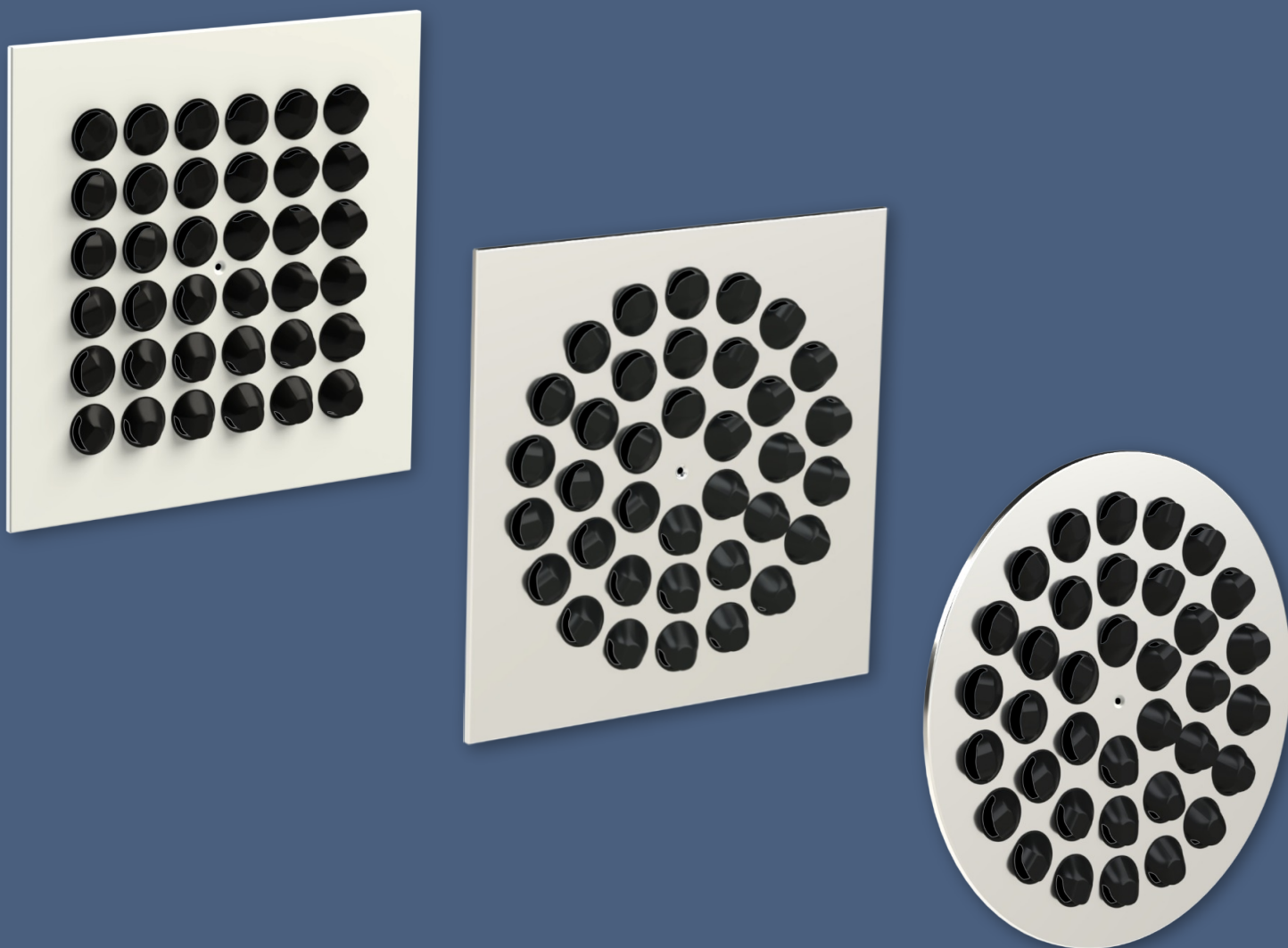


NDM

Diffuser with adjustable nozzles

Technical Documentation

Installation, Commissioning, Operation, Maintenance and Service Manual



These technical specifications state a row of manufactured sizes diffuser with adjustable NDM nozzles (hereinafter also referred to as the "diffuser").

It is valid for production, designing, ordering, delivery, maintenance and operation.

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I. GENERAL

Description

Diffuser serves as the end element of the air handling system for air supply and exhaust.

It consists of a front plate equipped with a set of plastic individually adjustable nozzles.

By rotating the nozzles, you can create any air flow direction according to the specific construction layout.

Diffusers are suitable for rooms up to 4 m high.

The difference between the supply air temperature and the room temperature can be up to 12°C.

Diffusers are intended for air spaces without abrasive, chemical and adhesive additives.

Main features

- basic range of nominal dimensions: 300, 400, 500, 600, 625 mm
- different numbers of nozzles on the plate distributed in a square or round array
- nozzles can be rotated 360°
- adjustable flow direction
- can be used for heating, cooling and isotherm
- easily accessible front panel makes cleaning easier
- can be used together with a UNIBOX or EKOBX connection
- low noise emissions

II. DESIGN

- Diffuser can be equipped with a square or round array of nozzles.
 - Number of square array nozzles: 16, 36, 64
 - Number of round array nozzles: 18, 36, 60
- Color of the nozzles can be chosen as white or black as standard.
- The possibility of using the connection box UNIBOX or EKOBX. These boxes can be supplied with a connection outlet horizontally or vertically to the diffuser, which can be fitted with a control damper.
 - UNIBOX TPM 139/19
 - EKOBX TPM 037/04



Box with square front plate and square nozzle array (C/C)

Box with square front plate and round nozzle array (C/K)

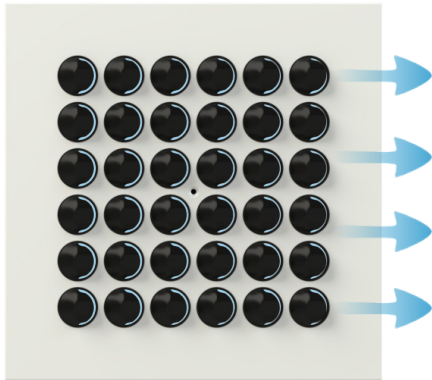
Box with round front plate and round nozzle array (K/K)

Standard combination of number of nozzles and box size

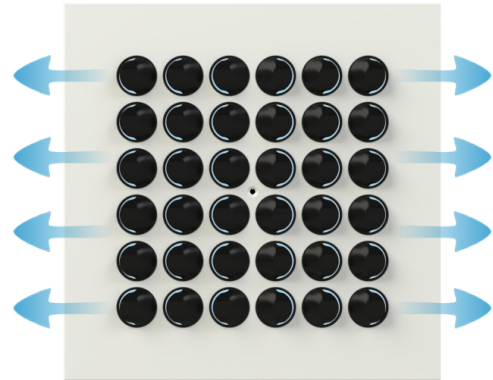
c/c		c/k		k/k	
Number of nozzles	Box size	Number of nozzles	Box size	Number of nozzles	Box size
16	300	18	400	18	400
36	400	36	500	36	500
64	600	60	600	60	600

Nozzle settings and air flow directions

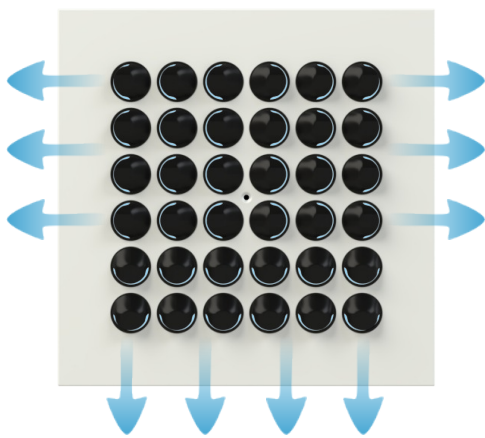
1 way air flow direction



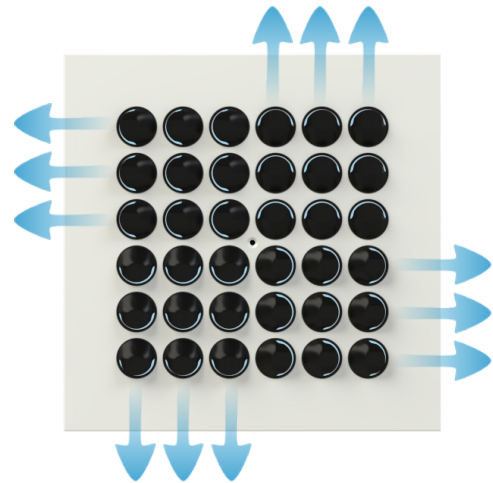
2-way air flow direction



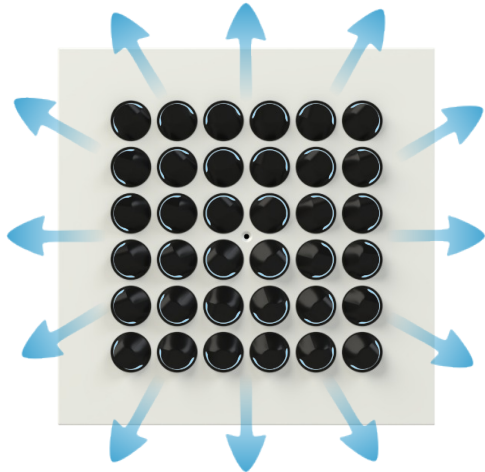
3-way air flow direction



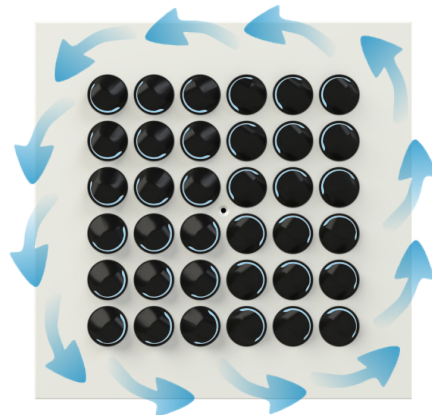
4-way air flow direction



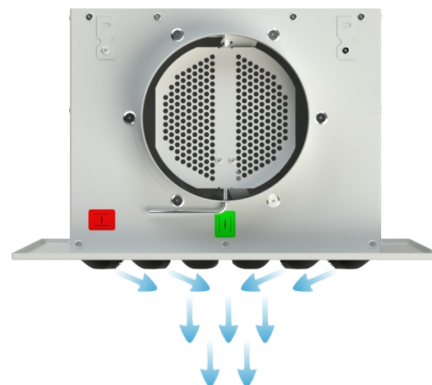
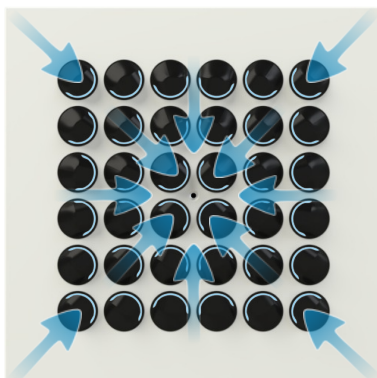
Omnidirectional airflow



Whirling air flow



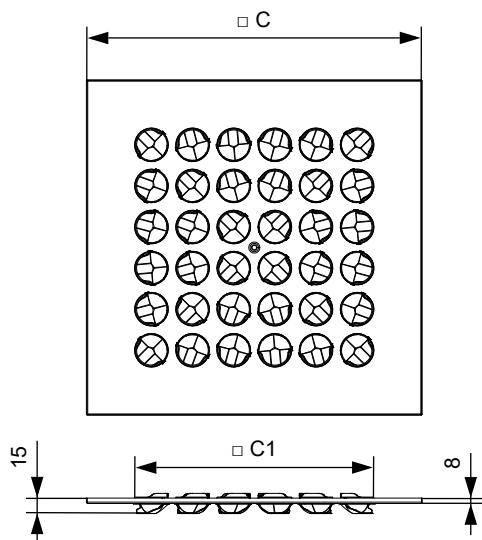
Vertical air flow



III. DIMENSIONS AND WEIGHTS

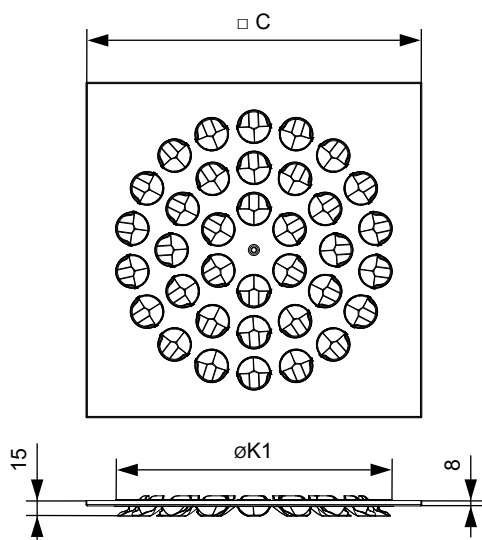
Dimensions and weight of the diffuser

Square front plate / square nozzle array (C/C)



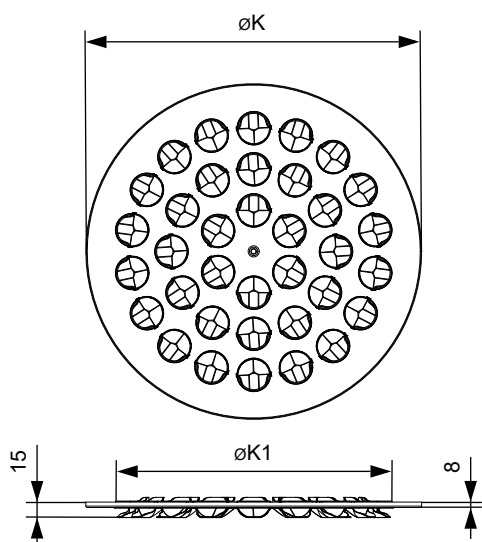
Nominal size [mm]	Number of nozzles [pcs]	□ C [mm]	□ C1 [mm]	Weight [kg]
300	16	298	235	0,6
	16	398	235	1,2
400	36	398	357	1
	16	498	235	1,9
500	36	498	357	1,7
	16	598	235	2,8
600	36	598	357	2,6
	64	598	479	2,3
625	16	623	235	3
	36	623	357	2,8
	64	623	479	2,5

Square front plate / round nozzle array (C/K)



Nominal size [mm]	Number of nozzles [pcs]	□ C [mm]	∅K1 [mm]	Weight [kg]
400	18	398	294	0,9
	18	498	294	1,4
500	36	498	416	1,2
	18	598	294	2,1
600	36	598	416	1,9
	60	598	538	1,7
625	18	623	294	2,3
	36	623	416	2,1
	60	623	538	1,9

Round front plate / round nozzle array (K/K)

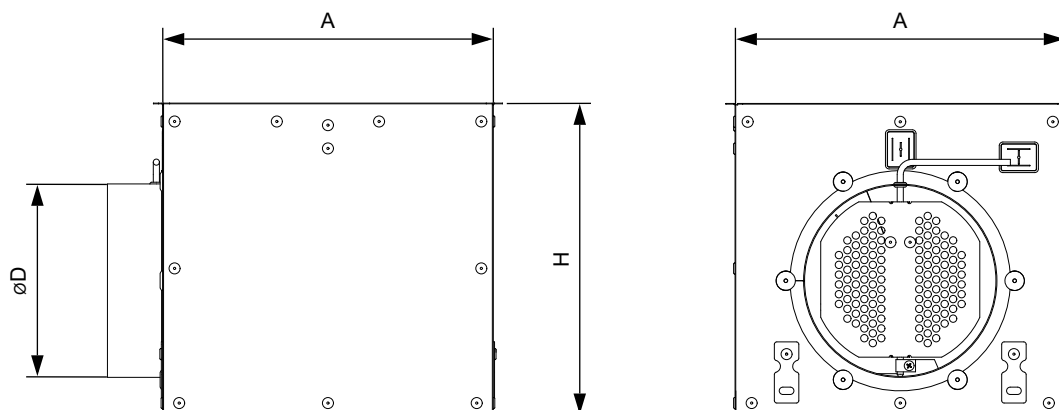


Nominal size [mm]	Number of nozzles [pcs]	∅K [mm]	∅K1 [mm]	Weight [kg]
400	18	398	294	1,1
	18	498	294	1,9
500	36	498	416	1,7
	18	598	294	2,7
600	36	598	416	2,6
	60	598	538	2,3
625	18	623	294	3
	36	623	416	2,8
	60	623	538	2,5

Dimensions and weights of connection boxes

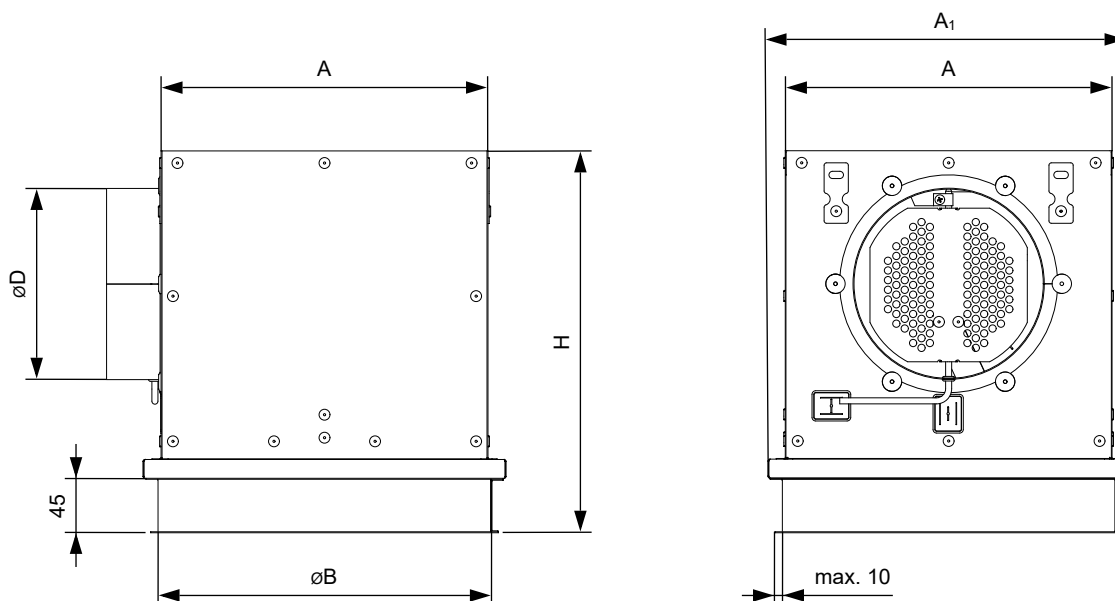
UNIBOX - more information can be found in TPM 139/19

UNIBOX in design for horizontal connection and square front plates



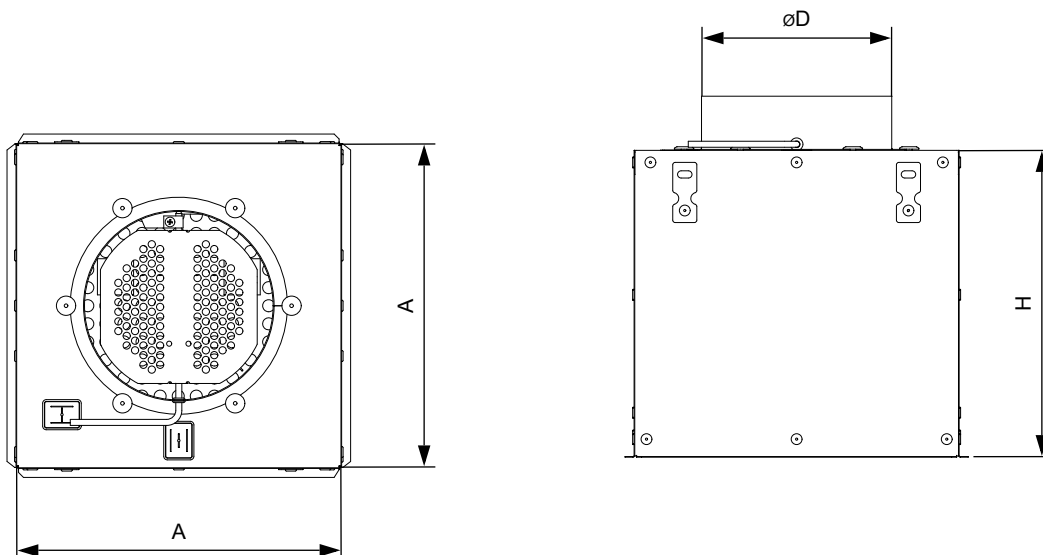
Nominal size [mm]	A [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	255	158	2,3
400	370	295	198	3,5
500	470	295	198	4,8
600	572	345	248	6,7
625	600	345	248	7,1

UNIBOX in design for horizontal connection and round front plates



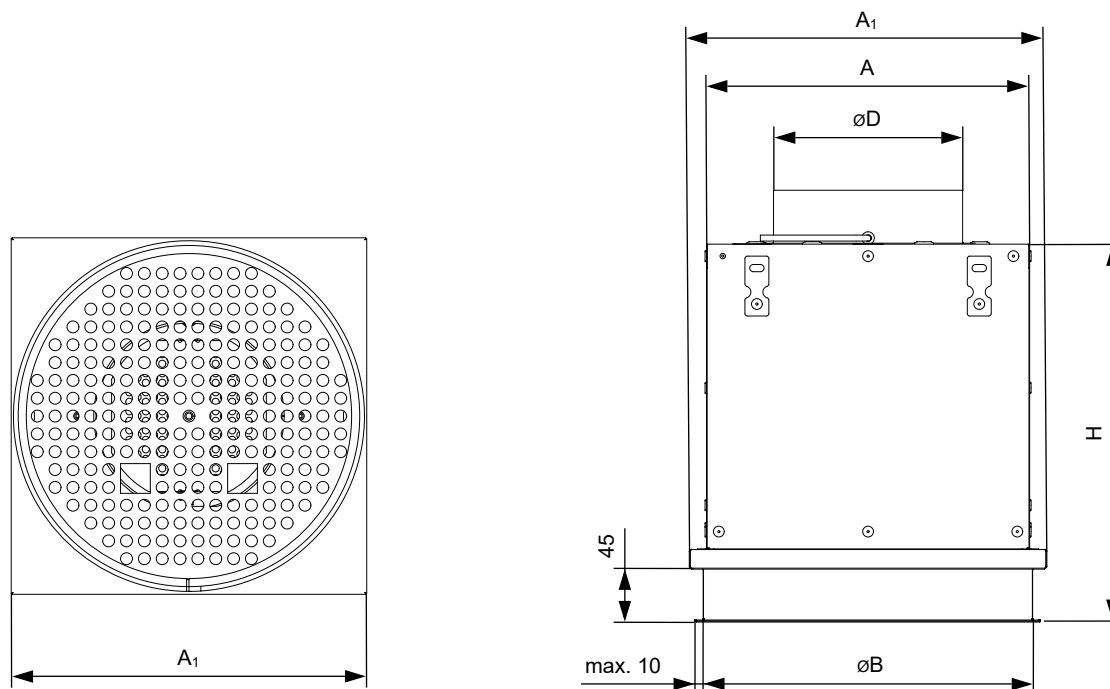
Nominal size [mm]	A [mm]	A ₁ [mm]	øB [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	297	275	290	158	3,1
400	370	390	365	300	198	4,3
500	470	490	465	300	198	5,7
600	572	592	570	350	248	7,8
625	600	620	595	350	248	8,3

UNIBOX in design for vertical connection and square front plates



Nominal size [mm]	A [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	255	158	2,3
400	370	295	198	3,6
500	470	295	198	4,8
600	572	345	248	6,8
625	600	345	248	7,2

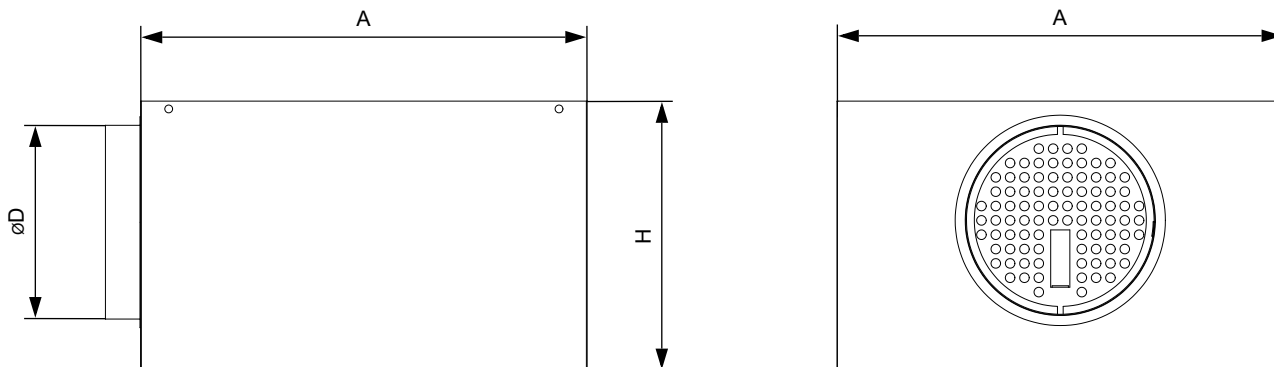
UNIBOX in design for vertical connection and round front plates



Nominal size [mm]	A [mm]	A ₁ [mm]	øB [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	297	275	290	158	3,1
400	370	390	365	300	198	4,3
500	470	490	465	300	198	5,7
600	572	592	570	350	248	7,8
625	600	620	595	350	248	8,3

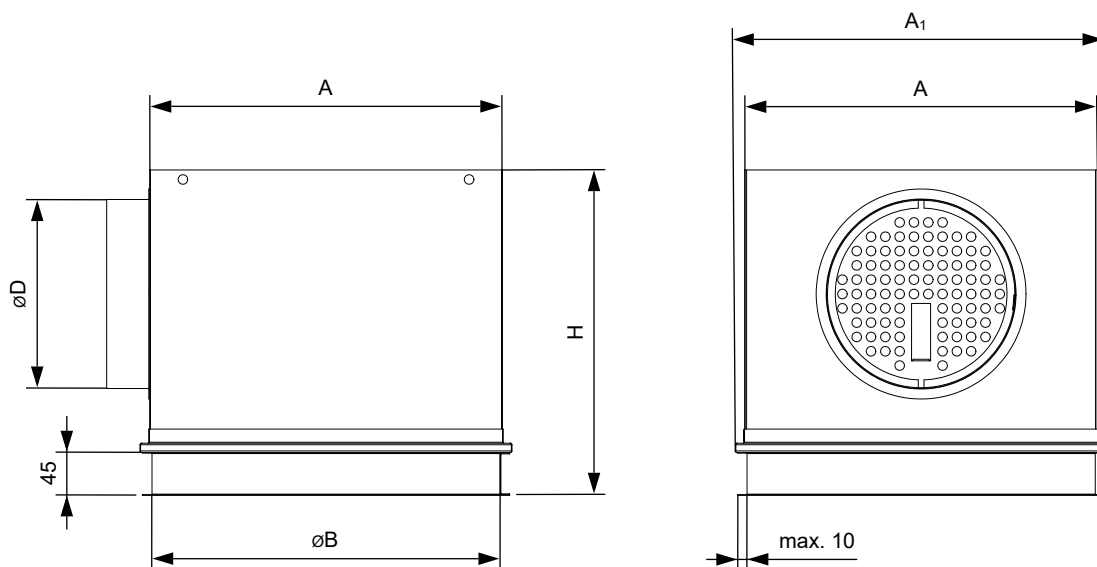
EKOBOX - more information can be found in TPM 037/04

EKOBOX in design for horizontal connection and square front plates



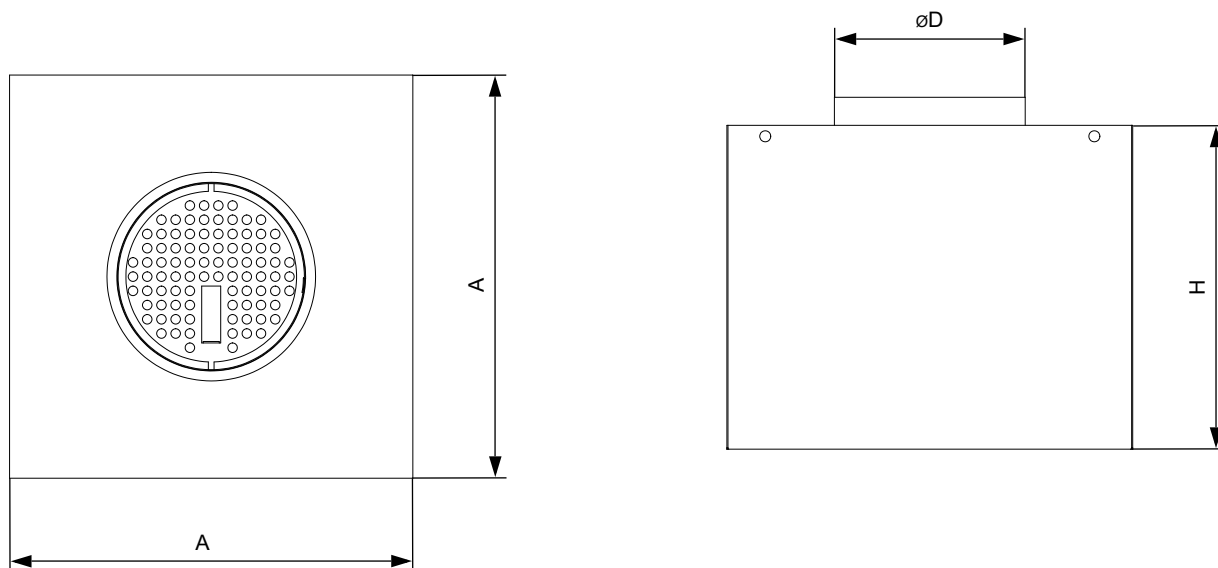
Nominal size [mm]	A [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	255	158	2,2
400	370	295	198	3,5
500	470	295	198	4,6
600	572	345	248	6,4
625	600	345	248	6,8

EKOBOX in design for horizontal connection and round front plates



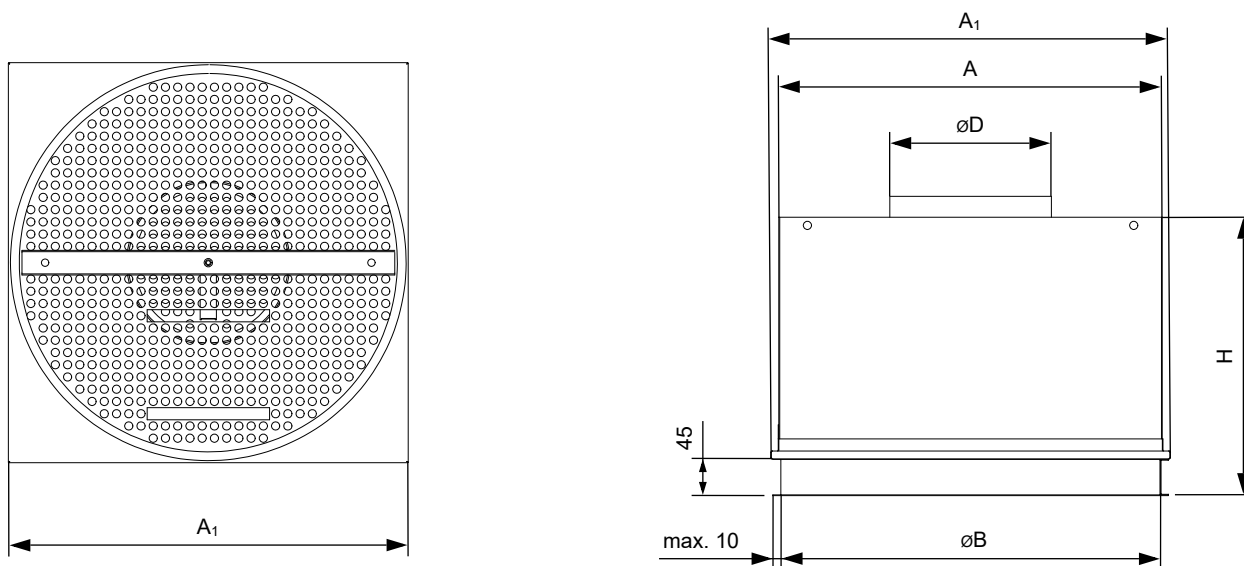
Nominal size [mm]	A [mm]	A ₁ [mm]	øB [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	297	275	300	158	2,8
400	370	390	365	340	198	4,3
500	470	490	465	340	198	5,7
600	572	592	570	390	248	7,9
625	600	620	595	372	248	8,4

EKOBOX in design for vertical connection and square front plates



Nominal size [mm]	A [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	255	158	2,3
400	370	295	198	3,6
500	470	295	198	4,8
600	572	345	248	6,8
625	600	345	248	7,2

EKOBOX in design for vertical connection and round front plates



Nominal size [mm]	A [mm]	A ₁ [mm]	øB [mm]	H [mm]	øD [mm]	Weight [kg]
300	270	297	275	300	158	2,8
400	370	390	365	340	198	4,3
500	470	490	465	340	198	5,7
600	572	592	570	390	248	7,9
625	600	620	595	372	248	8,4

IV. TECHNICAL PARAMETERS

Pressure losses and noise data

NDM C/C 16 + UNIBOX with fully open control damper

Air flow range, pressure loss, acoustic power and air flow speed at the output			
Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
50	6,9	<20	0,9
100	10,4	21	2
150	18,4	28	2,9
200	26,5	32	3,9
250	42,6	36	4,8
300	55,2	41	5,9

Airflow range in meters relative to terminal velocity 0,2 m/s							
Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
50	2,6	1,4	1,1	0,8	0,7	0,5	2
100	4,3	2,5	2	1,4	1,3	1	3,6
150	6,2	3,4	2,8	1,9	1,7	1,5	5,1
200	8	4,3	3,4	2,3	2,1	1,7	6,5
250	9,6	5,2	4,1	2,7	2,5	2,1	7,8
300	11,5	6,2	5	3,2	2,9	2,6	9,1

NDM K/K 18 + UNIBOX with fully open control damper

Airflow range, pressure loss, acoustic power and air flow speed at the output			
Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
50	5,9	<20	0,8
100	8,7	20	2
150	13,5	27	2,7
200	22,1	31	3,6
250	31,3	34	4,5
300	44,5	38	5,4

Airflow range in meters relative to terminal velocity 0,2 m/s							
Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
50	2,5	1,3	1	0,8	0,7	0,5	1,9
100	4	2,3	1,9	1,3	1,2	0,9	3,3
150	5,7	3,1	2,6	1,7	1,6	1,4	4,7
200	7,4	4	3,1	2,1	1,9	1,6	6
250	8,7	4,7	3,7	2,5	2,3	1,9	7,1
300	10,4	5,6	4,5	2,9	2,6	2,3	8,2

NDM C/K 18 + UNIBOX with fully open control damper**Airflow range, pressure loss, acoustic power and air flow speed at the output**

Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
50	6,1	<20	0,8
100	9	22	1,8
150	13,9	28	2,7
200	22,8	33	3,6
250	32,4	36	4,5
300	46,1	39	5,4

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
50	2,5	1,3	1	0,8	0,7	0,5	1,9
100	4	2,3	1,9	1,3	1,2	0,9	3,3
150	5,7	3,1	2,6	1,7	1,6	1,4	4,7
200	7,4	4	3,1	2,1	1,9	1,6	6
250	8,7	4,7	3,7	2,5	2,3	1,9	7,1
300	10,4	5,6	4,5	2,9	2,6	2,3	8,2

NDM C/C 36 + UNIBOX with fully open control damper**Airflow range, pressure loss, acoustic power and air flow speed at the output**

Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
100	3,3	<20	1,4
150	5,2	<20	1,9
200	7,9	<20	2,6
250	11,7	23	3
300	16,9	27	3,6
350	23,2	32	4
400	30	35	4,8

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
100	3,1	1,7	1,4	0,9	0,8	0,7	2,2
150	4,9	2,6	2,1	1,4	1,3	1,1	3,5
200	6,8	3,7	3	1,9	1,7	1,5	4,9
250	8,4	4,6	3,7	2,4	2,1	1,8	6
300	9,7	5,3	4,2	2,7	2,3	2,1	6,9
350	11,1	6	4,8	3,1	2,7	2,4	7,9
400	12,9	7	5,6	3,6	3,2	2,8	9,2

NDM K/K 36 + UNIBOX with fully open control damper

Airflow range, pressure loss, acoustic power and air flow speed at the output

Air flow [m³/h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
100	3,4	<20	1,4
150	5,6	<20	1,9
200	8,5	22	2,6
250	12,2	26	3
300	16,9	32	3,6
350	22,3	36	4
400	28,4	41	4,8

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m³/h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
100	3,1	1,7	1,4	0,9	0,8	0,7	2,2
150	4,9	2,6	2,1	1,4	1,3	1,1	3,5
200	6,8	3,7	3,0	1,9	1,7	1,5	4,9
250	8,4	4,6	3,7	2,4	2,1	1,8	6
300	9,7	5,3	4,2	2,7	2,3	2,1	6,9
350	11,1	6	4,8	3,1	2,7	2,4	7,9
400	12,9	7	5,6	3,6	3,2	2,8	9,2

NDM C/K 36 + UNIBOX with fully open control damper

Airflow range, pressure loss, acoustic power and air flow speed at the output

Air flow [m³/h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
100	3,1	<20	1,4
150	5,5	<20	1,9
200	7,7	21	2,6
250	10,9	25	3
300	14,8	28	3,6
350	21,4	34	4
400	29,3	38	4,8

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m³/h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
100	3,1	1,7	1,4	0,9	0,8	0,7	2,2
150	4,9	2,6	2,1	1,4	1,3	1,1	3,5
200	6,8	3,7	3	1,9	1,7	1,5	4,9
250	8,4	4,6	3,7	2,4	2,1	1,8	6
300	9,7	5,3	4,2	2,7	2,3	2,1	6,9
350	11,1	6	4,8	3,1	2,7	2,4	7,9
400	12,9	7	5,6	3,6	3,2	2,8	9,2

NDM C/C 64 + UNIBOX with fully open control damper**Airflow range, pressure loss, acoustic power and air flow speed at the output**

Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
200	5,6	<20	1,4
250	6,8	<20	1,5
300	8,3	<20	1,8
350	9,8	20	2
400	11,6	24	2,2
450	13	28	2,5
500	15,5	31	2,7
550	17,9	34	3
600	20,6	37	3,2
650	23,3	39	3,4
700	27,3	42	3,7

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
200	3	1,6	1,3	0,9	0,8	0,7	2,1
250	4,5	2,4	2	1,3	1,2	1	3,2
300	5,8	3,2	2,6	1,7	1,5	1,3	4,1
350	7	3,9	3,2	2	1,8	1,6	5
400	8,1	4,4	3,7	2,3	2,1	1,8	5,7
450	9	4,9	4,1	2,6	2,3	2	6,4
500	9,9	5,4	4,5	2,9	2,6	2,2	7
550	10,7	5,9	4,8	3,1	2,8	2,4	7,6
600	11,5	6,3	5,2	3,3	3	2,6	8,2
650	12,2	6,7	5,5	3,6	3,2	2,8	8,7
700	12,8	7	5,8	3,7	3,3	2,9	9,1

NDM K/K 60 + UNIBOX with fully open control damper

Airflow range, pressure loss, acoustic power and air flow speed at the output

Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
200	5,9	<20	1,5
250	7,2	<20	1,8
300	8,8	<20	2
350	10,4	22	2,2
400	12,7	26	2,4
450	15	31	2,8
500	17,5	34	3,1
550	20,4	38	3,4
600	23,1	41	3,6
650	26,4	43	4,2
700	30,8	47	4,4

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
200	3,1	1,7	1,4	0,9	0,8	0,7	2,2
250	4,7	2,6	2,1	1,4	1,2	1,1	3,3
300	6	3,3	2,7	1,8	1,6	1,4	4,3
350	7,3	4	3,3	2,1	1,9	1,6	5,1
400	8,3	4,6	3,8	2,4	2,2	1,9	5,9
450	9,2	5	4,1	2,7	2,4	2,1	6,5
500	10,1	5,5	4,6	2,9	2,6	2,3	7,2
550	10,9	6	4,9	3,2	2,8	2,5	7,7
600	11,8	6,5	5,3	3,4	3	2,7	8,4
650	12,5	6,8	5,6	3,6	3,2	2,8	8,9
700	13,1	7,2	5,9	3,8	3,4	3	9,3

NDM C/K 60 + UNIBOX with fully open control damper**Airflow range, pressure loss, acoustic power and air flow speed at the output**

Air flow [m ³ /h]	Pressure loss [Pa]	Acoustic power L _{WA} [dB]	Air flow speed at the output [m/s]
200	5,8	<20	1,4
250	7	<20	1,7
300	8,6	<20	1,9
350	10,2	21	2,2
400	12,5	25	2,4
450	14,8	29	2,7
500	17,3	33	3
550	20,2	36	3,3
600	22,9	39	3,6
650	26,1	41	3,8
700	30,4	45	4,1

Airflow range in meters relative to terminal velocity 0,2 m/s

Air flow [m ³ /h]	1 way air flow	2 way air flow	3 way air flow	4 way air flow	Omnidirectional airflow	Whirling air flow	Vertical air flow
200	3,1	1,7	1,4	0,9	0,8	0,7	2,2
250	4,7	2,6	2,1	1,4	1,2	1,1	3,3
300	6	3,3	2,7	1,8	1,6	1,4	4,3
350	7,3	4	3,3	2,1	1,9	1,6	5,1
400	8,3	4,6	3,8	2,4	2,2	1,9	5,9
450	9,2	5	4,1	2,7	2,4	2,1	6,5
500	10,1	5,5	4,6	2,9	2,6	2,3	7,2
550	10,9	6	4,9	3,2	2,8	2,5	7,7
600	11,8	6,5	5,3	3,4	3	2,7	8,4
650	12,5	6,8	5,6	3,6	3,2	2,8	8,9
700	13,1	7,2	5,9	3,8	3,4	3	9,3

V. MATERIAL, FINISHING

- Front plate is made of carbon steel sheet and is powder coated as standard in RAL 9010 shade. It can also be delivered in another RAL shade. Other material design of the front plate must be discussed with the manufacturer.
- Plastic nozzles are produced by the injection method from ABS plastic material. It is possible to supply them in black or white as standard.
- Connection boxes are made of galvanized sheet steel.



VI. TRANSPORTATION, STORAGE AND WARRANTY

Logistic terms

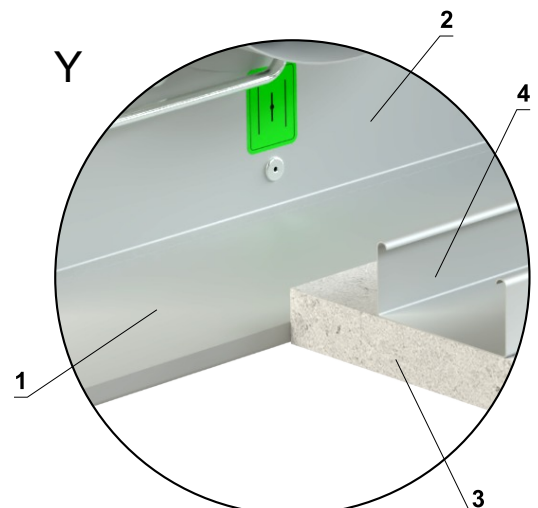
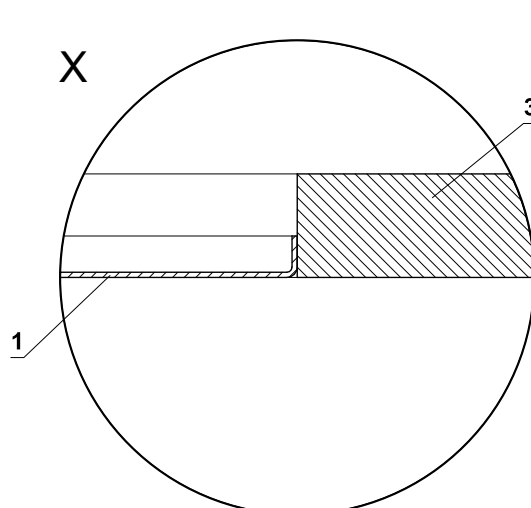
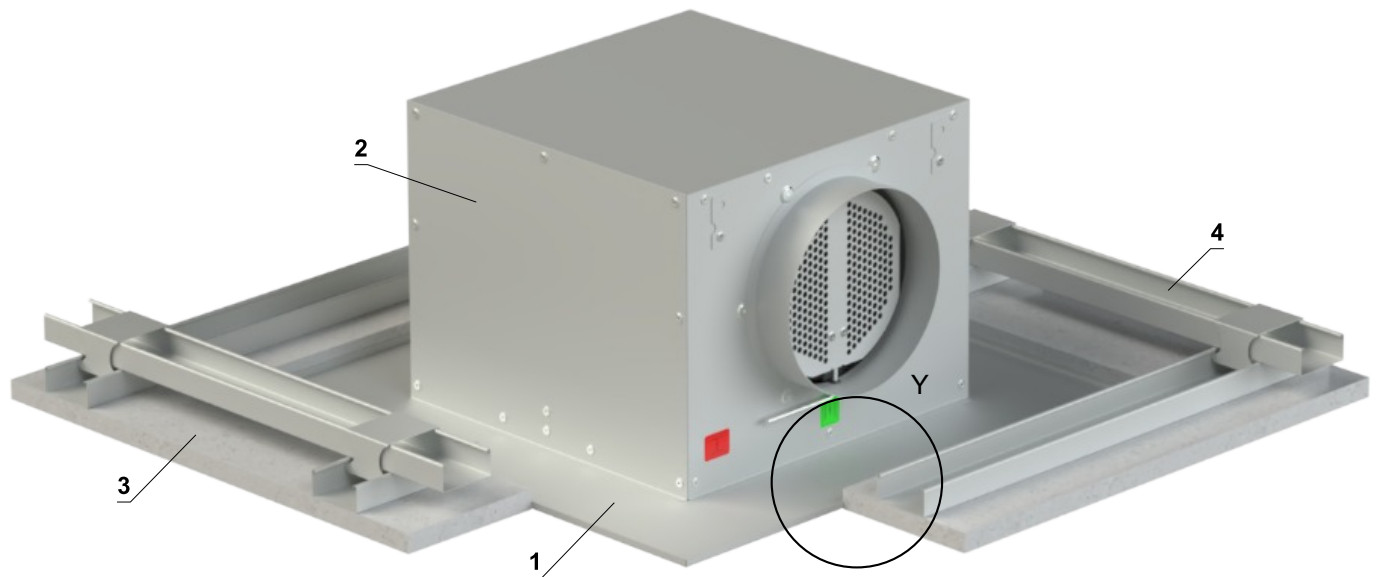
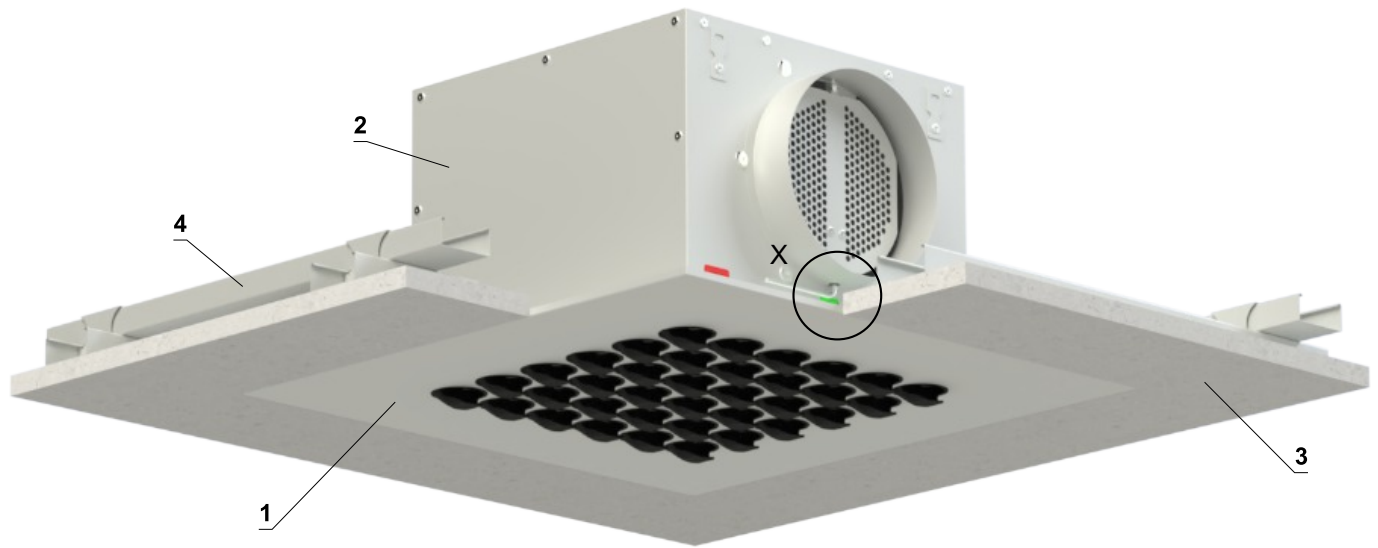
- Diffusers are supplied in cardboard packaging. They are transported in bulk by ordinary means of transport. Upon agreement with the customer, diffusers can be transported on pallets. During handling during transport and storage, the diffusers must be protected against mechanical damage and weather effects.
- If the method of acceptance is not specified in the order, handing over the diffuser to the carrier will be considered acceptance.
- Diffusers must be stored wrapped in covered objects, in an environment free of aggressive vapors, gases and dust. The objects must be kept at a temperature in the range of -5°C to +40°C and a relative humidity of max. 80%.

Warranty

- The manufacturer provides a warranty of 24 months from the date of dispatch for the diffusers.
- The warranty is void if diffusers are used for other purposes, devices and working conditions than those allowed by these technical conditions or if the diffusers are mechanically damaged during handling.
- If the diffusers are damaged by transport, a record must be written down with the forwarder at reception for later complaint.

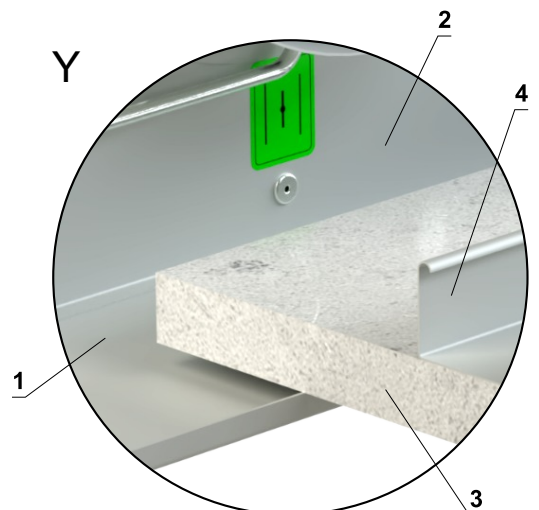
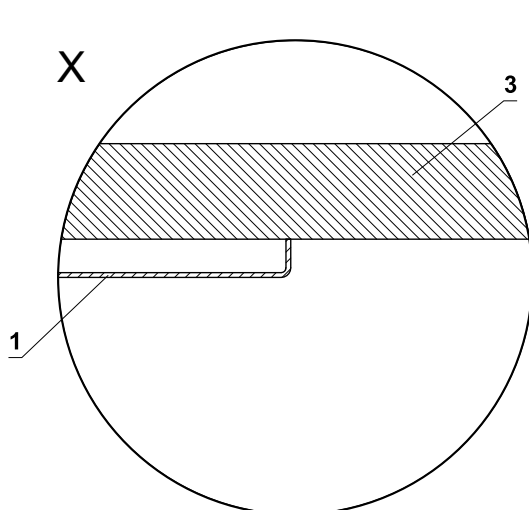
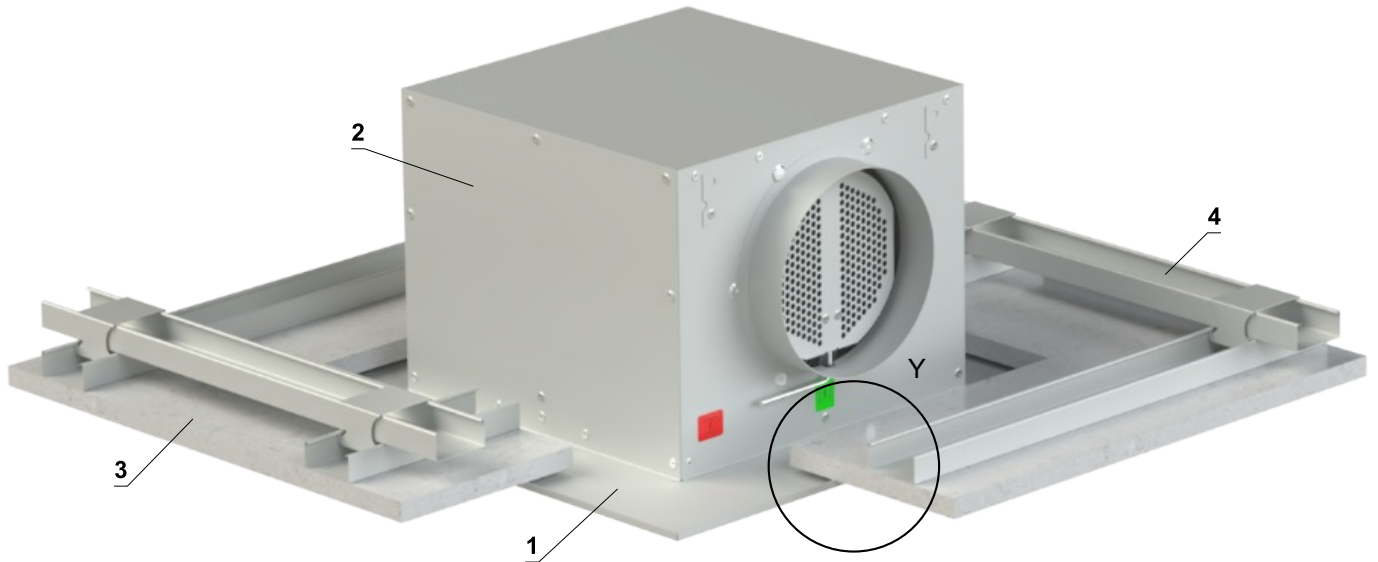
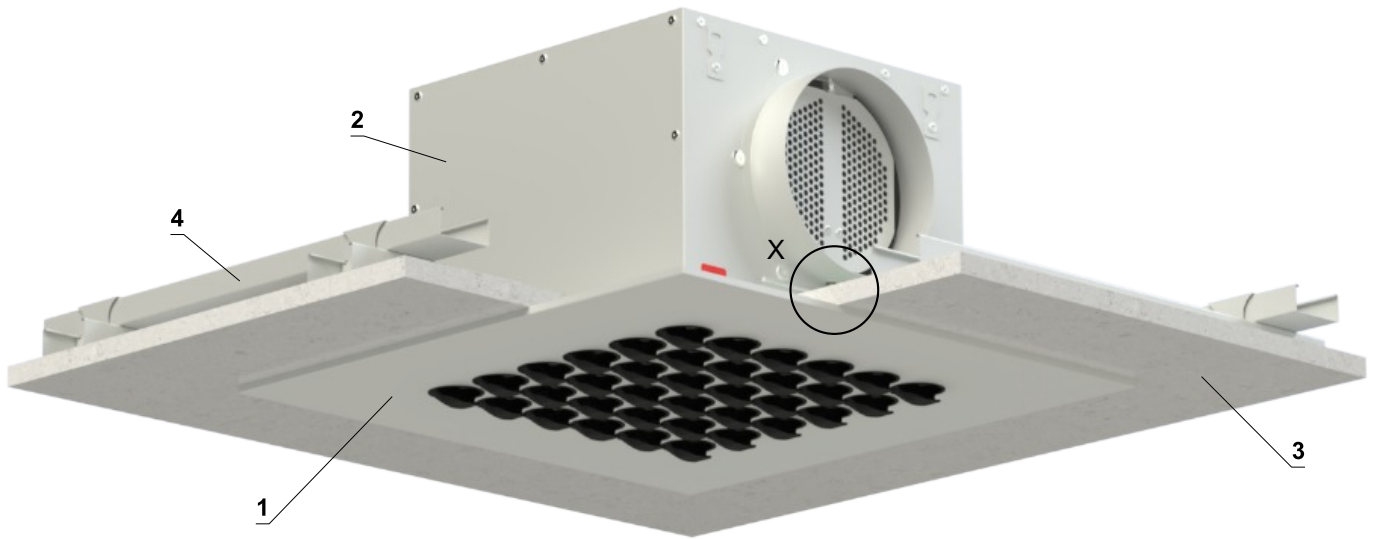
VII. ASSEMBLY AND COMMISSIONING

Installation inside a plasterboard ceiling



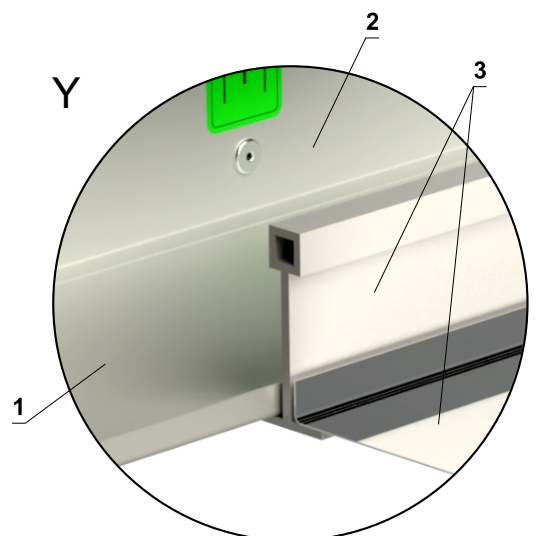
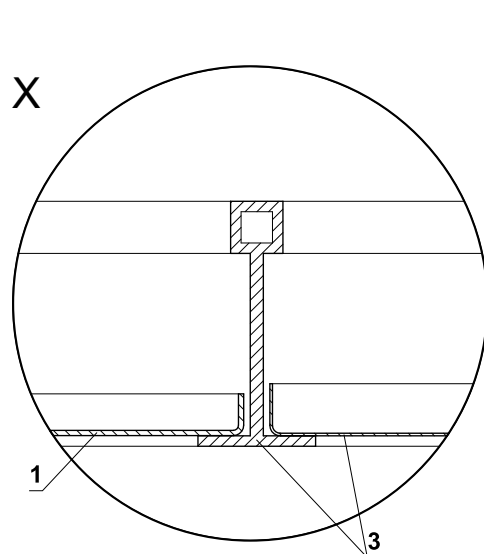
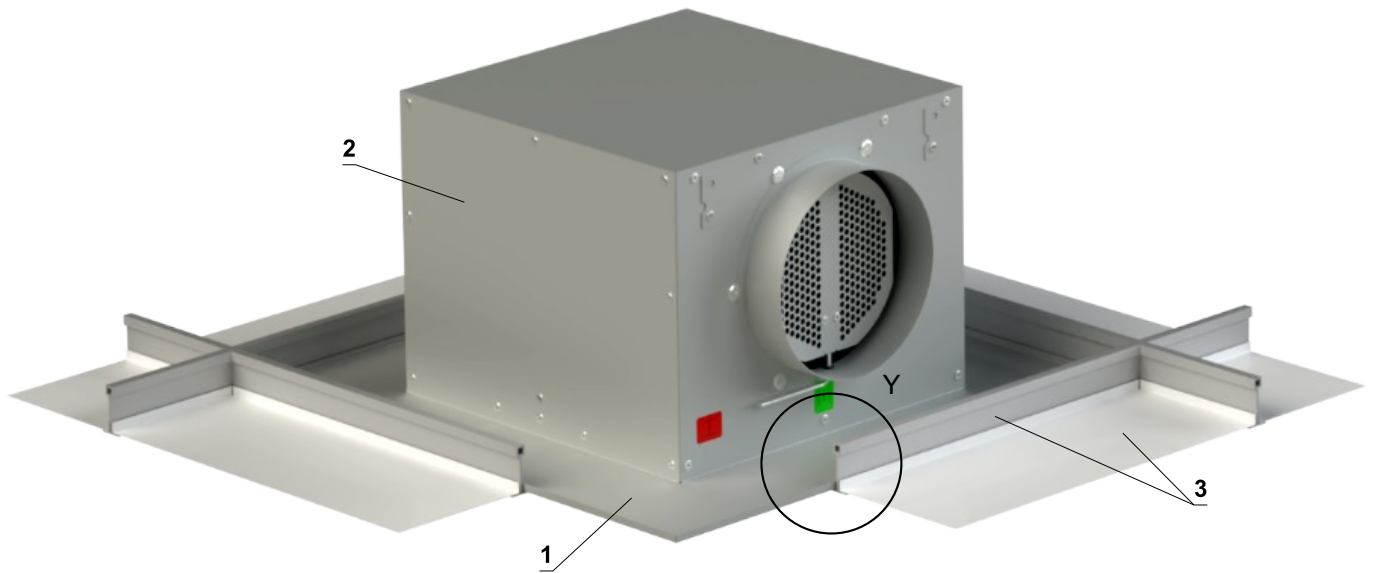
- 1 NDM
- 2 UNIBOX / EKOBOX
- 3 Plasterboard
- 4 Mounting profiles and fasteners

Installation outside a plasterboard ceiling



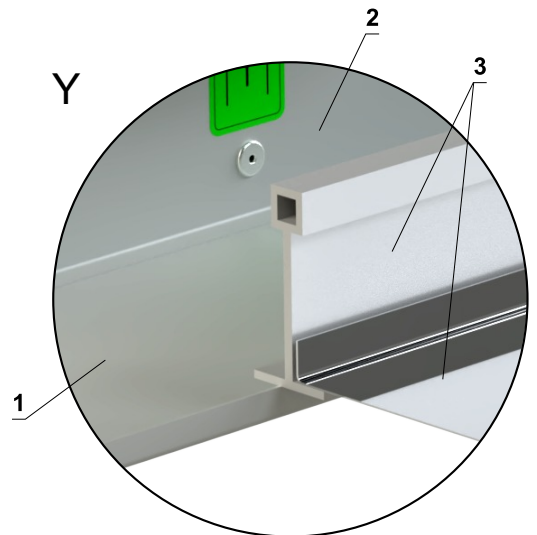
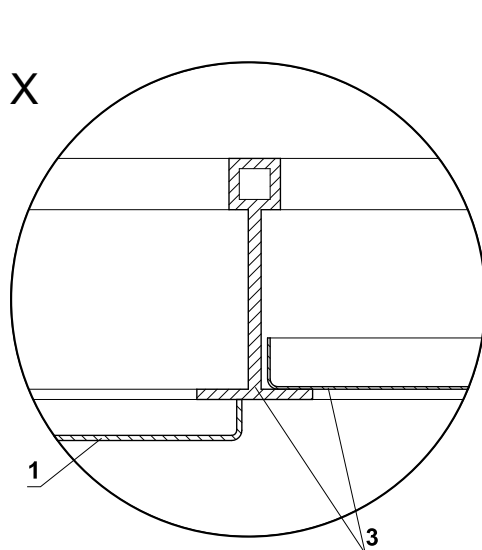
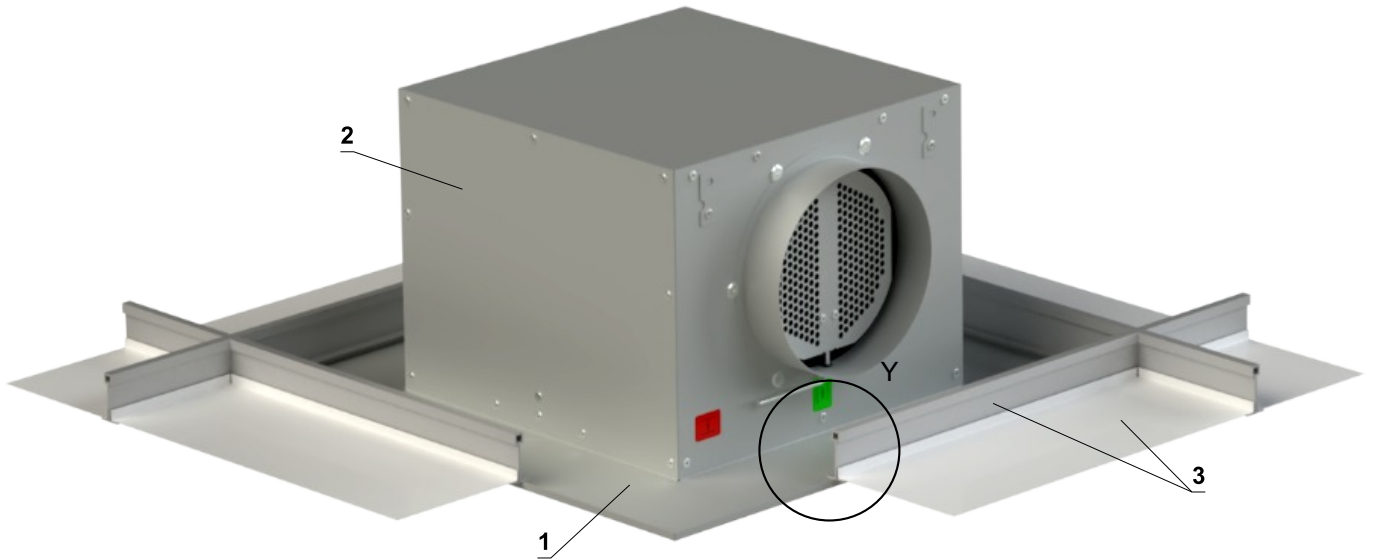
- 1 NDM
- 2 UNIBOX / EKOBOX
- 3 Plasterboard
- 4 Mounting profiles and fasteners

Installation inside a T-bar cassette ceiling



- 1 NDM
- 2 UNIBOX / EKOBOX
- 3 Cassette T-bar ceiling

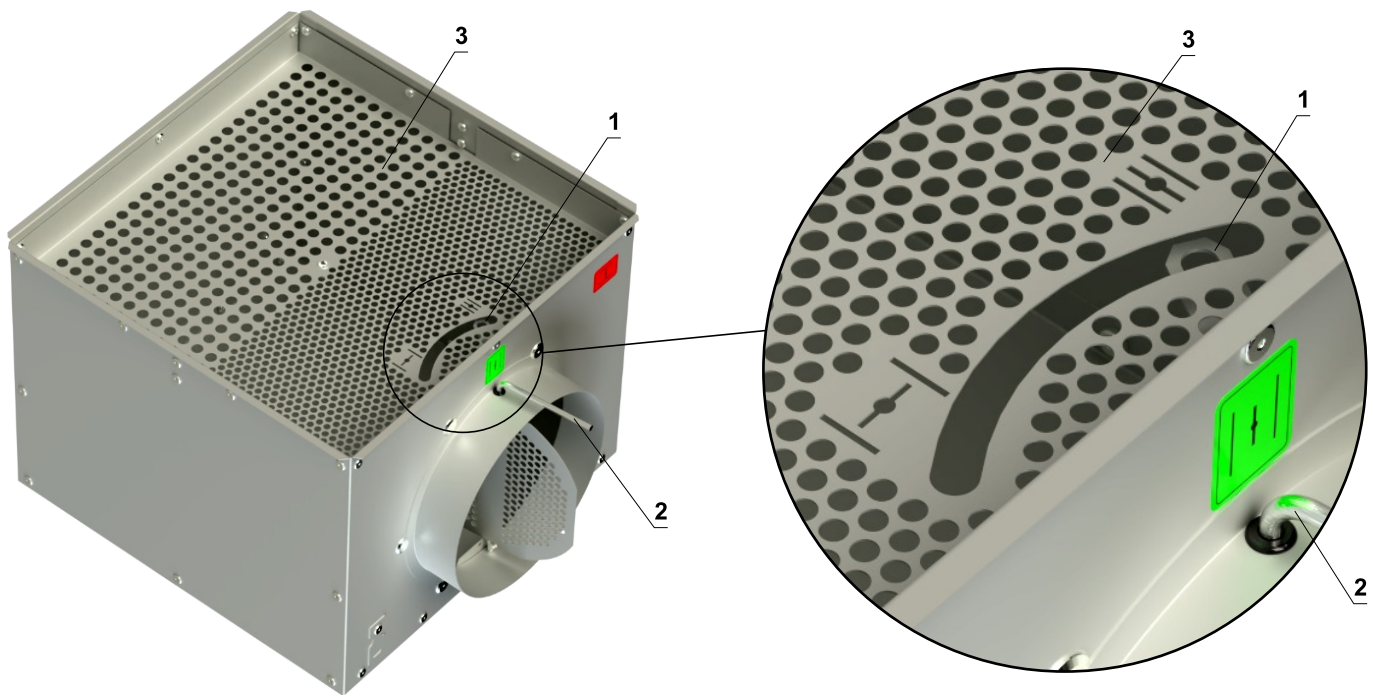
Installation outside a T-bar cassette ceiling



- 1 NDM
- 2 UNIBOX / EKOBOX
- 3 Cassette T-bar ceiling

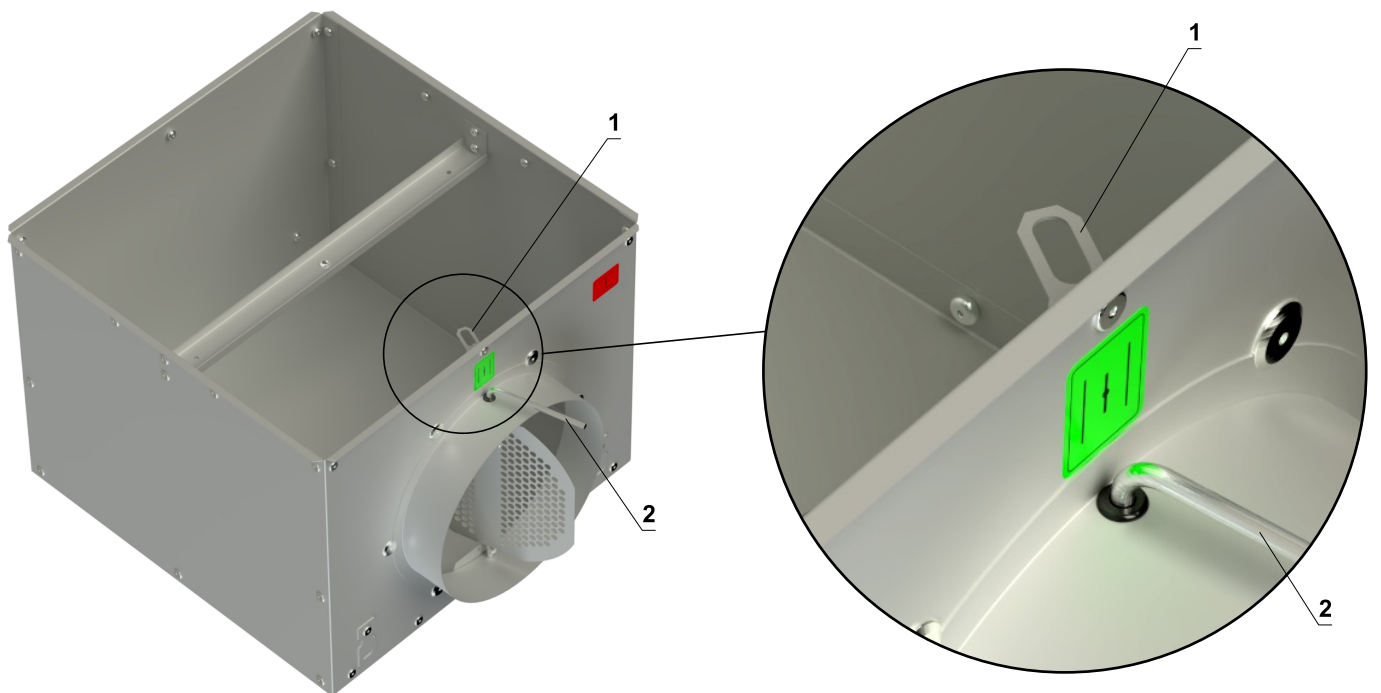
Control of the UNIBOX by a regulation damper

UNIBOX supply with dispersion plate



- 1 Internal control
- 2 External control
- 3 Dispersion plate

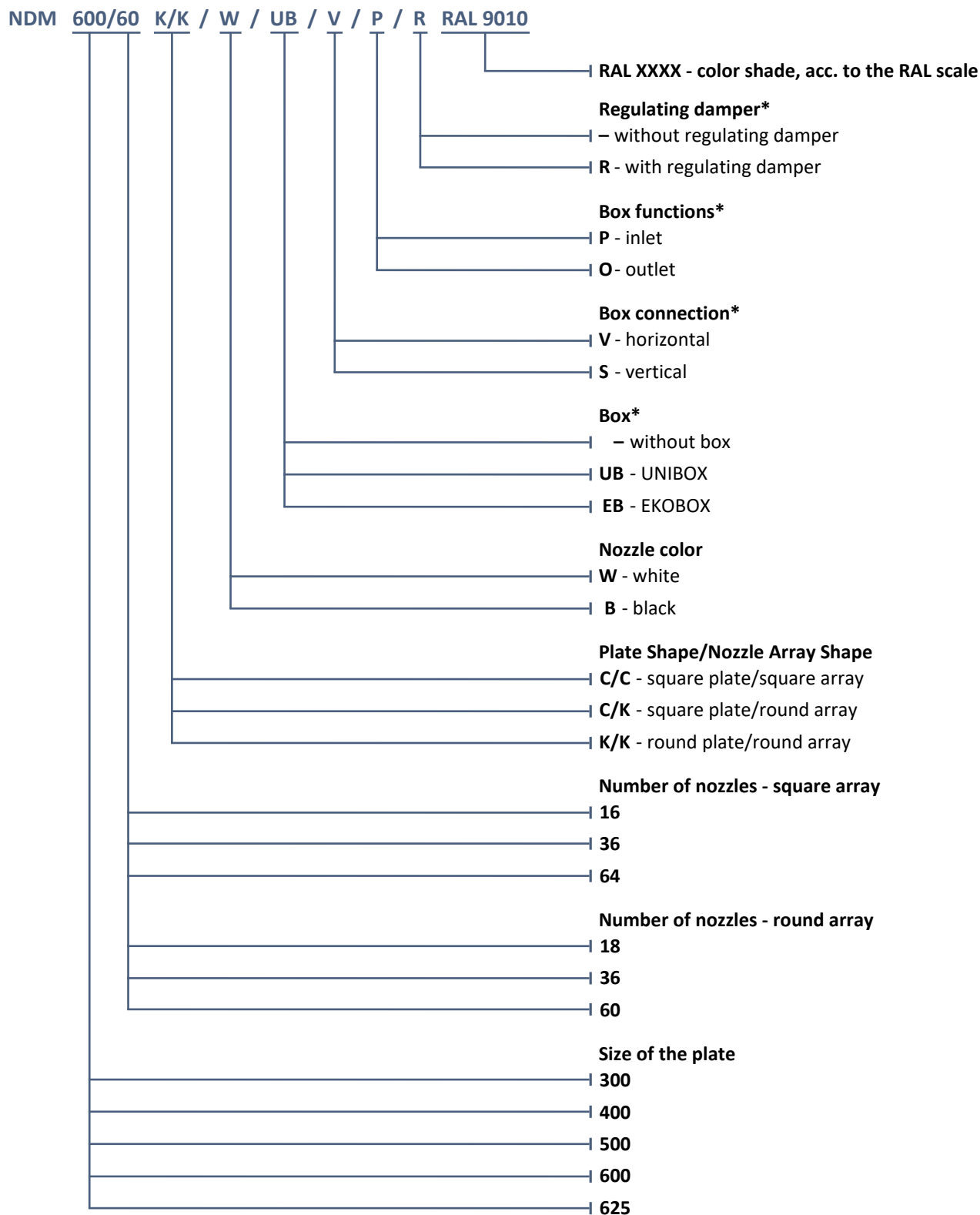
UNIBOX outlet without dispersion plate



- 1 Internal control
- 2 External control

VIII. ORDERING INFORMATIONS

Ordering key



EXAMPLE:

NDM 600/60 K/K /W/UB/V/P/R RAL 9010 - **600/60**-size of the plate (600) and the number of nozzles (60), **K/K**-round plate shape and round nozzle array shape, **W**-white nozzle color, **UB**-box type (UNI-BOX), **V**-horizontal connection of the box, **P**-box function (input), **R**-with regulating damper, **RAL 9010**-selected color shade, acc. to the RAL scale

* In the case of ordering a diffuser without a box, enter the order key in the format (example: NDM 600/60 K/K /W/-/-/-/-)

The producer reserves the right for innovations of the product.
For actual product information see www.mandik.com

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