

## MAGIO MS-449F 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.

The MAGIO MS-449F refrigerated circulator has an exceptionally large bath volume. This makes the unit ideal for precisely tempering larger or a variety of different samples in the bath.

### Plenty of room for samples in the bath

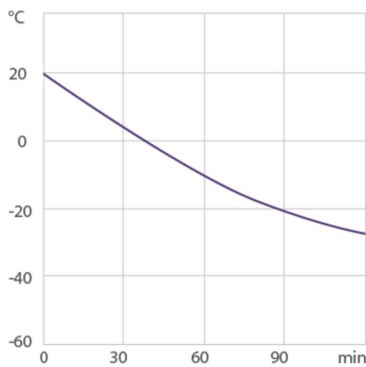
The cooling machine 449F features an extraordinarily large bath volume. The unit is therefore perfect for precise temperature control of larger or a variety of samples in the bath. The height-adjustable shelf, which is available as an accessory, further enhances the flexibility of application.

### 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
- Connections for solenoid valve
- Integrated pump connection M16×1

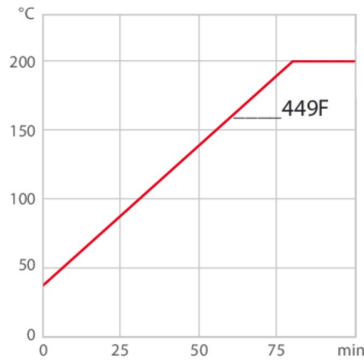


### Cool-down time



Medium: Ethanol

### Heat-up time



Medium: Thermal

### Performance values

<b>230V/50Hz (Schuko Plug - CEE 7/4 Plug Type F)</b>	
Heating capacity kW	2
Viscosity max. cSt	70
Pump capacity flow rate l/min	16 ... 31
Pump capacity flow pressure bar	0.24 ... 0.92
Maximum suction bar	-0.03 ... -0.4
Power consumption A	13

Order No.	9032716.N1.33				
<b>Cooling capacity 1 (Ethanol)</b>					
°C	20	0	-10	-20	-30
kW <sup>1</sup>	0.46	0.37	0.29	0.22	0.08
<b>Cooling capacity 2 (Ethanol)</b>					
°C	20	0	-10	-20	-30
kW <sup>1</sup>	0.4	0.31	0.24	0.19	0.05

Note about natural refrigerants:  
 Temperature control units using natural refrigerants are often subject to regulatory requirements regarding the installation site, operation, transport or disposal of the units. If you have any questions, we will be happy to advise you.

<b>Refrigerant stage 1</b>	
Refrigerant	R290
Filling weight g	41
Global Warming Potential for R290	3
Carbon dioxide equivalent t	0.000123

<sup>1</sup> 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. Cooling capacity 1 = capacity at minimum pump level, cooling capacity 2 = capacity at maximum pump level

### Technical data

<b>Available voltage versions</b>		<b>Cooling</b>	
Order No.	9 032 716	Cooling of compressor	1-stage Air

## Available voltage versions:

9032716.N1.01	100V/50-60Hz (Nema N5-15 Plug) (R290)
9032716.N1.02	115V/60Hz (Nema N5-15 Plug) (R290)
9032716.N1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R290)
9032716.N1.33.chn	200-230V/50-60Hz (CN Plug) (R290)
9032716.N1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R290)
9032716.N1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R290)

## Bath

Bath tank	Stainless steel
Bath cover	integrated
Usable bath opening cm (W x L / D)	28 x 35 / 20

## Other

Classification	Classification III (FL)
IP Code	IP 20
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

Interfaces	Ethernet, Modbus, RS232, RS485, Stakei, USB
External pt100 sensor connection	integrated
Integrated programmer	8x60 steps
Temperature control	ICC
Absolute temperature calibration	10 Point Calibration
Temperature display	7" TFT Touchscreen
Temperature setting	Touchscreen
Electronic Timer h:min	00:00 ... 99:59

## Dimensions and volumes

Weight kg	42
Dimensions cm (W x L x H)	37 x 59 x 69
Filling volume l	18 ... 26
Pump connections	M16x1 male

## Temperature values

Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-30 ... +200
Temperature stability °C	±0.01
Ambient temperature °C	+5 ... +40
Setting the resolution of the temperature display °C	0.01

## Included in delivery

2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)

## All Benefits



**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.



**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.



**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.



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



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



**Stable. Mobile.**  
Rubber feet keep JULABO Circulators standing firm. Larger and more powerful units also have integrated rollers for easy handling.



**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.



**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.



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



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



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



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



**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.



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



**Services 24/7.**  
Around the clock availability. You can find suitable accessories, data sheets, manuals, case studies, and more at [www.julabo.com](http://www.julabo.com).



**Quick support**  
If an error occurs, the integrated Black-Box function permits fast diagnosis by the JULABO service team