

ROTOFIX 32 A



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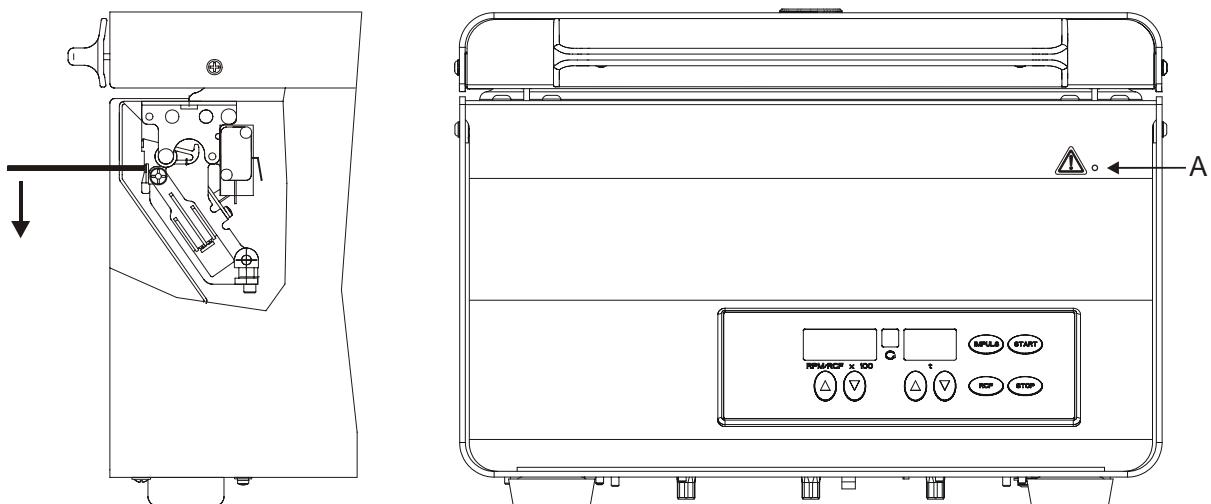


Fig. 1

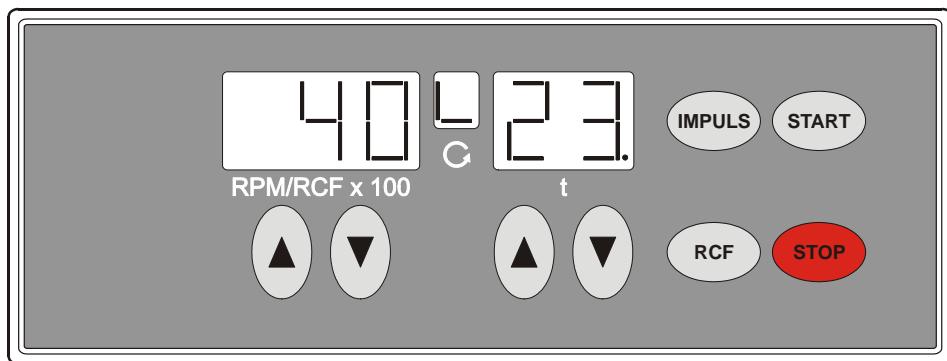


Fig. 2 ROTOFIX 32 A

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1 Use according to specification

The machine presented here is a medical product (laboratory centrifuge) according to the IVD guideline 98/79/EG. The centrifuge is used to separate substances or substance mixtures with a density of max. 1.2 kg/dm³. This also includes substances and substance mixtures of human origin. The centrifuge is only intended to be used for this purpose. A different use or application over and above this is deemed not in accordance with the specifications. The company Andreas Hettich GmbH & Co. KG undertakes no liability for damages resulting therefrom.

Belonging to the application according to specification is also the observance of all references contained in the Instruction Manual and compliance with the inspection and maintenance works.

2 Residual risks

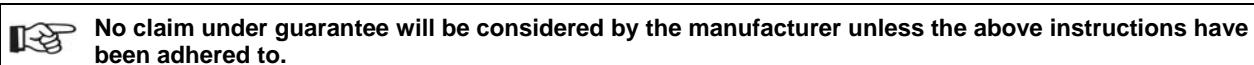
The machine is constructed according to the state of the art and the recognized technical safety regulations. Improper use and handling can result in dangers to life and limb of the user or third parties and impairments to the machine or to other material assets. The machine is only to be used for the specified applications and only in an impeccable technical safety condition.

Disturbances that can interfere with the safety are to be immediately rectified.

3 Technical specifications

Manufacturer	Andreas Hettich GmbH & Co. KG D-78532 Tuttlingen		
Model	ROTOFIX 32 A		
Type	1206	1206-01	1206-02
Mains voltage ($\pm 10\%$)	208 – 240 V 1~	100 – 127 V 1~	
Mains frequency	50 – 60 Hz	50 – 60 Hz	
Connected load	300 VA	300 VA	
Current consumption	1.4 A	3.0 A	
Max. capacity	4 x 100 ml / 32 x 15 ml		
Allowed density	1.2 kg/dm ³		
Speed (RPM)	6000		
Force (RCF)	4186		
Kinetic energy	3160 Nm		
Obligatory inspection (BGR 261)	no		
Ambient conditions (EN 61010-1)	<ul style="list-style-type: none"> – Set-up site – Altitude – Ambient temperature – Humidity – Excess-voltage category (IEC 60364-4-443) – Pollution degree Indoors only Up to 2000 m above sea level 2°C to 40°C Maximum relative humidity 80% for temperatures up to 31°C, linearly decreasing to 50% relative humidity at 40°C. II 2		
Device protection class	I		
Not suitable for use in explosion-endangered areas.			
EMC	<ul style="list-style-type: none"> – Emitted interference (suppression of radio interference) – Interference immunity EN 55011, Group 1, Class B EN 61000-3-2 EN 61000-3-3 EN 61000-6-2		
Noise level (dependent on rotor)	≤ 57 dB(A)		
Dimensions	<ul style="list-style-type: none"> – Width – Depth – Height 366 mm 430 mm 257 mm		
Weight	23 kg	approx. 27 kg	

4 Notes on safety



- Before the initial operation of your centrifuge you should read and pay attention to the operating instructions.
Only personnel that has read and understood the operating instructions are allowed to operate the device.
- Along with the operating instructions and the legal regulations on accident prevention, you should also follow the recognised professional regulations for working in a safe and professional manner.
These operating instructions should be read in conjunction with any other instructions concerning accident prevention and environmental protection based on the national regulations of the country where the device is to be used.
- This centrifuge is a state-of-the-art piece of equipment which is extremely safe to operate.
 - However, it can lead to danger for users or others if used by untrained staff, in an inappropriate way or for a purpose other than that it was designed for.
- The centrifuge should be installed on a good, stable base.
- Before using the centrifuge absolutely check the rotor for firm placement.
- When the centrifuge is running, according to IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.
- The centrifuge must not be moved or knocked during operation.
- In case of fault or emergency release, never touch the rotor before it has stopped turning.
- To avoid damage due to condensate, when changing from a cold to a warm room the centrifuge must either heat up for at least 3 hours in the warm room before being connected to the mains, or run hot for 30 minutes in the cold room.
- Only the rotors and accessories approved by the manufacturer for this device may be used (see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories").
- The centrifuge rotor may only be loaded in accordance with the chapter "Loading the rotor".
- When centrifuging with maxim revolutions per minute the density of the materials or the material mixtures may not exceed 1.2 kg/dm³.
- The centrifuge may only be operated when the balance is within the bounds of acceptability.
- The centrifuge may not be operated in explosion-endangered areas.
- The centrifuge must not be used with:
 - inflammable or explosive materials
 - materials that react with one another producing a lot of energy.
- If users have to centrifuge hazardous materials or compounds contaminated with toxic, radioactive or pathogenic micro-organisms, they must take appropriate measures.
For hazardous substances centrifuge containers with special screw caps must strictly be used. In addition to the screw cap centrifuge containers, for materials in hazard category 3 and 4 a biosafety system must be used (see the World Health Organisation's "Laboratory Biosafety Manual").
Under a biosafety system small drips and aerosols are prevented from escaping by a bioseal (packing ring) located between the hanger and the lid.
If the hanger of a biosafety system is used without the lid, the packing ring must be removed from the hanger in order to prevent the packing ring from being damaged during the centrifugation run. Damaged packing rings must not be used to seal the biosafety system.
Without the use of a biosafety system the centrifuge is not microbiologically sealed in the sense of the EN 61010-2-020 standard.
For further details of available biosafety systems see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories". If in doubt, you should obtain relevant information from the manufacturer.
- The centrifuge must not be operated with highly corrosive substances which could impair the mechanical integrity of rotors, hangers and accessories.
- Rotors, suspensions and accessories that possess traces of corrosion or mechanical damage or if their term of use has expired may not be used any longer.
- Repairs must only be carried out by personnel authorised to do so by the manufacturer.
- Only original spare parts and original accessories licensed by the Andreas Hettich GmbH & Co. KG company are allowed to be utilised.
- The following safety regulations apply:
IEC 61010-1 and IEC 61010-2-020 as well as their national deviations.
- The safe operation and reliability of the centrifuge can only be guaranteed if:
 - the centrifuge is operated in accordance with the operating instructions,
 - the electrical installation on the site where the centrifuge is installed conforms to the demands of IEC stipulations,
 - prescribed tests to BGV A1, BGR 261 are carried out by an expert.

5 Symbol meanings



Symbol on the machine:

Attention, general hazard area.

Before using the centrifuge implicitly read the operating instructions and pay attention to the safety relevant references!



Symbol in the operating instructions:

Attention, general hazard area.

This symbol refers to safety relevant warnings and indicates possibly dangerous situations.

The non-adherence to these warnings can lead to material damage and injury to personal.



Symbol in the operating instructions:

This symbol refers to important circumstances.



Symbol on the machine and in the operating instructions:

Symbol for the separate collection of electric and electronic devices according to the guideline 2002/96/EG (WEEE). The device belongs to Group 8 (medical devices).

Applies in the countries of the European Union, as well as in Norway and Switzerland.

6 Delivery checklist

The following items and accessories are delivered with the centrifuge:

- 1 Connecting cable
- 2 Fuses (type 1206-02: 3 fuses)
- 1 Lubricating grease for trunnions
- 1 Hex. pin driver
- 1 Release pin
- 1 Notes on moving the equipment safely
- 1 Operating instructions

The rotor(s) and associated accessories are included in the delivery in the quantity.

7 Unpacking the centrifuge

- Lift the carton upward and remove the padding.



Do not lift by the handle rail.
Observe the weight of the centrifuge, refer to chapter "Technical specifications".

Lift the centrifuge on both sides with an appropriate number of helpers and place it on the laboratory table.

8 Initial operation

- According to the laboratory instrument standards IEC 61010-2-020 an emergency switch to separate power supply in the event of a failure must be installed in the building electrical system.
This switch has to be placed remote from the centrifuge, prefered outside of the room in which the centrifuge is installed or near by the exit of this room.
- Remove the transportation safety device from the bottom of the housing, see sheet "Transportation safety device".
- Position the centrifuge in a stable and level manner in a suitable place. During set-up, the required safety margin of 300 mm around the centrifuge is to be kept according to IEC 61010-2-020.



When the centrifuge is running, according to IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.

- Do not place any object in front of the ventiduct.
Keep a ventilation area of 300 mm around the ventiduct.
- Check whether the mains voltage tallies with the statement on the type plate.
- Connect the centrifuge with the connection cable to a standard mains socket. For connection ratings refer to Chapter "Technical specifications".
- Turn on the mains switch. Switch position "I".
The last used centrifuge data will be displayed.
- Open the lid.

9 Opening and closing the lid

9.1 Opening the lid

 The lid can only be opened when the centrifuge is switched on and the rotor is at rest. If it cannot be opened under these circumstances, see the section on "Emergency release".

- Swing handle rail on the lid upwards. The symbol "L" (lid open) illuminates in the rotation indicator Q.
- Open the lid.

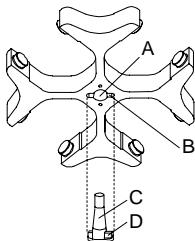
9.2 Closing the lid



Do not bang the lid shut.

- Place the lid and swing handle rail on the lid downward. The symbol "—" (lid closed) illuminates in the rotation indicator Q.

10 Installation and removal of the rotor



- Clean the motor shaft (C) and the rotor drilling (A), and lightly grease the motor shaft afterwards. Dirt particles between the motor shaft and the rotor hinder a perfect seating of the rotor and cause an irregular operation.
- Place the rotor vertically on the motor shaft. The motor shaft dog (D) has to fit in the rotor slot (B). The alignment of the groove is labelled on the rotor.
- Tighten the rotor tension nut with the supplied wrench by turning in a clockwise direction.
- Check the rotor for firm seating.
- Loosening the rotor: Loosen the tension nut by turning in a counter clockwise direction, and turning until the working point for lifting. After passing the working point for lifting the rotor is loosened from the motor shaft cone. Turn the tension nut until the rotor is able to be lifted from the motor shaft.

11 Loading the rotor



Standard centrifuge containers of glass will not stand RCF values exceeding 4000 (DIN 58970, pg. 2).

- Check the rotor for firm seating.
- With swing-out rotors all rotor positions must be lined with **identical** hangers. Certain hangers are marked with the number of the rotor position. These hangers may only be used in the respective rotor position.
- The rotors and hangers may only be loaded symmetrically. For authorised combinations see Chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".
In the case of angle rotors all possible rotor positions must be loaded, see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".
- On certain suspensions, the weight of the maximum load and the maximum weight of the suspension when it is fully equipped is displayed. This weight may not be exceeded. The weight specified for the maximum loading includes the total weight of adapter, frame, centrifuging container and content.
- In containers with rubber inserts, the same number of rubber inserts must always be among the centrifuge containers.
- Always fill the centrifuge containers outside of the centrifuge.
- No liquid should be allowed to enter the centrifugal chamber during filling and swinging out of the hangers.
- The maximum filling quantity for the centrifuge containers specified by the manufacturer must not be exceeded.
- In order to maintain the weight differences within the centrifuge container as marginal as possible, a consistent fill level in the containers is to be heeded.

12 Control and display elements

See figure on page 2.

Fig. 2: Display and control panel

12.1 Symbols on the control panel



Rotation indicator. The rotation indicator lights up and rotates anticlockwise while the rotor is turning.

When the rotor is stationary, the status of the lid is displayed by symbols in the rotation indicator:

Symbol **L** : Lid open

Symbol **—** : Lid closed

Operator errors and occurring faults are indicated on the display (see Chapter "Faults").

12.2 Keys and setting options

RPM/RCF x 100

- Speed



A numeric value of 500 RPM up to the maximum rotor speed can be set. For maximum rotor speed, see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories". Preset in steps of 100 (RPM = displayed value x 100).

If the key **▲** or **▼** is kept pressed, the value changes with increasing speed.

- Display the brake step and the centrifuging radius.

t

- Running time

- Preset from 1 - 99 minutes, in 1 minute steps
- Continuous operation "--"

- Centrifuging radius. Input in centimeters. Preset from 5 - 16 centimeters, in 1 centimeter steps. For centrifuging radius, see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".
- Braking steps 0 or 1. Step 1 = short run-down time, Step 0 = long run-down time.

If the key **▲** or **▼** is kept pressed, the value changes with increasing speed.



- Start centrifugation run.



- End centrifugation run.
The rotor runs down with the preselected brake step.
- Save the brake step and the centrifuging radius.



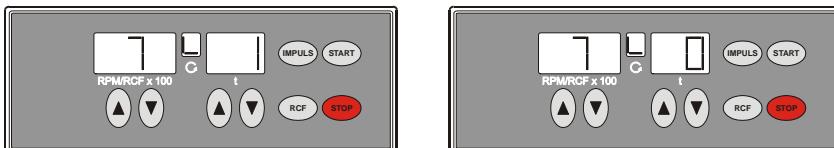
- Display of the relative centrifugal force (RCF).
The display of the relative centrifugal force (RCF) appears while the key **RCF** is kept pressed.



- Short-time centrifugation.
The centrifugation run occurs while the key **IMPULS** is kept pressed.
- Display the brake step and the centrifuging radius.

13 Setting the brake step

- Switch off the mains switch.
- Keep the key ▲ beneath the speed indicator and the key IMPULS pressed simultaneously.
- Switch on the mains switch and release the keys again.
- Press the key ▲ beneath the speed indicator until the following display appears:



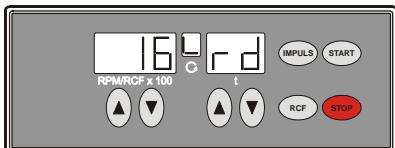
The machine version set in the factory (e.g. 7) is displayed in the speed indicator and the set brake step is displayed in the time indicator.

- Set the desired brake step with the keys ▲▼ beneath the time indicator.
Step 1 = short run-down time, Step 0 = long run-down time.
For run-down times, see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".
- Press the key STOP to save the setting.

14 Setting the centrifuging radius

The centrifuging radius must be entered in centimeters.

- Switch off the mains switch.
- Keep the key ▲ beneath the speed indicator and the key IMPULS pressed simultaneously.
- Switch on the mains switch and release the keys again.
- Press the key ▲ beneath the speed indicator until the following display appears:



The set centrifuging radius is displayed in the speed indicator.

- Set the desired centrifuging radius with the keys ▲▼ beneath the time indicator.
For centrifuging radius, see chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".
- Press the key STOP to save the setting.

15 Centrifugation

When the centrifuge is running, according to IEC 61010-2-020, no persons, dangerous substances or objects may be within the safety margin of 300 mm around the centrifuge.

- If the permissible weight difference is exceeded within the rotor loading, the drive switches off during the run-up time, and error -3- is displayed (see chapter "Faults").
- The centrifugation run can be interrupted at any time by pressing the key STOP.
- The time and speed can be changed during the centrifugation run, with the keys ▲▼.
- If the key ▲ or ▼ is kept pressed, the value changes with increasing speed.
- After a centrifugation run, the display flashes until the cover is opened or a key is pressed.
- If the symbol "—" (lid closed) and "L" (lid open) flashes alternately in the rotation indicator Q, operation of the centrifuge can only be continued after opening the lid.
- If rot xx is displayed, no centrifugation run has taken place because the rotor has been changed, see chapter "Rotor Identification".

- Switch on the mains switch (switch position "I").
- Load the rotor and close the centrifuge cover.

15.1 Centrifugation with preselected time

- Set the desired speed with the keys   beneath the speed indicator.
- Set the desired time with the keys   beneath the time indicator.
- Press the key  **START**. The rotation indicator  appears while the rotor is turning.



The time is displayed in minutes. The last minute is counted down in seconds.
When the time is displayed in minutes, a point flashes next to the number.

- After expiry of the time or if the centrifugation run is interrupted by pressing the key  **STOP**, the rotor runs down with the set brake step.

During the centrifugation run, the rotor speed or the resulting RCF value and the remaining time are displayed.

15.2 Continuous operation

- Set the desired speed with the keys   beneath the speed indicator.
- Set the time to zero with the key  beneath the time indicator. "--" is displayed.
- Press the key  **START**. The rotation indicator  appears while the rotor is turning. The time count starts from 0.



The first minute is counted up in seconds, and then the time is displayed in minutes.
When the time is displayed in minutes, a point flashes next to the number.

- Press the key  **STOP** to end the centrifugation run. The rotor runs down with the set brake step.

During the centrifugation run, the rotor speed or the resulting RCF value and the expired time are displayed.

15.3 Short-time centrifugation

- Set the desired speed with the keys   beneath the speed indicator.
- Keep the key  **IMPULS** pressed. The rotation indicator  appears while the rotor is turning. The time count starts from 0.



The first minute is counted up in seconds, and then the time is displayed in minutes.
When the time is displayed in minutes, a point flashes next to the number.

- Release the key  again to end the centrifugation run. The rotor runs down with the set brake step.

During the centrifugation run, the rotor speed and the expired time are displayed.

15.4 Display of the relative centrifugal force (RCF)

The relative centrifugal force (RCF) can be displayed during the centrifugation run.



If the relative centrifugal force (RCF) is used, the centrifuging radius must be entered.

- Keep the key  **RCF** pressed during the centrifugation run.
The relative centrifugal force (RCF) appears in the speed indicator (RCF = displayed value x 100).
- Release the key  again. The speed is displayed.

16 Relative centrifugal force (RCF)

The relative centrifugal force (RCF) is given as a multiple of the acceleration of gravity (g). It is a unit-free value and serves to compare the separation and sedimentation performance.

These values are calculated using the formula below:

$$\text{RCF} = \left(\frac{\text{RPM}}{1000} \right)^2 \times r \times 1,118 \quad \Rightarrow \quad \text{RPM} = \sqrt{\frac{\text{RCF}}{r \times 1,118}} \times 1000$$

RCF = relative centrifugal force

RPM = rotational speed (revolutions per minute)

r = centrifugal radius in mm = distance from the centre of the turning axis to the bottom of the centrifuge.

For more on the centrifugal radius see the chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories".



The relative centrifugal force (RCF) stands in relation to the revolutions per minute and the centrifugal radius.

17 Centrifugation of materials with higher density

The rotors are designed to centrifuge substances up to a maximum mean homogenous density of 1.2 kg/dm³ when rotating at the stated speed.

Denser substances must be centrifuged at lower speed.

The permissible speed can be calculated using the following formula:

$$\text{Reduced speed (n}_{\text{red}}\text{)} = \sqrt{\frac{1.2}{\text{Greater density}}} \times \text{Rated speed}$$

e.g.: RPM 4000, density 1.6 kg/dm³

$$\text{n}_{\text{red}} = \sqrt{\frac{1.2}{1.6}} \times 4000 = 3464 \text{ RPM}$$

If in doubt you should obtain clarification from the manufacturer.

18 Rotor Identification

After every start of a centrifugation run the rotor utilised is identified.

After a rotor change, the drive switches off and the rotor code (rot xx) is displayed.

- Press the key **START**. The last used centrifuge data will be displayed..

 A further operation of the centrifuge is only possible after a single opening of the lid.
If, following a rotor change, the maximum speed of the rotor is less than the set speed, the speed is limited to the maximum speed of the rotor.

19 Emergency release

The lid cannot be opened during power failure. An emergency release has to be executed by hand.

 For emergency release disconnect the centrifuge from the mains.
Open the lid only during rotor standstill.
Only the plastic release pin provided may be used for emergency release.

See figure on page 2.

- Switch off the mains switch (switch position "0").
- Look through the window in the lid to be sure that the rotor has come to a standstill.
- Insert the release pin (see scope of supply) horizontally into the hole (Fig. 1, A). Push the unlocking pin in until the handle can be lifted when the pin is pressed down.
- Open the lid.

20 Maintenance and servicing

 Pull the mains plug before cleaning.
Before any other cleaning or decontamination process other than that recommended by the manufacturer is applied, the user has to check with the manufacturer that the planned process does not damage the device.

- Cleaning agents and disinfectants which lie in the pH range 5 – 8 are to be utilised. Alkaline cleaning agents with a pH value > 8 are to be avoided.
- In order to prevent appearances of corrosion through cleaning agents or disinfectants, the application guide from the manufacturer of the cleaning agent or disinfectant are absolutely to be heeded.

20.1 Centrifuge

- Clean the centrifuge housing and the centrifuging chamber regularly, using soap or a mild detergent and a damp cloth if required. For one thing, this serves purposes of hygiene, and it also prevents corrosion through adhering impurities.
- In the event of condensation water formation, dry the centrifugal chamber by wiping out with an absorbent cloth.
- If infectious materials penetrates into the centrifugal chamber this is to be disinfected immediately. For surface disinfection we recommend Bacillol® manufactured by Bode Chemie in Hamburg or Biocidal ZF™ from the company WAK-Chemie Medical GmbH in Steinbach.
- Lightly grease the rubber seal of the centrifugal chamber after every cleaning.

20.2 Rotors and Attachments

- In order to prevent corrosion and material changes, rotors and accessories must be cleaned regularly with soap or a mild detergent and a damp cloth. Cleaning is recommended at least once a week, even better after every usage.
- If the rotor or accessory parts are contaminated by pathogenic or radioactive material, a suitable cleaning has to be executed. For disinfection we recommend Helipur® H plus N from the company B. Braun Melsungen. For the removal of radioactive material we recommend decon neutracon® from the company Decon Laboratories Limited.
- The rotors and accessory parts must be dried immediately after cleaning.
- Angle rotors, container and hanger made of aluminium are to be lightly greased after drying using acid-free grease, e.g. vaseline.
- With aerosol-sealed rotors and bio safety systems (see Chapter "Anhang/Appendix, Rotoren und Zubehör/Rotors and accessories") the sealing rings are to be checked and cleaned regularly (weekly). The sealing ring is to be replaced immediately upon indication of crack formation, embrittlement or abrasive wear. To prevent the sealing ring from twisting when the lid is opened and closed, the sealing ring must be lightly greased with acid-free grease, such as Vaseline.
- In order to prevent corrosion as a result of moisture between the rotor and the motor shaft, the rotor should be disassembled and cleaned at least once a month, and the motor shaft should be lightly greased.
- The rotors and accessory parts are to be checked on a monthly basis for corrosion damage.



Rotors and attachments may no longer be utilised upon indication of wear and tear or corrosion.

- Check the firm seating of the rotor on a weekly basis.

20.2.1 Trunnions

With swing-out rotors the trunnions must be regularly lubricated (Hettich Lubricating Grease No. 4051) in order to ensure consistent swinging out of the hangers.

20.2.2 Rotors and accessories with limited term of use

The use of specific rotors, suspensions and accessories is time limited.

They are marked with an expiry date, e.g. "einsetzbar bis Ende: / usable until end of: IV. Quartal 2011" (applicable until the end of: IVth quarter 2011).



The rotors, suspensions and accessories may not be used for longer periods for safety reasons once the marked expiry date has been reached.

20.3 Autoclaving

Swing-out rotors, angle rotors made of aluminium, suspension made of metal, lids with biodegradable seals as well as stands and reductions can be autoclaved at 121° C / 250°F (20 mins). Otherwise you must ask the manufacturer.



The lids of the rotors and containers must be removed prior to autoclaving.

Autoclaving accelerates the ageing process of plastics. In addition, autoclaving may discolour plastics.

After autoclaving, we recommend that the sealing rings of the aerosol-tight and bio-safety systems be exchanged.

20.4 Centrifuge containers

- With leakiness or after the breakage of centrifuging containers broken container parts and leaked centrifugation material are to be completely removed.
- The rubber inserts as well as the plastic sleeves of the rotors are to be replaced after a glass breakage.



Remaining glass splinters cause further glass breakage!

- If this concerns infectious material, a disinfection process is to be executed immediately.

21 Faults

If the fault cannot be eliminated with the help of the fault table, please inform Customer Service.

Please state the type of centrifuge and the factory serial number. Both values are visible on the centrifuge type plate.

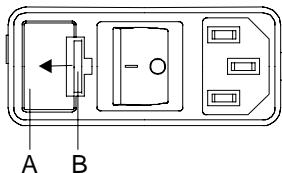
 Perform a MAINS RESET:
<ul style="list-style-type: none"> - Switch off the mains switch (switch position "0"). - Wait at least 10 seconds and then switch on the mains switch again (switch position "I").

Fault	Display	Cause of fault	Remedy
No display	---	No voltage Mains input fuses defective. Transformer fuse defective (only for types 1206-02).	<ul style="list-style-type: none"> - Check distribution voltage. - Check mains power input fuse, refer to Chapter "Change mains input fuse". - Check the transformer fuse, refer to Chapter "Replace the transformer fuse" (only for types 1206-02). - Mains switch ON.
Tacho error	- 1 -	Failure of speed impulses during operation, Unbraked runout.	<ul style="list-style-type: none"> - Due to safety reasons the lid can only be opened after approx. 120 seconds. - After this time has expired perform a MAINS-RESET.
System reset	- 2 -	Failure of power supply during a run Unbraked runout.	<ul style="list-style-type: none"> - When stationary, open lid and press START key.
Balance error	- 3 -	Balance error on the motor axis due to weight differences in the rotor loading.	<ul style="list-style-type: none"> - Open lid when rotor is stationary. - Eliminate balance error.
Communication	- 4 -	Fault in control unit or power unit. Unbraked runout.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
Overload	- 5 -	Motor or motor control defective.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
Overvoltage Undervoltage	- 6 - - 8 -	Supply voltage outside tolerance (see Technical Data) Unbraked runout.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary. - Check supply voltage.
Overspeed	- 7 -	Fault in the supply board Unbraked runout	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary
Excess temperature	- 9 -	Excess temperature switch in motor has triggered. Unbraked runout.	<ul style="list-style-type: none"> - When rotor is stationary, open lid using emergency unlocking (see Emergency Unlocking chapter). - Allow motor to cool down.
Version error	No display in speed field; figure in time field.	Incorrect machine version set, control unit jumps into Setting menu.	<ul style="list-style-type: none"> - Set the figure 4 in the time field with the ▲ or ▼ arrow keys and confirm with STOP. - Perform a MAINS RESET.
Controller watchdog	- C -	Fault in control unit Unbraked runout.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
Lid error	- d -	Unbraked rundown, after standstill lid release.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
Short circuit	- E -	Short circuit in control unit / power unit.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
No rotor code	- F -	No rotor recognition at start. No rotor fitted or defective tacho.	<ul style="list-style-type: none"> - Perform a MAINS RESET when the rotor has been stationary.
New rotor identified	rot...	see section rotor identification.	<ul style="list-style-type: none"> - Press START key.

22 Change mains input fuse



Switch off the mains switch and separate the centrifuge from the mains!



The fuse holder (A) with the mains input fuses is located next to the mains switch.

- Remove the connecting cable from the machine plug socket.
- Press the snap-fit (B) against the fuse holder (A) and remove.
- Exchange defective mains input fuses.



Only use fuses with the rating defined for the type. See the following table.

- Reinsert the fuse holder until the snap-fit clicks shut.
- Reconnect the centrifuge to the mains supply.

Model	Type	Fuse	Order no.
ROTOFIX 32 A	1206	T 3.15 AH/250V	E997
ROTOFIX 32 A	1206-01	T 5 AH/250V	E914
ROTOFIX 32 A	1206-02	T 6.3 AH/250V	2266

23 Acceptance of the centrifuges for repair

If the centrifuge is returned to the manufacturer for repair, it must be decontaminated and cleaned to protect persons, environment and material.

We reserve the right to accept contaminated centrifuges.

Costs incurred for cleaning and disinfection are to be charged to the customer.

We ask for your understanding in this matter.

24 Disposal

When you are disposing of the device, the respective statutory rules must be observed.

Pursuant to guideline 2002/96/EC (WEEE), all devices supplied after August 13, 2005 may not be disposed as part of domestic waste. The device belongs to group 8 (medical devices) and is categorized in the business-to-business field.

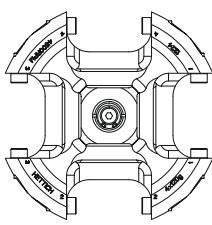
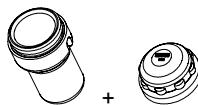


The icon of the crossed-out trash can shows that the device may not be disposed as part of domestic waste.

The waste disposal guidelines of the individual EC countries might vary. If necessary, contact your supplier.

25 Anhang / Appendix

25.1 Rotoren und Zubehör / Rotors and accessories

1324	1390 + 1382						
Ausschwingrotor 4-fach / Swing out rotor 4-times	  + mit Bioabdichtung / with bio-containment 5)						
	Reduzierung / adapter						
	0761	0765	1329	1329	1330		
						ohne Gummieinlage / without rubber insert	
	Röhrchen / tube						
Kapazität / capacity	ml	100	30	9	15	7,5 - 8,2	9 - 10
Maße / dimensions	Ø x L	44 x 100	44 x 105	14 x 100	17 x 100	15 x 92	16 x 92
Anzahl p. Gestell/number p. frame		1	1	4	4	4	4
Anzahl p. Rotor / number p. rotor		4	4	16	16	16	16
Drehzahl / speed	RPM	4000	4000	4000	4000	4000	4000
RZB / RCF		2522	2504	2504	2504	2504	2630
Radius / radius	mm	141	140	140	140	140	147
	sec	27	27	27	27	27	27
	sec	30	30	30	30	30	30
	sec	420	420	420	420	420	420
Probenerwärmung/Sample temp. rise	K ¹⁾	10	10	10	10	10	10

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit (nur bei Zentrifuge ohne Kühlung)

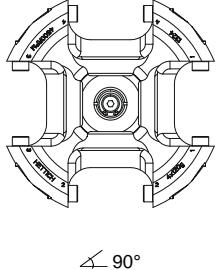
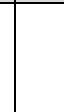
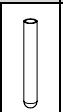
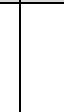
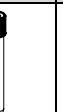
4) nicht mit Stopfen zentrifugierbar, Skal. 10µl-300µl, 15ml, 30ml

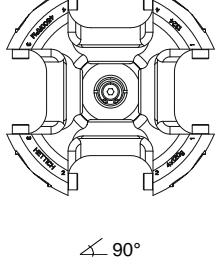
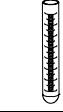
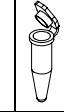
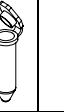
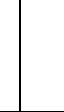
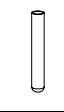
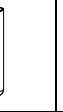
5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time (only with centrifuges without cooling)

4) can not be centrifuged when plug is attached, Scal. 10µl-300µl, 15ml, 30ml

5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio-safety systems in chapters "Notes on safety" and "Maintenance and servicing".

1324		1390 + 1382							
Ausschwingrotor 4-fach / Swing out rotor 4-times		 + 							
 ↙ 90°		mit Bioabdichtung / with bio-containment 5)							
		Reduzierung / adapter							
1331	1339	1343	1347		1348				
									
		Röhrchen / tube							
0521	Rhesus		0509				Vacutainer	Vacutainer	
									
Kapazität / capacity ml	50	1	3	4	15	10	8	8,5 - 10	4 - 7
Maße / dimensions Ø x L mm	34 x 100	6 x 45	10 x 60	10 x 88	17 x 120	16 x 80	16 x 81	16 x 100	16 x 75
Anzahl p. Gestell/number p. frame	1	27	9		1	4	4	4	4
Anzahl p. Rotor / number p. rotor	4	108	36		4	16	16	16	16
Drehzahl / speed RPM	4000	4000	4000		4000	4000	4000	4000	4000
RZB / RCF	2379	2558	2594		2630	2486	2486	2486	2486
Radius / radius mm	133	143	145		147	139	139	139	139
↙ 9 (97%) sec	27	27	27		27	27	27	27	27
↖ 9 sec	30	30	30		30	30	30	30	30
↖ 0 sec	420	420	420		420	420	420	420	420
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10		10	10	10	10	10

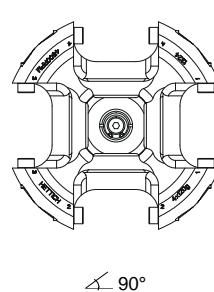
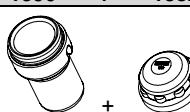
1324		1390 + 1382							
Ausschwingrotor 4-fach / Swing out rotor 4-times		 + 							
 ↙ 90°		mit Bioabdichtung / with bio-containment 5)							
		Reduzierung / adapter							
1329	1351	1363	1365		1383				
									
		Röhrchen / tube							
0518	2078	0536			0501			Sarstedt	
									
Kapazität / capacity ml	15	1,5	2,0	25	30	5	6	7	2,7 - 3
Maße / dimensions Ø x L mm	17 x 100	11 x 38	25 x 90	25 x 110	12 x 75	12 x 82	12 x 100	11 x 66	
Anzahl p. Gestell/number p. frame	4	5	1	1	5	5	5	5	5
Anzahl p. Rotor / number p. rotor	16	20	4	4	20	20	20	20	20
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2504	2415	2308	2630	2522	2522	2522	2522	2522
Radius / radius mm	140	135	129	147	141	141	141	141	141
↙ 9 (97%) sec	27	27	27	27	27	27	27	27	27
↖ 9 sec	30	30	30	30	30	30	30	30	30
↖ 0 sec	420	420	420	420	420	420	420	420	420
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10	10

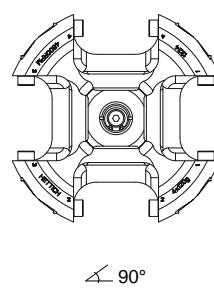
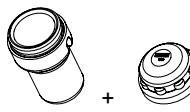
1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit (nur bei Zentrifuge ohne Kühlung)

5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time (only with centrifuges without cooling)

5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

1324	1390 + 1382													
 <p>Ausschwingrotor 4-fach / Swing out rotor 4-times $\angle 90^\circ$</p>	 mit Bioabdichtung / with bio-containment 5) Reduzierung / adapter <table border="1"> <thead> <tr> <th>1383</th><th>1384</th><th>1396</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td></tr> </tbody> </table>								1383	1384	1396			
1383	1384	1396												
Sarstedt	Sarstedt	Sarstedt	Vacutainer	Vacutainer	0513	0547	0549							
Kapazität / capacity ml	2,6 – 2,9	4,9	4,5 - 5	1,6 -5	4 –7	50	85							
Maße / dimensions Ø x L mm	13 x 65	13 x 90	11 x 92	13 x 75	13 x 100	29 x 115	38 x 106							
Anzahl p. Gestell/number p. frame	5	5	5	5	5	1	1							
Anzahl p. Rotor / number p. rotor	20	20	20	20	20	4	4							
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000							
RZB / RCF	2522	2522	2522	2522	2630	2576	2576							
Radius / radius mm	141	141	141	141	141	144	144							
$\sqrt{ } 9$ (97%) sec	27	27	27	27	27	27	27							
$\sqrt{ } 9$ sec	30	30	30	30	30	30	30							
$\sqrt{ } 0$ sec	420	420	420	420	420	420	420							
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10							

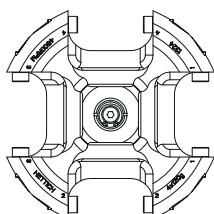
1324	1390 + 1382																					
 <p>Ausschwingrotor 4-fach / Swing out rotor 4-times $\angle 90^\circ$</p>	 mit Bioabdichtung / with bio-containment 5) Reduzierung / adapter <table border="1"> <thead> <tr> <th>1459</th><th>4416</th><th>4417</th><th>6311</th><th>6318</th><th>1356</th><th>1457</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>								1459	4416	4417	6311	6318	1356	1457							
1459	4416	4417	6311	6318	1356	1457																
Sarstedt	Sarstedt	0546	0545	----	Falcon	0509	Sarstedt															
Kapazität / capacity ml	4 – 5,5	7,5 – 8,2	50	30	12	50	15															
Maße / dimensions Ø x L mm	15 x 75	15 x 92	29 x 107	26 x 95	17 x 100	29 x 115	17 x 120															
Anzahl p. Gestell/number p. frame	4	4	1	1	1	1	3															
Anzahl p. Rotor / number p. rotor	16	16	4	4	4	4	12															
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000															
RZB / RCF	2540	2540	2594	2415	2630	2630	2630															
Radius / radius mm	142	142	145	135	147	147	142															
$\sqrt{ } 9$ (97%) sec	27	27	27	27	27	27	27															
$\sqrt{ } 9$ sec	30	30	30	30	30	30	30															
$\sqrt{ } 0$ sec	420	420	420	420	420	420	420															
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10															

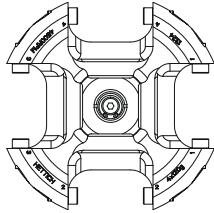
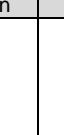
1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit (nur bei Zentrifuge ohne Kühlung)

5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time (only with centrifuges without cooling)

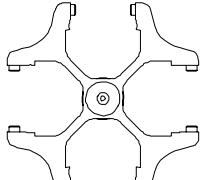
5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

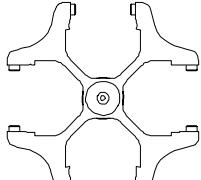
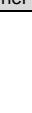
1324	1398							
Ausschwingrotor 4-fach / Swing out rotor 4-times								
								
↙ 90°								
Sarstedt	Sarstedt	Sarstedt	Sarstedt		Vacutainer	0500	0507	
								
Kapazität / capacity ml	2,6 – 2,9	4 – 4,5	9 – 10	10	12	4 - 7	9	15
Maße / dimensions Ø x L mm	13 x 65	15 x 75	16 x 92	15 x 102	17 x 100	16 x 75	14 x 100	17 x 100
Anzahl p. Gestell/number p. frame	4	4	4	4	4	4	4	4
Anzahl p. Rotor / number p. rotor	16	16	16	16	16	16	16	16
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2272	2272	2522	2522	2522	2397	2522	2522
Radius / radius mm	127	127	141	141	141	134	141	141
✓ .9 (97%) sec	27	27	27	27	27	27	27	27
✓ .9 sec	30	30	30	30	30	30	30	30
✓ .0 sec	420	420	420	420	420	420	420	420
Probenerwärmung/Sample temp. rise K ¹⁾	9	9	9	9	9	9	9	9

1324	1398							
Ausschwingrotor 4-fach / Swing out rotor 4-times								
								
↙ 90°								
1483	1484	1484	1482					
	ohne / without E2110							
0509	Falcon	0513	0518					
								
Kapazität / capacity ml	15	50	50	15				
Maße / dimensions Ø x L mm	17 x 120	29 x 115	29 x 115	17 x 100				
Anzahl p. Gestell/number p. frame	4	1	1	4				
Anzahl p. Rotor / number p. rotor	16	4	4	16				
Drehzahl / speed RPM	4000	4000	4000	4000				
RZB / RCF	2612	2576	2576	2522				
Radius / radius mm	146	144	144	141				
✓ .9 (97%) sec	27	27	27	27				
✓ .9 sec	30	30	30	30				
✓ .0 sec	420	420	420	420				
Probenerwärmung/Sample temp. rise K ¹⁾	9	9	9	9				

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit (nur bei Zentrifuge ohne Kühlung)

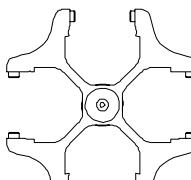
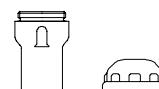
1) Sample temp. rise during maximum speed and 1 hour running time (only with centrifuges without cooling)

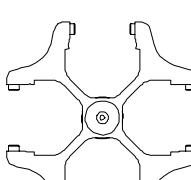
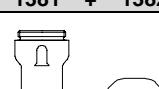
1624				1366				
  <p>Ausschwingrotor 4-fach / Swing out rotor 4-times</p>	1308	1345	1346					
	Reduzierung / adapter					1326	1327	1357
								5277
	Röhrchen / tube					Rhe-sus		
	0521						2078	0536
								
	Kapazität / capacity ml	50	45	20	4	3	1	0,4
	Maße / dimensions Ø x L mm	34 x 100	31 x 100	21 x 100	12 x 60	10 x 60	6 x 45	11 x 38
	Anzahl p. Gestell/number p. frame	1	1	2	12	12	30	9
	Anzahl p. Rotor / number p. rotor	4	4	8	48	48	120	36
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2290	2361	2361	1932	1932	1950	1968	1968
Radius / radius mm	128	132	132	108	108	109	110	110
$\sqrt{ } \cdot (97\%)$ sec	22	22	22	22	22	22	22	22
$\sqrt{ } \cdot 1$ sec	25	25	25	25	25	25	25	25
$\sqrt{ } \cdot 0$ sec	110	110	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10

1624										
  <p>Ausschwingrotor 4-fach / Swing out rotor 4-times</p>	1369			1369-92		1370	1372	1369-91		
	Reduzierung / adapter									
Röhrchen / tube			0507	0518	Vacutainer	0501	0578	0500		
										
Kapazität / capacity ml	15	15	8,5 - 10	6	7	9	5	5		
Maße / dimensions Ø x L mm	17 x 100	17 x 100	16 x 100	12 x 82	12 x 100	14 x 100	12 x 75	12 x 75		
Anzahl p. Gestell/number p. frame	4	4	4	4	4	5	17	4		
Anzahl p. Rotor / number p. rotor	16	16	16	16	16	20	68	16		
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000		
RZB / RCF	2308	2308	2308	2308	2308	2308	2164	2057		
Radius / radius mm	129	129	129	129	129	129	121	115		
$\sqrt{ } \cdot (97\%)$ sec	22	22	22	22	22	22	22	22		
$\sqrt{ } \cdot 1$ sec	25	25	25	25	25	25	25	25		
$\sqrt{ } \cdot 0$ sec	110	110	110	110	110	110	110	110		
Probenerwärmung/Sample temp. rise K ¹⁾	9	9	9	9	9	10	10	9		

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

1) Sample temp. rise during maximum speed and 1 hour running time

1624		1381 + 1382										
 Ausschwingrotor 4-fach / Swing out rotor 4-times		 mit Bioabdichtung / with bio-containment 5)										
 <i>↙ 90°</i>		Reduzierung / adapter										
		1329	1330	1331	1339	1343	1347					
												
		Röhrchen / tube										
Kapazität / capacity	ml	9	15	7,5 - 8,2	9 - 10	25	50	1	0,4	3	4	15
Maße / dimensions	Ø x L mm	14 x 100	17 x 100	15 x 92	16 x 92	24 x 100	34 x 100	6 x 45	10 x 60/ 88	10 x 88	17 x 120	
Anzahl p. Gestell/number p. frame		4	4	4		1	1	27	9	1		
Anzahl p. Rotor / number p. rotor		16	16	16		4	4	108	36	4		
Drehzahl / speed	RPM	4000	4000	4000		4000	4000	4000	4000	4000	4000	
RZB / RCF		2540	2540	2540		2433	2415	2594	2630	2665		
Radius / radius	mm	142	142	142		136	135	145	147	149		
 (97%)	sec	22	22	22		22	22	22	22	22		
 1	sec	25	25	25		25	25	25	25	25		
 0	sec	110	110	110		110	110	110	110	110		
Probenerwärmung/Sample temp. rise	K ¹⁾	10	10	10		10	10	10	10	10		

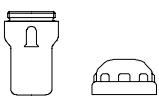
1624		1381 + 1382											
 Ausschwingrotor 4-fach / Swing out rotor 4-times		 mit Bioabdichtung / with bio-containment 5)											
 <i>↙ 90°</i>		Reduzierung / adapter											
		1348	1351	1329	1329	ohne Gummieinlage / without rubber insert							
		Röhrchen / tube											
Vacutainer		2078	0536	Sarstedt	0518								
Kapazität / capacity	ml	10	8	4 - 7	8,5 - 10	1,5	2,0	10	10	15			
Maße / dimensions	Ø x L mm	16 x 80	16 x 81	16 x 75	16 x 100	11 x 38	11 x 38	15 x 102	15 x 100	17 x 100			
Anzahl p. Gestell/number p. frame		4	4	4		5	5	4	4	4			
Anzahl p. Rotor / number p. rotor		16	16	16		20	20	16	16	16			
Drehzahl / speed	RPM	4000	4000	4000		4000	4000	4000	4000	4000	4000		
RZB / RCF		2522	2522	2522		2522	2451	2451	2665	2540			
Radius / radius	mm	141	141	141		141	137	137	149	142			
 (97%)	sec	22	22	22		22	22	22	22	22			
 1	sec	25	25	25		25	25	25	25	25			
 0	sec	110	110	110		110	110	110	110	110			
Probenerwärmung/Sample temp. rise	K ¹⁾	10	10	10		10	10	10	10	10			

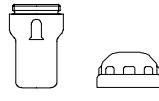
1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time

5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

1624	1381 + 1382								
Ausschwingrotor 4-fach / Swing out rotor 4-times									
	mit Bioabdichtung / with bio-containment 5)								
	Reduzierung / adapter								
	1383								
	Röhrchen / tube								
	0501	Sarstedt							
									
Kapazität / capacity ml	5	6	7	4,5 - 5,0	2,7 - 3	2,6 - 2,9	4,9	1,6 - 5,0	
Maße / dimensions Ø x L mm	12 x 75	12 x 82	12 x 100	11 x 92	11 x 66	13 x 65	13 x 90	13 x 75	
Anzahl p. Gestell/number p. frame	5	5	5	5	5	5	5	5	
Anzahl p. Rotor / number p. rotor	20	20	20	20	20	20	20	20	
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000	
RZB / RCF	2558	2558	2558	2558	2558	2558	2558	2558	
Radius / radius mm	143	143	143	143	143	143	143	143	
 sec	22	22	22	22	22	22	22	22	
 sec	25	25	25	25	25	25	25	25	
 sec	110	110	110	110	110	110	110	110	
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10	

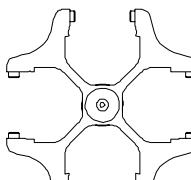
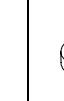
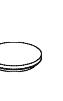
1624	1381 + 1382							
Ausschwingrotor 4-fach / Swing out rotor 4-times								
	mit Bioabdichtung / with bio-containment 5)							
	Reduzierung / adapter							
	1383	1384	1396	6311	6318	1457		
								
	Röhrchen / tube							
	Vacutainer	0513	0547	0549			Sarstedt	0519
								
Kapazität / capacity ml	4,5 - 7	50	85	85	12	50	1,1 - 1,4	25
Maße / dimensions Ø x L mm	13 x 100	29 x 115	38 x 106	38 x 106	17 x 100	29 x 115	8 x 66	24x 100
Anzahl p. Gestell/number p. frame	5	1	1	1	1	1	7	2
Anzahl p. Rotor / number p. rotor	20	4	4	4	4	4	28	8
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2558	2665	2612	2612	2665	2665	2576	2325
Radius / radius mm	143	149	146	146	149	149	144	130
 sec	22	22	22	22	22	22	22	22
 sec	25	25	25	25	25	25	25	25
 sec	110	110	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10

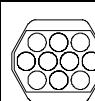
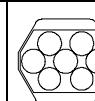
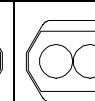
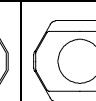
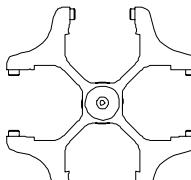
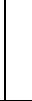
1) Probenerwärmung bei maximaler Drehzahl und
1 Stunde Laufzeit

5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time

5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio safety systems in chapters "Notes on safety" and "Maintenance and servicing".

1624	1381 + 1382							
Ausschwingrotor 4-fach / Swing out rotor 4-times								
								
	1459	4416	4417	0761	0765	1363	1365	
								
	Röhrchen / tube							
	Sarstedt	0546	0545	0526	0534 4)	0535		
								
Kapazität / capacity ml	4 - 5,5	7,5 - 8,2	50	30	100	30	25	30
Maße / dimensions Ø x L mm	15 x 75	15 x 92	29 x 107	26 x 95	44 x 100	44 x 105	25 x 90	25 x 110
Anzahl p. Gestell/number p. frame	4	4	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor	16	16	4	4	4	4	4	4
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2576	2576	2630	2451	2558	2540	2343	2665
Radius / radius mm	144	144	147	137	143	142	131	149
 (97%) sec	22	22	22	22	22	22	22	22
 1 sec	25	25	25	25	25	25	25	25
 0 sec	110	110	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10

1624	1741	1742	1745	1746	1741	1742
Ausschwingrotor 4-fach / Swing out rotor 4-times						
		---	---	---		
	0500	0518	0507	0519	0545	0521
						
Kapazität / capacity ml	9	15	25	30	50	4,9
Maße / dimensions Ø x L mm	14 x 100	17 x 100	24 x 100	26 x 95	34 x 100	13 x 90
Anzahl p. Gestell/number p. frame	10	7	2		1	10
Anzahl p. Rotor / number p. rotor	40	28	8		4	40
Drehzahl / speed RPM	4000	4000	4000		4000	4000
RZB / RCF	2415	2451	2451		2451	2415
Radius / radius mm	135	137	137		137	135
 (97%) sec	22	22	22		22	22
 1 sec	25	25	25		25	25
 0 sec	110	110	110		110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10		10	10

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

4) nicht mit Stopfen zentrifugierbar, Skal. 10µl-300µl, 15ml, 30ml

5) Nach DIN EN 61010, Teil 2 – 020. Die Hinweise für Bio-Sicherheitssysteme in den Kapiteln "Sicherheitshinweise" und "Pflege und Wartung" beachten

1) Sample temp. rise during maximum speed and 1 hour running time

4) can not be centrifuged when plug is attached, Scal. 10µl-300µl, 15ml, 30ml

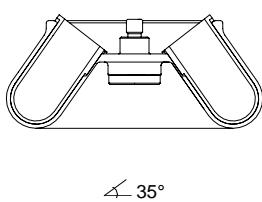
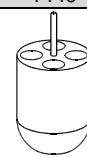
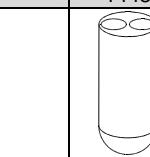
5) in conformity with DIN EN 61010, part 2 – 020. Observe the notes for bio-safety systems in chapters "Notes on safety" and "Maintenance and servicing".

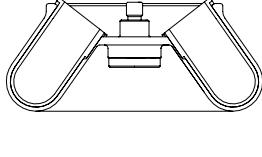
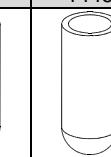
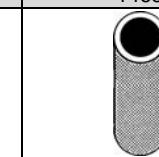
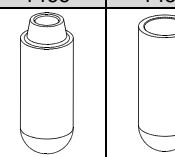
1611		1131				1132		
Ausschwingrotor 8-fach / Swing out rotor 8-times								
Röhrchen / tube		---	0501	Sarstedt	Sarstedt	Vacutainer	2079	Sarstedt
Kapazität / capacity	ml	5	6	2,6 - 2,9	2,7 - 3	1,6 - 5,0	10	4,0 - 5,5
Maße / dimensions	Ø x L mm	12/13 x 75	12 x 82	13 x 65	11 x 66	13 x 75	17 x 70	15 x 75
Anzahl p. Red./number p. adapter		1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor		8	8	8	8	8	8	8
Drehzahl / speed	RPM	4000	4000	4000	4000	4000	4000	4000
RZB / RCF		1914	1914	1914	1914	1914	1914	1914
Radius / radius	mm	107	107	107	107	107	107	107
	(97%) sec	22	22	22	22	22	22	22
	1 sec	25	25	25	25	25	25	25
	0 sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise	K ¹⁾	6	6	6	6	6	6	6

1611		1643				1644		
Ausschwingrotor 8-fach / Swing out rotor 8-times								
Röhrchen / tube		0578	Vacutainer	---	Sarstedt	0507	Sarstedt	Vacutainer
Kapazität / capacity	ml	7	4 - 7	10	4,5 - 5	15	7,5 - 8,2	8,5 - 10
Maße / dimensions	Ø x L mm	12 x 100	13 x 100	13 x 100	11 x 92	17 x 100	15 x 92	16 x 100
Anzahl p. Red./number p. adapter		1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor		8	8	8	8	8	8	8
Drehzahl / speed	RPM	4000	4000	4000	4000	4000	4000	4000
RZB / RCF		2415	2415	2415	2415	2415	2415	2415
Radius / radius	mm	135	135	135	135	135	135	135
	(97%) sec	22	22	22	22	22	22	22
	1 sec	25	25	25	25	25	25	25
	0 sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise	K ¹⁾	9	9	9	9	9	9	9

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

1) Sample temp. rise during maximum speed and 1 hour running time

1620A		Reduzierung / adapter									
Winkelrotor 6-fach / Angle rotor 6-times		1449	1448	1451							
											
Röhrchen / tube		2078	0536	---		0507	Sarstedt	Sarstedt	Vacutainer	Sarstedt	0518
Kapazität / capacity	ml	1,5	2,0	3	10	15	9 - 10	7,5 - 8,2	8,5 - 10	10	15
Maße / dimensions	Ø x L mm	11 x 38		10 x 60	16 x 80	17 x 100	16 x 92	15 x 92	16 x 100	15 x 102	17 x 100
Anzahl p. Red./number p. adapter		4		4	2	1	1	1	1		1
Anzahl p. Rotor / number p. rotor		24		24	12	6	6	6	6		6
Drehzahl / speed	RPM	6000		6000	6000	6000	6000	6000	6000		6000
RZB / RCF	³⁾	4065		4065	3904	3904	3904	3904	3904		3904
Radius / radius	mm	101		101	97	97	97	97	97		97
 (97%)	sec	19		19	19	19	19	19	19		19
 1	sec	22		22	22	22	22	22	22		22
 0	sec	104		104	104	104	104	104	104		104
Probenerwärmung/Sample temp. rise	K ¹⁾	5		5	5	5	5	5	5		5

1620A		Reduzierung / adapter					Einsatz / insert	
Winkelrotor 6-fach / Angle rotor 6-times		1447	1446	1463	1466	1454	1646	
							Falcon-Set für 6 Röhrchen / Falcon-set for 6 tubes	
Röhrchen / tube								
Kapazität / capacity	ml	30	50	75	50	15	50	50
Maße / dimensions	Ø x L mm	26 x 95	29 x 107	35 x 105	34 x 100	17 x 120	29 x 115	29 x 115
Anzahl p. Red./number p. adapter		1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor		6	6	6	6	6	6	6
Drehzahl / speed	RPM	6000	6000	6000	6000	6000	6000	6000
RZB / RCF	³⁾	3824	4025	4146	4146	3985	3985	3985
Radius / radius	mm	95	100	103	103	99	99	99
 (97%)	sec	19	19	19	19	19	19	19
 1	sec	22	22	22	22	22	22	22
 0	sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise	K ¹⁾	5	5	5	5	5	5	5

1) Probenerwärmung bei maximaler Drehzahl und
1 Stunde Laufzeit

3) Zentrifugiergefäße aus Glas nur belastbar bis RZB 4000

1) Sample temp. rise during maximum speed and 1 hour

running time

3) Centrifuge containers of glass will not stand RCF values exceeding 4000

1620A		Reduzierung / adapter					
		SK 63.08					
		Röhrchen / tube					
0547	0549		0501	Vacutainer	Sarstedt		
Kapazität / capacity ml	85	85	5	6	1,6 - 5	2,6 - 2,9	
Maße / dimensions Ø x L mm	38 x 106	38 x 106	12/13 x 75	12 x 82	13 x 75	13 x 65	
Anzahl p. Red./number p. adapter	1	1	2	2	2	2	
Anzahl p. Rotor / number p. rotor	6	6	12	12	12	12	
Drehzahl / speed RPM	6000	6000	6000	6000	6000	6000	
RZB / RCF ³⁾	4186	4186	3783	3783	3783	3783	
Radius / radius mm	104	104	94	94	94	94	
	sec	19	19	19	19	19	
	sec	22	22	22	22	22	
	sec	104	104	104	104	104	
Probenerwärmung/Sample temp. rise K ¹⁾	5	5	5	5	5	5	

1628		1122		1621			
		Reduzierung / adapter					
2079	Sarstedt	Vacutainer	0507	Sarstedt	Vacutainer	0518	
Kapazität / capacity ml	10	4 - 5,5	4 - 7	15	7,5 - 8,2	8,5 - 10	15
Maße / dimensions Ø x L mm	17 x 70	15 x 75	16 x 75	17 x 100	15 x 92	16 x 100	17 x 100
Anzahl p. Gestell/number p. frame	1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor	12	12	12	12	12	12	12
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2254	2254	2254	2683	2683	2683	2683
Radius / radius mm	126	126	126	150	150	150	150
	sec	22	22	22	22	22	22
	sec	25	25	25	25	25	25
	sec	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	12	12	12	16	16	16	16

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

3) Zentrifugiergefäße aus Glas nur belastbar bis RZB 4000

1) Sample temp. rise during maximum speed and 1 hour running time

3) Centrifuge containers of glass will not stand RCF values exceeding 4000

1628	1127							
Ausschwingrotor 12-fach / Swing out rotor 12-times								
					Reduzierung / adapter			
	Vacutainer	Sarstedt	Sarstedt					
Kapazität / capacity ml	5	1,6 – 5,0	2,6 – 2,9	2,7 - 3				
Maße / dimensions Ø x L mm	12 / 13 x 75	13 x 75	13 x 65	11 x 66				
Anzahl p. Gestell/number p. frame	1	1	1	1				
Anzahl p. Rotor / number p. rotor	12	12	12	12				
Drehzahl / speed RPM	4000	4000	4000	4000				
RZB / RCF	2236	2236	2236	2236				
Radius / radius mm	125	125	125	125				
	22	22	22	22				
	25	25	25	25				
	110	110	110	110				
Probenerwärmung/Sample temp. rise K ¹⁾	12	12	12	12				
1617	1619				1681			
Ausschwingrotor 8-fach / Swing out rotor 8-times								
					Reduzierung / adapter			
					Ausschwingrotor 6-fach / Swing out rotor 6-times			
					Reduzierung / adapter			
Röhrchen / tube	0509	0513						
Kapazität / capacity ml	15	50	Kapazität / capacity ml	15	50			
Maße / dimensions Ø x L mm	17 x 120	29 x 115	Maße / dimensions Ø x L mm	17 x 120	29 x 115			
Anzahl p. Gestell/number p. frame	1	1	Anzahl p. Gestell/number p. frame	1	1			
Anzahl p. Rotor / number p. rotor	8	8	Anzahl p. Rotor / number p. rotor	6	6			
Drehzahl / speed RPM	4000	4000	Drehzahl / speed RPM	4000	4000			
RZB / RCF	2469	2469	RZB / RCF	2701	2701			
Radius / radius mm	138	138	Radius / radius mm	151	151			
	22	22		22	22			
	25	25		25	25			
	110	110		110	110			
Probenerwärmung/Sample temp. rise K ¹⁾	11	11	Probenerwärmung/Sample temp. rise K ¹⁾	10	10			

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

1) Sample temp. rise during maximum speed and 1 hour running time

1613		Reduzierung / adapter						
Winkelrotor 12-fach / Angle rotor 12-times								
		Röhrchen / tube						
0518		0507	0509	Vacutainer	Sarstedt			
Kapazität / capacity ml	15	15	15	4 - 7	4,9	4,5 - 5	7,5 - 8,2	9 - 10
Maße / dimensions Ø x L mm	17 x 100	17 x 100	17 x 120	13 x 100	13 x 90	11 x 92	15 x 92	16 x 92
Anzahl p. Red./number p. adapter	1	1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor	12	12	6	12	12	12	12	12
Drehzahl / speed RPM	6000	6000	6000	6000	6000	6000	6000	6000
RZB / RCF ³⁾	4146	4146	4146	4146	4146	4146	4146	4146
Radius / radius mm	103	103	103	103	103	103	103	103
	sec	13	13	13	13	13	13	13
	sec	15	15	15	15	15	15	15
	sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise K ¹⁾	5	5	5	5	5	5	5	5

1613		Reduzierung / adapter						
Winkelrotor 12-fach / Angle rotor 12-times								
		1054-A						
		Röhrchen / tube						
Sarstedt		Vacutainer	Vacutainer		0501	Sarstedt	Sarstedt	Sarstedt
Kapazität / capacity ml	10	8	8,5 - 10	5	6	1,1 - 1,4	2,7 - 3	2,6 - 2,9
Maße / dimensions Ø x L mm	15 x 102	16 x 125	16 x 100	12/13 x 75	12 x 82	8 x 66	11 x 66	13 x 65
Anzahl p. Red./number p. adapter	1	1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor	12	6	12	12	12	12	12	12
Drehzahl / speed RPM	6000	6000	6000	6000	6000	6000	6000	6000
RZB / RCF ³⁾	4146	4146	4146	3300	3300	3300	3300	3300
Radius / radius mm	103	103	103	82	82	82	82	82
	sec	13	13	13	13	13	13	13
	sec	15	15	15	15	15	15	15
	sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise K ¹⁾	5	5	5	5	5	5	5	5

1) Probenerwärmung bei maximaler Drehzahl und
1 Stunde Laufzeit

3) Zentrifugiergefäße aus Glas nur belastbar bis RZB 4000

1) Sample temp. rise during maximum speed and 1 hour running time

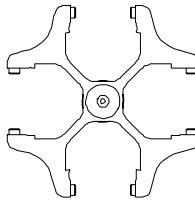
3) Centrifuge containers of glass will not stand RCF values exceeding 4000

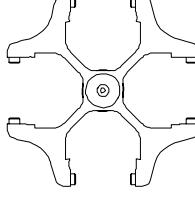
1613		Reduzierung / adapter						
	1054-A	0701	6305	SK 1/89	SK 19/85-4	SK 73/74		
Winkelrotor 12-fach / Angle rotor 12-times								
Vacutainer				Sarstedt	Vacutainer	2078	0536	
Kapazität / capacity ml	1,6 - 5	4	4	0,8	4 - 5,5	4 - 7	1,5	2
Maße / dimensions Ø x L mm	13 x 75	12 x 60	10 x 88	8 x 45	15 x 75	16 x 75	11 x 38	11 x 38
Anzahl p. Red./number p. adapter	1	1	1	1	1	1	1	1
Anzahl p. Rotor / number p. rotor	12	12	12	12	12	12	12	12
Drehzahl / speed RPM	6000	6000	6000	6000	6000	6000	6000	6000
RZB / RCF	3300	3260	3502	2576	3663	3663	2737	2737
Radius / radius mm	82	81	87	64	91	91	68	68
	(97%) sec	13	13	13	13	13	13	13
	1 sec	15	15	15	15	15	15	15
	0 sec	104	104	104	104	104	104	104
Probenerwärmung/Sample temp. rise K ¹⁾	5	5	5	5	5	5	5	5

1418		1467			1468		
Winkelrotor 8-fach / Angle rotor 8-times							
		0716	E2109	E2110			
Röhrchen / tube							
0507	0518	--	0509	0513	0546	--	
Kapazität / capacity ml	15	15	12	15	50	50	50
Maße / dimensions Ø x L mm	17 x 100	17 x 100	17 x 100	17 x 120	29 x 115	29 x 107	29 x 115
Anzahl p. Gestell/number p. frame	4	4	4	4	1	1	1
Anzahl p. Rotor / number p. rotor	32	32	32	32	8	8	8
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2540	2540	2540	2594	2486	2486	2486
Radius / radius mm	142	142	142	145	139	139	139
	(97%) sec	36	36	36	36	36	36
	1 sec	43	43	43	43	43	43
	0 sec	200	200	200	200	200	200
Probenerwärmung/Sample temp. rise K ¹⁾	16	16	16	16	16	16	16

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

1) Sample temp. rise during maximum speed and 1 hour running time

1624	1661 + 1660							
Ausschwingrotor 4-fach / Swing out rotor 4-times								
								
↙ 90°								
	1663	1664	1665	1666	1667	1668	1663	1664
Kapazität / capacity ml	1	2	4	8	3 x 2	4 x 1	1	2
Maße / dimensions Ø / A mm²	6,2 / 30	8,7 / 60	12,4 / 120	17,5 / 240	8,7 / 60	6,2 / 30	6,2 / 30	8,7 / 60
Anzahl p. Gestell/number p. frame	1	1	1	1	1	1	2	2
Anzahl p. Rotor / number p. rotor	4	4	4	4	4	4	8	8
Filterkarten / filter cards	1675	1675	1675	1676	1677	1678	1692	1692
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	1646	1646	1646	1646	1646	1646	1646	1646
Radius / radius mm	92	92	92	92	92	92	92	92
✓ (97%) sec	22	22	22	22	22	22	22	22
✓ 1 sec	25	25	25	25	25	25	25	25
✓ 0 sec	110	110	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	10	10	10

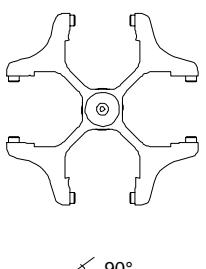
1624	1661 + 1660				1660	1680					
Ausschwingrotor 4-fach / Swing out rotor 4-times											
											
↙ 90°											
1663	1664	1665	1666	1667	1668	1671	1672	1673			
Kapazität / capacity ml	4	8	3 x 2	4 x 1	Objekträger/ object slide	[1] 0,5	[1] 0,5	[1] 0,5			
Maße / dimensions Ø / A mm²	12,4 / 120	17,5 / 240	8,7 / 60	6,2 / 30	26 / 76	6,2 / 30	8,7 / 60	12,4 / 120			
Anzahl p. Gestell/number p. frame	2	2	2	2	6	1	1	1			
Anzahl p. Rotor / number p. rotor	8	8	8	8	24	4	4	4			
Filterkarten / filter cards	1692	1691	1694	1693	[1] 1696	[1] 1697	[1] 1698	[1] 1698			
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000			
RZB / RCF	1646	1646	1646	1646	1574	1467	1467	1467			
Radius / radius mm	92	92	92	92	88	82	82	82			
✓ (97%) sec	22	22	22	22	22	22	22	22			
✓ 1 sec	25	25	25	25	25	25	25	25			
✓ 0 sec	110	110	110	110	110	110	110	110			
Probenerwärmung/Sample temp. rise K ¹⁾	10	10	10	10	10	6	6	6			

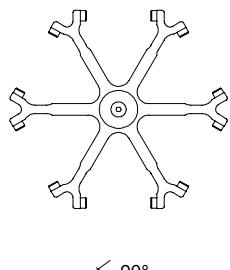
1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

6) Objekträger nur belastbar bis RZB 1100
[1] Einschritt-Methode

1) Sample temp. rise during maximum speed and 1 hour running time

6) Object slide will not stand RCF values exceeding 1100
[1] One-step method

1624	1661 + 1660	
Ausschwingrotor 4-fach / Swing out rotor 4-times  ↙ 90°	 + 	
Spannplatte / slide carrier		
	1470	
Zyto-Kammer / cyto chamber		
1471	1475	
		
Kapazität / capacity ml	1 x 8	2 x 8
Maße / dimensions Ø / A mm ²	17,5 / 240	17,5 / 240
Anzahl p. Gestell/number p. frame	1	1
Anzahl p. Rotor / number p. rotor	4	4
Filterkarten / filter cards	---	---
Drehzahl / speed RPM	4000	4000
RZB / RCF	1556	1556
Radius / radius mm	87	87
✓ (97%) sec	22	22
✓,1 sec	25	25
✓,0 sec	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	10	10

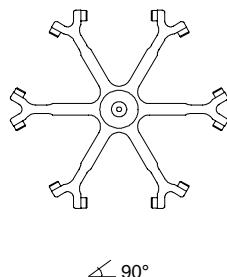
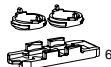
1626	1661 + 1660	
Ausschwingrotor 6-fach / Swing out rotor 6-times  ↙ 90°	 + 	
Spannplatte / slide carrier		
	1662	1670
Zyto-Kammer / cyto chamber		
1663	1664	1665
		
1666	1667	1668
		
1663	1664	1665
		
Kapazität / capacity ml	1	2
Maße / dimensions Ø / A mm ²	6,2 / 30	8,7 / 60
Anzahl p. Gestell/number p. frame	1	1
Anzahl p. Rotor / number p. rotor	6	6
Filterkarten / filter cards	1675	1675
Drehzahl / speed RPM	4000	4000
RZB / RCF	2039	2039
Radius / radius mm	114	114
✓ (97%) sec	22	22
✓,1 sec	25	25
✓,0 sec	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	8	8

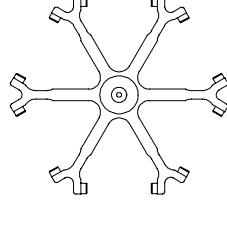
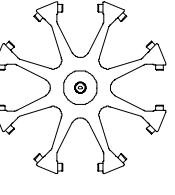
1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

6) Objekträger nur belastbar bis RZB 1100

1) Sample temp. rise during maximum speed and 1 hour running time

6) Object slide will not stand RCF values exceeding 1100

1626	1661 + 1660				1660	1680		
Ausschwingrotor 6-fach / Swing out rotor 6-times  ↙ 90°	 + 							
Spannplatte / slide carrier				Spannplatte / slide carrier				
1670				1285				
 6)				 nur ohne Deckel / without lid 1661				
Zyto-Kammer / cyto chamber				Zyto-Kammer / cyto chamber				
1665	1666	1667	1668			1671	1672	1673
								
Kapazität / capacity ml	4	8	3 x 2	4 x 1	Objektträger/ object slide	[1] 0,5	[1] 0,5	[1] 0,5
Maße / dimensions Ø / A mm ²	12,4 / 120	17,5 / 240	8,7 / 60	6,2 / 30	26 / 76	6,2 / 30	8,7 / 60	12,4 / 120
Anzahl p. Gestell/number p. frame	2	2	2	2	6	1	1	1
Anzahl p. Rotor / number p. rotor	12	12	12	12	36	6	6	6
Filterkarten / filter cards	1692	1691	1694	1693		[1] 1696	[1] 1697	[1] 1698
Drehzahl / speed RPM	4000	4000	4000	4000	4000	4000	4000	4000
RZB / RCF	2039	2039	2039	2039	1914	1842	1842	1842
Radius / radius mm	114	114	114	114	107	103	103	103
✓ (97%) sec	22	22	22	22	22	22	22	22
✓ 1 sec	25	25	25	25	25	25	25	25
✓ 0 sec	110	110	110	110	110	110	110	110
Probenerwärmung/Sample temp. rise K ¹⁾	8	8	8	8	8	8	8	8

1626	1661 + 1660		1648	1680				
Ausschwingrotor 6-fach / Swing out rotor 6-times  ↙ 90°	 + 		Ausschwingrotor 8-fach / Swing out rotor 8-times  ↙ 90°					
Spannplatte / slide carrier			Spannplatte / slide carrier					
1470			1662					
								
Zyto-Kammer / cyto chamber			Zyto-Kammer / cyto chamber					
1471	1475		1671	1672	1673			
								
Kapazität / capacity ml	1 x 8	2 x 8	Kapazität / capacity ml	[1] 0,5	[1] 0,5	[1] 0,5		
Maße / dimensions Ø x L mm	17,5 / 240	17,5 / 240	Maße / dimensions Ø x L mm	6,2 / 30	8,7 / 60	12,4 / 120		
Anzahl p. Gehänge/number p. hanger	1	1	Anzahl p. Gehänge/number p. hanger	1	1	1		
Anzahl p. Rotor / number p. rotor	6	6	Anzahl p. Rotor / number p. rotor	8	8	8		
Filterkarten / filter cards	---	---	Filterkarten / filter cards	[1] 1696	[1] 1697	[1] 1698		
Drehzahl / speed RPM	4000	4000	Drehzahl / speed RPM	4000	4000	4000		
RZB / RCF	1950	1950	RZB / RCF	2218	2218	2218		
Radius / radius mm	109	109	Radius / radius mm	124	124	124		
✓ (97%) sec	22	22	✓ (97%) sec	22	22	22		
✓ 1 sec	25	25	✓ 1 sec	28	28	28		
✓ 0 sec	110	110	✓ 0 sec	117	117	117		
Probenerwärmung/Sample temp. rise K ¹⁾	8	8	Probenerwärmung/Sample temp. rise K ¹⁾	13	13	13		

1) Probenerwärmung bei maximaler Drehzahl und 1 Stunde Laufzeit

6) Objektträger nur belastbar bis RZB 1100

[1] Einschritt-Methode

1) Sample temp. rise during maximum speed and 1 hour running time

6) Object slide will not stand RCF values exceeding 1100

[1] One-step method