Model KBF 470 | Humidity test chambers with a large temperature / humidity range

The proven specialist for reliable ICH stability tests in the pharmaceutical industry: the KBF masters all long-term tests, accelerated tests and stress tests. It fulfills all important ICH requirements, from precision to programming and documentation. With flexible water supply options for all installation locations. In addition, the new KBF consumes up to 40 % less energy than its predecessor. With optional LED light packages, the KBF can be converted into an ICH photostability chamber and a plant growth chamber.

BENEFITS

- A reliable option for critical ICH stability testing thanks to maximum climate homogeneity, even when the unit is fully loaded
- Reliable: failsafe operation over the long term thanks to proven compressor technology and interior made of stainless steel
- Smart: signal triangle with light-up status display and ergonomic control terminal with touchscreen program controller
- Economical: up to 40% lower energy consumption than the previous model thanks to modern inverter cooling technology



Model 470



Model 470

IMPORTANT FEATURES

- Temperature range: 0 °C to +70 °C
- Humidity range: 10% to 80% RH
- Proven APT.line™ preheating chamber technology
- Energy-efficient cooling with modern inverter cooling unit
- Cooling with climate-neutral R-600a refrigerant
- Door heating to prevent condensation
- Adjustable fan speed
- Humidity regulation with capacitive humidity sensor and responsive steam humidification
- Sturdy housing design with HIT sandwich technology
- Stainless-steel inner chamber
- Inner doors made of metal oxide-coated safety glass
- Two racks made of stainless steel
- 80 mm x 45 mm access port with silicone plug
- Floor-standing units featuring sturdy twin casters with brakes at the front
- Intuitive touchscreen controller with time-segment and real-time programming
- Ergonomically adjustable operating terminal
- Signal triangle with light-up status display
- Internal data logger, measured values can be read out in open format via USB
- Class 3.3 independent temperature safety device (DIN 12880) with visual and acoustic alarms
- Unit self-test for comprehensive status analysis
- Data interfaces: Ethernet, USB
- BINDER Multi Management Software APT-COM™ basic edition
- Optional light modules for ICH photostability tests
- Optional LED light modules for plant growth

ORDERING INFORMATION

Interior volume		Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
[cu.ft.]	[L]					
Model KBF 470						
17	472	220...240 V 1~ 50/60 Hz -16,0 A	CEE 7/7	Standard	KBF470-230V	9020-0480
		120 V 1~ 50/60 Hz -16,0 A	NEMA 5-20	Standard	KBF470UL-120V	9020-0496

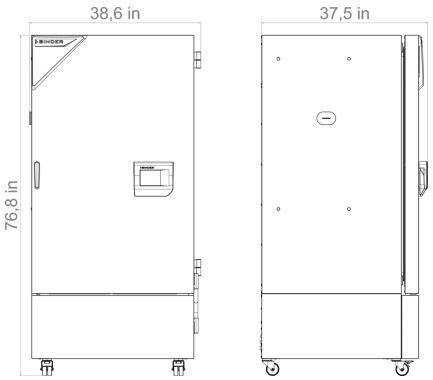
TECHNICAL DATA

Data		
Article Number	9020-0480	9020-0496
Designation	KBF470-230V	KBF470UL-120V
Option model	Standard	Standard
Performance Data Temperature		
Temperature range	0...70 °C	0...70 °C
Max. heat compensation at 40°C	530 W	530 W
Performance Data Climate		
Temperature range with humidity	10...70 °C	10...70 °C
Humidity range	10...80 % r.F.	10...80 % r.F.
Temperature uniformity at 25°C and 60% RH	0.2 ± K	0.2 ± K
Temperature uniformity at 40°C and 75% RH	0.2 ± K	0.2 ± K
Temperature fluctuation at 25°C and 60% RH	0.1 ± K	0.1 ± K
Temperature fluctuation at 40°C and 75% RH	0.1 ± K	0.1 ± K
Humidity fluctuation at 25°C and 60% RH	1.5 ± % r.F.	1.5 ± % r.F.
Humidity fluctuation at 40°C and 75% RH	1.5 ± % r.F.	1.5 ± % r.F.
Recovery time after door was opened for 30 s at 25°C and 60% RH	2 min	2 min
Recovery time after door was opened for 30 s at 40°C and 75% RH	4 min	4 min
Electrical data		
Rated Voltage	220...240 V	120 V
Power frequency	50/60 Hz	50/60 Hz
Nominal power	1,4 kW	1,4 kW
Unit fuse	16,0 A	16,0 A
Phase (Nominal voltage)	1~	1~
Dimensions and weights		
Interior volume	17 cu.ft.	17 cu.ft.
Net weight of the unit (empty)	496 lbs	496 lbs
Load per rack	88 lbs	88 lbs
Permitted load	441 lbs	441 lbs

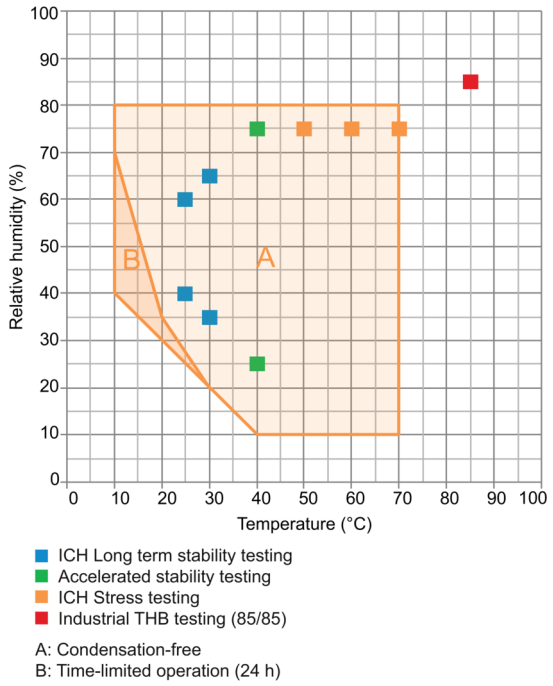
Wall clearance back	3,94 in	3,94 in
Wall clearance sidewise	7,09 in	7,09 in
Housing dimensions not incl. fittings and connections		
Width net	36.61 in	36.61 in
Height net	76.81 in	76.81 in
Depth net	35.43 in	35.43 in
Internal Dimensions		
Interior width	25.83 in	25.83 in
Interior height	49.21 in	49.21 in
Interior depth	22.64 in	22.64 in
Inner doors	1	1
Unit doors	1	1
Environment-specific data		
Sound-pressure level at 25°C and 60% RH	51 dB(A)	51 dB(A)
Energy consumption at 25°C and 60% RH	265 Wh/h	290 Wh/h
Energy consumption at 40°C and 75% RH	285 Wh/h	305 Wh/h
Fixtures		
Number of shelves (std./max.)	2/16	2/16

All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

DIMENSIONS Incl. fittings and connections [mm]



DIAGRAMS



Climate chart

OPTIONS

Designation	Description	KBF 470	*	Art.-No.
Access port with silicone plug	left			
	30 mm	•	01	8012-2481
	50 mm	•	01	8012-2482
	100 mm	•	01	8012-2483
	right			
	30 mm	•	01	8012-2484
	50 mm	•	01	8012-2485
	100 mm	•	01	8012-2486
	top			
	30 mm	•	01	8012-2499
	50 mm	•	01	8012-2487
	100 mm	•	01	8012-2488
Alarm	accessible via 3-pin clamping sleeve (max. 24 V - 2.5 A)	•	-	8012-2503
Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	•	-	8012-2574

Designation	Description	KBF 470	*	Art.-No.
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	•	-	8012-2575
Calibration certificate, temperature	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-2378
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-2382
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-2426
Calibration certificate, temperature and humidity	Measurement in center of chamber at 25°C / 60% RH or at specified test values	•	-	8012-2437
	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values	•	-	8012-2577
Door lock	lockable door handle	•	-	8012-2535
Door lock, electromechanical	can be opened with PIN code via controller	•	-	8012-2537
Inner chamber, reinforced	permitted load with U rails 300 kg	•	-	8012-2520
Interior lighting	With climate-resistant LEDs, switches when the unit door is opened	•	-	8012-2561
Shipping pallet	with unloading ramp for installing unit without forklift	•	-	8012-2547
Specimen temperature display	Flexible Pt 100 indoor temperature sensor, for object temperature display or control	•	-	8012-2591
Swivel casters, height-adjustable	For horizontal alignment of the unit on uneven floors	•	-	8012-2543

ACCESSORIES

Designation	Description	KBF 470	*	Art.-No.
APT-COM™ 4 GLP-Edition	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11.			
	version 4, GLP edition	•	-	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
	version 4, PROFESSIONAL edition	•	-	9053-0040
BINDER PURE AQUA SERVICE	System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts	•	-	8012-0759
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	•	-	6011-0165
CO_2 gassing module	BINDER CO_2 gassing module 0-1%, with NDIR CO_2 sensor and analog output 4-20 mA	•	-	8012-2140
	BINDER CO_2 gassing module 0-20%, with NDIR CO_2 sensor and analog output 4-20 mA	•	-	8012-2138

Designation	Description	KBF 470	*	Art.-No.
ICH light module	BINDER ICH-Q1B light module consisting of a VIS cassette and a UVA cassette as well as an independent power supply	•	-	8012-2441
	BINDER ICH-Q1B light module with light-dose control consisting of a VIS cassette, a UVA cassette, a spherical VIA sensor, a spherical UVA sensor as well as an independent power supply	•	-	8012-2443
LED light bars	Basic set consisting of 2 pieces, attachment material, control unit for max. 4 light strips, 100-240 V, 50/60 Hz			
	Basic set 300, length 30 cm	•	-	8012-1107
	Basic set 500, length 50 cm	•	-	8012-1108
	Expansion set consisting of 2 pieces, attachment material: clips. For expanding the basic set of light bars			
	Expansion set 300, length 30 cm	•	-	8012-1716
	Expansion set 500, length 50 cm	•	-	8012-1717
Light module for plants	BINDER LED plant light module consisting of 16 LED strip lights, 3-channel controller and fresh air pump as well as independent power supply	•	-	8012-2439
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
Qualification documents IQ/OQ	IQ/OQ documents digital in PDF format – supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering:			
	temperature. humidity, and light values. Excluded: Document execution is separate.	•	-	7057-0012
	temperature and humidity. Excluded: Document execution is separate.	•	-	7057-0011
Qualification documents IQ/OQ/PQ	IQ/OQ/PQ documents digital in PDF format – supporting documents for validation customizied to customer requirements, PQ section added to the qualification folder IQ/OQ; supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering:			
	temperature and humidity values. Excluded: Document execution is separate.	•	-	7057-0017
	temperature, humidity, CO_2 and O_2 values. Excluded: Document execution is separate.	•	-	7057-0027
	temperature, humidity and CO_2 values. Excluded: Document execution is separate.	•	-	7057-0026
	temperature, humidity values and light values. Excluded: Document execution is separate.	•	-	7057-0018
	temperature and light values. Excluded: Document execution is separate.	•	-	7057-0025
Reinforced rack	Shelf rack in set with pair of retaining rails (U rails), made entirely of stainless steel			
	Load-bearing capacity 80 kg	•	-	8012-2413
Shelf rack, perforated	Shelf rack in set with pair of retaining rails (U rails), made entirely of stainless steel			
	Load-bearing capacity 40 kg	•	-	8012-2407
Standard rack	Shelf rack in set with pair of retaining rails (ball bearing mounted telescopic rails), made entirely of stainless steel			

Designation	Description	KBF 470	*	Art.-No.
	Load-bearing capacity 40 kg	•	-	8012-2384
	Shelf rack in set with pair of retaining rails (U rails), made entirely of stainless steel			
	Load-bearing capacity 40 kg	•	-	8012-2390
Water supply	External, free-standing, set consisting of 20-liter fresh water canister with pump and level sensor and 20-liter waste water canister	•	-	8012-2592

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
Calibration services	Calibration of CO_2 concentration at 0,5 % by vol. with analyzed test gas, including certificate	05	DL30-0404
	Calibration of CO_2 concentration at 5,0 % by vol. with analyzed test gas, including certificate	05	DL30-0405
	Measurement of irradiance (UVA) and illumination intensity (VIS) at 25 measuring points each, recording of emission spectra for UVA and VIS, including certificate	05	DL30-0530
Temperature and humidity calibration	Expansion –Additional Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	05	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	05	DL30-0340
Temperature measurement, 9 temperature measuring points and 1 humidity measuring point	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	05	DL30-0309
Temperature measurement, 18 temperature measuring points and 1 humidity measuring point	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 2 shelves are required.	05	DL30-0318
Temperature measurement, 27 temperature measuring points and 1 humidity measuring point	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	05	DL30-0327
Installation services			
Installation services	Installation of BINDER CO_2 gassing module (0-1% or 0-20%), assembly of supply box, insertion of CO_2 sensor and gas hose in interior, sealing of access port, connection of box to an existing CO_2 gas supply, update of controller data set, function check	05	DL10-0130
	Installation of BINDER ICH-Q1B light module: assembly of supply box, insertion and connection of illumination cassettes, (LQC: and of light sensors), sealing of access port, (LQC: update of controller data set), function check	05	DL10-0140
	Installation of BINDER LED plant light module, assembly of supply box, assembly of LED strip lights as specified, laying of cables and fresh air hose, sealing of access port, function check	05	DL10-0150

Designation	Description	*	Art.-No.
Unit installation	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work) Travel to be quoted as separate.	05	DL10-0170
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming. Travel to be quoted as separate Limited to 3 hours.	05	DL10-0550
Maintenance services			
BRONZE 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate. 10% Discount on Spare Parts and Labor for any additional Services needed Wear + tear parts to be purchased or billed to customer. Travel to be quoted as separate.	05	DL20-0710
GOLD 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of both Temperature and Humidity. 25% Discount on Spare Parts and Labor for any additional Services needed. One additional courtesy visit per year can be used for service visit or operator. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	05	DL20-0920
Preventive maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Checking a test temperature specified by the user in center of usable space without certificate. Wear + tear parts need to be purchased or billed to customer. Travel to be quoted as separate.	05	DL20-0613
SILVER 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate 15% Discount on Spare Parts and Labor for any additional Services needed One additional courtesy visit per year can be used for service visit or operator training. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	05	DL20-0820
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder. Travel to be quoted separate.	05	DL42-0300
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate.	05	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	05	DL50-0030

NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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