

TOP  
S  
P  
N



**ROTOFIX 46/46 H**  
Benchtop centrifuges  
classic/heated

## Special applications require special solutions

Ideal centrifuges for research and industrial laboratories offer a wide range of accessories for routine applications, while also enabling customized solutions for special requirements. Temperature control is often required in addition to the capability of accommodating special tubes.

Such tubes include centrifuge tubes designed to meet the requirements of the **American Society for Testing Materials (ASTM)**. To carry out standardized test methods for crude oil testing the sample tubes can be centrifuged in the heatable ROTOFIX 46 H at the specified temperature of 70 °C.

The sulphuric acid content of chrome baths can be determined by using chrome bath tubes. The method, which is intended to provide quality assurance information, is not only of interest to public and private test bodies, but also for the operators of the baths who wish to carry out the regularly necessary sulphate determinations themselves.

Rotor 5616 is suited for centrifuging Schlenk tubes widely used in organometallic chemistry and co-ordination complex chemistry. Substances that have been prepared in Schlenk tubes can also be separated in them through centrifugation where necessary.

Microfluidic chips can be manufactured in a centrifuge by using accessories specially designed for this purpose. For this new manufacturing technique the centrifuging chamber of the ROTOFIX 46 H can be heated up to 90 °C.

## DESIGN

- Metal housing
- Metal lid
- Stainless steel centrifuging chamber
- Viewing port in the lid

## USER FRIENDLINESS

- Twist lock for effortless opening and closing of the lid
- Ergonomic control and information panel
- 10 programmable memories
- Easy rotor changing

## HEATING (ROTOFIX 46 H)

- Infinitely variable setting from + 10 °C to + 90 °C, dependent on the ambient temperature
- Pre-heating function

## SAFETY

- Lid locking and holding
- Automatic rotor recognition
- Imbalance switch-off
- Emergency lid lock release
- Lid dropping protection
- Motor overheating protection
- Chamber overheating protection

## USE

Because of their assigned use, ROTOFIX 46/46 H centrifuges **are not classified as** medical products under the **IvD Directive**. Consequently, they must not be used for medical analysis or diagnosis. The scope of the **IvD Directive** includes Europe and countries that have adopted the Directive or follow it for the most part.



ROTOFIX 46 H

Cat. No. 4600-50

## OPERATION AND CONTROL

The display panel and all controls on the ROTOFIX 46 / 46 H have been designed ergonomically. During centrifugation, the actual parameter values are indicated.

Nine acceleration and braking ramps, or unbraked run-down can be preselected. Ramp 9 always corresponds to the shortest possible run-up or run-down time. The stored parameter combinations remain in the memory even after the centrifuge has been switched-off.

After entering the rotor radius  $r$  / mm, the centrifuge calculates and indicates the rotational speed RPM or the relative centrifugal force RCF by pressing the RCF key.

The twist knob allows quick and easy entry or changing of the parameters.



ROTOFIX 46

Cat. No. 4600

## DIGITAL DISPLAY AND CONTROL PANEL KEYPAD

	Pre-heating (ROTOFIX 46 H)
RCF	Change-over from RPM to RCF indication
SELECT	Selection of parameters
<u>START</u> IMPULS	Starts centrifugation / Short cycle mode
STOP	Stops centrifugation manually



## ENTRY OF THE PARAMETERS

P	Entry of program number, 10 programmable memories
T/°C	Entry of temperature in increments of 1 within a range of + 10 °C to + 90 °C (ROTOFIX 46 H), dependent on the ambient temperature
RCF	Entry in increments of 10
RPM	Entry in increments of 10
r/mm	Entry of the rotor radius in mm in RCF mode
t/min	Entry of the centrifugation time in minutes and seconds (max. 99 min : 59 s)
	Entry of the acceleration ramp 1-9 Entry of the braking ramp 1-9

# ROTORS AND ACCESSORIES FOR ROTOFIX 46 AND 46 H

## Swing-out rotor, 4-place, for ASTM tubes



↗ 90°

n = 2,000 min<sup>-1</sup>  
max. RCF 984  
illustrated with  
carriers 4275

**Cat. No.** (without carriers) **4474**

## Swing-out rotor, 6-place, for chrome bath tubes



↗ 90°

n = 2,000 min<sup>-1</sup>  
max. RCF 917

**Cat. No.** **4619<sup>8)</sup>**

## Angle rotor, 6-place, for Schlenk tubes



↘ 45°

n = 2,000 min<sup>-1</sup>  
max. RCF 805

**Cat. No.** **5616<sup>8)</sup>**

capacity in ml	50	100	100	100
Ø x L in mm	45 x 130	58 x 161	44 x 168	37 x 200
<b>Cat. No.</b>	- <sup>1)</sup>	<b>0528<sup>1)</sup></b>	- <sup>1)</sup>	<b>0531<sup>1)</sup></b>
carrier Cat. No. <b>4275</b>				
<b>rotor</b> Cat. No. <b>4474</b>				
<b>Cat. No.</b>	<b>4278-A</b>	<b>0771</b>	<b>4277</b>	<b>4276</b>
boring Ø x L in mm	-			
tubes per rotor	4			
max. RCF <sup>1)</sup>	984		961	
radius in mm	220		215	
run-up in sec	16			
run-down in sec, braked	40			

capacity in ml	30
Ø x L in mm	24 x 151
<b>Cat. No.</b>	<b>0529/0508<sup>2)</sup></b>
<b>rotor</b> Cat. No. <b>4619<sup>8)</sup></b>	
<b>Cat. No.</b>	-
boring Ø x L in mm	-
tubes per rotor	6
max. RCF <sup>1)</sup>	917
radius in mm	205
run-up in sec	15
run-down in sec, braked	20

capacity in ml	25	50
Ø x L in mm	24 x 146.5	38 x 148.5
<b>Cat. No.</b>	<b>0532</b>	<b>0533</b>
<b>rotor</b> Cat. No. <b>5616<sup>8)</sup></b>		
<b>Cat. No.</b>	<b>4317</b>	-
boring Ø x L in mm	25 x 86	38.5 x 89.9
tubes per rotor	6	
max. RCF <sup>1)</sup>	783	805
radius in mm	175	180
run-up in sec	15	
run-down in sec, braked	35	

The method used for determination of the sulphate content of chrome baths can be ordered from Hettich free of charge or downloaded from our homepage [www.hettichlab.com](http://www.hettichlab.com)

<sup>1)</sup> Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for ASTM tubes annotated with footnote <sup>1)</sup> is 700.

<sup>2)</sup> The tube may not be centrifuged with the stopper. The stopper only serves to close the tube for agitating or mixing.

# ROTORS AND ACCESSORIES FOR ROTOFIX 46

## Swing-out rotor, 4-place

↻ 90°

$n = 4,000 \text{ min}^{-1}$   
max. RCF 3,095



illustrated with carriers 5051  
and lids 5053

**Cat. No.** (without carriers) **5694**

capacity in ml	3	5	6	7	9	15	25	50	100	100
Ø x L in mm	10 x 60	12 x 75	12 x 82	12 x 100	14 x 100	17 x 100	24 x 100	34 x 100	44 x 100	40 x 115
<b>Cat. No.</b>	-	<b>0553<sup>1)</sup></b>	<b>0501<sup>1)</sup></b>	<b>0578<sup>1)</sup></b>	<b>0500<sup>1)</sup></b>	<b>0518<sup>1)</sup></b>	<b>0519<sup>1)</sup></b>	<b>0521<sup>1)</sup></b>	<b>0526<sup>1)</sup></b>	<b>0523<sup>1)</sup></b>
lid Cat. No. <b>5053</b>										
carrier Cat. No. <b>5051</b>										
<b>Cat. No.</b>	<b>5267</b>	<b>5227</b>	<b>5247<sup>4)</sup></b>	<b>5264</b>	<b>5248<sup>4)</sup></b>	<b>5242</b>	<b>5243</b>	<b>5262</b>	<b>5249</b>	
boring Ø x L in mm	11 x 44	12.5 x 42	12.5 x 86	16 x 50	17.5 x 86	26 x 86	36 x 86	45.5 x 86	42 x 86	
tubes per rotor	80	80	80	48	48	20	8	4		
max. RCF <sup>1)</sup>	2,737	2,773	2,755	2,773	2,755		2,755			
radius in mm	153	155	154	155	154		154			
run-up in sec	40									
run-down in sec, braked	45									

capacity in ml	15	50	12	30	50
Ø x L in mm	17 x 120	29 x 115	17 x 100	25 x 110	29 x 115
<b>Cat. No.</b>	<b>0509</b>	<b>0513</b>	-	-	
lid Cat. No. <b>5053</b>					
carrier Cat. No. <b>5051</b>					
<b>Cat. No.</b>	<b>6306</b>	<b>5259</b>	<b>6306</b>	<b>5266</b>	<b>5243<sup>5)</sup></b>
boring Ø x L in mm	17 x 90	30 x 86	17 x 90	26 x 86	36 x 86
tubes per rotor	28	8	28	20	8
max. RCF <sup>1)</sup>	2,898	2,826	2,898	2,755	
radius in mm	162	158	162	154	
run-up in sec	40				
run-down in sec, braked	45				

<sup>3)</sup> When using these tubes, carrier 5051 cannot be closed with lid 5053.

<sup>4)</sup> With Cat. No. 5247-91 or 5248-91 these adapters can also be ordered with a decanting aid.

<sup>5)</sup> Please remove inserts.

<sup>8)</sup> In heatable model ROTOFIX 46 H, rotors 4619 and 5616 can only be used up to a maximum of + 40 °C.

# ROTORS AND ACCESSORIES FOR ROTOFIX 46



Illustrated with carriers 5092  
and lids 5093

## Swing-out rotor 5694

capacity in ml	4	5	6	7	10	15	25	50	100	100	250	
Ø x L in mm	12x60	12x75	12x82	12x100	17x70	17x100	24x100	34x100	44x100	40x115	65x115	
<b>Cat. No.</b>	-	<b>0553<sup>1)</sup></b>	<b>0501<sup>1)</sup></b>	<b>0578<sup>1)</sup></b>	<b>2079</b>	<b>0518<sup>1)</sup></b>	<b>0519<sup>1)</sup></b>	<b>0521<sup>1)</sup></b>	<b>0526<sup>1)</sup></b>	<b>0523<sup>1)</sup></b>	<b>0530<sup>1)</sup></b>	
lid with biocontainment <sup>6)</sup> Cat. No. 5093												
<b>carrier</b> Cat. No. 5092												
<b>Cat. No.</b>		<b>5128</b>		<b>5120</b>		<b>5136</b>		<b>5122</b>	<b>5124</b>	<b>5125</b>	<b>5126</b>	<b>1791</b>
boring Ø x L in mm		12.8 x 45		12.8 x 82		17.5 x 60.7		25.5 x 82	35.5 x 85	45.5 x 85	42 x 85	66 x 103
tubes per rotor		48			32		16	4				
max. RCF <sup>1)</sup>		3,005			2,952		2,898	2,952	2,952		3,095	
radius in mm		168			165		162	165	165		173	
run-up in sec	40											
run-down in sec, braked	45											

capacity in ml	15	50	12	25	30	50	10	250	290	
Ø x L in mm	17x120	29x115	17x100	25x90	25x110	29x115	16x80	61x122	62x137	
<b>Cat. No.</b>	<b>0509</b>	<b>0513</b>	-				<b>5127<sup>7)</sup></b>		<b>-<sup>7)</sup></b>	
lid with biocontainment <sup>6)</sup> Cat. No. 5093										
<b>carrier</b> Cat. No. 5092										
<b>Cat. No.</b>	<b>5129</b>	<b>5123</b>	<b>5121</b>	<b>5134</b>	<b>5122</b>	<b>5135</b>	<b>5136</b>	<b>6319</b>		
boring Ø x L in mm	17x85	30x85	17.5x82	26x73	25.5x82	30x99	17.5x60.7	66x103		
tubes per rotor	28	8	28	12	16	8	32	4		
max. RCF <sup>1)</sup>	3,095		3,005	2,826	2,898	3,023	2,952	3,095		
radius in mm	173		168	158	162	169	165	173		
run-up in sec	40									
run-down in sec, braked	45									

<sup>1)</sup> Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for ASTM tubes annotated with footnote <sup>1)</sup> is 4,000.

<sup>6)</sup> Tested by the TÜV in conformity with DIN EN 61010, section 2-020.

<sup>7)</sup> At temperatures of over + 40 °C and / or when not filled to capacity, bottles may warp during centrifugation.

# ROTORS AND ACCESSORIES FOR ROTOFIX 46 H

## Angle rotor, 2-place, for the ZentriForm insert

The rotors 4690 and 4691 are only for use in the heatable ROTOFIX 46 H (4600-50).



↘ 30°

n = 2,000 min<sup>-1</sup>  
max. RCF 519

**Cat. No.** (without inserts) **4691**

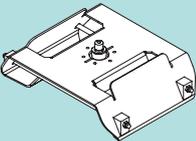
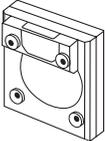
## Spin coater for 4" wafers

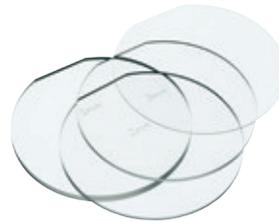


↘ 90°

n = 4,000 min<sup>-1</sup>  
max. RCF 896

**Cat. No.** **4690**

	
<b>rotor</b> Cat. No. <b>4691</b>	<b>ZentriForm insert</b> incl. 1 set of spacers and O-rings
<b>Cat. No.</b>	<b>4692</b>
boring Ø x L in mm	-
inserts per rotor	2
max. RCF	519
radius in mm	116
run-up in sec	22
run-down in sec, braked	22



Disc spacers in 5 different sizes are included in the scope of supply of insert 4692.



De-moulding aid E 3362

Further information on the manufacture of microfluidic chips in centrifuges can be obtained free of charge from [zentriform@hettichlab.com](mailto:zentriform@hettichlab.com) or downloaded from our homepage [www.hettichlab.com](http://www.hettichlab.com)

Do you have an application that can be performed more efficiently / quickly using a centrifuge, but which is not mentioned in this brochure? Talk to us and we will be happy to manufacture the appropriate carriers and adapters.



ROTOFIX 46 H  
illustrated with rotor 4691  
and ZentriForm insert 4692

# ROTOFIX 46/46 H

TECHNOLOGY	ROTOFIX 46		ROTOFIX 46 H	
<b>Benchtop centrifuge, without rotor</b>	<b>classic</b>		<b>heated</b>	
Power supply <sup>*)</sup>	200 – 240 V 1 ~	100 – 127 V 1 ~	200 – 240 V 1 ~	100 – 127 V 1 ~
Frequency	50 – 60 Hz			
Consumption	460 VA	500 VA	600 VA	650 VA
Emission, Immunity	EN / IEC 61326-1, class B		FCC class B	
 Max. capacity	4 x 290 ml		4 x 100 ml	
Max. RPM (speed)	4,000 min <sup>-1</sup>			
Max. RCF	3,095		984	
Running time	1 sec – 99 min : 59 sec, continuous run, short cycle mode (impulse key)			
Dimensions (HxWxD)	345 x 538 x 647 mm			
Weight	approx. 58 kg			
<b>Heating</b>				
Temperature setting, infinitely variable (dependent on the ambient temperature)	-		from + 10 to + 90 °C	
<b>Cat. No.</b>	<b>4600</b>	<b>4600-01</b>	<b>4600-50</b>	<b>4600-51</b>

<sup>\*)</sup> Other voltages on request.



Hettich centrifuges comply with all relevant EU standards in effect and conform to the European level of quality and safety for medical devices. Evidence is provided by national and international test marks such as IEC 61010 or the CE conformity. The ISO 9001 and 14001 certificates accredited to the company bear witness to the extreme care and responsibility Hettich puts into the manufacturing of centrifuges and their accessories.

## Andreas Hettich GmbH & Co. KG

Föhrenstr. 12  
D - 78532 Tuttlingen  
Germany

www.hettichlab.com  
info@hettichlab.com  
service@hettichlab.com

Phone +49 (0)7461 / 7 05 -0  
Fax +49 (0)7461 / 7 05 -122

**National Sales: -200**  
**International Sales: -201**  
**National Service: -202**  
**International Service: -203**



LAB TECHNOLOGY