## Julabo

#### MAGIO MS-600F 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.

#### High resolution TFT touch display

The modern TFT touch display gives you all the important information at a glance. Three large, predefined main screens clearly display data and graphics with various application priorities. Menu navigation is self-explanatory, arranged by relevance to daily operations and easy to operate with the touch of a finger. The in-built help function provides detailed support in case of additional questions.



#### Product features

- Ideal for demanding external applications
- Simple control of complex applications
- Continuously adjustable, extremely powerful pressure / suction pump
- Flow rate 16 ... 31 I / 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

#### **Technical data**

Available voltage versions
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Available voltage	versions	Bath	Bath				
Order No.	9 032 704	Bath tank	Stainless steel				
Available voltage ver	sions:	Bath cover	integrated				
9 032 704.01	100V/50-60Hz (Nema N5-15 Plu	ug) Usable bath opening in	(W x L / D) 8.7 x 5.9 / 5.9				
9 032 704.02	115V/60Hz (Nema N5-15 Plug)						
9 032 704.05	200-230V/50-60Hz (CH Plug Ty 1011)	pe SEV					
9 032 704.04	200-230V/50-60Hz (UK Plug Tyj BS1363A)	be					
9 032 704.33	200-230V/50-60Hz (Schuko Plu 7/4 Plug Type F)	g - CEE					
9 032 704.33.chn	200-230V/50-60Hz (CN Plug)						
Cooling		Other					
Cooling of compress	or 1-stage Air	Classification	Classification III (FL)				
		IP Code	IP 21				
		Pump function	Pressure Suction				

Pump type

Rath

Pump

Immersion Pump

- . .

## Julabo

Electronics	
External pt100 sensor connection	integrated
Integrated programmer	8x60 steps
Temperature control	ICC
Absolute temperature calibration	10 Point Calibration
Temperature displayTemperature display	7" TFT Touchscreen
Temperature settingTemperature setting	Touchscreen
Electronic Timer hr:min	00:00 99:59
Temperature values	
Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-35 +200.0
Temperature stability °C	+/-0.01
Ambient temperature °C	+10.0 +40.0
Temperature display resolution °C	0.01

Dimensions	and	volumes	
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84.4
13 x 18.5 x 27.2
5 7.5
M16x1 male

#### Performance values

#### 100V/50-60Hz (Nema N5-15 Plug)

100	100V/50Hz						100V/60Hz								
Heating capacity kW 0.8							Heating capacity kW 0.8							0.8	
Cooli	Cooling capacity (Ethanol)						Coolin	Cooling capacity (Ethanol)							
°C	20	10	0	-10	-20	-30		°C	20	10	0	-10	-20	-30	
kW	0.6	0.52	0.44	0.27	0.16	0.04		kW	0.6	0.52	0.44	0.27	0.16	0.04	
Visco	sity ma	ax. cST				-	70	Viscos	Viscosity max. cST						70
Refrigerant				I	R452A	Refrigerant							R452A		
Filling	g volum	ie g					150	Filling volume g							150
Globa	l Warm	ning Po	otentia	l for R4	452A	:	2140	Global Warming Potential for R452A							2140
Carbo	on dioxi	ide equ	uivalen	tt		(	0.321	Carbon dioxide equivalent t						0.321	
Pump	capac	ity flov	v rate	/min			16 31	Pump capacity flow rate l/min						16 31	
Pump capacity flow pressure psi 3.5 13.3						3.5 13.3	Pump capacity flow pressure psi						3.5 13.3		
Maximum suction psi -0.45.8						-0.45.8	Maximum suction psi -0.45.8						-0.45.8		
Powe	r						15 A	Power 15 A						15 A	

#### 115V/60Hz (Nema N5-15 Plug)

115V/60Hz									
Heating capacity kW 1									
Cooling capacity (Ethanol)									
°C	20	10	0	-10	-20	-30			
kW	0.6	0.52	0.44	0.27	0.16	0.04			
Viscos	sity ma	ax. cST					70		
Refrig	erant						R449A		
Filling	volum	e g					150		
Global	l Warm	ning Po	tentia	l for R4	149A		1397		



Carbon dioxide equivalent t	0.21
Pump capacity flow rate l/min	16 31
Pump capacity flow pressure psi	3.5 13.3
Maximum suction psi	-0.45.8
Power	12 A

#### 200-230V/50-60Hz (CH Plug Type SEV 1011)

200	//50H	lz						200V/
Heatir	ng capa	acity k'	W				1.6	Heating
Coolir	ng capa	acity (E	thano	I)				Cooling
°C	20	10	0	-10	-20	-30		°C
kW	0.6	0.52	0.44	0.27	0.16	0.04	ŀ	kW
Visco	sity ma	ax. cST					70	Viscosi
Refrig	erant						R449A	Refrige
Filling	volum	e g					150	Filling v
Globa	l Warm	ning Po	otentia	l for R4	149A		1397	Global
Carbo	n dioxi	de equ	iivalen	tt			0.21	Carbon
Pump	capac	ity flov	v rate	l/min			16 31	Pump c
Pump	capac	ity flov	v pres	sure pe	si		3.5 13.3	Pump c
Maxin	num sı	ction	psi				-0.45.8	Maximu
Power	r						10 A	Power
230	//50H	lz						230V/
Heatir	ng capa	acity k	W				2	Heating
Coolir	ng capa	acity (E	thano	I)				Cooling
°C	20	10	0	-10	-20	-30		°C
kW	0.6	0.52	0.44	0.27	0.16	0.04	ŀ	kW
Visco	sity ma	ax. cST					70	Viscosi
Refrig	erant						R449A	Refrige
Filling	volum	e g					150	Filling v
Globa	l Warm	ning Po	otentia	1397	Global			
Carbo	n dioxi	de equ	iivalen		0.21	Carbon		
Pump	capac	ity flov	v rate		16 31	Pump c		
Pump	capac	ity flov	v pres	sure pe	si		3.5 13.3	Pump c
Maxin	num sı	uction	psi				-0.45.8	Maximu
Power	r				10 A	Power		

200V	200V/60Hz											
leatin	leating capacity kW 1.6											
Coolin												
°C	20	10	0	-30								
٨	0.6	0.52	0.44	0.27	0.16	0.04						
liscos	sity ma	ıx. cST		70								
Refrige	erant			R449A								
Filling	volum	e g					150					
Global	Warm	ing Po	tentia	l for R4	149A		1397					
Carbo	n dioxi	de equ	ivalen	tt			0.21					
Pump	сарас	ity flov	v rate l	/min			16 31					
oump	сарас	ity flov	v press	sure ps	si		3.5 13.3					
Maxim	num su	iction	osi				-0.45.8					
Power							10 A					
230V	760H	z										
leatin	ig capa	acity k\	N				2					
Coolin	g capa	acity (E	thano	I)								
°C	20	10	0	-10	-20	-30						
٧W	0.6	0.52	0.44	0.27	0.16	0.04						
liscos	sity ma	ıx. cST					70					
Refrige	erant						R449A					
Filling	volum	e g					150					
Global	Warm	ing Po	tentia	l for R4	149A		1397					
Carbo	n dioxi	de equ		0.21								
Pump	capac	ity flov		16 31								
Pump	сарас	ity flov	v press	sure ps	si		3.5 13.3					
Maxim	num su	ction	osi				-0.45.8					
Power							10 A					

#### 200-230V/50-60Hz (UK Plug Type BS1363A)

200V/50Hz										
Heating capacity kW 1.6										
Cooling capacity										
°C	20	10	0	-10	-20	-30				
kW	0.6	0.52	0.44	0.27	0.16	0.04				
Viscos	sity ma	ax. cST					70			
Refrig	Refrigerant R449A									
Filling	volum	e g					150			

200V/60Hz									
Heatin	g capa	acity k\		1.6					
Cooling capacity (Ethanol)									
°C	20	10	0	-10	-20	-30			
kW	0.6	0.52	0.44	0.27	0.17	0.04			
Viscos	sity ma	ax. cST					70		
Refrige	erant		I	R449A					
Filling	volum	e g					150		

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Global Warming Potential for R449A	1397	Global Warming Potential for R449A	1397		
Carbon dioxide equivalent t	0.21	Carbon dioxide equivalent t	0.21		
Pump capacity flow rate I/min	16 31	Pump capacity flow rate I/min	16 31		
Pump capacity flow pressure psi	3.5 13.3	Pump capacity flow pressure psi	3.5 13.3		
Maximum suction psi	-0.45.8	Maximum suction psi	-0.45.8		
Power	12 A	Power	12 A		
230V/50Hz		230V/60Hz			
Heating capacity kW	2	Heating capacity kW	2		
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)			
°C 20 10 0 -10 -20 -30	)	°C 20 10 0 -10 -20 -30			
kW 0.6 0.52 0.44 0.27 0.16 0.0	4	kW 0.6 0.52 0.44 0.27 0.16 0.04	4		
Viscosity max. cST	70	Viscosity max. cST	70		
Refrigerant	R449A	Refrigerant	R449A		
Filling volume g	150	Filling volume g	150		
Global Warming Potential for R449A	1397	Global Warming Potential for R449A	1397		
Carbon dioxide equivalent t	0.21	Carbon dioxide equivalent t	0.21		
Pump capacity flow rate l/min	16 31	Pump capacity flow rate I/min	16 31		
Pump capacity flow pressure psi	3.5 13.3	Pump capacity flow pressure psi	3.5 13.3		
Maximum suction psi	-0.45.8	Maximum suction psi	-0.45.8		
Power	13 A	Power	13 A		

#### 200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F)

200V/50Hz		200V/60Hz				
Heating capacity kW	1.6	Heating capacity kW 1.6				
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)				
°C 20 10 0 -10 -20 -30	)	°C 20 10 0 -10 -20 -30				
kW 0.6 0.52 0.44 0.27 0.16 0.0	4	kW 0.6 0.52 0.44 0.27 0.16 0.04				
Viscosity max. cST	70	Viscosity max. cST 70				
Refrigerant	R449A	Refrigerant R449A				
Filling volume g	150	Filling volume g 150				
Global Warming Potential for R449A	1397	Global Warming Potential for R449A 1397				
Carbon dioxide equivalent t	0.21	Carbon dioxide equivalent t 0.21				
Pump capacity flow rate I/min	16 31	Pump capacity flow rate I/min 16 31				
Pump capacity flow pressure psi	3.5 13.3	Pump capacity flow pressure psi 3.5 13.3				
Maximum suction psi	-0.40.6	Maximum suction psi -0.45.8				
Power	12 A	Power 12 A				
230V/50Hz		230V/60Hz				
Heating capacity kW	2	Heating capacity kW 2				
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)				
°C 20 10 0 -10 -20 -30	0	°C 20 10 0 -10 -20 -30				
kW 0.6 0.52 0.44 0.27 0.16 0.0	4	kW 0.6 0.52 0.44 0.27 0.16 0.04				
Viscosity max. cST	70	Viscosity max. cST 70				
Refrigerant	R449A	Refrigerant R449A				
Filling volume g	150	Filling volume g 150				
Global Warming Potential for R449A	1397	Global Warming Potential for R449A 1397				

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Carbon dioxide equivalent t	0.21	Carbon dioxic
Pump capacity flow rate l/min	16 31	Pump capacit
Pump capacity flow pressure psi	3.5 13.3	Pump capacit
Maximum suction psi	-0.45.8	Maximum su
Power	14 A	Power

Carbon dioxide equivalent t	0.21
Pump capacity flow rate l/min	16 31
Pump capacity flow pressure psi	3.5 13.3
Maximum suction psi	-0.45.8
Power	14 A

#### 200-230V/50-60Hz (CN Plug)

200V	/50H	lz						200V	/60H	z	
Heatin	ig capa	acity k\	N				1.6	Heatin	g capa	acity k	W
Coolin	g capa	acity (E	thano	I)				Coolin	g capa	acity (E	thano
°C	20	10	0	-10	-20	-30		°C	20	10	0
kW	0.6	0.52	0.44	0.27	0.16	0.04		kW	0.6	0.52	0.44
Viscos	sity ma	ax. cST					70	Viscos	ity ma	x. cST	
Refrige	erant						R449A	Refrige	erant		
Filling	volum	e g					150	Filling	volum	e g	
Global	Warm	ning Po	tentia	l for R4	449A		1397	Global	Warm	ing Po	tential
Carbor	n dioxi	de equ	ivalen	tt			0.21	Carbo	n dioxi	de equ	ivalen
Pump	capac	ity flow	rate	/min			16 31	Pump	capac	ity flov	v rate l
Pump	capac	ity flow	/ pres	sure p	si		3.5 13.3	Pump	сарас	ity flov	v press
Maxim	num si	uction p	osi				-0.45.8	Maxim	num su	iction	psi
Power							13 A	Power			
230V	7/50H	lz						230V	/60H	z	
Heatin	ig capa	acity k\	N				2	Heatin	g capa	acity k	W
Coolin	g capa	acity (E	thano	I)				Coolin	g capa	acity (E	thano
°C	20	10	0	-10	-20	-30		°C	20	10	0
kW	0.6	0.52	0.44	0.27	0.16	0.04		kW	0.6	0.52	0.44
Viscos	sity ma	ax. cST					70	Viscos	ity ma	x. cST	
Refrige	erant						R449A	Refrige	erant		
Filling	volum	e g					150	Filling	volum	e g	
Global Warming Potential for R449A					1397	Global Warming Potential					
Carbor	n dioxi	de equ	ivalen	tt			0.21	Carbo	n dioxi	de equ	ivalen
Pump	capac	ity flow	rate	/min			16 31	Pump	сарас	ity flov	v rate l
Pump	capac	ity flow	/ press	sure p	si		3.5 13.3	Pump	сарас	ity flov	v press
Maxim	num su	uction p	osi				-0.45.8	Maxim	ium su	iction	psi
Power							14 A	Power			

	200V/60Hz										
	Heatin	g capa	acity k\		1.6						
	Coolin	g capa	acity (E								
	°C	20	10	0	-10	-20	-30				
	kW	0.6	0.52	0.44	0.27	0.16	0.04				
	Viscos	ity ma	x. cST					70			
	Refrige	erant			R449A						
	Filling	volum	e g		150						
	Global	Warm	ing Po		1397						
	Carbor	n dioxi	de equ		0.21						
	Pump	capac	ity flov		16 31						
3	Pump	capac	ity flov	v press	sure ps	si		3.5 13.3			
3	Maxim	ium su	iction p	osi				-0.45.8			
	Power				13 A						
	230V	/60H	z								
	Heatin	g capa	acity k\	N				2			
	Coolin	g capa	acity (E	thanol	)						
	°C	20	10	0	-10	-20	-30				
	kW	0.6	0.52	0.44	0.27	0.16	0.04				
	Viscos	ity ma	x. cST					70			
	Refrige	erant			R449A						
	Filling	volum	e g					150			
	Filling Global		-	tential	for R4	I49A					
	-	Warm	ing Po			I49A		150			
	Global	Warm n dioxi	ing Po de equ	ivalen	tt	149A		150 1397			
3	Global Carbor	Warm n dioxi capac	ing Po de equ ity flow	iivalen <sup>.</sup> v rate l	t t /min			150 1397 0.21			
3	Global Carbor Pump	Warm n dioxi capac capac	ing Po de equ ity flow ity flow	ivalen v rate l v press	t t /min			150 1397 0.21 16 31			

#### All Benefits



#### 100% Checked.

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



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





#### Intelligent temperature control.

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



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



#### 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.



Multi-lingual. Operation in multiple languages.



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



### Process stability.

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



Stable. Mobile.



**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.



#### 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.

# ATC10

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



point calibration

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.

#### 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.



#### Programmer. Integrated.

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



Fill level. Monitored. Fill level indicator on the display for heattransfer liquid.



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



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

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







#### Connection. Easy.

Inclined pump connections (M16×1) facilitate the connection of applications. Each unit includes 2 barbed fittings of 8/12 mm diameter each.



#### 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.



#### **Analog I/O.** Analog interfaces for integration into

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.