



*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.	
	<i>rpm</i>	<i>RCF</i>	<i>rpm</i>	<i>RCF</i>
11148	12.000	13.523	13.200	16.363

No.	Adapter	tubes
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	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



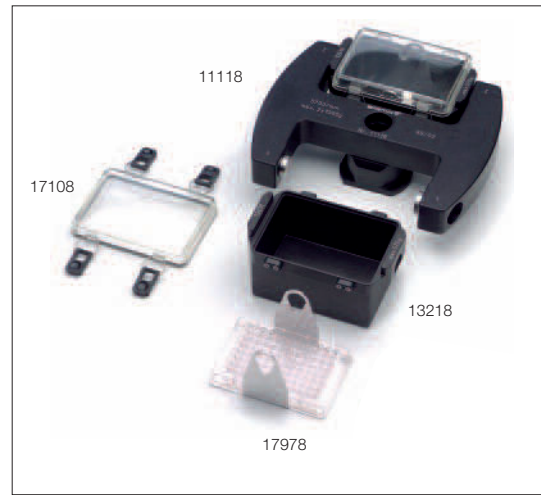
18012



11157

	<b>4-16S</b>		<b>4-16KS</b>	
<i>Rotor No.</i>	<i>max. rpm</i>	<i>max. RCF</i>	<i>max. rpm</i>	<i>max. 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
<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] <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





# WolfLabs

**Pricing on any accessories shown can be found by keying the part number into the search box on our website.**

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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