

# Displacement diffusers




















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# Lindab Comdif


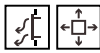

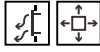

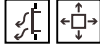

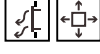
## Comdif

Displacement diffusers


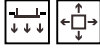

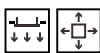
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## Theatre diffusers

Circular and square diffusers

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## Low-impulse diffusers

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# Lindab Comdif



CSC, canteen, Copenhagen

## Lindab Comdif

By using displacement ventilation, the air is supplied to the room directly into the occupied zone at floor-level - at a low velocity and a cooling temperature. The air spreads out across the floor and displaces the hot contaminated air, which is sent to the ceiling by the convection flow from the heated sources. Extraction should take place by the ceiling, where a hot “contaminated” layer of air forms.

The increase in ventilation efficiency means that cooling power can be saved, or that the cooling effect of the fresh air can be utilized better.

The ventilation efficiency of displacement ventilation is larger than that of mixed ventilation, owing to this division of layers. The difference increases when the ceiling and thermal load are higher.

## Flexibility by displacement ventilation

Comdif is a series of air distribution diffusers for displacement ventilation. Comdif is available in various designs for any purpose and consists of a pressure chamber with a number of nozzles.

The diffusers are all equipped with adjustable nozzles, so it is possible to change the near-zones geometry. The diffuser comes standard supplied with a perforated frontplate with a free area of approx. 38%.

The diffusers are available in special designs with several different types of perforation, plate-thickness and choice of materials. The diffusers can also be constructed to fit other dimensions and different geometry on request.



CCA, circular displacement unit

# Lindab Comdif a series of displacement diffusers

## Design

See chapter on [Comfort and Design](#)



Function  
supp./exhau.

Size

## Accessories

See page [Accessories](#)



Product

**Perforated diffuser - semicircular** mm

<b>CBA</b>					1207
					1607
					2010
					2510
					3115
					4020
					5020

Duct cover      Connection duct      Plinth      Mounting bracket

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**Perforated diffuser - semicircular** mm

<b>CHA</b>					1207
					1607
					2010
					2510
					3115
					4020
					5020
					6320

Duct cover      Connection duct      Plinth      Mounting bracket

--	--	--	--

**Perforated diffuser - corner** mm

<b>CQA</b>					1207
					1607
					2010
					2510
					3115
					4020

Duct cover      Connection duct      Plinth      Mounting bracket

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**Perforated diffuser - rectangular** mm

<b>CRA</b>					3010
					5010
					8010
					8020

Connection duct      Plinth

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**Perforated diffuser - built-in** mm

<b>CVA</b>					3005
					5005
					6005
					6008
					8008

Connection duct

--

**Perforated diffuser - rectangular** mm

<b>CEA</b>					2010
					2510
					3115
					4015

Plinth

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**Perforated diffuser - square** mm

<b>CKA</b>					2010
					2510
					3110
					4015
					5020
					6320

Plinth

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**Perforated diffuser - circular** mm

<b>CCA</b>					1207
					1607
					2010
					2510
					3115
					4020
					5020
					6320

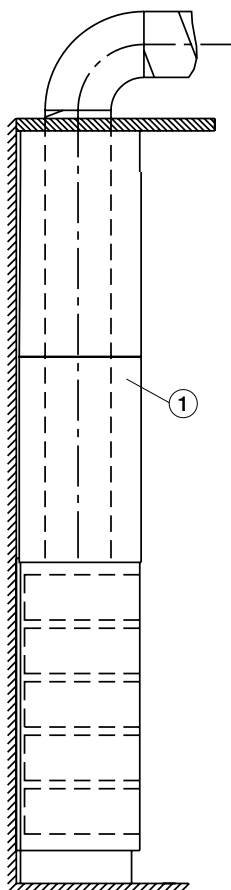
Plinth

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# Comdif accessories

## Duct covers

### Duct cover Type 0



1. Duct cover

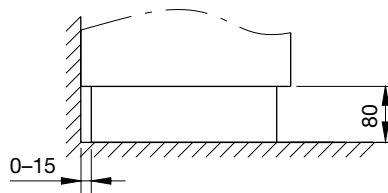
Duct covers are available for displacement diffusers type CBA,CHA,CQA from size 1207 to 3115.

### Type CHAZ-0, CQAZ-0 & CBAZ-0

Size	A mm	Max. room height mm	Min. room-height mm	m kg/m
1207	250	3300	2400	6,0
1607	300	3300	2400	7,5
2010	330	3300	2400	9,5
2510	400	3300	2400	12,0
3115	520	3200	2400	15,0

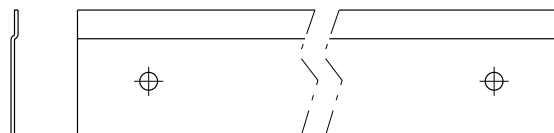
## Plinth CHAZ-2

Plinth CHAZ-2 is available in all sizes for free standing diffusers.

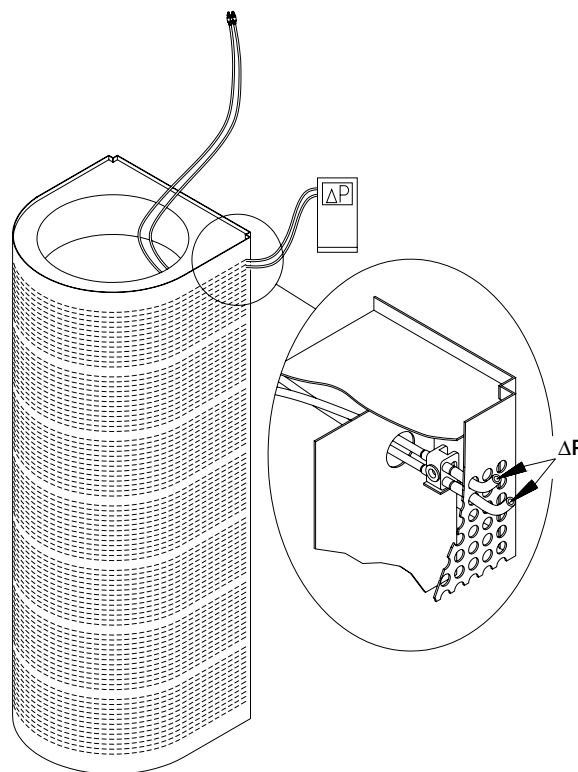


## Mounting bracket CHAZ-3

Mounting bracket CHAZ-3 is available in all sizes for free standing diffusers.



Comdif is equipped with pressure nozzles, which can be connected through pipes to a flow measuring device (FMI, FMDU, DIRU) or one similar inside the air duct system. The couplings are mounted behind the holes in the front plate, so the measurements can be taken without removing the front plate.



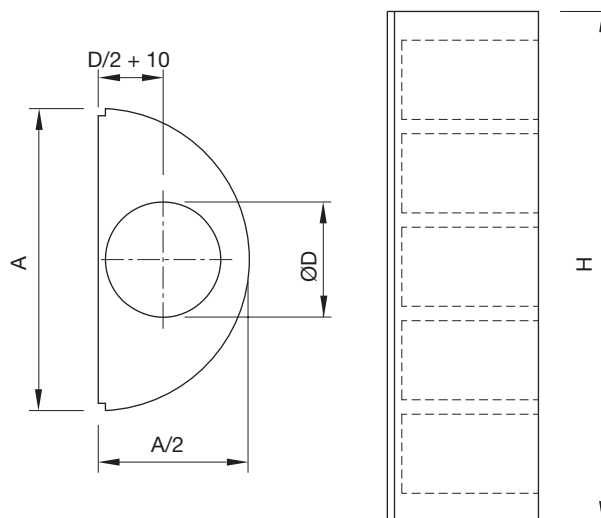
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# Perforated diffuser - semicircular

# CBA



## Dimensions



## Description

Comdif CBA is a semicircular perforated displacement diffuser for installation against/on a wall or column.

Behind the perforated front plate, CBA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles.
- Duct covers, plinths and wall brackets can be supplied as accessories

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

## Order code

<b>Product</b>	<b>CBA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Cover:	CBAZ - 0 - size
Plinth:	CBAZ - 2 - size
Wall bracket:	CBAZ - 3 - size

Size	A mm	ØD mm	H mm	Weight kg
1207	350	125	710	6,50
1607	420	160	710	7,50
2010	500	200	970	13,0
2510	600	250	970	18,0
3115	730	315	1490	35,0
4020	900	400	2010	58,0
5020	1100	500	2010	78,0

## Accessories

Can be supplied with duct cover, plinth and bracket for wall mounting.

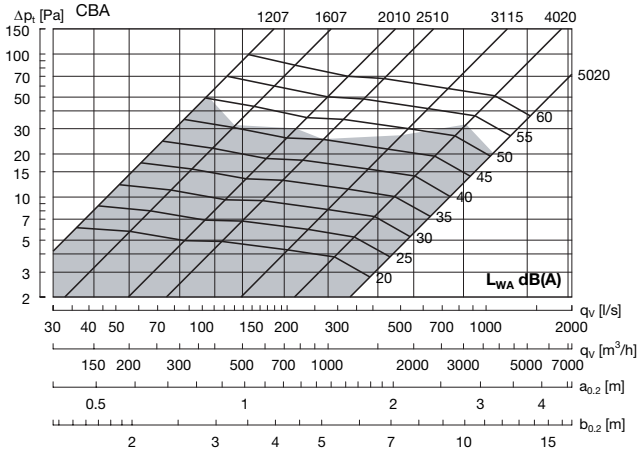
## Materials and finish

Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

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

# Perforated diffuser - semicircular CBA

## Technical data



Recommended maximum volume flow

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

### Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{ok}$

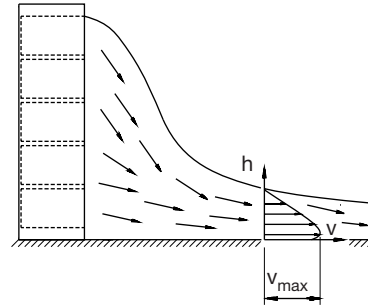
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	8	-3	0	1	-8	-15	-27	-38
1607	10	-3	3	0	-8	-18	-30	-33
2010	15	-2	3	0	-9	-16	-30	-37
2510	10	-1	4	-1	-9	-16	-29	-41
3115	11	1	4	-1	-8	-17	-30	-42
4020	13	3	4	-1	-9	-17	-30	-43
5020	7	2	2	0	-6	-16	-19	-17

### Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	19	14	5	3	2	1	2	1
1607	16	12	4	1	2	1	2	2
2010	12	8	4	2	3	2	2	2
2510	12	8	5	2	1	1	1	1
3115	11	8	3	2	1	1	2	2
4020	9	6	1	1	1	1	1	1
5020	7	5	0	1	1	1	1	2

## Nearzone



Large diffusion (factory setting)

Small diffusion

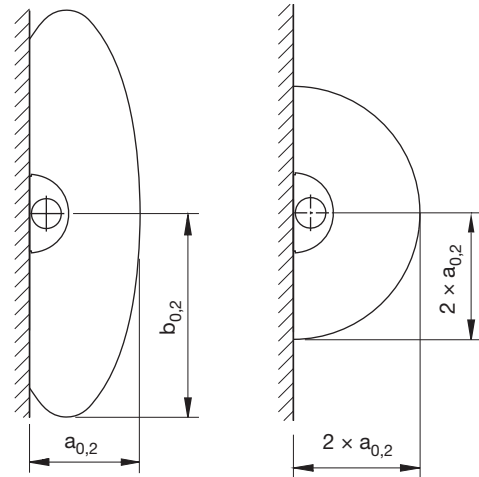


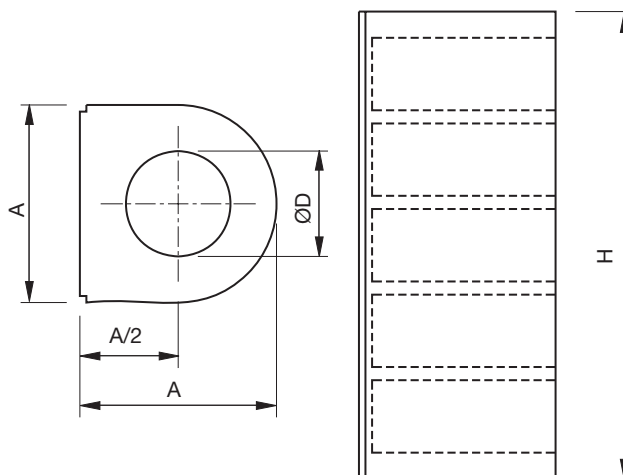
Table 1 Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

Under-temperature $T_r - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - semicircular CHA



## Dimensions



## Description

Comdif CHA is a semicircular perforated displacement diffuser for installation against a wall or column. Behind the perforated front plate, CHA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles
- Duct covers, plinths and wall brackets can be supplied as accessories

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

## Order code

<b>Product</b>	<b>CHA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Cover:	CHAZ - 0 - size
Plinth:	CHAZ - 2 - size
Wall bracket:	CHAZ - 3 - size

Size	A mm	ØD mm	H mm	Weight kg
1207	250	125	710	6,50
1607	300	160	710	7,50
2010	330	200	970	13,0
2510	400	250	970	18,0
3115	520	315	1490	35,0
4020	630	400	2010	58,0
5020	730	500	2010	78,0
6320	830	630	2010	106

## Accessories

Can be supplied with duct cover, plinth and bracket for wall mounting.

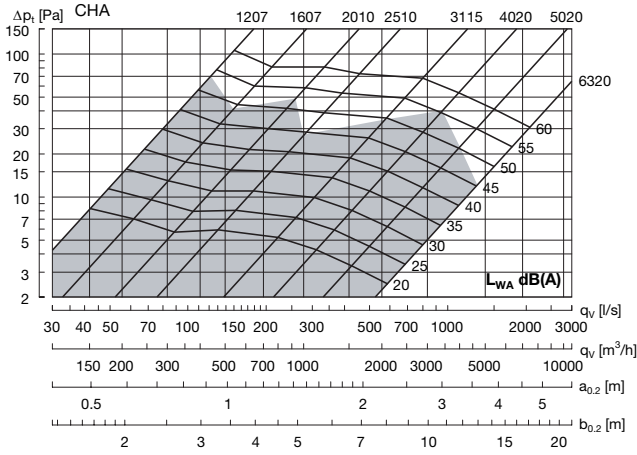
## Materials and finish

Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

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

# Perforated diffuser - semicircular CHA

## Technical data



Recommended maximum volume flow

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

### Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{ok}$

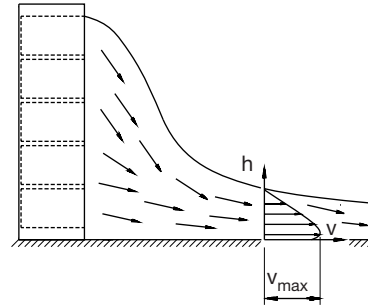
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	11	-4	1	1	-9	-16	-28	-34
1607	9	-2	2	0	-8	-16	-28	-34
2010	10	-2	3	0	-7	-16	-28	-39
2510	11	0	4	-2	-7	-15	-27	-37
3115	13	1	3	-1	-7	-17	-29	-42
4020	7	3	2	-1	-5	-14	-19	-14
5020	7	3	2	0	-6	-16	-19	-17
6320	7	3	2	0	-6	-16	-29	-17

### Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz								
	63	125	250	500	1K	2K	4K	8K	
1207	19	14	5	3	2	1	2	1	
1607	16	12	4	1	2	1	2	2	
2010	12	8	4	2	3	2	2	2	
2510	12	8	5	2	1	1	1	1	
3115	11	8	3	2	1	1	2	2	
4020	9	6	1	1	1	1	1	1	
5020	7	5	0	1	1	1	1	2	
6320	5	3	1	1	0	0	0	0	

## Nearzone



Large diffusion (factory setting)

Small diffusion

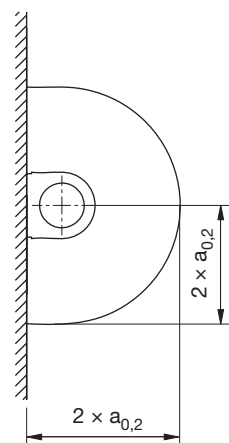
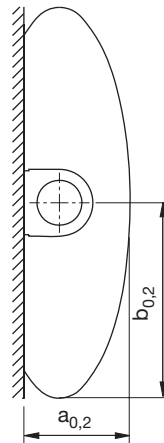


Table 1 Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

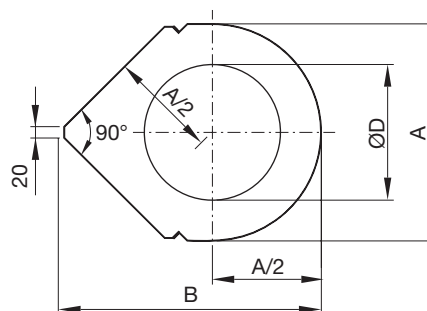
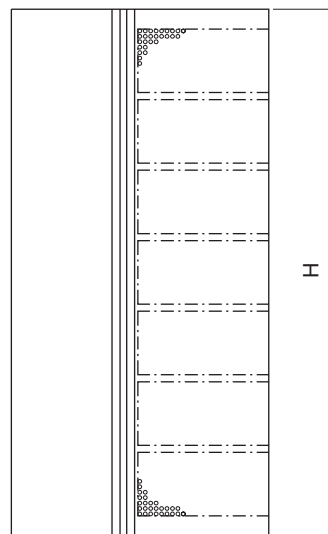
Under-temperature $T_r - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - corner

# CQA



## Dimensions



## Description

Comdif CQA is a semicircular perforated displacement diffuser for corner installation. Behind the perforated front plate, CQA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles
- Duct covers, plinths and wall brackets can be supplied as accessories

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

Size	A mm	B mm	ØD mm	H mm	Weight kg
1207	250	302	125	710	8,00
1607	300	362	160	710	9,00
2010	330	398	200	970	14,0
2510	400	483	250	970	20,0
3115	520	628	315	1490	40,0
4020	630	760	400	2010	64,0

## Accessories

Can be supplied with duct cover, plinth and bracket for wall mounting.

## Order code

<b>Product</b>	<b>CQA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Cover:	CQAZ - 0 - size
Plinth:	CQAZ - 2 - size
Wall bracket:	CQAZ - 3 - size

## Materials and finish

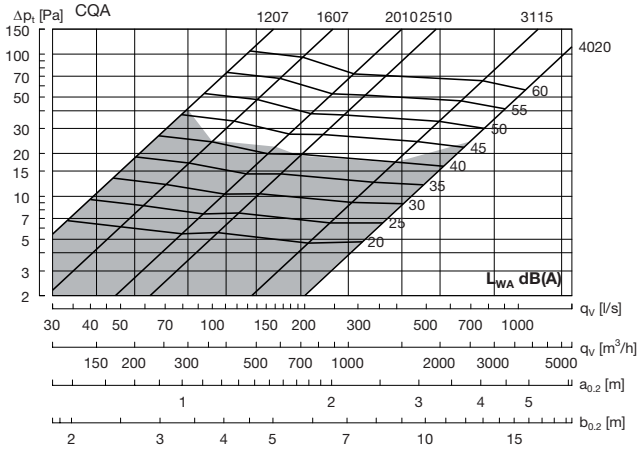
Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

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

# Perforated diffuser - corner

# CQA

## Technical data



Recommended maximum volume flow.

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

## Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{ok}$

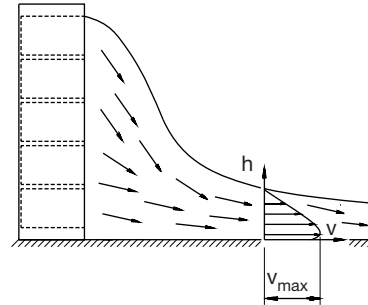
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	8	-3	3	0	-7	-15	-27	-35
1607	11	-1	5	-2	-8	-16	-28	-34
2010	11	0	5	-2	-7	-16	-28	-40
2510	11	2	5	-2	-7	-15	-29	-39
3115	11	3	5	-2	-8	-17	-29	-38
4020	12	4	2	0	-8	-16	-30	-41

## Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	18	13	5	3	3	2	2	2
1607	15	11	3	1	2	2	2	2
2010	11	7	3	8	5	5	7	7
2510	10	6	5	7	5	4	4	5
3115	9	6	5	4	4	5	5	7
4020	8	5	2	3	2	3	3	3

## Nearzone



Large diffusion (factory setting)

Small diffusion

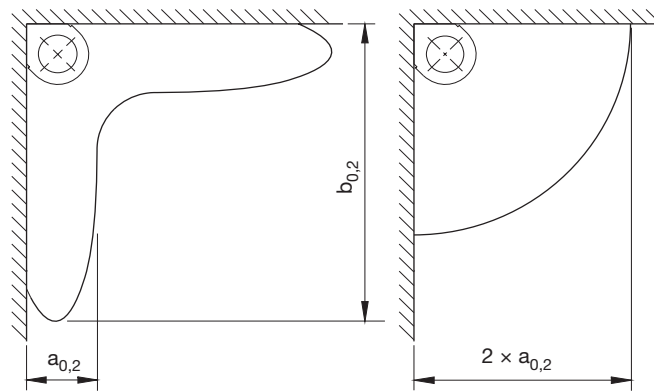


Table 1 Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

Under-temperature $T_f - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - rectangular

# CRA



## Description

Comdif CRA is a rectangular perforated displacement diffuser for installation against a wall or column. CRA has a rectangular connection and therefore has a limited depth, making it ideal for installation in premises where a discrete appearance is required. Behind the perforated front plate, CRA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a rectangular duct connection, so the diffuser can be connected at the top or bottom. The connection duct CRAZ with a circular connection is available as an accessory. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles
- Duct connections and plinths can be supplied as accessories

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

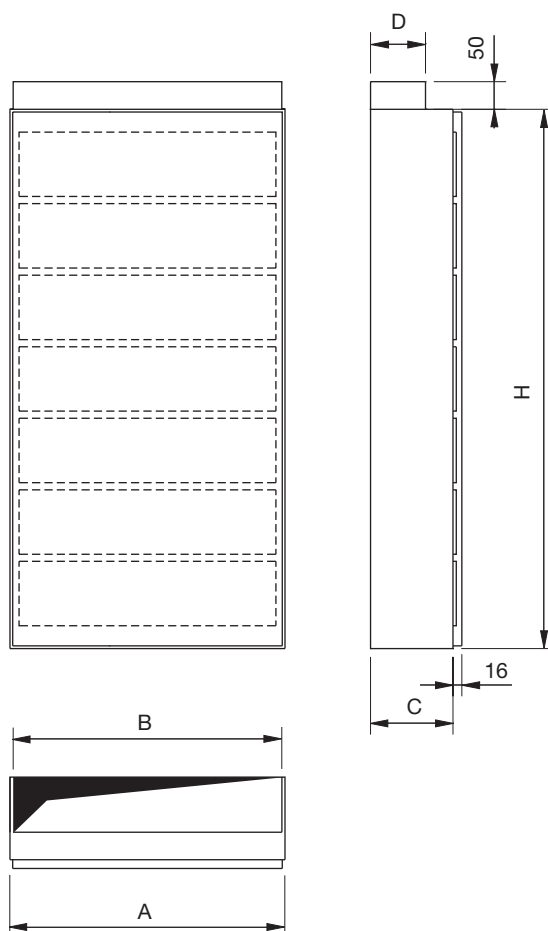
## Order code

<b>Product</b>	<b>CRA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Connection duct: CRAZ - 1 - size  
 Plinth: CRAZ - 2 - size

## Dimensions



Size	A mm	B mm	C mm	D mm	H mm	Weight kg
3010	300	278	150	98	980	10,0
5010	500	478	150	98	980	17,0
8010	800	778	150	98	980	27,0
8020	800	778	250	198	2020	32,0

## Accessories

Can be supplied with duct connection and plinth.

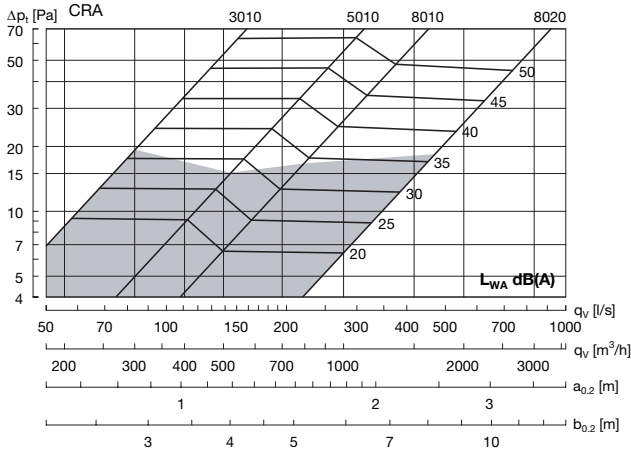
## Materials and finish

Diffuser: Galvanised steel  
 Nozzles: Black plastic  
 Front plate: 1,5 mm galvanised steel  
 Standard finish: Powder-coated  
 Standard colour: RAL 9010 - white, gloss 30

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

# Perforated diffuser - rectangular CRA

## Technical data



Recommended maximum volume flow

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

### Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{ok}$

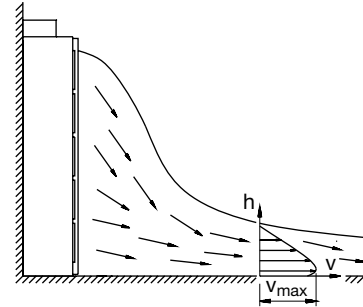
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
3010	9	-1	5	-1	-11	-17	-30	-41
5010	7	1	4	0	-11	-19	-32	-42
8010	15	0	4	0	-12	-20	-31	-43
8020	10	4	6	-2	-11	-21	-33	-39

### Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
3010	11	7	6	4	2	2	1	2
5010	10	6	6	4	2	2	1	2
8010	10	6	4	3	2	1	1	1
8020	7	4	3	2	1	1	1	1

## Nearzone



Large diffusion (factory setting)

Small diffusion

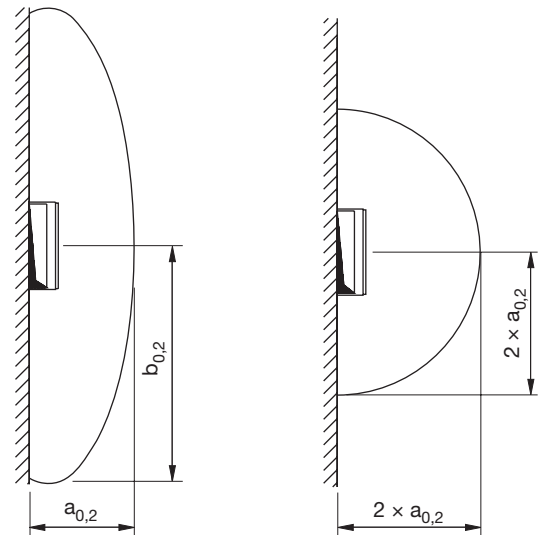


Table 1 Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

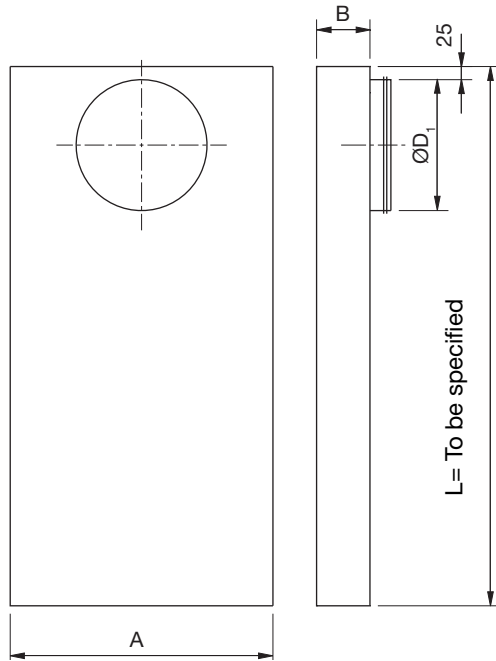
Under-temperature $T_f - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - rectangular

CRA

## Accessories

### Connection duct CRAZ-1



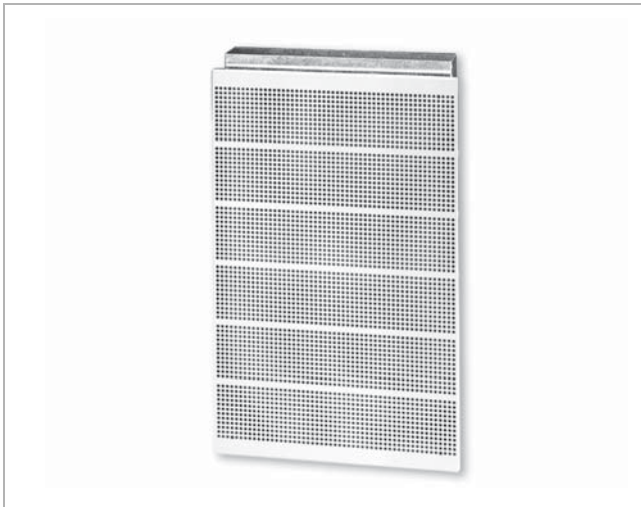
Size	A mm	B mm	ØD <sub>1</sub> mm	Weight kg/m
3010	280	100	200	5,0
5010	480	100	250	7,0
8010	780	100	315	9,0
8020	780	200	400	11,0

## Order code

Connection duct	CRAZ-1	aaaa	bbbb	c
Type				
Size				
Length	According to dimensions in mm L=max. 2,000 mm			
Connection	Front Back (Standard)	0 1		

# Perforated diffuser - installation

# CVA



## Description

Comdif CVA is a rectangular perforated displacement diffuser for installation in walls or similar structures. CVA has a rectangular connection. Behind the perforated front plate, CVA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a rectangular duct connection, so the diffuser can be connected at the top or bottom. A wall duct with circular connection is supplied as an accessory. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for installation in walls.
- The geometry of the near zone can be adjusted using adjustable nozzles.
- A wall duct can be supplied as an accessory.

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

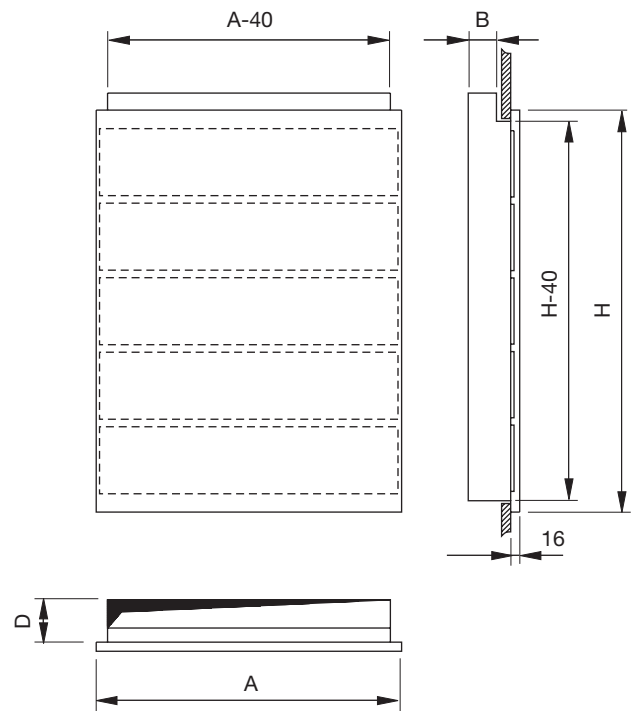
## Order code

<b>Product</b>	<b>CVA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Wall duct: CVAZ -1 - size

## Dimensions



Size	A mm	B mm	D mm	H mm	m kg
3005	540	50	75	320	4,40
5005	540	50	75	450	5,80
6005	540	50	75	580	8,70
6008	540	80	105	580	9,00
8008	540	80	105	840	12,0

Cutting dimension: A - 30 x H - 30

## Accessories

Can be supplied with wall duct.

## Materials and finish

Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1,5 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

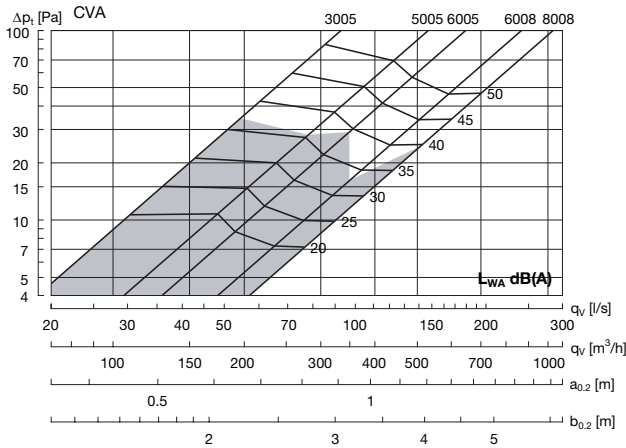
The diffuser is available in other colours. Please contact Lindab's sales department for further information.



# Perforated diffuser - installation

CVA

## Technical data



Recommended maximum volume flow

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

### Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{Ok}$

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
3005	7	-2	-2	1	-8	-17	-27	-38
5005	7	-3	-1	1	-7	-17	-29	-36
6005	11	-4	-1	1	-7	-17	-29	-37
6008	12	-4	2	1	-9	-20	-31	-31
8008	10	-4	2	1	-9	-19	-30	-43

### Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
3005	18	13	9	4	1	0	0	1
5005	15	11	8	2	2	1	0	0
6005	15	10	4	2	0	0	0	1
6008	12	8	3	2	0	0	0	0
8008	12	8	3	1	0	0	0	0

## Nearzone



Large diffusion (factory setting)

Small diffusion

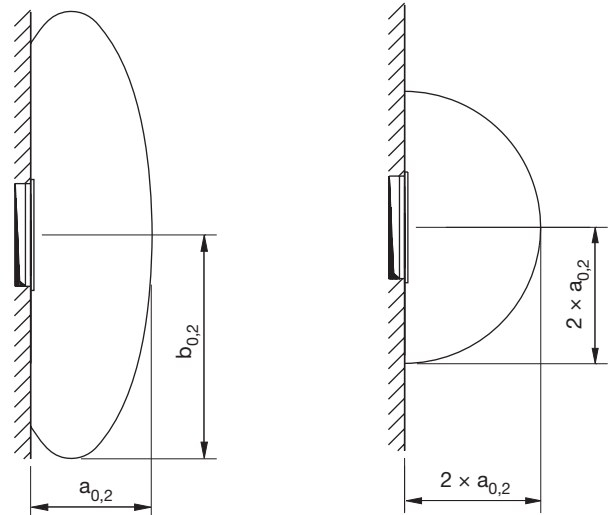


Table 1  
Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

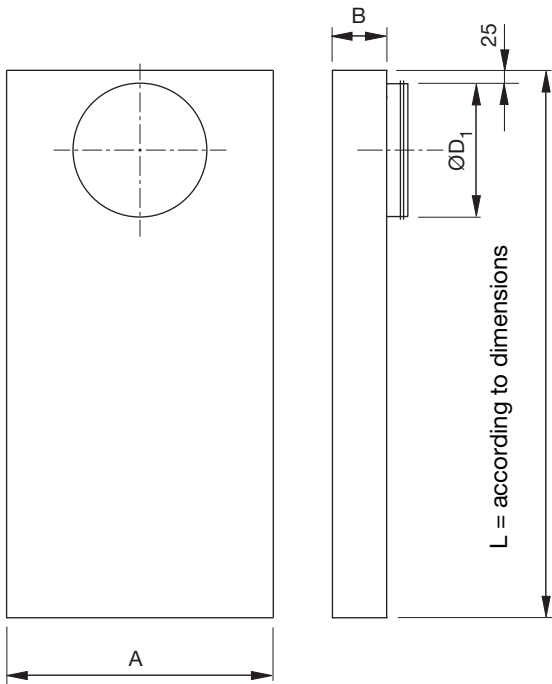
Under-temperature $T_f - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - installation

# CVA

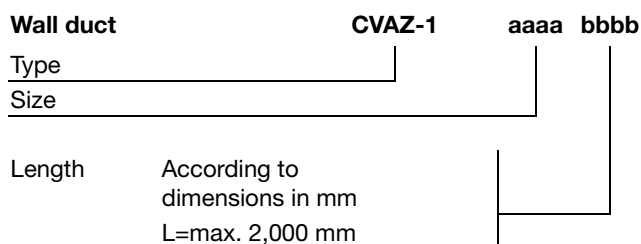
## Accessories

### Wall duct CVAZ-1



Size	A mm	B mm	ØD <sub>1</sub> mm	Weight kg/m
3005	502	52	125	6,0
5005	502	52	160	6,0
6005	502	52	200	6,0
6008	502	82	250	6,5
8008	502	82	315	6,5

## Order code



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

# Perforated diffuser - rectangular

CEA



## Description

Comdif CEA is a rectangular perforated displacement diffuser for installation against a wall or column. Behind the perforated front plate, CEA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles.
- Plinths be supplied as accessories.

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

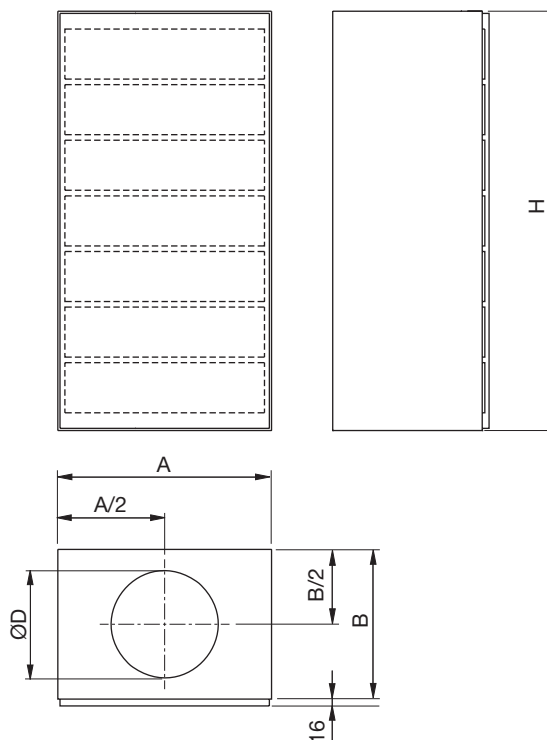
## Order code

<b>Product</b>	<b>CEA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Plinth: CEAZ - 2 - size

## Dimensions



Size	A mm	B mm	ØD mm	H mm	Weight kg
200	300	300	200	980	12,0
250	500	350	250	980	24,0
315	800	500	315	1500	80,0
400	800	600	400	1500	96,0

## Accessories

Can be supplied with plinth.

## Materials and finish

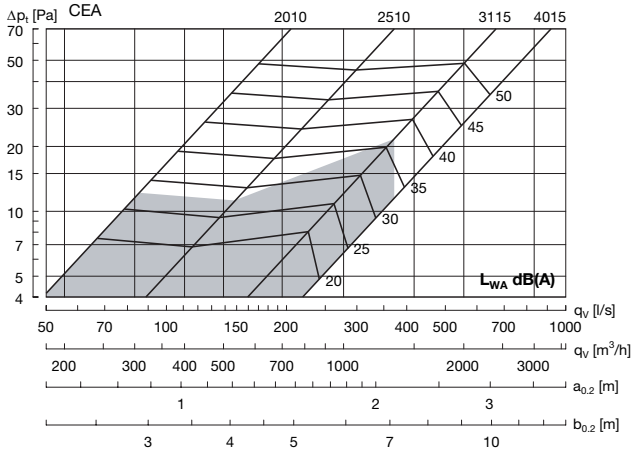
Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1,5 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

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

# Perforated diffuser - rectangular

# CEA

## Technical data



Recommended maximum volume flow.

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table 1, correction of the near zone for -3 K and -6 K respectively.

## Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{ok}$

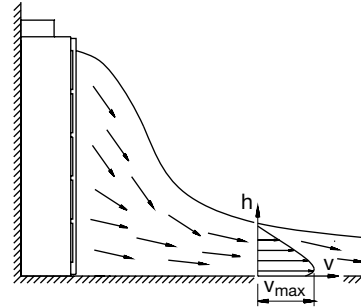
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
2010	11	4	4	-1	-8	-14	-25	-37
2510	8	4	2	0	-6	-16	-27	-40
3115	14	6	3	-1	-8	-17	-29	-25
4015	11	3	2	1	-10	-18	-30	-37

## Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

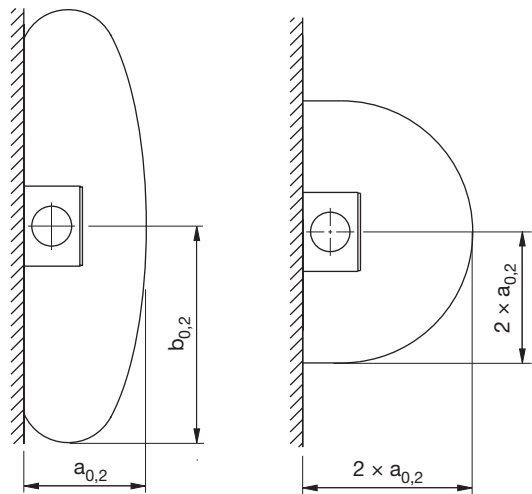
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
2010	10	6	1	4	5	3	4	4
2510	10	6	6	4	2	2	4	3
3115	9	6	5	3	3	4	4	5
4015	8	5	3	3	2	3	4	4

## Nearzone



Large diffusion  
(factory setting)

Small diffusion



## Correction of the near zone ( $a_{0,2}$ , $b_{0,2}$ )

Under-temperature	Maximum velocity	Mean velocity	Correction factor
$T_r - T_r$	m/s	m/s	
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - square

CKA



## Description

Comdif CKA is a square perforated displacement diffuser for installation against a wall or column. Behind the perforated front plate, CKA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air
- The geometry of the near zone can be adjusted using adjustable nozzles
- Plinths can be supplied as accessories

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

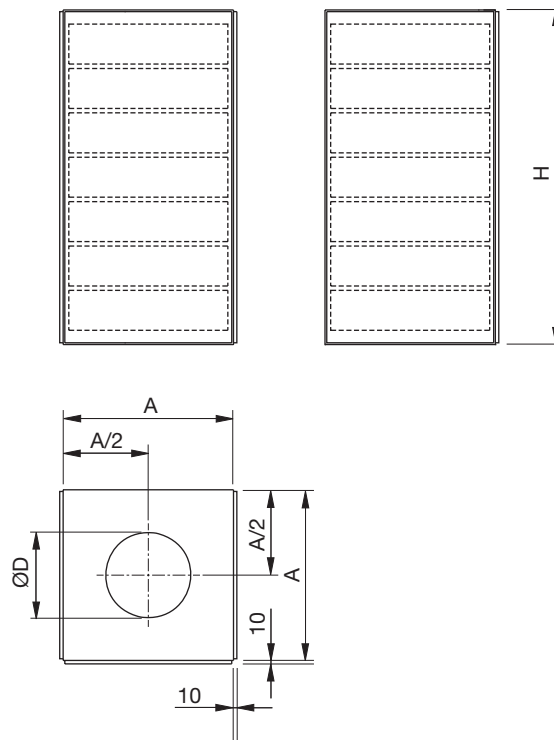
## Order code

<b>Product</b>	<b>CKA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Plinth: CKAZ - 2 - size

## Dimensions



Size	A mm	ØD mm	H mm	Weight kg
200	300	200	980	11,0
250	400	250	980	20,0
315	500	315	980	30,0
400	500	400	1500	45,0
500	800	500	2020	150
630	800	630	2020	150

## Accessories

Can be supplied with plinth.

## Materials and finish

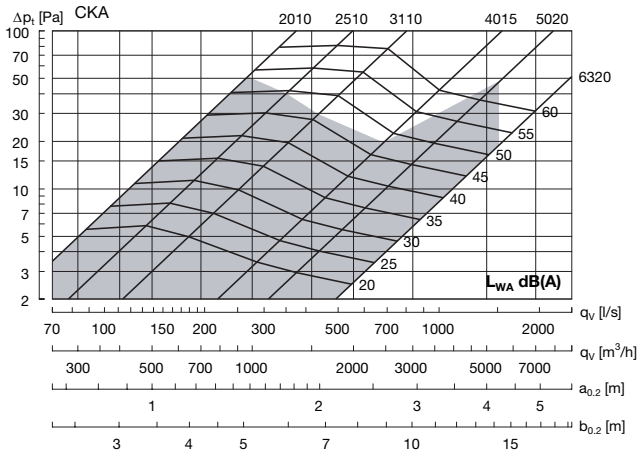
Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1,5 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white, gloss 30

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

# Perforated diffuser - square

# CKA

## Technical data



Recommended maximum volume flow.

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table correction of the near zone for -3 K and -6 K respectively.

## Sound effect level

$$\text{Sound effect level } L_W \text{ [dB]} = L_{WA} + K_{ok}$$

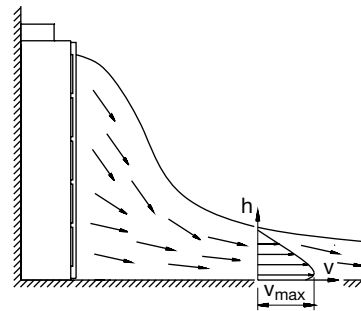
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
2010	10	0	4	0	-8	-18	-29	-43
2510	11	1	4	-1	-8	-19	-30	-42
3110	14	3	4	-1	-10	-18	-30	-32
4015	10	1	2	0	-8	-17	-27	-42
5020	7	3	2	0	-6	-16	-19	-17
6320	7	3	2	0	-6	-16	-19	-17

## Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

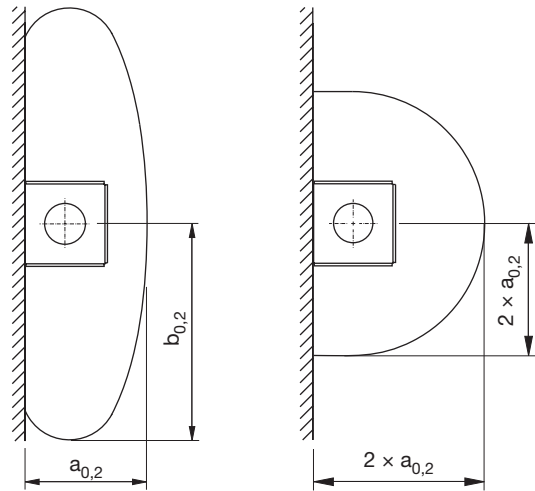
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
2010	12	8	4	2	1	1	1	1
2510	10	6	6	4	2	2	4	3
3110	10	7	3	1	2	1	2	1
4015	9	6	1	1	1	1	1	1
5020	6	4	1	1	1	1	1	1
6320	5	3	1	0	0	0	0	0

## Nearzone



Large diffusion (factory setting)

Small diffusion



## Correction of the near zone ( $a_{0,2}$ , $b_{0,2}$ )

Under-temperature $T_i - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70
	0.40	0.20	0.60

# Perforated diffuser - circular

# CCA



## Description

Comdif CCA is a circular perforated displacement diffuser for freestanding installation. Behind the perforated front plate, CCA is equipped with individually adjustable nozzles, making it possible to alter the geometry of the near zone. The diffuser can be turned and has a circular duct connection (MF measure), so the diffuser can be connected at the top or bottom. The diffuser is suitable for the supply of large volumes of moderately cooled air.

- The diffuser is suitable for the supply of large volumes of air.
- The geometry of the near zone can be adjusted using adjustable nozzles.
- Plinths can be supplied as accessories.

## Maintenance

The front plate can be removed from the diffuser, making it possible to clean the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

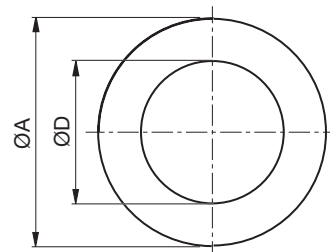
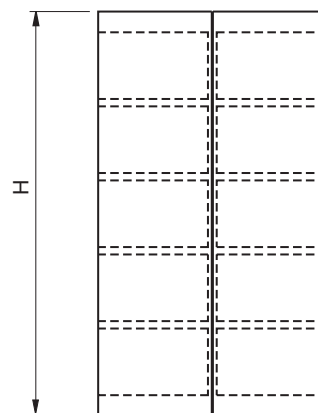
## Order code

<b>Product</b>	<b>CCA</b>	<b>aaaa</b>
Type		
Size		

## Order - accessories

Plinth: CCAZ - 2 - size

## Dimensions



Size	ØA mm	ØD mm	H mm	Weight kg
1207	250	125	710	5,00
1607	300	160	710	7,50
2010	360	200	970	13,0
2510	400	250	970	18,0
3115	520	315	1490	35,0
4020	630	400	2010	58,0
5020	730	500	2010	78,0
6320	830	630	2010	106

## Accessories

Can be supplied with plinth.

## Materials and finish

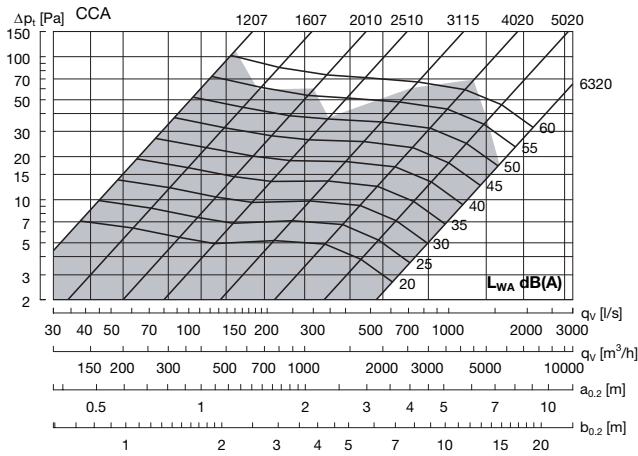
Diffuser:	Galvanised steel
Nozzles:	Black plastic
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 9010 - white

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

# Perforated diffuser - circular

# CCA

## Technical data



Recommended maximum volume flow

The near zone is given at an under-temperature of -3 K to a maximum terminal velocity of 0.20 m/s.

Conversion to other terminal velocities - see table correction of the near zone for -3 K and -6 K respectively.

## Sound effect level

Sound effect level  $L_W$  [dB] =  $L_{WA} + K_{Ok}$

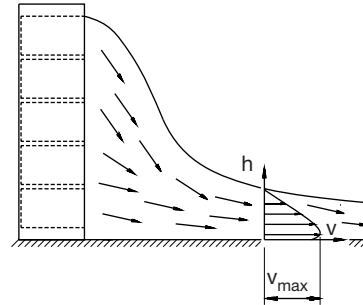
Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	8	-1	1	1	-9	-17	-28	-40
1607	10	-1	1	1	-8	-17	-29	-33
2010	10	-1	3	0	-9	-17	-27	-40
2510	7	-1	3	0	-7	-18	-28	-41
3115	13	2	3	-1	-8	-17	-29	-27
4020	13	2	3	-1	-7	-16	-28	-43
5020	7	3	2	0	-6	-16	-19	-17
6320	7	3	2	0	-8	-16	-20	-17

## Sound attenuation

Sound attenuation  $\Delta L$  [dB] including end reflection.

Size	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
1207	19	14	5	3	2	1	2	1
1607	16	12	4	1	2	1	2	2
2010	12	8	4	2	3	2	2	2
2510	12	8	5	2	1	1	1	1
3115	11	8	3	2	1	1	2	2
4020	9	6	1	1	1	1	1	1
5020	6	4	1	1	1	1	1	1
6320	5	3	1	1	0	0	0	1

## Nearzone



Oval diffusion

Circular diffusion (factory setting)

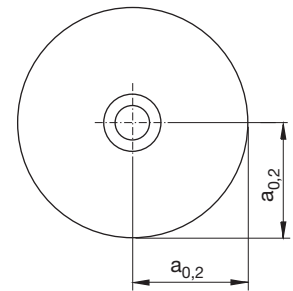
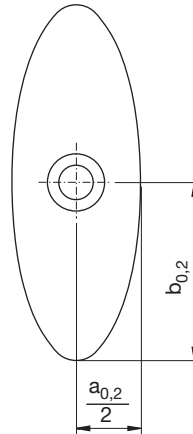


Table 1  
Correction of the near zone ( $a_{0,2}$ ,  $b_{0,2}$ )

Under-temperature $T_f - T_r$	Maximum velocity m/s	Mean velocity m/s	Correction factor
-3K	0.20	0.10	1.00
	0.25	0.12	0.80
	0.30	0.15	0.70
	0.35	0.17	0.60
	0.40	0.20	0.50
-6K	0.20	0.10	1.20
	0.25	0.12	1.00
	0.30	0.15	0.80
	0.35	0.17	0.70



# Theatre diffusers



*Opera House, Copenhagen*

## Theatre diffusers

For ventilation in auditoriums, theatres, cinemas etc., where many people sit together, it is a great advantage to use the displacement principle and diffusers especially for that purpose.

Typically diffusers are either placed in the stairs or in the floor under the rows of seats. Normal small air volumes (10-14 l/s) are supplied with a limited cooling temperature, usually distributed in the ratio of one diffuser per person. This ensures the best division of layers. An added bonus is that the thermal load from the people is removed.

The velocity of the air in the diffusers near-zone is an important parameter in planning. Normally 0,20 m/s at a temperature gradient of 1,5 K is acceptable. The velocity depends on how much air is supplied per metre of chair-rows in the room, in addition to the air diffusion. Usually air diffusion pattern is directed so the air is supplied in the direction of the chairs. This ensures a reduction in the velocity before the air is spread throughout the room.

## Unique solutions

In the series of theatre diffusers are also diffusers for displacement ventilation. The theatre diffusers come in circular and rectangular with the possibility of being mounted directly in the air duct system or pressure chamber.

The diffusers are delivered with perforated front plates and blending profiles, which makes it possible to direct the air flow patterns to small near-zones. The diffusers are delivered pre-set for chosen pressure and air flow, so adjustment is not necessary.

In many instances, it is necessary to create especially designed solutions due to the increased requirements for acoustics, architecture, constructional needs etc.

The diffusers are therefore available in a number of special designs and varieties. Please contact Lindab for further information.



*CCU, theatre diffuser*

# Theatre diffuser

# CRP



## Description

CRP is a rectangular displacement diffuser for installation under seats in theatres, auditoriums, etc. It is suitable for installation in a pressure chamber and has a fixed resistance that ensures even distribution of the air. The diffuser can be adapted to the correct air volume and pressure, specified according to the actual conditions.

- It has built-in resistance that ensures even distribution over the diffusers
- The diffuser can be supplied with a specified pressure setting
- The diffuser is available in other dimensions

## Maintenance

The front plate of the diffuser can be removed to enable cleaning of the internal components. The visible parts of the diffuser can be wiped with a damp cloth.

## Materials and finish

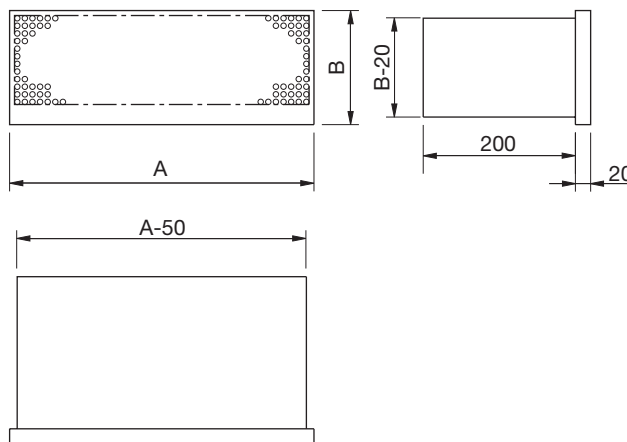
Diffuser:	Galvanised steel
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 7040 - grey, gloss 30 RAL 9010 - white, gloss 30

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

## Order code

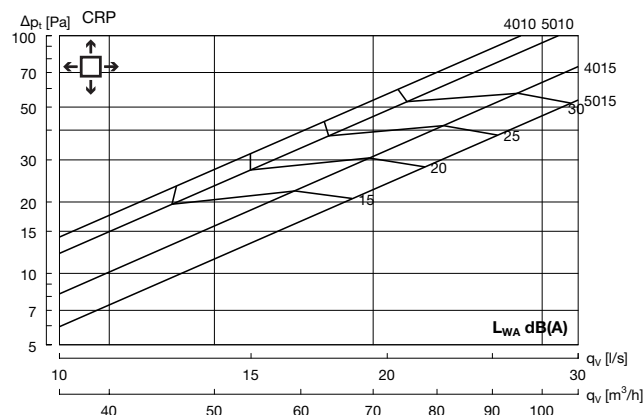
<b>Product</b>	<b>CRP</b>	<b>a</b>	<b>bbbb</b>
Type			
Colour	RAL 7040 - grey	0	
	RAL 9010 - white	1	
	Special colour	2	
Size			

## Dimensions



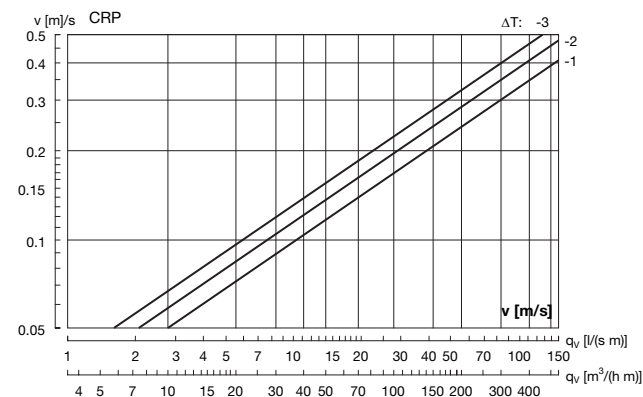
Size	A mm	B mm	Weight kg
4010	400	100	1,60
4015	400	150	2,20
5010	500	100	2,00
5015	500	150	2,70

## Pressure, sound level



Size	63	125	250	500	1K	2K	4K	8K
4010	5	-6	-5	-2	-4	-9	-17	-26
4015	0	-4	-1	0	-6	-10	-18	-27
5010	7	-4	-3	0	-6	-12	-18	-29
5015	5	-3	-1	0	-6	-11	-19	-30

## Near zone



The speed is measured 0.5 m from the diffuser.

# Theatre diffuser

# CRU



## Description

CRU is a rectangular displacement diffuser for installation under seats in theatres, auditoriums, etc. The diffuser is supplied with a circular connection. The diffuser can be supplied with a fixed resistance adapted to the correct air volume and pressure, specified according to the actual conditions.

- Circular connection with Lindab Safe.
- The diffuser can be supplied with a fixed resistance at a specified pressure setting
- The diffuser is available in other dimensions.

## Maintenance

The front plate can be removed from the diffuser for cleaning of the internal components. The visible parts of the diffuser can be wiped with a damp cloth.

## Materials and finish

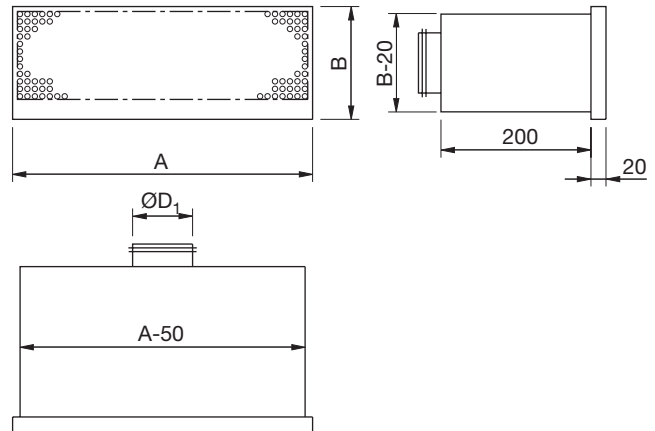
Diffuser:	Galvanised steel
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 7040 - grey, gloss 30 RAL 9010 - white, gloss 30

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

## Order code

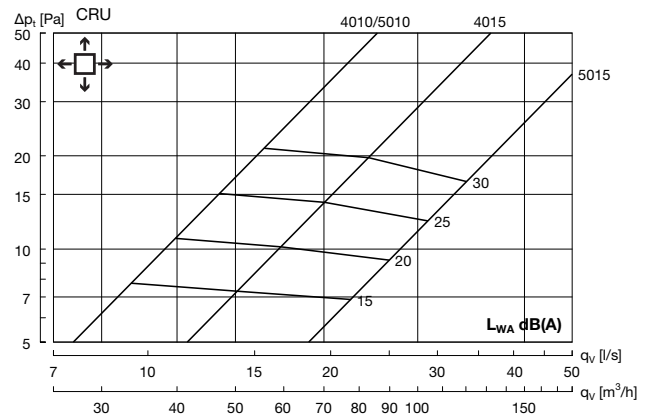
Product	CRU	aaaa	bbbb
Type			
Colour	RAL 7040 - grey	0	
	RAL 9010 - white	1	
	Special colour	2	
Size			

## Dimensions



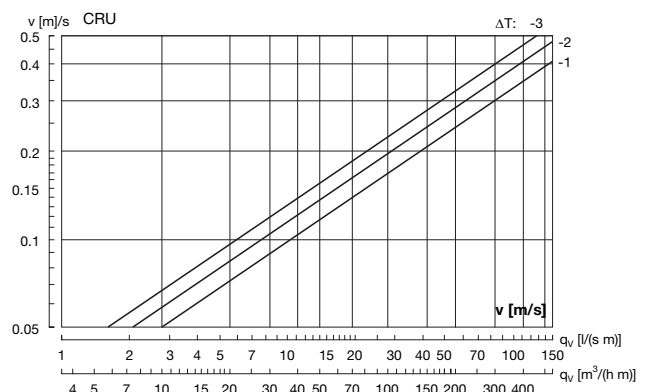
Size	A mm	B mm	ØD <sub>1</sub> mm	Weight kg
4010	400	100	80	1,40
4015	400	150	100	2,00
5010	500	100	80	1,70
5015	500	150	125	2,50

## Pressure, sound level



Size	63	125	250	500	1K	2K	4K	8K
4010	5	-4	-2	2	-9	-18	-30	-42
4015	9	-2	-2	2	-10	-17	-30	-37
5010	5	-4	-2	2	-9	-18	-30	-42
5015	7	-6	-2	2	-11	-21	-33	-28

## Near zone



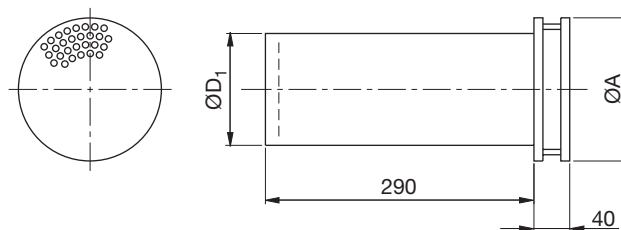
The speed is measured 0.5 m from the diffuser.

# Theatre diffuser

# CCP



## Dimensions



Size	ØA mm	ØD1 mm	Weight kg
100	140	100	0,70
125	160	125	0,90

## Description

CCP is a circular displacement diffuser for installation under seats in theatres, auditoriums, etc. This diffuser is suitable for installation in a pressure chamber. It has a fixed resistance that ensures even distribution of the air. The diffuser can be adapted to the correct air volume and pressure, specified according to the actual conditions.

- It has built-in resistance that ensures even distribution over the diffuser
- The diffuser can be supplied with a specified pressure setting
- The diffuser is available in other dimensions

## Maintenance

The front plate of the diffuser can be removed to enable cleaning of the internal components. The visible parts of the diffuser can be wiped with a damp cloth.

## Materials and finish

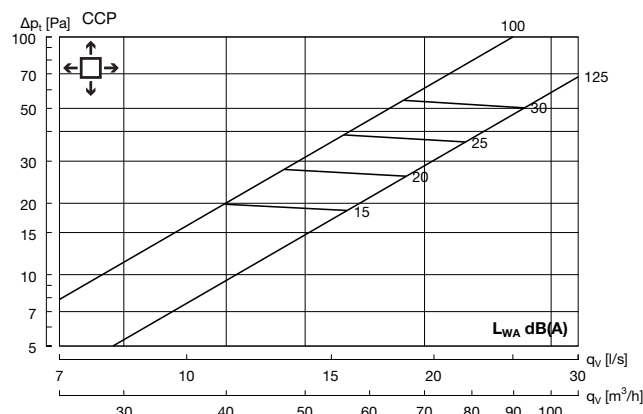
Diffuser: Galvanised steel  
 Front plate: 1 mm galvanised steel  
 Standard finish: Powder-coated  
 Standard colour: RAL 7040 - grey, gloss 30  
 RAL 9010 - white, gloss 30

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

## Order code

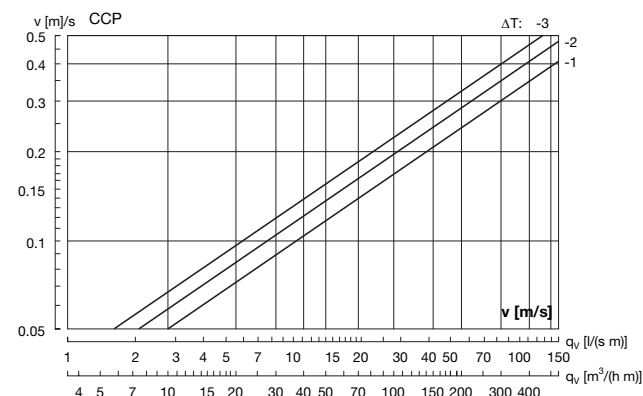
Product	CCP	a	bbb
Type			
Colour	RAL 7040 - grey	0	
	RAL 9010 - white	1	
	Special colour	2	
Size			

## Pressure, sound level



Size	63	125	250	500	1K	2K	4K	8K
100	10	-7	-6	-1	-5	-8	-13	-24
125	3	-7	-5	0	-5	-10	-15	-27

## Near zone



The speed is measured 0.5 m from the diffuser.

# Theatre diffuser

# CCU



## Description

CCU is a circular displacement diffuser for installation under seats in theatres, auditoriums, etc. The diffuser is supplied with a circular connection. The diffuser can be supplied with a fixed resistance, adapted to the correct air volume and pressure, specified according to the actual conditions.

- Circular connection with Lindab Safe.
- The diffuser can be supplied with a fixed resistance at a specified pressure setting.
- The diffuser is available in other dimensions.

## Maintenance

The front plate of the diffuser can be removed to enable cleaning of the internal components. The visible parts of the diffuser can be wiped with a damp cloth.

## Materials and finish

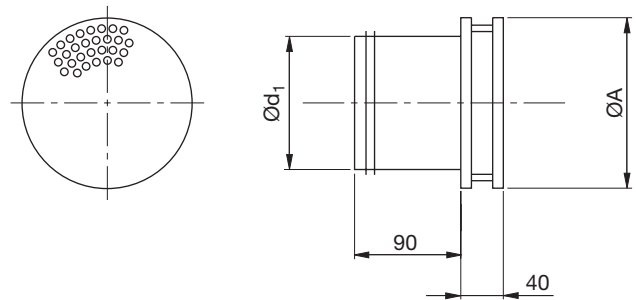
Diffuser:	Galvanised steel
Front plate:	1 mm galvanised steel
Standard finish:	Powder-coated
Standard colour:	RAL 7040 - grey, gloss 30 RAL 9010 - white, gloss 30

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

## Order code

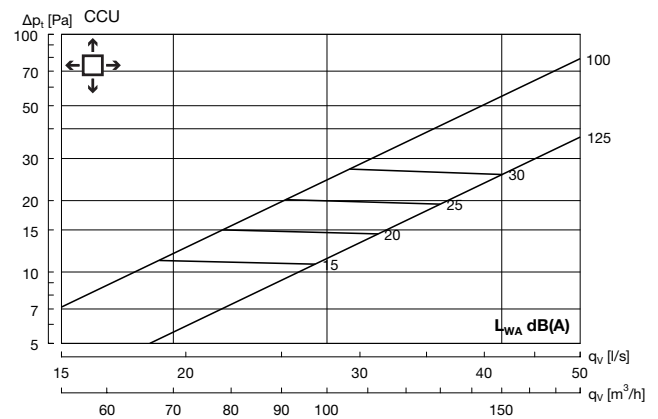
Product	CCU	a	bbb
Type			
Colour	RAL 7040 - grey	0	
	RAL 9010 - white	1	
	Special colour	2	
Size			

## Dimensions



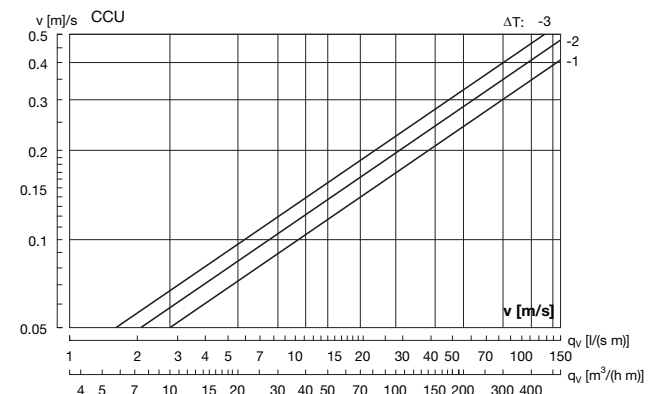
Size	ØA mm	ØD <sub>1</sub> mm	Weight kg
100	140	100	0,40
125	160	125	0,50

## Pressure, sound level



Size	63	125	250	500	1K	2K	4K	8K
100	10	1	-2	-3	-3	-11	-19	-29
125	9	-1	-2	-3	-3	-12	-20	-19

## Near zone



The speed is measured 0.5 m from the diffuser.

# Low impulse



CBAL, LEO pharma, Ballerup

## Low-impulse supplied air

At low-impulse supplied air, cooling temperature air is added at a low velocity from either ceiling- or wall mounted diffusers. That way, the clean air will partially displace the contaminated air. The need for this type of supplied air method usually arises when the environment and health issues demand supplied air as a substitute for the air which is exhausted by fume cubboards, cooking hoods or other types of exhaust diffusers. This often results in air changes up to 50 times per hour.

With an air change that high, it will not usually be possible to use diffusers based on the traditional mixed ventilation without creating draughts. The supply air method with low impulse is different from the traditional supplied air diffusers, and helps to ensure short air throws and limited velocities in the occupied zone. In order to avoid draughts it is however a pre-requisite that air with a limited cooling temperature (-3 to -4 K) is added. Despite the limited cooling temperature, the large air change will normally result in an unproblematic removal of the thermal load.

## Large selection

Lindab offers a large selection of low-impulse diffusers for visible mounting in the ceiling on on the wall. Likewise, the product-programme contains square and circular perforated diffusers for mounting in suspended ceilings with or without plenum boxes type MBA (see chapter on ceiling diffusers). These diffusers have in common, that Lindab in many instances adapts the diffuser for a specific ceiling system or in other ways adapts the diffuser to the constructural or architectural room conditions. In this chapter we will show some of the varieties Lindab has delivered as an inspiration.



CBAV, diffuser

# Low impulse

## Planning guide

The planning guide below is made for rooms with up to 4 metres room height.

## Sound power level and total pressure

Sound power level  $L_{WA}$  and total pressure loss can be read in the diagrams, which are shown in connection with product-documentation.

## Recommended maximum air flow

Please note the schedule below for the individual products.

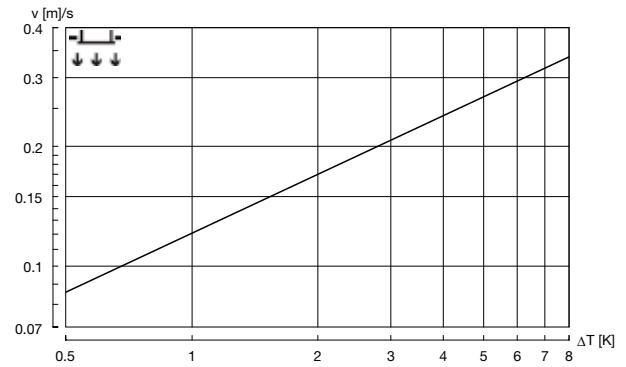
Produkt	$q_{max}$ recommended m <sup>3</sup> /h	$q_{max}$ recommended l/s
CBAL-1200	1000	278
CBAL-1800	1600	444
CBAV-1200	800	222
CBAV-1800	1200	333
PS-1V/H-L-160	190	53
PS-1V/H-L-200	190	53
PS-1V/H-L-250	300	83
PS-1V/H-L-315	450	125
PC-6-L-125	135	38
PC-6-L-160	230	64
PC-6-L-200	230	64
PC-6-L-250	300	83
PC-6-L-315	300	83

## Vertical temperature gradient

When air is supplied at a cooling temperature of up to -6K it will not be possible to register temperatures higher than - 1K lower than the surrounding room temperature, within the diffusers air diffusion area. This is the case no matter the air flow.

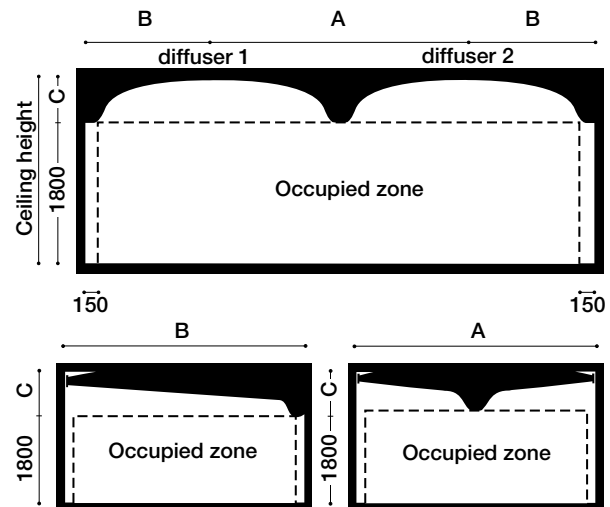
The tolerance level for the temperature is +/- 0,5 K.

## Velocities in the occupied zone



Please note that for the diffusers PS-1 and PC-6 the diagram is only valid, if the minimum distance between the diffusers is enforced as described in the formula below:

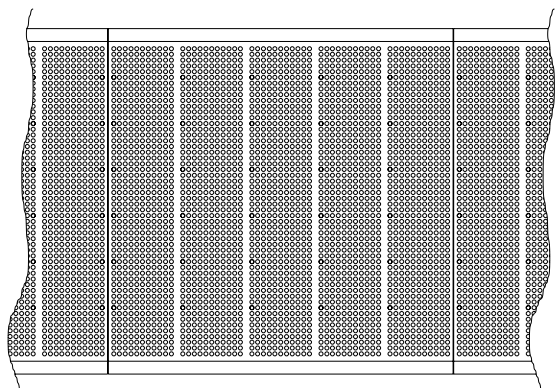
$$L_{0,2} < A/2+C \text{ (see chapter on theory for more information)}$$



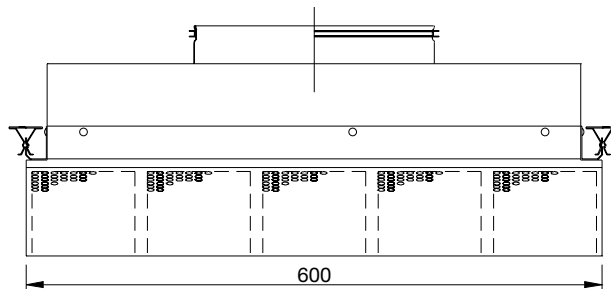
# Low impulse

## Types of CBAL

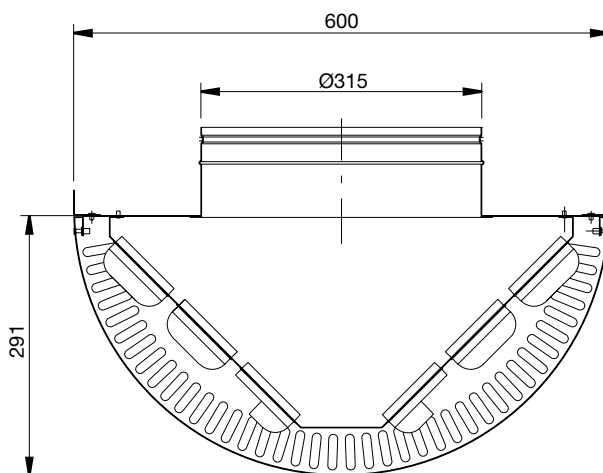
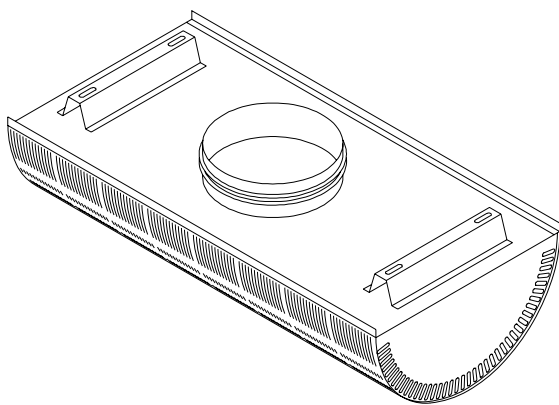
Lindab offers a variety of standard products. On this page we will show a small selection.



Continuous mounting



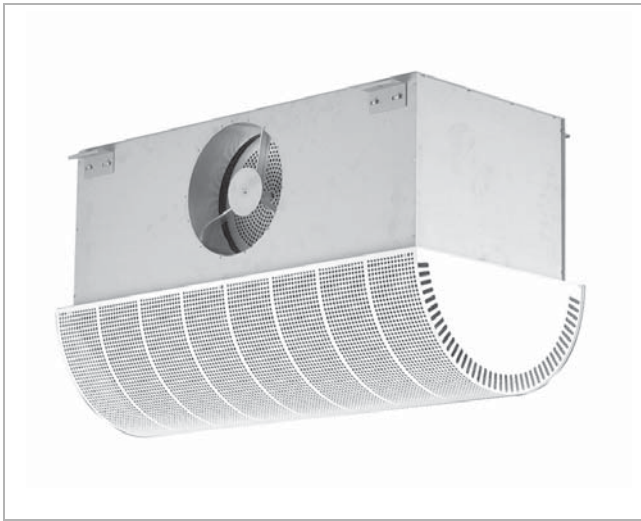
CBAL adapted to 600x600 ceiling systems is used directly in the air duct with moderate velocities, which in principle will function as a pressure chamber. Diffusers are available as 1, 2 or 3 module sections, which can be combined as needed. The diffuser is delivered with built-in resistance, so that adjustment of the individual diffusers is not needed. The individual diffuser can be made inactive by closing. It is possible to “move the air” and obtain a great deal of flexibility when furnishing the room.



CBAL without plenum box is used, when there is a need for a lower building height. The diffuser is usually mounted directly in an air duct placed above the diffuser. The diffuser is available in a length of 1200, 1800 in addition to 2400 mm with 1 and 2 piece  $\varnothing 315$  connections and 2 x  $\varnothing 400$  connections respectively. The diffuser is also adaptable to most ceiling systems.

# Perforated diffuser

# CBAL



## Description

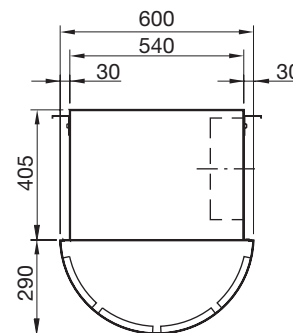
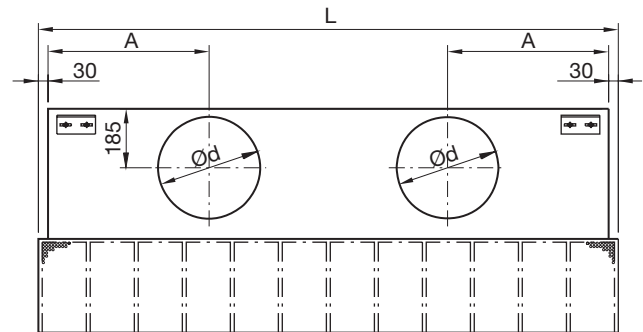
CBAL is a low-impulse diffuser for ceiling installation. The diffuser is suitable for the supply of replacement air in laboratories, commercial kitchens, etc. The diffuser is equipped with adjustable nozzles behind the perforated face plate, allowing the dispersal pattern to be adjusted according to the conditions.

## Maintenance

The face plate and nozzle tray can be removed from the diffuser to enable cleaning of the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

## Dimensions

L Size mm	A mm	ØD mm	Number of connections
1200	570	315	1
1800	500	315	2



## Order code

<b>Product</b>	<b>CBAL</b>	<b>bbbb</b>
Type		
Size	1200	
	1800	

## Materials and finish

Material: Galvanised steel  
 Nozzles: Black ABS plastic  
 Standard finish: Powder-coated  
 Standard colour: RAL 9010 Gloss 30

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



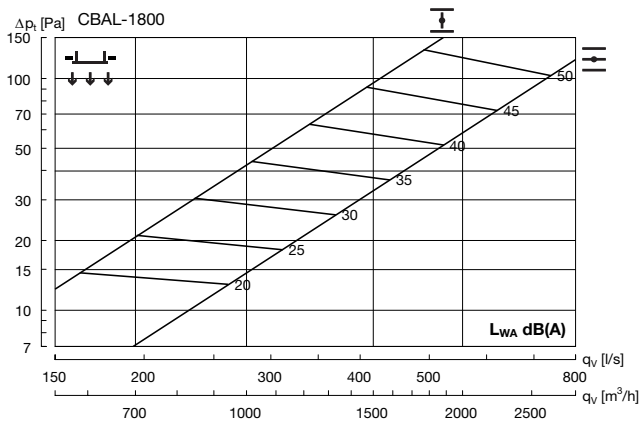
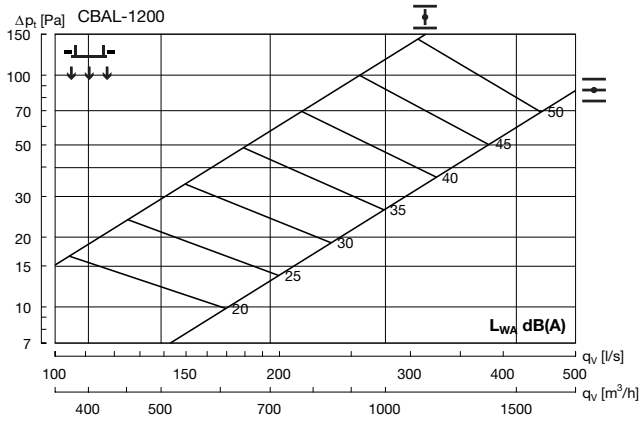
# Perforated diffuser

# CBAL

## Technical data

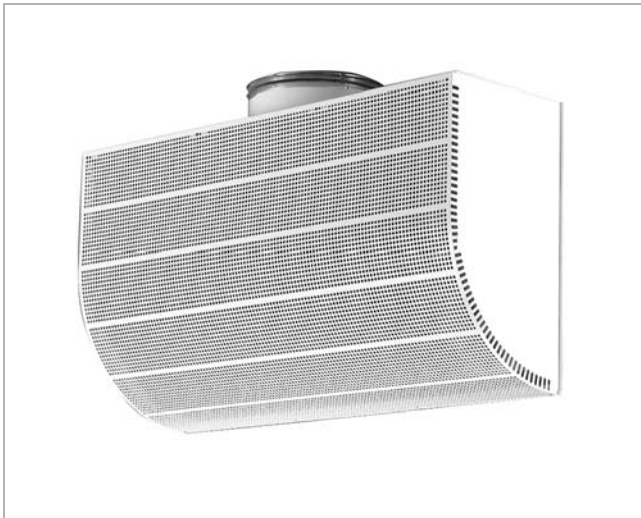
### Supply air

### CBAL



# Perforated diffuser

# CBAV



## Description

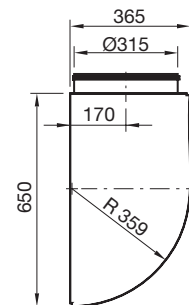
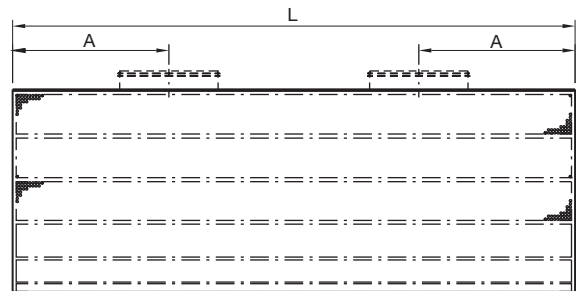
CBAV is a low-impulse diffuser for ceiling installation against a wall or skirt. The diffuser is suitable for the supply of replacement air in laboratories, commercial kitchens, etc. The diffuser is equipped with adjustable nozzles behind the perforated face plate, allowing the dispersal pattern to be adjusted according to the conditions.

## Maintenance

The face plate and nozzle tray can be removed from the diffuser to enable cleaning of the nozzles. The visible parts of the diffuser can be wiped with a damp cloth.

## Dimensions

L Size mm	A mm	ØD mm	Number of connections
1200	600	315	1
1800	500	315	2



## Order code

Product Type	CBAV	bbbb
Size	1200	1800

## Materials and finish

Material: Galvanised steel  
 Nozzles: Black ABS plastic  
 Standard finish: Powder-coated  
 Standard colour: RAL 9010 Gloss 30

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



# Perforated diffuser

# CBAV

## Technical data

### Supply air

### CBAV

