

BENCHTOP CENTRIFUGES

# UNIVERSAL 320 | 320 R

## A UNIVERSAL CHOICE

The UNIVERSAL 320 is a compact, versatile and indispensable general purpose centrifuge. Excellent performance and a comprehensive range of accessories enable the UNIVERSAL 320 to carry out virtually any centrifuging tasks including plates, blood tubes, cell culture, microliter and cytology.

This unit is available with refrigeration and a temperature range from -20 °C to +40 °C (UNIVERSAL 320 R).



## HIGHLIGHTS

- RPM: 500 - 16,000 min<sup>-1</sup>  
Adjustable in increments of 10
- max. RCF: 24,900
- max. capacity: 4 x 200 ml / 6 x 94 ml
- the universal choice among the benchtop centrifuges
- choice of 18 rotors
- IVDR-conform according to regulation (EU) 2017/746
- noise level of 48 dB(A) with angle rotor 1611
- impulse button for short centrifugation
- easy operation with keypad and control knob
- impulse key for short cycle mode
- 9 program memories
- 9 individual acceleration and 10 deceleration stages
- model 320 R coolable from -20 to +40 °C with pre-cooling function

## FEATURES

- metal housing and lid
- viewing port in the lid
- powered lid lock
- lid dropping protection
- emergency lid lock release
- stainless steel chamber
- automatic rotor recognition
- brushless drive
- error display
- imbalance switch-off
- backlit panel with actual values of all parameters
- auditory message after completion of the centrifugation run

## TECHNICAL DATA

	UNIVERSAL 320 non-refrigerated	UNIVERSAL 320 R refrigerated
voltage *)	200 – 240 V 1 ~	200 – 240 V 1 ~      240 V 1 ~
frequency	50 – 60 Hz	50 – 60 Hz      60 Hz
consumption	400 VA	800 VA
emission, immunity	EN/IEC 61326-1, class B	EN/IEC 61326-1, class B
max. capacity	4 x 200 ml / 6 x 94 ml	4 x 200 ml / 6 x 94 ml
max. RPM	16,000 min <sup>-1</sup>	16,000 min <sup>-1</sup>
max. RCF	24,900	24,900
running time	1sec –99 min: 59 sec, ∞ continuous run, short cycle mode (impulse button)	1sec –99 min: 59 sec, ∞ continuous run, short cycle mode (impulse button)
dimensions (WxDxH)	401x529x346 mm	407x698x346 mm
weight	approx. 31 kg	approx. 52 kg
noise level	48 dB (A) with rotor 1611	50 dB (A) with rotor 1611
temperature control, infinitely variable	-	from -20 to +40 °C
<b>Cat. No.</b>	<b>1401</b>	<b>1406</b>
100 – 127 V 1 ~ / 50–60 Hz *)	1401-01	1406-01
consumption	400 VA	950 VA
emission, Immunity	FCC class B	FCC class B

\*) Other voltages on request.

## AVAILABLE ROTORS

	angle	max. RPM	max. capacity	Cat. No.	page
<b>SWING-OUT ROTORS</b>					
swing-out rotor, 4-places	90°	4,500 min <sup>-1</sup>	4x200 ml	<b>1554</b>	3
swing-out rotor, 4-places	90°	5,000 min <sup>-1</sup>	4x100 ml	<b>1494</b>	6
swing-out rotor, 4-places	90°	4,000 min <sup>-1</sup>	4x100 ml	<b>1624</b>	9
swing-out rotor, 4-places	90°	4,500 min <sup>-1</sup>	4x100 ml	<b>1324</b>	12
swing-out rotor, 8-places	90°	4,000 min <sup>-1</sup>	8x15 ml	<b>1611</b>	14
swing-out rotor, 12-places	55° / 60° / 80°	4,000 min <sup>-1</sup>	12x15 ml	<b>1628</b>	14
swing-out rotor, 8-places	45°	5,000 min <sup>-1</sup>	8x50 ml	<b>1617</b>	15
swing-out rotor, 6-places	90°	4,000 min <sup>-1</sup>	6x50 ml	<b>1619</b>	15
swing-out rotor, 2-places	90°	4,000 min <sup>-1</sup>	10 plates	<b>1460</b>	16
swing-out rotor, 24-places	90°	13,000 min <sup>-1</sup>	24x2 ml	<b>1555</b>	16
<b>ANGLE ROTORS</b>					
angle rotor, 24-places	50°	16,000 min <sup>-1</sup>	24x2 ml	<b>1552</b>	17
angle rotor, 30-places	45°	14,150 min <sup>-1</sup>	30x2 ml	<b>1553</b>	17
angle rotor, 64-places	45°	13,000 min <sup>-1</sup>	64x0.2 ml	<b>1551</b>	18
angle rotor, 18-places	45°	14,150 min <sup>-1</sup>	18 x 5 ml	<b>1627</b>	18
angle rotor, 6-places	35°	9,000 min <sup>-1</sup>	6x94 ml	<b>1556</b>	19
angle rotor, 12-places	35°	6,000 min <sup>-1</sup>	12x15 ml	<b>1613</b>	20
angle rotor, 12-places	35°	12,000 min <sup>-1</sup>	12x15 ml	<b>1615</b>	21
angle rotor, 8-places	45°	4,500 min <sup>-1</sup>	8x50 ml	<b>1418</b>	22

## SWING-OUT ROTOR, 4-PLACE | 1554



<b>Rotor</b>	
max. RPM   max. RCF	4,500 min <sup>-1</sup>   3,328
max. capacity	4x200 ml
run-up   run-down, braked in sec	28   31
angle   max. noise level	90°   60 dB (A)
temperature in °C <sup>1)</sup>	-8
<b>Cat. No.</b>	<b>1554</b>



<b>Bucket with clamp lock</b>	
Lid bioseal <sup>3)</sup>	1561
<b>Cat. No.</b>	<b>1560</b>
<b>Bucket without clamp lock<sup>14)</sup></b>	
<b>Cat. No.</b>	<b>1565</b>



<b>Vessels</b>															
capacity in ml	1.5	2.0	5	5	6	7	9	15	15	25	50	85	100	125	150
Ø x L in mm	11x38	11x38	17x59	12x75	12x82	12x100	14x100	17x100	18x102	24x100	34x100	38x101	44x100	51x100	51x116
max. RCF <sup>2)</sup>	3,328	2,332	3,328	3,215	3,215	3,215	3,215	3,215	3,260	3,056	3,147	3,260	3,124	3,328	3,328
radius in mm	147	103	147	142	142	142	142	142	144	135	138	144	138	147	147
<b>Cat. No.</b>	<b>microliter tubes</b>			<b>tubes<sup>2)</sup></b>											

<b>Adapter</b>															
boring Ø x L in mm	11.5 x 39	11.5 x 39	17x52	13.5x60	13.5x60	13.5x60	17.5x60	17.5x60	18.5x74	25.2x66	35.2x69	38.5x74	45.5 x 69	52x77	52x77
vessels per rotor	56	56	16	28	28	28	20	20	16	4	4	4	4	4	4
<b>Cat. No.</b>	<b>1571</b>	<b>1571</b>	<b>1593</b>	<b>1589</b>	<b>1589</b>	<b>1589</b>	<b>1588</b>	<b>1588</b>	<b>1572</b>	<b>1573</b>	<b>1574</b>	<b>1575</b>	<b>1576</b>	<b>1594</b>	<b>1594</b>

<b>Vessels</b>															
capacity in ml	200	1.1-1.4	2.6-3.4	4.9	2.7-3	4-5	4-5.5	7.5-8.2	9-10	10	1.6-5	4-7	4-7	8.5-10	12
Ø x L in mm	56x112	8x66	13x65	13x90	11x66	11x92	15x75	15x92	16x92	15x102	13x75	13x100	16x75	16x100	17x102
max. RCF <sup>2)</sup>	3,328	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215
radius in mm	147	142	142	142	142	142	142	142	142	142	142	142	142	142	142
<b>Cat. No.</b>	<b>0555</b>	<b>blood collection / urine vessels</b>													

<b>Adapter</b>															
boring Ø x L in mm	57x77	13.5x60	13.5x60	13.5x60	13.5x60	13.5x60	17.5x60	17.5x60	17.5x60	17.5x60	13.5x60	13.5x60	17.5x60	17.5x60	17.5x74
vessels per rotor	4	28	28	28	28	28	20	20	20	20	28	28	20	20	12
<b>Cat. No.</b>	<b>-</b>	<b>1589</b>	<b>1589</b>	<b>1589</b>	<b>1589</b>	<b>1589</b>	<b>1588</b>	<b>1588</b>	<b>1588</b>	<b>1588</b>	<b>1589</b>	<b>1589</b>	<b>1588</b>	<b>1588</b>	<b>1591</b>

<b>Vessels</b>																			
capacity in ml	11	15	15	30	50	12	25	30	50	10	30	50	85	94	30				
Ø x L in mm	16x110	17x120	17x120	25x110	30x115	17x100	25x90	15x110	29x115	16x80	26x95	29x107	38x106	38x102	44x105				
max. RCF <sup>2)</sup>	3,260	3,328	3,328	3,328	3,328	3,260	3,328	3,328	3,328	3,215	3,260	3,260	3,260	3,260	3,192				
radius in mm	144	147	147	147	147	144	147	147	147	142	144	144	144	144	141				
<b>Cat. No.</b>	<b>Nunc®</b>	<b>tubes with screw cap</b>														<b>0534<sup>9)</sup></b>			

<b>Adapter</b>															
boring Ø x L in mm	17.5x74	17x77	17x77	26x77	30x77	17.5x74	26x65	26x65	30x77	16.5x60	26x74	29x74	38.5 x 74	38.5x74	45x71
vessels per rotor	16	8	12	4	4	16	4	4	4	20	4	4	4	4	4
<b>Cat. No.</b>	<b>1581</b>	<b>1577</b>	<b>1595</b>	<b>1578</b>	<b>1579</b>	<b>1581</b>	<b>1582</b>	<b>1582</b>	<b>1583</b>	<b>1584</b>	<b>1585</b>	<b>1586</b>	<b>1575</b>	<b>1575</b>	<b>1587</b>

## SWING-OUT ROTOR, 4-PLACE | 1554



### Rotor

max. RPM   max. RCF	4,500 min <sup>-1</sup>   3,328
max. capacity	4x50 ml
run-up   run-down, braked in sec	28   31
angle   max. noise level	90°   58 dB (A)
temperature in °C <sup>1)</sup>	-8
<b>Cat. No.</b>	<b>1554</b>

### Bucket

<b>Cat. No.</b>	<b>1559</b>
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### Vessels

capacity in ml	5	6	7	8	9	15	2.6-3.4	2.7-3	4-5.5	4.5-5	4.9	9-10	10	1.6-5	4-7	
Ø x L in mm	12x75	12x82	12x100	16x125	14x100	17x100	13x65	11x66	15x75	11x92	13x90	16 x 92	15 x 102	13x75	13x100	
max. RCF <sup>2)</sup>	3.215	3.215	3.215	3.328	3.260	3.260	3.215	3.215	3.215	3.215	3.215	3.260	3.260	3.215	3.215	
radius in mm	142	142	142	147	144	144	142	142	142	142	142	144	144	142	142	
<b>Cat. No.</b>	<b>tubes<sup>2)</sup></b>						<b>blood collection / urine vessels</b>									



### Adapter

boring Ø x L in mm	13.4x57.5	13.4x57.5	13.4x57.5	16.4x82	17.5x81	17.5x81	13.4x57.5	13.4x57.5	17.5x81	13.4x57.5	13.4x57.5	17.5x81	17.5x81	13.4x57.5	13.4x57.5
vessels per rotor	20	20	20	16	16	16	20	20	16	20	20	16	16	20	20
<b>Cat. No.</b>	<b>1486</b>	<b>1486</b>	<b>1486</b>	<b>1488</b>	<b>1482A</b>	<b>1482A</b>	<b>1486</b>	<b>1486</b>	<b>1482A</b>	<b>1486</b>	<b>1486</b>	<b>1482A</b>	<b>1482A</b>	<b>1486</b>	<b>1486</b>

### Vessels

capacity in ml	4-7	8.5-10	12	15	50	12	50
Ø x L in mm	16x75	16x100	17x102	17x120	29 x 115	17 x 100	29 x 115
max. RCF <sup>2)</sup>	3.215	3,260	3,147	3,351	3,305	3,260	3,305
radius in mm	142	144	139	148	146	144	146
<b>Cat. No.</b>	<b>blood- / urine vessels</b>			<b>tubes with screw cap</b>			



### Adapter

boring Ø x L in mm	17.5x81	17.5x81	17.5x74	17x100	30x98	17.5x81	30x98
vessels per rotor	16	16	12	16	4	16	4
<b>Cat. No.</b>	<b>1482A</b>	<b>1482A</b>	<b>1487</b>	<b>1483A</b>	<b>1484</b>	<b>1482A</b>	<b>1484<sup>4)</sup></b>

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 3,2) When using these tubes, bucket 1560 cannot be closed with lid 1561.  
 4) Please remove the spacer.  
 5) Tested by the TÜV in conformity with DIN EN 61010, section 2-020.  
 6) A rubber stopper for closing the tube for agitating or mixing is available under Cat. No. 0535. The tube may not be centrifuged with the stopper.  
 14) With the E3922 add-on kit and the 1561 lid, the 1565 carrier can be converted at a later time to a 1560 carrier with single-hand clamp lock.

## SWING-OUT ROTOR, 4-PLACE | 1554


Rotor		Bucket	
max. RPM   max. RCF	4,500 min <sup>1</sup>   3,260	Cat. No.	1563
max. capacity	8 x 50 ml		
run-up   run-down, braked in sec	28   31		
angle   max. noise level	90°   58 dB (A)		
temperature in °C <sup>1)</sup>	-8		
<b>Cat. No.</b>	<b>1554</b>		

Vessels		tubes with screw cap			
capacity in ml	12	15	50	50	
Ø x L in mm	17 x 100	17 x 120	29 x 115	29 x 115	
max. RCF <sup>2)</sup>	3,260	3,260	3,260	3,260	
radius in mm	144	144	144	144	
<b>Cat. No.</b>					

Adapter		+ E 2109 +E2110A			
boring Ø x L in mm	17 x 87	17 x 87	30 x 87	30 x 87	
vessels per rotor	8	8	8	8	
<b>Cat. No.</b>	<b>1592</b>	<b>1592</b>	-	-	

- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

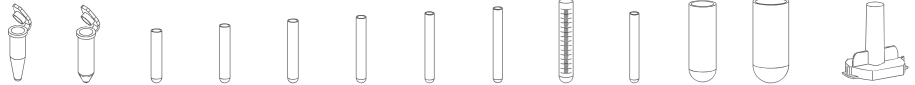
## SWING-OUT ROTOR, 4-PLACE | 1494



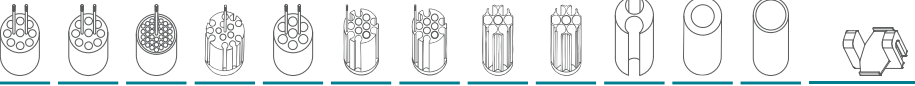
Rotor	
max. RPM   max. RCF	5,000 min <sup>-1</sup>   4,193
max. capacity	4 x 100 ml
run-up   run-down, braked in sec	30   32
angle   max. noise level	90°   56 dB (A)
temperature in °C <sup>1)</sup>	-10
<b>Cat. No.</b>	<b>1494</b>



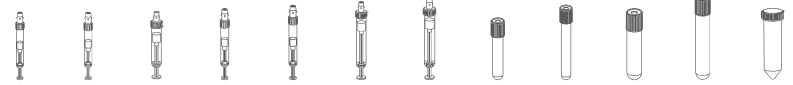
Bucket	
<b>Cat. No.</b>	<b>1425</b>

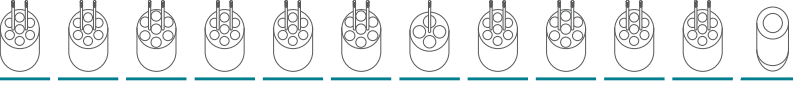
Vessels		1.5	2.0	1	3	5	6	7	9	15	25	50	100	1-8
capacity in ml		1.5	2.0	1	3	5	6	7	9	15	25	50	100	1-8
Ø x L in mm		11 x 38	11 x 38	6 x 45	10 x 60	12/18 x 75	12 x 82	12 x 100	14 x 100	17 x 100	24 x 100	34 x 100	44 x 100	simple / multiple
max. RCF <sup>2)</sup>		3,885	3,885	3,969	3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,801	2,879
radius in mm		139	139	142	140	140	140	140	140	140	140	140	136	103
<b>Cat. No.</b>		microliter tubes			Rhesus	tubes <sup>2)</sup>								cyto chambers



Adapter		11.2 x 38	11.2 x 38	6.5 x 34	10.5 x 40	13.4 x 50	12.5 x 60	12.5 x 60	17.5 x 84	17.5 x 84	25.5 x 84	35.5 x 84	45.5 x 80	-
boring Ø x L in mm		11.2 x 38	11.2 x 38	6.5 x 34	10.5 x 40	13.4 x 50	12.5 x 60	12.5 x 60	17.5 x 84	17.5 x 84	25.5 x 84	35.5 x 84	45.5 x 80	-
vessels per rotor		36	36	144	56	28	48	48	28	28	8	4	4	4
<b>Cat. No.</b>		1444	1444	1432	1433	1438	1434	1434	1431	1431	1435	1436	1437	1452



Vessels		2.6-3.4	2.7-3	4-5.5	4.5-5	4.9	7.5-8.2	9-10	1.6-5	4-7	4-7	8.5-10	50
capacity in ml		2.6-3.4	2.7-3	4-5.5	4.5-5	4.9	7.5-8.2	9-10	1.6-5	4-7	4-7	8.5-10	50
Ø x L in mm		13 x 65	11 x 66	15 x 75	11 x 92	13 x 90	15 x 92	16 x 92	13 x 75	13 x 100	16 x 75	16 x 100	29 x 115
max. RCF <sup>2)</sup>		3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,913	3,913	4,081
radius in mm		140	140	140	140	140	140	140	140	140	140	140	146
<b>Cat. No.</b>		blood collection / urine vessels											-




Adapter		13.4 x 50	13.4 x 50	16.5 x 50	13.4 x 50	13.4 x 50	16.5 x 50	17 x 45	13.4 x 50	13.4 x 50	16.5 x 50	16.5 x 50	30 x 90
boring Ø x L in mm		13.4 x 50	13.4 x 50	16.5 x 50	13.4 x 50	13.4 x 50	16.5 x 50	17 x 45	13.4 x 50	13.4 x 50	16.5 x 50	16.5 x 50	30 x 90
vessels per rotor		28	28	28	28	28	28	16	28	28	28	28	4
<b>Cat. No.</b>		1438	1438	1441	1438	1438	1441	1439	1438	1438	1441	1441	1443

**CYTO** Cyto system available for this model. More information on [page 180](#)

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.


## SWING-OUT ROTOR, 4-PLACE | 1494




Rotor	
max. RPM   max. RCF	5,000 min <sup>-1</sup>   4,109
max. capacity	4 x 50 ml
run-up   run-down, braked in sec	30   32
angle   max. noise level	90°   54 dB (A)
temperature in °C <sup>1)</sup>	-7
<b>Cat. No.</b>	<b>1494</b>



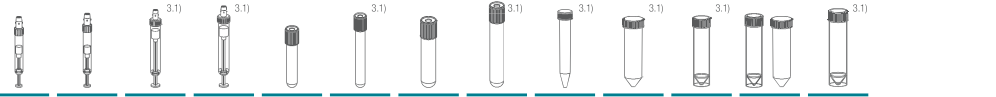

Bucket	
Lid	1421
<b>Cat. No.</b>	<b>1427</b>

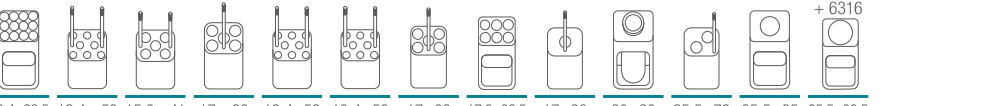
Vessels	
capacity in ml	1.5   2.0   1   3   5   6   7   9   15   25   50   1.1-1.4   2.6-2.9   2.7-3   4-5.5
Ø x L in mm	11 x 38   11 x 38   6 x 45   10 x 60   12/13 x 75   12 x 82   12 x 100   14 x 100   17 x 100   24 x 100   34 x 100   8 x 66   13 x 65   11 x 66   15 x 75
max. RCF <sup>2)</sup>	4,109   4,109   4,081   4,053   4,025   4,053   3,941   3,941   3,941   3,941   3,941   4,109   4,025   4,053   4,109
radius in mm	147   147   146   145   144   145   141   141   141   141   141   147   144   145   147
<b>Cat. No.</b>	<b>microliter tubes</b> <b>Rhesus</b> <b>tubes<sup>2)</sup></b> <b>blood collection / urine vessels</b>



Adapter	
boring Ø x L in mm	11.5 x 38   11.5 x 38   6.5 x 23   10.5 x 23   13.4 x 58   12.5 x 42   12.4 x 82.5   15 x 69.5   17.8 x 82.5   25.5 x 82.5   35.5 x 82.5   9 x 41   13.4 x 58   12.5 x 42   15.6 x 41
vessels per rotor	36   36   120   48   32   48   48   24   24   8   4   48   32   48   20
<b>Cat. No.</b>	<b>5277</b> <b>5277</b> <b>1357</b> <b>1327</b> <b>1732</b> <b>5229</b> <b>5230</b> <b>5237</b> <b>5231</b> <b>5232</b> <b>5233</b> <b>5278</b> <b>1732</b> <b>5229</b> <b>5279</b>



Vessels	
capacity in ml	4.5-5   4.9   7.5-8.2   9-10   1.6-5   4-7   4-7   8.5-10   15   50   25   30   50
Ø x L in mm	11 x 92   13 x 90   15 x 92   16 x 92   13 x 75   13 x 100   16 x 75   16 x 100   17 x 120   29 x 115   25 x 90   25 x 110   34 x 100
max. RCF <sup>2)</sup>	3,941   4,025   4,109   3,969   4,025   4,025   3,969   3,941   4,165   4,053   3,565   4,025   3,941
radius in mm	141   144   147   142   144   144   142   141   145   145   142   144   141
<b>Cat. No.</b>	<b>blood collection / urine vessels</b> <b>tubes with screw cap</b>



Adapter	
boring Ø x L in mm	12.4 x 82.5   13.4 x 58   15.6 x 41   17 x 66   13.4 x 58   13.4 x 58   17 x 66   17.8 x 82.5   17 x 90   30 x 90   25.5 x 72   25.5 x 85   35.5 x 82.5
vessels per rotor	48   32   20   20   32   32   20   24   4   4   8   4   4
<b>Cat. No.</b>	<b>5230</b> <b>1732</b> <b>5279</b> <b>5271<sup>4)</sup></b> <b>1732</b> <b>1732</b> <b>5271<sup>4)</sup></b> <b>5231</b> <b>5275</b> <b>5276</b> <b>1731</b> <b>5272</b> <b>5233<sup>4)</sup></b> <b>+ 6316</b>

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 3.1) When using these tubes, carrier 1427 cannot be closed with lid 1421.  
 4) Please remove the spacer.

## SWING-OUT ROTOR, 4-PLACE | 1494



<b>Rotor</b>	
max. RPM   max. RCF	5.000 min <sup>-1</sup>   4.193
max. capacity	4x100 ml
run-up   run-down, braked in sec	30   32
angle   max. noise level	90°   58 dB (A)
temperature in °C <sup>1)</sup>	-10
<b>Cat. No.</b>	<b>1494</b>



<b>Bucket</b>	
Lid bioseal <sup>5)</sup>	1492
<b>Cat. No.</b>	<b>1495</b>



<b>Vessels</b>														
capacity in ml	0.5	1.5	2.0	1	3	5	6	7	9	15	25	50	94	100
∅ x L in mm	10.7 x 46	11 x 38	11 x 38	6 x 45	10 x 60	12/13x75	12x82	12x100	14x100	17x100	24x100	34x100	38x102	44x100
max. RCF <sup>2)</sup>	3,745	3,857	3,857	4,081	4,137	4,025	4,025	4,025	3,997	3,997	3,829	3,801	4,109	4,025
radius in mm	134	138	138	145	148	144	144	144	143	143	137	136	147	144
<b>Cat. No.</b>	<b>Pediatric</b>	<b>microliter tubes</b>			<b>Rhesus</b>	<b>tubes<sup>2)</sup></b>								

<b>Adapter</b>																
boring ∅ x L in mm	11.2x38	11.2x38	11.2x38	6.5x34	10.5x40	13.4x45	13.4x45	13.4x45	17.6x89	17.6x89	25.2x77	35.2x77	38.5x92	45.6x98		
vessels per rotor	20	20	20	108	36	20	20	20	16	16	4	4	4	4		
<b>Cat. No.</b>	<b>1351</b>	<b>1351</b>	<b>1351</b>	<b>1339</b>	<b>1343</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1329</b>	<b>1329</b>	<b>1330</b>	<b>1331</b>	<b>1396</b>	<b>0761</b>		

<b>Vessels</b>														
capacity in ml	1.1-1.4	2.7-3	4.5-5	2.6-2.9	4.9	4-5.5	7.5-8.2	9-10	10	1.6-7	1.6-7	4-10	4-10	
∅ x L in mm	8 x 66	11 x 66	11 x 92	13 x 65	13 x 90	15 x 75	15 x 92	16 x 92	15 x 102	13 x 75	13 x 100	16 x 75	16 x 100	
max. RCF <sup>2)</sup>	4,053	4,025	4,025	4,025	4,025	4,053	4,053	3,997	4,193	4,025	4,025	4,025	4,025	
radius in mm	145	144	144	144	144	145	145	143	150	144	144	144	144	
<b>Cat. No.</b>	<b>blood collection / urine vessels</b>													

<b>Adapter</b>														
boring ∅ x L in mm	9x47	13.4x45	13.4x45	13.4x45	13.4x45	15.6x47	15.6x47	17.6x89	17.6x89	13.4x45	13.4x45	16.5x52	16.5x52	
vessels per rotor	28	20	20	20	20	16	16	16	16	20	20	16	16	
<b>Cat. No.</b>	<b>1457</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1459</b>	<b>1459</b>	<b>1329</b>	<b>1329<sup>4)</sup></b>	<b>1383</b>	<b>1383</b>	<b>1348</b>	<b>1348</b>	

<b>Vessels</b>												
capacity in ml	15	30	50	12	25	50	10	30	50	85	30	
∅ x L in mm	17 x 120	25 x 110	29 x 115	17 x 100	25 x 90	29 x 115	16 x 80	26 x 95	29x107	38x106	44x105	
max. RCF <sup>2)</sup>	4,193	4,193	4,193	4,193	3,689	4,193	4,025	3,857	4,137	4,109	3,997	
radius in mm	150	150	150	150	132	150	144	138	148	147	143	
<b>Cat. No.</b>	<b>tubes with screw cap</b>											<b>0534<sup>6)</sup></b>

<b>Adapter</b>														
boring ∅ x L in mm	17x90	26x80	30x90	17x80	26x72	29.5x80	16.5x52	26x83	29x93	38.5x92	45.9x98			
vessels per rotor	4	4	4	4	4	4	16	4	4	4	4			
<b>Cat. No.</b>	<b>1347</b>	<b>1365</b>	<b>1384</b>	<b>6311</b>	<b>1363</b>	<b>6318</b>	<b>1348</b>	<b>4417</b>	<b>4416</b>	<b>1396</b>	<b>0765</b>			

- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 3) When using these tubes, bucket 1495 cannot be closed with lid 1492.
- 4) Please remove the spacer.
- 5) Tested by the TÜV in conformity with DIN EN 61010, section 2-020.
- 6) A rubber stopper for closing the tube for agitating or mixing is available under Cat. No. 0535. The tube may not be centrifuged with the stopper.



## SWING-OUT ROTOR, 4-PLACE | 1624



### Rotor

max. RPM   max. RCF	4,000 min <sup>-1</sup>   2,665
max. capacity	4 x 50 ml
run-up   run-down, braked in sec	20   25
angle	90°
<b>Cat. No.</b>	<b>1624</b>

### Vessels

capacity in ml	5	5	6	7	9	9	15	15	20	25	45	50	1-8
Ø x L in mm	12x75	12x75	12x82	12x100	14x100	14x100	17x100	17x100	21x100	24x100	31x100	34x100	simple / multiple
max. RCF <sup>2)</sup>	2,057	2,164	2,308	2,308	2,308	2,415	2,308	2,415	2,361	2,451	2,361	2,451	1,646
radius in mm	115	121	129	129	129	135	129	137	132	137	132	137	92
temperature in °C <sup>1)</sup>	-17	-17	-17	-17	-17	-15	-17	-15	-15	-15	-15	-15	-16

<b>Cat. No.</b>	<b>tubes<sup>2)</sup></b>												<b>cyto chambers</b>
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### Carrier

boring Ø x L in mm	12x75	13.5x65	12.5x71.5	12.5x71.5	14.6x74	14.6x78	17.6x71.5	17.6x78	21.5x74	26x78	32x74	35x78	-
vessels per rotor	16	68	16	16	20	40	16	28	8	8	4	4	4
<b>Cat. No.</b>	<b>1369-91</b>	<b>1372</b>	<b>1369-92</b>	<b>1369-92</b>	<b>1370</b>	<b>1741</b>	<b>1369</b>	<b>1742</b>	<b>1346</b>	<b>1745</b>	<b>1345</b>	<b>1746</b>	<b>1660</b>

### Vessels

capacity in ml	1.1 - 1.4	2.6 - 3.4	4.5 - 5	4.9	1.6 - 5	4 - 7	4 - 7	4 - 7	8.5 - 10	30
Ø x L in mm	8 x 66	13x65	15x75	13x90	13x75	16 x 75	13 x 100	13 x 100	16 x 100	26 x 95
max. RCF <sup>2)</sup>	2,415	2,325	2,325	2,451	2,325	2,325	2,361	2,451	2,308	2,451
radius in mm	135	130	130	137	130	130	132	137	129	137
temperature in °C <sup>1)</sup>	-15	-15	-15	-15	-15	-15	-15	-15	-17	-15

<b>Cat. No.</b>	<b>blood collection / urine vessels</b>									<b>-</b>
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### Carrier

boring Ø x L in mm	14.6x78	17.6x78	17.6x78	14.6x78	17.6x78	17.6x78	14.6x74	13.5x78	17.6x71.5	26x78
vessels per rotor	40	28	28	40	28	28	20	28	16	8
<b>Cat. No.</b>	<b>1741</b>	<b>1742</b>	<b>1742</b>	<b>1741</b>	<b>1742</b>	<b>1742</b>	<b>1370<sup>4)</sup></b>	<b>1739</b>	<b>1369<sup>4)</sup></b>	<b>1745</b>

**CYTO** For more information about our Cyto accessory, see [page 178](#)

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 4) Please remove spacer.  
 5) Tested by the TÜV in conformity with DIN EN 61010. section 2-020.  
 16) Packed in units of 10 pieces.  
 20) This combination permits no Vacutainers made of glass.

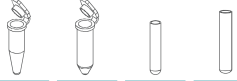
## SWING-OUT ROTOR, 4-PLACE | 1624



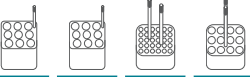
Rotor	
max. RPM   max. RCF	4,000 min <sup>-1</sup>   1,968
max. capacity	48 x 4 ml
run-up   run-down, braked in sec	22   25
angle   max. noise level	90°   48 dB (A)
temperature in °C	-15
<b>Cat. No.</b>	<b>1624</b>



Bucket	
<b>Cat. No.</b>	<b>1366</b>





Vessels	
capacity in ml	1.5    2.0    1    4
Ø x L in mm	11 x 38    11 x 38    6 x 45    12 x 60
max. RCF <sup>2)</sup>	1,968    1,968    1,950    1,932
radius in mm	110    110    109    108
<b>Cat. No.</b>	<b>microliter tubes</b> <b>Rhesus</b> <b>tubes<sup>2)</sup></b>



Adapter	
boring Ø x L in mm	11.5 x 38    11.5 x 38    6.5 x 23    12.5 x 44
vessels per rotor	36    36    120    48
<b>Cat. No.</b>	<b>5277</b> <b>5277</b> <b>1357</b> <b>1326</b>


## SWING-OUT ROTOR, 4-PLACE | 1624



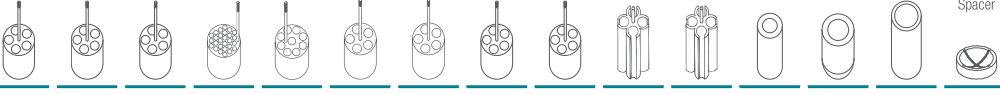
Rotor	
max. RPM   max. RCF <sup>2)</sup>	4,000 min <sup>-1</sup>   2,665
max. capacity	4 x 100 ml
run-up   run-down, braked in sec	20   25
angle   max. noise level	90°   58 dB (A)
temperature in °C	-15
<b>Cat. No.</b>	<b>1624</b>



Bucket	
Lid bioseal <sup>3)</sup>	1492
<b>Cat. No.</b>	<b>1481</b>

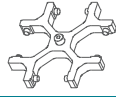



Vessels	
capacity in ml	0.5    1.5    2.0    1    3    4    5    6    7    9    15    25    50    85    100
Ø x L in mm	10.7 x 46    11 x 38    11 x 38    6 x 45    10 x 60    10 x 88    12 x 75    12 x 82    12 x 100    14 x 100    17 x 100    24 x 100    34 x 100    38 x 106    44 x 100
max. RCF <sup>2)</sup>	2,379    2,451    2,451    2,594    2,630    2,630    2,558    2,558    2,558    2,540    2,540    2,433    2,415    2,612    2,558
radius in mm	133    137    137    145    147    131    143    143    143    142    142    136    135    146    143
<b>Cat. No.</b>	<b>Pediatric</b> <b>microliter tubes</b> <b>Rhesus</b> <b>tubes<sup>2)</sup></b>



Adapter	
boring Ø x L in mm	11.2 x 38    11.2 x 38    11.2 x 38    6.5 x 34    10.5 x 43    13.4 x 45    13.4 x 45    13.4 x 45    13.4 x 45    17.6 x 89    17.6 x 89    25.2 x 77    35.2 x 75    38.5 x 92    45.9 x 98
vessels per rotor	20    20    20    108    36    20    20    20    20    16    16    4    4    4    4
<b>Cat. No.</b>	<b>1351</b> <b>1351</b> <b>1351</b> <b>1339</b> <b>1343</b> <b>1383</b> <b>1383</b> <b>1383</b> <b>1383</b> <b>1329</b> <b>1329</b> <b>1330</b> <b>1331</b> <b>1396</b> <b>0761</b>

## SWING-OUT ROTOR, 4-PLACE | 1624



### Rotor

max. RPM   max. RCF	4,000 min <sup>-1</sup>   2,665
max. capacity	4 x 100 ml
run-up   run-down, braked in sec	20   25
angle   max. noise level	90°   58 dB (A)
temperature in °C	-15
<b>Cat. No.</b>	<b>1624</b>



### Bucket

Lid bioseal <sup>®</sup>	1492
<b>Cat. No.</b>	<b>1481</b>



### Vessels

capacity in ml	1.1–1.4	2.7–3	4.5–5	2.6–2.9	4.9	4–8.5	7.5–8.2	9–10	10	1.6–5	4–7	4–7	8.5–10
Ø x L in mm	8 x 66	11 x 66	11 x 92	13 x 65	13 x 90	15 x 75	15 x 92	16 x 92	15 x 102	13 x 75	13 x 100	16 x 75	16 x 100
max. RCF <sup>2)</sup>	2,576	2,558	2,558	2,558	2,558	2,576	2,576	2,540	2,665	2,558	2,558	2,522	2,522
radius in mm	144	143	143	143	143	144	144	142	149	143	143	141	141
<b>Cat. No.</b>	<b>blood collection / urine vessels</b>												



### Adapter

boring Ø x L in mm	9x47	13.4x45	13.4x45	13.4x45	13.4x45	15.6x47	15.6x47	17.6x89	17.6x89	13.4x45	13.4x45	16.5x52	16.5x52
vessels per rotor	28	20	20	20	20	16	16	16	16	20	20	16	16
<b>Cat. No.</b>	<b>1457</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1459</b>	<b>1459</b>	<b>1329</b>	<b>1329<sup>4)</sup></b>	<b>1383</b>	<b>1383</b>	<b>1348</b>	<b>1348</b>

### Vessels

capacity in ml	15	50	12	25	30	50	10	30	50	85	30
Ø x L in mm	17x120	29x115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	26 x 95	29x107	38x106	44x105
max. RCF <sup>2)</sup>	2,665	2,665	2,665	2,343	2,665	2,665	2,522	2,451	2,630	2,612	2,540
radius in mm	149	149	149	131	149	149	141	137	147	146	142
<b>Cat. No.</b>	<b>tubes with screw cap</b>										<b>0534<sup>6)</sup></b>

chrome bath tube



### Adapter

boring Ø x L in mm	17x90	30x90	17x80	26x72	26x80	29.5x80	16.5x52	26x83	29x93	38.5x92	45.9x98
vessels per rotor	4	4	4	4	4	4	16	4	4	4	4
<b>Cat. No.</b>	<b>1347</b>	<b>1384</b>	<b>6311</b>	<b>1363</b>	<b>1365</b>	<b>6318</b>	<b>1348</b>	<b>4417</b>	<b>4416</b>	<b>1396</b>	<b>0765</b>

Spacer

- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 3.3) When using these tubes, bucket 1752 or 5051 cannot be closed with lid 1751 or 5053.
- 4) Please remove the spacer.
- 5) Tested by the TÜV in conformity with DIN EN 61010, section 2-020.
- 6) A rubber stopper for closing the tube for agitating or mixing is available under Cat. No. 0535. The tube may not be centrifuged with the stopper.

## SWING-OUT ROTOR, 4-PLACE | 1324



<b>Rotor</b>	
max. RPM   max. RCF	4,500 min <sup>1</sup>   3,328
max. capacity	4 x 100 ml
run-up   run-down, braked in sec	27   30
angle   max. noise level	90°   58 dB (A)
temperature in °C	-6
<b>Cat. No.</b>	<b>1324</b>



<b>Bucket</b>	
Lid bioseal <sup>®</sup>	1492
<b>Cat. No.</b>	<b>1490</b>



<b>Vessels</b>															
capacity in ml	0.5	1.5	2.0	1	3	4	5	6	7	9	15	25	50	85	100
Ø x L in mm	10.7x46	11x38	11x38	6x45	10x60	10x88	12x75	12x82	12x100	14x100	17x100	24x100	34x100	38x106	44x100
max. RCF <sup>2)</sup>	2,966	3,056	3,056	3,237	3,283	3,283	3,192	3,192	3,192	3,170	3,170	3,034	3,011	3,260	3,192
radius in mm	131	135	135	143	145	145	141	141	141	140	140	134	133	144	141
<b>Cat. No.</b>	<b>Pediatric</b>	<b>microliter tubes</b>			<b>Rhesus</b>	<b>tubes<sup>2)</sup></b>									

<b>Adapter</b>																
boring Ø x L in mm	11.2x38	11.2x38	11.2x38	6.5x34	10.5x43	10.5x43	13.4x45	13.4x45	13.4x45	13.4x45	17.6x89	17.6x89	25.2x77	35.2x77	38.5x92	45.9x100.5
vessels per rotor	20	20	20	108	36	36	20	20	20	20	16	16	4	4	4	4
<b>Cat. No.</b>	<b>1351</b>	<b>1351</b>	<b>1351</b>	<b>1339</b>	<b>1343</b>	<b>1343</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1329</b>	<b>1329</b>	<b>1330</b>	<b>1331</b>	<b>1396</b>	<b>0761</b>

<b>Vessels</b>															
capacity in ml	1.1-1.4	2.6-2.9	4.9	2.7-3	4.5-5	4-5.5	7.5-8.2	9-10	10	1.6-5	4-7	4-7	8.5-10	15	
Ø x L in mm	8 x 66	13x65	13x90	11x66	11x92	15x75	15x92	16x92	15x102	13x75	13x100	16x75	16x100	17x120	
max. RCF <sup>2)</sup>	3,215	3,192	3,192	3,192	3,192	3,215	3,215	3,170	3,328	3,192	3,192	3,147	3,147	3,328	
radius in mm	142	141	141	141	141	142	142	140	147	141	141	139	139	147	
<b>Cat. No.</b>	<b>blood collection / urine vessels</b>														<b>-</b>

<b>Adapter</b>															
boring Ø x L in mm	9x47	13.4x45	13.4x45	13.4x45	13.4x45	15.6x47	15.6x47	17.6x89	17.6x89	13.4x45	13.4x45	16.5x52	16.5x52	17x90	
vessels per rotor	28	20	20	20	20	16	16	16	16	20	20	16	16	4	
<b>Cat. No.</b>	<b>1457</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1383</b>	<b>1459</b>	<b>1459</b>	<b>1329</b>	<b>1329<sup>4)</sup></b>	<b>1383</b>	<b>1383</b>	<b>1348</b>	<b>1348</b>	<b>1347</b>	

<b>Vessels</b>													
Kapazität in ml	15	30	50	12	25	30	50	10	30	50	85	30	
Ø x L in mm	17x120	25 x 110	29 x 115	17 x 100	25 x 90	25 x 110	29 x 115	16 x 80	26 x 95	29x107	38x106	44x105	
max. RCF <sup>2)</sup>	3,328	3,328	3,328	3,328	2,920	3,328	3,328	3,147	3,056	3,283	3,260	3,170	
radius in mm	147	147	147	147	129	147	147	139	135	145	144	140	
<b>Cat. No.</b>	<b>tubes with screw cap</b>												<b>-<sup>6)</sup></b>

<b>Adapter</b>													
boring Ø x L in mm	17x107	26x80	30x90	17x80	26x72	26x80	29.5x80	16,5x52	26x83	29x93	38.5x92	45.9x100.5	
vessels per rotor	12	4	4	4	4	4	4	16	4	4	4	4	
<b>Cat. No.</b>	<b>1356</b>	<b>1365</b>	<b>1384</b>	<b>6311</b>	<b>1363</b>	<b>1365</b>	<b>6318</b>	<b>1348</b>	<b>4417</b>	<b>4416</b>	<b>1396</b>	<b>0765</b>	

## — SWING-OUT ROTOR, 4-PLACE | 1324



### Rotor

max. RPM   max. RCF	4,500 min <sup>-1</sup>   3,305
max. capacity	4 x 50 ml
run-up   run-down, braked in sec	27   30
angle   max. noise level	90°   54 dB (A)
temperature in °C	-6
<b>Cat. No.</b>	<b>1324</b>



### Bucket

<b>Cat. No.</b>	<b>1398</b>
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### Vessels

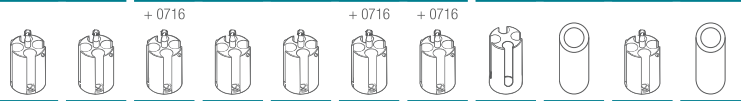
capacity in ml	9	15	4-4,5	9-10	10	4-7	8,5-10	15	50	12	50
Ø x L in mm	14x100	17x100	15x75	16x92	15x102	16x75	16x100	17 x 120	29 x 115	17 x 100	29 x 115
max. RCF <sup>2)</sup>	3,192	3,192	2,875	3,192	3,192	3,034	3,034	3,305	3,260	3,192	3,260
radius in mm	141	141	127	141	141	134	134	146	144	141	144

<b>Cat. No.</b>	tubes <sup>2)</sup>		blood collection / urine vessels				tubes with screw cap			
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### Adapter

boring Ø x L in mm	17,5x81	17,5x81	17,5x81	17,5x81	17,5x81	17,5x81	17,5x81	17x100	30x98	17,5x81	30x98
vessels per rotor	16	16	16	16	16	16	16	16	4	16	4
<b>Cat. No.</b>	<b>1482A</b>	<b>1482A</b>	<b>1482A</b>	<b>1482A</b>	<b>1482A</b>	<b>1482A</b>	<b>1482A</b>	<b>1483A</b>	<b>1484</b>	<b>1482A</b>	<b>1484<sup>4)</sup></b>



1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 4) Please remove spacer.

## SWING-OUT ROTOR, 8-PLACE | 1611



### Rotor

max. RPM   max. RCF	4,000 min <sup>-1</sup>   2,415
max. capacity	8 x 15 ml
run-up   run-down, braked in sec	20   20
angle   max. noise level	90°   48 dB (A)
temperature in °C <sup>1)</sup>	-16
<b>Cat. No.</b>	<b>1611</b>



### Vessels

capacity in ml	5	6	7	10	15	2.6-2.9	2.7-3	4-5.5	4.5-5	7.5-8.2	1.6-5	4-7	4-7	8.5-10
Ø x L in mm	12/13 x 75	12 x 82	12 x 100	13 x 100	17 x 100	13 x 65	11 x 66	15 x 75	11 x 92	15 x 92	13 x 75	13 x 100	16 x 75	16 x 100
max. RCF <sup>2)</sup>	1,914	1,914	2,415	2,415	2,415	1,914	1,914	1,914	2,415	2,415	1,914	2,415	1,914	2,415
radius in mm	107	107	135	135	135	107	107	107	135	135	107	135	107	135
<b>Cat. No.</b>	<b>tubes <sup>2)</sup></b>					<b>blood collection / urine vessels</b>								



### Bucket

boring Ø x L in mm	13 x 53	13 x 53	13.2 x 81	13.2 x 81	17.5 x 81	13 x 53	13 x 53	17.5 x 53	13.2 x 81	17.5 x 81	13 x 53	13.2 x 81	17.5 x 53	17.5 x 81
vessels per rotor	8	8	8	8	8	8	8	8	8	8	8	8	8	8
<b>Cat. No.</b>	<b>1131-A</b>	<b>1131-A</b>	<b>1643</b>	<b>1643</b>	<b>1644</b>	<b>1131-A</b>	<b>1131-A</b>	<b>1132-A</b>	<b>1643</b>	<b>1644</b>	<b>1131-A</b>	<b>1643</b>	<b>1132-A</b>	<b>1644</b>

## SWING-OUT ROTOR, 12-PLACE | 1628



### Rotor

max. RPM   max. RCF <sup>2)</sup>	5,000 min <sup>-1</sup>   4,193
max. capacity	12 x 15 ml
run-up   run-down, braked in sec	16   16
angle   max. noise level	55°/ 60°/ 80°   54 dB (A)
<b>Cat. No.</b>	<b>1628</b>



### Vessels

capacity in ml	5	10	15	2.6-2.9	2.7-3	4-5.5	7.5-8.2	1.6-5	4-7	8.5-10
Ø x L in mm	12/13 x 75	17 x 100	17 x 100	13 x 65	11 x 66	15 x 75	15 x 92	13 x 75	16 x 75	16 x 100
max. RCF <sup>2)</sup>	3,466	3,522	4,193	3,466	3,466	3,522	4,193	3,466	3,522	4,193
radius in mm	124	126	150	124	124	126	150	124	126	150
temperature in °C <sup>1)</sup>	-10	-10	-10	-15	-15	-15	-10	-15	-15	-10
<b>Cat. No.</b>	<b>tubes <sup>2)</sup></b>			<b>blood collection / urine vessels</b>						



### Bucket

boring Ø x L in mm	13.2x53	17.5x53	17.5x79	13.2x53	13.2x53	17.5x53	17.5x79	13.2x53	17.5x53	17.5x79
vessels per rotor	12	12	12	12	12	12	12	12	12	12
<b>Cat. No.</b>	<b>1127-A</b>	<b>1122</b>	<b>1621</b>	<b>1127-A</b>	<b>1127-A</b>	<b>1122</b>	<b>1621</b>	<b>1127-A</b>	<b>1122</b>	<b>1621</b>

- For cooled versions: Lowest temperature achievable with precooling and max. speed.
- Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

## — SWING-OUT ROTOR, 8-PLACE | 1617



### Rotor

max. RPM   max. RCF	5,000 min <sup>-1</sup>   3,857	
max. capacity	8 x 50 ml	
run-up   run-down, braked in sec	20   19	
angle   max. noise level	45°   50 dB (A)	
temperature in °C <sup>1)</sup>	-10	
<b>Cat. No.</b>	<b>1617</b>	



### Vessels

capacity in ml	15	50
Ø x L in mm	17 x 120	29 x 115
max. RCF <sup>2)</sup>	3,857	3,857
radius in mm	138	138
<b>Cat. No.</b>	<b>tubes with screw cap</b>	



### Adapter

boring Ø x L in mm	17 x 84	30 x 94.5
vessels per rotor	8	8
<b>Cat. No.</b>	<b>1462-A</b>	<b>-</b>



## — SWING-OUT ROTOR, 6-PLACE | 1619



### Rotor

max. RPM   max. RCF	4,000 min <sup>-1</sup>   2,701	
max. capacity	6 x 50 ml	
run-up   run-down, braked in sec	20   22	
angle   max. noise level	90°   50 dB (A)	
temperature in °C <sup>1)</sup>	-15	
<b>Cat. No.</b>	<b>1619</b>	



### Vessels

capacity in ml	15	50
Ø x L in mm	17 x 120	29 x 115
max. RCF <sup>2)</sup>	2,701	2,701
radius in mm	151	151
<b>Cat. No.</b>	<b>tubes with screw cap</b>	



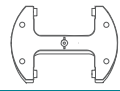
### Adapter

boring Ø x L in mm	17 x 84	30 x 87.5
vessels per rotor	6	6
<b>Cat. No.</b>	<b>1462-A</b>	<b>-</b>



- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

## SWING-OUT ROTOR, 2-PLACE | 1460



Rotor	
max. RPM   max. RCF	4,000 min <sup>-1</sup>   2,218
max. capacity	10 plates
run-up   run-down, braked in sec	40   45
angle   max. noise level	90°   55 dB (A)
temperature in °C <sup>1)</sup>	-6
<b>Cat. No.</b>	<b>1460</b>



Vessels						
capacity in ml	-	-	-	-	-	0.2
W x D x H in mm	128x86x15	128x86x22	128 x 86 x 44.5	128 x 86 x 46	124 x 82 x 20	-
max. RCF <sup>2)</sup>	2,433	2,433	2,433	2,433	2,433	2,433
radius in mm	136	136	136	136	136	136
<b>Cat. No.</b>	<b>MTP</b>	<b>CP</b>	<b>DWP</b>	<b>MS</b>	<b>PCR plate, 96 wells</b>	<b>PCR strips</b>

+						
<b>Bucket</b>						
boring Ø x L in mm	-	-	-	-	-	-
vessels per rotor	10	8	2	2	2	24 x 8
<b>Cat. No.</b>	<b>1453-A</b>	<b>1453-A</b>	<b>1453-A</b>	<b>1453-A</b>	<b>1453-A + 1485</b>	<b>1453-A + 1485</b>

## SWING-OUT ROTOR, 24-PLACE | 1555



Rotor	
max. RPM   max. RCF	13,000 min <sup>-1</sup>   18,327
max. capacity	24 x 2 ml
run-up   run-down, braked in sec	36   31
angle	90°
temperature in °C <sup>1)</sup>	3
<b>Cat. No.</b>	<b>1555</b>

Lid bioseal<sup>®</sup>, phenol-resistant



**Cat. No. INCLUSIVE**



Vessels						
capacity in ml	0.2	0.4	0.5	0.8	1.5	2
Ø x L in mm	6x18	6x45	8x30	8x45	11x38	11x38
max. RCF <sup>2)</sup>	18,327	18,327	18,327	18,327	18,327	18,327
radius in mm	97	97	97	97	97	97
<b>Cat. No.</b>	<b>microliter tubes</b>					

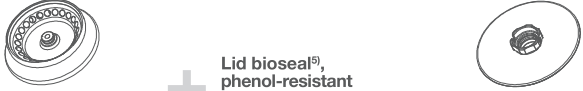
  

+						
<b>Adapter</b>						
boring Ø x L in mm	6 x 40	6 x 40	8 x 40	8 x 40	10.2x19.3	11.5x38.5
vessels per rotor	24	24	24	24	24	24
<b>Cat. No.</b>	<b>2024</b>	<b>2024</b>	<b>2023</b>	<b>2023</b>	<b>2031<sup>7)</sup></b>	<b>-</b>

- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 5) Tested by TÜV in conformity with DIN EN 61010, section 2-020.
- 7) For centrifugation at high speeds, we recommend to use conical, phenol-resistant adapters. Cat. No. 2031.



## ANGLE ROTOR, 24-PLACE | 1552




<b>Rotor</b>		
max. RPM   max. RCF	16,000 min <sup>-1</sup>   24,900	+ Lid bioseal <sup>®</sup> , phenol-resistant Cat. No. <b>INCLUSIVE</b>
max. capacity	24 x 2 ml	
run-up   run-down, braked in sec	30   29	
angle   max. noise level	50°   58 dB (A)	
temperature in °C <sup>1)</sup>	2	
<b>Cat. No.</b>	<b>1552</b>	

<b>Vessels</b>							
capacity in ml	0.2	0.4	0.5	0.8	1.5	2	0.5
Ø x L in mm	6x18	6x45	8x30	8x45	11x38	11x38	10,7x46
max. RCF <sup>2)</sup>	24,900	24,900	24,900	24,900	24,900	24,900	23,755
radius in mm	87	87	87	87	87	87	83
<b>Cat. No.</b>	<b>microliter tubes</b>						<b>Pediatric</b>

<b>Adapter</b>							
boring Ø x L in mm	6x40	6x40	8x40	8x40	10,2x19,3	11,2x42,6	11,2x39
vessels per rotor	24	24	24	24	24	24	12
<b>Cat. No.</b>	<b>2024</b>	<b>2024</b>	<b>2023</b>	<b>2023</b>	<b>2031<sup>17)</sup></b>	<b>-</b>	<b>0788<sup>17)</sup></b>

## ANGLE ROTOR, 30-PLACE | 1553



<b>Rotor</b>		
max. RPM   max. RCF	14,150 min <sup>-1</sup>   21,713	+ Lid bioseal <sup>®</sup> , phenol-resistant Cat. No. <b>INCLUSIVE</b>
max. capacity	30 x 2 ml	
run-up   run-down, braked in sec	35   32	
angle	45°	
temperature in °C <sup>1)</sup>	-1	
<b>Cat. No.</b>	<b>1553</b>	

<b>Vessels</b>							
capacity in ml	0.2	0.4	0.5	0.8	1.5	2	0.5
Ø x L in mm	6x18	6x45	8x30	8x45	11x38	11x38	10,7x46
max. RCF <sup>2)</sup>	21,713	21,713	21,713	21,713	21,713	21,713	20,818
radius in mm	97	97	97	97	97	97	93
<b>Cat. No.</b>	<b>microliter tubes</b>						<b>Pediatric</b>

<b>Adapter</b>							
boring Ø x L in mm	6x40	6x40	8x40	8x40	10,2x19,3	11,2x40,9	11,2x39
vessels per rotor	30	30	30	30	30	30	15
<b>Cat. No.</b>	<b>2024</b>	<b>2024</b>	<b>2023</b>	<b>2023</b>	<b>2031<sup>17)</sup></b>	<b>-</b>	<b>0788<sup>17)</sup></b>

- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 5) Tested by TÜV in conformity with DIN EN 61010, section 2-020.
- 7) For centrifugation at high speeds, we recommend to use conical, phenol-resistant adapters. Cat. No. 2031.
- 17) Packed in units of 15 pieces.

## — ANGLE ROTOR, 8-PLACE | 1551

Rotor	
max. RPM   max. RCF	13,000 min <sup>-1</sup>   13,604
max. capacity	8 x PCR-Strips
run-up   run-down, braked in sec	36   31
angle   max. noise level	45°   58 dB (A)
temperature in °C <sup>1)</sup>	-4
<b>Cat. No.</b>	<b>1551</b>



Lid bioseal<sup>5)</sup>,  
phenol-resistant  
Cat. No.



**INCLUSIVE**



Vessels	
capacity in ml	0.2
Ø x L in mm	6 x 18
max. RCF <sup>2)</sup>	13,604
radius in mm	64
<b>Cat. No.</b>	<b>-</b>



**PCR-Strips**

## — ANGLE ROTOR, 18-PLACE | 1627

Rotor	
max. RPM   max. RCF	14,150 min <sup>-1</sup>   22,161
max. capacity	18 x 5 ml
run-up   run-down, braked in sec	35   32
angle	45°
temperature in °C <sup>1)</sup>	2
<b>Cat. No.</b>	<b>1627</b>



Lid bioseal<sup>5)</sup>,  
phenol-resistant  
Cat. No.



**INCLUSIVE**




Vessels	
capacity in ml	5
Ø x L in mm	17 x 59
max. RCF <sup>2)</sup>	22,161
radius in mm	18
<b>Cat. No.</b>	<b>-</b>



- 1) For cooled versions: Lowest temperature achievable with precooling and max. speed.
- 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.
- 5) Tested by TÜV in conformity with DIN EN 61010, section 2-020.

## ANGLE ROTOR, 6-PLACE | 1556



<b>Rotor</b>	
max. RPM   max. RCF	9.000 min <sup>-1</sup>   10.595
max. capacity	6 x 94 ml
run-up   run-down, braked in sec	36   32
angle   max. noise level	35°   60 dB (A)
temperature in °C <sup>1)</sup>	0
<b>Cat. No.</b>	<b>1556</b>

+ Lid bioseal<sup>®</sup>, phenol-resistant  
Cat. No. **INCLUSIVE**



<b>Vessels</b>																
capacity in ml	1.5	2	15	50	50	85	7.5-8.2	9-10	10	8.5-10	15	50	10	30	50	
Ø x L in mm	11 x 38	11 x 38	17 x 100	35 x 105	34 x 100	38 x 101	15 x 92	16 x 92	15 x 102	16 x 100	17 x 120	29 x 115	16 x 80	26 x 95	29 x 107	
max. RCF <sup>2)</sup>	10,324	10,324	10,052	10,414	10,414	10,595	10,052	10,052	10,052	10,052	10,052	10,052	10,414	9,690	10,142	
radius in mm	114	114	111	115	115	117	111	111	111	111	111	111	111	115	107	112
<b>Cat. No.</b>	<b>microliter tubes</b>		<b>tubes<sup>2)</sup></b>			<b>blood collection / urine vessels</b>			<b>tubes with screw cap</b>							

<b>Adapter</b>															
boring Ø x L in mm	11.4 x 39	11.4 x 39	17.5 x 78	35 x 89	35 x 89	-	17.5 x 78	17.5 x 78	17.5 x 78	17.5 x 78	17 x 106	29.8 x 97	16.5 x 72	26 x 85	29 x 92
vessels per rotor	24	24	6	6	6	-	6	6	6	6	6	6	12	6	6
<b>Cat. No.</b>	<b>1449</b>	<b>1449</b>	<b>1478</b>	<b>1463</b>	<b>1463</b>	<b>-</b>	<b>1478</b>	<b>1478</b>	<b>1478</b>	<b>1478</b>	<b>1466</b>	<b>1454</b>	<b>1477</b>	<b>1447</b>	<b>1446</b>

<b>Vessels</b>		
capacity in ml	85	94
Ø x L in mm	38 x 106	38 x 102
max. RCF <sup>2)</sup>	10,595	10,595
radius in mm	117	117
<b>Cat. No.</b>	<b>tubes with screw cap</b>	

<b>Adapter</b>		
boring Ø x L in mm	-	-
vessels per rotor	6	6
<b>Cat. No.</b>	<b>-</b>	<b>-</b>

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 3) Tested by TÜV in conformity with DIN EN 61010, section 2-020.

## — ANGLE ROTOR, 12-PLACE | 1613



### Rotor

max. RPM   max. RCF	6,000 min <sup>-1</sup>   4,146
max. capacity	12 x 15 ml
run-up   run-down, braked in sec	15   15
angle   max. noise level	35°   50 dB (A)
temperature in °C <sup>1)</sup>	-16
<b>Cat. No.</b>	<b>1613</b>

### Vessels

capacity in ml	0.5	1.5	2.0	4	5	6	15	1.1 – 1.4	2.6 – 2.9	2.7 – 3	4.5 – 5	4.9	7.5 – 8.2	9 – 10	10
Ø x L in mm	10.7 x 46	11 x 38	11 x 38	10 x 88	12/13 x 75	12 x 82	17 x 100	8 x 66	13 x 65	11 x 66	11 x 92	13 x 90	15 x 92	16 x 92	15 x 102
max. RCF <sup>2)</sup>	2,777	2,737	2,737	3,502	3,300	3,300	4,146	3,300	3,300	3,300	4,146	4,146	4,146	4,146	4,146
radius in mm	69	68	68	87	82	82	103	82	82	82	103	103	103	103	103
<b>Cat. No.</b>	<b>Pediatric</b>	<b>microliter tubes</b>			<b>tubes<sup>2)</sup></b>			<b>blood collection / urine vessels</b>							



### Adapter

boring Ø x L in mm	11 x 35	11 x 35	11 x 35	11.5 x 67.5	13.5 x 59	13.5 x 59	17.7 x 88	13.5 x 59	13.5 x 59	13.5 x 59	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88
vessels per rotor	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
<b>Cat. No.</b>	<b>2 x 1063-6 (6 pcs.)</b>			<b>6305</b>	<b>1054-A</b>	<b>1054-A</b>	<b>-</b>	<b>1054-A</b>	<b>1054-A</b>	<b>1054-A</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

### Vessels

capacity in ml	1.6 – 5	4 – 7	8	8.5 – 10	5	15
Ø x L in mm	13 x 75	13 x 100	16 x 125	16 x 100	17 x 59	17 x 120
max. RCF <sup>2)</sup>	3,300	4,146	4,146	4,146	3,180	4,146
radius in mm	82	103	103	103	79	103
<b>Cat. No.</b>	<b>blood collection / urine vessels</b>				<b>-</b>	<b>-</b>



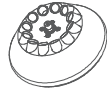
### Adapter

boring Ø x L in mm	13.5 x 60	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88	17.7 x 88
vessels per rotor	12	12	6	12	12	6
<b>Cat. No.</b>	<b>1054-A</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.

2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

## ANGLE ROTOR, 12-PLACE | 1615



### Rotor

max. RPM   max. RCF	12,000 min <sup>-1</sup>   16,582
max. capacity	12 x 15 ml
run-up   run-down, braked in sec	40   40
angle   max. noise level	35°   52 dB (A)
temperature in °C <sup>1)</sup>	-2
<b>Cat. No.</b>	<b>1615</b>

### Vessels

capacity in ml	0.5	1.5	2.0	4	5	6	15	1.1 - 1.4	2.6 - 2.9	2.7 - 3	4.5 - 5	4.9	7.5 - 10	10
Ø x L in mm	10.7 x 46	11 x 38	11 x 38	10 x 88	12/13 x 75	12 x 82	17 x 100	8 x 66	13 x 65	11 x 66	11 x 92	13 x 90	15/16 x 92	15 x 102
max. RCF <sup>2)</sup>	11,108	10,947	10,947	14,006	13,201	13,201	16,582	13,201	13,201	13,201	16,582	16,582	16,582	16,582
radius in mm	69	68	68	87	82	82	103	82	82	82	103	103	103	103
<b>Cat. No.</b>	<b>Pediatric</b>	<b>microliter tubes</b>			<b>tubes <sup>2)</sup></b>			<b>blood collection / urine vessels</b>						



### Adapter

boring Ø x L in mm	11 x 35	11 x 35	11 x 35	11.5x67.5	13.5 x 59	13.5 x 59	17.7 x 88	13.5 x 59	13.5 x 59	13.5 x 59	17.7 x 88	17.7 x 88	17.7 x 88
vessels per rotor	12	12	12	12	12	12	12	12	12	12	12	12	12
<b>Cat. No.</b>	<b>2 x 1063-6 (6 pcs.)</b>			<b>6305</b>	<b>1054-A</b>	<b>1054-A</b>	<b>-</b>	<b>1054-A</b>	<b>1054-A</b>	<b>1054-A</b>	<b>-</b>	<b>-</b>	<b>-</b>

### Vessels

capacity in ml	1.6 - 5	4 - 7	8.5 - 10	8	5	15
Ø x L in mm	13 x 75	13 x 100	16 x 100	16 x 125	17 x 59	17 x 120
max. RCF <sup>2)</sup>	13,201	16,582	16,582	16,582	12,718	15,455
radius in mm	82	103	103	103	79	96
<b>Cat. No.</b>	<b>blood collection / urine vessels</b>			<b>-</b>	<b>-</b>	<b>-</b>



### Adapter

boring Ø x L in mm	13.5 x 59	17.7 x 88	17.7 x 88	17.7 x 88	17 x 25	17 x 104
vessels per rotor	12	12	12	6	12	6
<b>Cat. No.</b>	<b>1054-A</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1064</b>	<b>1647 <sup>25)</sup></b>

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.  
 25) Adapter (set), 6-place: For conical 15 ml tubes with screw cap, remove carriers from rotor and replace them with adapters.

## ANGLE ROTOR, 8-PLACE | 1418



### Rotor

max. RPM   max. RCF	4,500 min <sup>1</sup>   3,305
max. capacity	8 x 50 ml
run-up   run-down, braked in sec	30   31
angle   max. noise level	45°   54 dB (A)
temperature in °C <sup>1)</sup>	-5
<b>Cat. No.</b>	<b>1418</b>



### Vessels

capacity in ml	5	15	1.1-1.4	2.6-2.9	2.7-3	9-10	1.6-5	4-7	8.5-10	12	15	50	12	50	50
Ø x L in mm	12/13x75	17x100	8x66	13x65	11x66	16x92	13x75	13x100	16x100	17x102	17x120	29x115	17x100	29x115	29x107
max. RCF <sup>2)</sup>	2,762	3,215	2,762	2,762	2,762	3,215	2,762	3,215	3,215	3,215	3,283	3,147	3,215	3,147	3,147
radius in mm	122	142	122	122	122	142	122	146	142	142	145	139	142	139	139

<b>Cat. No.</b>	tubes <sup>2)</sup>		blood collection / urine vessels								tubes with screw cap					
	+ 1054-A	+ 0716	+ 1054-A	+ 1054-A	+ 1054-A	+ 0716	+ 1054-A	+ 0716	+ 1054-A	+ 0716	+ 0716	+ E2109	+ E2110-A	+ 0716		
<b>+</b>																
<b>Carrier</b>																
boring Ø x L in mm	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	17.4x91	30.2x92	17.4x91	30.2x92	30.2x92
vessels per rotor	32	32	32	32	32	32	32	32	32	32	32	8	32	8	8	
<b>Cat. No.</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1467</b>	<b>1468</b>	<b>1467</b>	<b>1468</b>	<b>1468</b>	

1) For cooled versions: Lowest temperature achievable with precooling and max. speed.  
 2) Please note that the RCF values indicated refer only to rotor performance. The max. permissible RCF of tubes used should be verified with the individual manufacturers. The max. RCF for glass tubes annotated with footnote 2) is 4,000.

## CERTIFICATIONS / REGISTRATIONS

Product certification:



Product registration:

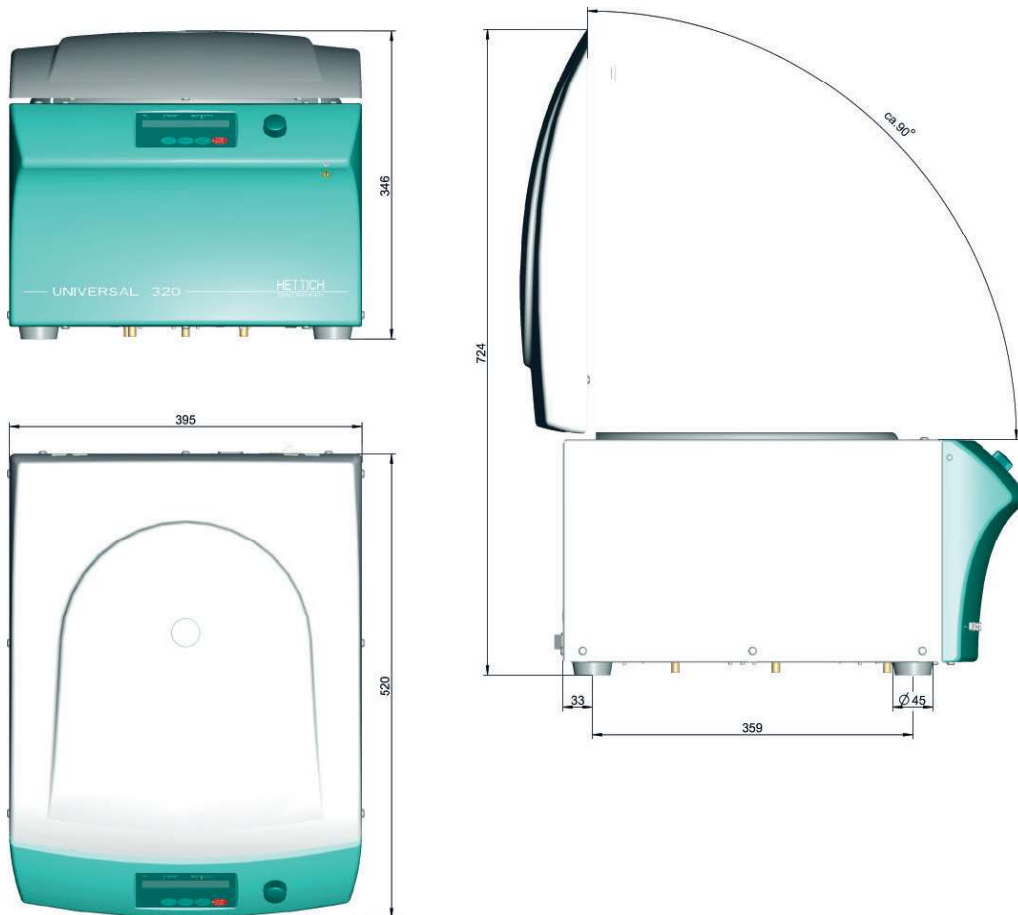


according to regulation (EU) 2017/746

Company certifications:



## DIMENSIONS – UNIVERSAL 320



— DIMENSIONS – UNIVERSAL 320 R

