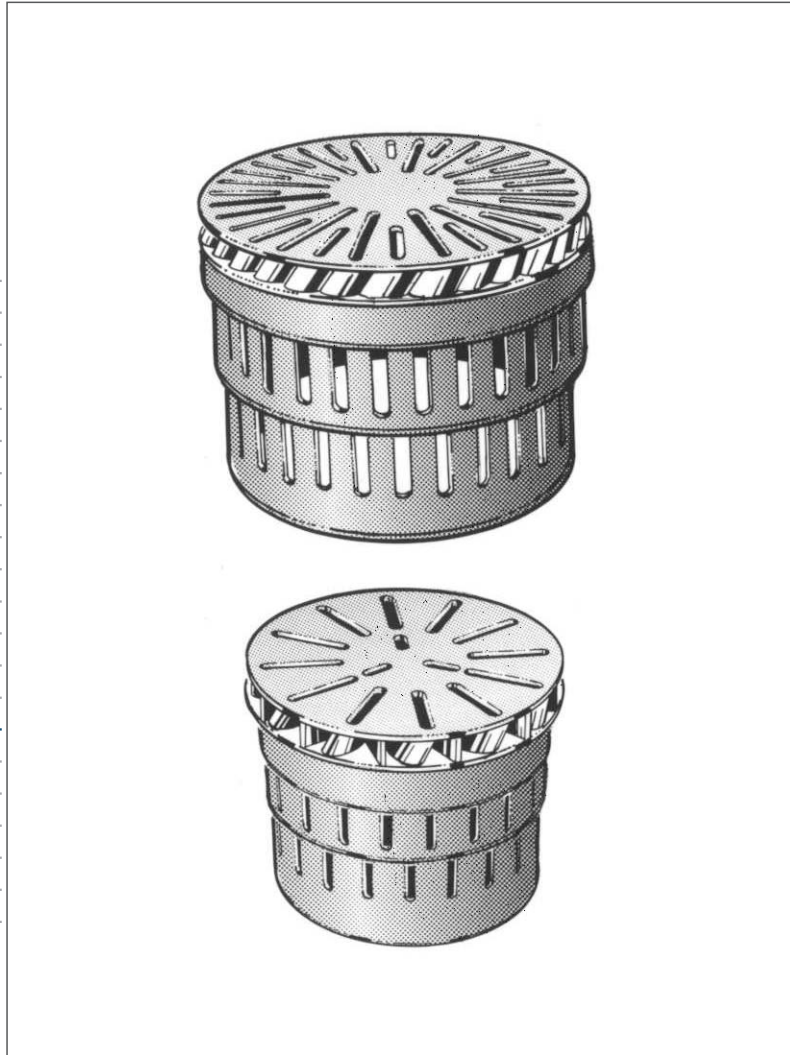


Please note,
type code is new,
see last page.

Technical Selection



**Floor twist outlets for
commercial rooms DB-E....**

Preliminary remarks

Air outlets from KRANTZ KOMPONENTEN for use in raised floor systems operate according to the principle of air distribution from bottom to top and discharge the supply air draught-free into the room. Heat, air pollutants and odorous substances are displaced from the occupied zone to the ceiling zone and removed with the return air. The replacement of indoor air with conditioned supply air is very intensive and the resultant air quality in the occupied zone is extraordinarily good.

Construction design

The main component of the floor twist outlet is the air outlet element **1** with radially arranged air slots **1a**. The DB-E floor twist outlet is used in conventional raised floor systems. If the floor plan is altered, the floor tiles with or without air outlets are easily interchangeable. The local air supply can therefore be increased or reduced as required. There are two connection methods (Figure 1):

Floor plenum system: The supply air enters the air outlet from below. The space under the raised floor acts as an air plenum.

Ductline system: The floor twist outlet is connected to the duct system by means of a rectangular connection box with flexible tubing.

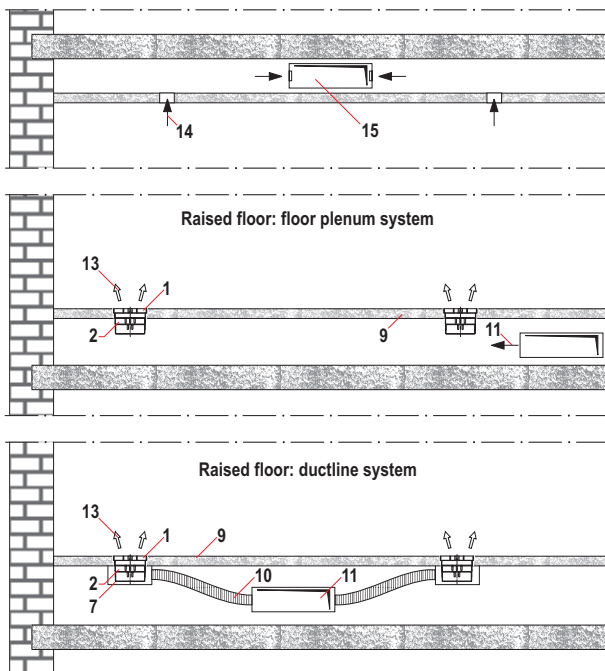


Figure 1: Air supply options

Above: directly from the pressurized plenum

Below: via flexible tubing and connection box

¹⁾ For the preferred air outlet type (kind, size, material) or possible combination of individual components see table on page 11, Types available

There are tried and tested methods for installing the air outlet:

1. Insertion in the stepped bore in the floor tile.
2. Installation with clamp insert in a through bore in the floor tile.

There is a collar on the top of the clamp insert 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 fixed to the floor tile with a clamp nut **5a**, claw fastener **5b** or clamp collar **5d**. The DN 200 twist element is also lockable to prevent unauthorized removal.¹⁾

A standard floor twist outlet accessory is the distributor basket **2** for even air supply. There are different types to choose from (Figure 2):

■ Standard design, with throttle device: Type VSD (without throttle device: Type VS)

■ Short type, for low plenums of raised floors; without throttle device: Type VK

■ Low type, with openable basket bottom to enable 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 outlets made of aluminium, with Type VPD throttle device

■ Short type with fixed damper for even supply air distribution when using DN 200 in assembly rooms or with low air outlet volume flow rates: Type VL

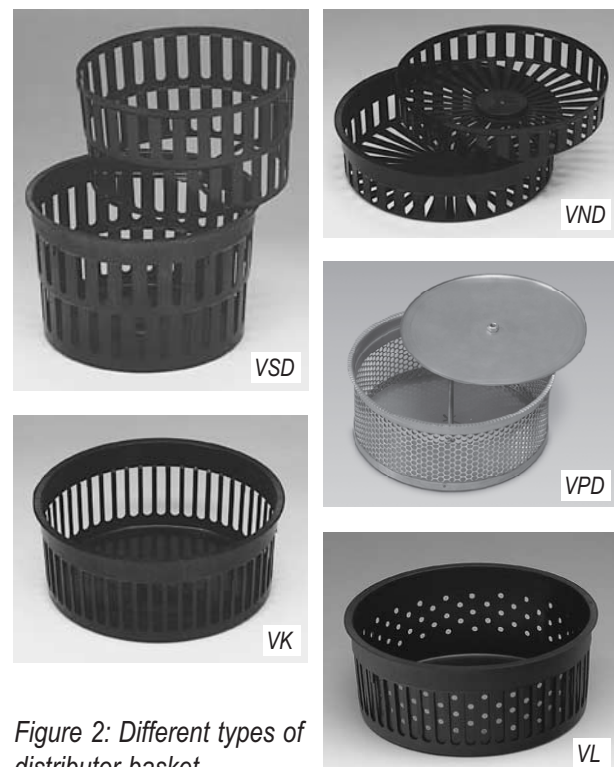
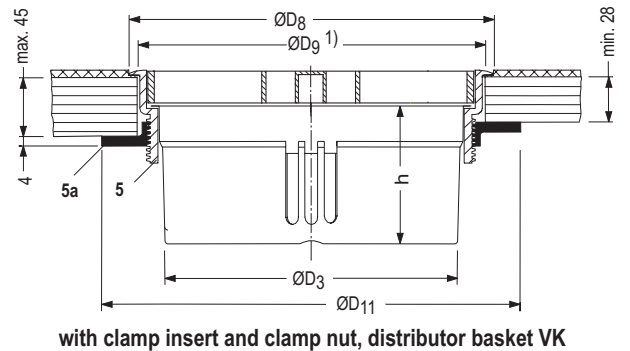
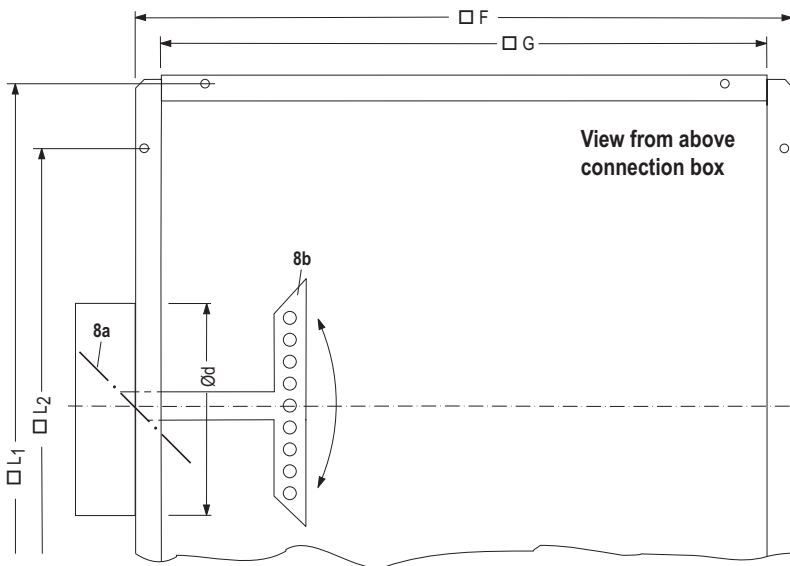
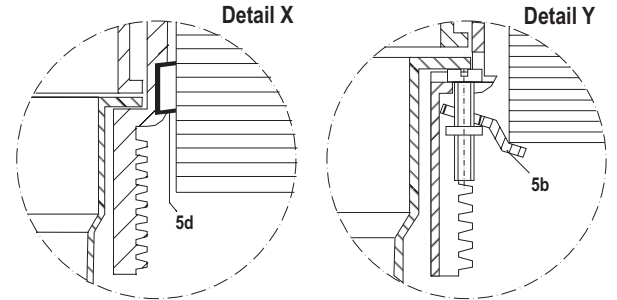
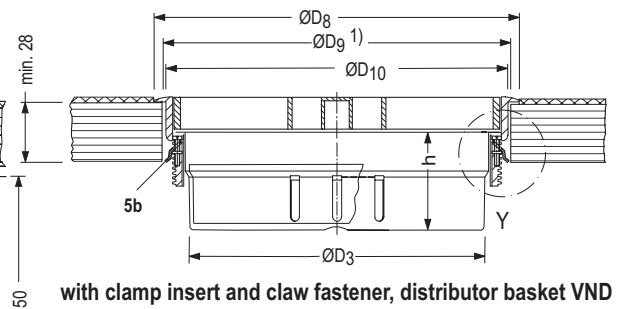
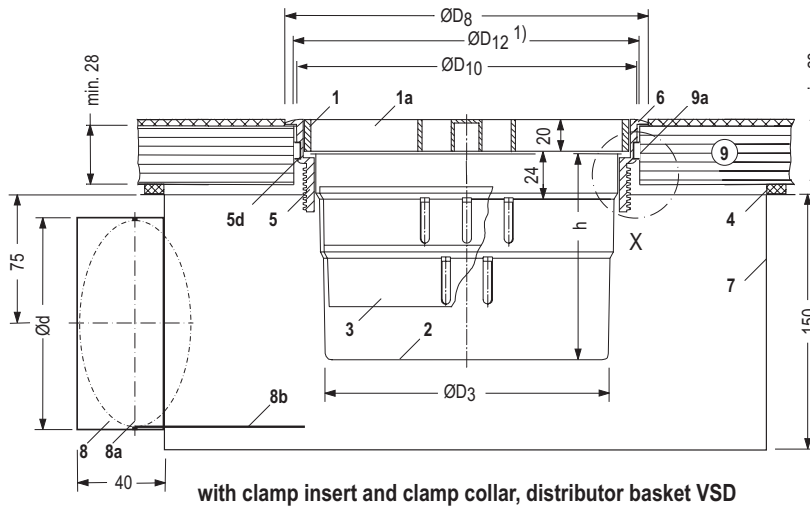


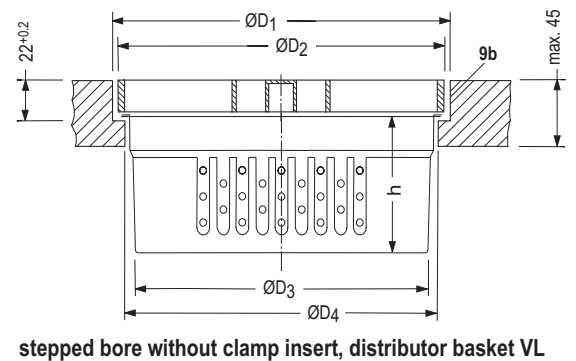
Figure 2: Different types of distributor basket



- Key for all pages**
- 1 Floor twist outlet
 - 1a Air slot
 - 2 Distributor basket
 - 3 Throttle device
 - 4 Sealing (on site)
 - 5 Clamp insert
 - 5a Clamp nut
 - 5b Claw fastener
 - 5d Clamp collar
 - 6 Protective collar
 - 7 Connection box
 - 8 Connection spigot
 - 8a V-damper (optional)
 - 8b Slide²⁾
 - 9a Through bore
 - 9b Stepped bore
 - 10 Flexible tube
 - 11 Supply air
 - 12 Induced indoor air
 - 13 Supply air jets
 - 14 Return air
 - 15 Return air duct

Dimensions in mm

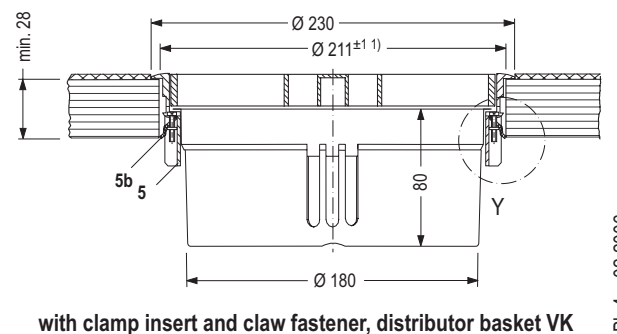
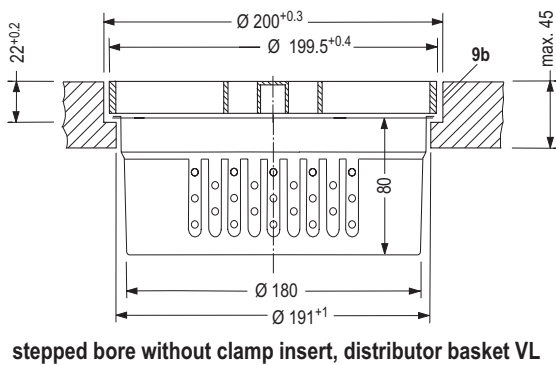
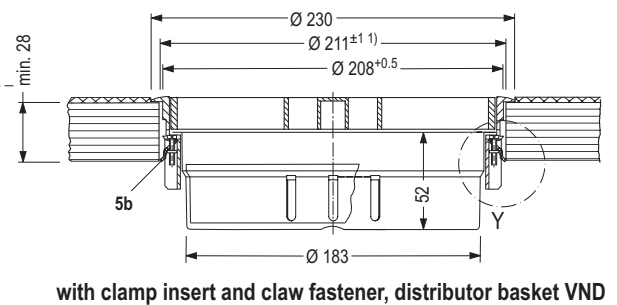
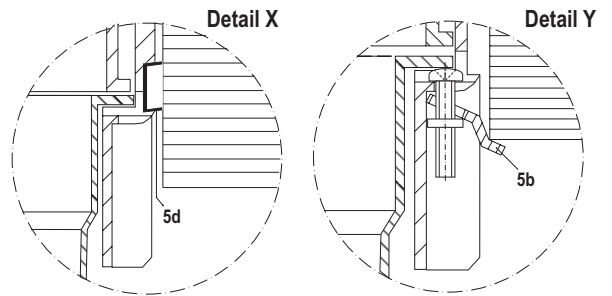
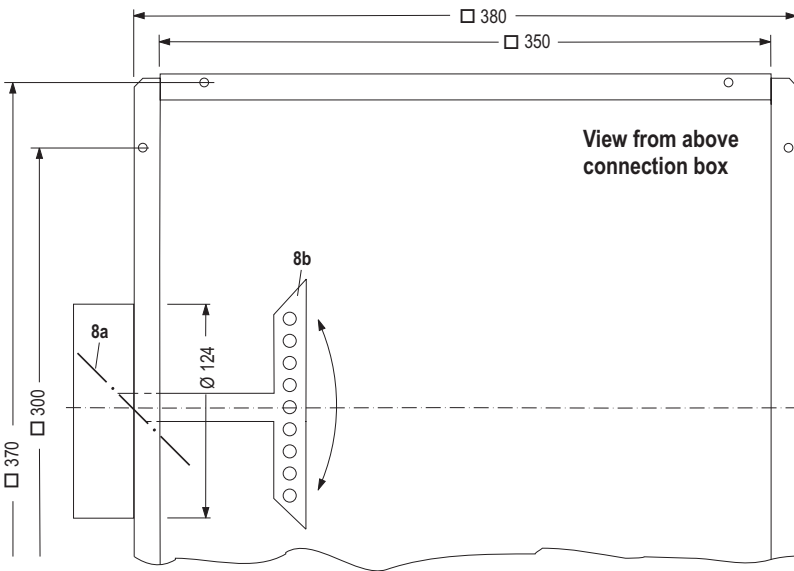
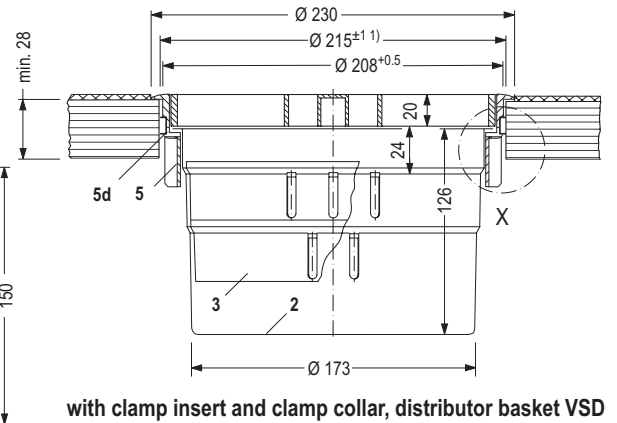
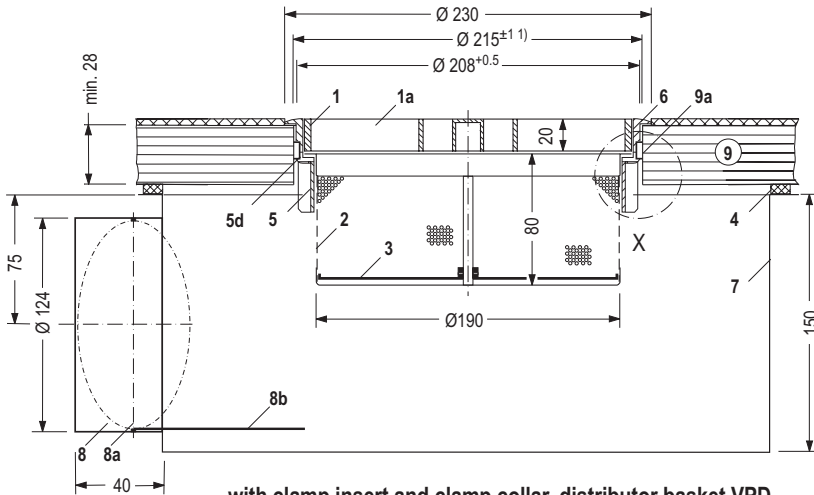
Size	Floor twist outlet			Clamp insert				
	Ø D ₁	Ø D ₂	Ø D ₄	Ø D ₈	Ø D ₉ ¹⁾	Ø D ₁₀	Ø D ₁₁	Ø D ₁₂ ¹⁾
DN 150	150 ^{+0.2}	149.5 ^{+0.4}	141 ⁺¹	172	161 ^{±1}	158 ^{+0.5}	205	165 ^{±1}
DN 200	200 ^{+0.3}	199.5 ^{+0.4}	191 ⁺¹	230	211 ^{±1}	208 ^{+0.5}	255	215 ^{±1}
Size	Distributor basket							
	Type VS, VSD		Type VK		Type VN, VND		Type VL	
	Ø D ₃	h	Ø D ₃	h	Ø D ₃	h	Ø D ₃	h
DN 150	131	105	135	54	—	—	—	—
DN 200	173	126	180	80	183	52	180	80
Size	Connection box							
	Ø d	F	G	L ₁	L ₂			
DN 150	79	280	250	270	200			
DN 200	124	380	350	370	300			



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

1) Ø D₉ = Ø-through bore for clamp insert with clamp nut or claw fastener; Ø D₁₂ = the same for clamp collar

2) The slide 8b of the V-damper is movable 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 placement in the other figures.

1) $\varnothing 211^{\pm 1}$ = \varnothing -through bore for clamp insert with claw fastener;
 $\varnothing 215^{\pm 1}$ = the same for clamp collar
 2) The slide 8b of the V-damper is adjustable from the room

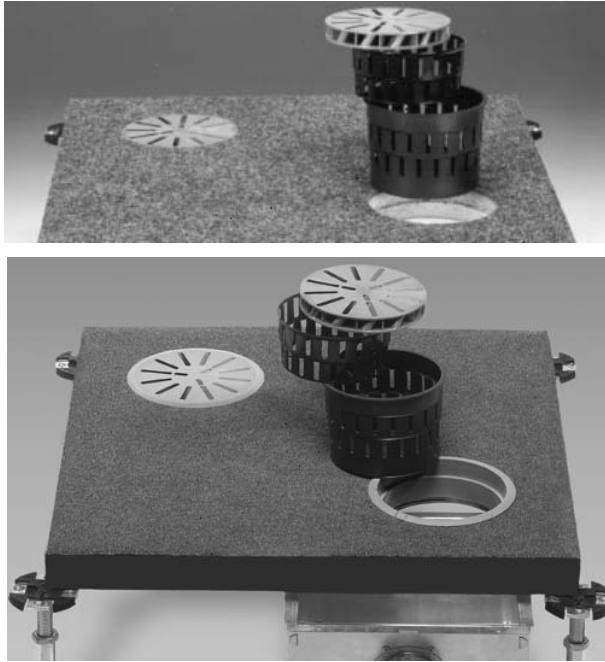


Figure 3: Floor twist outlet DB-E-DN 150 with VSD-type distributor basket; example for installation in floor tiles; above: with stepped bore, below: with clamp insert and connection box

Mode of operation

The supply air flows into the distributor basket and then through the radial air slots into the room.

Due to the many slots single twisted, high-turbulence air jets form with an intensive induction effect (Fig. 4). This causes a rapid velocity reduction and a fast equalization of the supply air temperature and the indoor air temperature.

The supply from below produces an upflow in the same direction as the buoyancy caused by the heat loads in the room. This upflow conveys the warm and stale indoor air to the ceiling, where it is removed, while

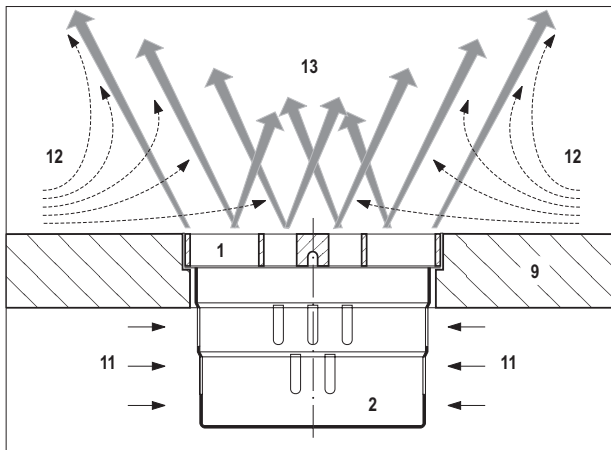


Figure 4: Mode of operation of floor twist outlet

the desired indoor air conditions are maintained in the occupied zone. This results in an excellent air quality or high ventilation efficiency.

Recommended minimum spacing between seats is
⇒ 1 m for size DN 150 and ⇒ 1 to 1.5 m for DN 200.



Figure 5: Jet pattern of floor twist outlet made visible with smoke tracer

Technical data

Nominal diameter		DN 150	DN 200	
Air volume flow rate	l/s	5.5 – 14	14 – 50	
	m ³ /h	20 – 50	50 – 180	
With occupants in room, max.	l/s	12.5	42	
	m ³ /h	45	150	
Max. temperature difference supply air - return air	K	± 10		
Supply air temperature	°C	18 – 30		
Max. load-bearing capacity ¹⁾	kg	800	1400	600
	Twist element made of	PC	Al	PC
For tile size		Floor twist outlets per tile, max.		
500 mm x 500 mm	unit	2	1	
600 mm x 600 mm	unit	4	1	
Min. air outlet spacing	m	approx. 0.3	approx. 0.6	
Min. distance between seat and air outlet	m	approx. 1	approx. 1.5	

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

Jet temperature and velocity

The generation of high-induction supply air jets with rapid velocity reduction and fast equalization of jet temperature and indoor air temperature help a great deal in preventing draughts. Air outlets from KRANTZ KOMPONENTEN are known to be eminently suited to meet this requirement. With air supply from below, **floor twist outlets** thus produce excellent results in draught-free ventilation.

The following figures illustrate jet temperatures for different measurement heights above the floor twist outlets and document the quick reduction of temperature difference between supply air and indoor air. The jet velocity curve is shown on pages 7 and 8.

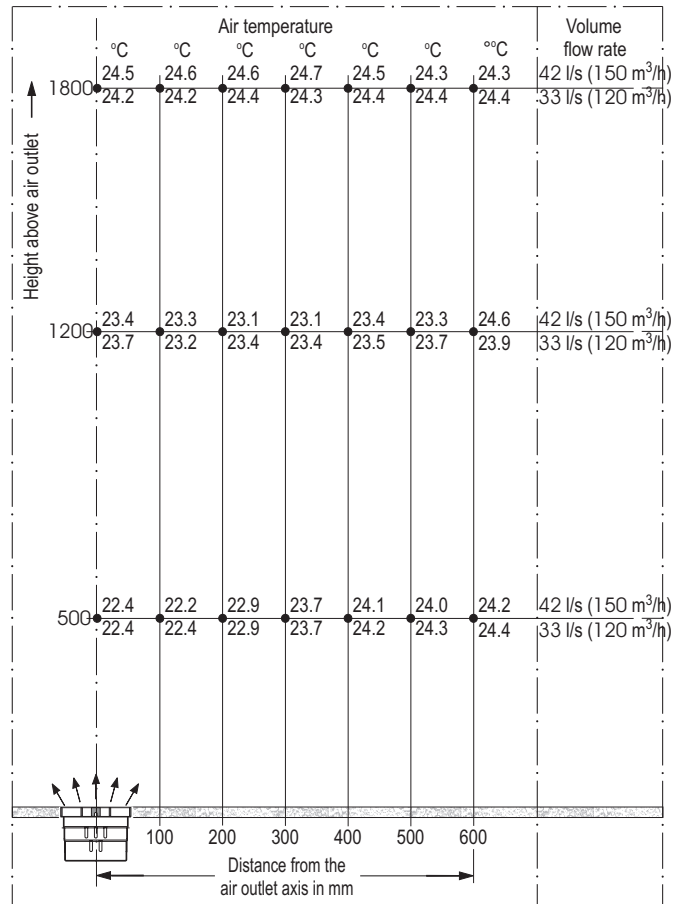
The jet temperature measurements are based on:

- Supply air temperature = 19°C (prior to discharge)
- Room temperature = 24°C (at a height of 1.2 m)

Air outlet volume flow rate

- DN 150: 8 and 11 l/s (30 and 40 m³/h)
- DN 200: 33 and 42 l/s (120 and 150 m³/h)

Size DN 200



Size DN 150

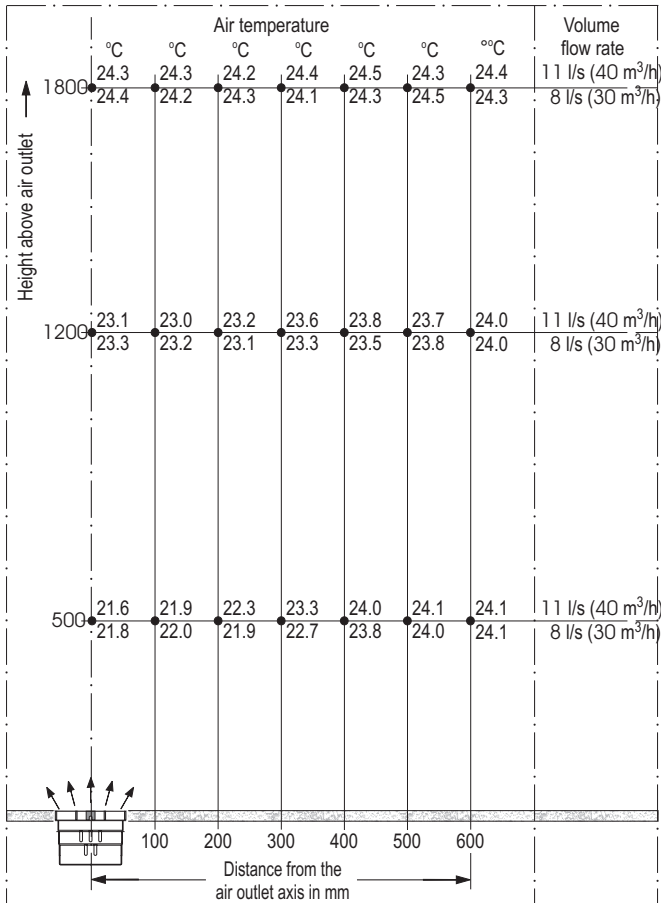


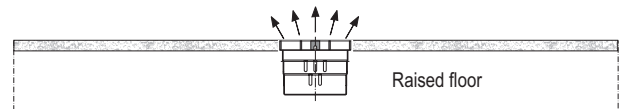
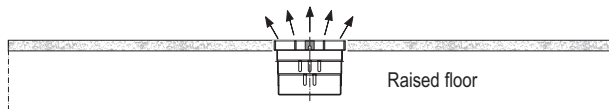
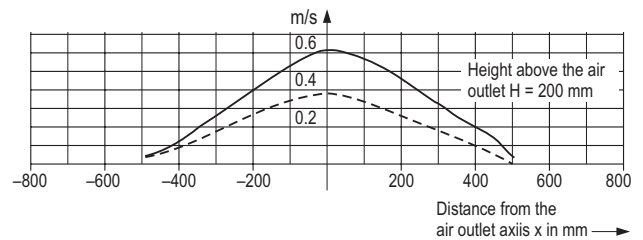
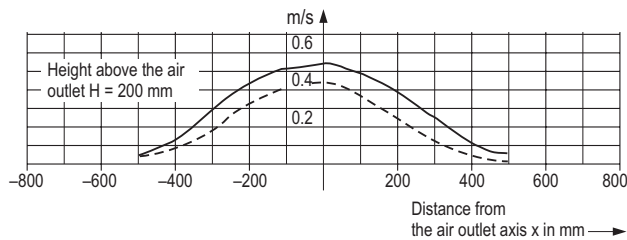
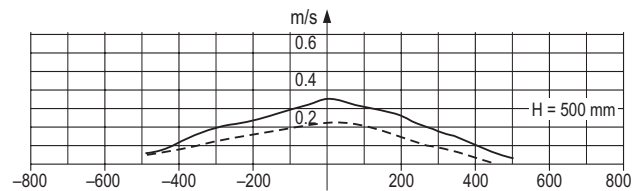
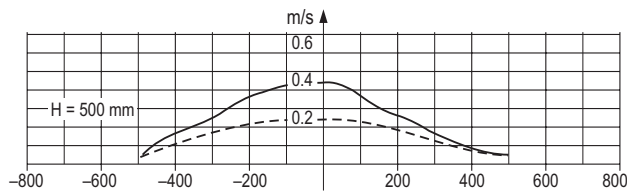
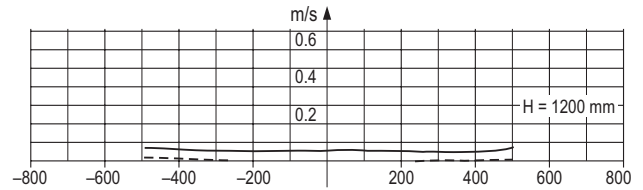
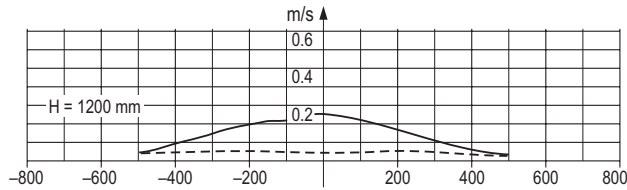
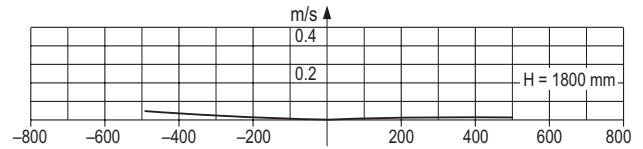
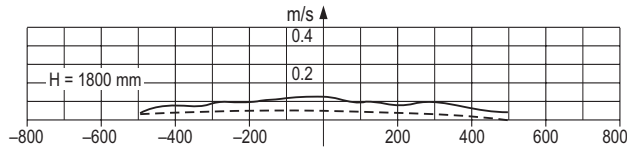
Figure 6: Floor twist outlet in an office

1. Mean value for DN 150

Air outlet volume flow rate ——— = 11 l/s (40 m³/h); - - - - = 8 l/s (30 m³/h)

a) Temperature difference between supply air and indoor air $\Delta\vartheta = -2$ K (1.2 m height)

b) Temperature difference between supply air and indoor air $\Delta\vartheta = -4$ K (1.2 m height)



Note:

In the graphs (pages 7 and 8) the jet velocities are shown for different reference levels above the floor twist outlets DN 150 and DN 200. The jet velocities are shown resp. for a large and a small volume flow rate and a large and small temperature difference between supply air and indoor air. The theoretical discharge velocity for the large volume flow rate with DN 150 amounts to \Rightarrow 3.4 m/s and with DN 200 \Rightarrow 4.1 m/s.

The jet velocity - for the resp. larger volume flow rate - has already dropped for size DN 150 at 500 mm height to approximately 0.45 m/s and for size DN 200 at 500 mm height to approximately 0.8 m/s. At a height of 1800 mm jet velocity is \leq 0.2 m/s.

2. Mean value for DN 200

Air outlet volume flow rate ——— = 42 l/s (150 m³/h); - - - - = 33 l/s (120 m³/h)

a) Temperature difference between supply air and indoor air $\Delta\vartheta = 0$ K (1.2 m height)

B) Temperature difference between supply air and indoor air $\Delta\vartheta = -5$ K (1.2 m height)

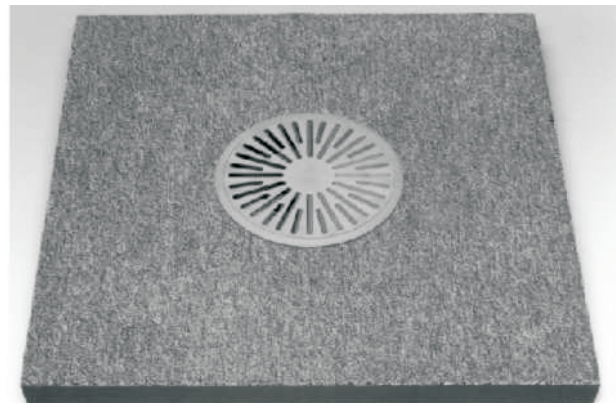
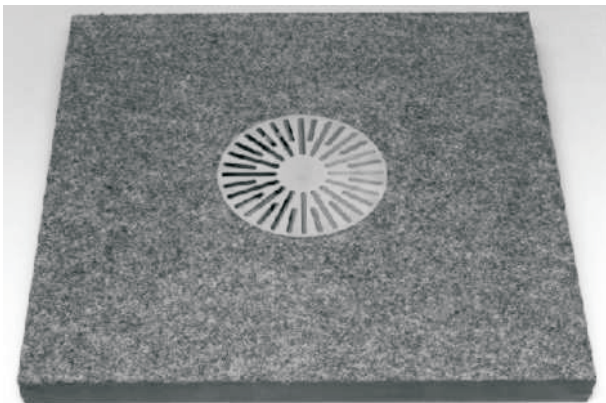
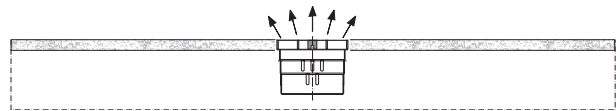
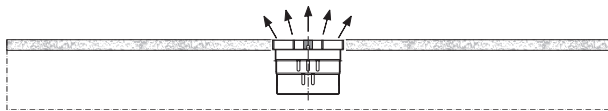
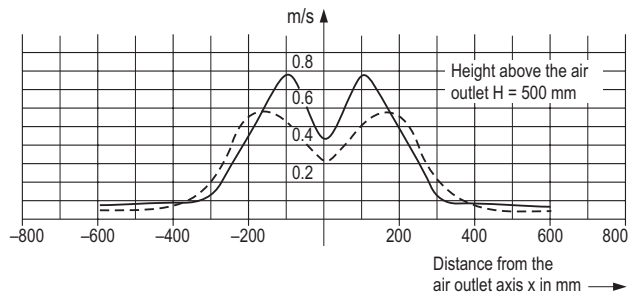
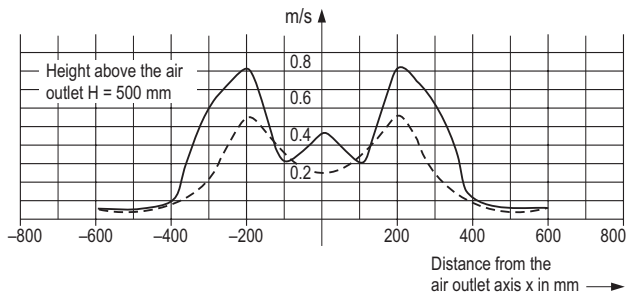
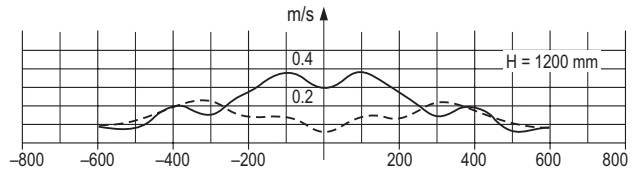
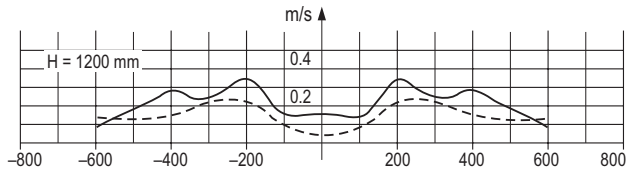
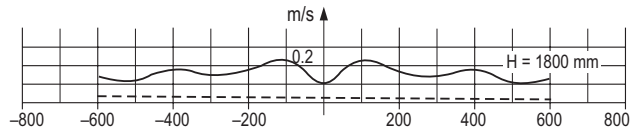
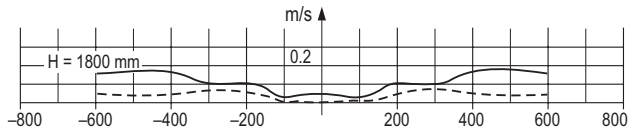
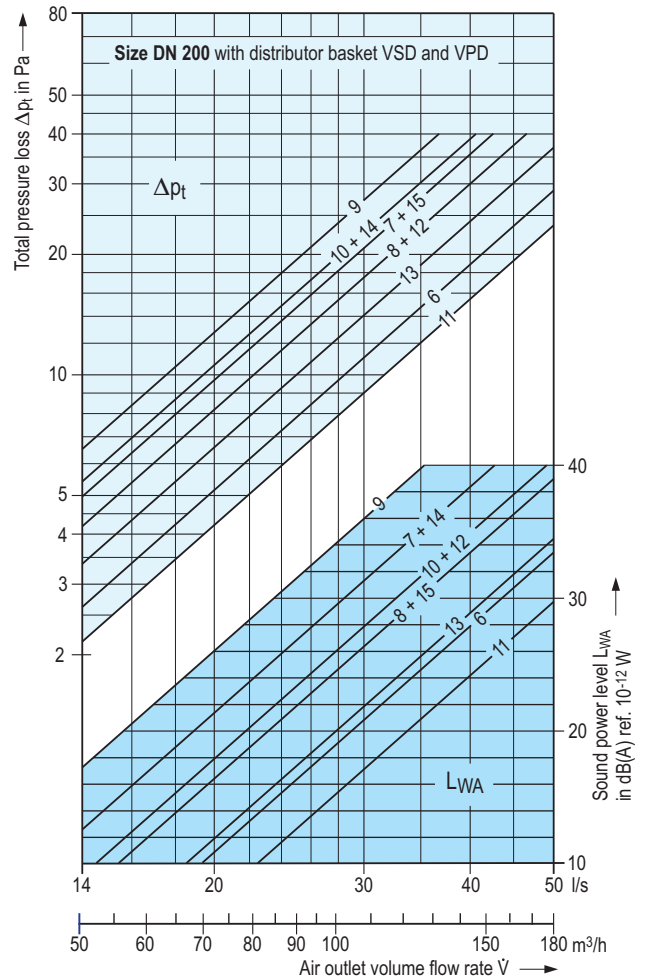
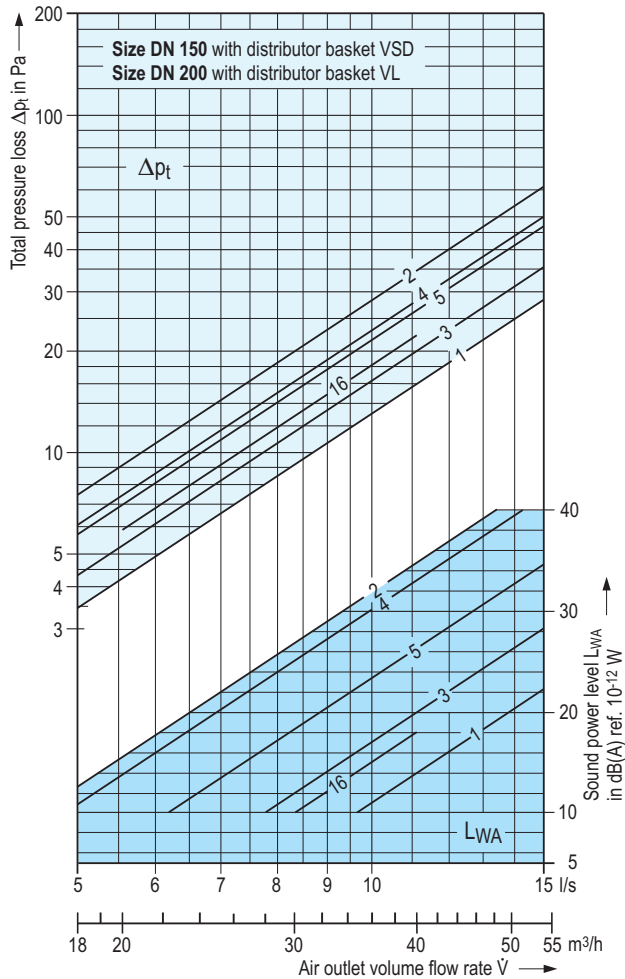


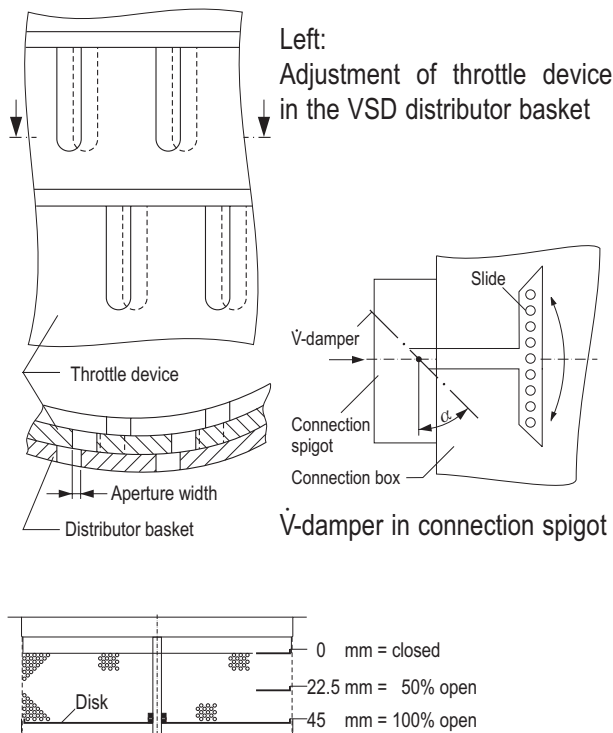
Figure 7: View of installed DN 200 floor twist outlets,

Left: In stepped bore

Right: With clamp insert in a through bore



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 150	VSD	100	5.0	— ³⁾
2			50	2.5	— ³⁾
3			100	5.0	90° open
4			50	2.5	90° open
5			100	5.0	45°
6	DN 200	VSD	100	8.0	— ³⁾
7			50	4.0	— ³⁾
8			100	8.0	90° open
9			50	4.0	90° open
10			100	8.0	45°
11	DN 200	VPD	100	45.0	— ³⁾
12			50	22.5	— ³⁾
13			100	45.0	90° open
14			50	22.5	90° open
15			100	45.0	45°
16	DN 200	VL	without throttle device		— ³⁾

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 VL distributor baskets. When using VK and VND distributor baskets, the values approximate those of the VSD distributor basket.
2) The throttle device in the VSD distributor basket enables continuous reduction of air volume rate, preferably up to 50% as well as full shut-off
3) Without connection box

Sound power level and total pressure loss

No.	Air outlet volume flow rate		Total pressure loss Δp_t Pa	Sound power level L_w in dB ref. 10^{-12} W							
	\dot{V}_A l/s	m ³ /h		L_{WA} dB(A)	Octave band centre frequency in Hz						
			63		125	250	500	1 K	2 K	4 K	
DN 150 with distributor basket VSD											
1	8	30	9	6	22	12	—	—	—	—	—
	11	40	18	14	30	20	17	11	—	—	—
	12.5	45	20	17	33	23	20	14	—	—	—
	14	50	24	20	36	26	23	17	12	—	—
2	8	30	18	27	20	18	20	18	27	—	—
	11	40	35	35	28	26	28	26	35	12	—
	12.5	45	43	38	31	29	31	29	38	15	—
	14	50	52	42	35	33	35	33	42	19	—
3	8	30	12	12	23	18	17	—	—	—	—
	11	40	20	20	31	26	25	17	12	—	—
	12.5	45	25	23	34	29	28	20	15	—	—
	14	50	32	26	37	32	31	23	18	—	—
4	8	30	16	25	23	21	25	20	23	—	—
	11	40	28	33	31	29	33	28	31	13	—
	12.5	45	35	36	34	32	36	31	34	16	—
	14	50	44	39	37	35	39	34	37	19	—
5	8	30	15	18	25	23	20	14	15	—	—
	11	40	27	26	33	31	28	22	23	—	—
	12.5	45	33	29	36	34	31	25	26	10	—
	14	50	41	32	39	37	34	28	29	13	—
DN 200 with distributor basket VSD											
6	25	90	8	16	27	20	19	14	10	—	—
	33	120	14	24	35	28	27	22	18	10	—
	42	150	20	29	40	33	32	27	23	15	—
	50	180	30	34	45	38	37	32	28	20	11
7	25	90	15	27	32	26	28	24	23	16	—
	33	120	25	34	39	33	35	31	30	23	13
	42	150	38	39	44	38	40	36	35	28	18
8	25	90	12	22	22	26	25	19	17	—	—
	33	120	21	29	29	33	32	26	24	15	—
	42	150	33	35	35	39	38	32	30	21	11
	50	180	45	39	39	43	42	36	34	25	15
9	25	90	19	32	22	28	32	27	30	19	10
	33	120	34	39	29	35	39	34	37	26	17
10	25	90	16	23	20	27	25	20	19	10	—
	33	120	27	30	27	34	32	27	26	17	—
	42	150	42	36	33	40	38	33	32	23	12
	50	180	59	41	38	45	43	38	37	28	17

No.	Air outlet volume flow rate		Total pressure loss Δp_t Pa	Sound power level L_w in dB ref. 10^{-12} W							
	\dot{V}_A l/s	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 VPD											
11	25	90	6	13	22	19	17	10	—	—	—
	33	120	11	20	29	26	24	17	15	—	—
	42	150	17	25	34	31	29	22	20	10	—
	50	180	23	30	39	36	34	27	25	15	—
12	25	90	12	23	27	20	19	17	19	18	—
	33	120	21	30	34	27	26	24	26	25	13
	42	150	33	36	40	33	32	30	32	31	19
	50	180	45	41	45	38	37	35	37	36	24
13	25	90	10	17	18	20	20	15	13	—	—
	33	120	17	25	26	28	28	23	21	12	—
	42	150	26	30	31	33	33	28	26	17	—
	50	180	47	34	35	37	37	32	30	21	—
14	25	90	16	27	22	26	24	21	23	21	11
	33	120	27	34	29	33	31	28	30	28	18
	42	150	42	39	34	38	36	33	35	33	23
15	25	90	15	22	21	22	22	18	19	12	—
	33	120	25	29	28	29	29	25	26	19	—
	42	150	38	35	34	35	35	31	32	25	15
	50	180	52	39	38	39	39	35	36	29	19
DN 200 with distributor basket VL											
16	8	30	13	10	8	9	6	8	6	—	—
	10	35	17	14	12	13	10	12	10	5	—
	11	40	22	18	16	17	14	16	14	9	—

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	
DN 150	6	1	0	2	3	9	9	8	5
DN 200	3	1	1	2	3	5	6	6	3
DN 150	0	6	2	5	2	8	8	6	5
DN 200	1	1	2	3	2	3	5	5	3

- without connection box
 with connection box

Layout specifications

Size DN 150

In applications with very high comfort requirements, the DN 150 floor twist outlet has proved to be most effective. This applies for use in offices with more or less even specific heat loads and in rooms with different local heat load factors such as EDP rooms or control rooms.

We recommend an air outlet volume flow rate in the machinery zone of about 12.5 l/s (45 m³/h) and in the occupied zone of maximum 10 l/s (35 m³/h). Minimum

air outlet spacing of workplaces with continual presence of personnel must be 1 m.

A denser air outlet placement is more effective for specific heat removal from the machinery zone. Here it is better to use size DN 150, since the floor tiles can accommodate up to four air outlets, depending on measurements. Size DN 150 thus enables an exact adjustment of the supply air volume flow rate to different local machinery heat loads.

Size DN 200

Selecting air outlets with large volume flow rates has the following advantages:

- low number of air outlets,
- few apertures in raised floor,
- few supply pipes with direct duct connection,
- low investment costs.

In such cases the use of size DN 200 has proved to be effective. The volume flow rate is four times larger than with size DN 150. It amounts to max. 50 l/s (180 m³/h), in the occupied zone max. 42 l/s (150 m³/h).

Due to the large (local) volume flow rate, higher jet velocities occur in the near zone of the outlet as compared with size DN 150. A brief spell above the air outlet is not, however, uncomfortable.

Features

- For turbulent mixing air flow in the commercial sector with air supply from the floor
- Installation in conventional raised floor systems
- Air supply direct from the pressurized plenum or via connection box with flexible tubing
- High-induction, rotationally symmetric, stable vertical jet
- Supply air flow in the direction of thermal flow, from floor to ceiling
- Intensive admixture of supply air and indoor air
- High ventilation efficiency
- Max. temperature difference supply air – return air ±10 K
- Supply air temperature 18 - 30°C
- Low sound power level
- Min. distance between air outlet and seat approx. 1 m to 1.5 m
- Air volume flow rate
5.5 – 14 l/s (20 – 50 m³/h) for DN 150 and
14 – 50 l/s (50 – 180 m³/h) for DN 200
- Available in sizes DN 150 and DN 200
- Floor installation by insertion in a stepped bore or installation with a clamp insert in a through bore of floor tile
- Fastening of clamp insert to the floor tile either with clamp collar or claw fastener, also with clamp nut in the plastic option
- Twist element and clamp insert DN 200 made of polycarbonate or aluminium, connection box made of galvanized steel
- The DN 200 twist element can be locked against unauthorized removal; 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 and steel, with or without throttle device
- Short type with fixed damper for low volume flow rates for use in assembly rooms
- Can be walked over, driven over and can support a wheelchair

Types available

Component	Size					
	DN 150			DN 200		
	Materials ¹⁾					
	PC	Al	St	PC	Al	St
Twist element	●			●	●	
For installation in through bore:						
Clamp insert						
– with clamp collar SR	3)			● 4)	● 5)	
– with claw fastener SK	●			● 4)	● 5)	
– with clamp nut SM	●			● 4)		
For installation in through and stepped bore						
Distributor basket						
– 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		3)			● 6)
– Short type with fixed damper	VL			●		
Connection box						
– without V-damper in connection spigot			●			●
– with V-damper in connection spigot ²⁾			●			●

● = available

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

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

3) On request

4) Standard lock

5) Optional lock

6) Only combinable with aluminium type

Type code

DB – EK – DN _____ – _____

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

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

Function / Kind: E = EDP and office
K = Plastic

Size: DN 150 and DN 200

Distributor basket V

VS = Standard type
 VSD = Standard type with throttle device
 VK = Short type
 VN³⁾ = Low type
 VND³⁾ = Low type with throttle device
 VL³⁾ = Short type with fixed damper

Clamp insert

SO = Without clamp insert (installation in stepped bore)
 SM = Clamp insert with clamp nut
 SK = Clamp insert with claw fastener
 SR = Clamp insert with clamp collar⁴⁾

Connection type: D = Pressurized plenum;
K = Connection box

Tender text

..... Units

Air outlet for floor installation with high induction effect in floor zone for rapid reduction of air discharge velocity and intensive energy exchange with indoor air; air outlet consisting of:

Twist element with radial slots to generate twist effect,

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 distributor basket³⁾ 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.

Short type with fixed damper³⁾ for even supply air distribution when used in assembly rooms or with low air outlet volume flow rates.

Clamp insert for installation in through bore of floor tile with clamp collar⁴⁾. with claw fastener.

with clamp nut.

Twist element of DN 200 with lock against unauthorized removal.

Connection box for direct connection of air outlet to a flexible tube, with V-damper adjustable from room¹⁾.

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)
 Perm. sound power level: dB(A) ref. 10⁻¹² W
 Load-bearing capacity²⁾: kg

Make: KRANTZ KOMponentEN

Type: DB – EK – DN _____ – _____ – _____ – _____

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

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

3) Available for DN 200

4) On request for DN 150

Subject to technical alterations!

Type code

DB – EA – DN _____ – _____ – _____

Floor twist outlet

Function / Kind

Size

Distributor basket

Clamp insert

Connection type

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

Function / Kind: E = EDP and office
A = Aluminium

Size: DN 200

Distributor basket V

- 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
- VL = Short type with fixed damper

Clamp insert

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

Connection type: D = Pressurized plenum;
K = Connection box

Tender text

..... Units

Air outlet for floor installation with high induction effect in floor zone for rapid reduction of air discharge velocity and intensive energy exchange with indoor air; air outlet consisting of:

Twist element with radial slots to generate twist effect,

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

Short type with fixed damper for even supply air distribution when used in assembly rooms or with low air outlet volume flow rates.

Clamp insert for the installation in through bore of floor tile with clamp collar. with claw fastener. Twist element with lock against unauthorized removal.

Connection box for direct connection of air outlet to a flexible tube, with V-damper, adjustable from room¹⁾.

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

Materials:

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

Colour of visible air outlet parts:
natural colour
(powder-coated on request)

Technical data:

Volume flow rate: l/s (m³/h)
Perm. sound power level: dB(A) ref. 10⁻¹² W
Load-bearing capacity²⁾: kg

Make: KRANTZ KOMPONENTEN

Type: DB – EA – DN _____ – _____ – _____

1) V-damper unnecessary for distributor basket with throttle device
2) With vertical single load on a central indent of 50 mm diameter

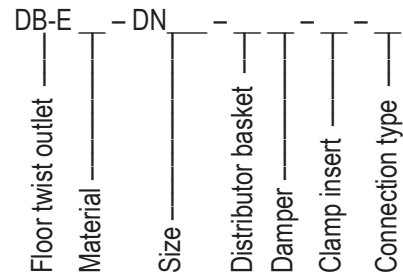


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Floor twist outlet with clamp insert

Type code



Material

- K = Plastic
- A = Aluminium (DN 200 only)

Size

- 150 = DN 150
- 200 = DN 200

Distributor basket

- VS = Standard type
- VK = Short type
- VL = Short type with fixed damper (DN 200 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

- SO = no clamp insert
- SM = Clamp nut (plastic only)
- SK = Claw fastener
- SR = Clamp ring¹⁾

Connection type

- P = Floor plenum
- K = Connection box

Subject to technical alteration.

¹⁾ for DN 150 on request