

## MAGIO MS-450F Refrigerated / heating circulator

As with all circulators from the MAGIO range, the refrigerated circulators stand out thanks to their premium quality, high performance and intuitive operation. The devices offer extra strong pressure and suction pumps, thus fulfilling the highest demands for temperature control of external applications. Whether in basic research, material testing or technical systems – the MAGIO refrigerated circulators offer high-tech solutions for high customer requirements.

### Alternatively with natural refrigerant

The MAGIO MS-450F is alternatively available with natural refrigerant. Order No. 9 032 714.N1



### Product features

- Ideal for demanding external applications
- Simple control of complex applications
- Continuously adjustable, extremely powerful pressure / suction pump
- Flow rate 16 ... 31 l / min, pressure 0.24 ... 0.92 bar, suction 0.03 ... 0.4 bar
- Large, high-resolution TFT touch display with multilingual user interface
- Parts being in contact with the medium made of stainless steel
- Integrated programmer
- Integrated external Pt100 connection
- USB connection
- RS232 interface for online communication
- Ethernet
- analog interfaces (accessory)
- Class III (FL) according to DIN 12876-1
- Modbus
- Profibus DP (Accessory)
- RS232/RS485 interface for online communication
- Connections for solenoid valve

### Performance values

115V/60Hz (Nema N5-15 Plug)	
Heating capacity kW	1
Viscosity max. cST	70
Pump capacity flow rate l/min	16 ... 31
Pump capacity flow pressure psi	3.5 ... 13.3
Maximum suction psi	-0.4 ... -5.8
Power A	12

## Refrigerant variants

Order No. 9032714.N1.02

## Cooling capacity 1 (Ethanol)

°C	20	0	-10	-20	-30
kW	0.46	0.39	0.29	0.17	0.07

\*Performance specifications measured in accordance with DIN12876. 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.

## Cooling capacity 2 (Ethanol)

°C	20	0	-10	-20	-30
kW	0.4	0.33	0.24	0.12	0.01

\*Performance specifications measured in accordance with DIN12876. 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.

## Refrigerant stage 1

Refrigerant R290

Filling volume g 31

Global Warming Potential for R290 3

Carbon dioxide equivalent t 0

Order No. 9032714.S1.02

## Cooling capacity 1 (Ethanol)

°C	20	0	-10	-20	-30
kW	0.46	0.39	0.29	0.17	0.07

\*Performance specifications measured in accordance with DIN12876. 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.

## Cooling capacity 2 (Ethanol)

°C	20	0	-10	-20	-30
kW	0.4	0.33	0.24	0.12	0.01

\*Performance specifications measured in accordance with DIN12876. 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.

## Refrigerant stage 1

Refrigerant R449A

Filling volume g 70

Global Warming Potential for R449A 1397

Carbon dioxide equivalent t 0.098

## Technical data

## Available voltage versions

Order No. 9 032 714

## Bath

Bath tank

Stainless steel

Available voltage versions:		Bath cover	integrated
9032714.N1.01	100V/50-60Hz (Nema N5-15 Plug) (R290)	Usable bath opening in. (W x L / D)	5.1 x 5.9 / 5.9
9032714.S1.01	100V/50-60Hz (Nema N5-15 Plug) (R449A)		
9032714.N1.02	115V/60Hz (Nema N5-15 Plug) (R290)		
9032714.S1.02	115V/60Hz (Nema N5-15 Plug) (R449A)		
9032714.N1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R290)		
9032714.S1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R449A)		
9032714.N1.33.chn	200-230V/50-60Hz (CN Plug) (R290)		
9032714.S1.33.chn	200-230V/50-60Hz (CN Plug) (R449A)		
9032714.N1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R290)		
9032714.S1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R449A)		
9032714.N1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R290)		
9032714.S1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R449A)		

Cooling		Other	
Cooling of compressor	1-stage Air	Classification	Classification III (FL)
		IP Code	IP 21
		Hint to the technical data table	Cooling capacity 1 = capacity at minimum pump level, cooling capacity 2 = capacity at maximum pump level
		Pump function	Pressure Suction Pump
		Pump type	Immersion Pump
		User Interface Language	Chinese, Czech, Dutch, English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Spanish, Turkish

Electronics		Dimensions and volumes	
Digital interface	Ethernet, Modbus, RS232, RS485, USB	Weight lbs	63.9
External pt100 sensor connection	integrated	Dimensions in. (W x L x H)	9.1 x 15.7 x 25.6
Integrated programmer	8x60 steps	Filling volume l	3 ... 4
Temperature control	ICC	Pump connections	M16x1 male
Absolute temperature calibration	10 Point Calibration		
Temperature display	7" TFT Touchscreen		
Temperature setting	Touchscreen		
Electronic Timer hr:min	00:00 ... 99:59		

Temperature values		Included in delivery	
Setting the resolution of the temperature display °C	0.01	2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)	

Working temperature range °C	-30 ... +200
Temperature stability °C	±0.01
Ambient temperature °C	+10 ... +40
Temperature display resolution °C	0.01

**All Benefits**



**Touch display. Perfect operation.**  
With the touch display, the user always has an overview of all values and functions. The intuitive and multilingual menu structure enables perfect control.



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



**Many interfaces.**  
Straight-forward remote control, data management, and integration into process structures. USB, Ethernet, RS232, SD card, and alarm off are permanently integrated. Further interfaces available as accessories.



**Maximum safety.**  
Classification III according to DIN12876-1 enables safe operation, even with flammable fluids. Automatic switch-off in the event of high temperature or low liquid level.



**Space saving. Free up space.**  
Place your JULABO Circulator right next to an application, another unit, or wall. That saves space. This is made possible by eliminating vents and connections on the sides.



**Multi-lingual.**  
Operation in multiple languages.



**Programmer. Integrated.**  
The integrated internal programmer makes it possible to automatically run temperature time profiles.



**Temperature. Under control.**  
External Pt100 sensor connection for precise measurement and control directly in the external application.



**Fill level. Monitored.**  
Fill level indicator on the display for heat-transfer liquid.



**Process stability.**  
Early warning - visual and acoustic - of critical states increases process stability.



**Process. Under control.**  
Full control of the dynamic, access to all important control parameters for individual process optimization.



**Stable. Mobile.**



**Energy-saving.**  
The high-quality insulation of all relevant components saves energy.



**Everything made of stainless steel.**  
Quality and material compatibility at the highest level. All parts in contact with the medium are entirely made of stainless steel.



**Wide range.**  
Refrigerated and heating circulator in various combinations, circulator in various sizes. Maximum flexibility through a large selection of accessories.



**Connection. Easy.**  
Inclined pump connections (M16x1) facilitate the connection of applications. Each unit includes 2 barbed fittings of 8/12 mm diameter each.



**Analog I/O.**  
Analog interfaces for integration into process control systems (optional).



**Condensation protection.**  
Superb design solution. Integrated ventilation directs air over the bath lid and minimizes condensation.



**Most powerful pump.**  
The integrated pressure/suction pump with performance values of 0.9 bar and -0.4 bar is the most powerful in its class and continuously adjustable.



**Highest measuring accuracy**  
'Absolute Temperature Calibration' for manual compensation of a temperature difference, 10-point calibration