



*Centrifuge*

**4-16S**



*Refrigerated Centrifuge*

**4-16KS**

**SIGMA 4-16S** No. 10380 (220 – 240 V, 50/60 Hz), No. 10381 (208 V, 60 Hz), No. 10382 (120 V, 60 Hz), No. 10283 (100 V, 50/60 Hz)

- Universal table top centrifuge; speed range up to 13.500 rpm
- Control unit Spincontrol S
- Various angle and swing-out rotors available
- Lid can easily be opened due pneumatic swing support
- Maximum capacity of 4 x 650 ml down to microtubes with different adapters in the same bucket
- Maintenance-free induction drive motor A Microcontroller controls speed or gravitational field, time
- 2 Motorized lid locks
- Suitable for low speeds e.g. for cell sedimentation, accuracy +/- 1 rpm
- Magnetic rotor identification prevents the rotor from overspeeding
- Stainless steel bowl
- Imbalance switch
- No need to open the casing for emergency lid lock release
- Produced according to national and international safety regulations (e.g. EN 61010-2-020)
- Window in the centrifuge lid for external speed control
- Backlighted keys for start, stop, lid open

**SIGMA 4-16KS** No. 10385 (220 – 240 V, 50 Hz), No. 10386 (220 - 240 V, 60 Hz), No. 10387 (208 V, 60 Hz), No. 10388 ( 200 V, 50/60 Hz)

- refrigerated version of 4-16S
- Universal refrigerated table top centrifuge; speed range up to 15.000 rpm
- Possibility of precooling the rotors during standstill Refrigerant CFC-free (R404a)
- Guaranteed 4°C at max. speed for all rotors

**SIGMA 4-16KHS** No. 10389 (220 – 240 V, 50 Hz)

- heated version of 4-16KS
- Max. Rotortemperature 40°C up to 60°C depending on rotor and speed

**SIGMA 4-16KRL** (220 – 240 V, 50 Hz)

For Robot systems / Separate brochure

## Biosafe rotor

### 4-16S

### 4-16KS

Rotor No.	max. rpm	max. RCF	max. rpm	max. RCF
11650 + 1 x 13421	4.200	3.096	4.700	3.877
11650 + 2 x 13450	4.200	3.708	4.700	4.643
11660 + 1 x 13421	4.200	3.096	4.700	3.877
11660 + 2 x 13450	4.200	3.708	5.100	5.467

- 11660** Aluminum swing-out rotor for 4 buckets no. 13421, 13450  
**11650** Stainless steel swing-out rotor for 4 buckets no. 13421, 13450  
**13421** Bucket for microtiter- and deepwellplates, incl. plate holder, max. height = 60 mm, 1 set = 4 pcs.  
**13450** Round bucket, sealable with cap no. 17170, for adapter, (no. 17649 - 17699, 13654), 1 set = 2 pcs.

#### Adapter for bucket 13450, 1 set = 2 pcs.

- 17653** 26 x 1.5/2.0 ml, max. Ø 11 mm, e.g. no. 15008, 15040  
**17651** 20 x 4 - 7 ml, max. Ø 15.5/18 x 50 - 75 mm, e.g. Monovette, Primavette,  
**17652** 36 x 5 ml, max. Ø 12.5 x 60 - 80 mm, e.g. no. RIA tube 15060, hemolyse tubes  
**17656** 22 x 5 - 6 ml, max. Ø 13.5/17.5 x 70 - 90 mm, e.g. no. RIA tube 15060  
 Vacutainer -, hemolyse tubes  
**17654** 32 x 7 ml, max. Ø 12.5 x 85 - 115 mm, e.g. no. 15007, 15027  
**17658** 19 x 9 - 15 ml, max. Ø 17.2/19.5 x 85 - 115 mm, e.g. no. 15015, 15020,  
 15022, 15023, 15024 and Monovettes 9 - 10 ml  
**17655** 20 x 10 - 12 ml, max. Ø 16.2/18 x 65 - 90 mm, e.g. no. 15000, 15010, 15039  
**17659** 12 x 15 ml culture no. 15115, cap Ø max. 23 mm  
**17660** 15 x 15 ml culture no. 15115 cap Ø max. 22 mm\*  
**17670** 8 x 25 - 30 ml, max. Ø 25.4/30 x 90 - 115 mm, e.g. no. 15025, 15026, 15029,  
 15030, 15032, 15033  
**17662** 7 x 30 ml, max. Ø 25/31 x 65 - 95 mm, e.g. Barloworld Scientific Ltd.  
**17676** 7 x 40 - 50 ml max. Ø 29/32 x 90 - 115 mm, e.g. 13055, 15051, 15052  
**17675** 4 x 50 ml, max. Ø 35/38 x 90 - 115 mm, e.g. 15049, 15056, 15050  
**17677** 5 x 50 ml culture, e.g. no. 15151, Nunc, Corning, Falcon and Greiner  
**17678** 5 x 50 ml culture, max. Ø 29,4/36 x 90 - 115 mm\*\*  
**17649** 7 x 50 ml culture, max. Ø 29/36 x 90 - 115 mm\*  
**17685** 3 x 78 - 85 ml, max. Ø 38/40 x 90 - 110 mm, e.g. no. 13085, 15076, 15080  
**17690** 2 x 100 ml, max. Ø 45/47 x 85 - 110 mm, e.g. no. 15100, 15102, 15103, 15106  
**17692** 1 x 125 ml, max. Ø 51 x 90 - 115 mm, e.g. no. 15125  
**17694** 1x 150 - 250 ml culture angle 88°, max. Ø 60 x 120 - 140 mm\*  
 e.g. Falcon 175, 225 ml, Labcon 175, 225 ml  
**17696** 1 x 200 ml approx., max. Ø 57 x 90 - 115 mm, e.g. no. 15202, 15203  
**17693** 1 x 150 ml - 200 ml culture, angle 60°, max. Ø 61.5 x 140 mm  
 e.g. no. 15175, 15174  
**17698** 1 x 250 ml, max. Ø 61.5 x 90 - 125 mm, e.g. no. 13255, 15247, 15249  
**13654** 1 x 400 ml, max. Ø 85 x 118 mm, e.g. no. 15401  
**13654** 1 x 500 ml, Ø 85 x 130 - 173 mm, e.g. no. 15501  
**17682** 1 x 500 ml culture, no. Corning 431123, angle 75°, Ø 96 x 150 mm\*  
**13456** 1 x 650 ml, Ø 100 x 111 mm, cap 17123

\* without bucket cap 17170

\*\* with rim



17677



17659



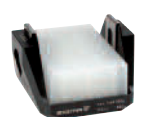
13450



17652



17653



13421



17682



Corning  
431123



17660



17658



17670



17649

Rotor No.	4-16S		4-16KS	
	max. rpm	max. RCF	max. rpm	max. RCF
11150 + 2 x 13215	4.500	4.120	5.100	5.292
11150 + 2 x 13220	4.100	3.007	4.100	3.007
11150 + 2 x 13221	4.500	3.622	5.100	4.653
11150 + 2 x 13233	4.500	3.668	5.100	4.711
11150 + 2 x 13234	4.300	3.680	4.300	3.680
11150 + 2 x 13235	4.500	4.302	5.100	5.525
11150 + 2 x 13236	4.500	4.256	5.100	5.467
11150 + 2 x 13350	4.500	4.302	5.100	5.525

**11150** Swing-out rotor for 4 buckets no. 13215, 13220, 13221, 13233, 13234, 13235, 13236, 13350

**1 set = 2 pcs.**

**13215** Rectangular bucket for adapter no. 18000 - 18200 (next page), sealable with cap no. 17112, max. tube length 115 mm

**13220** Bucket for microtiter plates, max. height of plates 51 mm

**13221** Bucket for microtiter plates, incl. plate holder no. 17979, max. height of plates 56 mm

**13233** Multiple carrier for 50 x tubes approx. 5 ml, max. Ø 12.5 x 70 - 90 mm, e.g. RIA tube no. 15060

**13234** Multiple carrier for 4 x 100 ml, Ø 45 x 92 - 100 mm e.g. no. 15100, 15102, 15103, 15106, incl. rubber cushion no. 16051

**13235** Multiple carrier for 7 culture tubes 50 ml no. 15151

**13236** Multiple carrier for 12 culture tubes 15 ml no. 15115

**13350** Round bucket, sealable with cap no. 17134 or 17135, for round carriers Ø 85 mm (no. 17344 - 17404), 500 ml bottles no. 15501

**17112** Rectangular polysulfone sealing cap

**17134** Round aluminium sealing cap

**17135** Round polysulfone sealing cap

**11151** Swing-out rotor 48 x 15 ml complete, no. 11150, incl. 2 sets rectangular buckets no. 13215, 2 sets rectangular carriers no. 18015 and 48 PP-tubes 15 ml no. 15023



**Adapter for bucket 13350, 1 set = 2 pcs.**

- 17350** 24 x **0.5/0.75 ml**, max. Ø 8/10 x 28/31 mm, e.g. no. 15005  
**17353** 20 x **1.5/2.2 ml**, max. Ø 11 mm, e.g. no. 15008, 15040  
**17351** 12 x **4 - 7 ml**, max. Ø 15.5/18 x 50 - 75 mm, e.g. Monovettes 4 ml  
**17352** 25 x **5 ml**, max. Ø 12.5/13.5 x 65 - 80 mm, e.g. no. RIA tube 15060, hemolyse tubes  
**17356** 16 x **5 - 6 ml**, max. Ø 13.5/17.5 x 70 - 90 mm, e.g. no. RIA tubes,15060, Vacutainer, hemolyse  
**17354** 16 x **7 ml**, max. Ø 12.5 x 85 - 115 mm, e.g. no. 15007, 15027  
**17355** 12 x **10 - 12 ml**, max. Ø 16.2/19 x 65 - 90 mm, e.g. no. 15000, 15010, 15039  
**17358** 12 x **10 - 15 ml**, max. Ø 17.2/19.5 x 90 - 115 mm, e.g. no. 15015, 15020, 15022, 15023, 15024 and Monovettes 9 - 10 ml  
**17359** 9 x **15 ml** culture, max. cap Ø 23 mm, e.g. no. 15115, Falcon, Corning and Greiner tubes  
**17360** 10 x **15 ml** culture, max. cap Ø 22 mm, Falcon, Greiner, tubes  
**17370** 5 x **25 - 30 ml**, max. Ø 25.4/29 x 85 - 115 mm, e.g. no. 15025, 15026, 15029, 15030, 15032, 15033  
**17362** 5 x **30 ml**, max. Ø 25/31 x 65 - 95 mm\*\*  
**17376** 4 x **40 - 50 ml**, max. Ø 29/34 x 85 - 110 mm, e.g. no. 15051, 15052, 13055  
**17375** 3 x **50 ml**, max. Ø 35/38 x 90 - 110 mm, e.g. no. 15049, 15050, 15056  
**17377** 4 x **50 ml** culture, e.g. no. 15151, Nunc, Corning, Falcon and Greiner  
**17378** 4 x **50 ml** \*\*, max. Ø 29.4/36 x 90 - 120 mm  
**17385** 1 x **78 - 85 ml**, max. Ø 38/40 x 85 - 115 mm, e.g. no. 13085, 15076, 15080  
**17390** 1 x **100 ml**, max. Ø 45/50 x 85 - 110 mm, e.g. no. 15100, 15102, 15103, 15106  
**17395** 1 x **125 ml**, max. Ø 51 x 90 - 115 mm, e.g. no. 15125  
**17401** 1 x **175 - 200 ml**, max. Ø 57.5 x 90 - 150 mm, e.g. no. 15201, 15206, 15250, 15251, 15254  
**17393** 1 x **175 - 250 ml** with pointed bottom angle 60°, max. Ø 61.5 x 120 - 165 mm, e.g. no. 15174, 15175, Nunc Nalge  
**17402** 1 x **150 - 250 ml** with pointed bottom angle 88°, max. Ø 60 x 120 - 140 mm, e.g. Nalgene 150 and 200 ml, Labcon 175, 250 ml  
**17400** 1 x **200 ml**, max. Ø 57 x 90 - 115 mm, e.g. no. 15202, 15203  
**17347** 1 x **250 ml**, max. Ø 61.5 x 90 - 125 mm, e.g. no. 15247, 15249, 13255  
**15401** 1 x **400 ml** PP Ø 85 x 118 mm, incl. screw cap  
**15501** 1 x **500 ml**, PP Ø 85 x 135 mm, incl. screw cap\*

\*Single bottle \*\*with rim



17356



17358



17378



17356



17347



17377



15501



15401

**32 x 1.5 – 2.0 ml swing out rotor**

**4-16S**

**4-16KS**

<i>Rotor No.</i>	<i>max. rpm</i>	<i>max. RCF</i>	<i>max. rpm</i>	<i>max. RCF</i>
11148	12.000	13.523	13.200	16.363

<i>No.</i>	<i>Adapter</i>	<i>tubes</i>
13021	<b>0.2 ml</b> PCR	15042
13000	<b>0.4 ml</b> Reaction vials	15014
13002	<b>0.5 ml - 0.75 ml</b> Reaction vials	15005



11148



## 4-16S

## 4-16KS

Rotor No.	max. rpm	max. RCF	max. rpm	max. RCF
11156 + 3 x 13127	4.500	4.324	4.800	4.920

- 11156** Sixplace rotor for buckets 13127  
**13127** Rectangular bucket, sealable with cap no. 17112, for rectangular carriers (no. 18002 - 18200), max. tube length 115 mm, 1 set = 2 pcs.  
**17112** Rectangular cap for 13127, PSU, 1 set = 2 pcs.

**Adapter for bucket 13127, 1 set = 2 pcs.**

- 18002** 20 x **1.5/2.0 ml**, max. Ø 11 mm, e.g. no. 15008, 15040  
**18005** 20 x **5 ml**, flat and round bottom, max. Ø 12.2 x 60 - 75 mm, e.g. no. RIA 15060  
**18105** 20 x **5 ml**, flat and round bottom, max. Ø 12.2 x 60 - 75 mm, e.g. no. RIA 15060, **decantable**  
**18009** 20 x **5 ml**, max. Ø 12.8 x 70 - 90 mm, e.g. no. Hemolyse, RIA 15060  
**18012** 12 x **6 - 7 ml**, max. Ø 13.5/18 x 65 - 90 mm, e.g. Vacutainer  
**18007** 20 x **7 ml**, max. Ø 12.3 x 80 - 105 mm, e.g. no. 15007, 15027  
**18107** 20 x **7 ml**, max. Ø 12.3 x 80 - 105 mm, e.g. no. 15007, 15027 **decantable**  
**18010** 12 x **10 - 12 ml**, max. Ø 16.8/17.5 x 60 - 85 mm, e.g. no. 15000, 15010, 15039  
**18015** 12 x **10 - 15 ml**, max. Ø 17 x 90 - 105 mm, e.g. no. 15015, 15020, 15022, 15023, 15024  
**18115** 12 x **10 - 15 ml**, max. Ø 17 x 90 - 105 mm, e.g. no. 15015, 15020, 15022, 15023, 15024 **decantable**  
**18016** 4 x **15 ml** culture e.g. no. 15115  
**18018** 6 x **15 ml** culture \*\* e.g. no. 15115  
**18017** 10 x **15 ml**, max. Ø 17.5/19.5 x 80 - 112 mm, e.g. 15015, 15020, 15022, 15023, 15024, Monovettes 9 - 10 ml  
**18025** 5 x **25 ml**, max. Ø 24 x 85 - 105 mm, e.g. no. 15025, 15026  
**18030** 5 x **27 - 30 ml**, max. Ø 25.4/27.5 x 80 - 110 mm, e.g. no. 15029, 15030, 15032  
**18022** 2 x **30 ml**, max. Ø 25/31 x 65 - 95 mm  
**18051** 2 x **40 - 50 ml**, max. Ø 29/35 x 80 - 110 mm, e.g. no. 13055, 15051, 15052  
**18050** 2 x **50 ml**, max. Ø 35/38 x 85 - 110 mm, e.g. no. 15049, 15050, 15056  
**18052** 2 x **50 ml** culture e.g. no. 15151  
**18053** 2 x **50 ml** culture\* max. Ø 29.5/36 x 85 - 118 mm  
**18085** 1 x **78 - 85 ml**, max. Ø 38/40 x 85 - 112 mm, e.g. no. 13085, 15076, 15080  
**18100** 1 x **100 ml**, max. Ø 45.5/48 x 85 - 110 mm, e.g. no. 15100, 15102, 15103, 15106  
**18125** 1 x **125 ml**, max. Ø 51 x 90 - 120 mm, e.g. no. 15125  
**18250** 1 x **175 - 200 ml**, max. Ø 57 x 90 - 137 mm, e.g. no. 15201, 15206  
**18200** 1 x **200 ml**, max. Ø 57 x 90 - 115 mm, e.g. no. 15202, 15203

\* with rim

\*\* without cap 17112



11156



17112



18007



18005



13127



18100



18050



18025



18015



18200



18052



18016



18012



11157

	<b>4-16S</b>		<b>4-16KS</b>	
<i>Rotor</i>	<i>max.</i>	<i>max.</i>	<i>max.</i>	<i>max.</i>
<i>No.</i>	<i>rpm</i>	<i>RCF</i>	<i>rpm</i>	<i>RCF</i>
11118 + 13218	5.700	5.485	5.700	5.485

- 11118** Swing-out rotor for microtiter plates complete, incl. 2 carriers no. 13218, incl. plate holder no. 17978, max. height of plates 80 mm
- 13218** Bucket for microtiter plates, sealable with cap no. 17108, incl. plate holder no. 17978, max. height of plates approx. 80 mm, 1 set = 2 pcs.
- 17108** Polysulfone sealing cap, clear, incl. 4 clips no. 17118, 1 set = 2 pcs.
- 17118** Clip for lid no. 17108, 1 set = 2 pcs.
- 17978** Plate holder for bucket no. 13218, 1 set = 2 pcs.



<b><i>Created during production. Centrifuge with one rotor</i></b>		
	<b>Sigma 4-16S</b>	<b>Sigma 4-16KS, 4-16KHS</b>
<i>Calibration certificate for speed and time</i>	No. 17714	No. 17714
<i>Calibration certificate for temperature speed and time</i>	–	No. 17715
<i>IQOQ</i>	No. 17710	No. 17711
<i>For a further rotor</i>	No. 17712	No. 17712



12449



12174







12269



12265

**4-16S**

**4-16KS**

Typ	Rotor No.	tubes	max. rpm	max. RCF	max. rpm	max. RCF	
 48 x <b>1.5-2.0 ml</b> Biosafe 100 x <b>1.5-2.0 ml</b>	12449	15008, 15040	13.500	20.376	15.000	25.155	
	12201	15008, 15040	9.000	14.761	9.600	16.795	
<i>Adapter</i>	<i>Order No.</i>						
<b>0.2 ml</b> PCR	13021	15042					
<b>0.4 ml</b>	13000	15014					
<b>0.5 – 0.75 ml</b>	13002	15005					
<b>20 x 10 ml</b>	12168	15000, 15039	12.500	17.119	14.000	21.475	
<b>12 x 15 ml</b> Culture	12170	15115	12.500	17.496	13.500	20.376	
<b>24 x 15 ml</b> Culture	12174	15115	10.000	15.531	12.000	20.285	
<b>12 x 30 ml</b>	12172	15029, 15032	12.500	19.216	14.000	21.475	
<i>Adapter</i>	<i>Order No.</i>						
<b>10 ml</b>	13059	15000, 15039					
 8 x <b>50 ml</b> Biosafe	12266	15051, 15052	12.500	17.469	14.000	21.913	
	<i>Adapter</i>	<i>Order No.</i>					
<b>15 ml</b>	16018	15022					
<b>15 ml</b> glass	16018	15085					
<b>15 ml</b> round bottom	13062						
<b>30 ml</b> glass	16030	15086					
 8 x <b>50 ml</b> Culture Biosafe	12269	15151	12.500	18.168	13.500	21.191	
	<i>Adapter</i>	<i>Order No.</i>					
<b>15 ml</b> Culture	13060	15115					
<b>50 ml</b> round bottom	13079	15051, 15052					
 6 x <b>85 ml</b> Biosafe	12265	15076, 15080	12.500	18.517	14.000	23.228	
	<i>Adapter</i>	<i>Order No.</i>					
	<b>10 ml</b>	13084	15000, 15039				
	<b>15 ml</b> glass	16019	15085				
	<b>15 ml</b> Culture	13081	15115				
	<b>15 ml</b> round bottom	13063					
	<b>30 ml</b>	13083	15029, 15032				
	<b>30 ml</b> glass	16031	15086				
	<b>50 ml</b> Culture	13080	15151				
<b>50 ml</b>	13082	15051, 15052					



1.5 – 2,0 ml



10 ml

15 ml  
Kultur



30 ml



50 ml



50 ml  
Kultur



80 ml





12356



13255

15247

15249

Typ	Rotor No.	tubes	4-16S		4-16KS	
			max. rpm	max. RCF	max. rpm	max. RCF
6 x 250 ml Biosafe	12356	13255, 15247, 15249	8.000	10.375	9.000	13.131
Adapter	Order No.					
9 x 1.5 – 2.0 ml	14122	15008, 15040				
6 x 10 ml	14124	15000, 15039				
4 x 15 ml Culture	14125	15115				
2 x 30 ml	14127	15029, 15032				
1 x 50 ml	14129	15051, 15052				
1 x 50 ml Culture	14131	15151				
1 x 85 ml	14134	13085, 15076, 15080				


In 4-16KHS  
max. Rotortemp. +50 °C



# Spincontrol S



## Spincontrol S

Display	TFT
Plain text pop up windows	+
Permanent display preselected, actual values	+
Display shows dimensions	+
Languages	
Timer	10 sec - 99 h 59 min
Timing after set speed has been reached	+
Time increments [sec]	60;1
Short run	+
Continuous run	+
Speed increments [rpm]	10;1
Display speed and g-force	+
g-force increments [xg]	10;1
Temperature increments [°C] <sup>1</sup>	1
Switchable °C, °F <sup>1</sup>	+
Standstill cooling, switchable <sup>1</sup>	+, +
Standstill heating, switchable <sup>2</sup>	+, +
Rapid cooling program: Rapid_temp <sup>1</sup>	+
Start refused with exceeded temperature tolerance, tolerance preselectable <sup>1</sup>	+
Programs	60
User defined program name	+
Program list shows all parameters	+, +
Linear acceleration curves	10
Quadratic acceleration curves	10
User defined acceleration curves	10
Linear deceleration curves	10
Quadratic deceleration curves	10
User defined deceleration curves	10
Brakeless	+
Combination deceleration a. brakeless from 1000 - 100 rpm selectable	+
Acoustic signal, switchable	+, +
Signal length preselectable	+
Optical display standstill	+
Counting cycles centrifuge, each rotor	+, +
Pop up window end of rotor life time	+
Automatic lid opening at the end of the run, switchable	+, +
All rotors preprogrammed speed, g-force, radius	+
Max. radius decreasable	+
Calculation for liquid density >1.2 g/cm <sup>3</sup>	+
Start delay	+
Control unit lockable	+
Code protection	+
Run monitoring	+
Microprocessor controlled	+

<sup>1</sup> only for 4-16K, 4-16KH

<sup>2</sup> only for 4-16KH



17927 Trolley  
(w x d x h) (490 x 647 x 497 mm)



17926 Trolley  
(w x d x h) (670 x 650 x 497 mm)

Technical data	4-16	4-16K
Power consumption [W]	1.680	2.280
Max. capacity [ml]	4 x 650	4 x 650
Max. speed [rpm]	13.500	15.000
Min. speed [rpm]	100	100
Interference suppression	EN 61326	EN 61326
Height x Width x Depth [mm]	489 x 496 x 650	489 x 670 x 650
Height with open lid [mm]	940	940
Weight without rotor [kg]	82	124
Kinetic energy max. [Nm]	50.486	63.897
Noise level at max. speed (approx.)		
Rotor 12449 at 13.500 rpm [dB (A)]		
Rotor 11150 at 4.500 rpm [dB (A)]	73	62
Max. acceleration rotor 11150 + 13350 [sec]	24 <sup>1</sup>	41 <sup>2</sup>
rotor 12356 [sec]	75 <sup>3</sup>	55 <sup>4</sup>
Max. acceleration rotor 11150 + 13350 [sec]	29 <sup>1</sup>	43 <sup>2</sup>
rotor 12356 [sec]	58 <sup>3</sup>	73 <sup>4</sup>
Temperature setting range	-	-20°C – +40°C

<sup>1</sup>4.500 min<sup>-1</sup> · <sup>2</sup>5.100 min<sup>-1</sup> · <sup>3</sup>8.000 min<sup>-1</sup> · <sup>4</sup>9.000 min<sup>-1</sup>



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MADE IN GERMANY

