

## 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 - 15,000 min<sup>-1</sup>  
Adjustable in steps of 10
- max. RCF: 21,382
- max. capacity: 4 x 200 ml / 6 x 94 ml
- the universal choice among the benchtop centrifuges
- choice of 18 rotors
- IvD-conform according to directive 98/79/EC
- maximum noise level of ≤ 50 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 bis +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

|                                          | <b>UNIVERSAL 320</b><br>classic                                               | <b>UNIVERSAL 320 R</b><br>cooled                                              |
|------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| voltage *)                               | 200 – 240 V 1 ~                                                               | 200 – 240 V 1 ~                                                               |
| frequency                                | 50 – 60 Hz                                                                    | 50 – 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,<br>short cycle mode (impulse button) | 1sec – 99 min: 59 sec, ∞ continuous run,<br>short cycle mode (impulse button) |
| dimensions (W x D x H)                   | 401 x 529 x 346 mm                                                            | 407 x 698 x 346 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

| <b>SWING-OUT ROTORS</b>    | angle | max. RPM                 | max. capacity | Cat. No.    | page |
|----------------------------|-------|--------------------------|---------------|-------------|------|
| 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 | 90°   | 5,000 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>  | 6x85 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

### Rotor

|                                  |                                 |
|----------------------------------|---------------------------------|
| max. RPM   max. RCF              | 4,500 min <sup>-1</sup>   3,328 |
| max. capacity                    | 4 x 200 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>                     |



### Bucket

|                                          |             |
|------------------------------------------|-------------|
| Lid bioseal <sup>5)</sup>                | 1561        |
| <b>Cat. No.</b>                          | <b>1560</b> |
| Bucket without clamp lock <sup>14)</sup> |             |
| <b>Cat. No.</b>                          | <b>1565</b> |



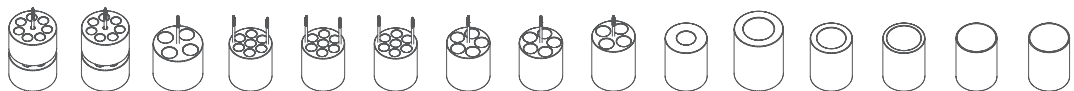
### Vessels

|                        |                         |         |         |                             |         |          |          |          |          |          |          |          |          |             |          |
|------------------------|-------------------------|---------|---------|-----------------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|-------------|----------|
| capacity in ml         | 1.5                     | 2.0     | 5       | 5                           | 6       | 7        | 9        | 15       | 15       | 25       | 50       | 94       | 100      | 125         | 150      |
| Ø x L in mm            | 11 x 38                 | 11 x 38 | 17 x 59 | 12 x 75                     | 12 x 82 | 12 x 100 | 14 x 100 | 17 x 100 | 18 x 102 | 24 x 100 | 34 x 100 | 38 x 102 | 44 x 100 | 51 x 100    | 51 x 116 |
| 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    | 3,147    | 3,328       | 3,328    |
| radius in mm           | 147                     | 103     | 147     | 142                         | 142     | 142      | 142      | 142      | 144      | 135      | 139      | 144      | 139      | 147         | 147      |
| <b>Cat. No.</b>        | <b>microliter tubes</b> |         |         | <b>tubes<sup>3,2)</sup></b> |         |          |          |          |          |          |          |          |          | <b>0536</b> | <b>-</b> |



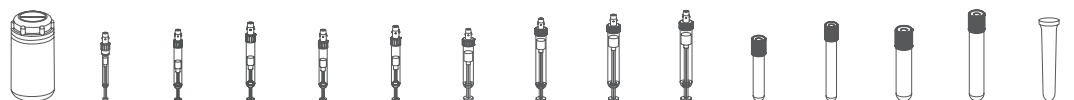
### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 11.5 x 39   | 11.5 x 39   | 17 x 52     | 13.5 x 60   | 13.5 x 60   | 13.5 x 60   | 17.5 x 60   | 17.5 x 60   | 18.5 x 74   | 25.2 x 66   | 35.2 x 69   | 38.5 x 74   | 45.5 x 69   | 52 x 77     | 52 x 77     |
| 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> |



### Vessels

|                        |             |                                         |         |         |         |         |         |         |         |          |         |          |         |          |          |
|------------------------|-------------|-----------------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|---------|----------|---------|----------|----------|
| capacity in ml         | 200         | 1.1–1.4                                 | 2.6–3.4 | 4.9     | 2.7–3   | 4.5–5   | 4–5.5   | 7.5–8.5 | 9–10    | 10       | 1.6–5   | 4–7      | 4–7     | 8.5–10   | 12       |
| Ø x L in mm            | 56 x 112    | 8 x 66                                  | 13 x 65 | 13 x 90 | 11 x 66 | 11 x 92 | 15 x 75 | 15 x 92 | 16 x 92 | 15 x 102 | 13 x 75 | 13 x 100 | 16 x 75 | 16 x 100 | 17 x 102 |
| 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> |         |         |         |         |         |         |         |          |         |          |         |          |          |



### Adapter

|                    |          |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 57 x 77  | 13.5 x 60   | 13.5 x 60   | 13.5 x 60   | 13.5 x 60   | 13.5 x 60   | 17.5 x 60   | 17.5 x 60   | 17.5 x 60   | 17.5 x 60   | 13.5 x 60   | 13.5 x 60   | 17.5 x 60   | 17.5 x 60   | 17 x 74     |
| 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> |



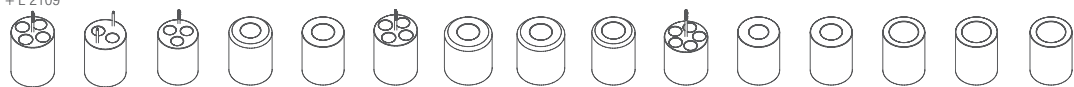
### Vessels

|                        |              |                             |          |          |          |          |         |          |          |         |         |          |          |          |                          |
|------------------------|--------------|-----------------------------|----------|----------|----------|----------|---------|----------|----------|---------|---------|----------|----------|----------|--------------------------|
| capacity in ml         | 11           | 15                          | 15       | 30       | 50       | 12       | 25      | 30       | 50       | 10      | 30      | 50       | 85       | 94       | 30                       |
| Ø x L in mm            | 16 x 110     | 17 x 120                    | 17 x 120 | 25 x 110 | 29 x 115 | 17 x 100 | 25 x 90 | 15 x 110 | 29 x 115 | 16 x 80 | 26 x 95 | 29 x 107 | 38 x 106 | 38 x 102 | 44 x 105                 |
| 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>6)</sup></b> |



### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 17.5 x 74   | 17 x 77     | 17 x 77     | 26 x 77     | 30 x 77     | 17.5 x 74   | 26 x 65     | 26 x 65     | 30 x 77     | 16.5 x 60   | 26 x 74     | 29 x 74     | 38.5 x 74   | 38.5 x 74   | 45 x 71     |
| 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> |



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.

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

|                                  |                                 |
|----------------------------------|---------------------------------|
| max. RPM   max. RCF              | 4,500 min <sup>-1</sup>   3,328 |
| max. capacity                    | 4 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                              |

Cat. No.

1554



### Bucket

Cat. No.



1559



### Vessels

|                        |                     |       |        |        |        |                                  |         |         |         |       |        |        |         |        |       |
|------------------------|---------------------|-------|--------|--------|--------|----------------------------------|---------|---------|---------|-------|--------|--------|---------|--------|-------|
| capacity in ml         | 5                   | 6     | 7      | 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  | 4 – 7 |
| Ø x L in mm            | 12x75               | 12x82 | 12x100 | 14x100 | 17x100 | 13x65                            | 11x66   | 15x75   | 11x92   | 13x90 | 16x92  | 10x102 | 13x75   | 13x100 | 16x75 |
| max. RCF <sup>2)</sup> | 3,192               | 3,192 | 3,192  | 3,260  | 3,260  | 3,192                            | 3,192   | 3,124   | 3,192   | 3,192 | 3,260  | 3,260  | 3,192   | 3,192  | 3,124 |
| radius in mm           | 141                 | 141   | 141    | 144    | 144    | 141                              | 141     | 138     | 141     | 141   | 144    | 144    | 141     | 141    | 138   |
| Cat. No.               | tubes <sup>3)</sup> |       |        |        |        | blood collection / urine vessels |         |         |         |       |        |        |         |        |       |



### Adapter

|                    |           |           |           |         |         |           |           |         |           |           |         |         |           |           |         |
|--------------------|-----------|-----------|-----------|---------|---------|-----------|-----------|---------|-----------|-----------|---------|---------|-----------|-----------|---------|
| boring Ø x L in mm | 13.4x57.5 | 13.4x57.5 | 13.4x57.5 | 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 | 17.5x81 |
| vessels per rotor  | 20        | 20        | 20        | 16      | 16      | 20        | 20        | 16      | 20        | 20        | 16      | 16      | 20        | 20        | 16      |
| Cat. No.           | 1486      | 1486      | 1486      | 1482A   | 1482A   | 1486      | 1486      | 1482A   | 1486      | 1486      | 1482A   | 1482A   | 1486      | 1486      | 1482A   |

### Vessels

|                        |                        |        |        |                      |          |        |        |
|------------------------|------------------------|--------|--------|----------------------|----------|--------|--------|
| capacity in ml         | 8.5 – 10               | 8      | 12     | 15                   | 50       | 12     | 50     |
| Ø x L in mm            | 16x100                 | 16x125 | 17x102 | 17x120               | 29 x 115 | 17x100 | 29x115 |
| max. RCF <sup>2)</sup> | 3,260                  | 3,328  | 3,147  | 3,351                | 3,305    | 3,260  | 3,305  |
| radius in mm           | 144                    | 147    | 139    | 148                  | 146      | 144    | 146    |
| Cat. No.               | blood- / urine vessels |        |        | tubes with screw cap |          |        |        |



### 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                  |
| Cat. No.           | 1482A   | 1482A <sup>4)</sup> | 1487    | 1483A  | 1484  | 1482A   | 1484 <sup>4)</sup> |

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 the spacer.



## — SWING-OUT ROTOR, 4-PLACE | 1554

|                                                                                   |                                 |                                                                                    |      |
|-----------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------|------|
|  |                                 |  |      |
| <b>Rotor</b>                                                                      |                                 | <b>Bucket</b>                                                                      |      |
| 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>                     |                                                                                    |      |



|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |
| <b>Vessels</b>         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| capacity in ml         | 12                                                                                | 15                                                                                | 50                                                                                | 50                                                                                |
| Ø x L in mm            | 17x100                                                                            | 17x120                                                                            | 29x115                                                                            | 29x115                                                                            |
| max. RCF <sup>2)</sup> | 3,260                                                                             | 3,260                                                                             | 3,260                                                                             | 3,260                                                                             |
| radius in mm           | 144                                                                               | 144                                                                               | 144                                                                               | 144                                                                               |
| <b>Cat. No.</b>        | <b>tubes with screw cap</b>                                                       |                                                                                   |                                                                                   |                                                                                   |

|                                                                                   |             |                                                                                   |                                                                                   |                                                                                   |  |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
|  |             |  |  |  |  |
|                                                                                   |             |                                                                                   | + E 2109                                                                          | + E2110-A                                                                         |  |
| <b>Adapter</b>                                                                    |             |                                                                                   |                                                                                   |                                                                                   |  |
| boring Ø x L in mm                                                                | 17x87       | 17.5x74                                                                           | 30x87                                                                             | 30x87                                                                             |  |
| vessels per rotor                                                                 | 8           | 8                                                                                 | 8                                                                                 | 8                                                                                 |  |
| <b>Cat. No.</b>                                                                   | <b>1592</b> | <b>1592</b>                                                                       | <b>-</b>                                                                          | <b>-</b>                                                                          |  |

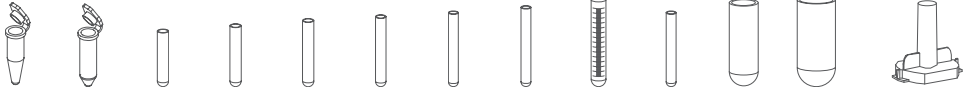


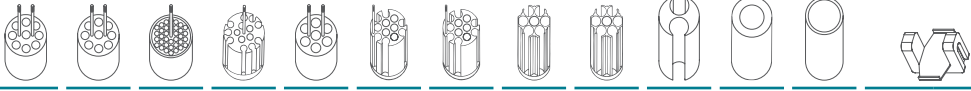
## — SWING-OUT ROTOR, 4-PLACE | 1494

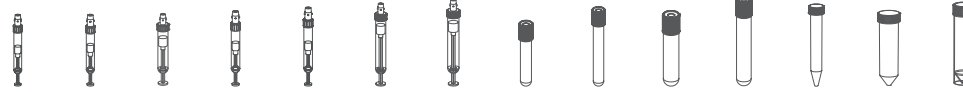
|                                                                                   |                                 |
|-----------------------------------------------------------------------------------|---------------------------------|
|  |                                 |
| <b>Rotor</b>                                                                      |                                 |
| 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>                     |

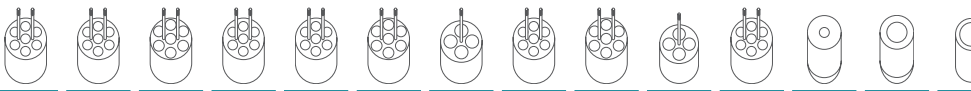
|                                                                                    |             |
|------------------------------------------------------------------------------------|-------------|
|  |             |
| <b>Bucket</b>                                                                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



|                                                                                    |                                                                                                                                                            |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                                                            |
| <b>Vessels</b>                                                                     |                                                                                                                                                            |
| 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 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    2,739                                          |
| radius in mm                                                                       | 139    139    142    140    140    140    140    140    140    140    140    136    98                                                                     |
| <b>Cat. No.</b>                                                                    | <b>microliter tubes    Rhesus    tubes <sup>2)</sup>    cyto chambers</b>                                                                                  |

|                                                                                    |                                                                                                                                                              |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                                                              |
| <b>Adapter</b>                                                                     |                                                                                                                                                              |
| boring Ø x L in mm                                                                 | 11.5 x 38    11.5 x 38    6.5 x 34    10.5 x 40    13.4 x 50    12.7 x 60    12.7 x 60    17.5 x 84    17.5 x 84    25.5 x 84    35.5 x 84    45.5 x 86    - |
| vessels per rotor                                                                  | 36    36    144    56    28    48    48    28    28    8    4    4    4                                                                                      |
| <b>Cat. No.</b>                                                                    | <b>1444    1444    1432    1433    1438    1434    1434    1431    1431    1435    1436    1437    1452</b>                                                  |

|                                                                                      |                                                                                                                                                             |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                                                             |
| <b>Vessels</b>                                                                       |                                                                                                                                                             |
| capacity in ml                                                                       | 2.6 – 3.4    2.7 – 3    4 – 5.5    4.5 – 5    4.9    7.5 – 8.5    9 – 10    1.6 – 5    4 – 7    4 – 7    8.5 – 10    15    50    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    17 x 120    29 x 115    19 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    4,081    4,081                                  |
| radius in mm                                                                         | 140    140    140    140    140    140    140    140    140    140    140    146    146    146                                                              |
| <b>Cat. No.</b>                                                                      | <b>blood collection / urine vessels    tubes with screw cap</b>                                                                                             |

|                                                                                      |                                                                                                                                                                            |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                                                                            |
| <b>Adapter</b>                                                                       |                                                                                                                                                                            |
| 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    17 x 90    30 x 90    30 x 90 |
| vessels per rotor                                                                    | 28    28    28    28    28    28    16    28    28    28    28    4    4    4                                                                                              |
| <b>Cat. No.</b>                                                                      | <b>1438    1438    1441    1438    1438    1441    1439    1438    1438    1441    1441    1442    1443    1737</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



## Bucket

|                 |             |
|-----------------|-------------|
| Lid             | 1421        |
| <b>Cat. No.</b> | <b>1427</b> |



|                        |                         |       |               |                            |       |       |        |        |        |        |        |                                         |         |       |       |
|------------------------|-------------------------|-------|---------------|----------------------------|-------|-------|--------|--------|--------|--------|--------|-----------------------------------------|---------|-------|-------|
| capacity in ml         | 1.5                     | 2.0   | 1             | 3                          | 5     | 6     | 7      | 9      | 15     | 25     | 50     | 1.1–1.4                                 | 2.6–3.4 | 2.7–3 | 4–5.5 |
| Ø x L in mm            | 11x38                   | 11x38 | 6 x 45        | 10 x 60                    | 12x75 | 12x82 | 12x100 | 14x100 | 17x100 | 24x100 | 34x100 | 8 x 66                                  | 13x65   | 11x66 | 15x75 |
| 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   | 148           | 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> |         |       |       |

|                    |         |         |        |         |         |         |         |       |         |         |         |      |         |         |         |
|--------------------|---------|---------|--------|---------|---------|---------|---------|-------|---------|---------|---------|------|---------|---------|---------|
| boring Ø x L in mm | 11.5x38 | 11.5x38 | 6.5x34 | 10.5x40 | 13.4x58 | 12.5x44 | 12.4x87 | 15x73 | 17.8x87 | 25.5x87 | 35.5x87 | 9x41 | 13.4x58 | 12.5x44 | 15.6x41 |
| vessels per rotor  | 36      | 36      | 120    | 48      | 32      | 48      | 48      | 24    | 24      | 8       | 4       | 48   | 32      | 48      | 20      |
| Cat. No.           | 5277    | 5277    | 1357   | 1327    | 1732    | 5229    | 5230    | 5237  | 5231    | 5232    | 5233    | 5278 | 1732    | 5229    | 5279    |

Figure 1 illustrates the different types of syringes and vials used in the study. The devices are shown in a row, including syringes and vials, with some labeled '3.1)'.

|                        |                                         |         |           |         |         |          |         |          |                             |          |          |          |          |
|------------------------|-----------------------------------------|---------|-----------|---------|---------|----------|---------|----------|-----------------------------|----------|----------|----------|----------|
| capacity in ml         | 4.5 – 5                                 | 4.9     | 7.5 – 8.5 | 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 | 19 x 115 | 25 x 110 | 25 x 115 |
| max. RCF <sup>2)</sup> | 3,941                                   | 4,025   | 4,105     | 3,969   | 4,025   | 4,025    | 3,969   | 3,941    | 4,165                       | 4,053    | 3,565    | 4,025    | 4,053    |
| radius in mm           | 141                                     | 144     | 147       | 142     | 144     | 144      | 142     | 141      | 145                         | 145      | 142      | 144      | 145      |
| <b>Cat. No.</b>        | <b>blood collection / urine vessels</b> |         |           |         |         |          |         |          | <b>tubes with screw cap</b> |          |          |          |          |

|                     |           |           |           |                    |           |           |                    |           |         |         |           |           |                    |
|---------------------|-----------|-----------|-----------|--------------------|-----------|-----------|--------------------|-----------|---------|---------|-----------|-----------|--------------------|
| bearing Ø x L in mm | 12.4 x 87 | 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 87 | 17 x 90 | 30 x 90 | 25.5 x 72 | 25.5 x 85 | 35.5 x 87          |
| vessels per rotor   | 48        | 32        | 20        | 20                 | 32        | 32        | 20                 | 24        | 4       | 4       | 8         | 4         | 4                  |
| Cat. No.            | 5230      | 1732      | 5279      | 5271 <sup>4)</sup> | 1732      | 1732      | 5271 <sup>4)</sup> | 5231      | 5275    | 5276    | 1731      | 5272      | 5233 <sup>4)</sup> |

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.

## 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°   58 dB (A)                 |
| temperature in °C <sup>1)</sup>  | -10                             |
| <b>Cat. No.</b>                  | <b>1494</b>                     |

### Bucket

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



### Vessels

|                        |                  |                         |               |                           |         |       |       |        |        |        |        |        |        |        |
|------------------------|------------------|-------------------------|---------------|---------------------------|---------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| capacity in ml         | 0.5              | 1.5                     | 2.0           | 1                         | 3       | 5     | 6     | 7      | 9      | 15     | 25     | 50     | 94     | 100    |
| Ø x L in mm            | 10.7x36          | 11x38                   | 11x38         | 6 x 45                    | 10 x 60 | 12x75 | 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           | 146                       | 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> |         |       |       |        |        |        |        |        |        |        |



### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 11.2x38     | 11.2x38     | 11.2x38     | 6.5x34      | 10.5x40     | 13.4x48     | 13.4x48     | 13.4x48     | 17.6x91     | 17.6x91     | 25.2x87     | 35.2x87     | 35.5x92     | 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> |

### Vessels

|                        |                                         |         |         |         |         |         |         |         |          |         |          |         |          |
|------------------------|-----------------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|---------|----------|---------|----------|
| capacity in ml         | 1.1–1.4                                 | 2.7–5   | 2.7–5   | 2.6–4.9 | 2.6–4.9 | 4–8.5   | 4–8.5   | 9–10    | 10       | 1.6–5   | 1.6–5    | 4–10    | 4–10     |
| 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> | 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> |         |         |         |         |         |         |         |          |         |          |         |          |



### Adapter

|                    |             |             |             |             |             |             |             |             |                          |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 9x47        | 13.4x48     | 13.4x48     | 13.4x48     | 13.4x48     | 15.6x47     | 15.6x47     | 17.6x91     | 17.6x91                  | 13.4x48     | 13.4x48     | 16.5x56     | 16.5x56     |
| 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                          | 30       | 50       | 12       | 25      | 50       | 10      | 30      | 50       | 85       | 30                       |
| Ø 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 | 29 x 107 | 38 x 106 | 44 x 105                 |
| 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> |



### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 17x90       | 26x80       | 30x90       | 17x80       | 26x72       | 29.5x80     | 16.5x56     | 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.

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> |



### Carrier

|                    |                |             |                |                |             |             |             |             |             |             |             |             |             |
|--------------------|----------------|-------------|----------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 12.5x64.4      | 13.5x65     | 12.5x71.5      | 12.5x71.5      | 14.6x74     | 14.6x78     | 17.6x74     | 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 | 1.6 – 5 | 4 – 7 | 4 – 7    | 4 – 7    | 4 – 7    | 8.5 – 10 | 30          |
| Ø x L in mm                     | 8 x 66                                  | 13x65     | 15x75   | 13x90 | 13x75   | 16x75 | 13x75   | 16x75 | 13 x 100 | 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 | 2,129   | 2,361 | 2,325   | 2,325 | 2,361    | 2,361    | 2,451    | 2,361    | 2,451       |
| radius in mm                    | 135                                     | 130       | 130     | 137   | 119     | 132   | 130     | 130   | 132      | 132      | 137      | 132      | 137         |
| temperature in °C <sup>1)</sup> | -15                                     | -15       | -15     | -15   | -15     | -15   | -15     | -15   | -15      | -15      | -15      | -17      | -15         |
| <b>Cat. No.</b>                 | <b>blood collection / urine vessels</b> |           |         |       |         |       |         |       |          |          |          |          | <b>0545</b> |



### Carrier

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

16) Packed in units of 10 pieces.

20) This combination permits no Vacutainers made of glass.

## — SWING-OUT ROTOR, 4-PLACE | 1624

|                                  |                                 |                 |      |
|----------------------------------|---------------------------------|-----------------|------|
|                                  |                                 |                 |      |
| <b>Rotor</b>                     |                                 | <b>Bucket</b>   |      |
| max. RPM   max. RCF              | 4,000 min <sup>-1</sup>   1,968 | <b>Cat. No.</b> | 1366 |
| 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>                  | 1624                            |                 |      |



|                        |                                                    |
|------------------------|----------------------------------------------------|
|                        |                                                    |
| <b>Vessels</b>         |                                                    |
| capacity in ml         | 1.5    2.0    1    3    4                          |
| Ø x L in mm            | 11 x 38    11 x 38    6 x 45    10 x 60    12 x 60 |
| max. RCF <sup>2)</sup> | 1,968    1,968    1,950    1,932    1,932          |
| radius in mm           | 110    110    109    108    108                    |
| <b>Cat. No.</b>        | microliter tubes    Rhesus    tubes <sup>2)</sup>  |

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
|                    |                                                              |
| <b>Adapter</b>     |                                                              |
| boring Ø x L in mm | 11.5 x 38    11.5 x 38    6.5 x 23    10.5 x 23    12.5 x 44 |
| vessels per rotor  | 36    36    120    48    48                                  |
| <b>Cat. No.</b>    | 5277    5277    1357    1327    1326                         |

## — SWING-OUT ROTOR, 4-PLACE | 1624

|                                   |                                 |                           |      |
|-----------------------------------|---------------------------------|---------------------------|------|
|                                   |                                 |                           |      |
| <b>Rotor</b>                      |                                 | <b>Bucket</b>             |      |
| max. RPM   max. RCF <sup>2)</sup> | 4,000 min <sup>-1</sup>   2,665 | Lid bioseal <sup>5)</sup> | 1492 |
| max. capacity                     | 4 x 100 ml                      | <b>Cat. No.</b>           | 1481 |
| 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>                   | 1624                            |                           |      |



|                        |                                                                                                                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        |                                                                                                                                                                                   |
| <b>Vessels</b>         |                                                                                                                                                                                   |
| capacity in ml         | 0.5    1.5    2.0    1    3    5    6    7    9    15    25    50    94    100                                                                                                    |
| Ø x L in mm            | 10,7 x 36    11 x 38    11 x 38    6 x 45    10 x 60    12 x 75    12 x 82    12 x 100    14 x 100    17 x 100    24 x 100    34 x 100    38 x 102    44 x 100                    |
| max. RCF <sup>2)</sup> | 2,379    2,451    2,451    2,594    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    143    143    143    142    142    136    135    146    143                                                                                    |
| <b>Cat. No.</b>        | Pediatric    microliter tubes    Rhesus    tubes <sup>2)</sup>                                                                                                                    |
|                        |                                                                                                                                                                                   |
| <b>Adapter</b>         |                                                                                                                                                                                   |
| 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 48    13.4 x 48    13.4 x 48    17.6 x 91    17.6 x 91    25.2 x 87    35.2 x 87    38.5 x 92    45.9 x 98 |
| vessels per rotor      | 20    20    20    108    36    20    20    20    16    16    4    4    4    4                                                                                                     |
| <b>Cat. No.</b>        | 1351    1351    1351    1339    1343    1383    1383    1383    1329    1329    1330    1331    1396    0761                                                                      |

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.

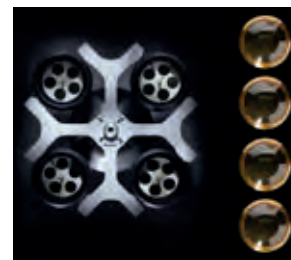
5) Tested by the TÜV in conformity with DIN EN 61010. section 2 - 020.



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

|                                  |                                 |
|----------------------------------|---------------------------------|
|                                  |                                 |
| <b>Rotor</b>                     |                                 |
| 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>                     |

|                           |             |
|---------------------------|-------------|
|                           |             |
| <b>Bucket</b>             |             |
| Lid bioseal <sup>5)</sup> | 1492        |
| <b>Cat. No.</b>           | <b>1481</b> |



|                        |                                                                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|                        |                                                                                                                                   |
| <b>Vessels</b>         |                                                                                                                                   |
| capacity in ml         | 1.1–1.4   2.7–5   2.7–5   2.6–4.9   2.6–4.9   4–8.5   4–8.5   9–10   10   1.6–7   1.6–7   4–10   4–10                             |
| 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>                                                                                           |

|                    |                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                                                                                                        |
| <b>Adapter</b>     |                                                                                                                                                        |
| boring Ø x L in mm | 9 x 47   13.4 x 48   13.4 x 48   13.4 x 48   13.4 x 48   15.6 x 47   15.6 x 47   17.6 x 91   17.6 x 91   13.4 x 48   13.4 x 48   16.5 x 56   16.5 x 56 |
| vessels per rotor  | 28   20   20   20   20   16   16   16   16   20   20   16   16                                                                                         |
| <b>Cat. No.</b>    | <b>1457   1383   1383   1383   1383   1459   1459   1329   1329<sup>4)</sup>   1383   1383   1348   1348</b>                                           |

|                        |                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                        |                                                                                                                               |
| <b>Vessels</b>         |                                                                                                                               |
| capacity in ml         | 5   15   50   12   25   30   50   10   30   50   85   30                                                                      |
| Ø x L in mm            | 17 x 59   17 x 120   29 x 115   17 x 100   25 x 90   25 x 110   29 x 115   16 x 80   26 x 95   29 x 107   38 x 106   44 x 105 |
| max. RCF <sup>2)</sup> | 2,665   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   149   131   149   149   141   137   147   146   142                                                         |
| <b>Cat. No.</b>        | <b>-   tubes with screw cap   0534<sup>6)</sup></b>                                                                           |

|                    |                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                                                                               |
| <b>Adapter</b>     |                                                                                                                               |
| boring Ø x L in mm | 17 x 45   17 x 90   30 x 90   17 x 80   26 x 72   26 x 80   29.5 x 80   16.5 x 56   26 x 83   29 x 93   38.5 x 92   45.9 x 98 |
| vessels per rotor  | 12   4   4   4   4   4   4   16   4   4   4   4                                                                               |
| <b>Cat. No.</b>    | <b>6341   1347   1384   6311   1363   1365   6318   1348   4417   4416   1396   0765</b>                                      |

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 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

### Rotor

|                                  |                                 |
|----------------------------------|---------------------------------|
| 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>                     |



### Bucket

|                           |             |
|---------------------------|-------------|
| Lid bioseal <sup>5)</sup> | 1492        |
| <b>Cat. No.</b>           | <b>1490</b> |



### Vessels

|                        |                  |                         |               |                           |       |       |       |       |        |        |        |        |        |        |        |
|------------------------|------------------|-------------------------|---------------|---------------------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| capacity in ml         | 0,5              | 1,5                     | 2,0           | 1                         | 3     | 4     | 5     | 6     | 7      | 9      | 15     | 25     | 50     | 94     | 100    |
| Ø x L in mm            | 10.7x36          | 11x38                   | 11x38         | 6x45                      | 10x60 | 10x88 | 12x75 | 12x82 | 12x100 | 14x100 | 17x100 | 24x100 | 34x100 | 38x102 | 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> |       |       |       |       |        |        |        |        |        |        |        |



### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 11.2x38     | 11.2x38     | 11.2x38     | 6.5x34      | 10.5x43     | 10.5x43     | 13.4x48     | 13.4x48     | 13.4x48     | 17.6x91     | 17.6x91     | 25.2x87     | 35.2x87     | 38.5x92     | 45.9x100.5  |
| vessels per rotor  | 20          | 20          | 20          | 108         | 36          | 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>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> |

### Vessels

|                        |                                         |         |       |       |       |       |         |       |        |       |        |       |        |          |          |
|------------------------|-----------------------------------------|---------|-------|-------|-------|-------|---------|-------|--------|-------|--------|-------|--------|----------|----------|
| capacity in ml         | 1.1–1.4                                 | 2.6–3.4 | 4.9   | 2.7–3 | 4.5–5 | 4–5.5 | 7.5–8.5 | 9–10  | 10     | 1.6–5 | 4–7    | 4–7   | 8.5–10 | 5        | 15       |
| Ø x L in mm            | 8 x 66                                  | 13x65   | 13x90 | 11x66 | 11x92 | 15x75 | 15x92   | 16x92 | 15x102 | 13x75 | 13x100 | 16x75 | 16x100 | 17x59    | 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    | 3,328    |
| radius in mm           | 142                                     | 141     | 141   | 141   | 141   | 142   | 142     | 140   | 147    | 141   | 141    | 139   | 139    | 147      | 147      |
| <b>Cat. No.</b>        | <b>blood collection / urine vessels</b> |         |       |       |       |       |         |       |        |       |        |       |        | <b>-</b> | <b>-</b> |



### Adapter

|                    |             |             |             |             |             |             |             |             |                          |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 9x47        | 13.4x48     | 13.4x48     | 13.4x48     | 13.4x48     | 15.6x47     | 15.6x47     | 17.6x91     | 17.6x91                  | 13.4x48     | 13.4x48     | 16.5x56     | 16.5x56     | 17x45       | 17x90       |
| vessels per rotor  | 28          | 20          | 20          | 20          | 20          | 16          | 16          | 16          | 16                       | 20          | 20          | 16          | 16          | 12          | 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>6341</b> | <b>1347</b> |

### Vessels

|                        |                             |          |          |          |         |          |          |         |         |        |        |                          |
|------------------------|-----------------------------|----------|----------|----------|---------|----------|----------|---------|---------|--------|--------|--------------------------|
| 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>0534<sup>6)</sup></b> |



### Adapter

|                    |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| boring Ø x L in mm | 17x107      | 26x80       | 30x90       | 17x80       | 26x72       | 26x80       | 29.5x80     | 16.5x56     | 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> |

3) When using these tubes, carrier 1490 cannot be closed with lid 1492.

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>                     |                                 | <b>Bucket</b>   |      |
| max. RPM   max. RCF              | 4,500 min <sup>-1</sup>   3,305 | <b>Cat. No.</b> | 1398 |
| 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>                  | 1324                            |                 |      |



|                        |                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------|
|                        |                                                                                                 |
| <b>Vessels</b>         |                                                                                                 |
| capacity in ml         | 5 6 7 9 12 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 14x100 17x102 17x100 13x65 11x66 15x75 11x92 13x90 16x92 15x102 13x75 13x100 |
| max. RCF <sup>2)</sup> | 3,147 3,147 3,147 3,192 3,102 3,192 3,147 3,147 2,875 3,147 3,147 3,192 3,192 3,147 3,147       |
| radius in mm           | 139 139 139 141 137 141 139 139 127 139 139 141 141 139 139                                     |
| <b>Cat. No.</b>        | <div>Tubes<sup>2)</sup></div> <div>blood collection / urine vessels</div>                       |

|                    |                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                                                                                           |
| <b>Adapter</b>     |                                                                                                                                           |
| boring Ø x L in mm | 13.4x57.5 13.4x57.5 13.4x57.5 17.5x81 17.5x74 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 12 16 20 20 16 20 20 16 16 20 20                                                                                              |
| <b>Cat. No.</b>    | <div>1486 1486 1486 1482A 1487 1482A 1486 1486 1482A 1486 1486 1482A 1482A 1486 1486</div>                                                |

|                        |                                                                             |
|------------------------|-----------------------------------------------------------------------------|
|                        |                                                                             |
| <b>Vessels</b>         |                                                                             |
| capacity in ml         | 4–7 8.5–10 15 50 12 50                                                      |
| Ø x L in mm            | 16x75 16x100 17 x 120 29 x 115 17 x 100 29 x 115                            |
| max. RCF <sup>2)</sup> | 3,034 3,034 3,305 3,260 3,192 3,260                                         |
| radius in mm           | 134 134 146 144 141 144                                                     |
| <b>Cat. No.</b>        | <div>blood collection / urine vessels</div> <div>tubes with screw cap</div> |

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

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 – 3.4                        | 2.7 – 3 | 4 – 5.5 | 4.5 – 5 | 7.5 – 8.5 | 1.6 – 5 | 4 – 7    | 4 – 7   | 8.5 – 10 |
| Ø x L in mm            | 12 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      |
| Cat. No.               | tubes <sup>2)</sup> |         |          |          |          | blood collection / urine vessels |         |         |         |           |         |          |         |          |



### 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                          | 15       | 2.6 – 3.4                               | 2.7 – 3 | 4 – 5.5 | 7.5 – 8.5 | 1.6 – 5 | 4 – 7   | 8.5 – 10 |
| Ø x L in mm                     | 12 x 75                    | 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>          | 3,494                      | 4,193    | 3,494                                   | 3,494   | 3,522   | 4,193     | 3,494   | 3,522   | 4,193    |
| radius in mm                    | 125                        | 150      | 125                                     | 125     | 126     | 150       | 125     | 126     | 150      |
| temperature in °C <sup>1)</sup> | -15                        | -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 | 13.2 x 53     | 17.5 x 79   | 13.2 x 53     | 13.2 x 53     | 17.5 x 53   | 17.5 x 79   | 13.2 x 53     | 17.5 x 53   | 17.5 x 79   |
| vessels per rotor  | 12            | 12          | 12            | 12            | 12          | 12          | 12            | 12          | 12          |
| <b>Cat. No.</b>    | <b>1127-A</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> |

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, 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                             |

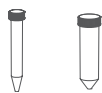
**Cat. No.** 1617



### 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      |

**Cat. No.** tubes with screw cap



### Adapter

|                    |         |           |
|--------------------|---------|-----------|
| boring Ø x L in mm | 17 x 84 | 30 x 94.5 |
| vessels per rotor  | 8       | 8         |

**Cat. No.** 1462-A -



## — 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                             |

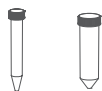
**Cat. No.** 1619



### 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      |

**Cat. No.** tubes with screw cap



### Adapter

|                    |         |           |
|--------------------|---------|-----------|
| boring Ø x L in mm | 17 x 84 | 30 x 87.5 |
| vessels per rotor  | 6       | 6         |

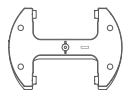
**Cat. No.** 1462-A -



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  | 128x86x17.5 | 128x86x22 | 128x86x44.5 | 128x86x46 | 128x86x83 | 84x59x11                | 124x82x20                  | -                 |
| max. RCF <sup>2)</sup> | 2,218      | 2,218       | 2,218     | 2,218       | 2,218     | 2,218     | 2,218                   | 2,218                      | 2,218             |
| radius in mm           | 124        | 124         | 124       | 124         | 124       | 124       | 124                     | 124                        | 124               |
| <b>Cat. No.</b>        | <b>MTP</b> | <b>MTP</b>  | <b>CP</b> | <b>DWP</b>  | <b>MS</b> | <b>QP</b> | <b>Microtest plates</b> | <b>PCR plate, 96 wells</b> | <b>PCR strips</b> |



### Bucket

|                    |               |               |               |               |               |               |               |                      |                      |
|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------|----------------------|
| boring Ø x L in mm | -             | -             | -             | -             | -             | -             | -             | -                    | -                    |
| vessels per rotor  | 10            | 8             | 6             | 2             | 2             | 2             | 4             | 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</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> |        |        |        |        |        |



### Adapter

|                    |             |             |             |             |                          |           |
|--------------------|-------------|-------------|-------------|-------------|--------------------------|-----------|
| boring Ø x L in mm | 6x40        | 6x40        | 8x40        | 8x40        | -                        | 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.



## — ANGLE ROTOR, 24-PLACE | 1552

|                                                                                   |                                   |
|-----------------------------------------------------------------------------------|-----------------------------------|
|  |                                   |
| <b>Rotor</b>                                                                      |                                   |
| max. RPM   max. RCF                                                               | 16,000 min <sup>-1</sup>   24,900 |
| 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>                       |



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

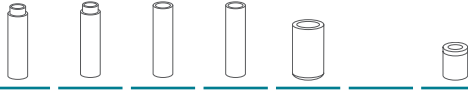


**INCLUSIVE**



|                                                                                   |                                                                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|
|  |                                                                   |
| <b>Vessels</b>                                                                    |                                                                   |
| capacity in ml                                                                    | 0.2   0.4   0.5   0.8   1.5   2   0.5                             |
| Ø x L in mm                                                                       | 6 x 18   6 x 45   8 x 30   8 x 45   11 x 38   11 x 38   10,7 x 36 |
| 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                                                                | 6 x 40   6 x 40   8 x 40   8 x 40   10.2 x 19   11.2 x 42.6   11.2 x 39       |
| vessels per rotor                                                                 | 24   24   24   24   24   24   12                                              |
| <b>Cat. No.</b>                                                                   | <b>2024   2024   2023   2023   2031<sup>7)</sup>   -   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 |
| 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>                       |



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

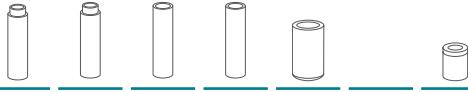


**INCLUSIVE**



|                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
|  |                                                                   |
| <b>Vessels</b>                                                                      |                                                                   |
| capacity in ml                                                                      | 0.2   0.4   0.5   0.8   1.5   2   0.5                             |
| Ø x L in mm                                                                         | 6 x 18   6 x 45   8 x 30   8 x 45   11 x 38   11 x 38   10.7 x 36 |
| 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                                                                  | 6 x 40   6 x 40   8 x 40   8 x 40   10.2 x 19   11.2 x 40.9   11.2 x 39       |
| vessels per rotor                                                                   | 30   30   30   30   30   30   15                                              |
| <b>Cat. No.</b>                                                                     | <b>2024   2024   2023   2023   2031<sup>7)</sup>   -   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.

17) Packed in units of 15 pieces.

## — ANGLE ROTOR, 64-PLACE | 1551



### Rotor

|                                  |                                   |
|----------------------------------|-----------------------------------|
| max. RPM   max. RCF              | 13,000 min <sup>-1</sup>   13,604 |
| max. capacity                    | 64 x 0.2 ml                       |
| 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      | 0.2               |
| Ø x L in mm            | 6 x 18   | -                 |
| max. RCF <sup>2)</sup> | 13,604   | 13,604            |
| radius in mm           | 72       | 72                |
| <b>Cat. No.</b>        | <b>-</b> | <b>PCR-Strips</b> |

## — 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           | 99       |
| <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>2)</sup>,  
phenol-resistant

Cat. No.



**INCLUSIVE**



|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Vessels                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| capacity in ml         | 1,5                                                                               | 2                                                                                 | 15                                                                                | 50                                                                                | 50                                                                                | 85                                                                                | 7.5–8.5                                                                           | 9–10                                                                              | 10                                                                                | 8.5–10                                                                              | 15                                                                                  | 50                                                                                  | 10                                                                                  | 30                                                                                  | 50                                                                                  |
| Ø x L in mm            | 11x38                                                                             | 11x38                                                                             | 17x100                                                                            | 35x105                                                                            | 34x100                                                                            | 38x101                                                                            | 15x92                                                                             | 16x92                                                                             | 15x102                                                                            | 16x100                                                                              | 17x120                                                                              | 29x115                                                                              | 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                                                                                 | 112                                                                                 |
| Cat. No.               | microliter tubes                                                                  |                                                                                   | tubes <sup>2)</sup>                                                               |                                                                                   |                                                                                   |                                                                                   | blood collection / urine vessels                                                  |                                                                                   |                                                                                   |                                                                                     | tubes with screw cap                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |             |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Adapter</b>                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |             |
| boring Ø x L in mm                                                                | 11 x 35                                                                           | 11 x 35                                                                           | 13.5 x 60                                                                         | 13.5 x 60                                                                         | 13.5 x 60                                                                         | -                                                                                 | 13.5 x 60                                                                         | 13.5 x 60                                                                           | 13.5 x 60                                                                           | 13.5 x 60                                                                           | 17 x 106                                                                            | 17.7 x 88                                                                           | 16.5 x 74                                                                           | 26 x 85                                                                             | 29 x 92     |
| vessels per rotor                                                                 | 24                                                                                | 24                                                                                | 6                                                                                 | 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>1447</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>    | - | - |

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 | 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 – 3.4 | 2.7 – 3 | 4.5 – 5 | 4.9     | 7.5 – 8.5 | 9 – 10  | 10       |
| Ø x L in mm            | 10.7 x 36        | 11 x 38                 | 11 x 38 | 10 x 88                    | 12 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 60     | 13.5 x 60     | 17.7 x 88 | 13.5 x 60     | 13.5 x 60     | 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      | 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> | <b>-</b> |



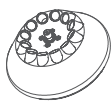
### Adapter

|                    |               |             |           |           |             |           |
|--------------------|---------------|-------------|-----------|-----------|-------------|-----------|
|                    |               |             |           |           |             |           |
| boring Ø x L in mm | 13.5 x 60     | 13.5 x 79   | 17.7 x 88 | 17.7 x 88 | 17 x 25     | 17.7 x 88 |
| vessels per rotor  | 12            | 12          | 6         | 12        | 12          | 6         |
| <b>Cat. No.</b>    | <b>1054-A</b> | <b>1058</b> | <b>-</b>  | <b>-</b>  | <b>1064</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         | 45°   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 - 3.4 | 2.7 - 3 | 4.5 - 5 | 4.9     | 7.5 - 10   | 10       |
| Ø x L in mm            | 10.7 x 36        | 11 x 38                 | 11 x 38 | 10 x 88                    | 12 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 | 11.5 x 67.5 | 13.5 x 60     | 13.5 x 60     | 17.7 x 88 | 13.5 x 60     | 13.5 x 60     | 13.5 x 60     | 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        |
| <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>  |

### Vessels

|                        |                                         |          |          |          |          |          |
|------------------------|-----------------------------------------|----------|----------|----------|----------|----------|
|                        |                                         |          |          |          |          |          |
| capacity in ml         | 1.6 - 5                                 | 4 - 7    | 8 - 10   | 8 - 10   | 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 60     | 13.5 x 79   | 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>1058</b> | <b>-</b>  | <b>-</b>  | <b>1064</b> | <b>1647 <sup>2b)</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.

## — 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>  | -11                             |
| <b>Cat. No.</b>                  | <b>1418</b>                     |



### Vessels

|                        |       |        |         |         |       |       |       |        |        |        |        |        |        |        |        |
|------------------------|-------|--------|---------|---------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
|                        |       |        |         |         |       |       |       |        |        |        |        |        |        |        |        |
| capacity in ml         | 5     | 15     | 1.1-1.4 | 2.6-3.4 | 2.7-3 | 9-10  | 1.6-5 | 4-7    | 8.5-10 | 12     | 15     | 50     | 12     | 50     | 50     |
| Ø x L in mm            | 12x75 | 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 | 3,305  | 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    |

### Cat. No.

| 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 | + 0716 | + E2109 | + E2110-A            | + 0716 |  |  |  |



### Carrier

|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                    |             |             |             |             |             |             |             |             |             |             |             |             |             |             |             |
| 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     | 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.

## CERTIFICATES / REGISTRATIONS

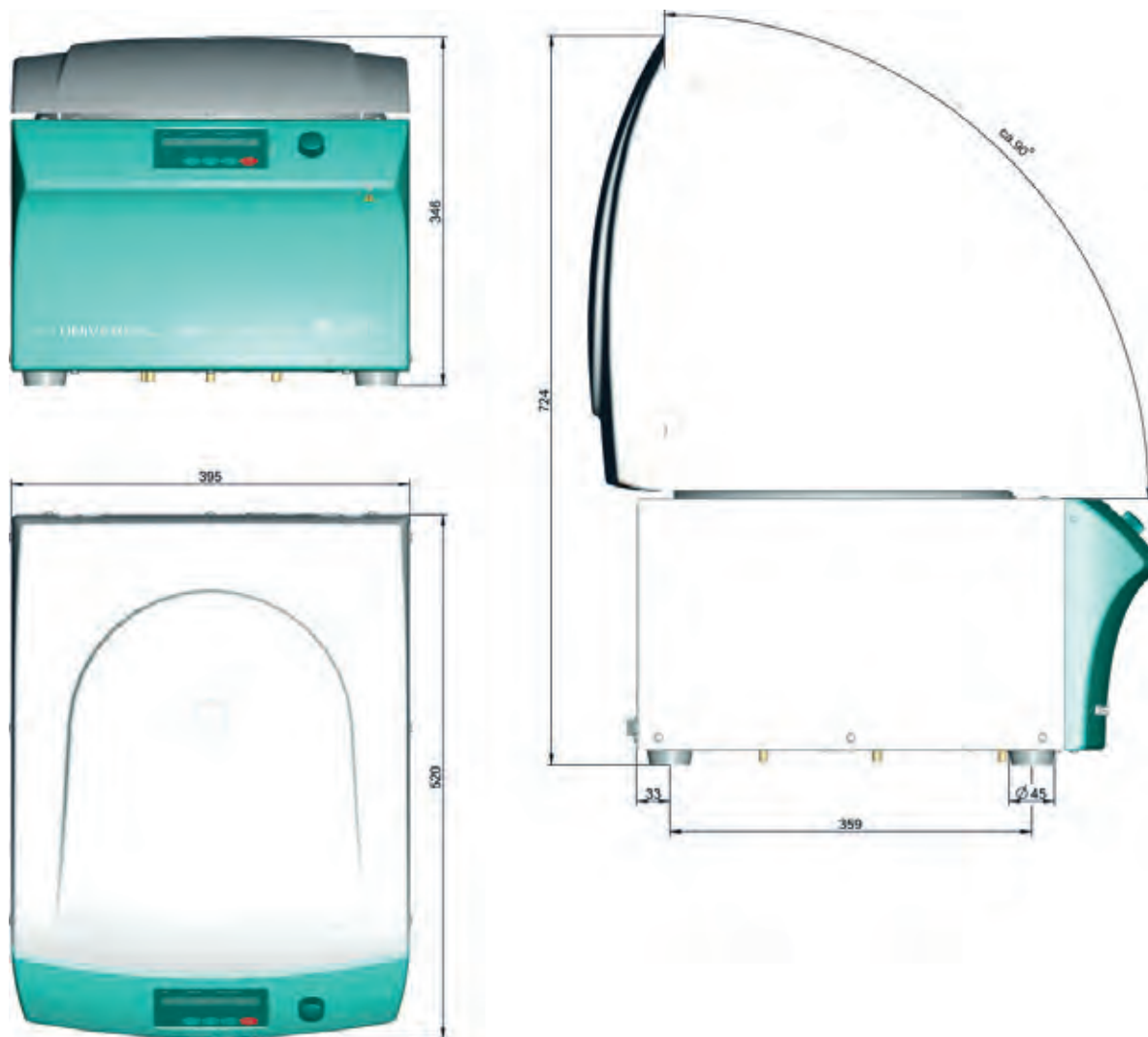


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# Wolf Laboratories Limited

[www.wolflabs.co.uk](http://www.wolflabs.co.uk)

Tel: 01759 301142

Fax: 01759 301143

[sales@wolflabs.co.uk](mailto:sales@wolflabs.co.uk)



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