Julabo

FP90-SL 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 instruments provide the entire variety of functions of the professional HighTech Series of circulators.

Product features

- VFD COMFORT DISPLAY
- LCD DIALOG DISPLAY backlit for convenient interactive operation
- Keypad for setpoints, warning/safety values and menu functions
- ICC (Intelligent Cascade Control), self-optimizing temperature control
- TCF Temperature Control Features to optimize the control behavior
- ATC3 3-Point-Calibration
- Pt100 External sensor connection for measurement and control
- SMART PUMP, electronically adjustable pump stages
- Unique early warning system for low liquid level
- 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
- Active Cooling Control

Performance values

400V/3PNPE/50Hz (Plug 32A CEE)	
Heating capacity kW	3
Viscosity max. cSt	70
Pump capacity flow rate I/min	22 26
Pump capacity flow pressure bar	0.4 0.7
Maximum suction bar	0.2 0.4
Power consumption A	22



59 x 76 x 116

M16x1 male

22

0.050700.07						
Order No.		9352790.07				
Cooling capacity (Ethanol)						
°C	20	0	-20	-40	-60	-80
kW ¹	1.8	1.7	1.6	1.35	0.75	0.15
Refrigerant stage 1 Refrigerant stage 2						
Refrigerant	R	404A	Re	efrigerant	R23	
Filling weight g	8	50	Fi	lling weight g	380	
Global Warming P R404A	Potential for 39	922		obal Warming Potentia 23	l for 14800	
Carbon dioxide eq	uivalent t 3.	3337	Ca	arbon dioxide equivaler	ntt 5.624	

¹ Performance specifications measured in accordance with DIN 12876. Cooling capacities up to 20 °C measured with ethanol; over 20 °C with thermal oil unless otherwise specified. Performance specifications apply at an ambient temperature of 20 °C. Performance values may differ with other bath fluids.

Technical data

External pt100 sensor connection

Absolute temperature calibration

Integrated programmer

Temperature control

Available voltage versions			Cooling	
Order No.	9 352 790		Cooling of compressor	2-stage Air
Available voltage versions:				
9352790.16	208V/3PPE/60Hz (Without Plug) (R404A)			
9352790.06	230V/3PPE/50Hz (Without Plug) (R404A)			
9352790.07	400V/3PNPE/50H: (R404A)	z (Plug 32A CEE)		
Bath			Other	
Bath cover		integrated	Classification	Classification III (FL)
Usable bath opening cr	n (W x L / D)	28 x 23 / 20	IP Code	IP 21
Electronics			Dimensions and volumes	
Interfaces		Profibus optional	Weight kg	201

Dimensions cm ($W \times L \times H$)

Filling volume I

Pump connections

Temperature display	VFD	
Temperature setting	Keypad	
Temperature values		Included in delivery
Setting the resolution of the temperature display $^{\circ}\mathrm{C}$	0.01	2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)
Working temperature range °C	-90 +100	
Temperature stability °C	±0.05	
Ambient temperature °C	+5 +40	
Setting the resolution of the temperature display °C	0.01	

integrated

6x60 steps

3 Point Calibration

ICC

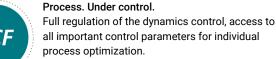
All Benefits



S3

Classification III (FL) according to DIN 12876-1

For flammable bath fluid





Early warning system for high/low temperature limits

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



Connection of additional equipment Stakei connections for solenoid valve, HSP booster

pump and HST booster heater

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



100% Checked.

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



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



Satisfied customers.

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



Intelligent temperature control.

Intelligent cascade control - automatic and selfoptimizing adaptation of the PID control parameters with external stability of +/- 0.05 °C.



ATC3. Calibration. 'Absolute Temperature Calibration' for compensating a physically caused temperature difference, 3-point calibration.



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 switchoff of compressor as needed to save up to 90 % energy in comparison to unregulated cooling machines



Clever pump system Reliable and consistent pump capacity, electronically adjustable pump stages



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

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



Ouick 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, case studies, and more at www.julabo.com.

