FläktGroup

MultiMAXX® HB

TECHNICAL DATA

Unit code HB 1 1 . B A K

HB	Unit code

Model size

1-4	Model size 1 to 4

Capacity stage

1	Capacity stage 1 (1RR heat exchanger Cu/Al)
2	Capacity stage 2 (2RR heat exchanger Cu/Al)
3	Capacity stage 3 (3RR heat exchanger Cu/Al)
4	Capacity stage 4 (4RR heat exchanger Cu/Al)

Outlet

A	Outlet nozzle ceiling
B	Basis - wall
C	Secondary-air louvre, ceiling, manually adjustable
K	Terminating flange, pressure side
P	Profile ceiling/wall
T	Gate nozzle
U	Secondary-air louvre, wall installation, manual adjustment
V	Four sides, ceiling
Z	Basic ceiling two sides
O	Without outlet

Motor/speeds

A	3 ~ 400 V 2-speed - low speed range - wide-blade fan
B	3 ~ 400 V 2-speed - high speed range - wide-blade fan
C	3 ~ 400 V 3-speed - wide-blade fan[2)]
E	1 ~ 230 V 1-speed - high speed range - wide-blade fan
R	3 ~ 400 V 2-speed high speed range - sickle-blade fan[1)]
S	3 ~ 400 V 3-speed - sickle-blade fan
Y	1 ~ 230 V continuous EC - sickle-blade fan

Electric equipment

K	Terminal box
S	Fan isolator

Accessory items code ZH x x x x x

ZH	**Accessory items code**
1-4	**Model size 1 to 4**

Additional modules and suspensions

53	Compact C Wall
54	Studio wall
56	Ceiling suspension

Configuration 56 ceiling suspension

0	Installation without threaded rod
1	Kit with threaded rod M10 - 1 m
2	Kit with threaded rod M10 - 2 m
3	Kit with threaded rod M10 - 3 m

Tab. 1: Unit code and Accessory items code

1) Not for size 1 and 2
2) Not for size 1

Controls code MC 301EC . W

Type

Motor design

301EC	EC-Motor, 1 x 230 V

S	Shut-off valve connection 1x 230 V
W	Operation and error idication, shut-off valve connection 1x 230 V
R	Operation and error indication

Controls code MC4 U 3AC 000

Type

U	Recirculating air

Motor design
AC-Motor

1AC	1-speed, 230 V AC, 50 Hz
2AC	2-speed, 400 V AC, 50 Hz
3AC	3-speed, 400 V AC, 50 Hz

Additional functions controls
Recirculating air

000	without optional functions

Tab. 2: Control units 301EC and MC4

Dear Customer,

This catalogue focuses on the Multi*MAXX* HB unit heater and provides assistance in its layout according to your requirements and gives guidance in the selection of the corresponding order code.

The wide variety: The FläktGroup Multi*MAXX* HB recirculation unit heater is on a technical scale identical with the FläktGroup Multi*MAXX* HN heating unit The selection of the FläktGroup Multi*MAXX* HB unit is easy and fast thanks to the shorter unit type code. Another advantage of this unit is the delivery time of 10 workdays.

The catalogue is composed of four main sections:

Part 1 Unit description
This section provides ample data on all unit components.

Part 2 Unit samples
are used to demonstrate our know-how in most common applications with Multi*MAXX* HB units.

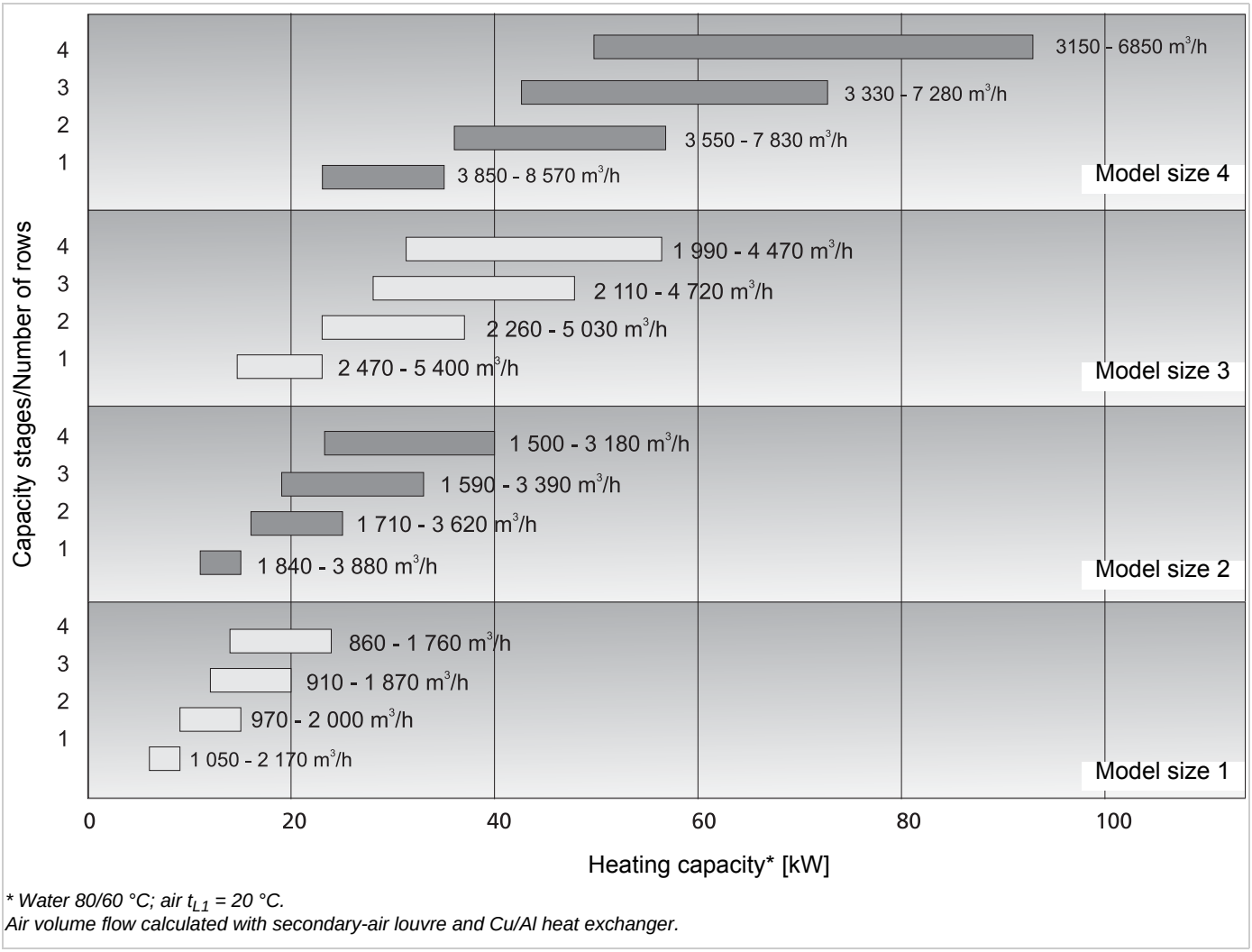
Part 3 Unit data
specifies most essential technical information for the Multi*MAXX* HB unit heaters. Dimensions, sizes and weight are summarized in this section as well.

Part 4 Control units and regulation system
Once you have decided on the unit, you can find data on possible regulation variants in Part 4 and then make your selection using controls order code (see „Controls code“ on page 3)

Unit code The entire unit code (see „Unit code“ on page 3) specifies the unit in its variations. As with other FläktGroup products, the unit code contains all details necessary for ordering, subsequent extension of the unit or provision of spare parts.

Suspensions code: The suspensions are also provided with a separate type code (see „Accessory items code“ on page 3).

Controls code Controls components are also provided with a separate type code (see „Controls code“ on page 3).



** Water 80/60 °C; air t_{L1} = 20 °C.*
Air volume flow calculated with secondary-air louvre and Cu/Al heat exchanger.

Fig. 1: Diagram with capacity overview

The FläktGroup Multi*MAXX* HB unit heater is a recirculating-air unit, equipped with a Cu/Al warm water heat exchanger (max. 130°C, 1.6 MPa). The heat exchanger casing (industry version) consists of the painted metal sheet in the colour shade corresponding to RAL 7000. An axial fan with AC or EC motor with external rotors with wide or sickle blade with contact protection grille is embedded in the fan chamber. The discharge side is fitted with a discharge louvre in desired design (of choice). A terminal box or fan switch is located on the side of the fan chamber.

Operating conditions for basic units

Unit heaters of series Multi*MAXX* HB operate with water as heating medium and are designed for ambient temperatures up to +40 °C and normal ranges in accordance with EN 60 721-3-3. Unit protection class shall be IP 54 in conformity with EN 60 529.

The FläktGroup MultiMAXX HB unit heaters are designed for heating of industrial buildings and commercially used premises.

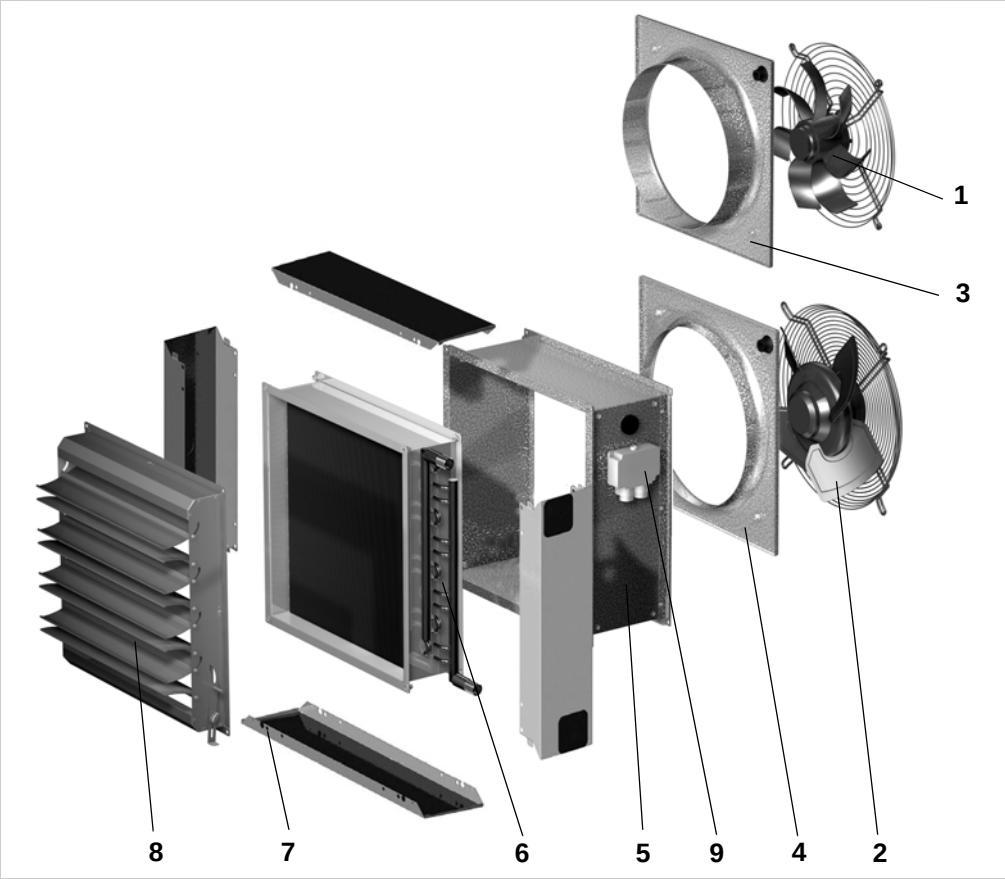


Fig. 2: Sample unit design with description of unit components

1: *Wide-blade fan with contact protection grille*
2: *Sickle-blade fan with contact protection grille*
3: *Air inlet nozzle wide-blade fan*
4: *Air inlet nozzle sickle-blade fan*
5: *Fan casing*
6: *Heat exchanger Cu/Al*
7: *Heat exchanger casing industry*
8: *Secondary-air louvre wall (SAL) (sample)*
9: *Electric motor terminal box (optional)*

Fans meet requirements of (EU) Regulation No. 327/2011 of the Commission as of 30th March 2011 to implement Directive 2009/125/EG (ErP-regulation).

Fans

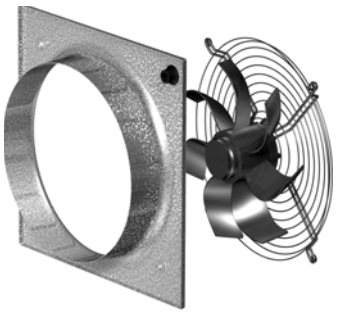


Fig. 3: Sickle-blade fan with operating limits : air-intake as full nozzle

Sickle-blade fan

Low-noise axial fan with an external rotor motor for increased pressure and sound requirements with an integrated contact protection grille according to ISO 13 857.

Sickle blade, balanced by the factory, maintenance-free with moisture-proof motor and wired to the terminal box. Pressure stable model, even in mixed-air applications with filter step or for larger air throws/suspension heights.

Protection class IP 54 (as of EN 60 529), thermal class F (as of EN 60 529), thermal contact, 400 V AC motor, continuously variable 230 V "EC“ motor.

Range of application:	
Air inlet temperature:	-20 to +40 °C

H B # # . # R #	- 3 ~ 400 V 2-speed high speed range - sickle-blade fan
H B # # . # S #	- 3 ~ 400 V 3-speed high speed range - sickle-blade fan
H B # # . # Y #	- 1 ~ 230 V continuously variable EC - sickle-blade fan

Fig. 4: Wide-blade fan with air-intake nozzle is performed as short nozzle

Wide-blade fan

Standard axial fan with an external rotor motor for normal pressure and sound requirements as well as fan protection curb with an integrated contact protection grille according to EN ISO 13 857.

Aluminium wide blades, balanced by the factory, maintenance-free with moisture-proof motor and wired to the terminal box.

Protection class IP 54 (as of EN 60 529), thermal class F (as of EN 60 529), in 3 400 V AC motor variants and 230 V AC motor variant.

Range of application:	
Air inlet temperature:	-20 to +40 °C

H B # # . # A #	- 3 ~ 400 V 2-speed low speed range - wide-blade fan
H B # # . # B #	- 3 ~ 400 V 2-speed high speed range - wide-blade fan
H B # # . # C #	- 3 ~ 400 V 3-speed low speed range - wide-blade fan
H B # # . # E #	- 1 ~ 230 V 1-speed high speed range - wide-blade fan

Fig. 5: Heat exchanger Cu/Al

Heat Exchanger Cu/Al (HE)

The Cu/Al heat exchanger is designated for heating through warm water (PWW) and is delivered in the version with 1, 2, 3 or 4 rows. The heat exchanger consists of Cu pipes and aluminium fins, the clearance between the individual fins is 2.5 mm. The connection side is intended for the right-hand connection side when looking at the unit against the air flow. The heat exchanger connection fittings are completed with external screw thread:
model size 1 and 2 - R 1”
model size 3 and 4 - R 1¼"

Range of application:	
Maximum operating temperature:	130 °C
Maximum operating pressure:	1.6 MPa (16 bar)

Heat exchanger casing

Fig. 6: Heat exchanger industrial casing

The heat exchanger casing in the industrial version is mounted by the manufacturer. Heat exchanger casing made of galvanized and painted metal sheet in RAL 7000.

Outlets (wall)

Fig. 7: Secondary-air wall louvre

Secondary-air louvre

As anodized aluminium air deflection fins can be adjusted separately, the secondary-air louvre (SAL), which has been developed and patented by FläktGroup, allows to manually adjust the air discharge opening and therefore speed of the conditioned air to match individual requirements. Additional secondary air is therefore drawn in from the side and mixed with the primary air, making it possible to lower the air discharge temperature to a few degrees above the room temperature. The desired temperature is achieved faster contributing in such a way to an economic operation.

Discharge air speed of 14 m/s allows to achieve maximum air throws!

H	B	#	#	.	U	#	#

Fig. 8: Basic wall outlet

Basic wall outlet

Galvanized metal sheet fins of a wall basic outlet enable to deflect conditioned air at the needed discharge angle.

Each self-locking fin of the basic outlet can be adjusted manually.

H	B	#	#	.	B	#	#

Outlets (ceiling)

Fig. 9: Secondary-air louvre

Secondary-air louvre, SAL

As anodized aluminium air deflection fins can be adjusted separately, the secondary-air louvre (SAL), which has been developed and patented by FläktGroup, allows to manually adjust the air discharge opening and therefore speed of the conditioned air to match individual requirements. Additional secondary air is therefore drawn in from the side and mixed with the primary air, making it possible to lower the air discharge temperature to a few degrees above the room temperature. The desired temperature is achieved faster contributing in such a way to an economic operation. Discharge air speed of 14 m/s allows to achieve maximum air throws.

H	B	#	#	.	C	#	#

Fig. 10: Basic ceiling outlet

Basic ceiling outlet

Outlet for low installation heights. Galvanized metal sheet fins enable to deflect conditioned air at two needed discharge angles. The adjustment mechanism is divided in the middle.

H	B	#	#	.	Z	#	#

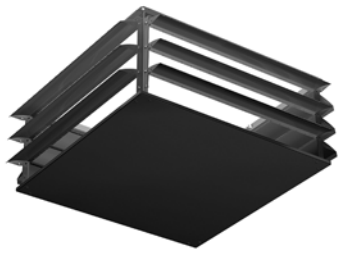


Fig. 11: Four-side outlet

Four-side outlet

Air distributing outlet for low mounting heights made of galvanized metal sheet fins. Independent adjustability in four directions enables to individually direct air volume flow. A direct flow of air to the vertical area underneath is avoided.

H	B	#	#	.	V	#	#

Fig. 12: Outlet nozzle

Outlet nozzle

Made of galvanized metal sheet square cone-shaped nozzle. Therefore air velocity is increased which enables larger installation heights.

H	B	#	#	.	A	#	#

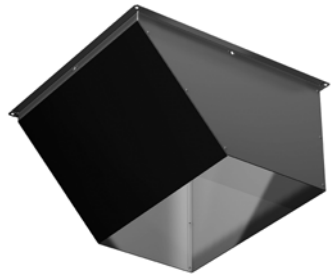


Fig. 13: Gate nozzle

Gate nozzle

Made of galvanized metal sheet one-sided cone-shaped nozzle. Therefore air velocity is increased which enables targeted deflection of air volume flow for shielding lager gates in combination with multiple units.

H	B	#	#	.	T	#	#

Outlets (ceiling and wall)

Fig. 14: Profile outlet

Profile outlet

The profile outlet consisting of aluminium air deflection fins is a good compromise. It is used to increase the air throw at constant air discharge velocity.

Medium air throws can be achieved without any problems.

The profile outlet is manually adjustable and self-locking. The profile outlet is manually adjustable.

H	B	#	#	.	P	#	#

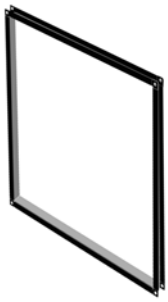


Fig. 15: Terminating flange, pressure side

Terminating flange, pressure side

The blank flange on discharge side is used for connecting the air-flow pipe with the unit discharge side. This makes the installation of the unit possible behind a wall or in a different room.

H	B	#	#	.	K	#	#

Example wall mounting

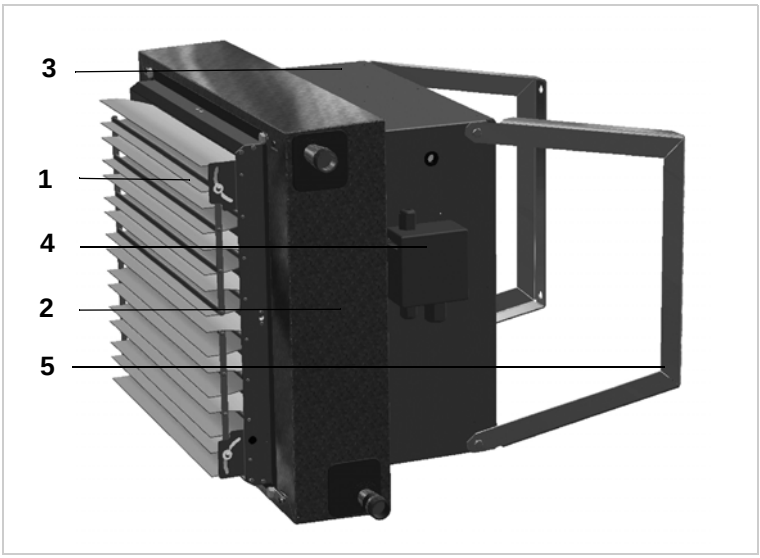


Fig. 16: Example for wall mounting

FläktGroup Multi*MAXX* HB recirculation unit heater with Cu/Al heat exchanger and secondary air louvre

	Unit / accessory item	Unit / accessory type code
1	Profile outlet	HB*nm*.PBK
2	Heat exchanger with heat exchanger casing	
3	Fan module (wide-blade fan)	
4	Terminal box	
5	Suspension compact C	ZH*n*.5300

n = model size 1...4 selectable
m = capacity stage/rows 1...4 selectable

About the performance data tables

For fast selection of Multi*MAXX* HB unit heaters please use the following tables and graphs.

Capacity tables The tables contain all parameters for all Cu/Al heat exchangers and fan models covering different medium and air intake temperatures.

Diagrams Should you require medium temperature or spreading which is not covered by the following tables, intermediate values are presented in the diagrams starting from page 19.

Should you require further information, please contact the FläktGroup commercial agency.

Unit Data

H B # # . # A # = 3 ~ 400 V, 2-speed AC motor, low speed

Model size 1			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	A AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**1160**		**1440**		**1030**		**1330**		**950**		**1250**		**880**		**1180**	
	Air throw[2] Basic **B**	m	5		6		4		5		3		4		3		3	
	Air throw[2] secondary louver **U**	m	6		7		5		6		4		5		3		4	
	Max. Height[2] ceiling two sides **Z**	m	4		5		3		4		2		3		2		2	
	Max. Height[2] SAL **C**	m	7		9		5		6		4		5		3		4	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	9	28	10	26	14	44	16	40	16	56	20	52	18	66	23	63
		18°C	7	36	8	34	10	48	12	46	13	58	16	55	15	67	18	64
		20°C	7	37	7	35	10	49	12	46	12	59	15	56	14	67	18	65
70/50°C	Air intake temperature t_{L1}	5°C	7	23	8	21	12	36	13	32	13	45	16	42	15	53	19	50
		18°C	6	29	7	27	8	38	10	36	11	46	13	44	12	54	15	51
		20°C	6	30	6	28	8	39	9	37	10	47	12	45	11	55	14	52

Model size 2			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	A AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**2040**		**2480**		**1880**		**2310**		**1750**		**2170**		**1640**		**2060**	
	Air throw[2] Basic **B**	m	6		7		5		6		4		5		4		4	
	Air throw[2] SAL **U**	m	7		9		6		7		5		6		4		5	
	Max. Height[2] ceiling two sides **Z**	m	5		7		4		5		3		4		3		3	
	Max. Height[2] SAL **C**	m	9		11		6		8		5		7		4		6	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	15	27	17	25	23	42	26	39	28	52	32	50	32	63	38	60
		18°C	12	35	13	34	18	47	21	45	22	55	26	53	26	65	30	62
		20°C	11	37	12	35	17	48	20	46	21	56	25	54	25	65	29	62
70/50°C	Air intake temperature t_{L1}	5°C	12	23	14	21	19	34	21	31	23	42	27	41	27	51	31	48
		18°C	10	29	11	26	15	37	17	36	18	44	21	42	21	52	24	49
		20°C	9	30	10	25	14	38	16	37	17	44	20	43	20	52	23	50

Model size 3			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	A AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**2800**		**3630**		**2540**		**3320**		**2330**		**3080**		**2170**		**2890**	
	Air throw[2] Basic **B**	m	6		7		5		6		4		5		4		4	
	Air throw[2] SAL **U**	m	7		9		6		7		5		6		4		5	
	Max. Height[2] ceiling two sides **Z**	m	5		7		4		5		3		4		2		3	
	Max. Height[2] SAL **C**	m	8		12		6		8		5		7		4		5	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	22	28	25	25	33	44	39	40	39	55	48	51	43	65	55	62
		18°C	17	36	19	34	26	49	31	46	31	57	38	54	35	66	44	63
		20°C	16	37	19	35	25	49	29	46	30	58	36	55	34	66	42	63
70/50°C	Air intake temperature t_{L1}	5°C	18	23	20	20	27	35	31	32	32	44	39	41	35	52	44	50
		18°C	14	29	15	27	21	39	25	33	25	45	30	43	28	53	36	51
		20°C	13	28	14	26	20	38	26	34	24	46	29	44	27	54	35	52

Model size 4			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	A AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**4080**		**5740**		**3730**		**5280**		**3460**		**4920**		**3240**		**4640**	
	Air throw[2] Basic **B**	m	6		8		5		7		4		6		4		5	
	Air throw[2] SAL **U**	m	8		10		6		8		5		7		5		6	
	Max. Height[2] ceiling two sides **Z**	m	5		8		4		6		3		4		2		4	
	Max. Height[2] SAL **C**	m	9		13		6		9		5		8		4		6	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	32	28	39	25	49	44	61	39	58	55	74	50	65	65	87	61
		18°C	25	36	30	34	39	49	48	45	46	57	59	54	53	66	70	63
		20°C	24	38	29	35	37	49	46	46	44	58	57	54	51	67	67	63
70/50°C	Air intake temperature t_{L1}	5°C	26	23	32	20	39	35	49	39	45	44	59	40	52	51	70	49
		18°C	20	29	24	22	32	39	39	37	37	46	48	43	42	52	56	50
		20°C	19	30	23	23	31	40	38	39	35	47	47	44	41	53	54	51

1= Air volume flow: specified table data are calculated for units with fan type "A" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

H B # # . # B # = 3 ~ 400 V, 2-speed AC motor, high speed

Model size 1			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	**B** AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**1720**		**2170**		**1570**		**2000**		**1450**		**1870**		**1350**		**1760**	
	Air throw[2] Basic **B**	m	7		8		5		6		4		5		4		5	
	Air throw[2] SAL **U**	m	8		10		6		8		5		6		5		6	
	Max. Height[2] ceiling two sides **Z**	m	7		9		5		6		3		5		3		4	
	Max. Height[2] SAL **C**	m	11		15		8		10		6		8		5		7	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	11	24	12	22	18	38	20	35	22	50	26	47	25	61	31	57
		18°C	9	33	9	31	14	44	16	41	17	54	21	51	20	63	25	59
		20°C	8	34	9	32	13	45	15	42	17	54	20	52	20	63	24	60
70/50°C	Air intake temperature t_{L1}	5°C	9	20	10	18	14	32	26	29	27	42	33	38	31	52	40	47
		18°C	6	29	7	28	10	38	12	36	14	46	16	44	16	54	20	51
		20°C	6	30	7	29	10	38	11	36	13	47	15	44	15	54	19	51

Model size 2			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	**B** AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**2650**		**3520**		**2370**		**3250**		**2160**		**3010**		**1990**		**2610**	
	Air throw[2] Basic **B**	m	8		10		6		8		5		6		4		5	
	Air throw[2] SAL **U**	m	9		11		7		9		6		8		5		7	
	Max. Height[2] ceiling two sides **Z**	m	8		11		5		8		4		6		3		5	
	Max. Height[2] SAL **C**	m	12		18		8		12		7		10		5		8	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	17	24	20	22	27	38	32	34	32	50	40	45	37	61	47	55
		18°C	13	33	15	31	21	44	25	41	26	53	32	49	30	62	38	58
		20°C	13	34	15	32	20	55	24	62	24	52	30	50	29	63	36	59
70/50°C	Air intake temperature t_{L1}	5°C	14	21	16	19	22	32	26	29	27	42	33	38	31	52	40	47
		18°C	10	30	12	28	16	38	19	35	20	45	24	42	24	53	30	50
		20°C	10	31	11	29	15	39	18	36	19	46	23	43	22	53	29	51

Model size 3			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	**B** AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**4070**		**5130**		**3640**		**4680**		**3330**		**4330**		**3080**		**4070**	
	Air throw[2] Basic **B**	m	9		10		6		8		5		6		5		6	
	Air throw[2] SAL **U**	m	10		12		8		9		6		8		6		7	
	Max. Height[2] ceiling two sides **Z**	m	9		11		6		7		4		6		3		5	
	Max. Height[2] SAL **C**	m	13		18		9		12		7		10		6		8	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	26	24	29	22	41	39	48	35	50	50	60	46	58	61	70	56
		18°C	21	33	23	31	33	45	37	42	40	54	47	51	46	62	56	59
		20°C	20	34	22	33	31	45	36	43	38	54	45	51	44	63	54	59
70/50°C	Air intake temperature t_{L1}	5°C	22	21	24	19	34	33	39	30	42	43	50	39	48	52	58	48
		18°C	16	30	18	28	25	38	29	36	31	46	37	43	37	53	45	51
		20°C	15	31	17	30	23	39	27	37	29	46	35	44	35	54	42	51

Model size 4			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger Cu/Al	**B** AC motor, 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L	m^3/h	**7150**		**8570**		**6450**		**7830**		**5950**		**7280**		**5550**		**6850**	
	Air throw[2] Basic **B**	m	11		12		8		9		7		8		6		7	
	Air throw[2] SAL **U**	m	12		14		9		11		8		9		7		8	
	Max. Height[2] ceiling two sides **Z**	m	11		14		7		9		6		7		4		6	
	Max. Height[2] SAL **C**	m	18		22		12		15		9		12		8		10	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	43	23	46	21	69	37	76	34	85	48	97	45	99	58	115	55
		18°C	33	32	36	31	54	43	60	41	67	51	76	49	79	61	92	58
		20°C	32	33	35	32	51	44	57	42	64	52	73	50	76	61	88	58
70/50°C	Air intake temperature t_{L1}	5°C	35	20	38	18	56	31	62	29	70	40	80	38	83	50	96	47
		18°C	25	29	28	28	41	37	45	35	52	44	59	42	63	52	73	50
		20°C	24	30	26	29	39	38	43	36	49	45	56	43	60	52	70	50

1= Air volume flow: specified table data are calculated for units with fan type "B" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

Unit Data

H B # # . # C # = 3 ~ 400 V, 3-speed AC motor, low speed

Model size 2			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger: Cu/Al	**C** AC motor, 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**1850**		**3180**		**3880**		**1710**		**2880**		**3620**		**1590**		**2640**		**3390**		**1500**		**2470**		**3180**	
	Air throw[2] Basic **B**	m	6		9		10		4		7		8		4		6		7		3		5		6	
	Air throw[2] SAL **U**	m	7		10		12		5		8		10		5		7		8		4		6		7	
	Max. Height[2] ceiling two sides **Z**	m	5		10		12		3		7		9		3		5		7		2		4		5	
	Max. Height[2] SAL **C**	m	8		16		20		6		11		14		5		8		11		4		7		9	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	14	28	19	23	21	21	22	43	30	36	34	33	26	53	37	47	44	43	30	64	43	57	52	53
		18°C	11	36	15	32	16	30	17	48	23	42	27	40	20	56	29	51	34	48	24	636	35	60	41	56
		20°C	11	37	14	33	15	32	16	48	22	43	25	41	19	56	28	51	33	49	23	66	33	60	40	57
70/50°C	Air intake temperature t_{L1}	5°C	12	24	15	19	17	18	18	36	24	30	28	28	21	45	31	39	36	36	25	55	36	49	43	45
		18°C	9	32	11	29	12	27	13	41	18	37	20	34	16	47	23	43	26	41	19	56	28	51	33	49
		20°C	8	33	11	30	12	29	12	412	17	37	19	36	15	48	21	44	25	42	18	56	26	52	31	49

Model size 3			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger: Cu/Al	**C** AC motor, 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**2470**		**4170**		**5130**		**2260**		**3730**		**4690**		**2110**		**3410**		**4350**		**1990**		**3170**		**4080**	
	Air throw[2] Basic **B**	m	6		9		10		4		7		8		4		5		6		3		5		6	
	Air throw[2] SAL **U**	m	6		10		12		5		9		10		5		7		8		4		6		7	
	Max. Height[2] ceiling two sides **Z**	m	4		9		11		3		6		7		3		4		6		2		4		5	
	Max. Height[2] SAL **C**	m	7		14		18		5		9		12		4		7		10		4		6		8	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	20	29	27	24	29	22	31	45	42	39	48	35	36	56	51	50	60	46	41	66	59	60	70	56
		18°C	16	37	21	33	23	31	24	50	33	44	37	42	29	59	41	54	48	51	33	67	47	62	56	59
		20°C	15	38	20	34	22	33	23	50	32	45	36	43	28	59	39	54	46	51	31	67	45	62	54	59
70/50°C	Air intake temperature t_{L1}	5°C	17	25	22	21	24	19	25	38	35	33	39	30	30	47	43	42	50	39	34	56	49	51	59	48
		18°C	12	33	16	30	18	28	18	42	25	38	29	36	22	49	32	46	37	43	26	58	37	53	45	51
		20°C	12	34	15	32	17	30	17	43	24	39	28	38	21	50	30	46	35	44	25	58	36	53	42	51

Model size 4			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger: Cu/Al	**C** AC motor, 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**3850**		**6170**		**8130**		**3550**		**5580**		**7450**		**3330**		**5140**		**6930**		**3150**		**4790**		**6510**	
	Air throw[2] Basic **B**	m	6		9		11		5		7		9		4		6		7		4		5		6	
	Air throw[2] SAL **U**	m	7		11		13		6		8		10		5		7		9		5		6		8	
	Max. Height[2] ceiling two sides **Z**	m	5		9		13		3		6		9		3		5		7		2		4		5	
	Max. Height[2] SAL **C**	m	8		15		21		6		10		14		5		8		11		4		6		9	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	31	29	40	24	45	22	47	45	63	39	74	35	56	55	77	50	94	45	64	66	89	61	111	56
		18°C	24	37	31	33	35	31	37	49	50	45	58	41	44	58	61	53	74	50	52	67	72	62	89	59
		20°C	23	38	30	34	34	32	36	50	48	45	56	42	43	58	58	54	71	51	50	67	69	63	93	48
70/50°C	Air intake temperature t_{L1}	5°C	25	25	32	21	37	19	39	38	52	33	61	29	46	46	64	42	78	38	54	56	75	52	93	48
		18°C	19	33	24	30	27	28	29	42	38	38	44	36	34	49	47	46	57	43	42	58	57	53	70	50
		20°C	18	34	23	31	25	29	27	43	36	39	42	37	32	49	45	46	54	43	40	58	54	54	67	51

1= Air volume flow: specified table data are calculated for units with fan type „C" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

H B # # . # E # = 1 ~ 230 V, 1-speed AC motor

Model size 1			Capacity stage 1		Capacity stage 2		Capacity stage 3		Capacity stage 4	
Heat exchanger: Cu/Al	**E** AC motor 1x230V, 1-speed		1		1		1		1	
	Air flow rate[1] V_L	m^3/h	**2170**		**2000**		**1870**		**1760**	
	Air throw[2] Basic **B**	m	8		6		5		5	
	Air throw[2] SAL **U**	m	10		8		6		6	
	Max. Height[2] ceiling two sides **Z**	m	12		11		9		6	
	Max. Height[2] SAL **C**	m	20		19		15		11	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60 °C	Air intake temperature t_{L1}	5°C	12	22	20	35	26	47	31	57
		18°C	9	31	16	41	21	51	25	59
		20°C	9	32	15	42	20	52	24	60
70/50 °C	Air intake temperature t_{L1}	5°C	10	18	16	29	22	40	26	48
		18°C	7	28	12	36	16	44	20	51
		20°C	7	29	11	36	15	44	19	51

Model size 2			Capacity stage 1		Capacity stage 2		Capacity stage 3		Capacity stage 4	
Heat exchanger Cu/Al	**E** AC motor 1x230V, 1-speed		1		1		1		1	
	Air flow rate[1] V_L	m^3/h	**3590**		**3260**		**2980**		**2760**	
	Air throw[2] Basic **B**	m	10		8		6		5	
	Air throw[2] SAL **U**	m	12		9		8		7	
	Max. Height[2] ceiling two sides **Z**	m	15		14		12		8	
	Max. Height[2] SAL **C**	m	25		23		20		14	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60 °C	Air intake temperature t_{L1}	5°C	20	21	32	34	40	45	47	55
		18°C	16	31	25	41	32	49	37	58
		20°C	15	32	24	42	30	50	36	59
70/50 °C	Air intake temperature t_{L1}	5°C	16	18	26	29	33	38	39	47
		18°C	12	28	19	35	24	42	30	50
		20°C	11	29	18	36	23	43	28	51

Model size 3			Capacity stage 1		Capacity stage 2		Capacity stage 3		Capacity stage 4	
Heat exchanger: Cu/Al	**E** AC motor 1x230V, 1-speed		1		1		1		1	
	Air flow rate[1] V_L	m^3/h	**5130**		**4680**		**4330**		**4070**	
	Air throw[2] Basic **B**	m	10		8		6		6	
	Air throw[2] SAL **U**	m	12		9		8		7	
	Max. Height[2] ceiling two sides **Z**	m	15		14		12		8	
	Max. Height[2] SAL **C**	m	25		23		20		14	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60 °C	Air intake temperature t_{L1}	5°C	29	22	48	35	60	46	70	56
		18°C	23	31	37	42	47	51	56	58
		20°C	22	33	36	43	45	51	54	59
70/50 °C	Air intake temperature t_{L1}	5°C	24	19	39	30	39	50	59	48
		18°C	18	28	29	36	37	43	45	51
		20°C	17	30	27	37	35	44	42	51

Model size 4			Capacity stage 1		Capacity stage 2		Capacity stage 3		Capacity stage 4	
Heat exchanger Cu/Al	**E** AC motor 1x230V, 1-speed		1		1		1		1	
	Air flow rate[1] V_L	m^3/h	**8570**		**7830**		**7280**		**6850**	
	Air throw[2] Basic **B**	m	12		9		8		7	
	Air throw[2] SAL **U**	m	14		11		9		8	
	Max. Height[2] ceiling two sides **Z**	m	14		9		7		6	
	Max. Height[2] SAL **C**	m	22		15		12		10	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60 °C	Air intake temperature t_{L1}	5°C	46	21	76	34	97	45	115	55
		18°C	36	31	60	41	76	48	92	58
		20°C	35	32	57	42	73	50	88	58
70/50 °C	Air intake temperature t_{L1}	5°C	38	18	62	29	80	38	96	47
		18°C	28	28	45	35	59	42	73	50
		20°C	26	29	43	36	56	43	70	50

1= Air volume flow: specified table data are calculated for units with fan type "E" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

Unit Data

H B # # . # R # = 3 ~ 400 V, 2-speed AC motor, vyšší otáčky

Model size 3				Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	R	AC motor 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L		m^3/h	**4040**		**4900**		**3730**		**4570**		**3480**		**4290**		**3270**		**4040**	
	Air throw[2] Basic **B**		m	8		9		6		7		5		6		5		6	
	Air throw[2] SAL **U**		m	10		11		8		9		7		8		6		7	
	Max. Height[2] ceiling two sides **Z**		m	8		10		6		7		4		6		4		5	
	Max. Height[2] SAL **C**		m	13		17		9		12		7		10		6		8	
	Heating capacities Q_T/ Discharge temperature t_{L2}			**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C	Air intake temperature t_{L1}	5°C	26	24	29	22	42	38	49	36	52	48	60	47	60	60	70	56
			18°C	21	33	23	32	33	44	37	42	41	53	47	51	48	62	56	59
			20°C	20	34	22	33	32	45	35	43	34	54	45	51	46	62	54	59
	70/50°C	Air intake temperature t_{L1}	5°C	21	21	24	19	35	33	39	30	43	42	49	39	50	51	58	48
			18°C	16	30	17	29	25	38	28	36	32	46	37	44	38	53	44	51
			20°C	15	31	16	30	24	39	27	37	30	46	34	44	36	43	42	51

Model size 4				Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger Cu/Al	R	AC motor 3x400V, 2-speed		1		2		1		2		1		2		1		2	
	Air flow rate[1] V_L		m^3/h	**7020**		**8420**		**6330**		**7740**		**5820**		**7180**		**5410**		**6720**	
	Air throw[2] Basic **B**		m	10		12		8		9		6		8		6		7	
	Air throw[2] SAL **U**		m	12		14		9		11		8		9		7		8	
	Max. Height[2] ceiling two sides **Z**		m	11		13		7		9		5		7		4		6	
	Max. Height[2] SAL **C**		m	17		22		12		15		9		12		7		10	
	Heating capacities Q_T/ Discharge temperature t_{L2}			**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C	Air intake temperature t_{L1}	5°C	42	23	46	21	68	37	76	34	84	46	96	45	97	59	113	56
			18°C	33	32	36	31	52	42	59	41	67	52	76	49	78	61	91	58
			20°C	32	33	35	32	51	44	57	42	64	53	73	50	75	61	87	59
	70/50°C	Air intake temperature t_{L1}	5°C	35	20	38	18	55	31	62	29	69	40	79	38	82	50	95	47
			18°C	25	29	27	28	41	37	45	35	51	44	58	42	62	52	72	50
			20°C	24	29	26	29	38	38	43	36	48	45	55	43	59	53	69	51

1= Air volume flow: specified table data are calculated for units with fan type "R" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

H B # # . # S # = 3 ~ 400 V, 3-speed AC motor

Model size 1			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger Cu/Al	**S** AC motor 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**1050**		**1820**		**2140**		**970**		**1640**		**1950**		**910**		**1510**		**1810**		**860**		**1410**		**1700**	
	Air throw[2] Basic **B**	m	5		7		8		4		5		6		3		4		5		3		4		5	
	Air throw[2] SAL **U**	m	5		9		10		4		7		8		4		5		6		3		5		6	
	Max. Height[2] ceiling two sides **Z**	m	4		8		9		3		5		6		2		4		4		2		3		4	
	Max. Height[2] SAL **C**	m	6		12		15		4		8		10		3		6		8		3		5		6	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C Air intake temperature t_{L1}	5°C	8	29	11	23	12	22	13	45	18	38	20	35	16	56	23	50	26	47	18	67	26	60	30	57
		18°C	7	36	9	32	9	31	10	49	14	43	15	42	13	49	18	54	20	51	14	67	21	62	24	60
		20°C	6	38	8	34	9	32	10	49	13	44	15	43	12	59	17	54	19	52	14	67	20	63	23	60
	70/50°C Air intake temperature t_{L1}	5°C	7	24	9	20	10	19	11	37	15	31	16	30	13	48	19	42	21	40	15	57	22	51	25	49
		18°C	5	32	7	29	7	28	8	41	11	37	12	36	10	50	14	46	16	44	12	58	17	53	19	51
		20°C	5	33	6	30	7	29	7	42	10	38	11	37	9	50	13	46	15	45	11	58	16	54	18	52

Model size 2			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger Cu/Al	**S** AC motor 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**1840**		**2680**		**3570**		**1720**		**2510**		**3400**		**1620**		**2350**		**3210**		**1530**		**2230**		**3050**	
	Air throw[2] Basic **B**	m	5		7		9		4		6		8		4		5		7		3		5		6	
	Air throw[2] SAL **U**	m	7		9		12		5		7		9		5		6		8		44		6		7	
	Max. Height[2] ceiling two sides **Z**	m	5		7		11		3		5		8		3		4		6		2		4		5	
	Max. Height[2] SAL **C**	m	8		13		18		6		9		13		5		7		11		4		6		9	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C Air intake temperature t_{L1}	5°C	14	228	17	24	20	21	22	43	28	38	33	34	26	54	34	48	42	44	30	64	40	59	50	54
		18°C	11	36	14	33	16	31	17	48	22	44	26	40	21	56	27	52	33	49	25	66	32	61	40	57
		20°C	11	37	13	34	15	32	16	48	21	44	25	41	20	56	26	53	31	49	24	66	31	61	38	57
	70/50°C Air intake temperature t_{L1}	5°C	12	24	14	21	16	19	18	36	23	32	27	28	22	45	28	41	34	37	26	55	34	50	42	46
		18°C	9	32	10	30	12	28	13	41	17	38	19	35	16	47	21	44	25	41	19	56	26	52	32	48
		20°C	8	33	10	31	11	29	12	41	16	38	18	36	15	47	20	45	24	42	18	56	24	52	30	50

Model size 3			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger Cu/Al	**S** AC motor 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**2790**		**4310**		**5400**		**2620**		**4020**		**5030**		**2480**		**3780**		**4720**		**2330**		**3570**		**4470**	
	Air throw[2] Basic **B**	m	6		8		10		5		7		8		4		6		7		4		5		6	
	Air throw[2] SAL **U**	m	7		10		12		6		8		10		5		7		8		5		6		7	
	Max. Height[2] ceiling two sides **Z**	m	5		9		11		4		6		8		3		5		6		2		4		5	
	Max. Height[2] SAL **C**	m	8		14		19		6		10		14		5		8		11		4		7		9	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C Air intake temperature t_{L1}	5°C	22	28	27	24	30	22	34	43	44	38	49	34	41	54	55	48	63	45	46	64	64	58	75	55
		18°C	17	36	21	33	24	31	26	48	34	43	39	41	32	56	44	52	50	50	38	66	51	61	60	58
		20°C	16	37	20	34	23	32	25	49	33	44	37	42	31	57	42	53	48	50	36	66	49	61	57	58
	70/50°C Air intake temperature t_{L1}	5°C	18	24	22	20	25	19	28	36	36	31	41	29	34	45	46	41	53	38	39	55	54	50	63	47
		18°C	13	32	16	29	18	28	20	41	26	37	30	36	25	48	34	45	39	42	30	56	41	52	48	50
		20°C	12	33	16	31	17	29	19	42	25	38	28	37	24	48	32	45	37	43	28	56	39	52	46	50

Model size 4			Capacity stage 1						Capacity stage 2						Capacity stage 3						Capacity stage 4					
Heat exchanger Cu/Al	**S** AC motor 3x400V, 3-speed		1		2		3		1		2		3		1		2		3		1		2		3	
	Air flow rate[1] V_L	m^3/h	**4150**		**6780**		**8250**		**3670**		**6170**		**7610**		**3620**		**5720**		**7100**		**3430**		**5340**		**6700**	
	Air throw[2] Basic **B**	m	6		10		11		5		7		9		4		6		7		4		5		6	
	Air throw[2] SAL **U**	m	8		11		14		6		9		11		5		8		9		5		7		8	
	Max. Height[2] ceiling two sides **Z**	m	5		10		13		4		7		9		3		5		7		3		4		5	
	Max. Height[2] SAL **C**	m	9		16		21		6		11		15		5		9		12		4		7		10	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
	80/60°C Air intake temperature t_{L1}	5°C	32	28	41	23	45	21	50	44	67	37	75	34	60	54	83	48	96	46	69	64	97	59	113	55
		18°C	25	36	33	32	36	31	39	48	52	43	59	41	47	56	66	52	75	50	55	66	77	61	90	58
		20°C	24	37	31	34	34	32	38	49	50	44	56	42	45	57	63	53	72	50	53	66	74	61	87	59
	70/50°C Air intake temperature t_{L1}	5°C	27	24	34	20	37	18	41	37	55	31	61	29	49	45	69	41	79	38	58	55	81	50	95	47
		18°C	19	32	25	29	27	28	30	41	40	37	45	35	36	48	51	44	58	42	45	57	62	52	72	50
		20°C	18	33	23	30	26	29	29	42	38	38	42	36	35	48	48	45	55	43	42	57	59	53	69	51

1= Air volume flow: specified table data are calculated for units with fan type "S" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

Unit Data

H B # # . # Y # = 1 ~ 230 V, EC motor

Model size 1			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	Y EC-motor 1x230V, plynulé otáčky		Min.		Max.		Min.		Max.		Min.		Max.		Min.		Max.	
	Air flow rate[1] V_L	m^3/h	**645**		**3270**		**605**		**2980**		**565**		**2735**		**540**		**2545**	
	Air throw[2] Basic **B**	m	3		12		2		9		2		7		2		6	
	Air throw[2] SAL **U**	m	4		14		3		11		3		9		2		8	
	Max. Height[2] ceiling two sides **Z**	m	-		11		-		10		-		7		-		6	
	Max. Height[2] SAL **C**	m	-		18		-		16		-		15		-		14	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	6	34	15	18	9	50	25	30	11	62	33	41	13	75	39	51
		18°C	5	39	11	29	7	53	19	37	9	63	26	46	10	71	32	55
		20°C	5	41	11	30	7	53	18	38	8	63	25	47	9	71	30	56
70/50°C	Air intake temperature t_{L1}	5°C	5	28	12	16	7	42	20	25	9	52	27	35	10	61	33	44
		18°C	4	35	8	26	5	44	14	32	7	53	20	40	8	61	25	47
		20°C	3	36	8	27	5	44	14	34	6	53	19	41	7	61	26	48

Model size 2			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger: Cu/Al	Y EC-motor 1x230V, plynulé otáčky		Min.		Max.		Min.		Max.		Min.		Max.		Min.		Max.	
	Air flow rate[1] V_L	m^3/h	**840**		**4370**		**770**		**4015**		**710**		**3695**		**670**		**3440**	
	Air throw[2] Basic **B**	m	3		11		2		9		2		7		2		6	
	Air throw[2] SAL **U**	m	4		14		3		11		3		9		2		8	
	Max. Height[2] ceiling two sides **Z**	m	-		11		-		10		-		9		-		8	
	Max. Height[2] SAL **C**	m	-		18		-		16		-		15		-		14	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	9	36	22	20	12	52	36	32	14	62	45	42	15	71	54	52
		18°C	7	42	17	29	10	54	28	39	11	63	38	47	12	72	44	56
		20°C	7	43	16	31	9	55	27	40	10	63	34	48	12	71	42	56
70/50°C	Air intake temperature t_{L1}	5°C	7	31	18	17	10	43	30	27	11	52	37	35	13	62	46	45
		18°C	5	37	13	27	7	46	21	34	8	52	28	40	10	61	35	48
		20°C	5	38	12	28	7	46	20	35	8	52	26	41	9	61	33	49

Model size 3			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger Cu/Al	Y EC-motor 1x230V, plynulé otáčky		Min.		Max.		Min.		Max.		Min.		Max.		Min.		Max.	
	Air flow rate[1] V_L	m^3/h	**1155**		**5970**		**1055**		**5405**		**980**		**4950**		**915**		**4610**	
	Air throw[2] Basic **B**	m	3		12		2		9		2		7		2		6	
	Air throw[2] SAL **U**	m	4		14		3		10		3		9		2		8	
	Max. Height[2] ceiling two sides **Z**	m	-		11		-		9		-		8				8	
	Max. Height[2] SAL **C**	m	-		18		-		15		-		13				13	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	12	37	31	21	17	53	51	33	19	63	65	44	21	72	76	54
		18°C	10	43	25	30	13	56	40	40	15	64	52	50	17	72	61	57
		20°C	9	44	24	32	13	56	39	41	15	64	50	50	16	72	59	58
70/50°C	Air intake temperature t_{L1}	5°C	10	31	26	18	14	44	42	28	16	53	54	38	17	62	64	46
		18°C	8	38	19	28	10	47	31	35	12	54	40	42	13	61	49	50
		20°C	7	38	18	29	10	47	29	36	11	54	38	43	13	62	46	50

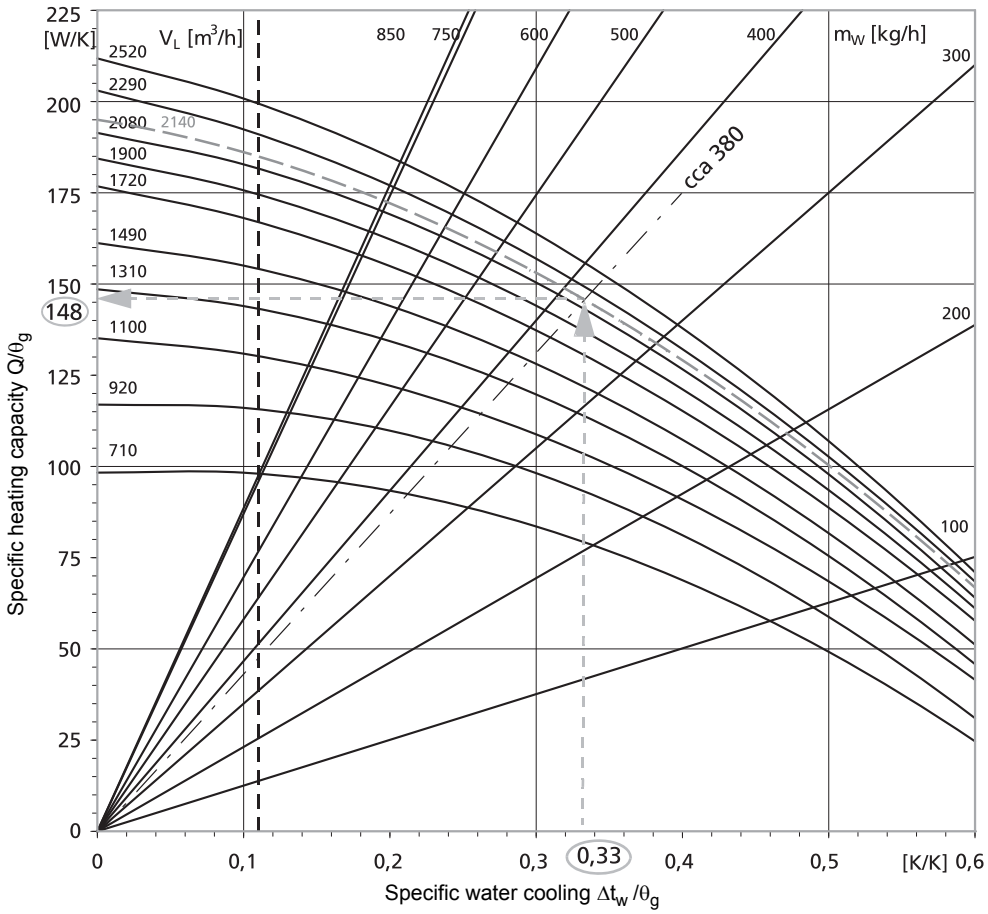
Model size 4			Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4			
Heat exchanger Cu/Al	Y EC-motor 1x230V, plynulé otáčky		Min.		Max.		Min.		Max.		Min.		Max.		Min.		Max.	
	Air flow rate[1] V_L	m^3/h	**1995**		**9680**		**1875**		**9010**		**1755**		**8430**		**1655**		**7950**	
	Air throw[2] Basic **B**	m	3		13		3		10		3		8		2		7	
	Air throw[2] SAL **U**	m	4		16		4		12		3		10		3		9	
	Max. Height[2] ceiling two sides **Z**	m	-		12		-		11		-		10		-		9	
	Max. Height[2] SAL **C**	m	-		20		-		19		-		17		-		17	
	Heating capacities Q_T/ Discharge temperature t_{L2}		**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**	**kW**	**°C**
80/60°C	Air intake temperature t_{L1}	5°C	20	36	49	20	29	52	82	32	34	62	106	43	39	75	127	52
		18°C	16	42	38	30	23	55	64	39	26	63	83	47	30	72	102	56
		20°C	15	43	36	32	22	54	61	40	25	63	80	48	29	72	98	57
70/50°C	Air intake temperature t_{L1}	5°C	17	30	40	17	24	43	67	27	28	52	87	36	31	61	107	45
		18°C	12	37	29	27	18	46	49	34	20	53	64	41	24	61	81	49
		20°C	12	37	28	29	17	47	46	35	19	52	61	42	23	61	78	49

1= Air volume flow: specified table data are calculated for units with fan type "Y" and secondary-air louvre wall outlet. The data are valid for heat exchangers Cu/Al.
2= Air throw: air throw is calculated for air intake temperature 18 °C. The values are valid for air discharge temperature up to 15 K greater than air intake temperature.

Using performance data diagrams

In order to explain how to use the following diagrams, individual steps with calculations and final results are presented in the following example. This example is based on size 1, capacity stage 1 and motor with sickle-blade fan (S).

EXAMPLE

	Input data		**Result**
Input The following input values are assumed for this example (based on diagram "model size 1 – capacity stage 1" on Seite 21).	Air flow rate V_L	→	V_L = 2140 m³/h (Tab. Seite 17)
	Air temperature	→	t_{L1} = 20 °C
	Water supply line	→	t_{w1} = 80 °C
	Water return line	→	t_{w2} = 60 °C
1nd Step Using the formula for Δt_w and θ_g you can calculate the specific water cooling as a ratio of Δtw to θg.	Temperature difference: Δt_w [K] = t_{w1} - t_{w2}	80 °C - 60 °C = 20 K →	Δt_w = 20 K
	Maximum temperature difference: θg [K] = t_{w1} - t_{L1}	80 °C - 20 °C = 60 K →	θg = 60 K
	$\frac{\Delta tw}{\theta g}$	$\frac{20}{60} = 0,\overline{3}$ →	**0.33 [K/K]**
2nd Step Extend a vertical line from the result in the first diagram "model size 1 – capacity stage 1" (on Seite 21) on the x-axis upwards to the intersection point of the specified (existing) air volume flow VL and read off the specific heating capacity Q/θg on the y-axis.			
	Read off specific heating capacity Q/θ_g	→	**148 W/K**
3nd Step The specific heating capacity Q/θ_g multiplied by θ_g returns the heating capacity Q_T [W].	Specific Heating capacity	→ Q/θ_g =148 W/K	
	Maximum temperature difference	→ θ_g = 60 K	
	Heating capacity: Q_T = Q/θ_g* θ_g	148 W/K*60 K = 8880 W →	**8.9 kW** See table value Seite 17

4th Step

You can also read off the water mass flow m_w [kg/h] from the first diagram for "model size 1 – capacity stage 1" (on Seite 21), or you can calculate it.

Water mass flow rate: (diagram)
Draw another curve from the zero point through the intersection point (see diagram on Seite 19) and and interpolate the value -> approx. 380 kg/h.

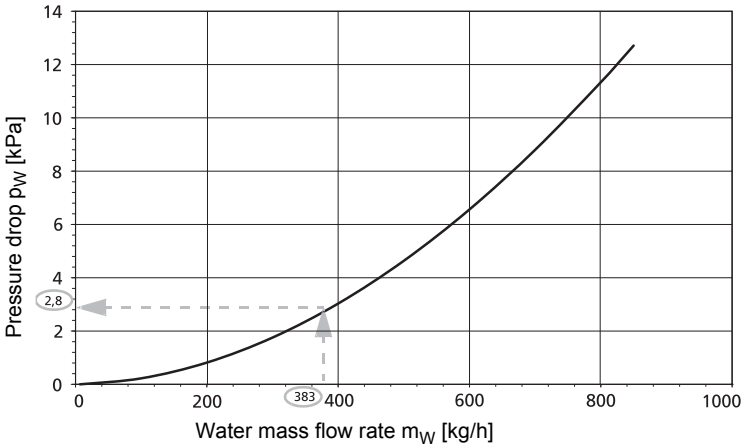
Water mass flow rate: (calculation)
$m_w = 860 * Q [kW] / \Delta t_w$

860 * 8.9 kW / 20 K =
382.7 kg/h

→ **383 kg/h**

5nd Step

Now you can read off the water-side pressure drop/water resistance p_w [kPa] from the second diagram "model size 1 – capacity stage 1" (on Seite 21)



Read off water-side pressure drop p_w [kPa].

→ **2.8 kPa**

Fig. 17: Model size 1 - capacity stage 1

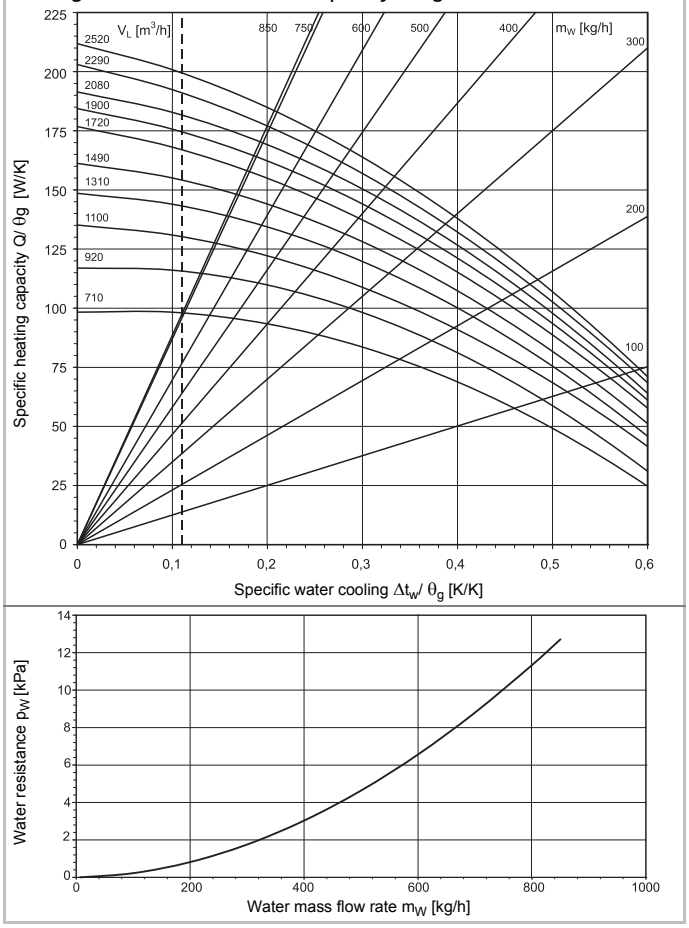


Fig. 18: Model size 1 - capacity stage 2

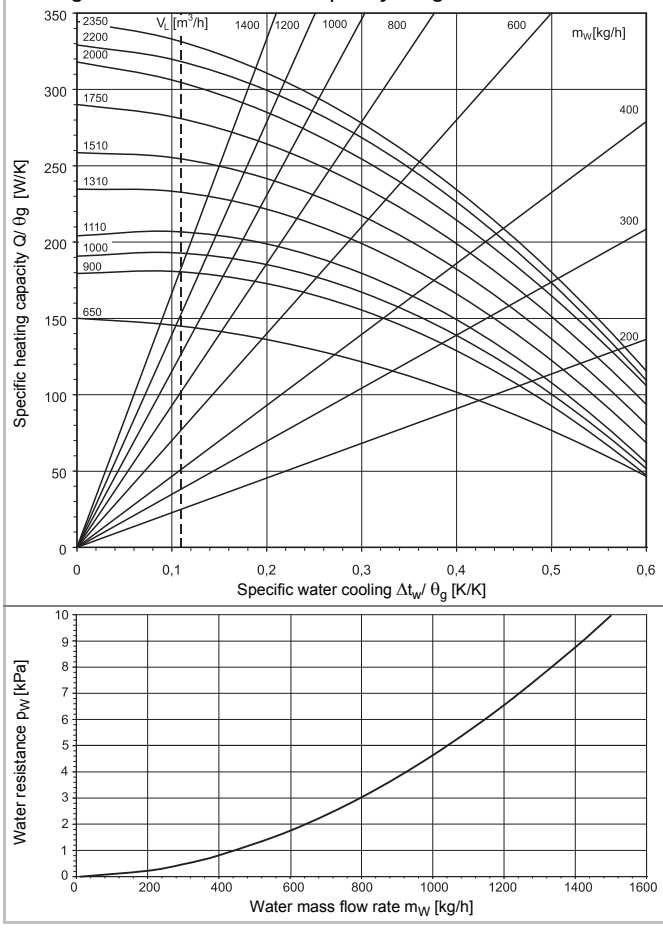


Fig. 19: Model size 1 - capacity stage 3

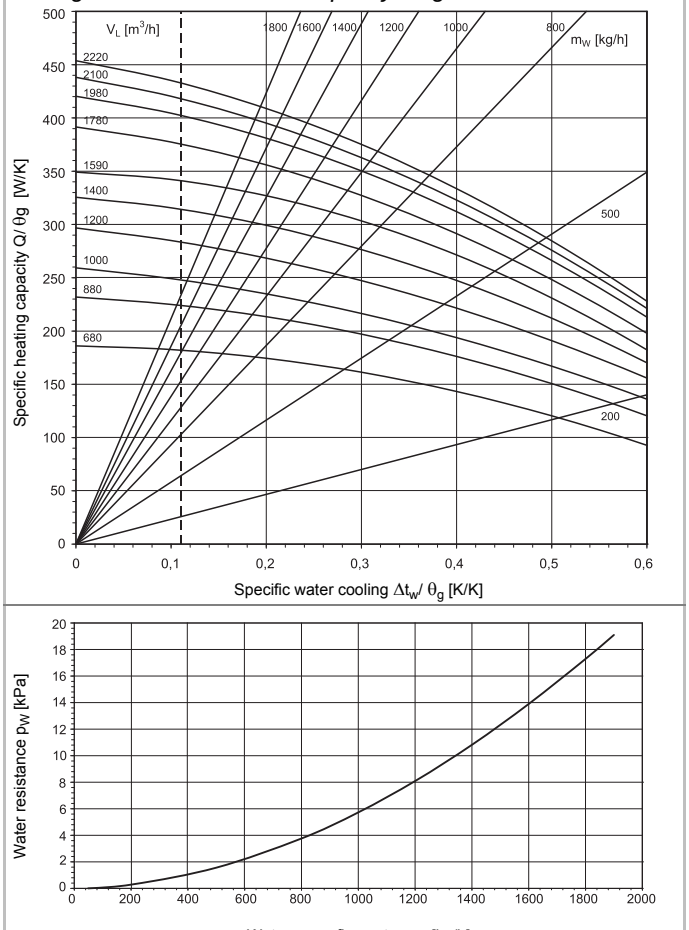


Fig. 20: Model size 1 - capacity stage 4

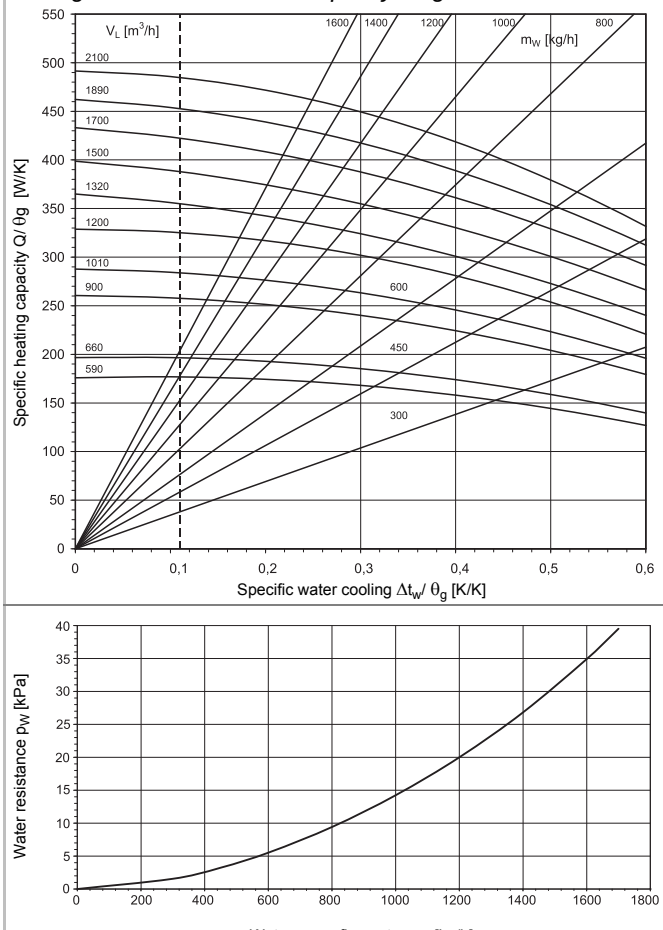
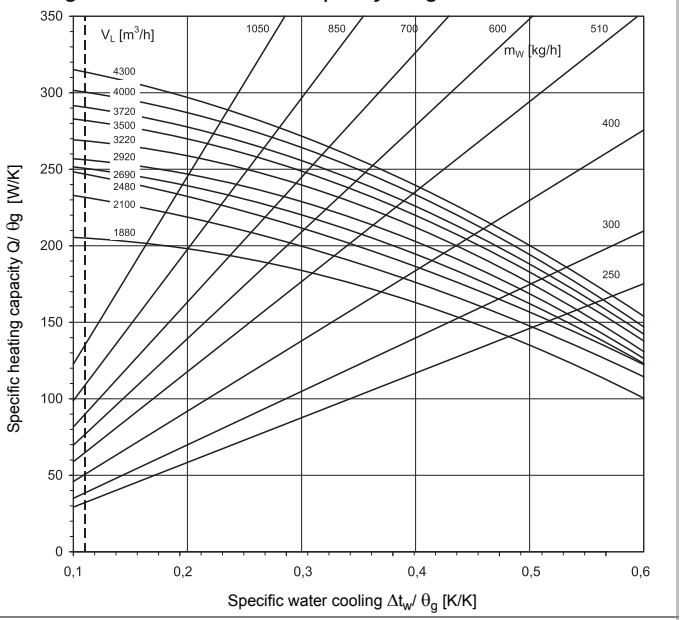


Fig. 21: Model size 2 - capacity stage 1



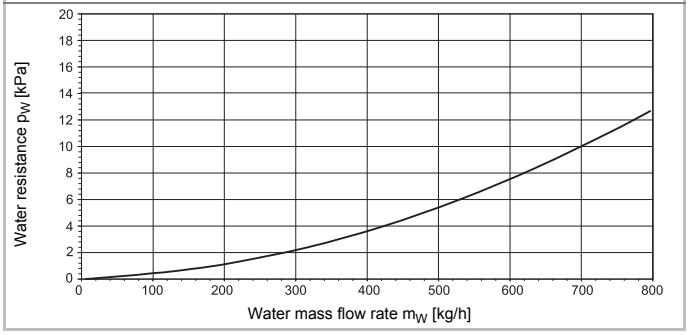
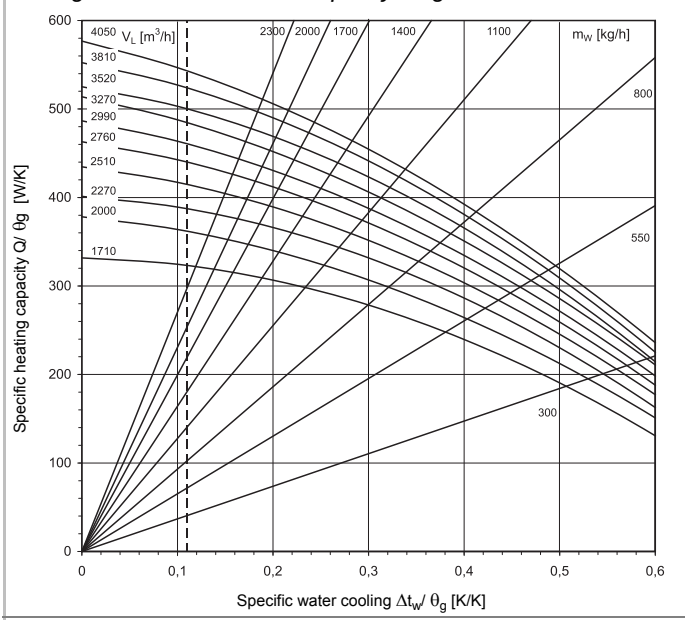


Fig. 22: Model size 2 - capacity stage 2



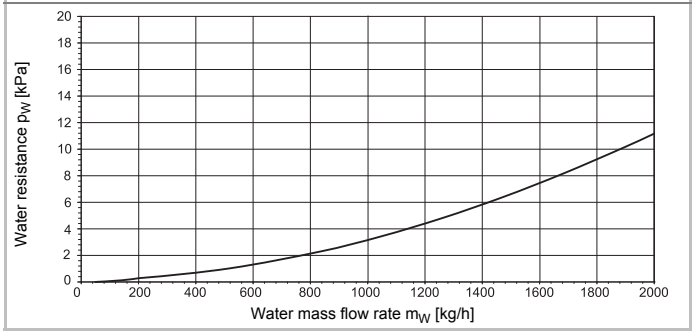
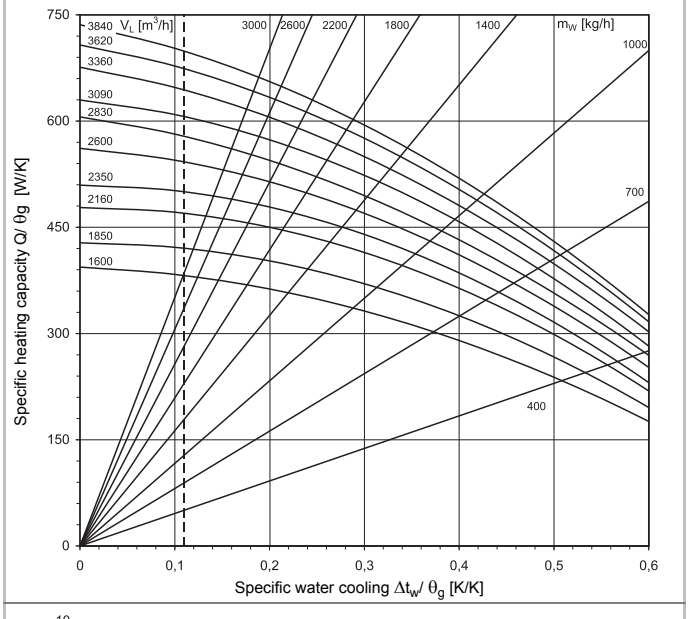


Fig. 23: Model size 2 - capacity stage 3



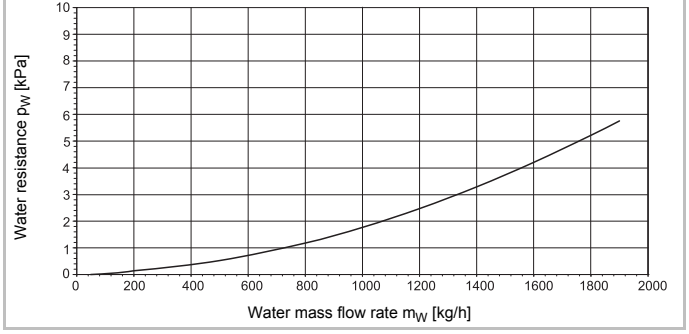
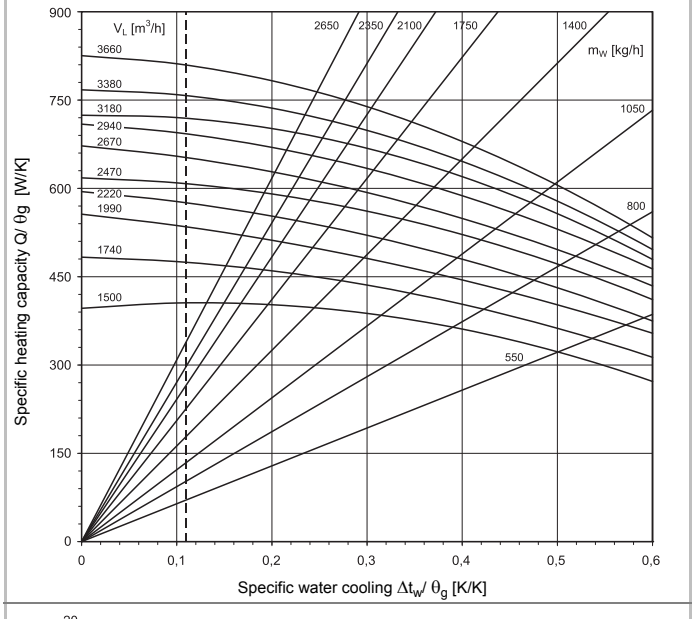


Fig. 24: Model size 2 - capacity stage 4



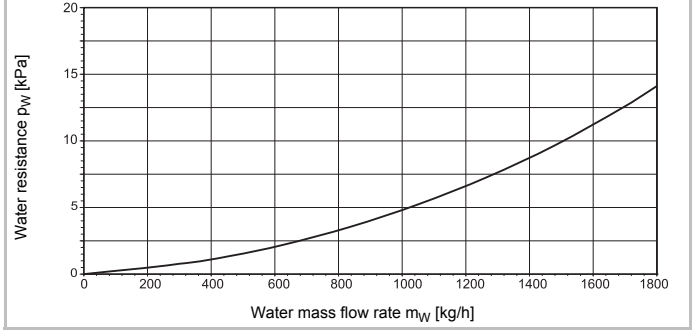


Fig. 25: Model size 3 - capacity stage 1

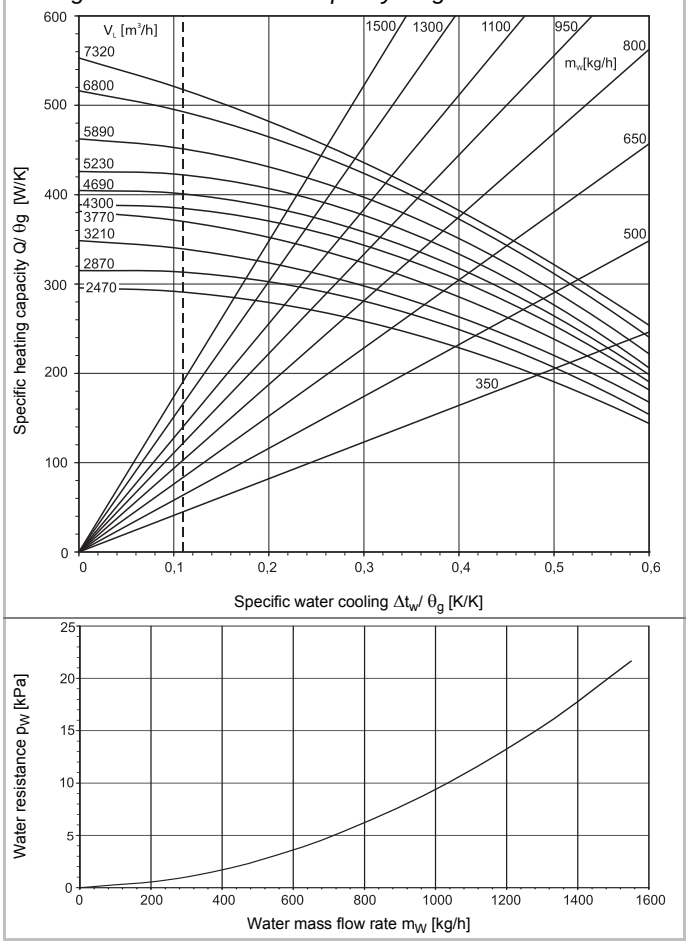


Fig. 26: Model size 3 - capacity stage 2

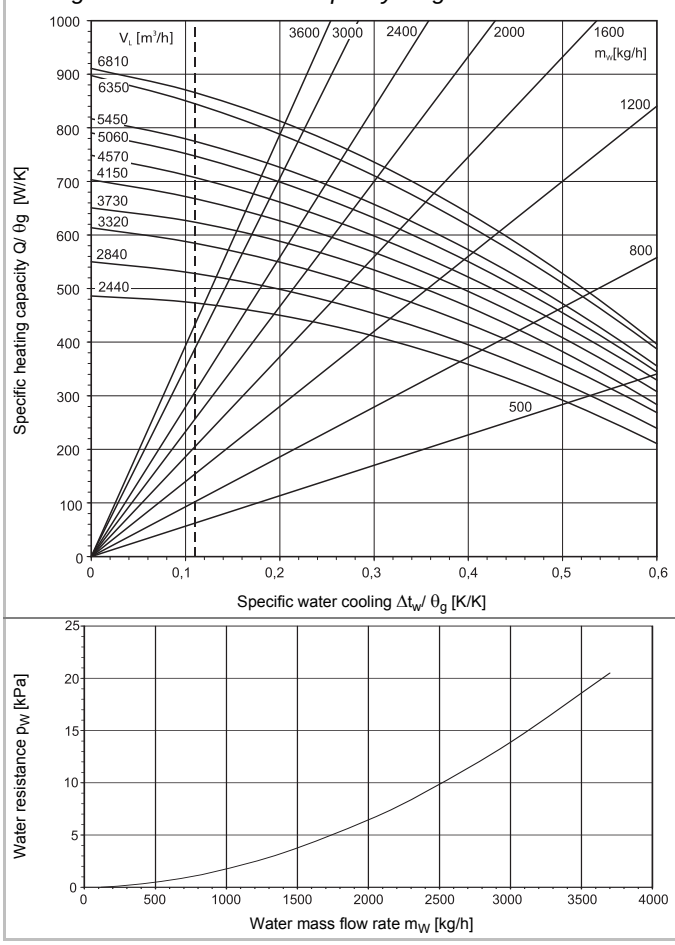
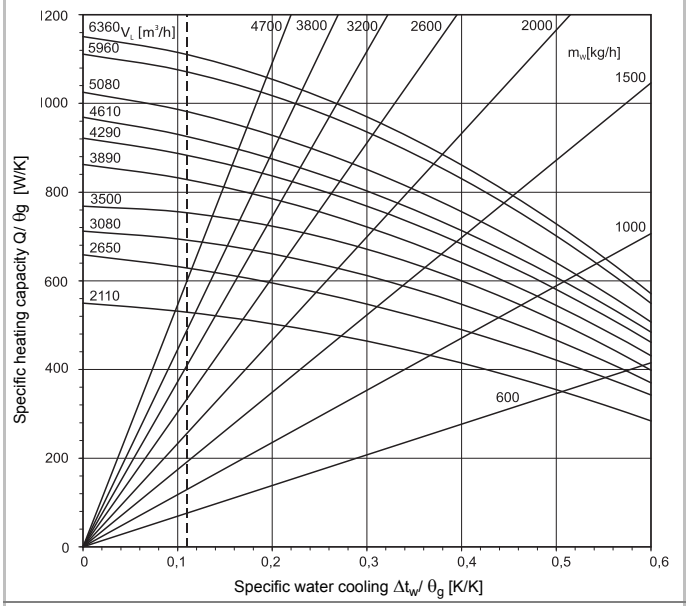


Fig. 27: Model size 3 - capacity stage 3



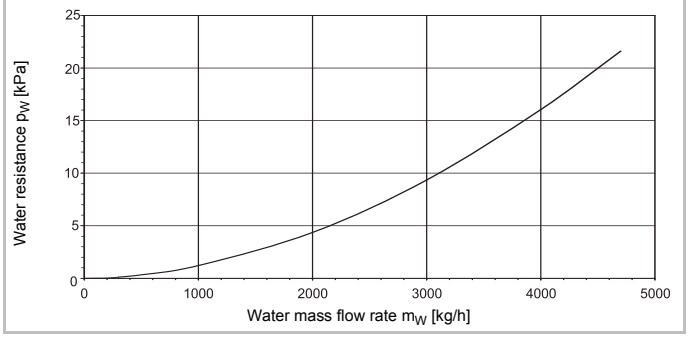
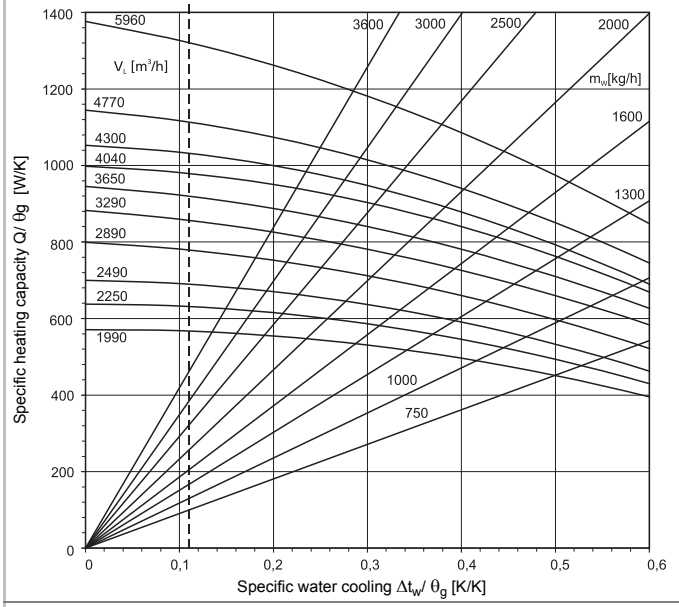


Fig. 28: Model size 3 - capacity stage 4



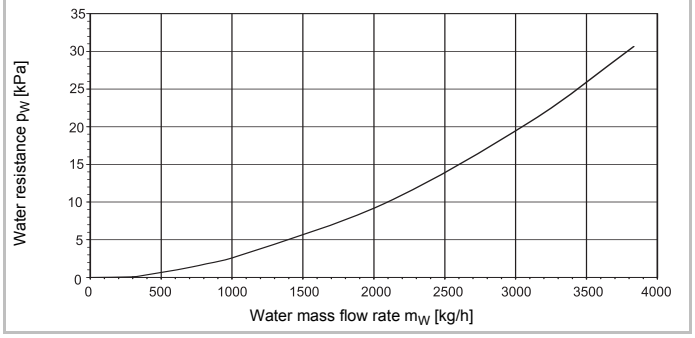


Fig. 29: Model size 4 - capacity stage 1

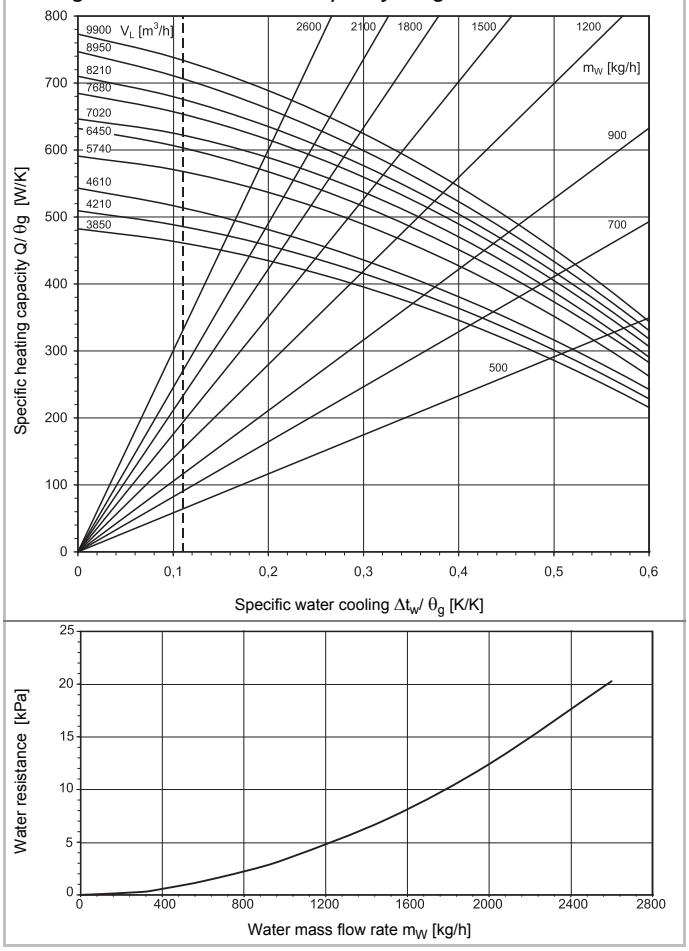


Fig. 30: Model size 4 - capacity stage 2

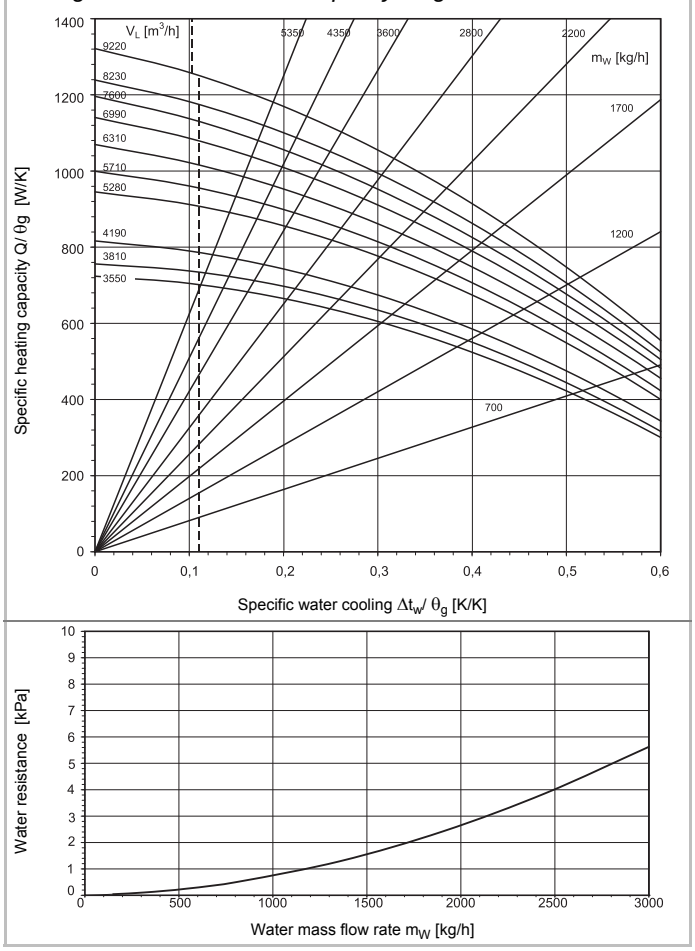


Fig. 31: Model size 4 - capacity stage 3

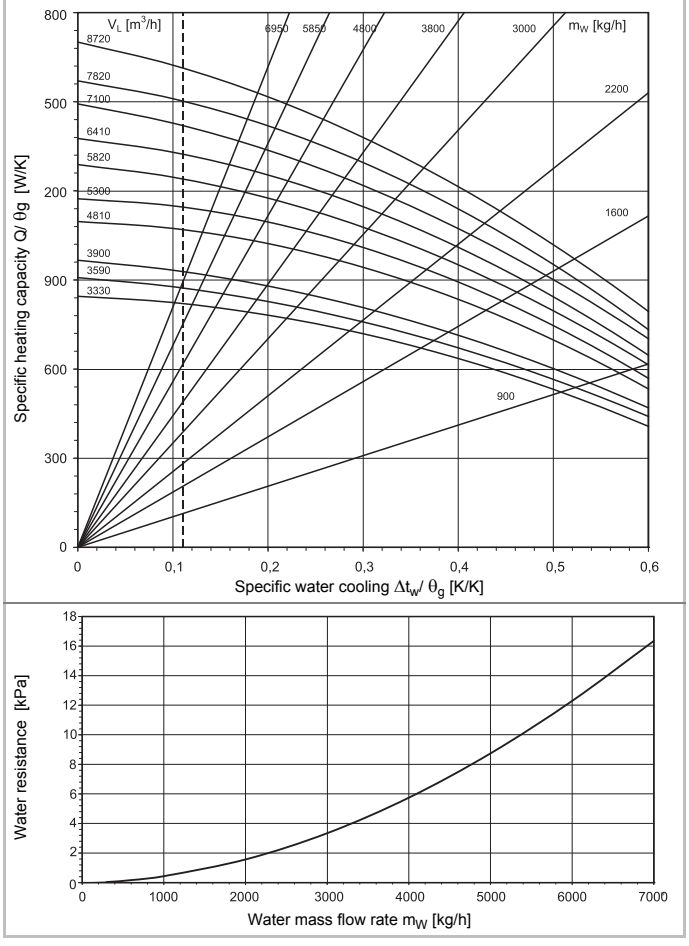
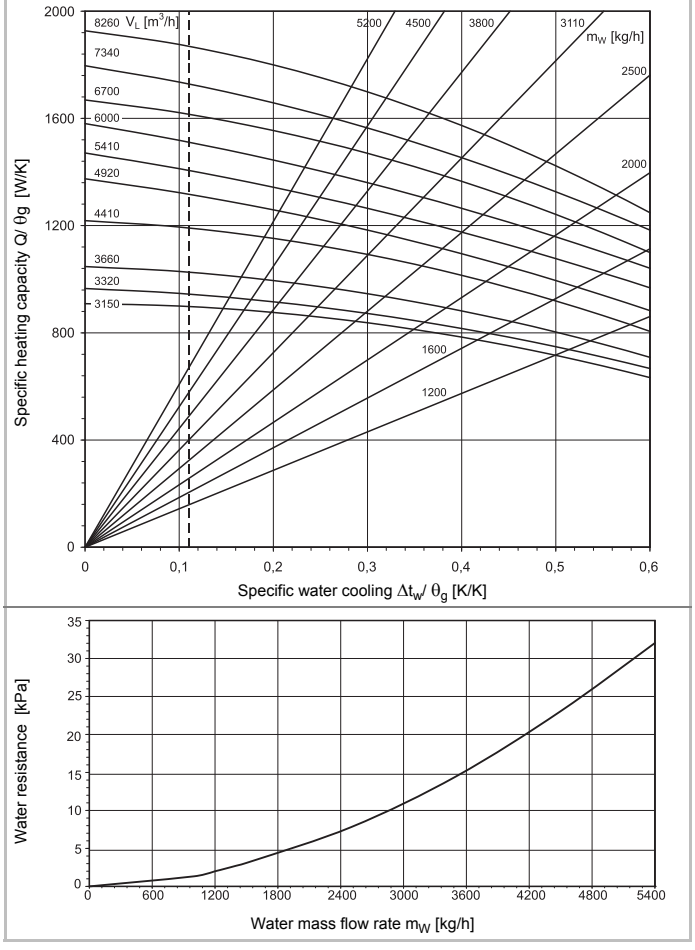
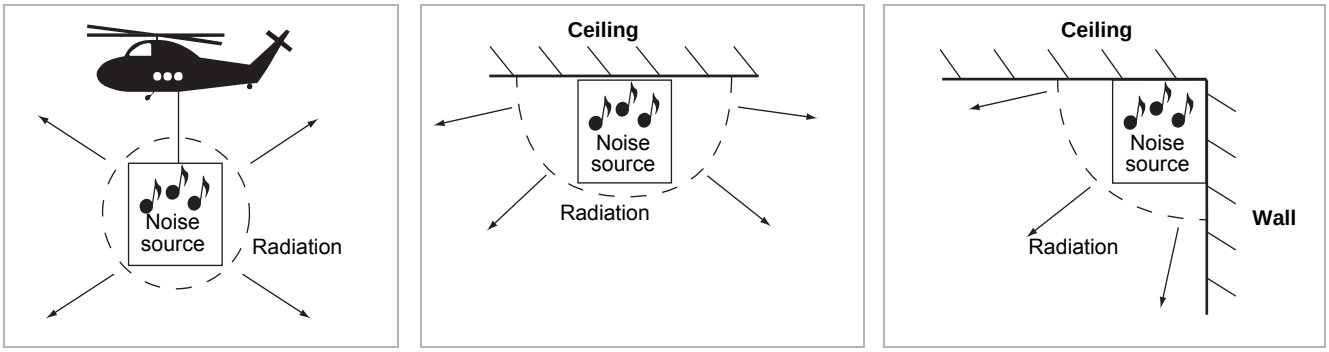


Fig. 32: Model size 4 - capacity stage 4



Radiation of sound source without reflections

Spherical	Hemispherical	Quarter-spherical
Only theoretical dimension	practical application	



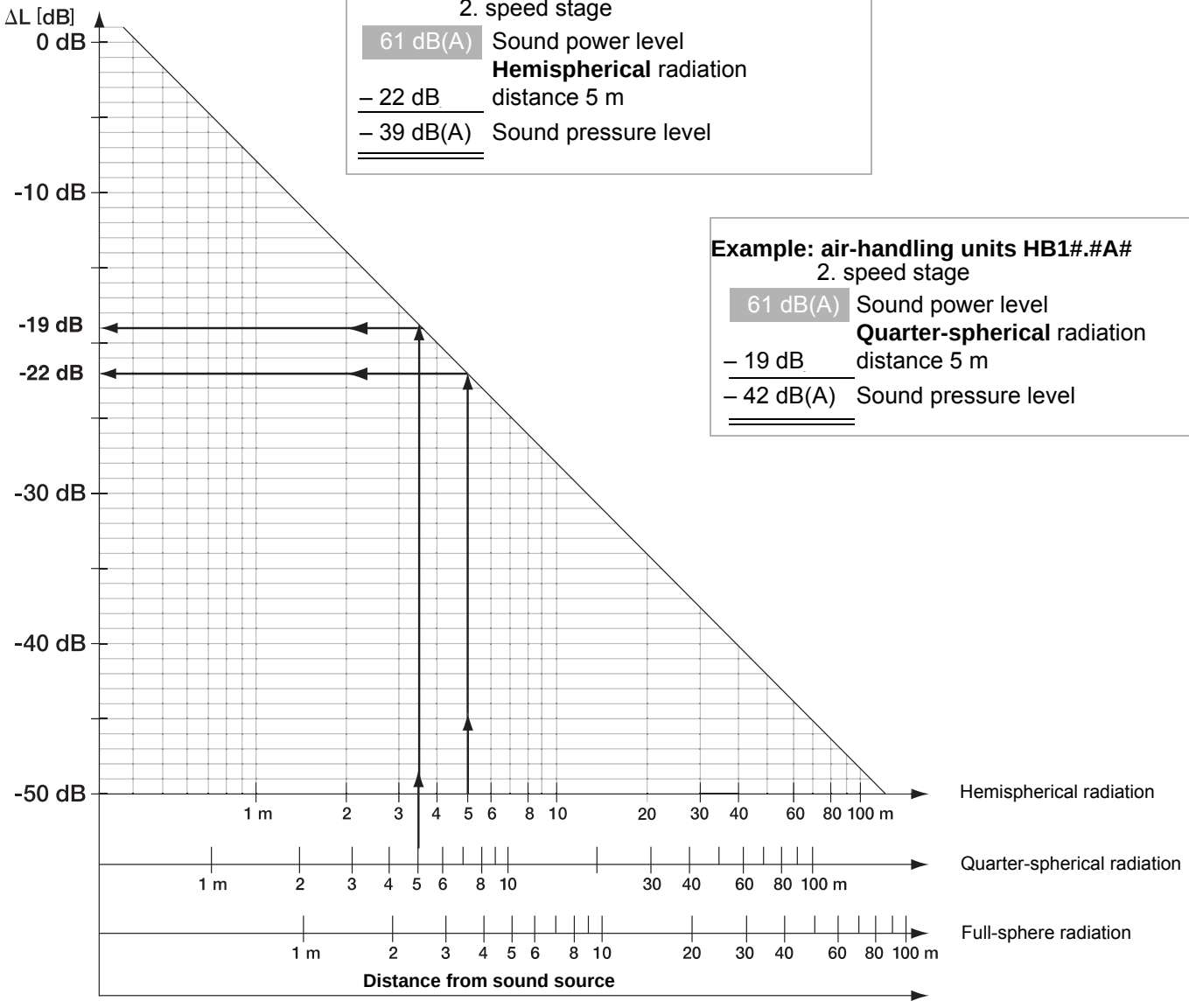
Direction coefficient 1 Direction coefficient 2 Direction coefficient 3

Example: air-handling units HB1#.#A#
2. speed stage

61 dB(A)	Sound power level
	Hemispherical radiation
– 22 dB	distance 5 m
– 39 dB(A)	Sound pressure level

Example: air-handling units HB1#.#A#
2. speed stage

61 dB(A)	Sound power level
	Quarter-spherical radiation
– 19 dB	distance 5 m
– 42 dB(A)	Sound pressure level



Model size	Speed		Sound power level (dB)								A-rated sum level		Max. power kW	Max. current A
			Octave centre frequency (Hz)								Sound power dB(A)	Sound pressure* dB(A)		
	Speed	RPM	63	125	250	500	1000	2000	4000	8000				
A – 3 ~ 400 V, 2-speed AC motor (low speed range)														
1	2	860	73	64	57	57	57	53	48	38	61	46	0.05	0.28
	1	670	63	54	53	53	51	46	38	28	55	40	0.03	0.16
2	2	910	69	66	63	63	60	57	53	44	65	50	0.12	0.45
	1	710	63	60	58	58	57	53	47	38	61	46	0.07	0.26
3	2	640	68	65	62	62	63	59	52	44	66	51	0.12	0.49
	1	500	64	60	56	56	57	51	44	34	60	45	0.07	0.28
4	2	650	71	73	65	65	64	60	53	46	68	53	0.24	0.72
	1	500	65	63	56	56	56	49	41	32	59	44	0.15	0.41
B – 3 ~ 400 V, 2-speed AC motor (high speed range)														
1	3	1320	60	70	67	65	65	65	61	53	71	56	0.14	0.49
	2	1050	54	65	65	60	62	61	57	47	67	52	0.09	0.28
2	3	1270	73	80	79	67	70	69	65	58	76	61	0.29	0.61
	2	890	70	73	63	64	64	62	58	49	69	54	0.19	0.35
3	3	900	83	75	81	70	69	68	62	55	76	61	0.31	0.86
	2	660	70	72	75	63	64	62	56	47	70	55	0.20	0.50
4	3	910	80	81	85	77	73	72	69	62	81	66	0.51	1.31
	2	740	69	69	80	72	69	68	64	56	76	61	0.37	0.76
C – 3 ~ 400 V, 3-speed AC motor (low speed range)														
2	3	1380	62	74	76	69	69	69	66	59	75	60	0.34	1.01
	2	1060	64	65	67	64	65	65	61	54	70	55	0.25	0.58
	1	690	55	54	57	53	54	52	45	33	58	43	0.07	0.50
3	3	910	79	67	73	68	67	67	64	56	73	58	0.28	0.92
	2	730	62	70	65	62	63	63	59	50	69	54	0.20	0.53
	1	460	49	57	56	50	53	50	41	30	57	42	0.07	0.26
4	3	920	78	75	85	74	73	70	67	60	80	65	0.58	1.47
	2	740	67	84	73	73	68	66	62	55	75	60	0.43	0.85
	1	460	55	68	71	56	55	53	45	34	64	49	0.14	0.73
E – 1 ~ 230 V, 1-speed AC motor (high speed range)														
1	1	1330	60	70	67	65	65	65	61	53	71	56	0.15	0.67
2	1	1350	70	80	79	67	70	69	65	58	76	61	0.28	1.35
3	1	890	83	75	81	70	69	68	63	55	76	61	0.28	1.30
4	1	910	80	81	85	77	73	72	69	62	81	66	0.55	2.80

** Sound pressure: standard values at 5 m distance to the unit side, at maximum air volume flow and **low-reflection** room.*
Industrial hall volume 1500 m^3/h, absorption surface 200 m^2 Sabin, hemispherical radiation = direction coefficient 2.
These values can be significantly influenced by the indoor characteristics in a positive or negative way.

Model size	Speed		Sound power level (dB)								A-rated sum level		Max. power kW	Max. current A
			Octave centre frequency (Hz)								Sound power dB(A)	Sound pressure* dB(A)		
	Speed	RPM	63	125	250	500	1000	2000	4000	8000				
R – 3 ~ 400 V 2-speed AC motor (high speed range)														
3	3	900	59	72	72	68	69	66	61	54	73	58	0.34	1.01
	2	720	56	67	68	63	64	60	55	47	68	53	0.23	0.59
4	3	870	66	78	77	74	73	71	67	62	78	63	0.76	1.84
	2	650	64	73	73	69	67	65	61	58	73	58	0.47	1.06
S – 3 ~ 400 V 3-speed AC motor (high speed range)														
1	3	1370	53	65	71	67	66	66	60	53	72	57	0.17	0.55
	2	1070	50	60	65	62	60	59	54	49	66	51	0.12	0.32
	1	700	43	53	56	53	51	47	43	34	56	41	0.04	0.28
2	3	1370	60	70	72	70	69	69	63	57	75	60	0.34	0.67
	2	1030	57	64	65	63	62	61	56	51	67	52	0.26	0.50
	1	700	52	57	57	55	53	50	47	44	58	43	0.07	0.43
3	3	900	59	72	72	68	69	66	61	54	73	58	0.38	0.98
	2	680	56	67	68	63	64	60	55	47	68	53	0.27	0.57
	1	450	51	58	62	54	53	48	45	34	58	43	0.09	0.49
4	3	870	66	78	77	74	73	71	67	62	78	63	0.68	1.78
	2	660	64	73	73	69	67	65	61	58	73	58	0.41	1.03
	1	420	59	65	66	61	57	54	51	52	64	49	0.12	0.89
Y – 1 ~ 230 V, EC motor, continuously variable														
1	max.	1830	41	57	66	69	73	73	69	63	80	66	0.36	1.80
2	max.	1600	30	50	57	59	61	60	55	45	78	64	0.39	1.95
3	max.	940	40	51	58	59	60	58	54	44	73	59	0.40	2.00
4	max.	1050	41	54	59	61	63	62	57	51	77	63	0.85	4.30

** Sound pressure: standard values at 5 m distance to the unit side, at maximum air volume flow and low-reflection room. Industrial hall volume 1500 m^3/h, absorption surface 200 m^2 Sabin, hemispherical radiation = direction coefficient 2. These values can be significantly influenced by the indoor characteristics in a positive or negative way.*

Unit dimensions Multi*MAXX* HB

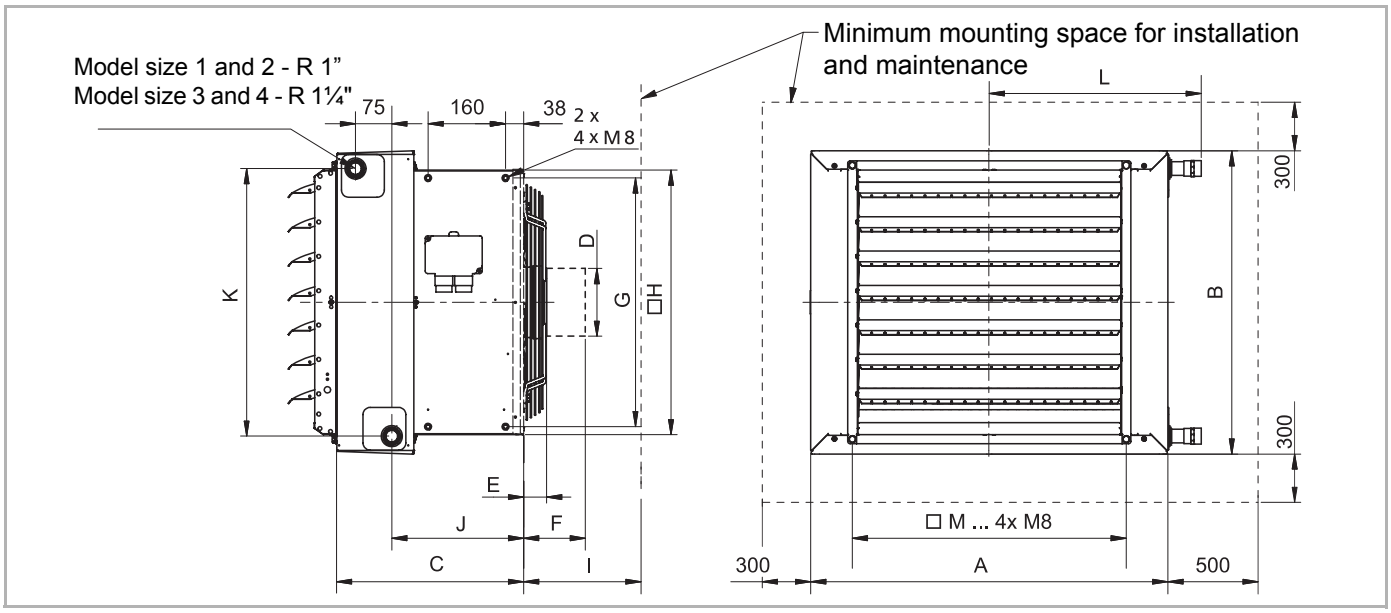


Fig. 33: Dimension of unit heater and arrangement of heat exchanger connection fittings

Table with unit dimensions

Dimensions [mm] / unit size	1	2	3	4
A	642	738	866	1026
B	520	616	744	904
C	387	387	387	452
D (for EC motor with sickle-blade fan)	150	150	175	175
E (for AC motor with sickle-blade fan)	35	50	51	66
E (for AC motor with sickle-blade fan)	60	81	100	112
F (for EC motor with sickle-blade fan)	150	150	170	150
G	418	514	642	802
H	451	547	675	835
I	300	300	400	400
J	273	273	273	348
K	457	553	681	841
L	399	447	511	591
M	470	566	694	854

Table unit weights and quantity of water in heat exchangers

Air Handling Unit Type	Unit weight with heat exchanger [kg]	Quantity of water in heat exchanger [l]
HB11.BS#	21	1.0
HB12.BS#	22	1.7
HB13.BS#	24	2.5
HB14.BS#	25	3.2
HB21.BS#	29	1.3
HB22.BS#	31	2.4
HB23.BS#	33	3.4
HB24.BS#	36	4.3
HB31.BS#	38	1.8
HB32.BS#	42	3.5
HB33.BS#	45	5.3
HB34.BS#	49	6.3
HB41.BS#	54	3.0
HB42.BS#	59	5.6
HB43.BS#	64	8.4
HB44.BS#	70	9.9

Outlets (wall)

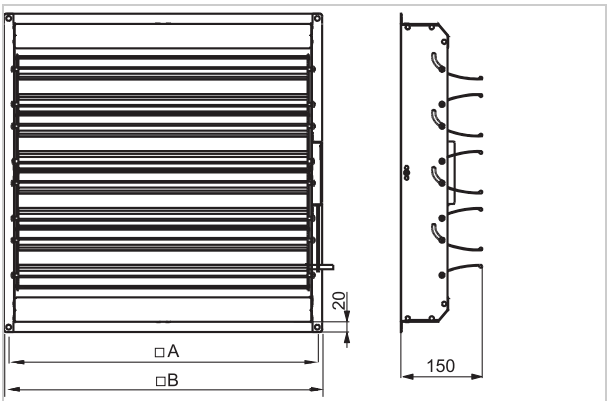


Fig. 34: Secondary-air wall louvre

Secondary-air louvre

for adjusting discharge speed and air throw in the following

H B # # . U # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
Weight (kg)	6.7	8.9	12.5	17.7

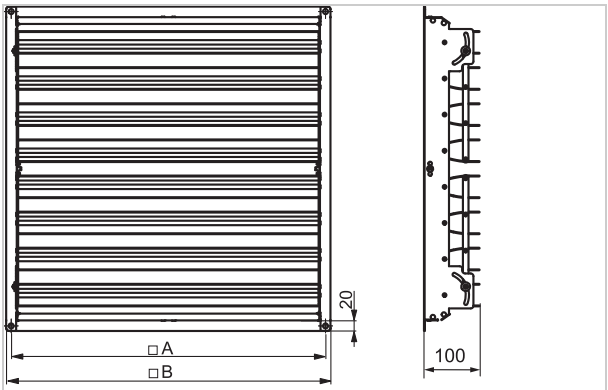


Fig. 35: Profile outlet

Profile outlet

made from aluminium air-deflection profiles for increasing air-discharge speed and air throw

H B # # . P # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
Weight (kg)	5.6	7.8	11.3	16.4

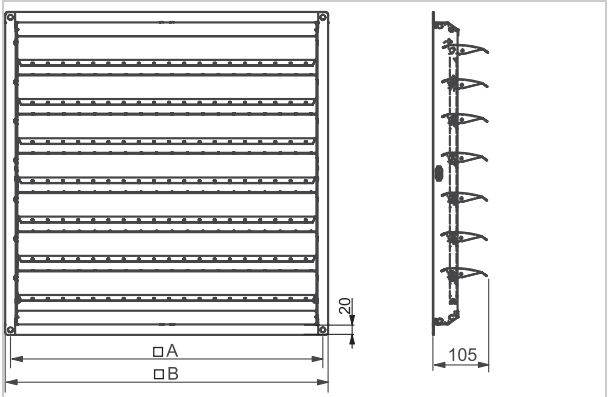


Fig. 36: Basic wall outlet

Basic wall outlet

outward-curved louvres;

adjustable, self-locking to adjust air-flow direction

H B # # . B # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
Weight (kg)	2.5	3.6	5.4	8

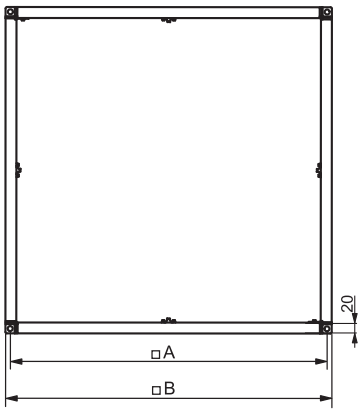


Fig. 37: Terminating flange, pressure side

Terminating flange, pressure side

for use without outlet for wall and ceiling;

also usable as short duct connection on discharge side

H B # # . K # # – for use without outlet

Model size	1	2	3	4	5
A (mm)	470	566	694	854	982
B (mm)	489	585	713	873	1001
Weight (kg)	2.1	2.5	3.1	3.8	4.4

Outlets (ceiling)

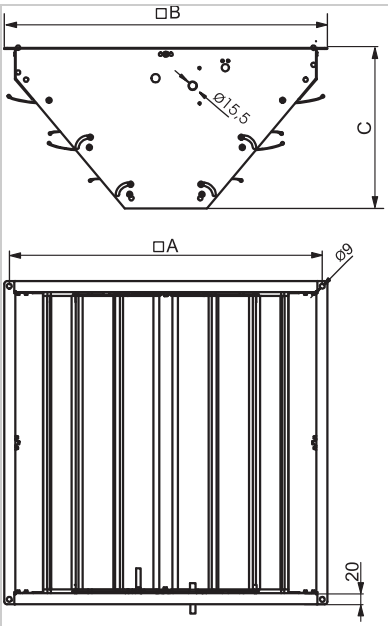
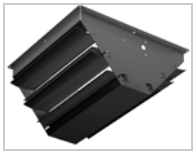


Fig. 38: Secondary-air ceiling louvre

Secondary-air louvre

for adjusting discharge speed and air throw in the following



H B # # . C # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
C (mm)	291	291	351	376
Weight (kg)	4.4	5.9	8.3	11.5

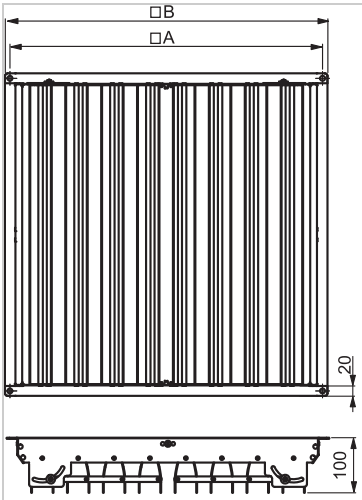
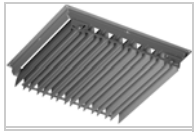


Fig. 39: Profile outlet

Profile outlet

for increasing air-discharge speed and air throw



H B # # . P # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
Weight (kg)	5.6	7.8	11.3	16.4

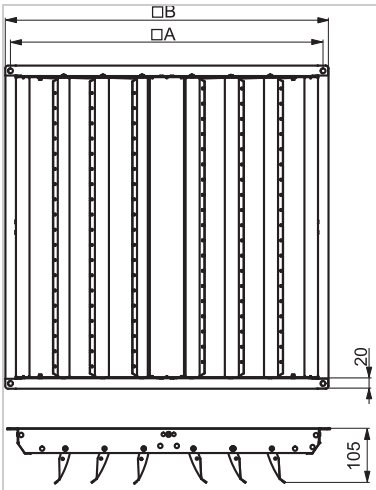


Fig. 40: Two-side basic ceiling outlet

Two-side basic ceiling outlet

air deflection unit for supplying air in 2 directions

H B # # . Z # # – manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
Weight (kg)	2.5	3.6	5.4	8

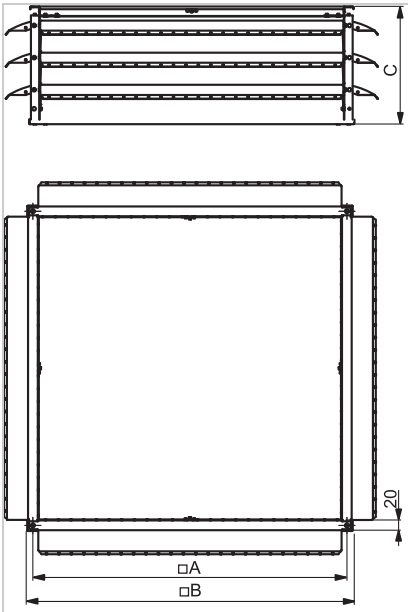
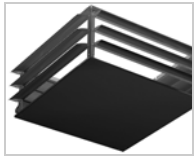


Fig. 41: Four-side outlet

Four-side outlet

Air deflection unit for low mounting height (2.5-3.5 m);

prevents air from being blown directly towards people;



H B # # . V # # – for air discharge on 4 sides, manually adjustable, self-locking

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
C (mm)	190	260	260	260
Weight (kg)	6.4	8.5	11.9	16.6

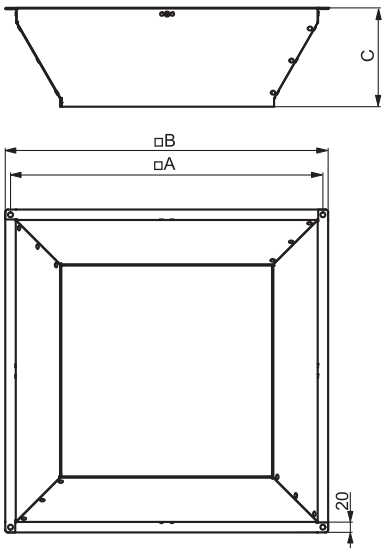
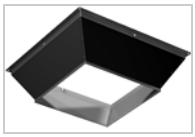


Fig. 42: Outlet nozzle

Outlet nozzle

square, cone-shaped, air speed and air throw increase due to reduced outlet surface



H B # # . A # # – for large mounting heights

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
C (mm)	154	178	211	253
Weight (kg)	3.6	5	7.2	10.5

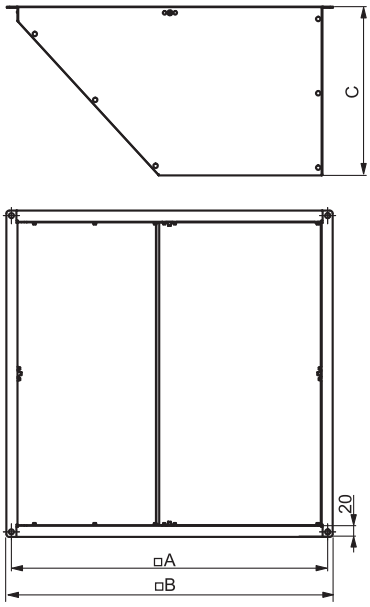
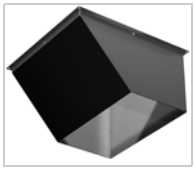


Fig. 43: Gate nozzle

Gate nozzle

Increase of discharge speed, for precise air-flow diffusion.



H B # # . T # # – for gate curtains

Model size	1	2	3	4
A (mm)	470	566	694	854
B (mm)	489	585	713	873
C (mm)	286	302	417	525
Weight (kg)	4.4	5.6	9.1	14

Suspensions

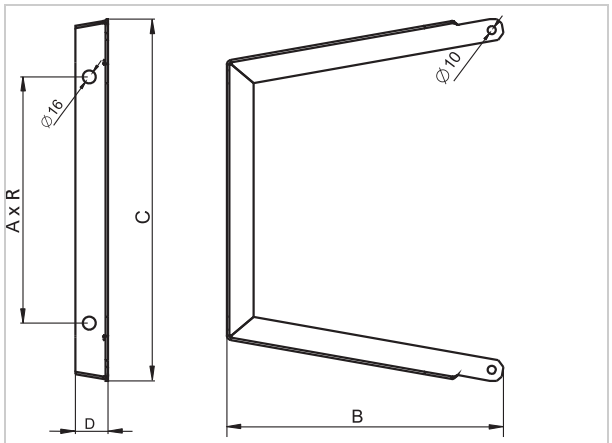
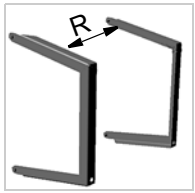


Fig. 44: Suspension type compact C

Suspension type compact C

for recirculating-air units for wall and ceiling mounting of units with Cu/Al heat exchangers; performed in galvanized metal sheet



Z	H	#	.	5	3	0	0	– Wall/ceiling mounting

Model size	1	2	3	4
A (mm)	303	389	484	628
B (mm)	340	392	504	578
C (mm)	445	544	680	845
D (mm)	40	40	50	62
R (mm)	414	510	628	776
Weight (kg)	2.9	3.9	8.2	12.2

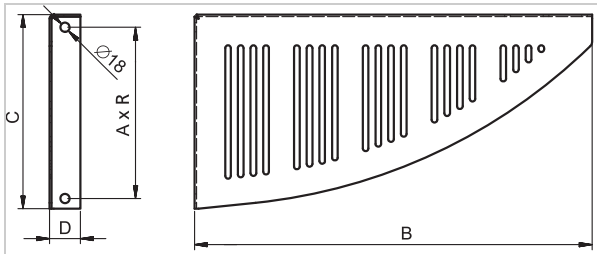
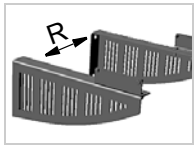


Fig. 45: Suspension type Studio

Suspension type Studio

for recirculating-air units as design model; painted in RAL 7000; other colour on request



Z	H	#	.	5	4	0	0	– Wall installation

Model size	1	2	3	4
A (mm)	138	175	218	282
B (mm)	496	544	656	728
C (mm)	183	220	263	327
D (mm)	60	60	60	60
R (mm)	400	496	624	784
Weight (kg)	6.8	8.1	10.6	13.5

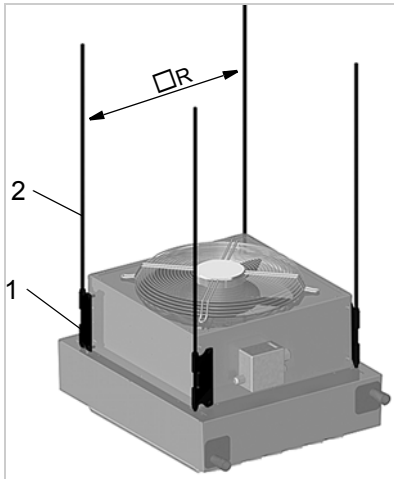


Fig. 46: Ceiling suspension

Ceiling suspension

comprising 4 unit mounting brackets (1) including fixing material for optional accessories (2) and 4 threaded rods (3); for ceiling mounting. The threaded rods M10 are available in different lengths:

Z	H	#	.	5	6	0	0	– Installation without threaded rod
Z	H	#	.	5	6	0	1	– Mounting kit threaded rod M10 - 1 m
Z	H	#	.	5	6	0	2	– Mounting kit threaded rod M10 - 2 m
Z	H	#	.	5	6	0	3	– Mounting kit threaded rod M10 - 3 m

Model size	1	2	3	4
R (mm)	531	627	755	915
Weight ZH#. 5600 (kg)	2.4			
Weight ZH#. 5601 (kg)	5.7			
Weight ZH#. 5602 (kg)	8.1			
Weight ZH#. 5603 (kg)	10.5			

Control unit MC4 for units with AC-Motor

- Plastic casing for wall mounting, light grey
- Protection class IP65
- Max. switching capacity 3,8 kW
- Max. current 9 A
- Full electronic protection for fan motor
- Frost protection for mixed-air operation
- Unit control in stand-alone or group mode (max. 4 unit heaters)
- Dimensions (W x H x D): 170 x 223 x 85 mm
- Connections:
  - Room/contact thermostat or external ON/OFF contact
  - Shut-off valve with actuator 230 V

			Motor design	Control unit type	Thermostats
Recirculating air	Heating only		1-speed, 1 x 230 V AC	MC4U1AC	Room thermostat 902.113 Room thermostat 902.110 Room thermostat 902.105
			2-speed, 3 x 400 V AC	MC4U2AC	
			3-speed, 3 x 400 V AC	MC4U3AC	

	Control unit type	AC-Motor	Description of additional functions
Recirculating air	MC4U1AC	1-speed, 1 x 230 V AC	– On/Off with signalling – Fan motor fault with signalling – Output: heating valve contact 230 V AC, open/close – Output: signalling for thermal contact OK/Error/Off (NOC/NCC) – Output: ISYteq controls 1-2-3-OFF (normallyopen/close contact) – On/Off – fan motor with operating status signal – Input: door contact 230 V AC or On/Off contact 230 V AC or room thermostat 230 V AC
	MC4U2AC	2-speed, 3 x 400 V AC	
	MC4U3AC	3-speed, 3 x 400 V AC	

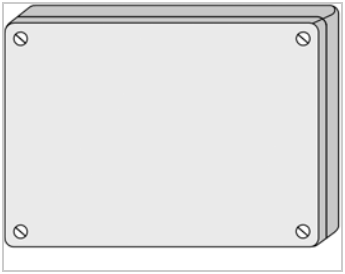
Control units MC301EC for units with EC-Motor

- Plastic casing for wall mounting, light grey with a separate section for wiring terminals
- Protection class IP54
- Contactor, 4 kW switching capacity according to AC3, max. current 9 A
- Fully protected motor electronics with automatic restart after power outage and interlocking disconnection
- Standby indicator and malfunction control lights
- Connection terminals for room thermostat or external ON/OFF contact

			Motor design	Control unit type	Thermostats
Recirculating air	Heating only		continuous, 1 x 230 V AC	MC301EC	Room thermostat 902.113 Room thermostat 902.110 Room thermostat 902.105

	Control unit type	Function	Control unit type	Additional Function
Recirculating air	MC301EC 	Selection switch 0-1, potentiometer 0-100%	MC301EC S	Connection for shut off valve
			MC301EC W	Status and alarm messages volt free, shut-off valve connection
			MC301EC R	Status and alarm messages volt free

Intermediate terminal box



Intermediate terminal box for connecting a maximum of 4 air-handling units:
- Plastic casing for on-wall mounting with sufficient space for loop-in wiring
- Protection class: IP 54
- Row terminal strips: 2.5 mm^2
- Dimensions (WxHxD): 270 x 220 x 105 mm

Operating mode	Terminal box type	Motor design/ motor mode	Control unit type
Recirculating air	**981 840**	AC Motor, 1 speed, 1 x 230 V AC 50 Hz	**MC4U1AC.000**
	981 860	AC Motor, 2 speed, 3 x 400 V AC 50 Hz	**MC4U2AC.000**
	981 870	AC Motor, 3 speed, 3 x 400 V AC 50 Hz	**MC4U3AC.000**
	981 890	EC Motor, continuous,1 x 230 V AC 50 Hz	**MC301EC**

Thermostat models

Room thermostat 902105

Room thermostat for surface mounting:
- Setpoint setting: 10 °C to 30 °C
- Bimetal system with thermal feedback
- Change-over contact: 10 A ohm./3 A ind. 250 V~ AC
- Switching difference: ± 0.5 K
- Plastic casing for on-wall mounting white
- Protection class: IP30
- Dimension in mm (W x H x D): 84 x 84 x 40 mm

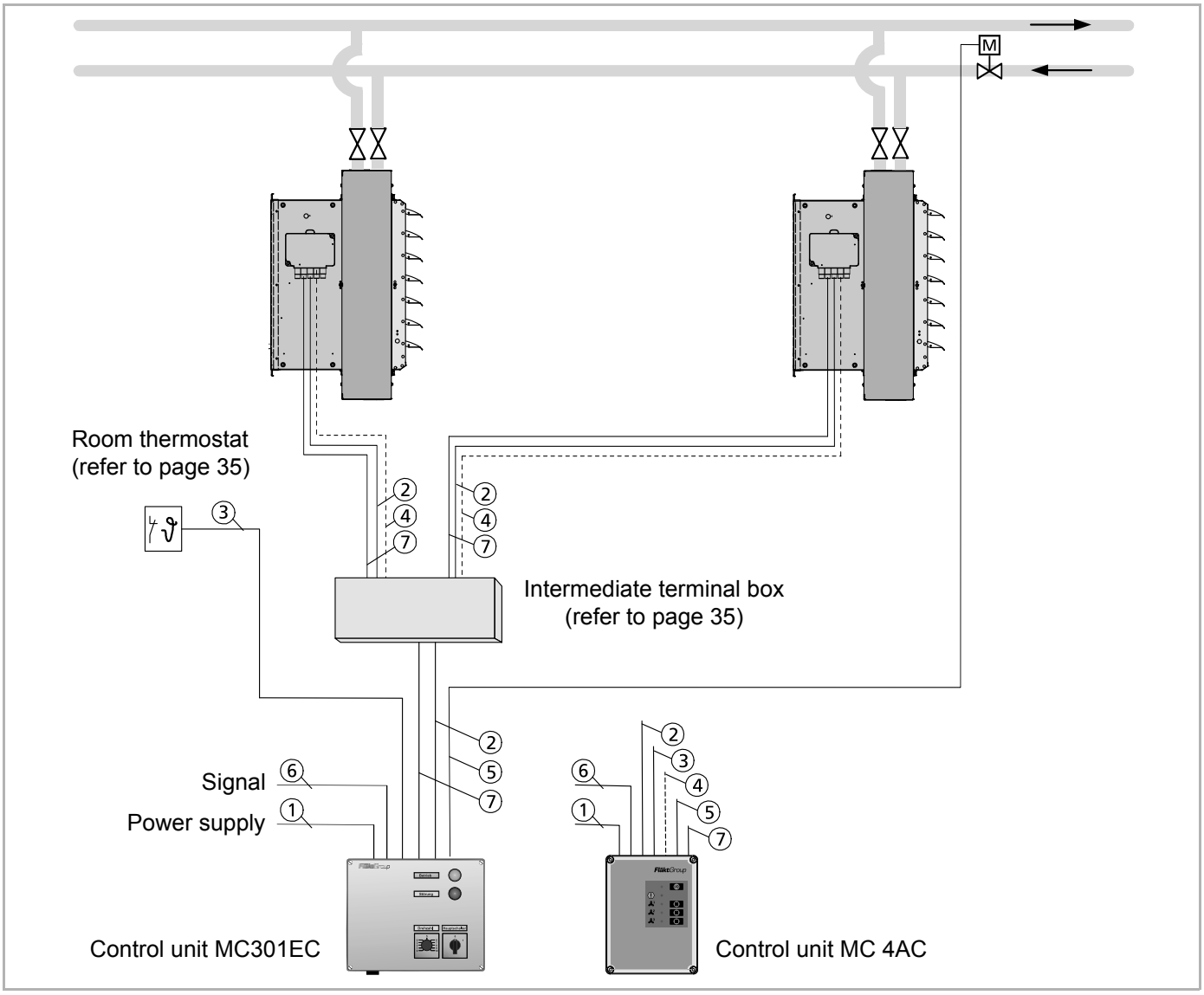
FläktGroup Industrial thermostat 902113

Measurement of room temperature, with plastic casing and closed capillary system:
- Setpoint range: 0 ... 60 °C
- Sensor coil: copper nickel-plated
- Protection class: IP 54
- Switching difference:1.5 +/- 1 K
- Outlet:change-over contact:
  NC: 16 (6) A 250 V
  NO: 6 (4) A 250 V
- Dimension (W x H x D): 96 x 135 x 87 mm

FläktGroup programmable room thermostat 902110

For regulating the unit due to the measured room temperature:
- Day/Night mode, week programme, 2x battery AA
- Setpoint range: +5 ... 35 °C
- Ambient temperature: 0 ... 45°C
- Protection class: IP 30
- Outlet: 230 V AC: 0.5 - 5 A ohmic, 0.5 - 3 A inductive
  24 V AC: 0.5 - 5 A ohmic, 0.5 - 3 A inductive
- Dimension (W x H x D): 136 x 97 x 26 mm

Unit group with MultiMAXX HB recirculating-air units with MC301/MC4 control units



Required number of wires

Control unit	MC301 EC 1x230 V	MC4U1AC 1x230 V	MC4U2AC 3x400 V	MC4U3AC 3x400 V
Cable 1 (power supply)	3	3	5	5
Cable 2 (fan motor)	3	3	7	10
Cable 3 (room thermostat)	3	3	3	3
Cable 4 (EC motor control)	3	–	–	–
Cable 5 (valve)	2	2	2	2
Cable 6 (signal)	3	3	3	3
Cable 7* (Thermal contact for AC-motor) (Error output for EC-motor)	2	2	2	2

** Shielded cable*

Fan motors of the FläktGroup Multi*MAXX* HB unit heaters are standard fitted with thermal contacts (error output on the EC fan).

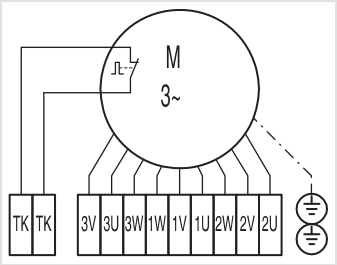
The fusing of the fan motor is performed by connecting thermal contact to a FläktGroup switch box and using fan motor internal temperature with unit disconnection in fault case. If the FläktGroup unit is operated by an external regulation system the thermal contact must be incorporated in the safety circuit. In this case FläktGroup can not assume any warranty obligations for such unit.

Notice!
If the 400 V fan motor is rotating in the wrong direction, two phases must be reversed.

Motor terminal diagram for 3-speed external rotor AC motor 3 x 400 V, 50 Hz (C, S)

- With thermal contacts
- With pole-changing capability
- Winding ΔΔ/YY/Δ
- Without voltage change-over!
- Operating voltage: refer to unit identification plate

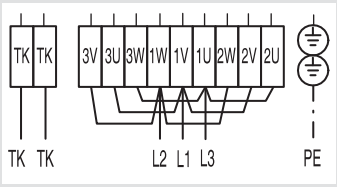
3-speed operating mode



- with three-speed control unit (MC4)
- Connection cable: 9 + PE = 10 wires
- Electrically screened cable: 2 TC connecting wires

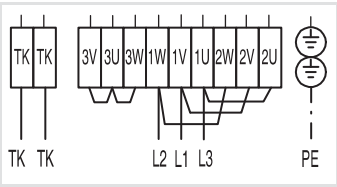
1-speed operating mode

- Connection cable: 3 + PE = 4 wires
- Electrically screened cable: 2 TC connecting wires



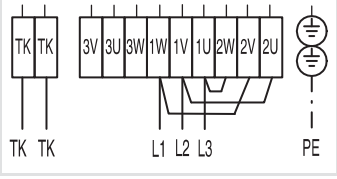
High speed

or



Medium speed

or

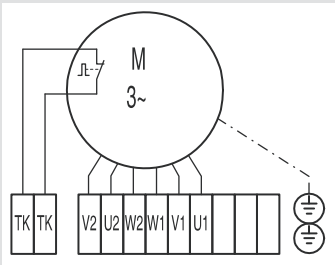


Low speed

Motor terminal diagram for 2-speed three-phase external rotor AC motor 3 x 400 V, 50 Hz (A, B, R)

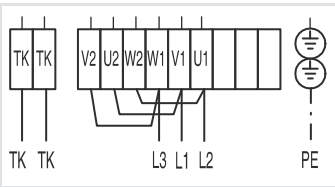
- With thermal contacts
- Slip regulator
- Winding D/Y
- Without voltage change-over!
- For operating voltage refer to the unit identification plate.

2-speed operating mode



- with two-speed control unit (MC4)
- Connection cable: 6 + PE = 7 wires
- Electrically screened cable: 2 TC connecting wires

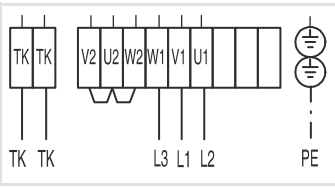
1-speed operating mode



- Connection cable: 3 + PE = 4 wires
- Electrically screened cable: 2 TC connecting wires

High speed

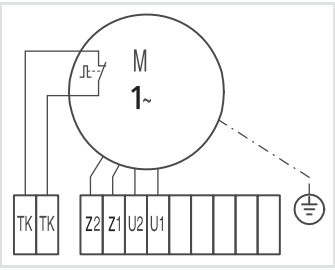
or

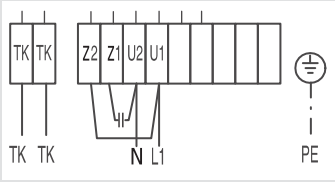


Low speed

Motor terminal diagram for 1-speed single-phase AC motor 1 x 230V, 50 Hz (E)

1-speed operating mode

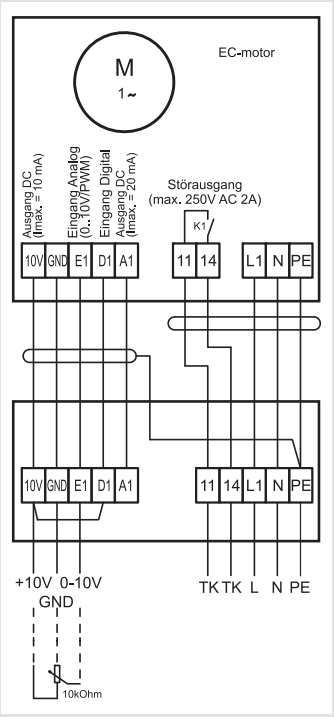




- With thermal contacts
- Operating voltage: refer to unit identification plate
- with one-speed control unit (MC301)
- Connection cable: 2 + PE = 3 wires
- Electrically screened cable: 2 TC connecting wires

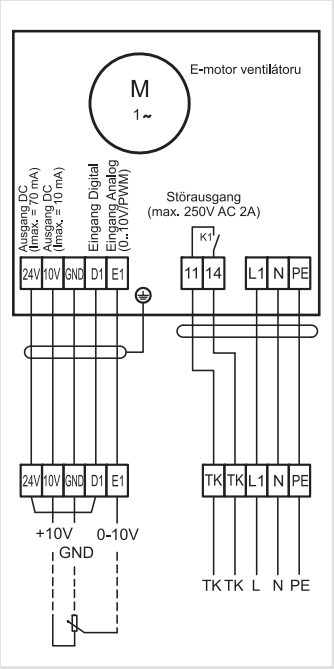
Motor terminal diagram for continuously variable EC fan motor 1 x 230 V, 50 Hz (Y)

Model size 1, 2, 3



- with error output
- Operating voltage: 1 x 230V
- with FläktGroup one-speed control unit (MC301EC)
- Connection cable: 2 + PE = 3 wires
- Electrically screened control cable: 3 connecting wires
- Electrically screened cable: 2 TC connecting wires

Model size 4



FläktGroup

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FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

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Air Management | Air Conditioning & Heating | Controls | Service

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