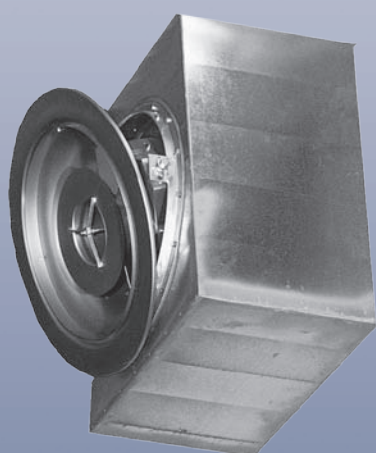


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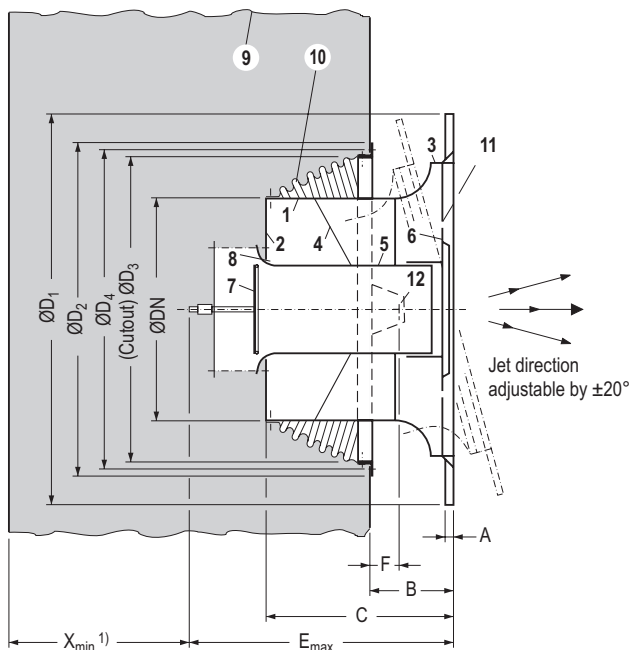
Swivel jet outlet SW....

Preliminary remarks

In large halls an even placement of air outlets in the ceiling zone is frequently impossible for operational or constructional reasons. The supply air is then discharged into the room from walls or pillars. The air outlets have to meet the following requirements:

1. Generation of large throws (often more than 20 m),
2. Adjustable discharge angle or, if possible, automatic readjustment of jet direction for highly fluctuating thermal loads (heating / cooling) for even room flushing and draught avoidance in the occupied zone,
3. High supply air volume flow rate per air outlet for economic unit quantities.

The swivel jet air outlet from KRANTZ KOMPONENTEN fully meets these requirements. It is available in different nominal sizes with air volume flow rates of 110 to 2800 l/s (400 to 10 000 m³/h) and with adjustable throws of up to 30 m. A swivel mechanism enables the jet direction to be altered in the vertical plane through $\pm 20^\circ$.



Key					
1	Outer cylinder	6	Diaphragm	10	Elastic collar
2	Straight intake	7	Valve disk	11	Ring
3	Staggered exit	8	Torus intake	12	Swivel mechanism
4	Twist vane	9	Supply air duct or connection box		
5	Core tube				

Construction design and function

As a basic element for the swivel jet air outlet KRANTZ KOMPONENTEN uses the variable twist outlet with core tube. This consists of the outer cylinder 1 with straight intake 2 and staggered exit 3, the fixed vanes 4 for the twist effect, the core tube 5 with diaphragm 6 and intake torus 8. Depending on the lift position of the valve disk 7 a partial volume flow rate of 0% to 30% of the supply air volume flow rate flows through the core tube. This produces a support jet, which flows along the air outlet axis and induces the radial air jets of the twist outlet. The larger the support jet volume flow rate, the more the radial air jets are deflected. With the support jet at maximum the complete supply air is discharged along the air outlet axis. This results in the longest jet path. The throw can be considerably enlarged by inserting a ring 11 in the staggered exit. The maximum possible throws are shown in the figures on page 3.

The swivel jet outlet can be fitted along the horizontal axis to a supply air duct or a connection box 9. The connection is made airtight with an elastic collar 10.

With a swivel mechanism 12, the air outlet can be swivelled in the vertical plane through $\pm 20^\circ$. So jet direction can be optimized or recorrected.

After exact adjustment of the throw and the discharge angle, the swivel jet outlet usually operates smoothly at temperature differences of $\Delta\vartheta = \pm 6$ K between indoor air and supply air. For applications with larger temperature differences, automatic adjustment of the discharge angle is recommended. An adjustment device with electric servomotor is available for this

Dimensions in mm

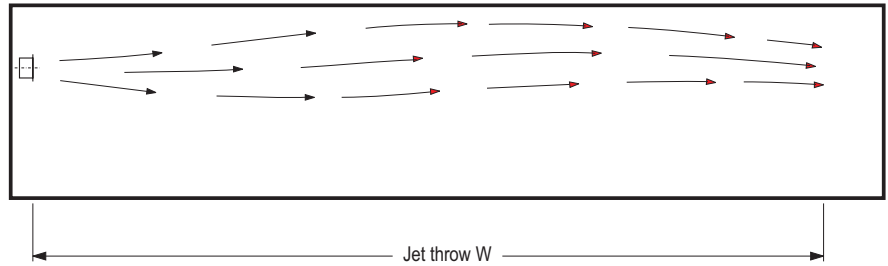
Dimensions	Nom.-Ø			
	DN 315	DN 400	DN 600	DN 710
A	10	10	15	18
B	232	256	320	337
C	285	330	500	535
E _{max}	435	490	708	768
F	64	64	65	65
D ₁	550	700	1050	1245
D ₂	500	620	900	1000
D ₃	460	580	820	920
D ₄	480	600	860	960
G in kg	10	13	25	32

1) X_{min} on request

Type:

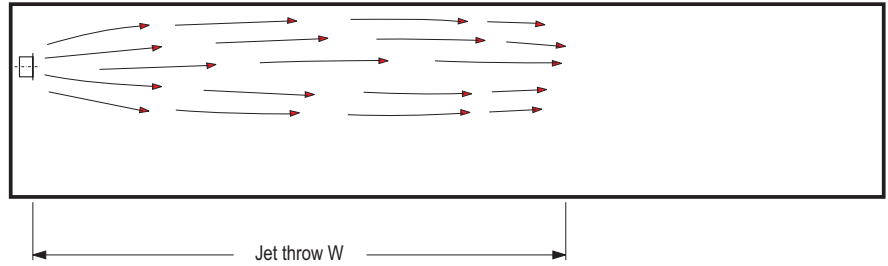
Jet outlet with ring,
with max. support jet, jet W:

DN 315 = approx. 22 m
 DN 400 = approx. 25 m
 DN 600 = approx. 30 m
 DN 710 = approx. 30 m



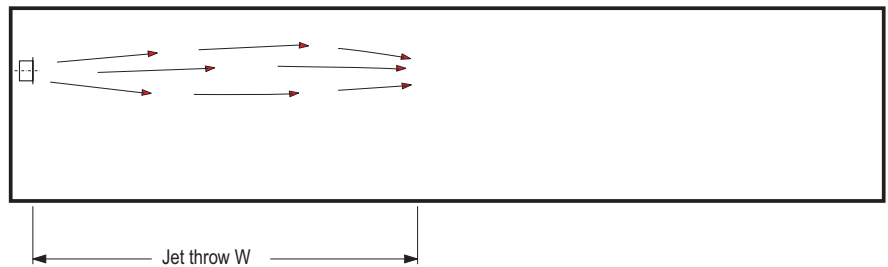
Jet outlet with ring,
without support jet, jet W:

DN 315 = approx. 14 m
 DN 400 = approx. 16 m
 DN 600 = approx. 20 m
 DN 710 = approx. 20 m



Jet outlet without ring,
with max. support jet, jet W:

DN 315 = approx. 8 m
 DN 400 = approx. 10 m
 DN 600 = approx. 15 m
 DN 710 = approx. 15 m



Selection and layout

Four nominal sizes are available with various volume flow rate ranges and throws. The outlet with the ring is selected for large throws:

Nominal size	Volume flow rate range		Throw W in m	
	\dot{V}_A l/s	\dot{V}_A m ³ /h	without ring	with ring
DN 315	$\dot{V}_{Amin} = 110$	$\dot{V}_{Amin} = 400$	0.5 – 5	5 – 8
	$\dot{V}_{Amax} = 550$	$\dot{V}_{Amax} = 2000$	1.0 – 8	14 – 22
DN 400	$\dot{V}_{Amin} = 280$	$\dot{V}_{Amin} = 1000$	0.5 – 5	5 – 8
	$\dot{V}_{Amax} = 1000$	$\dot{V}_{Amax} = 3500$	1.0 – 10	16 – 25
DN 600	$\dot{V}_{Amin} = 830$	$\dot{V}_{Amin} = 3000$	0.5 – 6	6 – 10
	$\dot{V}_{Amax} = 2200$	$\dot{V}_{Amax} = 8000$	1.0 – 15	20 – 30
DN 710	$\dot{V}_{Amin} = 830$	$\dot{V}_{Amin} = 3000$	0.5 – 6	6 – 10
	$\dot{V}_{Amax} = 2800$	$\dot{V}_{Amax} = 10000$	1.0 – 15	20 – 30

1. Placement

Minimum installation height between floor and air outlet is 4 m. Minimum spacing between two air outlets corresponds to 3 times nominal diameter.

2. Adjustment

The exact adjustment of the swivel jet outlet is best made when commissioning the HVAC plant.

a) Adjustment of throw

Altering the valve lift changes the size of the intake opening of the core tube and hence support jet volume flow rate:

Core tube 'shut' = Support jet zero, throw zero

Core tube 'open' = Maximum support jet, maximum throw

b) Adjustment of discharge angle

For applications with max. temperature differences between indoor air and supply air of ± 6 K a single manual setting is sufficient. At higher temperature differences the discharge angle must be readjusted. An adjustment device with an electric drive motor is available for this.

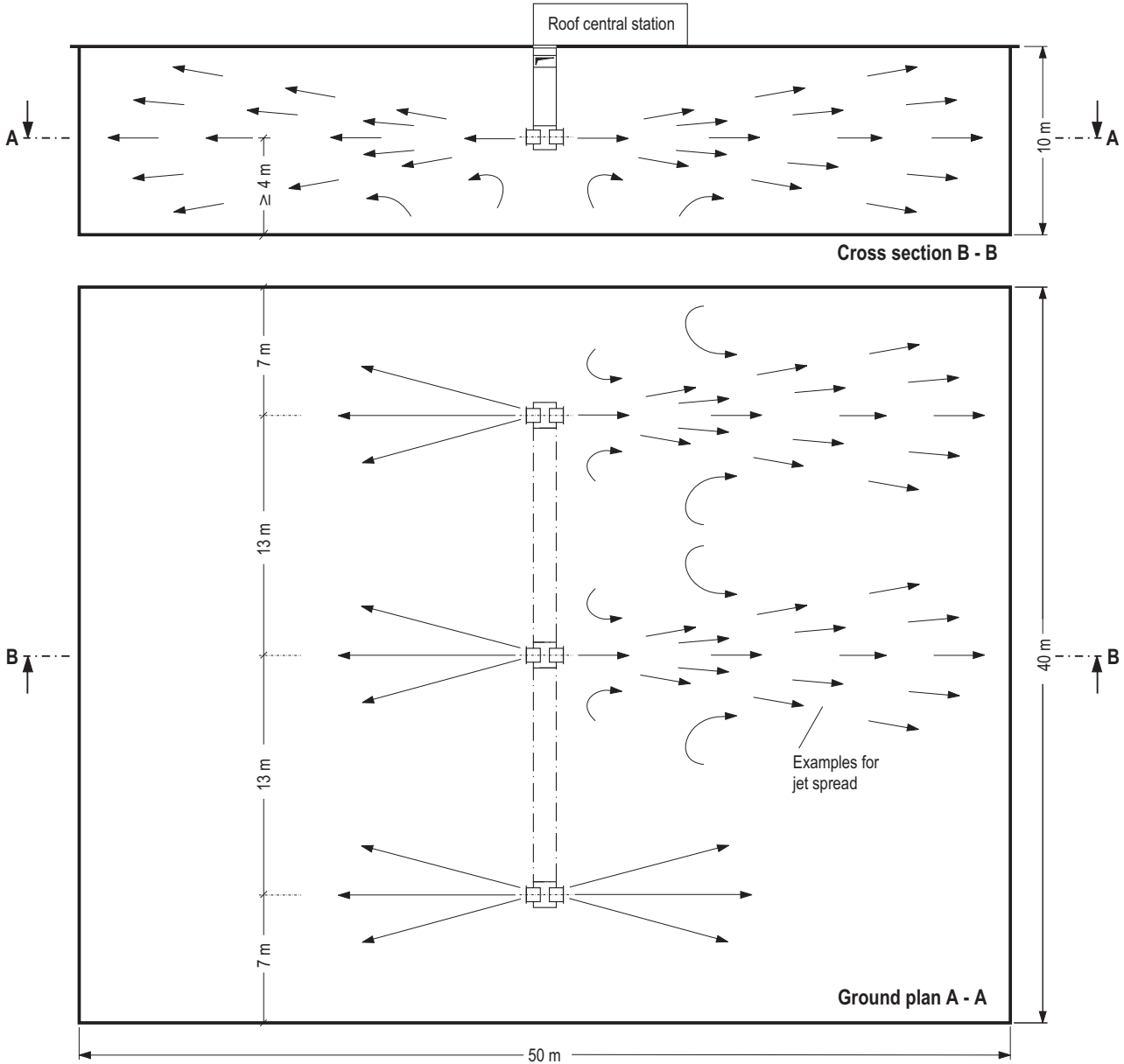
The exact layout of the swivel jet outlet is specified in the nomograms and tables on pages 5 to 7.

Swivel jet outlet

Example for placement in a hall

Model data:

Total volume flow rate	$\dot{V} =$	13 300 l/s	Air outlet volume flow rate	$\dot{V}_A \approx$	2 200 l/s
Number of air outlets	$Z =$	6 units DN 710	Jet throw	$W \approx$	25 m



Jet spread when cooling



Jet spread when heating

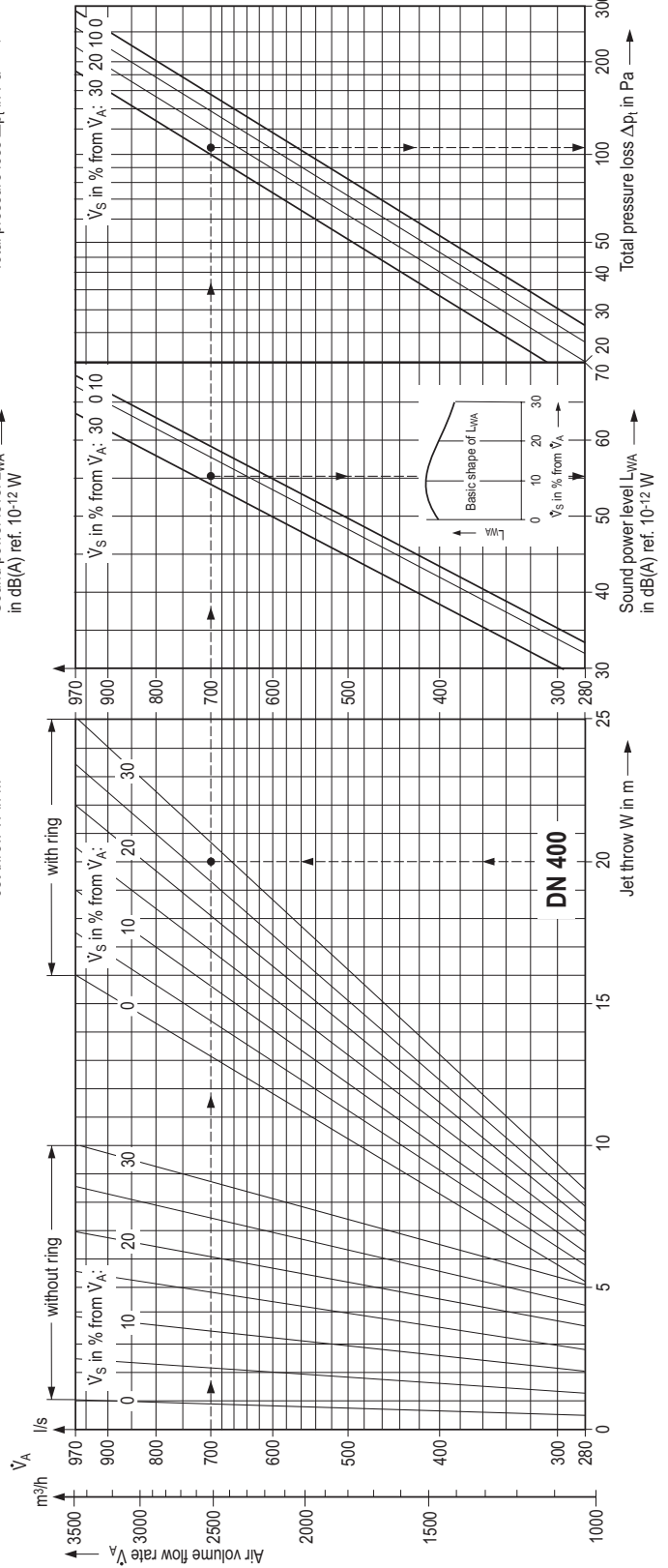
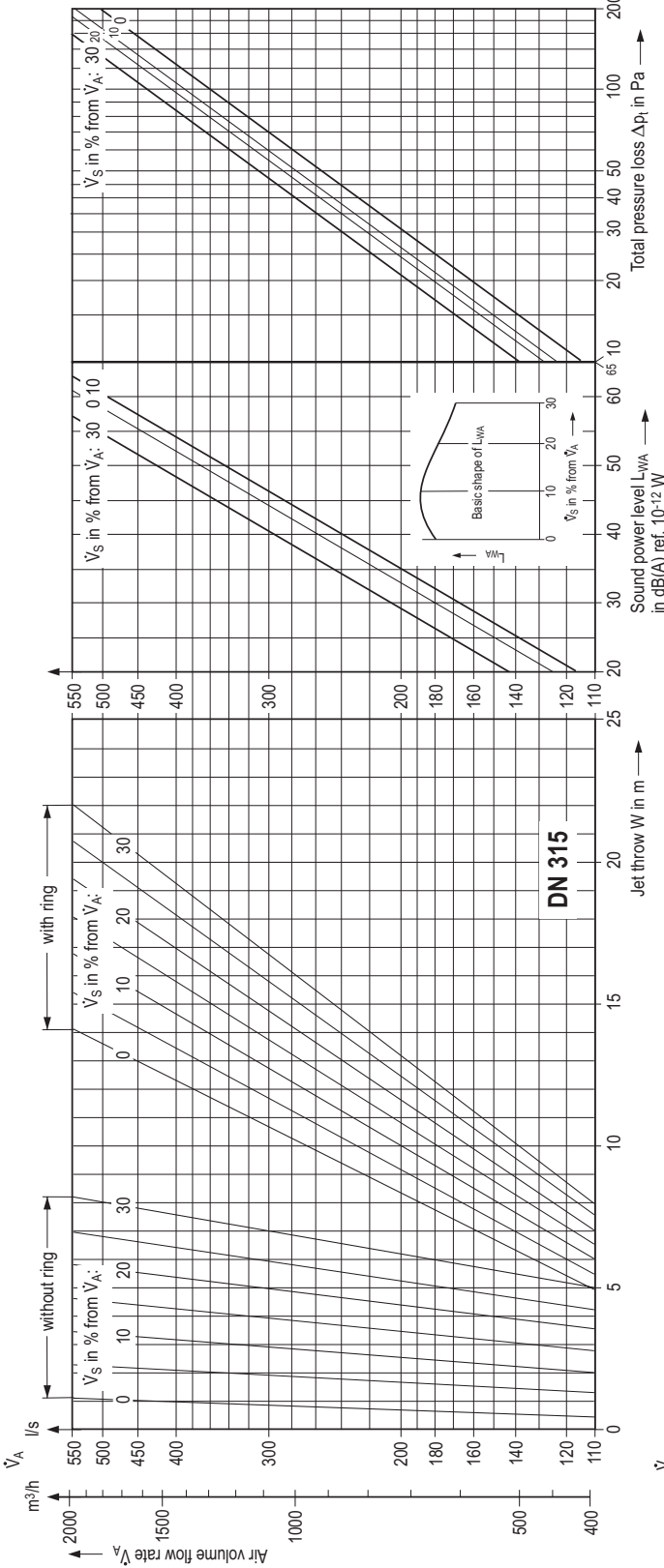
\dot{V}_A = Air outlet volume flow rate
 \dot{V}_S = Support jet volume flow rate
 Installation height between floor and air outlet $H \geq 4$ m!
 Minimum spacing between two outlets $t_{min} = 3 \times DN$

Example of design:

- Supply air volume flow rate $\dot{V} = 7000$ l/s
- Required jet throw $W = 20$ m
- Max. perm. sound power level $L_{WA} = 60$ dB(A) ref. 10⁻¹² W
- Selected: Nominal size DN 400 with ring

From diagram DN 400:

- Air outlet volume flow rate $\dot{V}_A = 700$ l/s
- Number of air outlets $Z = 10$ units [from 1 : 5]
- Support jet volume flow rate $\dot{V}_S = 27\%$
- Sound power level $L_{WA} \approx 55$ dB(A) ref. 10⁻¹² W
- Total pressure loss $\Delta p_t \approx 110$ Pa



Swivel jet outlet Nomogram

\dot{V}_A = Air outlet volume flow rate
 \dot{V}_S = Support jet volume flow rate

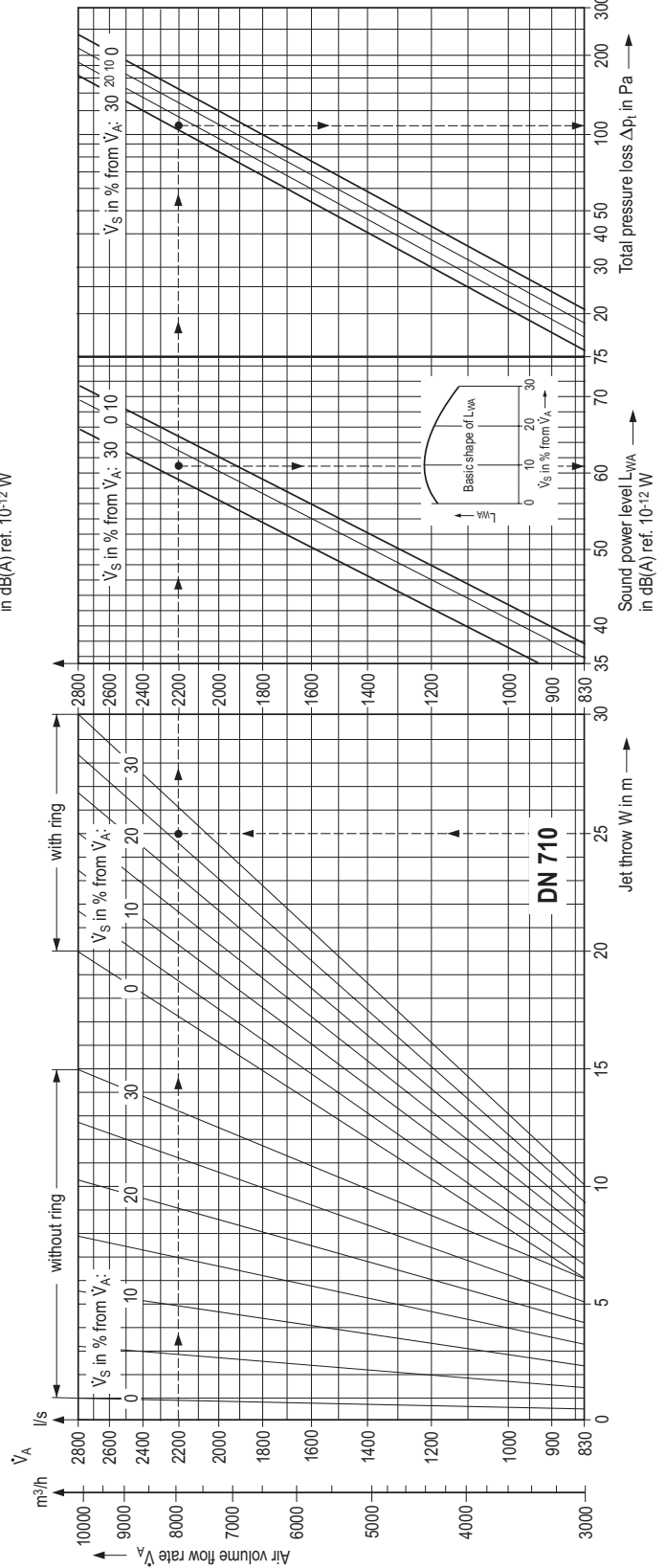
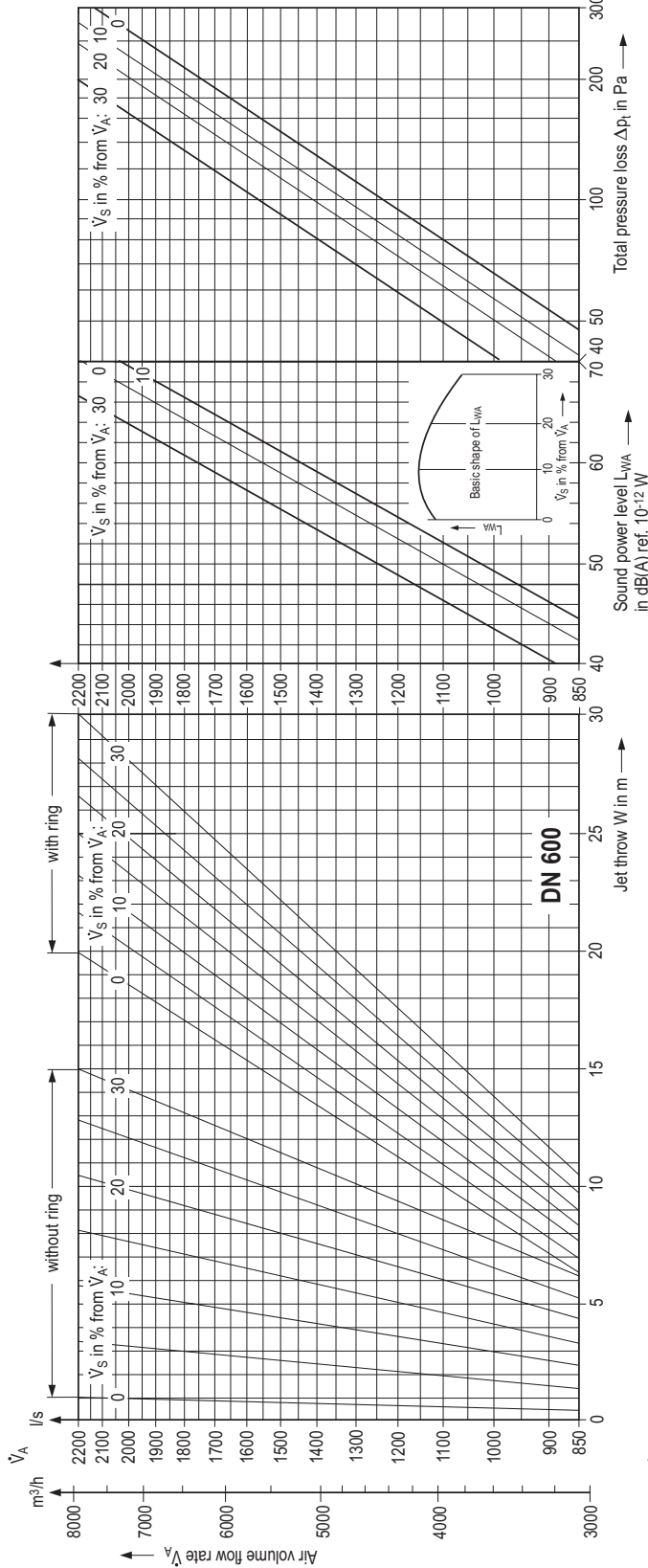
Installation height between floor and air outlet $H \geq 4$ m!
 Minimum spacing between two outlets $t_{min} = 3 \times DN$

Example of design:

- Supply air volume flow rate $\dot{V} = 13$ 200 l/s
- Required jet throw $W = 25$ m
- Max. perm. sound power level $L_{WA} = 65$ dB(A) ref. 10⁻¹² W
- Selected: Nominal size DN 710 with ring

From diagram DN 710:

- Air outlet volume flow rate $\dot{V}_A = 2$ 200 l/s
- Number of air outlets $Z = 6$ units [from 1 : 5]
- Support jet volume flow rate $\dot{V}_S = 26$ %
- Sound power level $L_{WA} \approx 61$ dB(A) ref. 10⁻¹² W
- Total pressure loss $\Delta p_t \approx 110$ Pa



Swivel jet outlet

Sound power level and pressure loss

Air outlet volume flow rate		Support jet volume flow rate \dot{V}_S % from \dot{V}_A	Total pressure loss Δp_t Pa	Sound power level L_W in dB ref. 10^{-12} W						
\dot{V}_A l/s	\dot{V}_A m ³ /h			L_{WA} dB(A)	Octave centre band frequency in Hz					
					125	250	500	1000	2000	4000
DN 315										
125	450	10	11	23	30	26	17	16	—	—
		30	7	17	22	17	15	—	—	—
220	800	10	33	38	41	37	37	34	25	20
		30	26	32	38	32	32	27	20	—
330	1200	10	73	49	50	52	48	44	38	30
		30	58	43	46	42	40	40	34	28
440	1600	10	130	57	57	55	54	53	46	40
		30	100	52	52	53	51	46	41	33
550	2000	10	200	63	58	63	61	57	54	47
		30	160	57	56	56	55	50	49	43
DN 400										
280	1000	10	23	32	43	35	30	25	19	12
		30	16	28	38	32	26	22	15	10
420	1500	10	48	44	49	45	43	37	28	21
		30	35	39	48	41	37	32	22	17
550	2000	10	86	52	51	52	50	47	40	32
		30	64	47	49	46	47	44	36	28
690	2500	10	135	58	57	55	56	53	48	42
		30	100	53	52	53	51	47	41	33
830	3000	10	195	63	58	63	61	57	54	47
		30	145	59	56	56	57	53	49	43
DN 600										
550	2000	10	18	33	43	35	30	25	19	—
		30	12	28	36	32	26	21	15	—
1000	3500	10	52	49	48	46	47	46	38	30
		30	38	43	49	41	42	38	33	27
1400	5000	10	110	59	56	54	57	54	52	46
		30	77	53	56	51	52	48	44	38
1800	6500	10	205	68	61	66	67	61	59	55
		30	130	60	57	58	59	54	52	48
2200	8000	10	280	72	66	69	72	65	63	60
		30	200	66	64	65	65	60	58	54
DN 710										
830	3000	10	20	37	47	40	36	30	22	18
		30	16	32	42	35	31	25	18	12
1400	5000	10	54	51	50	48	49	47	40	32
		30	42	46	52	45	45	42	36	29
1950	7000	10	105	61	58	56	59	56	54	47
		30	82	56	57	53	54	50	46	40
2500	9000	10	170	68	61	66	66	61	59	55
		30	140	63	60	61	62	57	56	50
3050	11000	10	260	74	67	70	72	66	64	62
		30	200	68	65	66	68	62	60	56

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



Swivel jet outlet with ring and servomotor installed in a wall tile with tripod for presentation purposes; air outlet swivelled upward.

Features

- Turbulent mixing air flow
- For wall or pillar attachment
- Jet direction adjustable in horizontal plane by $\pm 20^\circ$
- Adjustment manual or with servomotor
- Throw adjustable by opening or closing the core tube and with ring
- 4 sizes from DN 315 to DN 710
- Volume flow rate range 110 – 2800 l/s (400 – 10 000 m³/h)
- Discharge height 4 m to 6 m
- Throw up to 30 m
- Even temperature gradient in the hall
- Maximum temperature difference between supply air and indoor air: when cooling: -10 K, when heating: +6 K
- Connection at side of supply air duct or with connection box

Type code

SW – DN ___ – ___ – ___

|
Swivel jet outlet

|
Size

|
Ring

|
Adjustment

Size

DN 315, 400, 600, 710

Ring

R = With ring
O = Without ring

Adjustment

M = Manual
E = With electrical servomotor

Tender text

..... units

Swivel jet outlet

for air distribution in large halls, placement in wall and pillar zone, with high-induction radial air jets and adjustable support jet for optimum adjustment of throw, consisting of:

outer cylinder and core tube with interjacent twist vanes, perforated metal sheet for even supply air distribution and sufficient support jet volume flow rate,

ring at air discharge side to raise jet throw,

valve disk for support jet regulation by hand,

elastic collar for airtight connection between air outlet and installation opening,

swivel mechanism to alter jet direction in the vertical plane by $\pm 20^\circ$,

manual.

with electric servomotor.

Technical data:

Volume flow rate: l/s (m³/h)

Nominal diameter: DN

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

Material:

Air outlet: Aluminium

Swivel mechanism: Steel, painted

Elastic collar: Airtight, gray polyester fabric, temperature-resistant up to 80°C

Colour of visible part: RAL¹⁾

Make: KRANTZ KOMPONENTEN

Type: SW – DN ___ – ___ – ___

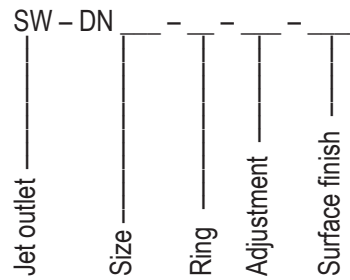
Subject to technical alterations!

¹⁾ without collar, flange in identical colour powder-coated



Swivel jet outlet

Type code



Size

- 315 = DN 315
- 400 = DN 400
- 600 = DN 600
- 710 = DN 710

Ring

- O = without ring
- R = with ring

Adjustment

- MA = manual
- E10 = „Belimo servomotor, 0-10 V modulation“, rotation drive type SM24A-SR
- E11 = „Belimo servomotor, 3-point type, 24 V“, rotation drive type SM24A
- E12 = „Belimo servomotor, 3-point type, 230 V“, rotation drive type SM230A
- E16 = „Siemens servomotor, 0-10 V modulation“, rotation drive type GBB163.1E
- E17 = „Siemens servomotor, 3-point type, 24 V“, rotation drive type GBB131.1E
- E18 = „Siemens servomotor, 3-point type, 230 V“, rotation drive type GBB331.1E

Surface finish ¹⁾

- = Face painted to RAL

Subject to technical alteration

¹⁾ without collar