jaga

CLIMATE DESIGNERS

AVS UNIT HEATER

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UNIT HEATER AVS

JAGA AVS INDIRECTLY POWERED UNIT HEATERS ARE AN ENERGY-EFFICIENT AND COMFORTABLE SOLUTION FOR HEATING LARGE SPACES

The Jaga AVS Unit heater is designed for heating industrial buildings, sports halls, warehouses, garages, supermarkets, exhibition halls, commercial centres, conservatories, ... and all other rooms that are not in continuous use, but that need to be heated very quickly.

JAGA DESIGN WITH HIGH BUILDING QUALITY

1 APPEALING FINISH

A totally new construction without any visible screws or rivets. A high quality sandblasted grey lacquered (001) scratch resistant and dirt repellent finish. Aerodynamic exhaust made of satin black lacquered aluminium.
Other colours on request.

2 AIR VENTURI SYSTEM

Jaga unit heaters are standard equipped with the unique AVS system (Air Venturi System).
The AVS system allows for a lower exhaust air temperature while maintaining the same output, which significantly improves the heat carrying capacity and temperature distribution. Due to the improved temperature distribution, run times are shorter and energy consumption is significantly lower. This system offers a number of unique new control options.

3 LOW-H2O HEAT EXCHANGER

Heat exchanger made from aluminium fins placed on mechanically expanded copper tubes, which are connected to steel collectors. The ideal combination of these materials guarantees optimum heat conductivity.

A selection of 5 sizes of heat exchangers with 2 or 3 rows of pipes. Heat output from 4.5 up to 78.6 kiloWatts at T 50.

4 HYBLADE FAN WITH EC MOTOR

EC motors reduce both operating costs and the environmental impact, while they impress with their quiet operation. Due to the higher efficiency of the EC motors, the energy onsumption is directly linked to the rotational speed and thus the flow rate of the fan. The actual power consumption is determined by the (variable) speed.

- No expensive switch cabinets
- Energy saving up to 32%
- Little or no maintenance (brushless)
- Low noise level
- Stepless speed control 0-10 V
- Long life expectancy due to low heat production

STANDARD WITH THE INVENTIVE AIR VENTURI SYSTEM

IMPROVED HEAT CARRYING CAPACITY AT EQUAL OUTPUT

Thanks to the adjustable Air Venturi System, standard in every Jaga unit heater, there is a direct mixing of heated air with ambient air. The outlet temperature drops and the hot air projection increases, without any power loss.

STANDARD UNIT HEATERS

Due to the higher air exhaust temperature the hot air will rise too quickly and the cooler air will consequently be pushed downwards.

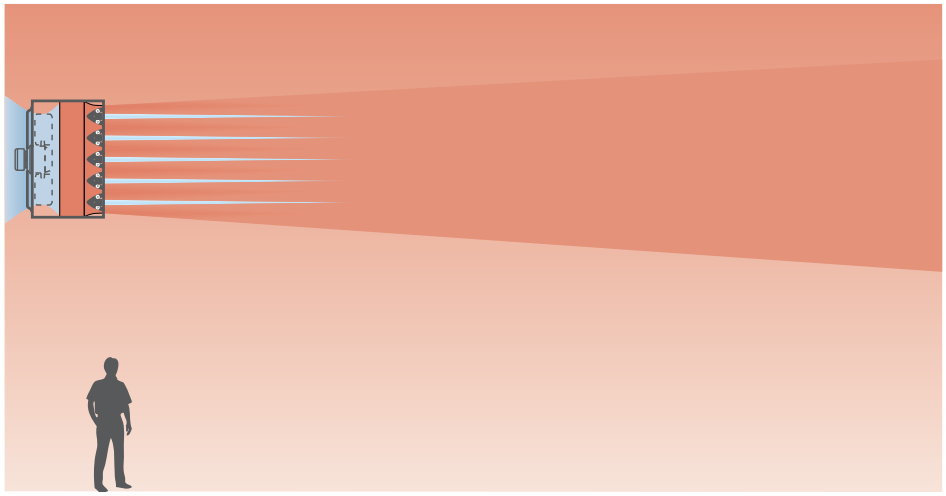
WHY AVS?

The main problem with unit heaters in general is the heat accumulation at the roof or ceiling level especially in high level roof spaces. The temperature difference between the floor and the ceiling is in proportion to the exhaust temperature of the unit heater. The higher the exhaust temperature the faster the heated air rises, pushing the cooler air down to floor level. Consequently more energy will be required to heat up the floor area in order to create a comfortable temperature.

Higher air flow, lower exhaust temperature or additional fans can alleviate the problem the problem, but will result in a considerable increase in cost or noise pollution.

THE JAGA SOLUTION: AIR VENTURI SYSTEM

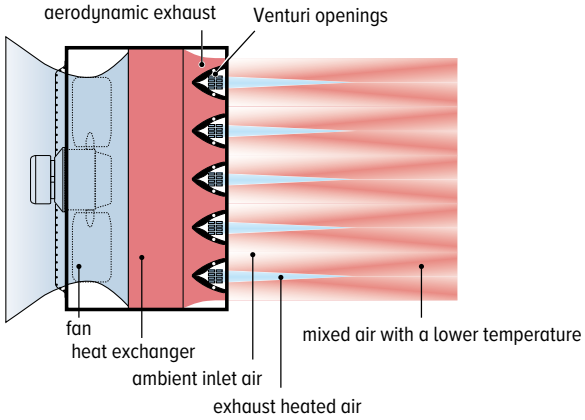
With the Air Venturi System the air exhaust temperature is lower, which greatly reduces the up-draught, resulting in a more even temperature distribution, faster heating and improved energy-efficiency.



AVS UNIT HEATER

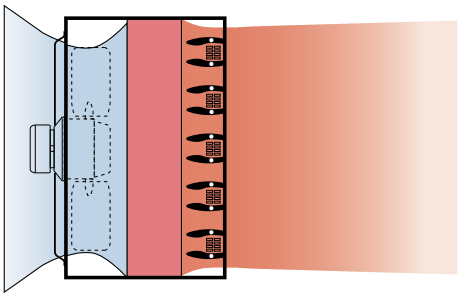
THE ADJUSTABLE LOUVRES IN VENTURI POSITION

Both the exhaust direction and the heat carrying capacity are adjustable. By adding cooler ambient air the exhaust temperature will drop and a more stable air stream and larger heat carrying capacity will be obtained.



THE ADJUSTABLE LOUVRES IN PARALLEL POSITION

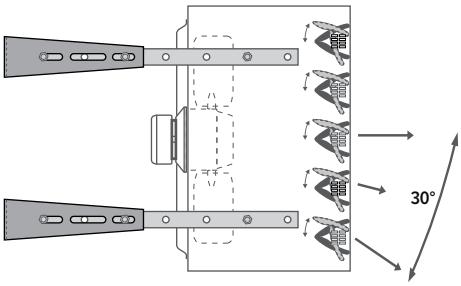
This is the normal position with standard unit heaters. Without special accessories it is almost impossible to adjust the air stream. Only the exhaust direction can be adjusted slightly by redirecting the louvres.



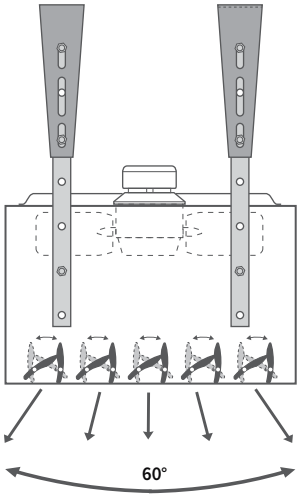
THE MODULATING AVS VERSION*

With the modulating AVS version the exhaust louvres are linked in pairs and connected to a servo motor. This motor produces a continuous back and forth movement of the adjustable louvres. The air turbulence this creates provides an even better temperature distribution. The angle of movement can easily be adjusted from 0 to 90°. A complete cycle takes about 150 seconds.

Wall



Ceiling



***The modulating operation is integrated into the equipment and therefore cannot be delivered as an accessory. Mini unit heater (code 021 and 031) are not available in a modulating version.**

A modulating unit heater cannot be combined with a front grille and a protective grid for balls, as these can interfere with the modulating AVS louvres.

THIS IS HOW YOU SELECT THE RIGHT UNIT HEATER(S) FOR YOU

HOW DO I SELECT AN AVS UNIT HEATER

Calculate the size of the room to be heated in m^3 (l x w x h).
Outbuildings should be calculated separately, it could be possible to use a smaller heater with a separate pipe for this purpose. Machines and racks that are part of the space to be heated do not absorb heat, but usually give off heat to the surroundings. The space occupied by these objects can be deducted from the total volume.

CURRENT CONDITION OF THE BUILDING

In addition to the total volume of the room to be heated, the following data are required for heating calculations:

- the insulation values of the different parts of the room, the walls and the roof
- the number of doors and/or gates that are regularly open
- the height of the room
- the orientation of the room to be heated in relation to the wind direction (north, east, south, west)
- total heating loss
- obstruction of the unit heater
- the outdoor temperature
- the desired indoor temperature
- method or type of ventilation system

All these parameters can be supplied by an engineering firm. Contact Jaga for an indicative formula to make an accurate selection yourself, to check data, and to choose quickly. The more accurate the calculation, the better the resulting selection.

FOCUS POINTS

The following corrections should be included in the calculation:

- a poorly insulated building: correct up to 20%
- a north-west orientation of the room to be heated: correct between 8 and 10%

These corrections are usually factored into the data supplied by an engineering firm.

OUTDOOR TEMPERATURES

Consider the outdoor temperature in autumn and winter. Reserve a margin for unexpected temperature peaks. Jaga unit heaters are designed to accommodate these peaks. For this, it is important to select a unit heater at mid-speed. By increasing the speed, even extreme negative temperatures can be managed. If the required output is not yet known, you can run a simulation on jaga. com or contact Jaga for an accurate unit selection.

FOCUS POINTS

Hazardous areas: Jaga Unit Heaters are not intended for use in areas with a risk of explosion.

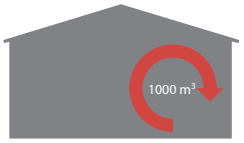
- AVS Unit Heaters should not be used with steam instead of water. The heat exchanger is not suitable for the use of steam as a heat conductor.
- The maximum water temperature for AVS Unit Heaters should not exceed 130° C with a pressure of max 11 bar. The heat exchangers were subjected to testing at a higher pressure over a very short interval of time.
- Ensure that the exhaust temperature of the Unit Heater is no more than 20 to 25° higher than the ambient temperature, even when only using ambient air (recycled air) or mixed air. This results in better air distribution.
- Shield large doorways with air curtains.
- For large rooms, use vertical air blowing units (to blow warm air downwards).

A LARGER NUMBER OF SMALL UNITS OR A SMALLER NUMBER OF LARGE UNITS?

A larger number of small unit heaters provides better air distribution and a more even temperature and is better suited to a room with high occupancy. A small number of larger unit heaters is more cost-effective in purchase and installation costs.

CALCULATION OF ROTATING AIR FLOW

Example: a unit with an airflow of 1000 m^3/h gives 1 revolution per hour in a room of 1000 m^3. Provide at least 4 revolutions per hour.



SELECTION FOR A LOWER NOISE LEVEL

If a lower noise level is required, this can be obtained by selecting a unit operating at low speed. An accelerated warm-up can then be obtained at high speed, while at lower speed and consequently at low noise, sufficient heat is generated to maintain the required temperature.

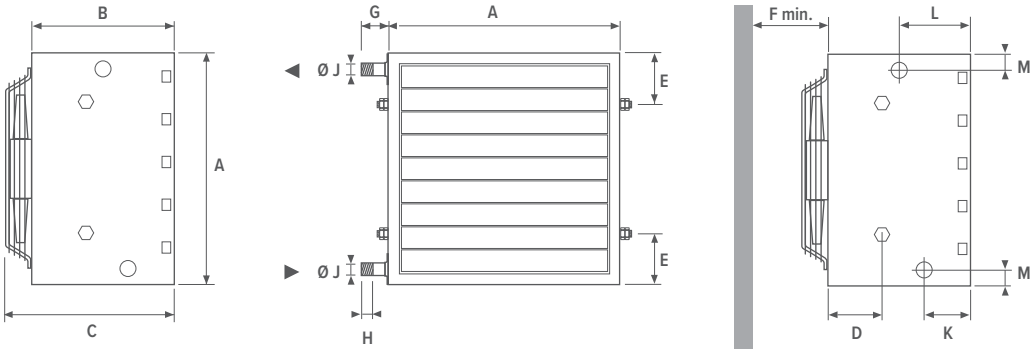
	CONTROL VOLTAGE DB(A)				
TYPE	2	4	6	8	10
021	34.0	42.4	50.1	53.9	55.4
031	33.0	41.4	49.0	52.0	53.1
121	25.2	33.3	41.9	49.5	55.2
131	24.2	32.2	40.3	47.1	55.2
221	41.8	43.3	51.6	55.5	59.2
231	40.8	42.2	53.1	53.6	59.8
321	27.3	35.6	43.1	51.7	55.1
331	26.3	34.3	41.9	49.9	56.3
421	30.2	37.8	46.2	54.6	62.3
431	29.2	36.7	44.9	52.9	60.4

Example:
Requested output: 52 kW - ΔT65

Requested airflow: 5000 m^3/h
Choice unit heater:
Type 321 - 55.1 dB(A) Control voltage 5
Type 431 - 39 db(A) Control voltage 2

AVS UNIT HEATER WITH WALL MOUNTING

DIMENSIONS *(in mm)*



	TYPE	021	031	121	131	221	231	321	331	421	431
OUTSIDE DIMENSIONS	A	410	410	530	530	650	650	770	770	890	890
	B	400	400	400	400	400	400	400	400	400	400
	C	430	430	480	480	498	498	572	572	551	551
INSTALLATION	D	151	151	151	151	151	151	151	151	151	151
	E	105	105	115	115	125	125	135	135	145	145
	F	300	300	350	350	450	450	560	560	650	650
CONNECTION	G	48	48	48	48	48	48	51	51	51	51
	H	22	22	22	22	22	22	33	33	33	33
	ØJ	3/4"	3/4"	G1"	G1"	G1"	G1"	G6/4"	G6/4"	G6/4"	G6/4"
	K	129	129	129	129	129	129	129	129	129	129
	L	198	198	198	198	198	198	198	198	198	198
	M	45	45	45	45	45	45	52	52	52	52
WEIGHT	kg	20	22	30	32	43	46	56	59	71	75

STANDARD DELIVERY

Fully pre-assembled unit for mounting against wall or ceiling, supplied in a sturdy cardboard box:
- standard with Air Venturi System
- heat exchanger with 2 or 3 rows of irrigation tubes

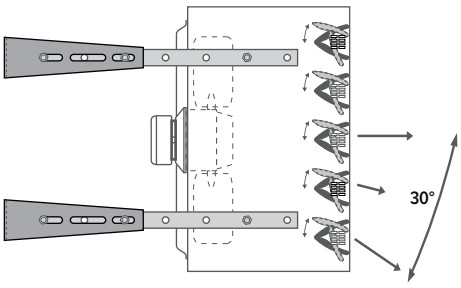
COLOURS

the casing is painted sandblast grey 001

Other colours
Other colours on request

STANDARD DELIVERY MODULATING

The modulating operation is integrated into the equipment and therefore cannot be delivered as an accessory.
Mini unit heater (code 021 and 031) are not available in a modulating version.



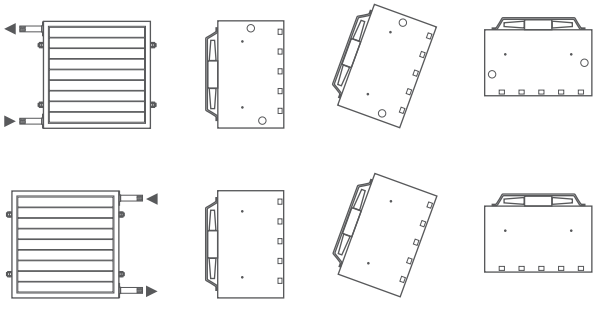
Other colours
Other colours on request

ORDER CODE

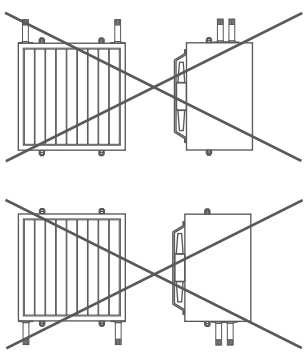
UNIT 021 EC
- *Type (2 = 2 rows of tubes) (3 = 3 rows of tubes)*
- *Unit size (0 - 1 - 2 - 3 - 4)*
- *UNIT (standard) UNIM (modulating)*

HYDRONIC CONNECTION

Good



Fault

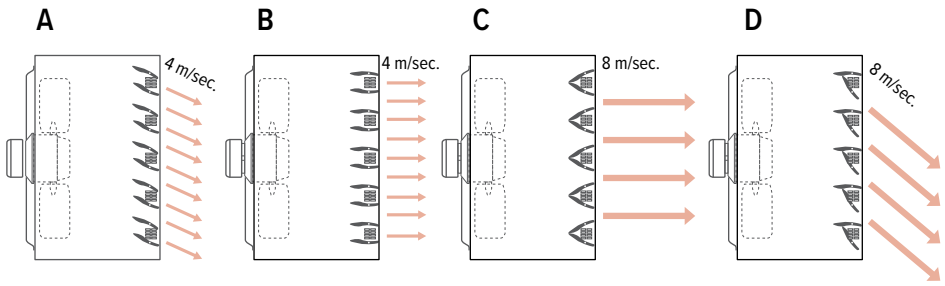


TYPE	INSTALLATION HEIGHT *min.. H in m*
021 / 031	2.5
121 / 131	2.5
221 / 231	2.5
321 / 331	3.0
421 / 431	3.0

Installation heights are based on maximum outputs of 10V.

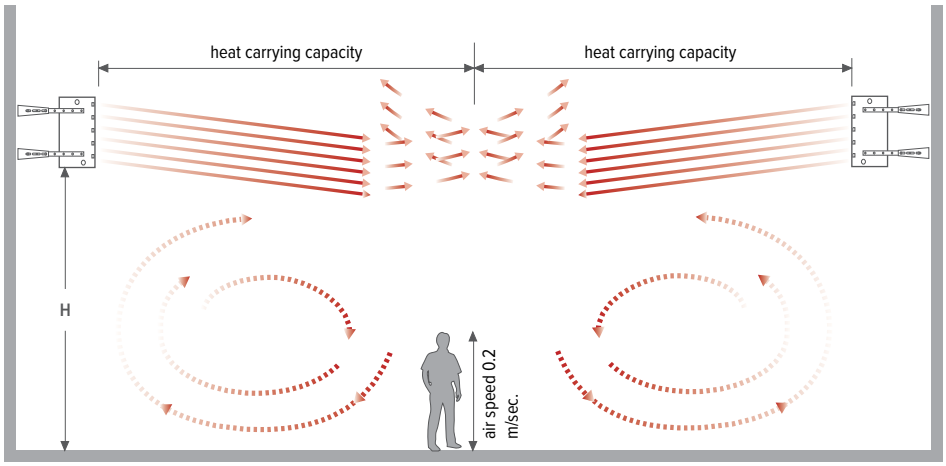
WALL MOUNTING

Installation



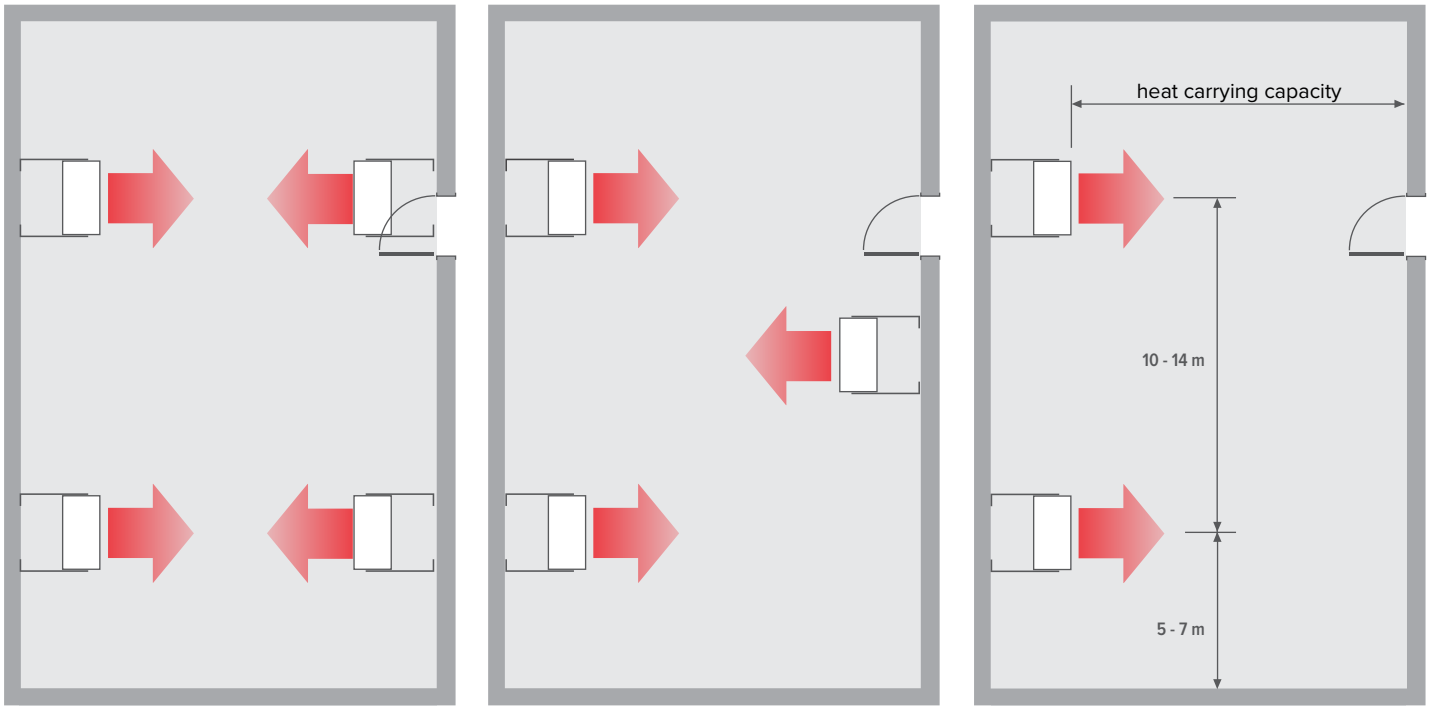
INSTALLATION HEIGHT (H)	POSITION
2.5 to 3 m	B or C
3 to 4 m	A
> 4 m	D

Tested with unit heater 221. For other types contact the Jaga technical department.



In order to guarantee comfort, avoid direct hot air projection in the direction of people.

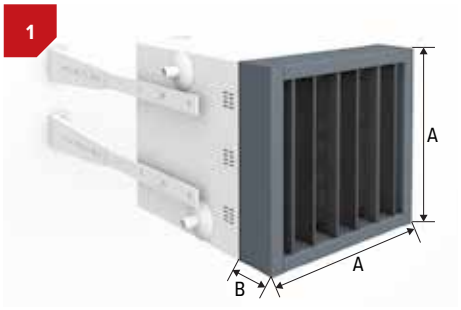
INSTALLATION OPTIONS WALL MOUNTING



* see technical table

GRID

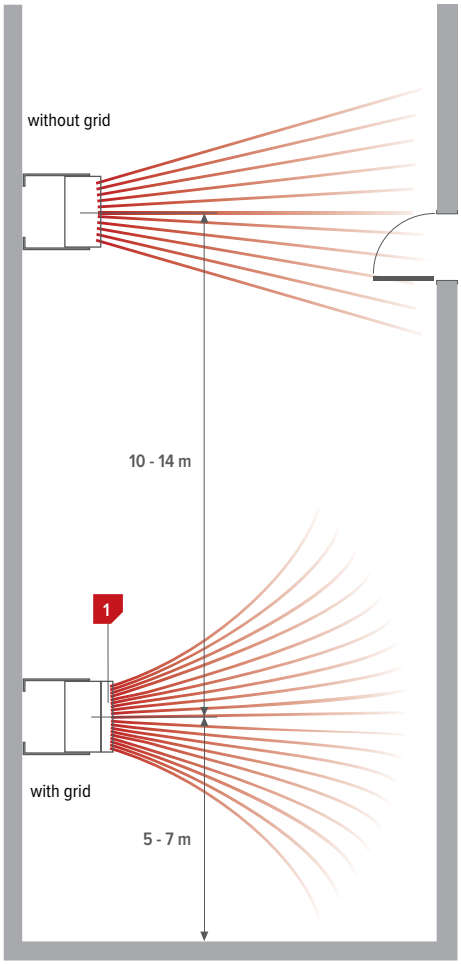
Installation



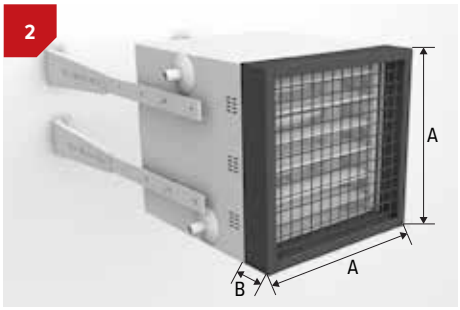
- prevents excessive heating on the opposite wall
- easy mounting and dismounting with quick-release connection (is supplied separately)
- not combined with modulating AVS
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- aerodynamic exhaust made of satin black lacquered aluminium
- the louvres are assembled both vertically and horizontally

CODE	TYPE	A *mm*	B *mm*	*kg*
8375 110100	021 / 031	410	101	5.0
8375 110101	121 / 131	530	101	6.1
8375 110102	221 / 231	650	101	8.1
8375 110103	321 / 331	770	101	10.4
8375 110104	421 / 431	890	101	13.0

Top view



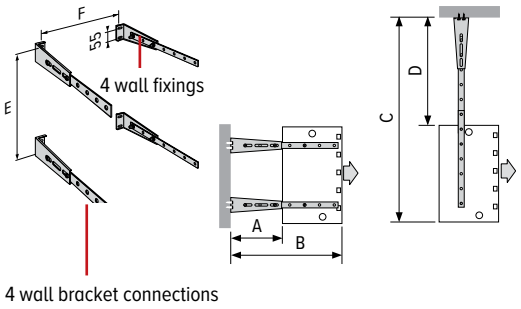
GRID TO PROTECT AGAINST BALLS



- easy mounting and dismounting with quick-release connection (is supplied separately)
- with this option, the unit heater has no exhaust grille
- not combined with modulating AVS
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- not available for the mini unit heater (021 / 031)

CODE	TYPE	A *mm*	B *mm*	*kg*
8375 100101	121 / 131	530	101	5.7
8375 100102	221 / 231	650	101	6.7
8375 100103	321 / 331	770	101	8.4
8375 100104	421 / 431	890	101	8.8

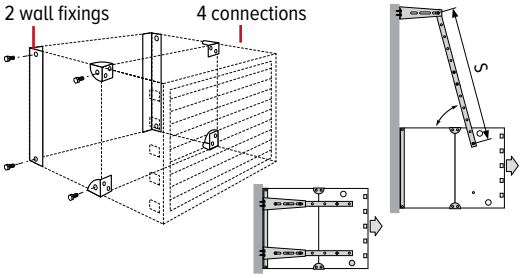
SET OF BRACKETS A



- load-bearing weight: 150kg
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts
- fixings, **without air inlet options**: mount the brackets inward
- fixings, **with air inlet options**: mount the brackets outward

CODE	A		B		C		D		E	F	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
	min.	*max.*	*min.*	*max.*	*min.*	*max.*	*min.*	*max.*						
8376 010100	360	670	770	1070	725	1325	315	1015	...	...	021 / 031	•	•	
8376 010100	360	670	770	1070	835	1435	305	905	355	530	121 / 131	•	•	
8376 010100	360	670	770	1070	945	1445	295	795	455	650	221 / 231	•	•	
8376 010100	360	670	770	1070	1055	1455	285	685	555	770	321 / 331	•	•	
8376 010100	360	670	770	1070	1165	1465	275	575	655	890	421 / 431	•	•	

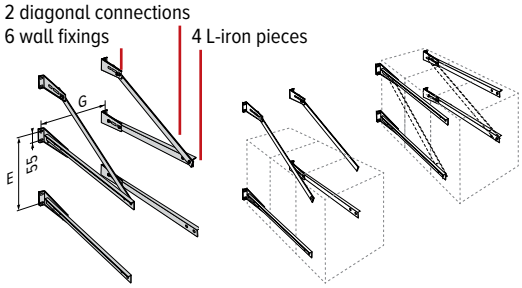
FIXING SET A



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts M8 x 16 DIN 933
- including toothed spring washers M8 DIN 127

CODE	S		TYPE
	min.	*max.*	
8376 040001	600	1100	121 / 131
8376 040002	600	1100	221 / 231
8376 040003	600	1100	321 / 331
8376 040004	600	1100	421 / 431

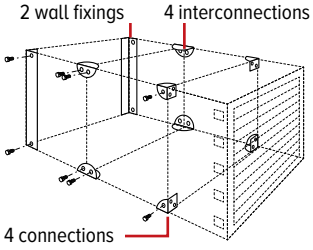
SET OF BRACKETS B



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts

CODE	E	G	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 030101	355	635	121 / 131			•
8376 030102	455	755	221 / 231			•
8376 030103	555	875	321 / 331			•
8376 030104	655	995	421 / 431			•

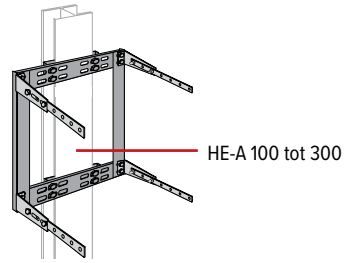
FIXING SET B



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts M8 x 16 DIN 933
- including toothed spring washers M8 DIN 127

CODE	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 040101	121 / 131			•
8376 040102	221 / 231			•
8376 040103	321 / 331			•
8376 040104	421 / 431			•

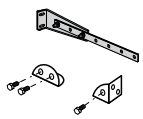
ATTACH TO STEEL FRAME



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts

CODE	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 050101	121 / 131	•	•	•
8376 050102	221 / 231	•	•	•
8376 050103	321 / 331	•	•	•
8376 050104	421 / 431	•	•	•

PARTS



CODE	PARTS	TYPE
8376 040201	2 wall fixings	121 / 131
8376 040202	2 wall fixings	221 / 231
8376 040203	2 wall fixings	321 / 331
8376 040204	2 wall fixings	421 / 431
8376 040300	4 interconnections + 8 bolts	all
8376 040400	4 unit heater connectings + 4 bolts	all

AVS UNIT HEATER

TECHNICAL TABLE WITH HORIZONTAL AIR PROJECTION

TYPE	CONTROL VOLTAGE	HEATING *room temperature 20°C*			AIR EXHAUST TEMPERATURE [1] *room temperature 20°C*			REVOLUTIONS	AIR FLOW	SOUND PRESSURE LEVEL [2]	POWER CONSUMPTION	INSTALLATION HEIGHT *(min.)*	HORIZONTAL HEAT CARRYING CAPACITY [3]		WEIGHT	ORDER CODE
													with AVS	none AVS		
	U	45/40	55/45	75/65	45/40	55/45	75/65									
	V	kWatts	kWatts	kWatts	°C	°C	°C	RPM	m^3/h	dB(A)	Watts	m	m	m	kg	
021	**2**	2.0	2.7	4.5	30.0	33.4	42.3	731	594	34.0	10	2.5	8.0	6.0	20	UNIT 021 EC
	4	2.5	3.3	5.5	28.6	31.5	39.2	984	847	42.4	20		11.0	8.0		
	6	2.9	3.8	6.4	27.5	30.0	36.6	1286	1144	50.1	43		15.0	12.0		
	8	3.2	4.2	7.1	27.1	29.5	35.9	1469	1325	53.9	63		19.0	14.0		
	10	3.3	4.4	7.3	26.9	29.2	35.3	1559	1422	55.4	76		21.0	16.0		
031	**2**	2.4	3.2	5.3	32.7	36.9	48.1	731	561	33.0	11	2.5	7.0	5.0	22	UNIT 031 EC
	4	2.9	3.9	6.5	30.9	34.6	44.3	984	799	41.4	21		10.0	7.0		
	6	3.6	4.8	8.1	30.0	33.3	42.2	1286	1080	49.0	45		14.0	10.0		
	8	4.1	5.4	9.0	29.6	32.8	41.4	1469	1251	52.0	65		17.0	12.0		
	10	4.3	5.8	9.6	29.6	32.8	41.3	1559	1342	53.1	79		19.0	14.0		
121	**2**	3.6	4.8	8.0	35.2	40.3	53.8	458	699	25.2	8	2.5	7.0	5.0	30	UNIT 121 EC
	4	4.8	6.4	10.7	34.3	39.1	51.8	614	997	33.3	14		11.0	8.0		
	6	5.8	7.8	13.0	32.1	36.1	46.8	857	1438	41.9	35		15.0	11.0		
	8	6.6	8.8	14.6	29.8	33.1	41.9	1143	1984	49.5	80		19.0	14.0		
	10	7.1	9.4	15.7	28.7	31.6	39.3	1413	2422	55.2	115		23.0	18.0		
131	**2**	4.1	5.5	9.2	38.6	40.3	61.3	458	660	24.2	9	2.5	6.0	5.0	32	UNIT 131 EC
	4	5.5	7.3	12.2	37.4	39.1	58.7	614	941	32.2	15		9.0	7.0		
	6	7.5	10.0	16.7	36.5	36.1	56.7	857	1357	40.3	37		14.0	11.0		
	8	8.7	11.6	19.3	33.8	33.1	50.7	1143	1872	47.1	82		19.0	14.0		
	10	9.0	12.0	20.1	31.7	31.6	46.1	1413	2286	55.2	118		22.0	16.0		
221	**2**	8.1	10.8	18.0	33.5	38.1	50.1	515	1773	41.8	27	2.5	13.0	10.0	43	UNIT 221 EC
	4	9.8	13.0	21.7	31.6	35.4	45.7	703	2517	43.3	54		19.0	14.0		
	6	11.9	15.8	26.4	30.2	33.6	42.6	936	3467	51.6	115		27.0	21.0		
	8	12.9	17.2	28.6	29.2	32.3	40.5	1117	4153	55.5	187		33.0	25.0		
	10	13.7	18.2	30.4	28.7	31.7	39.4	1232	4643	59.2	248		37.0	28.0		
231	**2**	9.6	12.7	21.2	37.0	42.6	57.7	515	1673	40.8	28	2.5	12.0	9.0	46	UNIT 231 EC
	4	11.7	15.6	25.9	34.6	39.5	52.5	703	2375	42.2	55		17.0	13.0		
	6	14.0	18.7	31.1	32.7	36.9	48.2	936	3272	53.1	117		24.0	18.0		
	8	15.6	20.8	34.6	31.8	35.7	46.2	1117	3920	53.6	189		30.0	23.0		
	10	16.5	22.0	36.7	31.2	34.9	44.9	1232	4382	59.8	251		35.0	27.0		
321	**2**	10.1	13.5	22.5	41.5	48.6	67.7	274	1403	27.3	20	2.5	13.0	10.0	56	UNIT 321 EC
	4	13.1	17.5	29.1	39.1	45.5	62.5	378	2036	35.6	34		20.0	15.0		
	6	16.2	21.6	36.0	36.1	41.4	55.7	515	2998	43.1	69		30.0	23.0		
	8	17.6	23.5	39.2	32.3	36.4	47.4	722	4254	51.7	158		37.0	28.0		
	10	18.1	24.1	40.2	30.9	34.6	44.3	826	4915	55.1	232		40.0	30.0		
331	**2**	11.2	14.9	24.8	45.1	53.4	75.7	274	1324	26.3	21	3.0	11.0	8.0	59	UNIT 331 EC
	4	12.6	16.8	27.9	39.4	45.9	63.2	378	1922	34.3	35		13.0	10.0		
	6	16.0	21.4	35.6	36.8	42.4	57.4	515	2829	41.9	71		19.0	14.0		
	8	20.2	26.9	44.8	34.9	39.9	53.2	722	4015	49.9	160		27.0	21.0		
	10	23.3	31.0	51.7	34.9	39.9	53.1	826	4639	56.3	235		36.0	27.0		
421	**2**	13.4	17.8	29.7	38.0	44.0	60.0	291	2207	30.2	30	3.0	14.0	11.0	71	UNIT 421 EC
	4	15.8	21.1	35.1	35.1	40.1	53.6	399	3107	37.8	54		20.0	15.0		
	6	19.9	26.5	44.2	33.6	38.2	50.3	539	4344	46.2	113		30.0	23.0		
	8	24.1	32.1	53.6	31.9	35.9	46.5	731	6004	54.6	249		40.0	31.0		
	10	29.3	39.1	65.2	30.7	34.3	43.8	972	8147	62.3	569		54.0	41.0		
431	**2**	14.5	19.4	32.3	40.7	47.6	66.0	291	2083	29.2	31	3.0	12.0	9.0	75	UNIT 431 EC
	4	18.7	24.9	41.6	39.0	45.3	62.1	399	2932	36.7	55		18.0	14.0		
	6	24.1	32.2	53.6	37.5	43.3	58.9	539	4100	44.9	115		27.0	20.0		
	8	29.4	39.2	65.4	35.4	40.6	54.3	731	5666	52.9	251		36.0	27.0		
	10	35.4	47.2	78.6	33.7	38.2	50.4	972	7689	60.4	572		49.0	37.0		

[1] exhaust temperature at the heat exchanger, before the AVS effect lowers this temperature

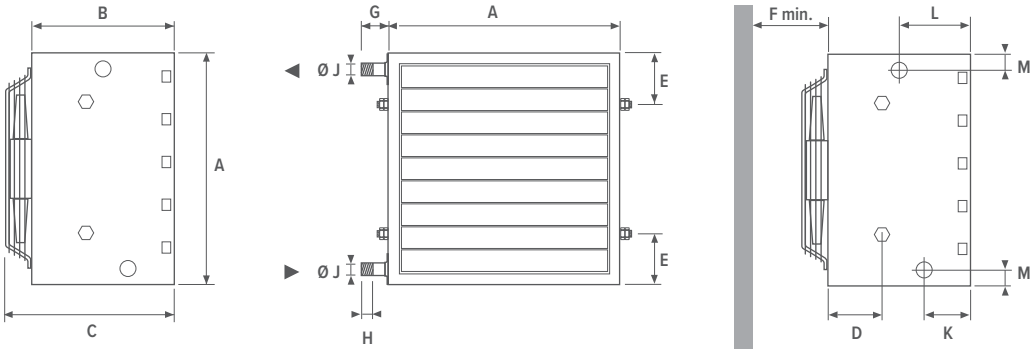
[2] measurement at 5m from the device / room volume 3,000 m^3 / reverberation time 2 sec. (VDI 2081)

[3] Heat carrying capacity is a guide value for free inlet and exhaust air. ΔTi is about 15° C to 20° C over room temperature.

Option AVS modulating enter 'UNIM',
NOT for types 021 or 031

AVS UNIT HEATER WITH CEILING MOUNTING

DIMENSIONS *(in mm)*



	TYPE	021	031	121	131	221	231	321	331	421	431
OUTSIDE DIMENSIONS	A	410	410	530	530	650	650	770	770	890	890
	B	400	400	400	400	400	400	400	400	400	400
	C	430	430	480	480	498	498	572	572	551	551
INSTALLATION	D	151	151	151	151	151	151	151	151	151	151
	E	105	105	115	115	125	125	135	135	145	145
	F	300	300	350	350	450	450	560	560	650	650
CONNECTION	G	48	48	48	48	48	48	51	51	51	51
	H	22	22	22	22	22	22	33	33	33	33
	ØJ	3/4"	3/4"	G1"	G1"	G1"	G1"	G6/4"	G6/4"	G6/4"	G6/4"
	K	129	129	129	129	129	129	129	129	129	129
	L	198	198	198	198	198	198	198	198	198	198
	M	45	45	45	45	45	45	52	52	52	52
WEIGHT	kg	20	22	30	32	43	46	56	59	71	75

STANDARD DELIVERY

Fully pre-assembled unit for mounting against wall or ceiling, supplied in a sturdy cardboard box:
- standard with Air Venturi System
- heat exchanger with 2 or 3 rows of irrigation tubes

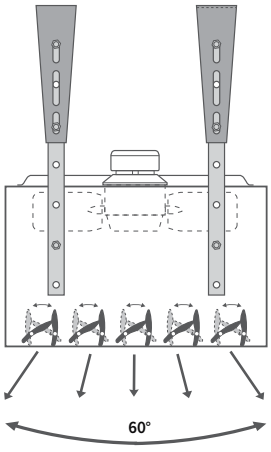
COLOURS

The casing is painted sandblast grey 001

Other colours
Other colours on request

STANDARD DELIVERY MODULATING

The modulating operation is integrated into the equipment and therefore cannot be delivered as an accessory.
Mini unit heater (code 021 and 031) are not available in a modulating version.



Other colours
Other colours on request

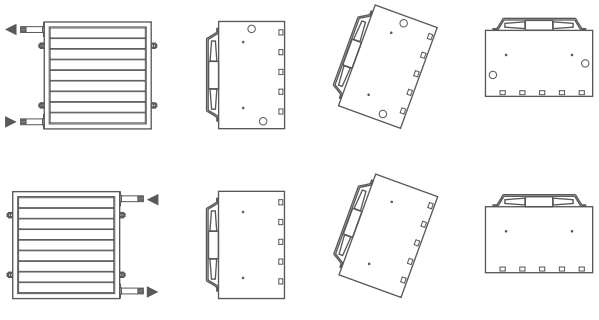
ORDER CODE

UNIT 021 EC

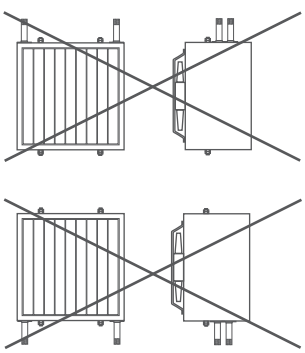
- *Type (2 = 2 rows of tubes) (3 = 3 rows of tubes)*
- *Unit size (0 - 1 - 2 - 3 - 4)*
- *UNIT (standard) UNIM (modulating)*

HYDRONIC CONNECTION

Good



Fault



TYPE	INSTALLATION HEIGHT *max. H in m*
021 / 031	2.5
121 / 131	2.5
221 / 231	2.5
321 / 331	3.0
421 / 431	3.0

Installation heights are based on maximum outputs of 10V.

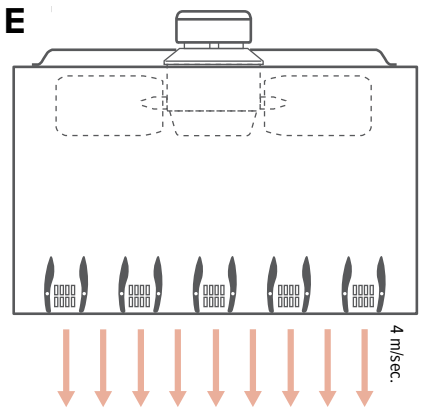
CEILING MOUNTING AVS

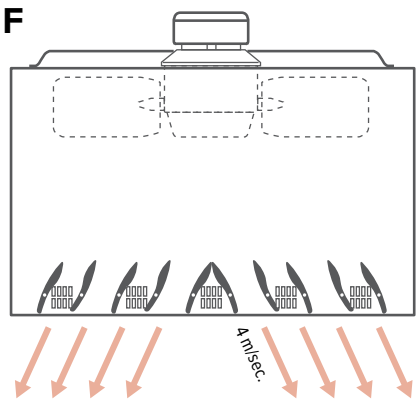
Installation

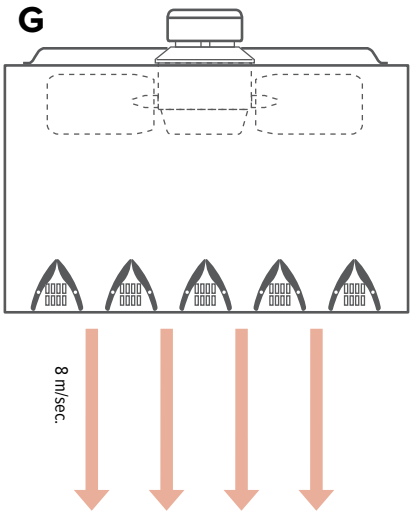
INSTALLATION HEIGHT	POSITION
Height < TABLE	E or F
Height = TABLE	G, H or I

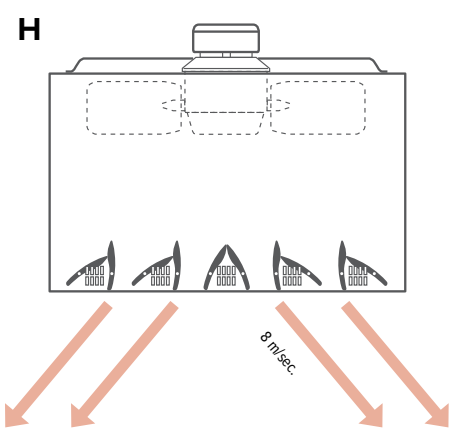
TYPE	VERTICAL HEAT CARRYING CAPACITY *max. H in m*
021	8.0
031	7.5
121	8.0
131	7.5
221	10.0
231	9.5
321	10.5
331	9.5
421	11.0
431	10.0

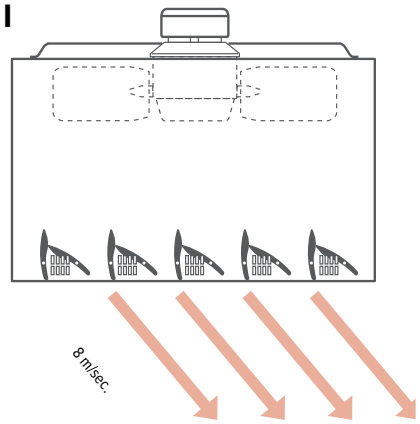
Heights are based on maximum outputs of 10V.



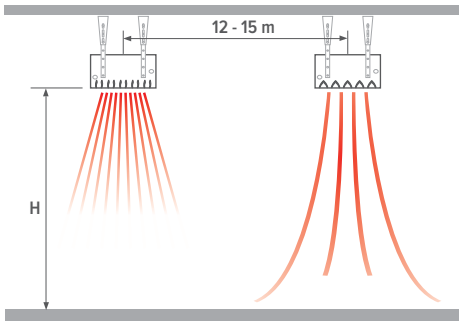


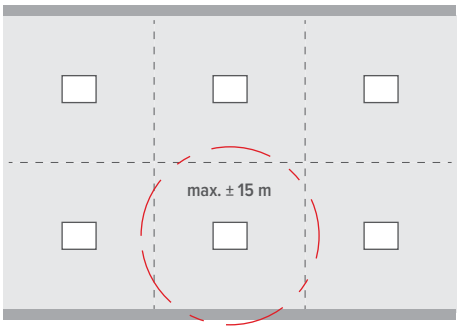






INSTALLATION OPTIONS CEILING

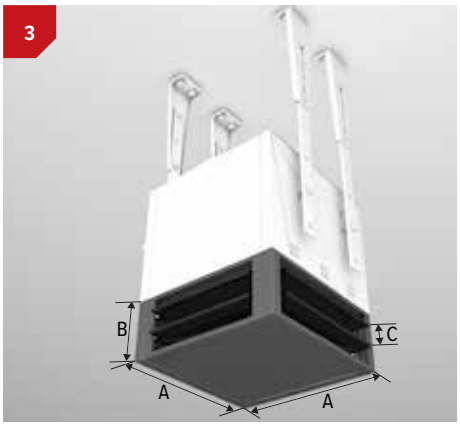


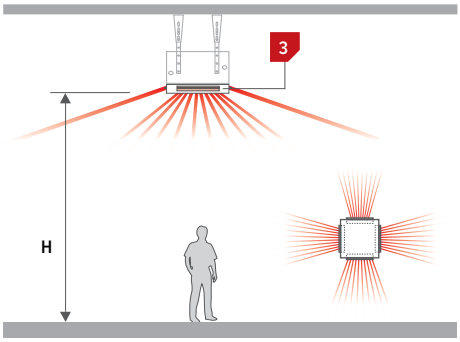


AVS UNIT HEATER

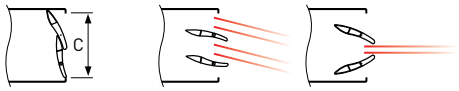
AIR EXHAUST OPTIONS FOR CEILING INSTALLATION

4-SIDED AVS AIR DIFFUSER





- in case of low ceilings a better horizontal diffusion should be obtained by using a 4 sided air diffuser
- to be ordered together with the unit heater
- with this option, the unit heater has no exhaust grille
- easy mounting and dismounting with quick-release connection (is supplied separately)
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- aerodynamic exhaust made of satin black lacquered aluminium
- maximum height from the bottom of the air diffuser to the floor depends on the type of Unit Heater

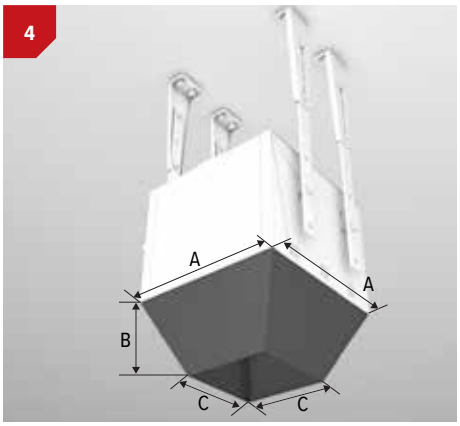


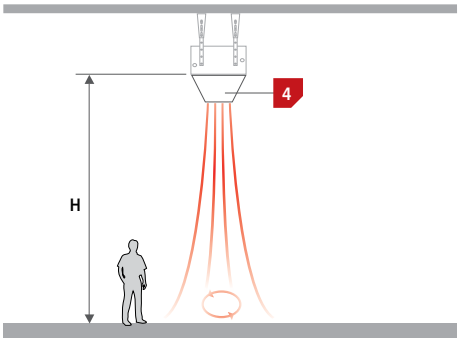
CODE	TYPE	A	B	C	kg
		mm	*mm*	*mm*	
8375 060100	021 / 031	410	188	138	7.2
8375 060101	121 / 131	530	188	138	9.2
8375 060102	221 / 231	650	188	138	11.8
8375 060103	321 / 331	770	188	138	14.6
8375 060104	421 / 431	890	188	138	17.7

TYPE	INSTAL-LATION HEIGHT	HEAT CARRYING CAPACITY 4-SIDED CONE	HEAT CARRYING CAPACITY 2-SIDED CONE
	min. H in m	*max. H in m*	*max. H in m*
021	2.5	5.0	10.0
031	2.5	4.5	9.0
121	2.5	6.0	12.5
131	2.5	6.0	11.5
221	2.5	11.0	21.5
231	2.5	10.5	20.5
321	3.5	12.5	22.5
331	3.5	11.5	20.5
421	3.5	15.5	27.0
431	3.5	14.0	25.0

Heights are based on maximum outputs of 10V.

FAN STACK





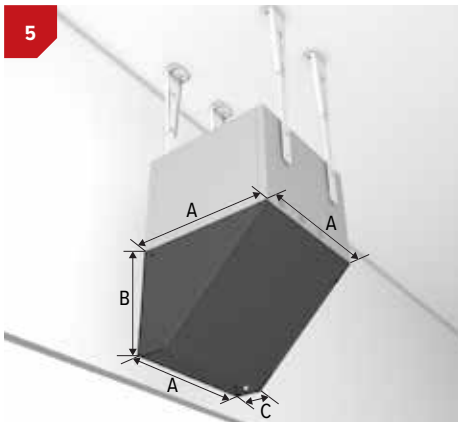
- the exhaust cone allows for a higher exhaust speed, which allows for mounting at a higher level
- to be ordered together with the unit heater
- easy mounting and dismounting with quick-release connection (is supplied separately)
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- maximum height from the bottom of the air diffuser to the floor depends on the type of Unit Heater
- not available for the mini unit heater (021 / 031)

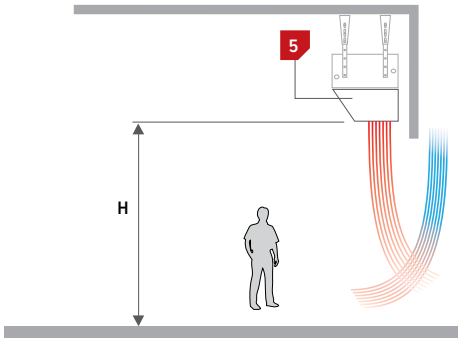
CODE	TYPE	A	B	C	kg
		mm	*mm*	*mm*	
8375 080101	121 / 131	530	433	220	8.2
8375 080102	221 / 231	650	461	320	10.7
8375 080103	321 / 331	770	558	370	14.8
8375 080104	421 / 431	890	642	430	18.9

CODE	HEAT CARRYING CAPACITY CONE	TYPE
	max. H in m	
8375 080101	9.0	121
8375 080101	8.5	131
8375 080102	11.0	221
8375 080102	10.5	231
8375 080103	11.5	321
8375 080103	10.5	331
8375 080104	12.5	421
8375 080104	11.5	431

Heights are based on maximum outputs of 10V.

AIR OUTLET





- The air outlet mouthpiece prevents the inflow of cold air at gates, etc.
- to be ordered together with the unit heater
- easy mounting and dismounting with quick-release connection (is supplied separately)
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- maximum height from the bottom of the air diffuser to the floor depends on the type of Unit Heater
- not available for the mini unit heater (021 / 031)

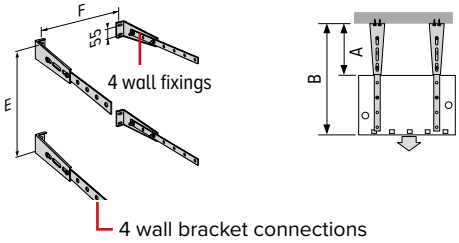
CODE	TYPE	A	B	C	kg
		mm	*mm*	*mm*	
8375 070101	121 / 131	530	545	105	9.7
8375 070102	221 / 231	650	600	180	17.3
8375 070103	321 / 331	770	725	190	24.0
8375 070104	421 / 431	890	1035	250	36.7

CODE	HEAT CARRYING CAPACITY MOUTH	TYPE
	max. H in m	
8375 070101	3.5	121
8375 070101	3.0	131
8375 080102	4.5	221
8375 080102	4.0	231
8375 080103	5.0	321
8375 080103	4.5	331
8375 080104	6.0	421
8375 080104	5.5	431

Heights are based on maximum outputs of 10V.

CEILING MOUNTING BRACKETS & MOUNTING SETS

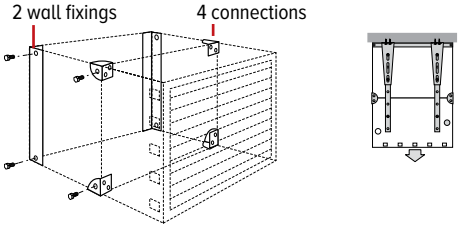
SET OF BRACKETS A



- load-bearing weight: 150kg
- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts
- fixings, **without air inlet options**: mount the brackets inward
- fixings, **with air inlet options**: mount the brackets outward

CODE	A		B		E	F	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
	min.	*max.*	*min.*	*max.*						
8376 010100	360	670	770	1070	...	...	021 / 031	•	•	
8376 010100	360	670	770	1070	355	530	121 / 131	•	•	
8376 010100	360	670	770	1070	455	650	221 / 231	•	•	
8376 010100	360	670	770	1070	555	770	321 / 331	•	•	
8376 010100	360	670	770	1070	655	890	421 / 431	•	•	

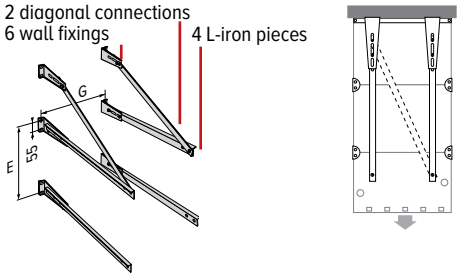
FIXING SET A



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts M8 x 16 DIN 933
- including toothed spring washers M8 DIN 127

CODE	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 040001	121 / 131		•	
8376 040002	221 / 231		•	
8376 040003	321 / 331		•	
8376 040004	421 / 431		•	

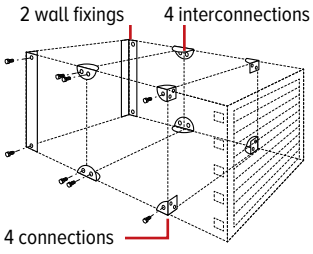
SET OF BRACKETS B



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts

CODE	E	G	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 030101	355	635	121 / 131			•
8376 030102	455	755	221 / 231			•
8376 030103	555	875	321 / 331			•
8376 030104	655	995	421 / 431			•

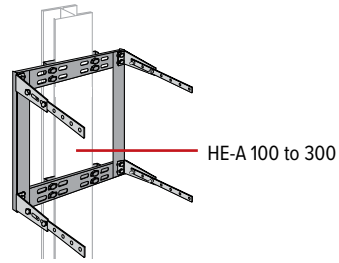
FIXING SET B



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts M8 x 16 DIN 933
- including toothed spring washers M8 DIN 127

CODE	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 040101	121 / 131			•
8376 040102	221 / 231			•
8376 040103	321 / 331			•
8376 040104	421 / 431			•

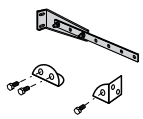
ATTACH TO STEEL FRAME



- version in the same colour as the unit heater, sandblast grey (001) fine texture metallic lacquer
- including bolts

CODE	TYPE	AVS Unit heater without air inlet options	AVS Unit heater with 1 air inlet option	AVS Unit heater with 2 air inlet options
8376 050101	121 / 131	•	•	•
8376 050102	221 / 231	•	•	•
8376 050103	321 / 331	•	•	•
8376 050104	421 / 431	•	•	•

PARTS



CODE	PARTS	TYPE
8376 040201	2 wall fixings	121 / 131
8376 040202	2 wall fixings	221 / 231
8376 040203	2 wall fixings	321 / 331
8376 040204	2 wall fixings	421 / 431
8376 040300	4 interconnections + 8 bolts	all
8376 040400	4 unit heater connectings + 4 bolts	all

AVS UNIT HEATER

TECHNICAL TABLE WITH VERTICAL AIR PROJECTION

TYPE	CONTROL VOLTAGE	HEATING *room temperature 20°C*			AIR EXHAUST TEMPERATURE [1] *room temperature 20°C*			REVOLUTIONS	AIR FLOW	SOUND PRESSURE LEVEL [2]	POWER CONSUMPTION	VERTICAL HEAT CARRYING CAPACITY [3]							WEIGHT	ORDER CODE
												AVS	none AVS	mouth cone		air diffuser	4 open sides	2 open sides		
												H max.	H max.	H max.	H max.	H max.				
	U	45/40	55/45	75/65	45/40	55/45	75/65													
	V	kWatts	kWatts	kWatts	°C	°C	°C	RPM	m³/h	dB(A)	Watts	m	m	m	m	m	m	m	kg	
021	2	2.0	2.7	4.5	30.0	33.4	42.3	731	594	34.0	10								20	UNIT 021 EC
	4	2.5	3.3	5.5	28.6	31.5	39.2	984	847	42.4	20									
	6	2.9	3.8	6.4	27.5	30.0	36.6	1286	1144	50.1	43	5.0	3.5			2.5	3.5	7.0		
	8	3.2	4.2	7.1	27.1	29.5	35.9	1469	1325	53.9	63	6.5	4.5			2.5	4.5	9.0		
	10	3.3	4.4	7.3	26.9	29.2	35.3	1559	1422	55.4	76	8.0	5.5			2.5	5.0	10.0		
031	2	2.4	3.2	5.3	32.7	36.9	48.1	731	561	33.0	11								22	UNIT 031 EC
	4	2.9	3.9	6.5	30.9	34.6	44.3	984	799	41.4	21									
	6	3.6	4.8	8.1	30.0	33.3	42.2	1286	1080	49.0	45	5.0	3.5			2.5	3.0	6.5		
	8	4.1	5.4	9.0	29.6	32.8	41.4	1469	1251	52.0	65	6.5	4.5			2.5	4.0	8.0		
	10	4.3	5.8	9.6	29.6	32.8	41.3	1559	1342	53.1	79	7.5	5.0			2.5	4.5	9.0		
121	2	3.6	4.8	8.0	35.2	40.3	53.8	458	699	25.2	8								30	UNIT 121 EC
	4	4.8	6.4	10.7	34.3	39.1	51.8	614	997	33.3	14									
	6	5.8	7.8	13.0	32.1	36.1	46.8	857	1438	41.9	35	5.0	3.5	3.5	6.0	2.5	4.0	8.0		
	8	6.6	8.8	14.6	29.8	33.1	41.9	1143	1984	49.5	80	6.5	4.5	3.5	7.5	2.5	5.0	10.0		
	10	7.1	9.4	15.7	28.7	31.6	39.3	1413	2422	55.2	115	8.0	5.5	3.5	9.0	2.5	6.0	12.5		
131	2	4.1	5.5	9.2	38.6	40.3	61.3	458	660	24.2	9								32	UNIT 131 EC
	4	5.5	7.3	12.2	37.4	39.1	58.7	614	941	32.2	15									
	6	7.5	10.0	16.7	36.5	36.1	56.7	857	1357	40.3	37	5.0	3.5	3.0	5.5	2.5	3.5	7.5		
	8	8.7	11.6	19.3	33.8	33.1	50.7	1143	1872	47.1	82	6.5	4.5	3.0	7.5	2.5	5.0	10.0		
	10	9.0	12.0	20.1	31.7	31.6	46.1	1413	2286	55.2	118	7.5	5.0	3.0	8.5	2.5	6.0	11.5		
221	2	8.1	10.8	18.0	33.5	38.1	50.1	515	1773	41.8	27								43	UNIT 221 EC
	4	9.8	13.0	21.7	31.6	35.4	45.7	703	2517	43.3	54									
	6	11.9	15.8	26.4	30.2	33.6	42.6	936	3467	51.6	115	7.5	4.5	4.5	8.0	2.5	8.0	15.5		
	8	12.9	17.2	28.6	29.2	32.3	40.5	1117	4153	55.5	187	8.5	5.0	4.5	9.5	2.5	10.0	18.5		
	10	13.7	18.2	30.4	28.7	31.7	39.4	1232	4643	59.2	248	10.0	6.0	4.5	11.0	2.5	11.0	21.5		
231	2	9.6	12.7	21.2	37.0	42.6	57.7	515	1673	40.8	28								46	UNIT 231 EC
	4	11.7	15.6	25.9	34.6	39.5	52.5	703	2375	42.2	55									
	6	14.0	18.7	31.1	32.7	36.9	48.2	936	3272	53.1	117	6.5	4.0	4.0	7.0	2.5	7.0	13.5		
	8	15.6	20.8	34.6	31.8	35.7	46.2	1117	3920	53.6	189	8.0	5.0	4.0	9.0	2.5	9.0	17.0		
	10	16.5	22.0	36.7	31.2	34.9	44.9	1232	4382	59.8	251	9.5	5.5	4.0	10.5	2.5	10.5	20.0		
321	2	10.1	13.5	22.5	41.5	48.6	67.7	274	1403	27.3	20								56	UNIT 321 EC
	4	13.1	17.5	29.1	39.1	45.5	62.5	378	2036	35.6	34									
	6	16.2	21.6	36.0	36.1	41.4	55.7	515	2998	43.1	69	8.0	5.0	5.0	8.5	3.0	9.5	17.0		
	8	17.6	23.5	39.2	32.3	36.4	47.4	722	4254	51.7	158	10.0	6.0	5.0	10.5	3.0	11.5	21.0		
	10	18.1	24.1	40.2	30.9	34.6	44.3	826	4915	55.1	232	10.5	6.5	5.0	11.5	3.0	12.5	22.5		
331	2	11.2	14.9	24.8	45.1	53.4	75.7	274	1324	26.3	21								59	UNIT 331 EC
	4	12.6	16.8	27.9	39.4	45.9	63.2	378	1922	34.3	35									
	6	16.0	21.4	35.6	36.8	42.4	57.4	515	2829	41.9	71	5.0	3.0	4.5	5.5	3.0	6.0	10.5		
	8	20.2	26.9	44.8	34.9	39.9	53.2	722	4015	49.9	160	7.0	4.5	4.5	8.0	3.0	8.5	15.5		
	10	23.3	31.0	51.7	34.9	39.9	53.1	826	4639	56.3	235	9.5	6.0	4.5	10.5	3.0	11.5	20.5		
421	2	13.4	17.8	29.7	38.0	44.0	60.0	291	2207	30.2	30								71	UNIT 421 EC
	4	15.8	21.1	35.1	35.1	40.1	53.6	399	3107	37.8	54									
	6	19.9	26.5	44.2	33.6	38.2	50.3	539	4344	46.2	113	6.0	5.5	6.0	7.0	3.0	8.5	7.5		
	8	24.1	32.1	53.6	31.9	35.9	46.5	731	6004	54.6	249	8.5	7.0	6.0	9.5	3.0	11.5	10.5		
	10	29.3	39.1	65.2	30.7	34.3	43.8	972	8147	62.3	569	11.0	9.5	6.0	12.5	3.0	15.5	14.0		
431	2	14.5	19.4	32.3	40.7	47.6	66.0	291	2083	29.2	31								75	UNIT 431 EC
	4	18.7	24.9	41.6	39.0	45.3	62.1	399	2932	36.7	55									
	6	24.1	32.2	53.6	37.5	43.3	58.9	539	4100	44.9	115	5.5	4.5	5.5	6.0	3.0	7.5	13.5		
	8	29.4	39.2	65.4	35.4	40.6	54.3	731	5666	52.9	251	7.5	6.5	5.5	8.5	3.0	10.5	18.0		
	10	35.4	47.2	78.6	33.7	38.2	50.4	972	7689	60.4	572	10.0	8.5	5.5	11.5	3.0	14.0	25.0		

[1] *Exhaust temperature at the heat exchanger, before the AVS effect lowers this temperature.*

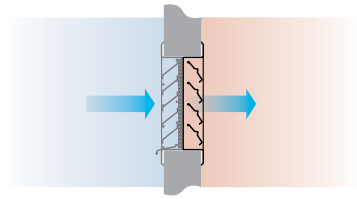
[2] *Measurement at 5m from the device / room volume 3,000 m³ / reverberation time 2 sec. (VDI 2081)*

[3] *Heat carrying capacity is a guide value for free inlet and exhaust air. ΔTi is about 15° C to 20° C over room temperature.*

Option AVS modulating enter 'UNIM', NOT for types 021 or 031

OUTSIDE AIR GRILLE

6

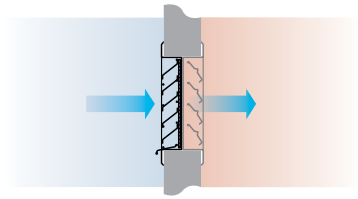


- protection against rain
- galvanised unlacquered steel
- with anti-pest mesh
- not available for the mini unit heater (021 / 031)

CODE	TYPE	W *mm*	H *mm*
8375 120101	121 / 131	400	345
8375 120102	221 / 231	600	345
8375 120103	321 / 331	600	510
8375 120104	421 / 431	800	510

CLOSING LOUVRES FOR THE OUTSIDE AIR GRILLE

7

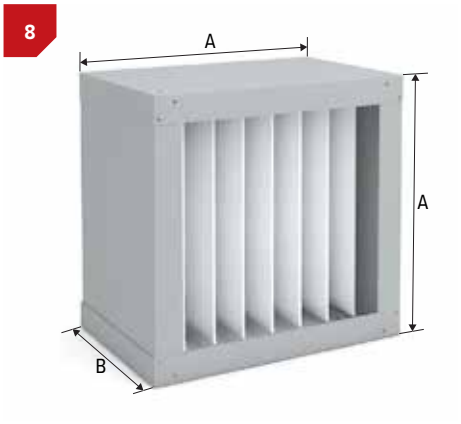


- protection against rain
- opens and closes automatically
- galvanised unlacquered steel
- aluminium louvres
- not available for the mini unit heater (021 / 031)

CODE	TYPE	W *mm*	H *mm*
8375 130101	121 / 131	400	345
8375 130102	221 / 231	600	345
8375 130103	321 / 331	600	510
8375 130104	421 / 431	800	510

FILTER BOX WITH FILTER ELEMENT

8



- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- it is recommended to order a spare filter element together with the filter box
- high airflow thanks to air bag system
- assembly: the filter box is mounted directly behind the unit heater
- not available for the mini unit heater (021 / 031)
- the filter is partially regenerable (depending on the purpose of the room to be heated)
- efficiency: ASHRAE dust 90%
- self-extinguishing in accordance with DIN 53438-1
- temperature-resistant up to 100 °C
- complies with the G4 classification in accordance with DIN EN 779

A dirty filter will reduce the output and airflow of the unit.

CODE GALVANISED	TYPE	A *mm*	B *mm*	*kg*
8375 140101	121 / 131	530	350	18.1
8375 140102	221 / 231	650	450	22.4
8375 140103	321 / 331	770	550	26.7
8375 140104	421 / 431	890	665	31.9

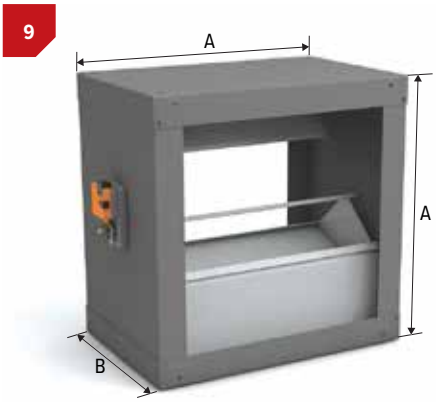
enter 1 for lacquered Ex. (8375**1** 140102)

GENERAL INFORMATION MIXING / SHUTTER BOX

- version: galvanised unlacquered
- manually adjustable
- not available for the mini unit heater (021 / 031)
- options: (is delivered mounted on the air mixing box and must be ordered together with the mixing box)
  - servo motors to control the exhaust louvres
  - frost protection thermostat
  - control cabinets

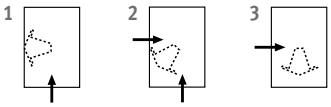
AIR MIXING BOX

9



OPERATION:

The air mixing box mixes fresh outdoor air with used indoor air.



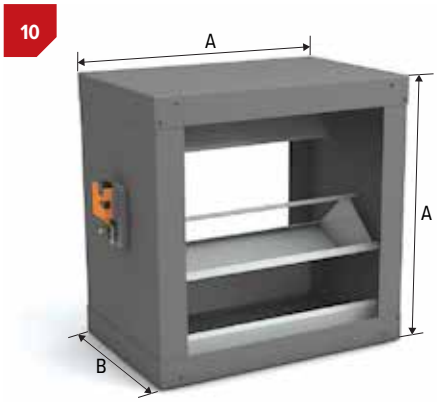
1. return air supply
2. mixing indoor and outdoor air
3. supply outdoor air only

CODE GALVANISED	TYPE	A *mm*	B *mm*	*kg*
8375 010101	121 / 131	530	188	9.2
8375 010102	221 / 231	650	188	11.8
8375 010103	321 / 331	770	188	14.6
8375 010104	421 / 431	890	188	17.7

enter 1 for lacquered Ex. (8375**1** 010102)

SHUTTER BOX 180°

10



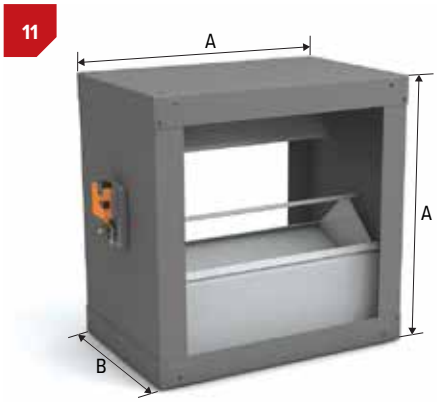
OPERATION:

CODE GALVANISED	TYPE	A *mm*	B *mm*	*kg*
8375 020101	121 / 131	530	450	13.6
8375 020102	221 / 231	650	550	19.3
8375 020103	321 / 331	770	650	25.9
8375 020104	421 / 431	890	765	33.1

enter 1 for lacquered Ex. (8375**1** 020102)

SHUTTER BOX 90°

11



OPERATION:

CODE GALVANISED	TYPE	A *mm*	B *mm*	*kg*
8375 020201	121 / 131	530	350	15.1
8375 020202	221 / 231	650	450	20.1
8375 020203	321 / 331	770	550	29.1
8375 020204	421 / 431	890	655	37.1

enter 1 for lacquered Ex. (8375**1** 020202)

CORNER BOX

12

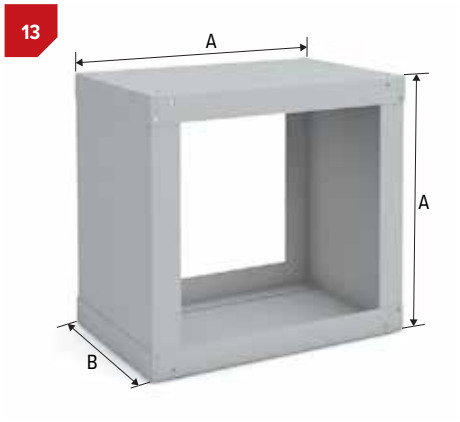
- as a corner transition or linking element between a horizontal and vertical element
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A mm	B mm	kg
8375 030101	121 / 131	530	350	12.5
8375 030102	221 / 231	650	450	18.3
8375 030103	321 / 331	770	550	24.9
8375 030104	421 / 431	890	665	32.7

enter 1 for lacquered Ex. (8375**1** 030102)

EXTENSION BOX

13



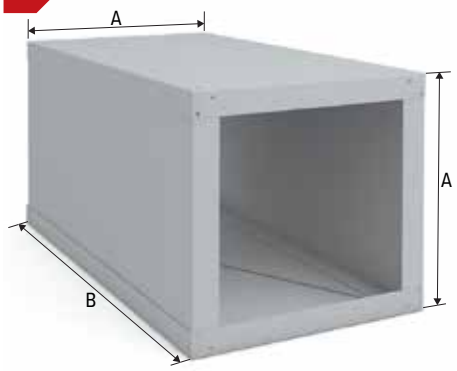
- as airlock / linking element between horizontally installed elements
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A mm	B mm	kg
8375 040101	121 / 131	530	350	11.1
8375 040102	221 / 231	650	450	16.2
8375 040103	321 / 331	770	550	22.3
8375 040104	421 / 431	890	665	29.4

enter 1 for lacquered Ex. (8375**1** 040102)

EXTENSION CHANNEL

14



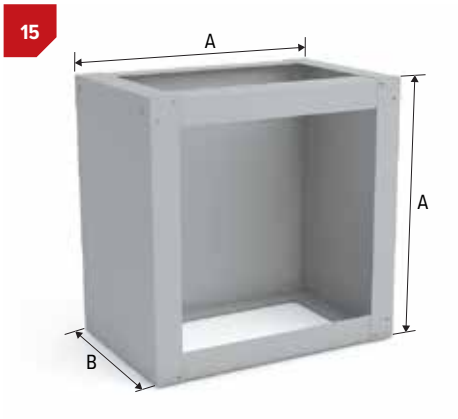
- as airlock / linking element between horizontally installed elements
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A mm	C* mm	kg
8375 170101	121 / 131	530	max. 2890	27.3
8375 170102	221 / 231	650	max. 2890	32.5
8375 170103	321 / 331	770	max. 2890	37.7
8375 170104	421 / 431	890	max. 2890	42.9

enter 1 for lacquered Ex. (8375**1** 170102)

2-SIDED AIR INLET BOX

15



- the 2-sided air inlet box is used to supply hot air from the top of the room to for e.g. a mixing box
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A mm	B mm	kg
8375 050101	121 / 131	530	350	10.8
8375 050102	221 / 231	650	450	15.2
8375 050103	321 / 331	770	550	18.7
8375 050104	421 / 431	890	665	26.4

enter 1 for lacquered Ex. (8375**1** 050102)

WALL CHANNEL BOX

16

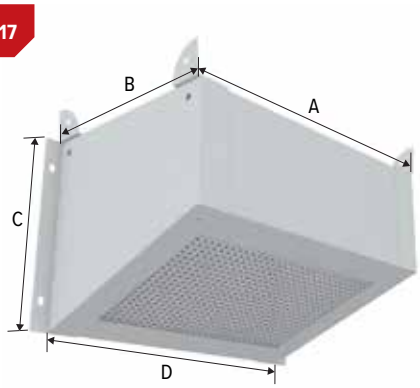
- as airlock / linking element between vertically installed elements
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A mm	B mm	C* mm	D mm	kg
8375 160101	121 / 131	530	350	max. 2890	560	26.0
8375 160102	221 / 231	650	450	max. 2890	680	31.2
8375 160103	321 / 331	770	550	max. 2890	800	36.4
8375 160104	421 / 431	890	665	max. 2890	920	41.6

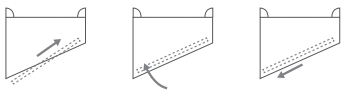
enter 1 for lacquered Ex. (8375**1** 160102)

AIR INLET WITH GRILLE FOR WALL CHANNEL BOX

17



- the grille prevents the intake of unwanted objects
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- not available for the mini unit heater (021 / 031)



CODE GALVANISED	TYPE	A mm	B mm	C mm	D mm	kg
8375 180101	121 / 131	530	350	324	560	8.6
8375 180102	221 / 231	650	450	362	680	10.8
8375 180103	321 / 331	770	550	401	800	13.4
8375 180104	421 / 431	890	660	445	920	15.8

enter 1 for lacquered Ex. (8375**1** 180102)

ROOF DUCT FOR WALL CHANNEL BOX

18

- to supply outdoor air via wall channel
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- manually adjustable
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A *mm*	A' *mm*	B *mm*	B' *mm*
8375 190101	121 / 131	640	460	540	360
8375 190102	221 / 231	760	560	660	460
8375 190103	321 / 331	880	660	780	560
8375 190104	421 / 431	1000	775	900	675

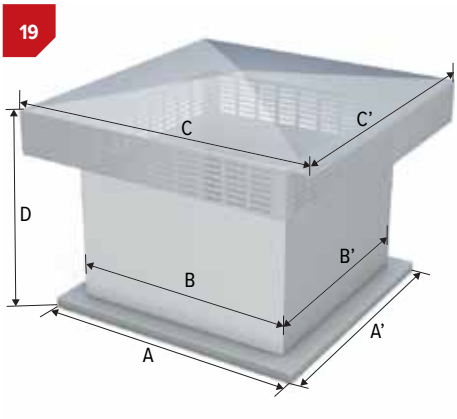
enter 1 for lacquered Ex. (8375**1** 190102)

CODE GALVANISED	TYPE	C *mm*	C' *mm*	D *mm*	*kg*
8375 190101	121 / 131	740	560	450	14.1
8375 190102	221 / 231	860	660	450	19.4
8375 190103	321 / 331	980	760	550	31.6
8375 190104	421 / 431	110	875	550	38.3

enter 1 for lacquered Ex. (8375**1** 190102)

ROOF DUCT FOR EXTENSION CHANNEL

19



- to supply outdoor air via extension channel
- version in galvanised unlacquered or in the same colour as the unit heater (sandblast grey, colour 001)
- manually adjustable
- not available for the mini unit heater (021 / 031)

CODE GALVANISED	TYPE	A *mm*	A' *mm*	B *mm*	B' *mm*
8375 090101	121 / 131	640	640	540	540
8375 090102	221 / 231	760	760	660	660
8375 090103	321 / 331	880	880	780	780
8375 090104	421 / 431	1000	1000	900	900

enter 1 for lacquered Ex. (8375**1** 090102)

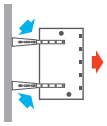
CODE GALVANISED	TYPE	C *mm*	C' *mm*	D *mm*	*kg*
8375 090101	121 / 131	740	740	450	19.0
8375 090102	221 / 231	860	860	450	26.2
8375 090103	321 / 331	980	980	550	42.6
8375 090104	421 / 431	110	110	550	51.7

enter 1 for lacquered Ex. (8375**1** 090102)

COMBINATION EXAMPLES WALL MOUNTED FIXING

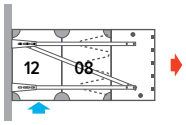
WITH 100% AMBIENT AIR

01 SET OF BRACKETS A + FIXING SET A



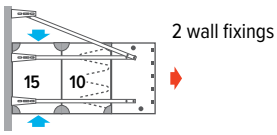
02 SET OF BRACKETS A + FIXING SET A

08 Filter box with filter element
12 Corner box



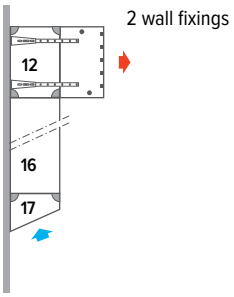
03 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

10 shutter box 180°
15 2-sided air inlet box



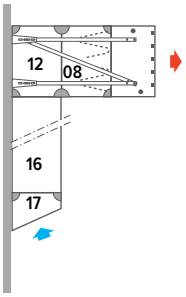
04 SET OF BRACKETS B + FIXING SET B + 2 WALL FIXINGS

12 Corner box
16 Wall channel box
17 Air inlet with grille for wall channel box



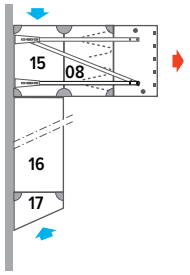
05 SET OF BRACKETS A + FIXING SET A

08 Filter box with filter element
12 Corner box
16 Wall channel box
17 Air inlet with grille for wall channel box



06 SET OF BRACKETS A + FIXING SET A

08 Filter box with filter element
15 2-sided air inlet box
16 Wall channel box
17 Air inlet with grille for wall channel box

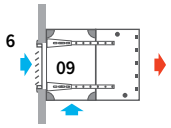


jaga

WITH MIXED AIR

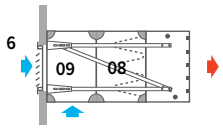
07 SET OF BRACKETS A + FIXING SET A

06 Outside air grille
09 Air mixing box



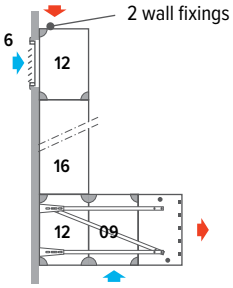
08 SET OF BRACKETS B + FIXING SET B

06 Outside air grille
08 Filter box with filter element
09 Air mixing box



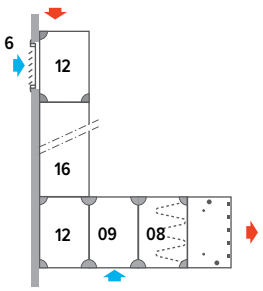
09 SET OF BRACKETS B + FIXING SET B + 2 WALL FIXINGS

06 Outside air grille
09 Air mixing box
12 Corner box
16 Wall channel box



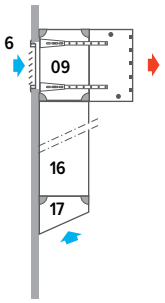
10 2 X SET OF BRACKETS B

06 Outside air grille
08 Filter box with filter element
09 Air mixing box
12 Corner box
16 Wall channel box



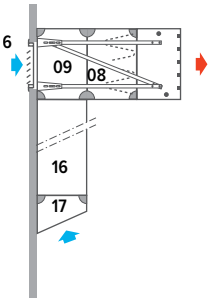
11 SET OF BRACKETS A + FIXING SET A

06 Outside air grille
09 Air mixing box
16 Wall channel box
17 Air inlet with grille for wall channel box



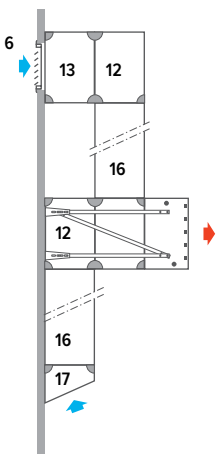
12 SET OF BRACKETS B + FIXING SET B

06 Outside air grille
08 Filter box with filter element
09 Air mixing box
16 Wall channel box
17 Air inlet with grille for wall channel box



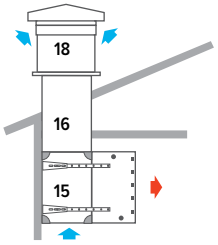
13 SET OF BRACKETS A + FIXING SET A + FIXING SET B

06 Outside air grille
12 Corner box
13 Extension box
16 Wall channel box
17 Air inlet with grille for wall channel box



14 SET OF BRACKETS A + FIXING SET A

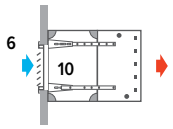
15 2-sided air inlet box
16 Wall channel box
18 roof duct for wall channel box



WITH 100% OUTSIDE AIR

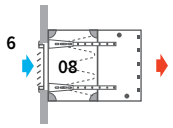
15 SET OF BRACKETS A + FIXING SET A

06 Outside air grille
10 Shutter box 180°



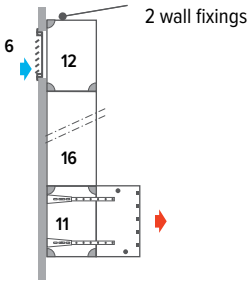
16 SET OF BRACKETS A + FIXING SET A

06 Outside air grille
08 Filter box with filter element



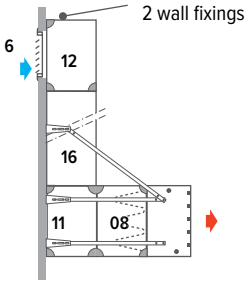
17 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

06 Outside air grille
11 Shutter box 90°
12 Corner box
16 Wall channel box



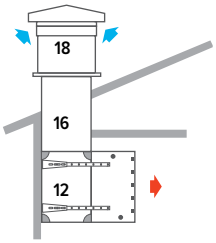
18 SET OF BRACKETS B + FIXING SET B + 2 WALL FIXINGS

06 Outside air grille
08 Filter box with filter element
11 Shutter box 90°
12 Corner box
16 Wall channel box



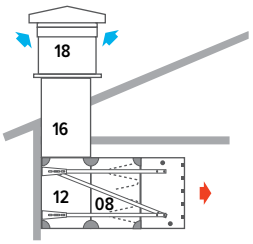
19 SET OF BRACKETS A + FIXING SET A

12 Corner box
16 Wall channel box
18 Roof duct for wall channel box



20 SET OF BRACKETS B + FIXING SET B

08 Filter box with filter element
12 Corner box
16 Wall channel box
18 Roof duct for wall channel box

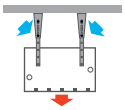


AVS UNIT HEATER

COMBINATION EXAMPLES CEILING MOUNTED FIXINGS

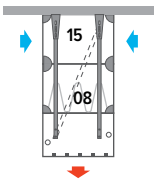
WITH 100% AMBIENT AIR

01 SET OF BRACKETS A



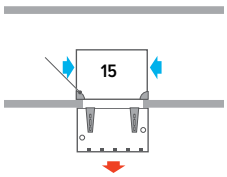
02 SET OF BRACKETS B + FIXING SET B

08 Filter box with filter element
15 2-sided air inlet box



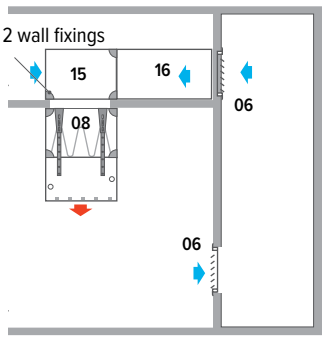
03 SET OF BRACKETS A

15 2-sided air inlet box



04 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

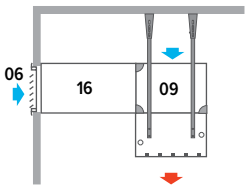
06 Outside air grille
08 Filter box with filter element
15 2-sided air inlet box
16 Wall channel box



WITH MIXED AIR

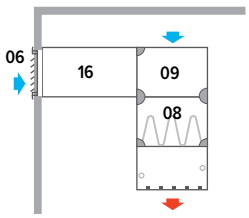
05 SET OF BRACKETS B + FIXING SET A

06 Outside air grille
09 Air mixing box
16 Wall channel box



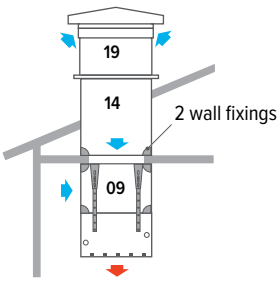
06 SET OF BRACKETS A CEILING MOUNTING TO BE SUPPLIED

06 Outside air grille
08 Filter box with filter element
09 Air mixing box
16 Wall channel box



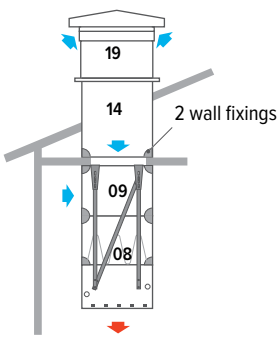
07 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

09 Air mixing box
14 Extension channel
19 Roof duct for extension channel



08 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

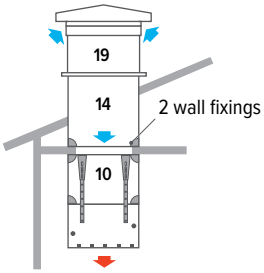
08 Filter box with filter element
09 Air mixing box
14 Extension channel
19 Roof duct for extension channel



WITH 100% OUTSIDE AIR

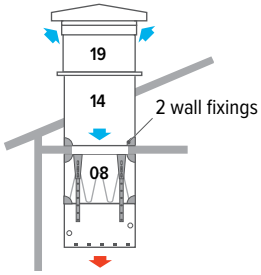
09 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

10 Shutter box 180°
14 Extension channel
19 Roof duct for extension channel



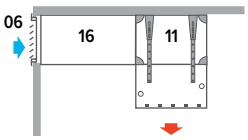
10 SET OF BRACKETS A + FIXING SET A + 2 WALL FIXINGS

08 Filter box with filter element
14 Extension channel
19 Roof duct for extension channel



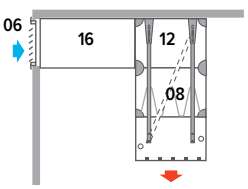
11 SET OF BRACKETS A + FIXING SET A

06 Outside air grille
11 Shutter box 90°
16 Wall channel box

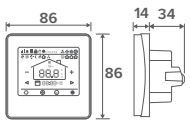
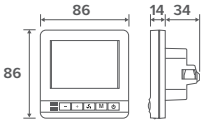
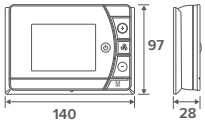
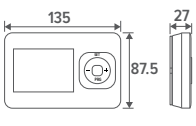
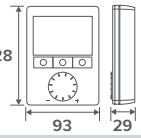
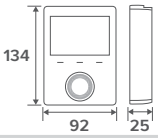


12 SET OF BRACKETS B + FIXING SET B

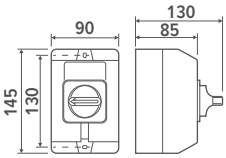
06 Outside air grille
08 Filter box with filter element
12 Corner box
16 Wall channel box



JRT-100 TB BLACK	JRT-100 TW WHITE	JRT-100	JRT-200	JRT-300	RDG 160T	RDG264KN
						
8751 050019	8751 050017	8751 050012	8751 050013	8751 050014	8751 050009	8751 050018

	JRT-100 TW	JRT-100	JRT-200	JRT-300	RDG 160T	RDG264KN
POWER SUPPLY						
supply voltage	24V DC	24V DC	24V DC	2 x AAA 1.5 V	24V DC	24V DC
OUTPUT / INPUT VOLTAGE						
valve 24V DC contact	2 (NO)	2 (NO)	-	-	-	-
potential-free contact	-	-	2 (NO)	1 (NO/NC)	3 (NO)	3 (NO)
input from keycard	-	-	✓	-	✓	✓
input from window contact	-	-	-	-	✓	✓
fan (0 - 10 V DC)	max. +/- 10 mA	max. +/- 10 mA	max. +/- 10 mA	-	max. +/- 5 mA	max. +/- 5 mA
manual 3-position speed controller	✓	✓	✓	-	✓	✓
automatic mode	✓	✓	✓	-	✓	✓
APPLICATIONS						
2-pipe						
manual (H/C)	✓	✓	✓	-	✓	✓
auto (H/C) - water temperature sensor required	-	-	-	-	✓	✓
4-pipe						
manual (H/C)	✓	✓	✓	-	✓	✓
auto (H/C)	✓	✓	✓	-	✓	✓
DIMENSIONS						
for wall mounting	-	-	✓	✓	✓	✓
for recessed-mounting	✓	✓	optional	optional	optional	optional
						
POSITION						
LCD display with backlight	-	✓	✓	✓	✓	✓
LCD touch screen with backlight	✓	-	-	-	-	-
protection category IP20	-	-	-	✓	-	-
protection category IP30	✓	✓	✓	-	✓	✓
Integrated CO2-sensor	-	-	-	-	-	✓
humidity sensor	-	-	-	-	-	✓
FEATURES						
programmable time zones	✓	✓	✓	✓	✓	✓
control via Wi-Fi (smartphone app)	✓	-	-	-	-	-
fan start delay	-	-	-	-	✓	✓
continuous fan speed	-	-	-	-	✓	✓
temperature sensor 80 cm	✓	✓	optional	optional	optional	optional

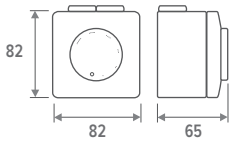
SWITCH DISCONNECTOR



- mounted on the side if ordered together with the unit heater
- applications: safety during maintenance, replacement of parts
- 1 switch per individual unit heater
- ON/OFF position
- no shutdown when power supply is interrupted
- with provision to lock the rotary knob to setting “I on”, with padlock
- little lock to cover the bottom screw

CODE
8531 050003

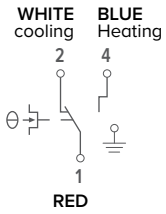
POTENTIOMETER



- continuously variable speed control for max. 10 EC motors & servo motors modulating
- synthetic housing ASA, RAL9010
- wall-mounted or wall-recessed
- splash-proof IP44
- supply voltage 230 VAC
- output voltage 0..10 VDC (max. 8 mA)

CODE
8751 050008

FROST PROTECTION THERMOSTAT



frost protection thermostat (from -10 °C to +12 °C)

CODE
8384 0001

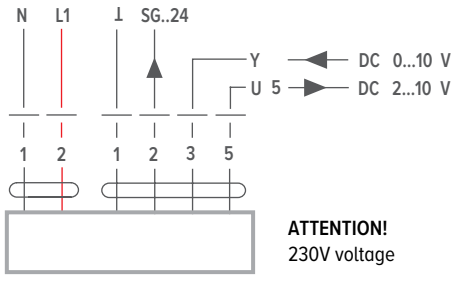
To be ordered together with the unit heater!

SERVO MOTORS “MODULATING” 230V

Actuators to control the air louvres in air mixing boxes. The servo motor is mounted directly onto the axle rotating the louvres by Jaga. If the servo motor is to be installed on site, a detailled assembly manual is supplied.

- motor with modulating AVS version
- control from 0...10 VDC
- feedback position DC 2 ... 10 V
- connection, power cable: cable 1 m, 3x 0,75 mm²
- connection, signal cable: cable 1 m, 4x 0,75 mm²
- runtime 150 s
- sound level max. 45dB(A)
- protection category double-insulated
- protection category IP54 in every mounting position
- EMV CE in accordance with 89/336/EEG
- low tension directive CE in accordance with 73/23/EEG
- operation type 1 (in accordance with EN 60730-1)

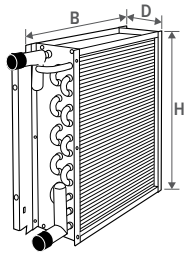
Order servo motor together with the shutter and/or air mixing boxes!



CODE
8383 2303

HEAT EXCHANGER

2 rows of circulation pipes

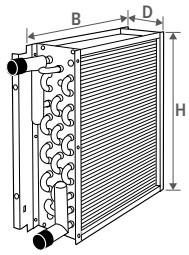


STANDARD DELIVERY:

heat exchanger:
ex. 021, 121, 221, 321, 421
- pressure test (bars): 25 kg/cm²
- working pressure (bars): 13 kg/cm² (max. 130 °C)

CODE	H	W	D	WATER CONTENT	TYPE
	mm	*mm*	*mm*	*L*	
8393 010105	360	260	65	0.9	021
8393 010101	480	380	65	1.8	121
8393 010102	600	500	65	3.6	221
8393 010103	725	588	65	4.0	321
8393 010104	840	705	65	5.5	421

3 rows of circulation pipes



STANDARD DELIVERY:

heat exchanger:
ex. 031, 131, 231, 331, 431
- pressure test (bars): 25 kg/cm²
- working pressure (bars): 13 kg/cm² (max. 130 °C)

CODE	H	W	D	WATER CONTENT	TYPE
	mm	*mm*	*mm*	*L*	
8393 020105	360	260	100	1.3	031
8393 020101	480	380	100	2.6	131
8393 020102	600	500	100	4.2	231
8393 020103	725	588	100	5.8	331
8393 020104	840	705	100	8.9	431

FILTER ELEMENT

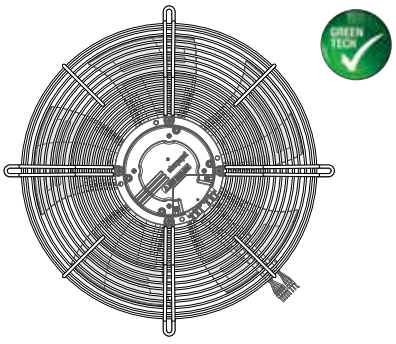
STANDARD DELIVERY:

filter element

not available for the mini unit heater (021 / 031)

CODE	TYPE
8375 150101	121 / 131
8375 150102	221 / 231
8375 150103	321 / 331
8375 150104	421 / 431

EC FAN



STANDARD DELIVERY:

fan

CODE	L	W	TYPE
	mm	*mm*	
24555 20000005	410	30	021 / 031
24502 02300101	530	79	121 / 131
24502 02300201	650	98	221 / 231
24502 02300302	770	172	321 / 331
24502 02300401	890	151	421 / 431

SOUND POWER LEVEL

Noise output is the noise produced by the unit itself (source noise).
The noise output is thus considered a fixed value independent of the installation situation.

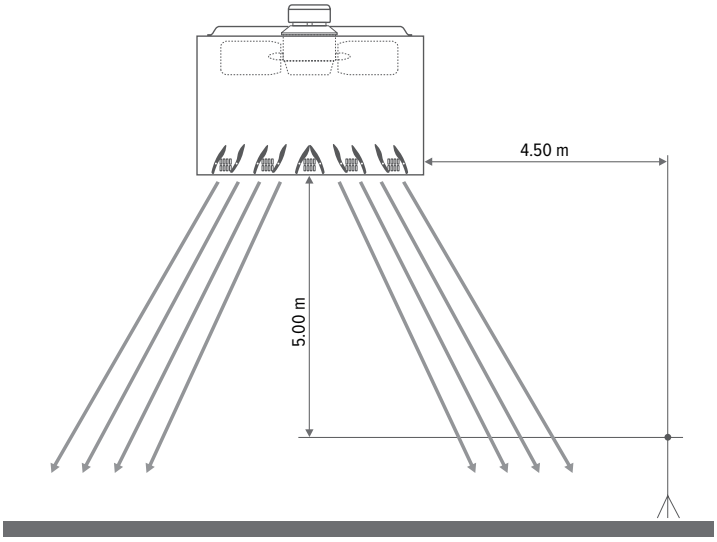
Sound power level **Sound pressure**

Sound pressure is the perceptible sound.
This depends on the installation situation and various factors:
- the location of the unit
- the ambient condition
- the distance from the measured source noise
- the reflection of the sound (depending on the size and height of the room and the materials used)

ATTENTION:
The noise output is always greater than the perceived sound pressure.
Reverberation time: the time - in seconds - required for the sound pressure level to drop by 60 dB after a sound source is switched off. This shows that reverberation time will be greater in a large room than in a small room. Especially the acoustics and furnishing of the room determine the reverberation time.

SOUND PRESSURE

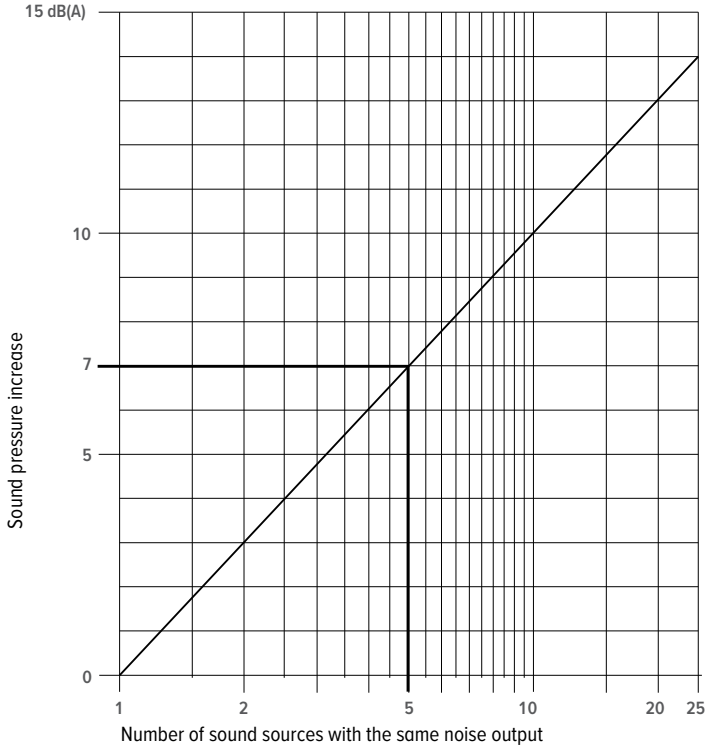
Sound measuring in a room in accordance with (DIN) EN 23741 and 23742.



COMBINATION OF DIFFERENT NOISE SOURCES AT THE SAME SOUND LEVEL:

Example:

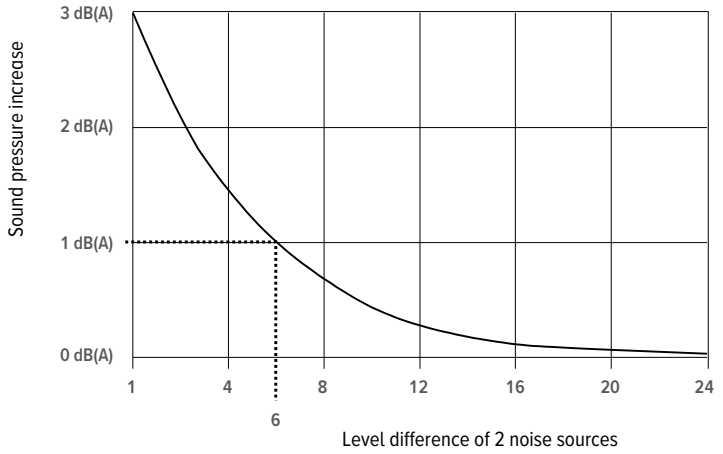
- given: 5 sound sources of each 53 dB(A)
- requested: total sound pressure
- total sound pressure: 53 dB(A) + 7 dB(A) = 60 dB(A)



COMBINATION OF DIFFERENT NOISE SOURCES WITH DIFFERENT SOUND LEVELS:

Example:

- given: 2 sound sources of 53 dB(A) and 59 dB(A)
- difference = 6 dB(A)
- requested: total sound pressure
- total sound pressure: 59 dB(A) + 1 dB(A) = 60 dB(A)



CALCULATION FOR OTHER TEMPERATURES

1 ΔT calculation

T_v = supply temperature
T_r = return temperature
T_l = room temperature
Q_v = requested output

$$\Delta T = \frac{T_v + T_r}{2} - T_l$$

Correction factor Cf

CALCULATION EXAMPLE

T_v = 70 °C
T_r = 50 °C
T_l = 18 °C
Q_v = 25 kWatts

$$\Delta T = \frac{70\ °C + 50\ °C}{2} - 18°C = 42$$

0.84

2 CALCULATION IMAGINARY OUTPUT (Qf)

$$Q_f = \frac{Q_v}{Cf}$$

$$Q_f = \frac{25\ kWatt}{0.84} = 29.76\ kWatts$$

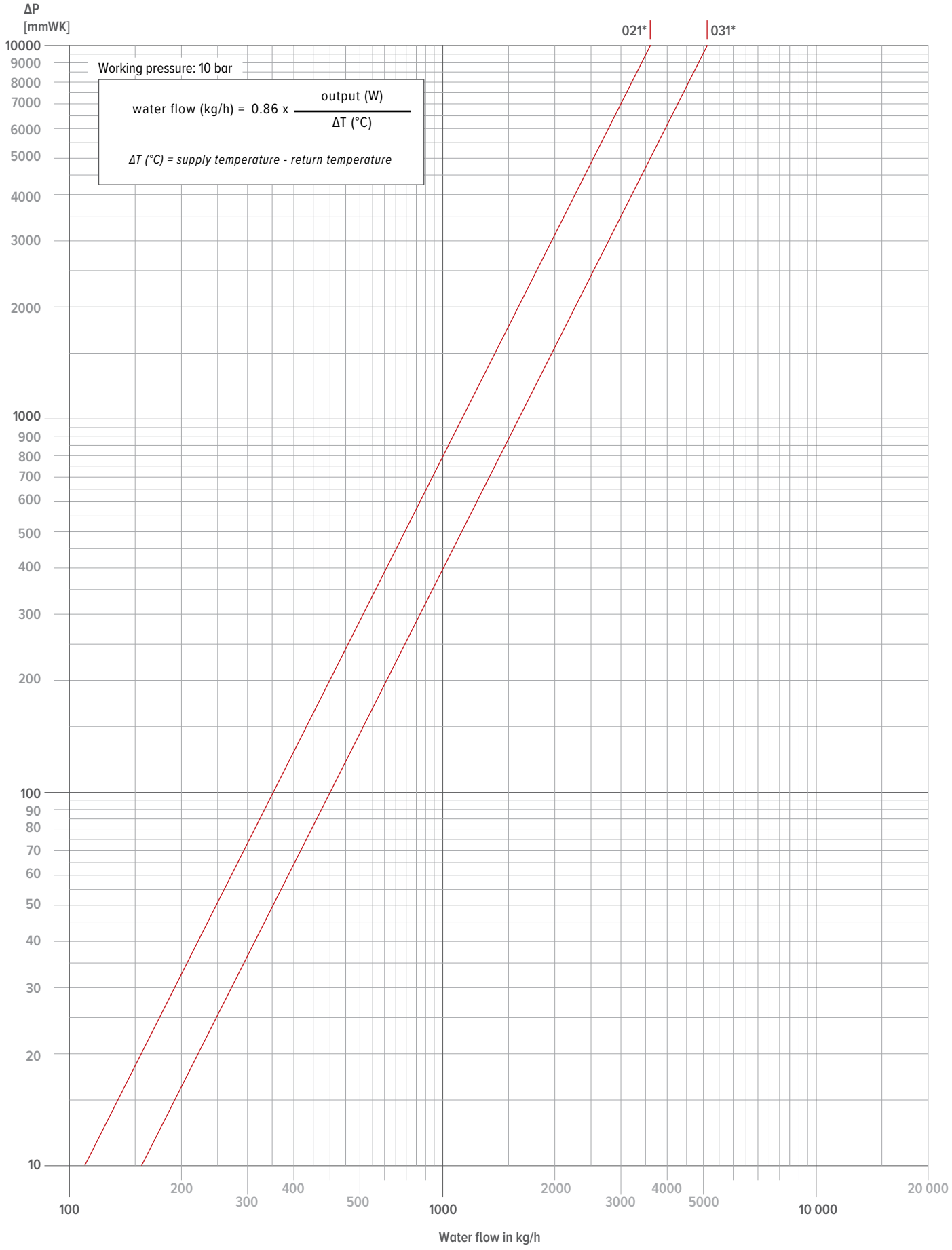
3 CHOICE UNIT HEATER

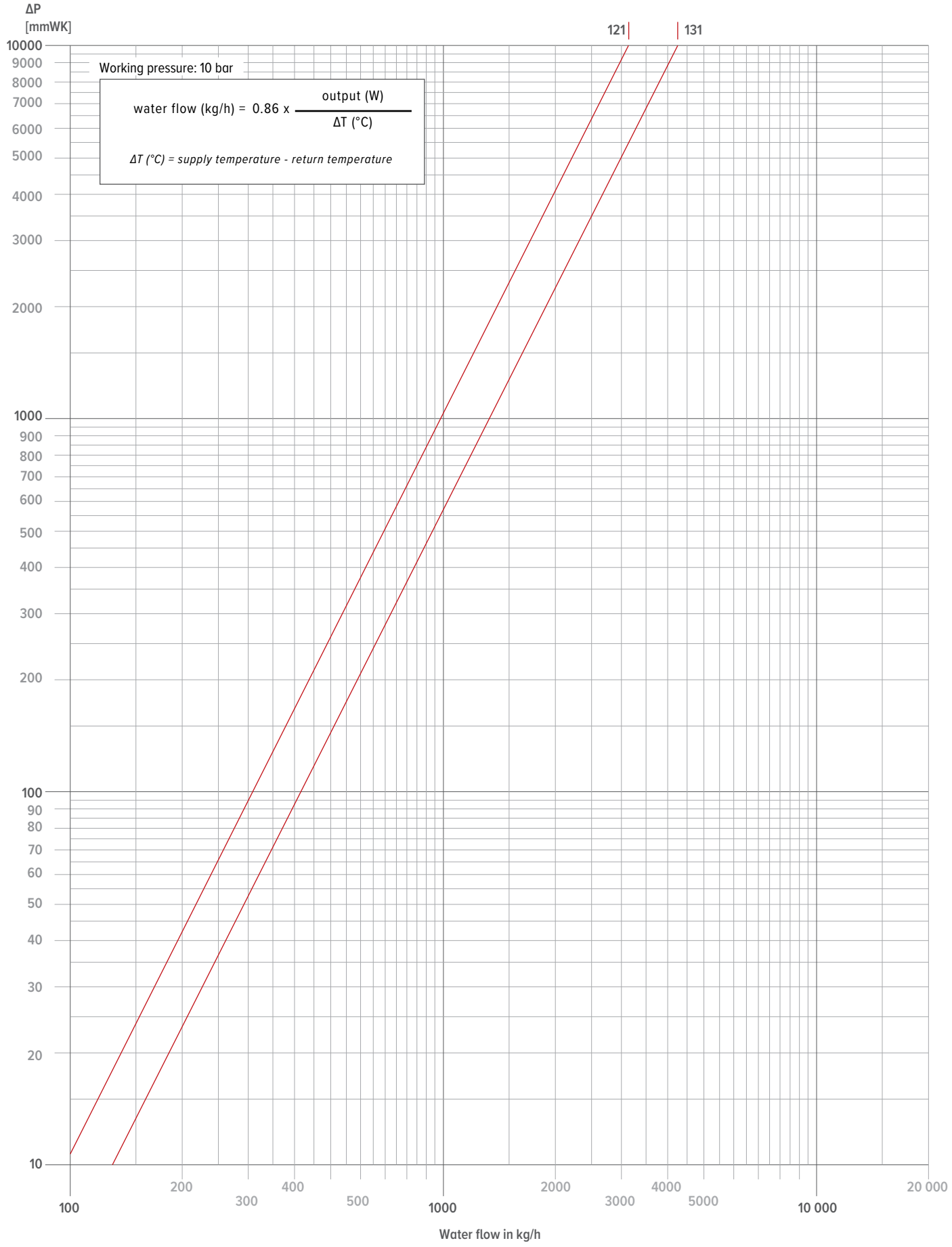
Select in table ΔT = 50 a unit heater with an output of about 29.76 kWatts (= imaginary output Qf).
This unit heater will provide 25 kWatts (= requested output Qv) at a water temperature of Tv - Tr (70 °C / 50 °C) and a room temperature Tl (18° C).

CORRECTION FACTORS (CF) AS A FUNCTION OF ΔT

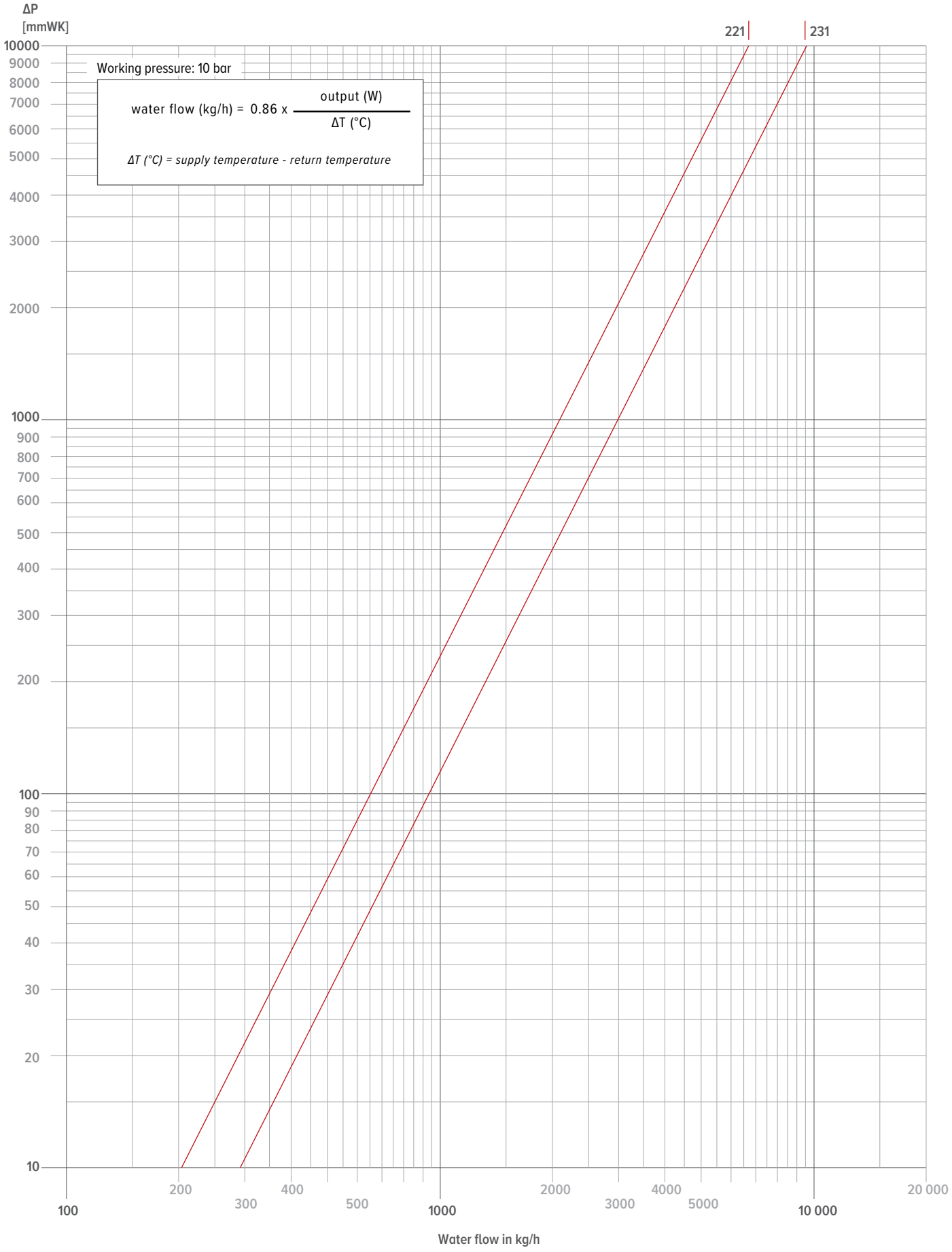
(ΔT = average water temperature - room temperature)

ΔT	FACTOR	ΔT	FACTOR	ΔT	FACTOR
30	0.60	49	0.98	68	1.36
31	0.62	50	1.00	69	1.38
32	0.64	51	1.02	70	1.40
33	0.66	52	1.04	71	1.42
34	0.68	53	1.06	72	1.44
35	0.70	54	1.08	73	1.46
36	0.72	55	1.10	74	1.48
37	0.74	56	1.12	75	1.50
38	0.76	57	1.14	76	1.52
39	0.78	58	1.16	77	1.54
40	0.80	59	1.18	78	1.56
41	0.82	60	1.20	79	1.58
42	0.84	61	1.22	80	1.60
43	0.86	62	1.24	81	1.62
44	0.88	63	1.26	82	1.64
45	0.90	64	1.28	83	1.66
46	0.92	65	1.30	84	1.68
47	0.94	66	1.32	85	1.70
48	0.96	67	1.34	86	1.72


ΔP
[mmWK]
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
021*
031*
Working pressure: 10 bar
water flow (kg/h) = 0.86 x output (W) / ΔT (°C)
ΔT (°C) = supply temperature - return temperature
100
200
300
400
500
1000
2000
3000
4000
5000
10 000
20 000
Water flow in kg/h


ΔP
[mmWK]
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
121
131
Working pressure: 10 bar
water flow (kg/h) = 0.86 x output (W) / ΔT (°C)
ΔT (°C) = supply temperature - return temperature
100
200
300
400
500
1000
2000
3000
4000
5000
10 000
20 000
Water flow in kg/h

PRESSURE DROP TYPE 221 & 231



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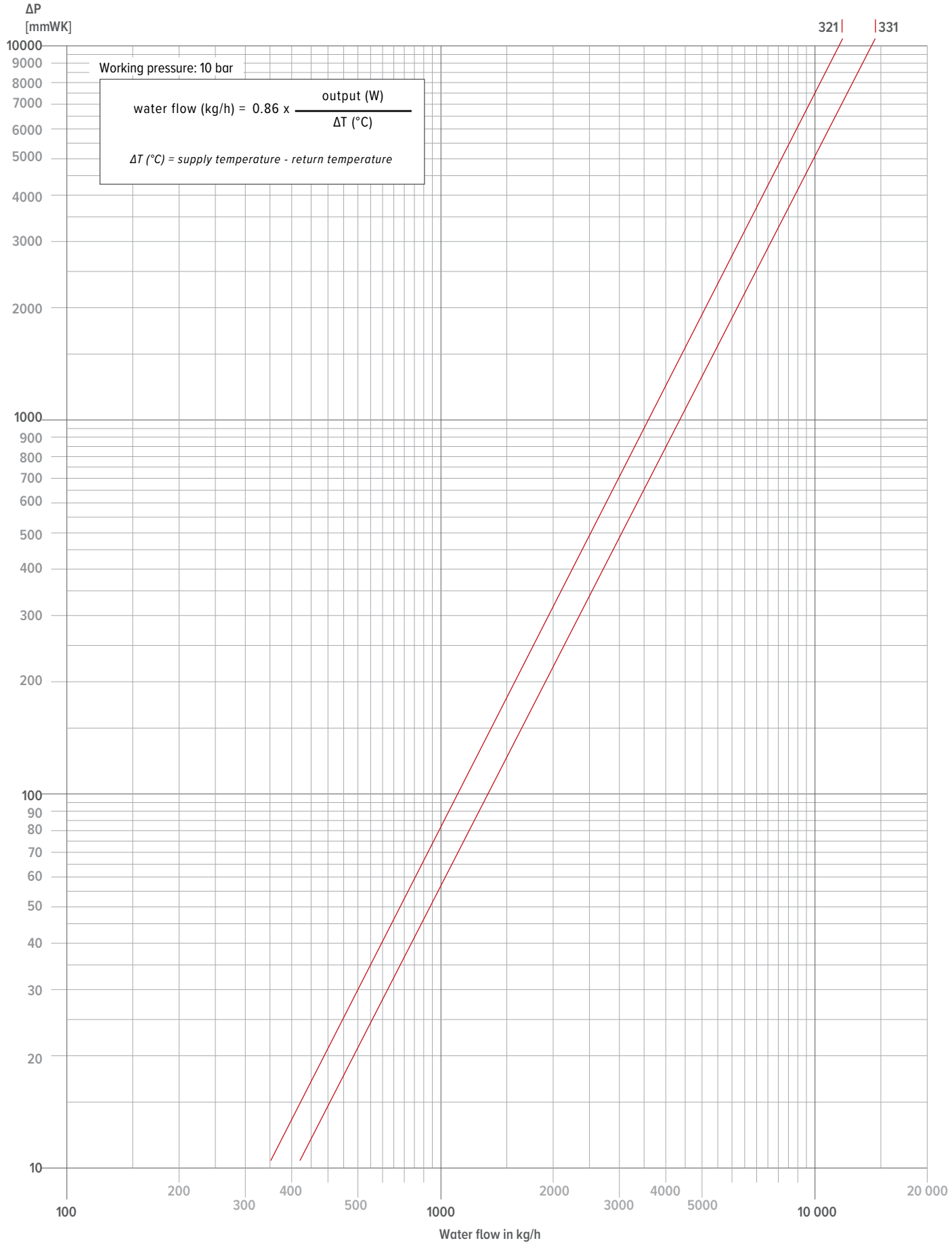
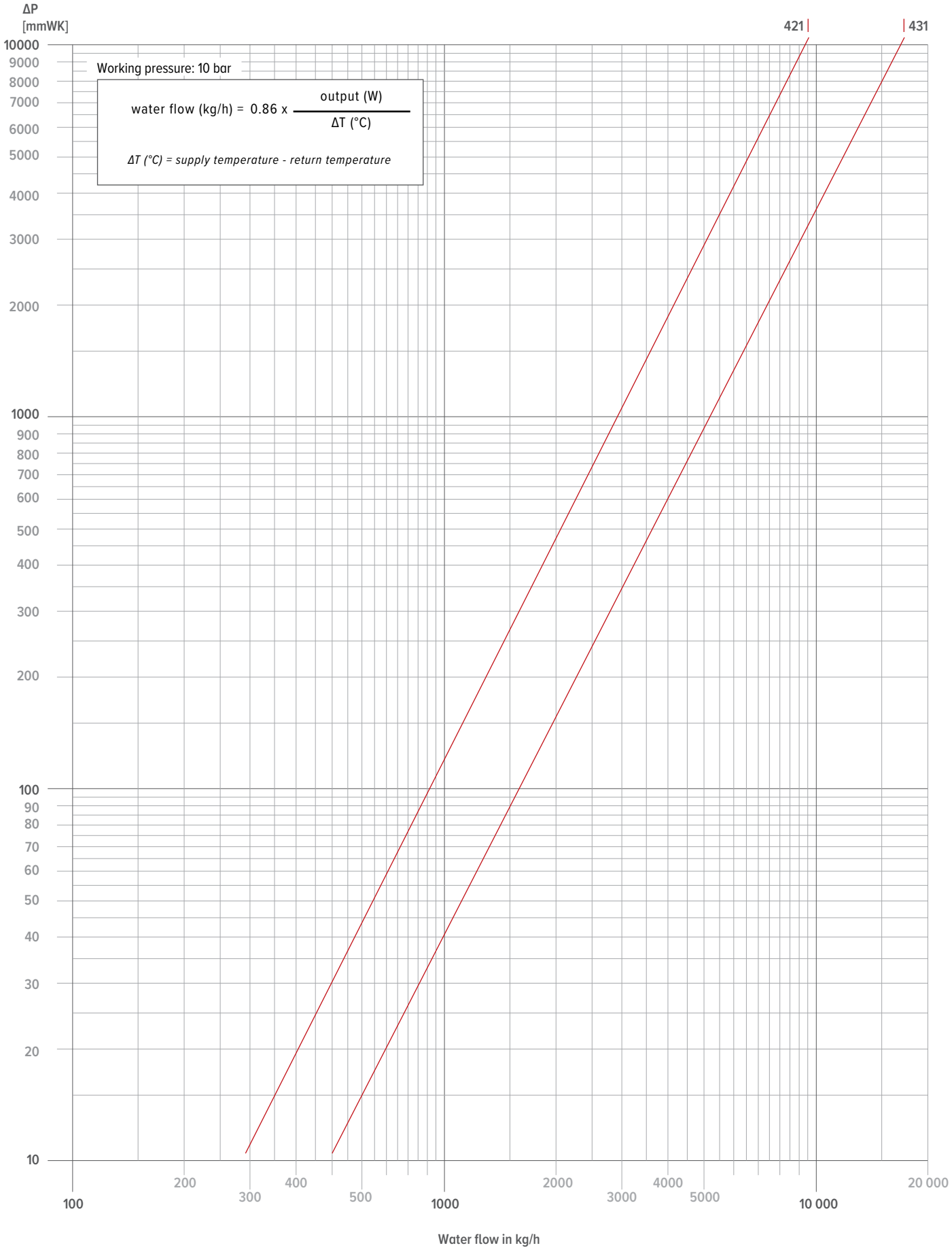
PRESSURE DROP TYPE 321 & 331



PRESSURE DROP TYPE 421 & 431



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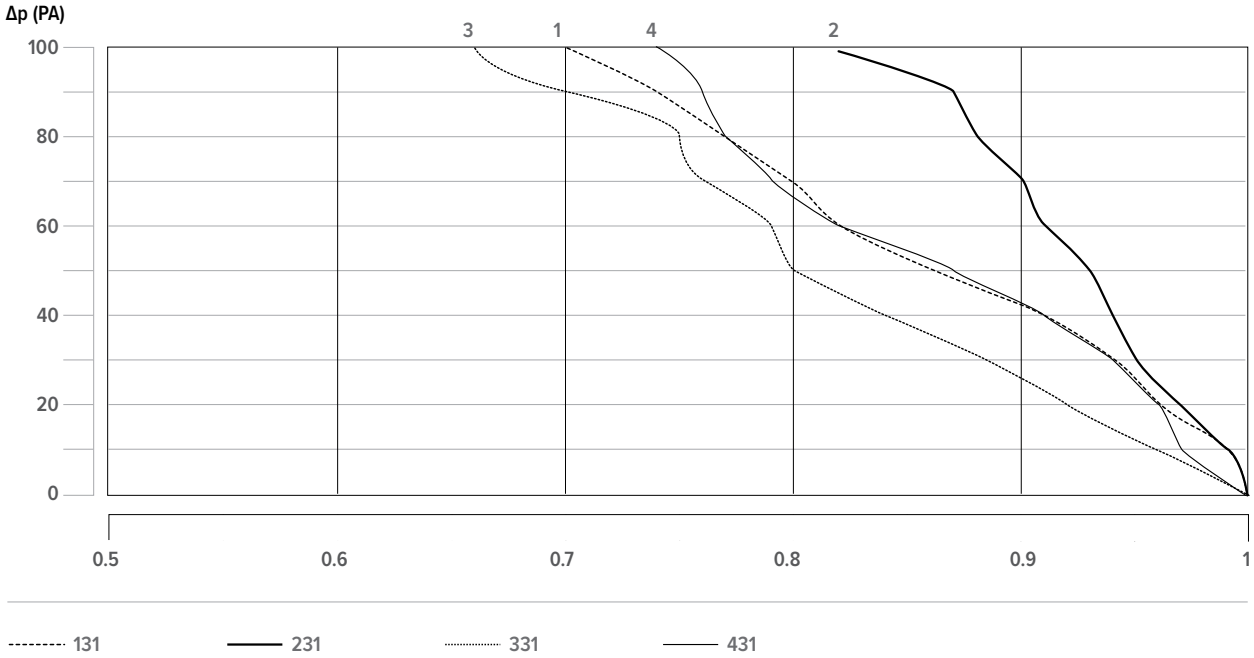
AIR FLOW

CORRECTION FACTOR FOR THE AIR FLOW

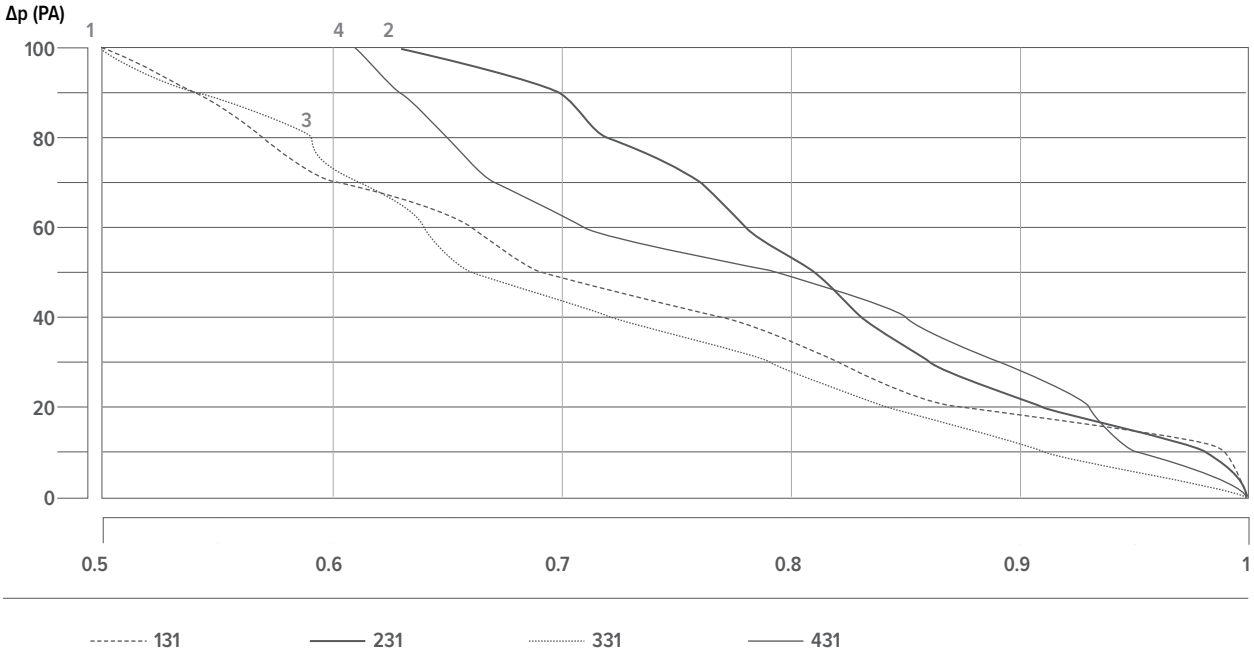
Pressure drop with air inlet options



THERMAL OUTPUT

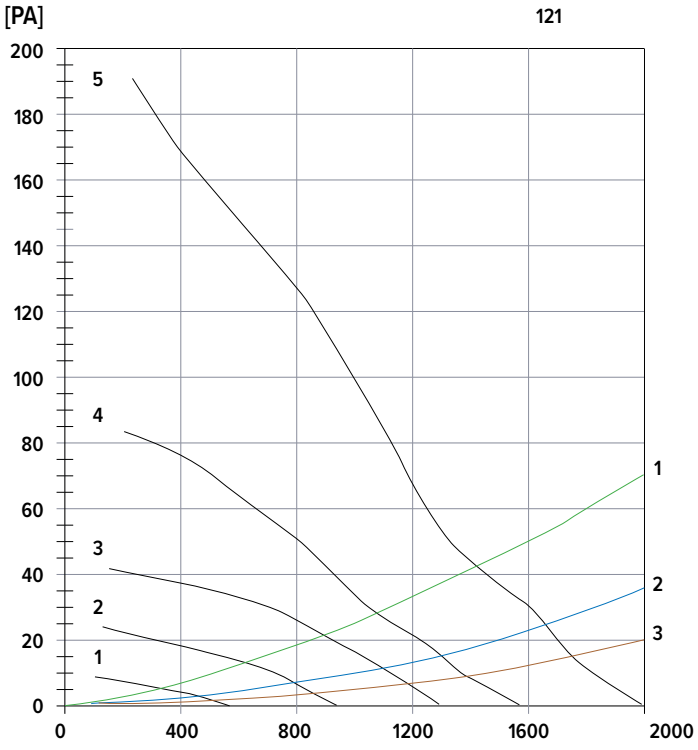
CORRECTION FACTOR FOR THE HEATING LOSS OF OUTPUT

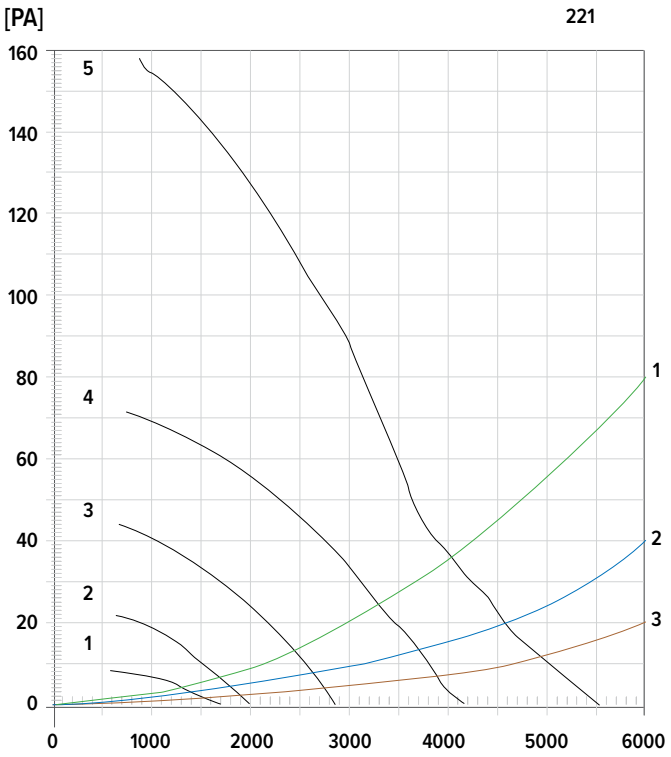
Pressure drop with air inlet options

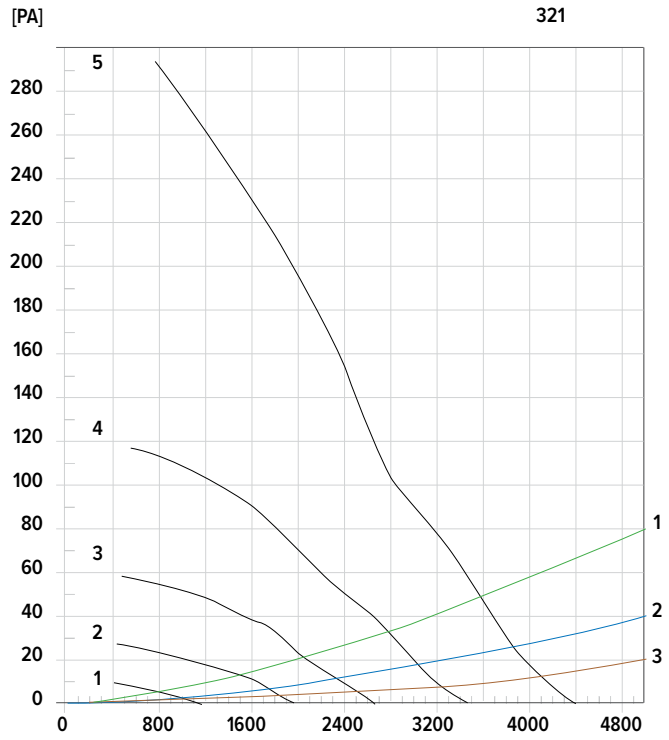


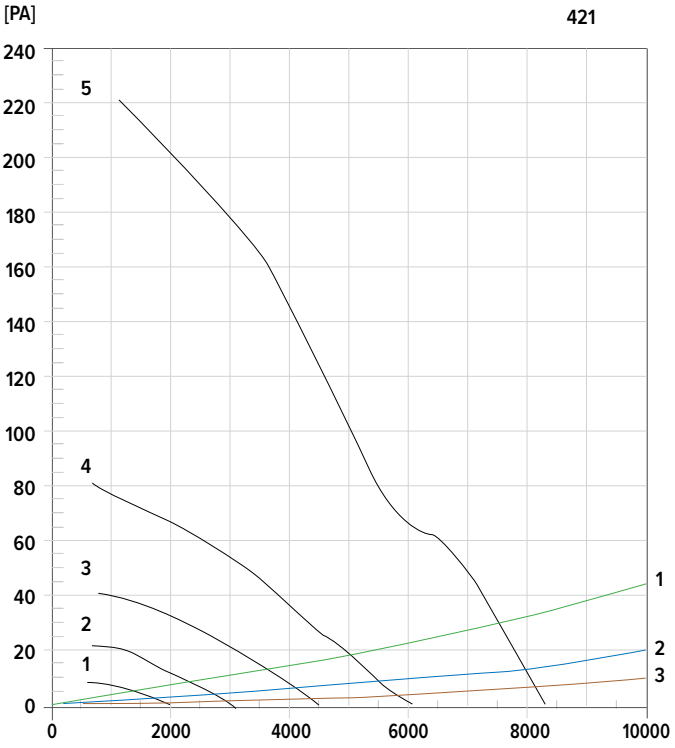
2 CIRCULATION PIPES

1 Filter
2 Outside air grille
3 Air inlet options & air exhaust options









3 CIRCULATION PIPES

1 Filter
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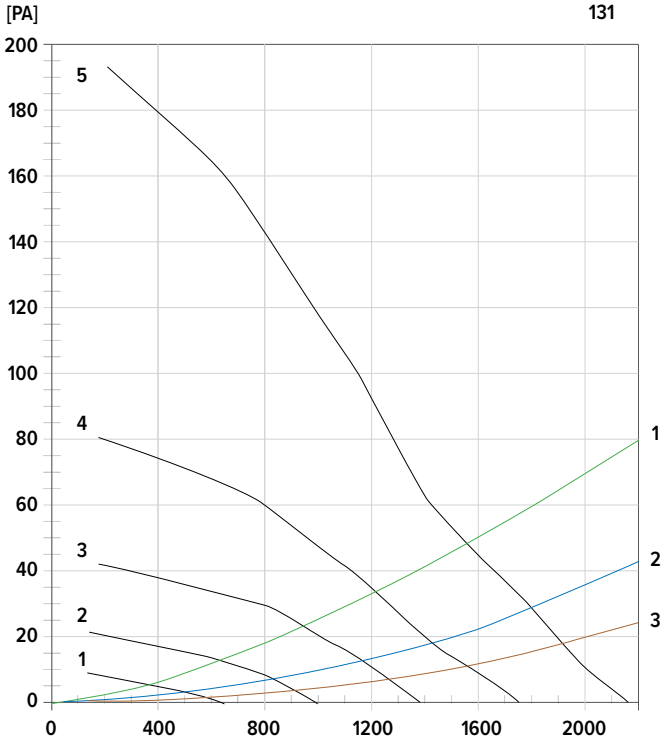

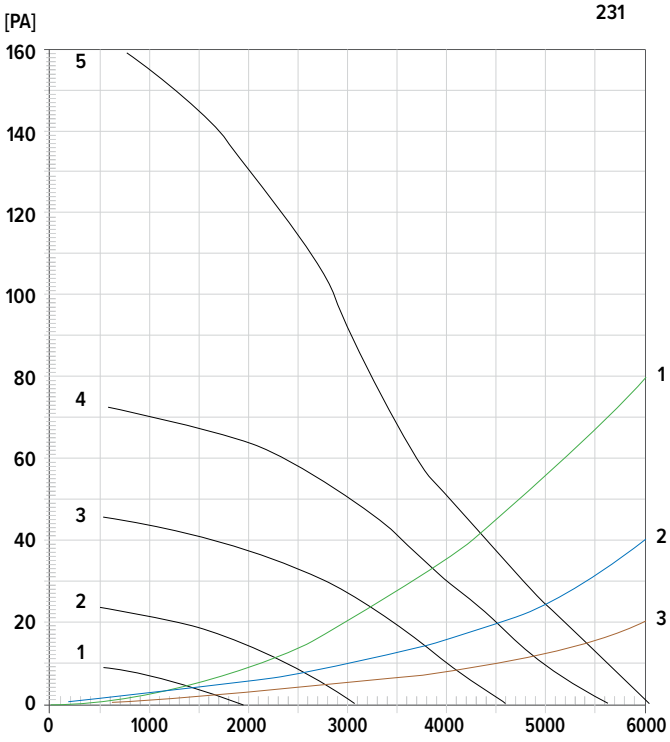

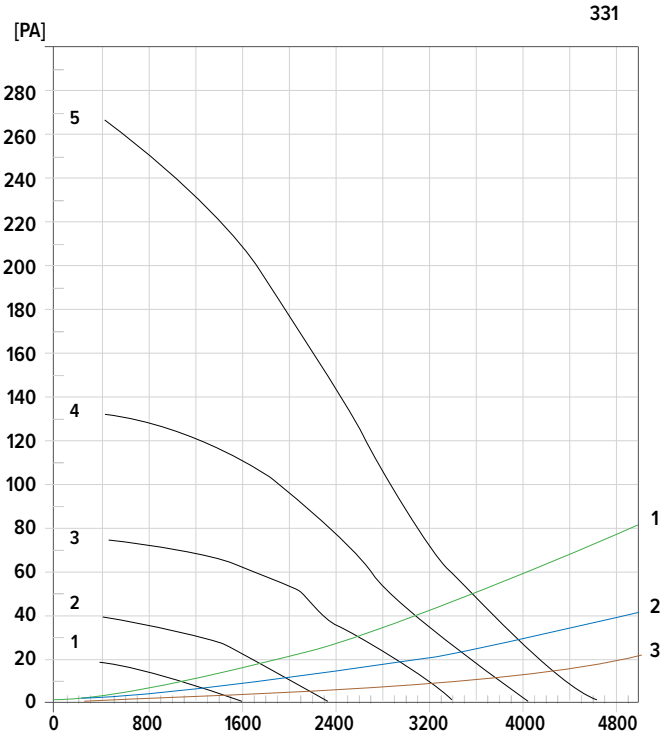

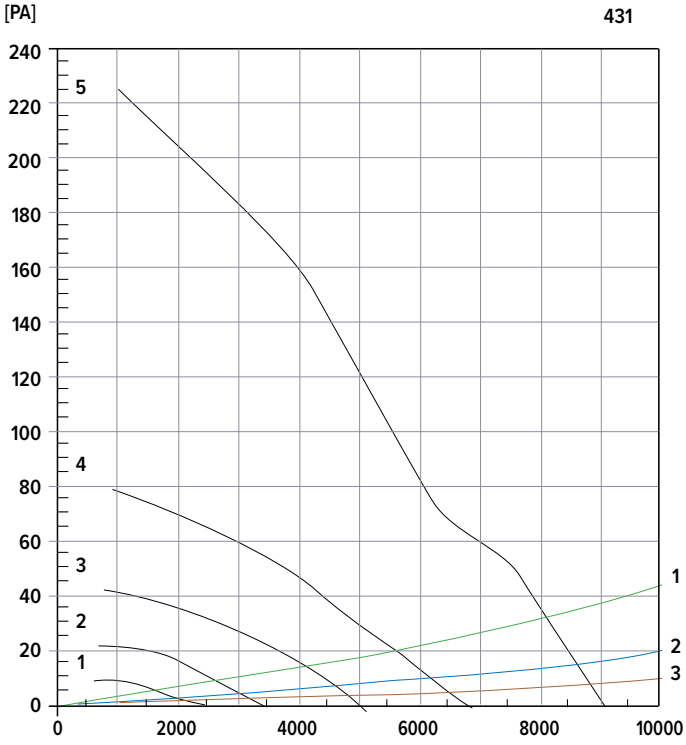

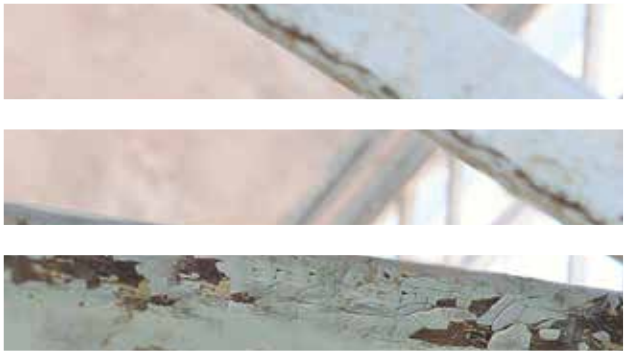

jaga CLIMATE DESIGNERS

JAGA INTERNATIONAL JAGA NV

In need of some advice? Make an appointment at the Jaga Advice Centre.

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