

Please note,
type code is new,
see on last page.



Rotary floor twist outlet DB-D-DN

Preliminary remarks

Floor twist outlets from KRANTZ KOMPONENTEN discharge supply air with a vertical jet axis from bottom up into the room. If the client wishes individual adjustment of discharged air in the near zone of the seating area, e.g. at office workplaces, this is easy to do with the rotary floor twist outlet. Its jet axis is inclined at about 30° to vertical. Jet direction can be individually adjusted by manual rotation of the twist element.

The air outlet is intended for installation in conventional raised floor systems.

Construction design

The rotary floor twist outlet consists of the circular air outlet element **1** with radial slots **1a** and circular slots **1b**. It is available in the sizes DN 125 and DN 200. It is installed with the help of a clamp insert **5** in the through bore of the raised floor. The DN 200 air outlet element can be locked against unauthorized removal. Up to 4 DN 125 air outlets and 1 DN 200 air outlet can be inserted in floor tiles measuring 500 mm x 500 mm or 600 mm x 600 mm.



Figure 1: Rotary floor twist outlet with distributor basket and clamp insert,

Left: DN 125 with rotary claw
Right: DN 200 with clamp collar

The clamp insert has a protective collar **6** on the top which functions as edging for the tile cutout around the air outlet. This option is useful for raised floors with carpeting. The clamp insert can be fastened to the floor,

- for size DN 200 with an optional clamp nut **5a**, claw fastener **5b** or clamp collar **5d**¹⁾.
- for size DN 125 with rotary claw **5c**.

¹⁾ For the required air outlet type (kind, size, material) or possible combination of individual components see page 9, "Types available"

Instead of using the clamp insert, the DN 200 air outlet element can also be inserted in a stepped bore **9b**.

The rotary floor twist outlet is delivered with a distributor basket **2** for even air supply.

For size **DN 200** there are different types of distributor basket to choose from (Figure 2):¹⁾

- Standard type, with throttle device: Type VSD (without throttle device: Type VS)

- Short type, for raised floors with lower plenums; without throttle device: Type VK

- Low type, with openable basket floor. This enables additional air supply from below, best for raised floors with thicker tiles and lower plenums, with throttle device: Type VND (without throttle device Type VN)

- Perforated sheet metal type for floor air outlet made of aluminium, with Type VPD throttle device

For size **DN 125**

- Distributor insert with throttle device: Type VD

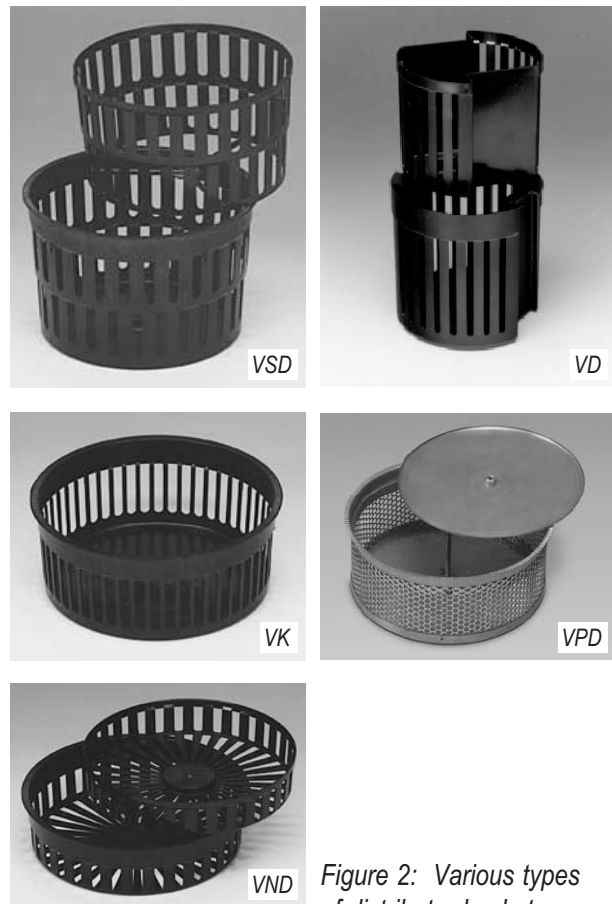
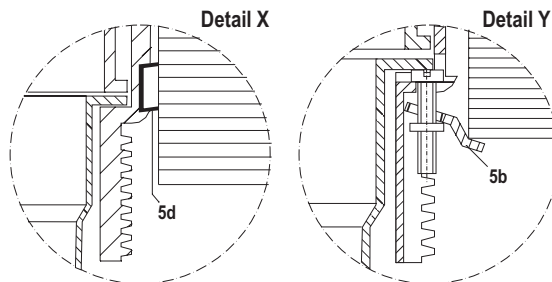
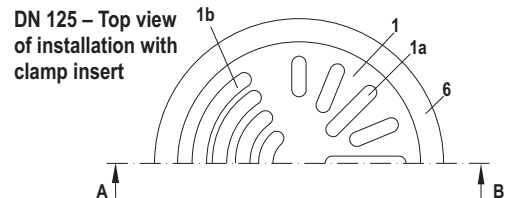
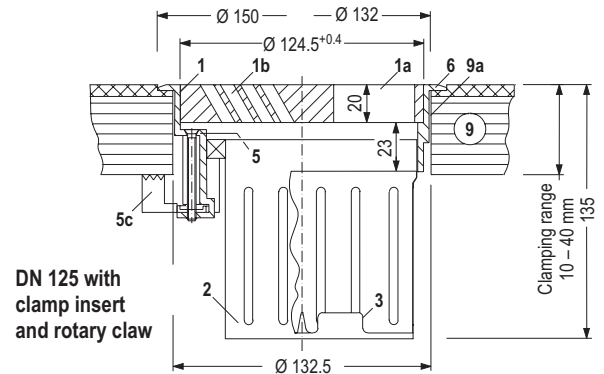
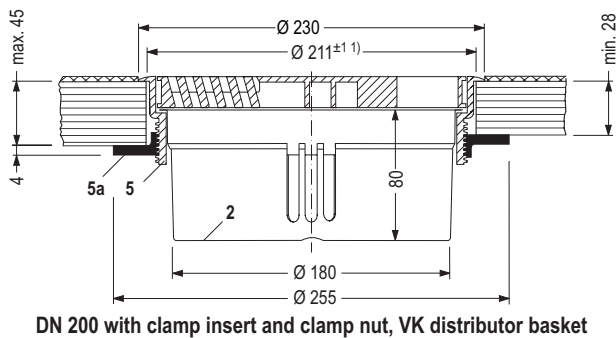
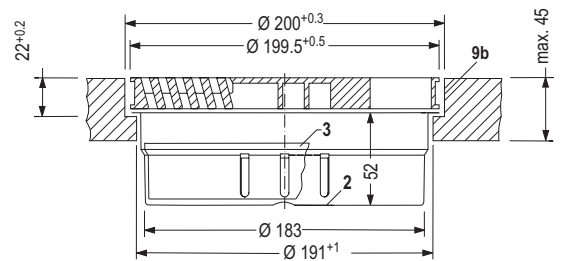
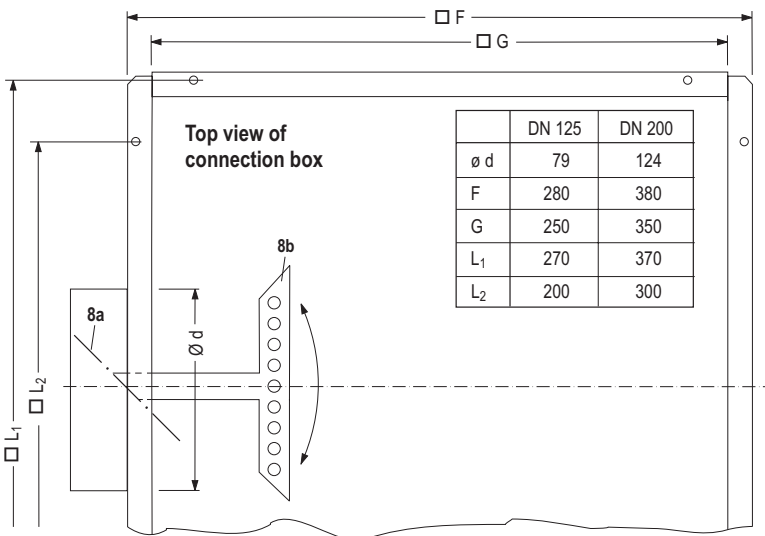
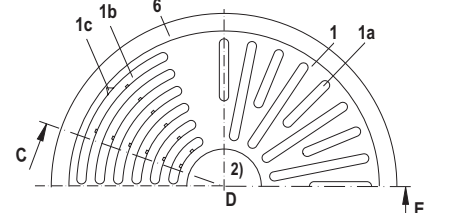
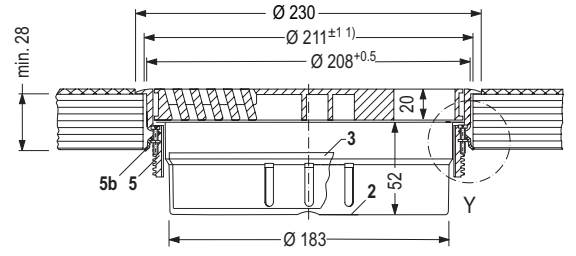
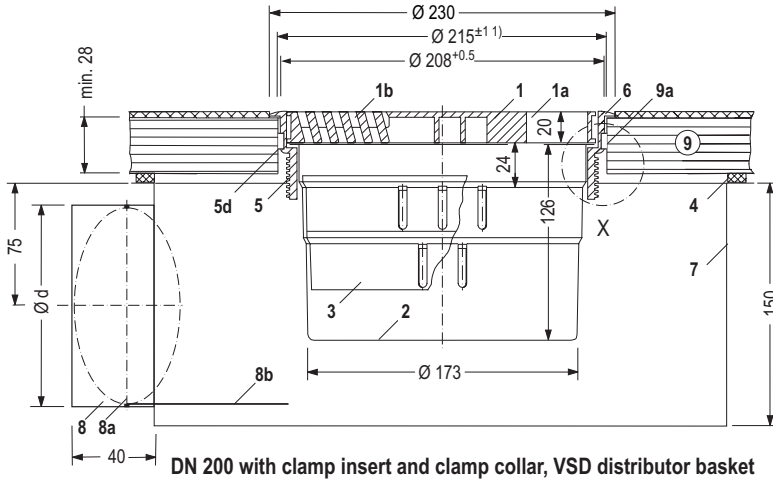


Figure 2: Various types of distributor basket

The air can be supplied directly from the pressurized plenum below the floor, with DN 200 also via a connection box with flexible tubing.

Rotary floor twist outlet made of plastic

Dimensions



Key for all pages:

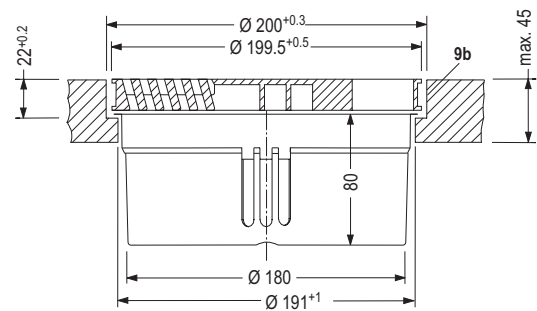
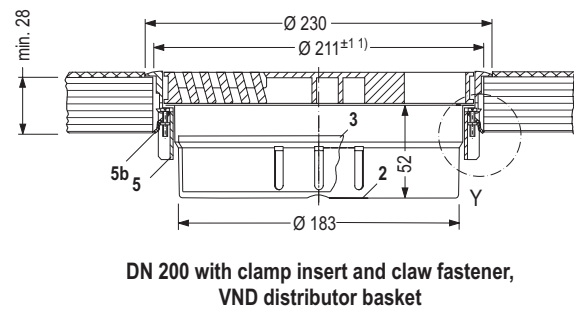
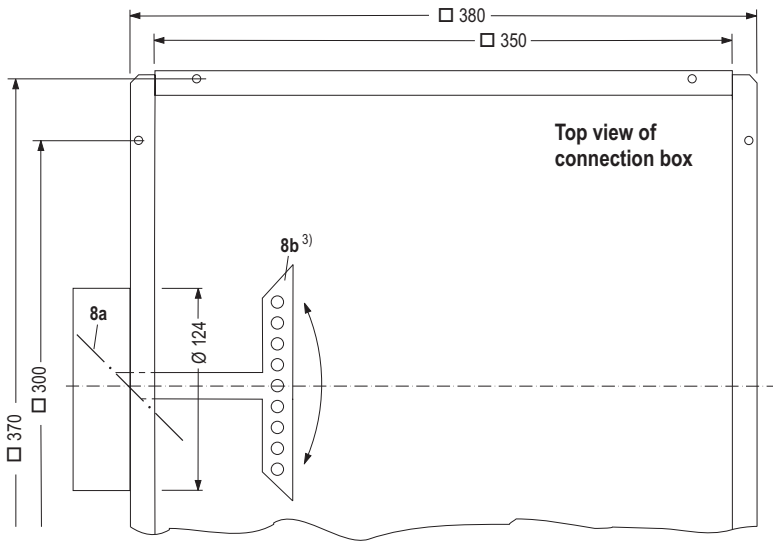
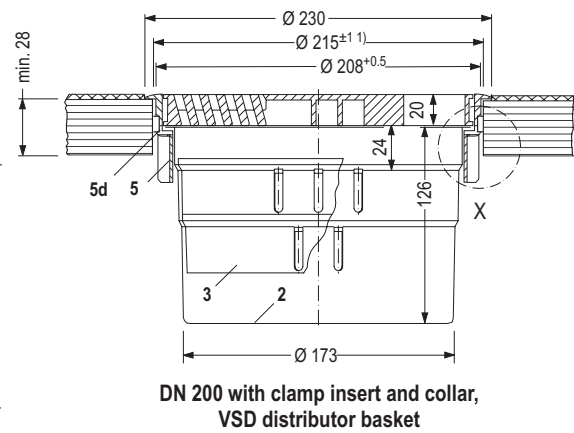
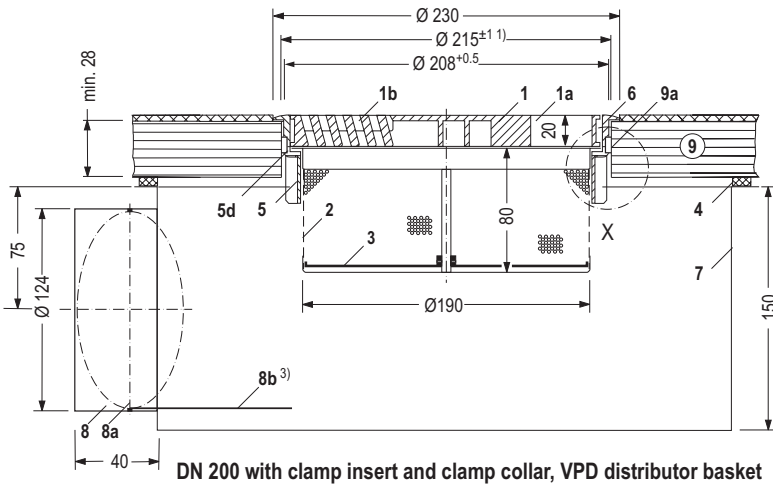
- | | | |
|-----------------------------|---------------------|------------------------|
| 1 Air outlet element | 5 Clamp insert | 8 Connection spigot |
| 1a Radial air slots | 5a Clamp nut | 8a V-damper (optional) |
| 1b Circular air slots | 5b Claw fastener | 8b Slide ³⁾ |
| 1c Marking of main jet axis | 5c Rotary claw | 9 Floor tile |
| 2 Distributor basket | 6 Protective collar | 9a Through bore |
| 3 Throttle device | 7 Connection box | 9b Stepped bore |
| 4 Sealing (on site) | | |

1) Ø 211^{±1.1} for fastening with clamp nut or claw fastener, Ø 215^{±1} for clamp collar fastener
 2) Trademark of client or other emblem on request
 3) The slide **8b** is adjustable from the room

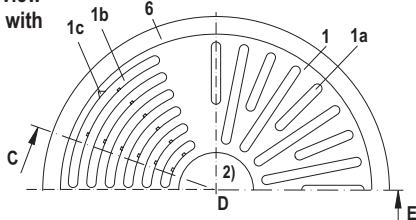
Note: Any distributor basket can be used for the respective installation options. Likewise connection box 7 can be used for the air outlet layout in the other figures.

Rotary floor twist outlet made of aluminium

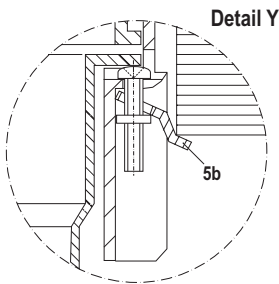
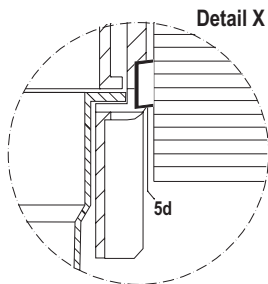
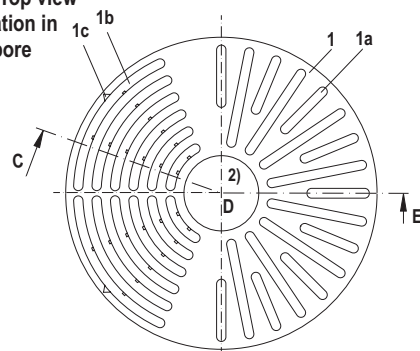
Dimensions



DN 200 – Top view of installation with clamp insert



DN 200 – Top view of installation in stepped bore



- 1) $\text{Ø } 211^{\pm 1}$ for fastening with clamp nut or claw fastener, $\text{Ø } 215^{\pm 1}$ for clamp collar fastener
- 2) Trademark of client or other emblem on request
- 3) The slide **8b** is adjustable from the room

Note: Any distributor basket can be used for the respective installation options. Likewise connection box **7** can be used for the air outlet layout in the other figures.

Mode of operation

The air slots **1a** and **1b** of the rotary floor twist outlet are inclined to vertical. The slot inclination selected and the various slot shapes result in an air jet incline of about 30° to vertical. Jet direction can be individually adjusted by manual rotation of the air outlet element.



The rotary floor twist outlet produces high-turbulence, twisted supply air jets with intensive induction of indoor air. The heat and material loads in the room are very effectively removed with the help of buoyancy from the occupied zone to the ceiling.

A turbulent mixing air upflow is produced. Ventilation effectiveness is equivalent to that achieved with displacement ventilation. The vertical temperature gradient is, however, significantly smaller than with displacement ventilation. Even with high specific indoor cooling loads (up to 100 W/m²), the vertical temperature gradient in the occupied zone is ≤ 2 K/m.

The high induction effect of the twisted supply air jets results in a rapid drop in jet velocity and fast equalization of supply air temperature and room temperature.

Due to the angle of inclination of the jet axis of about 30° to vertical, air velocities at head height near the seated person can be altered by turning the air outlet (see Figure 3)

For size DN 125:

- with 1 air outlet per floor tile
from < 0.1 m/s to about 0.3 m/s,
- with 4 air outlets per floor tile
from < 0.1 m/s to about 0.55 m/s.

For size DN 200:

- with 1 air outlet per floor tile
from < 0.1 m/s to about 0.4 m/s,

Air temperature can be altered by a maximum 1 K.

It is therefore possible to individually adjust the intensity of the indoor air flow in the near zone of the occupant from a fresh breeze to full draught avoidance with air velocities < 0.1 m/s.

These specifications are based on extensive measurements also taken for DN 125 in 4 rotary positions (Figure 4). Figure 6 shows the air jet patterns for these 4 rotary positions made visible using a smoke tracer.

For rotary position 1 and 4, for example, the air velocity curves are shown in Figure 5.

For size DN 200 (1 air outlet per floor tile) Figure 7 shows the velocity curve in the main jet axis. The main jet direction is indicated by a marking on the surface of the air outlet.

Figure 3: Jet pattern for different settings, shown for size DN 200

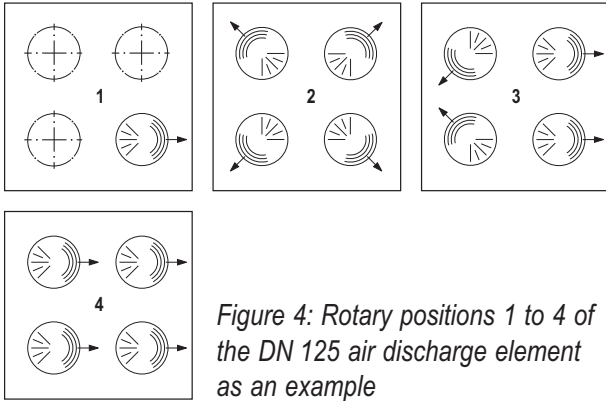


Figure 4: Rotary positions 1 to 4 of the DN 125 air discharge element as an example

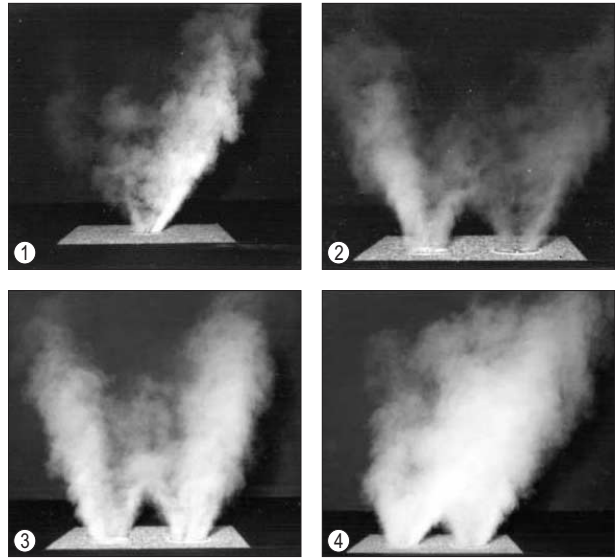


Figure 6: Air jet patterns for rotary positions 1 to 4 made visible with a smoke tracer

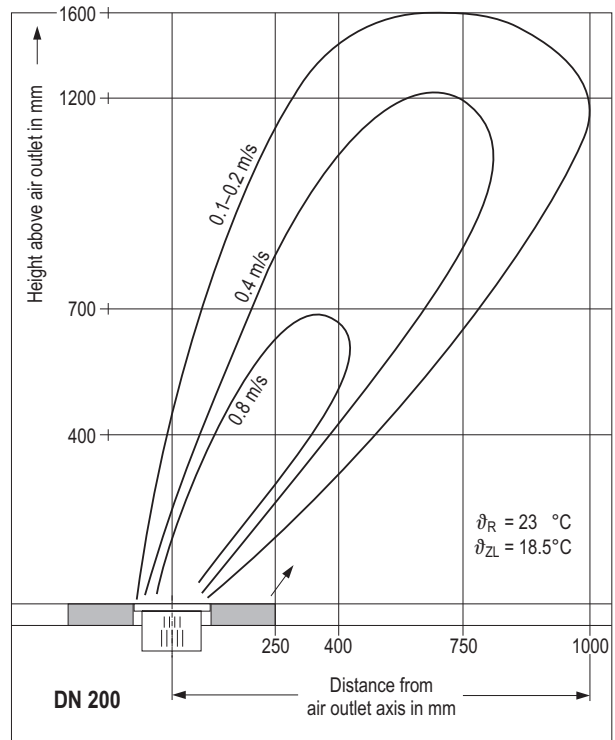
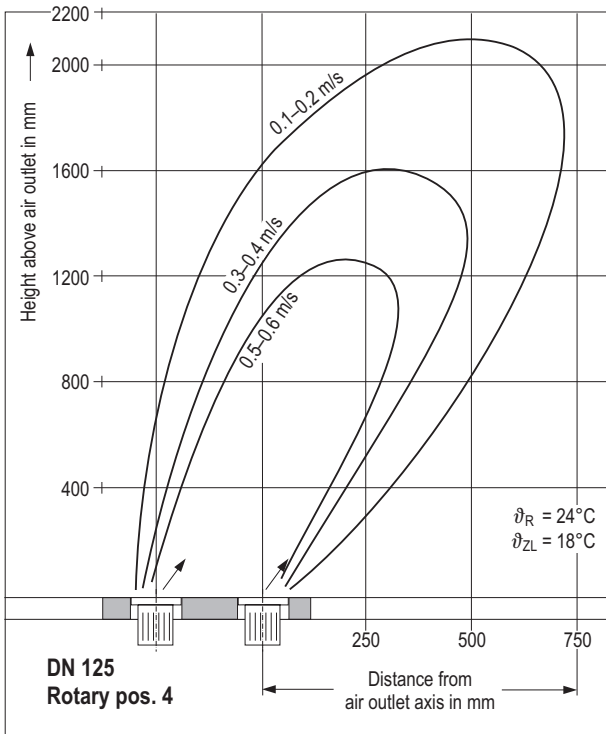
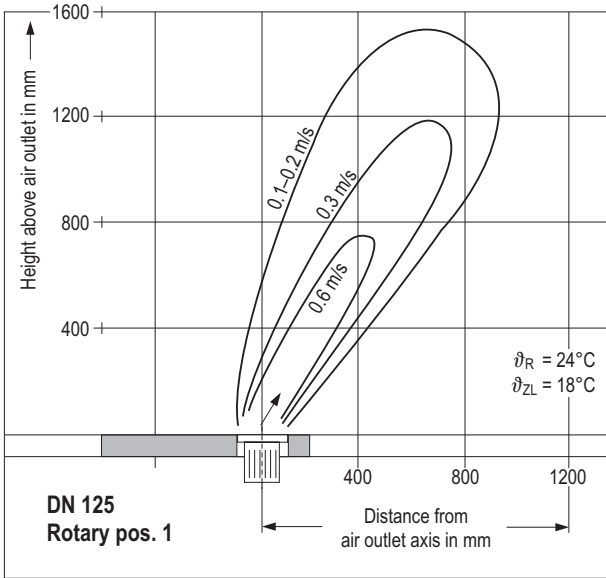
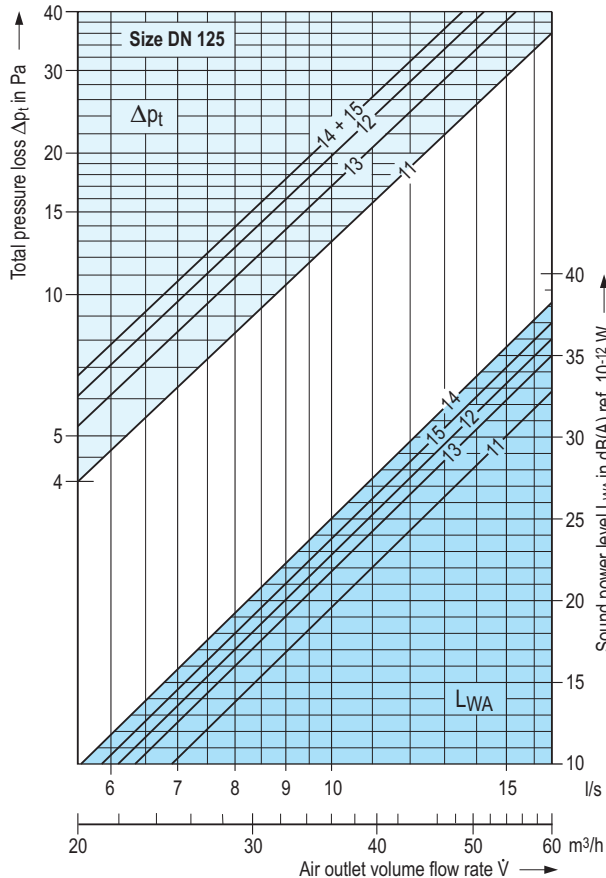
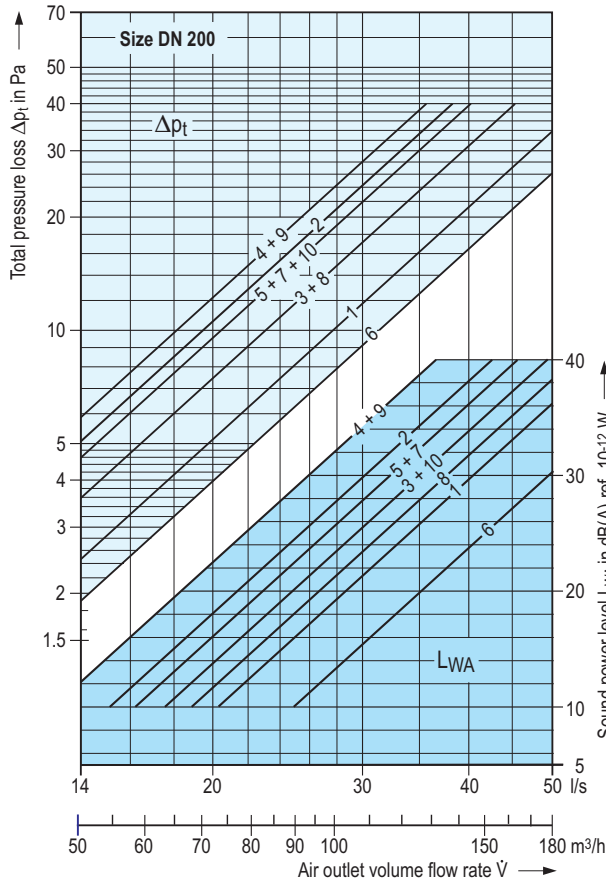


Figure 7: Air velocities for DN 200 in the main jet axis, volume flow rate 42 l/s (150 m³/h)

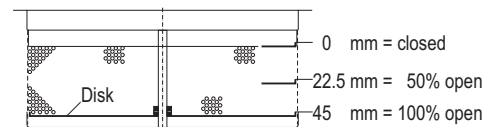
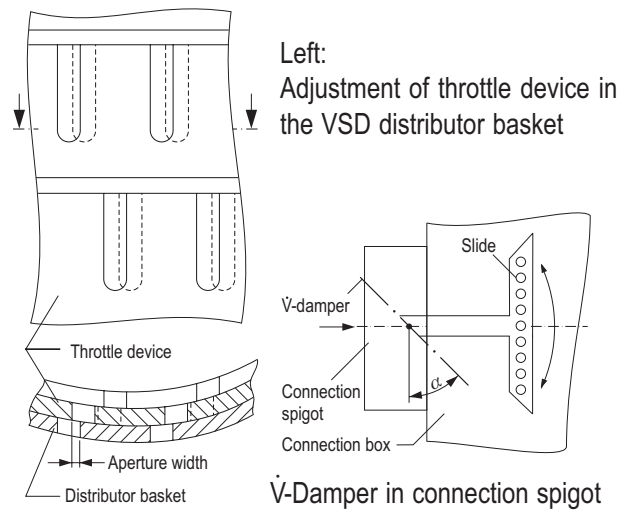
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Figure 5: Jet velocity curve for DN 125, rotary position 1 and 4, volume flow rate 14 l/s (50 m³/h) per air outlet

Sound power level and pressure loss ¹⁾



Key to graphs

No.	Size	Type	Distributor basket		V-damper in connection spigot Damper angle α
			Throttle device ²⁾ % open	Aperture width / Disk lift mm	
1	DN 200	VSD	100	8	— ³⁾
2			50	4	— ³⁾
3			100	8	90° open
4			50	4	90° open
5			100	8	45°
6	DN 200	VPD	100	45.0	— ³⁾
7			50	22.5	— ³⁾
8			100	45.0	90° open
9			50	22.5	90° open
10			100	45.0	45°
11	DN 125	VD	100	5.0	— ³⁾
12			50	2.5	— ³⁾
13			100	5.0	90° open
14			50	2.5	90° open
15			100	5.0	45°



Adjustment of throttle device (disk) in the VPD distributor basket

1) The sound power level and pressure loss pertain to the use of the VSD, VPD and VD distributor baskets. When using VK and VND distributor baskets, the values approximate those for the VSD distributor basket.
2) The throttle devices in the distributor baskets enable continuous volume reduction, preferably up to 50% as well as full shutoff
3) Without connection box

No.	Air outlet volume flow rate		Total pressure loss Δp_t Pa	Sound power level in dB ref. 10^{-12} W							
	\dot{V}_A l/s	\dot{V}_A m ³ /h		L_{WA} dB(A)	Octave band centre frequency in Hz						
					63	125	250	500	1 K	2 K	4 K
DN 200 with distributor basket VSD											
1	25	90	8	16	27	19	19	14	11	—	—
	33	120	15	24	35	27	27	22	19	11	—
	42	150	23	31	42	34	34	29	26	18	—
	50	180	34	36	47	39	39	34	31	23	11
2	25	90	17	24	28	24	25	22	20	12	—
	33	120	30	33	37	33	34	31	29	21	11
	42	150	48	39	43	39	40	37	35	27	17
3	25	90	12	20	17	24	23	18	15	—	—
	33	120	21	29	26	33	32	27	24	14	—
	42	150	34	35	32	39	38	33	30	20	10
	50	180	49	40	37	44	43	38	35	25	15
4	25	90	19	29	19	25	29	25	27	17	—
	33	120	35	37	27	33	37	33	35	25	16
	42	150	55	44	34	40	44	40	42	32	23
5	25	90	15	23	19	26	26	20	19	10	—
	33	120	27	31	27	34	34	28	27	18	—
	42	150	43	37	33	40	40	34	33	24	13
DN 200 with distributor basket VPD											
6	25	90	7	10	19	13	12	—	—	—	—
	33	120	11	18	27	21	20	16	13	—	—
	42	150	18	25	34	28	27	23	20	11	—
	50	180	26	30	39	33	32	28	25	16	—
7	25	90	15	23	26	18	17	15	19	18	—
	33	120	27	31	34	26	25	23	27	26	12
	42	150	43	37	40	32	31	29	33	32	18
8	25	90	12	18	17	20	20	16	14	—	—
	33	120	21	26	25	28	28	24	22	13	—
	42	150	34	33	32	35	35	31	29	20	—
	50	180	49	38	37	40	40	36	34	25	14
9	25	90	19	29	22	27	27	23	25	23	15
	33	120	35	37	30	35	35	31	33	31	23
	42	150	55	44	37	42	42	38	40	38	30
10	25	90	15	20	16	21	21	16	17	—	—
	33	120	27	29	25	30	30	25	26	18	—
	42	150	43	35	31	36	36	31	32	24	12
	50	180	62	40	36	41	41	36	37	29	17
DN 125 with distributor basket VD											
11	8	30	9	15	22	17	18	14	—	—	—
	11	40	16	22	29	24	25	21	16	—	—
	14	50	25	28	35	30	31	27	22	15	—
12	8	30	14	18	26	20	21	16	12	—	—
	11	40	24	26	34	28	29	24	20	13	—
	14	50	38	33	41	35	36	31	27	20	10
13	8	30	12	17	17	21	21	14	12	—	—
	11	40	21	25	25	29	29	22	20	11	—
	14	50	33	31	31	35	35	28	26	17	—
14	8	30	15	20	14	22	22	16	17	—	—
	11	40	27	28	22	30	30	24	25	15	—
	14	50	42	34	28	36	36	30	31	21	10
15	30	15	19	15	23	22	15	15	—	—	—
	40	27	27	23	31	30	23	23	14	—	—
	50	42	32	28	36	35	28	28	19	—	—

Insertion loss in dB									
Size	Octave band centre frequency in Hz								Mean value
	63	125	250	500	1 K	2 K	4 K	8 K	
125	5	1	1	2	3	5	8	7	4
200	4	2	1	2	3	5	5	5	3
125	1	5	4	5	3	5	7	5	4
200	1	1	3	2	2	4	4	4	3

□ Without connection box □ With connection box

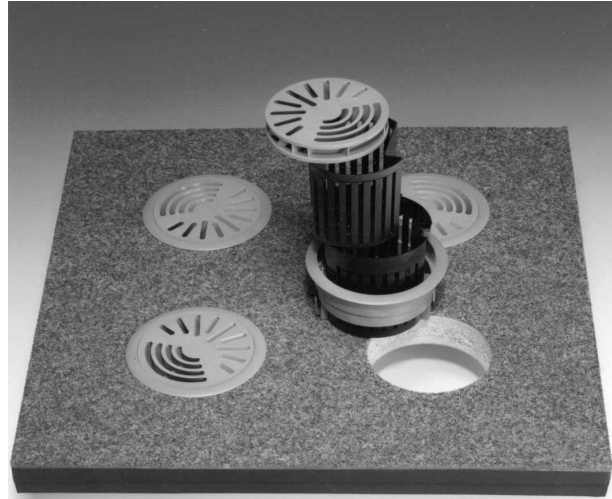


Figure 8: Rotary floor twist outlet with clamp insert for installation in through bore of floor tile,
Above: 4 DN 125 air outlets with VD distributor basket
Centre: 1 DN 200 air outlet with VPD distributor basket and connection box
Below: Installed DN 200 air outlet

Technical data

Nominal diameter	DN 125		DN 200	
	Air volume flow rate	l/s	5.5 – 16.5	14 – 50
	m ³ /h	20 – 60	50 – 180	
Largely people max.	l/s	14	42	
	m ³ /h	50	150	
Max. temperature difference supply air-return air	K	± 10		
Supply air temperature	°C	18 – 30		
Max. bearing strength ¹⁾	kg	600	400	1200
Twist element made of		PC	PC	Al
For tile size		Air outlets per tile, max.		
500 mm x 500 mm	units	4	1	
600 mm x 600 mm	units	4	1	
Min. air outlet spacing	m	approx. 0.25	approx. 0.6	
Min. distance between seat and air outlet	m	approx. 0.5	approx. 0.5	

1) With vertical single load on a central indent of 50 mm diameter; for materials see Types available; Al = aluminium; PC = polycarbonate

Types available

Rotary floor twist outlet	Size					
	DN 125			DN 200		
Component	Materials ¹⁾					
	PC	Al	St	PC	Al	St
Twist element	●			●	●	
For installation in through bore:						
Clamp insert						
– with clamp collar SR				● ⁴⁾	● ⁵⁾	
– with claw fastener SK				● ⁴⁾	● ⁵⁾	
– with clamp nut SM				● ⁴⁾		
– with rotary claw SD	●					
For installation in through bore and stepped bore:						
Distributor						
– Standard type VS				●		
– with throttle device VSD				●		
– Short type VK				●		
– Low type VN				●		
– with throttle device VND				●		
– Perforated sheet metal type with throttle device VPD						●
– Distributor insert with throttle device VD	●					
Connection box						
– without V-damper in spigot			●			●
– with V-damper in spigot ²⁾			●			●

1) PC = polycarbonate; Al = aluminium; St = galvanized steel

2) V-damper unnecessary for distributor basket with throttle device

4) Standard lock

5) Optional lock ● = available

Features

- Floor twist outlet with 30° jet axis incline to vertical
- For turbulent mixing air flow in the commercial sector
- Installation in conventional raised floor systems
- Air supply direct from the pressurized plenum or via connection box with flexible tubing
- Supply air flow in the direction of thermal flow, from floor to ceiling
- Intensive admixture of supply air and indoor air
- High ventilation effectiveness
- Air velocity adjustable in near zone of air outlet by rotating air outlet element: from full draught avoidance (velocity < 0.1 m/s) to fresh breeze (velocity 0.3 - 0.55 m/s)
- Jet temperature at a height of 1.2 m max. 1 K below mean room temperature
- Max. temperature difference supply air - return air ±10 K
- Minimum supply air temperature 18°C
- Low sound power level
- Minimum distance between air outlet and seat approx. 0.5 m
- Air volume flow rate 5.5 - 16.5 l/s (20 - 60 m³/h) for DN 125 and 14 - 50 l/s (50 - 180 m³/h) for DN 200
- Floor installation by insertion in a stepped bore or installation with a clamp insert in through bore of floor tile
- Fastening of clamp insert to floor tile either with clamp collar or claw fastener for DN 200, also with clamp nut for the plastic option; with rotary claw for DN 125
- Twist element and clamp insert made of polycarbonate, for DN 200 also of aluminium; connection box made of galvanized steel
- The DN 200 twist element can be locked against unauthorized this lock is
 - standard if clamp insert is made of polycarbonate,
 - optional if clamp insert is made of aluminium
- Different distributor baskets made of polycarbonate, with and without throttle device; additional distributor basket made of galvanized steel for DN 200
- In the centre of DN 200 air outlet blank surface for client trademark
- Can be walked over, driven over and can support a wheelchair

Rotary floor twist outlet made of plastic

Tender text

Type code

DB - DK - DN - - - -
 Floor twist outlet - - - -
 Function / Kind - - - -
 Size - - - -
 Distributor basket - - - -
 Clamp insert - - - -
 Connection type - - - -

Please note,
 type code is new,
 see last page.

Function / Kind:

D = Rotatable
 K = Plastic

Size: DN 125
 and DN 200

Distributor basket for DN 125:

VD = Distributor insert with throttle device

Distributor basket for DN 200:

VS = Standard type
 VSD = Standard type with throttle device
 VK = Short type
 VN = Low type
 VND = Low type with throttle device

Clamp insert for DN 125:

SD = Clamp insert with rotary claw

Clamp insert for DN 200:

SO = Without clamp insert (installation in stepped bore)
 SM = Clamp insert with clamp nut for floor tiles
 SK = Clamp insert with claw fastener for all floors
 SR = Clamp insert with clamp collar for all floors

Connection type:

D = Pressurised plenum K = Connection box

Tender text

..... units rotary floor twist outlet for floor installation with high induction effect in floor zone for more rapid reduction of jet velocity and intensive energy exchange with ambient air; air jet axis approx. at 30° incline to vertical as well as rotatable air outlet element for individual adjustment of air jet direction or air flow intensity at workplace, consisting of:

circular twist element with radial and circular slots, structured surface,

For DN 125:

Clamp insert for installation in through bore of floor tile, with rotary claw.
 Distributor basket with distributor insert with surrounding slots in basket casing including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

For DN 200 (optional):

Standard distributor basket with surrounding slots in basket casing including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

Short distributor basket with surrounding slots in basket casing, best for low raised floors, without throttle device.

Low distribution basket with surrounding slots in basket casing and openable bottom, best for raised floors with thicker tiles and lower plenums, including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

Clamp insert for the installation in through bore, with clamp collar. with claw fastener. with clamp nut.

Lock for the twist element against unauthorized removal.

Connection box ²⁾ for direct connection of air outlet to a flexible tube; with V-damper adjustable from room ³⁾.

Air outlet can be walked over, driven over and can support a wheelchair.

Materials:

- Twist element: polycarbonate
 - Clamp insert: polycarbonate
 - Distributor basket: polycarbonate
 - Connection box: galvanized steel

Colour of visible air outlet parts:

painted similar to RAL 7037, dust grey;
 (other colours on request)

Technical data:

Volume flow rate: l/s (m³/h)

Size: DN

Perm. sound power level: dB(A) ref. 10⁻¹² W

Bearing strength: ¹⁾ max. kg

Make: KRANTZ KOMPONENTEN

Type: DB - DK - DN - - - -

1) With vertical single load on a central indent of 50 mm diameter

2) Available for DN 125 and DN 200

3) V-damper unnecessary for distributor basket with throttle device

Subject to technical alterations!

Type code

DB - DA - DN - - - -

Floor twist outlet
Function / Kind
Size
Distributor basket
Clamp insert
Connection type

Please note,
type code is new,
see last page.

Function / Kind:

D = Rotatable
A = Aluminium

Size:

DN 200

Distributor basket:

VS = Standard type
VSD = Standard type with throttle device
VK = Short type
VN = Low type
VND = Low type with throttle device
VPD = Perforated sheet metal type with throttle device

Clamp insert:

SO = Without clamp insert (installation in stepped bore)
SK = Clamp insert with claw fastener for all floors
SR = Clamp insert with clamp collar for all floors

Connection type:

D = Pressurised plenum K = Connection box

Tender text

..... units rotary floor twist outlet for floor installation with high induction effect in floor zone for more rapid reduction of jet velocity and intensive energy exchange with ambient air;

air jet axis approx. at 30° incline to vertical as well as rotatable air outlet element for individual adjustment of air jet direction or air flow intensity at workplace, consisting of:

circular twist element with radial and circular slots, structured surface,

Optional:

Standard distributor basket with surrounding slots in basket casing including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

Short distributor basket with surrounding slots in basket casing, best for low raised floors, without throttle device.

Low distribution basket with surrounding slots in basket casing and openable bottom, best for raised floors with thicker tiles and lower plenums, including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

Perforated sheet metal distributor, including throttle device for reduction of supply air volume flow rate as required for the individual air outlet.

Clamp insert for the installation in through bore, with clamp collar, with claw fastener, with clamp nut, and with lock for the twist element against unauthorized removal.

Connection box for direct connection of air outlet to a flexible tube; with V-damper adjustable from room²⁾.

Air outlet can be walked over, driven over and can support a wheelchair.

Materials:

- Twist element: aluminium
- Clamp insert: aluminium
- Distributor basket: galv. steel
 polycarbonate
- Connection box: galvanized steel

Colour of visible air outlet parts:

Aluminium type natural colour
(powder-coated on request)

Technical data:

Volume flow rate: l/s (m³/h)

Size: DN

Perm. sound power level: dB(A) ref. 10⁻¹² W

Bearing strength: ¹⁾ max. kg

Make: KRANTZ KOMPONENTEN

Type: DB - DA - DN - - - -

1) With vertical single load on a central indent of 50 mm diameter

2) V-damper unnecessary for distributor basket with throttle device



Caverion Deutschland GmbH

Krantz Komponenten

Uersfeld 24, 52072 Aachen, Germany

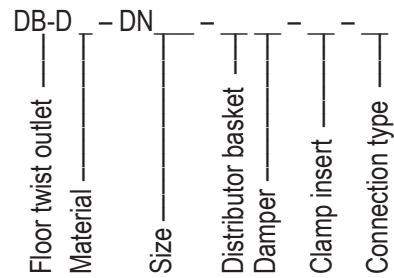
Phone: +49 241 441-1, Fax: +49 241 441-555

info@krantz.de, www.krantz.de



Rotary floor twist outlet with clamp insert

Type code



Material

- K = Plastic
- A = Aluminium

Size

	Plastic	Aluminium
125 = DN 125	●	
200 = DN 200	●	●

Distributor basket

- VS = Standard type
- VK = Short type
- VD = Distributor with throttle device (DN 125 only)
- VN = Low type (DN 200 only)
- VP = Perforated sheet metal type (DN 200 only)

Damper

- O = no volume flow damper
- D = with throttle device

Clamp insert

	Plastic	Aluminium
SD = only for DN 125	●	
SO = no clamp insert (DN 200 only)	●	●
SM = Clamp nut (DN 200 only)	●	
SK = Claw fastener (DN 200 only)	●	●
SR = Clamp ring (DN 200 only)	●	●

Connection type

- P = Floor plenum
- K = Connection box

Subject to technical alteration.