

# MAGIO MS-900F Refrigeration / 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.



# Your advantages

 Combined RS232/RS485 interface for serial data transmission according to the EIA-485 industry standard (2-wire bus technology), upgradeable with Profibus DP

# **Technical data**

Available voltage	versions		Bath	
Order No.	9 032 706		Bath tank	Stainless steel
Available voltage vers	sions:		Bath cover	integrated
9 032 706.02	115V/60Hz (Nema	n N5-20 Plug)	Usable bath opening cm (W x L / D)	26 x 35 / 20
9 032 706.05	200-230V/50-60Hz 1011)	z (CH Plug Type SEV		
9 032 706.04	200-230V/50-60Hz BS1363A)	z (UK Plug Type		
9 032 706.33	200-230V/50-60Hz 7/4 Plug Type F)	z (Schuko Plug - CEE		
9 032 706.33.chn	200-230V/50-60H	z (CN Plug)		
Cooling			Other	
Cooling of compresso	or	1-stage Air	Classification	Classification III (FL)
			IP Code	IP 20
			Pump function	Pressure Suction Pump
			Pump type	Immersion Pump
Electronics			Dimensions and volumes	
External pt100 senso	r connection	integrated	Weight kg	54.9
Integrated programm	er	8x60 steps	Dimensions cm (W $\times$ L $\times$ H)	39 x 62 x 75
Temperature control		ICC	Filling volume I	21 30
Absolute temperature	e calibration	3 Point Calibration	Pump connections	M16x1 male
Temperature display		7" TFT Touchscreen		
Temperature setting		Touchscreen		
Electronic Timer hr:m	in	00:00 00:00		
Temperature valu	ies			



Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-38 +200.0
Temperature stability °C	+/-0.01
Ambient temperature °C	+10.0 +40.0
Temperature display resolution °C	0.01

# Performance values

# 115V/60Hz (Nema N5-20 Plug)

115V/60Hz											
Heating capacity kW 1											
Cooling capacity (Ethanol)											
°C	200	20	10	0	-10	-20	-30				
kW	0.9	0.9	0.85	8.0	0.52	0.31	0.11				
Viscos	sity ma	x. cST					50				
Refrig	erant						R449A				
Filling	volum	e g					220				
Global	Warm	ing Po	tential	for R4	149A		1397				
Carbo	n dioxi	de equ	iivalen	t t			0.307				
Pump	capac	ity flov	v rate l	/min			16 31				
Pump	сарас	ity flov	v press	sure ba	ar		0.24 0	).92			
Maxim	num su	iction l	oar				-0.03	-0.4			

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

200V	200V/50Hz						200V/60Hz								
Heatir	ng capa	acity k	W				1.6	Heating capacity kW 1.6							
Coolin	ig capa	city (E	thanol	)				Cooling capacity (Ethanol)							
°C	200	20	10	0	-10	-20	-30	°C	200	20	10	0	-10	-20	-30
kW	0.9	0.9	0.85	8.0	0.52	0.31	0.11	kW	0.9	0.9	0.85	8.0	0.52	0.31	0.11
Viscosity max. cST 50						Viscos	ity ma	x. cST				!	50		
Refrig	Refrigerant R449A						R449A	Refrig	erant					ı	R449A
Filling	volum	e g				:	220	Filling	volum	e g				:	220
Globa	l Warm	ing Po	tential	for R	149A		1397	Global	Warm	ing Po	tential	for R4	149A		1397
Carbo	n dioxi	de equ	uivalen	t t			0.307	Carbon dioxide equivalent t							0.307
Pump	capac	ity flov	v rate l	/min			16 31	Pump	capac		16 31				
Pump	capac	ity flov	v press	sure ba	ar	(	0.24 0.92	Pump	capac	(	0.24 0.92				
Maxin	num su	ction	bar				-0.030.4	Maximum suction bar -0.030.4							-0.030.4
230V	//50H	Z						230V	7/60H	Z					
Heatir	ng capa	city k	W			:	2	Heatin	g capa	acity k	W			:	2
Coolir	ıg capa	city (E	thanol	)				Coolin	g capa	city (E	thanol	)			
°C	200	20	10	0	-10	-20	-30	°C	200	20	10	0	-10	-20	-30
kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11	kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11
Viscosity max. cST 50					Viscosity max. cST 50							50			



Refrigerant	R449A	Refrigerant	R449A
Filling volume g	220	Filling volume g	220
Global Warming Potential for R449A	1397	Global Warming Potential for R449A	1397
Carbon dioxide equivalent t	0.307	Carbon dioxide equivalent t	0.307
Pump capacity flow rate I/min	16 31	Pump capacity flow rate I/min	16 31
Pump capacity flow pressure bar	0.24 0.92	Pump capacity flow pressure bar	0.24 0.92
Maximum suction bar	-0.030.4	Maximum suction bar	-0.030.4

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

200V/50Hz	200V/60Hz								
Heating capacity kW	1.6	Heating capacity kW 1.6							
Cooling capacity		Cooling capacity (Ethanol)							
°C 200 20 10 0 -10 -2	30	°C	200	20	10	0	-10	-20	-30
kW 0.9 0.9 0.85 0.8 0.52 0.3	1 0.11	kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11
Viscosity max. cST	50	Viscosity max. cST 50							
Refrigerant	Refrige	erant					I	R449A	
Filling volume g	220	Filling	volum	e g				:	220
Global Warming Potential for R449A	1397	Global	Warm	ing Po	tential	for R4	149A		1397
Carbon dioxide equivalent t	0.307	Carbor	n dioxid	de equ	ıivalent	t			0.307
Pump capacity flow rate I/min	16 31	Pump	capaci	ty flov	v rate l	min/			16 31
Pump capacity flow pressure bar	0.24 0.92	Pump capacity flow pressure bar							0.24 0.92
Maximum suction bar	-0.030.4	Maximum suction bar -0.030.4							-0.030.4
230V/50Hz		230V/60Hz							
Heating capacity kW	2	Heating capacity kW 2							
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)							
		000	g oupu	, (					
°C 200 20 10 0 -10 -2	30	°C	200	20	10	0	-10	-20	-30
°C 200 20 10 0 -10 -20 kW 0.9 0.9 0.85 0.8 0.52 0.3					10 0.85	0		-20 0.31	0.11
		°C	200	20	0.85			0.31	
kW 0.9 0.9 0.85 0.8 0.52 0.3	1 0.11	°C kW	200 0.9 sity ma	20	0.85			0.31	0.11
kW 0.9 0.9 0.85 0.8 0.52 0.3 Viscosity max. cST	1 0.11	°C kW Viscos	200 0.9 sity ma erant	20 0.9 x. cST	0.85			0.31	0.11
kW 0.9 0.9 0.85 0.8 0.52 0.3  Viscosity max. cST  Refrigerant	1 0.11 50 R449A	°C kW Viscos Refrige Filling	200 0.9 sity ma erant volume	20 0.9 x. cST	0.85	0.8	0.52	0.31	0.11 50 R449A
kW 0.9 0.9 0.85 0.8 0.52 0.3  Viscosity max. cST  Refrigerant  Filling volume g	1 0.11 50 R449A 220	°C kW Viscos Refrige Filling Global	200 0.9 sity ma erant volume Warm	20 0.9 x. cST e g ing Po	0.85	0.8	0.52	0.31	0.11 50 R449A 220
kW 0.9 0.9 0.85 0.8 0.52 0.3  Viscosity max. cST  Refrigerant  Filling volume g  Global Warming Potential for R449A	50 R449A 220 1397	°C kW Viscos Refrige Filling Global Carbon	200 0.9 sity ma erant volume Warm n dioxid	20 0.9 x. cST e g ing Po	0.85	0.8 for R <sup>2</sup>	0.52	0.31	0.11 50 R449A 220
kW 0.9 0.9 0.85 0.8 0.52 0.3  Viscosity max. cST  Refrigerant  Filling volume g  Global Warming Potential for R449A  Carbon dioxide equivalent t	1 0.11 50 R449A 220 1397 0.307	°C kW Viscos Refrige Filling Global Carbon Pump	200 0.9 sity ma erant volume Warm n dioxid capaci	20 0.9 x. cST e g ing Pc de equ ty flow	0.85	0.8 for R4 t	0.52 149A	0.31	0.11 50 R449A 220 1397 0.307

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

200\	200V/50Hz							200V/60Hz								
Heating capacity kW 1.6							Heating capacity kW						1.6			
Cooling capacity (Ethanol)							Coolin	ıg capa	city (E	Ethanol	)					
°C	200	20	10	0	-10	-20	-30	°C	200	20	10	0	-10	-20	-30	
kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11	kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11	
Visco	sity ma	x. cST	-			į	50	Viscosity max. cST 50								
Refrigerant R449A						Refrigerant						1	R449A			
Filling	volum	e g				:	220	Filling	Filling volume g						220	



Global	l Warm	ing Po	otential	for R4	449A	-	1397			Globa	l Warm	ing Po	otential	for R	449A		1397
Carbo	n dioxi	de equ	uivalen	t t		(	0.307			Carbon dioxide equivalent t							0.307
Pump	capac	ity flov	w rate I	/min		1	16 3	1		Pump	capac		16 31				
Pump	сарас	ity flov	w press	sure ba	ar	(	0.24	0.92		Pump	capac	ity flov	w press	sure ba	ar		0.24 0.92
Maximum suction bar -0.030.4								Maxim	num su	ıction	bar				-0.030.4		
230V/50Hz							230V	//60H	z								
Heatir	ng capa	acity k	W			2	2			Heatir	ng capa	acity k	W				2
Coolin	ıg capa	acity (E	thanol	)						Coolin	ig capa	acity (E	thanol	)			
°C	200	20	10	0	-10	-20	-25	-30		°C	200	20	10	0	-10	-20	-30
kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11	0.04		kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11
Viscos	sity ma	ıx. cST	-			į	50			Viscosity max. cST 50							
Refrig	erant					F	R449A			Refrigerant							R449A
Filling	volum	e g				2	220			Filling	volum	e g					220
Globa	l Warm	ing Po	otential	for R4	449A	-	1397			Globa	l Warm	ing Po	otential	for R	449A		1397
Carbo	n dioxi	de equ	uivalen <sup>.</sup>	t t		(	0.307			Carbon dioxide equivalent t							0.307
Pump	capac	ity flov	w rate I	/min		1	16 3	1		Pump capacity flow rate I/min							16 31
Pump	capac	ity flov	w press	sure ba	ar	(	).24	0.92		Pump capacity flow pressure bar							0.24 0.92
Maxin	านm รเ	ıction	bar			-	0.03	0.4		Maxim	านm รเ	ıction	bar				-0.030.4

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

200V/50Hz	200V/60Hz								
Heating capacity kW	1.6	Heating capacity kW 1.6							
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)							
°C 200 20 10 0 -10 -2	0 -30	°C	200	20	10	0	-10	-20	-30
kW 0.9 0.9 0.85 0.8 0.52 0.3	1 0.11	kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11
Viscosity max. cST	50	Viscos	ity ma	x. cST					50
Refrigerant	Refrig	erant						R449A	
Filling volume g	Filling	volum	e g					220	
Global Warming Potential for R449A	Global	Warm	ing Po	otential	for R	449A		1397	
Carbon dioxide equivalent t	0.307	Carbo	n dioxi	de equ	uivalen	t t			0.307
Pump capacity flow rate I/min	16 31	Pump	capac	ity flov	v rate l	/min			16 31
Pump capacity flow pressure bar	0.24 0.92	Pump capacity flow pressure bar							0.24 0.92
Maximum suction bar	-0.030.4	Maximum suction bar -0.030.4							-0.030.4
230V/50Hz		230V/60Hz							
Heating capacity kW	2	Heating capacity kW 2							
Cooling capacity (Ethanol)		Cooling capacity (Ethanol)							
°C 200 20 10 0 -10 -2	0 -30	°C	200	20	10	0	-10	-20	-30
kW 0.9 0.9 0.85 0.8 0.52 0.3	1 0.11	kW	0.9	0.9	0.85	0.8	0.52	0.31	0.11
Viscosity max. cST	50	Viscos	ity ma	x. cST					50
Refrigerant	R449A	Refrig	erant						R449A
Filling volume g	220	Filling	volum	e g					220
Global Warming Potential for R449A	1397	Global Warming Potential for R449A 1397							
Carbon dioxide equivalent t	0.307	Carbon dioxide equivalent t							0.307
Pump capacity flow rate I/min	16 31	Pump capacity flow rate I/min							16 31
Pump capacity flow pressure bar	0.24 0.92	Pump capacity flow pressure bar 0.24 0.92							0.24 0.92



Maximum suction bar

-0.03 ... -0.4

Maximum suction bar

-0.03 ... -0.4

## **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



#### JULABO. Quality.

Highest standards of quality for a long product life.



#### Ouick 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.



#### 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.



## Connection. Easy.

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



#### 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.



## ATC3. Calibration.

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



## Condensation protection.

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



## Wide range.

Refrigerated and heating circulator in various combinations, circulator in various sizes.

Maximum flexibility through a large selection of accessories.



Analog I/O.

Analog interfaces for integration into process control systems (optional).



## 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.



### 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.





#### 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.



### 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.



# 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.



# Most powerful pump.

The integrated pressure/suction pump with performance values of 0.9 bar and -0.5 bar is the most powerful in its class and continuously adjustable.



### Fill level. Monitored.

Fill level indicator on the display for heattransfer liquid.



#### Multi-lingual.

Operation in multiple languages.



# Energy-saving.

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



### Programmer. Integrated.

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