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R5SS3

Instructions for Use

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# 1 About this manual

## 1.1 Version overview

| Version | Change             | Content approval |
|---------|--------------------|------------------|
| 00      | • Document created | 2026-08-28       |

## 1.2 Notes on this manual

This document describes the rotor and does not replace the operating manual for the device.

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1. Read these instructions for use before using the rotor.
2. Also read the operating manual for the device with which you are using the rotor.

The dates in this manual correspond to the international date format as specified in the ISO 8601 standard. All dates are shown in the format YYYY-MM-DD or YYYY-MM.

This manual uses units of measurement and unit symbols in accordance with the International System of Units SI (see. ISO 80000) and its derived and legally permissible units. For example, times are specified in hours [h], minutes [min], and seconds [s].

Eppendorf is committed to equal treatment. To improve readability, we have chosen not to use gender-specific terms (m/f/d) in our manuals. All references to persons apply equally to all genders.

## 1.3 Warning notice structure



### HAZARD LEVEL! Type of danger

- Source of danger
- Consequences of disregarding the danger
- Measures to avoid the danger

| Symbol                                                                              | Hazard level   | Type of danger  | Meaning                                 |
|-------------------------------------------------------------------------------------|----------------|-----------------|-----------------------------------------|
|  | <b>DANGER</b>  | Personal injury | Will lead to severe injuries or death.  |
|  | <b>WARNING</b> | Personal injury | May lead to severe injuries or death.   |
|  | <b>CAUTION</b> | Personal injury | May lead to minor or moderate injuries. |

| Symbol                                                                            | Hazard level  | Type of danger  | Meaning                      |
|-----------------------------------------------------------------------------------|---------------|-----------------|------------------------------|
|  | <b>NOTICE</b> | Material damage | May lead to material damage. |

## 1.4 Graphics

| Depiction                                                                         | Meaning                                    |
|-----------------------------------------------------------------------------------|--------------------------------------------|
| 1.                                                                                | Work steps                                 |
| 2.                                                                                |                                            |
| •                                                                                 | Bullet point                               |
| <i>Text</i>                                                                       | Display text                               |
| <b>Key</b>                                                                        | Name for port, button, status lamp, or key |
|  | Important information                      |
|  | Tip                                        |

## 1.5 Other applicable documents

The following documents supplement these instructions for use:

- Operating manual for the SpinPro 8 R
- Operating manual for the CR22N/CR21N
- Operating manual for the CR30NX

## 2 Safety

### 2.1 Personal injury

#### 2.1.1 Biological hazards

If unsuitable or damaged rotors, rotor lids or accessories are used in aerosol-tight centrifugation, hazardous aerosols may escape.

- Only use aerosol-tight rotors and rotor lids and aerosol-tight accessories.
- Check all rotors, rotor lids and accessories for perfect condition before each use.

Pathogenic biological agents can harm your health and the environment.

- Observe national regulations and the biosafety level of your laboratory.
- Wear your personal protective equipment.
- Observe the Safety Data Sheets and instructions for use for the accessories.
- For information on handling germs or biological material of risk group II or higher, read the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, in the current version).

### 2.1.2 Explosion hazards

The use of explosive or highly reactive substances in the rotor can lead to fire or explosion.

- Do not use explosive or highly reactive substances.
- Do not use substances that can create an explosive atmosphere with or without a reactant.

### 2.1.3 Mechanical hazards

If you handle rotors incorrectly, the rotors may fall down and injure people.

- Hold rotors with both hands.
- Hold swing-bucket rotors at the rotor cross.

If rotors break, sharp-edged fragments can be created that can injure people.

- Wear cut-resistant gloves when collecting sharp-edged fragments.
- Avoid material damage to the rotors.

## 2.2 Material damage

### 2.2.1 Chemical hazards

Aggressive chemicals, as well as aggressive cleaning agents and disinfectants, can damage the material of the rotor, accessories, and vessels.

- Check the chemical resistance of the rotor and accessories before using organic solvents and aggressive chemicals.
- For vessels, refer to the manufacturer's material specifications.
- Use only samples that will not damage the rotor and vessels.
- Clean and disinfect all components only with recommended cleaning agents and disinfectants.
- Clean the rotor and accessories immediately after contact with aggressive chemicals.
- Check the rotor and accessories for material changes before each use.
- Replace a damaged rotor.
- Replace damaged accessories.

The use of organic solvents (e.g. Phenol, Chloroform) reduces the stability of plastic tubes. The tubes may become damaged.

- Please take note of the information provided by the manufacturer regarding the chemical resistance of the tubes.

### 2.2.2 Mechanical hazards

A damaged rotor or damaged accessories can be destroyed when used in the device.

- Check the rotor and accessories for visible damage and material changes before each use.
- Use only undamaged rotors and accessories.
- Use rotors and accessories only within their service life.

Incorrect handling of the buckets of swing-bucket rotors can cause the rotor cross and the buckets to fall and become damaged.

- Remove the buckets before removing the rotor.
- Insert the rotor without buckets.

### **2.2.3 Incorrect handling**

Improperly attached rotors can damage the device, rotor and vessels.

- Insert the rotor as described in this manual.
- If present, close the rotor lid and caps as described in this manual.
- Stop centrifugation immediately if there are any unusual noises.

### **2.2.4 Loss of samples**

Incorrect handling of the buckets, tubes and adapters can lead to tube breakage and sample loss.

- Observe the manufacturer's instructions for tubes.
- Only use accessories appropriate for the tubes in the rotor.
- Use adapters to insert the tubes in the buckets.
- Remove the buckets before removing the rotor.
- Insert the rotor without buckets.

Incorrect handling of tubes may cause sample loss.

- Observe the manufacturer's instructions for tubes.
- For centrifugation, only use liquids with a maximum density of 1.2 g/mL.

## **2.3 Information on product liability**

The owner of the device will be held liable for personal and material damage in the following cases:

- The device is used outside of its intended use
- The device is not used in accordance with the operating manual
- Manipulation of safety devices
- The device has spare parts installed that are not authorized by Eppendorf SE
- The device is used with accessories or consumables that are not recommended by Eppendorf SE
- Cleaning agents are used that are not recommended by Eppendorf SE
- Chemicals are used that are not recommended by Eppendorf SE
- Shipment not in original packing or in improper substitute packing
- The device is maintained or repaired by persons not authorized by Eppendorf SE
- Unauthorized modifications

### 3 Scope of delivery

| Quantity | Description           |
|----------|-----------------------|
| 1        | Rotor cross           |
| 1        | Pivot grease – 50 mL  |
| 1        | Download instructions |

## 4 Product description

### 4.1 Features

The R5SS3 is a swing-bucket rotor with a capacity of up to 750 mL per bucket. Round buckets and plate buckets can be used.

The color of the overspeed adapter indicates which device series the rotor is compatible with. A rotor with a blue overspeed adapter can be used in CR-N series devices and the SpinPro 8 R. A rotor with a red overspeed adapter can be used in CR-NX series devices.

The rotor has the following specific features:

- Rotor detection by magnet
- Aerosol-tight centrifugation with caps

The following consumables can be used with the rotor:

- Reaction vessels 1.5 mL and 2.0 mL
- Round-bottom vessels 4 mL – 12 mL
- Conical vessels 15 mL – 50 mL
- Wide-neck bottles or conical vessels 175 mL – 750 mL
- Deepwell plates
- Microplates
- PCR plates
- Slides
- Cell-culture plates
- IsoRack vessels 0.5 mL / 1.5 mL / 2.0 mL

## 4.2 Product overview

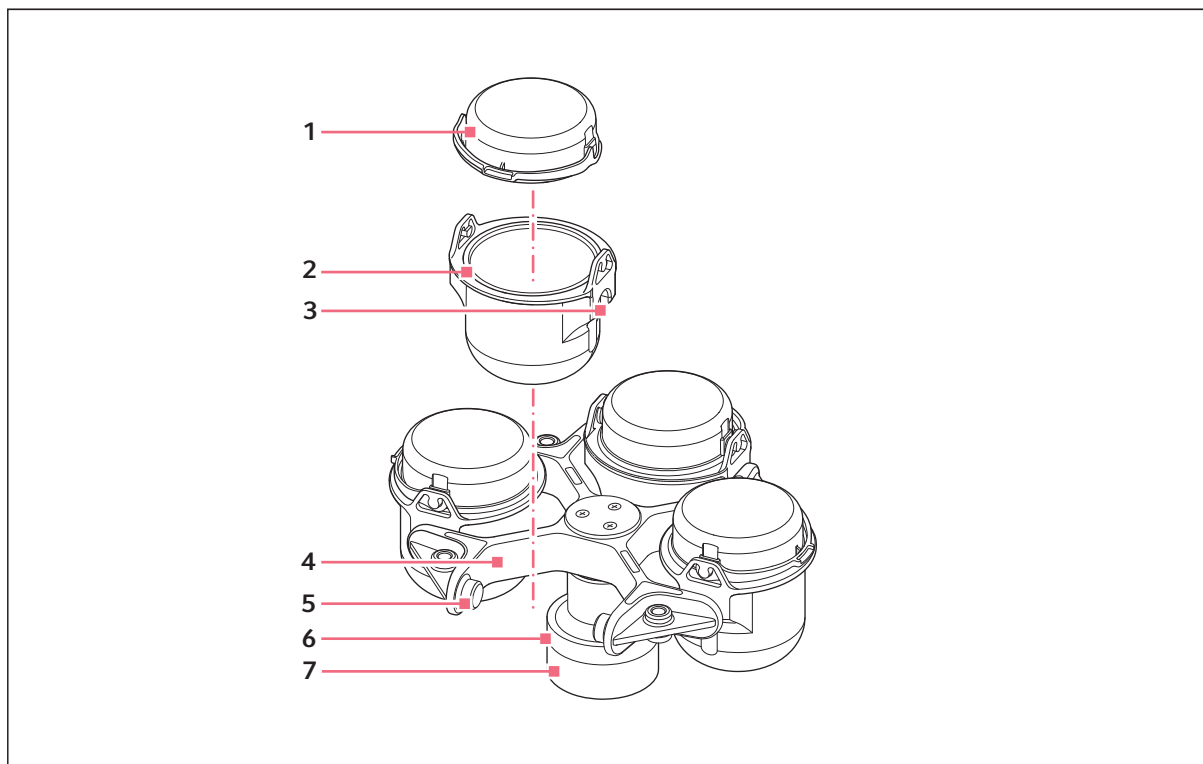


Fig. 4-1: Components of the R5SS3

- |   |               |   |                   |
|---|---------------|---|-------------------|
| 1 | Bucket cap    | 5 | Rotor pivot       |
| 2 | Rotor bucket  | 6 | Rotor hub         |
| 3 | Bucket groove | 7 | Overspeed adapter |
| 4 | Rotor cross   |   |                   |

## 5 Application

### 5.1 k-factor

The k-factor is a rotor-specific factor for determining the sedimentation efficiency and depends on the position of the reaction vessel in the rotor. The k-factor takes into account the *g*-force and the path length. The lower the k-factor, the shorter the centrifugation run time.

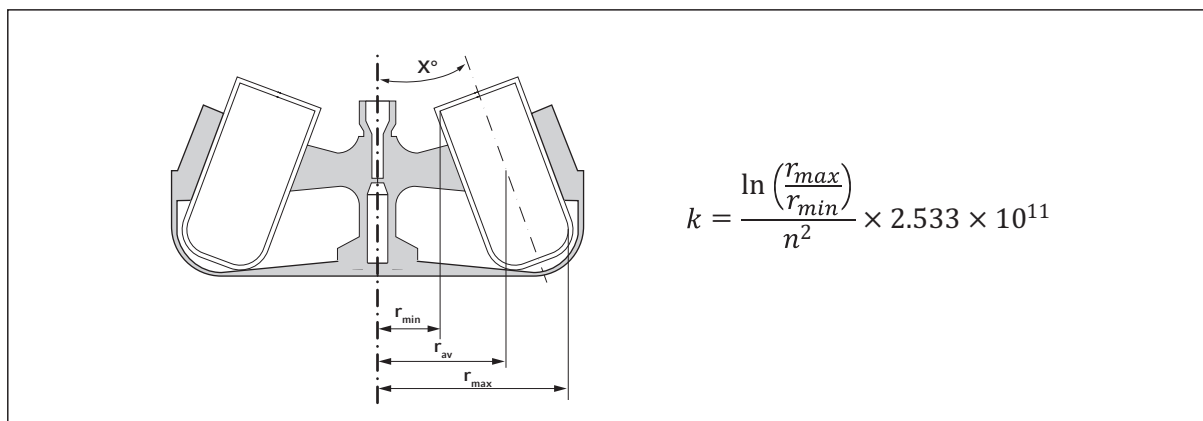


Fig. 5-1: Determination of the k-factor

|           |                                                        |                |                               |
|-----------|--------------------------------------------------------|----------------|-------------------------------|
| $r_{max}$ | Maximum centrifugation radius                          | $\alpha^\circ$ | Rotation angle                |
| $r_{min}$ | Minimum centrifugation radius at maximum filling level | $n$            | Maximum rotation speed in rpm |
| $r_{av}$  | Average centrifugation radius                          |                |                               |

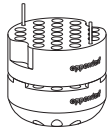
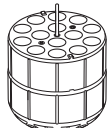
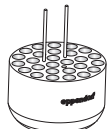
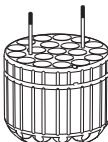
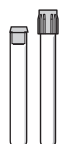
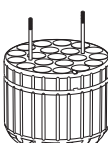


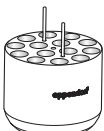
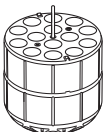
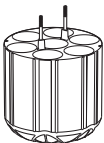
The k-factors can be found in the rotor tables.

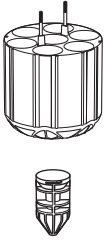
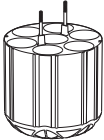
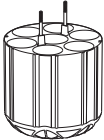
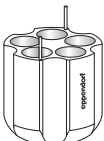
## 5.2 Rotor table - vessels

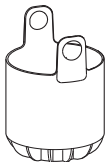
Suitable vessels for the R5SS3 with rotor buckets for vessels

| Rotor cross                                | Rotor bucket    | Aerosol-tight cap |
|--------------------------------------------|-----------------|-------------------|
|                                            |                 |                   |
| Max. <i>g</i> -force:                      | 4828 × <i>g</i> |                   |
| Max. speed:                                | 4700 rpm        |                   |
| Max. load (adapter, vessel, and contents): | 1000 g          |                   |

| Vessel                                                                              | Vessel<br>Capacity<br>Number per<br>adapter/rotor        | Adapter<br>Order no.<br>(international)                                                                                          | Bottom shape<br>Vessel diameter<br>Max. vessel length<br>with cap / without<br>cap | Max. <i>g</i> -force<br>Max. speed<br>Radius                                                         | k-factor                     |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------|
|    | Reaction vessel<br><br>1.5 mL/2.0 mL<br><br>50/200       | <br><br>5825 740 009                            | Open<br><br>Ø 11 mm<br>39 mm/39 mm                                                 | Top: 4631 × <i>g</i><br>Bottom:<br>3519 × <i>g</i><br>4700 rpm<br>Top: 14.3 cm<br>Bottom:<br>18.8 cm | Top: 3179<br>Bottom:<br>2354 |
|   | Reaction vessel<br><br>5 mL<br><br>14/56                 | <br><br>5825 734 009<br>(without upper<br>part) | Conical<br>Ø 17 mm<br><br>127 mm/131 mm                                            | 4710 × <i>g</i><br>4700 rpm<br><br>19.1 cm                                                           | 4046                         |
|  | Round-bottom<br>vessel<br>Ø 12 mm × 75 mm<br><br>27/108  | <br><br>5825 747 003                          | Round<br>Ø 12 mm<br>114 mm/121 mm                                                  | 4500 × <i>g</i><br>4700 rpm<br>18.2 cm                                                               | 5030                         |
|  | Vessel<br>4 mL – 8 mL<br>Ø 13 mm × 100 m<br>m<br>23/92   | <br><br>5825 738 004                          | Round<br>Ø 13 mm<br>115 mm/118 mm                                                  | 4458 × <i>g</i><br>4700 rpm<br>18.1 cm                                                               | 9188                         |
|  | Vessel<br>7.5 mL – 16 mL<br>Ø 16<br>mm × 100 mm<br>20/80 | <br><br>5825 736 001                          | Round<br>Ø 16 mm<br>120 mm/125 mm                                                  | 4569 × <i>g</i><br>4700 rpm<br>18.5 cm                                                               | 7948                         |
|  | Vessel<br>8 mL – 16 mL                                   |                                               | Round<br>Ø 16 mm                                                                   | 4569 × <i>g</i><br>4700 rpm                                                                          | 7948                         |

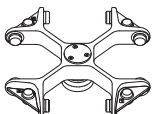
| Vessel                                                                              | Vessel<br>Capacity<br>Number per<br>adapter/rotor | Adapter<br>Order no.<br>(international)                                                                             | Bottom shape<br>Vessel diameter<br>Max. vessel length<br>with cap / without<br>cap | Max. <i>g</i> -force<br>Max. speed<br>Radius | k-factor |
|-------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|----------|
|                                                                                     | 7/28 (only inner<br>bores loaded)                 | 5825 736 001                                                                                                        | (Do not use aerosol-<br>tight cap)/125 mm                                          | 18.5 cm                                      |          |
|    | Vessel<br>9 mL<br>Ø 17.5 mm x<br>100 mm<br>20/80  | <br>5825 743 008                   | Round<br>Ø 17.5 mm<br>112 mm/117 mm                                                | 3912 × <i>g</i><br>4700 rpm<br>15.8 cm       | 4606     |
|    | Round-bottom<br>vessel<br>14 mL<br>14/56          | <br>5825 748 000                   | Round<br>Ø 17.5 mm<br>118 mm/123 mm                                                | 4460 × <i>g</i><br>4700 rpm<br>18.1 cm       |          |
|  | Conical vessel<br>15 mL<br>14/56                  | <br>5825 734 009                 | Conical<br>Ø 17 mm x 104 mm<br>127 mm/131 mm                                       | 4695 × <i>g</i><br>4700 rpm<br>19.0 cm       | 9968     |
|  | Conical vessel<br>(skirted)<br>30 mL<br>8/32      | <br>5825 755 006                 | Flat<br>Ø 25 mm<br>112 mm/118 mm                                                   | 4458 × <i>g</i><br>4700 rpm<br>18.1 cm       |          |
|  | Conical vessel<br>25 mL<br>7/28                   | <br>5825 733 002<br>5820 734 000 | Conical<br>Ø 30 mm x 109 mm<br>78.5 mm/78.5 mm                                     | 3828 × <i>g</i><br>4700 rpm<br>15.5 cm       | 5222     |

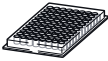
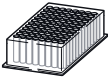
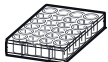
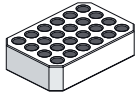
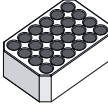
| Vessel                                                                              | Vessel<br>Capacity<br>Number per<br>adapter/rotor    | Adapter<br>Order no.<br>(international)                                                                                                                | Bottom shape<br>Vessel diameter<br>Max. vessel length<br>with cap / without<br>cap | Max. <i>g</i> -force<br>Max. speed<br>Radius   | k-factor |
|-------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------|----------|
|    | Conical vessel<br><br>25 mL<br><br>6/24              | <br><br>5825 733 002<br>center bore<br>cannot be used<br>5820 733 004 | Conical<br><br>Ø 30 mm × 109 mm<br><br>83 mm/83 mm                                 | 4080 × <i>g</i><br><br>4700 rpm<br><br>16.5 cm | 4821     |
|   | Conical vessel<br><br>50 mL<br><br>7/28              | <br><br>5825 733 002                                                 | Conical<br><br>Ø 30 mm × 109 mm<br><br>122 mm/128 mm                               | 4742 × <i>g</i><br><br>4700 rpm<br><br>19.2 cm | 9038     |
|  | Conical vessel<br><br>50 mL<br><br>6/24              | <br><br>5825 733 002<br>center bore<br>cannot be used               | Conical<br><br>Ø 30 mm × 109 mm<br><br>– / 122 mm                                  | 4742 × <i>g</i><br><br>4700 rpm<br><br>19.2 cm | 9038     |
|  | Conical vessel<br>(skirted)<br><br>50 mL<br><br>5/20 | <br><br>5825 732 006                                                | Conical<br><br>Ø 30 mm × 104 mm<br><br>122 mm/126 mm                               | 4519 × <i>g</i><br><br>4700 rpm<br><br>18.3 cm | 8540     |
|  | Centrifuge bottle<br><br>175 mL – 250 mL             |                                                                     | Flat<br><br>Ø 62 mm × 129 mm                                                       | 4652 × <i>g</i><br><br>4700 rpm                | 10053    |

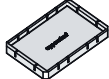
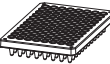
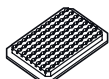
| Vessel                                                                             | Vessel<br>Capacity<br>Number per<br>adapter/rotor | Adapter<br>Order no.<br>(international)                                                            | Bottom shape<br>Vessel diameter<br>Max. vessel length<br>with cap / without<br>cap | Max. <i>g</i> -force<br>Max. speed<br>Radius | k-factor |
|------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|----------|
|                                                                                    | 1/4                                               | 5825 741 005<br>Conical bottles<br>require the man-<br>ufacturer's<br>adapter                      | 134 mm/151 mm                                                                      | 18.8 cm                                      |          |
|   | Wide-neck bottle<br>750 mL<br>1/4                 | <br>5825 744 004  | Flat<br>Ø 102 mm × 132 mm<br>(Do not use aerosol-<br>tight cap)/146 mm             | 4717 × <i>g</i><br>4700 rpm<br>19.1 cm       | 9190     |
|  | Corning centrifuge<br>bottle<br>500 mL<br>1/4     | <br>5825 745 000 | Conical<br>Ø 96 mm × 132 mm<br>(Do not use aerosol-<br>tight cap)/152 mm           | 4815 × <i>g</i><br>4700 rpm<br>19.5 cm       | 10562    |

### 5.3 Rotor table – plates

Suitable vessels for the R5SS3 with rotor buckets for plates

| Rotor cross                                                                         | Rotor bucket                                                                        | Aerosol-tight cap                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| Max. <i>g</i> -force:                                                               | 4137 × <i>g</i>                                                                     |                                                                                       |
| Max. speed:                                                                         | 4700 rpm                                                                            |                                                                                       |
| Max. load (adapter, vessel, and con-<br>tents):                                     | 450 g                                                                               |                                                                                       |

| Vessel                                                                              | Vessel Capacity<br>Number per adapter/rotor            | Adapter<br>Order no.<br>(international)                                                                                                                                                                                | Bottom shape<br>Vessel diameter<br>Max. vessel length | Max. <i>g</i> -force<br>Max. speed<br>Radius                                                   | k-factor                  |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------|
|    | Microplate<br>96/384 wells<br><br>4/16                 | <br><br>5820 756 004                                                                                                                  | Flat<br><br>47 mm/60 mm                               | $3989 \times g$<br>4700 rpm<br><br>16.2 cm                                                     | 620                       |
|    | Deepwell plate<br>96 wells<br><br>1/4                  | <br><br>5820 756 004                                                                                                                  | Flat<br><br>47 mm/60 mm                               | $3989 \times g$<br>4700 rpm<br><br>16.2 cm                                                     | 2550                      |
|   | Cell-culture plate<br><br>2/8                          | <br><br>5820 756 004                                                                                                                 | Flat<br><br>47 mm/60 mm                               | $3976 \times g$<br>4700 rpm<br><br>16.1 cm                                                     |                           |
|  | Kit<br><br>1/4                                         | <br><br>5820 756 004                                                                                                                | Flat<br><br>47 mm/60 mm                               | Top: $3989 \times g$<br>Bottom: $3354 \times g$<br>4700 rpm<br>Top: 16.2 cm<br>Bottom: 13.6 cm | Top: 1212<br>Bottom: 1447 |
|  | IsoRack<br><br>24 × 0.5 mL reaction vessels<br><br>1/4 | <br><br>5825 708 008<br><br><br><br>5820 756 004 | Open<br><br>Ø 6 mm<br><br>47 mm/64 mm                 | $3803 \times g$<br><br>4700 rpm<br><br>15.4 cm                                                 |                           |
|  | IsoRack                                                |                                                                                                                                     | Open                                                  | $3704 \times g$                                                                                |                           |

| Vessel                                                                              | Vessel<br>Capacity<br>Number per<br>adapter/rotor | Adapter<br>Order no.<br>(international)                                                             | Bottom shape<br>Vessel diameter<br>Max. vessel<br>length | Max. <i>g</i> -force<br>Max. speed<br>Radius | k-factor |
|-------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|----------|
|                                                                                     | 24 × 1.5/2 mL<br>reaction ves-<br>sels            | 5825 709 004<br>   | Ø 11 mm<br>47 mm/64 mm                                   | 4700 rpm<br>15.0 cm                          |          |
|                                                                                     | 1/4                                               | 5820 756 004                                                                                        |                                                          |                                              |          |
|   | PCR plate                                         |                    | Flat                                                     | 3890 × <i>g</i>                              | 675      |
|                                                                                     | 384 wells                                         | 5825 713 001<br>  | 47 mm/64 mm                                              | 4700 rpm<br>15.8 cm                          |          |
|                                                                                     | 1/4                                               | 5820 756 004                                                                                        |                                                          |                                              |          |
|  | PCR plate                                         |                  | Conical                                                  | 3890 × <i>g</i>                              | 652      |
|                                                                                     | 96 wells                                          | 5825 711 009<br> | 47 mm/64 mm                                              | 4700 rpm<br>15.8 cm                          |          |
|                                                                                     | 1/4                                               | 5820 756 004                                                                                        |                                                          |                                              |          |
| Slide                                                                               | CombiSlide                                        |                  | Flat                                                     | 3877 × <i>g</i>                              |          |
|                                                                                     | 12 slides                                         | 5825 706 005<br> |                                                          | 4700 rpm<br>15.7 cm                          |          |
|                                                                                     | 12/48                                             | 5820 756 004                                                                                        | 47 mm/64 mm                                              |                                              |          |

## 5.4 Selecting the rotor and accessories

1. Select the rotor, adapter, and vessels according to your application.
2. Use the rotor buckets with aerosol-tight caps for aerosol-tight centrifugation.
3. Ensure that the rotors and accessories meet the following requirements:
  - Maximum shelf life not exceeded
  - Undamaged
  - No corrosion
  - No material changes
  - Undamaged and clean lid sealing
4. Ensure that the vessels meet the following requirements:
  - Manufacturer approved for this application
  - Chemically resistant to the sample
  - Designed for the intended load
  - Undamaged
  - Not deformed
  - Not brittle

## 5.5 Inserting the rotor

If this rotor has not yet been registered, contact application support to register the rotor.



The SpinPro 8 R centrifuge detects the rotor the first time it is installed, even without registration by application support.

The rotor is detected after insertion by briefly turning it in the direction of rotation or automatically at the start of a centrifugation run as it is equipped with rotor detection. The arrow on the rotor bowl of the device indicates the direction of rotation. The device limits the speed of the detected rotor to its maximum permissible speed. The rotor is uniquely identified by rotor detection. To record the number of rotor cycles, the rotor must be registered with the device. Information on this can be found in the respective operating manuals for the devices. Rotor detection prevents a rotor from being used in a device with which it is incompatible.

### Installing the rotor in the CR22N / CR21N / SpinPro 8 R

Prerequisites:

- A suitable rotor is available.
1. Place the rotor vertically onto the motor shaft.
  2. Turn the rotor clockwise.

The device detects the rotor.



Starting a centrifugation run also triggers rotor detection.

### Inserting a rotor in CR30NX

Prerequisites:

- A suitable rotor is available.

1. Place the rotor vertically onto the motor shaft.

## 5.6 Loading the rotor

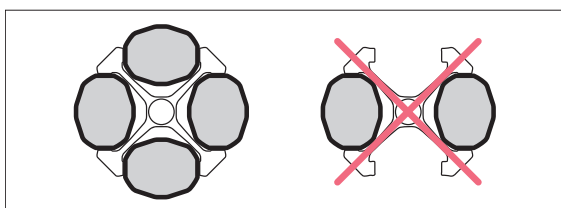
### Inserting the bucket



The code number referring to the weight category is stamped into the groove on the rotor bucket.

Prerequisites:

- The grooves of the bucket are clean.
- The pegs of the rotor cross are greased.



1. Insert the adapters into the rotor buckets.
  2. Insert buckets with the same code number in the rotor cross opposite each other.
- All positions in the rotor cross are filled.

### Loading buckets



When using different types of vessels, the weight symmetry of the rotor load must be ensured.



Opposite vessel types, including the sample, must not differ in weight by more than 5 g. If the difference is within 5 g, an imbalance can be detected. In this case, either reduce the weight difference or increase the acceleration and deceleration settings.

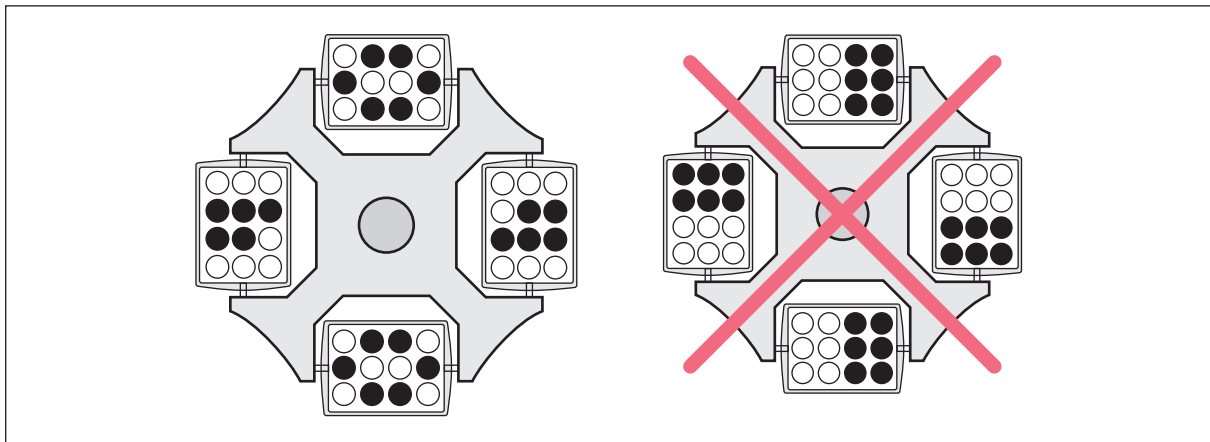


Fig. 5-2: Loading examples



**NOTICE! Sample loss**

Open tube lids can break off during centrifugation.

- Before centrifugation, make sure that the tube lids are closed correctly.

**Prerequisites:**

- The rotor buckets are equipped with the appropriate adapters.
- For vessels with a length of >119 mm, only the inner bores of the adapter may be used.
- The maximum load per rotor bucket, including adapter, cap, vessel, or plate, is not exceeded.

1. Place the vessels of the same type and weight correctly aligned and symmetrically in the rotor buckets.
2. Ensure that the loaded rotor buckets can swing freely.

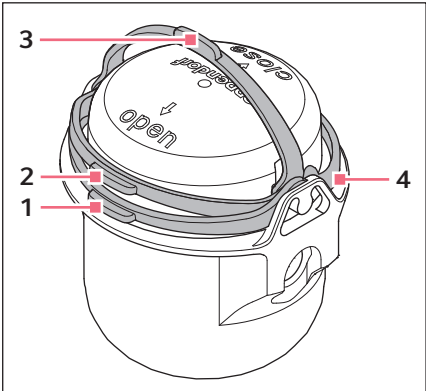
**Closing the bucket with the cap**



**NOTICE! Damage to the bucket cap**

If the bucket cap is positioned incorrectly, the sealing clamp of the cap may break when sealing the bucket.

- Make sure the bucket cap is correctly positioned on the bucket.



1. Fold the sealing clamp of the cap into the position **open** (1).
2. Place the cap on the bucket and press it down so that the sealing clamp lifts slightly (2).
3. In order to seal the caps aerosol-tight, fold the clamp beyond the locking tab to the **close** position (4) until it audibly engages.



To transport the bucket closed, fold the clamp into the carrying position (3).

5.7      Removing the rotor

1. Lift the rotor vertically out of the device.

6          Maintenance

6.1       Maintenance plan

| Interval              | Maintenance work                                                                 |
|-----------------------|----------------------------------------------------------------------------------|
| As required           | ☞ Chapter 6.3.1 "Cleaning the rotor" on page 22                                  |
|                       | ☞ Chapter 6.3.2 "Cleaning the swing-bucket rotor after tube breakage" on page 23 |
|                       | ☞ Chapter 6.4.1 "Decontaminating the rotor" on page 24                           |
|                       | ☞ Chapter 6.4.2 "Autoclaving accessories" on page 24                             |
| Before each use       | ☞ Chapter 6.2.1 "Checking the rotor and accessories" on page 22                  |
| 50 autoclaving cycles | ☞ Chapter 6.2.2 "Replacing the sealing ring on caps" on page 22                  |

## **6.2 Maintenance**

### **6.2.1 Checking the rotor and accessories**

1. Check the rotors and accessories for damage.

Take damaged rotors and damaged accessories out of operation.

2. Check the service life of the rotors and the accessories.

Replace rotors and accessories that have exceeded their service life.

### **6.2.2 Replacing the sealing ring on caps**



The cap is only aerosol-tight if the sealing ring is seated correctly.

Material:

- Distilled water
- Cloth
- Pivot grease

Prerequisites:

- A new sealing ring is available.

1. Open the bucket and remove the cap from the bucket.
2. Use the paperclip to pry the sealing ring out of the groove.
3. Position the new sealing ring on the groove.
4. Press the sealing ring into the groove.

The sealing ring must not protrude from the groove at any point.

5. Lightly coat the groove with pivot grease.
6. Place the cap on the bucket and close the bucket.
7. Check that the sealing ring is correctly seated.

## **6.3 Cleaning**

### **6.3.1 Cleaning the rotor**



Do not grease the rotor hub.

Material:

- Water
- Soap-based cleaning agent
- Cloth
- Pivot grease

Prerequisites:

- The rotor has been removed from the device.
1. Dampen the cloth with water and cleaning agent.
  2. Clean the rotor, the buckets and the rotor accessories.
  3. Rinse the rotor, the buckets and the accessories with water to remove any cleaning agent.
  4. Allow the rotor, the buckets and the accessories to dry.
  5. Lightly grease the rotor pivots with pivot grease.



You can clean the rotor cross in the dishwasher.

### 6.3.2 Cleaning the swing-bucket rotor after tube breakage



#### **WARNING! Contamination**

Biological substances leak from broken tubes. People who come into contact with these substances may suffer damage to their health.

- Wear your personal protective equipment.
- If necessary, carry out decontamination before cleaning.

Protective equipment:

- Laboratory protective clothing
- Cut-resistant gloves

Material:

- Deionized water
  - Soap-based cleaning agent
  - Cloth
1. Remove all tube fragments.
  2. Remove the rotor from the device.
  3. Thoroughly rinse the rotor with water.
  4. Clean the rotor with a damp cloth.

5. Very small tube particles can deposit in parts made of rubber, e.g., seals. Clean these parts very carefully.
6. If there are any damaged seals, replace them.

## **6.4 Decontamination**

### **6.4.1 Decontaminating the rotor**



Decontamination with at least 70% ethanol is described here. If using an alternative disinfectant, follow the manufacturer's instructions.

Material:

- Disinfectant with at least 70 % ethanol
- Deionized water
- Cloth

Prerequisites:

- The rotor has been removed from the device.
1. Dampen the cloth with disinfectant.
  2. Wipe the rotor cross, buckets and accessories with the cloth.
  3. Wipe off the disinfectant with deionized water.
  4. Clean the rotor, buckets and accessories.

### **6.4.2 Autoclaving accessories**

The following are autoclavable:

- Buckets
- Bucket cap with sealing ring

Protective equipment:

- Laboratory protective clothing
1. To avoid deformation, remove the bucket cap from the bucket before autoclaving.
  2. Autoclave at 121 °C with steam for 20 min.

## **7 Transport**

### **7.1 Sending the rotor**



Use the original packing for transport. In the event that the original packing is no longer available, ensure that the rotor is adequately protected by replacement packing during storage and transport. Eppendorf SE is not liable for damage caused by improper replacement packing.



### **WARNING! Contamination**

If you store or ship a contaminated rotor, people may be contaminated and suffer damage to their health.

- Decontaminate the rotor before storage or shipping.

Material:

- Packing

Prerequisites:

- The rotor has been decontaminated and cleaned

1. Download the decontamination certificate for returned goods from the website:  
<https://www.eppendorf.link/decontamination/>.
2. Complete the decontamination certificate.
3. Pack the rotor.
4. Attach the decontamination certificate securely to the outside of the packing for transport.
5. Send the rotor.

## **8 Disposal**

### **8.1 Legal regulations**

#### **Electrical and electronic equipment in EU countries**

Electrical and electronic equipment must be disposed of in EU member states in accordance with Directive 2012/19/EU. This directive has been implemented into national law by all EU member states.

Electrical and electronic equipment placed on the market after August 13, 2005, must be specially marked. According to the European standard EN 50419, the following symbol can be used for this marking:



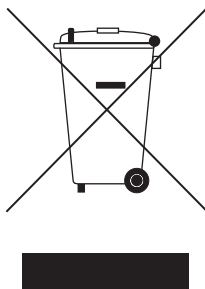
#### **Non-EU countries**

Non-EU countries have country-specific standards for the disposal of waste electrical and electronic equipment and the disposal of batteries and rechargeable batteries.

### Notes on disposal of electrical and electronic equipment in the United Kingdom

In the United Kingdom, the disposal of electrical and electronic equipment is governed by national regulations which are based on national legislation from 2013, The Waste Electrical and Electronic Equipment Regulations 2013 (as amended), which apply to these devices.

According to these regulations, any electrical and electronic equipment that was put on the market after August 13, 2005 in the business-to-business sector – which applies to this product – must no longer be disposed of with household waste. They are marked with the following symbol to indicate this:



As the disposal regulations may differ from one country to another, please contact your supplier for more information.

## 8.2 Preparing for disposal

### Preparing disposal according to legal regulations



For information on the legal regulations that apply in your country, contact your local authority and your Eppendorf partner.

1. Check which legal regulations apply to disposal in your country.
2. Choose a certified waste disposal company or contact your Eppendorf partner.
3. Decontaminate and clean the rotor before disposal.
4. If decontamination is not possible, dispose of the rotor as hazardous waste.

### Creating a decontamination certificate

Prerequisites:

- The rotor has been decontaminated and cleaned.

1. Download a decontamination certificate from our website:  
<https://www.eppendorf.link/decontamination/>.
2. Complete the decontamination certificate.

## 9 Technical data

### 9.1 Application parameters

| Device      | Maximum <i>g</i> -force | Maximum speed |
|-------------|-------------------------|---------------|
| SpinPro 8 R | 4828 × <i>g</i>         | 4700 rpm      |
| CR22N/CR21N | 4828 × <i>g</i>         | 4700 rpm      |
| CR30NX      | 4828 × <i>g</i>         | 4700 rpm      |

### 9.2 Service life

 As soon as the maximum number of cycles is reached, the rotor must be replaced.

Eppendorf SE indicates the maximum service life of rotor and accessories in cycles.

Each centrifugation run in which the rotor is accelerated and then braked again is counted as a cycle, regardless of the speed and duration of the centrifugation run.

The specified service life applies if the following conditions are met:

- Proper use
- Recommended care
- Damage-free condition

| Components and accessories       | Lifetime from first use |          |
|----------------------------------|-------------------------|----------|
|                                  | in cycles               | in years |
| Rotor cross                      | 50000 cycles            | 15 years |
| Bucket                           | 50000 cycles            | 15 years |
| Bucket cap with replaceable seal | 19500 cycles            | 3 years  |

| Components and accessories | Time / temperature |
|----------------------------|--------------------|
| Bucket                     | 20 min / 121 °C    |
| Cap with seal              | 20 min / 121 °C    |

## 10 Ordering information

| Description  | Order no.    |
|--------------|--------------|
| Pivot grease | 5720 411 230 |
| 1 piece      |              |

## Appendix

## Overview of the chemical resistance of the rotor cross, bucket, bucket cap and seal

|          |                                                 |           |
|----------|-------------------------------------------------|-----------|
| <b>A</b> | <b>Assessment criteria.....</b>                 | <b>30</b> |
| <b>B</b> | <b>Organic solvents.....</b>                    | <b>31</b> |
| <b>C</b> | <b>Cleaning and decontamination agents.....</b> | <b>32</b> |

## A Assessment criteria

| Marking | Resistance          | Explanations                                                                                                         |
|---------|---------------------|----------------------------------------------------------------------------------------------------------------------|
| ■■■     | Resistant           | Chemical can be used.                                                                                                |
| ■■      | Partially resistant | Chemical can cause discoloration of the surface.                                                                     |
| ■       | Not resistant       | Chemical can cause severe discoloration or damage to the surface. The chemical must only be used with great caution. |
| N/A     | –                   | Chemical has not been tested.                                                                                        |

## B Organic solvents

| Designation                                    | Concentration | Rotor cross | Bucket | Bucket cap | Seal |
|------------------------------------------------|---------------|-------------|--------|------------|------|
| Acetone                                        | ≥ 99.7 %      | ■           | ■■■    | ■■■        | ■■■  |
| Acetonitrile                                   | ≥99.9 %       | N/A         | ■■     | ■■■        | ■■■  |
| Petroleum ether                                | —             | N/A         | ■■■    | ■■■        | ■■■  |
| Trichlorome-<br>thane (chloro-<br>form)        | —             | N/A         | ■■■    | ■          | ■■■  |
| Dichlorome-<br>thane (meth-<br>ylene chloride) | ≥99.5 %       | N/A         | ■■     | ■          | ■■   |
| Diethyl ether                                  | ≥99.5 %       | N/A         | ■■     | ■■■        | ■■■  |
| DMSO                                           | 10 %          | N/A         | ■■     | ■■         | ■■   |
| DMSO                                           | 50 %          | N/A         | ■■     | ■■■        | ■■■  |
| DMSO                                           | 100 %         | N/A         | ■■     | ■■■        | ■■■  |
| Acetic acid<br>ethyl ester                     | ≥99.5 %       | ■           | ■■     | ■■■        | ■■■  |
| Ethanol(dena-<br>tured)                        | ≥96 %         | N/A         | ■■■    | ■■■        | ■■■  |
| Formaldehyde                                   | 37 %          | N/A         | ■■■    | ■■■        | ■■■  |
| Isoamyl alcohol                                | ≥ 98.5 %      | N/A         | ■■■    | ■■■        | ■■■  |
| Isopropanol                                    | ≥99.5 %       | N/A         | ■■■    | ■■■        | ■■■  |
| Methanol                                       | ≥ 99.98 %     | N/A         | ■■     | ■■■        | ■■■  |

## C Cleaning and decontamination agents

| Designation                                | Concentration  | Rotor cross | Bucket | Bucket cap | Seal |
|--------------------------------------------|----------------|-------------|--------|------------|------|
| Biocidal ZF                                | —              | ■■■■        | N/A    | ■■■■       | ■■■■ |
| CaviCide                                   | —              | ■■■■        | N/A    | N/A        | N/A  |
| ClearKlens Bi-Spore, VH26                  | Mix 1 + 48 + 1 | ■■■■        | N/A    | N/A        | N/A  |
| ClearKlens Cleansinald (SC), VH9           | 0.5 %          | ■■■■        | N/A    | N/A        | N/A  |
| ClearKlens Tego 2000 (SC), VH25            | 1 %            | ■■■■        | N/A    | N/A        | N/A  |
| COUNT-OFF Liquid Concentrat                | 2 %            | ■■■■        | N/A    | ■■■■       | ■■■■ |
| COUNT-OFF Surface Cleaner                  | —              | ■■■■        | ■      | ■■         | ■■   |
| Dismozon plus (peroxide-based)             | 4 %            | ■■■■        | ■■■■   | ■■■■       | ■■■■ |
| Descoton Forte                             | 5 %            | ■■■■        | N/A    | N/A        | N/A  |
| DNA AWAY                                   | —              | ■■■■        | ■■     | ■■■■       | ■■■■ |
| DNA-ExitusPlus                             | —              | ■■■■        | N/A    | ■■■■       | ■    |
| Ethanol                                    | 70 %           | ■■■■        | N/A    | N/A        | N/A  |
| Formaldehyde                               | 6 %            | ■■■■        | N/A    | ■■■■       | ■■■■ |
| Helipur (phenol-based)                     | 6 %            | ■■■■        | ■■■■   | ■■         | N/A  |
| Hexaquart pure (QAV-based <sup>(1)</sup> ) | 5 %            | ■■■■        | ■■     | ■■■■       | ■■■■ |
| Incidin Plus                               | 3 %            | ■■■■        | N/A    | N/A        | N/A  |
| Isopropanol                                | 70 %           | ■■■■        | N/A    | N/A        | N/A  |
| Klercide Low Residue Quat Concentrate      | 2 %            | ■■■■        | N/A    | N/A        | N/A  |
| Klercide Sporidical Low Residue Peroxide   | —              | ■■■■        | N/A    | N/A        | N/A  |

| Designation                        | Concentration | Rotor cross | Bucket | Bucket cap | Seal |
|------------------------------------|---------------|-------------|--------|------------|------|
| Korsolex basic<br>(aldehyde-based) | 5 %           | ■■■         | ■■■    | ■■■        | ■■■  |
| Medichem ID<br>Kombi               | 3 %           | ■■■         | N/A    | N/A        | N/A  |
| Meliseptol<br>(alcohol-based)      | —             | ■■■         | ■■■    | ■■■        | ■■■  |
| Sodium hypochlorite                | 6 %           | N/A         | N/A    | ■■■        | ■■■  |
| Sodium hypochlorite                | 10 %          | N/A         | ■      | ■■■        | ■■■  |
| Rheosept                           | —             | ■■■         | N/A    | N/A        | N/A  |
| RNase AWAY                         | —             | ■■■         | ■■     | ■■■        | ■■■  |
| RNase-Exitus-Plus                  | —             | ■■■         | N/A    | ■■■        | ■    |
| Sekusept Plus                      | 2 %           | ■■■         | N/A    | N/A        | N/A  |
| Spor-Klenz                         | —             | ■■■         | N/A    | N/A        | N/A  |
| Hydrogen peroxide                  | 6 %           | ■■■         | N/A    | N/A        | N/A  |
| Hydrogen peroxide                  | 35 %          | N/A         | ■      | ■■■        | ■■   |

**Your local distributor: [www.eppendorf.com/contact](http://www.eppendorf.com/contact)**

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