

FP89-HL Ultra-Low Refrigerated-Heating Circulator

The Ultra-Low Refrigerated Circulators of the HighTech Series with HL or SL circulator feature powerful pressure and suction pumps. The in-struments provide the entire variety of functions of the professional HighTech Series of circulators.

Your advantages

- VFD COMFORT DISPLAY
- LCD DIALOG DISPLAY backlit for convenient interactive operation
- ICC (Intelligent Cascade Control), self-optimizing temperature control
- TCF Temperature Control Features to optimize the control behavior
- ATC3 3-Point-Calibration
- · SMART PUMP, electronically adjustable pump stages
- · Adjustable high temperature cut-out, visible via display
- RS232/RS485 interface for online communication
- Integrated programmer for 6 x 60 program steps
- · Connections for solenoid valve and HSP booster pump
- Proportional cooling control



Technical data

Available voltage ve	rsions		Bath				
Order No.	9 312 689		Bath cover	integrated			
Available voltage version	s:		Usable bath opening cm (W x L / D) 13 x 15 / 16				
9 312 689.03							
9 312 689.13							
Cooling			Other				
Cooling of compressor		2-stage Air	Classification	Classification III (FL)			
			IP Code	IP 21			
Electronics			Dimensions and volumes				
Digital interface		Profibus optional	Weight kg	135			
External pt100 sensor co	External pt100 sensor connection		Dimensions cm (W × L × H)	55 x 60 x 92			
Integrated programmer 6x60		6x60 steps	Filling volume I	5.5 8			
Temperature control ICC		ICC	Pump connections	M16x1 male			
Absolute temperature calibration 3 Point Calibra		3 Point Calibration					
Temperature display		VFD					
Temperature setting Keypad		Keypad					
Temperature values							
Setting the resolution of the temperature 0.01 display °C							
Working temperature range °C -90 +100							
Temperature stability °C ±0.02							
Ambient temperature °C +5.0 +40.0							
Temperature display resolution °C 0.01		0.01					

Performance values





230V/50Hz (Schuko Plug - CEE 7/4 Plug Type F)

230V/50Hz							
Heating capacity kW							1.3
Cooling capacity (Ethanol)							
°C	20	0	-20	-40	-60	-80	
kW	1	0.92	0.88	0.75	0.58	0.2	
Viscos	sity ma	x. cST		70			
Refrigerant							R404A
Filling volume g							500
Global Warming Potential for R404A							3922
Carbon dioxide equivalent t							1.961
Refrigerant							R508B
Filling volume g							270
Global Warming Potential for R508B							13396
Carbon dioxide equivalent t							3.617
Pump capacity flow rate I/min							22 26
Pump capacity flow pressure bar							0.4 0.7
Maximum suction bar							0.2 0.4

230V/60Hz (Nema N6-20 Plug)

230V/60Hz							
Heating capacity kW							1.3
Cooling capacity (Ethanol)							
°C	20	0	-20	-40	-60	-80	
kW	1	0.92	0.88	0.75	0.58	0.2	
Viscosity max. cST							70
Refrigerant							R404A
Filling volume g							500
Global Warming Potential for R404A							3922
Carbon dioxide equivalent t							1.961
Refrigerant							R508B
Filling volume g							270
Global Warming Potential for R508B							13396
Carbon dioxide equivalent t							3.617
Pump capacity flow rate I/min							22 26
Pump capacity flow pressure bar							0.4 0.7
Maximum suction bar							0.2 0.4

All Benefits



JULABO. Quality. Highest standards of quality for a long product



Green technology.
Development consistently applied environmentally friendly materials and technologies.







Satisfied customers.

11 subsidiaries and more than 100 partners worldwide guarantee fast and qualified JULABO support.



100% Checked.

100% testing. 100% quality. Each JULABO Circulator undergoes thorough quality testing before leaving the factory.



Quick start.

Individual JULABO consultation and comprehensive manuals at your disposal.



Services 24/7.

Around the clock availability. You can find suitable accessories, data sheets, manuals.



Intelligent temperature control.

Intelligent cascade control - automatic and self-optimizing adaptation of the PID control parameters with external stability of +/- 0.05 $^{\circ}\text{C}.$



Connection of additional equipment

Stakei connections for solenoid valve, HSP booster pump and HST booster heater



Early warning system for high/low temperature limits

Maximum safety for applications, optical and audible alarm, convertible to automated cut-off function



Clever pump system

Reliable and consistent pump capacity, electronically adjustable pump stages



Control from the external application

External Pt100 sensor connection for precise measurement and control directly in the external application



For flammable bath fluid

Classification III (FL) according to DIN 12876-1



ATC3. Calibration.

'Absolute Temperature Calibration' for compensating a physically caused temperature difference, 3-point calibration.



Process. Under control.

Full regulation of the dynamics control, access to all important control parameters for individual process optimization.



100 % Cooling capacity

'Active Cooling Control' for cooling available throughout the entire working temperature range, fast cool-down even at higher temperatures



Energy saving cooling

Proportional cooling control for automatic adjustment of cooling power or temporary switch-off of compressor as needed to save up to 90 % energy in comparison to unregulated cooling machines



Condensation and ice protection

A heated cover plate prevents condensation or ice build-up in the bath

