

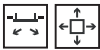
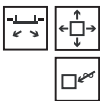
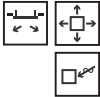
Ceiling diffusers - visible



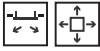
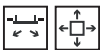
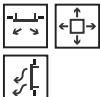
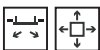
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Ceiling diffusers - visible

Ceiling diffusers for visible mounting

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Industrial diffusers

	Product	Functions	Page
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Ceiling diffusers - visible



PCS, Dahlerup's Packhus, converted warehouse, Copenhagen

Usage

Visible diffusers are normally used, where a suspended ceiling is not in place to hide the airduct systems and plenum boxes.

The diffusers normally function by the mixed ventilation principle, and are used typically in office environments, canteens, schools or similar rooms, for comfort ventilation. In rooms with different and variable loads, the PCS and LCS can be motorized in order to achieve the possibility of VAV-function, and consequently the ability to vary the air flow / volume and achieve an individual regulation of the ventilation in the room.

Function

The diffusers PCS, LCS and DCS are designed for visible mounting and fulfill most requirements of design and function. The diffusers have integrated plenum boxes with built-in dampers and measuring devices. As standard products the diffusers are available in circular design with a sideconnection painted in RAL 9010 gloss 30.



PCS, perforated ceiling diffuser

Ceiling diffusers - visible

Design

See [Comfort and Design](#)

Function

Supp./exhau.

Size

Motor

Accessories

Box

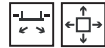
See [Product pages](#)

Product

Nozzle diffuser

mm

DCS

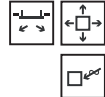
100
125
160
200
250
315

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●					
●					
●					
●					
●					

Plain diffuser

mm

LCS

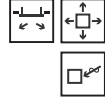
125
160
200
250
315

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●	●				
●	●				
●	●				
●	●				
●	●				

Perforated diffuser

mm

PCS

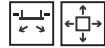
125
160
200
250
315

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●	●				
●	●				
●	●				
●	●				
●	●				

Swirl diffuser

mm

RCW

250
315
400
500
630

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●	●	●		●	●
●	●	●		●	●
●	●	●		●	●
●	●	●		●	●
●	●	●		●	●

Swirl diffuser

mm

RCWB

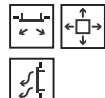
250
315
400
500
630

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●	●	●			
●	●	●			
●	●	●			
●	●	●			
●	●	●			

Perforated diffuser

mm

HLD

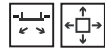
250
315
400
500
630

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●	●		●		
●	●		●		
●	●		●		
●	●		●		
●	●		●		

Multicone diffuser

mm

FKD

160
200
250
315
355
400
450
500
630

Manual	Electric motor	Thermal actuator	Mounting bracket	Moduleplate	MBB
●				●	●
●				●	●
●				●	●
●				●	●
●				●	●
●				●	●
●				●	●
●				●	●
●				●	●

- 1. Product and tech. data depicted in catalogue.
- 2. Combination possible. Tech. data depicted in catalogue.
- 3. Combination possible. Tech. data not in catalogue.
- 4. If space is empty, combination is not possible.

Nozzle diffuser

DCS



Description

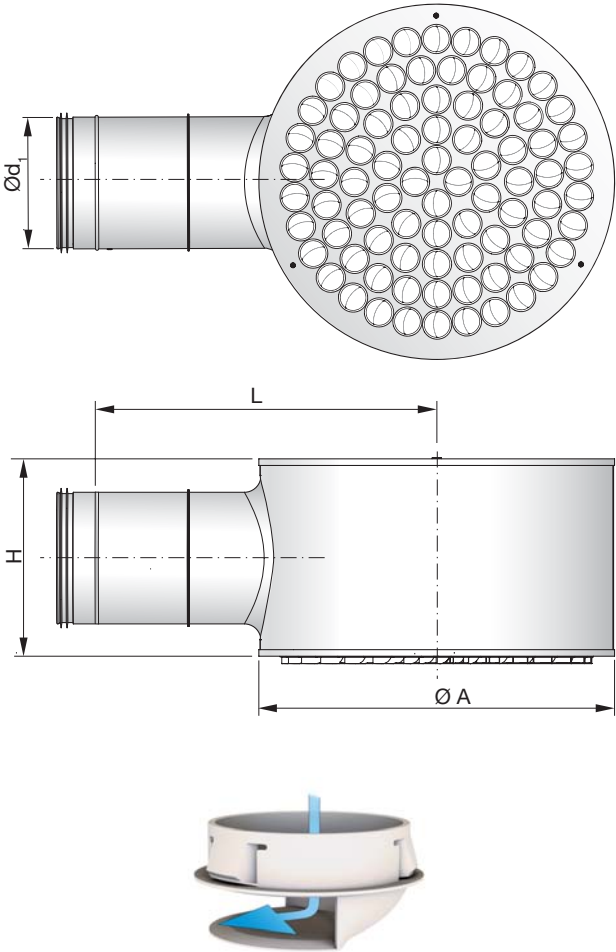
DCS is a circular diffuser with integrated box for visible installation. The diffuser is equipped with individually adjustable nozzles. The diffuser has an built-in damper and a measuring device for individual adjustment. DCS is equipped with a threaded rod at the top for attaching the diffuser. The diffuser is suitable for the horizontal supply of cooled air, where great flexibility in the dispersal pattern is required.

- Individually adjustable nozzles
- Supplied with integrated rivet nut for suspension
- Detachable damper for cleaning of duct

Maintenance

The face plate can be detached and the damper removed to enable cleaning of the internal parts or the duct. The visible parts of the diffuser can be wiped with a damp cloth.

Dimensions



Ød ₁ Size mm	ØA mm	Ød ₁ mm	L mm	H mm	Weight kg
100	300	100	365	200	3,1
125	360	125	395	215	4,0
160	460	160	470	260	5,2
200	540	200	545	300	7,7
250	680	250	645	350	10,5
315	680	315	685	420	10,8

Order code

Product	DCS	aaa	A
Type	DCS		
Duct connection Ød ₁	Ø100-315		
Version	A		

Example: DCS-200-A

Materials and finish

Material: Galvanised steel
Nozzles: ABS Plastic, white
Standard finish: Powder-coated
Standard colour: White 9010, gloss 30

The diffuser is available in other colours. Please contact Lindab's sales department for further information.

Nozzle diffuser

DCS

Technical data

Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0.2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$

K_{ok} values are specified in charts beneath the diagrams on the following pages

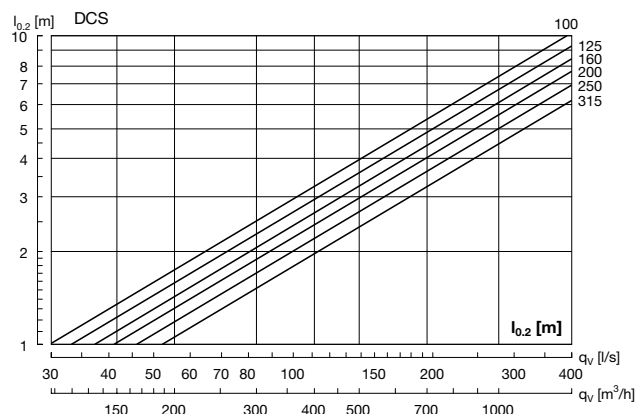
Quick selection

Supply air

DCS Ød ₁ mm	Minimum P _i =5 Pa		p _t = 50 Pa L _{WA} =30 dB(A)		p _t = 50 Pa L _{WA} =35 dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
100	9	33	15	52	34	123
125	15	53	29	105	42	150
160	25	91	44	157	65	233
200	40	145	63	225	95	340
250	67	241	-	-	115	416
315	112	402	-	-	166	596

Throw $l_{0.2}$

The throw is specified at a speed of 0.2 m/s.



Sound attenuation

Sound attenuation of the diffusers ΔL from duct to room, including end reflection, see table below

DCS Ød ₁ mm	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
100	14	9	6	17	14	11	9	16
125	16	11	5	14	12	9	10	16
160	14	10	5	16	10	9	9	14
200	11	7	7	13	8	7	9	14
250	11	7	9	9	7	7	10	14
315	9	6	11	9	6	8	10	14

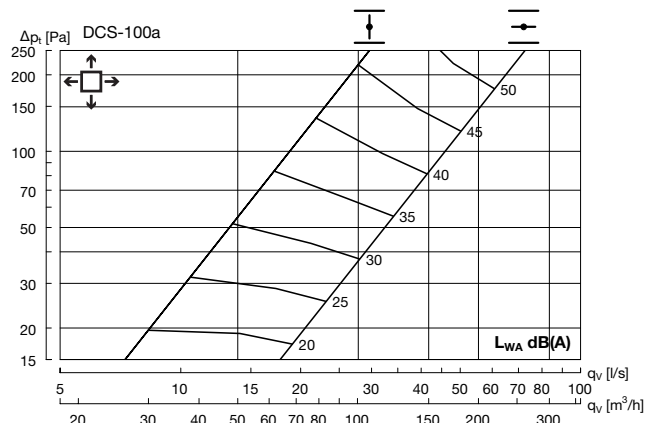
Balancing

Balancing data is contained in a separate brochure.

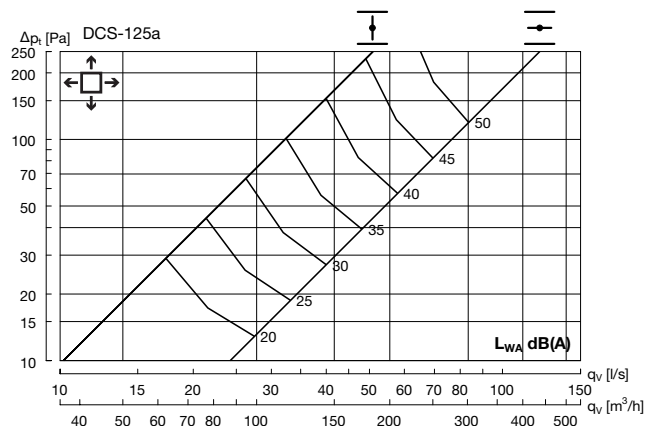
Nozzle diffuser

DCS

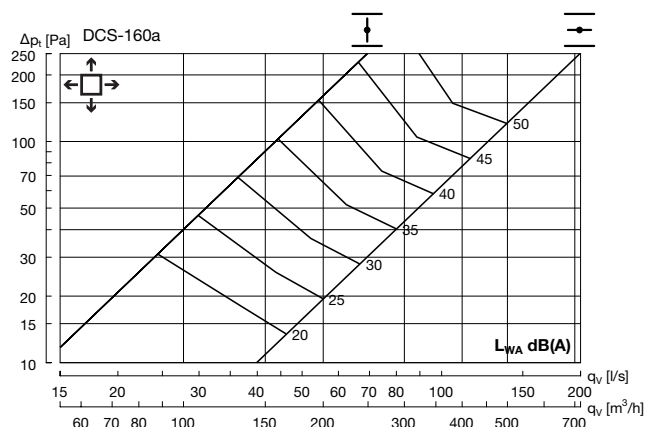
Technical data



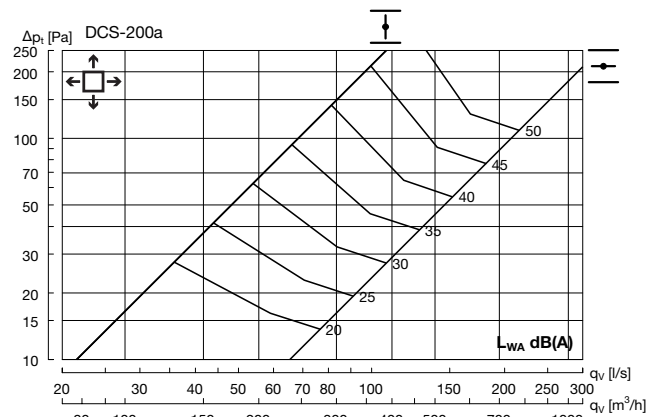
Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	7	4	5	-5	-7	-10	-14	-18



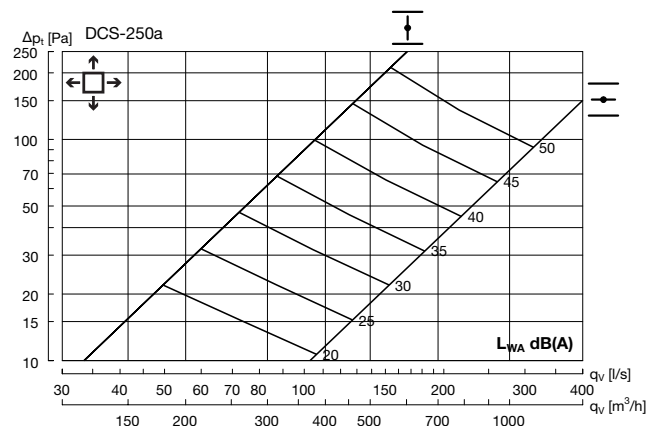
Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	7	4	4	-4	-7	-9	-14	-20



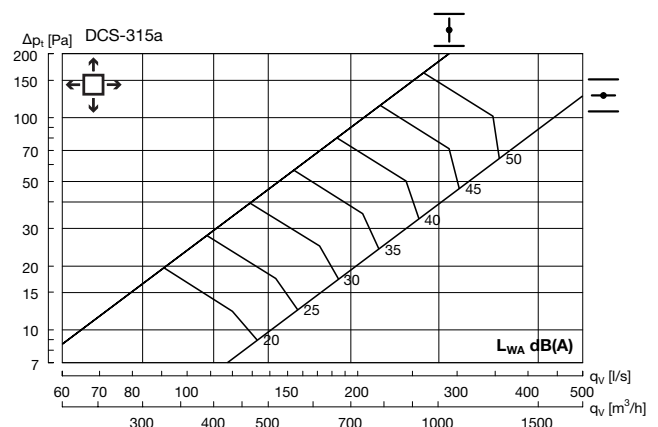
Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	11	8	3	-5	-6	-10	-17	-19



Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	11	8	1	-4	-6	-10	-15	-16



Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	11	8	1	-5	-6	-10	-14	-16



Hz	63	125	250	500	1K	2K	4K	8K
K _{ok}	9	6	1	-2	-6	-13	-16	-16

Plain diffuser

LCS



Description

LCS is a circular diffuser with integrated box for visible installation. The diffuser has an unperforated face plate and can be used for both supply and exhaust air.

The diffuser has a built-in damper and a measuring device for individual adjustment. LCS is equipped with a threaded rod at the top for suspending the diffuser.

The diffuser is suitable for the horizontal supply of cooled air, where high impulse is required.

- Can be used for both supply and exhaust air.
- Can be connected regardless of straight ducting before the diffuser
- Supplied with integrated rivet nut for suspension
- Detachable damper for cleaning of duct
- High impulse

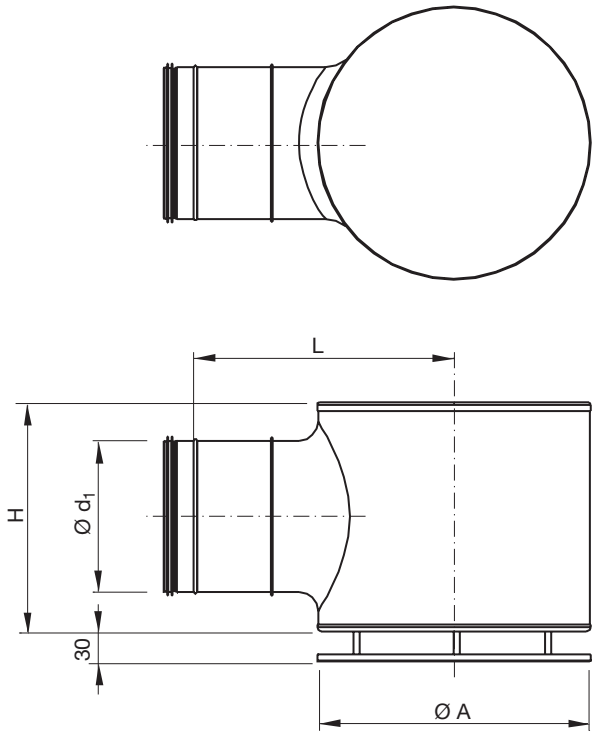
Maintenance

The face plate can be detached and the damper removed to enable cleaning of the internal parts or the duct. The visible parts of the diffuser can be wiped with a damp cloth.

Order code

Product	LCS	bbb	A
Type			
Size			
Version			

Dimensions



Ød ₁ Size	ØA mm	Ød ₁ mm	L mm	H mm	Weight kg
125	240	125	340	215	3,4
160	300	160	372	260	4,6
200	360	200	415	300	6,90
250	460	250	445	350	9,6
315	540	315	445	420	11,4

Materials and finish

Material: Galvanised steel
Standard finish: Powder-coated
Standard colour: White, RAL 9010, gloss 30

The diffuser is available in other colours. Please contact Lindab's sales department for further information.

Plain diffuser

LCS

Technical data

Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0.2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$. K_{ok} values are given in charts beneath the diagrams on the following pages.

Quick selection

Supply air

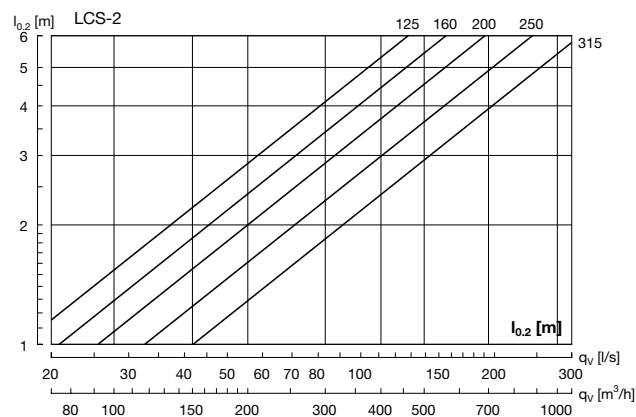
Size	Minimum $P_i=5$ Pa		$p_t=50$ Pa $L_{WA}=30$ dB(A)		$p_t=50$ Pa $L_{WA}=35$ dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125	18	65	33	119	42	151
160	30	108	53	191	63	227
200	44	158	68	245	84	302
250	69	248	105	378	132	475
315	88	317	-	-	181	652

Exhaust

Size	Minimum $P_i=5$ Pa		$P_t=50$ Pa $L_{WA}= 30$ dB(A)		$P_t=50$ Pa $L_{WA}= 35$ dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125	18	66	33	117	43	156
160	30	107	43	156	65	235
200	44	157	67	242	101	362
250	69	248	125	448	147	530
315	88	316	151	543	186	668

Throw $l_{0.2}$

The throw is specified at a terminal velocity of 0.2 m/s.



Sound attenuation

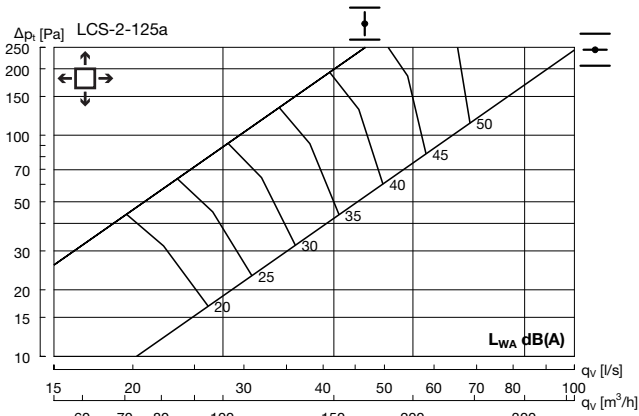
Sound attenuation of the diffusers ΔL from duct to room, including end reflection, see table below

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
125	19	14	7	19	12	15	14	20
160	14	10	6	15	14	14	14	17
200	14	10	11	10	17	12	15	18
250	20	16	15	20	15	12	16	19
315	17	14	14	17	13	12	15	18

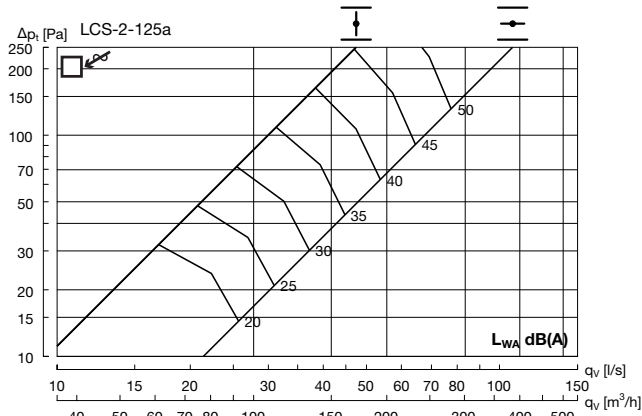
Plain diffuser

LCS

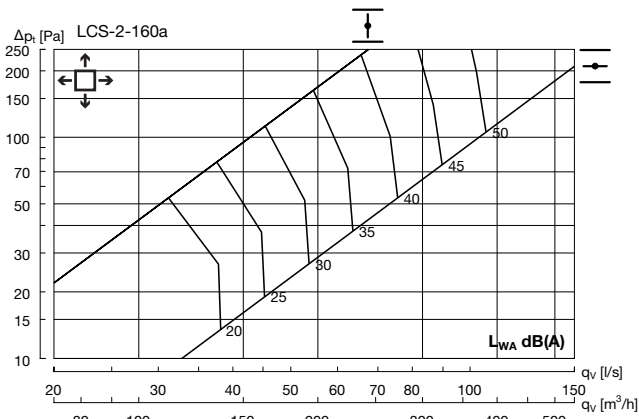
Technical data



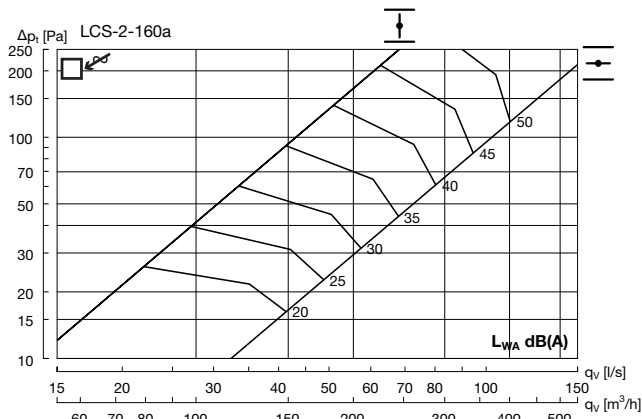
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	7	4	1	-3	-4	-12	-17	-17



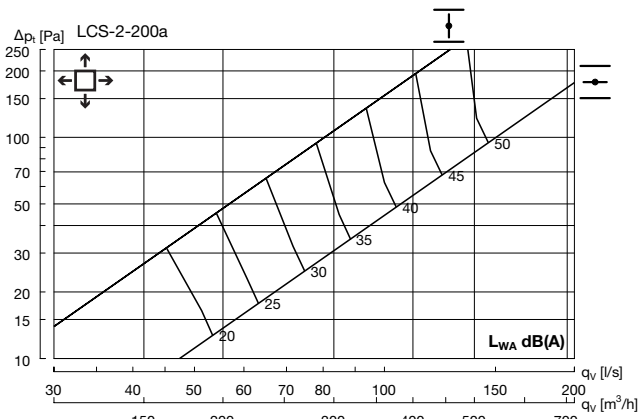
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	7	4	3	-4	-6	-11	-14	-16



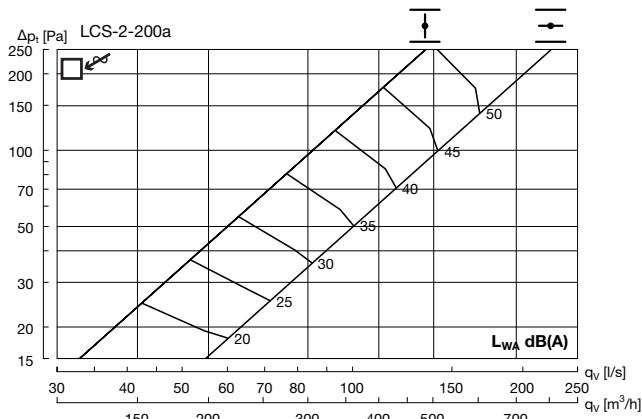
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	9	6	0	-2	-5	-12	-16	-16



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	10	7	2	-5	-6	-11	-14	-15



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	-2	-2	-4	-11	-19	-20

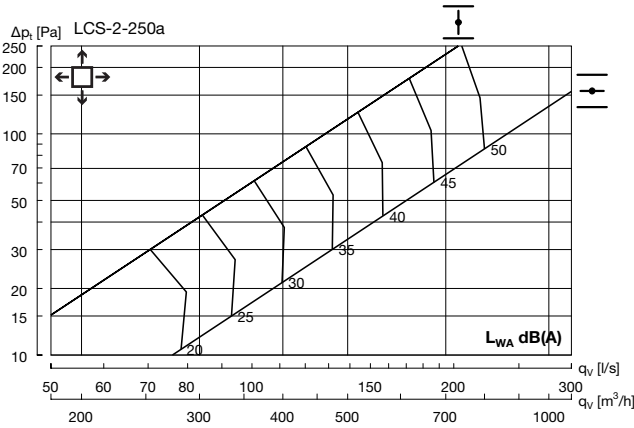


Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	7	3	-2	-3	-5	-9	-15	-20

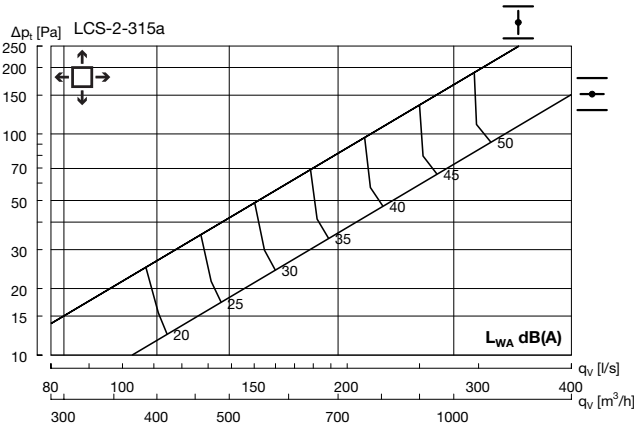
Plain diffuser

LCS

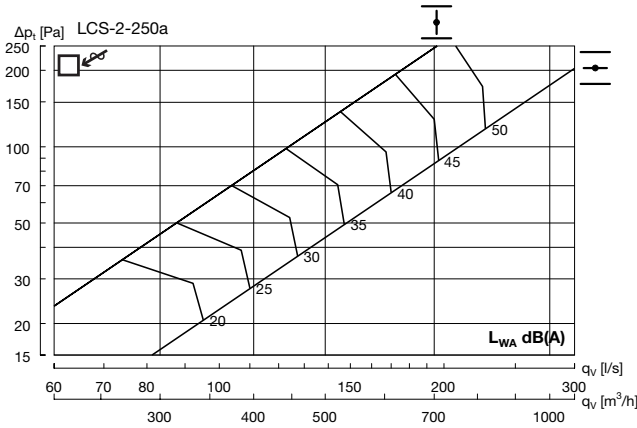
Technical data



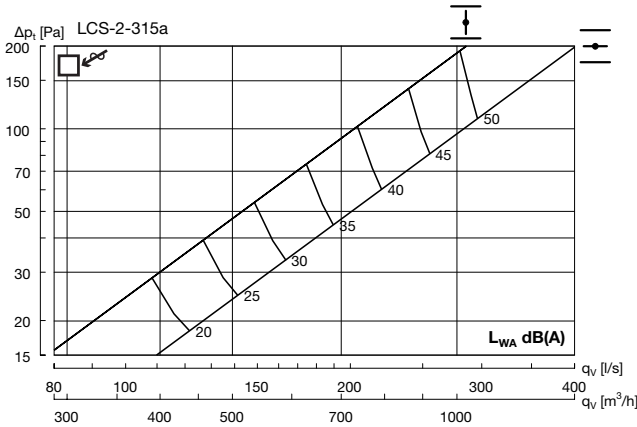
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	5	2	-3	-2	-4	-11	-18	-19



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	4	1	-3	-2	-3	-11	-19	-22



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	7	4	-1	-3	-5	-10	-15	-17



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	-1	-2	-4	-12	-19	-18

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

Perforated diffuser

PCS



Description

PCS is a circular diffuser with integrated box for visible installation. The diffuser has a perforated face plate and can be used for both supply and exhaust air.

The diffuser has a built-in damper and a measuring device for adjustment. PCS is equipped with a threaded rod at the top for suspending the diffuser.

The diffuser is suitable for the horizontal supply of cooled air.

- Can be used for both supply and exhaust air.
- Can be connected regardless of straight ducting before the diffuser
- Supplied with integrated rivet nut for suspension
- Detachable damper for cleaning of duct

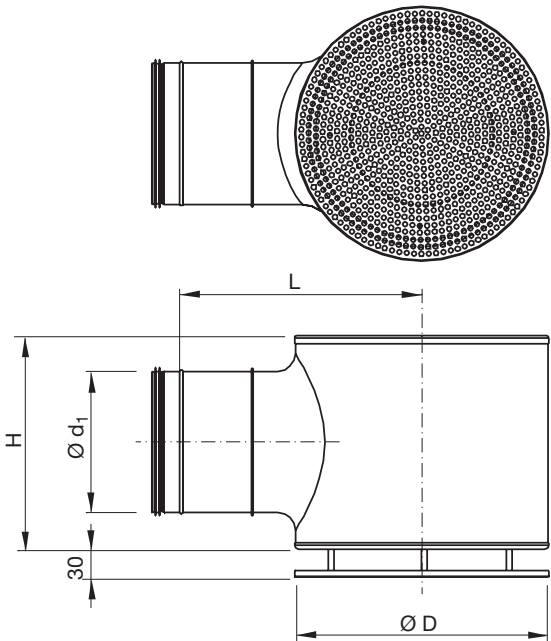
Maintenance

The face plate can be detached and the damper removed to enable cleaning of the internal parts or the duct. The visible parts of the diffuser can be wiped with a damp cloth.

Order code

Product	PCS 2	bbb	A
Type			
Size			
Version			

Dimensions



Size	ØD mm	Ød1 mm	L mm	H mm	Weight kg
125	240	125	340	215	3,4
160	300	160	372	260	4,6
200	360	200	415	300	6,9
250	460	250	445	350	9,6
315	540	315	445	420	11,4

Materials and finish

Material:	Galvanised steel
Standard finish:	Powder-coated
Standard colour:	White, RAL 9010, gloss 30

The diffuser is available in other colours. Please contact Lindab's sales department for further information.

Perforated diffuser

PCS

Technical data

Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0.2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$. K_{ok} values are specified in charts beneath the diagrams on the following pages.

Quick selection

Supply air

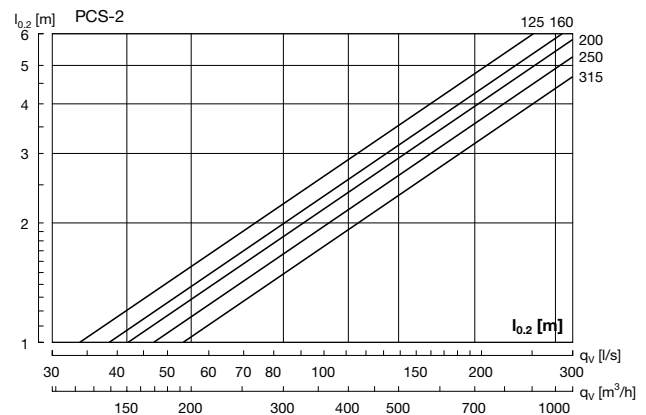
Size	Minimum $P_i=5$ Pa		$p_t=50$ Pa $L_{WA}=30$ dB(A)		$p_t=50$ Pa $L_{WA}=35$ dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125	20	73	30	106	36	131
160	34	122	48	173	59	212
200	53	190	65	235	81	292
250	79	286	109	393	135	484
315	121	437	-	-	188	675

Exhaust

Size	Minimum $P_i=5$ Pa		$P_t=50$ Pa $L_{WA}= 30$ dB(A)		$P_t=50$ Pa $L_{WA}= 35$ dB(A)	
	l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125	20	73	29	104	43	156
160	34	122	32	117	62	222
200	53	190	63	225	104	376
250	79	286	109	391	146	525
315	121	437	-	-	191	687

Throw $l_{0.2}$

The throw is specified at a terminal velocity of 0.2 m/s.



Sound attenuation

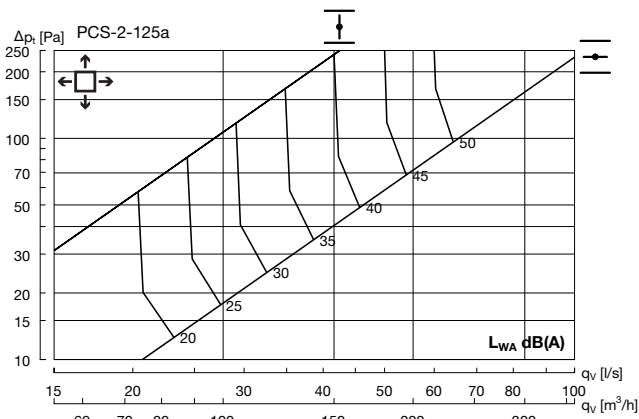
Sound attenuation of the diffusers ΔL from duct to room, including end reflection, see table below.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
125	21	16	6	19	14	12	11	17
160	15	11	9	21	15	12	13	16
200	12	8	6	15	15	9	11	14
250	19	15	12	17	12	9	11	14
315	16	13	11	14	12	9	12	13

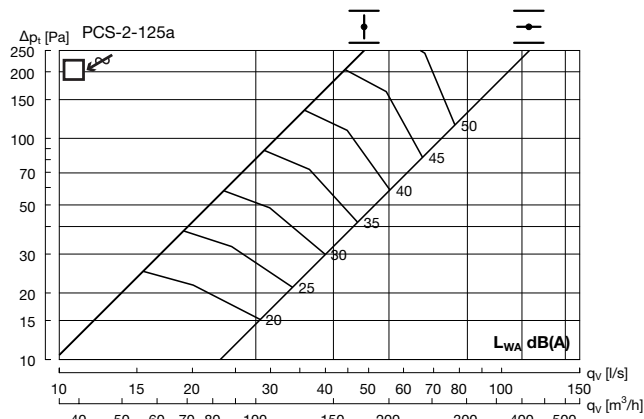
Perforated diffuser

PCS

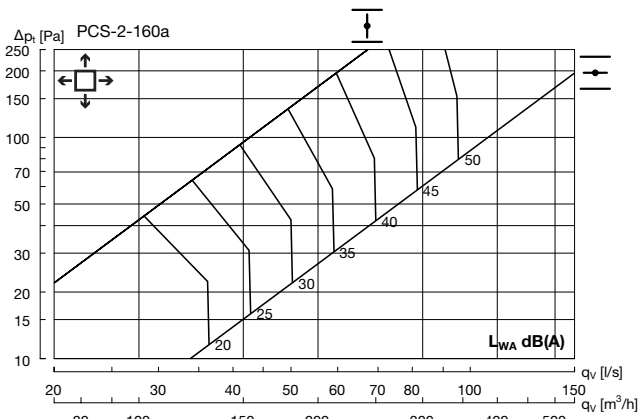
Technical data



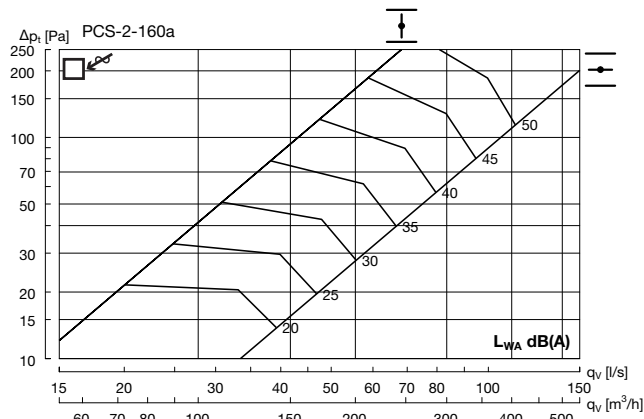
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	1	-4	-5	-10	-15	-17



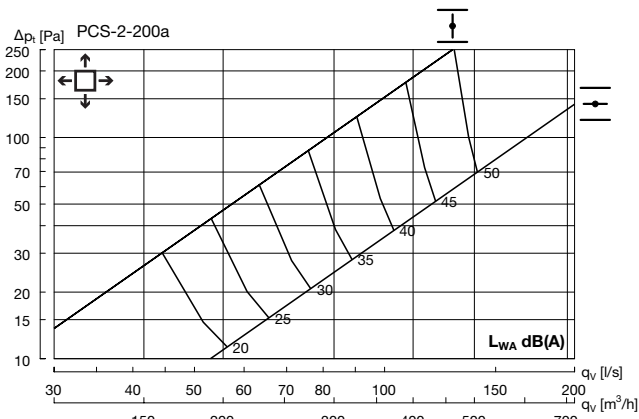
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	2	-3	-6	-10	-13	-16



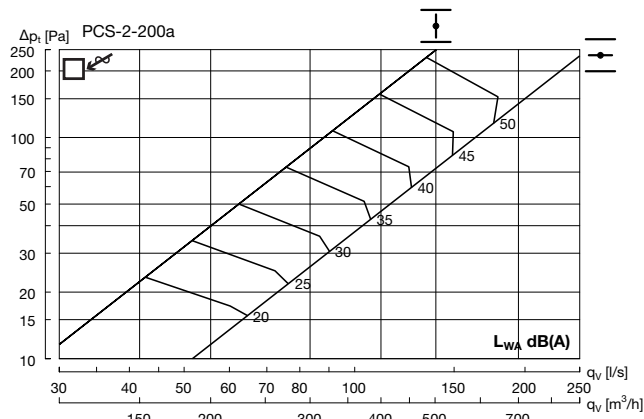
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	-1	-4	-5	-9	-16	-17



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	5	2	0	-6	-5	-8	-13	-18



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	3	0	-2	-3	-4	-9	-17	-19

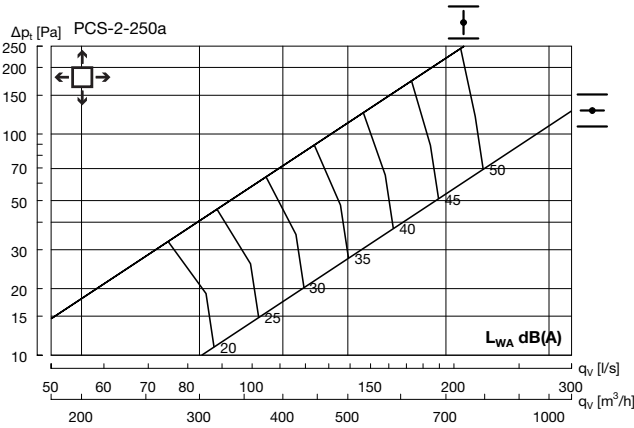


Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	7	4	-1	-3	-4	-9	-15	-19

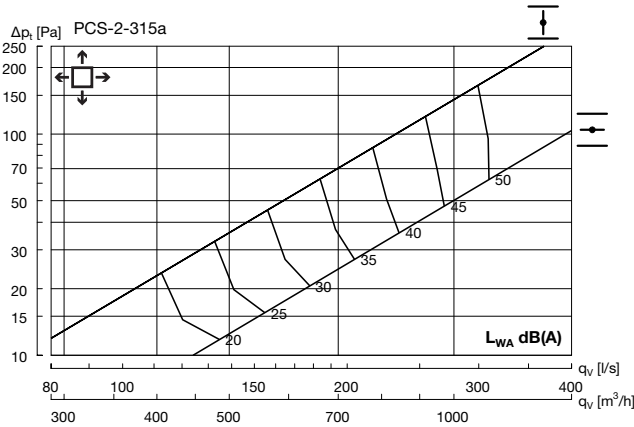
Perforated diffuser

PCS

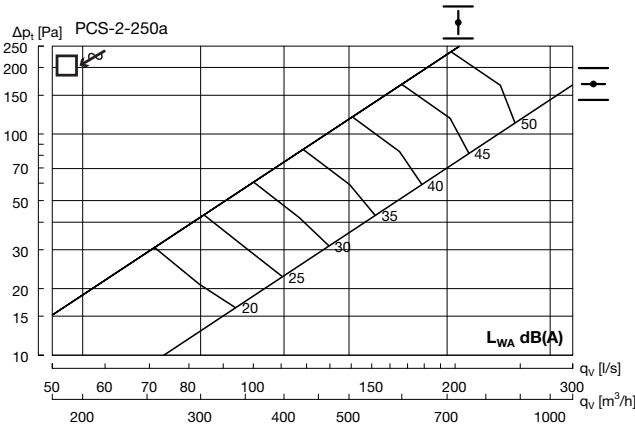
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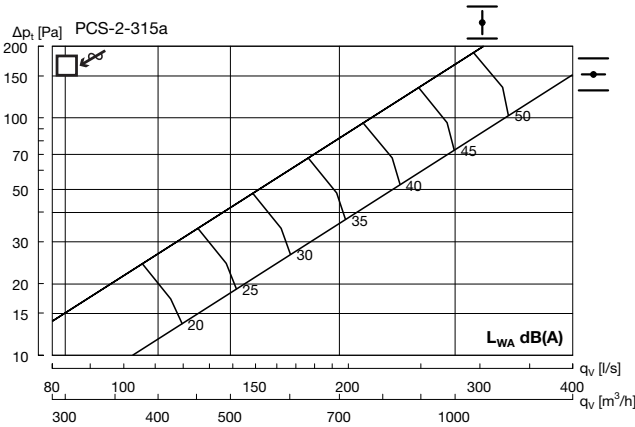
Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	4	1	-3	-3	-4	-9	-17	-18



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	5	2	-2	-1	-5	-11	-17	-16



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	8	5	-2	-3	-5	-9	-14	-16



Hz	63	125	250	500	1K	2K	4K	8K
K_{ok}	6	3	-4	-3	-4	-8	-16	-22

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Ceiling diffusers - visible



HLD, DSB, Aarhus.

Usage

For ventilation of larger rooms in industry, shopping malls, hangars, arenas and similar buildings, there will typically be a need for both heating and cooling. This makes demands on being able to vary the jet pattern from horizontal (cooling needs) to vertical (heating needs). This is in order to avoid too great a velocity in the occupied zone in the cooling situation, and that the air penetrates the occupied zone in the heating situation, so the greatest amount of efficiency is obtained.

Function

The diffusers have an adjustable jet pattern, which makes the diffusers suitable for both heating and cooling. The jet pattern can be adjusted manually or with several types of electric motors.

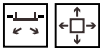
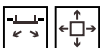
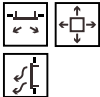
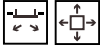
RCW/RCWB is available with a thermal actuator, where the jet pattern is adjustable in relation to the supply air temperature. This way costly electrical work for the individual diffusers is saved.



RCW, rotation diffuser

Ceiling diffusers - visible

Industrial diffusers

	Product	Functions	Page
	Introduction		307
		RCW 	309
		RCWB 	315
		HLD 	321
		FKD 	327

Swirl diffuser

RCW



Description

RCW is a rotation diffuser particularly suitable for rooms with a high ceiling.

The diffuser is equipped with adjustable blades, so the supply air pattern can be changed from vertical to horizontal.

The blade settings can be adjusted manually, or the function can be automated using various types of motor. RCW with manual blade adjustment is supplied as standard with a blade setting of 30°.

The motorized models are supplied as standard with a blade setting from 30° to 75°. In the motorized versions, RCW can be supplied with an electric on/off motor, a modulating motor or a thermal actuator, where the supply air pattern is changed in step with the supply air temperature

- Suitable for both cooling and heating
- Horizontal and vertical dispersal pattern
- High induction
- Can be supplied with an electric motor
- Can be supplied with a thermal actuator

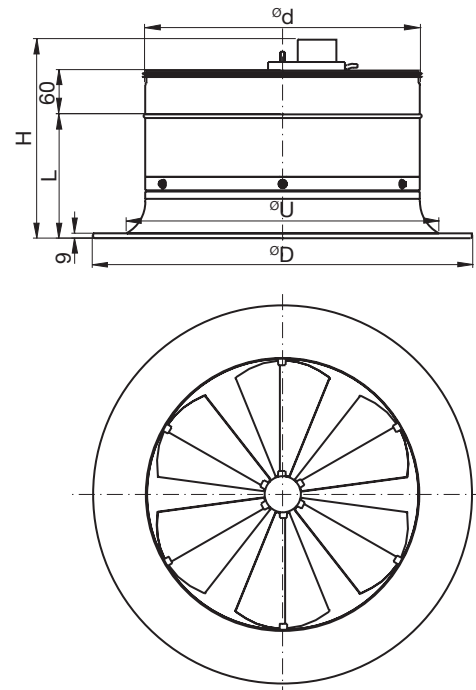
Maintenance

The visible parts of the diffuser can be wiped with a damp cloth. For other maintenance, see installation instructions.

Order code

Product Type	RCW	a	bbb	A
Manual	0			
Motorized - modulating	1			
Motorized- on/off	2			
Thermal actuator	3			
Size				
Version				

Dimensions



Ød Size	ØD mm	H mm	L mm	ØU mm	Weight * kg
250	360	240	143	285	2.40
315	460	267	168	365	3.10
400	560	292	178	450	4.40
500	670	341	226	570	6.80
630	870	391	273	740	9.90

* Motorized models weigh approx. 1 kg more than the weight stated in the table above.

Motor type

RCW-1 Ød	Motor
315-400	NM24A-MF-F
500-630	LH24A-MF60

RCW-2 Ød	Motor
250-400	NM24A-F
500-630	LH24A60

Materials and finish

Material: Aluminium & steel

Standard finish: Powder-coated

Standard colour: RAL 9010 Gloss 30

Available in other colours. Please contact Lindab's sales department for further information.

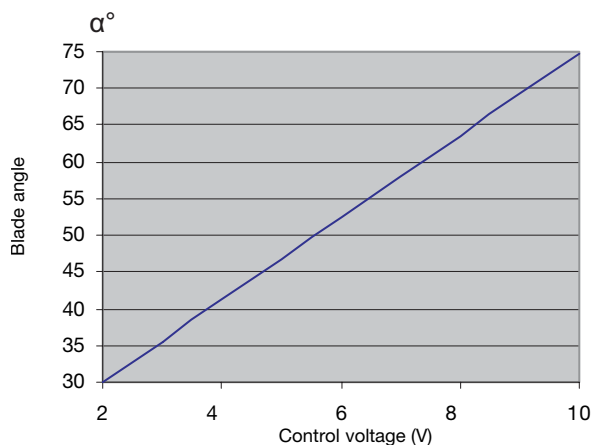
Other blade settings can be supplied on request.

Swirl diffuser

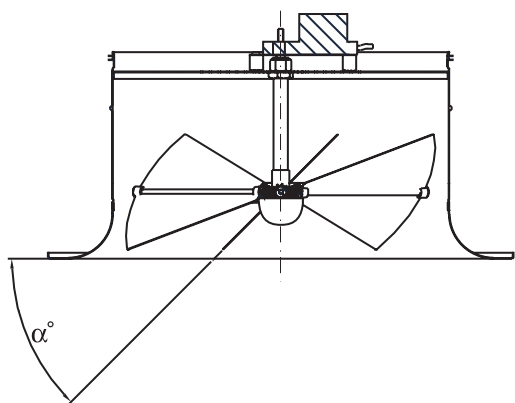
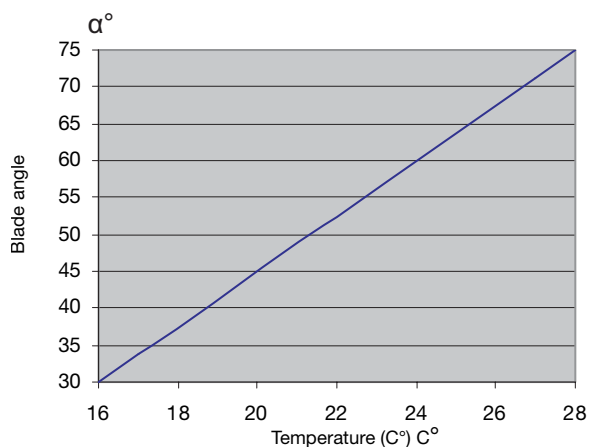
RCW

Technical data

RCW with electric modulating motor



RCW with thermal actuator



Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0,2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Throw $l_{0,2}$ / turning point $l_{0,0}$

Throw $l_{0,2}$ [m] can be seen in the diagrams for isothermal air at a speed of 0.2 m/s. Turning point $l_{0,0}$ [m] can be seen in the diagrams for heated air, +5 K, +10 K and +15 K respectively.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$. K_{ok} values are specified in charts beneath the diagrams on the following pages.

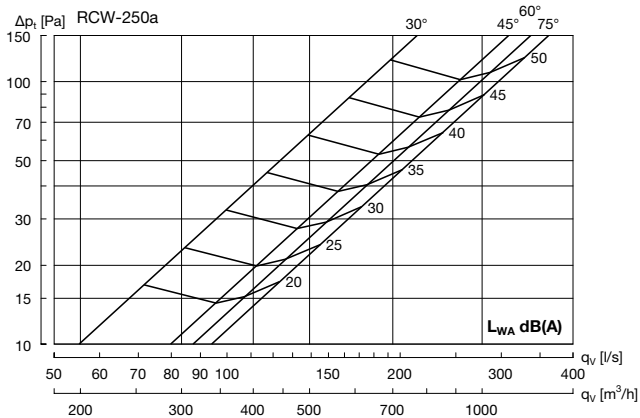
Quick selection

Size	Angle	q_v [l/s]	q_v [m ³ /h]	P_t [Pa]	$l_{0,2}$ isotherm [m]	$l_{0,0}$ +10K [m]
		$L_{WA} = 40$				
250	30°	138	498	63	10	
250	75°	138	498	22		5
315	30°	237	854	65	6	
315	75°	237	854	24		6
400	30°	361	1299	60	5	
400	75°	361	1299	22		6
500	30°	453	1630	52	5	
500	75°	453	1630	13		5
630	30°	818	2943	57	6	
630	75°	818	2943	17		7
$L_{WA} = 50$						
250	30°	192	692	121	13	
250	75°	192	692	42		7
315	30°	329	1183	124	8	
315	75°	329	1183	46		8
400	30°	513	1846	122	7	
400	75°	513	1846	44		8
500	30°	636	2290	103	6	
500	75°	636	2290	25		6
630	30°	1136	4088	110	8	
630	75°	1136	4088	32		9
$L_{WA} = 60$						
250	30°	267	962	234	18	
250	75°	267	962	81		10
315	30°	455	1638	238	10	
315	75°	455	1638	88		11
400	30°	729	2623	247	11	
400	75°	729	2623	89		12
500	30°	893	3216	203	8	
500	75°	893	3216	49		9
630	30°	1577	5679	213	11	
630	75°	1577	5679	62		12

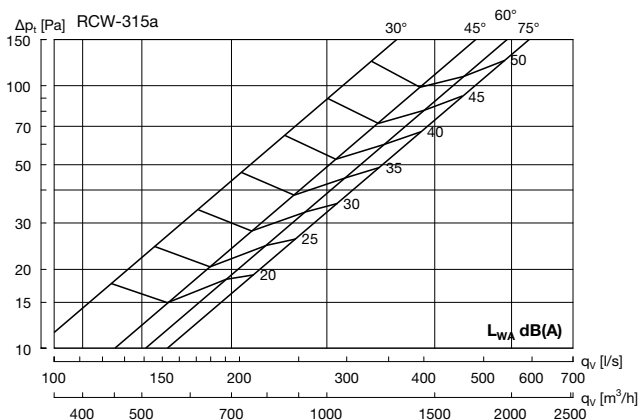
Swirl diffuser

RCW

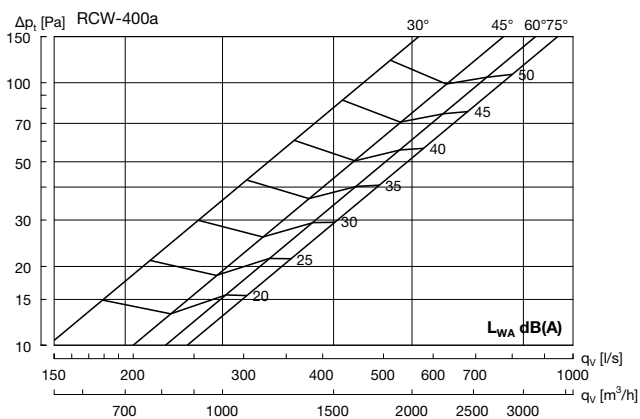
Technical data



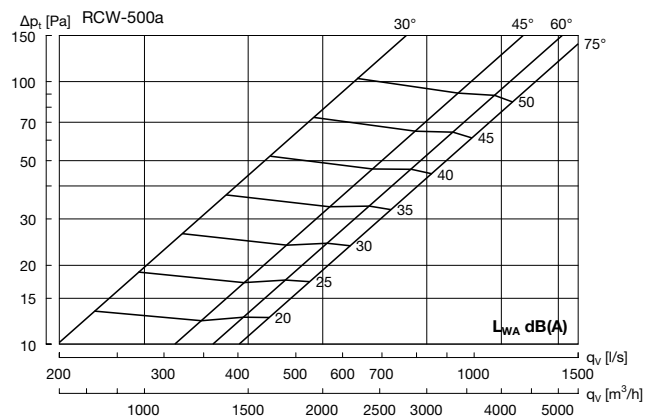
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	7	1	-2	-2	-4	-9	-18	-21



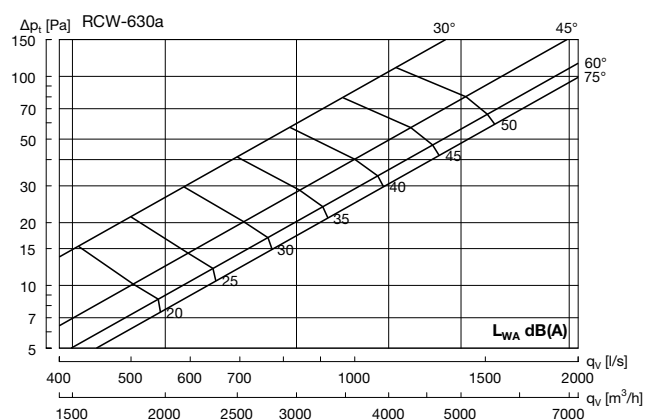
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	10	2	-1	-3	-4	-10	-17	-21



Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	12	1	-2	-2	-3	-13	-20	-23



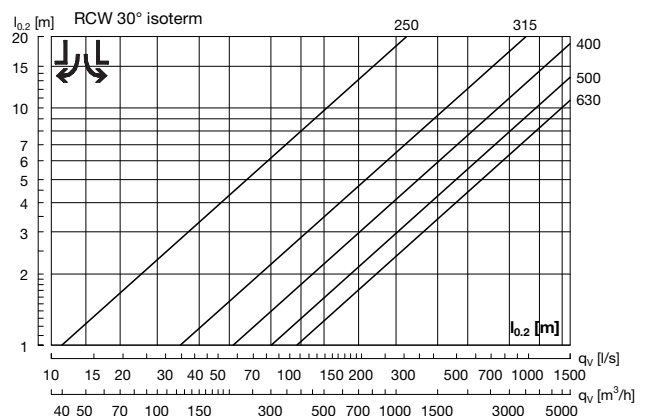
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	12	1	-2	-1	-4	-12	-20	-22



Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	15	5	0	-2	-5	-12	-18	-22

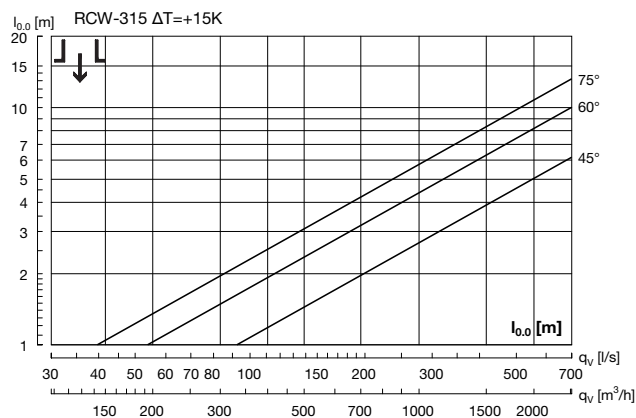
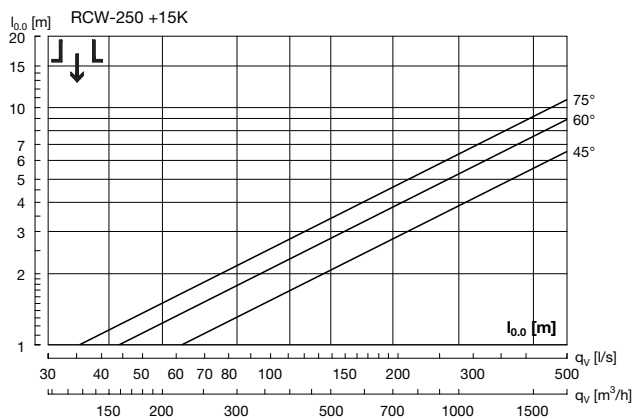
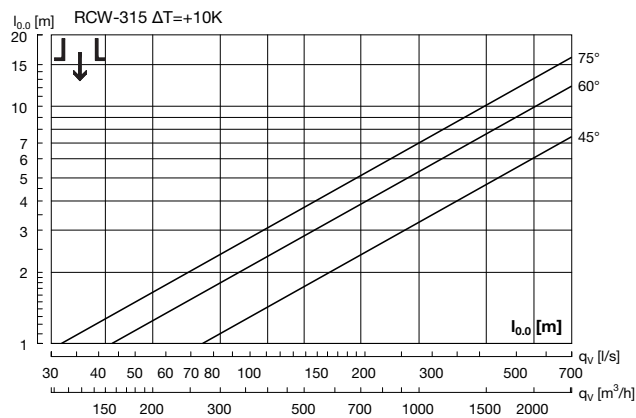
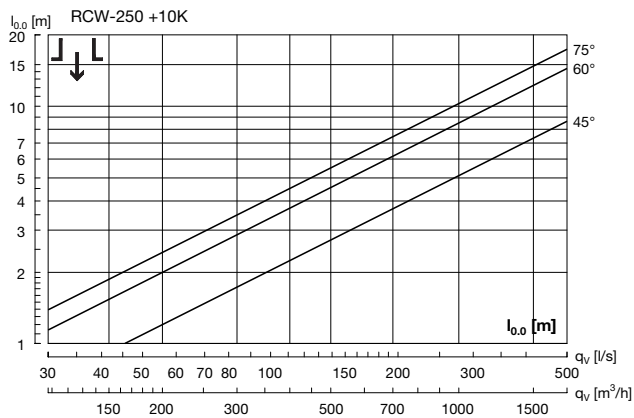
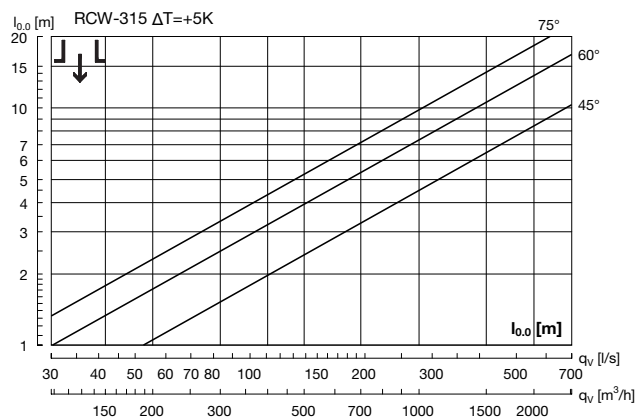
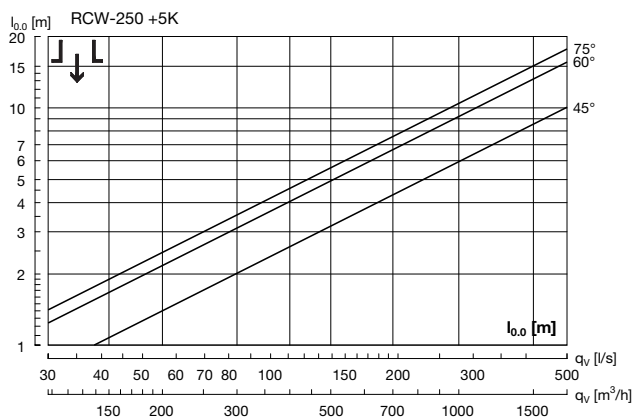
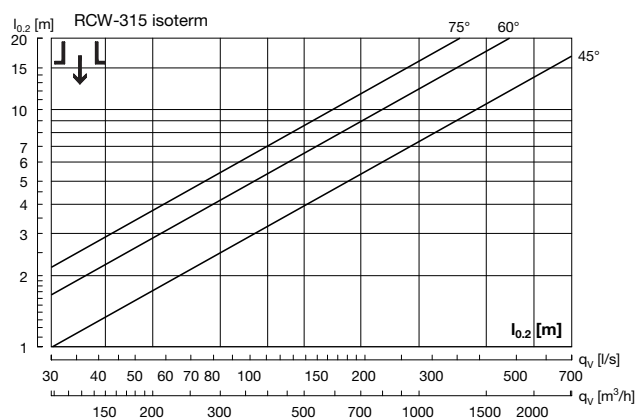
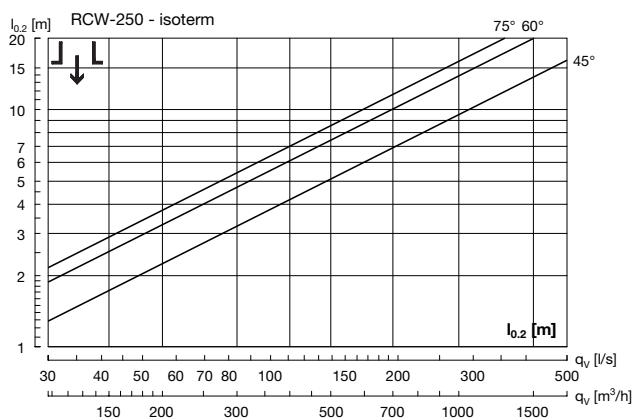
Throw $l_{0.2}$ horizontal

Horizontal throw $l_{0.2}$ is specified for free suspension. If the diffuser is installed < 300 mm from the ceiling, the value must be multiplied by 1.4.



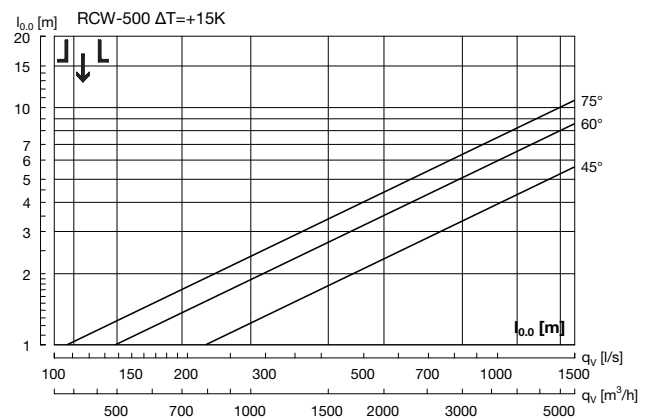
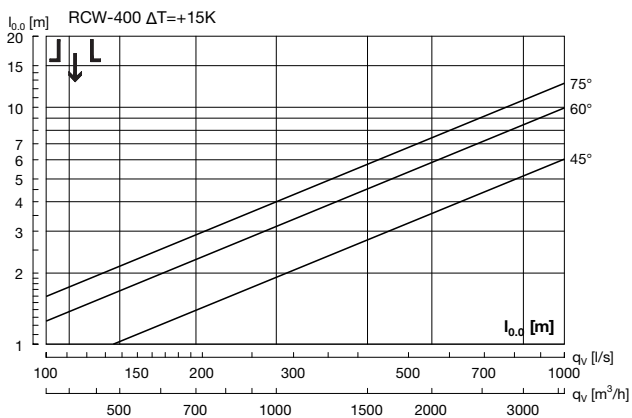
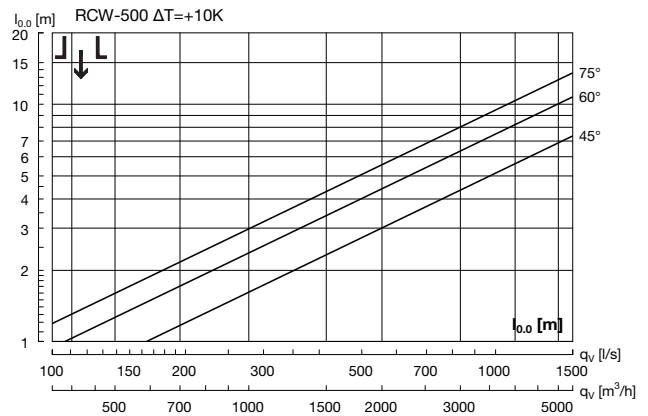
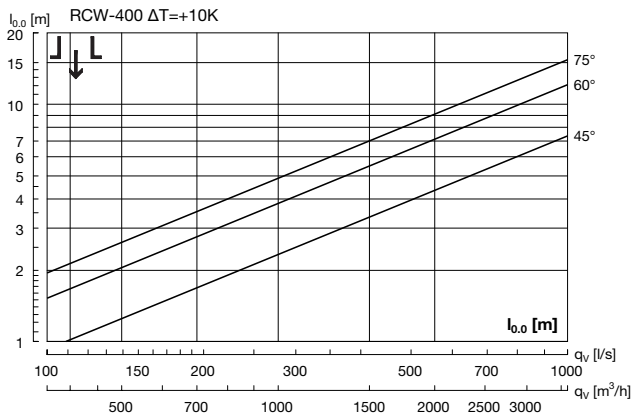
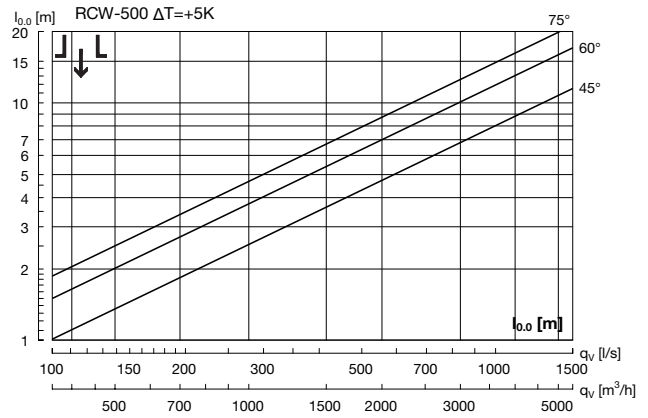
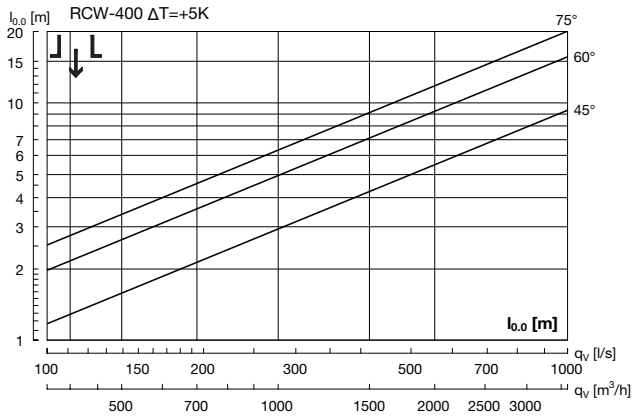
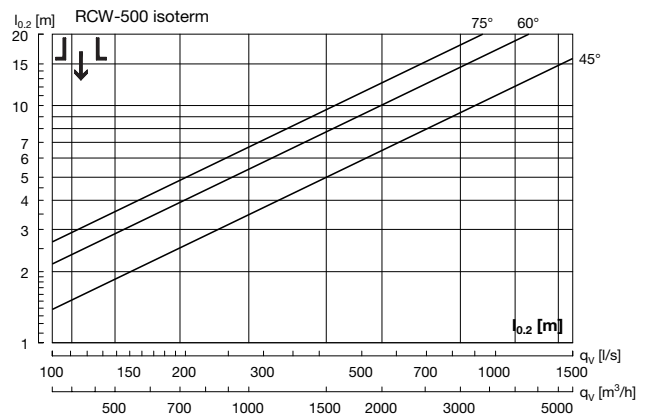
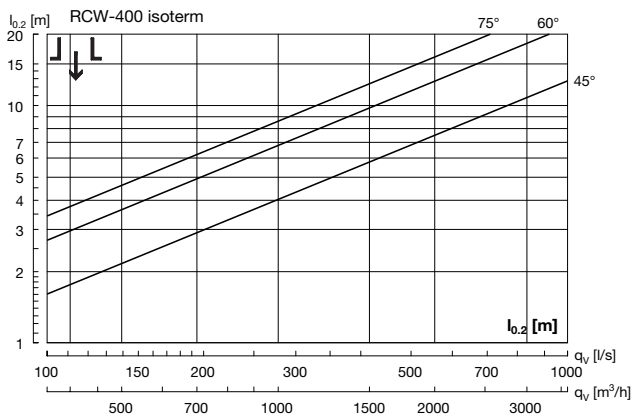
Swirl diffuser

RCW



Swirl diffuser

RCW



Swirl diffuser

RCW

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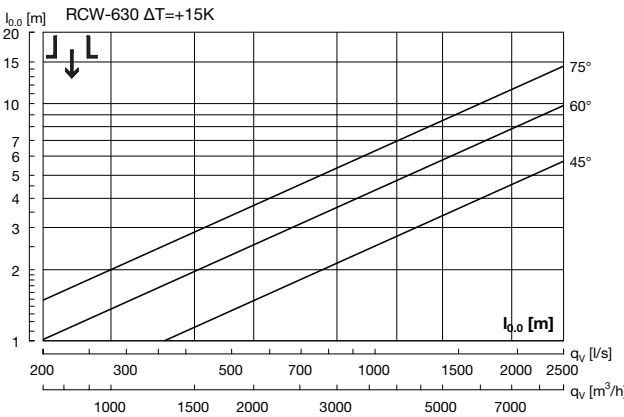
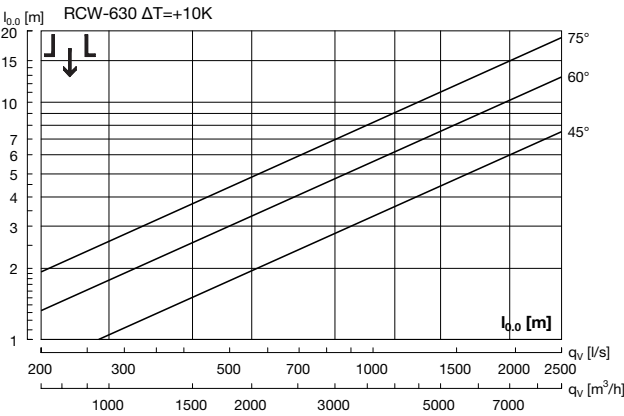
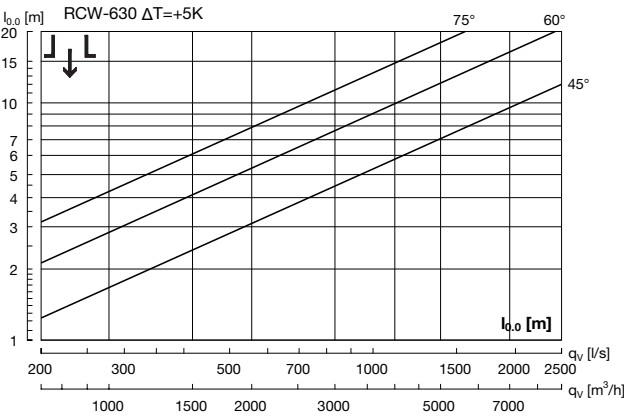
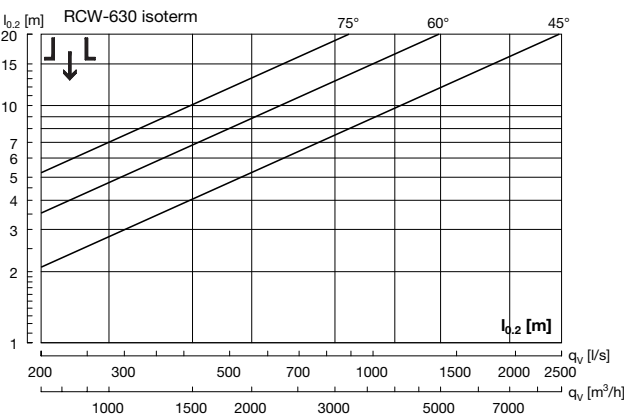
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Swirl diffuser

RCWB



Description

RCWB is a rotation diffuser (RCW) with integral box, particularly suitable for rooms with a high ceiling.

The diffuser is equipped with adjustable blades, so the supply air pattern can be changed from vertical to horizontal. The blade settings can be adjusted manually, or the function can be automated using various types of motor.

RCWB with manual blade adjustment is supplied as standard with a blade setting of 30°.

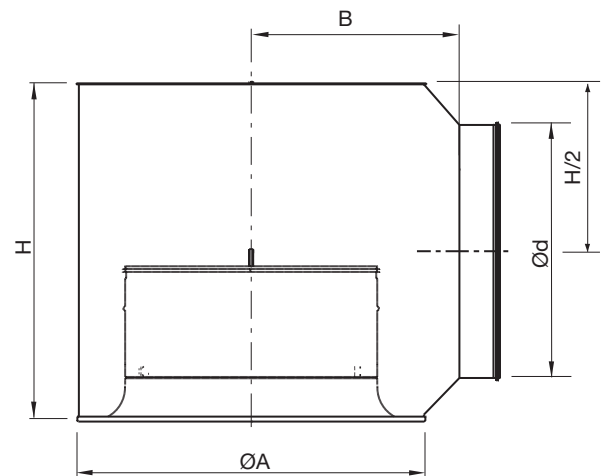
The motorized models are supplied as standard with a blade setting from 30° to 75°. In the motorized versions, RCWB can be supplied with an electric on/off motor, a modulating motor or a thermal actuator, where the supply air pattern is changed in step with the supply air temperature.

- Suitable for both cooling and heating
- Horizontal and vertical dispersal patterns
- High induction
- Can be supplied with an electric motor
- Can be supplied with a thermal actuator

Order code

Product Type	RCWB	a	bbb	c	A
Manual	0				
Motorized - modulating	1				
Motorized- on/off	2				
Thermal actuator	3				
Galvanised box	0				
Box RAL 9010	1				
Size					
Version					

Dimensions



Ød Size	ØA mm	H mm	B mm	Weight * kg
250	360	415	250	5.70
315	460	480	300	8.20
400	560	570	350	11.8
500	670	670	412	17.2
630	870	800	500	25.7

* Motorized models weigh approx. 1 kg more than the weight stated in the table above.

Motor type

RCWB-1 Ød	Motor
315-400	NM24A-MF-F
500-630	LH24A-MF60

RCWB-2 Ød	Motor
250-400	NM24A-F
500-630	LH24A60

Maintenance

The visible parts of the diffuser can be wiped with a damp cloth. For other maintenance, see installation instructions.

Materials and finish

Material:	Aluminium & steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 Gloss 30
Box:	Hot-galvanised steel

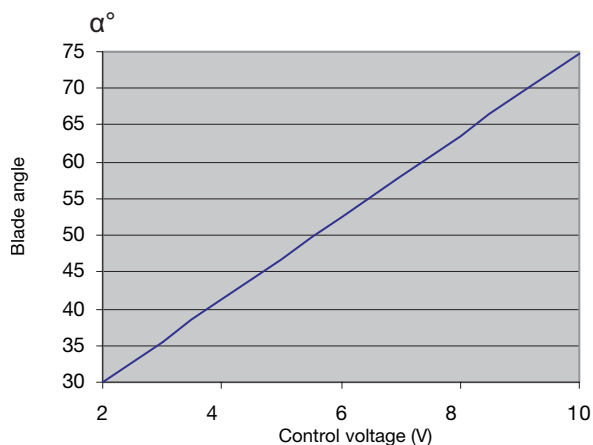
Available in other colours. Please contact Lindab's sales department for further information.

Swirl diffuser

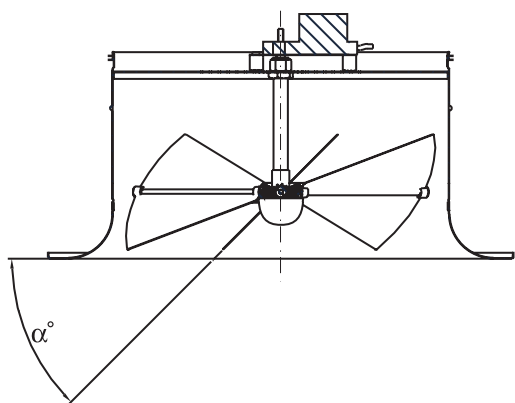
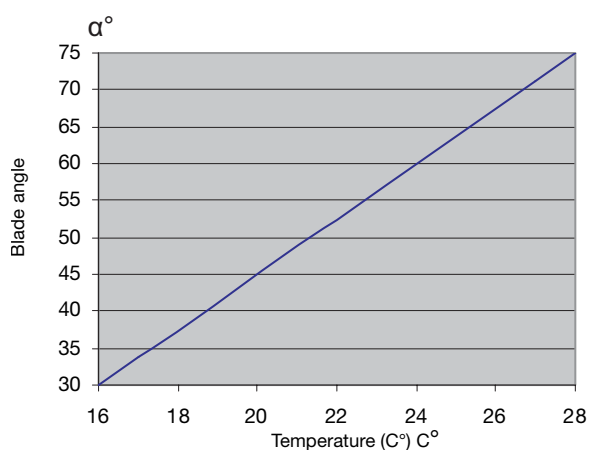
RCWB

Technical data

RCWB with electric modulating motor



RCWB with thermal actuator



Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0,2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Throw $l_{0,2}$ / turning point $l_{0,0}$

Throw $l_{0,2}$ [m] can be seen in the diagrams for isothermal air at a speed of 0.2 m/s. Turning point $l_{0,0}$ [m] can be seen in the diagrams for heated air, +5 K, +10 K and +15 K respectively.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$. K_{ok} values are specified in charts beneath the diagrams on the following pages.

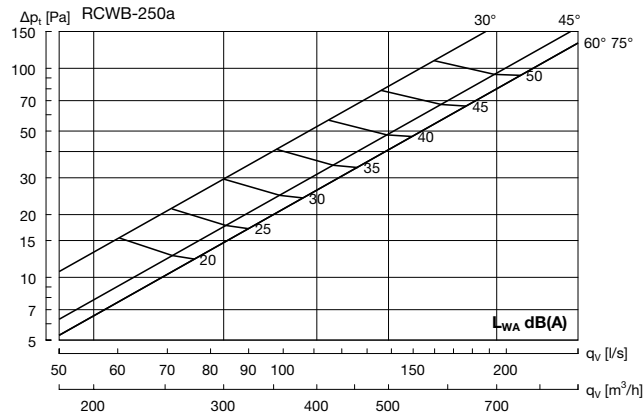
Quick selection

Size	Angle	q_v [l/s]	q_v [m ³ /h]	P_t [Pa]	$l_{0,2}$ isotherm [m]	$l_{0,0}$ +10K [m]
		$L_{WA} = 40$				
250	30°	115	415	57	8	
250	75°	115	415	28		5
315	30°	187	672	53	5	
315	75°	187	672	29		5
400	30°	290	1043	49	4	
400	75°	290	1043	27		5
500	30°	403	1451	47	4	
500	75°	403	1451	22		4
630	30°	605	2178	39	5	
630	75°	605	2178	19		5
		$L_{WA} = 50$				
250	30°	160	575	108	11	
250	75°	160	575	54		6
315	30°	257	924	101	6	
315	75°	257	924	54		7
400	30°	397	1428	91	6	
400	75°	397	1428	50		7
500	30°	565	2034	91	6	
500	75°	565	2034	43		6
630	30°	861	3098	80	7	
630	75°	861	3098	39		7
		$L_{WA} = 60$				
250	30°	221	796	208	15	
250	75°	221	796	103		8
315	30°	353	1271	190	8	
315	75°	353	1271	103		9
400	30°	543	1954	170	8	
400	75°	543	1954	93		9
500	30°	792	2851	180	8	
500	75°	792	2851	85		8
630	30°	1224	4407	161	9	
630	75°	1224	4407	78		10

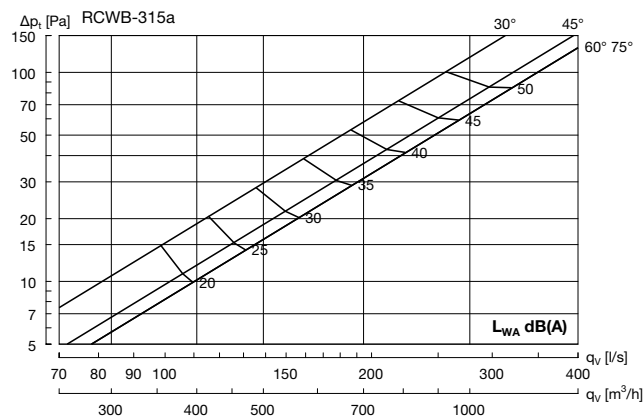
Swirl diffuser

RCWB

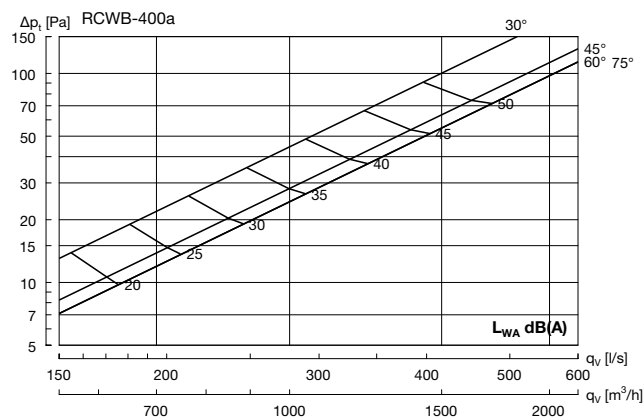
Technical data



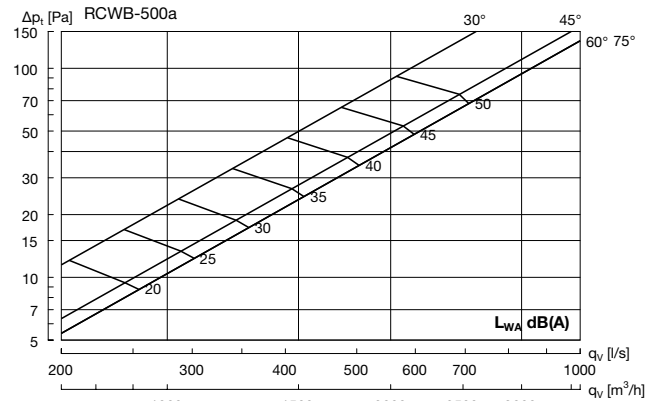
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	5	0	-5	-4	-3	-9	-17	-26



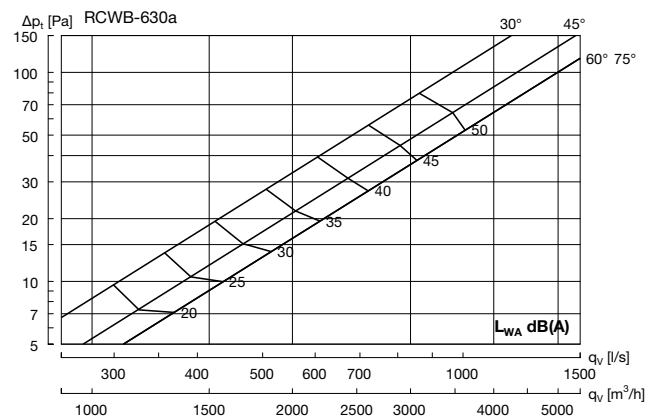
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	7	-1	-4	-3	-3	-10	-19	-27



Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	8	0	-5	-2	-3	-11	-20	-28



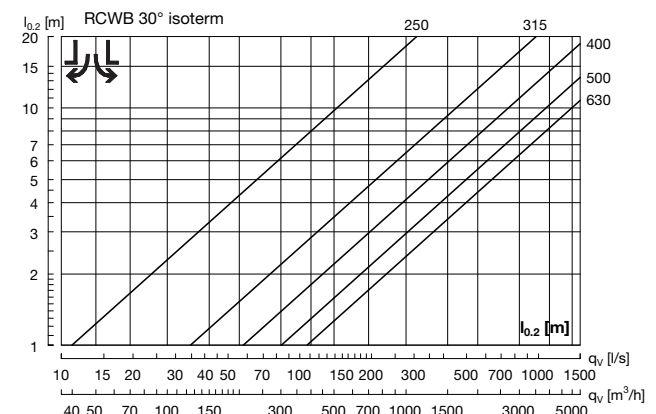
Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	8	2	-3	-2	-4	-11	-21	-30



Hz	63	125	250	500	1K	2K	4K	8K
K_{ek}	7	-1	-3	-1	-4	-13	-24	-33

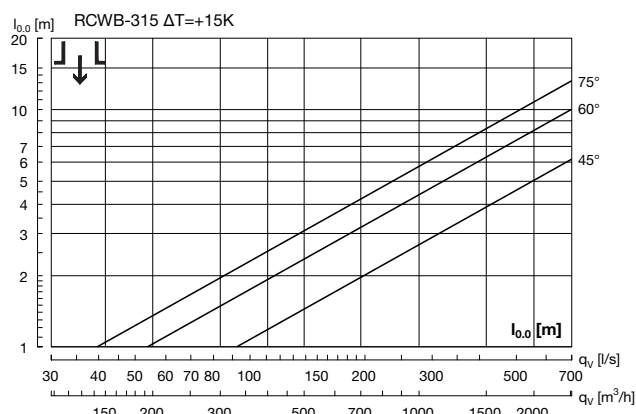
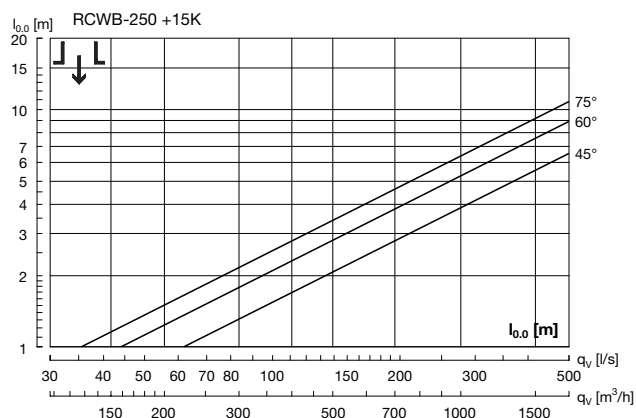
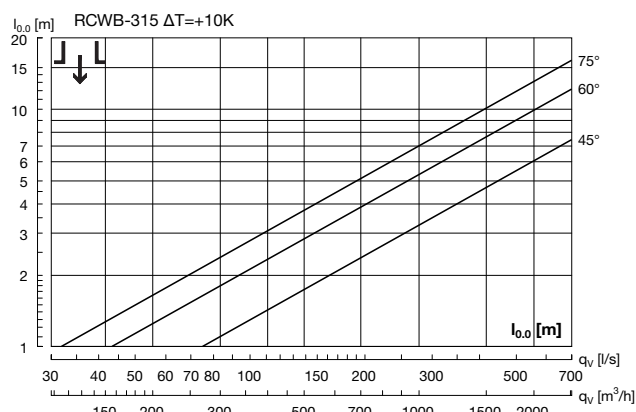
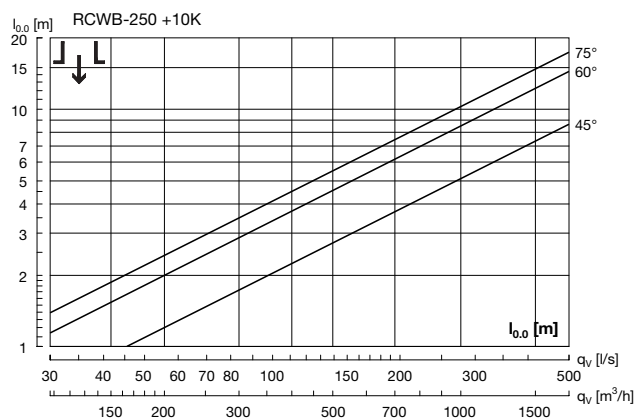
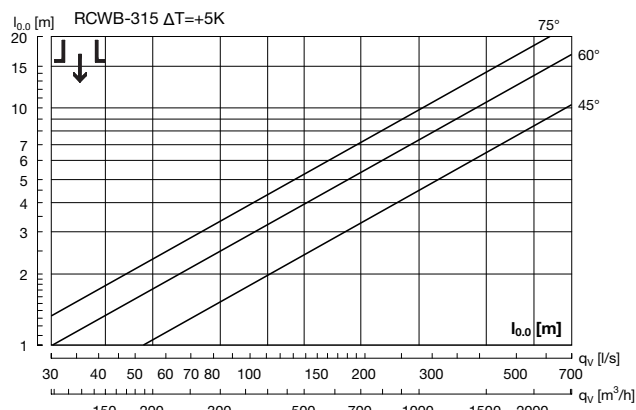
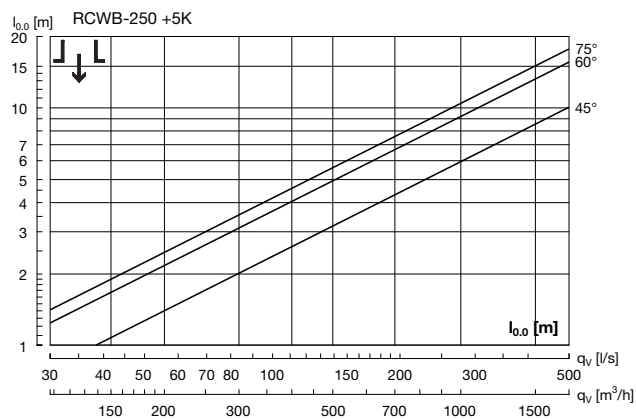
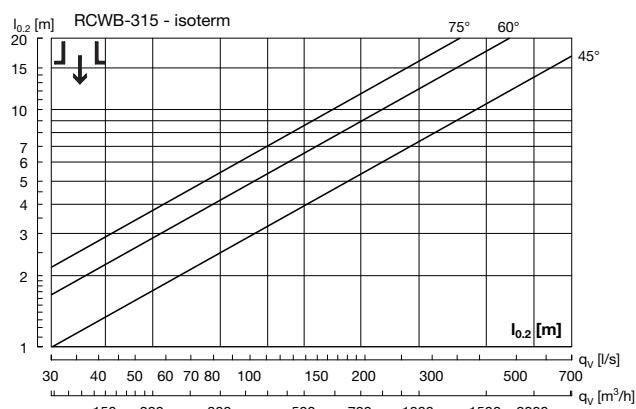
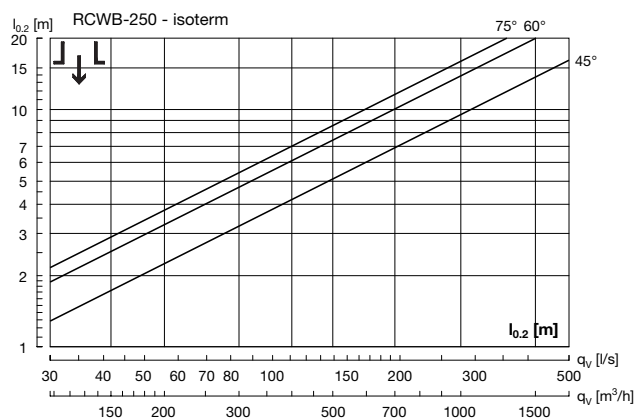
Throw $l_{0.2}$ horizontal

Horizontal throw $l_{0.2}$ is specified for free suspension. If the diffuser is installed < 300 mm from the ceiling, the value must be multiplied by 1.4.



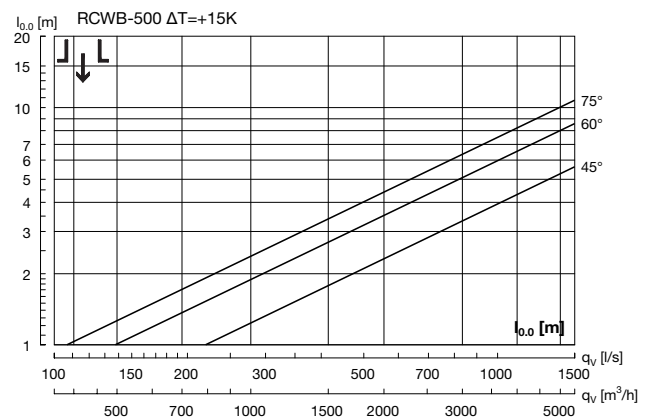
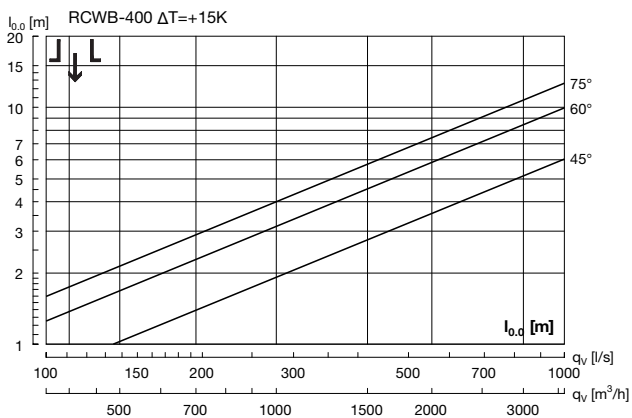
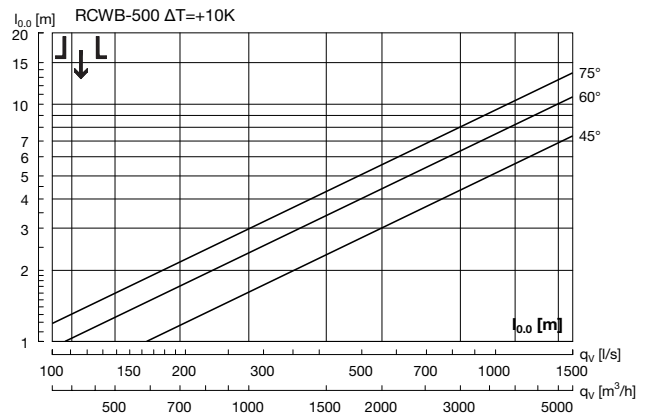
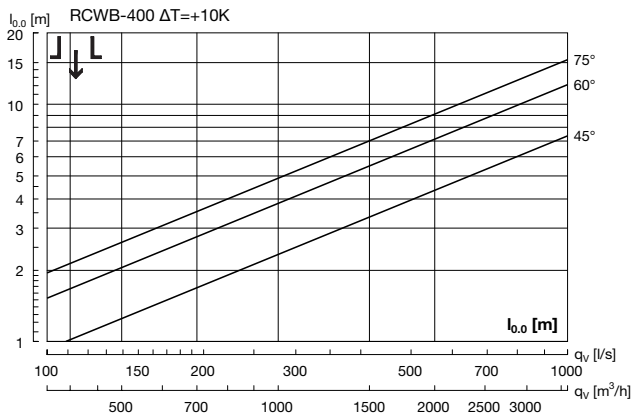
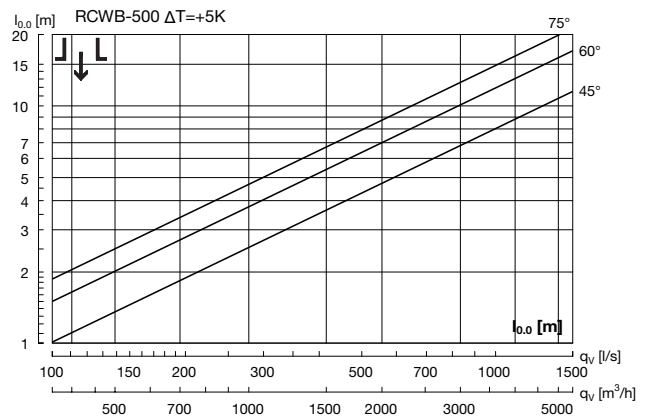
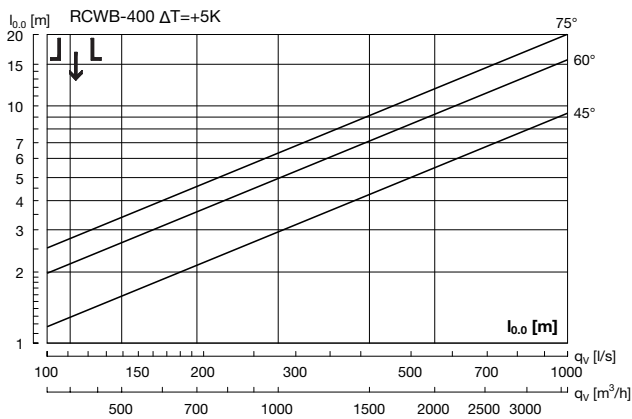
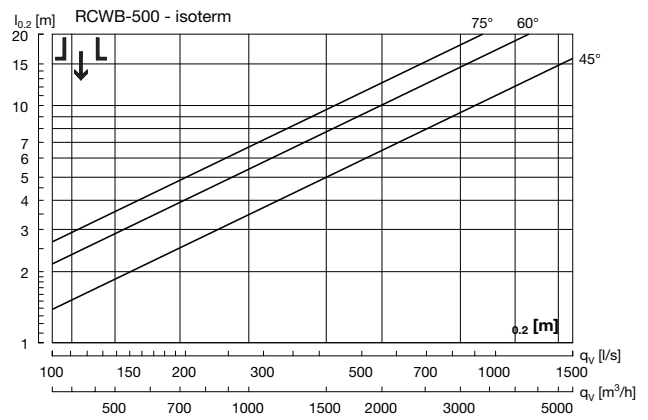
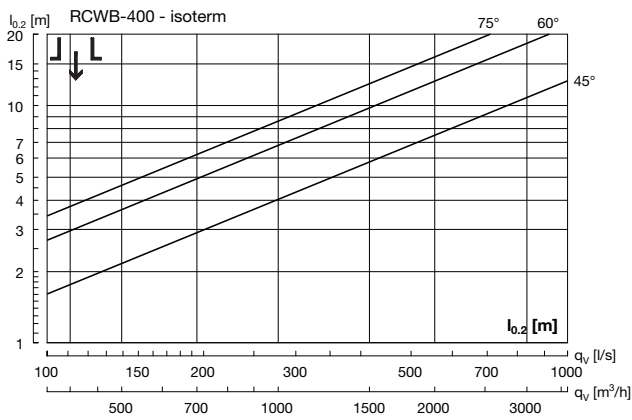
Swirl diffuser

RCWB



Swirl diffuser

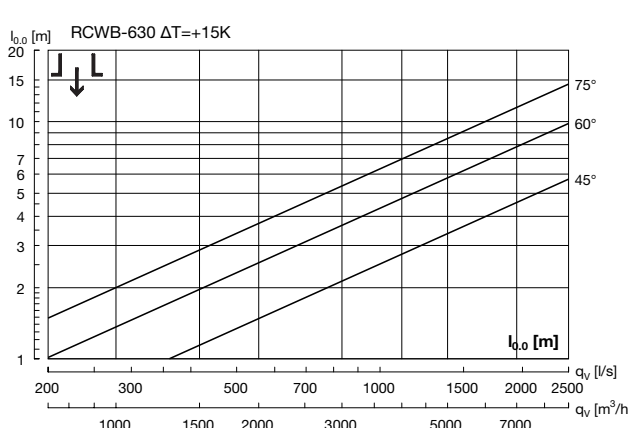
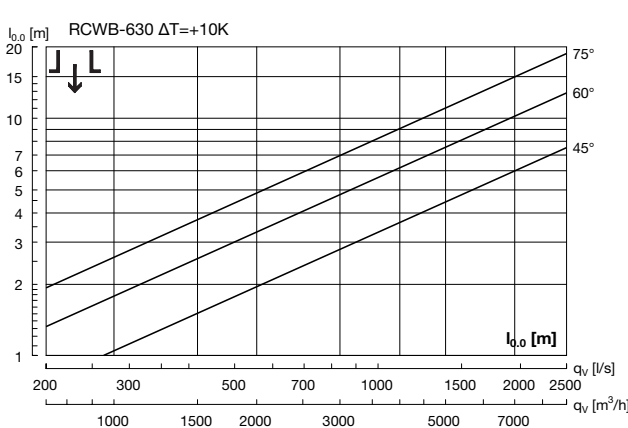
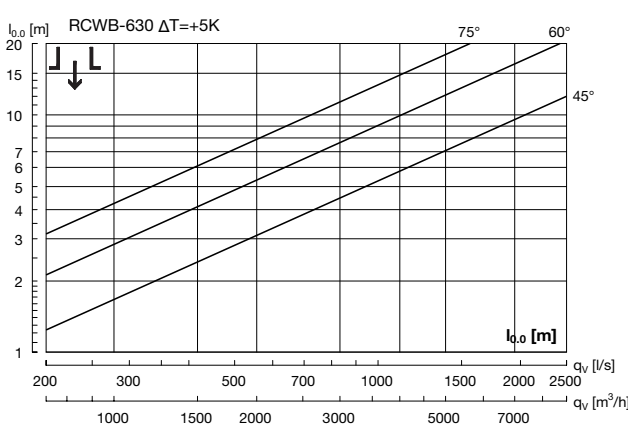
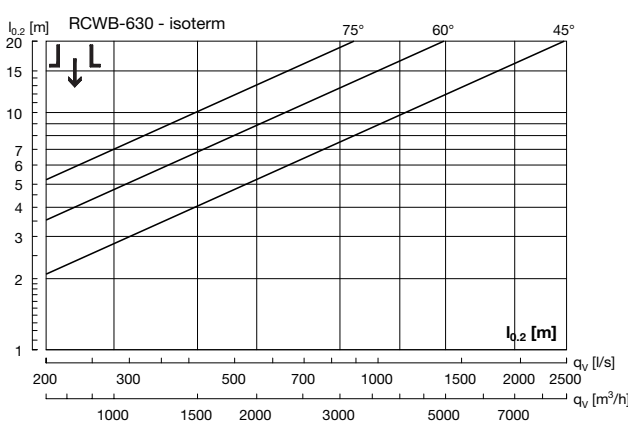
RCWB



Swirl diffuser

RCWB

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Perforated diffuser

HLD



Description

HLD is a circular high level displacement diffuser adapted for industrial requirements. HLD is equipped with a damper function, which makes it possible to vary the supply air pattern between horizontal or vertical, depending on whether heating or cooling is required. The switch can be made manually, or it can be automated using several types of motor. The external dimensions of the diffuser are adapted to the connection, making it easy to integrate into an ordinary duct system. HLD can be suspended from or installed on a wall or column using the installation bracket, which ensures great flexibility no matter how premises are used.

- Suitable for both cooling and heating
- Horizontal and vertical dispersal patterns
- High capacity
- Flexible positioning
- Can be supplied with an electric motor
- Can be supplied with a thermal actuator

Maintenance

The visible parts of the diffuser can be wiped with a damp cloth. For other maintenance, see installation instructions.

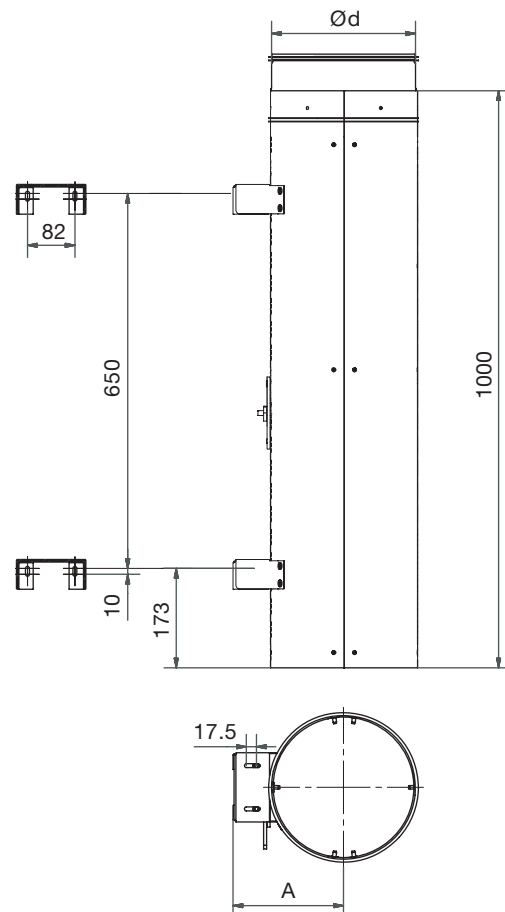
Order code

Product		HLD	a	bbb
Type				
Manual	0			
Motorized - modulating	1			
Motorized- on/off	2			
Automatic thermal actuator	3			
Size				

Accessories

Product		HLZ	a
Installation brackets (1set)			
Size			

Dimensions



Ød Size	A mm	Weight * kg
250	192	11.5
315	225	13.7
400	270	17,0
500	322	21,0
630	390	27,0

*Motorized models weigh approx. 1 kg more than the weight stated in the table above.

Motor type

Type	Motor
HLD - 1	NM24A-MF-F
HLD - 2	NM24A-F

Materials and finish

Material: Galvanised steel
Standard finish: Galvanised

HLD is also available in stainless steel. Please contact Lindab's sales department for further information.

Perforated diffuser

HLD

Technical data

Capacity

Volume flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0,2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Throw $l_{0,2}$ / turning point $l_{0,0}$

Throw $l_{0,2}$ [m] can be seen in the diagrams for isothermal air at a speed of 0.2 m/s. Turning point $l_{0,0}$ [m] can be seen in the diagrams for heated air, +5 K +10 K respectively.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{WA} + K_{ok}$. K_{ok} values are specified in charts beneath the diagrams on the following pages.

Quick selection

Size		q_v [l/s]	q_v [m ³ /h]	P_t [Pa]	$l_{0,2}$ isotherm [m]	$l_{0,0}$ +5K [m]
$L_{WA} = 50$						
250	Horizontal	259	934	44	2	
250	Vertical	259	934	44		3
315	Horizontal	394	1420	37	2	
315	Vertical	394	1420	37		3
400	Horizontal	586	2111	32	2	
400	Vertical	586	2111	32		2
500	Horizontal	938	3377	32	3	
500	Vertical	938	3377	32		2
630	Horizontal	1500	5401	32	4	
630	Vertical	1500	5401	32		2
$L_{WA} = 55$						
250	Horizontal	305	1099	62	2	
250	Vertical	305	1099	62		3
315	Horizontal	457	1647	50	2	
315	Vertical	457	1647	50		3
400	Horizontal	680	2447	44	3	
400	Vertical	680	2447	44		3
500	Horizontal	1087	3915	42	3	
500	Vertical	1087	3915	42		3
630	Horizontal	1739	6262	42	4	
630	Vertical	1739	6262	42		2
$L_{WA} = 60$						
250	Horizontal	359	1294	85	2	
250	Vertical	359	1294	85		4
315	Horizontal	531	1910	68	3	
315	Vertical	531	1910	68		3
400	Horizontal	788	2838	58	3	
400	Vertical	788	2838	58		3
500	Horizontal	1261	4539	57	4	
500	Vertical	1261	4539	57		3
630	Horizontal	2017	7260	57	5	
630	Vertical	2017	7260	57		3

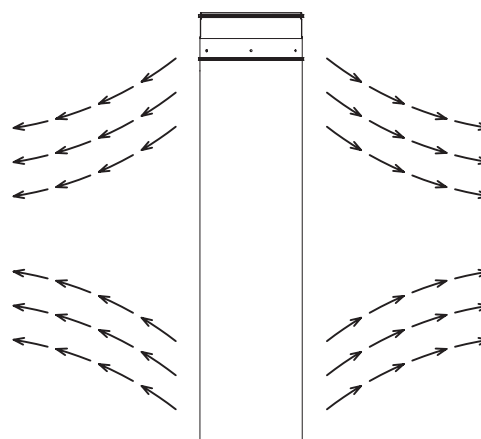
Supply air

With its special design, HLD is suitable for the supply of large volumes of air with short throws in a limited area. This concentrates the supplied air in a small area within a larger space, after which the air distributes itself around the premises. Normally, a horizontal dispersal pattern is recommended in cooling situations and a vertical dispersal pattern in heating situations.

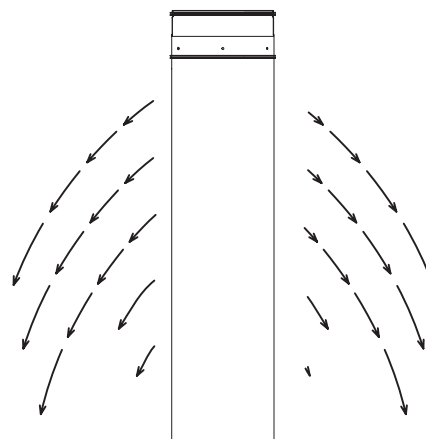
Planning

HLD with cooled air works in much the same way as displacement ventilation. Displacement ventilation has a higher temperature efficiency than mixing ventilation, and thus more power is discharged with the same volume of air and the same cooling temperature. For the calculation of discharged power in a cooling situation, use the calculation method for displacement ventilation. For HLD with heated air, power is calculated as for mixing ventilation.

Horizontal supply air - cooling



Vertical supply air - heating



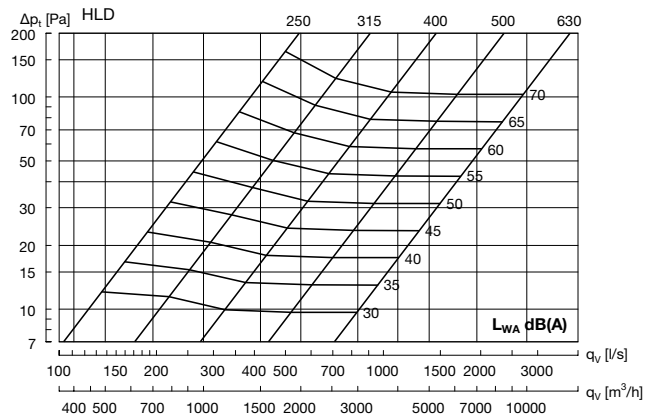
Perforated diffuser

HLD

Technical data

Sound power level

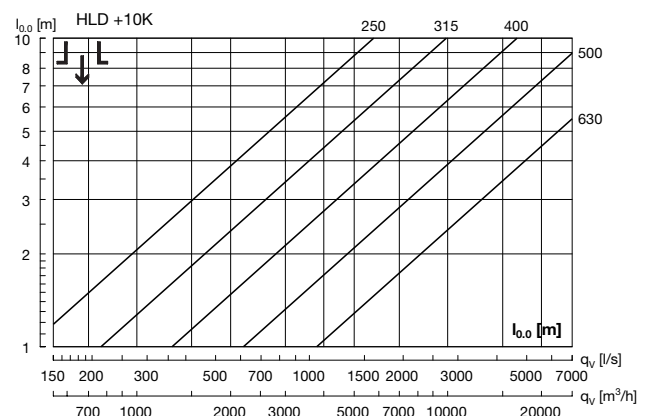
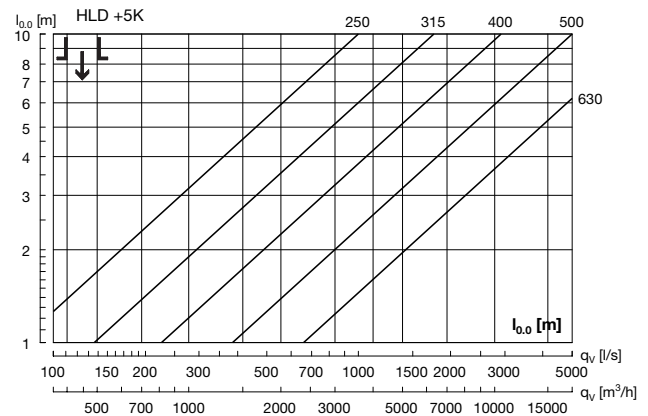
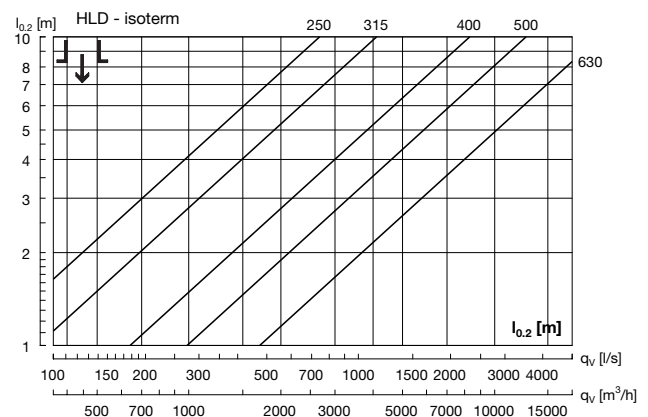
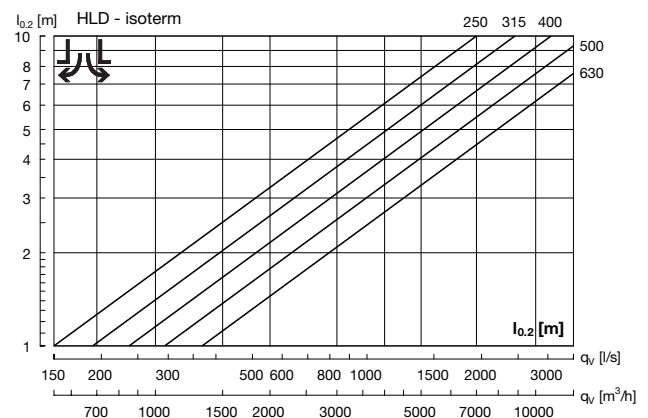
The diagram for sound effect level and pressure applies to both horizontal and vertical dispersal.



Size	Hz	63	125	250	500	1K	2K	4K	8K
250	K _{ok}	4	-3	-3	1	-6	-16	-29	-37
315	K _{ok}	12	1	0	1	-7	-16	-27	-36
400	K _{ok}	5	-3	2	1	-8	-17	-29	-41
500	K _{ok}	5	-3	2	1	-8	-17	-29	-41
630	K _{ok}	5	-3	2	1	-8	-17	-29	-41

Throw $l_{0.2}$ / Turning point $l_{0.0}$

These diagrams apply for installation heights > 1 m



Perforated diffuser

HLD

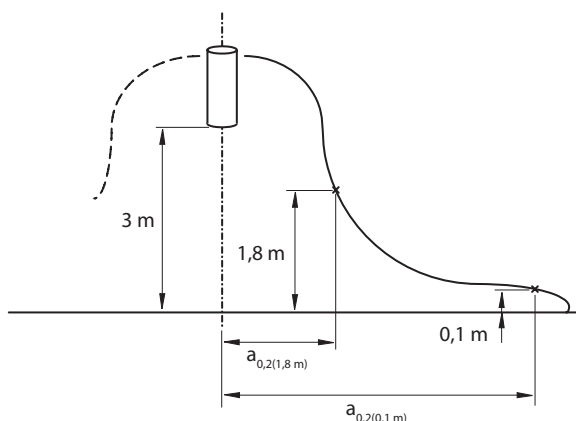
Technical data

All diagrams apply for suspended installation.

Near zones

For cooling and horizontal supply air, HLD will function as a displacement diffuser positioned high up.

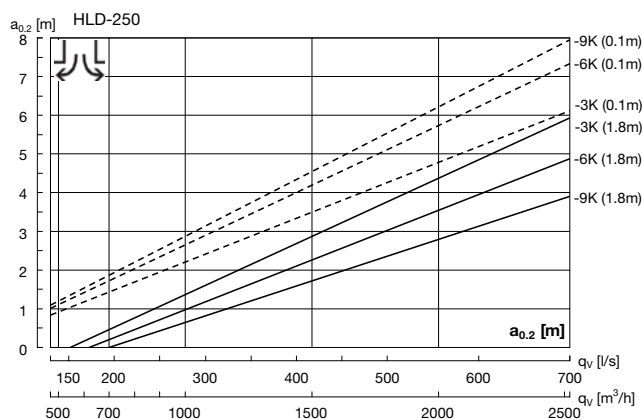
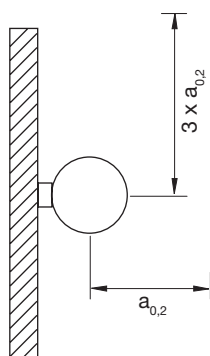
The near zone is shown for two different heights, one "inner" near zone $a_{0,2} (1.8 \text{ m})$ defined as the distance from the diffuser where the speed at a height of 1.8 m is 0.2 m/s, and an "outer" near zone $a_{0,2} (0.1 \text{ m})$, which is the distance from the diffuser where the speed at a height of 0.1 m is 0.2 m/s.



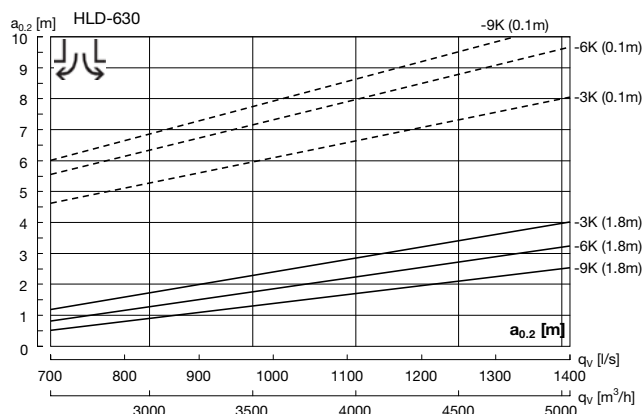
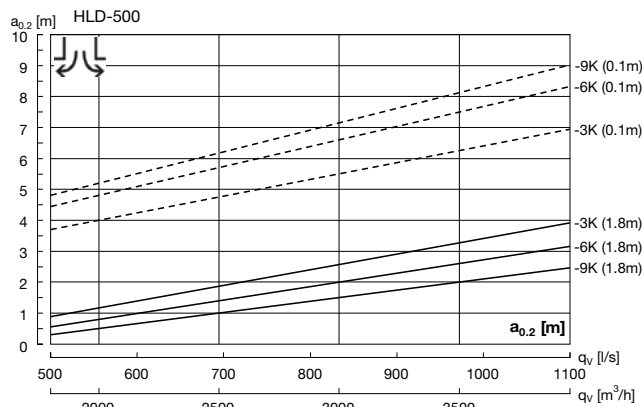
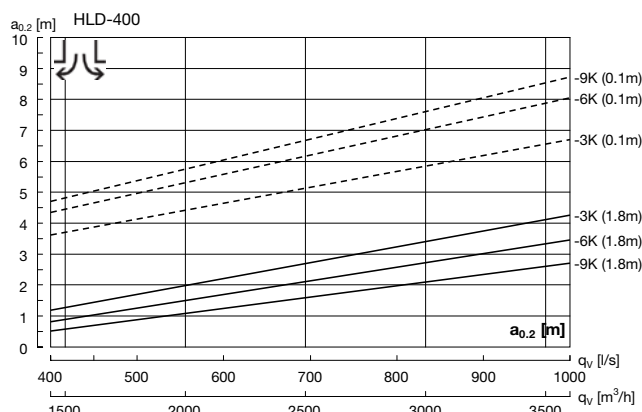
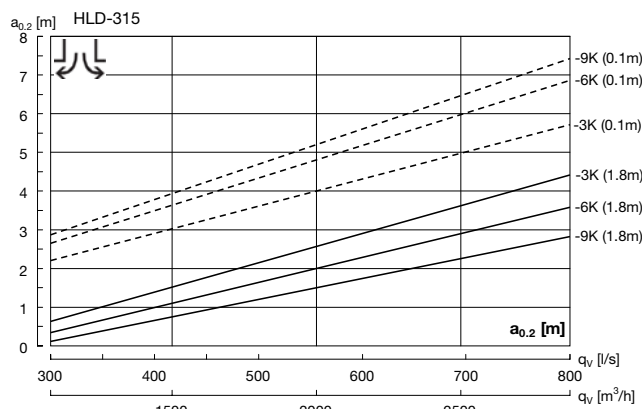
For wall installation the following corrections apply:

$a_{0,2}$ at right angles to wall = diagram value.

$a_{0,2}$ along wall = diagram value $\times 3$.



Nearzone, Horizontal



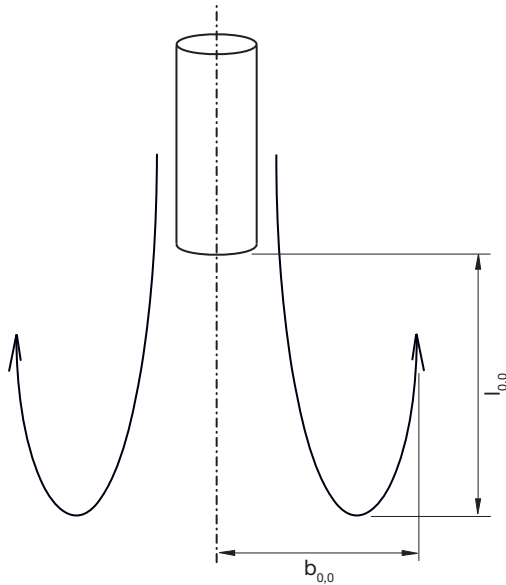
Perforated diffuser

HLD

Technical data

Spread

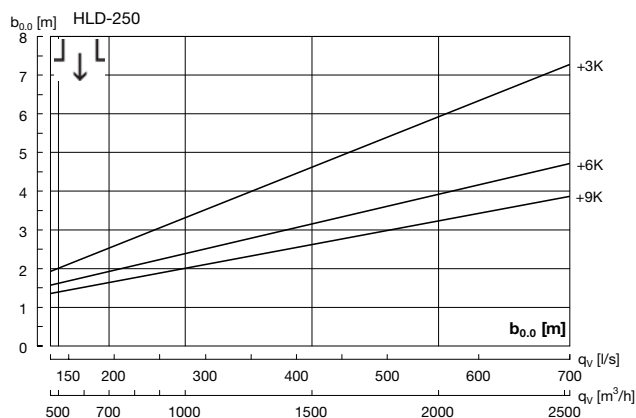
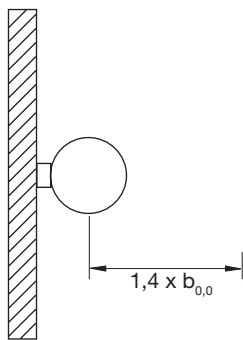
For vertical supply air with warm air, the air from the diffuser will turn at a vertical distance of $l_{0,0}$ from the diffuser. The width of the air jet, $b_{0,0}$, which can also be designated horizontal spread, can be seen in the diagrams for spread.



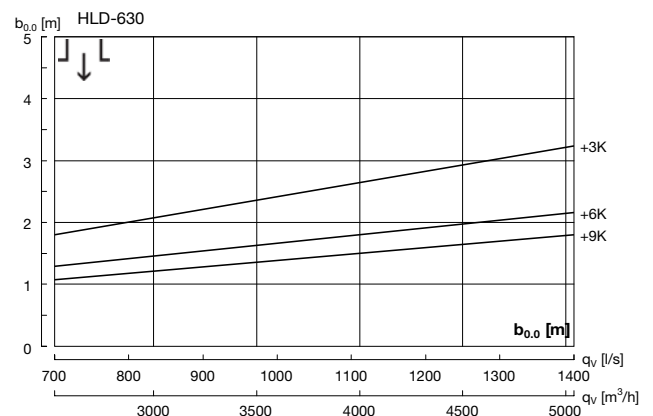
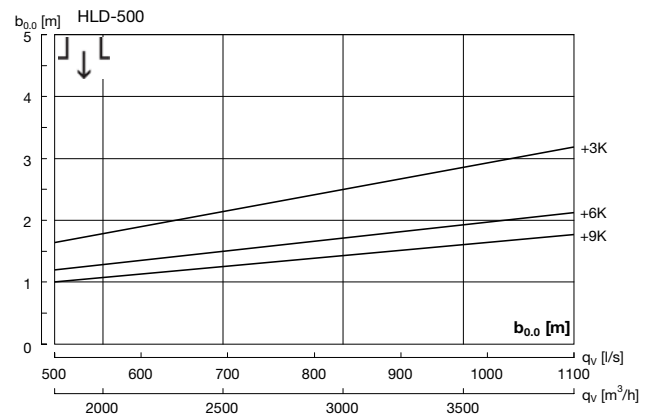
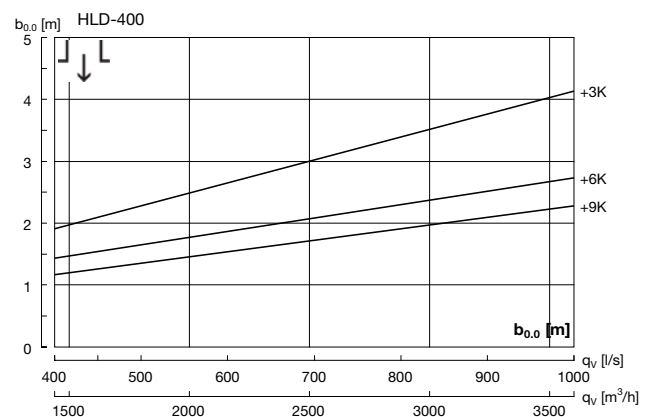
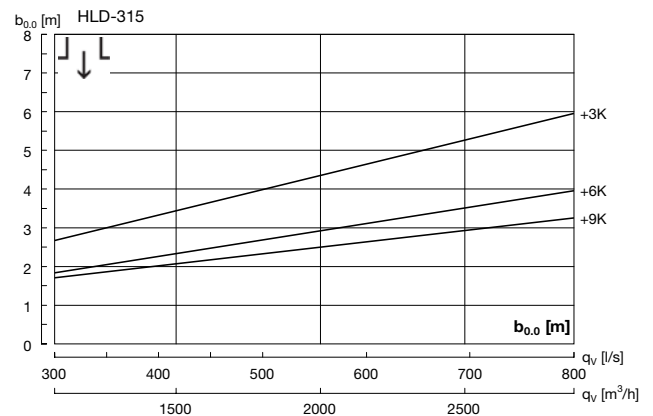
$l_{0,0}$ values in 2 diagrams bottom right hand corner page 323.

For wall installation the following correction applies:

$b_{0,0 \text{ wall}} = \text{diagram value} \times 1.4$.



Spread, Vertical



Multi-cone diffuser

FKD



Description

FKD is an adjustable circular multi-cone diffuser, which is typically used for supply air.

The diffuser can be switched between horizontal and vertical supply air and is therefore ideal for the supply of both heated and cooled air.

Installing an FKD diffuser up to size 400 in a plenum box type MBB can help to achieve a stable airflow to the diffuser as well as realise the potential for individual adjustment.

- Suitable for both supply and exhaust air
- Vertical or horizontal supply air pattern

Maintenance

The multi-cone insert can be removed to enable cleaning of internal parts or to gain access to the duct or box. The visible parts of the diffuser can be wiped with a damp cloth.

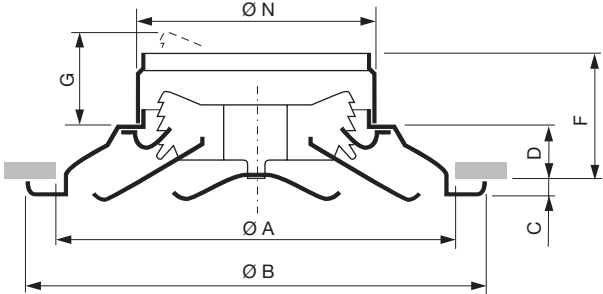
Order code

Product	FKD	aaa
Type	FKD	
Connection dim.		
Ø160-630		

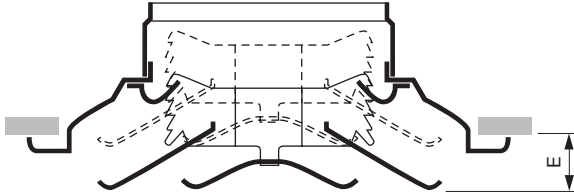
Example: FKD-200

Dimensions

Vertical



Horizontal



FKD Size	ØA mm	ØB mm	C mm	D mm	E mm	F mm	G mm	ØN mm	Weight kg
160	279	323	12	35	22	85	46	160	1.75
200	375	428	10	51	26	101	55	200	2.70
250	467	538	14	67	33	117	68	250	4.70
315	557	635	10	85	42	135	80	315	6.20
355	648	743	18	96	46	146	86	355	8.00
400	740	856	14	116	49	166	92	400	11.8
450	832	970	14	135	66	185	110	450	14.0
500	924	1081	17	149	66	199	116	500	18.0
630	1103	1286	18	182	66	232	116	630	21.0

Number of cones: size 160–400: 2
size 450–630: 3
Ø A: ceiling grid opening

Materials and finish

Material: Steel
Standard finish: Powder-coated
Standard colour: RAL 9010 white

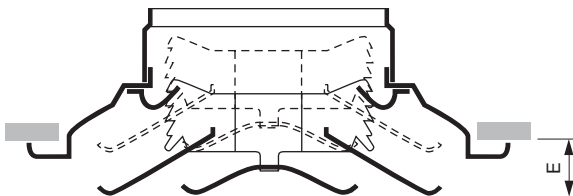
The diffuser is available in other colours. Please contact Lindab's sales department for further information.

Multi-cone diffuser

FKD

Dispersal patterns

FKD is supplied for vertical supply air as standard.
The dispersal pattern can be altered to horizontal supply air by setting the inner part of the diffuser to its lowest position.



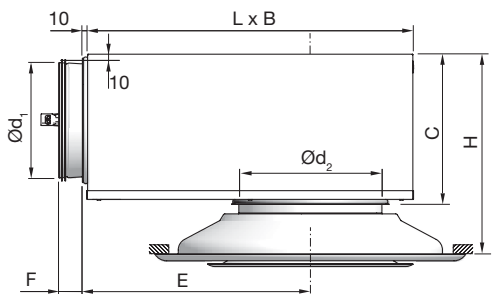
Accessories

Plenum box

MBB



FKD + MBB



FKD + MBB							
Duct	FKD	B	C	E	F	H	L
Ød ₁ mm	Ød ₂ mm	mm	mm	mm	mm	mm	mm
100	160	260	159	216	50	195 - 235	310
125	160	310	184	262	50	220 - 260	376
125	200	310	184	262	50	236 - 276	376
160	160	380	220	323	50	255 - 295	459
160	200	380	220	323	50	270 - 310	459
160	250	380	220	323	50	286 - 326	459
200	200	460	259	396	70	361 - 401	565
200	250	460	259	396	70	327 - 367	565
200	315	460	259	396	70	345 - 385	565
250	250	540	309	486	70	377 - 417	698
250	315	540	309	486	70	395 - 435	698
250	400	540	309	486	70	426 - 466	698
315	315	540	373	646	70	460 - 500	858
315	400	540	373	646	70	491 - 531	858

Order code

Product	MBB	aaa	bbb	c
Type				
MBB				
Duct connection				
Ø100-315				
Diffuser dimension				
Ø160-400				
Functional use				
S = Supply air				
E = Exhaust				

Example: FKD 200+MBB-160-200-S

Multi-cone diffuser

FKD

Technical data

Capacity

Air flow q_v [l/s] and [m³/h], total pressure Δp_t [Pa], throw $l_{0.2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

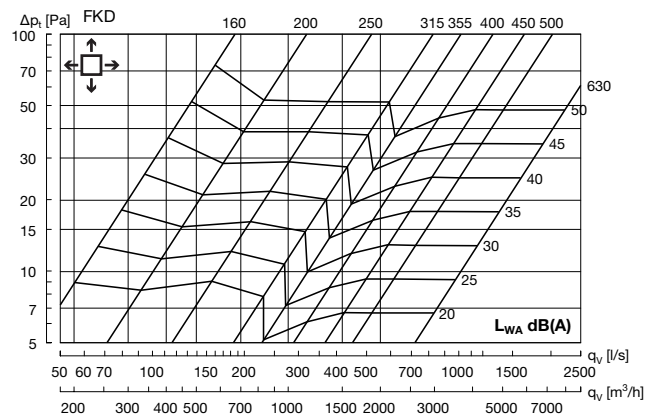
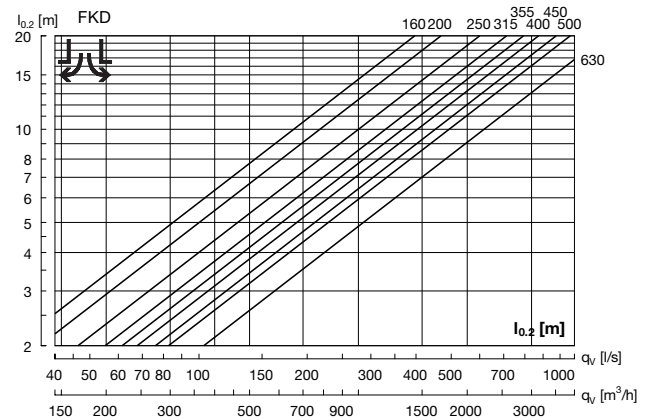
Throw $l_{0.2}$

Throw $l_{0.2}$ [m] can be seen in the diagram for isothermal air at a speed of 0.2 m/s.

Frequency-related sound effect level

The sound effect level in the frequency band is defined as $L_{wok} = L_{WA} + K_{ok}$. K_{ok} values are specified in charts beneath the diagrams on the following pages. K_{ok} values for FKD without a box can be found in a separate supplement.

Horizontal



Sound attenuation

Sound attenuation of the diffuser ΔL from duct to room, including end reflection, see table below.

FKD + MBB		Centre frequency Hz							
Duct $\varnothing d_1$	FKD $\varnothing d_2$	63	125	250	500	1K	2K	4K	8K
100	160	20	16	5	15	17	17	16	19
125	160	13	13	8	19	13	16	16	19
125	200	15	11	6	15	12	14	16	17
160	160	16	17	10	18	17	18	20	21
160	200	15	14	7	19	15	16	18	19
160	250	17	16	4	16	15	16	16	18
200	200	13	10	6	15	18	15	19	17
200	250	13	9	4	12	17	13	17	16
200	315	13	8	3	8	16	14	16	15
250	250	14	8	8	15	17	17	17	18
250	315	13	6	5	13	15	15	16	17
250	400	12	4	3	12	13	14	14	15
315	315	7	9	8	12	17	16	17	21
315	400	7	8	7	11	16	14	16	19

Balancing

Balancing data is contained in a separate brochure.

Multi-cone diffuser

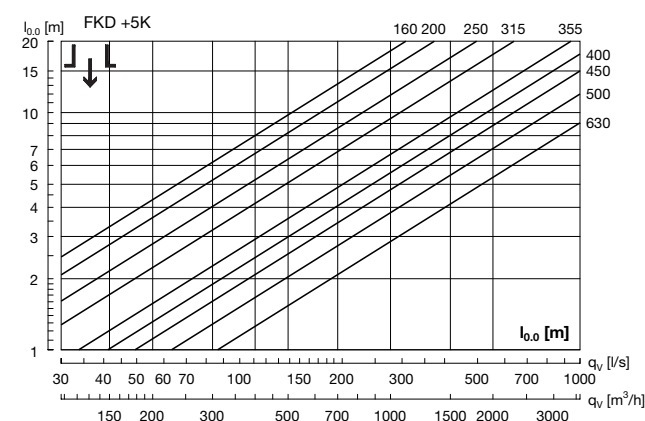
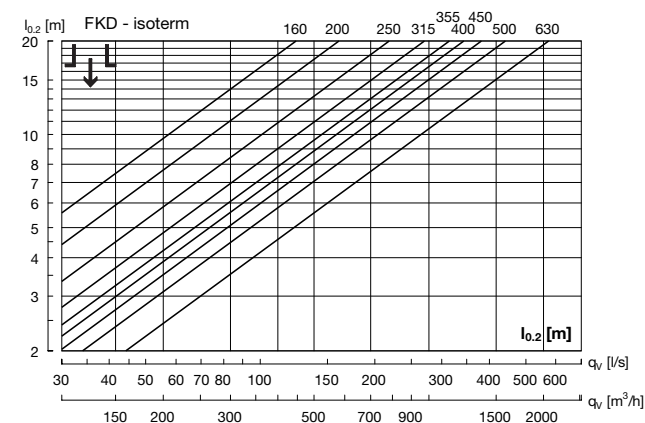
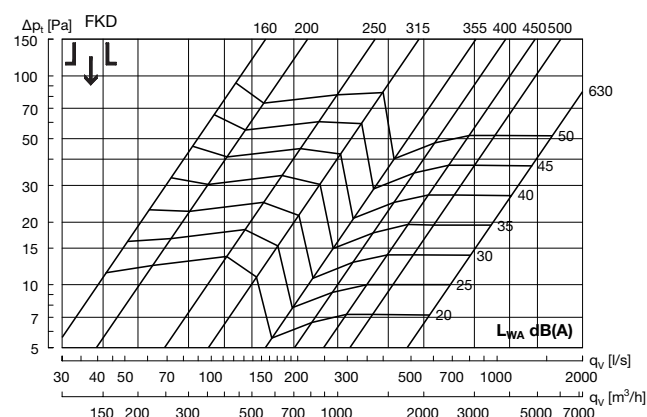
FKD

Technical data

Throw $l_{0,2}$ / turning point $l_{0,0}$

Throws $l_{0,2}$ [m] can be seen in the diagrams for isothermal air at a speed of 0.2 m/s. Turning point $l_{0,0}$ [m] can be seen in the diagrams for heated air, +5 K, +10 K respectively.

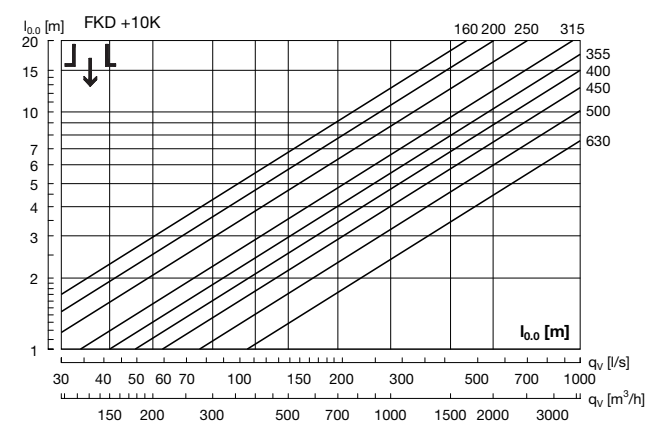
Vertical



Vertical supply air correction sound power level (L_{WA}) and pressure loss (Δp_t)

On the following pages you can find diagrams for all sizes FKD+MBB horizontal supply air. When Vertical supply air values are wanted, use the correction factors in the table below.

FKD + MBB		Vertical supply air	
Duct	FKD	Correction factor	
$\varnothing d_1$	$\varnothing d_2$	L_{WA}	Δp_t
100	160	3	x 1,2
125	160	1	x 1,2
125	200	1	x 1,1
160	160	5	x 1,5
160	200	3	x 1,3
160	250	0	x 1,1
200	200	1	x 1,3
200	250	5	x 1,2
200	315	0	x 1,1
250	250	1	x 1,3
250	315	2	x 1,3
250	400	1	x 1,1
315	315	4	x 1,4
315	400	3	x 1,2

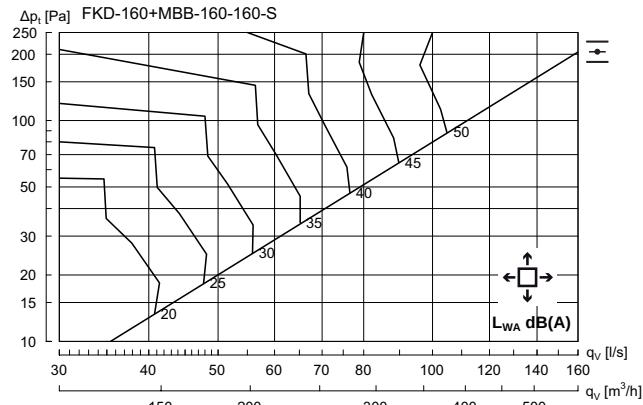


Multi-cone diffuser

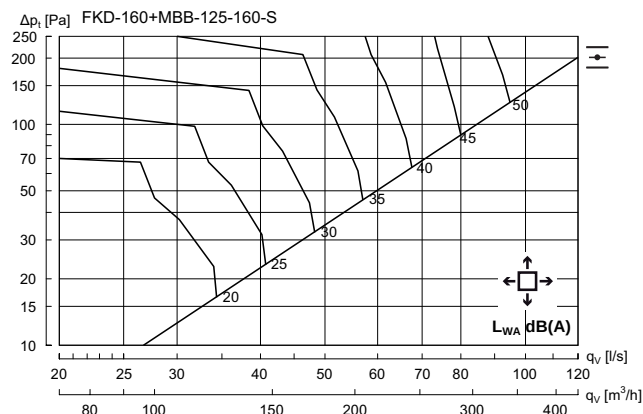
FKD

Technical data

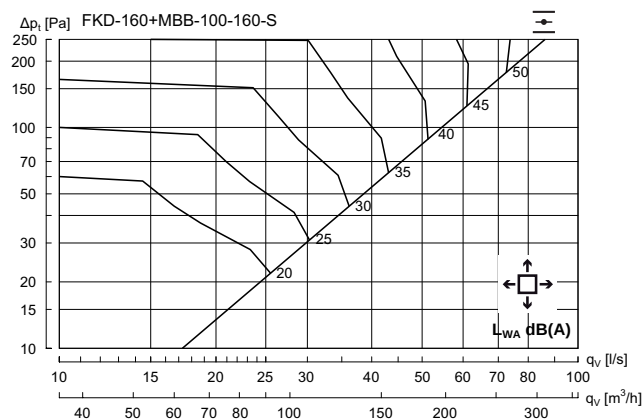
FKD 160 + MBB Horizontal



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	11	7	0	-6	-4	-9	-22	-31

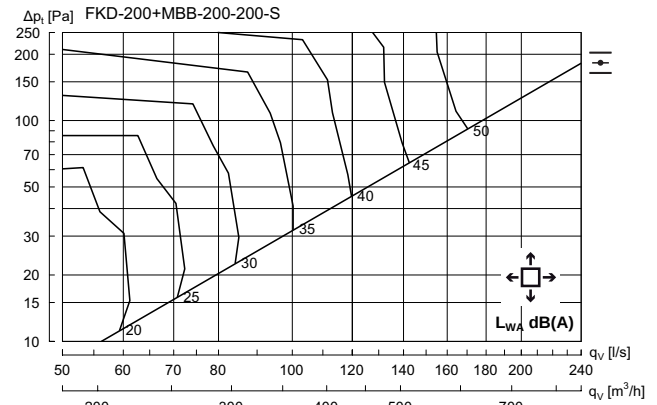


Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	10	5	2	-5	-5	-9	-18	-25

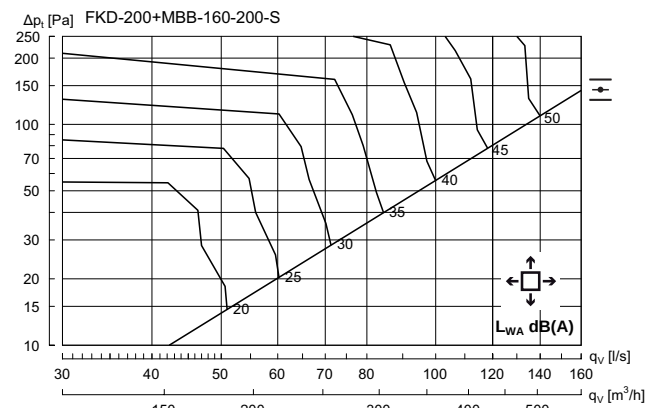


Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	9	4	2	-3	-5	-9	-16	-22

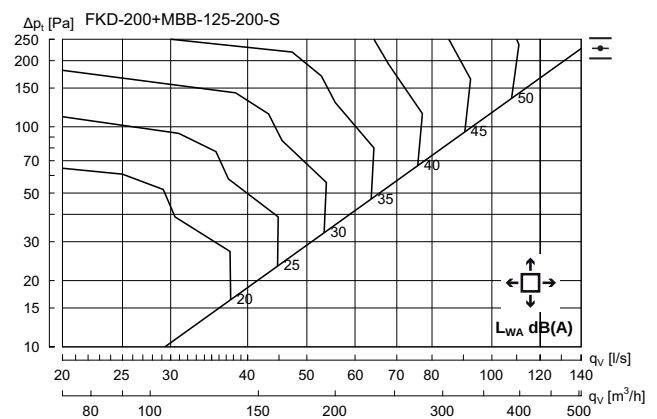
FKD 200 + MBB Horizontal



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	13	5	-2	-5	-3	-12	-22	-28



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	11	5	1	-5	-4	-11	-20	-25



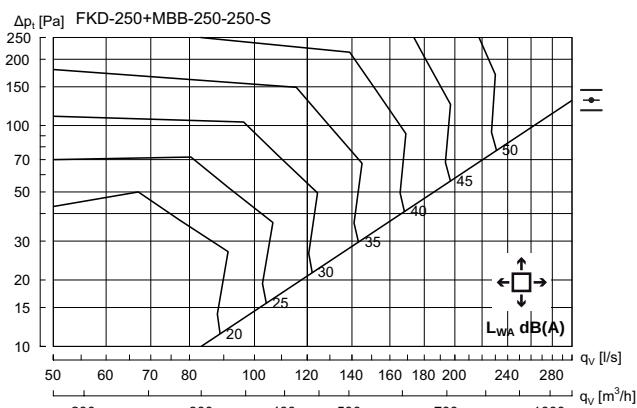
Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	11	4	1	-4	-4	-10	-16	-23

Multi-cone diffuser

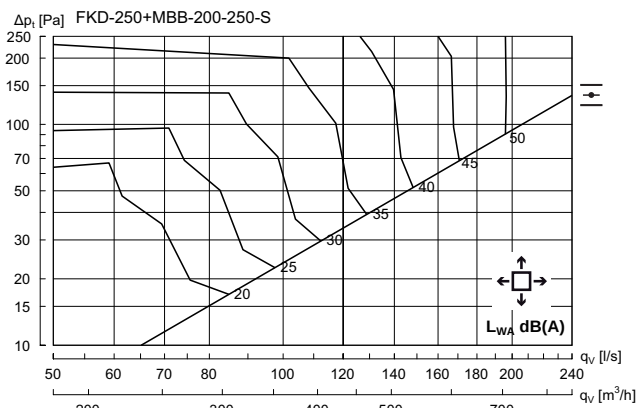
FKD

Technical data

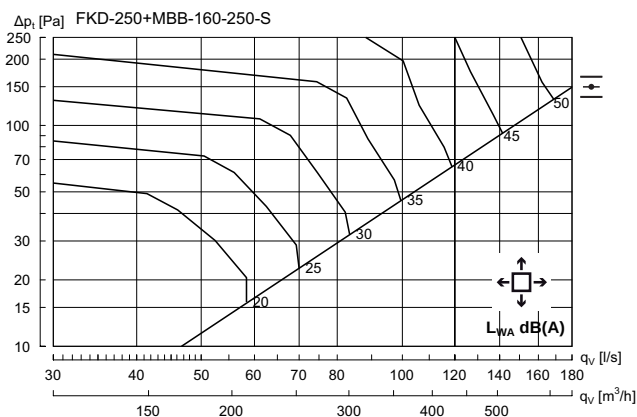
FKD 250 + MBB Horizontal



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	12	5	-2	-4	-3	-13	-20	-26

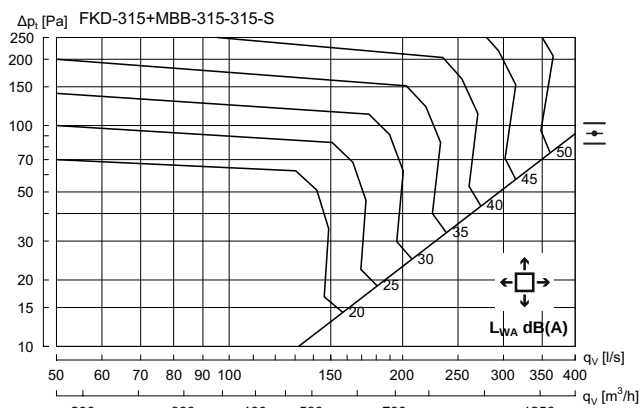


Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	11	5	-2	-3	-3	-12	-19	-24

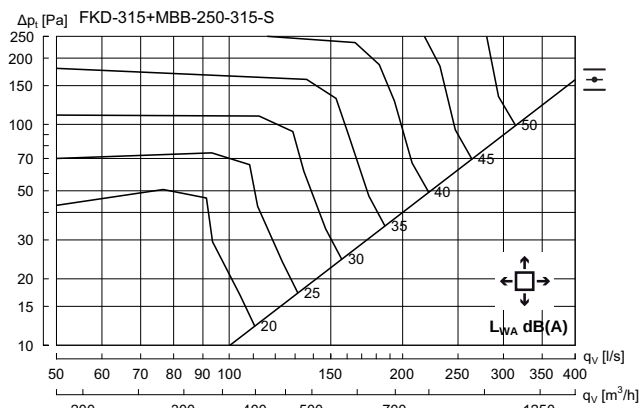


Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	12	4	0	-3	-4	-12	-18	-24

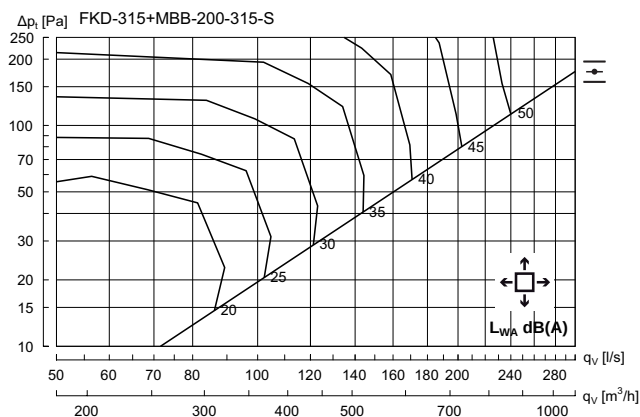
FKD 315 + MBB Horizontal



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	14	3	0	-2	-4	-14	-20	-26



Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	12	5	-1	-2	-4	-12	-19	-21



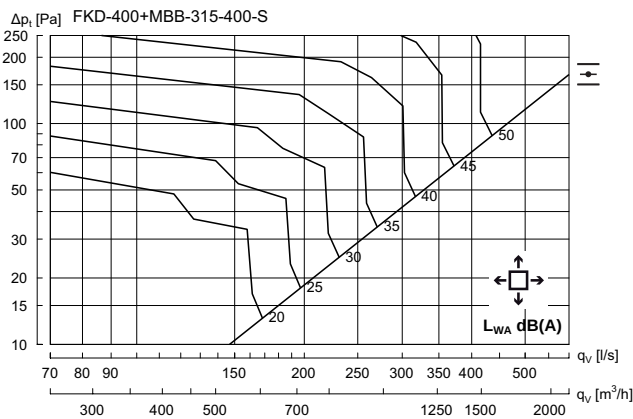
Hz	63	125	250	500	1K	2K	4K	8K
K_{uk}	9	5	-1	-2	-5	-11	-18	-24

Multi-cone diffuser

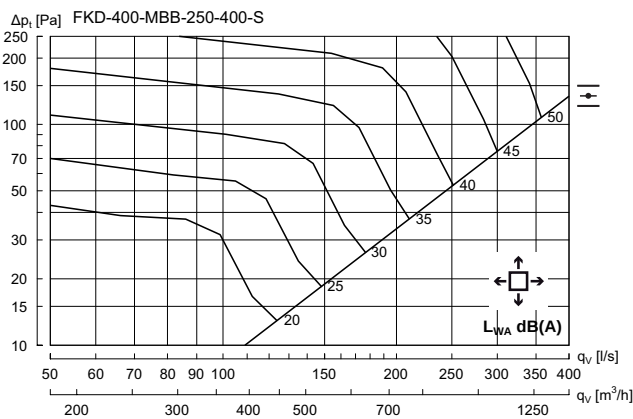
FKD

Technical data

FKD 400 + MBB Horizontal



Hz	63	125	250	500	1K	2K	4K	8K
$K_{\alpha k}$	11	4	1	-1	-6	-12	-17	-24



Hz	63	125	250	500	1K	2K	4K	8K
$K_{\alpha k}$	9	4	1	-1	-6	-12	-17	-25

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

