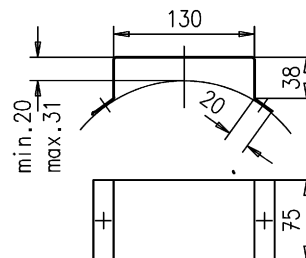


standard 360° throw on request 270° throw
(using a1/4 blanking plate)

detail X



detail Y

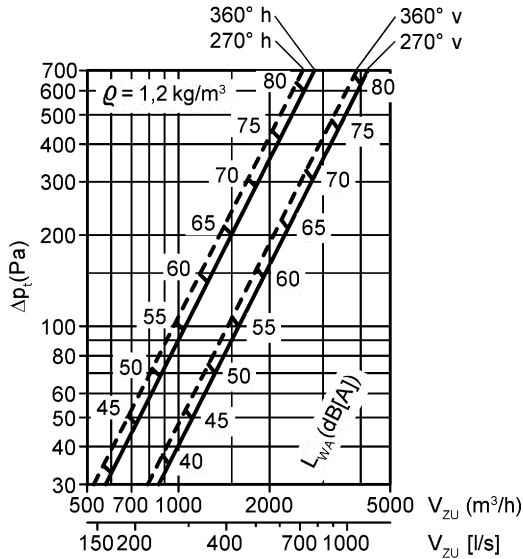


PUSH displacement diffuser

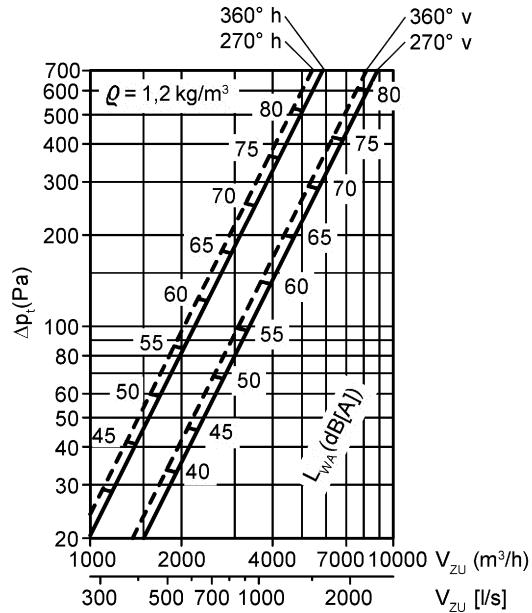
Technical data

Pressure loss and noise level

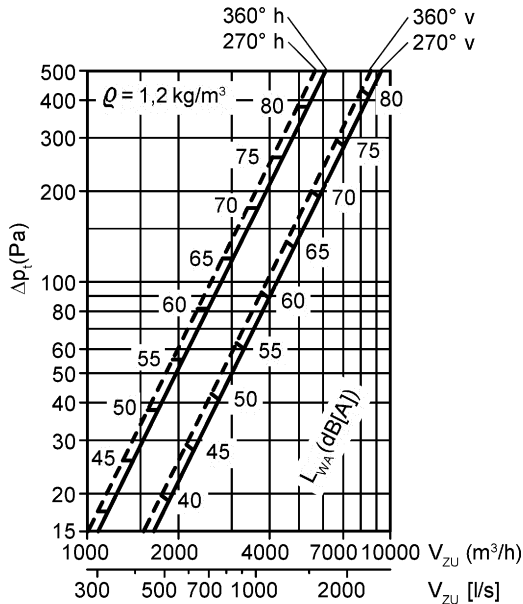
PUSH ø250



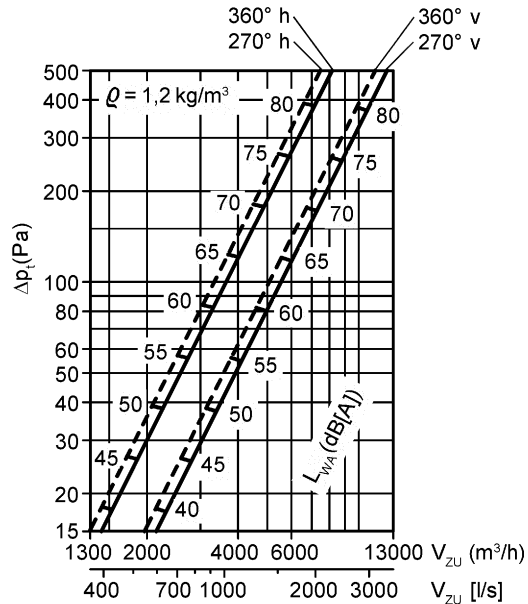
PUSH ø315



PUSH ø350 / ø355



PUSH ø400

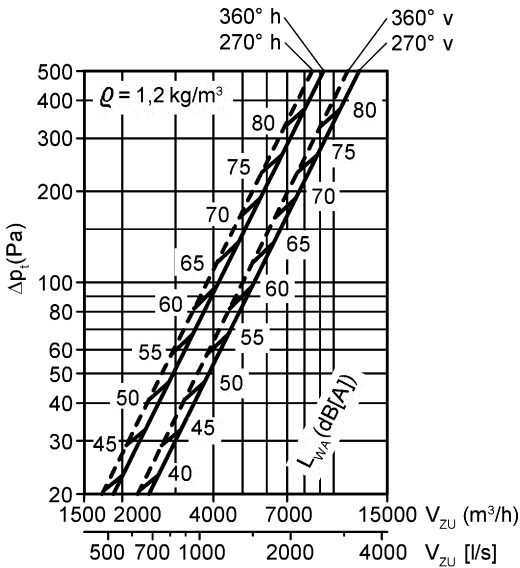


h = horizontal
v = vertical

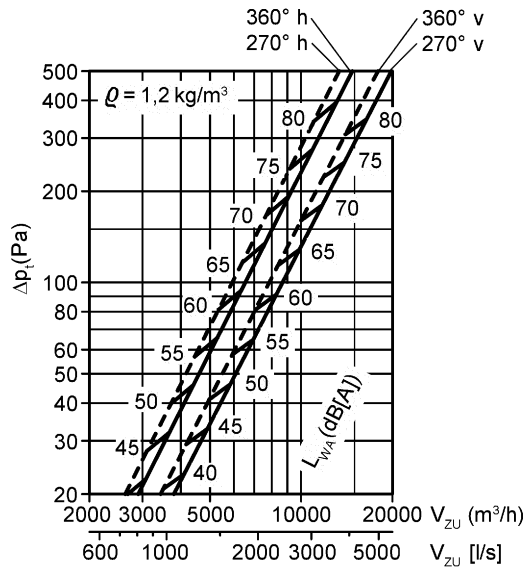
The correction factors refer to the sound power level L_{WA} with a horizontal throw.
damper position: OPEN in %

PUSH displacement diffuser

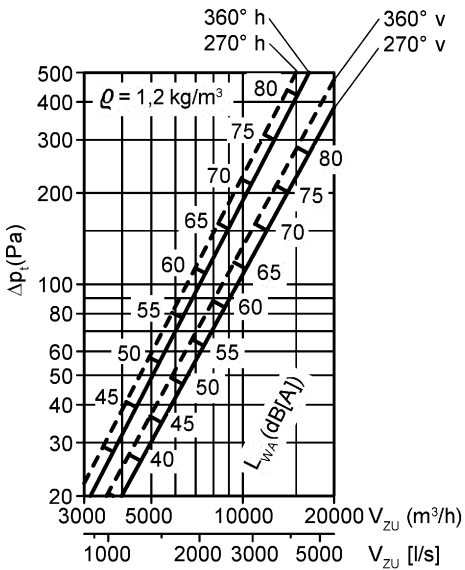
PUSH ø450



PUSH ø560



PUSH ø630



correction factor for damper (-DV)

NW	250	315	350/355	400	450	560	630
100% L_{WA}	×1,2	×1,2	×1,3	×1,3	×1,4	×1,4	×1,5
100% Δp_t	×2,3	×3,0	×3,5	×3,8	×4,0	×4,2	×4,3
66% L_{WA}	×1,4	×1,5	×1,5	×1,6	×1,6	×1,7	×1,7
66% Δp_t	×6,4	×6,8	×7,1	×7,3	×7,4	×7,5	×7,5
33% L_{WA}	×1,7	×1,9	×2,1	×2,4	×2,6	×2,8	×3,0
33% Δp_t	×10	×13	×14	×15	×15	×15	×15

h = horizontal
v = vertical

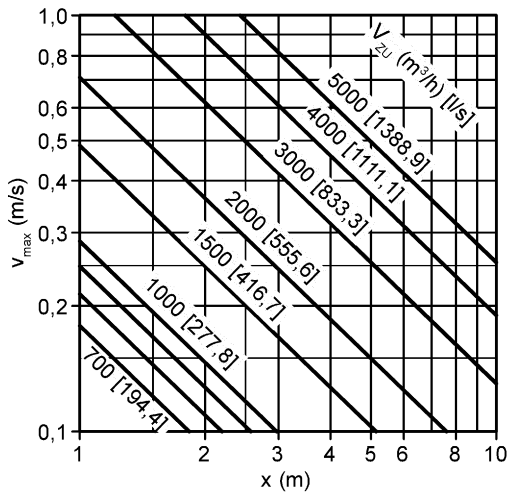
----270° throw for wall / column installation

The correction factors refer to the sound power level L_{wa} with a horizontal throw
damper position : OPEN in %

PUSH displacement diffuser

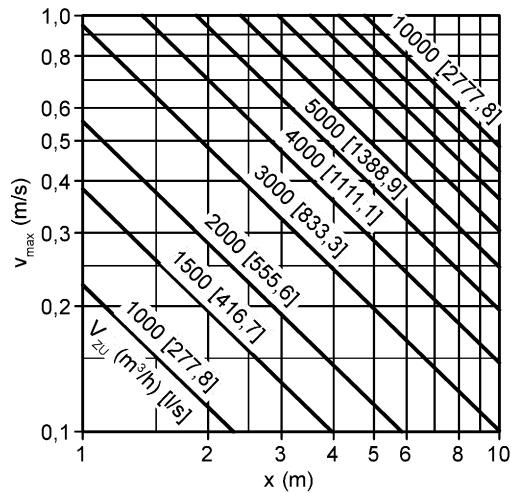
Maximum end velocity

PUSH ø250



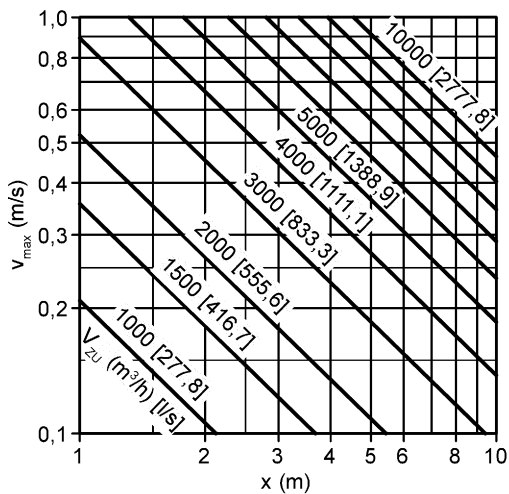
270° throw for wall / column installation
 $v_{max\ 270^\circ} = v_{max} \times 1,8$

PUSH ø315



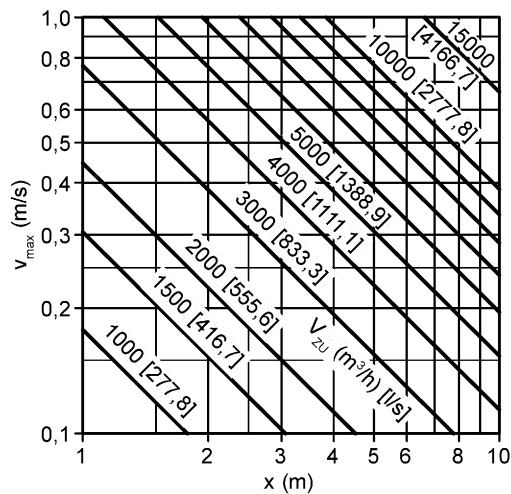
270° throw for wall / column installation
 $v_{max\ 270^\circ} = v_{max} \times 1,8$

PUSH ø350 / ø355



270° throw for wall / column installation
 $v_{max\ 270^\circ} = v_{max} \times 1,8$

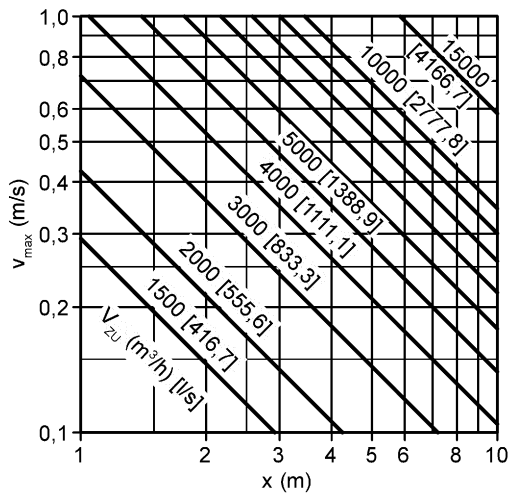
PUSH ø400



270° throw for wall / column installation
 $v_{max\ 270^\circ} = v_{max} \times 1,8$

PUSH displacement diffuser

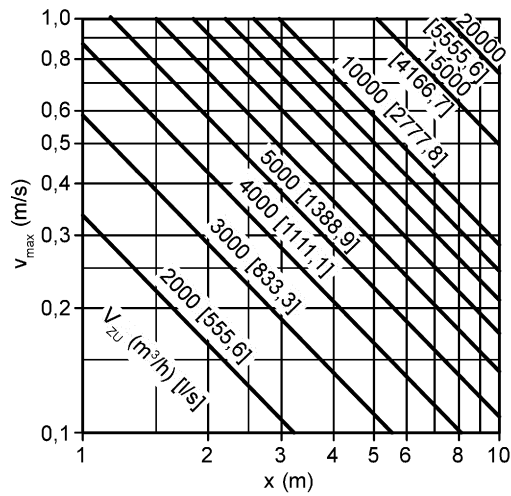
PUSH ø450



270° throw for wall / column installation

$$v_{max\ 270^\circ} = v_{max} \times 1,8$$

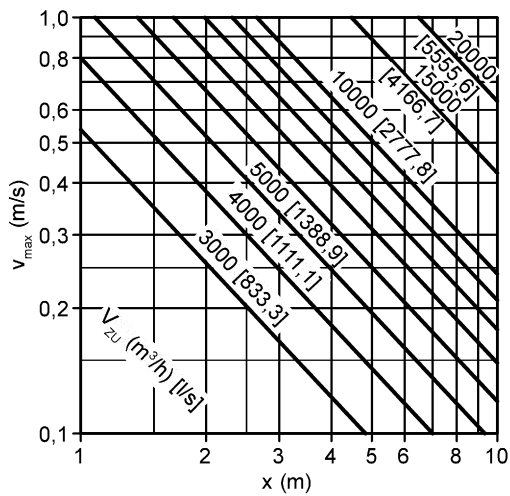
PUSH ø560



270° throw for wall / column installation

$$v_{max\ 270^\circ} = v_{max} \times 1,8$$

PUSH ø630



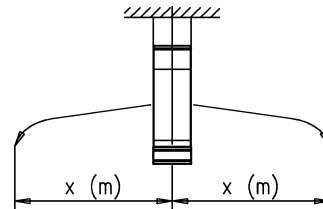
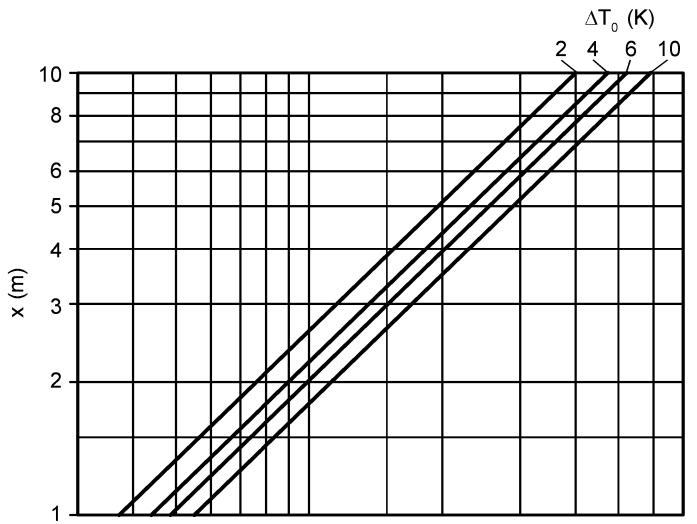
270° throw for wall / column installation

$$v_{max\ 270^\circ} = v_{max} \times 1,8$$

PUSH displacement diffuser

Critical throw

throw (in cooling mode)
suspended installation

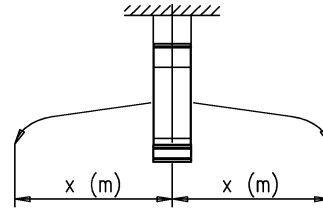
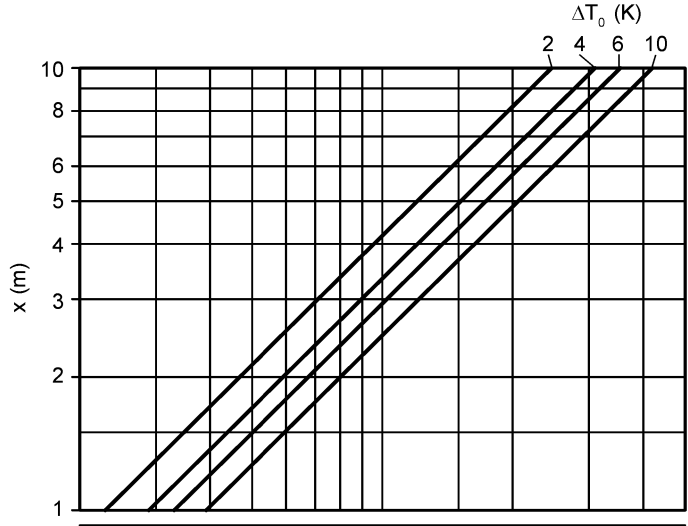


	NW														
<table border="1"> <tr><td>150</td><td>200</td><td>400</td><td>700</td><td>1000</td><td>2000</td><td>3000</td></tr> <tr><td>40</td><td>70</td><td>100</td><td>200</td><td>400</td><td>600</td><td>800</td></tr> </table>	150	200	400	700	1000	2000	3000	40	70	100	200	400	600	800	V_{zu} (m³/h) 250 V_{zu} [l/s] 250
150	200	400	700	1000	2000	3000									
40	70	100	200	400	600	800									
<table border="1"> <tr><td>200</td><td>400</td><td>700</td><td>1000</td><td>2000</td><td>4000</td></tr> <tr><td>60</td><td>100</td><td>200</td><td>400</td><td>700</td><td>1000</td></tr> </table>	200	400	700	1000	2000	4000	60	100	200	400	700	1000	V_{zu} (m³/h) 315 V_{zu} [l/s] 315		
200	400	700	1000	2000	4000										
60	100	200	400	700	1000										
<table border="1"> <tr><td>300</td><td>500</td><td>700</td><td>1000</td><td>2000</td><td>4000</td><td>7000</td></tr> <tr><td>100</td><td>200</td><td>400</td><td>700</td><td>1000</td><td>1500</td></tr> </table>	300	500	700	1000	2000	4000	7000	100	200	400	700	1000	1500	V_{zu} (m³/h) 350/355 V_{zu} [l/s] 350/355	
300	500	700	1000	2000	4000	7000									
100	200	400	700	1000	1500										
<table border="1"> <tr><td>500</td><td>700</td><td>1000</td><td>2000</td><td>4000</td><td>7000</td><td>10000</td></tr> <tr><td>150</td><td>200</td><td>400</td><td>700</td><td>1000</td><td>2000</td></tr> </table>	500	700	1000	2000	4000	7000	10000	150	200	400	700	1000	2000	V_{zu} (m³/h) 400 V_{zu} [l/s] 400	
500	700	1000	2000	4000	7000	10000									
150	200	400	700	1000	2000										
<table border="1"> <tr><td>700</td><td>1000</td><td>2000</td><td>4000</td><td>7000</td><td>10000</td><td>15000</td></tr> <tr><td>200</td><td>400</td><td>700</td><td>1000</td><td>2000</td><td>4000</td></tr> </table>	700	1000	2000	4000	7000	10000	15000	200	400	700	1000	2000	4000	V_{zu} (m³/h) 450 V_{zu} [l/s] 450	
700	1000	2000	4000	7000	10000	15000									
200	400	700	1000	2000	4000										
<table border="1"> <tr><td>1000</td><td>2000</td><td>4000</td><td>7000</td><td>10000</td><td>20000</td></tr> <tr><td>300</td><td>500</td><td>700</td><td>1000</td><td>2000</td><td>4000</td><td>6000</td></tr> </table>	1000	2000	4000	7000	10000	20000	300	500	700	1000	2000	4000	6000	V_{zu} (m³/h) 560 V_{zu} [l/s] 560	
1000	2000	4000	7000	10000	20000										
300	500	700	1000	2000	4000	6000									
<table border="1"> <tr><td>1500</td><td>2000</td><td>4000</td><td>7000</td><td>10000</td><td>20000</td><td>30000</td></tr> <tr><td>500</td><td>700</td><td>1000</td><td>2000</td><td>4000</td><td>6000</td><td>9000</td></tr> </table>	1500	2000	4000	7000	10000	20000	30000	500	700	1000	2000	4000	6000	9000	V_{zu} (m³/h) 630 V_{zu} [l/s] 630
1500	2000	4000	7000	10000	20000	30000									
500	700	1000	2000	4000	6000	9000									

PUSH

displacement diffuser

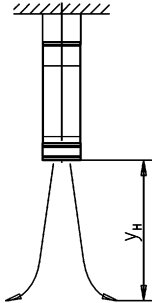
throw (in cooling mode)
wall / column installation, 270° throw



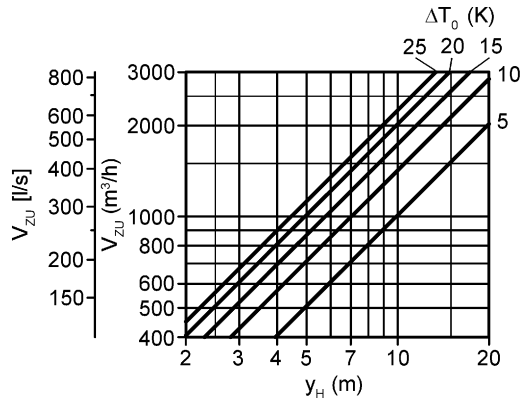
	NW						
<table border="0"> <tr> <td>100 200 400 700 1000 2000</td> <td>V_{zu} (m³/h)</td> <td>250</td> </tr> <tr> <td>30 50 70 100 200 400 600</td> <td>V_{zu} [l/s]</td> <td>250</td> </tr> </table>	100 200 400 700 1000 2000	V_{zu} (m ³ /h)	250	30 50 70 100 200 400 600	V_{zu} [l/s]	250	
100 200 400 700 1000 2000	V_{zu} (m ³ /h)	250					
30 50 70 100 200 400 600	V_{zu} [l/s]	250					
<table border="0"> <tr> <td>150 200 400 700 1000 2000 3000</td> <td>V_{zu} (m³/h)</td> <td>315</td> </tr> <tr> <td>40 70 100 200 400 600 900</td> <td>V_{zu} [l/s]</td> <td>315</td> </tr> </table>	150 200 400 700 1000 2000 3000	V_{zu} (m ³ /h)	315	40 70 100 200 400 600 900	V_{zu} [l/s]	315	
150 200 400 700 1000 2000 3000	V_{zu} (m ³ /h)	315					
40 70 100 200 400 600 900	V_{zu} [l/s]	315					
<table border="0"> <tr> <td>200 400 700 1000 2000 4000 5000</td> <td>V_{zu} (m³/h)</td> <td>350/355</td> </tr> <tr> <td>60 100 200 400 700 1000</td> <td>V_{zu} [l/s]</td> <td>350/355</td> </tr> </table>	200 400 700 1000 2000 4000 5000	V_{zu} (m ³ /h)	350/355	60 100 200 400 700 1000	V_{zu} [l/s]	350/355	
200 400 700 1000 2000 4000 5000	V_{zu} (m ³ /h)	350/355					
60 100 200 400 700 1000	V_{zu} [l/s]	350/355					
<table border="0"> <tr> <td>300 400 700 1000 2000 4000 7000</td> <td>V_{zu} (m³/h)</td> <td>400</td> </tr> <tr> <td>100 200 400 700 1000 2000</td> <td>V_{zu} [l/s]</td> <td>400</td> </tr> </table>	300 400 700 1000 2000 4000 7000	V_{zu} (m ³ /h)	400	100 200 400 700 1000 2000	V_{zu} [l/s]	400	
300 400 700 1000 2000 4000 7000	V_{zu} (m ³ /h)	400					
100 200 400 700 1000 2000	V_{zu} [l/s]	400					
<table border="0"> <tr> <td>500 700 1000 2000 4000 7000 10000</td> <td>V_{zu} (m³/h)</td> <td>450</td> </tr> <tr> <td>150 200 400 700 1000 2000 3000</td> <td>V_{zu} [l/s]</td> <td>450</td> </tr> </table>	500 700 1000 2000 4000 7000 10000	V_{zu} (m ³ /h)	450	150 200 400 700 1000 2000 3000	V_{zu} [l/s]	450	
500 700 1000 2000 4000 7000 10000	V_{zu} (m ³ /h)	450					
150 200 400 700 1000 2000 3000	V_{zu} [l/s]	450					
<table border="0"> <tr> <td>700 1000 2000 4000 7000 10000 15000</td> <td>V_{zu} (m³/h)</td> <td>560</td> </tr> <tr> <td>200 400 700 1000 2000 4000</td> <td>V_{zu} [l/s]</td> <td>560</td> </tr> </table>	700 1000 2000 4000 7000 10000 15000	V_{zu} (m ³ /h)	560	200 400 700 1000 2000 4000	V_{zu} [l/s]	560	
700 1000 2000 4000 7000 10000 15000	V_{zu} (m ³ /h)	560					
200 400 700 1000 2000 4000	V_{zu} [l/s]	560					
<table border="0"> <tr> <td>1000 2000 4000 7000 10000 20000</td> <td>V_{zu} (m³/h)</td> <td>630</td> </tr> <tr> <td>300 400 700 1000 2000 4000 7000</td> <td>V_{zu} [l/s]</td> <td>630</td> </tr> </table>	1000 2000 4000 7000 10000 20000	V_{zu} (m ³ /h)	630	300 400 700 1000 2000 4000 7000	V_{zu} [l/s]	630	
1000 2000 4000 7000 10000 20000	V_{zu} (m ³ /h)	630					
300 400 700 1000 2000 4000 7000	V_{zu} [l/s]	630					

PUSH displacement diffuser

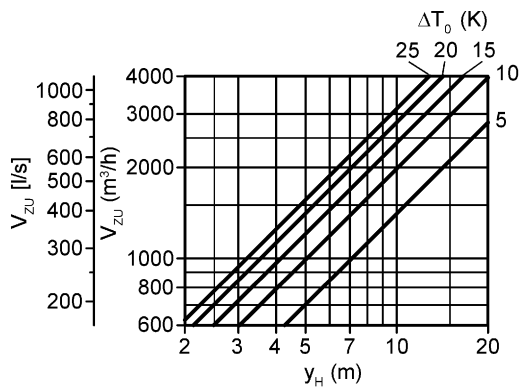
Maximum penetration
vertical throw (in heating mode)



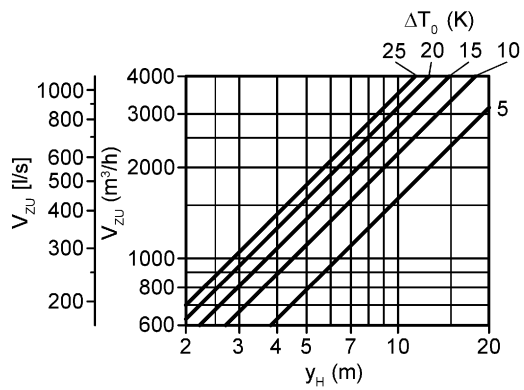
PUSH ø250



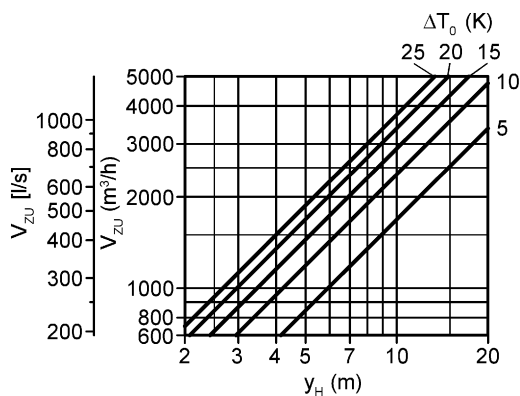
PUSH ø315



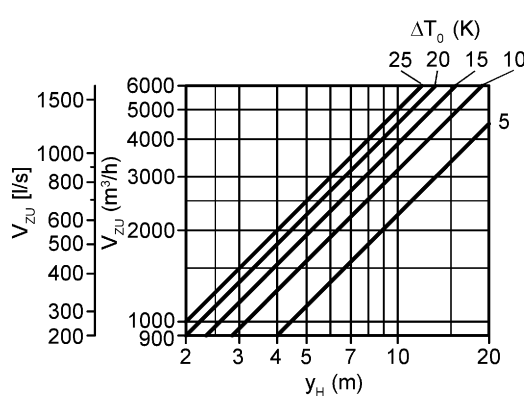
PUSH ø350 / ø355



PUSH ø400



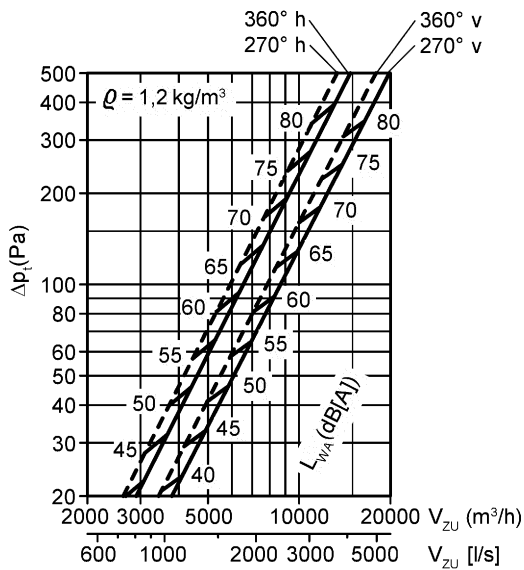
PUSH ø450



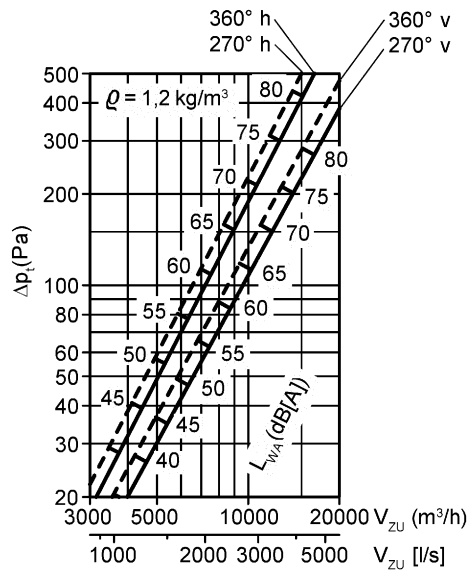
PUSH

displacement diffuser

PUSH ø560



PUSH ø630

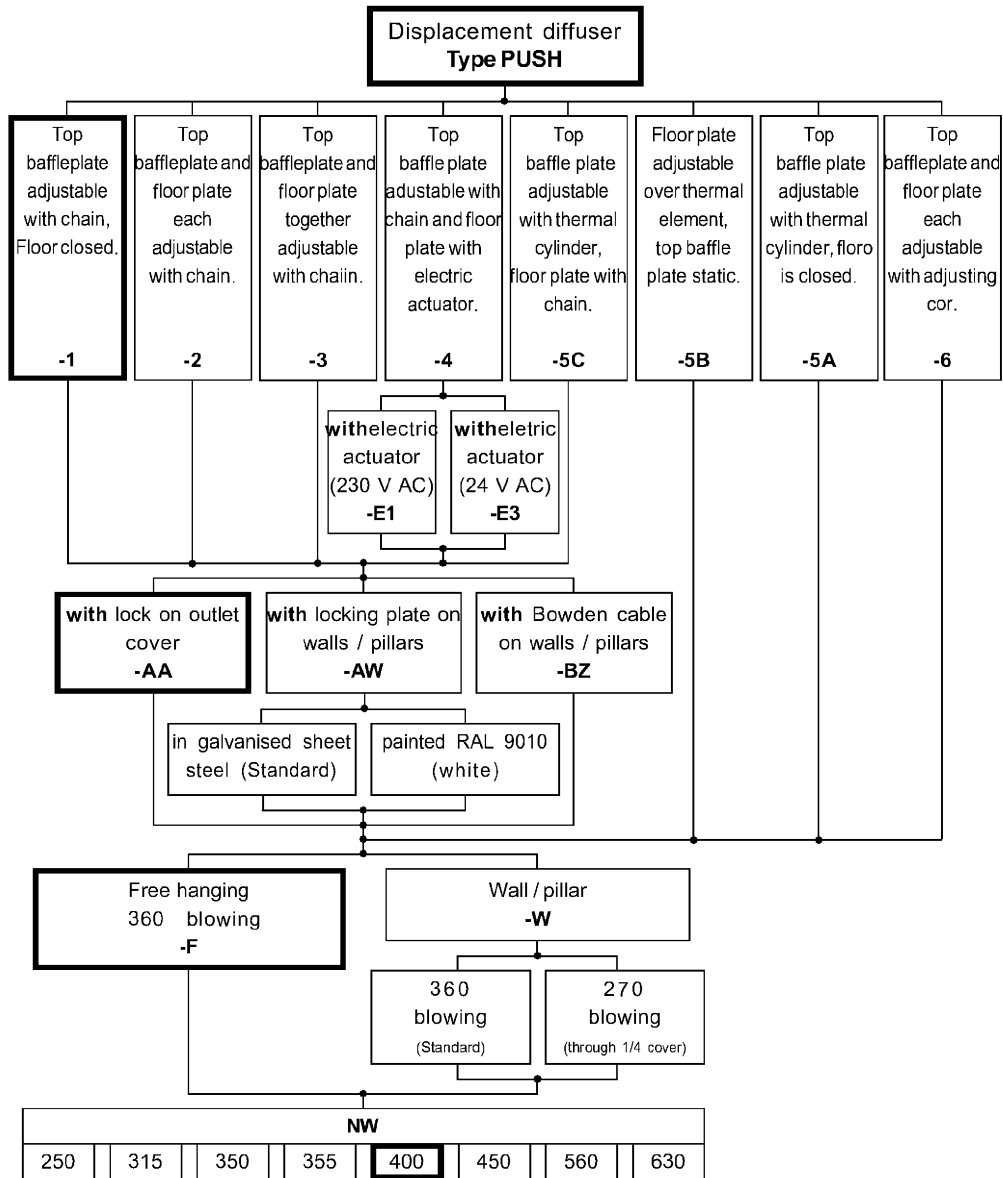


Legend

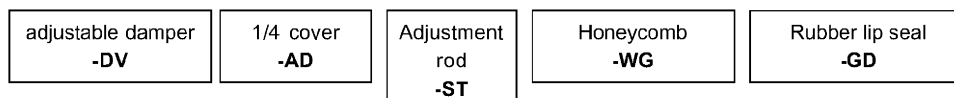
V_{supp} (m ³ /h)	=	supply air volume
V_{supp} (l/s)	=	supply air volume
y_H (m)	=	max vertical throw
ΔT_o (K)	=	temperature difference between supply and room air temperature
V_{max} (m/s)	=	maximum end velocity
x (m)	=	horizontal throw
v (m/s)	=	average velocity ($v=v_{\text{max}} \times 0.5$)
Δp_1 (Pa)	=	pressure loss
ρ (kg/m ³)	=	density
L_{WA} [dB(A)]	=	a weighted sound power level
h (-)	=	horizontal
v (-)	=	vertical
NW (mm)	=	nominal value

PUSH displacement diffuser

Order details



Accessories:



Order example:

PUSH-1-AA-F-400-DV

At non-specified order the thick framed design will be delivered!

PUSH

displacement diffuser

Specification texts

Displacement diffuser type PUSH which can be adjusted from a vertical to horizontal throw using a chain. Suitable for temperature differences from -10 K to +25 K.

Consisting of outlet case and adjustable galvanised sheet steel baffle plate.

Locking chain of the baffle plate is made of galvanised steel.

Top baffle plate adjustable with locking chain, base closed.

Manufacturer: SCHAKO **type PUSH -1**

- Top baffle plate and floor plate individually adjustable using the locking chain
Manufacturer: SCHAKO **type PUSH -2**
- Top baffle plate and floor plate adjustable together using chain
manufacturer: SCHAKO **type PUSH -3**
- Top baffle plate adjusted by chain, floor plate by electric actuator (3-point-drive)
 - E1: 230 V AC
 - E3: 24 V ACManufacturer: SCHAKO **type PUSH -4**
- Top baffle plate adjustable with thermo cylinder, base closed
Manufacturer: SCHAKO **type PUSH -5A**
- Floor plate adjustable with thermo element, top baffle plate fixed
Manufacturer: SCHAKO **type PUSH -5B**
- Top baffle plate adjustable with thermo cylinder, floor plate adjustable using chain
Manufacturer: SCHAKO **type PUSH -5C**
- Top baffles plate individually adjustable using adjustment rod - base closed
Manufacturer: SCHAKO **type PUSH -6**
- Jet path setting (for PUSH -1 / -2 / -3 / -4 / -5C) :
 - Diffuser casing with locking mechanism (-AA)
 - On walls / columns
 - with locking plate (-AW)
 - with bowden cable (-BZ)
- Installations:
 - Suspended (-F), 360° jet path
 - Wall / column installation (-W)
 - 360° throw (standard)
 - 270° throw with a 1/4 cover plate

PUSH

displacement diffuser

extras:

- adjustable damper (-DV), with side adjustment lever from sheet steel
- equalising mesh(-WG), from plastic
- 1/4 blanking (-AD), from sheet steel
- rubber gasket (-GD), from special rubber
- adjustment rod (-ST) (for PUSH -6)