

HAAKE Phoenix II systems for external temperature control are manufactured for applications that do not allow direct product contact. Used in combination with a Pt sensor, HAAKE Phoenix II circulators ensure high temperature accuracy of 0.01 degree C for external applications within a temperature range of -90 to +280 degrees C.

## HAAKE Phoenix II

Circulator baths for external temperature control



Phoenix II circulators for external applications



### Key features

- **New controller software and robust hardware ensure both greater temperature stability and fast reactions to external temperature changes.**
- **Easy operation – Phoenix II circulators can be programmed within minutes in any of six languages.**
- **Powerful software – ensures accuracy throughout the entire testing range, the user can select the three-point calibration function. Up to 10 different programs can be stored to make quick changes between experiments.**
- **With cooling capacities up to 5,000 watts, heating capacities up to 6,000 watts, and temperature ranges from -90°C to +280°C, the Phoenix II Series can be used for virtually any applications within the lab that require heating or cooling.**
- **New displays for easy viewing from any angle.**

### Rheology

Defined and accurate temperature control is also of extreme importance for defining the viscous and elastic properties of materials. Viscometers and rheometers are used to determine rheological values which are vital for the characterization of substances such as polymers, paints, pharmaceutical products or food and beverages. These values depend to a large extent on temperature as well as mechanical stress (shear), time and other influential factors.

Reliable temperature control can be thus ensured by using a laboratory circulator. Thermo Electron Corporation offers complete rheological characterization packages. The HAAKE RheoWin rheological measuring and evaluation software can be used to define a job sequence whereby the rheometer and HAAKE Phoenix II are both software-controlled.

### Analytical applications

Whether the application is the control of a sample temperature or the cooling of a piece of equipment, temperature stability assures stability in analysis. GAA, GAA.GC, NMR, or electrophoresis all benefit from easy operation in multiple languages, the multi-step programmable ramp-up software, the variety of connections such as RS 232 or Profibus and the powerful pump that reacts external temperature change needs within seconds.

### Semiconductor Industry

Etching, cleaning or depositing are known applications for Phoenix II with external cooling. Exact temperature control assures precise end-points and prevents over- or under-etching even allowing the user to run variable etching. Phoenix bath systems can be used for back-end testing when used in combination with Kryo systems.

## Specifications and Accessories

### Chemical Industry

HAAKE Phoenix II circulators are already well established in viscosity measurement with the HAAKE Rheostress 600, ensuring stable results. Reaction Calorimetry also benefits from the fast reaction of the Phoenix II to temperature changes in the reaction vessel thus improving the safety and performance of the process. The RTA or Real Temperature Adjustment assures the temperature on the display really is the temperature you measure.

### Petrochemicals

HAAKE Phoenix II circulators are ideal for many applications in the Petrochemical industry, from „Cloud and Point“ determination according to DIN, ASTM and ISO to the „Freezing Point“ determination of aviation fuels. The user-friendliness makes it a tool applicable in many places in the world.

### Biopharma Industry

Strict control of the fermentor temperature is essential to get the highest yield. Mammalian cell culturing over days is risky without high precision temperature control. Harvesting via molecular filtration using tap water, to prevent the denaturation of enzymes, is costly and uncontrolled. HAAKE Phoenix II circulators are, in all above cases, the answer for precise process control.

## Heating Baths



Optional accessories	Order-No.
Tap water cooling coil for baths W26 und W45	333-0677
Universal hose nozzle for tubing of 3 to 6 mm i. Ø	001-3718
Reservoir drain	333-0499
Bath cover made from stainless steel (fits 2 x onto W45)	333-0648
Bath cover made from stainless steel (fits 2 x onto W26)	333-0225
External analog box	333-0685
230V Power supply for analog box	333-0705
Software ThermStar95plus	091-2950
Pt100 sensors TT	333-0429
Pt100 sensors ST	333-0428
Pt100 sensors HT	333-0423
Additional heater B7 bath	333-0741
Additional heater B12 bath	333-0743
Additional heater W26/W45 bath	333-0758
Solenoid valve control for tap water cooling	333-0744
Additional pump	333-0746

### Technical specification acc. to DIN 12876

Working temperature range	°C
with tap water cooling	°C
with other cooling	°C
Temperature accuracy	+/- K
Heater capacity 230V / 115V	kW
Pump: Pressure max.	mbar
Flow rate max.	l/min
Suction max.	mbar
Flow rate max.	l/min
Bath opening WxLxD	cm
Bath volume max.	l
Overall dimensions WxLxH	cm
Total wattage 230V / 115V	VA
Net weight	kg
Order-No. for 230V / 50-60Hz	
Order-No. for 115V / 60Hz	

HAAKE Phoenix II P2 circulators are also available with a

## Refrigerated Baths



Optional accessories	Order-No.
Universal hose nozzle for tubing of 3 to 6 mm i. Ø	001-3718
Reservoir drain valve	333-0499
Trolley for C30P, C35P, C40P, C41P, C50P	333-0678
External analog box	333-0685
230V Power supply for analog box	333-0705
Software ThermStar95plus	091-2950
Pt100 sensors TT	333-0429
Pt100 sensors ST	333-0428
Pt100 sensors HT	333-0423
Additional heater for C25P	333-0741
Additional heater for C30P, C35P, C50P	333-0745
Additional heater for C40P, C41P	333-0742
Additional pump	333-0746

### Technical specifications acc.

Working temperature range	
Temperature accuracy	
Heater capacity 230V / 115V	
Cooling capacity at 20°C	
0°C	
-20°C	
Pump: Pressure max.	
Flow rate max.	
Suction max.	
Flow rate max.	
Bath opening WxLxD	
Bath volume max.	
Overall dimensions WxLxH	
Total wattage 230V / 115V	
Net weight	
Order-No. for 230V / 50Hz	
Order-No. for 220V / 60Hz	
Order-No. for 115V / 60Hz	

HAAKE Phoenix II P2 circula

## Specifications and Accessories

### Pharmaceutical industry

Haake heating and refrigerated circulating baths can provide precise external temperature control for jacketed reactors ranging in size from 500 ml to 50 liters. With cooling capacities up to 5000 watts and heating capacities to 6000 watts and temperature ranges from -90 to 280 °C these circulators can handle exothermic swings in temperature as well as provide fast and controlled ramp times.

### Food and Beverage

The refractive index of a sugar solution changes with temperature while its solid content remains the same, so temperature is one of the single most important factors influencing accurate refractometer readings and is one of the largest sources of error in measurement. Precise temperature control is therefore of utmost importance for obtaining an accurate refraction index measurements.

HAAKE Phoenix II circulators, with a temperature accuracy of  $\pm 0.01^\circ\text{C}$ , provide the ideal support platform for a complete refractometry solution.

### Cosmetics

Filling systems for lipstick or eyeliners benefit from the fast temperature reaction and ease of operation of HAAKE Phoenix II circulators units. They can be easily operated in both the laboratory as well as in the filling process due the multiple language screen.

### Others

Measuring strength of stainless steel, the quality of tar, the calibration of bi-metal devices or the use of HAAKE Phoenix II circulators to measure the rate of fogging of plastic automobile windscreens ... all of these are applications, which have challenged us in the past. Help us to keep our creativity level high.

### Service

In addition to the standard service support during warranty time, Thermo offers a wide variety of service products to assure the correct functioning of the product during and after standard warranty time. Our service products offer tailor-made solutions, varying from start-up assistance, on-site service or preventive maintenance action to ensure the top quality of your end product.

P1-B5	P2-B5	P1-B7	P2-B7	P1-B12	P2-B12	P1-W26	P2-W26	P1-W45	P2-W45
32...250	32...280	30...250	30...280	28...250	28...280	28...250	28...280	28...250	28...280
20...250	20...280	20...250	20...280	20...250	20...280	20...250	20...280	20...250	20...280
-60...250	-60...280	-60...250	-60...280	-60...250	-60...280	-60...250	-60...280	-60...250	-60...280
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2.0/1.2	3.0/1.2	2.0/1.2	3.0/1.2	2.0/1.2	3.0/1.2	2.0/1.2	3.0/1.2	2.0/1.2	3.0/1.2
560	560	560	560	560	560	560	560	560	560
24	24	24	24	24	24	24	24	24	24
380	380	380	380	380	380	380	380	380	380
22	22	22	22	22	22	22	22	22	22
14x14.5x15	14x14.5x15	13x10x20	13x10x20	22x14x20	22x14x20	30x35x20	30x35x20	30x35x30	30x35x30
4.5	4.5	7	7	12	12	26	26	42	42
24x38x44	24x38x44	25x38x50	25x38x50	34x38x50	34x38x50	35x54x44	35x54x44	36x54x55	36x54x55
2100/1250	3100/1250	2100/1250	3100/1250	2100/1250	3100/1250	2100/1250	3100/1250	2100/1250	3100/1250
10.2	10.2	11.8	11.8	13	13	11	11	19	19
440-0051	441-0051	440-0071	441-0071	440-0121	441-0121	440-0261	441-0261	440-0451	441-0451
440-0052	441-0052	440-0072	441-0072	440-0122	441-0122	440-0262	441-0262	440-0452	441-0452

Profibus interface on special request. Please do not forget to order the correct hoses and bath liquids for your external application.

c. to DIN 12876	P1-C25P	P2-C25P	P1-C30P	P2-C30P	P1-C35P	P2-C35P	P1-C40P	P2-C40P	P1-C41P	P2-C41P	P1-C50P	P2-C50P
°C	-28...150	-28...150	-30...200	-30...200	-35...200	-35...200	-40...150	-40...150	-40...150	-40...150	-50...150	-50...150
+/- K	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
kW	2.0/1.2	2.0/1.2	2.0/-	2.0/-	2.0/1.2	2.0/1.2	2.0/-	2.0/-	2.0/-	2.0/-	2.0/-	2.0/-
W	300	300	800	800	400	400	700	700	1000	1000	850	850
W	200	200	620	620	300	300	550	550	750	750	700	700
W	70	70	450	450	150	150	300	300	400	400	500	500
mbar	560	560	560	560	560	560	560	560	560	560	560	560
l/min	24	24	24	24	24	24	24	24	24	24	24	24
mbar	380	380	380	380	380	380	380	380	380	380	380	380
l/min	22	22	22	22	22	22	22	22	22	22	22	22
cm	13x10x15	13x10x15	22x14x20	22x14x20	22x14x15	22x14x15	29x15x15	29x15x15	29x15x20	29x15x20	22x14x15	22x14x15
l	4.5	4.5	12	12	8	8	12	12	15	15	8	8
cm	26x48x63	26x48x63	40x51x77	40x51x77	40x51x71	40x51x71	40x51x71	40x51x71	40x51x77	40x51x77	40x51x77	40x51x77
VA	2450/1650	2450/1650	2600/-	2600/-	2500/1700	2500/1700	2550/-	2550/-	2600/-	2600/-	2650/-	2650/-
kg	26.3	26.3	46	46	40	40	41	41	45	45	46	46
	440-0251	441-0251	440-0301	441-0301	440-0351	441-0351	440-0401	441-0401	440-0411	441-0411	440-0501	441-0501
	440-0251	441-0251	440-0309	441-0309	440-0359	441-0359	440-0409	441-0409	440-0419	441-0419	440-0509	441-0509
	440-0252	441-0252	-	-	440-0352	441-0352	-	-	-	-	-	-

Profibus interface on special request. Please do not forget to order the correct hoses and bath liquids for your external application.

## Cryostats



Optional accessories	Order-No.
Universal <b>hose nozzle</b> for tubing of 3 to 6 mm i. Ø	001-3718
<b>Reservoir drain valve</b>	333-0499
<b>Trolley</b> for P1-C75P, P2-C75P	333-0678
<b>External analog box</b>	333-0685
<b>230V Power supply</b> for analog box	333-0705
<b>Software ThermStar95plus</b>	091-2950
<b>Pt100 sensors TT</b>	333-0429
<b>Pt100 sensors ST</b>	333-0428
<b>Pt100 sensors HT</b>	333-0423
<b>Additional heater</b> for C75P	333-0741
<b>Additional heater</b> for CT90L/W	333-0745
<b>Additional heater</b> for CT50L/W	333-0749
<b>Additional pump</b>	333-0746

Technical specification acc. to DIN 12876		P1-C75P	P2-C75P	P2-CT80L	P2-CT50L	P2-CT50W	P2-CT90L	P2-CT90W	
Working temperature range	°C	-75..100	-75..100	-80..100	-50..100	-50..100	-90..100	-90..100	
Temperature accuracy	+/-K	0.02	0.02	0.1	0.1	0.1	0.1	0.1	
Heater capacity	KW	1.0	1.0	1.0	2.0	3.0	2.0	2.0	
Cooling	at 20°C / 0°C	W	280/220	280/220	800/750	2500/1750	5000/3000	1650/1500	1900/1700
	at -20°C / -40°C	W	180/130	18 /130	700/600	1100/300	1900/800	1300/1150	1500/1300
	at -60°C / -80°C	W	50/-	50/-	500/50	-	-	600/170	700/200
Pump: Pressure / Flow rate max.	Suction / Flow rate max.	mbar/l/ min	560/24 380/22	560/24 380/22	560/24 380/22	560/24 380/22	560/24 380/22	560/24 380/22	560/24 380/22
	Bath opening: WxLxD	cm	13x10x20	13x10x20	22x14x20	22x27x20	22x27x20	22x15x20	22x15x20
Bath volume	l	6	6	12	24	24	15	15	
Overall dimensions: WxLxH	cm	40x51x77	40x51x77	42x66x102	50x75x109	50x75x109	50x90x109	50x90x109	
Net weight	kg	68	68	107	125	180	190	185	
Total wattage	VA	2500	2500	2500	3300	5800	5300	5300	
Order-No. for 230V / 50Hz for 220V / 60Hz for 380V / 3Ph / 50Hz for 220V / 3Ph / 60Hz		440-0751	441-0751	441-0801	-	-	-	-	
		440-0759	441-0759	441-0809	-	-	-	-	
		-	-	-	446-0503	447-0503	448-0903	449-0903	
		-	-	-	446-0504	447-0504	448-0904	449-0904	

HAAKE Phoenix II P2 circulators are also available with a Profibus interface on special request.  
Please do not forget to order the correct hoses and bath liquids for your external application.

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