turns more than heads

# Sigma 2-16KL
# Sigma 2-16KHL

Benchtop centrifuge

- Refrigerated
- Refrigerated/ heatable

www.sigma-zentrifugen.de

# 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 × g make the refrigerated version Sigma 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 2-16KL**

- Universal laboratory centrifuge
- Speed range up to 15,300 rpm
- Maximum capacity: 4 x 100 ml
- User-friendly Spincontrol L controller
- High-performance cooling
- 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)
- Temperature setting range: -10 °C to +40 °C
- Rotor cooling also possible at standstill
- Pre-cooling program "Rapid Temp"
- Optionally available as inert gas variant

**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
- Optionally available as inert gas variant

sigma
11123

# 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 16 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

▸ p.9

**Swing-out rotor 11170**

- Max. capacity: 4 x 100 ml
- Max. speed: 5,000 rpm
- Max. RCF: 3,969 x g
- Angle: 90°

▸ p.12

**Swing-out rotor 11124**

- Max. capacity: 24 x 2 ml
- Max. speed: 14,000 rpm
- Max. RCF: 16,215 x g
- Angle: 90°

### MTP swing-out rotors on page 13

▸ p.13

**Swing-out rotor 11122**

- Max. capacity: 6 microtiter plates
- Max. speed: 3,000 rpm
- Max. RCF: 1,218 x g
- Angle: 90°

▸ p.13

**Swing-out rotor 11123**

- Max. capacity: 6 microtiter plates
- Max. speed: 4,000 rpm
- Max. RCF: 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: 14,000 rpm
- Max. RCF: 21,475 x g
- Angle: 45° (both rows)

▸ p. 14

**Fixed-angle rotor 12148** ☣

- Max. capacity: 24 x 2 ml
- Max. speed: 15,300 rpm
- Max. RCF: 21,460 x g
- Angle: 45°

▸ p. 15

**Fixed-angle rotor 12132**

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

▸ p. 16

**Fixed-angle rotor 12180**

- Max. capacity: 12 x 5 ml conical
- Max. speed: 15,000 rpm
- Max. RCF: 20,124 x g
- Angle: 40°

▸ p. 16

**Fixed-angle rotor 12141**

- Max. capacity: 10 x 10 ml
- Max. speed: 15,300 rpm
- Max. RCF: 19,890 x g
- Angle: 35°

▸ p. 17

**Fixed-angle rotor 12071**

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

▸ p. 18

**Fixed-angle rotor 12072**

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

▸ p. 19

**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. 20

**Fixed-angle rotor 12139**

- Max. capacity: 6 x 30 ml round-bottom
- Max. speed: 15,300 rpm
- Max. RCF: 20,414 x g
- Angle: 29°

▸ p. 20

**Fixed-angle rotor 12181**

- Max. capacity: 6 x 50 ml conical
- Max. speed: 12,000 rpm
- Max. RCF: 15,294 x g
- Angle: 28°

▸ p. 21

**Fixed-angle rotor 12138**

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

▸ p. 22

**Haematocrit rotor 11409**

- Max. capacity: 24 capillary tubes
- Max. speed: 12,000 rpm
- Max. RCF: 14,489 x g
- Angle: 90°

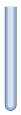
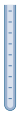
## Swing-out rotor 11170

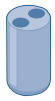
**Round bucket 13299 (1 set = 2 pcs.)***

- Max. capacity: 4 x 100 ml
- Max. speed: 5,000 rpm
- Max. RCF: 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 |
| **Adapter** 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 |
| **Adapter** 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 | | |

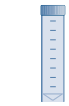
* If used with paediatric tubes, only partial loading is possible in some cases ** Only possible without cap 17299

## Swing-out rotor 11170

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

- Max. capacity: 4 x 100 ml
- Max. speed: 5,000 rpm
- Max. RCF: 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

| **Tube** | | | |  | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated capacity (filling volume) [ml] | 30 (26) | 30 (28) | 30 | 30 | 50 | 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 x100 | 35 x 100 | 34 x 100 | 28 x 115 | 29 x 117 |
| Tube material | PPCO | PC | Glass | PP | Glass | Glass | Glass | PC | PP | PP |
| Item no. | 15032 | 15030 | 15033 | – | 15045 | 15050 | 15056 | 15049 | – | 15151 |

| **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 |

* Only possible without cap 17299

## Swing-out rotor 11170

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

- Max. capacity: 4 x 100 ml
- Max. speed: 5,000 rpm
- Max. RCF: 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: 5,000 rpm
- Max. RCF: 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 | 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 | | – | | | | | |

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

## Swing-out rotor 11170

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

- Max. capacity: 24 x 15 ml
- Max. speed: 5,000 rpm
- Max. RCF: 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: 14,000 rpm
- Max. RCF: 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 | – | |

* Observe loading

## MTP swing-out rotor 11122

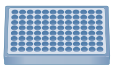
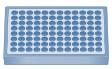
**with 1 set (quantity 2) rectangular buckets 13222**

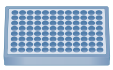
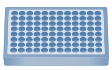
- Max. plate height: 56 mm
- Max. speed: 3,000 rpm
- Max. RCF: 1,218 x g
- Max. load per carrier: 337 g
- Tmin at maximum speed: <4 °C
- Angle: 90°

## MTP swing-out rotor 11123

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

- Max. plate height: 50 mm
- Max. speed: 4,000 rpm
- Max. RCF: 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 14,000 rpm
- Max. RCF outer row: 21,475 x g
- Max. RCF inner row: 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: 15,300 rpm
- Max. RCF: 21,460 x g
- Biosafe 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. | – | – |

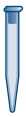
| **Tube** | | | | | | |
|---|---|---|---|---|---|---|
| Rated capacity (filling volume) [ml] | 0.2 | 0.4 | 0.5 | 0.5 | 1.5 | 2 |
| Diameter x length [mm] | 5.8 x 20 | 5.8 x 47 | 7.9 x 28 | 10.8 x 47.6 | 10.7 x 42 | 10.7 x 42 |
| Tube material | PP | PE | PP | PP | PP | PP |
| Item no. | 15042 | 15014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

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

# Fixed-angle rotor 12132

**with aluminium lid 17849**

- Max. capacity: 30 x 2 ml
- Max. speed: 14,000 rpm
- Max. RCF: 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**<br>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

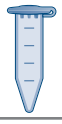
**with aluminium lid 17180**

- Max. capacity: 12 x 5 ml conical
- Max. speed: 15,000 rpm
- Max. RCF: 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: 15,300 rpm
- Max. RCF: 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. | – | | |

** Only possible without lid 17180

# Fixed-angle rotor 12071

**with 12 buckets 13011 and 6 buckets 13151**

- Max. capacity: 12 x 15 ml + 6 x 50 ml
- Max. speed: 4,000 rpm
- Max. RCF outer row: 2,254 x g
- Max. RCF inner row: 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 |
| **Adapter** 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 |
| 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 |
| Tube material | PP | PP | PET | PP | PP | PET | PP, PET | PET | PP |
| Item no. | – | – | – | – | – | – | – | – | – |
| **Adapter** 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 |
| Tubes per adapter / rotor | 1 / 12 | | | 1 / 12 | 1 / 12 | – / 12 | | | 1 / 12 |
| Centrifuging radius (outer / inner) [mm] | 95 / – | | | 120 / – | 116 / – | 126 / – | | | 116 / – |
| Item no. | 13070 | | | 13072 | 13073 | – | | | 13073 |

## 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
- Tmin 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 |
| 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 |
| Tube material | PP | PP | PET | PP | PP | PET | PP, PET | PET | PP |
| 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 |
| 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 |

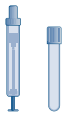
# Fixed-angle rotor 12073

**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
- 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 | | | | |
|---|---|---|---|---|
| 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 |
| 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 |
| Tube material | PP | PP | PET | PP | PP | PET | PP, PET | PET | PP |
| 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 | 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 |

* Observe loading

## Fixed-angle rotor 12139

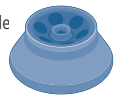
**with aluminium lid 17851**

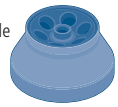
- Max. capacity: 6 x 30 ml round-bottom
- Max. speed: 15,300 rpm
- Max. RCF: 20,414 x g
- Hermetically closable with aluminium lid 17851
- Tmin at maximum speed: <4 °C
- Angle: 29°

## Fixed-angle rotor 12181

**with aluminium lid 17931**

- Max. capacity: 6 x 50 ml conical
- Max. speed: 12,000 rpm
- Max. RCF: 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: 9,400 rpm
- Max. RCF: 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 | | | | |
|---|---|---|---|---|
| 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 | | | | |
|---|---|---|---|---|
| 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: 12,000 rpm
- Max. RCF: 14,489 x g
- Tmin at maximum speed: <4 °C
- Angle: 90°

Evaluation card 17029

| **Tube** | |
|---|---|
| Rated capacity (filling volume) [µl] | 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) |
|---|---|---|---|---|---|
| **Autoclave resistant** | Yes | Yes | No | No | Yes |
| **Elasticity** | Not elastic | Not elastic | Not elastic | Good | Not elastic |
| **Transparency** | Transparent | Translucent | Transparent | Translucent | Translucent |
| **Microwave resistant** | Moderate | Yes | No | Limited | Moderate |
| **Chemical resistance** | | | | | |
| 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 |
| **Note:** | 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 |
|---|---|---|---|---|
| **Autoclave resistant** | Yes | Yes | Yes | Yes |
| **Elasticity** | Moderate | Not elastic | Not elastic | Not elastic |
| **Transparency** | Translucent | Transparent | Transparent | Opaque |
| **Microwave resistant** | Moderate | Yes | Yes | No |
| **Chemical resistance** | | | | |
| Weak acids | Yes | Yes | Yes | Limited |
| Strong acids | Yes | Yes | Yes | Limited |
| Alcohols and alkalis | Yes | Yes | Yes | Yes |
| Salts | Yes | Yes | Yes | Limited |
| **Note:** | | 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.

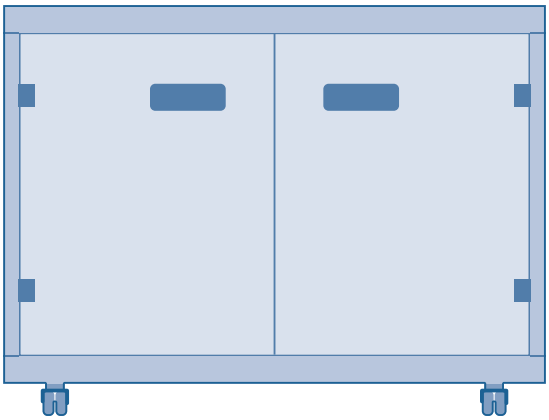
The high-performance cooling system provides precise control over the range of -10 °C to +40 °C with fine adjustment in 1 °C increments. Along with the pre-cooling function, the Sigma 2-16KL and 2-16KHL feature optionally selectable standstill cooling.

| 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 lid 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 | + |

**Spincontrol L**
Get more information.
View our video:

# 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 17001**
For Sigma 4-5KL
W x H x D [mm]: 605 x 581 x 635

**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 2-16KL* | Sigma 2-16KHL* |
|---|---|---|
| **Max. capacity [ml]** | | |
| Swing-out rotor | 4 x 100 | 4 x 100 |
| Fixed-angle rotor | 4 x 85 | 4 x 85 |
| **Max. RCF** | 21,913 | 21,913 |
| **Maximum speed [rpm]** | 15,300 | 15,300 |
| **Minimum speed [rpm]** | 100 | 100 |
| **Noise level at maximum speed (approx.) [dB(A)]** | | |
| Fixed-angle rotor 12141 | ≤ 53 | ≤ 53 |
| Swing-out rotor 11170 with buckets 13299 and caps | ≤ 52 | ≤ 52 |
| **Max. acceleration time [s]** | | |
| Fixed-angle rotor 12141 | 31 | 31 |
| Swing-out rotor 11170 with buckets 13299 and caps | 17 | 17 |
| **Max. braking time [s]** | | |
| Fixed-angle rotor 12141 | 37 | 37 |
| Swing-out rotor 11170 with buckets 13299 and caps | 15 | 15 |
| **Temperature adjustment range [°C]** | -10 – +40 | -10 – +60 |
| **Power consumption [W]** | 720 | 720 |
| **Height x width x depth [mm]** | 310 x 550 x 570 | 310 x 550 x 570 |
| **Height with open cap [mm]** | 705 | 705 |
| **Weight without rotor [kg]** | 60 | 60 |
| **Refrigerant** | R513a | R513a |
| Filling quantity [kg] / Max. permissible pressure [bar] | 0.255 / 23 | 0.255 / 23 |
| $CO_2$ equivalent [t] | 0.161 | 0.161 |

* Contains fluorinated greenhouse gases in a hermetically sealed refrigeration system. (EU) 2024/2729; 2028-DEC-31

**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)

**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)

WEEE-Reg.-Nr. DE 76714077

**Sigma 2-16KL** centrifuge, inert gas
220 – 240 V, 50/60 Hz (item no. 109011)

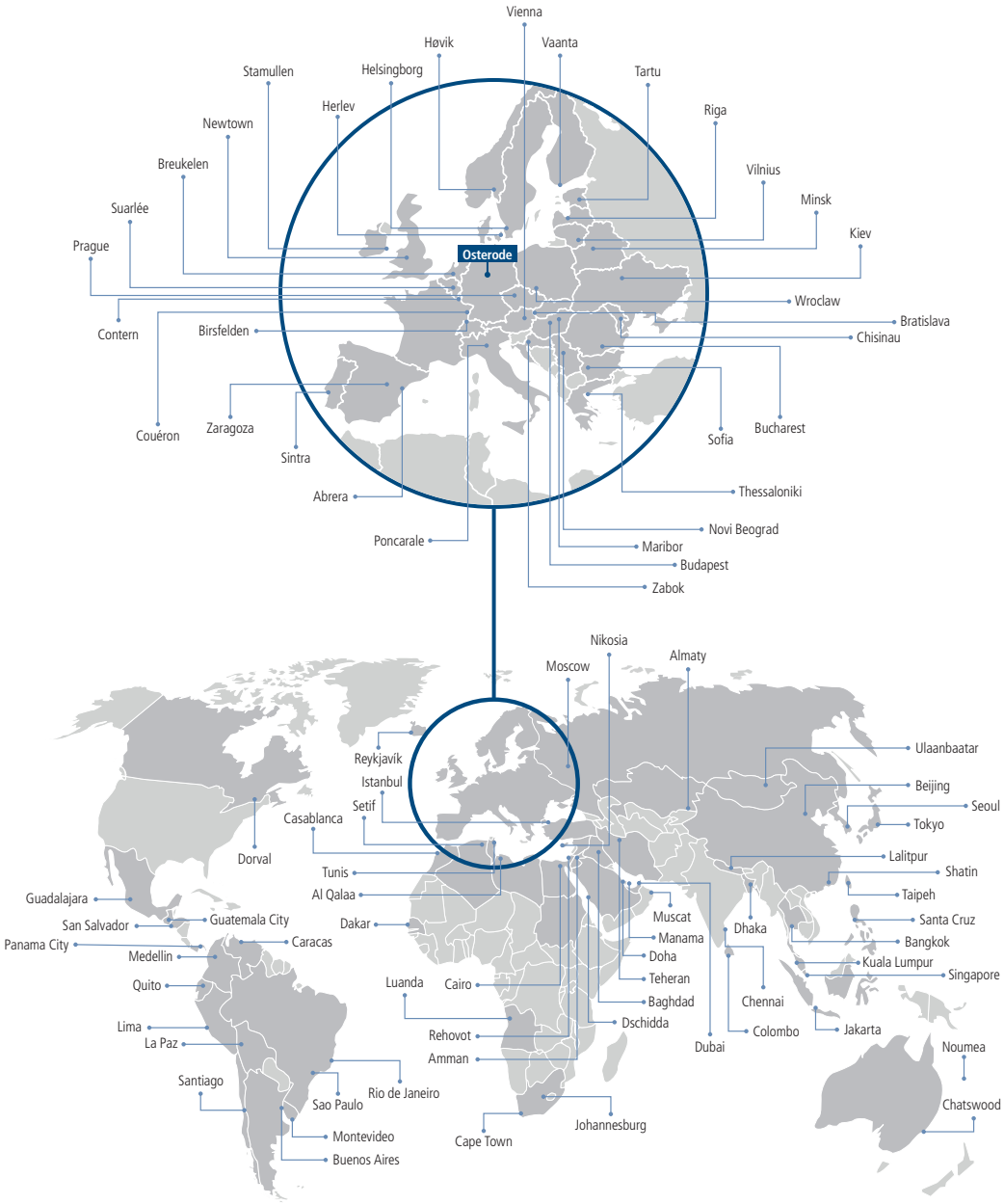
**Sigma 2-16KHL** centrifuge
220 – 240 V, 50/60 Hz (item no. 10353)

**Sigma 2-16KHL** centrifuge, inert gas
220 – 240 V, 50/60 Hz upon request

# 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

**Sigma Laborzentrifugen GmbH**
An der Unteren Söse 50
37520 Osterode am Harz
Tel. +49 (0) 55 22 / 50 07-0
Fax +49 (0) 55 22 / 50 07-12
info@sigma-zentrifugen.de
www.sigma-zentrifugen.de

06/2026