



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



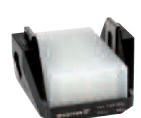
13450



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

Rotor No.	max.		max.	
	rpm	RCF	rpm	RCF
11148	12.000	13.523	13.200	16.363

No.	Adapter	tubes
13021	0.2 ml PCR	15042
13000	0.4 ml Reaction vials	15014
13002	0.5 ml - 0.75 ml Reaction vials	15005



11148

4-16S

4-16KS

Rotor	max.	max.	max.	max.
No.	rpm	RCF	rpm	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



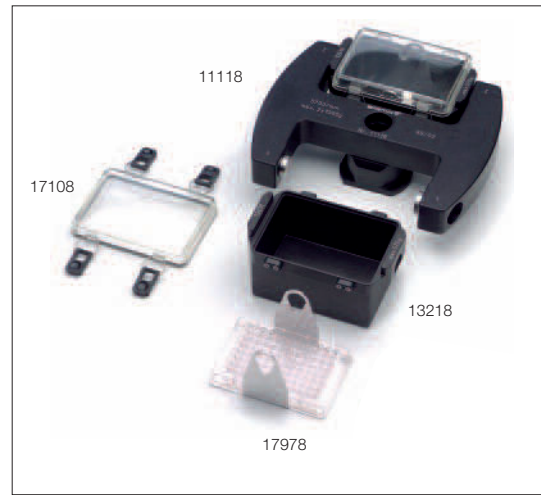
18012



11157

	4-16S		4-16KS	
<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.



<i>Created during production. Centrifuge with one rotor</i>		
	Sigma 4-16S	Sigma 4-16KS, 4-16KHS
<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 1.5-2.0 ml Biosafe 100 x 1.5-2.0 ml	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>						
0.2 ml PCR	13021	15042					
0.4 ml	13000	15014					
0.5 – 0.75 ml	13002	15005					
20 x 10 ml	12168	15000, 15039	12.500	17.119	14.000	21.475	
12 x 15 ml Culture	12170	15115	12.500	17.496	13.500	20.376	
24 x 15 ml Culture	12174	15115	10.000	15.531	12.000	20.285	
12 x 30 ml	12172	15029, 15032	12.500	19.216	14.000	21.475	
<i>Adapter</i>	<i>Order No.</i>						
10 ml	13059	15000, 15039					
 8 x 50 ml Biosafe	12266	15051, 15052	12.500	17.469	14.000	21.913	
	<i>Adapter</i>	<i>Order No.</i>					
15 ml	16018	15022					
15 ml glass	16018	15085					
15 ml round bottom	13062						
30 ml glass	16030	15086					
 8 x 50 ml Culture Biosafe	12269	15151	12.500	18.168	13.500	21.191	
	<i>Adapter</i>	<i>Order No.</i>					
15 ml Culture	13060	15115					
50 ml round bottom	13079	15051, 15052					
 6 x 85 ml Biosafe	12265	15076, 15080	12.500	18.517	14.000	23.228	
	<i>Adapter</i>	<i>Order No.</i>					
	10 ml	13084	15000, 15039				
	15 ml glass	16019	15085				
	15 ml Culture	13081	15115				
	15 ml round bottom	13063					
	30 ml	13083	15029, 15032				
	30 ml glass	16031	15086				
	50 ml Culture	13080	15151				
50 ml	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
<i>Adapter</i>	<i>Order No.</i>					
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] ¹	1
Switchable °C, °F ¹	+
Standstill cooling, switchable ¹	+, +
Standstill heating, switchable ²	+, +
Rapid cooling program: Rapid_temp ¹	+
Start refused with exceeded temperature tolerance, tolerance preselectable ¹	+
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 ³	+
Start delay	+
Control unit lockable	+
Code protection	+
Run monitoring	+
Microprocessor controlled	+

¹ only for 4-16K, 4-16KH

² 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 ¹	41 ²
rotor 12356 [sec]	75 ³	55 ⁴
Max. acceleration rotor 11150 + 13350 [sec]	29 ¹	43 ²
rotor 12356 [sec]	58 ³	73 ⁴
Temperature setting range	-	-20°C – +40°C

¹4.500 min⁻¹ · ²5.100 min⁻¹ · ³8.000 min⁻¹ · ⁴9.000 min⁻¹



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