

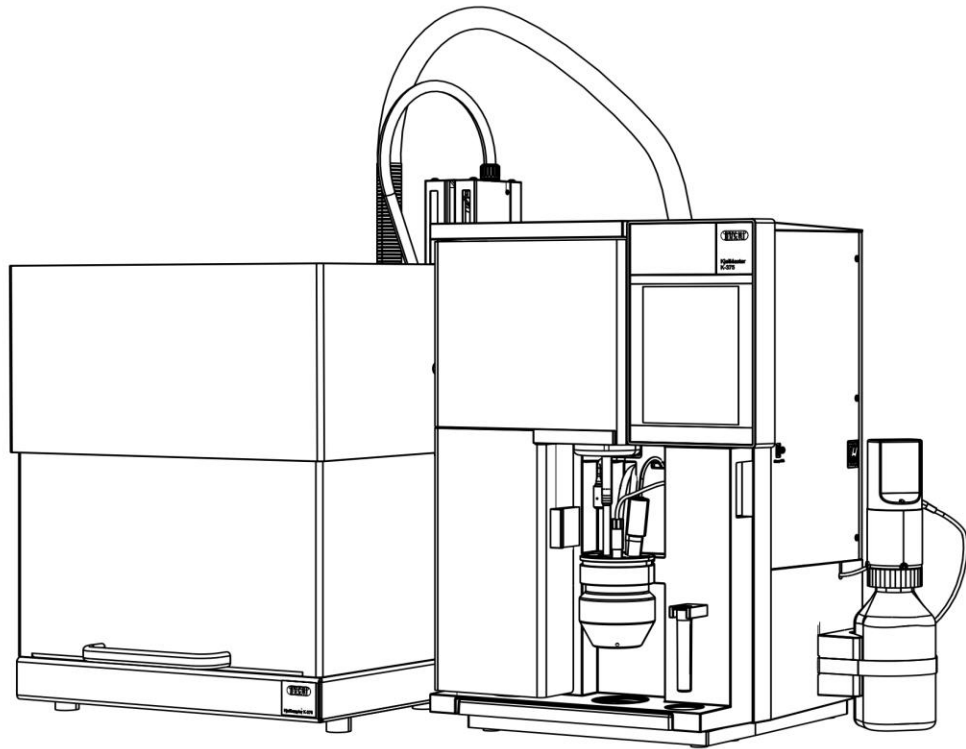
مشخصات فنی دستگاه اندازه گیری پروتئین کلدال کمپانی Buchi

مشخصات فنی تجهیز شماره ۱: KjelMaster K-375 (Part Number 113753700)



KjelMaster K-375 / KjelSampler K-376 / K-377 Technical data sheet

The automatic distillation unit KjelMaster K-375 is designed for convenient nitrogen and protein analysis. The reduced need for user interaction and an intelligent software save time and costs. Automation and throughput are increased significantly by using the KjelSampler K-376 or K-377.



Scope of delivery KjelSampler K-376 and K-377

The K-376 accommodates up to 24 sample tubes of 300 mL capacity. The K-377 allows processing up to 48 samples in 300 mL tubes.

	K-376	K-377
RS232 communication cable	1.5 m	1.5 m
Sample tubes (500 mL)	1	1
Sample tubes (300 mL)	28	52
Rack trays	1	2
Rack for 20 x 300 mL sample tubes	1	2
Express rack for 4 x 300 mL sample tubes	1	2
Test gauge for sample tubes	1	1

Order code



KjelMaster K-375

- 0 Without distillation unit
- 1 Potentiometric titration, glass splash protector
- 2 Colorimetric titration, glass splash protector
- 3 Potentiometric titration, plastic splash protector
- 4 Colorimetric titration, plastic splash protector

KjelSampler K-376 or K-377

- 0 Without auto sampler
- 1 KjelSampler K-376 (24 positions)
- 2 KjelSampler K-377 (48 positions)

Technical data

KjelMaster K-375

	K-375
Dimensions (W x D x H)	458 x 431 x 670 mm
Weight	32 kg
Display	8.4 inch color touch
Result memory on instrument	>100'000 results
Result memory with Kjellink PC software	Unlimited
User administration	Administrator and operator level
Titration setup options	Potentiometric (pH), colorimetric and back titration (pH)

K-375

Integrated titrator	Yes
Interchangeable burette	Yes, 20 mL and 50 mL burette volume
Online-Titration	Yes
Starting the titration already during the distillation for faster time to results.	
Minimal titrator volume	2 µl / step
Automatic result calculation	Yes
Language	DE, EN, IT, ES, FR, JA, CN, KO, PL, RU
Cooling water control	Saving cooling water by restricting water flow during distillations and closing water valve after distillations.
Pumps for automatic addition	NaOH, H ₃ BO ₃ , H ₂ O
Automatic waste removal	From sample tube and receiver waste with separate waste outlets.
Distillation capacity (100 %)	~ 40 mL / min
Adjustable steam output	30 – 100 %
Measuring range (LOQ - Max. Amount)	0.02 – 220 mg N
Reproducibility (RSD)	<1 %
Recovery	>99.5 %
RS232 ports	2 (balance, KjelSampler)
USB ports	3 (printer, barcode reader, memory stick)
LAN port	1
Power supply	220 - 240 VAC ±10 %
Frequency	50/60 Hz
Power consumption (during distillations)	2400 W
Power consumption (stand-by mode)	34 W
Water consumption (during distillation only)	0.7 L/min at 10 °C 2.5 L/min at 30 °C
Safety sensors	3 (service door, protecting door, sample tube)

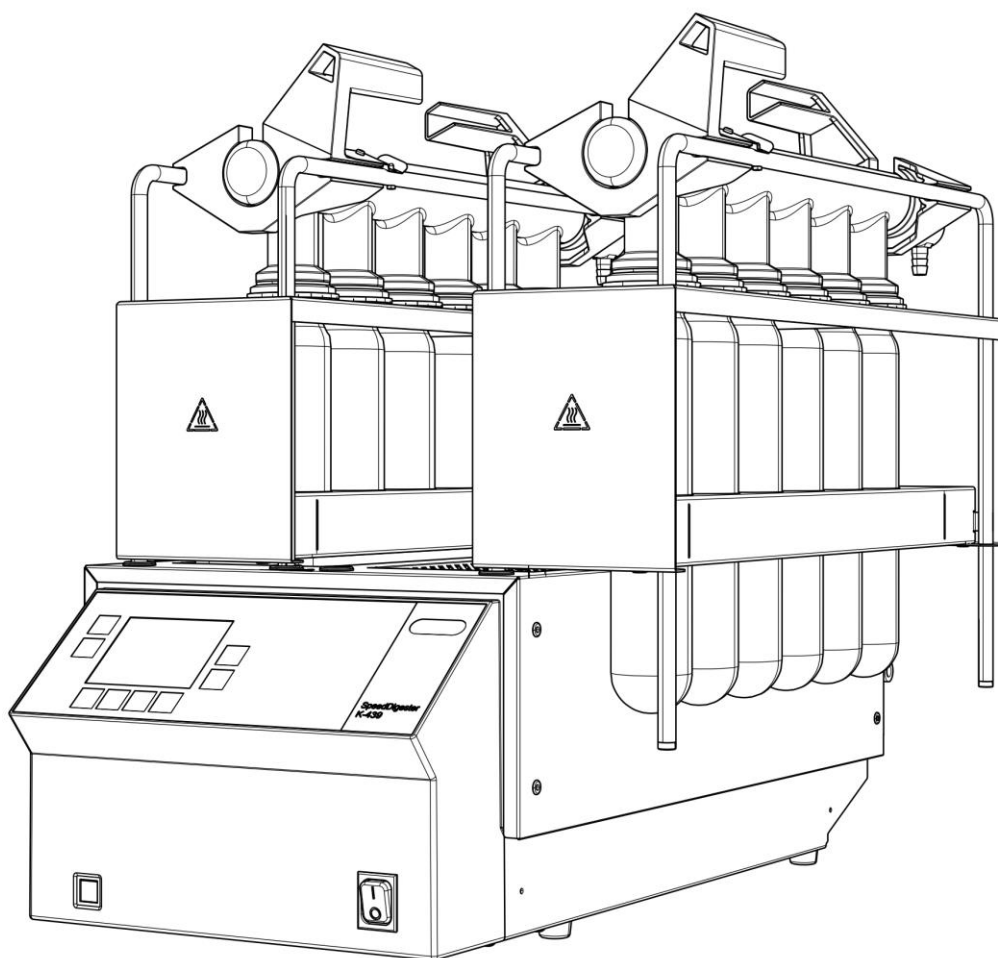
Materials

Steam generator housing	Stainless steel
Housing stirrer	Glass fiber reinforced polypropylene
Glass parts	Borosilicate 3.3
Plastic splash protector	Glass fiber reinforced polypropylene
Protective cover	PMMA



SpeedDigester K-439 Technical data sheet

The SpeedDigester K-439 combines all advantages of IR and block heating digestion systems and is revolutionizing Kjeldahl digestion. It is the only IR digestion system with an integrated temperature sensor, so that fast IR digestion is achievable at precise temperatures.



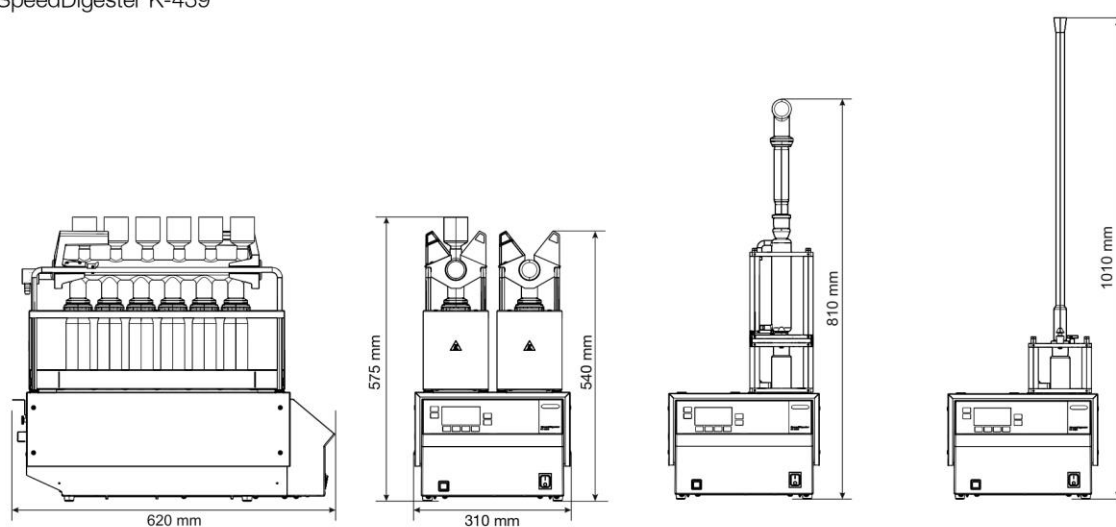
Possible configurations and maximum number of samples

Possible sample tube configurations	Max. numbers of samples
100 mL tubes (micro-Kjeldahl)	12
300 mL tubes (standard Kjeldahl)	12
500 mL tubes (TKN)	10
Ground joint tubes (NS 29/32; COD / reflux)	12
3 rd party tubes	12

Dimensions and weight

Dimensions with standard Kjeldahl setup (WxHxD)	310 x 540 x 620 mm
Weight without accessory	15.5 kg










SpeedDigester K-439







Technical data











Operating voltage	220 – 240 V \pm 10 %
Frequency	50/60 Hz
Power consumption	2000 W
Temperature range	50 – 580 °C
Temperature error	\pm 5 °C at 200 °C / \pm 10 °C at 550 °C
Temperature resolution	1 °C
Display	QVGA 240 x 320 pixels
Degree of protection	IP 20
Approval	CE / CSA

Accessories

For 300 mL tubes	Qty	Order number	Picture
Suction module standard Suitable for most applications	1	11055849	
Suction module with condensate trap For aqueous samples, prevents backflow of condensate into the sample tube	1	11055865	
Suction module for H ₂ O ₂ addition	1	11055853	
Sample tubes 300 mL For sample volumes up to 200 mL in volume or 5 g in weight	4	037377	
Sample tubes (300 mL)	20	11059690	
Rack for 300 mL/micro tubes	1	11055248	
Insulation plate for 300 mL tubes	1	11055142	
Bed-plate to raising the sample tubes For raising the 300 mL sample tubes in the rack, for easier removal	1	11055943	
Insulation cap for unused positions To cover individual unoccupied positions of the insulation plate, for 300 mL and 500 mL sample tubes	1	11056024	


For 500 mL tubes	Qty	Order number	Picture
Suction module with condensate trap	1	11055851	
Sample tubes (500 mL) For sample volumes up to 400 mL in volume or more than 4 g in weight	4	043982	
Rack for 500 mL tubes (incl. base and interlock spring)	1	11056966	
Insulation plate for 500 mL tubes	1	11055143	
Insulation cap for unused positions To cover individual unoccupied positions of the insulation plate, for 300 mL and 500 mL sample tubes	1	11056024	

For micro-Kjeldahl tubes	Qty	Order number	Picture
Suction module standard	1	11055849	
Sample tubes micro For sample volumes up to 3 mL in volume or 0.2 g in weight. Reduction of chemicals of approx. 80% compared to the 300 mL tubes.	4	11057442	
Rack for 300 mL/micro tubes	1	11055248	
Insulation plate for micro tubes	1	11055204	

For reflux and COD digestion	Qty	Order number	Picture
Reflux rack	1	11058226	
Air reflux condenser Length 700 mm, NS 29/32	6	11058300	
Water reflux setup Incl. holder with 6 water condensers, 6 absorption vessels and silicone hoses with quick coupling	1	11058227	
Absorption vessels for water reflux	6	11058377	
Insulation plate (reflux and 3 rd party tubes)	1	11055877	
Sample tubes ground joint (NS 29/32)	6	11058697	
Stand for air reflux condensers Stand for 12 condensers	1	11058700	
Cooling tray To cool the sample tubes when adding the chemicals	1	11058701	
Suction module standard	1	11055849	
Connector to suction module (PVDF; high resistant)	1	11056804	

High resistant parts *	Qty	Order number	Picture
Sealing (PTFE)	1	022442	
Hose set (FKM)	1	11056891	
Connector to suction module (PVDF)	1	11056804	

* For digestions using nitric acid, hydrochloric acid or aqua regia, special system requirements are necessary

General Accessories	Qty	Order number	Picture
Weighing Boats Nitrogen-free paper, 58 x 10 x 10 mm	100	11060522	
Glass caps For occupying empty sample positions, to close the suction circuit	4	040049	
Stand with drip tray (for suction manifold)	1	11055216	
Connection cable to Scrubber The Scrubber is controlled by the digester by the cable connection (already incl. at Scrubber ^{ECO} models)	1	030973	
Digestion rods To prevent boiling delays	10	043087	
Scrubber K-415	1	see Data Sheet Scrubber	

Documentation	Qty	Order number
Kjeldahl Guide (EN) Comprehensive guide covering all aspects of the theoretical and practical know-how	1	11055033
Kjeldahl Practice Guide (EN) Provides theoretical background information, useful hints and calculation tables for daily routine work	1	11592548
Kjeldahl Practice Guide (DE)	1	11592547
Kjeldahl Practice Guide (CN)	1	11592549
IQ/OQ set for K-439 (EN)	1	11056167
IQ/OQ set for K-439 (DE)	1	11057207
Repeating OQ K-439 (EN)	1	11056253
Repeating OQ K-439 (DE)	1	11057209

Kjeldahl Tablets*			Order number
Titanium	3.71 g	(3.500 g K ₂ SO ₄ , 0.105 g CuSO ₄ • 5 H ₂ O, 0.105 g TiO ₂)	11057980
Missouri	5.00 g	(4.980 g K ₂ SO ₄ , 0.020 g CuSO ₄ • 5 H ₂ O)	11057982
ECO	4.00 g	(3.998 g K ₂ SO ₄ , 0.002 g CuSO ₄ • 5 H ₂ O)	11057983
Titanium Micro	1.59 g	(1.500 g K ₂ SO ₄ , 0.045 g CuSO ₄ • 5 H ₂ O, 0.045 g TiO ₂)	11057981
Copper Micro	1.65 g	(1.500 g K ₂ SO ₄ , 0.150 g CuSO ₄ • 5 H ₂ O)	11057985
Antifoam	1.00 g	(0.970 g Na ₂ SO ₄ , 0.030 g Silicone Antifoam)	11057984

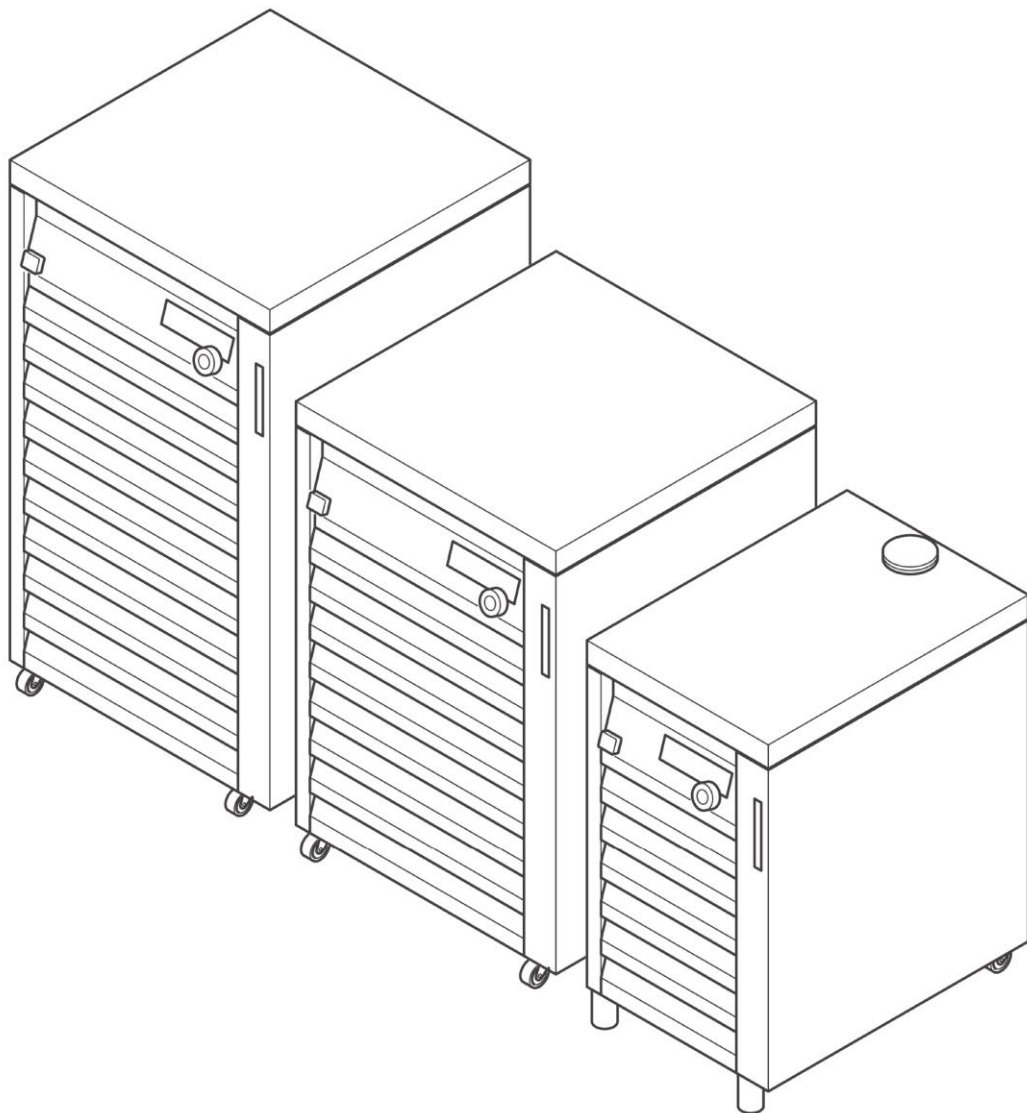
* Box of 1000 tablets



Recirculating Chiller F-305, F-308, F-314

Technical data sheet

The BUCHI recirculating chillers are meant to be used with laboratory equipment that requires coolant flow such as rotary evaporators, parallel evaporators, Kjeldahl- and extraction products. The F-300 line is specifically designed for seamless integration into a BUCHI Rotavapor® R-300 system. The temperature can conveniently be set by the interface. Furthermore, it offers ECO-mode, temperature lock and instant start with dynamic pressure adjustment without waiting until the chiller reaches its set temperature.



Overview

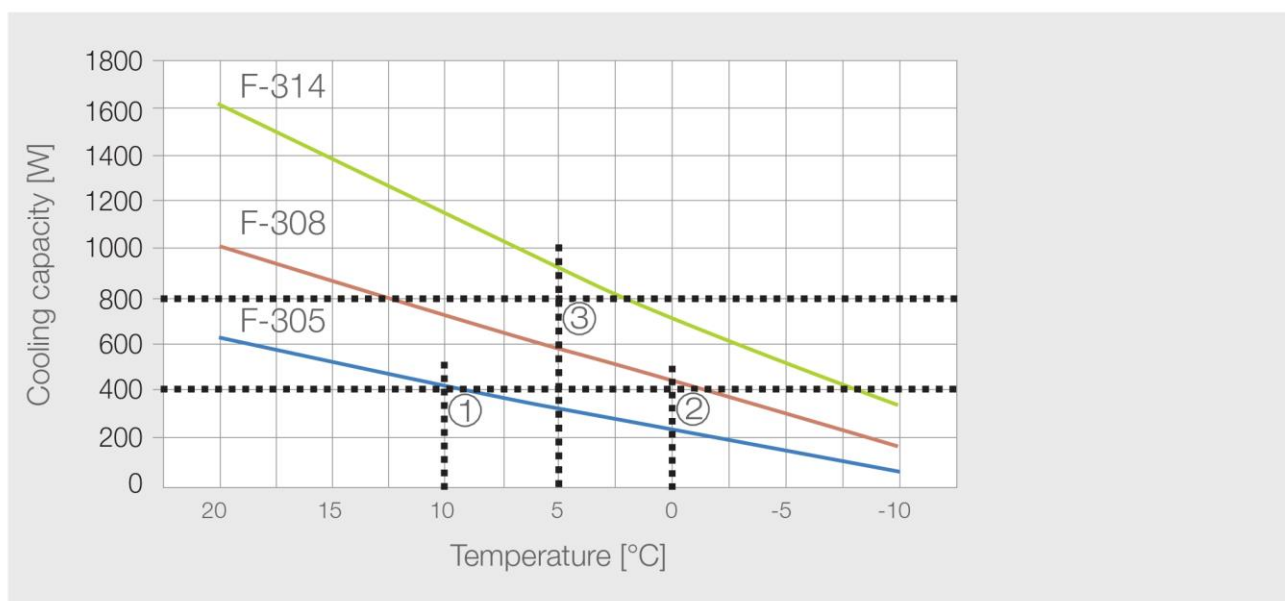
The Recirculating Chiller F-305 / F-308 / F-314 cover a temperature range of -10 to + 25 °C. The chillers differ in the cooling capacity to support various laboratory instruments.

Recommended chiller when working at 15 °C cooling and 20 °C ambient temperature

	F-305	F-308	F-314
Cooling capacity at 15 °C	550 W	900 W	1400 W
Supported lab-size rotary evaporator	1	2	3 – 4
Supported parallel evaporator	-	1	2
Supported extraction system	-	1	2
Supported Kjeldahl products	-	1 stand-alone	1 sampler system

Recommended chiller when working at other cooling temperatures

The following graph shows the relation between cooling capacity and temperature at 25 °C ambient conditions; the lower the temperature, the lower the cooling capacity. In addition to the ambient temperature, the cooling capacity is influenced by humidity, tubing length, tubing diameter, etc.



Typically required cooling capacity for laboratory instruments:

Rotary evaporator:	400 W
Extraction units:	550 W
Kjeldahl unit:	700 W
Parallel evaporation:	600 W

Examples:

- ① Distillation with one rotary evaporator at F-305
10 °C
- ② Distillation with one rotary evaporator at F-308
0 °C
- ③ Distillation with two rotary evaporators F-314
at 5 °C

Order code

Choose the configuration according to your needs:



Recirculating Chiller Type

05 F-305 (550 W at 15 °C)

08 F-308 (900 W at 15 °C)

14 F-314 (1400 W at 15 °C)

Voltage

1 230 V

2 115 V

Scope of delivery

All configurations are supplied ready to use.

	F-305	F-308	F-314
Hose clamp	4	4	4
Power cord	1	1	1
Control cable, 2 m	1	1	1
Hose barb, Ø 8 mm	2	2	-
Hose barb, Ø 9.5 mm	-	2	2
Hose barb, Ø 13.5 mm	-	-	2

Technical data

Recirculating Chiller

	F-305	F-308	F-314
Dimensions (W x D x H)	280x 400 x 500mm	400 x 500 x 580 mm	400 x 500 x 670 mm
Weight	31 kg	41 kg	52 kg
Cooling capacity at 15 °C*	550 W	900 W	1'400 W
Cooling capacity at 10 °C*	440 W	730 W	1'150 W
Cooling capacity at 0 °C*	250 W	450 W	720 W
Cooling capacity at -10 °C*	80 W	180 W	350 W
Temperature range	-10 to +25°C	-10 to +25°C	-10 to +25°C
Heating emission	750 W	1'400 W	2'100 W
Power consumption	800 W	1'100 W	1'500 W
Voltage	230 V AC ± 10% 115 V AC ± 10%	230 V AC ± 10% 115 V AC ± 10%	230 V AC ± 10% 115 V AC ± 10%
Frequency			
at 230 V	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
at 115 V	60 Hz	60 Hz	60 Hz
Temperature reading resolution	0.1°C	0.1°C	0.1°C
Hysteresis	± 1°C	± 1°C	± 1°C
Refrigerant	R134a	R134a	R134a
Tank capacity	3.0 L	4.5 L	6.5 L
Tubing connector	8 + 9.5 mm	8 + 9.5 mm	9.5 + 13.5 mm
Pump pressure	0.6 bar	0.6 bar	1 bar
Pump delivery rate	2.5 L/min	3 L/min	11 L/min
Overvoltage category	II	II	II
Display	Digital	Digital	Digital

* Measured at 20°C ambient temperature.

Compatibility and communication requirements with a F-305 / F-308 / F-314

Interface /	Compatibility / Mode	Communication requirements
Vacuum Controller		
I-300 / I-300 Pro	compatible controlled	VacuBox 2x Communication cable. BUCHI COM 6p: 11058705 (0.3 m), 11058707 (1.8 m), 11058708 (5 m) or 11064090 (15 m) Power is supplied through connection with other appropriate peripherals.
I-100	compatible on/off	Communication cable. Mini-DIN 8p: 11060882 (0.6 m) or 038010 (1.5 m) Power adapter (11060669)
V-850 / V-855*	compatible on/off	Communication cable. Mini-DIN 6p to RJ45 11060649 (1.5 m) or 11064104 (3 m) Power adapter (11060669)

Interface /	Compatibility / Mode	Communication requirements
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Vacuum Controller

V-800 / V-805	-	-
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* Vacuum Controller V-850/V-855 only communicates with the Recirculating Chiller F-305/F-308/F-314 when firmware version 3.0 (or newer) is installed.

Explanation of terms

speed controlled	Recirculating chiller is turned on/off and the temperature can be set via the interface. The actual temperature is displayed on the interface. Additional features when the system is operating in „controlled“ mode are listed as follows.
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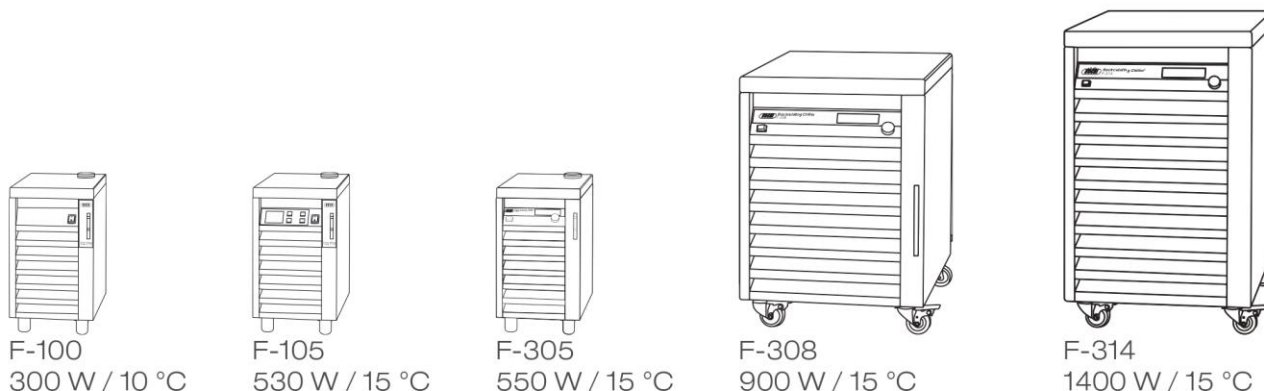
on/off	Recirculating chiller is automatically turned on/off via the interface.
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-	Connection not possible.
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A VacuBox is included when ordering Rotavapor® R-300 with an Interface I-300 or Interface I-300 Pro compatibility pack.

All recirculating chillers at a glance

The BUCHI recirculating chiller portfolio is completed with the F-100 line. The following table provides an overview of the different features.



	F-100	F-105	F-305	F-308	F-314
Cooling capacity at 15 °C	400 W	530 W	550 W	900 W	1400 W
Temperature range	Fix at 10 °C	-10 °C to +25 °C	-10 °C to +25 °C	-10 °C to +25 °C	-10 °C to +25 °C
Eco mode to save energy	-	-	•	•	•
Temperature lock	-	-	•	•	•
Recommended BUCHI Rotavapor® line	Rotavapor® R-100	Rotavapor® R-100	Rotavapor® R-300	Two Rotavapor® R-300	Two Rotavapor® R-300
ON/OFF control via interface on recom. Rotavapor®	-	•	•	•	•
Temperature setting via interface on recom. Rotavapor®	-	-	•	•	•
Other applications	Small distillation apparatus	Small distillation apparatus	Small distillation apparatus	Kjeldahl Extraction Parallel evaporator	Parallel evaporator at low temperature Kjeldahl systems