2.2.12.   Slotted diffusers   NSS

Use:
Supply In low and medium pressure systems. Suitable for hot and cold air supply.

Assembly:
On plenum box assambly visible screws

Construction:
Diffusers are made from aluminum profiles.
Max. Lengh 2mb

Material:
Aluminum, alloy 6063

Surface finish
Anodized aluminum, painting RAL coulour on demand

Air flow regulation:
With damper in inlet in plenum box

Certificates:
Rekomendacja techniczna: RT-ITB-1148/2010
Hygienic certificate: BK/K/0926/01/2018

Type and dimension marking:
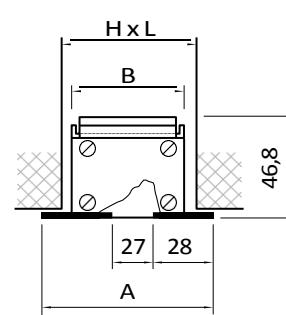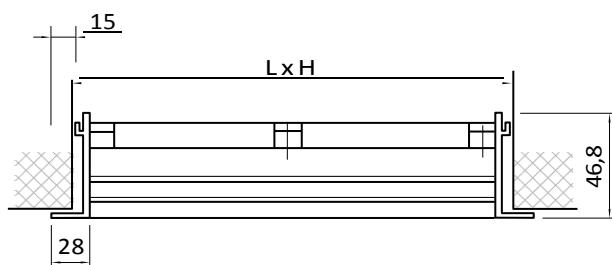
NSS-1
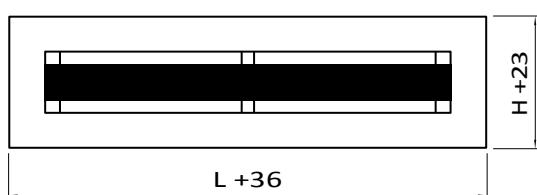
Slotted diffusers NSS - technical data

Products range:

External sizes [mm]	Dimension of mounting holes L x H [mm]	A [mm]	B [mm]
1 szczelina 1036 x 83	1000 x 60	83	53
2 szczeliny 1036 x 127	1000 x 104	127	97
3 szczeliny 1036 x 171	1000 x 148	171	141
4 szczeliny 1036 x 215	1000 x 192	215	185
5 szczelin 1036 x 259	1000 x 236	259	229
6 szczelin 1036 x 303	1000 x 280	303	273

Supply direction:
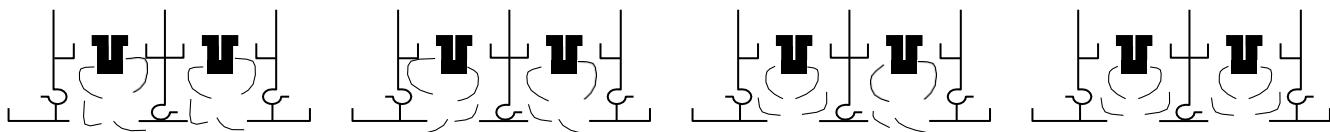
Varianty:
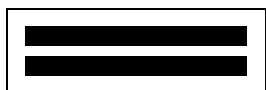
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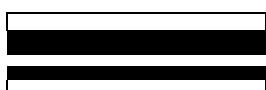
NSS-LR
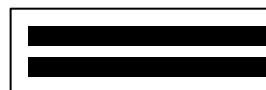
NSS-R

NSS-L

NSS-90°

Assambly:
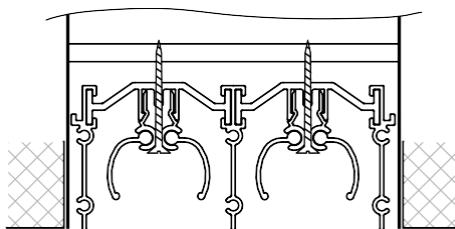
TYP A:
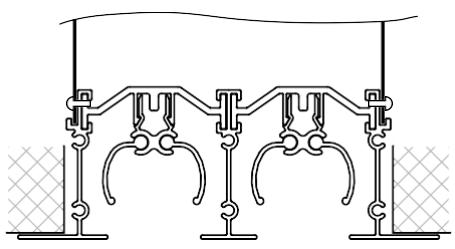
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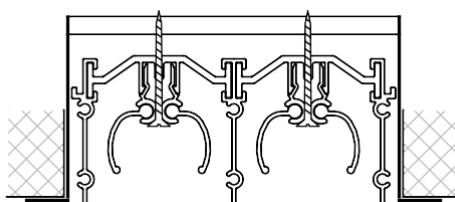
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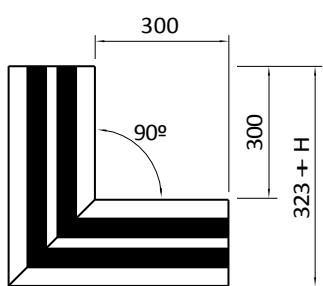
Diagram for selection slotted diffusers NSS (open blades)

Relation of pressure loss (Δp), maximum stream velocity (V_{ef}), average stream velocity (V_{av}), a range of velocity stream V=0,25 m/s ($L_{0,25}$)) and a level of acoustic power (L_{WA}) from air stream volume (Q).
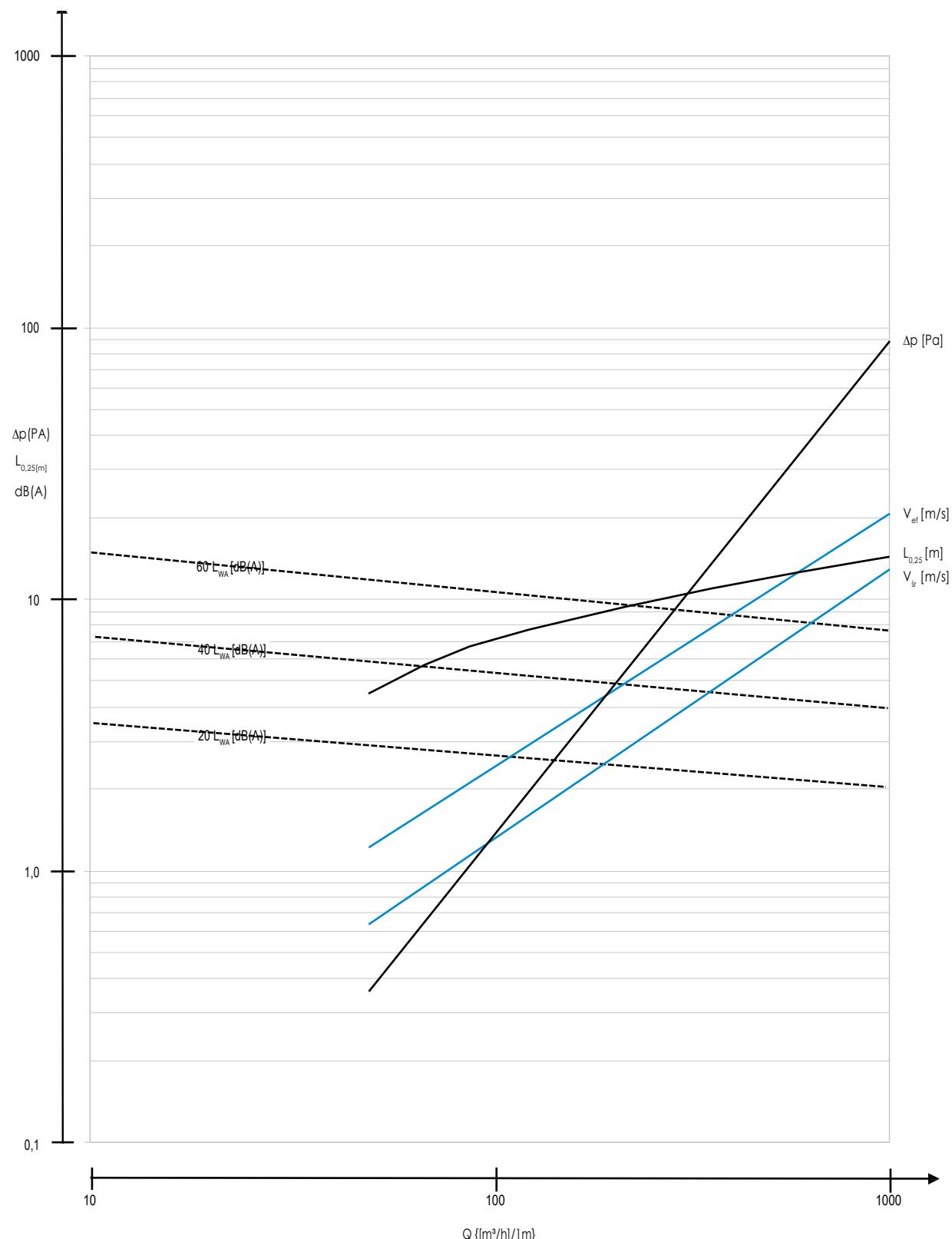
Uwaga!
**Q - Air stream volume przypadający na pojedynczy nawiewnik długości 1 m. Dla nawiewników wieloszczelinowych oraz o innych długościach patrz uwagi!!!**

## Diagram for selection slotted diffuser NSS (one blade closed)

Relation of pressure loss (Δp), maximum stream velocity (V_{el}), average stream velocity (V_{av}), a range of velocity stream V=0,25 m/s ($L_{0,25}$)) and a level of acoustic power (L_{WA}) from air stream volume (Q).
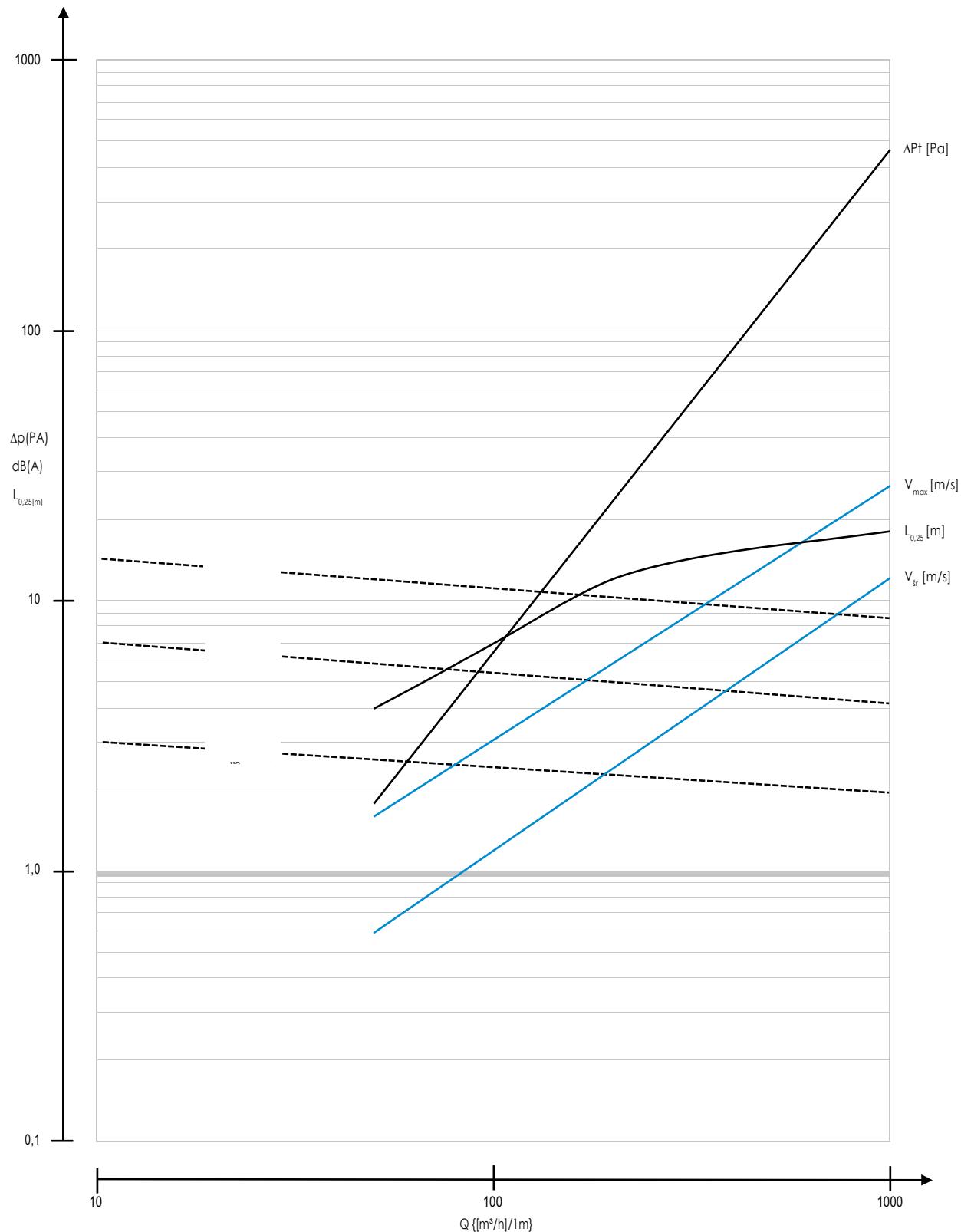
Uwaga!
Q - Air stream volume przypadający na pojedynczy nawiewnik długości 1 m. Dla nawiewników wieloszczelinowych oraz o innych długościach patrz uwagi!!!

Instruction of using diagram for selection slotted diffusers NSS

Uwaga!
Q - Air stream volume przypadający na pojedynczy nawiewnik długości 1 m. Dla
nawiewników wieloszczelinowych oraz o innych długościach patrz uwagi!!!

Annotations:
Characteristics are relevant for a single 1 m long diffuser (unit characteristics)In case of using a longer diffuser, or using two or three units, in order to calculate the demanded air outlet and correctly read the value from the diagram one needs to calculate the following:

$$Q_s \text{ diagram} = \frac{Q_n \text{ demanded}}{D \times N}$$

Where: N = 2 for two diffusers,
          N = 3 for three diffusers,
          D = diffuser length in meters.

Chart 1. Correction coefficients for other lengths:

L [m]	1	1,5	2	3	4	5	6	8	10
ΔPt [Pa] $L_{0,2}$ [m]	x1	x1,05	x1,1				x1,15		
NR [dB]	0	+2	+3	+4	+5	+6	+7	+9	+10

Values of range, pressure loss and velocity read from Q diagram, and corrected according to the above chart represent a complete diffuser. For lower air outlets then in the diagram the curves should be linearly prolonged.

When looking for the outlet covering the demanded range one has to use the following formula:

$$Q_s = Q_s \text{ diagram} \times D \times N$$

Active surface of the diffuser depends on the blade fixing:

$$A_{ef} \text{ max single} = 0,022 * L[m]$$

Given values are given for orientation purposes. In special cases characteristics may depend on the room hight where the diffuser is to be fitted (shape and size) and depends on the system to which the diffuser is attached (e.g. depending on the plenum box or damper used in the system).

Annotations for two or three slotted diffusers:
Counter directional fixing of blades is not recommended because of the non-stationary air flow. In special cases the air stream may be vertical despite shifted blades, instead being directed horizontally in opposing directions. Such possibility should be verified during mounting of the diffuser.
When one of the slots is open, the other slot blade is closed, as for achieving horizontal air flow, we will get a skew air stream deviating approx. 20-30° from the perpendicular. That will not provide two air streams – where one is vertical and the other is horizontal. In order to obtain two air streams flowing in different directions it is recommended to use two independent diffusers fitted at least one width from each other.

Example of selection:

Task 1:
4 m high room. Demanded velocity at 1.5 m lower than 0.5 m/s. Planned 3 m long diffuser. Vertical air supply, open blades.

2.5 m distance from the diffuser. At the crossing point of the orange line L... and

Task 2:
Demanded air outlet 200 m³/h. Horizontal air supply. 1.5 m long diffuser. Looking for the range and pressure loss.

Single diffuser:
Q_s diagram = 200/1,5 = 133,3 {[m³/h]/m}
ΔPt total = 13 Pa

$L_{0,5}$ = 7,5 m
$L_{0,2}$ = 9,5 m
V_{max} = 4,2 m/s
V_{du} = 1,6 m/s

Double diffuser:
Q_s diagram = 200/(1,5 x 2) = 66,6 {[m³/h]/m}
ΔPt total = 3 Pa

$L_{0,5}$ = 1,4 m
$L_{0,2}$ = 5 m
V_{max} = 2,3 m/s
V_{du} = 0,8 m/s

Triple diffuser:
Q_s diagram = 200/(1,5 x 3) = 44,4 {[m³/h]/m}
ΔPt total = 1,33 Pa

$L_{0,5}$ = 0,3 m
$L_{0,2}$ = 3,5 m
V_{max} = 1,4 m/s
V_{du} = 0,5 m/s

Table for selection slotted diffusers NSS

Singular diffuser 1   m

(open blades)

Q [m³/h]	Q [m³/s]	ΔPt [Pa]	V_{max} [m/s]	V_{sr} [m/s]	$L_{0,25}$ [m]
50	0,014	0,4	1,2	0,6	4,5
100	0,028	1,4	2,3	1,3	6,8
150	0,042	3,1	3,4	1,9	8,1
200	0,056	5,2	4,5	2,6	9,0
250	0,069	7,8	5,6	3,2	9,8
300	0,083	10,9	6,6	3,9	10,4
350	0,097	14,5	7,7	4,5	10,9
400	0,111	18,6	8,7	5,1	11,3
450	0,125	23,1	9,7	5,8	11,7
500	0,139	28,0	10,7	6,4	12,0
550	0,153	33,4	11,8	7,1	12,4
600	0,167	39,2	12,8	7,7	12,6
650	0,181	45,4	13,8	8,4	12,9
700	0,194	52,1	14,8	9,0	13,1
750	0,208	59,1	15,8	9,7	13,4
800	0,222	66,6	16,7	10,3	13,6
850	0,236	74,5	17,7	11,0	13,8
900	0,250	82,7	18,7	11,6	14,0
950	0,264	91,4	19,7	12,3	14,1
1000	0,278	100,4	20,7	12,9	14,3

(close blades)

Q [m³/h]	Q [m³/s]	ΔPt [Pa]	V_{max} [m/s]	V_{sr} [m/s]	$L_{0,25}$ [m]
50	0,014	1,7	1,6	0,6	4,3
100	0,028	6,3	3,1	1,2	7,3
150	0,042	13,5	4,5	1,8	9,1
200	0,056	23,0	5,9	2,4	10,3
250	0,069	34,9	7,3	3,0	11,3
300	0,083	48,9	8,6	3,6	12,1
350	0,097	65,2	10,0	4,2	12,8
400	0,111	83,6	11,3	4,8	13,3
450	0,125	104,1	12,6	5,4	13,9
500	0,139	126,6	13,9	6,1	14,3
550	0,153	151,2	15,3	6,7	14,7
600	0,167	177,8	16,6	7,3	15,1
650	0,181	206,3	17,8	7,9	15,5
700	0,194	236,9	19,1	8,5	15,8
750	0,208	269,3	20,4	9,1	16,1
800	0,222	303,7	21,7	9,7	16,4
850	0,236	340,0	23,0	10,4	16,6
900	0,250	378,1	24,2	11,0	16,9
950	0,264	418,1	25,5	11,6	17,1
1000	0,278	460,0	26,8	12,1	17,3

Air outlet Q for single vent diffuser and unit length of 1 meter.
For 2-vent diffuser: multiply Q from the table x2 to result the air outlet for the entire 1 m diffuser.
For 3-vent diffuser: multiply Q from the table x3 to result the air outlet for the entire 1 m diffuser.

Max A_{ef} = 0.022 [m²] (for single vent 1 m diffuser, open blades)

Product marking NSS

NSS–2/1800–RAL–SR/Ø

Assambly:

Type A, Type B, Type C   - for slotted diffusers   NSS

Plenum box / diameter:

SR   - plenum box

SRP   - plenum box with damper

SRPw   - plenum box with damper regulation inside

SRIP   - plenum box with damper and isolation

SRIPw   - plenum box with damper regulation inside and isolation

Z   - additional assembly elements

Surface finish:

Standard   - anodized aluminum

Dimensions:

Numer of slots / mounting hole

Material:

Standard   - anodized aluminum

alp   - aluminum painted RAL colour

Type of diffusers

Order's example:

NSS–2/2000–SR/Ø160