



5.0 VarioCond model range



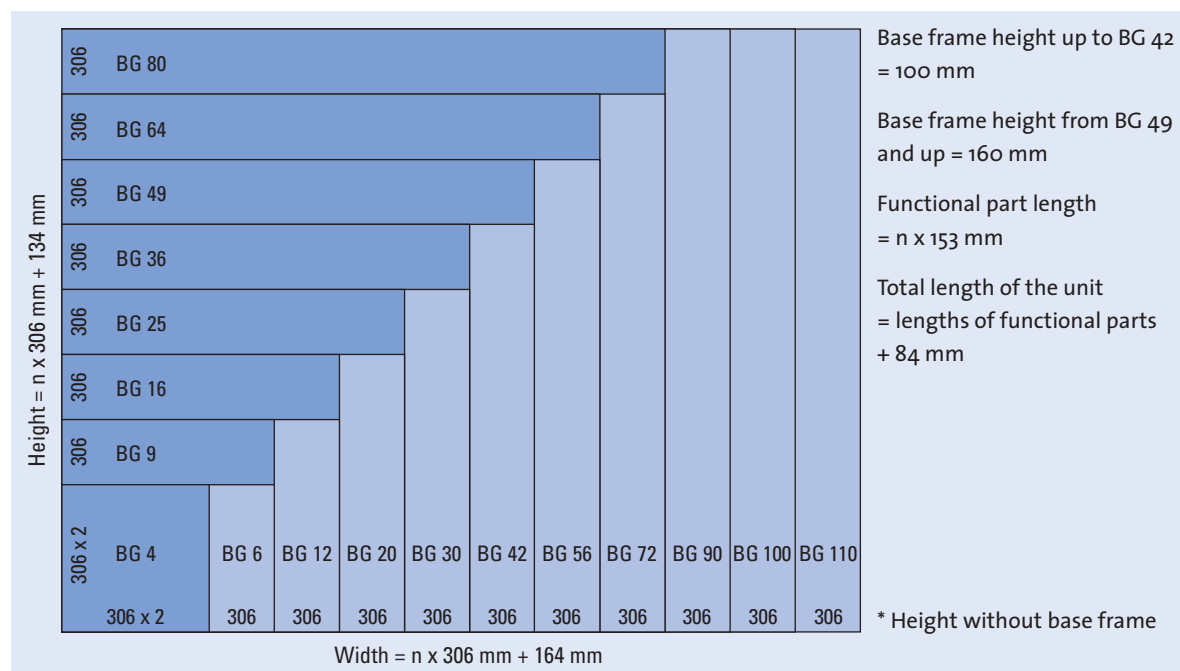
BerlinerLuft.



5.0 VarioCond Model Range

Construction sizes (BG)

Dimensions



Volume flow

Construction Size	Volume flow [m³/h]				
	for different flow-through speeds based on the free cross section of the unit				
BG	1,5 m/s	2,0 m/s	2,5 m/s	3,0 m/s	3,5 m/s
4	2600	3500	4300	5200	6000
6	3700	5000	6200	7500	8700
9	5400	7200	9000	10800	12600
12	7000	9500	12000	14000	16000
16	9000	12000	15500	18000	22000
20	11000	15000	19000	23000	27000
25	14000	19000	23000	28000	33000
30	17000	22000	28000	33000	39000
36	20000	26000	33000	40000	46000
42	23000	31000	38000	46000	54000
49	27000	36000	44000	53000	63000
56	30000	40000	51000	61000	71000
64	35000	46000	58000	69000	80000
72	39000	52000	65000	77000	90000
80	44000	58000	72000	87000	100000
90	48000	64000	80000	96000	112000
100	53000	70000	88000	106000	123000
110	58000	77000	96000	115000	134000

Technical changes reserved

Other unit sizes on request



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VarioCond – Technical solutions for the perfect climate

The basis for VarioCond is always a closed profile frame construction, which is based on a buckling resistant connection between frame and panel. This kind of construction allows us to produce air handling units (AHUs) according to customer specification or customer requirements. The panels are generally designed as thermally separated sandwich panels. They consist of sendzimir galvanized, strip-coated or stainless steel sheets with a minimum thickness of 1 mm and an insulation core, connected with a special technique for joining parts, made of mineral wool insulation material.

Due to the smooth inner surface and full utilisation of the cross section, energy costs are reduced to a minimum.

The rising demand for and increased use of air handling units with integrated chiller and MCA technology in recent years was enabled by developing our own VarioCond compact AHU's. The "plug-in" units are put into operation by specially qualified personnel on site and handed over to our customers after instruction. Any attached or mounted parts that are used are in compliance with European quality standards which are subject to permanent supervision.

Quality management

The units are type-examination tested according to VDI 6022 sheet 1/3 "Hygienische Anforderungen an raumlufttechnische Geräte" (hygienic requirements on ambient air units) and meet the requirements of VDI 3803 as well as the requirements of DIN 1946 part 2/4. The BerlinerLuft. Klimatechnik is a member of the RLT Raumlufthtechnische Geräte Herstellerverband e.V. (association of ambient air unit manufacturers).

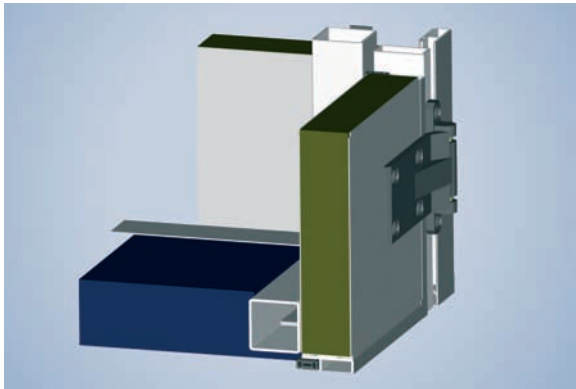
The company BerlinerLuft.Klimatechnik GmbH is certified according to DIN ISO 9001. All of the processes are subject to internal quality control.





5.0 VarioCond model range

Casing



Casingstructure



panel VarioCond

The modular device structure is provided with a length grid of 153 mm. This is to ensure the individual adjustment of the devices. The functional parts can be compiled according to customer specification.

VarioCond can be completely dismantled and consists of a square-tube construction. The inner surface of the device is completely smooth without screw tops and wall fastenings. Thus, the maintenance time needed can be significantly reduced.

Crane transport will be possible, using the crane eyes attached to the edges of the unit roof, for BG 25 and smaller sizes.

For BG 30 and larger sizes crane transport will be carried out using lifting pipes passed through the base frame.

Tub design

The tubs used are smooth and provided with all-side incline designed as unit bottom according to VDI 6022, DIN EN 13053 and VDI 3803 and provided with condensate drain at the lowest area.

Panel design

The panels consist of double-shell sandwich plates with inner and outer surfaces made of heat treated galvanised sheet steel with RAL 7035 (W1) strip coating.

The insulation core made of leg-oriented mineral wool insulation material, non-inflammable according to DIN 4102, class A, is completely glued with the inner and outer sheets.

Inner and outer sheets are thermally uncoupled by a special circumferential profile.

This VarioCond wall construction stands for high buckling resistance and a long life cycle.

Frame designs

- R1 self-supporting closed frame made of aluminium profile (AlMg3), design for BG 16 and smaller numbers
- R2 self-supporting closed frame made of hot-dip galvanised steel profile, design for BG 20 and up

Optional

- R3 self-supporting closed frame made of stainless steel profile, design for all installation sizes
- R4 self-supporting closed frame made of stainless steel profile (1.4571), design for all installation sizes

The frame is inlaid in order to avoid cold bridges and for holding together joints provided by customer.



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Panel types

- W1** Inner surface made of hot-dip galvanised sheet steel, outer surface of hot-dip galvanised sheet steel with additional RAL 7035 strip coating
- W2** Inner surface made of stainless steel (1.4301), outer surface of hot-dip galvanised sheet steel with additional RAL 7035 strip coating
- W3** Inner surface made of stainless steel (1.4571), outer surface of hot-dip galvanised sheet steel with additional RAL 7035 strip coating
- W4** Inner surface made of stainless steel (1.4301), outer surface of stainless steel (1.4301)
- W5** Inner surface made of stainless steel (1.4571), outer surface of stainless steel (1.4571)
- W6** Design VarioCond „Rixner Line“, inner and outer wall made of hot-dip galvanised sheet steel without thermal decoupling profile, not glued

panel thickness: NW 45
 bottom: NW 55
 density of insulation at least: 80 kg/m³
 sheet thickness inner/outer surface: 1 mm

VarioCond casing data according to DIN EN 1886:

Insulation standard D_e at:

H _z	125	250	500	1000	2000	4000	8000
dB	12,0	21,0	26,0	28,0	29,0	34,0	40,0

mechanical strength: class D2 (M)
 casing leakage: class L2
 filter-Bypass-Leakage: 0,1% up to filter class Fg
 thermal bridge factor: class TB2
 thermal transition factor: class T2

Design VarioCond „Rixner Line“ (W7) differing casing data according to DIN EN 1886 :

Insulation standard D_e at:

H _z	125	250	500	1000	2000	4000	8000
dB	11,5	22,5	30,5	35,5	31,5	40	43

thermal bridge factor: class TB3
 thermal transfer factor: class T3

The casing bottom of devices > BG 16 is walkable.

All doors and operating caps are provided with circumferential inserted hollow section sealings with a double lip in EPDM quality.

Standard designs of operation openings:

Device size BG 4 – BG 12

with snap-on cap without pivotal point and sash fasteners operated by a square box wrench (optionally with doors and sash fasteners)

Device size > BG 12

with doors and lever locks inside and outside



lever lock

Optional doors with inspection glass (double glazing)



inspection glass

The door hinge adjustable three-dimensionally enables the simple and effective adjustment of the door leaf in all directions.



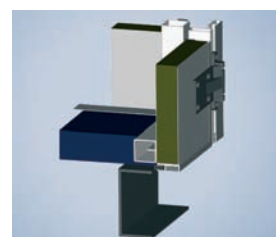
doorhinge

In order to avoid corrosion of the bottom elements and for better transport and installation a heat treated galvanised base frame is integrated into the casing.

base frame height:

BG 4 – BG 49 100 mm

BG 56 – BG 110 160 mm



base frame





5.0 VarioCond model range

Weatherproof design

For outdoors installation the device will be provided with a roof with 40 mm circumferential projection and a drainage area made of UV-resistant, PVC-free roof cladding. Corrosion is prevented by use of stainless steel screws with sealing washers in outdoors areas. The outside surfaces of the panels are made of heat treated galvanised steel and is strip coated according to shade RAL 7035. The coating is weatherproof and UV-resistant.

For sealing the roof cladding provided by customer hot-dip galvanized roof base frames with drainage area can be supplied in different heights, coated (RAL 7035) or stainless steel (1.4301) as option.

In order to prevent injuries during maintenance work the doors are provided with locking devices.



corner cut-out with roof cladding

Explosion-proof design

VarioCond is type-examination tested by the Technical Inspection Agency TÜV Saarland according to the ATEX 94/9/EG guidelines. Equipment will be supplied according to the requirement for explosion-proof zones 1, 2 and 3.



Hygienic design

The following additional features are characteristic for hygienic units:

- Inside bottom of the unit made of stainless steel (1.4301) smooth, easy to clean and disinfect.
- Bottom joints sealed hygienically and vapour proof with a sealing material resistant to disinfectant and fungal decay.
- Inner walls of the units made of hot-dip galvanized and coated (RAL 7035) sheet steel or stainless steel (1.4301) as option.
- Up to installation size 12, heat exchanger able to be pulled out of the casing on slide bars for cleaning purposes
- Louver valves made of aluminium (AlMg) according to EN 1751 leak tightness class 2. Designed as room closing valves, airtight according to EN 1751 leak tightness class 4.
- Inspection glasses and interior lighting mounted into ventilator, filter and humidifier chambers. Lighting fixture designed with smooth surface.
- Cooler frames made of aluminium (AlMg), stainless steel as option, aluminium coated lamellas as option, pipes and collectors made of copper, as option cooler completely coated
- Coated ventilators, coated base frame stainless steel (1.4301) as option.
- Humidifier chambers designed with stainless steel (1.4301) on the inside
- Rotary and heat plate exchangers with zinc-plated and coated frame, lamellas made of aluminium (AlMg)
- Installation bars made of stainless steel (1.4301)
- filter frame made of stainless steel (1.4301)
- Elastic connecting pieces designed as closed porous rubber profile binder
- All units will be packed in foil.





5.0 VarioCond model range

Mounting parts

Fan with spiral casing

- high performance fans with backward bent blades
- clamping slider with spindle joint with shaft joint
- V belt pulleys with easy to loosen quick clamping elements (System Taperlock)
- three-phase motor according to IEC standard, single-turn or multiple turn



fan with spiral casing

Accessories

- touch guard grill to be hung out
- belt protective box
- guard grill on the suction side
- crane rail



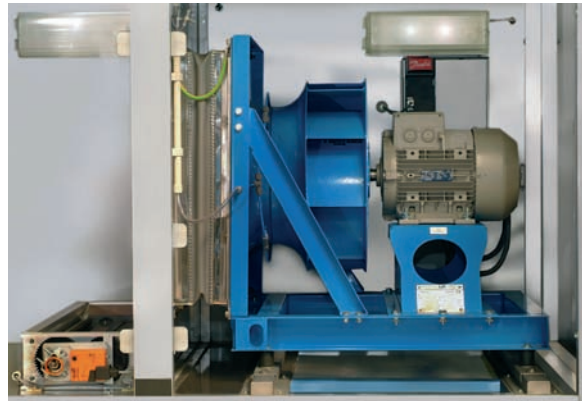
motor exchange via crane rail

optional:

- actuation via flat belt
- enclosed motor with forced air ventilation

Plenum fan with direct drive

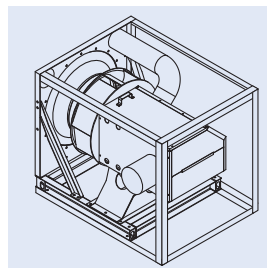
- fan wheel mounted to the motor shaft with backward bent blades



free-wheeling impeller

optional:

- plenum fan with enclosed motor and forced air ventilation via a casing wall. Hydraulic adjustment of the enclosed system will be provided by BerlinerLuft. for the motor cooling to work properly.



motor with forced air ventilation

Accessories

- suction side guard grill
- touch guard grill to be hung out
- fan unit to be pulled out
- frequency converter for continuous speed control
- volume flow measuring via ring line and pressure sensor



ring line



pressure sensor

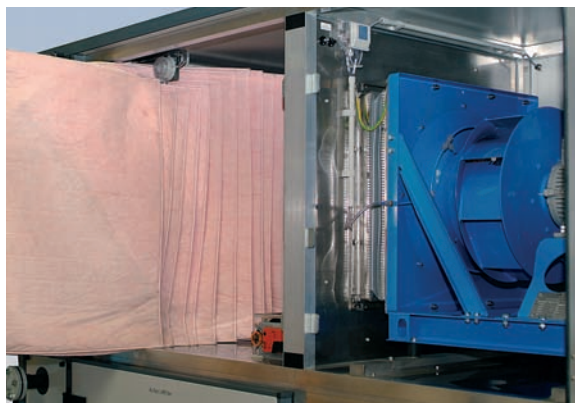


5.0 VarioCond model range

Mounting parts

Filter

- bag filter with standard dimensions
- installation size ffi 20, up to filter class F7 inclusive, to be pulled out completely with frame, filter class F8-F9 and integral filter for suspended matters (HEPA-filter) with standard filter frame
- installation size ? 25 with standard filter frame integrated into the casing



extensible filter

Accessories

- U-tube – manometer
- inclined-tube gauge
- differential pressure switch
- constant differential pressure measurement

Air heater

- made of seamless copper tubing with pressed-on aluminium lamellas
- collector made of steel
- frame made of galvanised sheet steel

optional:

- electric heater

Air cooler

- made of seamless copper tubing with pressed-on aluminium lamellas
- frame made of galvanised sheet steel
- droplet separator in a casing made of seawater-resistant aluminium, separator profiles made of plastics
- condensate tub made of stainless steel 1.4301 with all sides incline towards the drain nozzle



air cooler with droplet separator

optional:

- CU/AL heat exchanger with plastic coating
- CU/CU heat exchanger
- heat exchanger with steel finned-tubes and collector, completely galvanised
- heat exchanger made of stainless steel
- frame made of seawater-resistant aluminium
- frame made of stainless steel 1.4301
- extensible antifreeze frame
- flange and counterflange



flange and pipe feed-through



5.0 VarioCond model range

Mounting parts

Heat recovery

The following systems can be supplied:

- rotary heat exchanger with up to 80% efficiency
- plate-type heat exchanger with up to 80% efficiency
- heat pipe with up to 48% efficiency
- interconnected circuit system (KVS) with up to 70% efficiency
- accumulator with up to 92% efficiency
- heat pump circuit (s. brochure 5.3. air conditioning unit with integrated cold and heat pump circuit)

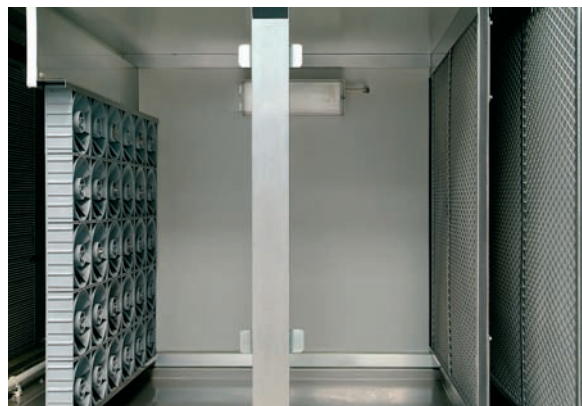
Humidifier

The following systems can be supplied:

- nozzle humidifier made of stainless steel or GFK
- high-pressure humidifier
- vapour humidifier with self or forced vapour generation
- cold vapour generator
- evaporation humidifier



cross flow plate heat exchanger



high-pressure humidifier

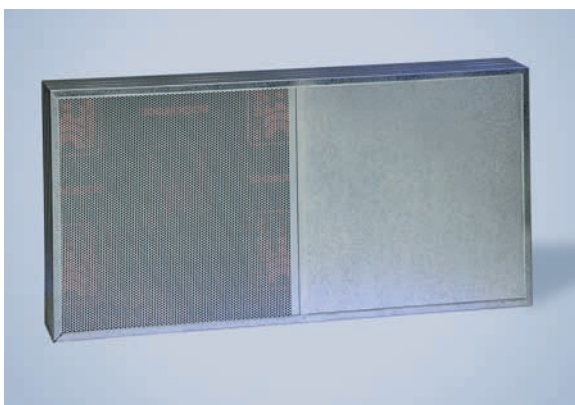


5.0 VarioCond model range

Mounting parts

Sound absorber

- baffles, abrasion-proof up to 20 m/s
- optional:
 - baffles with inflow profile *Beta-Stream*®
 - baffles with perforated plate cover
 - baffles with foil cover
 - resonance sound absorber



sound absorber baffle

Duct connection

- elastic four-hole connecting piece
- profile rubber connections
- potential equalisation



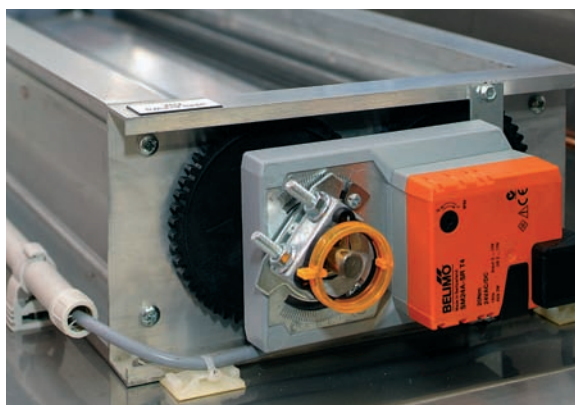
connecting piece with potential equalisation provided by customer

Louver dampers

- frame and lamellas made of heat treated galvanised sheet steel, aluminium or stainless steel 1.4301

designs:

- standard
- with lip gasket according to EN 1751, class 2
- air-tight according to DIN 1946, part 4



louver damper assembled with servo-motor

optional:

- with outside linkage

Accessory

- 24 V or 230 V motor-driven control operator



louver dampers



5.0 VarioCond model range

Mounting parts

External atmosphere suction/ exhaust air blow-out

Weather grill

- weather grill made of galvanised steel, with bird grill made of corrugated wire

optional

- weather grill lacquered as a customer's option
- acoustic weather grill
- heatable weather grill
- droplet separator



weather grill

suction and blow-out hood

- suction and blow-out hood made of galvanised sheet steel with corrugated wire grill at suction or blow-out side

optional

- suction and blow-out hood lacquered at customer's option



suction and blow-out hood



5.0 VarioCond model range

VarioCond with integrated chiller

Energetic consideration, high reliability and dot-precise design of performance are the characteristics of the integrated chiller with direct evaporation. There are no losses due to standstills and no piping provided by the customer.

Scope of delivery includes:

- reciprocating pistons and scroll compressors as well as half hermetical screw compressors with a cooling capacity of 130 kW
- output regulation via FU control, suction-throttle valve or multiple sandwich arrangement
- condensator for outdoor installation
- condensator in exhaust air volume flow for outdoors installation, as condensator with condensation pressure control as option
- optional high-pressure output limitation for failure-free operation if external atmosphere temperature is exceeded (max. design temperature) in midsummer
- forced-air cooling for overnight operation or for rooms without personnel
- valve cross connection for rooms with personnel
- chiller reversible to heat pump (s. brochure 5.3. air conditioning system with integrated cold and heat pump circuit)



Integrated chiller



pre-assembled chiller rack with fully hermetical reciprocating compressors



Compound connexion with four reciprocating compressors



half hermetical screw compressor



Cooling piping provided by customer technical changes



5.0 VarioCond model range

VarioCond with integrated control cabinet and DDC control

Control cabinet

Complete installation of MCA technology ensures high operational safety due to tested software and is time and cost efficient.

- control cabinet casing with subplate, including main and control fuses
- main switch
- adjustment via integrated DDC module
- standard software for different AHUs and functions

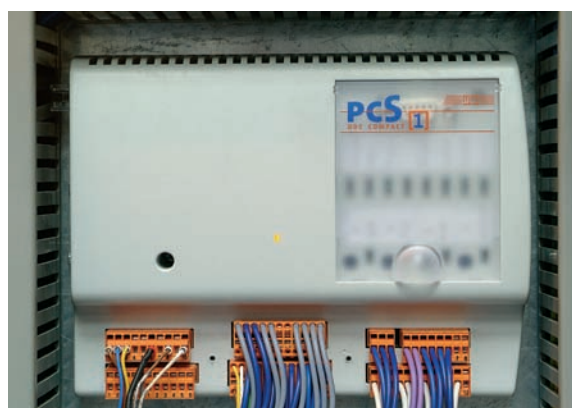
Functionality

The DDC module offers functionality in the smallest place

- freely programmable compact DDC
- optional integrated or remote graphic display
- optional integrated manual/emergency operated and unit interface
- large working memory for historical data
- 44 data points in the basic unit, extendable via networks
- integrated Web-Server technology



control cabinet with DDC module



DDC module



control cabinet with built-in touch screen

Optional:

- software adjustment to the individual customers' systems
- start-up by technicians of BerlinerLuft.Klimatechnik GmbH



5.0 VarioCond model range

VarioCond with integrated control cabinet and DDC control

Communication

- BACnet
- LONWORKS®
- EIB (European Installation Bus)
- MP-BUS (BELIMO® MFT drives)
- M-Bus
- Modbus
- OPC-Server intrusions for connections to external GLT systems
- Telecommunication via analogue, ISDN or GSM modem with the following functions: remote maintenance, remote diagnosis as well as notices of malfunctions via SMS, but also via remote programming
- web technology
- software adjustment to the individual customers' systems



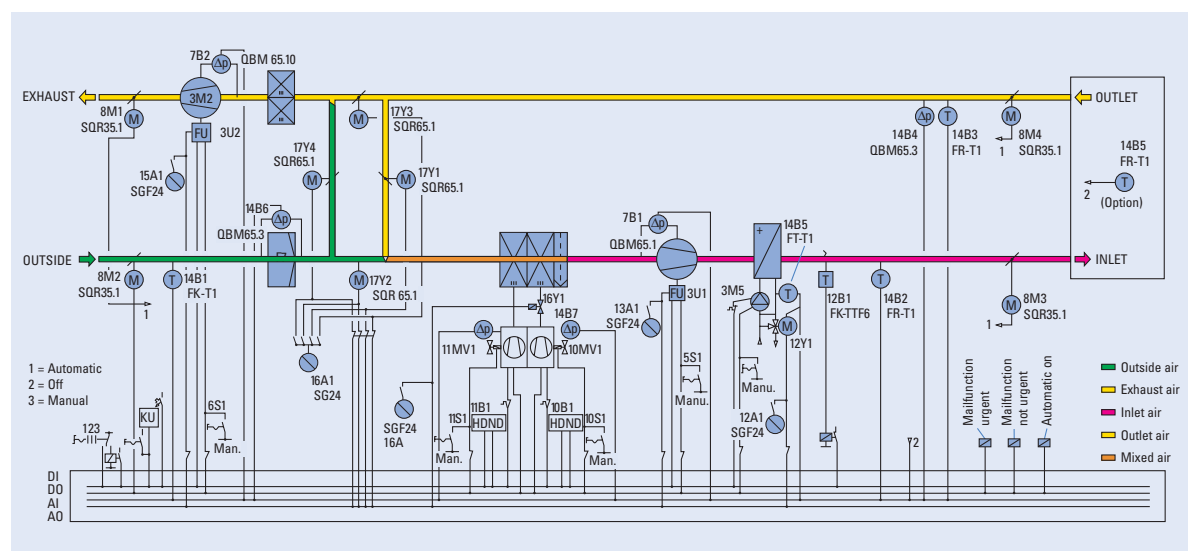
touch screen

The touch screen displays any operational data (including temperature sensor values, air quantity, operating conditions, malfunctions etc.) of the system.

The touch screen can be programmed for different languages that can be changed.

For easier system operation touch screens will be used as an option.

Control system schematic diagram





5.0 VarioCond model range

VarioCond with integrated control cabinet and DDC control

Compact unit

- pre-assembled as compact unit with integrated chiller, control cabinet and control, including internal cabling and piping

- start-up by technicians of BerlinerLuft.Klimatechnik GmbH

optional:

- connecting chambers for piping
- designed as roof-top unit with integrated operating corridor and chambers for installation of all groups of controllers



rooftop control system

Ventilation unit with integrated combustion chamber

- combustion chamber for gas and oil heating up to a power rating of 900 KW
- combustion chamber and heating area as tube made of stainless steel
- control via modulating blower or via bypass control
- horizontal or vertical air conduction possible
- preinstallation of controlled system



integrated combustion chamber



compact unit, weatherproof

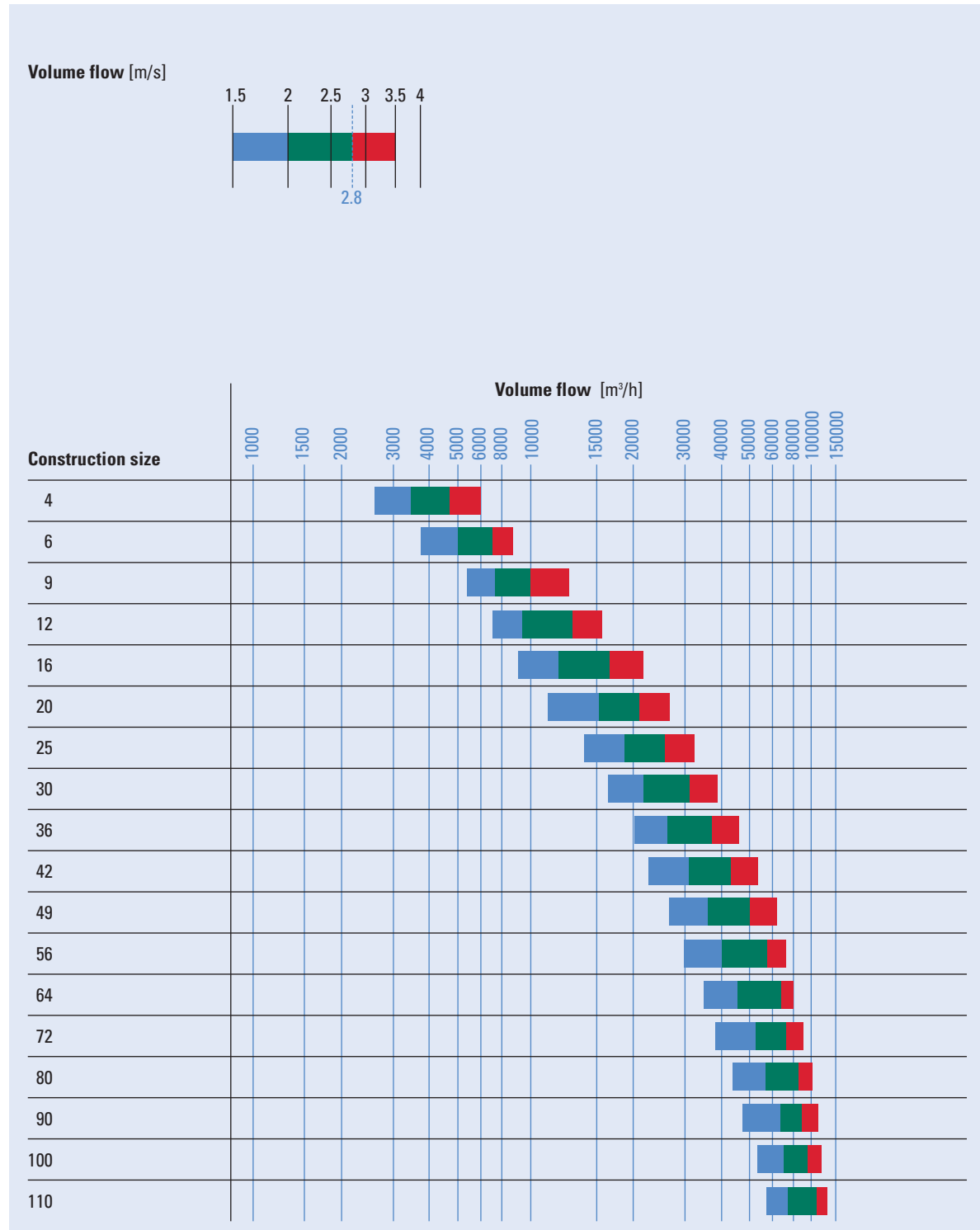


group of controllers for combustion chamber



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Selection diagram, dimensions and weights of functional parts



Technical changes reserved

	776	746	612	60	306	33	1224	110	459	119	918	169	224	108	918	177	918	159	98	306	63	40	765	123	28	160	87	65	1071	100	77	1377	124	12	76	22	107	29	140	42	198	88	765	122	1071	233	918	198	765	197	400	162	1318	289	125	499
6	1082	746	612	72	306	40	1224	127	459	153	918	214	1377	130	1224	231	918	240	114	306	84	47	765	160	37	212	106	81	1071	122	94	1377	148	11	94	20	133	27	171	40	250	117	765	160	1224	326	1071	285	765	258	400	193	1624	382	148	659
9	1082	1052	765	99	306	45	1530	172	459	181	1071	266	1377	158	1377	345	1224	291	129	306	96	53	765	192	41	261	138	93	1071	139	109	1377	170	13	112	20	156	27	203	40	312	139	765	192	1530	423	1224	357	765	306	400	274	1624	484	165	671

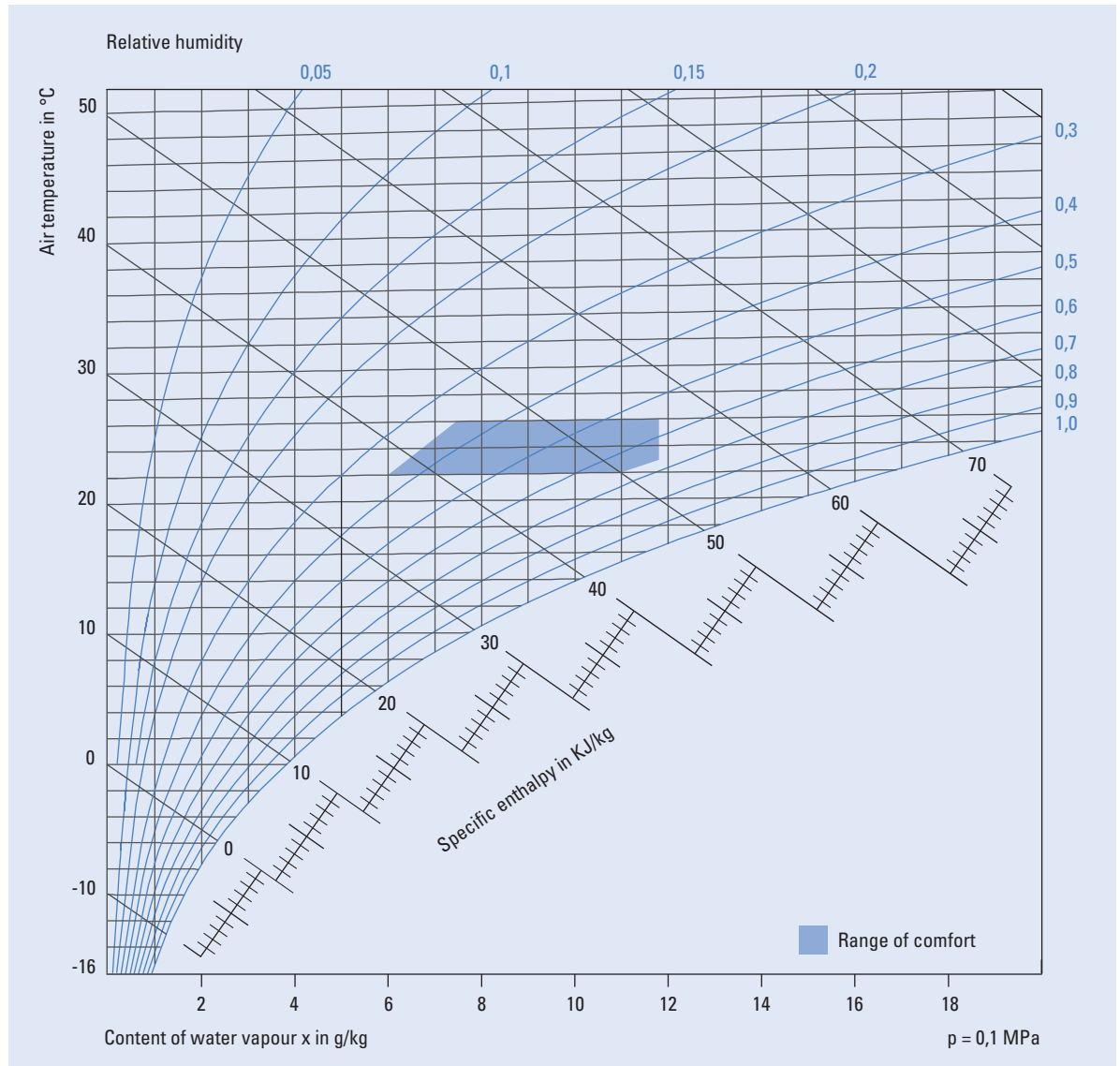
Height **without** base frame



5.0 VarioCond model range

Technical parameters

hx diagram

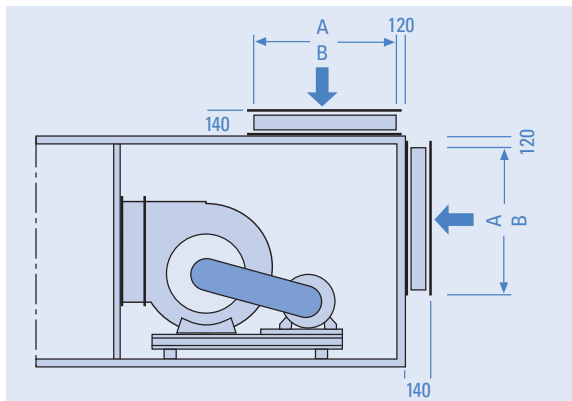
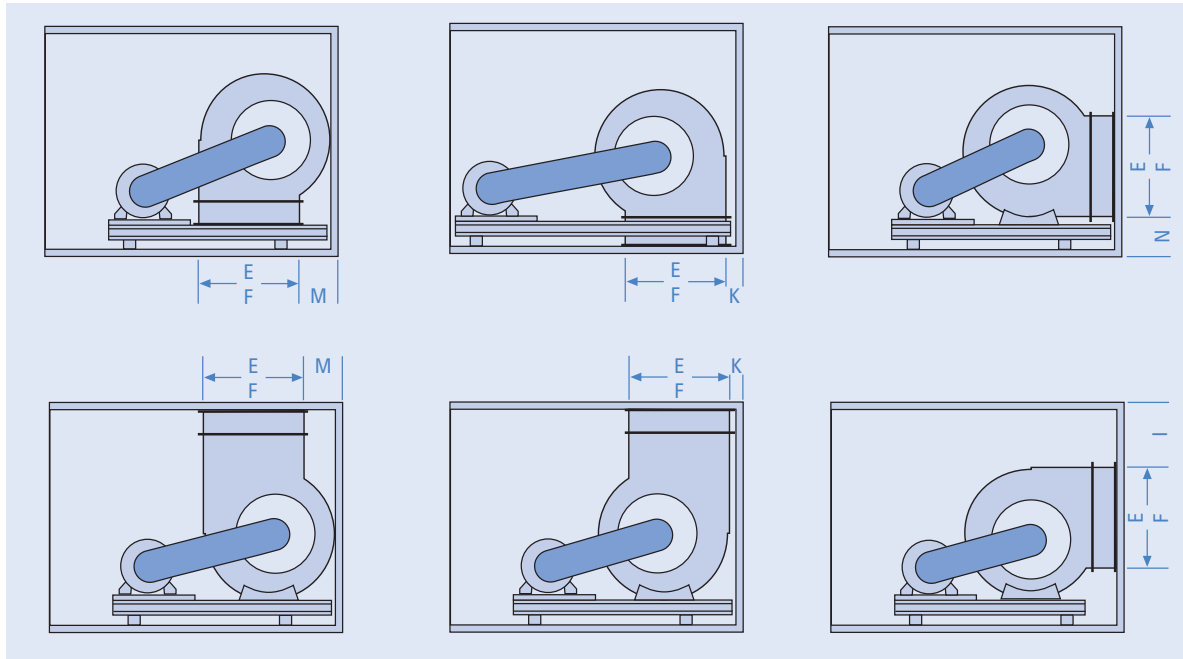




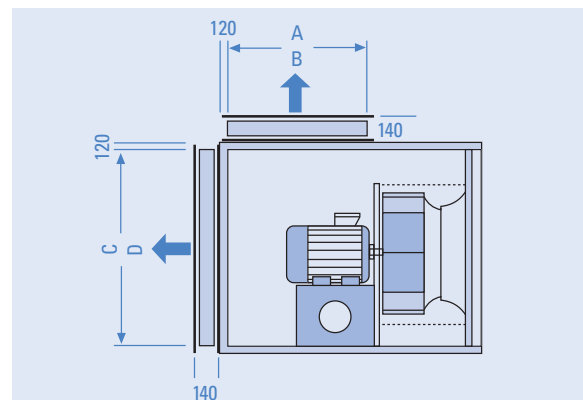
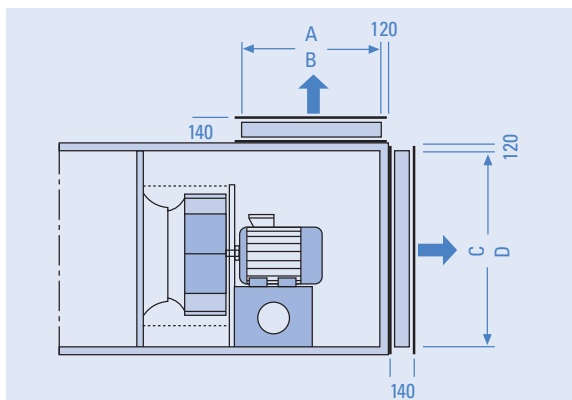
5.0 VarioCond model range

Technical parameters

Connecting dimensions of radial fans with spiral casing



Connecting dimensions of freewheel radial fans



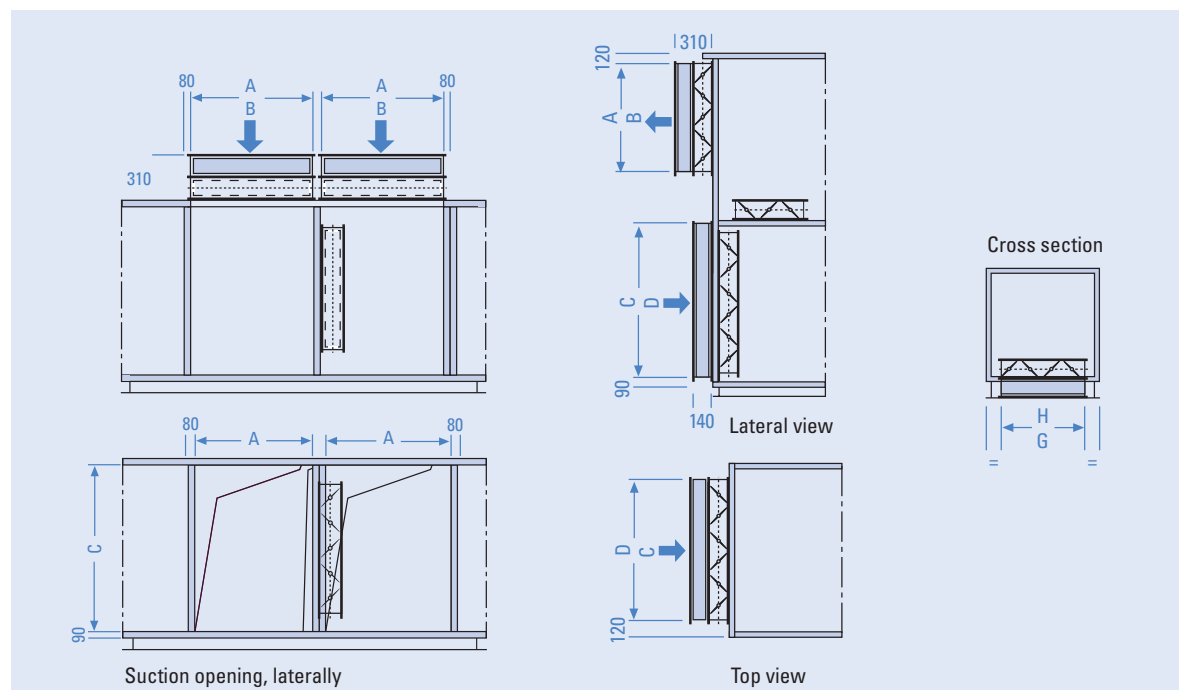
Technical changes reserved



5.0 VarioCond model range

Technical parameters

Connecting dimensions of suction/blow-out/mixing chamber



Connecting dimensions of lower dampers

Construction size	A	B	C	D	E	F	G	H	I	K	M	N
4	452	532	532	532	360	330	352	432	120	140	240	130
6	452	838	532	838	450	360	352	738	110	140	225	130
9	605	838	838	838	650	530	505	738	160	140	240	130
12	605	1144	838	1144	700	530	505	1044	150	140	240	130
16	758	1144	1144	1144	900	750	658	1044	200	140	255	135
20	758	1450	1144	1450	950	800	658	1350	175	140	270	135
25	911	1450	1450	1450	1050	840	811	1350	250	140	325	140
30	911	1756	1450	1756	1050	840	811	1656	250	140	325	140
36	911	1756	1756	1756	1150	940	811	1656	300	140	380	150
42	911	2062	1756	2062	1150	940	811	1962	300	140	380	150
49	1064	2062	2062	2062	1300	1040	964	1962	250	140	340	150
56	1064	2368	2062	2368	1450	1170	964	2268	370	140	450	160
64	1217	2368	2368	2368	1600	1350	1117	2268	320	140	520	160
72	1217	2674	2368	2674	1600	1350	1117	2574	320	140	520	160
80	1370	2674	2674	2674	1600	1350	1270	2574	320	140	580	160
90	1370	2980	2674	2980	2 x 1150	2 x 940	1270	2880	1180	140	380	150
100	1370	3286	2674	3286	2 x 1300	2 x 1040	1270	3186	960	140	340	150
110	1370	3592	2674	3592	2 x 1450	2 x 1170	1270	3492	910	140	450	160

Other unit sizes on request



5.0 VarioCond Model Range

Technical parameters

Fan sizes

Construction size	Radial fan			Plenum fan		
	Fan size	Motor size	Length [mm]	Fan size	Motor size	Length [mm]
4				280	100	918
	200	71	765	315	132	918
	225	132	918	355	112	918
	250	100	918	400	112	918
6	225	132	918	310	100	918
	250	132	1071	355	132	1071
	280	132	1224	400	132	1071
9	280	132	1224	355	132	1071
	315	112	1224	400	132	1224
	355	160	1377	450	132	1224
	400	132	1377	500	160	1377
12	315	112	1224	400	132	1071
	355	160	1377	450	132	1224
	400	160	1530	500	160	1377
				560	160	1377
16	400	132	1377	500	132	1377
	450	160	1530	560	160	1377
	500	160	1683	630	160	1530
	560	180	1836	710	160	1683
20	315	160	1377	560	160	1377
	400	160	1530	630	160	1530
	500	160	1683	710	180	1683
	560	180	1836	800	160	1683
25	450	160	1530	560	160	1377
	500	160	1683	630	160	1530
	560	180	1836	710	180	1683
	630	225	2142	800	200	1836
				900	160	1836
30	500	160	1683	630	160	1530
	560	180	1836	710	200	1683
	630	200	1989	800	225	1836
	710	225	2142	900	180	1836
36	560	180	1836	710	200	1683
	630	200	1989	800	225	1836
	710	225	2142	900	250	2142
	800	225	2448	1000	180	1989

Other unit sizes on request

Technical changes reserved



5.0 VarioCond Model Range

Technical parameters

Fan sizes

Construction size	Radial fan			Plenum fan		
	Fan size	Motor size	Length [mm]	Fan size	Motor size	Length [mm]
42	560	180	1836	710	180	1683
	630	200	1989	800	200	1836
	710	225	2142	1000	225	1989
	800	225	2448	1000	250	2295
49	630	180	1836	800	200	1836
	710	200	2142	900	225	2142
	800	225	2448	1000	280	2295
	900	250	2601	1120	280	2448
	1000	250	2754			
56	710	200	2142	800	180	1836
	800	225	2448	900	200	2142
	900	250	2601	1000	225	2295
	1000	280	2754	1120	280	2448
64	800	200	2295	900	225	2142
	900	250	2601	1000	250	2295
	1000	280	2754	1120	280	2448
	1120	280	3366	1250	280	2754
72	800	225	2448	900	225	2142
	900	250	2601	1000	280	2295
	1000	280	2754	1120	280	2448
	1120	280	3366	1250	280	2754
80	900	225	2448	1000	250	2295
	1000	280	2754	1120	280	2448
	1120	280	3366	1250	315	2754
90	1000	280	2754	1000	250	2295
	1120	250	2754	1250	315	2754
	2 x 710	2 x 225	2448	2 x 1000	2 x 225	2295
	2 x 800	2 x 250	2754			
100	1000	225	2601	1000	250	2295
	1120	250	2754	1250	315	2754
	2 x 800	2 x 250	2754	2 x 1000	2 x 250	2142
	2 x 900	2 x 250	2907			
110	1120	250	2754	1000	250	2295
	2 x 900	2 x 250	2907	1250	315	2754
	2 x 1000	2 x 280	3060	2 x 1000	2 x 250	2295

Other unit sizes on request

Technical changes reserved



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