

# Sigma 4-16S Sigma 4-16KS Sigma 4-16KHS



Benchtop centrifuge

- Unrefrigerated
- Refrigerated
- Refrigerated / heatable



# Most versatile 3-liter centrifuge in the industry



**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 4-16 centrifuge series features outstanding versatility, performance and capacity. With maximum RCF up to 5,526 x g with a swing-out rotor or 25,155 x g with a fixed-angle rotor, they are the most versatile three-liter centrifuges in the industry.

Large specimen volumes can also be processed efficiently thanks to the maximum capacity of 4 x 750 ml in a swing-out rotor or 6 x 250 ml in a fixed-angle rotor. Smooth running guarantees excellent, reproducible sedimentation results, for which reason this compact centrifuge series is recommended not only for routine tasks but also for demanding applications in research and industry.

Along with the unrefrigerated Sigma 4-16S, the refrigerated Sigma 4-16KS and Sigma 4-16KHS versions enable operation over an extended temperature range. The temperature of this refrigerable and heatable centrifuge can be set from -20°C to +60°C. That makes it particularly suitable for specimens that need to have their viscosity lowered during centrifugation.

# High throughput in the laboratory

## Result-oriented, convenient and robust

The Sigma 4-16 centrifuge series is designed for research tasks as well as routine procedures in laboratory operations. With their versatile rotor configurations, these models are suitable for research laboratories, hospitals, universities, cell culture applications, pharmaceutical laboratories, and applications in the biotechnology sector.

Along with excellent specifications, the series offers intuitive operation and advanced features. The patented one-knob Spincontrol S controller provides superior operating convenience, safety and versatility. Thanks to the intuitive user interface and the clearly organised

menu structure, operating parameters can be entered and adjusted quickly. The acceleration and braking curves (30 each) facilitate optimisation of separation runs and results. Routine procedures can be stored with user-defined names and quickly retrieved from the integrated process library.

With automatic rotor identification, run time and speed monitoring, password-protected access to the controller and secure program storage, the centrifuges ensure uncompromising safety.

### Sigma 4-16S

- Universal benchtop centrifuge
- Speed range up to 13,500 rpm
- Maximum capacity: 4 x 750 ml
- User-friendly Spincontrol S controller
- Extra large TFT display
- 60 programs
- Compact, space-saving unit
- Low noise level
- Automatic rotor identification
- Zero-maintenance induction motor
- Motorised lid lock
- Automatic imbalance monitoring
- Rotor life monitoring for high 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 4-16KS

All features of the Sigma 4-16S, plus:

- Speed range up to 15,000 rpm
- High-performance cooling
- Temperature setting range: -20 °C to +40 °C
- Pre-cooling function "Rapid Temp"
- Rotor cooling also possible at standstill

### Option

- Inert gas version with inert gas injection system

### Sigma 4-16KHS

All features of the Sigma 4-16KS, plus:

- Heatable refrigerated centrifuge
- Standstill cooling or heating
- Temperature setting range: -20 °C to +60 °C





# Rotors and accessories

## Large selection and a multitude of applications

The compact Sigma 4-16 series is available with numerous swing-out and fixed-angle rotors, various buckets and adapters. The extensive port-folio of accessories can accommodate tubes from 0.2 ml to 750 ml as well as microtiter and deepwell plates.


The swing-out rotors can hold up to 3 liter (4 x 750 ml) or for example up to 60 conical 15 ml tubes. In many cases the configurations achieve best-in-class RCF for this centrifuge segment. Unique in the

domain of fixed-angle rotors are the 6 x 250 ml rotor with a maximum RCF of 13,131 x g and the ability to centrifuge 50 ml culture tubes at more than 23,000 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 11650

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 4,643 x g
- Accessories in part with biosafe cap 
- Angle: 90°



▶ p.9

#### Swing-out rotor 11660

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 5,467 x g
- Accessories in part with biosafe cap 
- Angle: 90°



▶ p.9

#### Swing-out rotor 11150

- Max. capacity: 4 x 500 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Angle: 90°



▶ p.13

#### Swing-out rotor 11156

- Max. capacity: 6 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 4,800 rpm
- Max. RCF (4-16S / 4-16KS): 4,324 / 4,920 x g
- Angle: 90°



▶ p.22

#### Swing-out rotor 11148

- Max. capacity: 32 x 2 ml
- Max. speed (4-16S / 4-16KS): 12,000 / 13,200 rpm
- Max. RCF (4-16S / 4-16KS): 13,523 / 16,363 x g
- Angle: 90°



▶ p.25

### MTP swing-out rotors on page 26


#### Swing-out rotor 11150

- Max. capacity: 12 microtiter plates
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,622 / 4,653 x g
- Angle: 90°



▶ p.26

#### Swing-out rotor 11118

- Max. capacity: 10 microtiter plates
- Max. speed (4-16S / 4-16KS): 5,700 rpm
- Max. RCF (4-16S / 4-16KS): 5,485 x g
- Biosafe with cap 17108 
- Angle: 90°



▶ p.27

▶ p.27

**Swing-out rotor 11650 and bucket 13421**

- Max. capacity: 16 microtiter plates
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,096 / 3,877 x g
- Angle: 90°



▶ p.27


**Swing-out rotor 11660 and bucket 13421**

- Max. capacity: 16 microtiter plates
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,096 / 4,565 x g
- Angle: 90°

**Fixed-angle rotors starting on page 28**

▶ p.28

**Fixed-angle rotor 12449**

- Max. capacity: 48 x 2 ml
- Max. speed (4-16S / 4-16KS): 13,500 / 15,000 rpm
- Max. RCF (4-16S / 4-16KS): 20,376 / 25,155 x g
- Biosafe with aluminium lid 17612 
- Angle (outer / inner row): 25° / 53°



▶ p.28


**Fixed-angle rotor 12201**

- Max. capacity: 100 x 2 ml
- Max. speed (4-16S / 4-16KS): 9,000 / 9,600 rpm
- Max. RCF (4-16S / 4-16KS): 14,761 / 16,795 x g
- Angle (both rows): 45°



▶ p.29

**Fixed-angle rotor 12450**

- Max. capacity: 24 x 5 ml conical
- Max. speed (4-16S / 4-16KS): 13,000 rpm
- Max. RCF (4-16S / 4-16KS): 21,917 x g
- Biosafe with aluminium lid 17614 
- Angle: 40°



▶ p.29

**Fixed-angle rotor 12170**

- Max. capacity: 12 x 15 ml conical
- Max. speed (4-16S / 4-16KS): 12,500 / 13,500 rpm
- Max. RCF (4-16S / 4-16KS): 17,469 / 20,376 x g
- Angle: 25°



▶ p.30

**Fixed-angle rotor 12168**

- Max. capacity: 20 x 10 ml
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 17,119 / 21,475 x g
- Angle: 25°



▶ p.30

**Fixed-angle rotor 12174**

- Max. capacity: 24 x 15 ml conical
- Max. speed (4-16S / 4-16KS): 10,500 / 12,000 rpm
- Max. RCF (4-16S / 4-16KS): 15,531 / 20,285 x g
- Angle (outer / inner row): 30° / 40°



▶ p.31


**Fixed-angle rotor 12172**

- Max. capacity: 12 x 30 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 19,216 / 24,104 x g
- Angle: 30°



▶ p.31


**Fixed-angle rotor 12269**

- Max. capacity: 8 x 50 ml conical
- Max. speed (4-16S / 4-16KS): 12,500 / 13,500 rpm
- Max. RCF (4-16S / 4-16KS): 18,168 / 21,191 x g
- Biosafe with aluminium lid 17604 
- Angle: 25°



▶ p.32


**Fixed-angle rotor 12266**

- Max. capacity: 8 x 50 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 17,469 / 21,913 x g
- Biosafe with aluminium lid 17605 
- Angle: 25°



▶ p.33


**Fixed-angle rotor 12265**

- Max. capacity: 6 x 94 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 18,517 / 23,228 x g
- Biosafe with aluminium lid 17607 
- Angle: 25°



▶ p.34

**Fixed-angle rotor 12356**

- Max. capacity: 6 x 250 ml
- Max. speed (4-16S / 4-16KS): 8,000 / 9,000 rpm
- Max. RCF (4-16S / 4-16KS): 10,375 / 13,131 x g
- Biosafe with aluminium lid 17603 
- Angle: 30°








## Swing-out rotor 11650


### Round bucket 13450 (1 set = 2 pcs.)

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 4,643 x g
- Max. tube length in middle of bucket without / with cap: 148 / 137 mm
- Biosafe with cap 17170 
- Tmin at maximum speed: <4°C
- Angle: 90°













## Swing-out rotor 11660








### Round bucket 13450 (1 set = 2 pcs.)










- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 5,467 x g
- Max. tube length in middle of bucket without / with cap: 153 / 137 mm
- Biosafe with cap 17170 
- Tmin at maximum speed: <4°C
- Angle: 90°









Tube										
Rated capacity (filling volume) [ml]	1.5	2	5	5	6 (5)	7	10	10	10	10
Diameter x length [mm]	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	16.1 x 81.1	16.1 x 81.1	16 x 100
Tube material	PP	PP	PS	PPCO	Glass	Glass	PF	PC	PPCO	Glass
Item no.	15008	15040	15060	–	15007	15027	15000	15010	15039	15015

Adapter							
Bore diameter x length [mm]	11.1 x 38.5	12.8 x 52	17 x 52	12.8 x 74	16.5 x 55	17.5 x 55	
Tubes per adapter / rotor	26 / 104	37 / 148	12 / 48	32 / 128	20 / 80	19 / 76	
Centrifuging radius [mm]	181	180	185	182	183	183	
Item no.	17653	17652	17211	17654	17655	17658	

Tube									
Rated capacity (filling volume) [ml]	10	14	14	15 (13)	15	25	25	25	30 (26)
Diameter x length [mm]	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	PS	PP	Glass	PP	PP	Glass	Glass	PF
Item no.	15024	15020	15023	15022	15115	–	15025	15026	15029

Adapter						
Bore diameter x length [mm]	17.5 x 55	17 x 78.5	17 x 78.5	25.5 x 70	25.5 x 77	
Tubes per adapter / rotor	19 / 76	12 / 48	15 / 60	7 / 28	8 / 32	
Centrifuging radius [mm]	183	187	187	175	185	
Item no.	17658	17659	17660*	17662	17670	

### Swing-out rotor 11650

**Round bucket 13450 (1 set = 2 pcs.)**

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 4,643 x g
- Max. tube length in middle of bucket without / with cap: 148 / 137 mm
- Biosafe with cap 17170
- Tmin at maximum speed: <4°C
- Angle: 90°



### Swing-out rotor 11660

**Round bucket 13450 (1 set = 2 pcs.)**

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 5,467 x g
- Max. tube length in middle of bucket without / with cap: 153 / 137 mm
- Biosafe with cap 17170
- Tmin at maximum speed: <4°C
- Angle: 90°



Tube										
Rated capacity (filling volume) [ml]	30 (26)	30 (28)	30	30	50 (38)	50 (43)	50	50	50	50
Diameter x length [mm]	25.3 x 98	25.3 x 98	24 x 105	25 x 107	28.8 x 107	28.5 x 107	28.5 x 101.5	34 x 100	34 x 100	34 x 100
Tube material	PPCO	PC	Glass	PP	PPCO	PF	Stainless steel	Glass	Glass	PC
Item no.	15032	15030	15033	–	15052	15051	13055	15045	15050	15049

Adapter					
Bore diameter x length [mm]		25.5 x 77	25.5 x 70	29.5 x 77	35.5 x 77.5
Tubes per adapter / rotor		8 / 32	7 / 28	7 / 28	4 / 16
Centrifuging radius [mm]		185	175	185	185
Item no.		17670	17662	17676	17675


Tube									
Rated capacity (filling volume) [ml]	50	50	50	85 (73)	85 (76)	94 (85)	94	100 (75)	100 (90)
Diameter x length [mm]	35 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
Tube material	Glass	PP	PP	PF	PPCO	Stainless steel	PC	Glass	Glass
Item no.	15056	–	15151	15080	15076	13085	15094	15078	15106

Adapter						
Bore diameter x length [mm]	35.5 x 77.5	29.5 x 74	29.5 x 78.5	29,5 x 78	38.5 x 77	45.5 x 77
Tubes per adapter / rotor	4 / 16	5 / 20	5 / 20	7 / 28	3 / 12	2 / 8
Centrifuging radius [mm]	185	182	186	186	185	185
Item no.	17675	17678	17677	17649*	17685	17690**

\* Only possible without cap 17170; \*\* Including rubber cushion 16051

## Swing-out rotor 11650


### Round bucket 13450 (1 set = 2 pcs.)

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 4,643 x g
- Max. tube length in middle of bucket without / with cap: 148 / 137 mm
- Biosafe with cap 17170 
- Tmin at maximum speed: <4°C
- Angle: 90°





























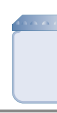







## Swing-out rotor 11660

### Round bucket 13450 (1 set = 2 pcs.)

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 5,467 x g
- Max. tube length in middle of bucket without / with cap: 153 / 137 mm
- Biosafe with cap 17170 
- Tmin at maximum speed: <4°C
- Angle: 90°



Tube										
Rated capacity (filling volume) [ml]	100	100	150	175	175	200 (168)	200	225	250 (232)	250 (232)
Diameter x length [mm]	44 x 100	45 x 100	51 x 99	61 x 118	62 x 139.2	56 x 112	61 x 130	61 x 137	61.4 x 122	61.4 x 122
Tube material	Glass	PC	PP	PP	PP	PPCO	PP	PP	PF	PPCO
Item no.	15100	15103	15125	–	15175	15202	15174	–	15247	15249
<b>Adapter</b>										
for round bucket 13450										
Bore diameter x length [mm]	45.5 x 77	51.5 x 77	61 x 100	62.5 x 110	57.5 x 77	62.5 x 110	61 x 100	62.5 x 77	61 x 100	62.5 x 77
Tubes per adapter / rotor	2 / 8	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	185	185	188	188	185	188	188	188	185	185
Item no.	17690*	17692	17694	17693	17696	17693	17694	17698	17698	17698

Tube							
Rated capacity (filling volume) [ml]	250	250	400	500	500	650	750
Diameter x length [mm]	61.4 x 125	61 x 145	85 x 118	85 x 135	95.5 x 147	100 x 111	100 x 127
Tube material	Stainless steel	PP	PPCO	PPCO	PP	PP	PPCO
Item no.	13255	–	15401	15501	–	13456	15917***
<b>Adapter</b>							
for round bucket 13450							
Bore diameter x length [mm]	62.5 x 77	62.5 x 110	86 x 107	96.3 x 110	101 x 102	– / 4	–
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	– / 4	–	–
Centrifuging radius [mm]	185	188	185	188	188	–	–
Item no.	17698	17693**	13654	17682**	–	–	–

## Swing-out rotor 11650

### Round bucket 13450 (1 set = 2 pcs.)

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 4,700 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 4,643 x g
- Max. tube length in middle of bucket without / with cap: 148 / 137 mm
- Biosafe with cap 17170
- Tmin at maximum speed: <4°C
- Angle: 90°



## Swing-out rotor 11660

### Round bucket 13450 (1 set = 2 pcs.)

- Max. capacity: 4 x 750 ml
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,708 / 5,467 x g
- Max. tube length in middle of bucket without / with cap: 153 / 137 mm
- Biosafe with cap 17170
- 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	4–6	1.8–7	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 81–106	13 x 81–107	15 x 91–118	15 x 106	16 x 106–107	16 x 108	16 x 131
Tube material	PP	PP	PP	PET	PET	PP	PET	PET	PP	Glass
Item no.	–	–	–	–	–	–	–	–	–	–

### Adapter

for round bucket 13450



Bore diameter x length [mm]	12.8 x 52	13.8 x 54	16.5 x 55	17.5 x 55	17.5 x 55
Tubes per adapter / rotor	37 / 148	23 / 92	20 / 80	19 / 76	7 / 28
Centrifuging radius [mm]	180	182	183	183	183
Item no.	17652	17656	17655	17658	17658*













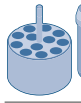
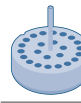




















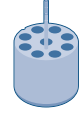
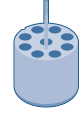


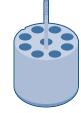
## Swing-out rotor 11150

### Round bucket 13350 (1 set = 2 pcs.)

- Max. capacity: 4 x 500 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Max. tube length in middle of bucket without / with cap: 150 / 140 mm
- Hermetically closable with aluminium cap 17134 or polysulphone cap 17135
- T<sub>min</sub> 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 13350										
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]	183	185	182	185	188	187	187	187	187	187
Item no.	17353 & 13021	17353 & 13000	17361	17350	17353	17352	17210	17210	17354	17354

Tube									
Rated capacity (filling volume) [ml]	10	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 13350									
Bore diameter x length [mm]	16.5 x 58	16.5 x 58	16.5 x 58	16.5 x 58	17.5 x 58	17.5 x 58	17 x 78.5	17 x 78.5	17 x 78.5
Tubes per adapter / rotor	12 / 48	12 / 48	12 / 48	12 / 48	12 / 48	12 / 48	5 / 20	5 / 20	9 / 36
Centrifuging radius [mm]	188	188	188	188	188	188	188	188	188
Item no.	17355	17355	17355	17355	17358	17358	17345	17345	17359*

\* For culture tubes with a cap diameter of 23 mm










## Swing-out rotor 11150

### Round bucket 13350 (1 set = 2 pcs.)

- Max. capacity: 4 x 500 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Max. tube length in middle of bucket without / with cap: 150 / 140 mm
- Hermetically closable with aluminium cap 17134 or polysulphone cap 17135
- Tmin at maximum speed: <4°C
- Angle: 90°



### Tube

										
Rated capacity (filling volume) [ml]	15	25	25	25	30 (26)	30 (26)	30 (28)	30	30	50 (38)
Diameter x length [mm]	16.5 x 120	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
Tube material	PP	PP	Glass	Glass	PF	PPCO	PC	Glass	PP	PPCO
Item no.	15115	–	15025	15026	15029	15032	15030	15033	–	15052









### Adapter

for round bucket 13350



Bore diameter x length [mm]	17 x 78.5	25.5 x 56	25.5 x 77.5				25.5 x 56	29.5 x 77.5
Tubes per adapter / rotor	10 / 40	5 / 20	5 / 20				5 / 20	4 / 16
Centrifuging radius [mm]	188	186	187				186	187
Item no.	17360*	17362	17370				17362	17376

### Tube

								
Rated capacity (filling volume) [ml]	50 (43)	50	50	50	50	50	50	50
Diameter x length [mm]	28.5 x 107	28.5 x 101.5	34 x 100	34 x 100	34 x 100	35 x 100	29 x 117	29 x 117
Tube material	PF	Stainless steel	Glass	Glass	PC	Glass	PP	PP
Item no.	15051	13055	15045	15050	15049	15056	–	15151

### Adapter

for round bucket 13350



Bore diameter x length [mm]	29.5 x 77.5		35.5 x 77.5			29.5 x 77	29.5 x 74	29.5 x 78.5	29.5 x 78.5
Tubes per adapter / rotor	4 / 16		3 / 12			3 / 12	4 / 16	3 / 12	4 / 16
Centrifuging radius [mm]	187		187			187	184	188	188
Item no.	17376		17375			17344	17378	17346	17377

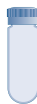









\* For culture tubes with a cap diameter of 22 mm

## Swing-out rotor 11150





### Round bucket 13350 (1 set = 2 pcs.)











- Max. capacity: 4 x 500 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Max. tube length in middle of bucket without / with cap: 150 / 140 mm
- Hermetically closable with aluminium cap 17134 or polysulphone cap 17135
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $90^{\circ}$












Tube										
Rated capacity (filling volume) [ml]	85 (73)	85 (76)	94 (85)	94	100 (75)	100 (90)	100	100	150	150
Diameter x length [mm]	38 x 112	38 x 112	38 x 103	38 x 110	44 x 100	44 x 100	44 x 100	45 x 100	51 x 99	56 x 113
Tube material	PF	PPCO	Stainless steel	PC	Glass	Glass	Glass	PC	PP	Glass
Item no.	15080	15076	13085	15094	15078	15106	15100	15103	15125	15206

Adapter				
for round bucket 13350				
Bore diameter x length [mm]	38.5 x 77		45.5 x 77.5	
Tubes per adapter / rotor	1 / 4		1 / 4	
Centrifuging radius [mm]	187		187	
Item no.	17385		17390*	

Tube										
Rated capacity (filling volume) [ml]	175	175	200 (168)	200 (170)	200	200	225	230 (220)	250	250 (232)
Diameter x length [mm]	62 x 139.2	61 x 118	56 x 112	56 x 112	56 x 135	61 x 130	61 x 137	56 x 134	61 x 145	61.4 x 122
Tube material	PP	PP	PPCO	Glass	Glass	PP	PP	Glass	PP	PF
Item no.	15175	–	15202	15201	15254	15174	–	15250	–	15247

Adapter									
for round bucket 13350									
Bore diameter x length [mm]	62.5 x 105	61 x 104	57.5 x 77	58 x 75	62.5 x 105	61 x 104	58 x 75	62.5 x 105	62.5 x 80
Tubes per adapter / rotor	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	190	190	187	185	190	190	185	190	190
Item no.	17393	17402	17400	17401**	17393	17402	17401**	17393	17347





## Swing-out rotor 11150

### Round bucket 13350 (1 set = 2 pcs.)

- Max. capacity: 4 x 500 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Max. tube length in middle of bucket without / with cap: 150 / 140 mm
- Hermetically closable with aluminium cap 17134 or polysulphone cap 17135
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $90^{\circ}$



### Tube

				
Rated capacity (filling volume) [ml]	250 (232)	250	400	500
Diameter x length [mm]	61.4 x 122	61.4 x 125	85 x 118	85 x 135
Tube material	PPCO	Stainless steel	PPCO	PPCO
Item no.	15249	13255	15401	15501











### Adapter

for round bucket 13350



Bore diameter x length [mm]	62.5 x 80	85.9 x 106
Tubes per adapter / rotor	1 / 4	- / 4
Centrifuging radius [mm]	190	190
Item no.	17347	-

### 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 13350



Bore diameter x length [mm]	12.8 x 57	13.8 x 57	17.5 x 58
Tubes per adapter / rotor	25 / 100	17 / 68	12 / 48
Centrifuging radius [mm]	187	187	188
Item no.	17352	17356	17358





































## Swing-out rotor 11150

### Rectangular bucket 13215 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,120 / 5,292 x g
- Max. tube length in middle of bucket without / with cap: 141 / 123 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 13215										
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]	167	169	169	170	166	168	166	166		
Item no.	18002 & 13021	18002 & 13000	18002 & 13002	18002	18005*	18006	18007*	18010*		







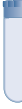

Tube									
Rated capacity (filling volume) [ml]	10	10	10	10	14	14	15 (13)	15	25
Diameter x length [mm]	16.1 x 81.1	16.1 x 81.1	16 x 100	16 x 100	17 x 100	17 x 100	17 x 110	16.5 x 120	25 x 90
Tube material	PC	PPCO	Glass	Glass	PS	PP	Glass	PP	PP
Item no.	15010	15039	15015	15024	15020	15023	15022	15115	–
<b>Adapter</b> for rectangular bucket 13215									
Bore diameter x length [mm]	17.2 x 46	17.2 x 46	17.2 x 72	17.2 x 72	17 x 72.5	17 x 72.5	25.5 x 61		
Tubes per adapter / rotor	12 / 48	12 / 48	12 / 48	12 / 48	4 / 16	7 / 28	4 / 16		
Centrifuging radius [mm]	166	166	166	166	170	170	167		
Item no.	18010*	18010*	18015*	18015*	18016	18018**	18022		






## Swing-out rotor 11150











### Rectangular bucket 13215 (1 set = 2 pcs.)






- Max. capacity: 4 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,120 / 5,292 x g
- Max. tube length in middle of bucket without / with cap: 141 / 123 mm
- Hermetically closable with cap 17112
- Tmin 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 13215					
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	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 13215					
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	170	169	
Item no.	18050**	18053	18052	18085	









## Swing-out rotor 11150

### Rectangular bucket 13215 (1 set = 2 pcs.)

- Max. capacity: 4 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,120 / 5,292 x g
- Max. tube length in middle of bucket without / with cap: 141 / 123 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	150	200 (168)	200 (170)
Diameter x length [mm]	44 x 100	44 x 100	44 x 100	45 x 100	51 x 99	56 x 113	56 x 112	56 x 112
Tube material	Glass	Glass	Glass	PC	PP	Glass	PPCO	Glass
Item no.	15078	15106	15100	15103	15125	15206	15202	15201











### Adapter

for rectangular bucket 13215



Bore diameter x length [mm]	46 x 65.5			51.5 x 71	57 x 62	57 x 34	57 x 62
Tubes per adapter / rotor	1 / 4			1 / 4	1 / 4	1 / 4	1 / 4
Centrifuging radius [mm]	165			168	167	166	167
Item no.	18100*			18125	18250**	18200	18250**

### 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 13215



Bore diameter x length [mm]	12.5 x 51	14 x 58			17.2 x 46		17.5 x 57	17.5 x 71
Tubes per adapter / rotor	20 / 80	12 / 48			12 / 48		11 / 44	10 / 40
Centrifuging radius [mm]	166	164			166		168	168
Item no.	18005**	18012			18010***		18020	18017****

## Swing-out rotor 11150

### Bucket 13233 (1 set = 2 pcs.)

- Max. capacity: 200 x 5 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,668 / 4,711 x g
- Max. tube length mid-bucket: 80 mm
- Tmin at maximum speed: <4°C
- Angle: 90°



## Swing-out rotor 11150

### Bucket 13234 including rubber cushion 16051 (1 set = 2 pcs.)

- Max. capacity: 16 x 100 ml round-bottom
- Max. speed (4-16S / 4-16KS): 4,300 rpm
- Max. RCF (4-16S / 4-16KS): 3,680 x g
- Max. tube length mid-bucket: 118 mm
- Tmin at maximum speed: <4°C
- Angle: 90°



### Tube



Rated capacity (filling volume) [ml]	5
Diameter x length [mm]	12 x 75
Tube material	PS
Item no.	15060

### Adapter

for bucket  
13233



Bore diameter x length [mm]	13 x 66
Tubes per adapter / rotor	50 / 200
Centrifuging radius [mm]	162
Item no.	—

### 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 bucket  
13234



Bore diameter x length [mm]	45.5 x 98
Tubes per adapter / rotor	4 / 16
Centrifuging radius [mm]	174
Item no.	16051

## Swing-out rotor 11150

### Bucket 13235 (1 set = 2 pcs.)

- Max. capacity: 28 x 50 ml conical
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,302 / 5,525 x g
- Max. tube length mid-bucket: 128 mm
- Tmin at maximum speed: <4°C
- Angle: 90°







## Swing-out rotor 11150

### Bucket 13236 (1 set = 2 pcs.)

- Max. capacity: 48 x 15 ml conical
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 4,256 / 5,467 x g
- Max. tube length mid-bucket: 124 mm
- Tmin at maximum speed: <4°C
- Angle: 90°






### Tube

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


### Adapter

for bucket  
13235



			
Bore diameter x length [mm]	17 x 107	25.5 x 71	29.5 x 97
Tubes per adapter / rotor	7 / 28	7 / 28	7 / 28
Centrifuging radius [mm]	189	167	190
Item no.	13060	13064	–

### Tube

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

### Adapter

for bucket  
13236



Bore diameter x length [mm]	17 x 92
Tubes per adapter / rotor	12 / 48
Centrifuging radius [mm]	188
Item no.	–













## Swing-out rotor 11156

### Rectangular bucket 13127 (1 set = 2 pcs.)

- Max. capacity: 6 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 4,800 rpm
- Max. RCF (4-16S / 4-16KS): 4,324 / 4,920 x g
- Max. tube length in middle of bucket without / with cap: 140 / 124 mm
- Hermetically closable with cap 17112
- Max. speed for 4 °C: 4,700 rpm
- 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










### Adapter

for rectangular bucket 13127



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 / 120	20 / 120	20 / 120	20 / 120	20 / 120	6 / 36	20 / 120	12 / 72
Centrifuging radius [mm]	187	189	189	190	186	188	186	186
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	–

### Adapter

for rectangular bucket 13127



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 / 72	12 / 72	4 / 24	7 / 42	4 / 24
Centrifuging radius [mm]	186	186	189	189	187
Item no.	18010*	18015*	18016	18018**	18022











\* Including rubber cushion 16909; \*\* Only possible without cap 17112

## Swing-out rotor 11156

### Rectangular bucket 13127 (1 set = 2 pcs.)

- Max. capacity: 6 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 4,800 rpm
- Max. RCF (4-16S / 4-16KS): 4,324 / 4,920 x g
- Max. tube length in middle of bucket without / with cap: 140 / 124 mm
- Hermetically closable with cap 17112
- Max. speed for 4°C: 4,700 rpm
- 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	28.8 x 107	28.5 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 13127







					
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 / 30	5 / 30	5 / 30	4 / 24	2 / 12
Centrifuging radius [mm]	186	188	186	187	188
Item no.	18025*	18030	18025*	18022	18051

Tube										
Rated capacity (filling volume) [ml]	50	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 13127



				
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 / 12	2 / 12	2 / 12	1 / 6
Centrifuging radius [mm]	182	191	189	189
Item no.	18050**	18053	18052	18085









## Swing-out rotor 11156

### Rectangular bucket 13127 (1 set = 2 pcs.)

- Max. capacity: 6 x 200 ml
- Max. speed (4-16S / 4-16KS): 4,500 / 4,800 rpm
- Max. RCF (4-16S / 4-16KS): 4,324 / 4,920 x g
- Max. tube length in middle of bucket without / with cap: 140 / 124 mm
- Hermetically closable with cap 17112
- Max. speed for 4 °C: 4,700 rpm
- Angle: 90°



### Tube

								
Rated capacity (filling volume) [ml]	100 (75)	100 (90)	100	100	150	150	200 (168)	200 (170)
Diameter x length [mm]	44 x 100	44 x 100	44 x 100	45 x 100	51 x 99	56 x 113	56 x 112	56 x 112
Tube material	Glass	Glass	Glass	PC	PP	Glass	PPCO	Glass
Item no.	15078	15106	15100	15103	15125	15206	15202	15201











### Adapter

for rectangular bucket 13127



Bore diameter x length [mm]		46 x 65.5		51.5 x 71	57 x 62	57 x 34	57 x 62	
Tubes per adapter / rotor		1 / 4		1 / 4	1 / 6	1 / 6	1 / 6	
Centrifuging radius [mm]		185		188	187	186	187	
Item no.		18100*		18125	18250**	18200	18250**	

### 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 13127



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 / 120		12 / 72			12 / 72		11 / 66	3 / 18
Centrifuging radius [mm]	186		184			186		188	188
Item no.	18005***		18012			18010***		18020	18020**




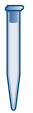


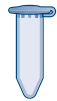
## Swing-out rotor 11148

### with 8 carrier buckets 13124 and aluminium lid 17880

- Max. capacity: 32 x 2 ml
- Max. speed (4-16S / 4-16KS): 12,000 / 13,200 rpm
- Max. RCF (4-16S / 4-16KS): 13,523 / 16,363 x g
- Hermetically closable with aluminium lid 17880
- Tmin at maximum speed: <4°C
- Angle: 90°






### Tube

					
Rated capacity (filling volume) [ml]	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	15014	15005	15008	15040

### Adapter

for bucket 13124



				
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	–
Tubes per adapter / rotor	1 / 24	1 / 24	1 / 24	4 / 32
Centrifuging radius [mm]	80	82	82	74
Item no.	13021	13000	13002	–

## 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.

## Swing-out rotor 11150

### Rectangular bucket 13220 (1 set = 2 pcs.)

- Max. plate height: 51 mm
- Max. speed (4-16S / 4-16KS): 4,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,007 x g
- Max. load per carrier: 300 g
- Tmin at maximum speed: <4°C
- Angle: 90°



## Swing-out rotor 11150

### Rectangular bucket 13221 including plate holder 17979 (1 set = 2 pcs.)

- Max. plate height: 56 mm
- Max. speed (4-16S / 4-16KS): 4,500 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,622 / 4,653 x g
- Max. load per carrier: 450 g
- Tmin at maximum speed: <4°C
- Angle: 90°



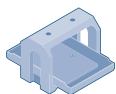
### Plate



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 13220



Bore diameter x length [mm]	-			
Plates per rotor	12	8	4	8
Centrifuging radius [mm]	160			
Item no.	-			

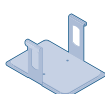
### Plate



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 13221



Bore diameter x length [mm]	-			
Plates per rotor	12	12	4	8
Centrifuging radius [mm]	160			
Item no.	17979			

## Swing-out rotor 11118

with 1 set rectangular buckets 13218, caps 17108 and plate holder 17978 (1 set = 2 pcs.)

- Max. plate height without / with cap: 93 / 80 mm
- Max. speed (4-16S / 4-16KS): 5,700 rpm
- Max. RCF (4-16S / 4-16KS): 5,485 x g
- Max. load per carrier: 520 g
- Biosafe with cap 17108 
- Tmin at maximum speed: <4°C
- Angle: 90°



## Swing-out rotor 11660 / 11650\*

Rectangular bucket 13421 including plate holder 17979 (1 set = 4 pcs.)

- Max. plate height: 68 mm
- Max. speed (4-16S / 4-16KS): 4,200 / 5,100 rpm
- Max. RCF (4-16S / 4-16KS): 3,096 / 4,565 x g
- Max. load per carrier: 500 g
- Tmin at maximum speed: <4°C
- Angle: 90°

\* Max. speed (4-16KS) 4,700 rpm or 3,877 x g



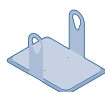
### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold	Filter plate
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	128 x 86 x 60

### Adapter

for rectangular bucket 13218



Bore diameter x length [mm]	-				
Plates per rotor (without / with cap)	12 / 10	10 / 8	4 / 2	8 / 8	2 / 2
Centrifuging radius [mm]	151				
Item no.	17978				

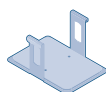
### Plate



Description	MTP (without lid)	MTP (with lid)	DWP	PCR plate 96-fold	Filter plate
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	128 x 86 x 60

### Adapter


for rectangular bucket 13421



Bore diameter x length [mm]	-				
Plates per rotor	16	12	4	12	4
Centrifuging radius [mm]	157				
Item no.	17979				

## Fixed-angle rotor 12449

### with aluminium lid 17612

- Max. capacity: 48 x 2 ml
- Max. speed (4-16S / 4-16KS): 13,500 / 15,000 rpm
- Max. RCF (4-16S / 4-16KS): 20,376 / 25,155 x g
- Biosafe with aluminium lid 17612 
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle (outer / inner row): 25° / 53°







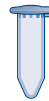
## Fixed-angle rotor 12201

### with aluminium lid 17896

- Max. capacity: 100 x 2 ml
- Max. speed (4-16S / 4-16KS): 9,000 / 9,600 rpm
- Max. RCF outer row (4-16S / 4-16KS): 14,761 / 16,795 x g
- Max. RCF inner row (4-16S / 4-16KS): 12,406 / 14,116 x g
- Hermetically closable with aluminium lid 17896
- Max. speed for 4°C: 9,400 rpm
- Angle (both rows): 45°

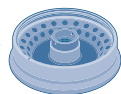






### Tube

					
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	1.5	2
Diameter x length [mm]	5.85 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	15014	15005	15008	15040





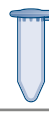
### Adapter

for  
fixed-angle rotor  
12449



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





### Tube

					
Rated capacity (filling volume) [ml]	0.2	0.4	0.5	1.5	2
Diameter x length [mm]	5.85 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	15014	15005	15008	15040

### Adapter


for  
fixed-angle rotor  
12201



				
Bore diameter x length [mm]	6.3 x 18.5	6 x 45	8 x 45	11.1 x 38.5
Tubes per adapter / rotor	1 / 100	1 / 100	1 / 100	– / 100
Centrifuging radius (outer / inner row) [mm]	159 / 133	161 / 135	161 / 135	163 / 151
Item no.	13021	13000	13002	–

## Fixed-angle rotor 12450

### with aluminium lid 17614

- Max. capacity: 24 x 5 ml conical
- Max. speed (4-16S / 4-16KS): 13,000 rpm
- Max. RCF (4-16S / 4-16KS): 21,917 x g
- Biosafe with aluminium lid 17614 
- Tmin at maximum speed: <4°C
- Angle: 40°








## Fixed-angle rotor 12170

### with aluminium lid 17859

- Max. capacity: 12 x 15 ml conical
- Max. speed (4-16S / 4-16KS): 12,500 / 13,500 rpm
- Max. RCF (4-16S / 4-16KS): 17,469 / 20,376 x g
- Hermetically closable with aluminium lid 17859
- Tmin at maximum speed: <4°C
- Angle: 25°

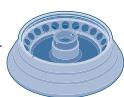






### Tube

					
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  
12450



				
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 / 24	1 / 24	1 / 24	– / 24
Centrifuging radius [mm]	89	93	99	116
Item no.	14081	14080	14082	–


### 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  
12170



	
Bore diameter x length [mm]	17.5 x 107
Tubes per adapter / rotor	– / 12
Centrifuging radius [mm]	100
Item no.	–



## Fixed-angle rotor 12168

### with aluminium lid 17846

- Max. capacity: 20 x 10 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 17,119 / 21,475 x g
- Hermetically closable with aluminium lid 17846
- Tmin at maximum speed: <4°C
- Angle: 25°



## Fixed-angle rotor 12174

### with aluminium lid 17883

- Max. capacity: 24 x 15 ml conical
- Max. speed (4-16S / 4-16KS): 10,500 / 12,000 rpm
- Max. RCF (4-16S / 4-16KS): 15,531 / 20,285 x g
- Hermetically closable with aluminium lid 17883
- Tmin at maximum speed: <4°C
- Angle (outer / inner row): 30° / 40°



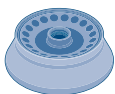
### Tube



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  
12168



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

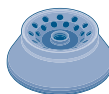
### Tube



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  
12174



Bore diameter x length [mm]	17 x 107
Tubes per adapter / rotor	- / 24
Centrifuging radius (outer / inner row) [mm]	126 / 126
Item no.	-



## Fixed-angle rotor 12172


### with aluminium lid 17845

- Max. capacity: 12 x 30 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 19,216 / 24,104 x g
- Hermetically closable with aluminium lid 17845
- Tmin at maximum speed: <4°C
- Angle: 30°



## Fixed-angle rotor 12269

### with aluminium lid 17604

- Max. capacity: 8 x 50 ml conical
- Max. speed (4-16S / 4-16KS): 12,500 / 13,500 rpm
- Max. RCF (4-16S / 4-16KS): 18,168 / 21,191 x g
- Biosafe with aluminium lid 17604 
- Tmin at maximum speed: <4°C
- Angle: 25°



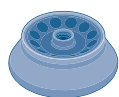
### Tube



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  
12172



Bore diameter x length [mm]	16.5 x 70			26 x 83		
Tubes per adapter / rotor	1 / 12			- / 12		
Centrifuging radius [mm]	100			110		
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  
12269



Bore diameter x length [mm]	17 x 107	25.5 x 71		30 x 91	29.5 x 102
Tubes per adapter / rotor	1 / 8	1 / 8		1 / 8	- / 8
Centrifuging radius [mm]	103	81		94	104
Item no.	13060	13064		13079	-






## Fixed-angle rotor 12266

### with aluminium lid 17605

- Max. capacity: 8 x 50 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 17,469 / 21,913 x g
- Biosafe with aluminium lid 17605 
- Tmin at maximum speed: <math><4^{\circ}\text{C}</math>
- Angle:  $25^{\circ}$







### Tube

										
Rated capacity (filling volume) [ml]	10	10	10	14	14	15	30 (26)	30 (26)	30 (28)	30
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	25.3 x 98	25.3 x 98	25.3 x 98	23.6 x 106
Tube material	PF	PC	PPCO	PS	PP	HS glass	PF	PPCO	PC	HS glass
Item no.	15000	15010	15039	15020	15023	15085	15029	15032	15030	15086




### Adapter

for  
fixed-angle rotor  
12266



				
Bore diameter x length [mm]	16.2 x 65	18 x 90	25.6 x 75	24.5 x 93
Tubes per adapter / rotor	1 / 8	1 / 8	1 / 8	1 / 8
Centrifuging radius [mm]	72	99	89	102
Item no.	13087	16018	13086	16030

### Tube

			
Rated capacity (filling volume) [ml]	50 (38)	50 (43)	50
Diameter x length [mm]	28.8 x 107	28.5 x 107	28.5 x 101.5
Tube material	PPCO	PF	Stainless steel
Item no.	15052	15051	13055

### Adapter

for  
fixed-angle rotor  
12266




Bore diameter x length [mm]	29 x 97
Tubes per adapter / rotor	- / 8
Centrifuging radius [mm]	104
Item no.	-








## Fixed-angle rotor 12265

### with aluminium lid 17607

- Max. capacity: 6 x 94 ml round-bottom
- Max. speed (4-16S / 4-16KS): 12,500 / 14,000 rpm
- Max. RCF (4-16S / 4-16KS): 18,517 / 23,228 x g
- Biosafe with aluminium lid 17607 
- Tmin at maximum speed: <4°C
- Angle: 25°
















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  
12265







Adapter							
Bore diameter x length [mm]	16.2 x 71			18 x 87		17 x 107	26 x 83
Tubes per adapter / rotor	2 / 12			1 / 6		1 / 6	1 / 6
Centrifuging radius [mm]	77			98		105	89
Item no.	13084			16019		13081	13083

Tube									
Rated capacity (filling volume) [ml]	30	50 (38)	50 (43)	50	50	85 (73)	85 (76)	94 (85)	94
Diameter x length [mm]	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	HS glass	PPCO	PF	Stainless steel	PP	PF	PPCO	Stainless steel	PC
Item no.	15086	15052	15051	13055	15151	15080	15076	13085	15094

### Adapter


for  
fixed-angle rotor  
12265



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 / 6	1 / 6		1 / 6	- / 6			
Centrifuging radius [mm]	99	103		106	106			
Item no.	16031	13082		13080	-			











## Fixed-angle rotor 12356

### with aluminium lid 17603

- Max. capacity: 6 x 250 ml
- Max. speed (4-16S / 4-16KS): 8,000 / 9,000 rpm
- Max. RCF (4-16S / 4-16KS): 10,375 / 13,131 x g
- Biosafe with aluminium lid 17603 
- T<sub>min</sub> at maximum speed: <4°C
- Angle: 30°








### Tube

										
Rated capacity (filling volume) [ml]	1.5	2	10	10	10	15	30 (26)	30 (26)	30 (28)	50 (38)
Diameter x length [mm]	10.7 x 42	10.7 x 42	16.1 x 81.1	16.1 x 81.1	16.1 x 81.1	16.5 x 120	25.3 x 98	25.3 x 98	25.3 x 98	28.8 x 107
Tube material	PP	PP	PF	PC	PPCO	PP	PF	PPCO	PC	PPCO
Item no.	15008	15040	15000	15010	15039	15115	15029	15032	15030	15052











### Adapter

for  
fixed-angle rotor  
12356



					
Bore diameter x length [mm]	11,1 x 38,5	16.5 x 69	17 x 105	26 x 82.5	29.5 x 98
Tubes per adapter / rotor	9 / 54	6 / 36	4 / 24	2 / 12	1 / 6
Centrifuging radius [mm]	128	141	144	141	137
Item no.	14122	14124	14125	14127	14129





### Tube

										
Rated capacity (filling volume) [ml]	50 (43)	50	50	85 (73)	85 (76)	94 (85)	94	250 (232)	250 (232)	250
Diameter x length [mm]	28.5 x 107	28.5 x 101.5	29 x 117	38 x 112	38 x 112	38 x 103	38 x 110	61.4 x 122	61.4 x 122	61.4 x 125
Tube material	PF	Stainless steel	PP	PF	PPCO	Stainless steel	PC	PF	PPCO	Stainless steel
Item no.	15051	13055	15151	15080	15076	13085	15094	15247	15249	13255

### Adapter

for  
fixed-angle rotor  
12356



				
Bore diameter x length [mm]	29.5 x 98	30 x 102	38.5 x 99	61.8 x 111
Tubes per adapter / rotor	1 / 6	1 / 6	1 / 6	- / 6
Centrifuging radius [mm]	137	141	138	145
Item no.	14129	14131	14134	-

# 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 S controller

## Intuitive operation and many options

The patented one-knob Spincontrol S controller sets standards in control technology for laboratory centrifuges. All parameters, such as speed, RCF or temperature, are set using the multifunction knob and can even be altered during operation. Illuminated buttons for starting, stopping and lid opening facilitate access to these functions.

Along with manual parameter configuration, previously entered programs can be selected via shortcuts. These programs can be assigned alphanumeric names to enhance process reliability and simplify operation. Another practical feature is the progress bar that visualises program status and can be seen at a distance. All setpoint and actual values are constantly shown on the clearly organised display.

The countless features leave nothing to be desired: time after target speed reached, capacity for 60 programs, password protection to prevent unintentional alteration of operating parameters, and the rotor cycle counter are just a few of the highlights that make the Spincontrol S controller a highly versatile system that is ready to meet the laboratory requirements of the future.

This premium controller from Sigma supports internal quality management functions as well as external communication with a laboratory information management system (LIMS). That way the Spincontrol S supports traceable professional reporting.

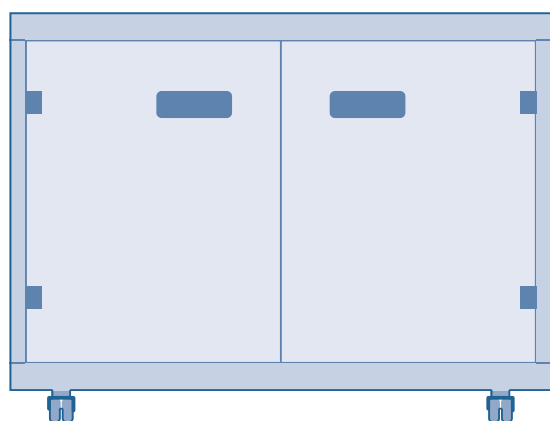


Display	TFT
Message window	+
Constant display of setpoints and actual values	+
Languages	DE, GB, PT, FR, ES, RU, HU, IT, SE, CN
Timer (s; h:min)	10 – 99:59
Timer tracks time after setpoint speed is reached; switchable	+, +
Time increment [s]	60; 1
Short run, Continuous run	+, +
Speed increment [rpm]	100; 1
Temperature increment [°C]	1*
RCF increment [x g]	10; 1
Progress bar	+
Programs	60
User-definable program name (alphanumeric)	+
Program list, preview of all parameters	+, +
Linear acceleration curves	10
Quadratic acceleration curves	10
User-definable acceleration curves	10
Linear braking curves	10
Quadratic braking curves	10
User-definable braking curves	10
Free run-out	+
Automatic lid opening at end of run, switchable	+, +
Start delay (clotting time) adjustable/switchable	+, +
Standstill cooling; switchable	+, +*
Standstill heating; switchable	+, +**
Pre-cooling function "Rapid Temp"	+*
Temperature deviation monitoring, settable	+*
Audible signal, switchable	+, +
Visual standstill indication	+
Centrifuge cycle count	+
Rotor cycle monitoring	+
Rotor end-of-life warning	+
Configurable for liquids > 1.2 g/cm <sup>3</sup>	+
Lockable controller with password protection	+
Microprocessor control	+

\* Only Sigma 4-16KS and Sigma 4-16KHS; \*\* Only for Sigma 4-16KHS

# 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 4-16 series meets 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 maintain reliability and optimise system availability.

	Sigma 4-16S	Sigma 4-16KS	Sigma 4-16KHS
<b>Max. capacity [ml]</b>			
Swing-out rotor	4 x 750	4 x 750	4 x 750
Fixed-angle rotor	6 x 250	6 x 250	6 x 250
<b>Max. RCF</b>	21,917	25,155	25,155
<b>Maximum speed [rpm]</b>	13,500	15,000	15,000
<b>Minimum speed [rpm]</b>	100	100	100
<b>Noise level at maximum speed (approx) [dB(A)]</b>			
Fixed-angle rotor 12449	≤ 58	≤ 60	≤ 60
Swing-out rotor 11660 with bucket 13450 and cap	≤ 65	≤ 59	≤ 59
<b>Max. acceleration time [s]</b>			
Fixed-angle rotor 12449	≤ 26	≤ 27	≤ 27
Swing-out rotor 11660 with bucket 13450 and cap	≤ 21	≤ 23	≤ 23
<b>Max. braking time [s]</b>			
Fixed-angle rotor 12449	≤ 37	≤ 42	≤ 42
Swing-out rotor 11660 with bucket 13450 and cap	≤ 23	≤ 27	≤ 27
<b>Temperature adjustment range [°C]</b>	–	-20–+40	-20–+60
<b>Power consumption [W]</b>	1,050	2,000	2,000
<b>Height x width x depth [mm]</b>	489 x 496 x 650	489 x 670 x 650	489 x 670 x 650
<b>Height with open lid [mm]</b>	940	940	940
<b>Weight without rotor [kg]</b>	82	124	124
<b>Refrigerant</b>		R452A	R452A
Filling quantity [kg] / Max. permissible pressure [bar]		0.530 / 28	0.530 / 28
CO <sub>2</sub> equivalent [t]		1.134	1.134

### Service Sigma

For maintenance and repairs please contact our Service department at:



### 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)



WEEE-Reg.-No.  
DE 76714077

#### Sigma 4-16S centrifuge

220–240 V, 50/60 Hz (item no. 10380)  
208 V, 60 Hz (item no. 10381)  
120 V, 60 Hz (item no. 10382)  
100 V, 50/60 Hz (item no. 10383)

#### Sigma 4-16KS centrifuge

220–240 V, 50 Hz (item no. 10385)  
220–240 V, 60 Hz (item no. 10386)  
208 V, 60 Hz (item no. 10387)  
200 V, 50/60 Hz (item no. 10388)

#### Sigma 4-16KHS centrifuge

220–240V, 50 Hz (item no. 10389)

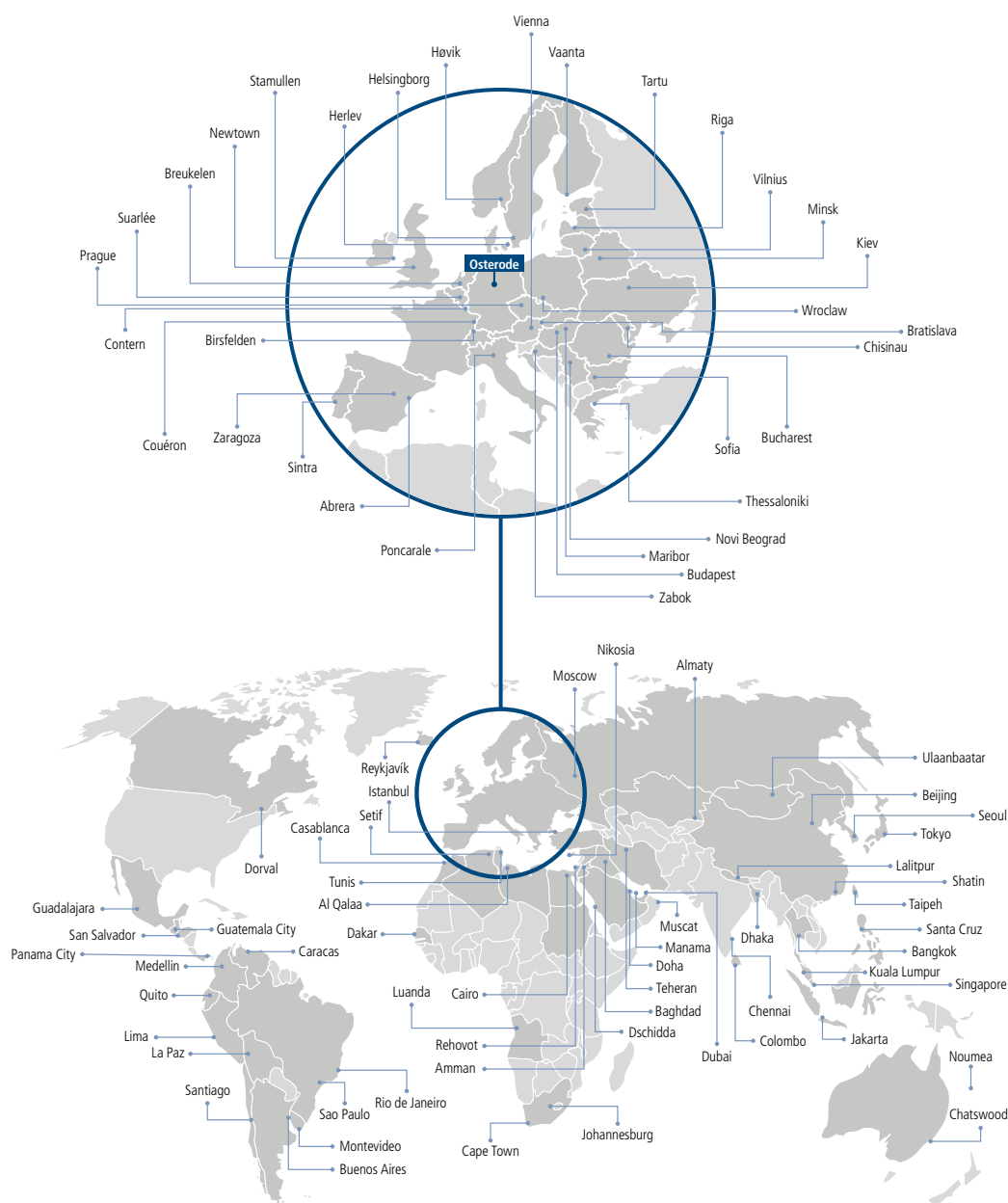
#### Sigma 4-16KS centrifuge, inert gas

220–240 V, 50 Hz (item no. 90971)

# 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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