



Dehumidification unit

type ..01 AF-MC-EC

Function description

Technical data

SET Fresh air - exhaust air - air dehumidifying units with heat recovery ...01 AF-MC

The air dehumidifying units of production series ..01 AF-MC are equipped with a heat pump. Different unit outputs treat the air luxurious private swimming pools and the smaller indoor pools of community associations, small hotels and small medical facilities or in sporting and leisure areas.

The air dehumidifying units ensure the complete dehumidification, heating and ventilation of the adjoining spaces. Additional fixtures for room heating are not required.

Unit functions, Function description

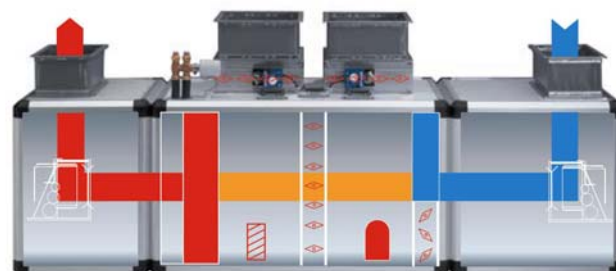
Air dehumidifying units from SET Schmidt Energietechnik have been developed and constructed especially for use in swimming pools. The use of premium and corrosion resistant materials ensures a long lifespan of the air dehumidifying units. Different surface coatings and finishes enable application for almost any purpose. Also available are titanium heat exchangers for thermal or salt water.

Every swimming pool must be dehumidified, ventilated and heated in order to guarantee a pleasant indoor climate and to avoid structural damage. Simple air extraction from the pool hall uses a great deal of energy, which can be significantly reduced by the heat recovery of an air dehumidifying unit.



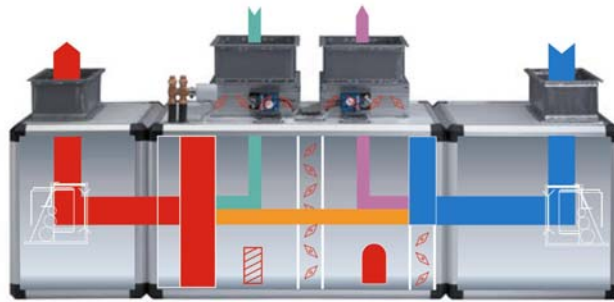
Heat

Heating the swimming area with the pumped hot water heater battery in air circulation mode.



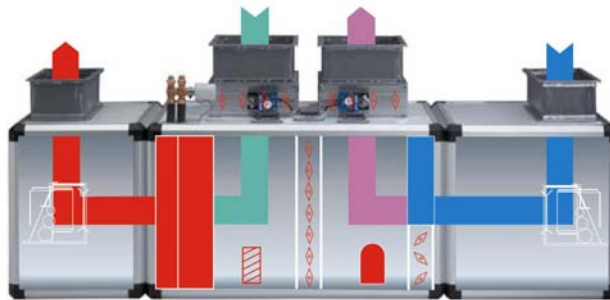
Dehumidification during low use

Dehumidification is effected in circulating air operation by cooling the swimming pool air on the evaporator of the heat pump. The dehumidified air is heated on the condenser of the heat pump using the heat pump heat recovery resulting from dehumidification. Optionally a heat recovery output from dehumidification is possible for the pool water.



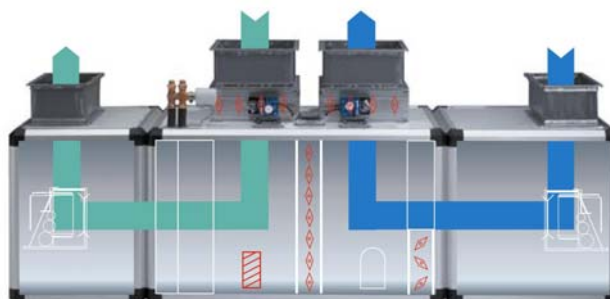
Dehumidification during swimming use with a proportion of fresh air

Dehumidification is effected in fresh air-/exhaust air operation by cooling and dehumidifying the swimming pool air on the evaporator of the heat pump. The dehumidified air is directed outside in a branch current. The remaining part of the dehumidified air is heated with the proportion of fresh air on the condenser of the heat pump using the heat pump heat recovery resulting from dehumidification. Optionally a heat recovery output from dehumidification is possible for the pool water. During the colder months the opening of the fresh air-/exhaust air valves is restricted by regulation.



Dehumidification during swimming use with 100% fresh air

Dehumidification is effected in fresh air-/exhaust air operation by cooling the swimming pool air on the evaporator of the heat pump. The dehumidified air is directed outside. The fresh air is heated on the condenser of the heat pump using the heat pump heat recovery resulting from dehumidification. Optionally a heat recovery output from dehumidification is possible for the pool water. Additional thermal energy for achieving the room temperature can be introduced via the pumped hot water heater battery. The fresh air considerably increases the dehumidification performance of the unit.



Summer dehumidification, cooling / ventilation

When outdoor temperatures are higher than the room target temperature, dehumidification is effected in fresh air-/exhaust air operation. The compressor does not work then.

Regulation

The DDC regulation MC 2001 undertakes all control and regulation functions of the swimming pool climate. The target values for temperature and humidity are set on the operation and display unit, which has a four-line LCD display. The fresh air mixture is controlled automatically and is regulated depending on the outdoor temperature and how the pool is used. During low use the system switches on when there is excess humidity or when the pool area temperature is exceeded and/or falls short; it switches off again when the operation target values are reached. If the temperature falls short, the system switches to air circulation mode and if humidity is exceeded to fresh air mode. Correspondingly, the heat valve continually regulates to the set target value. During low use and swimming use different target values can be set for temperature and humidity. Switching between low use and swimming use is done on the operation and display unit, via the optional clock module or optionally with an external switch, e.g. cover switch.

The air flow of the fans can be adjusted individually by the step-down transformers, frequency converters or speed controllers (on EC motors) on the duct system.

Thermal output to the pool water

All SET air dehumidifying units of production series ..01 AF-MC can optionally be installed with a pool water condenser. This is recommended for high water temperatures ($\geq 30^{\circ}\text{C}$) or when the room in question has low heat requirements. Overheating of the room with heat recovered from dehumidification can be avoided using the heat recovery output to the pool water.

Before delivery, SET air dehumidifying units undergo an extensive documented test run. This checks all device functions in the different operational areas and determines optimum settings. This ensures efficient operation within the customer system.

All devices can be dismantled into several parts for transportation. Assembly is simple and requires only a short time. The fully operational device wiring requires only the connection of the selected external consumer. The device parts are connected one beneath the other with plugs. Operational start-up can be carried out entirely by the system installation company.

Dehumidification unit type ..01 AF-MC-EC

1 Dehumidification unit type 01 AF-MC-EC

with heat recovery from a heat pump system for fresh air-/exhaust air operation, in basic configuration complete with Microcontroller MC 2001 and temperature and humidity sensors installed (optionally as room sensors), infinitely adjustable damper control, PWW with valve. Automatic mixing of the fresh air- / exhaust air rate from 0 – 100% according to mode of operation and target value deviation of the pool area,

consisting of:

3-part device housing (exhaust part, heat pump part, added air part), device housing of naturally anodised extruded hollow-chamber aluminium A6/CO with black plastic corners, plastic cover panels with integrated acoustic and thermal insulation, service cover with internal quick-release fasteners. Internal structures of Al Mg3. Flexible air connections with canvas supports (distance over hubs 20 mm), installed therein:

- 1 heat pump unit with safety refrigerant R 407 C, consisting of:
 - 1 fully hermetic engine compressor, vibration-cushion mounted
 - 1 crankcase heater
 - 1 air cooler (evaporator) of CU pipe with pressed-on alu-blades, coated
 - 1 air heater (condenser) of CU pipe with pressed-on alu-blades, coated
 - 1 expansion valve (thermal and external pressure balance), coated
 - 1 low pressure switch
 - 1 high pressure switch (TÜV tested)
 - 1 dryer
 - 1 inspection glass with indicator
 - 1 refrigerant collector
 - 1 cooling piping of CU pipe, inc. condensation insulation
 - 1 opposing bypass damper, manually adjustable, frames of extruded aluminium, blades of hollow-chamber aluminium inlaid with special seals and plastic cogs
- 3 air control dampers, frames of extruded aluminium, blades of hollow-chamber aluminium inlaid with special seals and plastic cogs
- 1 air filters G4, removable
- 3 damper motors 24 V
- 1 pumped hot water heater battery of CU pipe with pressed-on alu-blades inc. 3-way valve with continuous drive
- 1 frost protection facility via MC 2001
- 1 outdoor temperature sensors via MC 2001

Dehumidification unit type ..01 AF-MC-EC

Added air part and exhaust part, each consisting of

- 1 fan unit with EC-engine for energy saving operation across all load ranges with the highest degree of efficiency as a freely running, backward curved radial impeller, directly driven by external rotary engine as EC engine, fan unit to VDI standard 2060, Goods class Q 6.3, dynamically balanced in two planes, meeting EN 610200-3-2, speed infinitely adjustable by speed controller, engine in safety class IP 54, ISO class F, motor protection self-protecting

1 SET Microcontroller MC 2001

consisting of:

Control cabinet with structured stove enamel, or stainless steel, control cabinet doors with tightly closing rubber seals and quick-release fasteners, alternatively installed in device. Fuses, overcurrent release, contacts, and connection cable with multipoint connector for dehumidification unit control cabinet wiring to VDE, fully wired for external pumps etc.

Hardware

operation and display unit with input and function button field, four line LCD display, illuminated, for actual/target value display damper positions, hours of operation and message texts as well as coloured LEDs for operation and fault reporting, 1 main switch. Microprocessor, digital and analogue inputs and outputs, digital relay outputs, summer and alarm relay, sensors for the measurement of outdoor temperature, added air temperature and humidity are built into the device and fully wired.

Preparation of a modem interface for maintenance and remote operation.

Software

Control functions:

- Pool area temperature regulation
- Humidity regulation
- Control of fresh air mixture, automatically regulated depending on the outdoor temperature and how the pool is used.
- Mode of operation selector
- Error messages
- Filter monitoring
- PWW pumps activation

During low use mode the system switches on when there is excess humidity or when the pool area temperature is exceeded and/or falls short; it switches off again when the operational target values are reached.

If the temperature falls short, the system switches to air circulation mode and if humidity is exceeded to defined fresh air mode.

Installed as standard is a sensor for temperature and humidity (minimum circulating air always "on").

Dehumidification unit type ..01 AF-MC-EC

Technical data

Dehumidification	..	kg/h
Dehumidification capacity to VDI 2089	..	kg/h
Air flow	..	m ³ /h
Added air		
external pressure drop	max.	.. Pa
Sound pressure level LpA in 1m	..	dB(A)
Added air fan		
Nominal power	..	kW
Nominal current	..	A
Exhaust		
external pressure drop	max.	.. Pa
Sound pressure level LpA in 1m	..	dB(A)
Exhaust fan		
Nominal power	..	kW
Nominal current	..	A
Compressor		
Operating current on average	..	A
Power input on average	..	kW
Air heat recovery	..	kW
PWW air heater capacity (80/60°C)	..	kW
Water volume	..	m ³ /h
Drag (inc. valve)	..	kPa
NT PWW air heater capacity (50/40°C)	..	kW
Water volume	..	m ³ /h
Drag (inc. valve)	..	kPa
Feed-in	AC 400 V 3 N	
Total connected load	..	kW
Preliminary fuse (time-delay)	..	A
Control voltage	DC 24 V	
Switchbox/device safety class	IP 55 / 33	
Operating weight	..	kg
Dimensions W x H x D	..	mm
largest transport unit W x H x D	..	mm

Brand SET Schmidt Energietechnik, Hemmingen
 Type ..01 AF-MC-EC
 Supply from factory €

Dehumidification unit type ..01 AF-MC-EC

1 Pumped Hot Water Heater Battery PWW Low Temperature

installed in place of the available heater battery in the dehumidification unit ready for operation, for connection to the available building heating, inc. regulation, pump activation and control valve, target value indicator and sensor included in MC 2001.

Heat performance PWW at 50/40°C	.....	kW
Flow rate	.....	m ³ /h
Pressure decrease inc. valve	.....	kPa

Type	NT-PWW AF-MC	
Supply from factory		€

1 Electro heater battery for duct installation

constructed ready for operation in dehumidification unit, chassis with flange or aluminium with built-in temperature monitor and temperature limiter to VDE 0110/11.72,

Heat performance	.....	kW
Feed-in	AC ... V . N	

Type	EHZ AF-MC	
Supply from factory		€

1 Pool water heat exchanger of titanium

for the release of heat recovery into the pool water, fully wired installed in dehumidification unit, regulated on the cooling side, complete with electronic temperature regulation using MC 2001. With flow monitor, the pool water heat exchanger deactivates when there is insufficient water,

1 pool water sensor is supplied unconnected

Power from / to	..... /.....	kW
Flow rate	.....	m ³ /h
Pressure decrease	.....	kPa

Type	WRGAF Titan	
Supply from factory		€

1 Room sensor

for installation in the swimming pool area, instead of installed sensors

Type	RF	
Supply from factory		€

Dehumidification unit type ..01 AF-MC-EC

1 MC 2001 Real-time clock module

Real-time clock and storage module with popular back-up battery for powercut-proof memory of the time, and to enable time-programmed periods of swimming use and low use. Factory installed and configured ready for operation

Type	Uhr	
Supply from factory		€

1 Remote indication (additional control panel)

(up to 50 m distance from main device) consisting of:
2nd operation and display unit with input and function button field, four line LCD display, illuminated, for actual/target value display, damper positions, Hours of operation and message texts as well as coloured LEDs for operation and fault reporting (with acoustic alarm)

Type	BDT 2	
Supply from factory		€

1 Humidity displacer

Further regulation for the “displacement” of room humidity depending on the outdoor temperature. When room humidity falls short of the dew point on a building component it is reduced by regulation.

Adjustment to the selected building component is made by adaptation within regulation.

1 building component sensor is supplied unconnected

Type	FS	
Supply from factory		€

1 Temperature displacer

Further regulation for the “displacement” of room temperature depending on the pool water temperature.

Room temperature follows pool water temperature at a selected margin (0 - 9K).

1 pool water sensor is supplied unconnected

Type	TS	
Supply from factory		€

1 Remote control module

Further regulation for the remote control of the air dehumidifying units with the on-site central controller OSPA Bluecontrol.

Type	OSPA	
Supply from factory		€

Dehumidification unit type ..01 AF-MC-EC

1 Further regulation RS 485

Further regulation for the remote control of the air dehumidifying units,
MC 2001 interface RS 485 for communication with external control units,
implementation of the data point list takes place on site

Type	RS 485	
Supply from factory		€

1 Pocket filter for duct installation

Air filter F5 in housing for installation in the air duct

Type	TFK ..01 AF ...	
Supply from factory		€

1 Filter monitoring with display on MC 2001

Type	FÜ	
Supply from factory		€

Technical data

Device type		3601 AF-MC-EC	4601 AF-MC-EC	6601 AF-MC-EC	8601 AF-MC-EC
Water surface up to approx. ¹	m ²	40-50	40-60	50-75	70-100
Air flow	m ³ /h	1.000	1.200	1.400	2.500
Dehumidification (30°C / 60% r.h.)	kg/h	3,3	4,1	6,1	8,2
Dehumidification capacity to VDI 2089	kg/h	6,3	7,6	8,9	15,9
Fresh air proportion	%	0-100	0-100	0-100	0-100
Added air external pressure drop	Pa	240	240	240	240
Sound pressure level LpA in 1m	dB(A)	57	57	57	61
Added air fan nominal power	KW	0,3	0,3	0,3	0,77
Added air fan nominal current	A	1,4	1,4	1,4	1,4
Exhaust external pressure drop	Pa	260	260	260	240
Sound pressure level LpA in 1m	dB(A)	55	55	55	59
Exhaust fan nominal power	kW	0,3	0,3	0,3	0,77
Exhaust fan nominal current	A	1,4	1,4	1,4	1,4
Compressor operating current on average	kW	1,6	1,54	1,94	2,23
Compressor power input on average	A	3,3	3,0	3,7	4,2
Air heat recovery	kW	3,9	4,8	7,1	9,0
PWW air heater capacity (80/60°C)	kW	10,0	11,2	12,2	20,0
Water volume	m ³ /h	0,45	0,5	0,55	0,9
Drag (inc. valve)	kPa	5	6	6	10
NT PWW air heater capacity (50/40°C)	kW	5,7	6,7	7,6	12,0
Water volume	m ³ /h	0,5	0,6	0,7	1,1
Drag (inc. valve)	kPa	10	11	12	10
Control voltage		DC 24 V			
Feed-in		AC 400 V 3 N			
Total connected load	kW	2,5	2,5	3,0	4,0
Preliminary fuse (time-delay)	A	3 x 10	3 x 10	3 x 16	3 x 16
Operating weight	kg	130	140	155	220
Dimensions W x D x H	mm	2240 x 740 x 640			2880 x 790 x 740
largest transport unit W x D x H	mm	1100 x 740 x 640			1400 x 790 x 740

¹ Ambient air condition + 30°C / 60 - 80% r. h., Pool water temperature 27 - 28 °C

Technical data

Device type		3601 AF-MC 2800 EC	4601AF-MC 2800 EC	6601 AF-MC 2800 EC	8601 AF-MC 3200 EC
Water surface up to approx. ¹	m ²	40-50	40-60	50-75	70-100
Air flow	m ³ /h	2.800	2.800	2.800	3.200
Dehumidification (30°C / 60% r.h.)	kg/h	3,3	4,1	6,1	8,2
Dehumidification capacity to VDI 2089	kg/h	17,8	17,8	17,8	20,3
Fresh air proportion	%	0-100	0-100	0-100	0-100
Added air external pressure drop	Pa	240	240	240	240
Sound pressure level LpA in 1m	dB(A)	65	65	65	66
Added air fan nominal power	KW	0,77	0,77	0,77	0,8
Added air fan nominal current	A	1,4	1,4	1,4	1,5
Exhaust external pressure drop	Pa	240	240	240	240
Sound pressure level LpA in 1m	dB(A)	63	63	63	64
Exhaust fan nominal power	kW	0,77	0,77	0,77	0,8
Exhaust fan nominal current	A	1,4	1,4	1,4	1,5
Compressor operating current on average	kW	1,6	1,54	1,94	2,23
Compressor power input on average	A	3,3	3,0	3,7	4,2
Air heat recovery	kW	3,9	4,8	7,1	9,0
PWW air heater capacity (80/60°C)	kW	20,2	20,2	20,2	23,0
Water volume	m ³ /h	0,9	0,9	0,9	1,0
Drag (inc. valve)	kPa	10	10	10	11
NT PWW air heater capacity (50/40°C)	kW	13,5	13,5	13,5	15,0
Water volume	m ³ /h	1,2	1,2	1,2	1,3
Drag (inc. valve)	kPa	11	11	11	12
Control voltage		DC 24 V			
Feed-in		AC 400 V 3 N			
Total connected load	kW	3,3	3,3	3,3	4,2
Preliminary fuse (time-delay)	A	3 x 16	3 x 20	3 x 20	3 x 25
Operating weight	kg	200	210	220	230
Dimensions W x D x H	mm	2880 x 790 x 740			
largest transport unit W x D x H	mm	1400 x 790 x 740			

¹ Ambient air condition + 30°C / 60 - 80% r. h., Pool water temperature 27 - 28 °C

Technical data

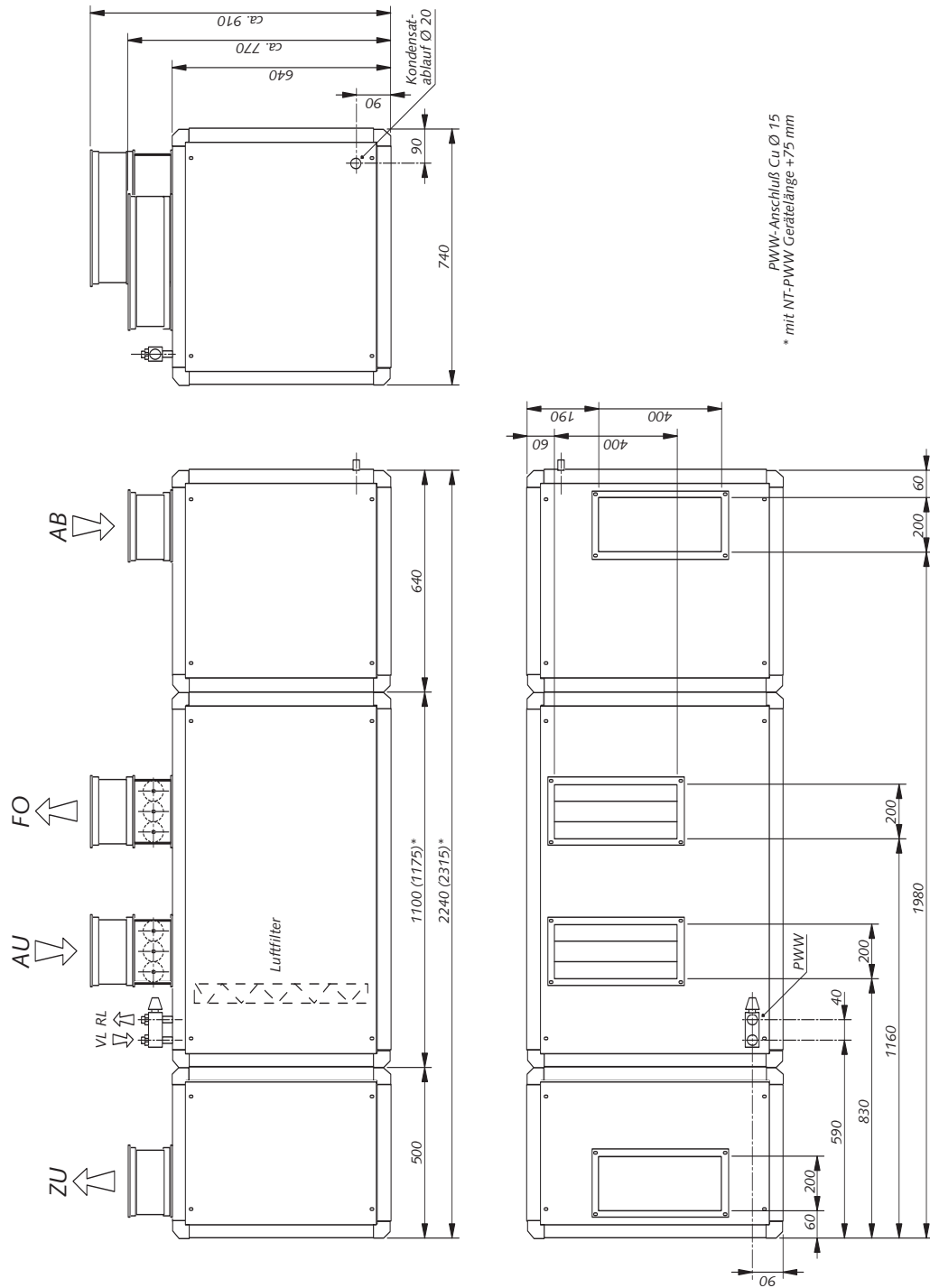
Device type		0401 AF-MC-EC	0501 AF-MC-EC	0601 AF-MC-EC
Water surface up to approx. ¹	m ²	100-130	130-160	150-190
Air flow	m ³ /h	4.000	5.000	6.000
Dehumidification (30°C / 60% r.h.)	kg/h	10,1	11,5	13,8
Dehumidification capacity to VDI 2089	kg/h	25,4	31,8	38,1
Fresh air proportion	%	0-100	0-100	0-100
Added air external pressure drop	Pa	350	350	350
Sound pressure level LpA in 1m	dB(A)	81	81	82
Added air fan nominal power	KW	1,0	1,1	1,1
Added air fan nominal current	A	4,4	4,4	4,6
Exhaust external pressure drop	Pa	400	400	400
Sound pressure level LpA in 1m	dB(A)	81	81	84
Exhaust fan nominal power	kW	0,95	1,0	1,0
Exhaust fan nominal current	A	4,1	4,1	4,1
Compressor operating current on average	kW	2,8	3,6	4,2
Compressor power input on average	A	5,0	6,0	7,0
Air heat recovery	kW	9,7	11,4	13,6
PWW air heater capacity (80/60°C)	kW	45,8	53,0	58,0
Water volume	m ³ /h	2,0	2,3	2,6
Drag (inc. valve)	kPa	16	16	16
Control voltage		DC 24 V		
Feed-in		AC 400 V 3 N		
Total connected load	kW	5,2	5,9	6,4
Preliminary fuse (time-delay)	A	3 x 20	3 x 20	3 x 25
Operating weight	kg	420	450	470
Dimensions W x D x H	mm	3825 x 985 x 985	3825 x 1185 x 985	
largest transport unit W x D x H	mm	2100 x 985 x 985	2100 x 1185 x 985	

¹ Ambient air condition + 30°C / 60 - 80% r. h., Pool water temperature 27 - 28 °C

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 3601 AF-MC-EC

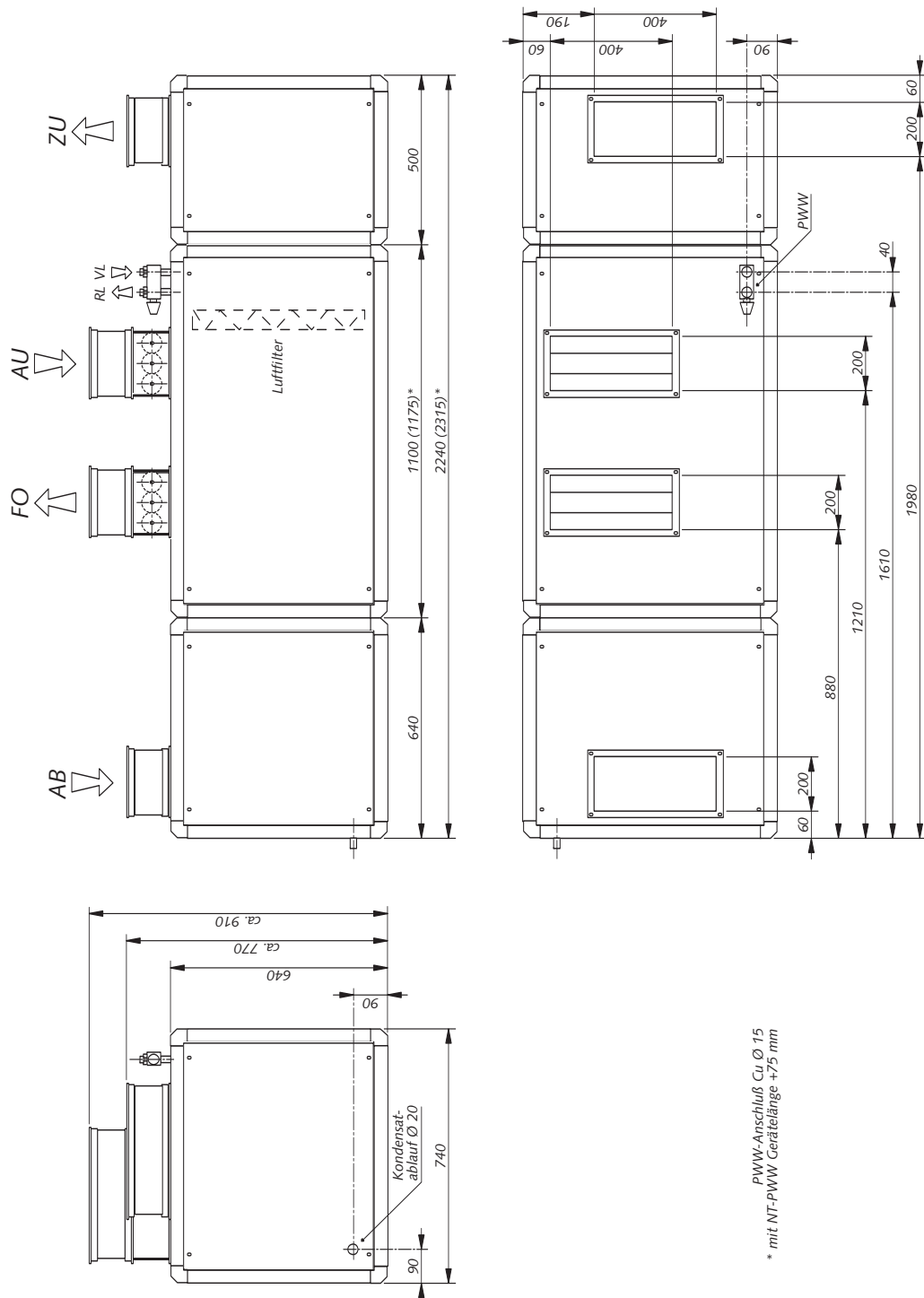


Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 3601 AF-MC-EC-S (spiegelverkehrt)

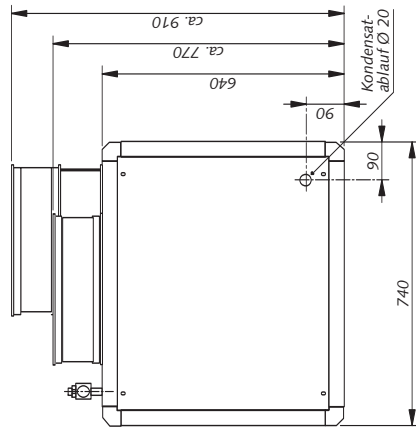


PWV-Anschluß Cu Ø 15
* mit NT-PWV Gerätelänge +75 mm

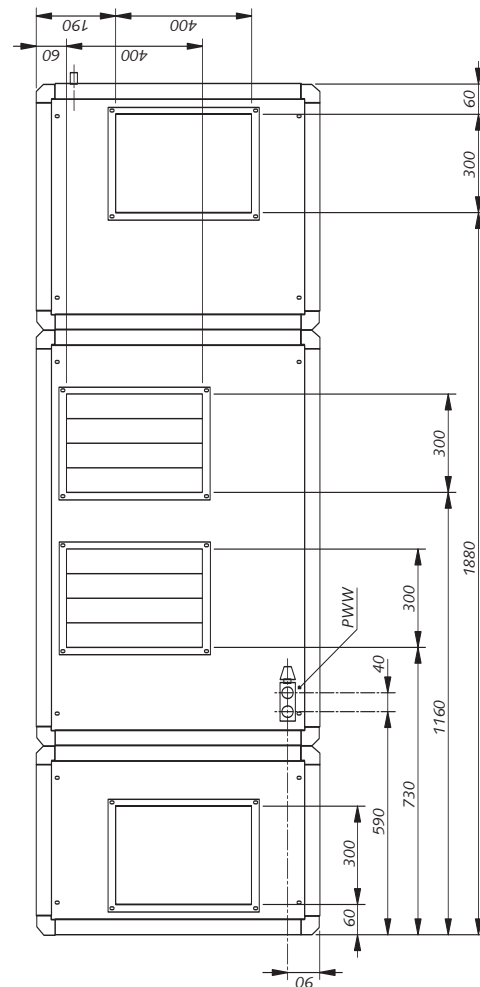
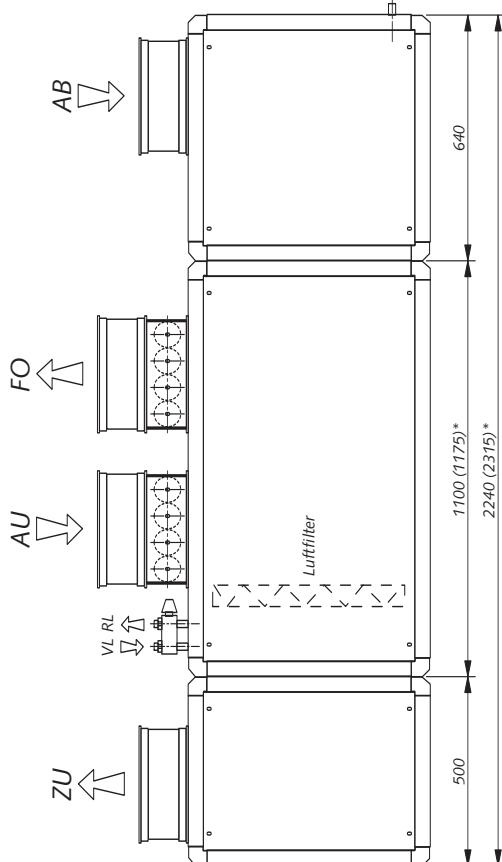
Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft
Typ 4601 und 6601 AF-MC-EC



PWW-Anschluß Cu Ø 15
* mit NT-PWW Gerätelänge + 75 mm

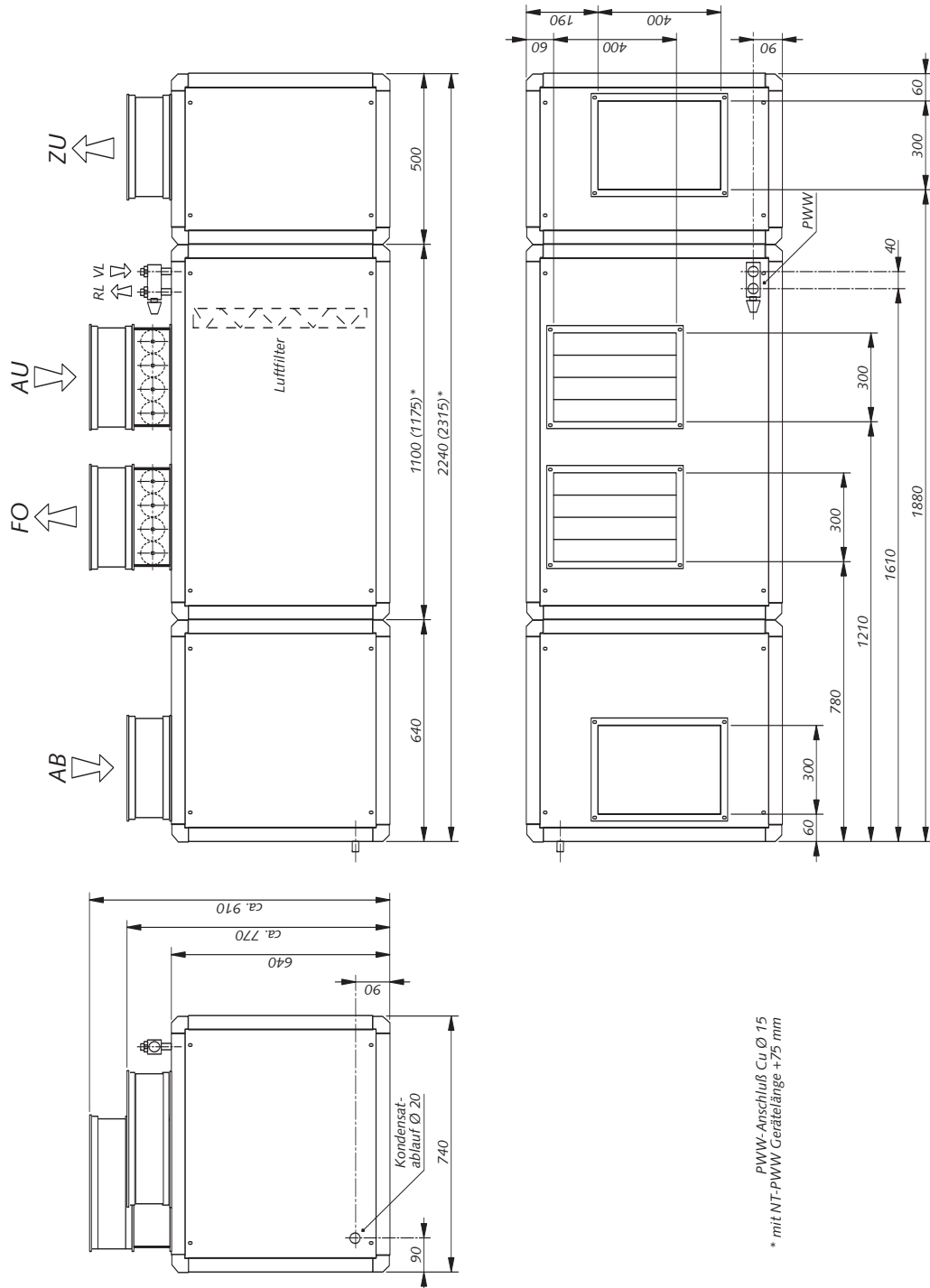


Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 4601 und 6601 AF-MC-EC-S (spiegelverkehrt)



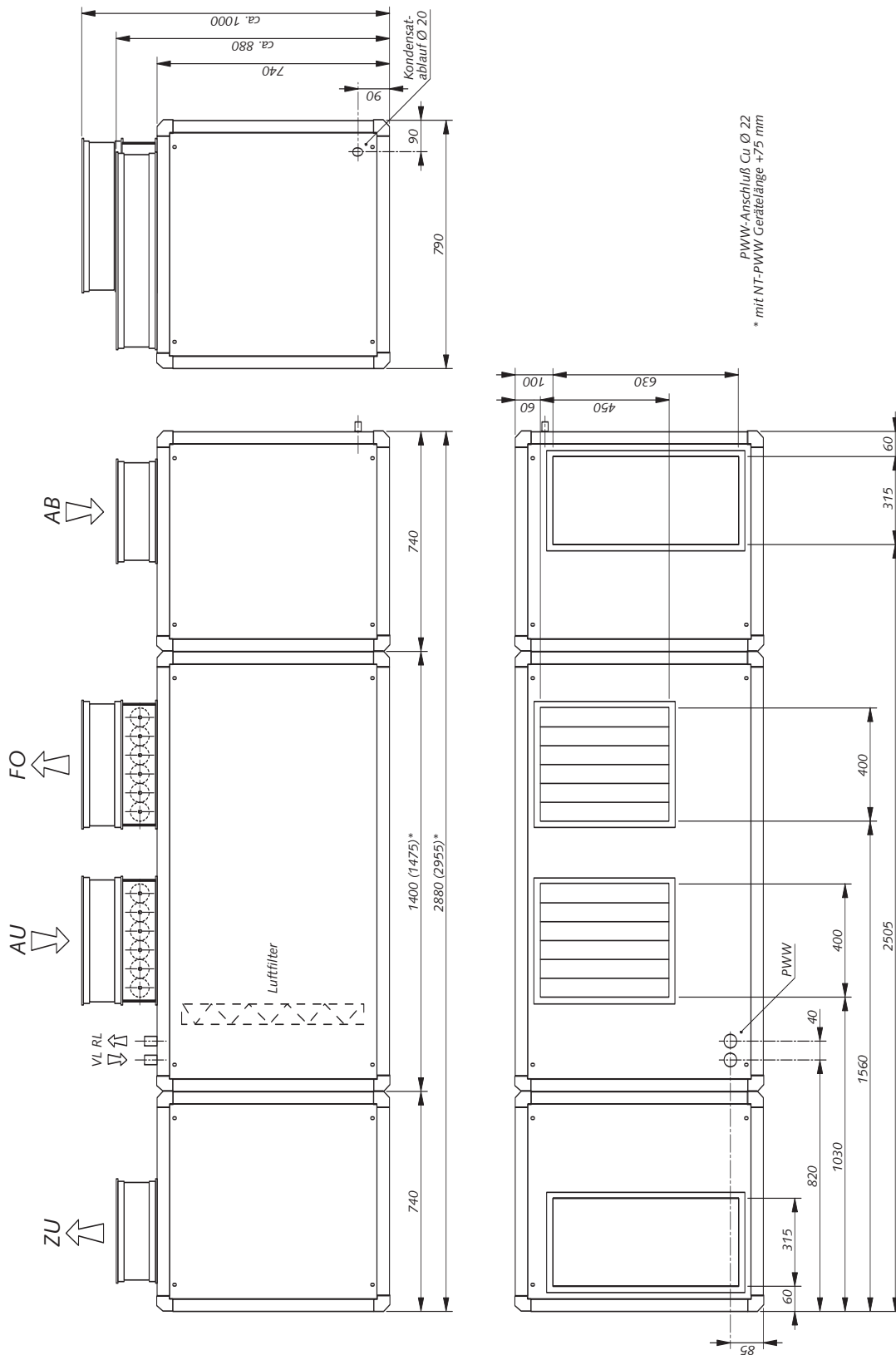
PWW-Anschluß Cu Ø 15
* mit NT-PWW Geräteränge +75 mm

Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

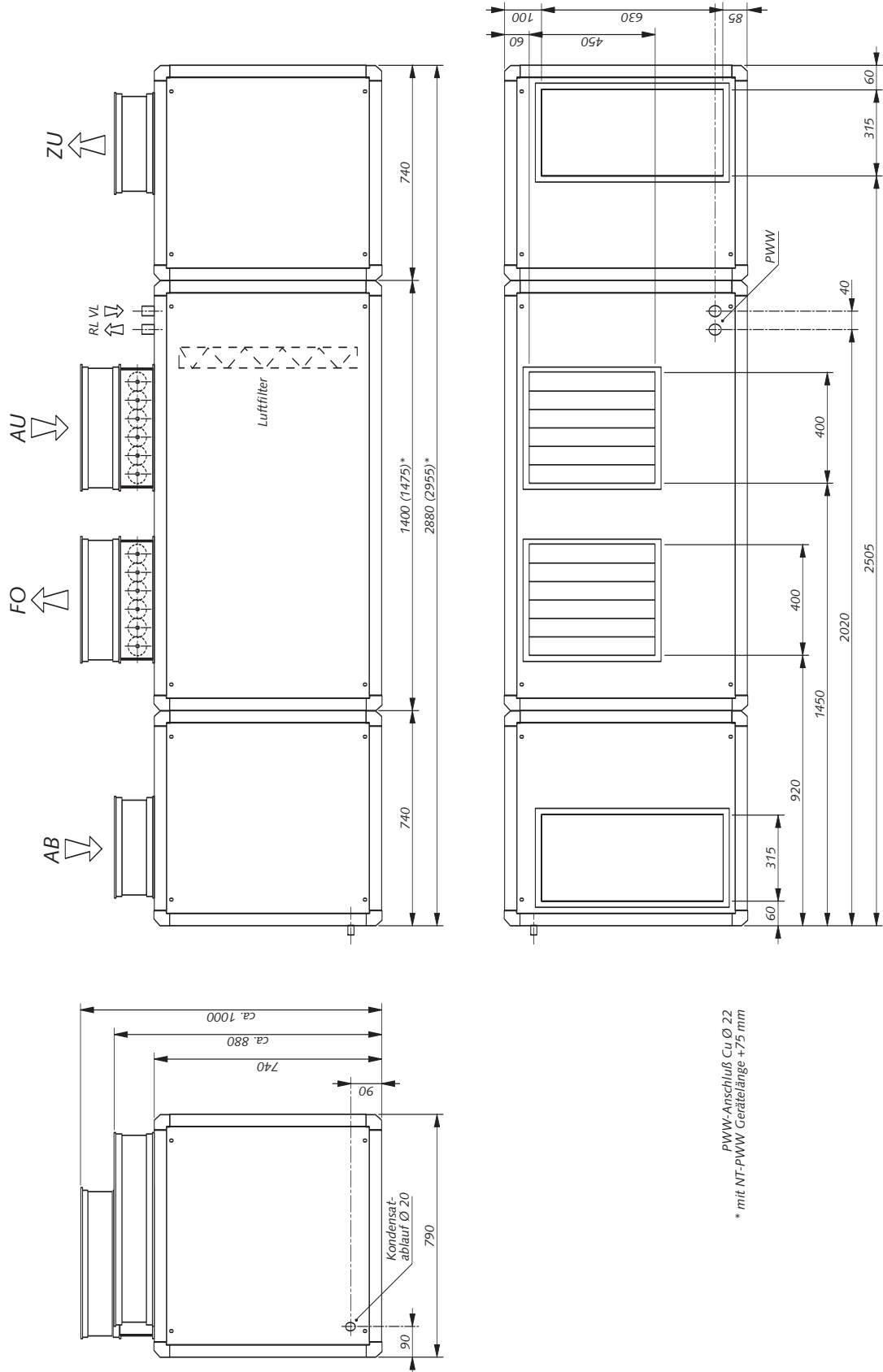
Typ 3601, 4601 und 6601 AF-MC-EC 2800, 8601 AF-MC-EC



Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft Typ 3601, 4601 und
6601 AF-MC-EC-S 2800, 8601 AF-MC-EC-S 3200 (spiegelverkehrt)



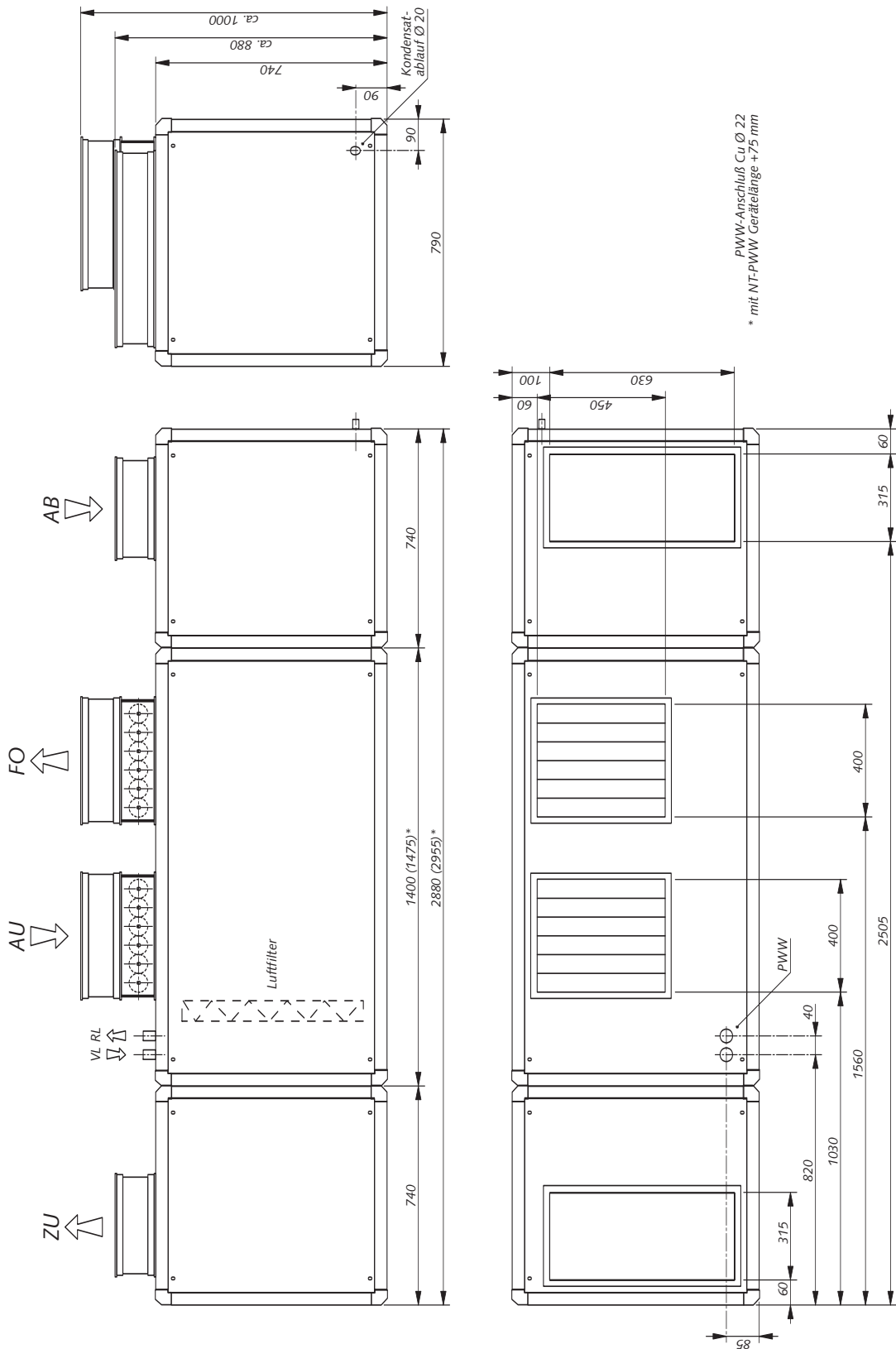
PWW-Anschluß Cu, Ø 22
* mit NT-PWW Geräteränge +75 mm

Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 8601 AF-MC-EC



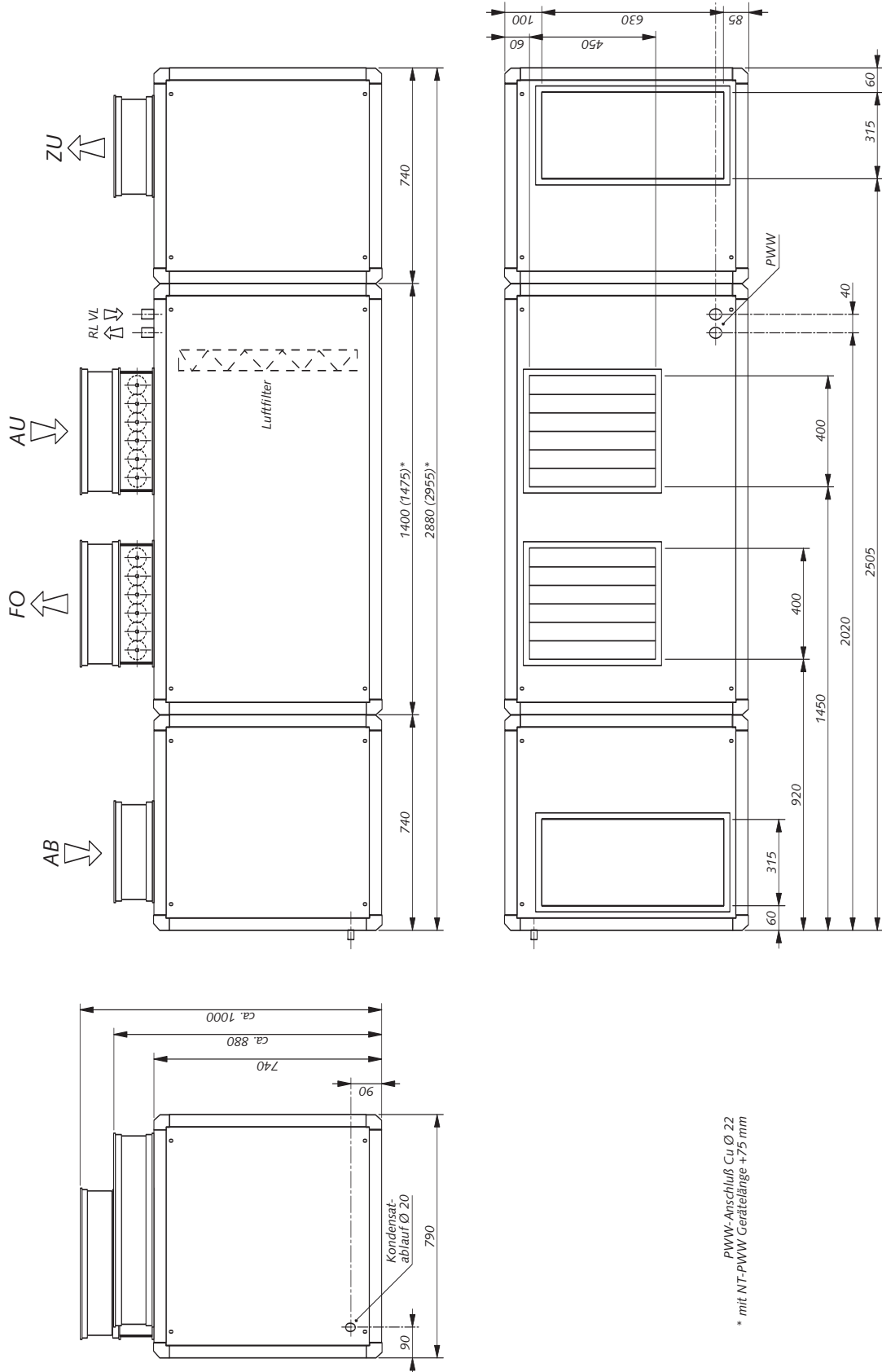
PWW-Anschluß Cu Ø 22
* mit NT-PWW Gerätelänge +75 mm

Technische Änderungen vorbehalten.

Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 8601 AF-MC-EC-S (spiegelverkehrt)



PWW-Anschluß Cu Ø 22
* mit NT-PWW Gerätelänge +75 mm

Technische Änderungen vorbehalten.

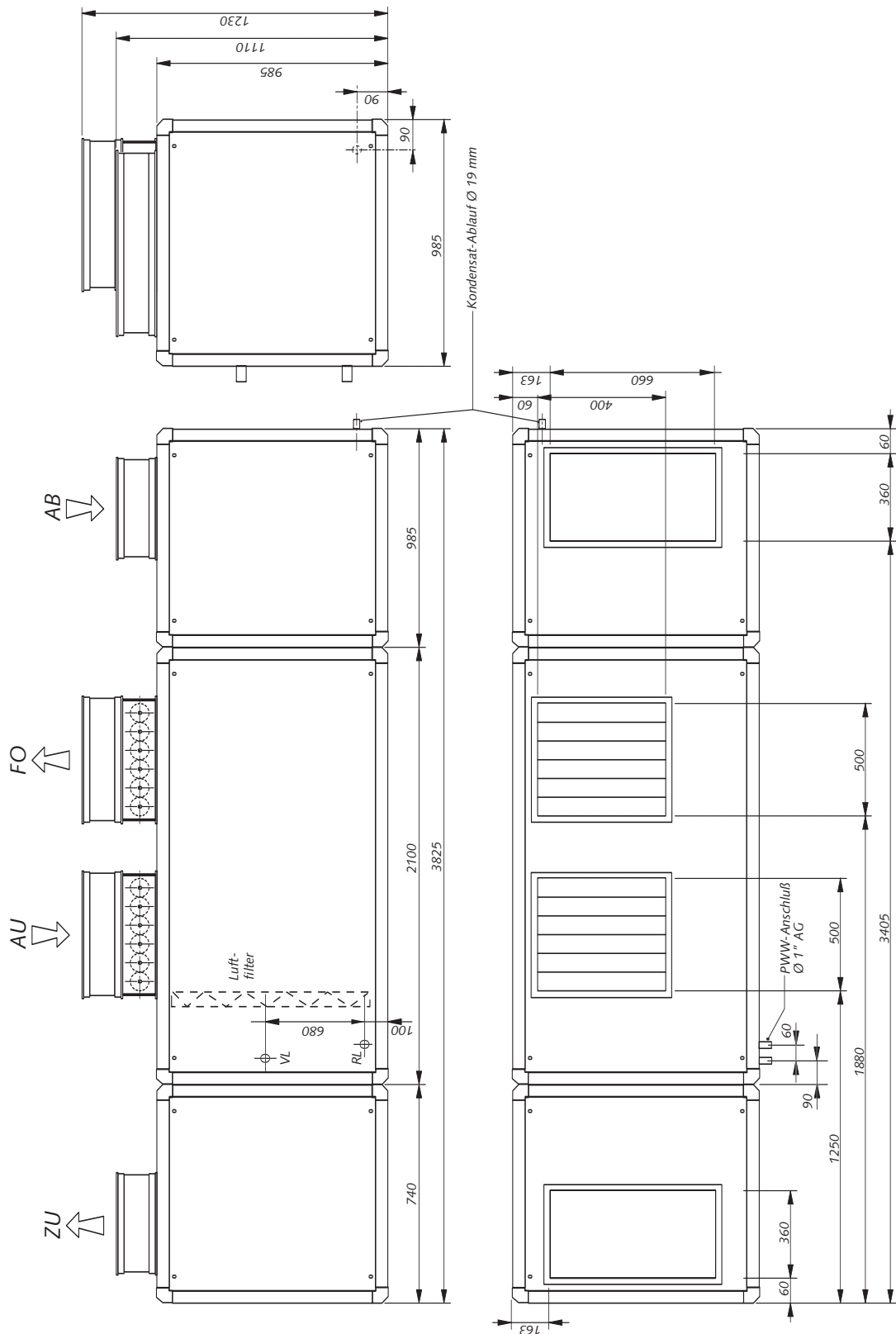
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Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 0401 AF-MC-EC



Technische Änderungen vorbehalten.

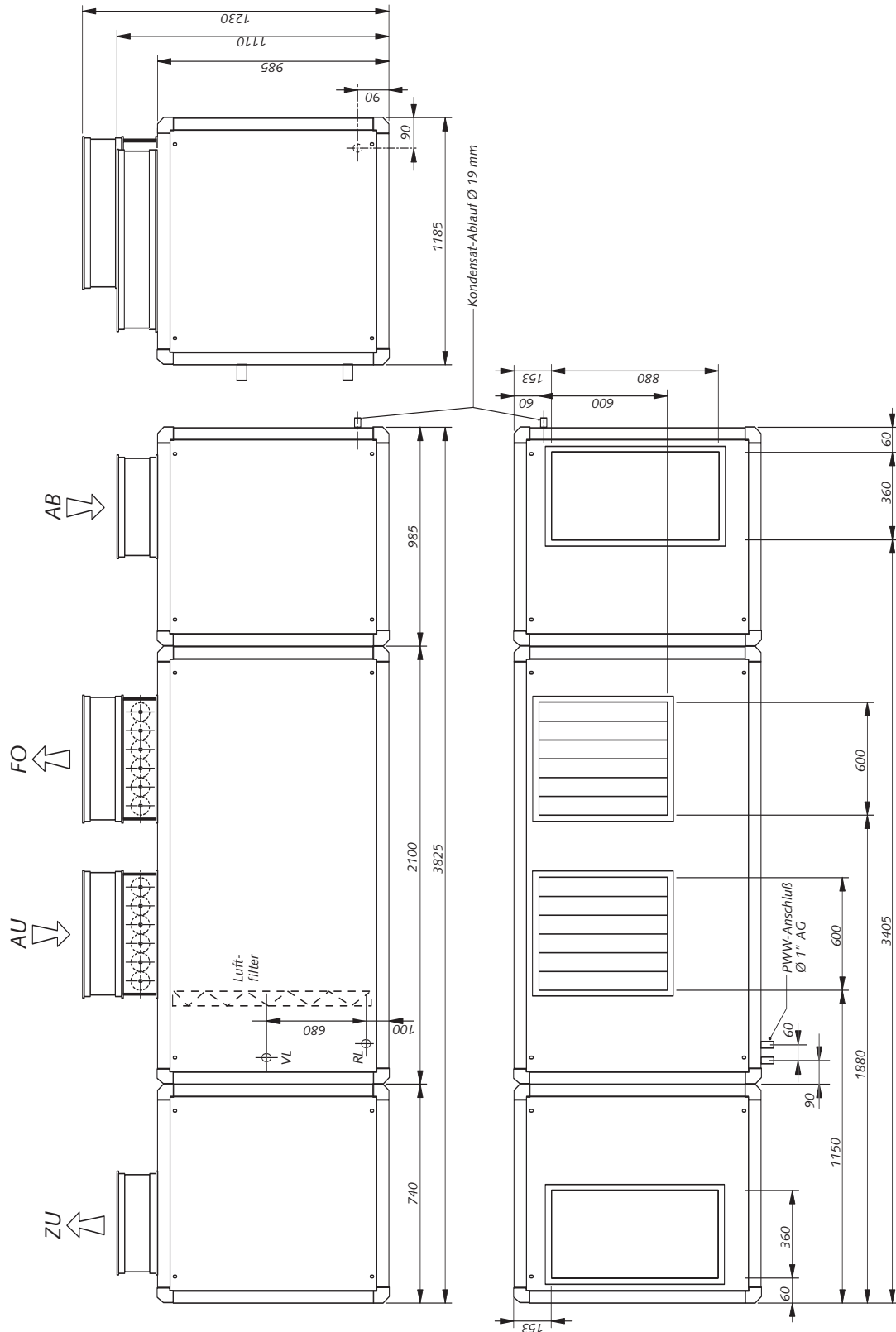
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Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft

Typ 0501 AF-MC-EC



Technische Änderungen vorbehalten.

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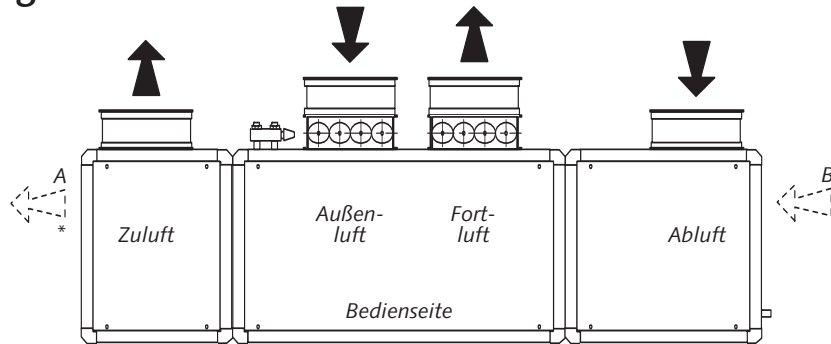
Maßblatt 01 AF-MC-EC

Kanalgeräte Außenluft-Fortluft
Anschlußmöglichkeiten

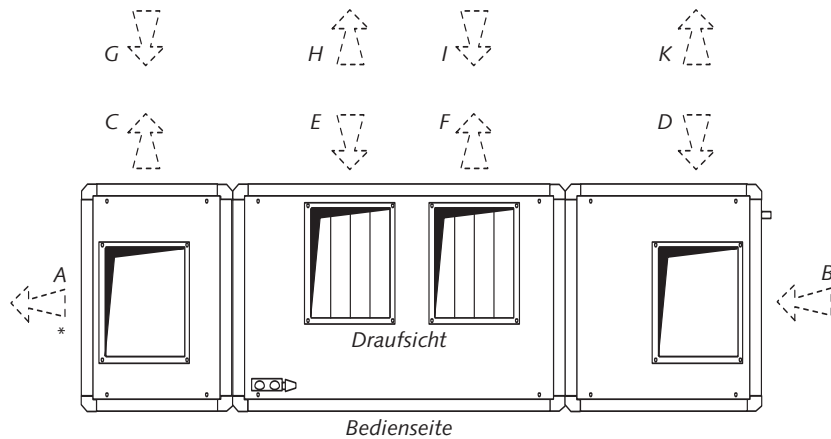


Luftseitige Anschlußmöglichkeiten bei Außenluft-Fortluftgeräten

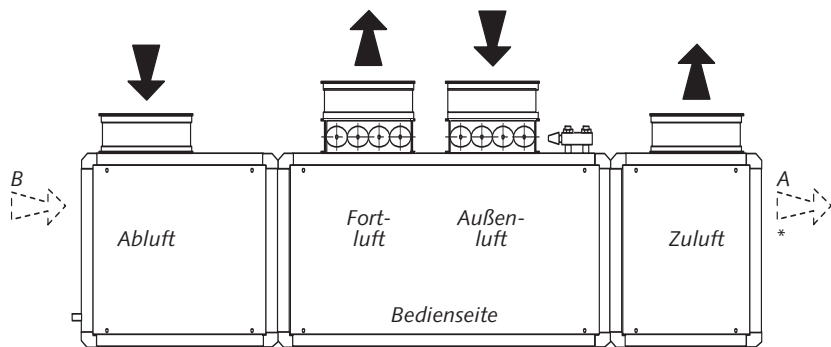
Standard-
ausführung



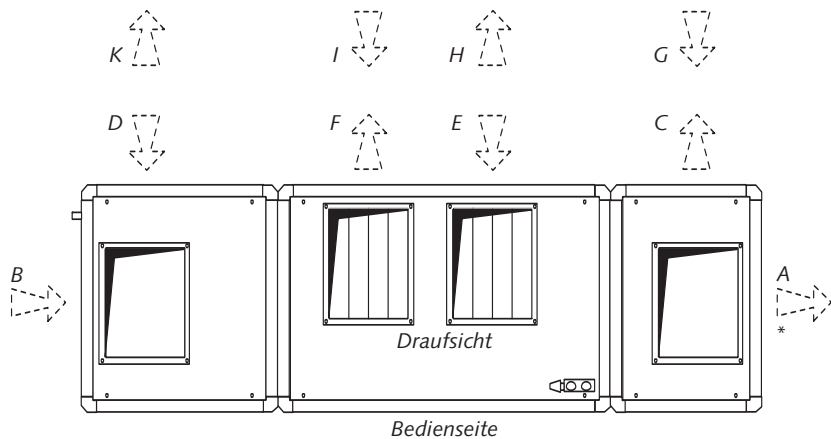
➔ *serienmäßig
alternativ
(bei Bestellung
angeben)*



Ausführung „S“
(spiegelverkehrt)



➔ *serienmäßig
alternativ
(bei Bestellung
angeben)*



* Bei Ausführung A
(Zuluft stirnseitig)
Gerätelänge +150 mm

Technische Änderungen vorbehalten.