



## TreAdvisory GmbH List of Centrifuges

### Brief Company Profile

TreAdvisory is a Trade and Research firm composed of a team with a long-standing research experience in relation to Foreign Direct Investment (FDI), market studies and supply chains distribution. TreAdvisory provides leading-edge professional expertise with a clear operations/owner's perspective. We have a hands-on-experience and established networks to private sector players, in both Kenya and Germany.

### Our Purpose - Your Benefit

Understanding ourselves as both services and products provider in sectors within public health, agriculture, and green energy consultancy. As such, our focus is in two main activities namely: *a) Economic Research and Market Trend Analysis and b) Export Trade, focusing on Medical devices, Farm Equipment and Solar Energy.*

Our esteemed Clients do not only benefit from our international networks and experience but also value our multidisciplinary approach. Be it the market studies and planning of an appropriate new market entry strategy or the analysis of an economy's market potential, or the supply of high-quality equipment, we always keep the full picture in mind.

From collecting primary market data and economic feasibility assessments to preparing technical reports and facilitating exports/investment, we cover the complete range of services.

### Mission

Combining operational background and our international experience with professionalism towards workable innovation and modern technology, it is our mission to contribute strategically to the success and competitiveness of our Clients' projects.

**TreAdvisory GmbH** is partnering with **Sigma Laborzentrifugen GmbH**, a company which offers solutions for the efficient separation of several components of a liquid based on their respective densities by centrifugation and is one of the globally leading suppliers of *laboratory centrifuges*.



# Sigma 1-16 Sigma 1-16K

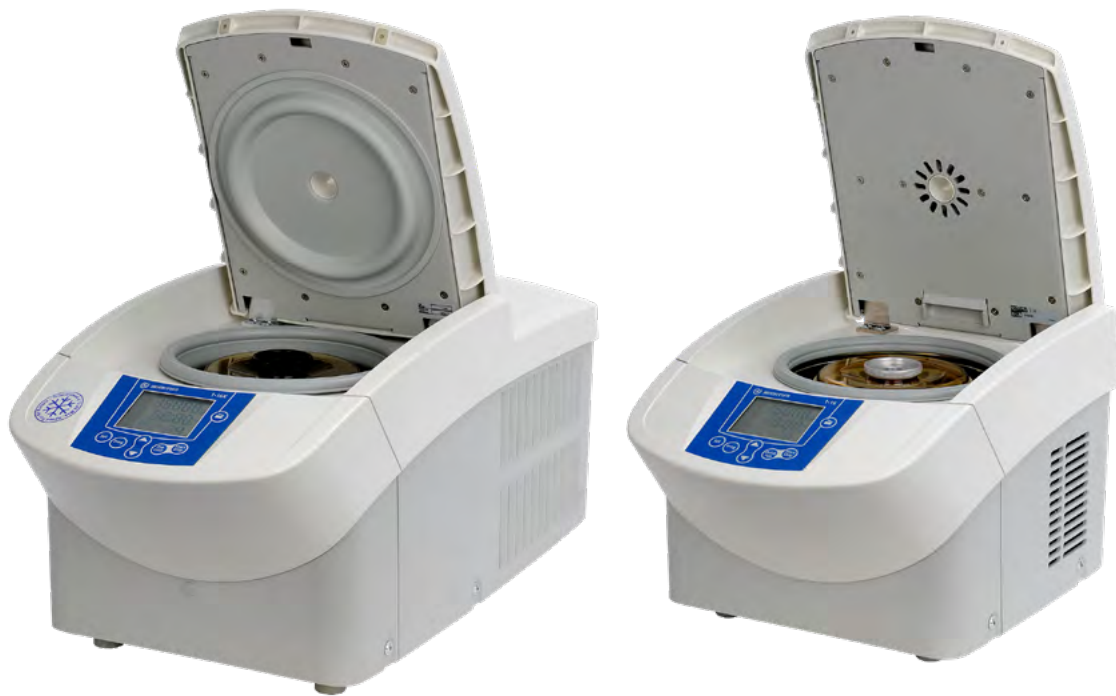


Microcentrifuge

- Unrefrigerated
- Refrigerated



# Exactly what you want – a microcentrifuge tailored to your needs



**Sigma is a leading international manufacturer of laboratory centrifuges for diverse sectors, including biotechnology, pharmaceutical, medical, and environment analysis. Laboratories, institutions and companies everywhere in the world have been relying on premium Sigma quality – Made in Germany – for more than 40 years. The company stands for innovative products and development of durable, energy-efficient and especially user-friendly devices.**

The compact Sigma 1-16 bench centrifuge and the refrigerated version 1-16K are specifically designed for working with microliter tubes. Their outstanding specifications and extensive range of rotors and accessories make this device series especially suitable for research applications with a medium to high volume of samples. Along with a maximum capacity of up to 36 x 2 ml, these devices boast RCF exceeding 20,600 x g, enabling shorter separation times and enhanced separation results. These proven models are used in a wide variety of microbiology applications, such as DNA, RNA or protein isolation. They also have a strong track record in clinical chemistry, paediatrics, biotechnology and bacteriology.



# Clear application orientation

## User-friendly, powerful and sturdy

Along with excellent specifications, the Sigma 1-16 series offers high-quality finishing and smart features. A unique feature is the motorised lid lock for convenient, effortless closing. Users also appreciate the ten programs and the high-performance cooling system of the Sigma 1-16K, including the pre-cooling function and standstill cooling.

The Sigma 1-16 and 1-16K additionally boast compact design and low-noise operation. Thanks to optimal air guidance and smart fan

control, the 36-position fixed-angle rotor 12136 can be operated in the refrigerated centrifuge at maximum speed with an astonishingly low noise level of less than 48 dB(A).

The short acceleration and deceleration times of this microliter centrifuge are equally impressive. In combination with high RCF, this avoids wait times and optimises throughput.

Both bench centrifuges are also available in IVD versions.

### Sigma 1-16

- Universal microcentrifuge
- Speed range up to 15,000 rpm
- Maximum capacity: 36 x 2 ml
- Simple and convenient Spincontrol Basic controller
- Clearly organised display
- Ten programs
- Compact, space-saving device
- Short acceleration and braking times
- Low noise level
- Motorised lid lock
- Automatic lid unlocking
- Low temperature rise in continuous operation
- Durable, easy-care stainless steel chamber
- Window in lid for external speed monitoring
- Manufactured according to the latest national and international standards (e.g. EN 61010-2-020)

### Sigma 1-16K

All features of the Sigma 1-16, plus:

- High-performance cooling
- Temperature setting range: -10 °C to +40 °C
- Rotor temperature control also possible at standstill
- Pre-cooling program
- Energy-efficient and low-noise fan control
- Guaranteed  $\leq +4$  °C at maximum speed with all rotors





# Rotors and accessories

## Large selection and a multitude of applications

A broad selection of fixed-angle rotors for 0.2–5 ml reaction tubes is available for the Sigma 1-16 series. This extensive portfolio is complemented by a haematocrit rotor for determination of the volume percentage of erythrocytes in blood samples and a rotor for centrifugation of PCR tubes.

The innovative design of the 18-position fixed-angle rotor 12118 allows it to be used not only with microliter tubes but also with all common spin column kits (minipreps). The fixed-angle rotor 12136

features a maximum capacity of up to 36 x 2 ml and a Biosafe certificate. Sigma gives customers a choice of polypropylene and aluminium rotors. Due to their better thermal conductivity, aluminium rotors are recommended for use in refrigerated centrifuges, while polypropylene (PP) rotors have better chemical resistance and are less prone to corrosion.

Sigma offers a wide range of rotors, and if desired can also produce custom accessories tailored to customer needs.

### Fixed-angle rotor 12135 for PCR strips

- Max. capacity: 32 x 0.2 ml PCR tubes
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 16,602 x g
- Angle: 45°

▶ p.7



### Fixed-angle rotor 12118 for spin column kits (minipreps)

- Max. capacity: 18 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Angle: 45°

▶ p.7



### Fixed-angle rotor 12024

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Angle: 45°

▶ p.8




### Fixed-angle rotor 12134

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Angle: 43°

▶ p.8




### Fixed-angle rotor 12120

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Biosafe with aluminium lid 17580 
- Angle: 45°

▶ p.9



### Fixed-angle rotor 12136

- Max. capacity: 36 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Biosafe with aluminium lid 17613 
- Angle (outer / inner): 30° / 50°

▶ p.9



### Fixed-angle rotor 12180

- Max. capacity: 12 x 5 ml conical
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Angle: 40°

▶ p.10



### Haematocrit rotor 11024

- Max. capacity: 24 capillary tubes
- Max. speed (1-16 / 1-16K): 14,000 rpm
- Max. RCF (1-16 / 1-16K): 18,626 x g
- Angle: 90°

▶ p.10



## Fixed-angle rotor 12135

### Polypropylene fixed-angle rotor with lid 17930

- Max. capacity: 32 x 0.2 ml PCR tubes
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 16,602 x g
- Hermetically closable with polysulphone lid 17930
- Tmin at maximum speed: <4°C
- Angle: 45°



## Fixed-angle rotor 12118

### Aluminium fixed-angle rotor for reaction tubes with filter (spin column kits / minipreps) with lid 17615

- Max. capacity: 18 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Hermetically closable with aluminium lid 17615
- Tmin at maximum speed: <4°C
- Angle: 45°



### Tube



Rated capacity (filling volume) [ml]	0.2	0.2
Diameter x length [mm]	5.8 x 20	–
Tube material	PP	–
Item no.	15042	PCR strips

### Adapter

for fixed-angle rotor 12135



Bore diameter x length [mm]	6.3 x 18.5	6.3 x 18.5
Tubes per rotor	32	4 x 8
Centrifuging radius [mm]	66	66
Item no.	–	–

### Tube



Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	1.5	2	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	–	15040	–

### Adapter

for fixed-angle rotor 12118



Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8.1 x 45	11.1 x 29.5	11.1 x 38.5			
Tubes per adapter / rotor	1 / 18	1 / 18	1 / 18	1 / 18	– / 18			
Centrifuging radius [mm]	76	78	78	71	80			
Item no.	13021	13000	13002	13074	–			



## Fixed-angle rotor 12024

### Aluminium fixed-angle rotor with lid 17828

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Hermetically closable with polysulphone lid 17828
- Tmin at maximum speed: <4°C
- Angle: 45°









## Fixed-angle rotor 12134

### Polypropylene fixed-angle rotor with lid 17929

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Hermetically closable with polysulphone lid 17929
- Tmin at maximum speed: <4°C
- Angle: 43°








### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040







### Adapter

for fixed-angle rotor 12024



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8.1 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 24	- / 24
Centrifuging radius [mm]	78	80	80	73	82
Item no.	13021	13000	13002	13074*	-






### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

### Adapter


for fixed-angle rotor 12134



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8.1 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 24	- / 24
Centrifuging radius [mm]	78	80	80	73	82
Item no.	13021	13000	13002	13074*	-

## Fixed-angle rotor 12120


### Aluminium fixed-angle rotor with lid 17580

- Max. capacity: 24 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,627 x g
- Biosafe with aluminium lid 17580 
- Tmin at maximum speed: <4°C
- Angle: 45°









## Fixed-angle rotor 12136

### Aluminium fixed-angle rotor with lid 17613

- Max. capacity: 36 x 2 ml
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Biosafe with aluminium lid 17613 
- Tmin at maximum speed: <4°C
- Angle (outer / inner): 30° / 50°







### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040







### Adapter

for fixed-angle rotor 12120



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8.1 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 24	- / 24
Centrifuging radius [mm]	78	80	80	73	82
Item no.	13021	13000	13002	13074*	-





### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

### Adapter

for fixed-angle rotor 12136



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8.1 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 36	1 / 36	1 / 36	1 / 36	- / 36
Centrifuging radius [mm]	76	78	78	71	80
Item no.	13021	13000	13002	13074*	-

## Fixed-angle rotor 12180

### Aluminium fixed-angle rotor with lid 17180

- Max. capacity: 12 x 5 ml conical
- Max. speed (1-16 / 1-16K): 15,000 rpm
- Max. RCF (1-16 / 1-16K): 20,124 x g
- Hermetically closable with aluminium lid 17180
- Tmin at maximum speed: <4°C
- Angle: 40°














## Haematocrit rotor 11024

### Haematocrit rotor with with lid 17874 and evaluation card 17029 (see figure)

- Max. capacity: 24 capillary tubes
- Max. speed (1-16 / 1-16K): 14,000 rpm
- Max. RCF (1-16 / 1-16K): 18,626 x g
- Tmin at maximum speed: <4°C
- Angle: 90°



Tube					
Rated capacity (filling volume) [ml]	1.5	1.5–1.8	1.5	2	5
Diameter x length [mm]	11.7 x 34	12.3 x 49	10.7 x 42	10.7 x 42	17 x 60
Tube material	Glass	PP	PP	PP	PPCO
Item no.	HPLC	Cryo tube	15008	15040	–
<b>Adapter</b>					
for fixed-angle rotor 12180					
Bore diameter x length [mm]	12.5 x 28	12.7 x 32	11.1 x 38.5	17 x 52	
Tubes per adapter / rotor	1 / 12	1 / 12	1 / 12	– / 12	
Centrifuging radius [mm]	53	57	63	80	
Item no.	14081	14080**	14082	–	

Tube	
Rated capacity (filling volume) [µl]	50
Diameter x length [mm]	1.5 x 75
Tube material	Glass
Item no.	15001
<b>Adapter</b>	
for haematocrit rotor 11024	
Bore diameter x length [mm]	–
Capillary tubes per rotor	24
Centrifuging radius [mm]	85
Item no.	–



Optionally available:  
Evaluation disc 17024



Optionally available:  
Capillary tube sealing kit  
(10 plates) 17005

# Material properties

## Guideline for optimal tube selection

Due to the many factors that influence material properties, this overview is only intended as a general recommendation. There is no guarantee of the stated properties. Users should therefore carefully

test materials for suitability under specific application conditions. Tubes should be discarded as soon as they show any sign of material fatigue.

	Polycarbonate (PC)	Polyvinyl fluoride (PF)	Polystyrene (PS)	Polyethylene (PE)	Polypropylene (PP)
<b>Autoclave resistant</b>	Yes	Yes	No	No	Yes
<b>Elasticity</b>	Not elastic	Not elastic	Not elastic	Good	Not elastic
<b>Transparency</b>	Transparent	Translucent	Transparent	Translucent	Translucent
<b>Microwave resistant</b>	Moderate	Yes	No	Limited	Moderate
<b>Chemical resistance</b>					
Weak acids	Yes	Yes	Yes	Yes	Yes
Strong acids	No	Yes	Limited	Yes	Yes
Alcohols and alkalis	No	Yes	Yes	Yes	Yes
Salts	Limited	Yes	Limited	Yes	Yes
<b>Note:</b>	Frequent autoclaving leads to loss of strength	Tubes should be completely filled and closed for use at maximum RCF			

	PP copolymer (PPCO)	Glass	High-speed glass (HS glass)	Stainless steel
<b>Autoclave resistant</b>	Yes	Yes	Yes	Yes
<b>Elasticity</b>	Moderate	Not elastic	Not elastic	Not elastic
<b>Transparency</b>	Translucent	Transparent	Transparent	Opaque
<b>Microwave resistant</b>	Moderate	Yes	Yes	No
<b>Chemical resistance</b>				
Weak acids	Yes	Yes	Yes	Limited
Strong acids	Yes	Yes	Yes	Limited
Alcohols and alkalis	Yes	Yes	Yes	Yes
Salts	Yes	Yes	Yes	Limited
<b>Note:</b>		Max. RCF for all glass tubes approx. 4,000 x g	High-speed glass for maximum RCF of 13,100 x g	



# Spincontrol Basic

## Advanced control, intuitive operation

Spincontrol Basic is a programmable and user-friendly control unit with a clearly organised and intuitive user interface that simplifies everyday tasks in the lab. Operating parameters are entered using centrally arranged arrow buttons, and parameter settings can be changed during operation.

Spincontrol Basic can hold up to ten programs – a unique feature in its class. These user-modifiable programs can store standard routines for retrieval at any time. That makes the control unit ideal for institutions where tubes with different operating parameters must be centrifuged. Quick access to stored programs facilitates enhanced process reliability and quality of analytical results.

The high-performance cooling system provides precise control over the range of -10°C to +40°C with fine adjustment in 1°C increments. Along with the pre-cooling function, the Sigma 1-16K features standstill cooling.

Two pairs of acceleration and braking curves help to optimise separation processes. Short or pulsed runs are also possible by pressing and holding the Start/Stop button.

Display	LCD
Speed/RCF display	+
Timer (s; min:s)	10 – 99:59
Short run, Continuous run	+, +
Time increment [s]	1
Speed increment [rpm]	100
Temperature increment [°C]	1*
RCF increment [x g]	10
Programs	10
Acceleration curves	2 (fast, soft)
Braking curves	2 (fast, soft)
Standstill cooling	+*
Pre-cooling program	+*
Microprocessor control	+

\* Only Sigma 1-16K



# Premium quality

## Made in Germany

The Sigma 1-16 and Sigma 1-16K meet the highest technical requirements of laboratory standards. Developed and produced at our facility in Osterode, Germany, they are high-performance, durable and energy-efficient quality products and conform to the latest safety, emissions and environmental standards. Sigma guarantees the availability of spare parts and wearing parts for at least 10 years.

Furthermore, you benefit from our extensive services portfolio, including commissioning, maintenance, device calibration and more. Our qualified service technicians are ready to provide professional maintenance and repair as well as loaner devices if necessary. All support services are designed to ensure reliability and optimise system availability.

	Sigma 1-16	Sigma 1-16K
<b>Max. capacity [ml]</b>		
Fixed-angle rotor	36 x 2	36 x 2
<b>Max. RCF</b>	20,627	20,627
<b>Maximum speed [rpm]</b>	15,000	15,000
<b>Minimum speed [rpm]</b>	200	200
<b>Noise level at maximum speed (approx.) [dB(A)]</b>		
Fixed-angle rotor 12134	≤ 59	≤ 48
<b>Max. acceleration time [s]</b>		
Fixed-angle rotor 12134	≤ 16	≤ 16
<b>Max. braking time [s]</b>		
Fixed-angle rotor 12134	≤ 16	≤ 16
<b>Temperature adjustment range [°C]</b>	–	-10 – +40
<b>Power consumption [W]</b>	170	420
<b>Height x width x depth [mm]</b>	271 x 310 x 418	291 x 310 x 660
<b>Height with open lid [mm]</b>	527	547
<b>Weight without rotor [kg]</b>	14	34
<b>Refrigerant</b>		R134a
Filling quantity [kg] / Max. permissible pressure [bar]		0.136 / 23
CO <sub>2</sub> equivalent [t]		0.194

### Sigma Service

For maintenance and repairs please contact our Service department at [www.sigma-zentrifugen.de/en/service](http://www.sigma-zentrifugen.de/en/service)

### Calibration

Documented proof of compliance with essential technical parameters.

Speed or run time	(item no. 17713)
Speed and run time	(item no. 17714)
Speed, run time, temperature	(item no. 17715)

### Device qualification (IQOQ)

This comprehensive device qualification includes installation qualification and metrological checking of all functional parameters with a rotor.

IQOQ documents	(item no. 170000)
IQOQ on site	(upon request)

#### Sigma 1-16 centrifuge

100–240 V, 50/60 Hz (item no. 10045)

#### Sigma 1-16 centrifuge, IVD version

100–240 V, 50/60 Hz (item no. 10049)

#### Sigma 1-16K centrifuge

220–240 V, 50/60 Hz (item no. 10046)

120 V, 60 Hz (item no. 10047)

100 V, 50/60 Hz (item no. 10048)

#### Sigma 1-16K centrifuge, IVD version

220–240 V, 50/60 Hz (item no. 10052)

120 V, 60 Hz (item no. 10053)

100 V, 50/60 Hz (item no. 10054)



energy saving + silent  
cooling fan controlled by demand

# Product portfolio

Sigma offers a broad product portfolio with more than 25 laboratory centrifuges. They can be combined with an extensive range of fixed-angle and swing-out rotors and a large range of accessories to obtain the right device configuration for every application.



**Microcentrifuge**  
**Sigma 1-16**

- 36 x 2 ml
- 15,000 rpm
- 20,627 x g

**Floorstanding centrifuge**  
**Sigma 8KS**

- 12 x 1,000 ml
- 5,100 rpm
- 8,578 x g

- 6 x 1,000 ml
- 10,500 rpm
- 20,461 x g



**Benchtop centrifuge**  
**Sigma 2-7**

- 4 x 100 ml
- 4,000 rpm
- 2,540 x g

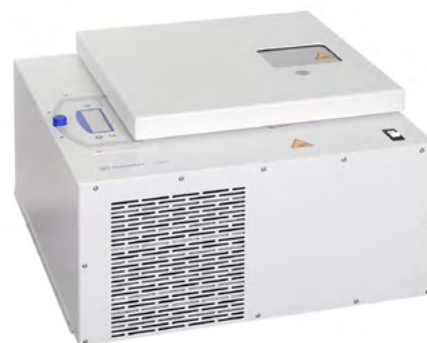
- 30 x 15 ml
- 4,000 rpm
- 2,486 x g



**Benchtop centrifuge**  
**Sigma 3-30KS**

- 4 x 100 ml
- 5,000 rpm
- 3,969 x g

- 6 x 94 ml
- 30,000 rpm
- 70,121 x g



**Robot centrifuge**  
**Sigma 4-5KRL**

- 100 x 15 ml
- 4,700 rpm
- 4,470 x g

## Legend

Max. capacity

Max. speed

Max. RCF

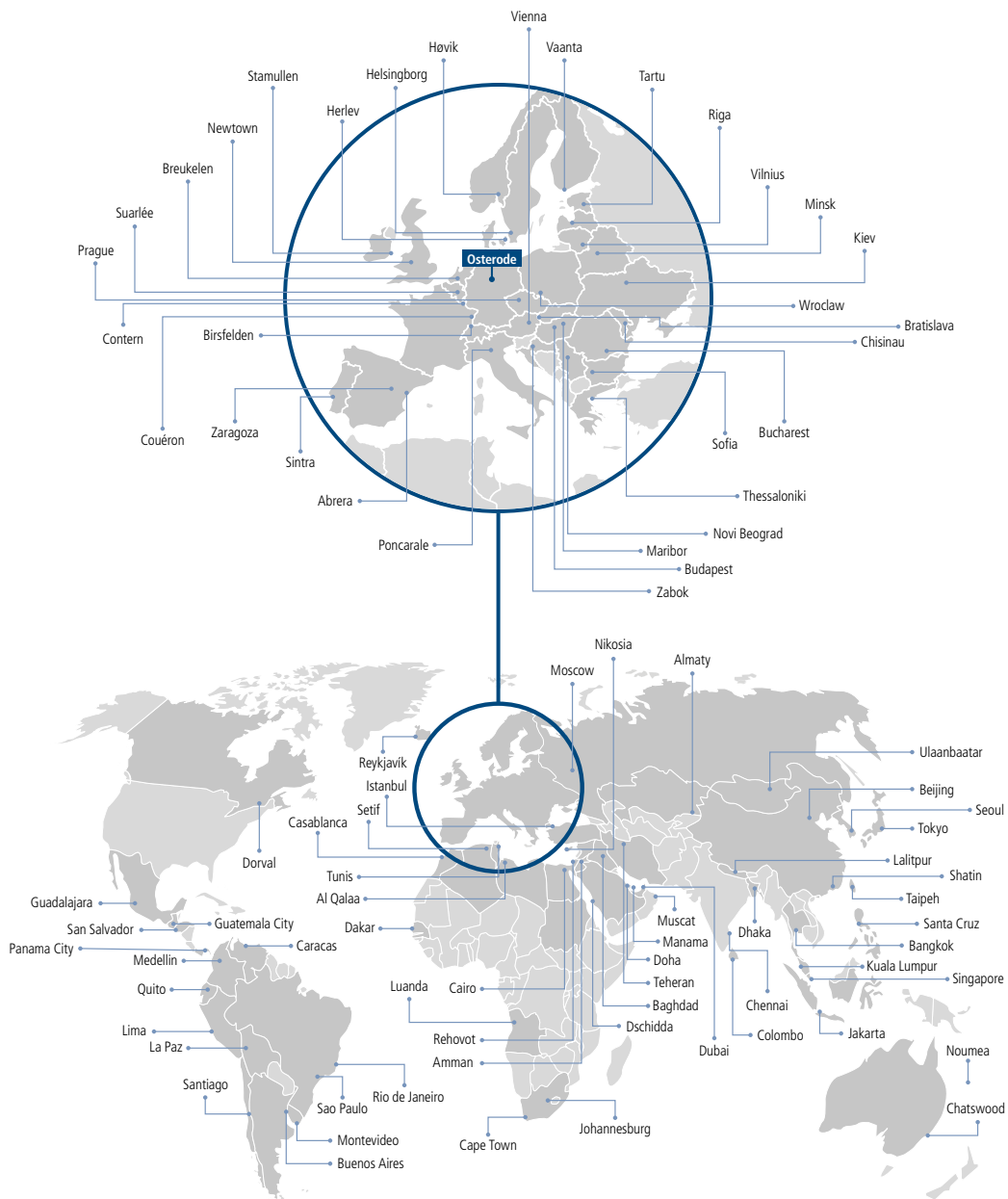
Swing-out rotor

Fixed-angle rotor

# Global service

## For local product security

Our trained service partners in over 100 countries ensure consistently high quality in accordance with national regulations. Our specialists can also be engaged quickly around the world, either remotely or on site in person.



Selected locations of our representatives.

An overview of all representatives with detailed contact information can be found at [www.sigma-zentrifugen.de](http://www.sigma-zentrifugen.de)





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[www.sigma-zentrifugen.de](http://www.sigma-zentrifugen.de)

## Sigma 2-7



Benchtop centrifuge  
• Unrefrigerated



# High performance in a new design



**Sigma is a leading international manufacturer of laboratory centrifuges for diverse sectors, including biotechnology, pharmaceutical, medical and environment analysis. Laboratories, institutions and companies everywhere in the world have been relying on premium Sigma quality – Made in Germany – for more than 40 years. The company stands for innovative products and development of durable, energy-efficient and especially user-friendly devices.**

The Sigma 2-7 scores with many new features. One highlight is the blue LED running indicator, which enables operators to see whether the device is still running – even at a distance. Other unique features are the ten program storage locations (unequaled in its class), the patented lid closing damper, and the optional programmable centrifuge wait and start times. This delayed start feature has been specifically developed for clinical in vitro diagnostics (IVD) using blood tubes. The necessary

clotting time can be preset on the device to simplify work processes. The low noise level and ergonomic operation make the device ideal for everyday use in the laboratory environment. The Sigma 2-7 combines high capacity (up to 4 x 100 ml) with exceptional flexibility. The maximum RCF of more than 2,500 x g is suitable for many application areas in clinical diagnostics, veterinary medicine, pharmacy, environmental analysis and industrial production, as well as universities and research facilities.

The performance specifications and accessories are primarily oriented to small to medium-size laboratories. In the area of clinical diagnostics, the Sigma 2-7 sets the standard with the capacity of up to 24 blood collection tubes 16 x 100 mm. The innovative six-fold bucket allows up to 50% more capacity per run to be achieved. That boosts throughput in the laboratory and enables faster patient diagnoses.



# Top marks for functionality

## Easy operation, convenience and maximum safety

The Sigma 2-7 is equipped with a well organised, clear display at a perfect viewing angle and with large buttons. The intuitive Spincontrol Basic control unit makes entry of operating parameters and programs simple. The centrifuge run time can be selected in seconds, and the LED run time indicator is readily visible at a distance.

The motorised lid lock, which closes automatically to eliminate extra effort, is a nice practical touch. The innovative electronics provide extremely high energy efficiency and low sensitivity to mains voltage fluctuations. Together with a powerful motor, this enables outstanding acceleration and braking times. With two sets of acceleration

and braking profiles, the Sigma 2-7 is also suitable for centrifuging sensitive cells requiring gentle run-up and run-down. With these features, the Sigma 2-7 sets standards for easy operation, convenience and safety.

The compact Sigma 2-7 (just 37.8 cm wide) saves space in the laboratory and is pleasantly quiet. The low noise level of less than 53 dB(A) at maximum speed with the swing-out rotor ensures a quiet work environment.

The Sigma 2-7 is also available as an IVD model.

### Sigma 2-7

- High-performance small centrifuge
- Innovative LED running indicator, readily visible at a distance
- Speed range up to 4,000 rpm
- Maximum capacity: 4 x 100 ml / 30 x 15 ml
- Up to 24 blood collection tubes (16 x 100 mm) per run
- Clear and convenient Spincontrol Basic control unit
- User-configurable audible signal for keypress and end of run
- Ten programs
- Two acceleration and braking curves
- Compact device; fits on every lab bench
- Low height for easy loading and unloading
- Short acceleration and braking times
- Automatic imbalance monitoring
- Adjustable start delay (for clotting time, etc.)
- Low noise level
- Motorised lid lock
- Automatic lid opening
- Low temperature rise in continuous operation
- Automatic overspeed monitoring
- Durable, easy-care stainless steel chamber
- Window in lid for external speed monitoring
- Produced in compliance with the latest national and international standards (e.g. EN 61010-2-020)





# Rotors and accessories

## Large selection and a multitude of applications

The Sigma 2-7 is available with numerous swing-out and fixed-angle rotors, various buckets and adapters. The extensive accessories accept tubes from 1.5 ml to 100 ml as well as microtiter plates and deep-well plates.

Special features include the intelligently designed four-fold and six-fold buckets for nearly all commonly used blood collection tubes. The Sigma 2-7 can hold up to 24 blood tubes (16 x 100 mm) in the swing-out rotor, setting a new standard for compact laboratory centrifuges. The innovative bucket design simplifies working with different tube sizes by minimising the need to exchange buckets and adapters. That makes work processes more convenient and helps to reduce operating costs.

Another special feature is the swing-out rotor for microtiter plates. Up to six microtiter plates per run can be centrifuged with RCF exceeding 2,100 x g. These performance specifications and versatility are otherwise only available with larger laboratory centrifuges.

The portfolio is rounded out by general-purpose round buckets with hermetically sealable caps, making them suitable for use with sensitive specimens.

Another unique feature is that custom accessories can be produced upon request. The rotors and accessories are made from certified high-grade materials to withstand the most severe stresses.

### Swing-out rotors starting on page 7

#### Swing-out rotor 11071

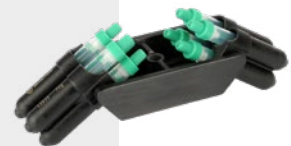
- Max. capacity: 4 x 100 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,540 x g
- Angle: 90°



▶ p. 7

#### Swing-out rotor 11037

- Max. capacity: 8 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,379 x g
- Angle: 90°



▶ p. 11

#### MTP swing-out rotor 11123

- Max. capacity: 6 microtiter plates
- Max. speed: 4,000 rpm
- Max. RCF: 2,111 x g
- Angle: 90°



▶ p. 12

### Fixed-angle rotors starting on page 13

#### Fixed-angle rotor 12072

- Max. capacity: 20 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,486 x g
- Angle: 33°

▶ p. 13



#### Fixed-angle rotor 12073

- Max. capacity: 30 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,486 x g
- Angle: 33° (both rows)

▶ p. 14



## Swing-out rotor 11071







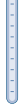





### Round bucket 13299 (1 set = 2 pcs.)\*

















- Max. capacity: 4 x 100 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,540 x g
- Max. tube length in middle of bucket with / without cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Angle: 90°

\* Bucket not autoclavable



The regular greasing of the rotor bolts is no longer necessary – this minimises non-productive time and guarantees maximum safety.

Tube										
Rated capacity (filling volume) [ml]	0,5	1.5	2	5	5	6 (5)	7	10	10	10
Diameter x length [mm]	10.8 x 46.5	10.7 x 42	10.7 x 42	17 x 60	12 x 75	12 x 100	12 x 100	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1
Tube material	PP	PP	PP	PPCO	PS	Glass	Glass	PF	PC	PPCO
Item no.	Paediatrics	15008	15040	–	15060	15007	15027	15000	15010	15039
<b>Adapter</b>										
for round bucket 13299										
Bore diameter x length [mm]	11.1 x 35		17 x 52		13.5 x 52			16.5 x 56		
Tubes per adapter / rotor	4 / 16		3 / 12		5 / 20			4 / 16		
Centrifuging radius [mm]	137		139		139			138		
Item no.	14301*		14309		14302			14303		

Tube										
Rated capacity (filling volume) [ml]	10	10	14	14	15 (13)	15	25	25	25	30 (26)
Diameter x length [mm]	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120	25 x 90	24 x 100	24 x 100	25.3 x 98
Tube material	Glass	Glass	PS	PP	Glass	PP	PP	Glass	Glass	PF
Item no.	15015	15024	15020	15023	15022	15115	–	15025	15026	15029
<b>Adapter</b>										
for round bucket 13299										
Bore diameter x length [mm]	16.5 x 56		17.5 x 67.5			17 x 76	25.5 x 56	25.5 x 58		
Tubes per adapter / rotor	4 / 16		3 / 12			2 / 8	1 / 4	1 / 4		
Centrifuging radius [mm]	138		140			126	138	140		
Item no.	14303		14307			14300**	14308	14304		

\* If used with paediatric tubes, only partial loading is possible in some cases \*\* Only possible without cap 17299

## Swing-out rotor 11071




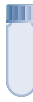





The regular greasing of the rotor bolts is no longer necessary – this minimises non-productive time and guarantees maximum safety.

### Round bucket 13299 (1 set = 2 pcs.)\*







- Max. capacity: 4 x 100 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,540 x g
- Max. tube length in middle of bucket with / without cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Angle: 90°





\* Bucket not autoclavable





Tube									
Rated capacity (filling volume) [ml]	30 (26)	30 (28)	30	30	50	50	50	50	50
Diameter x length [mm]	25.3 x 98	25.3 x 98	24 x 105	25 x 107	34 x 100	34 x 100	35 x 100	34 x 100	28 x 115
Tube material	PPCO	PC	Glass	PP	Glass	Glass	Glass	PC	PP
Item no.	15032	15030	15033	–	15045	15050	15056	15049	–

Adapter						
for round bucket 13299						
Bore diameter x length [mm]		25.5 x 58	25.5 x 56		35.5 x 58	29.5 x 67
Tubes per adapter / rotor		1 / 4	1 / 4		1 / 4	1 / 4
Centrifuging radius [mm]		140	138		140	139
Item no.		14304	14308		14305	14310*

Tube				
Rated capacity (filling volume) [ml]	100 (75)	100 (90)	100	100
Diameter x length [mm]	44 x 100	44 x 100	44 x 100	45 x 100
Tube material	Glass	Glass	Glass	PC
Item no.	15078	15106	15100	15103

Adapter		
for round bucket 13299		
Bore diameter x length [mm]		45.1 x 98.5
Tubes per adapter / rotor		1 / 4
Centrifuging radius [mm]		139
Item no.		16051

## Swing-out rotor 11071


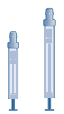
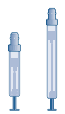
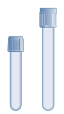




### Round bucket 13299 (1 set = 2 pcs.)\*

- Max. capacity: 4 x 100 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,540 x g
- Max. tube length in middle of bucket with / without cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Angle: 90°

\* Bucket not autoclavable







### Blood and urine tubes

								
Rated capacity (filling volume) [ml]	1.1 – 1.4	2.7 – 5	1.6 – 6	1.8 – 7	4 – 8.5	6 – 10	10	9 – 10
Diameter x length with lid [mm]	8 x 82	11 x 82–108	13 x 81–106	13 x 81–107	15 x 91–108	16 x 107	15 x 118	16 x 108
Tube material	PP	PP	PP	PET	PP	PET	PP	PP
Item no.	–	–	–	–	–	–	–	–

### Adapter

for round bucket 13299



				
Bore diameter x length [mm]	13.5 x 52	16.5 x 56	16.5 x 56	17.5 x 67.5
Tubes per adapter / rotor	5 / 20	4 / 16	4 / 16	3 / 12
Centrifuging radius [mm]	139	138	138	140
Item no.	14302*	14303	14303**	14307



\* Tube 13 x 107 mm only possible without cap 17299 \*\* Only possible without cap 17299



## Swing-out rotor 11071






The regular greasing of the rotor bolts is no longer necessary – this minimises non-productive time and guarantees maximum safety.

### Bucket 13296 (1 set = 2 pcs.)\*

- Max. capacity: 24 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,379 x g
- Angle: 90°

\* Bucket not autoclavable



Tube					
Rated capacity (filling volume) [ml]	10	10	10	10	15 (13)
Diameter x length [mm]	16 x 100	16 x 100	16.1 x 81.1	16.1 x 81.1	17 x 100
Tube material	Glass	Glass	PF	PC	PPCO
Item no.	15015	15024	15000	15010	15039










### Adapter

for  
bucket  
13296



Bore diameter x length [mm]	17.5 x 64.5	17.5 x 67.5
Tubes per bucket / rotor	6 / 24	6 / 24
Centrifuging radius [mm]	130	133
Item no.	16020	–

### Blood and urine tubes

									
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–5	1.6–6	1.8–7	4–10	8–9	6–10	9–10	10
Diameter x length with lid [mm]	8 x 82	11 x 82–108	13 x 81–106	13 x 81–107	15 x 91–108	16 x 107	16 x 106	16 x 108	15 x 118
Tube material	PP	PP	PP, PET	PET	PP, PET	PET	PET	PP	PP
Item no.	–	–	–	–	–	–	–	–	–

### Adapter

for  
bucket  
13296



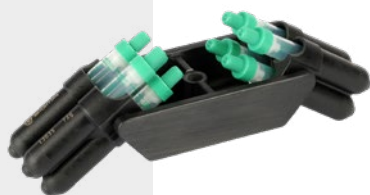
Bore diameter x length [mm]	17.5 x 67.5
Tubes per bucket / rotor	6 / 24
Centrifuging radius [mm]	133
Item no.	–

## Swing-out rotor 11037

### Bucket 13035 (1 set = 2 pcs.)\*







- Max. capacity: 8 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,379 x g
- Angle: 90°

\* Bucket not autoclavable



The regular greasing of the rotor bolts is no longer necessary – this minimises non-productive time and guarantees maximum safety.

### Tube

						
Rated capacity (filling volume) [ml]	10	10	10	10	14	15
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	16 x 100	17 x 100	17 x 100
Tube material	PF	PC	PPCO	Glass	Glass	PS
Item no.	15000	15010	15039	15015	15024	15020

### Adapter

for bucket 13035



Bore diameter x length [mm]	17.5 x 86
Tubes per bucket / rotor	4 / 8
Centrifuging radius [mm]	133
Item no.	–

### Blood and urine tubes

									
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–5	1.6–6	1.8–7	4–10	8–9	6–10	9–10	10
Diameter x length with lid [mm]	8 x 82	11 x 82–108	13 x 81–106	13 x 81–107	15 x 91–108	16 x 107	16 x 106	16 x 108	15 x 118
Tube material	PP	PP	PP, PET	PET	PP, PET	PET	PET	PP	PP
Item no.	–	–	–	–	–	–	–	–	–

### Adapter

for bucket 13035



Bore diameter x length [mm]	17.5 x 86		17.5 x 76	17.5 x 86
Tubes per bucket / rotor	4 / 8		4 / 8	4 / 8
Centrifuging radius [mm]	133		123	133
Item no.	–		13073*	–

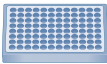

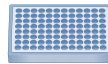

\* Use adapter 13073 for use with 15 x 91 mm tubes \*\* Observe loading

## MTP swing-out rotor 11123

with 1 set (quantity 2) rectangular buckets 13223

- Max. plate height: 50 mm
- Max. speed: 4,000 rpm
- Max. RCF: 2,111 x g
- Max. load per carrier: 346 g
- Angle: 90°



Plate				
Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold
W x D x H [mm]	128 x 86 x 15	128 x 86 x 17.5	128 x 86 x 44.5	128 x 86 x 20
<b>Adapter</b>				
for rectangular bucket 13223				
Bore diameter x length [mm]	-			
Plates per rotor	6	4	2	4
Centrifuging radius [mm]	118			
Item no.	-			



More on the Web  
View our video to learn  
more about the Sigma 2-7.  
Scan the QR code or go  
directly to the web page:

[www.sigma-zentrifugen.de/  
en/sigma-2-7](http://www.sigma-zentrifugen.de/en/sigma-2-7)













## Fixed-angle rotor 12072

### with 20 buckets 13011

- Max. capacity: 20 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,486 x g
- Angle: 33°







Tube										
Rated capacity (filling volume) [ml]	5	6 (5)	10	10	10	10	14	14	15 (13)	15
Diameter x length [mm]	12 x 75	12 x 100	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120
Tube material	PS	Glass	PC	PPCO	Glass	Glass	PS	PP	Glass	PP
Item no.	15060	15007	15010	15039	15015	15024	15020	15023	15022	15115











### Adapter

for fixed-angle rotor 12072



Adapter				
Bore diameter x length [mm]	13.5 x 69	12.5 x 85	17.9 x 77.8	17.9 x 87.8
Tubes per adapter / rotor	1 / 20	1 / 20	1 / 20	- / 20
Centrifuging radius [mm]	117	133	129	139
Item no.	13071	13072	13073	-






### Blood and urine tubes

Blood and urine tubes										
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–3.1	1.6–5.3	2.7–5	7.5–8.5	4.9–6	9.5–10	6–10	9–10	8
Diameter x length with lid [mm]	8 x 82	11 x 82	13 x 81–91	11 x 82–108	15 x 108	13 x 106–107	15 x 106–118	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PP	PP	PET	PP, PET	PET	PP	Glass
Item no.	-	-	-	-	-	-	-	-	-	-

### Adapter

for fixed-angle rotor 12072



Adapter					
Bore diameter x length [mm]	13.8 x 60	12.5 x 85	17.9 x 77.8	17.9 x 87.8	17.9 x 77.8
Tubes per adapter / rotor	1 / 20	1 / 20	1 / 20	- / 20	1 / 20
Centrifuging radius [mm]	108	133	129	139	129
Item no.	13070	13072	13073	-	13073










## Fixed-angle rotor 12073

### with 30 buckets 13011

- Max. capacity: 30 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF outer row: 2.486 x g
- Max. RCF inner row: 2.111 x g
- Angle: 33° (both rows)






### Tube

										
Rated capacity (filling volume) [ml]	5	6 (5)	10	10	10	10	14	14	15 (13)	15
Diameter x length [mm]	12 x 75	12 x 100	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120
Tube material	PS	Glass	PC	PPCO	Glass	Glass	PS	PP	Glass	PP
Item no.	15060	15007	15010	15039	15015	15024	15020	15023	15022	15115







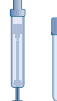



### Adapter

for fixed-angle rotor 12073



										
Bore diameter x length [mm]	13.5 x 69	12.5 x 85	17.9 x 77.8	17.9 x 87.8						
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30	- / 30						
Centrifuging radius (outer/inner)[mm]	117 / 96	133 / 112	129 / 108	139 / 118						
Item no.	13071	13072	13073	-						




### Blood and urine tubes

										
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–3.1	1.6–5.3	2.7–5	7.5–8.5	4.9–6	9.5–10	6–10	9–10	8
Diameter x length with lid [mm]	8 x 82	11 x 82	13 x 81–91	11 x 82–108	15 x 108	13 x 106–107	15 x 106–118	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PP	PP	PET	PP, PET	PET	PP	Glass
Item no.	-	-	-	-	-	-	-	-	-	-

### Adapter

for fixed-angle rotor 12073



										
Bore diameter x length [mm]	13.8 x 60	12.5 x 85	17.9 x 77.8	17.9 x 87.8						
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30	- / 30						
Centrifuging radius (outer/inner)[mm]	108 / 87	133 / 112	129 / 108	139 / 118						
Item no.	13070	13072	13073	-						

# Material properties

## Guideline for optimal tube selection

Due to the many factors that influence material properties, this overview is only intended as a general recommendation. There is no guarantee of the stated properties. Users should therefore carefully

test materials for suitability under specific application conditions. Tubes should be discarded as soon as they show any sign of material fatigue.

	Polycarbonate (PC)	Polyvinyl fluoride (PF)	Polystyrene (PS)	Polyethylene (PE)	Polypropylene (PP)
<b>Autoclave resistant</b>	Yes	Yes	No	No	Yes
<b>Elasticity</b>	Not elastic	Not elastic	Not elastic	Good	Not elastic
<b>Transparency</b>	Transparent	Translucent	Transparent	Translucent	Translucent
<b>Microwave resistant</b>	Moderate	Yes	No	Limited	Moderate
<b>Chemical resistance</b>					
Weak acids	Yes	Yes	Yes	Yes	Yes
Strong acids	No	Yes	Limited	Yes	Yes
Alcohols and alkalis	No	Yes	Yes	Yes	Yes
Salts	Limited	Yes	Limited	Yes	Yes
<b>Note:</b>	Frequent autoclaving leads to loss of strength	Tubes should be completely filled and closed for use at maximum RCF			

	PP copolymer (PPCO)	Glass	High-speed glass (HS glass)	Stainless steel
<b>Autoclave resistant</b>	Yes	Yes	Yes	Yes
<b>Elasticity</b>	Moderate	Not elastic	Not elastic	Not elastic
<b>Transparency</b>	Translucent	Transparent	Transparent	Opaque
<b>Microwave resistant</b>	Moderate	Yes	Yes	No
<b>Chemical resistance</b>				
Weak acids	Yes	Yes	Yes	Limited
Strong acids	Yes	Yes	Yes	Limited
Alcohols and alkalis	Yes	Yes	Yes	Yes
Salts	Yes	Yes	Yes	Limited
<b>Note:</b>		Max. RCF for all glass tubes approx. 4,000 x g	High-speed glass for maximum RCF of 13,100 x g	



# Spincontrol Basic

## Advanced control, intuitive operation

Spincontrol Basic is a programmable and user-friendly control unit with a clearly organised and intuitive user interface that simplifies everyday tasks in the lab. Operating parameters are entered using centrally arranged arrow buttons, and parameter settings can be changed during operation. Another clever feature is the optional adjustable automatic lid opening at the end of the run.

Spincontrol Basic can hold up to ten programs – a unique feature in its class. These user-modifiable programs can store standard routines for retrieval at any time.

That makes the control unit ideal for institutions where specimens with different operating parameters must be centrifuged. Quick access to stored programs facilitates enhanced process reliability and quality of analytical results.

Two pairs of acceleration and braking curves help to optimise separation processes. Short or pulsed runs are also possible by pressing and holding the Start/Stop button.

Display	LCD
Speed/RCF display	+
Timer (s; min:s)	10 – 99:59
Short run, Continuous run	+, +
Time increment [s]	1
Speed increment [rpm]	100
RCF increment [x g]	10
Programs	10
Acceleration curves	2 (fast, soft)
Braking curves	2 (fast, soft)
Automatic lid opening at end of run, switchable	+, +
Start delay (clotting time) adjustable, switchable	+, +
Audible signal, switchable	+, +
Visual standstill indication	+
Lockable controller	+
Microprocessor control	+



# Premium quality

## Made in Germany

The Sigma 2-7 centrifuge meets the highest technical requirements and laboratory standards. Developed and produced at our facility in Osterode, Germany, it is a high-performance, durable and energy-efficient quality product and conforms to the latest safety, emissions and environmental standards. Sigma guarantees the availability of spare parts and wearing parts for at least 10 years.

Furthermore, you benefit from our extensive services portfolio, including commissioning, maintenance, device calibration and more. Our qualified service technicians are ready to provide professional maintenance and repair as well as loaner devices if necessary. All support services are designed to ensure reliability and optimise system availability.

### Sigma Service

For maintenance and repairs please contact our Service department at [www.sigma-zentrifugen.de/en/service](http://www.sigma-zentrifugen.de/en/service)

### Sigma 2-7

<b>Max. capacity [ml]</b>	
Swing-out rotor	4 x 100
Fixed-angle rotor	30 x 15
<b>Max. RCF</b>	2,540
<b>Maximum speed [rpm]</b>	4,000
<b>Minimum speed [rpm]</b>	100
<b>Noise level at maximum speed (approximate) [dB(A)]</b>	
Fixed-angle rotor 12073	54
Swing-out rotor 11071 with buckets 13299 and caps	53
<b>Max. acceleration time [s]</b>	
Fixed-angle rotor 12073	18
Swing-out rotor 11071 with buckets 13299 and caps	13
<b>Max. braking time [s]</b>	
Fixed-angle rotor 12073	14
Swing-out rotor 11071 with buckets 13299 and caps	10
<b>Power consumption [W]</b>	210
<b>Height x width x depth [mm]</b>	293 x 378 x 535
<b>Height with open lid [mm]</b>	643
<b>Weight without rotor [kg]</b>	23

### Calibration

Documented proof of compliance with essential technical parameters.

Speed or run time (item no. 17713)  
 Speed and run time (item no. 17714)  
 Speed, run time, temperature (item no. 17715)

### Device qualification (IQOQ)

This comprehensive device qualification includes installation qualification and metrological checking of all functional parameters with a rotor.

IQOQ documents (item no. 170000)  
 IQOQ on site (upon request)

**Sigma 2-7** centrifuge  
 100–240 V, 50/60 Hz (item no. 10226)

**Sigma 2-7** centrifuge, IVD version  
 100–240 V, 50/60 Hz (item no. 10227)



# Product portfolio

Sigma offers a broad product portfolio with more than 25 laboratory centrifuges. They can be combined with an extensive range of fixed-angle and swing-out rotors and a large variety of accessories to obtain the right device configuration for every application.



**Microcentrifuge**  
**Sigma 1-16**

- 36 x 2 ml
- 15,000 rpm
- 20,627 x g

**Floor-standing centrifuge**  
**Sigma 8KS**

- 12 x 1,000 ml
- 5,100 rpm
- 8,578 x g

- 6 x 1,000 ml
- 10,500 rpm
- 20,461 x g



**Benchtop centrifuge**  
**Sigma 2-7**

- 4 x 100 ml
- 4,000 rpm
- 2,540 x g

- 30 x 15 ml
- 4,000 rpm
- 2,486 x g



**Benchtop centrifuge**  
**Sigma 3-30KS**

- 4 x 100 ml
- 5,000 rpm
- 3,969 x g

- 6 x 94 ml
- 30,000 rpm
- 70,121 x g



**Robot centrifuge**  
**Sigma 4-5KRL**

- 100 x 15 ml
- 4,700 rpm
- 4,470 x g

## Legend

Max. capacity

Max. speed

Max. RCF

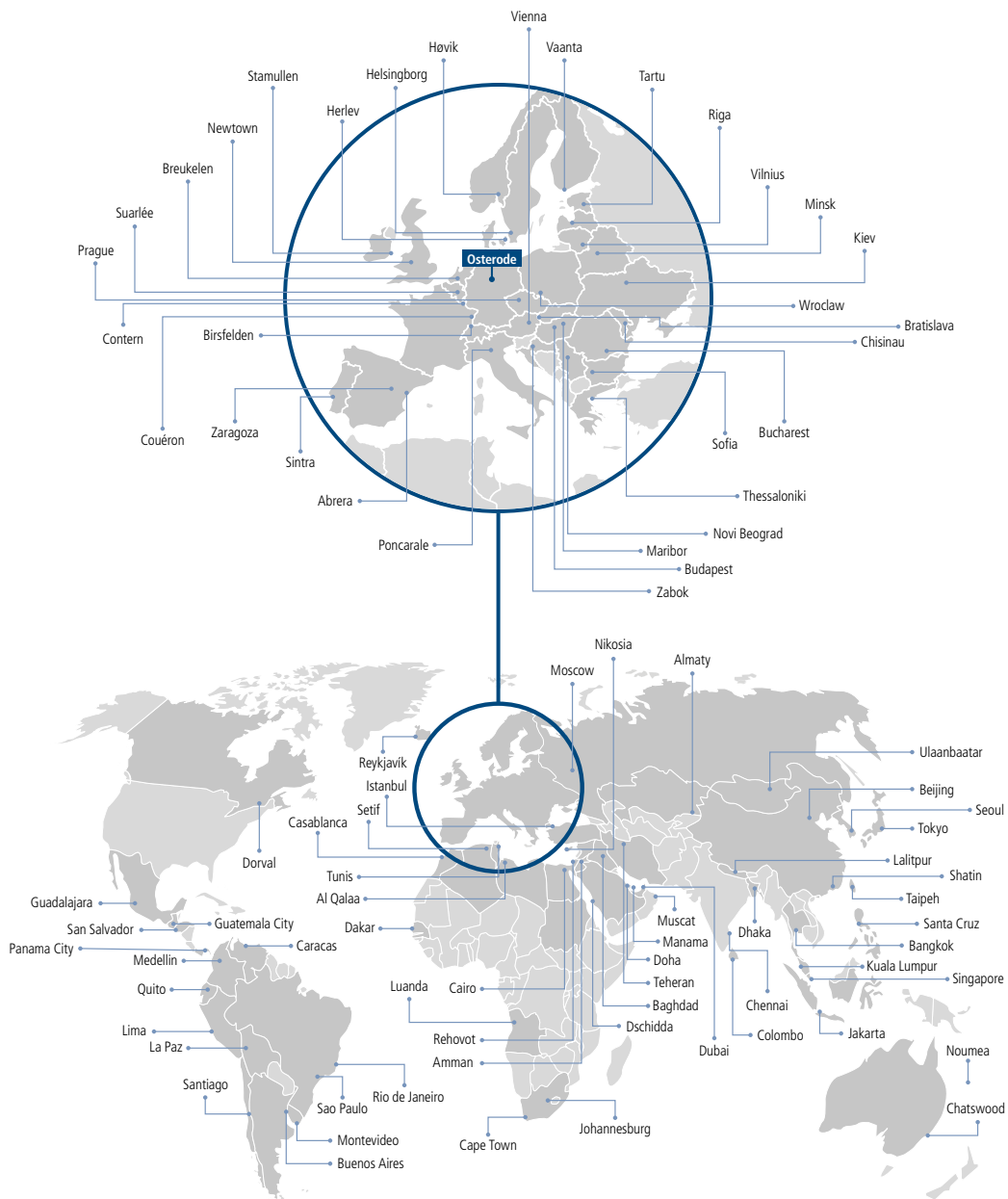
Swing-out rotor

Fixed-angle rotor

# Global service

## For local product security

Our trained service partners in over 100 countries ensure consistently high quality in accordance with national regulations. Our specialists can also be engaged quickly around the world, either remotely or on site in person.



Selected locations of our representatives.

An overview of all representatives with detailed contact information can be found at [www.sigma-zentrifugen.de/en/sales-partners](http://www.sigma-zentrifugen.de/en/sales-partners)



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**Sigma 2-16P**  
**Sigma 2-16KL**  
**Sigma 2-16KHL**



Benchtop centrifuge

- Unrefrigerated
- Refrigerated
- Refrigerated/  
heatable





# Multitalent for everyday lab tasks



**Sigma is a leading international manufacturer of laboratory centrifuges for diverse sectors, including biotechnology, pharmaceutical, medical and environment analysis. Laboratories, institutions and companies everywhere in the world have been relying on premium Sigma quality – Made in Germany – for more than 40 years. The company stands for innovative products and development of durable, energy-efficient and especially user-friendly devices.**

The Sigma 2-16 series features high performance, compact size and versatility. These compact universal centrifuges are easy to use, pleasantly quiet, and provide extraordinary capacity with 4 x 100 ml in a swing-out rotor or 4 x 85 ml in a fixed-angle rotor.

The extensive accessories and high RCF of up to 21.913 x g make the Sigma 2-16P and the refrigerated version 2-16KL ideal for a wide variety of applications in medicine, clinical diagnostics, research, industry and biotechnology. The coolable and heatable version Sigma 2-16KHL is used with specimens whose viscosity needs to be lowered during centrifuging, and in molecular biology to improve the viability of cells.

Along with versatility, the Sigma 2-16 series scores top marks for performance. For example, 50 ml culture tubes can be centrifuged at more than 15,000 x g in a fixed-angle rotor, and up to 24 blood tubes (16 x 100 mm) can be centrifuged in a swing-out rotor.

# Universal centrifuge with a broad application spectrum

## Safe, versatile and intuitive

The Sigma 2-16 series represents a unique combination of performance, versatility and ease of use. With their high RCF, advanced controller and impressive safety features, they excite even demanding users.

Standard routines can be stored and recalled conveniently in up to 50 programs. Ten selectable acceleration and braking curves facilitate optimisation of separation processes and additionally shorten run

times. The refrigerated version Sigma 2-16KL and the coolable and heatable version Sigma 2-16KHL have a high-performance cooling system with precisely settable temperature over the range of -10 °C to +40 °C or -10 °C to +60 °C, respectively. The pre-cooling function "Rapid Temp" allows the centrifuge chamber and accessories to be cooled to a defined temperature. That guarantees optimum safety for work with heat-sensitive specimens.

### Sigma 2-16P

- Universal laboratory centrifuge
- Speed range up to 15,000 rpm
- Maximum capacity: 4 x 100 ml
- Intuitive Spincontrol Universal controller
- Backlit buttons for start, stop and lid opening
- Fifty programs
- Compact, space-saving device
- Low noise level
- Automatic rotor identification
- Zero-maintenance induction motor
- Electromechanical lid opening
- Automatic imbalance monitoring
- Easily cleaned stainless steel chamber
- Window in lid for independent speed checking
- Manufactured according to the latest national and international standards (e.g. EN 61010-2-020)

### Sigma 2-16KL

All features of the Sigma 2-16P, plus:

- Speed range up to 15,300 rpm
- User-friendly Spincontrol L controller
- High-performance cooling
- Temperature setting range: -10 °C to +40 °C
- Rotor cooling also possible at standstill
- Pre-cooling program "Rapid Temp"

### Sigma 2-16KHL

All features of the Sigma 2-16KL, plus:

- Heatable refrigerated centrifuge
- Standstill cooling or heating
- Temperature setting range: -10 °C to +60 °C







# Rotors and accessories

## Large selection of rotors and capacities

The Sigma 2-16 series can be used with fixed-angle and swing-out rotors for PCR, reaction, round-bottom and conical tubes as well as microtiter plates. This extensive portfolio is rounded out with a haematocrit rotor for determination of the volume percentage of erythrocytes in blood.

A total of 17 swing-out and fixed-angle rotors are available, along with a wide range of accessories. The tube capacity extends from 0.2 ml to 85 ml in fixed-angle rotors or 0.2 ml to 100 ml in swing-out rotors. A highlight is the 6 x 50 ml Falcon fixed-angle rotor 12181 with a maximum RCF of up to 15,294 x g – an absolute best

value in this class. Specifically for clinical diagnostics, the innovative 6-place bucket 13296 has been developed to hold virtually all commonly used blood collection tubes. Thanks to the intelligent design, the swing-out rotor allows up to 24 blood collection tubes (16 x 100 mm) per run to be centrifuged at a maximum RCF of up to 3,717 x g.

As a special feature, Sigma can produce custom accessories upon request. The rotors and accessories are made from certified high-grade materials to withstand the most severe stresses.

### Swing-out rotors starting on page 9

#### Swing-out rotor 11170

- Max. capacity: 4 x 100 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,215 / 3,969 x g
- Angle: 90°



#### Swing-out rotor 11124

- Max. capacity: 24 x 2 ml
- Max. speed (2-16P / 2-16KL): 12,500 / 14,000 rpm
- Max. RCF (2-16P / 2-16KL): 12,927 / 16,215 x g
- Angle: 90°



### MTP swing-out rotors on page 13

#### Swing-out rotor 11122

- Max. capacity: 6 microtiter plates
- Max. speed (2-16P / 2-16KL): 3,000 rpm
- Max. RCF (2-16P / 2-16KL): 1,218 x g
- Angle: 90°



#### Swing-out rotor 11123

- Max. capacity: 6 microtiter plates
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,111 x g
- Angle: 90°



## Fixed-angle rotors starting on page 14

▶ p. 14

### Fixed-angle rotor 12104 for PCR strips

- Max. capacity: 96 x 0.2 ml PCR tubes
- Max. speed (2-16KL): 14,000 rpm
- Max. RCF (2-16KL): 21,475 x g
- Angle: 45° (both rows)



▶ p. 14

### Fixed-angle rotor 12148

- Max. capacity: 24 x 2 ml
- Max. speed (2-16P / 2-16KL): 15,000 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 20,627 / 21,460 x g
- Angle: 45°



▶ p. 15

### Fixed-angle rotor 12133

- Max. capacity: 30 x 2 ml
- Max. speed (2-16P): 12,000 rpm
- Max. RCF (2-16P): 16,099 x g
- Angle: 45°



▶ p. 15

### Fixed-angle rotor 12132

- Max. capacity: 30 x 2 ml
- Max. speed (2-16KL): 14,000 rpm
- Max. RCF (2-16KL): 21,913 x g
- Angle: 45°



▶ p. 16

### Fixed-angle rotor 12180

- Max. capacity: 12 x 5 ml conical
- Max. speed (2-16P / 2-16KL): 14,000 / 15,000 rpm
- Max. RCF (2-16P / 2-16KL): 17,530 / 20,124 x g
- Angle: 40°



▶ p. 16

### Fixed-angle rotor 12141

- Max. capacity: 10 x 10 ml
- Max. speed (2-16P / 2-16KL): 13,500 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 15,485 / 19,890 x g
- Angle: 35°



▶ p. 17

### Fixed-angle rotor 12071

- Max. capacity: 12 x 15 ml + 6 x 50 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,254 x g
- Angle: 35° (both rows)



▶ p. 18

### Fixed-angle rotor 12072

- Max. capacity: 20 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,486 x g
- Angle: 33°



▶ p. 19

### Fixed-angle rotor 12073

- Max. capacity: 30 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,486 x g
- Angle: 33° (both rows)



▶ p. 20

### Fixed-angle rotor 12139

- Max. capacity: 6 x 30 ml round-bottom
- Max. speed (2-16P / 2-16KL): 13,500 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 15,893 / 20,414 x g
- Angle: 29°



▶ p. 20

### Fixed-angle rotor 12181

- Max. capacity: 6 x 50 ml conical
- Max. speed (2-16P / 2-16KL): 10,000 / 12,000 rpm
- Max. RCF (2-16P / 2-16KL): 10,621 / 15,294 x g
- Angle: 28°



▶ p. 21

### Fixed-angle rotor 12138

- Max. capacity: 4 x 85 ml round-bottom
- Max. speed (2-16KL): 9,400 rpm
- Max. RCF (2-16KL): 9,484 x g
- Angle: 27°



▶ p. 22

### Haematocrit rotor 11409

- Max. capacity: 24 capillary tubes
- Max. speed (2-16P / 2-16KL): 12,000 rpm
- Max. RCF (2-16P / 2-16KL): 14,489 x g
- Angle: 90°







## Swing-out rotor 11170
















### Round bucket 13299 (1 set = 2 pcs.)\*


















- Max. capacity: 4 x 100 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,215 / 3,969 x g
- Max. tube length in middle of bucket without / with cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Tmin at maximum speed: <4°C
- Angle: 90°

\* Bucket not autoclavable



The regular greasing of the rotor bolts is no longer necessary – this minimises non-productive time and guarantees maximum safety.

Tube										
Rated capacity (filling volume) [ml]	0,5	1,5	2	5	5	6 (5)	7	10	10	10
Diameter x length [mm]	10.8 x 46.5	10.7 x 42	10.7 x 42	17 x 60	12 x 75	12 x 100	12 x 100	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1
Tube material	PP	PP	PP	PPCO	PS	Glass	Glass	PF	PC	PPCO
Item no.	Paediatrics	15008	15040	–	15060	15007	15027	15000	15010	15039
<b>Adapter</b>										
for round bucket 13299										
Bore diameter x length [mm]		11.1 x 35		17 x 52		13.5 x 52			16.5 x 56	
Tubes per adapter / rotor		4 / 16		3 / 12		5 / 20			4 / 16	
Centrifuging radius [mm]		137		139		139			138	
Item no.		14301*		14309		14302			14303	

Tube										
Rated capacity (filling volume) [ml]	10	10	14	14	15 (13)	15	25	25	25	30 (26)
Diameter x length [mm]	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120	25 x 90	24 x 100	24 x 100	25.3 x 98
Tube material	Glass	Glass	PS	PP	Glass	PP	PP	Glass	Glass	PF
Item no.	15015	15024	15020	15023	15022	15115	–	15025	15026	15029
<b>Adapter</b>										
for round bucket 13299										
Bore diameter x length [mm]		16.5 x 56		17.5 x 67.5		17 x 76	25.5 x 56		25.5 x 58	
Tubes per adapter / rotor		4 / 16		3 / 12		2 / 8	1 / 4		1 / 4	
Centrifuging radius [mm]		138		140		126	138		140	
Item no.		14303		14307		14300**	14308		14304	

\* If used with paediatric tubes, only partial loading is possible in some cases \*\* Only possible without cap 17299

## Swing-out rotor 11170




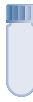





### Round bucket 13299 (1 set = 2 pcs.)\*

- Max. capacity: 4 x 100 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,215 / 3,969 x g
- Max. tube length in middle of bucket without / with cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $90^{\circ}$

\* Bucket not autoclavable








### Tube

									
Rated capacity (filling volume) [ml]	30 (26)	30 (28)	30	30	50	50	50	50	50
Diameter x length [mm]	25.3 x 98	25.3 x 98	24 x 105	25 x 107	34 x 100	34 x 100	35 x 100	34 x 100	28 x 115
Tube material	PPCO	PC	Glass	PP	Glass	Glass	Glass	PC	PP
Item no.	15032	15030	15033	–	15045	15050	15056	15049	–





### Adapter

for round bucket 13299



					
Bore diameter x length [mm]	25.5 x 58	25.5 x 56	35.5 x 58	29.5 x 67	29.6 x 90
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	140	138	140	139	142
Item no.	14304	14308	14305	14310*	14299

### Tube

				
Rated capacity (filling volume) [ml]	100 (75)	100 (90)	100	100
Diameter x length [mm]	44 x 100	44 x 100	44 x 100	45 x 100
Tube material	Glass	Glass	Glass	PC
Item no.	15078	15106	15100	15103

### Adapter

for round bucket 13299



	
Bore diameter x length [mm]	45.1 x 98.5
Tubes per adapter / rotor	1 / 4
Centrifuging radius [mm]	139
Item no.	16051

## Swing-out rotor 11170

### Round bucket 13299 (1 set = 2 pcs.)\*

- Max. capacity: 4 x 100 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,215 / 3,969 x g
- Max. tube length in middle of bucket without / with cap: 126 / 117 mm
- Hermetically closable with cap 17299
- Tmin at maximum speed: <4°C
- Angle: 90°

\* Bucket not autoclavable



## Swing-out rotor 11170









### Bucket 13296 (1 set = 2 pcs.)\*

- Max. capacity: 24 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,011 / 3,717 x g
- Tmin at maximum speed: <4°C
- Angle: 90°

\* Bucket not autoclavable







### Blood and urine tubes

								
Rated capacity (filling volume) [ml]	1.1 – 1.4	2.7 – 5	1.6 – 6	1.8 – 7	4 – 8.5	6 – 10	10	9 – 10
Diameter x length with lid [mm]	8 x 82	11 x 82–108	13 x 81 – 106	13 x 81 – 107	15 x 91 – 108	16 x 107	15 x 118	16 x 108
Tube material	PP	PP	PP	PET	PP	PET	PP	PP
Item no.	–	–	–	–	–	–	–	–






### Adapter

for round bucket 13299



				
Bore diameter x length [mm]	13.5 x 52	16.5 x 56	16.5 x 56	17.5 x 67.5
Tubes per adapter / rotor	5 / 20	4 / 16	4 / 16	3 / 12
Centrifuging radius [mm]	139	138	138	140
Item no.	14302*	14303	14303**	14307

### Tube

								
Rated capacity (filling volume) [ml]	10	10	10	10	14	14	15 (13)	
Diameter x length [mm]	16 x 100	16 x 100	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	17 x 100	17 x 100	17x110
Tube material	Glass	Glass	PF	PC	PPCO	PS	PP	Glass
Item no.	15015	15024	15000	15010	15039	15020	15023	15022

### Adapter

for bucket 13296



		
Bore diameter x length [mm]	17.5 x 64.5	17.5 x 67.5
Tubes per bucket / rotor	6 / 24	6 / 24
Centrifuging radius [mm]	130	133
Item no.	16020	–

## Swing-out rotor 11170

## Bucket 13296 (1 set = 2 pcs.)\*

- Max. capacity: 24 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,500 / 5,000 rpm
- Max. RCF (2-16P / 2-16KL): 3,011 / 3,717 x g
- Tmin at maximum speed: <4°C
- Angle: 90°

\* Bucket not autoclavable












## Swing-out rotor 11124

## with 3 sets (quantity 6) buckets 13124 and aluminium lid 17878

- Max. capacity: 24 x 2 ml
- Max. speed (2-16P / 2-16KL): 12,500 / 14,000 rpm
- Max. RCF (2-16P / 2-16KL): 12,927 / 16,215 x g
- Hermetically closable with aluminium lid 17878
- Tmin at maximum speed: <4°C
- Angle: 90°



## Blood and urine tubes







									
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–5	1.6–6	1.8–7	4–10	8–9	6–10	9–10	10
Diameter x length with lid [mm]	8 x 82	11 x 82–108	13 x 81–106	13 x 81–107	15 x 91–108	16 x 107	16 x 106	16 x 108	15 x 118
Tube material	PP	PP	PP, PET	PET	PP, PET	PET	PET	PP	PP
Item no.	–	–	–	–	–	–	–	–	–

## Adapter

for  
bucket  
13296

Bore diameter x length [mm]	17.5 x 67.5
Tubes per bucket / rotor	6 / 24
Centrifuging radius [mm]	133
Item no.	–

## Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

## Adapter

for  
bucket  
13124

Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 12*	– / 24
Centrifuging radius [mm]	70	72	72	73	74
Item no.	13021	13000	13002	13074	–



## MTP swing-out rotor 11122

### with 1 set (quantity 2) rectangular buckets 13222

- Max. plate height: 56 mm
- Max. speed (2-16P / 2-16KL): 3,000 rpm
- Max. RCF (2-16P / 2-16KL): 1,218 x g
- Max. load per carrier: 337 g
- Tmin at maximum speed: <4°C
- Angle: 90°



## MTP swing-out rotor 11123

### with 1 set (quantity 2) rectangular buckets 13223

- Max. plate height: 50 mm
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,111 x g
- Max. load per carrier: 346 g
- Tmin at maximum speed: <4°C
- Angle: 90°



### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold
W x D x H [mm]	128 x 86 x 15	128 x 86 x 17.5	128 x 86 x 44.5	128 x 86 x 20

### Adapter

for rectangular bucket 13222



Bore diameter x length [mm]	-			
Plates per rotor	6	6	2	4
Centrifuging radius [mm]	121			
Item no.	-			

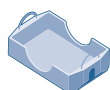
### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold
W x D x H [mm]	128 x 86 x 15	128 x 86 x 17.5	128 x 86 x 44.5	128 x 86 x 20

### Adapter

for rectangular bucket 13223



Bore diameter x length [mm]	-			
Plates per rotor	6	4	2	4
Centrifuging radius [mm]	118			
Item no.	-			



## Fixed-angle rotor 12104

### with aluminium lid 17867

- Max. capacity: 96 x 0.2 ml PCR tubes
- Max. speed (2-16KL): 14,000 rpm
- Max. RCF outer row (2-16KL): 21,475 x g
- Max. RCF inner row (2-16KL): 18,297 x g
- Hermetically closable with aluminium lid 17867
- Max. speed for 4°C: 13,200 rpm
- Angle: 45° (both rows)





## Fixed-angle rotor 12148

### with aluminium lid 17864

- Max. capacity: 24 x 2 ml
- Max. speed (2-16P / 2-16KL): 15,000 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 20,627 / 21,460 x g
- Hermetically closable with aluminium lid 17864
- Tmin at maximum speed: <4°C
- Angle: 45°





### Tube

		
Rated capacity (filling volume) [ml]	0.2	0.2
Diameter x length [mm]	5.8 x 20	–
Tube material	PP	–
Item no.	15042	PCR strips







### Adapter

for fixed-angle rotor 12104



		
Bore diameter x length [mm]	6.3 x 15.5	6.3 x 15.5
Tubes per rotor	96	12 x 8
Centrifuging radius (outer / inner) [mm]	98 / 83	98 / 83
Item no.	–	–







### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

### Adapter

for fixed-angle rotor 12148



						
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5	
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 24	– / 24	
Centrifuging radius [mm]	78	80	80	73	82	
Item no.	13021	13000	13002	13074*	–	

## Fixed-angle rotor 12133

### with aluminium lid 17863

- Max. capacity: 30 x 2 ml
- Max. speed (2-16P): 12,000 rpm
- Max. RCF (2-16P): 16,099 x g
- Hermetically closable with aluminium lid 17863
- Angle: 45°









## Fixed-angle rotor 12132

### with aluminium lid 17849

- Max. capacity: 30 x 2 ml
- Max. speed (2-16KL): 14,000 rpm
- Max. RCF (2-16KL): 21,913 x g
- Hermetically closable with aluminium lid 17849
- Max. speed for 4°C: 13,500 rpm
- Angle: 45°







### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040







### Adapter

for fixed-angle rotor 12133



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30	1 / 30	- / 30
Centrifuging radius [mm]	96	98	98	91	100
Item no.	13021	13000	13002	13074*	-





### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

### Adapter

for fixed-angle rotor 12132



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30	1 / 30	- / 30
Centrifuging radius [mm]	96	98	98	91	100
Item no.	13021	13000	13002	13074*	-

\* Only partial loading possible in some cases, depending on choice of paediatric tubes

## Fixed-angle rotor 12180

### with aluminium lid 17180

- Max. capacity: 12 x 5 ml conical
- Max. speed (2-16P / 2-16KL): 14,000 / 15,000 rpm
- Max. RCF (2-16P / 2-16KL): 17,530 / 20,124 x g
- Hermetically closable with aluminium lid 17180
- Tmin at maximum speed: <4°C
- Angle: 40°




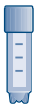



## Fixed-angle rotor 12141

### with aluminium lid 17850

- Max. capacity: 10 x 10 ml
- Max. speed (2-16P / 2-16KL): 13,500 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 15,485 / 19,890 x g
- Hermetically closable with aluminium lid 17850
- Tmin at maximum speed: <4°C
- Angle: 35°







### Tube

					
Rated capacity (filling volume) [ml]	1.5	1.5–1.8	1.5	2	5
Diameter x length [mm]	11.7 x 34	12.3 x 49	10.7 x 42	10.7 x 42	17 x 60
Tube material	Glass	PP	PP	PP	PPCO
Item no.	HPLC	Cryo tube	15008	15040	–




### Adapter

for fixed-angle rotor 12180



				
Bore diameter x length [mm]	12.5 x 28	12.7 x 32	11.1 x 38.5	17 x 52
Tubes per adapter / rotor	1 / 12	1 / 12	1 / 12	– / 12
Centrifuging radius [mm]	53	57	63	80
Item no.	14081	14080*	14082	–

### Tube

			
Rated capacity (filling volume) [ml]	10	10	10
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1
Tube material	PF	PC	PPCO
Item no.	15000	15010	15039

### Adapter

for fixed-angle rotor 12141

















Bore diameter x length [mm]	16.3 x 69
Tubes per adapter / rotor	– / 10
Centrifuging radius [mm]	76
Item no.	–
















## Fixed-angle rotor 12071

### with 12 buckets 13011 and 6 buckets 13151

- Max. capacity: 12 x 15 ml + 6 x 50 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF outer row (2-16P / 2-16KL): 2,254 x g
- Max. RCF inner row (2-16P / 2-16KL): 1,842 x g
- Tmin at maximum speed: <4°C
- Angle: 35° (both rows)



Tube										
Rated capacity (filling volume) [ml]	5	6 (5)	10	10	14	14	15	25	30	50
Diameter x length [mm]	12 x 75	12 x 100	16.1 x 81.1	16 x 100	17 x 100	17 x 100	16.5 x 120	25 x 90	25 x 107	29 x 117
Tube material	PS	Glass	PPCO	Glass	PS	PP	PP	PP	PP	PP
Item no.	15060	15007	15039	15015	15020	15023	15115	–	–	15151
<b>Adapter</b>										
for fixed-angle rotor 12071										
Bore diameter x length [mm]	13.5 x 69	12.5 x 85	17.9 x 77.8	17.9 x 87.8			25.5 x 71			30 x 100
Tubes per adapter / rotor	1 / 12	1 / 12	1 / 12	– / 12			1 / 6			– / 6
Centrifuging radius (outer / inner) [mm]	104 / –	120 / –	116 / –	126 / –			– / 80			– / 103
Item no.	13071	13072	13073	–			13064			–











Blood and urine tubes										
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–3.1	1.6–5.3	2.7–5	7.5–8.5	4.9–6	9.5–10	6–10	9-10	8
Diameter x length with cap [mm]	8 x 82	11 x 82	13 x 81–91	11 x 82–108	15 x 108	13 x 106–107	15 x 106–118	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PP	PP	PET	PP, PET	PET	PP	Glass
Item no.	–	–	–	–	–	–	–	–	–	–
<b>Adapter</b>										
for fixed-angle rotor 12071										
Bore diameter x length [mm]	13.8 x 60		12.5 x 85	17.9 x 77.8	17.9 x 87.8			17.9 x 77.8	17.9 x 87.8	
Tubes per adapter / rotor	1 / 12		1 / 12	1 / 12	– / 12			1 / 12	– / 12	
Centrifuging radius (outer / inner) [mm]	95 / –		120 / –	116 / –	126 / –			116 / –	126 / –	
Item no.	13070		13072	13073	–			13073	–	









## Fixed-angle rotor 12072











### with 20 buckets 13011













- Max. capacity: 20 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF (2-16P / 2-16KL): 2,486 x g
- T<sub>min</sub> at maximum speed: <4°C
- Angle: 33°



Tube										
Rated capacity (filling volume) [ml]	5	6 (5)	10	10	10	10	14	14	15 (13)	15
Diameter x length [mm]	12 x 75	12 x 100	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120
Tube material	PS	Glass	PC	PPCO	Glass	Glass	PS	PP	Glass	PP
Item no.	15060	15007	15010	15039	15015	15024	15020	15023	15022	15115

Adapter										
for fixed-angle rotor 12072										
Bore diameter x length [mm]	13.5 x 69	12.5 x 85	17.9 x 77.8	17.9 x 87.8						
Tubes per adapter / rotor	1 / 20	1 / 20	1 / 20	- / 20						
Centrifuging radius [mm]	117	133	129	139						
Item no.	13071	13072	13073	-						

Blood and urine tubes										
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–3.1	1.6–5.3	2.7–5	7.5–8.5	4.9–6	9.5–10	6–10	9–10	8
Diameter x length with cap [mm]	8 x 82	11 x 82	13 x 81–91	11 x 82–108	15 x 108	13 x 106–107	15 x 106–118	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PP	PP	PET	PP, PET	PET	PP	Glass
Item no.	-	-	-	-	-	-	-	-	-	-









Adapter									
for fixed-angle rotor 12072									
Bore diameter x length [mm]	13.8 x 60	12.5 x 85	17.9 x 77.8	17.9 x 87.8				17.9 x 77.8	17.9 x 87.8
Tubes per adapter / rotor	1 / 20	1 / 20	1 / 20	- / 20				1 / 20	- / 20
Centrifuging radius [mm]	108	133	129	139				129	139
Item no.	13070	13072	13073	-				13073	-

## Fixed-angle rotor 12073

### with 30 buckets 13011

- Max. capacity: 30 x 15 ml
- Max. speed (2-16P / 2-16KL): 4,000 rpm
- Max. RCF outer row (2-16P / 2-16KL): 2,486 x g
- Max. RCF inner row (2-16P / 2-16KL): 2,111 x g
- Tmin at maximum speed: <4°C
- Angle: 33° (both rows)











Tube										
Rated capacity (filling volume) [ml]	5	6 (5)	10	10	10	10	14	14	15 (13)	15
Diameter x length [mm]	12 x 75	12 x 100	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120
Tube material	PS	Glass	PC	PPCO	Glass	Glass	PS	PP	Glass	PP
Item no.	15060	15007	15010	15039	15015	15024	15020	15023	15022	15115











### Adapter

for fixed-angle rotor 12073



Adapter								
Bore diameter x length [mm]	13.5 x 69	12.5 x 85	17.9 x 77.8				17.9 x 87.8	
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30				- / 30	
Centrifuging radius (outer / inner) [mm]	117 / 96	133 / 112	129 / 108				139 / 118	
Item no.	13071	13072	13073				-	








### Blood and urine tubes

Blood and urine tubes										
Rated capacity (filling volume) [ml]	1.1–1.4	2.7–3.1	1.6–5.3	2.7–5	7.5–8.5	4.9–6	9.5–10	6–10	9–10	8
Diameter x length with cap [mm]	8 x 82	11 x 82	13 x 81–91	11 x 82–108	15 x 108	13 x 106–107	15 x 106–118	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PP	PP	PET	PP, PET	PET	PP	Glass
Item no.	-	-	-	-	-	-	-	-	-	-

### Adapter

for fixed-angle rotor 12073



Adapter							
Bore diameter x length [mm]	13.8 x 60	12.5 x 85	17.9 x 77.8			17.9 x 87.8	17.9 x 77.8
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30			- / 30	1 / 30
Centrifuging radius (outer / inner) [mm]	108 / 87	133 / 112	129 / 108			139 / 118	129 / 108
Item no.	13070	13072	13073			-	13073

## Fixed-angle rotor 12139

### with aluminium lid 17851

- Max. capacity: 6 x 30 ml round-bottom
- Max. speed (2-16P / 2-16KL): 13,500 / 15,300 rpm
- Max. RCF (2-16P / 2-16KL): 15,893 / 20,414 x g
- Hermetically closable with aluminium lid 17851
- Tmin at maximum speed: <4°C
- Angle: 29°





## Fixed-angle rotor 12181

### with aluminium lid 17931

- Max. capacity: 6 x 50 ml conical
- Max. speed (2-16P / 2-16KL): 10,000 / 12,000 rpm
- Max. RCF (2-16P / 2-16KL): 10,621 / 15,294 x g
- Hermetically closable with aluminium lid 17931
- Tmin at maximum speed: <4°C
- Angle: 28°





### Tube

						
Rated capacity (filling volume) [ml]	10	10	10	30 (26)	30 (26)	30 (28)
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	25.3 x 98	25.3 x 98	25.3 x 98
Tube material	PF	PC	PPCO	PF	PPCO	PC
Item no.	15000	15010	15039	15029	15032	15030

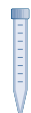





### Adapter

for fixed-angle rotor 12139



		
Bore diameter x length [mm]	16.5 x 70	26 x 83
Tubes per adapter / rotor	1 / 6	- / 6
Centrifuging radius [mm]	68	75
Item no.	13059	-





### Tube

						
Rated capacity (filling volume) [ml]	15	25	30	50 (38)	50 (43)	50
Diameter x length [mm]	16.5 x 120	25 x 90	25 x 107	28.8 x 107	28.5 x 107	29 x 117
Tube material	PP	PP	PP	PPCO	PF	PP
Item no.	15115	-	-	15052	15051	15151

### Adapter

for fixed-angle rotor 12181



				
Bore diameter x length [mm]	17 x 107	25.5 x 71	29.5 x 95	29.5 x 100
Tubes per adapter / rotor	1 / 6	1 / 6	1 / 6	- / 6
Centrifuging radius [mm]	94	72	90	95
Item no.	13060	13064	13079	-













## Fixed-angle rotor 12138

### with aluminium lid 17897

- Max. capacity: 4 x 85 ml round-bottom
- Max. speed (2-16KL): 9,400 rpm
- Max. RCF (2-16KL): 9,484 x g
- Hermetically closable with aluminium lid 17897
- Tmin at maximum speed: <4°C
- Angle: 27°














Tube										
Rated capacity (filling volume) [ml]	10	10	10	14	14	15	15	30 (26)	30 (26)	30 (28)
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	17 x 100	17 x 100	17.5 x 106	16.5 x 120	25.3 x 98	25.3 x 98	25.3 x 98
Tube material	PF	PC	PPCO	PS	PP	HS glass	PP	PF	PPCO	PC
Item no.	15000	15010	15039	15020	15023	15085	15115	15029	15032	15030

### Adapter

for fixed-angle rotor 12138







Adapter				
Bore diameter x length [mm]	16.2 x 71	18 x 87	17 x 107	26 x 83
Tubes per adapter / rotor	2 / 8	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	67	88	95	79
Item no.	13084	16019	13081	13083

Tube							
Rated capacity (filling volume) [ml]	30	50 (38)	50 (43)	50	50	85 (73)	85 (76)
Diameter x length [mm]	23.6 x 106	28.8 x 107	28.5 x 107	28.5 x 101.5	29 x 117	38 x 112	38 x 112
Tube material	HS glass	PPCO	PF	Stainless steel	PP	PF	PPCO
Item no.	15086	15052	15051	13055	15151	15080	15076

### Adapter

for fixed-angle rotor 12138

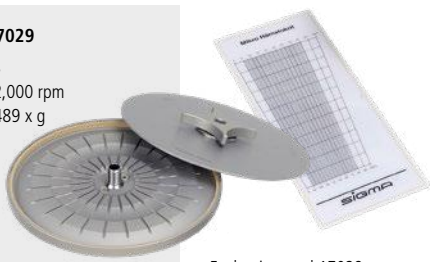


Adapter				
Bore diameter x length [mm]	24.5 x 88	29 x 97	30 x 100	38.3 x 99
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	- / 4
Centrifuging radius [mm]	89	93	96	96
Item no.	16031	13082	13080	-

## Haematocrit rotor 11409

### with lid and evaluation card 17029

- Max. capacity: 24 capillary tubes
- Max. speed (2-16P / 2-16KL): 12,000 rpm
- Max. RCF (2-16P / 2-16KL): 14,489 x g
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $90^{\circ}$



Evaluation card 17029

### Tube



Rated capacity (filling volume) [ $\mu\text{l}$ ]	50
Diameter x length [mm]	1.5 x 75
Tube material	Glass
Item no.	15001

### Adapter

for haematocrit rotor 11409



Bore diameter x length [mm]	–
Capillary tubes per rotor	24
Centrifuging radius [mm]	90
Item no.	–



Optionally available:  
Evaluation disc 17024

# Cleanroom

## Robust and resistant



**Cleanroom coating**  
Available for all accessories

An extremely resistant cleanroom coating is available from Sigma for all aluminium buckets and rotors. This coating provides reliable corrosion protection for accessories, especially where aggressive chemicals are used. The cleanroom coating can even withstand

exposure to sodium hydroxide and hydrochloric acid. The surfaces are also food-grade (FDA certified) and can easily be cleaned without residues.

# Material properties

## Guideline for optimal tube selection

Due to the many factors that influence material properties, this overview is only intended as a general recommendation. There is no guarantee of the stated properties. Users should therefore carefully

test materials for suitability under specific application conditions. Tubes should be discarded as soon as they show any sign of material fatigue.

	Polycarbonate (PC)	Polyvinyl fluoride (PF)	Polystyrene (PS)	Polyethylene (PE)	Polypropylene (PP)
<b>Autoclave resistant</b>	Yes	Yes	No	No	Yes
<b>Elasticity</b>	Not elastic	Not elastic	Not elastic	Good	Not elastic
<b>Transparency</b>	Transparent	Translucent	Transparent	Translucent	Translucent
<b>Microwave resistant</b>	Moderate	Yes	No	Limited	Moderate
<b>Chemical resistance</b>					
Weak acids	Yes	Yes	Yes	Yes	Yes
Strong acids	No	Yes	Limited	Yes	Yes
Alcohols and alkalis	No	Yes	Yes	Yes	Yes
Salts	Limited	Yes	Limited	Yes	Yes
<b>Note:</b>	Frequent autoclaving leads to loss of strength	Tubes should be completely filled and closed for use at maximum RCF			

	PP copolymer (PPCO)	Glass	High-speed glass (HS glass)	Stainless steel
<b>Autoclave resistant</b>	Yes	Yes	Yes	Yes
<b>Elasticity</b>	Moderate	Not elastic	Not elastic	Not elastic
<b>Transparency</b>	Translucent	Transparent	Transparent	Opaque
<b>Microwave resistant</b>	Moderate	Yes	Yes	No
<b>Chemical resistance</b>				
Weak acids	Yes	Yes	Yes	Limited
Strong acids	Yes	Yes	Yes	Limited
Alcohols and alkalis	Yes	Yes	Yes	Yes
Salts	Yes	Yes	Yes	Limited
<b>Note:</b>		Max. RCF for all glass tubes approx. 4,000 x g	High-speed glass for maximum RCF of 13,100 x g	

# Spincontrol L Controller

## Easy to operate, advanced safety features

The Spincontrol L controller combines intuitive operation with a multitude of options in a well-conceived package. It is fundamentally based on a Sigma patent. The brilliantly simple design of the Spincontrol L has only three buttons (Start, Stop, and Lid) along with the proven multifunction knob. Operating parameters can be entered conveniently and stored in up to 50 programs using the intuitive user interface. The backlit LCD display is easy to read at a distance.

A special feature is automatic monitoring of the number of operational rotor cycles. The integrated cycle counter keeps track of all completed rotor runs and informs the user when a defined limit value is reached. This alert system is based on real measurement data and helps to reliably avoid damage to rotors and the centrifuge.

The high-performance cooling system provides precise control over the range of -10 °C to +40 °C with fine adjustment in 1 °C increments. Along with the pre-cooling function, the Sigma 2-16KL and 2-16KHL feature optionally selectable standstill cooling.

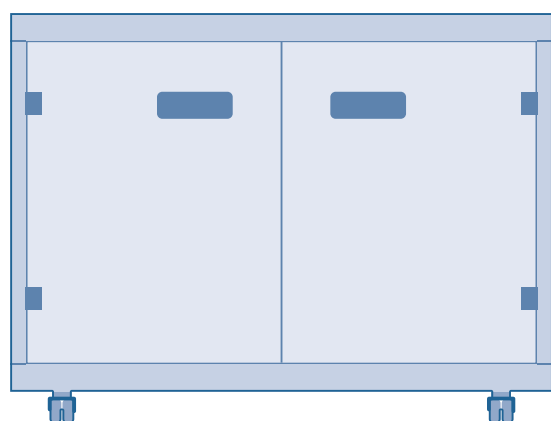
Display	Backlit LCD
Constant display of setpoints and actual values	+
Speed/RCF display	+
Timer (s; h:min)	10 – 99:59
Timer tracks time after setpoint speed is reached; switchable	+, +
Short run, Continuous run	+, +
Time increment [s]	1
Speed increment [rpm]	100
Temperature increment [°C]	1*
RCF increment [x g]	10
Programs	50
Acceleration curves	10
Braking curves	10
Free run-out	+
Automatic cap opening at end of run, switchable	+, +
Standstill cooling	+*
Pre-cooling program "Rapid Temp"	+*
Audible signal, switchable	+, +
Visual standstill indication	+
Rotor cycle monitoring	+
Rotor end-of-life warning	+
Lockable controller	+
Microprocessor control	+

\* Only Sigma 2-16KL and 2-16KHL



# Centrifuge tables

Sigma centrifuge tables are available in six different sizes. Matched to the corresponding centrifuge dimensions, they combine convenient work height with an optimally calculated footprint. The tables are made from coated sheet steel and are equipped with a storage compartment (with two doors) and a convenient pull-out shelf. Lockable castors allow the centrifuge tables to be easily moved and positioned in the laboratory.



## Centrifuge table 17920

For Sigma 2-16KL

W x H x D [mm]: 600 x 501 x 550

## Centrifuge table 17921

For Sigma 6-16KS

W x H x D [mm]: 790 x 515 x 684

## Centrifuge table 17922

For Sigma 6-16S

W x H x D [mm]: 581 x 481 x 684

## Centrifuge table 17923

For Sigma 3-30KS

W x H x D [mm]: 570 x 481 x 616

## Centrifuge table 17926

For Sigma 3-16KL, 3-18KS, 4-16KS

W x H x D [mm]: 650 x 501 x 647

## Centrifuge table 17927

For Sigma 3-16L, 4-5L, 4-16S

W x H x D [mm]: 490 x 497 x 647

# Premium quality

## Made in Germany

The Sigma 2-16 series meets the highest technical requirements and laboratory standards. Developed and produced at our facility in Osterode, Germany, they are high-performance, durable and energy-efficient quality products and conform to the latest safety, emissions and environmental standards. Sigma guarantees the availability of spare parts and wearing parts for at least 10 years. Furthermore, you

benefit from our extensive services portfolio, including commissioning, maintenance, device calibration and more. Our qualified service technicians are ready to provide professional maintenance and repair as well as loaner devices if necessary. All support services are designed to ensure reliability and optimise system availability.

	Sigma 2-16P	Sigma 2-16KL	Sigma 2-16KHL
<b>Max. capacity [ml]</b>			
Swing-out rotor	4 x 100	4 x 100	4 x 100
Fixed-angle rotor	6 x 50	4 x 85	4 x 85
<b>Max. RCF</b>	20,627	21,913	21,913
<b>Maximum speed [rpm]</b>	15,000	15,300	15,300
<b>Minimum speed [rpm]</b>	100	100	100
<b>Noise level at maximum speed (approx.) [dB(A)]</b>			
Fixed-angle rotor 12141	≤ 53	≤ 53	≤ 53
Swing-out rotor 11170 with buckets 13299 and caps	≤ 65	≤ 52	≤ 52
<b>Max. acceleration time [s]</b>			
Fixed-angle rotor 12141	38	31	31
Swing-out rotor 11170 with buckets 13299 and caps	15	17	17
<b>Max. braking time [s]</b>			
Fixed-angle rotor 12141	37	37	37
Swing-out rotor 11170 with buckets 13299 and caps	15	15	15
<b>Temperature adjustment range [°C]</b>	–	-10–+40	-10–+60
<b>Power consumption [W]</b>	340	720	720
<b>Height x width x depth [mm]</b>	300 x 365 x 452	310 x 550 x 570	310 x 550 x 570
<b>Height with open cap [mm]</b>	610	705	705
<b>Weight without rotor [kg]</b>	32	60	60
<b>Refrigerant</b>		R134a	R134a
Filling quantity [kg] / Max. permissible pressure [bar]		0.105 / 23	0.105 / 23
CO <sub>2</sub> equivalent [t]		0.150	0.150

### Sigma Service

For maintenance and repairs please contact our Service department at [www.sigma-zentrifugen.de/en/service](http://www.sigma-zentrifugen.de/en/service)

### Calibration

Documented proof of compliance with essential technical parameters.

Speed or run time (item no. 17713)  
 Speed and run time (item no. 17714)  
 Speed, run time, temperature (item no. 17715)

### Device qualification (IQOQ)

This comprehensive device qualification includes installation qualification and metrological checking of all functional parameters with a rotor.

IQOQ documents (item no. 170000)  
 IQOQ on site (upon request)

#### Sigma 2-16P centrifuge

220–240 V, 50/60 Hz (item no. 10155)  
 120 V, 50/60 Hz (item no. 10156)  
 100 V, 50/60 Hz (item no. 10157)

#### Sigma 2-16KL centrifuge

220–240 V, 50/60 Hz (item no. 10350)  
 120 V, 60 Hz (item no. 10351)  
 100 V, 50/60 Hz (item no. 10352)



#### Sigma 2-16KL centrifuge, inert gas

220–240 V, 50/60 Hz (item no. 90903)

#### Sigma 2-16KHL centrifuge

220–240 V, 50/60 Hz (item no. 10353)

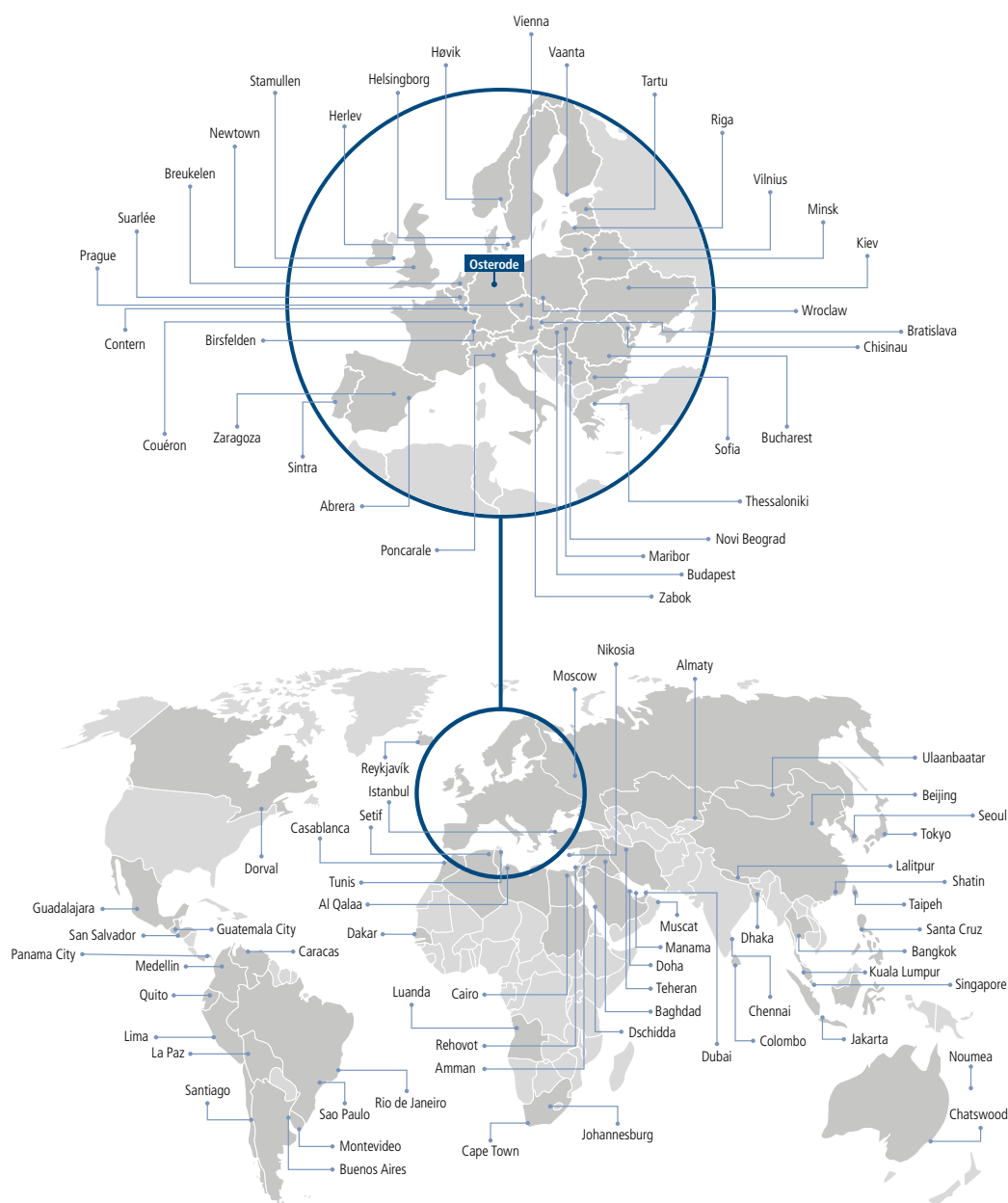
#### Sigma 2-16KHL centrifuge, inert gas

220–240 V, 50/60 Hz (item no. 91277)

# Global service

## For local product security

Our trained service partners in over 100 countries ensure consistently high quality in accordance with national regulations. Our specialists can also be engaged quickly around the world, either remotely or on site in person.



Selected locations of our representatives.

An overview of all representatives with detailed contact information can be found at [www.sigma-zentrifugen.de/en/sales-partners](http://www.sigma-zentrifugen.de/en/sales-partners)





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[www.sigma-zentrifugen.de](http://www.sigma-zentrifugen.de)

# Sigma 3-16L

# Sigma 3-16KL



Benchtop centrifuge

- Unrefrigerated
- Refrigerated



# All-rounder for a multitude of applications



**Sigma is a leading international manufacturer of laboratory centrifuges for diverse sectors, including biotechnology, pharmaceutical, medical and environment analysis. Laboratories, institutions and companies everywhere in the world have been relying on premium Sigma quality – Made in Germany – for more than 40 years. The company stands for innovative products and development of durable, energy-efficient and especially user-friendly devices.**

The compact benchtop centrifuges Sigma 3-16L and the refrigerated version 3-16KL boast the features of classic all-rounders. Users and buyers appreciate these practically oriented models with their outstanding capacities and wide variety of uses. Along with high performance and reliability, these laboratory centrifuges impress with unmatched versatility. As well-balanced universal centrifuges with extensive rotor and accessory options, they are suitable for an extremely wide variety of tasks.

# Scoring with standards

## Reliable, versatile and safe

The Sigma 3-16L and the refrigerated version Sigma 3-16KL score with impressive features. They are easy to operate, pleasantly quiet, and have extraordinary capacity with a maximum of 4 x 400 ml.

A broad portfolio of fixed-angle and swing-out rotors and an extensive range of accessories, including buckets and adapters, are available. The resulting compatibility with a large number of specimen tubes enables high versatility and allows them to be used for a very wide variety of tasks, including high-throughput applications. Classical deployment areas include hospitals, universities and industrial laboratories.

These units are the perfect choice for routine applications. The patented one-knob controller with illuminated function keys is highly practical and popular with users. Automatic lid opening can optionally be configured for easy end of run indication. After completion of centrifuging, the electromagnetic lid lock unlocks and the lid opens

conveniently with the aid of a gas spring. The high-grade stainless steel chamber is corrosion-resistant and easy to clean.

The Sigma 3-16L also delivers outstanding performance in terms of safety. One of the key functions is cycle counting: after the maximum number of runs has been reached for a rotor, an alert is issued to notify the user. In addition, automatic rotor identification ensures that rotors can only be operated within their permissible speed range.

The refrigerated version Sigma 3-16KL has a powerful cooling system with precise temperature setting in the range of -10 °C to +40 °C. The pre-cooling function "Rapid Temp" allows the centrifuge chamber and accessories to be cooled to a defined temperature. That guarantees optimum safety for work with heat-sensitive specimens.

Both benchtop centrifuges are also available in IVD versions.

### Sigma 3-16L

- Universal benchtop centrifuge
- Speed range up to 15,300 rpm
- Maximum capacity: 4 x 400 ml
- User-friendly Spincontrol L controller
- Fifty programs
- Compact, space-saving unit
- Low noise level
- Automatic rotor identification
- Zero-maintenance induction motor
- Electromechanical lid opening
- Automatic imbalance monitoring
- Rotor life monitoring for a high degree of safety
- Easily cleaned stainless steel chamber
- Window in lid for external speed monitoring
- Produced in compliance with the latest national and international standards (e.g. EN 61010-2-020)

### Sigma 3-16KL

All features of the Sigma 3-16L, plus:

- High-performance cooling
- Temperature setting range: -10 °C to +40 °C
- Rotor cooling also possible at standstill
- Pre-cooling function "Rapid Temp"

### Option

- Inert gas version with inert gas injection system







# Rotors and accessories

## Large selection and a multitude of applications


A broad portfolio of fixed-angle and swing-out rotors is available for the Sigma 3-16L and the Sigma 3-16KL, making them suitable for a large variety of applications. In addition, Sigma offers an extensive range of buckets and adapters for virtually all tube types.

As a special feature, Sigma can produce custom accessories upon request.

The rotors and accessories are made from certified high-grade materials to withstand the most severe stresses.

### Swing-out rotors starting on page 9

#### Swing-out rotor 11180

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Accessories in part with biosafe closure 
- Angle: 90°

▶ p.9



#### Swing-out rotor 11133

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 5,000 / 5,500 rpm
- Max. RCF (3-16L / 3-16KL): 4,332 / 5,242 x g
- Angle: 90°

▶ p.16



#### Swing-out rotor 11135

- Max. capacity: 24 x 2 ml
- Max. speed (3-16L / 3-16KL): 12,500 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 12,927 / 16,215 x g
- Angle: 90°

▶ p.20



#### Drum rotor 11136

- Max. capacity: 60 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,000 / 14,500 rpm
- Max. RCF (3-16L / 3-16KL): 13,226 / 16,454 x g
- Angle: 90°

▶ p.20



### MTP swing-out rotors on page 18


#### Swing-out rotor 11222

- Max. capacity: 6 microtiter plates
- Max. speed (3-16L / 3-16KL): 3,000 rpm
- Max. RCF (3-16L / 3-16KL): 1,218 x g
- Angle: 90°

▶ p.19



#### Swing-out rotor 11241

- Max. capacity: 8 microtiter plates
- Max. speed (3-16L / 3-16KL): 4,200 rpm
- Max. RCF (3-16L / 3-16KL): 2,623 x g
- Biosafe with cap 17108 
- Angle: 90°

▶ p.19



## Fixed-angle rotors starting on page 21

▶ p.21

### Fixed-angle rotor 12115 for PCR strips

- Max. capacity: 96 x 0.2 ml conical
- Max. speed (3-16L / 3-16KL): 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 21,475 x g
- Angle: 45° (both rows)



▶ p.21

### Fixed-angle rotor 12154

- Max. capacity: 24 x 2 ml
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 21,460 x g
- Angle: 45°



▶ p.22

### Fixed-angle rotor 12131

- Max. capacity: 30 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,200 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 19,480 / 21,913 x g
- Angle: 45°



▶ p.22


### Fixed-angle rotor 12349

- Max. capacity: 48 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,000 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 18,894 / 21,913 x g
- Angle (upper / lower row): 25° / 53°



▶ p.23

### Fixed-angle rotor 12182

- Max. capacity: 12 x 5 ml conical
- Max. speed (3-16L / 3-16KL): 15,000 / 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 21,130 / 21,984 x g
- Biosafe with aluminium lid 17182 
- Angle: 40°



▶ p.23

### Fixed-angle rotor 12111

- Max. capacity: 10 x 10 ml round-bottom
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 19,890 x g
- Angle: 35°



▶ p.24


### Fixed-angle rotor 12157

- Max. capacity: 20 x 10 ml round-bottom
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,875 / 10,956 x g
- Angle: 25°



▶ p.24

### Fixed-angle rotor 12311

- Max. capacity: 12 x 15 ml conical
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,965 / 11,068 x g
- Biosafe with aluminium lid 17935 
- Angle: 25°



▶ p.25

### Fixed-angle rotor 12158

- Max. capacity: 6 x 30 ml round-bottom
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 20,675 x g
- Angle: 29°



▶ p.25


### Fixed-angle rotor 12150

- Max. capacity: 6 x 50 ml round-bottom
- Max. speed (3-16L / 3-16KL): 10,000 / 11,000 rpm
- Max. RCF (3-16L / 3-16KL): 9,391 / 11,363 x g
- Angle: 25°



▶ p.26

### Fixed-angle rotor 12310

- Max. capacity: 6 x 50 ml conical
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,512 / 10,509 x g
- Biosafe with aluminium lid 17934 
- Angle: 25°



▶ p.26

### Fixed-angle rotor 12156

- Max. capacity: 8 x 50 ml round-bottom
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,694 / 10,733 x g
- Angle: 25°



▶ p.27

### Fixed-angle rotor 12155

- Max. capacity: 4 x 94 ml round-bottom
- Max. speed (3-16L / 3-16KL): 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 10,174 x g
- Angle: 26°



▶ p.28

### Fixed-angle rotor 12159


- Max. capacity: 6 x 94 ml round-bottom
- Max. speed (3-16L / 3-16KL): 8,000 rpm
- Max. RCF (3-16L / 3-16KL): 7,012 x g
- Angle: 25°





































## Swing-out rotor 11180

### Round bucket 13190 (1 set = 2 pcs.)

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Max. tube length, mid-bucket, without / with cap: 142 / 125 mm
- Biosafe with cap 17190 
- Tmin at maximum speed: <4°C
- Angle: 90°




Tube										
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2	5	5	6 (5)	7
Diameter x length [mm]	5.8 x 20	5.8 x 47	10.8 x 46.5	7.9 x 28	10.7 x 42	10.7 x 42	12 x 75	17 x 60	12 x 100	12 x 100
Tube material	PP	PE	PP	PP	PP	PP	PS	PPCO	Glass	Glass
Item no.	15042	15014	Paediatrics	15005	15008	15040	15060	–	15007	15027
<b>Adapter</b>										
for round bucket 13190										
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	11 x 32	8.1 x 29	11.1 x 38.5	12.8 x 57	17 x 52	17 x 52	12.8 x 77.5	12.8 x 77.5
Tubes per adapter / rotor	20 / 80	20 / 80	16 / 64	24 / 96	20 / 80	25 / 100	10 / 40	10 / 40	16 / 64	16 / 64
Centrifuging radius [mm]	166	168	164	168	171	169	169	169	170	170
Item no.	17353 & 13021	17353 & 13000	17361	17350	17353	17352	17210	17210	17354	17354















Tube									
Rated capacity (filling volume) [ml]	10	10	10	10	14	14	15 (13)	15	
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120
Tube material	PF	PC	PPCO	Glass	Glass	PS	PP	Glass	PP
Item no.	15000	15010	15039	15015	15024	15020	15023	15022	15115
<b>Adapter</b>									
for round bucket 13190									
Bore diameter x length [mm]		16.5 x 58			17.5 x 58			17 x 78.5	17 x 78.5
Tubes per adapter / rotor		12 / 48			12 / 48			5 / 20	9 / 36
Centrifuging radius [mm]		170			170			171	171
Item no.		17355			17358			17345	17359*

















## Swing-out rotor 11180

## Round bucket 13190 (1 set = 2 pcs.)

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Max. tube length, mid-bucket, without / with cap: 142 / 125 mm
- Biosafe with cap 17190 
- Tmin at maximum speed: <4°C
- Angle: 90°




Tube										
Rated capacity (filling volume) [ml]	25	25	25	30 (26)	30 (26)	30 (28)	30	30	50 (38)	50 (43)
Diameter x length [mm]	25 x 90	24 x 100	24 x 100	25.3 x 98	25.3 x 98	25.3 x 98	24 x 105	25 x 107	28.8 x 107	28.5 x 107
Tube material	PP	Glass	Glass	PF	PPCO	PC	Glass	PP	PPCO	PF
Item no.	–	15025	15026	15029	15032	15030	15033	–	15052	15051
<b>Adapter</b>										
for round bucket 13190										
Bore diameter x length [mm]	25.5 x 56	25.5 x 77.5			25.5 x 77.5	25.5 x 56	29.5 x 77.5			
Tubes per adapter / rotor	5 / 20	5 / 20			5 / 20	5 / 20	4 / 16			
Centrifuging radius [mm]	168	170			170	168	170			
Item no.	17362	17370			17370	17362	17376			

Tube										
Rated capacity (filling volume) [ml]	50	50	50	50	50	50	50	85 (73)	85 (76)	
Diameter x length [mm]	28.5 x 101.5	34 x 100	34 x 100	34 x 100	35 x 100	29 x 117	29 x 117	38 x 112	38 x 112	
Tube material	Stainless steel	Glass	PC	Glass	Glass	PPCO	PP	PF	PPCO	
Item no.	13055	15045	15049	15050	15056	–	15151	15080	15076	
<b>Adapter</b>										
for round bucket 13190										
Bore diameter x length [mm]	29.5 x 77.5	35.5 x 77.5			29.5 x 77	29.5 x 78.5	29.5 x 78.5	38.5 x 77		
Tubes per adapter / rotor	4 / 16	3 / 12			3 / 12	3 / 12	4 / 16	1 / 4		
Centrifuging radius [mm]	170	170			169	171	171	169		
Item no.	17376	17375			17344	17346	17377*	17385		











\* Only possible without cap 17190

## Swing-out rotor 11180

### Round bucket 13190 (1 set = 2 pcs.)

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Max. tube length, mid-bucket, without / with cap: 142 / 125 mm
- Biosafe with cap 17190 
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $90^{\circ}$









Tube										
Rated capacity (filling volume) [ml]	94 (85)	94	100 (75)	100 (90)	100	100	150	150	175	175
Diameter x length [mm]	38 x 103	38 x 110	44 x 100	44 x 100	44 x 100	45 x 100	51 x 99	56 x 113	62 x 139.2	61 x 118
Tube material	Stainless steel	PC	Glass	Glass	Glass	PC	PP	Glass	PP	PP
Item no.	13085	15094	15078	15106	15100	15103	15125	15206	–	–

### Adapter

for round bucket 13190



Bore diameter x length [mm]	38.5 x 77		45.5 x 77.5			51.5 x 77	58 x 75	62.5 x 105	61 x 104
Tubes per adapter / rotor	1 / 4		1 / 4			1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	169		170			169	167	172	172
Item no.	17385		17390*			17395	17401**	17393***	17402***

Tube							
Rated capacity (filling volume) [ml]	200 (168)	200 (170)	200	225	250 (232)	250 (232)	400
Diameter x length [mm]	56 x 112	56 x 112	61 x 130	61 x 137	61.4 x 122	61.4 x 122	85 x 118
Tube material	PPCO	Glass	PP	PP	PF	PPCO	PPCO
Item no.	15202	15201	–	–	15247	15249	15401

### Adapter

for round bucket 13190




Bore diameter x length [mm]	57.5 x 77	58 x 75	62.5 x 105	61 x 104	62.5 x 80		86 x 97
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4		– / 4
Centrifuging radius [mm]	169	167	172	172	172		172
Item no.	17400	17401**	17393***	17402***	17347		–



## Swing-out rotor 11180

### Round bucket 13190 (1 set = 2 pcs.)

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Max. tube length, mid-bucket, without / with cap: 142 / 125 mm
- Biosafe with cap 17190 
- Tmin at maximum speed: <4°C
- Angle: 90°













## Swing-out rotor 11180

### Carrier bucket 13194 (1 set = 2 pcs.)

- Max. capacity: 16 x 50 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,313 / 3,803 x g
- Max. tube length mid-bucket: 139 mm
- Tmin at maximum speed: <4°C
- Angle: 90°



### Blood and urine tubes

										
Rated capacity (filling volume) [ml]	1.1 – 1.4	2.7 – 5	4 – 6	1.8 – 7	1.6 – 6	4 – 10	9.5 – 10	6 – 10	9 – 10	8
Diameter x length with closure [mm]	8 x 82	11 x 82 – 108	13 x 81 – 106	13 x 81 – 107	13 x 81 – 106	15 x 91 – 118	15 x 106	16 x 106 – 107	16 x 108	16 x 131
Tube material	PP	PP	PET	PET	PP	PP	PET	PET	PP	Glass
Item no.	–	–	–	–	–	–	–	–	–	–

### Adapter

for round bucket 13190



Bore diameter x length [mm]	12.8 x 57	13.8 x 57	17.5 x 58	17.5 x 58
Tubes per adapter / rotor	25 / 100	17 / 68	12 / 48	3 / 12
Centrifuging radius [mm]	169	169	170	170
Item no.	17352	17356	17358	17358*

### Tube



Rated capacity (filling volume) [ml]	15	25	30	50	50
Diameter x length [mm]	16.5 x 120	25 x 90	25 x 107	29 x 117	29 x 117
Tube material	PP	PP	PP	PP	PP
Item no.	15115	–	–	15151	–

### Adapter

for hexagonal bucket 13194





















Bore diameter x length [mm]	17 x 79	25.5 x 70	29.5 x 78.5	29.5 x 80
Tubes per adapter / rotor	10 / 40	4 / 16	4 / 16	4 / 16
Centrifuging radius [mm]	167	158	167	168
Item no.	18311	18313	18310	18309















## Swing-out rotor 11180

### Rectangular bucket 13180 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,372 / 3,871 x g
- Max. tube length, mid-bucket, without / with cap: 141 / 124 mm
- Hermetically closable with cap 17112
- Tmin at maximum speed: <4°C
- Angle: 90°



Tube										
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	1.5	2	5	5	6 (5)	7	10
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.7 x 42	10.7 x 42	12 x 75	17 x 60	12 x 100	12 x 100	16.1 x 81.1
Tube material	PP	PE	PP	PP	PP	PS	PPCO	Glass	Glass	PF
Item no.	15042	15014	15005	15008	15040	15060	–	15007	15027	15000
<b>Adapter</b>										
for rectangular bucket 13180										
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 38	12.5 x 51	17 x 52	12.5 x 72	17.2 x 46		
Tubes per adapter / rotor	20 / 80	20 / 80	20 / 80	20 / 80	20 / 80	6 / 24	20 / 80	12 / 48		
Centrifuging radius [mm]	166	168	168	170	166	168	166	166		
Item no.	18002 & 13021	18002 & 13000	18002 & 13002	18002	18005*	18006	18007*	18010*		

Tube									
Rated capacity (filling volume) [ml]	10	10	10	10	14	14	15 (13)	15	25
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120	25 x 90
Tube material	PC	PPCO	Glass	Glass	PS	PP	Glass	PP	PP
Item no.	15010	15039	15015	15024	15020	15023	15022	15115	–
<b>Adapter</b>									
for rectangular bucket 13180									
Bore diameter x length [mm]	17.2 x 46	17.2 x 75	17 x 72.5	17 x 72.5	25.5 x 61				
Tubes per adapter / rotor	12 / 48	12 / 48	4 / 16	7 / 28	4 / 16				
Centrifuging radius [mm]	166	166	170	170	167				
Item no.	18010*	18015*	18016	18018**	18022				

## Swing-out rotor 11180

### Rectangular bucket 13180 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,372 / 3,871 x g
- Max. tube length, mid-bucket, without / with cap: 141 / 124 mm
- Hermetically closable with cap 17112
- T<sub>min</sub> at maximum speed: <4°C
- Angle: 90°



Tube										
Rated capacity (filling volume) [ml]	25	25	30 (26)	30 (26)	30 (28)	30	30	50 (38)	50 (43)	50
Diameter x length [mm]	24 x 100	24 x 100	25.3 x 98	25.3 x 98	25.3 x 98	24 x 105	25 x 107	28.5 x 107	28.8 x 107	28.5 x 101.5
Tube material	Glass	Glass	PF	PPCO	PC	Glass	PP	PPCO	PF	Stainless steel
Item no.	15025	15026	15029	15032	15030	15033	–	15052	15051	13055

Adapter for rectangular bucket 13180					
Bore diameter x length [mm]	24.5 x 70	25.5 x 71	24.5 x 70	25.5 x 61	29.5 x 71
Tubes per adapter / rotor	5 / 20	5 / 20	5 / 20	4 / 16	2 / 8
Centrifuging radius [mm]	166	168	166	167	168
Item no.	18025*	18030	18025*	18022	18051

Tube										
Rated capacity (filling volume) [ml]	50	50	50	50	50	85 (73)	85 (76)	94 (85)	94	
Diameter x length [mm]	34 x 100	34 x 100	35 x 100	34 x 100	29 x 117	29 x 117	38 x 112	38 x 112	38 x 103	38 x 110
Tube material	Glass	Glass	Glass	PC	PP	PP	PF	PPCO	Stainless steel	PC
Item no.	15045	15050	15056	15049	–	15151	15080	15076	13085	15094

Adapter for rectangular bucket 13180				
Bore diameter x length [mm]	35.5 x 68	30 x 74	29.5 x 72.5	38.5 x 72
Tubes per adapter / rotor	2 / 8	2 / 8	2 / 8	1 / 4
Centrifuging radius [mm]	162	171	169.5	169
Item no.	18050**	18053	18052	18085







## Swing-out rotor 11180

### Rectangular bucket 13180 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,372 / 3,871 x g
- Max. tube length, mid-bucket, without / with cap: 141 / 124 mm
- Hermetically closable with cap 17112
- Tmin at maximum speed: <4°C
- Angle: 90°



### Tube

						
Rated capacity (filling volume) [ml]	100 (75)	100 (90)	100	100	150	200 (168)
Diameter x length [mm]	44 x 100	44 x 100	44 x 100	45 x 100	51 x 99	56 x 112
Tube material	Glass	Glass	Glass	PC	PP	PPCO
Item no.	15078	15106	15100	15103	15125	15202











### Adapter

for rectangular bucket 13180



Bore diameter x length [mm]	46 x 65.5		51.5 x 71		57 x 34	
Tubes per adapter / rotor	1 / 4		1 / 4		1 / 4	
Centrifuging radius [mm]	165		168		166	
Item no.	18100*		18125		18200	

### Blood and urine tubes

										
Rated capacity (filling volume) [ml]	1.1 – 1.4	2.7 – 5	4 – 6	1.8 – 7	1.6 – 6	4 – 10	9.5 – 10	6 – 10	9 – 10	8
Diameter x length with closure [mm]	8 x 82	11 x 82–108	13 x 81–106	13 x 81–107	13 x 81–106	15 x 91–118	15 x 106	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PET	PET	PP	PP	PET	PET	PP	Glass
Item no.	–	–	–	–	–	–	–	–	–	–

### Adapter

for rectangular bucket 13180



Bore diameter x length [mm]	12.5 x 51		14 x 58		17.2 x 46		17.5 x 57		17.5 x 57	
Tubes per adapter / rotor	20 / 80		12 / 48		12 / 48		11 / 44		7 / 28	
Centrifuging radius [mm]	166		164		166		168		168	
Item no.	18005**		18012		18010**		18020		18020***	

## Swing-out rotor 11133

### Round bucket 13104 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 5,000 / 5,500 rpm
- Max. RCF (3-16L / 3-16KL): 4,332 / 5,242 x g
- Max. tube length, mid-bucket, without / with cap: 126 / 118 mm
- Hermetically closable with aluminium cap 17109 or polysulphone cap 17111
- Tmin at maximum speed: <4°C
- Angle: 90°



### Tube

Rated capacity (filling volume) [ml]	0.2	0.4	0.5	1.5	2	5	6 (5)	7	10	10
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.7 x 42	10.7 x 42	12 x 75	12 x 100	12 x 100	16.1 x 81.1	16.1 x 81.1
Tube material	PP	PE	PP	PP	PP	PS	Glass	Glass	PF	PC
Item no.	15042	15014	15005	15008	15040	15060	15007	15027	15000	15010

### Adapter

for round bucket 13104							
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 38.5	12.5 x 51	12.5 x 80	17 x 50.3
Tubes per adapter / rotor	12 / 48	12 / 48	12 / 48	12 / 48	12 / 48	12 / 48	6 / 24
Centrifuging radius [mm]	146	148	148	153	150	150	150
Item no.	17008 & 13021	17008 & 13000	17008 & 13002	17008	17006	17007	17012

### Tube

Rated capacity (filling volume) [ml]	10	10	10	14	14	15	25	25	25	30
Diameter x length [mm]	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	16.5 x 120	25 x 90	24 x 100	24 x 100	24 x 105
Tube material	PPCO	Glass	Glass	PP	PS	PP	PP	Glass	Glass	Glass
Item no.	15039	15015	15024	15023	15020	15115	–	15025	15026	15033

### Adapter









for round bucket 13104					
Bore diameter x length [mm]	17 x 50.3	17 x 79.7	17 x 78.5	25.5 x 58	24.5 x 79.6
Tubes per adapter / rotor	6 / 24	7 / 28	3 / 12	1 / 4	2 / 8
Centrifuging radius [mm]	150	150	154	153	150
Item no.	17012	17015	17019*	17032	17025

## Swing-out rotor 11133

### Round bucket 13104 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 5,000 / 5,500 rpm
- Max. RCF (3-16L / 3-16KL): 4,332 / 5,242 x g
- Max. tube length, mid-bucket, without / with cap: 126 / 118 mm
- Hermetically closable with aluminium cap 17109 or polysulphone cap 17111
- T<sub>min</sub> at maximum speed: <4°C
- Angle: 90°













Tube										
Rated capacity (filling volume) [ml]	30 (26)	30 (26)	30 (28)	30	50 (38)	50 (43)	50	50	50	50
Diameter x length [mm]	25.3 x 98	25.3 x 98	25.3 x 98	25 x 107	28.5 x 107	28.8 x 107	28.5 x 101.5	34 x 100	34 x 100	35 x 100
Tube material	PF	PPCO	PC	PP	PPCO	PF	Stainless steel	Glass	Glass	Glass
Item no.	15029	15032	15030	–	15052	15051	13055	15045	15050	15056

### Adapter

for round bucket 13104



Bore diameter x length [mm]	25.5 x 78	25.5 x 58	30 x 77.3	35.5 x 80
Tubes per adapter / rotor	2 / 8	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	153	153	152	150
Item no.	17030	17032	17052	17050*

Tube										
Rated capacity (filling volume) [ml]	50	50	50	85 (73)	85 (76)	94 (85)	94	100 (75)	100 (90)	100
Diameter x length [mm]	34 x 100	29 x 117	29 x 117	38 x 112	38 x 112	38 x 103	38 x 110	44 x 100	44 x 100	44 x 100
Tube material	PC	PP	PP	PPCO	PF	Stainless steel	PC	Glass	Glass	Glass
Item no.	15049	–	15151	15076	15080	13085	15094	15078	15106	15100

### Adapter

for round bucket 13104



Bore diameter x length [mm]	35.5 x 80	29.5 x 80	29.5 x 78.5	39 x 76.6	46 x 76.6
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	150	155	154	147	147
Item no.	17050*	17048	17049	17085*	17100*





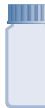
## Swing-out rotor 11133

### Round bucket 13104 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (3-16L / 3-16KL): 5,000 / 5,500 rpm
- Max. RCF (3-16L / 3-16KL): 4,332 / 5,242 x g
- Max. tube length, mid-bucket, without / with cap: 126 / 118 mm
- Hermetically closable with aluminium cap 17109 or polysulphone cap 17111
- Tmin at maximum speed: <4°C
- Angle: 90°






### Tube











			
Rated capacity (filling volume) [ml]	100	150	200 (168)
Diameter x length [mm]	45 x 100	51 x 99	56 x 112
Tube material	PC	PP	PPCO
Item no.	15103	15125	15202

### Adapter

for round bucket 13104







			
Bore diameter x length [mm]	46 x 76.6	51.4 x 80	57 x 98
Tubes per adapter / rotor	1 / 4	1 / 4	- / 4
Centrifuging radius [mm]	147	155	155
Item no.	17100*	17125	-

### Blood and urine tubes

										
Rated capacity (filling volume) [ml]	1.1 – 1.4	2.7 – 5	4 – 6	1.8 – 7	1.6 – 6	7.5 – 10	6 – 10	4 – 5.5	9 – 10	10
Diameter x length with closure [mm]	8 x 82	11 x 82 – 108	13 x 81 – 106	13 x 81 – 107	13 x 81 – 106	15 x 106 – 108	16 x 106 – 107	15 x 91	16 x 108	15 x 118
Tube material	PP	PP	PET	PET	PP	PP	PET	PET	PP	PP
Item no.	-	-	-	-	-	-	-	-	-	-

### Adapter

for round bucket 13104

						
Bore diameter x length [mm]	12.5 x 51	13.8 x 57	17 x 79.7	17 x 50.3	17.2 x 81.5	
Tubes per adapter / rotor	12 / 48	7 / 28	7 / 28	6 / 24	4 / 16	
Centrifuging radius [mm]	150	152	150	150	150	
Item no.	17006	17027	17015	17012	17018	

## Swing-out rotor 11222


### with 1 set (quantity 2) rectangular buckets 13222

- Max. plate height: 56 mm
- Max. speed (3-16L / 3-16KL): 3,000 rpm
- Max. RCF (3-16L / 3-16KL): 1,218 x g
- Max. load per carrier: 337 g
- Tmin at maximum speed: <4°C
- Angle: 90°



## Swing-out rotor 11241

### with 1 set (quantity 2) rectangular buckets 13241, caps 17108 and plate holder 17982

- Max. plate height without / with cap: 66 / 55 mm
- Max. speed (3-16L / 3-16KL): 4,200 rpm
- Max. RCF (3-16L / 3-16KL): 2,623 x g
- Max. load per carrier: 320 g
- Biosafe with cap 17108 
- Tmin at maximum speed: <4°C
- Angle: 90°



### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold
W x D x H [mm]	128 x 86 x 15	128 x 86 x 17.5	128 x 86 x 44.5	128 x 86 x 20

### Adapter

for rectangular bucket 13222



Bore diameter x length [mm]	-			
Plates per rotor	6	6	2	4
Centrifuging radius [mm]	121			
Item no.	-			

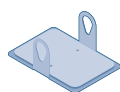
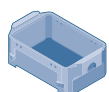
### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold
W x D x H [mm]	128 x 86 x 15	128 x 86 x 17.5	128 x 86 x 44.5	128 x 86 x 20

### Adapter

for rectangular bucket 13241



Bore diameter x length [mm]	-			
Plates per rotor (without / with cap)	8 / 6	6 / 6	2 / 2	6 / 4
Centrifuging radius [mm]	133			
Item no.	17982			

## Swing-out rotor 11135

### with 3 sets (quantity 6) carrier bucket 13124 and aluminium lid 17879

- Max. capacity: 24 x 2 ml
- Max. speed (3-16L / 3-16KL): 12,500 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 12,927 / 16,215 x g
- Hermetically closable with aluminium lid 17879
- Tmin at maximum speed: <4°C
- Angle: 90°









## Drum rotor 11136

### with aluminium lid 17898

- Max. capacity: 60 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,000 / 14,500 rpm
- Max. RCF (3-16L / 3-16KL): 13,226 / 16,454 x g
- Hermetically closable with aluminium lid 17878
- Tmin at maximum speed: <4°C
- Angle: 90°







### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040



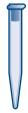


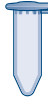
### Adapter

for carrier bucket 13124



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 12*	- / 24
Centrifuging radius [mm]	70	72	72	65	74
Item no.	13021	13000	13002	13074	-





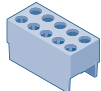
### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.2	0.4	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	-	5.8 x 47	7.9 x 28	10.7 x 42	10.7 x 42
Tube material	PP	-	PE	PP	PP	PP
Item no.	15042	PCR strips	15014	15005	15008	15040

### Adapter

for drum rotor 11136



					
Bore diameter x length [mm]	6.2 x 17	6.2 x 17	6 x 46	8.1 x 21	11.2 x 39
Tubes per adapter / rotor	32 / 192	4 x 8 / 24 x 8	20 / 120	10 / 60	10 / 60
Centrifuging radius [mm]	48	48	70	52	70
Item no.	14021	14021	14000	14020	14002

## Fixed-angle rotor 12115

### with aluminium lid 17875

- Max. capacity: 96 x 0.2 ml conical
- Max. speed (3-16L / 3-16KL): 14,000 rpm
- Max. RCF outer row (3-16L / 3-16KL): 21,475 x g
- Max. RCF inner row (3-16L / 3-16KL): 18,297 x g
- Hermetically closable with aluminium lid 17875
- Tmin at maximum speed: <4°C
- Angle: 45° (both rows)





## Fixed-angle rotor 12154

### with aluminium lid 17829

- Max. capacity: 24 x 2 ml
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 21,460 x g
- Hermetically closable with aluminium lid 17829
- Tmin at maximum speed: <4°C
- Angle: 45°





### Tube

		
Rated capacity (filling volume) [ml]	0.2	0.2
Diameter x length [mm]	5.8 x 20	–
Tube material	PP	–
Item no.	15042	PCR strips







### Adapter

for fixed-angle rotor 12115



		
Bore diameter x length [mm]	6.3 x 15.5	6.3 x 16.5
Tubes per adapter / rotor	96	12 x 8
Centrifuging radius outer / inner row [mm]	98 / 83	98 / 83
Item no.	–	–







### Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

### Adapter

for fixed-angle rotor 12154



						
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5	
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	1 / 24	– / 24	
Centrifuging radius [mm]	78	80	80	73	82	
Item no.	13021	13000	13002	13074*	–	

\* Only partial loading possible in some cases, depending on choice of paediatric tubes

## Fixed-angle rotor 12131

## with aluminium lid 17848

- Max. capacity: 30 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,200 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 19,480 / 21,913 x g
- Hermetically closable with aluminium lid 17848
- Tmin at maximum speed: <4°C
- Angle: 45°









## Fixed-angle rotor 12349

## with aluminium lid 17349

- Max. capacity: 48 x 2 ml
- Max. speed (3-16L / 3-16KL): 13,000 / 14,000 rpm
- Max. RCF (3-16L / 3-16KL): 18,894 / 21,913 x g
- Hermetically closable with aluminium lid 17349
- Tmin at maximum speed: <4°C
- Angle (outer / inner row): 25° / 53°







## Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040







## Adapter

for fixed-angle rotor 12131



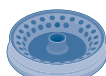
					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 30	1 / 30	1 / 30	1 / 30	– / 30
Centrifuging radius [mm]	96	98	98	91	100
Item no.	13021	13000	13002	13074*	–





## Tube

						
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	0.5	1.5	2
Diameter x length [mm]	5.8 x 20	5.8 x 47	7.9 x 28	10.8 x 47.6	10.7 x 42	10.7 x 42
Tube material	PP	PE	PP	PP	PP	PP
Item no.	15042	15014	15005	Paediatrics	15008	15040

## Adapter


for fixed-angle rotor 12349



					
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 29.5	11.1 x 38.5
Tubes per adapter / rotor	1 / 48	1 / 48	1 / 48	1 / 48	– / 48
Centrifuging radius outer / inner [mm]	96 / 96	98 / 98	98 / 98	91 / 91	100 / 100
Item no.	13021	13000	13002	13074*	–

## Fixed-angle rotor 12182

### with aluminium lid 17182

- Max. capacity: 12 x 5 ml conical
- Max. speed (3-16L / 3-16KL): 15,000 / 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 21,130 / 21,984 x g
- Biosafe with aluminium lid 17182 
- Tmin at maximum speed: <4°C
- Angle: 40°








## Fixed-angle rotor 12111

### with aluminium lid 17835

- Max. capacity: 10 x 10 ml round-bottom
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 19,890 x g
- Hermetically closable with aluminium lid 17835
- Tmin at maximum speed: <4°C
- Angle: 35°







### Tube

					
Rated capacity (filling volume) [ml]	1.5	1.5–1.8	1.5	2	5
Diameter x length [mm]	11.7 x 34	12.3 x 49	10.7 x 42	10.7 x 42	17 x 60
Tube material	Glass	PP	PP	PP	PPCO
Item no.	HPLC	Cryo tube	15008	15040	–




### Adapter

for fixed-angle rotor 12182



				
Bore diameter x length [mm]	12.5 x 28	12.7 x 32	11.1 x 38.5	17 x 52
Tubes per adapter / rotor	1 / 12	1 / 12	1 / 12	– / 12
Centrifuging radius [mm]	57	61	69	84
Item no.	14081	14080*	14082	–

### Tube

			
Rated capacity (filling volume) [ml]	10	10	10
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1
Tube material	PF	PC	PPCO
Item no.	15000	15010	15039

### Adapter

for fixed-angle rotor 12111



Bore diameter x length [mm]	16.3 x 69
Tubes per adapter / rotor	– / 10
Centrifuging radius [mm]	76
Item no.	–



## Fixed-angle rotor 12157


### with aluminium lid 17841

- Max. capacity: 20 x 10 ml round-bottom
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,875 / 10,956 x g
- Hermetically closable with aluminium lid 17841
- Tmin at maximum speed: <4°C
- Angle: 25°



## Fixed-angle rotor 12311

### with aluminium lid 17935

- Max. capacity: 12 x 15 ml conical
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,965 / 11,068 x g
- Biosafe with aluminium lid 17935 
- Tmin at maximum speed: <4°C
- Angle: 25°



### Tube



Rated capacity (filling volume) [ml]	10	10	10
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1
Tube material	PF	PC	PPCO
Item no.	15000	15010	15039

### Adapter

for fixed-angle rotor 12157



Bore diameter x length [mm]	16.3 x 69
Tubes per adapter / rotor	- / 20
Centrifuging radius [mm]	98
Item no.	-

### Tube



Rated capacity (filling volume) [ml]	15
Diameter x length [mm]	16.5 x 120
Tube material	PP
Item no.	15115

### Adapter

for fixed-angle rotor 12311



Bore diameter x length [mm]	17.5 x 106
Tubes per adapter / rotor	- / 12
Centrifuging radius [mm]	99
Item no.	-

# Cleanroom

## Robust and resistant



An extremely resistant cleanroom coating is available from Sigma for all aluminium buckets and rotors. This coating provides reliable corrosion protection for accessories, especially where aggressive chemicals are used. The cleanroom coating can even withstand

exposure to sodium hydroxide and hydrochloric acid. The surfaces are also food-grade (FDA certified) and can easily be cleaned without residues.

**Cleanroom coating**  
Available for all accessories

## Fixed-angle rotor 12158

### with aluminium lid 17842

- Max. capacity: 6 x 30 ml round-bottom
- Max. speed (3-16L / 3-16KL): 15,300 rpm
- Max. RCF (3-16L / 3-16KL): 20,675 x g
- Hermetically closable with aluminium lid 17842
- Tmin at maximum speed: <4°C
- Angle: 29°



## Fixed-angle rotor 12150

### with aluminium lid 17837

- Max. capacity: 6 x 50 ml round-bottom
- Max. speed (3-16L / 3-16KL): 10,000 / 11,000 rpm
- Max. RCF (3-16L / 3-16KL): 9,391 / 11,363 x g
- Hermetically closable with aluminium lid 17837
- Tmin at maximum speed: <4°C
- Angle: 25°



### Tube



Rated capacity (filling volume) [ml]	10	10	10	30 (26)	30 (26)	30 (28)
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	25.3 x 98	25.3 x 98	25.3 x 98
Tube material	PF	PC	PPCO	PF	PPCO	PC
Item no.	15000	15010	15039	15029	15032	15030

### Adapter

for fixed-angle rotor 12158



Bore diameter x length [mm]	16.5 x 70			25.7 x 82.5		
Tubes per adapter / rotor	1 / 6			- / 6		
Centrifuging radius [mm]	69			79		
Item no.	13059			-		

### Tube



Rated capacity (filling volume) [ml]	10	10	14	15	30 (26)	30 (28)	30	50 (38)	50 (43)	50
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	17 x 100	17.5 x 106	25.3 x 98	25.3 x 98	23.6 x 106	28.8 x 107	28.5 x 107	28.5 x 101.5
Tube material	PF	PPCO	PP	HS glass	PPCO	PC	HS glass	PPCO	PF	Stainless steel
Item no.	15000	15039	15023	15085	15032	15030	15086	15052	15051	13055

### Adapter


for fixed-angle rotor 12150



Bore diameter x length [mm]	16.2 x 65	17 x 88	18 x 90	25.6 x 75	24.5 x 93	29 x 98				
Tubes per adapter / rotor	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	- / 6				
Centrifuging radius [mm]	52	79	79	69	82	84				
Item no.	13087	13062	16018	13086	16030	-				

## Fixed-angle rotor 12310

## with aluminium lid 17934

- Max. capacity: 6 x 50 ml conical
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,512 / 10,509 x g
- Biosafe with aluminium lid 17934 
- Tmin at maximum speed: <4°C
- Angle: 25°









## Fixed-angle rotor 12156

## with aluminium lid 17840

- Max. capacity: 8 x 50 ml round-bottom
- Max. speed (3-16L / 3-16KL): 9,000 / 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 8,694 / 10,733 x g
- Hermetically closable with aluminium lid 17840
- Tmin at maximum speed: <4°C
- Angle: 25°







## Tube

						
Rated capacity (filling volume) [ml]	15	25	30	50 (38)	50 (43)	50
Diameter x length [mm]	16.5 x 120	25 x 90	25 x 107	28.8 x 107	28.5 x 107	29 x 117
Tube material	PP	PP	PP	PPCO	PF	PP
Item no.	15115	–	–	15052	15051	15151











## Adapter

for fixed-angle rotor 12310



				
Bore diameter x length [mm]	17 x 107	25.5 x 71	30 x 91	30 x 101
Tubes per adapter / rotor	1 / 6	1 / 6	1 / 6	– / 6
Centrifuging radius [mm]	93	71	84	94
Item no.	13060	13064	13079	–







## Tube

										
Rated capacity (filling volume) [ml]	10	10	14	15	30 (26)	30 (28)	30	50 (38)	50 (43)	50
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	17 x 100	17.5 x 106	25.3 x 98	25.3 x 98	23.6 x 106	28.8 x 107	28.5 x 107	28.5 x 101.5
Tube material	PF	PPCO	PP	HS glass	PPCO	PC	HS glass	PPCO	PF	Stainless steel
Item no.	15000	15039	15023	15085	15032	15030	15086	15052	15051	13055

## Adapter

for fixed-angle rotor 12156









						
Bore diameter x length [mm]	16.2 x 65	17 x 88	18 x 90	25.6 x 75	24.5 x 93	29 x 98
Tubes per adapter / rotor	1 / 8	1 / 8	1 / 8	1 / 8	1 / 8	– / 8
Centrifuging radius [mm]	64	91	91	81	94	96
Item no.	13087	13062	16018	13086	16030	–

## Fixed-angle rotor 12155

### with aluminium lid 17839

- Max. capacity: 4 x 94 ml round-bottom
- Max. speed (3-16L / 3-16KL): 10,000 rpm
- Max. RCF (3-16L / 3-16KL): 10,174 x g
- Hermetically closable with aluminium lid 17839
- Tmin at maximum speed: <4°C
- Angle: 26°


















Tube										
Rated capacity (filling volume) [ml]	10	10	10	14	14	15	15	25	30 (26)	30 (26)
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	17 x 100	17 x 100	17.5 x 106	16.5 x 120	24 x 100	25.3 x 98	25.3 x 98
Tube material	PF	PC	PPCO	PS	PP	HS glass	PP	Glass	PF	PPCO
Item no.	15000	15010	15039	15020	15023	15085	15115	15025	15029	15032

### Adapter

for fixed-angle rotor 12155








Adapter					
Bore diameter x length [mm]	16.2 x 71	18 x 87	17 x 107	24.5 x 88	26 x 83
Tubes per adapter / rotor	2 / 8	1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	62	83	90	84	74
Item no.	13084	16019	13081*	16031	13083

Tube										
Rated capacity (filling volume) [ml]	30 (28)	30	50 (38)	50 (43)	50	50	85 (73)	85 (76)	94 (85)	94
Diameter x length [mm]	25.3 x 98	23.6 x 106	28.8 x 107	28.5 x 107	28.5 x 101.5	29.5 x 117	38 x 112	38 x 112	38 x 103	38 x 110
Tube material	PC	HS glass	PPCO	PF	Stainless steel	PP	PF	PPCO	Stainless steel	PC
Item no.	15030	15086	15052	15051	13055	15151	15080	15076	13085	15094

### Adapter

for fixed-angle rotor 12155



Adapter					
Bore diameter x length [mm]	26 x 83	24.5 x 88	29 x 97	30 x 100	38.3 x 91
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	- / 4
Centrifuging radius [mm]	74	84	88	91	91
Item no.	13083	16031	13082	13080*	-







## Fixed-angle rotor 12159

### with aluminium lid 17843

- Max. capacity: 6 x 94 ml round-bottom
- Max. speed (3-16L / 3-16KL): 8,000 rpm
- Max. RCF (3-16L / 3-16KL): 7,012 x g
- Hermetically closable with aluminium lid 17843
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle: 25°








### Tube

										
Rated capacity (filling volume) [ml]	10	10	10	14	14	15	15	25	30 (26)	30 (26)
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	17 x 100	17 x 100	17.5 x 106	16.5 x 120	24 x 100	25.3 x 98	25.3 x 98
Tube material	PF	PC	PPCO	PS	PP	HS glass	PP	Glass	PF	PPCO
Item no.	15000	15010	15039	15020	15023	15085	15115	15025	15029	15032











### Adapter

for fixed-angle rotor 12159



								
Bore diameter x length [mm]	16.2 x 71	18 x 87	17 x 107	24.5 x 88	26 x 83			
Tubes per adapter / rotor	2 / 12	1 / 6	1 / 6	1 / 6	1 / 6			
Centrifuging radius [mm]	69	90	97	91	81			
Item no.	13084	16019	13081	16031	13083			





### Tube

										
Rated capacity (filling volume) [ml]	30 (28)	30	50 (38)	50 (43)	50	50	85 (73)	85 (76)	94 (85)	94
Diameter x length [mm]	25.3 x 98	23.6 x 106	28.8 x 107	28.5 x 107	28.5 x 101.5	29.5 x 117	38 x 112	38 x 112	38 x 103	38 x 110
Tube material	PC	HS glass	PPCO	PF	Stainless steel	PP	PF	PPCO	Stainless steel	PC
Item no.	15030	15086	15052	15051	13055	15151	15080	15076	13085	15094

### Adapter

for fixed-angle rotor 12159



								
Bore diameter x length [mm]	26 x 83	24.5 x 88	29 x 97	30 x 100	38.3 x 91			
Tubes per adapter / rotor	1 / 6	1 / 6	1 / 6	1 / 6	- / 6			
Centrifuging radius [mm]	81	91	95	98	98			
Item no.	13083	16031	13082	13080	-			

# Material properties

## Guideline for optimal tube selection

Due to the many factors that influence material properties, this overview is only intended as a general recommendation. There is no guarantee of the stated properties. Users should therefore carefully

test materials for suitability under specific application conditions. Tubes should be discarded as soon as they show any sign of material fatigue.

	Polycarbonate (PC)	Polyvinyl fluoride (PF)	Polystyrene (PS)	Polyethylene (PE)	Polypropylene (PP)
<b>Autoclave resistant</b>	Yes	Yes	No	No	Yes
<b>Elasticity</b>	Not elastic	Not elastic	Not elastic	Good	Not elastic
<b>Transparency</b>	Transparent	Translucent	Transparent	Translucent	Translucent
<b>Microwave resistant</b>	Moderate	Yes	No	Limited	Moderate
<b>Chemical resistance</b>					
Weak acids	Yes	Yes	Yes	Yes	Yes
Strong acids	No	Yes	Limited	Yes	Yes
Alcohols and alkalis	No	Yes	Yes	Yes	Yes
Salts	Limited	Yes	Limited	Yes	Yes
<b>Note:</b>	Frequent autoclaving leads to loss of strength	Tubes should be completely filled and closed for use at maximum RCF			

	PP copolymer (PPCO)	Glass	High-speed glass (HS glass)	Stainless steel
<b>Autoclave resistant</b>	Yes	Yes	Yes	Yes
<b>Elasticity</b>	Moderate	Not elastic	Not elastic	Not elastic
<b>Transparency</b>	Translucent	Transparent	Transparent	Opaque
<b>Microwave resistant</b>	Moderate	Yes	Yes	No
<b>Chemical resistance</b>				
Weak acids	Yes	Yes	Yes	Limited
Strong acids	Yes	Yes	Yes	Limited
Alcohols and alkalis	Yes	Yes	Yes	Yes
Salts	Yes	Yes	Yes	Limited
<b>Note:</b>		Max. RCF for all glass tubes approx. 4,000 x g	High-speed glass for maximum RCF of 13,100 x g	





# Spincontrol L controller

## Easy operation, maximum safety

Well conceived, uncluttered and extensive options are hallmarks of the Spincontrol L controller. Based on a patented Sigma concept. The brilliantly simple design of the Spincontrol L has only three buttons (Start, Stop, and Lid) along with the proven multifunction knob. Operating parameters can be entered conveniently and stored in up to 50 programs using the intuitive user interface. The backlit LCD display is easy to read at a distance.

A special feature is automatic monitoring of the number of operational rotor cycles. The integrated cycle counter keeps track of all completed rotor runs and informs the user when a defined limit value is reached. This alert system is based on real measurement data and helps to reliably avoid damage to rotors and the centrifuge.

The high-performance cooling system provides precise control over the range of  $-10^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  with fine adjustment in  $1^{\circ}\text{C}$  increments. Along with the pre-cooling function, the Sigma 3-16KL has optionally selectable standstill cooling.

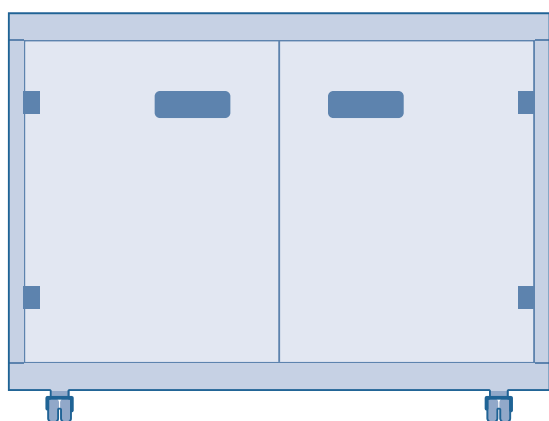
Display	Backlit LCD
Constant display of setpoints and actual values	+
Speed/RCF display	+
Timer (s; h:min)	10 – 99:59
Timer tracks time after setpoint speed is reached; switchable	+, +
Short run, Continuous run	+, +
Time increment [s]	1
Speed increment [rpm]	100
Temperature increment [ $^{\circ}\text{C}$ ]	1*
RCF increment [x g]	10
Programs	50
Acceleration curves	10
Braking curves	10
Free run-out	+
Automatic cap opening at end of run, switchable	+, +
Standstill cooling	+*
Pre-cooling program "Rapid Temp"	+*
Audible signal, switchable	+, +
Visual standstill indication	+
Rotor cycle monitoring	+
Rotor end-of-life warning	+
Lockable controller	+
Microprocessor control	+

\* Only for Sigma 3-16KL



# Centrifuge tables

Sigma centrifuge tables are available in six different sizes. Matched to the corresponding centrifuge dimensions, they combine convenient work height with an optimally calculated footprint. The tables are made from coated sheet steel and are equipped with a storage compartment (with two doors) and a convenient pull-out shelf. Lockable castors allow the centrifuge tables to be easily moved and positioned in the laboratory.



## Centrifuge table 17920

For Sigma 2-16KL  
W x H x D [mm]: 600 x 501 x 550

## Centrifuge table 17921

For Sigma 6-16KS  
W x H x D [mm]: 790 x 515 x 684

## Centrifuge table 17922

For Sigma 6-16S  
W x H x D [mm]: 581 x 481 x 684

## Centrifuge table 17923

For Sigma 3-30KS  
W x H x D [mm]: 570 x 481 x 616

## Centrifuge table 17926

For Sigma 3-16KL, 3-18KS, 4-16KS  
W x H x D [mm]: 650 x 501 x 647

## Centrifuge table 17927

For Sigma 3-16L, 4-5L, 4-16S  
W x H x D [mm]: 490 x 497 x 647

# Premium quality

## Made in Germany

The Sigma 3-16L and Sigma 3-16KL meet the highest technical requirements of laboratory standards. Developed and produced at our facility in Osterode, Germany, they are high-performance, durable and energy-efficient quality products and conform to the latest safety, emissions and environmental standards. Sigma guarantees the availability of spare parts and wearing parts for at least 10 years.

Furthermore, you benefit from our extensive services portfolio, including commissioning, maintenance, device calibration and more. Our qualified service technicians are ready to provide professional maintenance and repair as well as loaner devices if necessary. All support services are designed to ensure reliability and optimise system availability.

	Sigma 3-16L	Sigma 3-16KL
<b>Max. capacity [ml]</b>		
Swing-out rotor	4 x 400	4 x 400
Fixed-angle rotor	6 x 94	6 x 94
<b>Max. RCF</b>	21,475	21,984
<b>Maximum speed [rpm]</b>	15,300	15,300
<b>Minimum speed [rpm]</b>	100	100
<b>Noise level at maximum speed (approx.) [dB(A)]</b>		
Fixed-angle rotor 12154	≤ 60	≤ 55
Swing-out rotor 11180 with bucket 13190	≤ 65	≤ 52
<b>Max. acceleration time [s]</b>		
Fixed-angle rotor 12154	≤ 25	≤ 25
Swing-out rotor 11180 with bucket 13190	≤ 20	≤ 16
<b>Max. braking time [s]</b>		
Fixed-angle rotor 12154	≤ 42	≤ 40
Swing-out rotor 11180 with bucket 13190	≤ 22	≤ 17
<b>Temperature adjustment range [°C]</b>	–	-10 – +40
<b>Power consumption [W]</b>	500	1,010
<b>Height x width x depth [mm]</b>	355 x 460 x 600	355 x 630 x 600
<b>Height with open cap [mm]</b>	770	785
<b>Weight without rotor [kg]</b>	48	78
<b>Refrigerant</b>		R134a
Filling quantity [kg] / Max. permissible pressure [bar]		0.385 / 23
CO <sub>2</sub> equivalent [t]		0.551

### Sigma Service

For maintenance and repairs please contact our Service department at [www.sigma-zentrifugen.de/en/service](http://www.sigma-zentrifugen.de/en/service)

### Calibration

Documented proof of compliance with essential technical parameters.

Speed or run time (item no. 17713)  
 Speed and run time (item no. 17714)  
 Speed, run time, temperature (item no. 17715)

### Device qualification (IQOQ)

This comprehensive device qualification includes installation qualification and metrological checking of all functional parameters with a rotor.

IQOQ documents (item no. 170000)  
 IQOQ on site (upon request)

#### Sigma 3-16L centrifuge

220–240 V, 50/60 Hz (item no. 10355)  
 120 V, 60 Hz (item no. 10356)  
 100 V, 50/60 Hz (item no. 10357)

#### Sigma 3-16L centrifuge, IVD version

220–240 V, 50/60 Hz (item no. 10358)  
 120 V, 60 Hz (item no. 10359)

#### Sigma 3-16KL centrifuge

220–240 V, 50/60 Hz (item no. 10360)  
 120 V, 60 Hz (item no. 10361)  
 100 V, 50/60 Hz (item no. 10362)

#### Sigma 3-16KL centrifuge, IVD version

220–240 V, 50/60 Hz (item no. 10363)  
 120 V, 60 Hz (item no. 10364)






**Sigma 3-16KL centrifuge, inert gas**  
 220–240 V, 50/60 Hz (item no. 91027)

# Product portfolio




Sigma offers a broad product portfolio with more than 25 laboratory centrifuges. They can be combined with an extensive range of fixed-angle and swing-out rotors and a large variety of accessories to obtain the right device configuration for every application.






**Microcentrifuge**  
**Sigma 1-16**

-  36 x 2 ml
-  15,000 rpm
-  20,627 x g




**Floor-standing centrifuge**  
**Sigma 8KS**




-  12 x 1,000 ml
-  5,100 rpm
-  8,578 x g

-  6 x 1,000 ml
-  10,500 rpm
-  20,461 x g






**Benchtop centrifuge**  
**Sigma 2-7**




-  4 x 100 ml
-  4,000 rpm
-  2,540 x g

-  30 x 15 ml
-  4,000 rpm
-  2,486 x g






**Benchtop centrifuge**  
**Sigma 3-30KS**

-  4 x 100 ml
-  5,000 rpm
-  3,969 x g


-  6 x 94 ml
-  30,000 rpm
-  70,121 x g





**Robot centrifuge**  
**Sigma 4-5KRL**


-  100 x 15 ml
-  4,700 rpm
-  4,470 x g


## Legend

 Max. capacity

 Max. speed

 Max. RCF

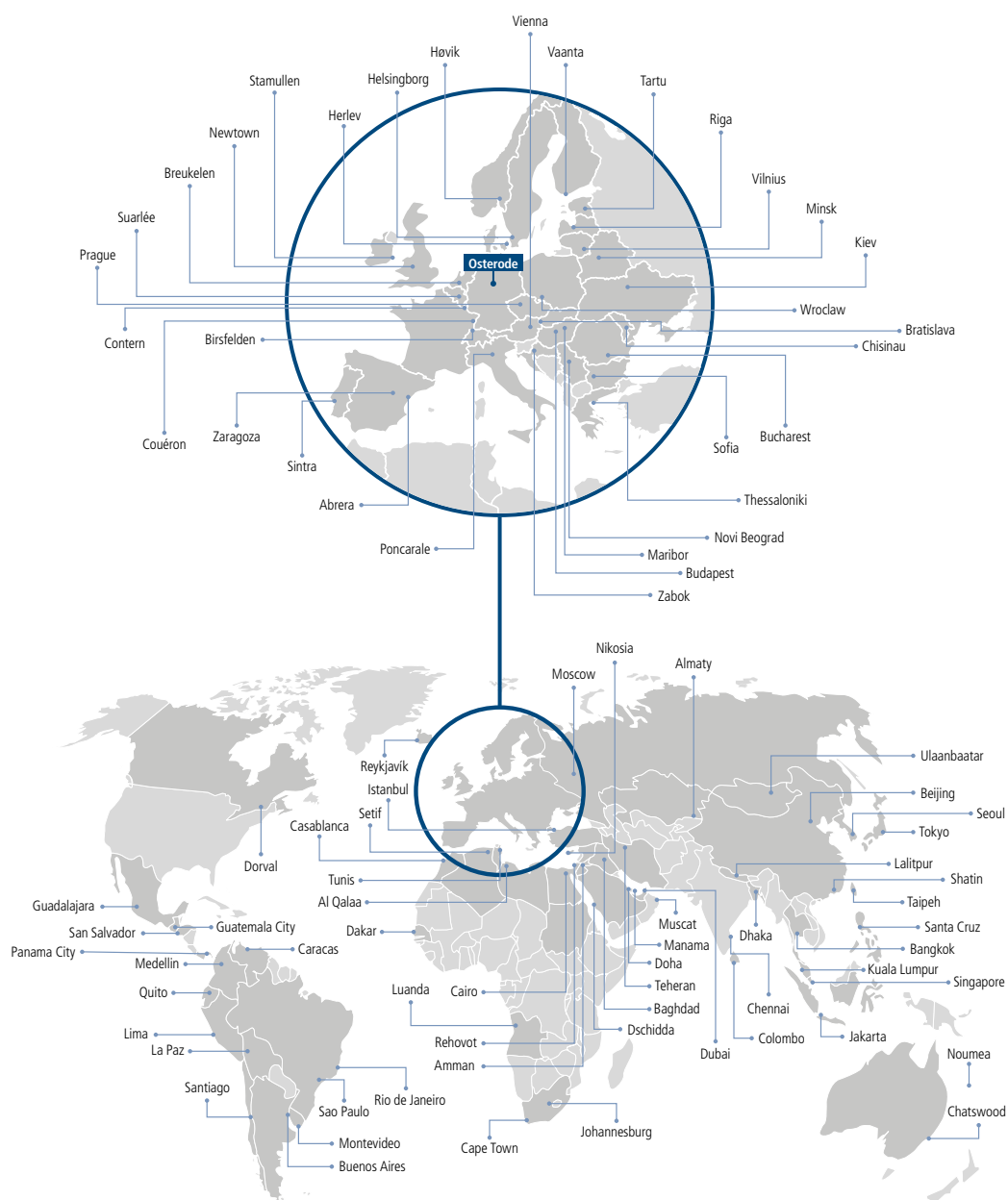
 Swing-out rotor

 Fixed-angle rotor

# Global service

## For local product security

Our trained service partners in over 100 countries ensure consistently high quality in accordance with national regulations. Our specialists can also be engaged quickly around the world, either remotely or on site in person.



Selected locations of our representatives.

An overview of all representatives with detailed contact information can be found at [www.sigma-zentrifugen.de/en/sales-partners](http://www.sigma-zentrifugen.de/en/sales-partners)



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[www.sigma-zentrifugen.de](http://www.sigma-zentrifugen.de)



# Cell culture packages



Recommended configurations for the centrifugation of conical cell culture tubes



# Premium quality

## For microbiology and molecular biology laboratories



**Sigma Laborzentrifugen GmbH is a leading international manufacturer of laboratory and blood bank centrifuges. The company stands for innovative products and development of durable, energy-efficient and especially user-friendly devices. Laboratories everywhere in the world have been relying on premium Sigma quality for more than 40 years.**

Sigma centrifuges are designed to be highly suitable for deployment in cellular biology laboratories, and the multitude of rotor options and capacities allows them to meet a very wide variety of throughput requirements. Smart functions and well-matched accessories help to simplify everyday work in the laboratory and fulfil high quality requirements for cell harvesting.

All centrifuges described in this brochure are specifically tailored for the use with cell culture tubes, and many of them are available as cooled or uncooled models. Cooled centrifuges are particularly suitable for high throughput or temperature-sensitive specimens. Their high-performance cooling system ensures a specimen temperature of less than or equal to 4 °C in typical cell culture applications. Along with the frequently used conical 15 ml and 50 ml tubes, large-volume tubes or microtiter plates can be centrifuged. This flexibility and the ability to use fixed-angle rotors with high RCF values also make the centrifuges suitable for further and/or future applications.

The very smooth running of the centrifuges and speed adjustment with resolution as fine as 1 rpm are additional key features. Efficient and reproducible cell harvesting can be achieved even in the very low speed range. A selection of up to 30 acceleration and braking curves, some of which are user programmable, helps with further optimisation of separation processes and yields. Routine procedures can be stored in program memory and conveniently retrieved from the integrated process library. With the large controllers, program names can be stored uncoded and can optionally be transferred to other devices by barcode. Password-protected access control prevents unauthorised access to programs and unintentional parameter changes. Another safety feature is rotor lifetime monitoring by counting the number of elapsed rotor cycles.

In all of the devices, the risk of contamination is minimised by easily cleaned stainless steel chambers, which together with biosafe closable rotors support contamination-free work processes. With devices in the 3-series, the patented g-lock system enables fast and secure rotor exchange. The rotor is locked in place by centrifugal force after the start of the centrifugation run, eliminating the need for manual tightening. This ensures extremely high safety and saves valuable working time.



# Sigma 2-7

## Benchtop centrifuge

The Sigma 2-7 is a compact and versatile centrifuge which combines high capacity (up to 4 x 100 ml) with exceptional flexibility. It is available with various swing-out and fixed-angle rotors for standard 15 ml and 50 ml culture tubes as well as a microtiter plate rotor. In combination with the 2 acceleration and braking curves and the possibility to store up to 10 programs, the Sigma 2-7 is an ideal device for a variety of cell culture applications. A highlight is the blue LED running indicator, which enables operators to see whether the device is still running – even at a distance.



### Highlights

- Max. 30 x 15 ml / 4 x 50 ml culture tubes
- 10 programs
- LED light as running indicator
- Motorized lid lock
- 2 acceleration / braking curves

## Cell culture packages for conical 15 ml and 50 ml tubes

### Rotor 11071 + bucket 13299

- Max. speed: 4,000 rpm
- Max RCF: 2,540 x g



Tube	Without Cap <sup>1</sup>	
	Adapter	Capacity
15 ml	14300	8
50 ml	14299*	4

\*Hermetically closable with cap 17299

### Sigma 2-7 + rotor 11071 +

<sup>1</sup> 4 x bucket 13299 + 4 x adapter 14300 + 4 x adapter 14299

### Rotor 12073

- Max. speed: 4,000 rpm
- Max. RCF (outer / inner row) : 2,486 / 2,111 x g



Tube	Without Cap <sup>2</sup>	
	Adapter	Capacity
15 ml	–	30
50 ml	–	–

### Sigma 2-7 + rotor 12073 +

<sup>2</sup> 30 x bucket 13011

## A selection of further available rotor options

### Swing-out rotor 11071 + bucket 13299\*

- Max. capacity: 4 x 100 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,540 x g
- Hermetically closable with cap 17299

\* Bucket not autoclavable



### Swing-out rotor 11123 + MTP bucket 13223

- Max. capacity: 6 microtiter plates
- Max. speed: 4,000 rpm
- Max. RCF: 2,111 x g



### Fixed-angle rotor 12072

- Max. capacity: 20 x 15 ml
- Max. speed: 4,000 rpm
- Max. RCF: 2,486 x g



# Sigma 2-16KL

## Benchtop centrifuge

The refrigerated Sigma 2-16KL centrifuge features high performance, compact size and intuitive operation. The wide range of accessories is tailored to the requirements of cell culture processing. The powerful cooling system ensures constant temperatures even at high speeds. Standard routines can be stored and recalled conveniently in up to 50 programs. Ten selectable acceleration and braking curves facilitate optimisation of separation processes and additionally help to shorten run times.



### Highlights

- Max. 30 x 15 ml / 6 x 50 ml culture tubes
- 50 programs
- 10 acceleration / braking curves
- Low noise level
- Automatic imbalance monitoring

## Cell culture packages for conical 15 ml and 50 ml tubes

### Rotor 11170 + bucket 13299

- Max speed: 5,000 rpm
- Max RCF: 3,969 x g



#### Without Cap <sup>3</sup>

Tube	Adapter	Capacity
15 ml	14300	8
50 ml	14299*	4

\*Hermetically closable with cap 17299

### Sigma 2-16KL + rotor 11170 +

<sup>3</sup> 4 x bucket 13299 + 4 x adapter 14300 + 4 x adapter 14299

### Fixed-angle rotor 12071

- Max. speed: 4,000 rpm
- Max. RCF (outer / inner row): 2,254 / 1,842 x g



#### Without Cap <sup>4</sup>

Tube	Adapter	Capacity
15 ml	–	12
50 ml	–	6

### Sigma 2-16KL + rotor 12071 +

<sup>4</sup> 12 x bucket 13011 + 6 x bucket 13151

## A selection of further available rotor options

### Swing-out rotor 11170 + bucket 13299\*

- Max. capacity: 4 x 100 ml
- Max. speed: 5,000 rpm
- Max. RCF: 3,969 x g
- Hermetically closable with cap 17299

\* Bucket not autoclavable



### Swing-out rotor 11123 + MTP bucket 13223

- Max. capacity: 6 microtiter plates
- Max. speed: 4,000 rpm
- Max. RCF: 2,111 x g



### Fixed-angle rotor 12181

- Max. capacity: 6 x 50 ml conical
- Max. speed: 12,000 rpm
- Max. RCF: 15,294 x g



# Sigma 3-16L / 3-16KL

## Benchtop centrifuge

The compact benchtop centrifuge Sigma 3-16L and the refrigerated version 3-16KL have become indispensable in mid-size laboratories. The compact centrifuges are easy to operate, pleasantly quiet and have an extraordinary capacity of maximum 36 cell culture tubes per run. The patented one-knob controller is highly practical and offers outstanding features like 50 programs, rotor life monitoring or controller locking to prevent unintentional alteration of operating parameters. The backlit LCD display is easy to read at a distance.



### Highlights

- Max. 36 x 15 ml / 16 x 50 ml culture tubes
- 50 programs
- Multifunction one-knob controller
- 10 acceleration / braking curves
- Low noise level

## Cell culture packages for conical 15 ml and 50 ml tubes

### Swing-out rotor 11180 + bucket 13190

- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max RCF (3-16L / 3-16KL): 3,392 / 3,894 x g



Tube	Without Cap <span style="background-color: #FFC000; padding: 2px;">5-8</span>		With Biosafe Cap <span style="background-color: #FFC000; padding: 2px;">9-12</span>	
	Adapter	Capacity	Adapter	Capacity
15 ml	17359	36	17345	20
50 ml	17377	16	17346	12

g-lock:

**Rotor exchange in seconds.** Eliminating the need for screw mounting ensures a high degree of safety.

### Sigma 3-16L + rotor 11180 +

- 5 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- 9 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

### Sigma 3-16KL + rotor 11180 +

- 6 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- 10 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

### Sigma 3-16L + rotor 91124 13 +

- 7 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- 11 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

### Sigma 3-16KL + rotor 91124 13 +

- 8 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- 12 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

## A selection of further available rotor options

### Swing-out rotor 11180 + bucket 13190

- Max. capacity: 4 x 400 ml
- Max. speed (3-16L / 3-16KL): 4,200 / 4,500 rpm
- Max. RCF (3-16L / 3-16KL): 3,392 / 3,894 x g
- Biosafe with cap 17190 14
- **NEW:** g-lock rotor 91124 13



### Swing-out rotor 11241 + MTP bucket 13421

- Max. capacity: 8 microtiter plates
- Max. speed (3-16L / 3-16KL): 4,200 rpm
- Max. RCF (3-16L / 3-16KL): 2,623 x g
- Biosafe with cap 17108 15
- **NEW:** g-lock rotor 91551 14



### Fixed-angle rotor 12159

- Max. capacity: 6 x 94 ml round-bottom
- Max. speed (3-16L / 3-16KL): 8,000 rpm
- Max. RCF (3-16L / 3-16KL): 7,012 x g
- **NEW:** g-lock rotor 91119 16



# Sigma 3-18KS

## Benchtop centrifuge

With its maximum capacity of 1.6 litres in a swing-out rotor and a maximum RCF of 30,070 x g with a fixed-angle rotor, the 3-18KS is the ideal centrifuge for demanding requirements in the cell laboratory. Combined with the extensive portfolio of rotors and accessories for cell culture application, this universal centrifuge sets standards for versatility and performance. The refrigerated 3-18KS is very intuitive to use thanks to the patented one-knob controller. Additional features like rotor cycle counting, automatic rotor identification or lid opening assisted by gas springs simplify everyday laboratory work and provide maximum safety.



### Highlights

- Max. 36 x 15 ml / 16 x 50 ml culture tubes
- 60 programs
- Controller with 10 selectable languages
- Motorized lid locks
- 30 acceleration / braking curves

## Cell culture packages for conical 15 ml and 50 ml tubes

### Swing-out rotor 11180 + bucket 13190

- Max speed: 4,700 rpm
- Max RCF: 4,248 x g



Tube	Without Cap <sup>13+14</sup>		With Biosafe Cap <sup>15+16</sup>	
	Adapter	Capacity	Adapter	Capacity
15 ml	17359	36	17345	20
50 ml	17377	16	17346	12

**g-lock:**  
Rotor exchange in seconds. Eliminating the need for screw mounting ensures a high degree of safety.



### Sigma 3-18KS + rotor 11180 +

- <sup>13</sup> 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- <sup>15</sup> 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

### Sigma 3-18KS + rotor 91124 <sup>14</sup> +

- <sup>14</sup> 4 x bucket 13190 + 4 x adapter 17359 + 4 x adapter 17377
- <sup>16</sup> 4 x bucket 13190 + 4 x adapter 17345 + 4 x adapter 17346 + 4 x cap 17190

## A selection of further available rotor options

### Swing-out rotor 11180 + bucket 13190

- Max. capacity: 4 x 400 ml
- Max. speed: 4,700 rpm
- Max. RCF: 4,248 x g
- Biosafe with cap 17190 <sup>15</sup>
- **NEW:** g-lock rotor 91124 <sup>14</sup>



### Swing-out rotor 11241 + MTP bucket 13421

- Max. capacity: 8 microtiter plates
- Max. speed: 4,700 rpm
- Max. RCF: 3,285 x g
- Biosafe with cap 17108 <sup>15</sup>
- **NEW:** g-lock rotor 91551 <sup>14</sup>



### Fixed-angle rotor 12159

- Max. capacity: 6 x 94 ml round-bottom
- Max. speed: 11,400 rpm
- Max. RCF: 14,239 x g
- **NEW:** g-lock rotor 91119 <sup>14</sup>





# Sigma 4-5L

## Benchtop centrifuge

The Sigma 4-5L is designed for high throughput laboratories with changing workloads. The optimized air guidance guarantees very low specimen heating and pleasantly quiet running. The centrifuge has an extraordinary capacity of up to 60 cell culture tubes per run at a maximum RCF of 4.643 x g. Also cell harvesting in bottles up to 750 ml is possible. Standard routines can be stored and recalled conveniently in up to 50 programs. Ten selectable acceleration and braking curves facilitate optimisation of separation processes.

### Highlights

- Max. 60 x 15 ml / 28 x 50 ml culture tubes
- 50 programs
- Motorized lid lock
- High imbalance tolerance
- 10 acceleration / braking curves



## Cell culture packages for conical 15 ml and 50 ml tubes

### Rotor 11650 + bucket 13450

- Max. speed: 4,700 rpm
- Max. RCF: 4,643 x g



Tube	Without Cap <sup>17</sup>		With Biosafe Cap <sup>18</sup>	
	Adapter	Capacity	Adapter	Capacity
15 ml	17660	60	17659	48
50 ml	17649	28	17677	20

### Sigma 4-5L + rotor 11650 +

<sup>17</sup> 4 x bucket 13450 + 4 x adapter 17660 + 4 x adapter 17649

<sup>18</sup> 4 x bucket 13450 + 4 x adapter 17659 + 4 x adapter 17677 + 4 x cap 17170

## A selection of further available rotor options

### Swing-out rotor 11650 + bucket 13450

- Max. capacity: 4 x 750 ml
- Max. speed: 4,700 rpm
- Max. RCF: 4,643 x g
- Biosafe with cap 17170 <sup>18</sup>



### Swing-out rotor 11650 + MTP bucket 13421

- Max. capacity: 16 microtiter plates
- Max. speed: 4,700 rpm
- Max. RCF: 3,877 x g



# Sigma 4-16KS

## Benchtop centrifuge

The refrigerated 4-16KS centrifuge is ideal for large laboratories, since it features outstanding performance, intuitive operation and high capacities. Volumes of up to 3 litres (4 x 750 ml) can be processed as well as up to 60 cell culture tubes per run. In many cases with best-in-class RCF for this centrifuge segment. This versatility makes the 4-16KS the perfect choice for high and low throughput cell culture and cell harvest applications. Up to 60 routine procedures can be stored with user-defined names and quickly retrieved from the integrated process library.

### Highlights

- Max. 60 x 15 ml / 28 x 50 ml culture tubes
- 60 programs
- Controller with 10 selectable languages
- Motorized lid locks
- 30 acceleration / braking curves



## Cell culture packages for conical 15 ml and 50 ml tubes

### Rotor 11650 + bucket 13450

- Max. speed: 4,700 rpm
- Max. RCF: 4,643 x g



### Rotor 11150 + bucket 13235

- Max. speed: 5,100 rpm
- Max. RCF: 5,525 x g



Tube	Without Cap <sup>19</sup>		With Biosafe Cap <sup>20</sup>	
	Adapter	Capacity	Adapter	Capacity
15 ml	17660	60	17659	48
50 ml	17649	28	17677	20

Tube	Without Cap <sup>21</sup>	
	Adapter	Capacity
15 ml	13060	28
50 ml	–	28

### Sigma 4-16KS + rotor 11650 +

- <sup>19</sup> 4 x bucket 13450 + 4 x adapter 17660 + 4 x adapter 17649
- <sup>20</sup> 4 x bucket 13450 + 4 x adapter 17659 + 4 x adapter 17677 + 4 x cap 17170

### Sigma 4-16KS + rotor 11150 +

- <sup>21</sup> 4 x bucket 13235

## A selection of further available rotor options

### Swing-out rotor 11660 + bucket 13450

- Max. capacity: 4 x 750 ml
- Max. speed: 5,100 rpm
- Max. RCF: 5,467 x g
- Biosafe with cap 17170 <sup>20</sup>



### Swing-out rotor 11660 + MTP bucket 13421

- Max. capacity: 16 microtiter plates
- Max. speed: 5,100 rpm
- Max. RCF: 4,565 x g



### Fixed-angle rotor 12356

- Max. capacity: 6 x 250 ml
- Max. speed: 9,000 rpm
- Max. RCF: 13,131 x g
- Biosafe with lid 17603 <sup>20</sup>



# Sigma 6-16S / 6-16KS

## Benchtop centrifuge

The refrigerated 6-16KS and unrefrigerated 6-16S centrifuges are perfectly suited for high throughput in cell culture and fermentation. Particularly due to the ability to use large-volume fixed-angle rotors with high RCF, a broad range of high speed cell processing applications is possible as well. Thanks to the powerful cooling system a consistent specimen temperature can be maintained, even in case of heavy workload (6-16KS). The patented one-knob controller provides superior operating convenience, safety and versatility.



### Highlights

- Max. 96 x 15 ml / 40 x 50 ml culture tubes
- 60 programs
- Controller with 10 selectable languages
- Motorized lid locks
- 30 acceleration / braking curves

## Cell culture packages for conical 15 ml and 50 ml tubes

### Rotor 11650 + bucket 13635

- Max. speed (6-16S / 6-16KS): 4,200 / 4,700 rpm
- Max. RCF (6-16S / 6-16KS): 3,846 / 4,816 x g



### Rotor 11650 + bucket 13650

- Max. speed (6-16S / 6-16KS): 4,200 / 4,700 rpm
- Max. RCF (6-16S / 6-16KS): 4,181 / 5,236 x g



#### Without Cap <sup>22+23</sup>

Tube	Adapter	Capacity
15 ml	18605	96
50 ml	18606	40

#### Without Cap <sup>24+25</sup>

Tube	Adapter	Capacity
15 ml	17660	60
50 ml	17679	28

#### With Biosafe Cap <sup>26+27</sup>

Tube	Adapter	Capacity	Adapter	Capacity
15 ml	17660	60	17659	48
50 ml	17679	28	17677	20

### Sigma 6-16S + rotor 11650 +


- <sup>22</sup> 4 x bucket 13635 + 4 x adapter 18605 + 4 x adapter 18606
- <sup>24</sup> 4 x bucket 13650 + 4 x adapter 17660 + 4 x adapter 17679
- <sup>26</sup> 4 x bucket 13650 + 4 x adapter 17659 + 4 x adapter 17677 + 4 x cap 17170

### Sigma 6-16KS + rotor 11650 +

- <sup>23</sup> 4 x bucket 13635 + 4 x adapter 18605 + 4 x adapter 18606
- <sup>25</sup> 4 x bucket 13650 + 4 x adapter 17660 + 4 x adapter 17679
- <sup>27</sup> 4 x bucket 13650 + 4 x adapter 17659 + 4 x adapter 17677 + 4 x cap 17170

## A selection of further available rotor options

### Swing-out rotor 11660 + bucket 13650

- Max. capacity: 4 x 1,000 ml
- Max. speed (6-16S / 6-16KS): 4,200 / 5,100 rpm
- Max. RCF (6-16S / 6-16KS): 4,181 / 5,467 x g
- Biosafe with cap 17170 




### Swing-out rotor 11660 + MTP bucket 13421

- Max. capacity: 20 microtiter plates
- Max. speed (6-16S / 6-16KS): 4,200 / 5,100 rpm
- Max. RCF (6-16S / 6-16KS): 3,589 / 4,565 x g



### Fixed-angle rotor 12600












- Max. capacity: 6 x 500 ml
- Max. speed (6-16S / 6-16KS): 8,000 / 9,600 rpm
- Max. RCF (6-16S / 6-16KS): 11,949 / 17,207 x g
- Biosafe with lid 17600 



# Solutions for cell harvesting

## Available options







### Sample capacities for conical cell harvesting tubes in Sigma centrifuges

											
Description	15 ml conical	50 ml conical	175 ml Falcon, VWR	175 ml Nalgene	200 ml Nunc	225 ml Falcon, VWR	250 ml Nunc	250 ml Corning	450 ml TPP	500 ml Corning	600 ml TPP
Diameter x length [mm]	16.5 x 120	29 x 117	61 x 118	62 x 139.2	61 x 130	61 x 137	61 x 145	59.7 x 171.2	96 x 145	95.5 x 147	100 x 183
Item no.	15115	15151	–	15175	15174	–	–	–	–	–	–
<b>Max. Capacity</b> (swing-out rotor / fixed-angle rotor)											
Sigma 2-7	8 / 30	4 / –									
Sigma 2-16P / 2-16KL	8 / 30	4 / 6									
Sigma 3-16L / 3-16KL	36 / 12	16 / 6	4 / –	4 / –	4 / –	4 / –					
Sigma 3-18KS	36 / 12	16 / 6	4 / –	4 / –	4 / –	4 / –					
Sigma 4-5L	60 / –	28 / –	4 / –	4 / –	4 / –	4 / –	4 / –		4* / –	4 / –	
Sigma 4-16S / 4-16KS	60 / 24	28 / 8	4 / –	4 / –	4 / –	4 / –	4 / –		4* / –	4 / –	
Sigma 6-16S / 6-16KS	96 / 24	40 / 8	4 / 4*	4 / 6	4 / 6	4 / 6*	4 / 6	4 / 6	4* / –	4 / –	
Sigma 8KS	144 / 30	84* / 12	12 / 6*	12 / 6	12 / 6	12 / 6*	12 / 6	12 / 6	12* / 6*	12 / 6	12* / –

\*On request

### Floor-standing centrifuge

#### Sigma 8KS

	12 x 1,000 ml		6 x 1,000 ml
	5,100 rpm		10,500 rpm
	8,578 x g		20,461 x g

The Sigma 8KS is a refrigerated floor-standing centrifuge that is ideal for universal deployment in research sectors or bioprocessing applications. This high-performance centrifuge features impressive capacity of up to 12 x 1,000 ml in a swing-out rotor or 6 x 1,000 ml in a fixed-angle rotor. With a maximum RCF of 20,461 x g, even demanding separation processes can be handled efficiently. The swing-out and fixed-angle rotors can both handle standard 1,000 ml USP VI bottles without using adapters.



#### Legend

	Max. capacity		Swing-out rotor
	Max. speed		Fixed-angle rotor
	Max. RCF		



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[www.sigma-zentrifugen.de](http://www.sigma-zentrifugen.de)

## Premium League



Zentrifugen  
Centrifuges

# Produktfamilie / Product family



## Sigma 1-14



0,2 - 2 ml

48 ml

14.800

16.163

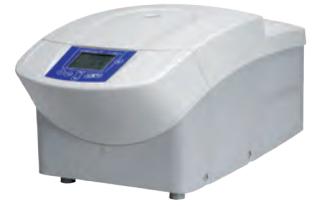
## Sigma 1-14K

0,2 - 2 ml

48 ml

15.000

16.602



## Sigma 1-16



0,2 - 5 ml

72 ml

15.000

20.627



## Sigma 1-16K

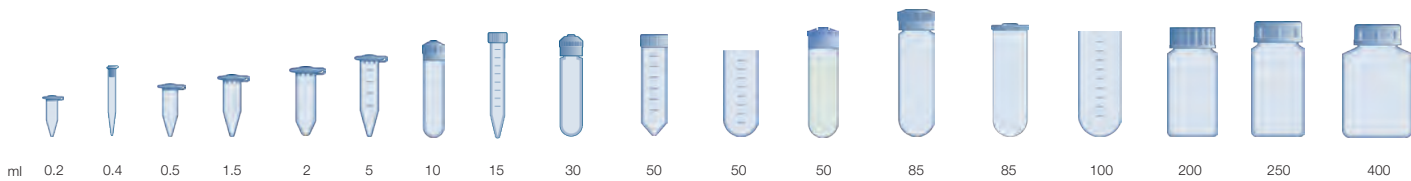


0,2 - 5 ml

72 ml

15.000

20.627



## Sigma 3-30KS

0,2 - 100 ml; MTP

0,2 - 94 ml

564 ml

30.000

70.121



## Sigma 4-16S

0,2 - 750 ml; MTP

0,2 - 250 ml

3.000 ml

13.500

20.376



## Sigma 4-16KS

0,2 - 750 ml; MTP

0,2 - 250 ml

3.000 ml

15.000

25.155







**Sigma 1-7**

0,2 - 15 ml

–

90 ml

8.000

6.153



**Sigma 2-7**

0,2 - 100 ml; MTP, Cyto

5 - 15 ml

450 ml

4.000

2.540



**Sigma 2-16P**

0,2 - 100 ml; MTP

0,2 - 50 ml

450 ml

15.000

20.627



**Sigma 2-16KL**

0,2 - 100 ml; MTP

0,2 - 85 ml

450 ml

15.300

21.913



500



500



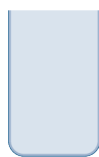
650



800



1000



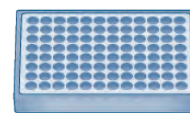
1000



1300



1500



MTP



BB



**Sigma 4-5L**

0,2 - 750 ml; MTP

–

3.000 ml

4.700

4.643



**Sigma 4-5KRL**

1,1 - 15 ml; MTP

–

1.500 ml

4.700

4.470



**Sigma 6-16S**

0,2 - 1.000 ml; MTP, BB

0,2 - 500 ml

4.000 ml

13.500

20.376



**Sigma 6-16KS**

0,2 - 1.000 ml; MTP, BB

0,2 - 500 ml

4.000 ml

15.000

25.419





### Sigma 3-16L

0,2 - 400 ml; MTP

0,2 - 94 ml

1.600 ml

15.300

21.460



### Sigma 3-16KL

0,2 - 400 ml; MTP

0,2 - 94 ml

1.600 ml

15.300

21.913



### Sigma 3-18KS

0,2 - 400 ml; MTP

0,2 - 94 ml

1.600 ml

18.000

30.070



### Sigma 8KS / 8KBS

0,2 - 1.500 ml; MTP, BB

0,2 - 1.000 ml

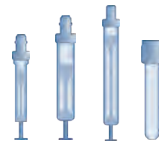
12.000 ml

10.500

20.461



Blut- und Uringefäße  
Blood collection tubes



Spitzgefäße  
Conical tubes



Rundbodengefäße  
Round bottom tubes



### Symbol Typ / Type

Ausschwingrotor  
Swing-out rotor

Winkelrotor  
Fixed-angle rotor

max. Kapazität  
max. capacity

max. Drehzahl, min<sup>-1</sup>  
max. speed, rpm

max. RZB, x g  
max. RCF, x g

Kühlzentrifuge  
Refrigerated centrifuge

Medizinprodukt für IVD Anwendungen  
Medical device for IVD applications

## Spincontrol family



**Spincontrol Basic**



**Spincontrol L**



**Spincontrol S**





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